

CONTRACT NAS1-98128 (Contract)

The following information has been determined to be exempt from disclosure and has been deleted from the contract and contract modifications:

- Exhibit H: Subcontracting Plan

The deleted material is exempt from disclosure under 14 C.F.R. 1206.300 (b) (4) which covers trade secrets and commercial or financial information obtained from a person and privileged or confidential. It has been held that commercial or financial matter is "confidential" for purposes of this exemption if its disclosure would be likely to have either of the following effects: (1) impair the Government's ability to obtain necessary information in the future; or (2) cause substantial harm to the competitive position of the person from whom the information was obtained, National Parks and Conservation v. Morton, 498 F2d 765 (D.C. Cir. 1974).

Disclosure of the information in the Subcontracting Plan would discourage future submission of detailed data concerning the company's implementation of their Subcontracting Plan and impair the Government's ability to obtain necessary information in the future as well as cause substantial harm to the competitive position of the company.



ARCHITECT - ENGINEER CONTRACT

1. CONTRACT NO

NAS1- 98128

2. DATE OF CONTRACT

9-30-98 (Effective 11-1-98)

3A. NAME OF ARCHITECT-ENGINEER

Sverdrup Technology, Inc.

3B. TELEPHONE NO (Include Area Code)

(931) 393-6211

4. DEPARTMENT OR AGENCY AND ADDRESS (Include ZIP Code):

**National Aeronautics and Space Administration
Langley Research Center
Hampton, VA 23681-2199
(757) 864 - 2435**

5. PROJECT TITLE AND LOCATION

Multi-Discipline Architect-Engineer Services for Langley Research Center, Hampton, Virginia.

6. CONTRACT FOR (General description of services to be provided):

Multi-Disciplined Architect-Engineer Services for Langley Research Center, Hampton, Virginia, in accordance with NASA Solicitation 1-073-GGK.1443, dated February 23, 1998

7. CONTRACT AMOUNT (Express in words and figures):

CLIN	BASE YEAR	OPTION YEAR 1	OPTION YEAR 2	OPTION YEAR 3	OPTION YEAR 4
01 (Maximum Fixed Price)	\$1,000,000	\$1,800,000	\$1,800,000	\$1,800,000	\$1,800,000
02 (Firm Fixed Price)	5456.750	\$458.649	\$460.549	\$462,450	\$464.351
03 (Maximum CPIF)	<u>\$1,250,000</u>	<u>\$1,250,000</u>	<u>\$1,250,000</u>	<u>\$1,250,000</u>	<u>\$1,250,000</u>
TOTALS:	\$2,706,750	\$3,508,649	\$3,510,549	\$3,512,450	\$3,514,351

8. NEGOTIATION AUTHORITY

41 U.S.C. 541

9. ADMINISTRATIVE APPROPRIATION AND ACCOUNTING DATA

PR:	GGL.2 111	GGK.1392	GGL.1329	GGL.1329	GGL.1329	GGL.1329
JO:	C974908	C207401	C137900	C200101	C200202	C455801
OC:	2530	2530	2530	2530	2530	2530

Invoices shall be submitted to and payment will be made by: Chief, Financial Management Division, Mail Stop 175
NASA, Langley Research Center
Hampton, VA 23681-2199


10. The United States of America (called the Government) represented by the Contracting Officer executing this contract, and the Architect-Engineer agree to perform this contract in strict accordance with the clauses and the documents identified as follows, all of which are made a part of this contract:

Contract Schedule	Part I, Sections B through H
Contract Clauses	Part II, Section I
List of Documents, Exhibits and Attachments	Part III, Section J
Representations and Instructions	Part IV, Sections K and L

If the parties of this contract are comprised of more than one entity, each entity shall be jointly and severally liable under this contract

SIGNATURES

NAMES **AND** TITLES (*Typed*)

A		R. Ward Johnson, Jr. Vice President - Sverdrup Technology, Inc.
B		
C		
D		

12. THE UNITED STATES OF AMERICA

Rosemary C. Froehlich

Typed Name of Contracting Officer

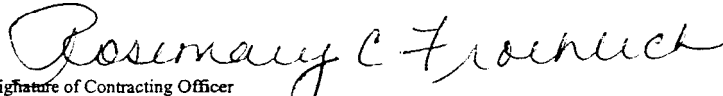

Signature of Contracting Officer

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PART I - THE SCHEDULE

SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS

B.1 SUPPLIES AND/OR SERVICES TO BE FURNISHED

The Contractor shall, to the extent specified herein, furnish all personnel, facilities, services, supplies, equipment and materials necessary to provide complete professional architectural and engineering design support, construction management and inspection services, general drafting, surveying, SPECSINTACT system support, and engineering library support, as specified in C.1, Statement of Work. Whenever the term "Statement of Work" is used throughout this contract, it is understood to also refer to the "Statement of Architect-Engineer Services".

B.2 TYPE OF CONTRACT

This is a hybrid fixed-price, cost-plus-incentive-fee and indefinite quantity contract.

CLIN 01 – Part III, Section 1.0, Professional Services, and Part III, Section 2.1, General Drafting, of C.1, Statement of Work, will be indefinite quantity type. The Government will order deliveries or performance under CLIN 01 by issuance of firm fixed-price Task Orders (TOs), pursuant to G.5, Procedures for Issuing Task Orders.

CLIN 02 – Part III, Sections 2.2 through 2.4 Surveying, SPECSINTACT System Support, and Engineering Library Support, of C.1, Statement of Work, will be firm fixed price.

CLIN 03 – Part III, Section 2.5 Construction Phase Support, of C.1, Statement of Work, will be indefinite quantity type. The Government will order deliveries or performance under CLIN 03 by issuance of cost-plus-incentive-fee TOs, pursuant to G.5, Procedures for Issuing Task Orders.

B.3 FIXED PRICE, ESTIMATED COST AND INCENTIVE FEE

- (a) The total fixed price for CLIN 02 is \$456,750.
- (b) The total fixed price for CLIN 01 will be as set on individual FFP task orders.
- (c) The total estimated cost and incentive fee for CLIN 03 will be as set forth on individual CPIF task orders.

B.4 MINIMUM AND MAXIMUM ORDER QUANTITIES, CLIN 01 AND CLIN 03

- (a) The minimum and maximum quantities of CLIN 01 are \$10,000 and \$1,000,000, respectively.
- (b) The minimum and maximum quantities of CLIN 03 are \$50,000 and \$1,250,000, respectively.

B.5 CONTRACT FUNDING (NASA 1852.232-81) (JUN 1990)

(a) For purposes of payment of cost, exclusive of fee, in accordance with the Limitation of Funds clause, the total amount allotted by the Government to this contract is \$70,298.00. This allotment is for the performance of work in accordance with the limitations and completion dates as set forth in task assignments authorized by the Contracting Officer.

(b) An additional amount of \$5,624.00 is obligated under this contract for payment of fee.

NOTE: B.5 is applicable to CLIN 03 only.

B.6 LABOR CATEGORIES

The following is a list of labor categories and their associated fully burdened fixed hourly rates that are applicable to CLIN 01 and CLIN 03. These labor categories and rates will be used by the Government to establish target cost for individual TOs.

Labor Categories	Fully Burdened Rate per Hour	Fully Burdened Overtime Rate Der Hour
<u>Contractor Site</u>		
Project Manager	\$86.82	\$86.82
Senior Engineer/Architect	75.69	75.69
Engineer/Architect	71.34	71.34
Junior Engineer/Architect	54.87	54.87
General Clerk I	20.49	24.53
General Clerk II	25.20	30.17
General Clerk III	31.34	37.52
General Clerk IV	35.05	41.95
Secretary I	25.89	31.00
Secretary II	30.15	36.09
Secretary III	34.57	41.38
Secretaw IV	40.37	48.32
Secretary V	42.37	50.72
Word Processor I	27.92	33.42
Word Processor II	31.46	37.66
Drafter I	28.12	33.66
Drafter II	31.64	37.87
Drafter III	39.75	47.59
Drafter.IV	48.29	57.81
Engineering Technician IV (Designer I)	51.23	61.33
Engineering Technician V (Designer II)	59.84	71.63
Enaineerina Technician VI (Desianer III)	73.93	88.50
<u>Government Site</u>		
CM/Inspector	49.81	49.81
Supervisor inspector	45.14	45.14
Secretaw I	21.80	26.91
Secretary II	25.38	31.32
Secretary III	29.10	35.90
Secretary IV	33.98	41.93
Secretary V	35.66	44.01
Inspector	39.96	49.32
Radiograph Monitor	21 36	26 37

Labor Categories	Rate per Hour	Overtime Rate per Hour
<u>Contractor Site</u>		
Project Manager	\$78 93	\$78 93
Senior Engineer/Architect	68 81	68 81
Engineer/Architect	64 85	64 85

Junior Engineer/Architect	49.88	49.88
General Clerk I	18.63	22.30
General Clerk II	22.91	27.43
General Clerk III	28.49	34.11
General Clerk IV	31.86	38.14
Secretary I	23.54	28.18
Secretary II	27.41	32.81
Secretary III	31.43	37.62
Secretary IV	36.70	43.93
Secretary V	38.52	46.11
Word Processor I	25.38	30.38
Word Processor II	28.60	34.24
Word Processor III	32.02	38.33
Drafter I	25.56	30.60
Drafter II	28.76	34.43
Drafter III	36.14	43.26
Drafter IV	43.90	52.55
Engineering Technician IV (Designer I)	46.57	55.75
Engineering Technician V (Designer II)	54.50	65.12
Engineering Technician VI (Designer III)	67.21	80.45
Government Site		
CM/Inspector	45.28	45.28
Supervisor Inspector	41.04	41.04
Secretary I	19.82	24.46
Secretary II	23.07	28.47
Secretary III	26.45	32.64
Secretary IV	30.89	38.12
Secretary V	32.42	40.01
Inspector	36.84	45.60
Radiograph Monitor	19.70	24.36

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

C.I STATEMENT OF WORK - MULTIDISCIPLINE ARCHITECT-ENGINEERING SERVICES

Part I - General

1.0 Introduction

Langley Research Center (LaRC) possesses a wide variety of unique aeronautical/aerospace research and institutional facilities. A continual rehabilitation program ensures that these facilities are well maintained and capable of providing state-of-the-art testing. New facilities are also periodically developed to expand the Center's capabilities. These facilities must be highly reliable, economical, and have low maintenance cost. The Facility Systems Engineering Division (FSED) at LaRC is the responsible organization for the above work.

2.0 Standards and Constraints

All designs, material selections, drawings, specifications, and other documentation produced under this contract shall conform to nationally accepted codes and standard

practices. This shall include the NASA Facility Project Implementation Handbook, NASA Policy Guidance (NPG) 8820.28 and drawing requirements as contained in Engineering Drawing System, Langley Policy Guidance (LAPG) 7320.1. Generally, all drawings shall be computer-generated in AutoCAD, release 14 or later format and shall be in SI - Metric or English Units as directed in the TO. Where appropriate, specific standards and constraints will be included in each TO.

Part II - Scope of Work

1.0 Professional Services

The Contractor shall produce complete architectural-engineering designs, cost estimates and analyses, and prepare construction contract drawings and specifications for institutional facilities, site work, and utility systems at LaRC. Professional Services include the following tasks:

- 1.1 Special studies and reports
- 1.2 Requirements definitions and analyses
- 1.3 Conceptual, preliminary and final designs

Specific requirements for any of the above Professional Services will be included in each TO. TOs will require work in the following areas:

Civil, Structural, and Architectural Design

The Contractor shall provide facility designs, which make the architectural, structural, electrical, and mechanical systems compatible with the facility function. The designs shall include functional and environmental relationships, economy in construction and maintenance, and considerations for health and safety while providing the flexibility necessary to permit future expansion. The work shall include site selection, utility development, civil work, selection and use of materials and structural framing systems. Designs shall be compatible with clear space and span requirements, applicable fire protection classification, foundation conditions, architectural treatment guides, and consideration of climate conditions and structural design loads for the specific facility and location. The Contractor shall provide facility and equipment layout options as specified in TOs and advise the Government as to the specific advantages of each of these schemes.

Mechanical Svstems Design

The Contractor shall provide mechanical system design of heating, plumbing, fire protection, ventilating, and air conditioning systems.

The air conditioning systems shall provide year-round automatic temperature control. The design of the equipment shall be based on a study of air conditioning requirements, extent of control required, appearance of appurtenances in occupied spaces, type of cooling source, nature of occupancy, building structure, and any other factors peculiar to the project. Special attention shall be given to the incorporation of energy conservation devices such as enthalpy control for economizer cycle, timers for night setback, and weekend shutdown. Where applicable, controls for air conditioning systems shall be compatible with existing control systems at LaRC.

Designs shall conform to the latest editions of ASHRAE Guide and Data Books, including Standard 90-80, ASME Codes, ANSI Safety Codes for Mechanical Refrigeration,

SMACNA Duct Manual, National Fire Protection Association, BOCA Plumbing Code, and Public Law 91-596 Occupational Safety and Health Act, unless otherwise specified in TOs.

Electrical Systems Design

The Contractor shall provide electrical system designs for projects including power, lighting, fire alarm, grounding, controls, communications, and associated systems necessary for the operation of facilities. The designs shall conform to the provisions of Public Law 91-596 Occupational Safety and Health Act; and the latest editions of the National Electrical Code; National Electrical Manufacturers Association; American National Standards Institute; Insulated Power Cable Engineers Association; the Illuminating Engineering Society; the National Electrical Safety Code; and ASHRAE Guide and Data Books, including Standard 90-80.

2.0 Incidental Services

The Contractor shall provide incidental services to support design and construction.

Incidental services shall include:

- 2.1 General Drafting
- 2.2 Surveying
- 2.3 SPECSINTACT System Support
- 2.4 Engineering Library Support
- 2.5 Construction Phase Support

Part III - Contractor Tasks

1.0 Professional Services – CLIN 01

As directed in TOs issued by the Government, the Contractor shall perform the professional services listed below to support the improvement of existing facilities and the development of new facilities at NASA - LaRC.

1.1 Special Studies and Reports

The Contractor shall perform engineering analyses including feasibility studies, technology assessments, trade-off studies, third-party reviews, and failure analyses. The Contractor shall prepare reports, which document studies and analyses and provide formal and informal briefings.

1.2 Requirements Definition and Analysis

The Contractor shall be responsible for derivation of project requirements from basic information supplied by the Government. Project requirements shall be based on analysis of system requirements with respect to subsystem and integrated systems concepts, cost, schedule, benefit, risk, feasibility, operability, maintainability, reliability, and related considerations. The Contractor shall participate in Preliminary Requirements Reviews and deliver Requirements Documents as specified in TOs.

1.3 Design

1.3.1 Conceptual Designs

The Contractor shall be responsible for obtaining data upon which to develop design concepts; performing preliminary analyses and studies; and preparing sketches, diagrams, layout plans, preliminary cost estimates, and preliminary development schedules. The Contractor shall participate in Conceptual Design Reviews as specified in TOs.

1.3.2 Preliminary Designs

The Contractor shall be responsible for development of preliminary drawings and critical analyses; identification of long-lead procurement items; refined cost estimates and schedules; detailed plans for completion of final design; and initial plans for procurement, fabrication, installation, integrated systems testing, and activation of designed systems. The Contractor shall prepare and deliver presentations at Preliminary Design Reviews as specified in TOs.

1.3.3 Final Designs

The Contractor shall produce final designs based on the functional and technical requirements, while remaining within the project scope, schedule, and budgetary parameters. Final designs shall include all documents necessary for the system development, including engineering analyses, drawings, specifications, detailed cost estimates, fabrication and assembly schedules, and associated supporting documentation. Final designs shall include development of an inspection plan, which identifies the critical inspection points for the project. Final designs shall conform to NPG 8820.28 NASA Facility Project Implementation Handbook, and specific requirements provided in TOs.

Drawings and specifications shall be completely detailed. Brand name or equal product specifications shall provide salient characteristics by which "equals" can be evaluated. Merely specifying a manufacturer's part number or equal will not be acceptable. The Contractor shall review all engineering calculations and drawings and shall so indicate on the respective documents. The Contractor shall prepare and deliver presentations at Critical Design Reviews as specified in TOs.

2.0 Incidental Services

2.1 General Drafting – CLIN 01

The Contractor shall perform general drafting services, as directed by the Government in TOs. The Contractor shall provide new drawings and revisions to existing drawings from engineering sketches and redline markups for electrical, piping, architectural, civil engineering and mechanical disciplines.

2.1.1 The Contractor shall perform manual drafting. Manual drafting shall consist of revisions to existing drawings that do not have an electronic database. The Contractor shall match lettering style, line weight,

symbolology, and detail configuration with the content of the original drawing, and shall deliver the completed product within the schedule specified for each TO.

- 2.1.2 The Contractor shall perform computer-aided drafting using AutoCAD and Pro Engineer software. For task orders specifying pro engineer, NASA will provide a non-site workstation and software. Computer-aided (electronic) drafting shall consist of preparing new drawings and revising existing drawings in the disciplines specified in paragraph 2.1. New drawings shall conform to drafting standard MIL-STD-100E unless otherwise specified by TO. The Contractor shall provide electronic drawings that conform to the specified standard and shall deliver the completed product within the schedule specified for each TO.
- 2.1.3 The Contractor shall update NASA-LaRC systems drawing sets. Drawing sets include electrical metering drawings, substation switching diagrams, panel location plans, one-line electrical plans and other similar sets. Information for updating these drawing sets will be provided by NASA-LaRC or, if specified in the TO, shall be obtained by the Contractor through field investigation. The Contractor shall match the lettering style, line weights, symbolology and detail configuration found on the existing NASA-LaRC drawing and shall deliver the completed project within the schedule specified for each TO.
- 2.1.4 The Contractor shall perform quality assurance checks and reviews on all Contractor-generated new drawings and on revisions to existing drawings before submission to NASA-LaRC. Accuracy and conformance to standards shall be the Contractor's responsibility. The work delivered shall comply with the specified drafting standard and be technically complete. Any re-work to correct discrepancies shall be completed within 48 hours after notification of the discrepancies.

2.2 Surveying – CLIN 02

The Contractor shall provide surveying services for NASA-LaRC. Requests for services may be verbally issued by the NASA - LaRC Underground Utilities Coordinator, or his designated alternate.

- 2.2.1 The Contractor shall perform field-surveying services to support NASA-LaRC's digging permit system. The Contractor shall perform field work with pipe locators, cable locators, and conventional survey equipment for locating and marking existing underground utilities to preclude damage during construction and maintenance activities.

The utility marking shall be thorough and accurate. Accuracy is defined by comparing the actual location of exposed utilities to the Contractor's markings. Accuracy requirements for marking utilities shall be ± 2 Ft. in the horizontal plane and ± 1 Ft. in the vertical plane. Thoroughness and accuracy will be determined using data from the inspection reports and feedback regarding construction problems, which arise due to incomplete marking of the utilities.

Based on historical data, it is expected that the Contractor will be required to issue approximately 300 digging permits during a 12-month

period. The digging permit procedure is outlined in Exhibit A. The Contractor shall respond to the specified site location for emergency digging permit requests (broken water lines, etc.) within 20 minutes of notification. The Contractor shall maintain a log of all requests and response times for each work assignment.

- 2.2.2 The Contractor shall obtain and record as-built information, during and after construction, of above and below grade utilities. The Contractor shall conduct field measurements with conventional survey equipment to determine horizontal and vertical positions of above and below grade utilities, structures and topographic features. Data obtained shall be expressed in the Virginia (Lambert) Plane Coordinate System. All as-built information and supporting field notes shall become the property of the Government and shall be delivered to the Government within 1 working day of any request. Accuracy requirements for determining as-built dimensions shall be ± 0.25 Ft. for horizontal location and ± 0.1 Ft. for vertical location (elevation) of below grade utilities, and ± 0.05 Ft. in both planes for structures and topographic features.

The Contractor shall coordinate with the construction inspection unit and construction Contractor and insure that as-built information for all new below-grade utilities is recorded prior to backfill. The number of requests for acquiring as-built information will approximate the number of digging permits issued each year.

- 2.2.3 The Contractor shall perform surveying services to establish horizontal and vertical reference points in support of facility construction and research projects. The Contractor shall use various types of field surveying and techniques such as topographic surveys, triangulation, traversing, differential leveling and construction surveying. The Contractor shall work in the Virginia State Lambert Coordinate System and the Geodetic Coordinate System. The work will include, but will not be limited to, verification of building layouts, concrete forms, anchor bolt placement, and centerlines for research equipment and wind tunnel structures. The Contractor shall perform surveying operations with conventional and GPS survey equipment. NASA will provide GPS equipment on short term loan for NASA specified requirements.

Accuracy requirements for this work are third order survey accuracy for field surveys, 20.01 Ft. for construction surveys, and ± 0.005 Ft. for research equipment centerlines.

- 2.2.4 The Contractor shall continuously update and maintain NASA-LaRC's underground utility drawing sets to reflect current as-installed information in accordance with the Digging Permit Procedure. NASA-LaRC will provide the electronic database for the underground utility drawings and supporting as-built files at contract startup. The Contractor shall be responsible for the accuracy and completeness of all subsequent updates/revisions during the term of this contract. The Contractor shall perform revisions to NASA-LaRC's underground utility drawings in AutoCAD and ARC/INFO format, and work within NASA-LaRC's GIS. The Contractor's field notes and other as-built information shall be added to NASA-LaRC's as-built files, and returned to the NASA - LaRC Underground Utilities Coordinator with the as-built files at the end of the

contract. Over the past three years, there has been an average of 114 requirements per year for this type of work.

Accuracy requirements for plotting revisions shall be ± 1 Ft. on 1" = 30 Ft. scale drawings, ± 5 Ft. on 1" = 100 Ft. scale drawings, and ± 10 Ft. on 1" = 300 Ft. scale drawings.

2.3 SPECSINTACT System Support – CLIN 02

The Contractor shall provide, on-site in Building 1209 at LaRC, the necessary SPECSINTACT operation and file clerk/librarian services to support a Facility Construction Program which has averaged approximately \$15M/Year. Over the past two years, this support has provided yearly averages of 76 new specifications, 103 tasks to revise specifications, and 7 updates to the local master sets of the specifications. The average size of the new specifications has been 188 pages. The Contractor shall provide all necessary clerical services to operate and maintain the SPECSINTACT system for the preparation of construction specifications. The work will be issued via individual SPECSINTACT Work Request Forms, through NASA - LaRC's Facility Systems Engineering Division or from within the Contractor's organization.

The Contractor shall provide construction contract specifications, utilizing SPECSINTACT, the Government's computerized storage, selective retrieval, and rapid printout of standard construction specifications. The work includes receipt of draft specifications, which include marked-up copies of SPECSINTACT shelf masters with hand-written or typed inserts of sentences, paragraphs or entire specification sections, from a variety of sources. Proofreading and producing final versions of specifications shall be in accordance with standard format and the work request. Incidental typing to produce final specifications may also be required. This will include data sheets and other technical specification attachments.

2.3.1 Performance Requirements for SPECSINTACT Support

The standard turn-around time for SPECSINTACT work is as follows:

Specification Processing - Job timeliness shall be measured in terms of the total workdays elapsed from receipt of a work request at the SPECSINTACT support unit until its delivery to the requestor.

First Pull jobs - Performance Standard is complete specifications returned to the initiator within 6 workdays. A first pull job is defined as the first printed version of the specification (draft).

Complete job revision - Performance Standard is a complete specification returned to the initiator within 5 workdays. A complete job revision is defined as the first printed version of the entire specification.

Partial job revision - Performance Standard is a complete specification returned to the initiator within 3 workdays. A partial job revision is defined as correction or additions to pages or sections.

Turn-around time for high priority work shall be 1 workday. High priority work is approximately 5% of the overall SPECSINTACT work.

2.4 Engineering Library Support – CLIN 02

The Contractor shall provide construction contract submittal processing and technical file services. These services involve receiving, copying, routing, and tracking construction contract submittals and responses; and maintaining and operating the technical engineering files and the technical library of the Facility Systems Engineering Division. Maintaining the technical library includes keeping the Visual Search Microfiche (VSMF) system current. The VSMF system **is** a collection of Government, industry, manufacturer and professional society standards, specifications, codes, and product data that serves as a reference source. The work includes maintaining the currency of the materials, both microfilm and hard copy, and providing user assistance. The submittal processing services shall be provided for all construction activities at LaRC; therefore the Reviewer referred to below could be an employee of the Contractor or a NASA employee.

Work will be issued via individual work requests through NASA - LaRC's Facility Systems Engineering Division or within the Contractor's organization.

2.4.1 Submittal Processing Services

The submittal processing services required are as follows:

Before Pre-construction **Conference/Notice to Proceed (NTP)**

The following items shall be accomplished prior to the Pre-construction Conference:

- Receive contract information from Program Integration Office (PIO)
- Receive Reviewer designations from COTR
- Generate submittal log for tracking submittals

Submittal Receipt

- Submittals received from Construction Contractors at Mail Stop **465** (81209, Center Core)
- Enter the following data into the Submittal Log
 - * Date received
 - * Number of copies received
 - * Specification Section Number
 - * Submittal Description (**SD**)Number
 - * Description of Material
 - * Government action required
 - * Date to Reviewer
 - * Date due from Reviewer (5 days after receipt)
- Copy Technical Submittal Form and keep for record
- Copy Technical Submittal Form and distribute in accordance with the distribution indicated on the Technical Submittal Form by an * (asterisk)
- Attach action item form and deliver to Reviewer Mail Stop

The Performance Standard for completion of these activities is two workdays after receipt of the complete submittal.

Submittal Review (Reviewer)

- The Reviewer services are not performed under this Task 2.4.1. Contractor or Government personnel, depending on the work involved, may perform the services. When performed by Contractor personnel, they shall be done in accordance with Part III, Paragraph 2.5.

Submittal Processing - Distribution

- Submittal package received from COTR
- Review package for completeness
 - * Number of copies
 - * Reviewer stamp and initials
 - * COTR signature
- Reproduce copies of Technical Submittal Form and attach to each submittal
- Mark submittals for distribution (extra copies of submittal to be returned to the construction Contractor)
- Enter the following data in Submittal Log:
 - * Date received from COTR
 - * Action code
- Distribute as indicated on Technical Submittal Form
 - * Examples of distribution requirements:
 - * 126/Contract Files (Name) – receives one copy of the completed Technical Submittal Form
 - * 447/Engineering Files (1) – receives one copy of the submittal with a copy of the completed Technical Submittal Form attached
 - * 428/Inspection (2) – receives two copies of the submittal with a copy of the completed Technical Submittal Form attached
- Mail original Technical Submittal Form to Construction Contractor
- Mail within NASA shall be by Government messenger envelopes
- Mail to the Construction Contractor shall be by NASA mailing envelopes

The Performance Standard for Distribution is two workdays after receipt from the COTR.

2.4.2 Engineering Files and Library Support

The services provided under this task are to maintain the existing construction records system, incorporate new data to expand the database, and provide on request customer service. The Contractor shall provide services between the hours of 8 a.m. and 4:30 p.m. each Government workday.

2.4.2.1 Engineering Files

The Contractor shall provide records to the requestor within 1 workday of receipt of the request. The Contractor shall establish new contract files and electronic media cross reference records within two workdays from receipt of request. The Contractor shall prepare closed out contracts for

conversion to historical records within 30 calendar days after receipt of contract close out memorandum from the Office of Procurement.

2.4.2.2 Library Support

The Contractor shall post updated library references. The Performance Standard is 5 workdays after receipt of the revised reference material.

2.5 Construction Phase Support – CLIN 03

The Contractor shall perform construction management and inspection services to support construction contracts at NASA – LaRC, as directed by the Government in TOs.

2.5.1 Construction Management

The Contractor shall perform construction management services for LaRC construction projects. These services will include support of LaRC project managers during the pre-construction and construction phases by reviewing and making appropriate recommendations regarding: contract specifications and drawings prior to the package going to the LaRC Office of Procurement, submittals, schedules, cost estimates, construction Contractor performance, engineering changes, tests, and test plans.

Contract administration support may include evaluation of Contractor requests for information (RFIs), progress/payment reviews, contract documentation and correspondence review required for effective contract administration and evaluation of Contractor claims. The Contractor shall prepare and/or attest to the reasonableness of construction and contract change order estimates, review and attest to the reasonableness of construction completion schedules and attest to the reasonableness of progress payment requests.

The Contractor shall maintain and update the existing Task Order Management Information System (TOMIS) database. This electronic construction management database contains both construction contract data and cost accounting of Construction Management and Inspection hours charged to each construction contract.

For additional requirements and a more detailed summary of LaRC Construction Management practices, consult Sections 3 and 4 and appropriate Appendices of the Facility Systems Engineering Division Construction Management Manual dated April 30, 1998 (Exhibit B).

2.5.2 Construction Inspection

The Contractor shall provide inspection services for construction contracts that are generated from designs performed under this contract, other contracts, and in-house generated designs. Multidiscipline construction inspection services are required for LaRC construction contracts estimated at \$15M/year. The Contractor shall furnish inspection services including, but not limited to, inspection of: site

preparation, foundation, masonry, structural steel, interior wall partitions, metal work, pipefitting, floors, doors, mechanical systems, roofing, electrical systems (power and controls), welding (including high pressure systems), wind tunnel injection and control systems, wind tunnel modifications, painting and coating systems, heating, ventilation, and air conditioning systems.

Inspection services shall be provided at locations both on and off LaRC and shall be carried out to verify construction Contractor compliance with contract requirements. Construction inspectors shall inspect, check and witness, prepare logbooks, refer to submittals, issue deficiency notices (non-compliance), conduct wage surveys and attest to the reasonableness of progress payments and coordinate construction Contractor activities which interface with ongoing NASA activities. Inspectors shall coordinate construction Contractor requested digging permits, utility outages and other miscellaneous services deemed necessary to complete the assigned mission.

The Contractor shall notify construction Contractors of contract deviations and if corrective action is not taken within a reasonable period of time, notification of non-compliance shall be provided to the COTR for the specific construction contract. Other construction services include; pre-award/pre-construction services, construction contract administration support and technical consultation.

If, during the course of inspection, the Contractor becomes aware of deviations in the construction contract documents from building codes, laws and NASA regulations, the Contractor shall notify the COTR for the specific construction contract.

The Contractor shall provide radiographic monitoring services for the nondestructive testing (NDT) of welds, castings and piping. Monitors shall establish boundaries and maintain a record of the time, location, and radiation levels measured at representative locations on the critical area boundary. The Contractor shall comply with the NDT requirements and procedures listed in LAPG 1710.5.

In addition to technical onsite inspection, the Contractor shall maintain a system of records and logs by individual Task Order, which attests that the work was performed as specified. When specified by TO, the Contractor shall field verify the accuracy of construction Contractor-maintained as-constructed drawings.

All inspection documentation will be subject to periodic review by the Government.

The Contractor shall become familiar with the NASA LaRC safety clearance procedures listed in LaRC Handbook LAPG 1710.10. NASA will train and certify the Contractor to install and remove the red "GO NOT OPERATE" safety tags. These services shall only be provided for construction contracts being inspected by the Contractor. Approximately 95% of the inspection Task Orders will require this red tag service.

The Contractor shall prepare a listing of remaining construction contract requirements to be accomplished (hereafter referred to as the "punch list") for use by COTR for the specific construction contract during final walk-through inspections.

For additional requirements and a more detailed summary of required inspection services for LaRC, consult the NASA LaRC Construction Inspection Manual provided in Appendix 12 of Exhibit B.

2.5.3 Performance Evaluation for Construction Phase Services

2.5.3.1 Quality Metrics

The quality of the Contractor's performance on each Task Order will be evaluated in accordance with the following metrics, as applicable.

- (1) Were all critical inspection points witnessed and documented? (Critical Metric)
- (2) Did the inspector obtain all required permits?
- (3) Were weekly entries made in the inspection log?
- (4) Did the inspector coordinate all utility outages with facility personnel?
- (5) Was all non-complying work corrected or reported to the COTR? (Critical Metric)
- (6) Were responses provided for all submittals and RFIs?
- (7) Does the Construction Management log reflect all contract changes?
- (8) Did the Contractor develop acceptable Request for Change (RFC) scope definitions and cost estimates?
- (9) Did the Contractor submit highlighted inspection drawings with dates indicating when the work was inspected and accepted?

2.5.3.2 Schedule Metrics

The timeliness (schedule portion) of the Contractor's performance on each Task Order will be evaluated in accordance with the following metrics, as applicable.

- (1) Did the Contractor identify and report all non-complying work at a time when it could be corrected in a cost-effective manner? (Critical Metric)
- (2) Was the average elapsed time from when the Inspector received a progress payment from the Financial

Management Division to the time it was turned over to the COTR 10 calendar days or less?

- (3) Was the average process time for technical submittals 10 calendar days or less?
- (4) Was the average process time for Requests for Information 5 calendar days or less?
- (5) Did the Contractor submit the properly completed Construction Contract Completion Checklist to the COTR within 10 days or less after completion of the Contract Completion Punch List?

SECTION D - PACKAGING AND MARKING

D.1 PACKING, PACKAGING AND MARKING

- (a) The Contractor shall preserve, pack, and mark for shipment all items deliverable under this contract in accordance with good commercial practices and in accordance with instructions that may be specified by the Government in authorized TOs. Shipments shall be preserved, packed and marked to ensure both acceptance by common carrier and safe transportation at the most economical rate(s).
- (b) Markings for reports and other documentation shall be as set forth in Exhibit C, Contract Documentation Requirements.

SECTION E - INSPECTION AND ACCEPTANCE

E.1 FINAL INSPECTION AND ACCEPTANCE--ALTERNATE I (LaRC 52.246-94) (OCT 1992)

The Contracting Officer or his duly authorized representative, at destination, shall accomplish final inspection and acceptance of all items specified for delivery under this contract, including those items specified for delivery under Task Orders.

TION I - DELIVERIES OR PERFORMANCE

F.1 DELIVERY

- (a) The documentation and reports required by each TO shall be delivered F.O.B. Destination in accordance with the schedule specified.
- (b) The reports and documentation required by Exhibit C, Contract Documentation Requirements, shall be delivered at the times and to the places specified therein.

F.2 PERIOD OF PERFORMANCE (LaRC 52.211-91) (AUG 1997)

The period of performance of this contract shall be 12 months from the effective date of the contract.

NOTE: Reference the clause entitled "Options", located at **H.12** for contract option periods.

F.3 PLACES OF PERFORMANCE — ALTERNATE II (LaRC 52.211-98) (OCT 1992)

The places of performance shall be the Contractor's facility; NASA, Langley Research Center, Hampton, Virginia; and other sites as may be designated by TO.

SECTION G - CONTRACT ADMINISTRATION DATA

G.1 NASA CONTRACTOR FINANCIAL MANAGEMENT REPORTING (NASA 1852.242-73) (JUL 1997)

- (a) The Contractor shall submit NASA Contractor Financial Management Reports on NASA Forms 533 in accordance with the instructions in NASA Policy Guidance (NPG) 9501.2, NASA Contractor Financial Management Reporting, and on the reverse side of the forms, as supplemented in the Schedule of this contract. The detailed reporting categories to be used, which shall correlate with technical and schedule reporting, shall be set forth in the Schedule. Contractor implementation of reporting requirements under this clause shall include NASA approval of the definitions of the content of each reporting category and give due regard to the Contractor's established financial management information system.
- (b) Lower level detail used by the Contractor for its own management purposes to validate information provided to NASA shall be compatible with NASA requirements.
- (c) Reports shall be submitted in the number of copies, at the time, and in the manner set forth in the Schedule or as designated in writing by the Contracting Officer. Upon completion and acceptance by NASA of all contract line items, the Contracting Officer may direct the Contractor to submit Form 533 reports on a quarterly basis only, report only when changes in actual cost incur, or suspend reporting altogether.
- (d) The Contractor shall ensure that its Form 533 reports include accurate subcontractor cost data, in the proper reporting categories, for the reporting period.
- (e) If during the performance of this contract NASA requires a change in the information or reporting requirements specified in the Schedule, or as provided for in Paragraph (a) or (c) of this clause, the Contracting Officer shall effect that change in accordance with the Changes clause of this contract.

NOTE: CLAUSE G.1 ABOVE IS APPLICABLE TO COST TYPE TASK ORDERS, SEE EXHIBIT C - CONTRACT DOCUMENTATION REQUIREMENTS.

G.2 INCENTIVE FEE

Incentive Fee Report for Construction Phase Services

- (a) The Contractor's performance under the Quality, Schedule, and Cost metrics of this contract will be evaluated every six months by the Government in accordance with this clause.
- (b) The Contractor shall submit within 10 days after the end of each semiannual reporting period to the COTR and the CO, a fee determination report for the Construction Phase Services. The report shall contain the contract number, the date, and the total fee for the period in accordance with the instructions below and the Section I Clause 52.216-10, INCENTIVE FEE. The fee computed will be subjected to Government review and approval. The Contractor shall use the negotiated Target Cost, the specified schedule and quality metrics, and the Incentive Fee Table below for determining the appropriate fee for the period:

Incentive Fee Table

<u>Fee Category</u>	<u>Percentage of Target Cost</u>
Maximum Fee	2%
Target Fee	5%
Minimum Fee	2%

The negotiated Target Cost will serve as the cost standard for each TO. The quality and schedule metrics are defined in the SOW Paragraph 2.5.3. "Applicable" metrics as used below are those required to be performed by the individual TO.

The semi-annual report should appear as follows and be completed using the directions below.

Sample Fee Determination Report:

Task Order No.(1)	Target Cost(2)	Actual Cost(3)	Were All Critical Metrics Met(4) See Note	Number of Applicable Quality Metrics(5)	Number of "Yes" Answers to Quality Metrics (6)	Number of Applicable Schedule Metrics (7)	Number of "Yes" Answers to Schedule Metrics (8)

Step 1: List all of the TOs completed during the reporting period in Column 1.

Step 2: List the Target Cost for each TO in Column 2.

Step 3: List the Actual Cost for each TO in Column 3.

Step 4: Indicate whether all of the critical metrics for a task were met in column 4. If the answer is "Yes" for that task, proceed on to Step 5. If the answer is "No", proceed on but enter a 0 in columns 6 and 8. Note: When the answer in column 4 is "No", assume that all available metrics (nine for quality and five for schedule) are applicable when filling in columns 5 for quality and 7 for schedule.

Step 5: Indicate the number of Applicable Quality Metrics for each TO in column 5

Step 6: Indicate the number of Quality Metrics, which the Contractor met in Column 6

Step 7: Indicate the number of Applicable Schedule Metrics for each TO in column 7

Step 8: Indicate the number of Schedule Metrics which the Contractor met in Column 8.

Step 9: The Contractor shall calculate the following:

- A. The dollar amounts of Maximum Fee, Target Fee, and Minimum Fee. These are computed by multiplying the Target Cost by the rates for each of the fees as listed in the Incentive Fee Table.
- B. The Percentage of Quality Metrics Met by dividing the sum of column 6 by the sum of column 5. Locate that number in the left-hand column of the following table and read the corresponding value of the Quality Fee Adjustment Factor.

Percentage of Quality Metrics Met	Quality Fee Adjustment Factor
.95 - 1.00	1.60
.90 - .94	1.46
.85 - .89	1.33
.80 - .84	1.00
Below .80	0.00

- C. The Percentage of Schedule Metrics Met by dividing the sum of column 8 by the sum of column 7. Locate that number in the left-hand column of the following table and read the corresponding value of the Schedule Fee Adjustment Factor.

Percentage of Schedule Metrics Met	Schedule Fee Adjustment Factor
.95 - 1.00	1.60
.90 - .94	1.46
.85 - .89	1.33
.80 - .84	1.00
Below .80	0.00

- D. The Target Quality Fee by multiplying the Target Fee calculated in Step 9A by 0.55, which is the weighting factor for Quality.
- E. The Quality Fee by multiplying the Target Quality Fee calculated in Step 9D by the Quality Fee Adjustment Factor determined in Step 9B.
- F. The Target Schedule Fee by multiplying the Target Fee calculated in Step 9A by 0.20, which is the weighting factor for Schedule.
- G. The Schedule Fee by multiplying the Target Schedule Fee calculated in Step 9F by the Schedule Fee Adjustment Factor determined in Step 9C.

Step 10: The fee associated with cost will be calculated using a 75/25 fee adjustment formula which represents the relative shares that the Government and the Contractor will receive for all cost savings. In other words, the Government will receive 75% of all cost savings and the Contractor will receive 25% of all cost savings. Likewise, the Contractor will be penalized on fee at the same rate for cost overruns. The calculation is as follows:

- A. Compute the Cost Variance:

$$\text{Cost Variance} = \text{Total Target Cost (sum of Column 2)} - \text{Total Actual Cost (sum of Column 3)}$$
- B. Compute the Cost Fee:

$$\text{Cost Fee} = \text{Contractor's share (.25)} \times \text{Cost Variance}$$

NOTE: When the Total Actual Cost is greater than the Total Target Cost a negative number will result for the Cost Variance and the Cost Fee. The negative sign will be used when calculating the Total Incentive Fee in Step 11.

Step 11: Total Incentive Fee = Quality Fee (Step 9E) + Schedule Fee (Step 9G) + Cost Fee (Step 10)

NOTES:

1. If the Total Incentive Fee calculated in Step 11 is less than the Minimum Fee calculated in Step 9A, the Minimum Fee (Step 9A) value is used.
2. If the Total Incentive Fee calculated in Step 11 is more than the Maximum Fee calculated in Step 9A, the Maximum Fee (Step 9A) value is used.

G.3 INCENTIVE FEE AUDIT

The Government reserves the right to audit actual cost records to verify accuracy for computation of fee for the cost metric. Upon any such audit, the Government may adjust the fee claimed for the current period or previous periods to reflect the correct actual cost. The Contractor shall maintain accounting records that show costs for each Task Order.

G.4 SUBMISSION AND PAYMENT OF VOUCHERS

(a) Payment for CLIN 1 and CLIN 2

(1) Public vouchers for CLIN 1 and CLIN 2 shall include a reference to this contract NAS1-98128 (AE). All vouchers for CLIN 1 shall also include the TO Number. The Contractor's taxpayer identification number shall be included on the invoice. All payments shall be made pursuant to Section I Clause 52.232-10 Payments under Fixed-Price Architect-Engineer Contracts (AUG 1987).

(2) Requests for progress payments will be in accordance with Clause 1852.232-82 entitled "Submission of Requests for Progress Payments" (MAR 1989).

(b) Payment for CLIN 3

(1) Public vouchers for payment of cost and fee shall include a reference to this contract NAS1-98128 (AE) and the TO number. The Contractor's taxpayer identification number shall be included on the invoice.

(2) Cost vouchers shall be submitted for approval through the cognizant DCAA office. Fee vouchers shall be submitted for approval through the Contracting Officer.

(3) Provisional incentive fee payments will be made under this contract pending the determination of the amount of fee earned for an evaluation period. If applicable, provisional incentive fee payments will **be** made to the Contractor on monthly basis. The total amount of incentive fee available in an evaluation period that will be provisionally paid is the lesser of 80 percent or the prior period's evaluation score.

(4) The Contractor shall prepare vouchers as follows:

A. One original Standard Form (SF) 1034, SF 1035, or equivalent Contractor's attachment.

B. Seven copies of SF 1034A, SF 1035A, or equivalent Contractor's attachment.

C. The Contractor shall mark SF 1034A copies 1, 2, 3, 4, and such other copies **as** may be directed by the Contracting Officer by insertion in the memorandum block the names and addresses as follows:

- (i) Copy 1 NASA Contracting Officer;
- (ii) Copy 2 Auditor;
- (iii) Copy 3 Contractor
- (iv) Copy 4 Contract administration office; and
- (v) Copy 5 Project management office (when required by the NASA

Contracting Officer).

(c) Invoice Address

The address as set forth below is the designated payment office for fixed-price, cost and fee vouchers for purposes of the Prompt Payment clause of this contract. The Contracting Officer's office is the designated billing office for fixed price progress payments for purposes of the Prompt Payment clause. Invoices shall be forwarded to the following address and marked with the contract number NAS1-98128 (AE) and the specific TO number (if applicable).

NASA, Langley Research Center
Attn: Financial Management Division, M/S 175
Hampton, VA 23681-0001

G.5 PROCEDURES FOR ISSUING TASK ORDERS

(a) The Contracting Officer, or his designated representative, shall issue Task Orders (TO) to the Contractor, for CLINs No. 01 and 03 providing specific authorization or direction to perform work within the scope of the contract. TOs issued under CLIN 01 shall be firm fixed-price. TOs issued under CLIN 03 shall be cost-plus-incentive-fee type.

(b) The Contractor may incur costs under this contract in performance of Task Orders and **Task** Order modifications issued in accordance with this procedure. No other costs are authorized for CLIN 01 and CLIN 03 unless otherwise specified in the contract or expressly authorized by the Contracting Officer.

(c) TOs shall be issued on FSED Task Order Form 1500.2. Task Orders shall contain, as a minimum, the following information:

- (1) Date of Task Order and contract number NAS1-98128
 - (2) Statement of Work and supporting documentation
 - (3) Deliverables
 - (4) Required completion date and /or delivery schedule
 - (5) Authorized dollars (includes cost plus fee on cost type TOs)
 - (6) Applicable special instructions or provisions
 - (7) Signatures - Technical Project Engineer (TPE), Supervisor, and Task Area Manager
- (TAM)
- (8) Authorization for performance (Contracting Officer or designated representative)

(d) Upon receipt of a Task Order, the Contractor shall submit a task plan that includes his proposed technical approach, period of performance, firm fixed-price or appropriate cost information (including estimate of hours applied to the hourly rates from the Section B of Contract Schedule, other direct costs (ODC's), and any other information specified), for execution of the task.

(e) For CLIN 01, A-E Design Tasks, the Contractors cost estimate shall be structured to differentiate between the elements included in The 6% Fee Limitation for AE Contracts (Ref. FAR 15.903(d)(1)(ii) and those services that are excluded.

(f) After review of the task plan, and discussions or negotiation with the contractor, the Contracting Officer or his designated representative will issue a revision to the TO which authorizes the Contractor to proceed with the task.

(g) The Contracting Officer or his designated representative may amend task orders in the same manner in which they are issued.

(h) Emergency tasks may be issued verbally or electronically by the Contracting Officer or his designated representative, and the Contractor shall begin work on Emergency Tasks immediately. Emergency requests will be followed by a TO within two working days, utilizing the procedure outlined above, except that the Contractor may proceed with the task during negotiation.

G.6 CONTRACT CLOSEOUT (LaRC 52.242-90) (JUN 1988)

(a) Reassignment--After receipt, inspection, and acceptance by the Government of all required articles and/or services, and resolution of any pending issues raised during the Period of Performance, this contract will be reassigned to the NASA Langley Research Center Contracting Officer for Contract Closeout. All transactions subsequent to the physical completion of the contract should, therefore, be addressed to the said Contracting Officer at NASA Langley Research Center, Mail Stop 126, who may be reached by telephone at (757) 864-2435.

(b) "Quick Closeout"--Paragraph (9) of the Allowable Cost and Payment clause of this contract addresses the "Quick Closeout Procedure" delineated by Subpart 42.7 of the Federal Acquisition Regulation (FAR). It should be understood that the said procedure applies to the settlement of indirect costs for a specific contract in advance of the determination of final indirect cost rates when the amount of unsettled indirect cost to be allocated to the contract is relatively insignificant. Therefore, the "Quick Closeout" procedure does not preclude the provisions of paragraph (d) of the Allowable Cost and Payment clause nor does it constitute a waiver of final audit of the Contractor's Completion Voucher.

(c) Completion Voucher Submittal--Notwithstanding the provisions of the Allowable Cost and Payment clause, as soon as practicable after settlement of the Contractor's indirect cost rates applicable to performance of the contract, the Contractor shall submit a Completion Voucher as required by the aforesaid clause. The Completion Voucher shall be supported by a cumulative claim and reconciliation statement and executed NASA Forms 778, Contractor's Release, and 780, Contractor's Assignment of Refunds, Rebates, Credits, and Other Amounts. Unless directed otherwise by the Contracting Officer for

Contract Closeout, the Contractor shall forward the said Completion Voucher directly to the cognizant Government Agency to which audit functions under the contract have been delegated.

G.7 PROVIDING FACILITIES TO CONTRACTORS (LaRC 52.245-90) (AUG 1997)

(a) In accordance with FAR 45.302-1, it is policy of the Government that Contractors shall furnish all facilities required for performing Government contracts. "Facilities" include real property and plant equipment including personal property such as general purpose off-the-shelf equipment, machine tools, test equipment, furniture and vehicles. "Facilities" do not include material, special test equipment, special tooling or agency-peculiar property.

(b) In keeping with the policy set forth in FAR 45.302-1, the Government will not provide NEW "facilities," except as provided for in the Statement of Work.

(c) However, the Government will provide EXISTING facilities as listed in G.9 and Part II, Section 1.10. Any of these existing facilities that reach the end of their useful life during the contract period, or which are beyond economical repair, shall be replaced by the Contractor, if the facilities are still needed for contract performance.

(d) Notwithstanding the "Allowable Cost and Payment" clause of this contract, cost of facilities are not an allowable cost except when charged to this contract in accordance with your approved accounting system.

G.8 INSTALLATION-ACCOUNTABLE GOVERNMENT PROPERTY (NASA 18-52.245-71) (JULY 1997)

(a) The Government property described in the clause at 1852.245-77, List of Installation Provided Property and Services, shall be made available to the Contractor on a no-charge basis for use in performance of this contract. This property shall be utilized only within the physical confines of the NASA installation that provided the property. Under this clause, the Government retains accountability for, and title to, the property, and the Contractor assumes the user responsibilities outlined in NHB 4200.1D, NASA Equipment Management Manual. The Contractor shall establish and adhere to a system of written procedures for compliance with these user responsibilities. Such procedures must include holding employees liable, when appropriate, for loss, damage, or destruction of Government property.

(b)(1) The official accountable recordkeeping, physical inventory, financial control, and reporting of the property subject to this clause shall be retained by the Government and accomplished by the installation Supply and Equipment Management Officer (SEMO) and Financial Management Officer. If this contract provides for the Contractor to acquire property, title to which will vest in the Government, the following additional procedures apply:

(i) The Contractor's purchase order shall require the vendor to deliver the property to the installation central receiving area;

(ii) The Contractor shall furnish a copy of each purchase order, prior to delivery by the vendor, to the installation central receiving area;

(iii) The Contractor shall establish a record of the property as required by FAR 45.5 and 1845.5 and furnish to the Industrial Property Officer a DD Form 1149 Requisition and Invoice/Shipping Document (or installation equivalent) to transfer accountability to the Government within 5 working days after receipt of the property by the Contractor. The Contractor is accountable for all Contractor-acquired property until the property is transferred to the Government's accountability.

(iv) Contractor use of Government property at an off-site location and off-site Subcontractor use require advance approval of the contracting officer and notification of the SEMO. The Contractor shall assume accountability and financial reporting responsibility for such property. The Contractor shall establish records and property control procedures and maintain the property in accordance with the requirements of FAR Part 45.5 until its return to the installation.

(2) After transfer of accountability to the Government, the Contractor shall continue to maintain such internal records as are necessary to execute the user responsibilities identified in paragraph

(a) and document the acquisition, billing, and disposition of the property. These records and supporting documentation shall be made available, upon request, to the SEMO and any other authorized representatives of the contracting officer.

G.9 LIST OF INSTALLATION-ACCOUNTABLE PROPERTY AND SERVICES (NASA 18-52.245-77) (JUL 1997)

In accordance with the clause at 1852.245-71, Installation-Accountable Government Property, the Contractor is authorized use of the types of property and services listed below, to the extent they are available, in the performance of this contract within the physical borders of the installation which may include buildings and space owned or directly leased by NASA in close proximity to the installation, if so designated by the Contracting Officer.

- (a) Office space, work area space, and utilities. Government telephones are available for official purposes only: pay telephones are available for Contractor employees for unofficial calls.
- (b) General- and special-purpose equipment, including office furniture.
 - (1) Equipment to be made available is listed in EXHIBIT E. The Government retains accountability for this property under the clause at 1852.245-71, Installation-Accountable Government Property, regardless of its authorized location.
 - (2) If the Contractor acquires property, title to which vests in the Government pursuant to other provisions of this contract, this property also shall become accountable to the Government upon its entry into Government records as required by the clause at 1852.245-71, Installation-Accountable Government Property.
 - (3) The Contractor shall not bring to the installation for use under this contract any property owned or leased by the Contractor, or other property that the Contractor is accountable for under any other Government contract, without the Contracting Officer's prior written approval.
- (c) Publications and blank forms stocked by the installation.
- (d) Safety and fire protection for Contractor personnel and facilities.
- (e) Installation service facilities: NONE
- (f) Medical treatment of a first-aid nature for Contractor personnel injuries or illnesses sustained during on-site duty.
- (g) Cafeteria privileges for Contractor employees during normal operating hours.
- (h) Building maintenance for facilities occupied by Contractor personnel.
- (i) Moving and hauling for office moves, movement of large equipment, and delivery of supplies. Moving services shall be provided on-site, as approved by the Contracting Officer.
- (j) The user responsibilities of the Contractor are defined in paragraph (a) of the clause at 1852.245-71, Installation-Accountable Government Property.

SECTION H - SPECIAL CONTRACT REQUIREMENTS

H.1 RESERVED

H.2 SITE VISIT

Offerors or quoters are urged and expected to inspect the site(s) where services for each individual TO are to be performed, and to satisfy themselves regarding all general, local and TO specific conditions that may affect the cost of TO performance, to the extent that the information is reasonably obtainable. In no event shall failure to inspect the site(s) constitute grounds for a claim after TO issuance.

H.3 SECURITY PROGRAM/FOREIGN NATIONAL EMPLOYEE INVESTIGATIVE REQUIREMENTS
(LaRC 52.204-91) (AUG 1997)

Prior to reporting to Langley Research Center (LaRC) to perform under a contract or grant, each Foreign National shall have approval for access to LaRC facilities from NASA Headquarters, Office of Space Science and Aeronautics (Code IS). A copy of the access authorization request shall be provided

to the LaRC Chief of Security. Additionally, an investigation by the Government shall be completed on each Foreign National Contractor prior to reporting to LaRC to perform under a contract or grant. A properly executed "Name Check Request" (NASA Form 531) and a completed "applicant" fingerprint card shall be submitted to the LaRC Security Office, Mail Stop 182, for each Foreign National Contractor at least 75 days prior to the estimated entry on duty date. The NF 531 and fingerprint card may be obtained from the LaRC Security Office. If the access approval is obtained from NASA Headquarters prior to completion of the investigation, and the Contracting Officer requires a Foreign National to work on LaRC, an escort request may be considered by the LaRC Chief of Security.

H.4 WORK SCHEDULE—ON-SITE ONLY

In order that the necessary and proper inspection of the Contractor's work may be effectively accomplished, and to assure the availability of required Government interface, the Contractor shall schedule work performance hereunder so as to be compatible with the established workweek and hours of work observed by the Government organization having cognizance over the work being performed.

H.5 OBSERVATION OF REGULATIONS AND IDENTIFICATION OF CONTRACTOR'S EMPLOYEES (LaRC 52.21 1-104) (MAR 1992)

(a) Observation of Regulations--In performance of that part of the contract work which may be performed at Langley Research Center or other Government installation, the Contractor shall require its employees to observe the rules and regulations as prescribed by the authorities at Langley Research Center or other installation.

(b) Identification Badges--At all times while on LaRC property, the Contractor shall require its employees, subcontractors and agents to wear badges which will be issued by the NASA Contract Badge and Pass Office, located at 1 Langley Boulevard (Building No. 1228). Badges shall be issued only between the hours of 6:30 a.m. and 4:30 p.m., Monday through Friday. Contractors will be held accountable for these badges, and may be required to validate outstanding badges on an annual basis with the NASA LaRC Security Office. Immediately after employee termination or contract completion, badges shall be returned to the NASA Contract Badge and Pass Office.

H.6 INCORPORATION OF SECTION K OF THE PROPOSAL BY REFERENCE (LaRC 52.215-107) (JUN 1998)

Pursuant to FAR 15.204-1(b), the completed Section K of the proposal dated July 29, 1998 is hereby incorporated herein by reference.

H.7 EVIDENCE OF INSURANCE

Prior to performing under this contract, the Contractor shall submit to the Contracting Officer evidence of the insurance coverage required by the Section I NASA Clause 1852.228-75 entitled "Minimum Insurance Coverage" (such as a Certificate of Insurance or other confirmation). If the Government extends the term of the contract, the Contractor shall present such evidence to the Contracting Officer prior to performing under the extension.

H.8 VIRGINIA AND LOCAL SALES TAXES (LaRC 52.229-92) (APR 1992)

To perform this contract, the Contractor must be knowledgeable of relevant state and local taxes when making purchases of tangible personal property. The Contractor shall refrain from paying nonapplicable taxes or taxes where an exemption exists, but shall pay applicable taxes that are reimbursable pursuant to FAR 31.205-41, Taxes. Even though title to property purchased under this contract may pass to the Government and the price is reimbursable under contract cost principles, such transactions do not in themselves provide tax immunity to the Contractor. Therefore, within 30 days after the effective date of this contract, the Contractor shall request from the Virginia State Tax Commission a

ruling on any tax exemptions that may be applicable to purchases made under this contract. The Contractor shall provide all facts relevant to the situation and shall pursue an interpretation of the law that is most favorable to both the Contractor and the Government.

H.9 YEAR 2000 COMPLIANCE (MAY 1998)

(a) Definition: "Year 2000 compliant", as used in this clause, means that the information technology (hardware, software and firmware, including embedded systems or any other electro-mechanical or processor-based systems used in accordance with its associated documentation) accurately processes date and date-related data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations, to the extent that other information technology, used in combination with the information technology being acquired, properly exchanges date and date-related data with it.

(b) Any information technology provided, operated and/or maintained under this contract is required to be Year 2000 compliant. To ensure this result, the Contractor shall provide documentation describing how the information technology items or services demonstrate Year 2000 compliance, consisting of: the manufacturers compliance certification for any software or hardware used in performance of this contract. Furthermore, the Contractor shall ensure that all designs delivered as a result of individual TOs issued under this contract, contain Year 2000 compliance language for any information technology items as defined in (a) above, imbedded into those designs.

(c) The Contractor warrants that any information technology items or services provided under this contract that involve the processing of date and date-related data are Year 2000 compliant. If the contract requires that specific listed products must perform as a system in accordance with the foregoing warranty, then that warranty shall apply to those listed products as a system.

(d) The remedies available under this warranty shall include repair or replacement, at no additional cost to the Government, of any provided items or services whose non-compliance is discovered and made known to the Contractor in writing within 90 days after acceptance. In addition, all other terms and limitations of the Contractor's standard commercial warranty or warranties shall be available to the Government for the information technology items or services acquired under this contract. Nothing in this warranty shall be construed to limit any rights or remedies the Government may otherwise have under this contract with respect to defects other than Year 2000 performance.

H.10 TERMINATION

The FAR clause 52.249-7, Termination (Fixed-Price Architect & Engineer) (APR 1984), applies to the firm fixed-price portion of this contract (CLINs 01 and 02) as a whole, and to each individual fixed-price TO issued under this contract. The FAR Clause 52.249-6 Termination (Cost-Reimbursement) (SEP 1996), applies to the cost-plus-incentive-fee portion (CLIN 03) of this contract as a whole, and to each individual CPIF TO issued under this contract. Thus, an individual TO may be terminated either for default or for the convenience of the Government.

H.11 STATEMENT OF EQUIVALENT RATES FOR FEDERAL HIRES (FAR 52.222-42) (MAY 1989)

In compliance with the Service Contract Act of 1965, as amended, and the regulations of the Secretary of Labor (29 CFR Part 4), this clause identifies the classes of service employees expected to be employed under the contract and states the wages and fringe benefits payable to each if they were employed by the contracting agency subject to the provisions of 5 U.S.C. 5341 or 5332.

THIS STATEMENT IS FOR INFORMATION ONLY: IT IS NOT A WAGE DETERMINATION

<u>Employee Class</u>	<u>Hourly Wage</u>
Secretary I	9.02
Secretary II	10.09
Secretary III	11.24
Secretary IV	12.49
Secretary V	13.84
General Clerk I	6.55
General Clerk II	7.36
General Clerk III	8.03
General Clerk IV	9.02
Word Processor I	8.03
Word Processor II	9.02
Lead Word Processor	10.09
Inspector (all disciplines)/Quality Assurance Specialist	15.28
Radiographic Monitor/Safety technician	13.84
Drafter I	8.03
Drafter II	9.02
Drafter III	10.09
Drafter IV	12.49
Surveying Technician	10.75
Surveying Aide	7.36

FRINGE BENEFITS

- Annual Leave - Receives 13 days paid leave for service up to 3 years; 20 days for 3 to 15 years service; and 26 days for 15 years service or over.
- Sick Leave - Receives 13 days paid leave per year
- Holidays - Receives 10 paid holidays per year.
- Health Insurance - Government pays up to 60% of health insurance.
- Group Life Insurance - Government pays two-thirds of life insurance rate premiums.
- Retirement - The Government provides three retirement plans identified as the Civil Service Retirement System (CSRS), the Federal Employees Retirement System (FERS), and the CSRS Offset. Under the CSRS, the Government contributes 7% of the employees' base pay towards the retirement benefit and 1.45% towards Medicare. Under the FERS, the Government contributes 11.4% of the employees' base pay towards a basic benefit plan, 6.2% to Social Security, 1.45% towards Medicare, and 1% (plus matching contributions of up to 4% of basic pay, depending on employees' contributions) to a thrift savings plan. Under the CSRS Offset, the Government contributes 0.8% of the employees' base pay towards the retirement benefit, 6.2% to Social Security, and 1.45% towards Medicare.

Part-time Federal employees receive pro rata annual leave, sick leave, holiday leave, health insurance, and group life insurance benefits based on the number of hours worked.

H.12 OPTIONS

Priced Options/Extended Term

Pursuant to the Section I clause entitled "Option to Extend the Term of the Contract (MAR 1989)," the Contractor hereby grants to the Government options to extend the term of the contract for 4 additional periods of 12 months each. Such options are to be exercisable by issuance of a unilateral modification. Upon exercise of such option(s) by the Government, the following items will be increased by the amount specified below for each option period.

<u>Item</u>	<u>First Option Period</u>	<u>Second Option Period</u>	<u>Third Option Period</u>	<u>Fourth Option Period</u>
Period of Performance (Ref. F2)	12 months	12 months	12 months	12 months
CLIN 01, Fixed Price (Ref. 8.4)				
Minimum	\$10,000	\$10,000	\$10,000	\$10,000
Maximum	\$1,800,000	\$1,800,000	\$1,800,000	\$1,800,000
CLIN 02, Fixed Price (REF. B.3)				
	\$458,649	\$460,549	\$462,450	\$464,351
CLIN 03, Cost Limitation (Ref. B.4)				
Minimum	\$50,000	\$50,000	\$50,000	\$50,000
Maximum	\$1,250,000	\$1,250,000	\$1,250,000	\$1,250,000

<u>Labor Category</u>	FULLY BURDENED LABOR RATES – CLIN 01							
	Year 2		Year 3		Year 4		Year 5	
	Straight/Overtime	Straight/Overtime	Straight/Overtime	Straight/Overtime	Straight/Overtime	Straight/Overtime	Straight/Overtime	Straight/Overtime
Contractor Site								
Project Manager	90.24	90.24	93.81	93.81	97.52	97.52	101.35	101.35
Senior Engineer/Architect	78.66	78.66	81.75	81.75	85.00	85.00	88.33	88.33
Engineer/Architect	74.13	74.13	77.07	77.07	80.11	80.11	83.24	83.24
Junior Engineer/Architect	57.02	57.02	59.26	59.26	61.62	61.62	64.03	64.03
General Clerk I	20.57	24.61	20.67	24.71	20.75	24.78	20.85	24.88
General Clerk II	25.32	30.29	25.42	30.39	25.52	30.49	25.64	30.61
General Clerk III	31.48	37.66	31.63	37.81	31.76	37.94	31.88	38.06
General Clerk IV	35.19	42.10	35.34	42.25	35.49	42.39	35.64	42.55
Secretary I	26.02	31.12	26.14	31.24	26.24	31.34	26.36	31.46
Secretary II	30.27	36.21	30.42	36.36	30.54	36.48	30.67	36.61
Secretary III	34.71	41.51	34.85	41.66	35.00	41.81	35.15	41.95
Secretary IV	40.55	48.50	40.71	48.66	40.89	48.84	41.06	49.02
Secretary V	42.55	50.90	42.75	51.10	42.92	51.27	43.11	51.46
Word Processor I	28.04	33.54	28.16	33.66	28.27	33.77	28.39	33.89
Word Processor II	31.60	37.81	31.74	37.94	31.86	38.06	32.00	38.20
Word Processor III	35.39	42.33	35.54	42.48	35.68	42.63	35.84	42.78
Drafter I	28.24	33.78	28.36	33.90	28.47	34.01	28.59	34.13
Drafter II	31.76	37.99	31.90	38.14	32.03	38.27	32.18	38.41
Drafter III	39.92	47.75	40.10	47.93	40.25	48.08	40.44	48.27

Drafter IV	48.51	58.03	48.71	58.22	48.91	58.42	49.13	58.64
Engineering Technician IV (Designer I)	51.44	61.53	51.66	61.75	51.88	61.97	52.10	62.19
Engineering Technician V (Designer II)	60.07	7.186	60.34	72.13	60.59	72.38	60.84	72.63
Engineering Technician VI (Designer III)	74.25	88.81	74.55	89.11	74.87	89.43	75.19	89.75
<u>Government Site</u>								
CM/Inspector	51.78	51.78	53.81	53.81	55.92	55.92	58.11	58.11
Supervisor Inspector	46.92	46.92	48.76	48.76	50.70	50.70	52.69	52.69
Secretary I	21.90	27.01	22.00	27.10	22.08	27.18	22.18	27.28
Secretary II	25.48	31.42	25.60	31.54	25.70	31.64	25.82	31.76
Secretary III	29.22	36.03	29.33	36.14	29.47	36.28	29.58	36.39
Secretary IV	34.13	42.09	34.27	42.22	34.41	42.36	34.56	42.52
Secretary V	35.82	44.17	35.98	44.33	36.14	44.48	36.28	44.63
Inspector	40.15	49.51	40.32	49.68	40.48	49.84	40.65	50.01
Radiograph Monitor	21.45	26.46	21.55	26.55	21.63	26.63	21.74	26.74

LABOR RATES – CLIN 03 (Excluding Fee)								
Labor Category	Year 2		Year 3		Year 4		Year 5	
	Straight/Overtime		Straight/Overtime		Straight/Overtime		Straight/Overtime	
<u>Contractor Site</u>								
Project Manager	82.04	82.04	85.28	85.28	88.65	88.65	92.14	92.14
Senior Engineer/Architect	71.51	71.51	74.32	74.32	77.27	77.27	80.30	80.30
Engineer/Architect	67.39	67.39	70.06	70.06	72.83	72.83	75.67	75.67
Junior Engineer/Architect	51.84	51.84	53.87	53.87	56.02	56.02	58.21	58.21
General Clerk I	19.73	23.60	19.82	23.69	21.10	25.21	21.19	25.30
General Clerk II	24.26	29.02	24.37	29.13	25.96	31.01	26.06	31.11
General Clerk III	30.19	36.11	30.31	36.23	32.29	38.57	32.42	38.70
General Clerk IV	33.75	40.37	33.89	40.51	36.11	43.14	36.27	43.30
Secretary I	24.95	29.85	25.06	29.96	26.71	31.91	26.82	32.02
Secretary II	29.03	34.73	29.16	34.86	31.05	37.09	31.18	37.22
Secretary III	33.28	39.81	33.43	39.96	35.62	42.55	35.78	42.71
Secretary IV	38.86	46.49	39.04	46.67	41.60	49.69	41.76	49.85
Secretary V	40.81	48.82	40.99	49.00	43.67	52.17	43.85	52.35
Word Processor I	26.89	32.17	27.00	32.28	28.76	34.36	28.89	34.49
Word Processor II	30.31	36.26	30.44	36.39	32.42	38.73	32.54	38.85
Word Processor III	33.93	40.59	34.07	40.73	36.29	43.35	36.45	43.51
Drafter I	27.07	32.38	27.18	32.49	28.96	34.60	29.09	34.73
Drafter II	30.46	36.44	30.58	36.56	32.60	38.94	32.72	39.06
Drafter III	38.29	45.80	38.45	45.96	40.95	48.92	41.11	49.08
Drafter IV	46.51	55.64	46.71	55.84	49.77	59.45	49.97	59.65
Engineering Technician IV (Designer I)	49.32	59.00	49.54	59.22	52.78	63.05	52.99	63.26
Engineering Technician V (Designer II)	57.60	68.90	57.85	69.15	61.63	73.62	61.90	73.89
Engineering Technician VI (Designer III)	71.19	85.16	71.50	85.47	76.16	90.98	76.48	91.30

Government Site								
CM/Inspector	47.07	47.07	48.92	48.92	50.84	50.84	52.83	52.83
Supervisor Inspector	42.65	42.65	44.33	44.33	46.09	46.09	47.90	47.90
Secretary I	21.00	25.90	21.09	25.99	22.48	27.68	22.57	27.77
Secretary II	24.44	30.14	24.54	30.24	26.13	32.17	26.24	32.28
Secretary III	28.01	34.54	28.13	34.66	29.98	36.91	30.12	37.05
Secretary IV	32.71	40.34	32.86	40.49	35.01	43.10	35.15	43.24
Secretary V	34.35	42.36	34.50	42.51	36.75	45.25	36.91	45.41
Inspector	38.30	47.38	39.78	49.21	41.36	51.11	43.00	53.08
Radiograph Monitor	20.47	25.29	21.27	26.25	22.10	27.27	22.98	28.33

H.13 SAFETY AND HEALTH (NASA 1852.223-70) (MAR 1997)

(a) The Contractor shall take all reasonable safety and health measures in performing under this contract. The Contractor shall comply with all Federal, State, and local laws applicable to safety and health in effect on the date of this contract and with the safety and health standards, specifications, reporting requirements, and provisions set forth in the contract Schedule.

(b) The Contractor shall take or cause to be taken any other safety and health measures the Contracting Officer may reasonably direct. To the extent that the Contractor may be entitled to an equitable adjustment for those measures under the terms and conditions of this contract, the equitable adjustment shall be determined pursuant to the procedures of the changes clause of this contract: provided, that no adjustment shall be made under this Safety and Health clause for any change for which an equitable adjustment is expressly provided under any other provision of the contract.

(c) The Contractor shall immediately notify and promptly report to the Contracting Officer or a designee any accident, incident, or exposure resulting in fatality, lost-time occupational injury, occupational disease, contamination of property beyond any stated acceptable limits set forth in the contract Schedule, or property loss of \$25,000 or more arising out of work performed under this contract. The Contractor is not required to include in any report an expression of opinion as to the fault or negligence of any employee. Service contractors (excluding construction contracts) shall provide quarterly reports specifying lost-time frequency rate, number of lost-time injuries, exposure, and accident/incident dollar losses as specified in the contract Schedule. The Contractor shall investigate all work-related incidents or accidents to the extent necessary to determine their causes and furnish the Contracting Officer a report, in such form as the Contracting Officer may require, of the investigative findings and proposed or completed corrective actions.

(d)(1) The Contracting Officer may notify the Contractor in writing of any noncompliance with this clause and specify corrective actions to be taken. The Contractor shall promptly take and report any necessary corrective action.

(2) If the Contractor fails or refuses to institute prompt corrective action in accordance with subparagraph (d)(1) of this clause, the Contracting Officer may invoke the stop-work order clause in this contract or any other remedy available to the Government in the event of such failure or refusal.

(e) The Contractor (or subcontractor or supplier) shall insert the substance of this clause, including this paragraph (e) and any applicable Schedule provisions, with appropriate changes of designations of the parties, in subcontracts of every tier that (1) amount to \$1,000,000 or more (unless the Contracting Officer makes a written determination that this is not required), (2) require construction, repair, or alteration in excess of \$25,000, or (3) regardless of dollar amount, involve the use of hazardous materials or operations.

(f) Authorized Government representatives of the Contracting Officer shall have access to and the right to examine the sites or areas where work under this contract is being performed in order to determine the adequacy of the Contractor's safety and health measures under this clause.

(g) As a part of the Contractor's safety plan (and health plan, when applicable) and to the extent required by the Schedule, the Contractor shall furnish a list of all hazardous operations to be performed, including operations indicated in paragraphs (a) and (b) of this clause, and a list of other major or key operations required or planned in the performance of the contract, even though not deemed hazardous by

the Contractor. NASA and the Contractor shall jointly decide which operations are to **be** considered hazardous, with NASA as the final authority. Before hazardous operations commence, **the** Contractor shall submit for NASA concurrence either or both of the following, as required by the contract Schedule or by the Contracting Officer:

- (1) Written hazardous operating procedures for all hazardous operations.
- (2) Qualification Standards for personnel involved in hazardous operations.

NOTICE: THE FOLLOWING CLAUSES ARE APPLICABLE TO THIS CONTRACT AS A WHOLE, INCLUDING BOTH FIRM-FIXED PRICE WORK AND COST-PLUS-INCENTIVE-FEE WORK APPLICABLE TO THIS CONTRACT.

PART II - CONTRACT CLAUSES

SECTION I - CONTRACT CLAUSES

I.1 LISTING OF CLAUSES INCORPORATED BY REFERENCE:

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
52.202-1	Definitions (OCT 1995)—Alternate I (APR 1984)
52.203-3	Gratuities (APR 1984)
52.203-5	Covenant Against Contingent Fees (APR 1984)
52.203-6	Restrictions on Contractor Sales to the Government (JUL 1995)
52.203-7	Anti-Kickback Procedures (JUL 1995)
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity (JAN 1997)
52.203-10	Price or Fee Adjustment for Illegal or Improper Activity (JAN 1997)
52.203-12	Limitation on Payments to Influence Certain Federal Transactions (JUN 1997)
52.204-4	Printing/Copying Double-Sided on Recycled Paper (JUN 1996)
52.209-6	Protecting the Government's Interest when Subcontracting with Contractors Debarred?Suspended, or Proposed for Debarment (JUL 1995)
52.211-15	Defense Priority and Allocation Requirements (SEP 1990)
52.215-2	Audit and Records--Negotiation (AUG 1996)
52.215-8	Order of Precedence-Uniform Contract Format (OCT 1997)
52.215-10	Price Reduction for Defective Cost or Pricing Data (OCT 1997)
52.215-12	Subcontractor Cost or Pricing Data (OCT 1997)
52.215-15	Termination of Defined Benefit Pension.Plans (OCT 1997)
52.215-16	Facilities Capital Cost of Money (OCT 1997)
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits Other than Pensions (OCT 1997)
52.215-19	Notification of Ownership Changes (OCT 1997)
52.215-21	Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data-Modifications (OCT 1997)
52.216-22	Indefinite Quantity (OCT 1995)
52.219-8	Utilization of Small, Small Disadvantaged, and Women-Owned Small Business Concerns (JUN 1997)
52.219-9	Small, Small Disadvantaged, and Women-Owned Small Business Subcontracting Plan (AUG 1996) Alternate II (MAR 1996)
52.219-16	Liquidated Damages--Subcontracting Plan (OCT 1995)
52.222-1	Notice to the Government of Labor Disputes (FEB 1997)
52.222-3	Convict Labor (AUG 1996)

52.222-4	Contract Work Hours and Safety Standards Act—Overtime Compensation (JUL 1995)
52.222-26	Equal Opportunity (APR 1984)
52.222-35	Affirmative Action for Special Disabled and Vietnam Era Veterans (APR 1984)
52.222-36	Affirmative Action for Handicapped Workers (APR 1984)
52.222-37	Employment Reports on Special Disabled Veterans and Veterans of the Vietnam Era (JAN 1988)
52.222-41	Service Contract Act of 1965, As Amended (MAY 1989)
52.223-2	Clean Air and Water (APR 1984)
52.223-5	Pollution Prevention and Right-To-Know Information (MAR 1997)
52.223-6	Drug-Free Workplace (JAN 1997)
52.223-14	Toxic Chemical Release Reporting (OCT 1996)
52.227-1	Authorization and Consent (JUL 1995)--Alternate (APR 1984)
52.227-2	Notice and Assistance Regarding Patent and Copyright Infringement (APR 1984)
52.227-17	Rights In Data-Special Works (JUN 1987) – (as modified by NASA FAR Supplement 1852.227-17)
52.228-5	Insurance -Work on a Government Installation (JAN 1997)
52.232-9	Limitation on Withholding of Payments (APR 1984)
52.232-17	Interest (JUN 1996)
52.232-23	Assignment of Claims (JAN 1986)
52.232-33	Mandatory Information for Electronic Funds Transfer Payment (AUG 1996)
52.233-1	Disputes (OCT 1995)--Alternate I (DEC 1991)
52.233-3	Protest After Award (AUG 1996)
52.237-2	Protection of Government Buildings, Equipment, and Vegetation (APR 1984)
52.242-13	Bankruptcy (JUL 1995)
52.244-6	Subcontracts for Commercial Items and Commercial Components (APR 1998)
52.252-6	Authorized Deviations in Clauses (APR 1984)
52.253-1	Computer Generated Forms (JAN 1991)

NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
1852.204-76	Security Requirements for Unclassified Automated Information Resources (SEP 1993)
1852.219-75	Small, Small Disadvantaged, and Women-Owned Small Business Subcontracting Reporting (JUL 1997)
1852.219-76	NASA 8 Percent Goal (JUL 1997)
1852.223-70	Safety and Health (MAR 1997)
1852.227-70	New Technology (JUL 1995)
1852.237-70	Emergency Evacuation Procedures (DEC 1988)
1852.242-72	Observation of Legal Holidays (AUG 1992)
1852.243-71	Shared Savings (MAR 1997)

12 CLAUSES IN FULL TEXT

THE CLAUSES LISTED BELOW FOLLOW IN FULL TEXT:

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
52.216-18	Ordering (OCT 1995)
52.217-9	Option to Extend the Term of the Contract (MAR 1989)

52.223-9	Certification and Estimate of Percentage of Recovered Material Content for EPA Designated Items (OCT 1997)
1852.209-71	Limitation of Future Contracting (DEC 1988)
1852.215-84	Ombudsman (OCT 1996)
1852.228-75	Minimum Insurance Coverage (OCT 1988)
1852.245-73	Financial Reporting of NASA Property in the Custody of Contractors (SEP 1996)
1852.245-76	List of Government-Furnished Property (OCT 1988)

1.3 ORDERING (FAR 52.216-18) (OCT 1995)

- (a) Any supplies and services to be furnished under this contract shall be ordered by issuance of task orders or delivery orders by the individuals or activities designated in the Schedule. Such orders may be issued from the effective date of contract award, through the end of contract period of performance.
- (b) All task orders or delivery orders are subject to the terms and conditions of this contract. In the event of conflict between a task order or task order and this contract, the contract shall control.
- (c) If mailed, a task order or delivery order is considered "issued" when the Government deposits the order in the mail. Orders may be issued orally, by facsimile, or by electronic commerce methods only if authorized in the Schedule.

1.4 OPTION TO EXTEND THE TERM OF THE CONTRACT (FAR 52.217-9) (MAR 1989)

- (a) The Government may extend the term of this contract by unilateral written notice to the Contractor within the current contract period of performance; provided, that the Government shall give the Contractor a preliminary notice of its intent to extend at least 60 days before the contract expires. The preliminary notice does not commit the Government to an extension.
- (b) If the Government exercises this option, the extended contract shall be considered to include this option provision.
- (c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed 60 months.

1.5 CERTIFICATION AND ESTIMATE OF PERCENTAGE OF RECOVERED MATERIAL CONTENT FOR EPA DESIGNATED ITEMS (FAR 52.223-9) (OCT 1997)

- (a) **As required by** the Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6962(j)(2)(C)), the Contractor shall execute the following certification:

CERTIFICATION

I, _____ (name of certifier), am an officer or employee responsible for the performance of this contract and hereby certify that the percentage of recovered material content for EPA Designated Items was at least the amount required by the applicable contract specifications.

[Signature of the Officer or Employee]

[Typed Name of the Officer or Employee]

 [Title]

 [Name of Company, Firm, or Organization]

 [Date]

(End of certification)

(b) The Contractor also shall estimate the percentage of recovered materials actually used in the performance of this contract. The estimate is in addition to the certification in paragraph (a) of this clause.

ESTIMATE

EPA Designated Item	Total Dollar Value of EPA Designated Item	Percentage of Recovered Material Content *

Where applicable, also include the percentage of postconsumer material content.

(c) The Contractor shall submit this certification and estimate upon completion of the contract to Contracting Officer, Mail Stop 126, Langley Research Center, Hampton, VA 23681-2199.

1.6 . LIMITATION OF FUTURE CONTRACTING (NASA 1852.209-71) (DEC 1988)

Pursuant to FAR 36.209, no contract for the construction of a project shall be awarded to the firm that designed the project or its subsidiaries or affiliates, as a prime Contractor or a subcontractor at any tier, except with the approval of the head of the agency or authorized representative.

1.7 OMBUDSMAN (NASA 1852.215-84) (OCT 1996)

An ombudsman has been appointed to hear and facilitate the resolution of concerns from offerors, potential offerors, and Contractors during the preaward and postaward phases of this acquisition. When requested, the ombudsman will maintain strict confidentiality as to the source of the concern. The existence of the ombudsman is not to diminish the authority of the Contracting Officer, the Source Evaluation Board, or the selection official. Further, the ombudsman does not participate in the evaluation of proposals, the source selection process, or the adjudication of formal contract disputes. Therefore, before consulting with an ombudsman, interested parties must first address their concerns, issues, disagreements, and/or recommendations to the Contracting Officer for resolution. If resolution cannot be made by the Contracting Officer, interested parties may contact the installation ombudsman, Belinda Adams, direct inquiries to Sandra S. Ray at (757) 864-2428. Concerns, issues, disagreements, and recommendations which cannot be resolved at the installation may be referred to the NASA ombudsman, the Deputy Administrator for Procurement, Thomas S. Luedtke, at 202-358-2090. Please do not contact the ombudsman to request copies of the solicitation, verify offer due date, or clarify technical requirements. Such inquiries shall be directed to the Contracting Officer or as specified elsewhere in this document.

1.8 MINIMUM INSURANCE COVERAGE (NASA 1852.228-75) (OCT 1988)

The Contractor shall obtain and maintain insurance coverage as follows for the performance of this contract:

- (a) Worker's compensation and employer's liability insurance as required by applicable Federal and state workers' compensation and occupational disease statutes. If occupational diseases are not compensable under those statutes, they shall be covered under the employer's liability section of the insurance policy, except when contract operations are so commingled with the Contractor's commercial operations that it would not be practical. The employer's liability coverage shall be at least \$100,000, except in States with exclusive or monopolistic funds that do not permit workers' compensation to be written by private carriers.
- (b) Comprehensive general (bodily injury) liability insurance of at least \$500,000 per occurrence.
- (c) Motor vehicle liability insurance written on the comprehensive form of policy which provides for bodily injury and property damage liability covering the operation of all motor vehicles used in connection with performing the contract. Policies covering motor vehicles operated in the United States shall provide coverage of at least \$200,000 per person and \$500,000 per occurrence for bodily injury liability and \$20,000 per occurrence for property damage. The amount of liability coverage on other policies shall be commensurate with any legal requirements of the locality and sufficient to meet normal and customary claims.
- (d) Comprehensive general and motor vehicle liability policies shall contain a provision worded as follows: "The insurance company waives any right of subrogation against the United States of America which may arise by reason of any payment under the policy."
- (e) When aircraft are used in connection with performing the contract, aircraft public and passenger liability insurance of at least \$200,000 per person and \$500,000 per occurrence for bodily injury, other than passenger liability, and \$200,000 per occurrence for property damage. Coverage for passenger liability bodily injury shall be at least \$200,000 multiplied by the number of seats or passengers, whichever is greater.

1.9 FINANCIAL REPORTING OF NASA PROPERTY IN THE CUSTODY OF CONTRACTORS (NASA 1852.245-73) (SEP 1996)

- (a) The Contractor shall submit annually a NASA Form 1018, NASA Property in the Custody of Contractors, in accordance with 18-45.505-14, the instructions on the form, and subpart 1845-71. Subcontractor use of NF 1018 is not required by this clause; however, the Contractor shall include data on property in the possession of subcontractors in the annual NF 1018.
- (b) If administration of this contract has been delegated to the Department of Defense, the original of NASA Form 1018 shall be submitted to the NASA, LaRC Financial Management Officer, Mail Stop 175 and three copies shall be sent concurrently through the DOD Property Administrator to the address below. If the contract is administered by NASA, the original of NF 1018 shall be submitted to the LaRC Financial Management Office and three copies shall be sent concurrently and directly to the following office:

ATTN: INDUSTRIAL PROPERTY OFFICE
 NASA LANGLEY RESEARCH CENTER
 MAIL STOP 377
 HAMPTON VA 23681-0001

- (c) The annual reporting period shall be from October 1 of each year to September 30 of the following year. The report shall be submitted by October 31. The information contained in these reports is entered into the NASA accounting system to reflect current asset values for agency financial statement purposes. Therefore, it is essential that required reports be received no later than October 31. The Contracting Officer may, in the Government's interest, withhold payment until a reserve not exceeding \$25,000 or 5 percent of the amount of the contract, whichever is less, has been set-aside. If the Contractor fails to submit annual NF 1018 reports when due, such reserve shall be withheld until the Contracting Officer has

determined that the required reports have been received by the Government. The withholding of any amount or the subsequent payment thereof shall not be construed as a waiver of any Government right.
 (d) A final report is required within 30 days after disposition of all property subject to reporting when the contract performance period is complete.

1.10 LIST OF GOVERNMENT-FURNISHED PROPERTY (NASA 1852.245-76) (OCT 1988)

For performance of work under this contract, the Government will make available Government property identified below or in Section J, EXHIBIT F of this contract on a no-charge-for-use basis. The Contractor shall use this property in the performance of this contract at LaRC, and at other location(s) as may be approved by the Contracting Officer. Under the FAR 52.245 Government property clause of this contract, the Contractor is accountable for the identified property.

NOTICE: THE FOLLOWING CLAUSES ARE APPLICABLE ONLY TO THE FIRM-FIXED PRICE PORTION (CLINs 01 and 02) OF THIS CONTRACT.

I.11 LISTING OF CLAUSES INCORPORATED BY REFERENCE:

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
52.222-43	Fair Labor Standards Act and Service Contract Act-Price Adjustment (Multiple Year and Option Contracts) (MAY 1989)
52.232-10	Payments under Fixed-Price Architect – Engineer Contracts (AUG 1987)
52.232-16	Progress Payments (JUL 1991)
52.232-18	Availability of Funds (APR 1984)
52.232-26	Prompt Payment for Fixed-Price Architect-Engineer Contracts (JUN 1997)
52.242-14	Suspension of Work (APR 1984)
52.242-15	Stop-Work Order (AUG 1989)
52.243-1	Changes—Fixed Price (AUG 1987)—Alternate III (APR 1984)
52.244-4	Subcontractors and Outside Associates and Consultants (APR 1984)
52.245-2	Government Property (Fixed-Price Contracts) (DEC 1989)
52.246-4	Inspection of Services--Fixed-Price (AUG 1996)
52.247-34	F.o.b. Destination (NOV 1991)
52.249-7	Termination (Fixed-Price Architect-Engineer) (APR 1984)

NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
----------------------	-----------------------

NONE

1.12 CLAUSES IN FULL TEXT

THE CLAUSES LISTED BELOW FOLLOW IN FULL TEXT:

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
52.236-22	Design Within Funding Limitations (APR 1984)
52.236-23	Responsibility of the Architect-Engineer Contractor (APR 1984)
52.236-24	Work Oversight in Architect-Engineer Contracts (APR 1984)
52.236-25	Requirements for Registration of Designers (APR 1984)

1.13 DESIGN WITHIN FUNDING LIMITATIONS (FAR 52.236-22) (APR 1984)

(a) The Contractor shall accomplish the design services required under this contract so as to permit the award of a contract, using standard Federal Acquisition Regulation procedures for the construction of the facilities designated at a price that does not exceed the estimated construction contract price as set forth in paragraph (c) below. When bids or proposals for the construction contract are received that exceed the estimated price, the Contractor shall perform such redesign and other services as are necessary to permit contract award within the funding limitation. These additional services shall be performed at no increase in the price of this contract. However, the Contractor shall not be required to perform such additional services at no cost to the Government if the unfavorable bids or proposals are the result of conditions beyond its reasonable control.

(b) The Contractor will promptly advise the Contracting Officer if it finds that the project being designed will exceed or is likely to exceed the funding limitations and it is unable to design a usable facility within these limitations. Upon receipt of such information, the Contracting Officer will review the Contractor's revised estimate of construction cost. The Government may, if it determines that the estimated construction contract price set forth in this contract is so low that award of a construction contract not in excess of such estimate is improbable, authorize a change in scope or materials as required to reduce the estimated construction cost to an amount within the estimated construction contract price set forth in paragraph (c) below, or the Government may adjust such estimated construction contract price. When bids or proposals are not solicited or are unreasonably delayed, the Government shall prepare an estimate of constructing the design submitted and such estimate shall be used in lieu of bids or proposals to determine compliance with the funding limitation.

(c) The estimated construction contract price for the project described in this contract is specified in each individual task order.

1.14 RESPONSIBILITY OF THE ARCHITECT-ENGINEER CONTRACTOR (FAR 52.236-23) (APR 1984)

(a) The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiencies in its designs, drawings, specifications, and other services.

(b) Neither the Government's review, approval or acceptance of, nor payment for, the services required under this contract shall be construed to operate as a waiver of any rights under this contract or of any cause of action arising out of the performance of this contract, and the Contractor shall be and remain liable to the Government in accordance with applicable law for all damages to the Government caused by the Contractor's negligent performance of any of the services furnished under this contract.

(c) The rights and remedies of the Government provided for under this contract are in addition to any other rights and remedies provided by law.

(d) If the Contractor is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder.

1.15 WORK OVERSIGHT IN ARCHITECT-ENGINEER CONTRACTS (FAR 52.236-24) (APR 1984)

The extent and character of the work to be done by the Contractor shall be subject to the general oversight, supervision, direction, control, and approval of the Contracting Officer.

1.16 REQUIREMENTS FOR REGISTRATION OF DESIGNERS (FAR 52.236-25) (APR 1984)

The design of architectural, structural, mechanical, electrical, civil, or other engineering features of the work shall be accomplished or reviewed and approved by architects or engineers registered to practice in the particular professional field involved in a State or possession of the United States, in Puerto Rico, or in the District of Columbia.

NOTICE: THE FOLLOWING CLAUSES ARE APPLICABLE ONLY TO THE COST REIMBURSEMENT ORDERS ISSUED UNDER THIS CONTRACT.

1.17 LISTING OF CLAUSES INCORPORATED BY REFERENCE:

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
52.216-7	Allowable Cost and Payment (MAR 1997)
52.216-10	Incentive Fee (MAR 1997)
52.222-28	Equal Opportunity Preaward Clearance of Subcontracts (APR 1984)
52.230-2	Cost Accounting Standards (APR 1996)
52.230-3	Disclosure and Consistency of Cost Accounting Practices (APR 1996)
52.230-6	Administration of Cost Accounting Standards (APR 1996)
52.232-20	Limitation of Cost (APR 1984)
52.242-1	Notice of Intent to Disallow Costs (APR 1984)
52.242-3	Penalties for Unallowable Costs (JAN 1997)
52.243-2	Changes-Cost Reimbursement (AUG 1987) Alternate I (APR 1984)
52.242-15	Stop-Work Order (AUG 1989) Alternate I (APR 1984)
52.244-2	Subcontracts (Cost-Reimbursement and Letter Contracts) (FEB 1997) Alternate I (AUG 1996)
52.245-5	Government Property (Cost-Reimbursement, Time-and-Material, or Labor-Hour Contracts) (JAN 1986) (DEVIATION) (JUL 1995)
52.246-5	Inspection of Services - Cost-Reimbursement (APR 1984)
52.249-6	Termination (Cost Reimbursement) (SEP 1996)
52.249-14	Excusable Delays (APR 1984)

NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
1852.216-89	Assignment and Release Forms (JUL 1997)
1852.242-70	Technical Direction (SEP 1993)
1852.242-73	NASA Contractor Financial Management Reporting (JUL 1997)

1.18 CLAUSES IN FULL TEXT

THE CLAUSES LISTED BELOW FOLLOW IN FULL TEXT:

<u>CLAUSE NUMBER</u>	<u>TITLE AND DATE</u>
52.222-2	Payment for Overtime Premiums (JUL 1990)
52.242-4	Certification of Final indirect Costs (JAN 1997)

1.19 PAYMENT FOR OVERTIME PREMIUMS (FAR 52.222-2) (JUL 1990)

- (a) The use of overtime is authorized under this contract if the overtime premium cost does not exceed \$0 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.

1.20 CERTIFICATION OF FINAL INDIRECT COSTS (FAR 52.242-4) (JAN 1997)

(a) The Contractor shall -

(1) Certify any proposal to establish or modify final indirect cost rates;

(2) Use the format in paragraph (c) of this clause to certify; and

(3) Have the certificate signed by an individual of the Contractor's organization at a level no lower than a vice president or chief financial officer of the business segment of the Contractor that submits the proposal.

(b) Failure by the Contractor to submit a signed certificate, as described in this clause, may result in final indirect costs at rates unilaterally established by the Contracting Officer.

(c) The certificate of final indirect costs shall read as follows:

CERTIFICATE OF FINAL INDIRECT COSTS

This is to certify that I have reviewed this proposal to establish final indirect cost rates and to the best of my knowledge and belief

1. All costs included in this proposal (identify proposal and date) to establish final indirect cost rates for (identify period covered by rate) are allowable in accordance with the cost principles of the Federal Acquisition Regulation (FAR) and its supplements applicable to the contracts to which the final indirect cost rates will apply; and;

2. This proposal does not include any costs which are expressly unallowable under applicable cost principles of the FAR or its supplements.

Firm: _____

Signature: _____

Name of Certifying Official:

Title: _____

Date of Execution: _____

PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS**SECTION J - LIST OF ATTACHMENTS**

- Exhibit A LaRC Digging Permit Procedures, 2 pages
- Exhibit B FSED Construction Management Manual, 227 pages
- Exhibit C Contract Documentation Requirements, 5 pages
- Exhibit D Register of Wage Determination and Fringe Benefits #94-2544, Rev 16, Sept. 29, 1998
and Collective Bargaining Agreement between Sverdrup Technology, Inc. and
International Brotherhood of Electrical Workers, AFL-CIO, Feb. 29, 1996, 35 pages
- Exhibit E List of Government-Furnished Property, 14 pages
- Exhibit F Installation-Accountable Government Property, 3 pages
- Exhibit G Items That Must Contain Recycled Content for FY98, 1 page
- Exhibit H Approved Subcontracting Plan, dated July 29, 1998, 19 pages

NAS1-98128
Exhibit A

Digging Permit Procedure

- Lead surveyor receives call **from** NASA, coordinates time for initial meeting at the work site.
- Lead surveyor assigns a survey team.
- Survey team **responds** to call, coordinates **requirements**, sets **date/time** for permit issue.
- Attendees at **initial** meeting - **Digging permit requester** (construction contractor, in-house maintenance crews, NASA employee, etc.) and inspector if applicable.
- Survey team **locates** and **marks all utilities** within the excavation area.
- Survey **team meets** with the individuals **that** will **be** performing the excavation and the inspector, if applicable, to conduct a walk-through of the work area. After walking through the work area and explaining the utility **markings**, the survey team issues copies of the underground utilities drawings for the work area, obtains the inspector's signature, if applicable, and **posts** the digging permit on signs provided by NASA.
- Digging permits **shall** not be issued before **all** utilities are marked **and** the walk-through **has** been conducted with the excavation customer.
- During excavation and installation of new underground utilities, the survey team makes routing site. Visits to obtain **and** record as-built information on **existing** and new utilities. Notification that new utilities are ready for as-built surveys may come from the inspector, construction contractor, **or** by pre-arranged schedules. Response to requests for recording as-built information on new utilities takes **priority** over other work.
- **Upon** completion of the excavation/construction project, the survey team recovers the digging permit and sign, submits all field notes, drawings and other as-built information to lead surveyor. The lead surveyor consolidates and reviews the **information** for completeness, and prepares an as-built drafting work order to revise the NASA subsurface utilities drawings database.
- The lead surveyor assigns the as-built work order to a member of the survey group for **drafting**. As-built drafting is accomplished between field work assignments. The time available for office **work/drafting** varies seasonally and with the field work load. **A** 30-day backlog of as-built drafting during heavy construction **periods** is not unusual.
- Completed as-built **drafting** work orders are subjected to two levels of **quality/accuracy** checks. When the lead surveyor determines that quality and accuracy **are** acceptable, the master disk is updated, electronic copies are transmitted to the NASA server, new

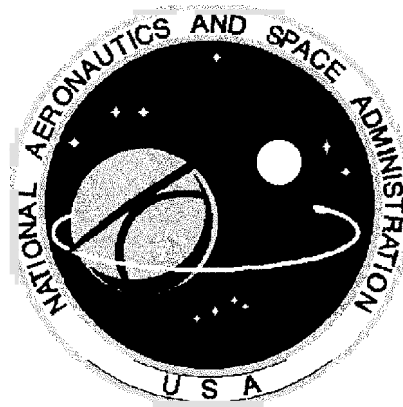
reproducible hard copies are generated, and the work order with supporting documentation is added to NASA's sas-built drawing files at the contractor's location.

Exhibit B

NASA
Langley Research Center
(LaRC)

Systems Engineering Competency

Construction Management
Manual



November 29,2000

NASA LaRC
FACILITIES SYSTEMS TECHNOLOGY AREA
CONSTRUCTION MANAGEMENT **MANUAL**

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NASA LaRC
FACILITIES SYSTEMS TECHNOLOGY AREA
CONSTRUCTION MANAGEMENT MANUAL

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**SECTION (1) INTRODUCTION
DIRECTORY**

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FOREWORD

The NASA LaRC Construction Management Manual (LCMM) is a handbook compiled by the Systems Engineering Competency (SEC), Langley Research Center, Hampton, VA as a guide to technicians, engineers and engineering management for the construction phase of facility acquisition projects.

The manual presents SEC's policies for construction management and provides specific procedures for use at Langley. It is Langley's detailed implementation of the broader policies concerning construction found in the NASA Facility Project Implementation Handbook (FPIH). Those not familiar with NASA's general policies regarding the construction of facility acquisition projects should refer to the FPIH for a broad overview of the process.

This document is primarily directed toward Project Manager (PM), Contracting Officer's Technical Representatives (COTR) and Construction Managers (CM). Nonetheless, personnel in Office of Procurement (OP), facility systems support personnel, Office of Safety and Mission Assurance, (OSMA), and Office of Security and Environmental Management (OSEM) and other organizations will find it useful for their involvement in facility acquisition projects.

CONSTRUCTION MANAGEMENT DEFINED

The term Construction Management (CM) means different things to different people depending upon one's background in the construction industry. Notwithstanding such variance in interpretation, within SEC the term has generally come to mean the construction contract oversight provided by the PM or the COTR in conjunction with a support staff during the construction phase of a project. It includes, among other things: reviewing and approving/disapproving submittals, issuing requests to the contractor for change proposals, change order estimating and replying to requests for information. On most projects it also includes a fair amount of discussion with the construction contractor as to just what the plans and specifications require.

As used in this manual, CM also includes: (1) pre-construction activities such as acquisition planning (2) the management of Government furnished materials; (3) the formation of the project construction management team, (4) post-construction activities such as shakedown, commissioning and turn over, as-built drawings, and (5) project evaluation.

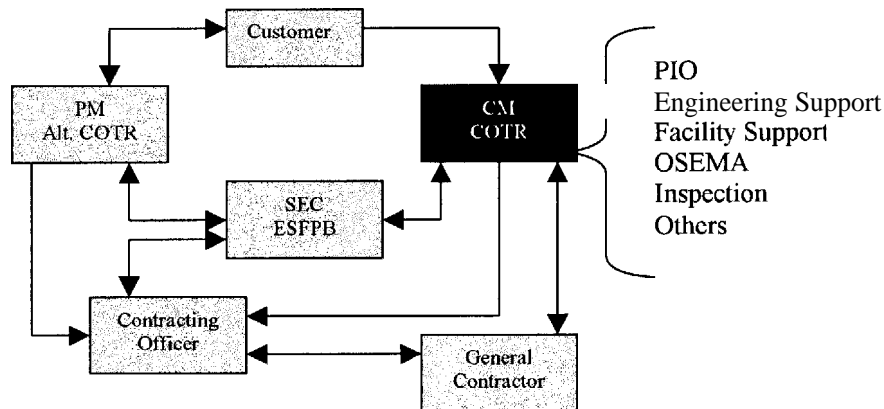
As used herein, CM is not the effort of a single individual—it's a team effort. CM is a collection of tasks performed by individuals on the project construction management team.

The term Construction Manager is used for a particular, designated individual. The Construction Manager performs an overall coordinative/management role during the construction phase—a role often separate from that of the PM or the COTR. For some construction projects a single person may be assigned all three roles—PM, COTR and Construction Manager; and for most projects, when the Construction Manager is a Government employee, he is also delegated COTR responsibilities.

Construction management oversight for Langley is provided within SEC through NASA Civil Service and contract personnel. Construction Managers are typically assigned or contracted from the Engineering Support and Facilities Projects Branch (ESFPB) and are tasked with the overall facilitation, coordination, and standardization of SEC's project support during the construction phase.

The interrelationship between the Construction Manager, COTR, SEC technical branches and offices, other NASA LaRC organizations and the general contractor is illustrated below in Figure (1). The interrelationships, shown diagrammatically in this figure, are developed in more detail throughout this manual.

Construction Management Project Organization



**Figure (1):
SEC Construction Management Project Organization**

The construction management approach developed in this manual is a flexible one that accommodates construction management activities performed by NASA personnel, support service contractors or A/E contractor personnel. It does this by differentiating between inherently governmental activities and non-governmental activities and by providing procedures under which each activity is performed.

Most construction management activities are not inherently governmental so there is a fair amount of latitude when determining how specific activities will be performed. The options for setting up a project construction management team and the process of assigning various construction management activities is described in detail in later sections of this manual.

The ROLE of The P M

One cannot adequately discuss construction management within the context of **NASA's** facility acquisition programs without addressing the role of the Project Manager (PM). The PM has "cradle to grave" responsibility for a facility or system project. Throughout the project life cycle, beginning with the concept through detail design, construction and commissioning, the PM is the primary point of contact between SEC's customer and the project team. The PM is tasked to provide a facility that fully satisfies the needs of the customer within the constraints of the project budget.

Typically, the PM is delegated responsibility at the project's inception. Thereafter, he or she coordinates all Langley activities in support of the project during planning, design and construction.

PM responsibilities include design oversight, construction management and commissioning, including the orderly and effective transition from construction to an operational status. Although the PM maintains a project management role through the construction phase, day to day construction management activities may be assigned to others. By organizing a project team with construction management capability, the majority of issues that arise during construction, along with a substantial amount of engineering and administrative **work**, can be performed by support personnel.

By separating project management and construction management, scarce PM resources can be preserved for other **SEC** requirements.

CONSTRUCTION MANAGEMENT ORGANIZATION within SEC

SEC makes available a number of resources for performing construction management so as to provide a great deal of flexibility in staffing a project's construction management team. Available resources include:

In-house personnel from the technical branches, and;
Engineering support service or A/E contractor personnel.

With respect to the use of service contractor or A/E contractor personnel to support construction management, such services are purchased by the Government through "menus of services" format under which specific services can be selected. As will be seen in later sections of this manual, the "menu of services" offers a wide variety of engineering support, ranging from technical consultation on an as-requested basis to daily administration of the entire job.

The approach for performing Construction Management on a specific project is typically determined by the Project Management Team (PMT) which is charged with overseeing SEC's construction management efforts and providing staff support to the project team. In collaboration with the division's management and in consideration of available resources, the Project Management Team makes staffing recommendations which:

- (1) Leverage the experience of senior engineers with limited availability for CM work by purchasing contractor support for the majority of CM tasks. This approach allows experienced in-house personnel to focus on high risk or complex circumstances.
- (2) Provide experience to junior engineers who need exposure to construction field activities for professional development.
- (3) Level tasking between in-house and contractor resources to maintain division schedules and to sustain commitments to SEC's customers.

The following table illustrates the available options for staffing COTR, Construction Manager and engineering support functions on a project.

COTR	CONSTRUCTION MANAGER	CONSTRUCTION ENGINEERING	PHASE SUPPORT
PM	PM	In-House	
PM	PM	CS	
PM	CS	CS	
PMT	PMT	CS	
PMT	CS	CS	
PMT	PMT	In-House	

Table of available options for staffing construction management.

PM = Project Manager

PMT=Project Management Team

CS=Contract Support Service

In House=SEC in house engineering support

The number of options available to SEC for staffing the project team during the construction phase makes it impractical to define a single CM organization, which applies to every project. Therefore, it is difficult to maintain procedures that apply to every circumstance. Nonetheless, the drawbacks of maintaining flexible-staffing options are preferable to the constraints imposed by forcing a rigid organizational structure on the dynamic staffing needs of SEC.

This manual provides uniform guidelines for the execution of the many tasks that are required to successfully complete the construction phase.

APPLICATIONS

The Langley Construction Management Manual is a guide for NASA employees and service or A/E contractor personnel involved in construction management activities. The manual establishes general policies and procedures for managing facility acquisition projects and describes the team structures, which are formed to manage the construction phase. Although management processes are developed to a fair degree of detail, the manual reserves much discretion for the individual project manager and project team members.

Program managers can refer to the manual to acquaint themselves with the specific responsibilities of various SEC branches in the support of the construction phase of a project. The manual provides a framework for assessing the resource needs of a project team and for evaluating the team's effort.

PM's and **COTR's** will find the procedural guides helpful in maintaining their focus on the essential management activities required during construction. Accountability and responsibility of team members is outlined as are procedures for contracting engineering support to supplement NASA's project team.

Engineers or technicians with limited exposure to construction activity will benefit from the manual's overview of construction management objectives and principles in Section (2). Supporting engineers/technicians, contractors and administrative staff can refer to the process outlines in Section (3) for guidance in the execution of construction management activities.

Non-SEC personnel can use the manual to become familiar with the division's policies and procedures concerning facility acquisition. SEC customers can identify their involvement in the process and obtain an outline of the services they should receive.

SECTION (2)
THE CONSTRUCTION PROJECT and
CONSTRUCTION PROJECT MANAGEMENT
DIRECTORY

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INTRODUCTION

Facility acquisition projects evolve through several phases starting with a concept and ending in the turnover of a completed facility. Between concept and turnover projects typically pass through several interim phases including:

- Preliminary design
- Final design
- Bid period
- Construction
- Shakedown and Commissioning
- Turnover
- Warranty

During preliminary and final design professionals apply theoretical and code based engineering principles to develop solutions to meet project criteria. After the design phase, builders and contractors engage in the actual construction of the work and facility operators, assisted by designers and constructors typically play a significant role in shakedown, commissioning and turnover. The warranty phase of a project involves the operator, the builder, and the various enterprises issuing the warranties.

The skills required for each phase are brought to the project by the owner through the design team, the construction management team and the shakedown and commissioning team, which are assembled to support the work at appropriate times. The constructor and the designer typically staff project teams within their own organization to apply the appropriate skills. Although individuals on each team will vary according to the skills required, the project teams are comprised of members from the owner, the designer and the construction contractor's organizations.

These three agents—the owner, the designer and the construction contractor—collaborate to bring a facility project to successful completion. How they collaborate depends upon the phase of the project and the type of delivery system under which the project is being accomplished.

NASA's facility acquisition projects are generally procured under a three-step design-bid-build process. (Design-bid for short.) Under this form of project delivery, the design and construction phases are distinct and separated by a bidding process wherein the construction contractor offers to construct the project through one of several contract instruments, including:

- Firm fixed price/invitation for bid (IFB)
- Negotiated
- Best value/request for proposal(RFP)
- cost plus
- Guaranteed maximum price with or without incentives

The construction phase of a design-bid project often finds the owner, designer, and contractor, at odds with each other with respect to what exactly is required by the plans and specifications. Discussions frequently refer to the "intent" of the design, a phrase that often leaves the contractor positioned to request additional compensation for change orders. Because interpretation of the drawings is an issue with significant cost implications for the contractor and equally significant quality implications for the owner, the design-bid method of project delivery benefits from every effort to establish and maintain good communications between owner, contractor and designer. Consequently, good communications is a requisite to a successful construction phase.

NASA also uses design-build as a project delivery system. Design-build offers some attractive advantages, including a strong link between design and construction and shorter completion schedules.

The phases of a project can overlap under a design-build delivery and principle agents are reduced to the owner and the design/building. With fewer parties involved, issues can be communicated somewhat more effectively, but

design-build presents other challenges for the project. Under design-build, the owner is at somewhat greater risk of failing to have the project requirements completely and fully identified and accommodated when the facility is finished. Hence, as is the case in design-bid procurements, good communication, focused upon identifying and satisfying the owner's requirements, is requisite to a successful design-build effort.

To promote communication and contain the risks, a project construction management team is typically established to manage the construction phase. As discussed in Section (1), at NASA LaRC, the project construction management team is assembled from a variety of available resources and is headed by the COTR. The project construction management team represents the interest of the owner—providing overall direction to the designer and/or the construction contractor.

The remainder of this section presents a general discussion of the role of the owner, the designer and the contractor, primarily from the perspective of a design-bid project delivery. For the most part, however, what is presented also applies to design/build. Additionally, this section provides a general discussion of the philosophy of effective construction contract management and construction contract administration. Detailed procedures for the project construction management team personnel are presented in Sections (3) and (4).

THE ROLE OF THE OWNER

At NASA LaRC, the owner is the government and the interests of the government are attended to by a number of operational and staff organizations. Hence the owner is not simply the Contracting Officer (CO), the COTR, the PM or the building occupant for whom the project is being built. Instead, the owner's interests and responsibilities are vested in many different individuals who must coordinate their interests and efforts.

Although technical management of Construction of Facilities (CofF) and Research and Development (R&D) projects reside within SEC; the **FAR** reserves authority for committing government monies to the CO who exercises contract management from LaRC's Office of Procurement. The separation of contracting authority from technical authority necessitates a carefully orchestrated team approach to maintain control of the construction project and, most importantly, to ensure that the needs of the end user are met. The project team then, acting for the government, assumes a primary role as the owner whose responsibilities include:

1. Establishing detailed project requirements and communicating them to the designer and constructor
2. Fully disclosing relevant information
3. Promoting effective communications among team members
4. Establishing a realistic budget
5. Allowing adequate time for performance
6. Providing adequate funding for the project and making prompt payments
7. Making timely decisions

With respect to the implementation of facility projects, LaRC organizations are clients of SEC. In turn, SEC is charged with assisting other LaRC divisions and program offices in the development of a requirement document, which establishes the performance criteria and desired features of a proposed facility. The PM has responsible charge for interviewing the client to, identify, catalog, quantify and prioritize in the form of the "Requirements Document" all the relevant criteria for the facility project.

THE ROLE OF THE DESIGNER

The designer translates the owner's criteria into a facility concept, designs the work and prepares drawings and specifications describing the new facilities to be constructed. The designer evaluates the technical and non-technical elements of the owner's facility project and develops documents, which are used by the construction contractor to build the facility. Sometimes the government is the designer—as is the case when SEC performs an in-house design.

Designer responsibilities include:

1. Assisting the owner in establishing realistic objectives related to cost, schedule, and performance
2. Delivering a design that meets the owner's objectives
3. Developing constructible details and providing contract documents that can be interpreted and accurately priced by the constructor
4. Efficiency and economy in the design
5. Ensuring that the completed design complies with applicable codes, regulations, and laws
6. Interpreting the design documents when questions regarding the intent of the design are raised

THE ROLE OF THE CONSTRUCTION CONTRACTOR

The contractor commits to build what is represented in the contract documents. To the extent that the plans and specifications are not ambiguous and support a single interpretation that is consistent with the owner's expectation, the constructor will be able to satisfy the owner's quality standards. On the other hand, if the owner or the owner's agents and the contractor do not concur in their interpretations, quality issues may arise in the construction phase.

Under a design-bid project delivery, the constructor's responsibilities include:

1. Conforming to the contract documents as modified or amended
2. Planning, supervising and controlling the construction work, including the performance of subcontractors and suppliers
3. Providing required resources (i.e., labor, material, equipment, supervision and management)
4. Cooperating to minimize the cost and impact of changes and making value engineering proposals as provided for under the contract with the owner
5. Allowing job site access for other team members or third party contractors as provided for in the contract documents

THE PROJECT CONSTRUCTION MANAGEMENT TEAM

A project construction management team is assembled to fulfill the government's responsibilities during the construction phase. A variety of NASA LaRC organizations are involved in the construction project organization, either through affiliated support service contractors or by direct involvement of civil service personnel. SEC and Office of Procurement share the majority of responsibilities but OSMA, OSEM, and FSSD, also have significant roles.

Individuals are brought together in a Project Construction Management **Team** as outlined in Figure (2). Very large or small projects may involve more or fewer organizations as required for efficiency, or special needs, and frequently, a single individual will serve in several positions. However, the basic organization is fundamental to all projects.

SEC's customer, or client, is the focus of the team and the end user whose requirements the project was conceived to satisfy. Fulfilling the customer's needs is the primary purpose of the project and primary objective of the project construction management team.

A Facility Coordinator and Facility Safety Head is designated by name in each NASA facility and both are generally involved in the construction phase when construction is within their building. Even if the Facility Coordinator or Safety Head is not a direct sponsor of the project, each has a primary interest in the project.

The Contracting Officer (CO) is the lead administrator of the project team during construction and is responsible for implementing effective controls to ensure compliance with the Federal Acquisition Regulation pertaining to the contract advertising, award, and administration. **All** decisions affecting the terms of the written contract, except those specifically delegated in writing to others are reserved for the Contracting Officer.

The Contracting Officer's Technical Representative (COR) is the Contracting Officer's principle staff advisor for technical issues. The COTR's primary objectives are (1) to deliver finished construction that conforms with contract plans and specifications, and (2) to ensure compliance with applicable Federal Acquisition Regulations. If the COTR and the PM are separate individuals, the PM serves as the COTR's project engineer. Generally, if the CM is a Government employee, he is designated as COTR and the PM is designated the alternate COTR.

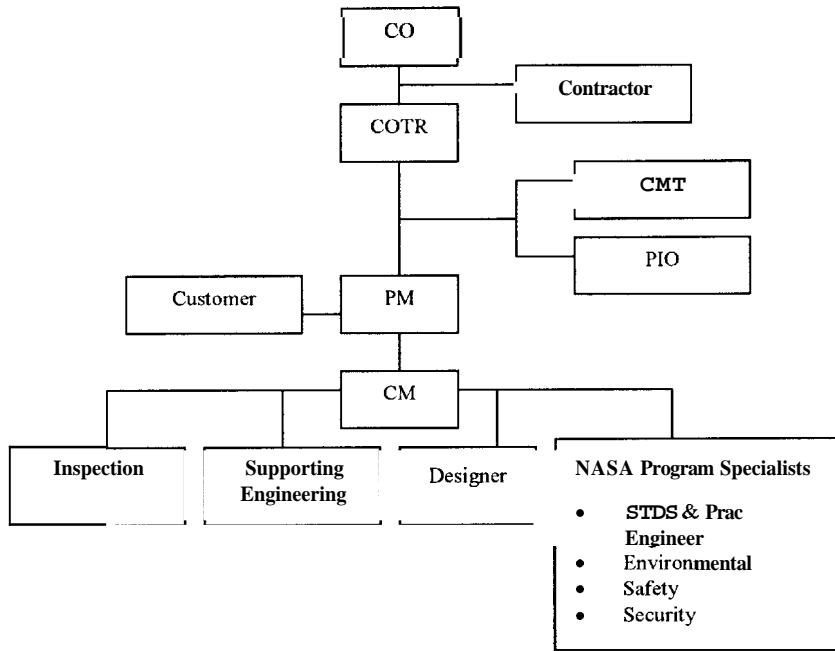


Figure (2)
The Project Construction Management Team Organization for Facility Acquisition Projects at NASA, LaRC.

CO=Contracting Officer
COTR=Contracting Officer's Technical Representative
PM=Project Manager
CMT=SEC Construction Management Team
PIO=SEC Program Integration Office
CM=Construction Manager

The COTR has limited authority to commit the Government to make payments under changed conditions and to accept completed work but only to the extent that such authority is delegated by the CO for a specific project. Specific C O R responsibilities are delegated in a letter from the CO and typically include:

1. Monitoring contractor **performance** and keeping the Contracting Officer informed of progress
2. Enforcing contract specifications
3. Endorsing/recommending the amount due on contractor pay requests
4. Recommending contract changes
5. Establishing controls to prevent the contractor's performance of unauthorized work
6. Preparing/approving cost estimates for contract changes and obtaining additional **funds**, if necessary
7. Accepting completed work

The role of Project Manager (PM) is outlined in Section (1) of this manual. As indicated in the organizational chart in Figure (2), the PM retains a central role in the project during the construction phase, even though the day to day activities may be the responsibility of other individuals.

The Construction Manager (CM) provides management staff support to the PM and the COTR by monitoring the progress and performance of construction and by serving as a facilitator between the construction contractor, NASA and in some circumstances, the designer. Section (3) of this manual provides a fairly exhaustive list of the activities typically performed by the CM, however, the scope of the CM's responsibilities varies depending on the level of support desired by the PM or COTR and, if CM services are purchased through a Contractor, by available **funding**.

The SEC's Construction Management Team (CMT) oversees the construction management efforts and provides staff support to the project team. The CMT is a resource for the PM, which makes available in house engineering support or service contract support for the performance of construction management functions. Responsibilities of the CMT include:

1. Recommending a mix of resources to satisfy COTR/PM requirements given the availability of resources and funding constraints;
2. Serving as Task Area Manager with responsibilities as assigned in the SSC Contract Management Plan.

Other SEC engineers, or support service contractor personnel or A/E contractor personnel provide technical engineering support for activities requiring their specialized knowledge and skills. For example, processing contractor submittals and engineering design changes are tasks frequently performed by supporting engineers when the work is of a specialized nature. Supporting engineers usually remain assigned to projects throughout the design and construction phases so as to provide continuity and consistency in government dealings with the contractor.

The SEC Program Integration Office (**PIO**) provides contract administration support. Change order processing, miscellaneous contract administration and acceptance of completed work are examples of administrative support provided by PIO.

Construction projects also require support from various divisions and branches within LaRC. For example, Office of Safety and Mission Assurance (OSMA) conducts safety briefings and reviews contractor safety plans. The environmental group reviews HAZMAT and environmental plans.

CM ACTIVITY and RESPONSIBILITY MATRIX

As can be seen in Figure (2) the project construction management team brings together many individuals in many different LaRC divisions and branches. Typically, these individuals are involved with multiple projects and each may also be tasked with division responsibilities completely removed from the project. Hence the project team organization overlays a larger organization spanning various LaRC administrative units.

Accordingly, the organizational contributions can **best** be diagrammed in a matrix, which lists the degree of involvement.

The matrix, presented in Figure (3) provides a starting point from which the construction project team can be assembled. The CMT, with the concurrence of other **SEC** authority builds the project team from the appropriate organizations represented in the matrix and having the available resources (i.e. capable individuals) to staff the project team.

The involvement of LaRC organizations in the construction phase of a project is indicated in Figure (3) at one of three levels, namely:

1. Direct Responsibility,
2. Shared/Support Responsibility,
3. Shared Interest.

CM ACTIVITY

	SSC	PROCUREMENT	SEC CMT	SEC Tech Branches	SEC PIO	DESIGNER	SEC CLIENT	CSU
Develop Acquisition Plan	N	S	S	D	S		I	
Set Up CM Organization	N		S	D	I			S
Obtain Regulatory Permits	Y	I	I	D	I	S	S	
Issue CM/I Task Order	N		D	S	I			S
Coordination Provisions for GFE/M	Y	I	S	D	I	S	I	S
Advertise/Bid/Award	N	D	I	S	S		I	I
Conduct Preconstruction Activity	N	D	S	I	I	S	I	S
Conduct Coordination Meetings	Y	I	D	I				S
Progress Payment Functions	Y	D	S	I				S
Progress Schedule Functions	Y	I	D	S	I		I	S
Prepare PCC Briefs	Y		D	S	I			I
Technical Submittal Functions	Y		D	S	I	S		S
Review/Approve VE Proposals	Y	I	D	S	I	S	I	S
Contract Correspondence Functions	Y	S	D	S	I			S
Inspection Functions	Y	I	S	S	I			D
Manage Change Order Process	Y	D	D	S	S		I	I
Maintain Lessons Learned	Y	I	D	S	S	I		S
Maintain As-Builts	Y		D	S			I	S
Manage Construction Warranties	Y	S	S	D			I	S
Claim Processing Functions	Y	D	D	S	S	I		S
Closeout & Acceptance Functions	Y	S	D	S	S	S	I	S
Evaluate CM/I Task Orders	Y	S	D	S	S		S	

D=Direct Responsibility S=Shared Support I=Shared Interest Y=Yes N=No

*Figure (3)
Matrix of CM Activities and NASA Organizational Responsibilities*

Table Key:

*SSC=Support Service Contractor
CMT=Construction Management Team
PIO=Program Integration Office
CSU=Construction Services Unit*

A review of Figure (3) shows that direct responsibility for most of the CM activities resides in SEC technical branches or the CMT or in Procurement. Other organizations provide support or have a shared interest in the outcome. The involvement codes are described below:

1. Direct Responsibility

Direct responsibility means having authority and accountability for making the decisions required to get the work done. It does not mean that the hands on work will necessarily be done by someone in the organization. Instead, it means that someone in the organization is responsible for seeing that the hands on work actually gets done. For example, if a task order is written for a particular CM activity, the service contractor will do the hands on work although the SEC Technical Branch **retains** responsibility. The service contractor is still accountable, however, because the technical branch personnel evaluate the task order service and grade work appropriately.

2. Shared/Support Responsibility

Shared/Support responsibility means having authority and accountability for providing supporting activity which enables the work to get done. Shared/support activity includes providing information or reports, processing documents or correspondence, making recommendations or other staff work. **As** in the above example, shared/support activity may be delegated or contracted through a task order.

3. Shared Interest

Shared Interest means having a vested interest in the outcome of the activity or in the proper execution of it. Shared interest includes the involvement of the facility coordinator, safety and others with similar association to the project. Organizations with shared interest may be required to provide information, accept or reject elements of the process or the work itself, make recommendations or perform other staff work.

Individual Involvement

Although CM activities are performed by an individual or group of individuals, individual positions are not listed in Figure (3) because the matrix focuses on organizational involvement. The process **narratives** and flow charts, included in the inventory of Construction Management activities in Section (3), describe CM activities more specifically and in a manner that **permits** discernment of individual accountability.

PRE-AWARD and POST CLOSE OUT CM ACTIVITIES

The construction phase of a project begins when the notice of award is issued and ends when final payment is made to the contractor. Most CM activities take place during the construction phase, however, some should be performed during the preliminary design or detail design phase while others occur after construction is finished, during start-up or in the first years of operation.

The PM and/or the COTR should be attentive to the following CM activities before work begins on site: (These activities are more thoroughly addressed in Section (3) of this manual.)

Acquisition Planning: The optimal time for Acquisition Planning is late in the preliminary design, before the start of detailed design. **NASA's** Facility Project Implementation Handbook (FPIH), NHB 8820.2A, dated July 1993, Section 3.11, provides a detailed discussion of acquisition planning.

Setting up the CM Organization: This activity should be performed either late in the Program Development Phase or early in the Design Phase. So, if CM services are to be provided by a contractor, sufficient time will remain before construction begins for the contractor to obtain any necessary resources and to integrate within the project team.

Obtaining Regulatory Permits: The process of obtaining permits should begin in time to avoid delaying the **start** of construction. Permits are typically required for pollution abatement or environmental remediation programs, asbestos or lead abatement, underground storage tank remediation or projects involving hazardous materials. Sites identified for archeological or historical values, work in wetlands, navigational waters or within flight path envelopes typically require permits of some sort.

Managing Construction Warranties: For a **period** of one year following final acceptance of the construction, the contractor is usually obligated to correct defects caused by defective materials and/or workmanship. Manufacturer's warranties on contractor-furnished equipment, roofing systems, coatings, and similar items may extend warranty protection for as much **as** 20 years, depending upon the provisions of the specification. During the design phase, warranties should be carefully considered and developed as appropriate. **As** construction is completed, the collection of warranty documentation and setting warranty start/completion dates should **be** addressed.

SECTION (3)
CONSTRUCTION MANAGEMENT ACTIVITIES
 DIRECTORY

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Menu of Construction Management Services.....	Pg 15
CM Support Service, Typical Statement Of Work	Pg 17
Develop Acquisition Plan	Pg 18
Set Up Construction Management Team.....	Pg 19
Obtain Regulatory Permits.....	Pg 20
Issue CM Task Orders	Pg 22
Coordinate Supply of GFP	Pg 23
Advertise / Bid / Award Contract	Pg 26
Conduct Preconstruction Activity.....	Pg 27
Prepare/Conduct Project Coordination Committee (PCC).....	Pg 28
Progress Payments Functions	Pg 29
Progress Schedule Functions	Pg 33
Conduct Coordination Meetings.....	Pg 36
Technical Submittal Functions	Pg 37
Process Value Engineering Proposals	Pg 41
Contract Documentation Functions	Pg 42
Manage Change Order Processes	Pg 46
Maintain Lessons Learned	Pg 54
Maintain As-Built Drawings.....	Pg 55
Claim Processing Functions.....	Pg 57
Close Out and Acceptance Functions.....	Pg 59
Evaluate CM Task Orders	Pg 61

INTRODUCTION

Earlier sections of the manual outline SEC's approach to a flexible CM organization that permits staffing the project team with in-house or support service contractor personnel. Up to this point, discussion of CM activities has focused on the organizational level, without specifically identifying the tasks that an individual performs.

In this section, CM activities are discussed in more detail. The activity descriptions on the following pages clarify each organization's involvement in the CM process in addition to providing fairly definitive steps to be taken by the individual performing the activity. The narratives and flow charts in the following section briefly describe:

1. An organization's primary interests in each activity.
2. The role of supporting organizations.
3. The decisions made in the process.
4. The principle information or knowledge required making the decisions.
5. An indication whether a task order can be written to obtain contracted support service for the activity.

If a particular activity is not inherently governmental, a task order may be written in order to obtain contracted engineering support to perform the service. If contract support service is desired, a scope of work is developed in accordance with the guidelines provided in this section of the manual and in the Section (4). A task order is then issued per the SEC Engineering Support Service contract or A/E contract management plan.

A CM activity is complete when a specific document, report, form, log entry, or deliverable is generated. The activity deliverables are similar irrespective of whether the CM activity is performed with Government resources or through a service contractor.

If the CM activity is performed by NASA personnel, the person holding direct responsibility for the activity either completes the action or delegates the action and oversees the satisfactory completion of it. In the case of contracted services, tasks are completed by the contractor and the deliverables are assessed in order to evaluate the service contractor's performance.

MENU OF CONSTRUCTION MANAGEMENT SERVICES

In the remainder of this section, the CM activities, which were identified in Figure (3), Section 2, Page 14, are discussed in detail. A general description of the activity is provided; organizations having primary and support interests in the activity are listed; information required to perform the activity is identified; and the activity is identified as inherently or not-inherently governmental.

Some of the CM activities cataloged in the remainder of this section are discussed in a Process Narrative. These discussions include fairly detailed procedures and in some cases flow charts are included to better describe the process.

Each CM activity in this section is presented in a similar format. A key to the format is provided below.

CM Activity:	Name of the Construction Management Activity, from Figure (3), Page 14.
Description:	Brief description of the activity with references to supporting materials contained in Section 5, "References".
Primary Interests:	Lists LaRC and SSC organizations, which are shown in Figure (3), Page 14, to have direct responsibility for the CM Activity. Also indicates the responsibility of each listed organization.
Support Provided:	Lists LaRC and SSC organizations, which are shown in Figure (3), Page 14, to have shared interest in the CM Activity. Also indicates the interest of each listed organization.
Process Requirements:	Indicates the decisions, which are made during the process and identities the key pieces of information needed in order to complete the activity.
Deliverables:	Lists the routine deliverables for the activity.
Task Order Available for support service contractor:	A yes indicates that the activity is not inherently governmental and that a task order can be written to buy the service from the division's engineering SSC.
Process Narrative:	The narrative gives requisite background information and discusses the procedures typically followed. In some instances, flow charts are presented to better illustrate the process.

In the remainder of this section, the following abbreviations are used:

SEC:	Systems Engineering Competency
OP:	Office of Procurement
CSU:	Construction Services Unit, Operated by support service Contractor or A/E contractor.
CMT:	Construction Management Team
OSMA:	Office of Safety and Mission Assurance
OSEM:	Office of Security and Environmental Management
PIO:	Program Integration Office
TAM:	Task Area Manager

CM SUPPORT SERVICE, TYPICAL STATEMENT OF WORK

Review the contract documents (i.e., drawings and specifications) and document errors, omissions, contradictions or other statements which may lead to:

1. Constructive contract changes
2. Unnecessary increases in the cost of work or in the time required to complete it
3. Other hindrances to job progress.

As a minimum, address the following: (1) economics, (2) availability of materials (e.g., GFE/GFM), (3) site restrictions, (4) local conditions that may affect the construction process (e.g., conflicting Government operations), and (5) conflicts between architectural, mechanical, electrical, and structural elements.

When specifically requested in the task order, consider machining and assembly issues such as: tolerances, fit and finish criteria and fabrication.

Deliverables: Provide to the PM or his designated agent by the date indicated:
Review comments presented on the prescribed form.
Red-lined drawings.

DEVELOP ACQUISITION PLAN

Description Acquisition planning is the process of developing a contracting strategy for the project. The plan specifies the most suitable form of contract, construction phasing, use of GFE/M, special scheduling requirements and the optimal time to bid and award the project. The plan also accommodates any funding constraints on the project. FAR 7.105, see **LMS-OP-5694**, "Facility Systems Project Review Requirements" and LMS-OP-5689, "Facility Systems Project Management Plan Development", describe the contents of a written acquisition plan. Acquisition planning should begin early in the design phase. The decisions made during the planning process influence the development of the project plans and specifications.

Primary Interests

SEC: Technical considerations, schedule considerations, funding constraints.
AD: FAR compliance. Form of contract.
CUSTOMER: Coordination with facility operational need.

Support Provided

AD: FAR interpretations and recommendations on form of contract.
SEC PIO: Interprets SEC policy and makes recommendations on acquisition strategy.
CUSTOMER: Provides facility operational requirements.

Process

Decisions: Is the most suitable form of contract being used? Will the project be constructed in the most suitable time of year? Are multiple contracts preferable? Are construction phases workable and coordinated with the facility?

Process

Requirements: Facility scheduling requirements.
Design criteria and project technical requirements. Knowledge of FAR constraints.

Deliverable: Acquisition Plan.

Task Order

Available: No

SET UP CONSTRUCTION MANAGEMENT TEAM

- Description:** Determine the involvement of SEC personnel and the mix of NASA and support service contractor resources, which will constitute the project Construction Management team. Name CM, reviewing engineer, COTR, and others. See LMS-OP-5689, "Facility Systems Project Management Plan Development".
- Primary Interests**
- AD:** Delegate COTR and Alternate COTR responsibilities per FAR.
- SEC:** Make assignments compatible with the division's workload, project plans, and human resource management plans.
- Support Provided**
- SEC CMT:** Offers in house and support service contractor services.
Make recommendations for CM organization.
- Process Decisions:** Which organizational elements and which individuals will be assigned construction management functions?
- Deliverable:** Project Construction Management Team Directory, COTR/Alt COTR Designation
- Process Requirements:** Division/Branch/Team work loads.
Available funds for task orders
- Task Order Available:** No.

OBTAIN REGULATORY PERMITS

Description: Identify statutory or regulatory permits required, which may effect the construction phase. Initiate permit application processes.

This function, or parts of it, may be undertaken during the design phase.

Primary Interests

SEC: Maintain compliance and avoid delays from the permit process.

DESIGNER: Design compatible with regulatory constraints.

OSEMA: Regulatory and statutory compliance.

CUSTOMER: Accommodate facility operational needs.

Support Provided

DESIGNER: Resource for compliance requirements and permit application staff work.

CUSTOMER: Identify facility effluent streams, waste generation, and operational requirements.

OSEMA: Resource for requirements and NASA policy compliance.

Process Decisions: Are there any statutory or regulatory issues relevant to the timely execution of the construction contract? If so, have they been satisfied?

Process Requirements: Project scope of work. Knowledge of applicable laws.

Deliverables: (1) List of required permits and preliminary schedule and application requirements.
(2) Permit application packages.

Task Order Available: Yes. See Langley Form (LF-252), "Construction Management Services"

PROCESS NARRATIVE for Obtaining Regulatory Permits

Determining requirements for approvals and permits issued by regulatory agencies is a task usually performed early in a project's design phase. Assigning responsibility for obtaining permits should follow immediately thereafter.

Permits sometimes require months, even years, to obtain. In the interest of avoiding a delay in the start of construction, the application process for long-lead permits should begin early.

The process of obtaining a permit involves the following steps:

1. Identify the regulatory agencies having jurisdiction and the types of permits required.
2. Research agency application procedures and approval requirements. Initiating contact with the agency is recommended.
3. Establish a schedule for completing the application process. Coordinate with the regulatory agency. Get their concurrence on activities they have responsibility for completing.
4. Prepare packages for submittal to the agency. The COTR must approve all documents for release.
5. Deliver the permit to the COTR.

SECTION (3) DIRECTORY

CONSTRUCTION MANAGEMENT ACTIVITIES

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Develop Acquisition Plan	Pg 26
Set Up Construction Management Team	Pg 27
Obtain Regulatory Permits	Pg 28
Issue CM/Inspection Task Orders	Pg 30
Coordinate Supply of GFP	Pg 31
Advertise/ Bid/ Award Contract	Pg 34
Conduct Preconstruction Activity	Pg 35
Prepare/Conduct Project Coordination Committee (PCC)	Pg 36
Progress Payments Functions	Pg 37
Progress Schedule Functions	Pg 41
Conduct Coordination Meetings	Pg 45
Technical Submittal Functions	Pg 47
Process Value Engineering Proposals	Pg 52
Contract Documentation Functions	Pg 53
Inspection Functions	Pg 57
Manage Change Order Processes	Pg 61
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Maintain As-Built Drawings	Pg 76
Claim Processing Functions	Pg 78
Close Out and Acceptance Functions	Pg 80
Evaluate CM/Inspection Task Orders	Pg 84

INTRODUCTION

Earlier sections of the manual outline **FSED's** approach to a flexible **CM** organization that **permits** staffing the project team with in-house or support service contractor personnel. Up to **this** point, discussion of **CM** activities **has** focused on the organizational level, without specifically identifying the tasks that an individual performs.

In **this** section, **CM** activities are discussed in more detail. The activity descriptions on the following pages clarify each organization's involvement **in** the **CM** process in addition to providing fairly definitive steps to be **taken** by the individual **performing** the activity. The **narratives** and **flow charts** in the following section briefly describe:

1. An organization's primary interests in each activity.
2. The role of supporting organizations.
3. The decisions made in the process.
4. The principle information or knowledge required **making** the decisions.
5. An indication whether a **task** order can **be** written to obtain contracted support service for the activity.

If a particular activity is not inherently governmental, a **task** order may be written in order to obtain contracted engineering support to perform the service. If contract support service is desired, a scope of work **is** developed in accordance with the guidelines provided in **this** section of the manual and in the Section (4). A **task** order is then issued per the FSED Engineering Support Service contract or A/E contract management plan.

A **CM** activity is complete when a specific document, report, form, log entry, or deliverable is generated. The activity deliverables are similar irrespective of whether the **CM** activity is performed with Government resources or through a service contractor.

If the **CM** activity is performed by **NASA** personnel, the person holding direct responsibility for the activity either completes the action **or** delegates the action and oversees the satisfactory completion of it. **In** the case of contracted services, **tasks** are completed by the contractor and the deliverables are assessed in order to evaluate the service contractor's performance.

MENU OF CONSTRUCTION MANAGEMENT SERVICES

In the remainder of **this** section, the **CM** activities, which were identified in Figure (3), Section 2, Page **18**, are discussed in detail. A general description of the activity is provided; organizations having primary and support interests in the activity are listed; information required **to** perform the activity is identified; and the activity **is** identified as inherently or not-inherently governmental.

Some of the **CM** activities cataloged in the remainder of this section are discussed in a Process Narrative. These discussions include fairly detailed procedures and in some cases **flow** charts are included to better describe the process.

Each CM activity in this section is presented in a similar format. A key to the format is provided below.

CM Activity	Name of the Construction Management Activity, from Figure (3), Page 18.
Description	Brief description of the activity with references to supporting materials contained in the appendix when applicable.
Primary Interests	Lists LaRC and SSC organizations, which are shown in Figure (3), Page 18, to have direct responsibility for the CM Activity. Also indicates the responsibility of each listed organization.
Support Provided	Lists LaRC and SSC organizations, which are shown in Figure (3), Page 18, to have shared interest in the CM Activity. Also indicates the interest of each listed organization.
Process Requirements	Indicates the decisions, which are made during the process and identifies the key pieces of information needed in order to complete the activity.
Deliverables	Lists the routine deliverables for the activity.
Task Order Available for support service contractor	A yes indicates that the activity is not inherently governmental and that a task order can be written to buy the service from the division's engineering s s c .
Process Narrative	The narrative gives requisite background information and discusses the procedures typically followed. In some instances, flow charts are presented to better illustrate the process.

In the remainder of this section, the following abbreviations are used:

FSED:	Facility Systems Engineering Division
FSSD:	Facility Systems Support Division
AD :	Acquisition Division (Office of Procurement)
c s u :	Construction Services Unit, Operated by support service Contractor or A/E contractor.
CMT:	Construction Management Team
OSEMA:	Office of Safety, Environmental and Mission Assurance
PIO:	Program Integration Office
TAM :	Task Area Manager

CM Activity **CONDUCT CONSTRUCTABILITY REVIEWS**

Description Constructability reviews include, **as** a minimum, the specification review, conducted by PIO, **and** a review **of** the contract **drawings**. These activities, conducted prior to distribution of the bid package should **focus** on clarity, completeness, **accurate** representation **of** existing conditions and code compliance.

A fully developed constructability program **can be** integrated into the **project design** so that construction **issues** are addressed from **the beginning** of the **project**. See Appendix (1) for more **discussion** of the **potential** benefits of a **fully developed program**

Primary Interests

- FSED:** Avoid changes. Identify conflicts, **omissions** and errors.
- AD:** **FAR** compliance. Avoid bid protests and changes.
- CSU:** Facilitate on site activity.
- OSEMA:** Safety/environmental compliance

Support Provided

- FSED CMT:** **Task Area** Manager. Technical **review**.
- PIO:** Technical & contractual reviews.
- OSEMA:** Safety/environmental reviews.
- CSU:** When tasked, verifies existing conditions provides a “trades perspective” on the design documentation. Contributes to specification Reviews.

Process Requirements

Knowledge of regulatory requirements concerning construction activity, site constraints and facility operational needs. Plans and **specifications**.

Deliverables

1. Review comments.
2. Red lined drawings and specifications.

Task Order Available for Support Service Contractor

Yes.

PROCESS NARRATIVE for Constructability Reviews

Constructability Reviews

Constructability reviews are conducted to eliminate ambiguities, omissions and inconsistencies in the contract documents **that may** lead to (1) change orders, (2) unnecessary **increases** in the contractor’s cost or the time required to complete the work or (3) otherwise hinder **progress** of the work. The issues that constructability reviews commonly address include (1) economics, (2) availability **of materials** (e.g., GFE/GFM), (3) site restrictions, (4) local conditions that may **affect** the construction process (e.g., conflicting Government operations), and (5) conflicts between architectural, mechanical, electrical, and structural elements.

Constructability reviews should **be** scheduled concurrent with the **final** review of a completed design package—before the critical design review (CDR). However, funding limitations **may** prevent it and constructability reviews are often conducted after the **CDR**

Prior to the CDR, constructibility review comments are returned to the design project manager for inclusion into the final revision of the design documents. After the CDR, FSED and PIO combine constructibility review comments with the comments generated during the specification review meetings.

In either case, constructibility comments should be reviewed by the project TPE for coordination and concurrence. A sample form from recoding review comments is included in Appendix (2).

CM SUPPORT SERVICE, TYPICAL STATEMENT OF WORK

Review the contract documents (i.e., drawings and specifications) and document errors, omissions, contradictions or other statements which may lead to:

1. Constructive contract changes
2. Unnecessary increases in the cost of work or in the time required to complete it
3. Other hindrances to job progress.

As a minimum, address the following: (1) economics, (2) availability of materials (e.g., GFE/GFM), (3) site restrictions, (4) local conditions that may affect the construction process (e.g., conflicting Government operations), and (5) conflicts between architectural, mechanical, electrical, and structural elements.

When specifically requested in the task order, consider machining and assembly issues such as: tolerances, fit and finish criteria and fabrication.

Deliverables

Provide to the TPE or his designated agent by the date indicated:

1. Review comments presented on the prescribed form.
2. Red-lined drawings.

CM Activity DEVELOP ACQUISITION PLAN

Description Acquisition planning *is* the process of developing a contracting strategy for the project. The plan specifies the most suitable form of contract, construction phasing, use of GFE/M, special scheduling requirements and the optimal time to bid and award the project. The plan **also** accommodates any funding constraints on the project. FAR 7.105, Appendix (3), describes the contents of a written acquisition plan. Acquisition planning **should begin** early in the design phase. The decisions made during the planning process influence the development of the project plans and specifications.

Primary Interests

FSED: **Technical** considerations, schedule considerations, funding constraints.
AD: FAR compliance. Form of contract.
CUSTOMER: **Coordination** with facility operational need.

Support Provided

AD: **FAR** interpretations and recommendations on form of contract.
FSED PIO: Interprets FSED policy and makes recommendations on acquisition strategy.
CUSTOMER Provides facility operational requirements.

Process Decisions

Is the most suitable form of contract being used? Will the project be constructed in the most suitable time of year? Are multiple contracts preferable? Are construction phases workable and coordinated with the facility?

Process Requirements

Facility scheduling requirements.
Design criteria and project technical requirements. Knowledge of FAR constraints.

Deliverable
Task Order Available

Acquisition Plan.
No

CM Activity SET UP CONSTRUCTION MANAGEMENT TEAM

Description Determine the involvement of FSED personnel and the **mix of** NASA and support service contractor resources, which will constitute the project Construction Management team. Name CM, reviewing engineer, COTR, and others. Complete the organization set-up work sheet in Appendix (4).

Primary Interests

AD: Delegate COTR and Alternate COTR responsibilities per **FAR**

FSED: Make assignments compatible with the division's workload, project plans, and **human resource management plans.**

Support Provided

FSED **CMT:** Offers in house and support service contractor services.
Make recommendations for CM organization.

Process Decisions

Which **organizational** elements and which individuals will **be** assigned construction management functions?

Deliverable

Project Construction Management Team Directory, COTR/Alt COTR Designation

Process Requirements

Division/Branch/Team work loads.
Available funds for **task** orders

Task Order Available

No.

CM Activity	OBTAIN REGULATORY PERMITS
Description	Identify statutory or regulatory permit requirements, which may effect the construction phase. Initiate permit application processes.
Primary Interests	This function, or parts of it, may be undertaken during the design phase.
FSED:	Maintain compliance and avoid delays from the permit process.
DESIGNER	Design compatible with regulatory constraints.
OSEMA :	Regulatory and statutory compliance.
CUSTOMER	Accommodate facility operational needs .
Support Provided	
DESIGNER	Resource for compliance requirements and permit application staff work.
CUSTOMER	Identify facility effluent streams, waste generation, and operational requirements.
OSEMA :	Resource for requirements and NASA policy compliance.
Process Decisions	Are there any statutory or regulatory issues relevant to the timely execution of the construction contract? If so, have they been satisfied?
Process requirements	Project scope of work. Knowledge of applicable laws.
Deliverables	<ol style="list-style-type: none"> 1) List of required permits and preliminary schedule and application requirements. 2) Permit application packages.
Task Order available	Yes.

PROCESS NARRATIVE for Obtaining Regulatory Permits

Determining requirements for approvals and permits issued by regulatory agencies **is** a task usually performed early in a project's design phase. Assigning responsibility for obtaining permits should follow immediately thereafter.

Permits sometimes require months, even years, **to** obtain. In the interest of avoiding a delay in the **start** of construction, the application process for long-lead **permits** should begin early.

The process of obtaining a permit involves the following steps:

1. Identify the regulatory agencies having jurisdiction and the **types** of **permits** required.
2. Research agency application procedures and approval requirements. Initiating contact with the agency is recommended.
3. Establish a schedule for completing the application process. Coordinate with the regulatory agency. Get their concurrence **on** activities they have responsibility for completing.
4. Prepare packages for submittal to the agency. All documents must be approved **for** release by the COTR
5. Deliver the permit **to** the COTR.

CM Support Services, Typical Statement of Work

Phase (1)

Determine the **permits** required by law to **be** obtained prior to construction. Research the requirements for obtaining required permits. Prepare a schedule **for** completing the application process for each **permit**. Consistent with agency requirements and the approved schedule, prepare documentation packages for submittal.

Phase (2)

Deliverables

1. List of required permits and agencies having **jurisdiction**
2. Schedule for completing application process
3. Permit application packages.

Required Information

1. Project schedule and scope of work with estimated quantities of work identified **for permit** sensitive work packages.

CM Activity	ISSUE CM/INSPECTION TASK ORDERS
Description	Develop scope of work and a Government estimate for construction management and inspection task orders. Follow procedures for issuing task orders per the FSED contract management plan. Applicable forms are included in Appendix (5).
	FSED policy is that all projects will receive inspection services. Task orders for construction management are only developed if CM activities are to be obtained through the division's engineering support service contract or A/E service contract.
Primary Interests	
FSED:	Definitive scope of work . Adherence to task order procedures and support service contracting requirements.
CSU:	Definitive scope of work .
SUPPORT SERVICE CONTRACTOR	Definitive scope of work .
Support Provided	
FSED CMT:	Task Area Manager for inspection and construction management tasks . CM fund custodian.
FSED TAM:	Issue task orders. Engineering support service contract COTR.
CSU:	Estimate of inspection costs. Scope concurrence.
SUPPORT SERVICE CONTRACTOR:	Estimate of CM costs. Scope concurrence.
Process Decisions	Identify scope of work for contracted Inspection and CM services.
Process Requirements	Critical items list and other special instructions for inspection services. Project CM organization. Plans and specifications. Contract information. Available funds.
Deliverable	Task order document with purchase requisition and government estimate.
Task Order Available	No.

CM Function **COORDINATE SUPPLY OF GFP**
(Government Furnished Property, Material/Equipment)

Description Where government furnished material or equipment is used, verify that the specification and configuration is correct for the application. Confirm that purchasing schedules will have the property on-site when required by the general contractor. Expedite orders as appropriate. Facilitate transfer of GFEM to the contractor.

Primary Interests

AD: Correct materials arrive on schedule.
FSED: Interface/connections details correctly specified.
CSU: Facilitation of on-site operations and proper custody of GFE/M transfers maintained.

Support Provided

FSED Technical Branches: Specify GFE/M configuration. Coordinate design.
PIO: Coordinated procurement
DESIGNER Coordinate specification requirements and interfaces
CSU: Facilitate transfer of materials. Confirm receipt. Locate materials.

Primary Process Decisions

Is the purchase strategy and schedule for GFEM coordinated with the construction schedule?
Do purchase specifications and configurations match requirements?

Process Requirements

Specifications and configurations

Deliverables

1. Verified listings of specified GFP.
2. Procurement and delivery schedules.
3. Expediting report.
4. Custody document.

Task Order Available

Yes.

PROCESS NARRATIVE for Government Furnished Property (GFP)

GFP consists of construction materials and equipment purchased by the Government for the project. The CM is responsible for (1) verifying that GFP conforms with specifications, (2) expediting delivery of GFP, if necessary, to fulfill contractual commitments and to avoid construction delays, (3) managing the transfer of GFP custody to the contractor, and (4) verifying the return of excess GFP and salvaged property.

Verifying that GFP conforms with specifications.

In performing this task, the CM has two objectives: (1) to avoid compromising the quality of the finished construction by allowing the contractor to use substandard products, and (2) to avoid contract changes caused by differences between the GFP delivered to the site and GFP specifications.

The process involves the following activities:

1. Verify the GFP purchase order accurately describes the product, specifies minimum **standards**, and defines all dimensions as required to assure the product can be installed without undue difficulty.
2. Inspect the supplier's factory to verify compliance with specified manufacturing standards.
3. Verify the delivered product conforms with purchase order specifications.

Expediting Delivery of GFP

The Government will often award a construction contract before receiving all GFP ordered for the project. In such a case, the Government must specify in the contract a date that undelivered GFP will become available for turnover to the contractor. Failure by the Government to turnover material by a specified date may warrant a contract time extension and/or a contract price adjustment under the "Suspension of Work" clause (FAR 52.212-12).

The process involves the following activities:

1. Coordinate GFP delivery schedules with the contractor's progress schedule. Negotiate a turnover date for undelivered GFP that allows for probable delivery delays.
2. Follow up with the supplier periodically to determine whether the current delivery date remains valid. If the expected delivery date slips beyond the promised turnover date, **notify** the contracting officer and provide a daily damage estimate for the contracting officer's use in compelling an earlier delivery from the supplier.

Managing Transfer of GFP Custody

Since GFP remains Government property after custody transfer, the contractor must return any GFP not included in the construction. Without adequate records describing the property transferred and identifying the person accepting custody on behalf of the contractor, agreeing on what property the Government is entitled to receive at the end of the project can **be** difficult. Having **the** contractor sign an **exhaustive** inventory at custody transfer, acknowledging receipt of all items listed clearly establishes what property was transferred. Appendix (6) is a form for documenting the GFP custody transfer process.

When the custody of GFP transfers, the contractor assumes responsibility for protecting the property from damage. If the property is damaged while in the contractor's custody, the contractor is obligated to pay the cost of restoring the property to its condition at the time of transfer. If the contracting parties agree on the condition of GFP immediately prior to transfer, the probability of a dispute over a defect found in the property while in the contractor's custody is reduced.

Clearly responsibility for protecting GFP belongs to the property custodian; nevertheless, a prudent CM will verify that the contractor takes reasonable precautions to protect any **GFP** in its custody. **GFP** is often difficult to

replace or repair. If a critical piece of equipment is severely damaged, completion of the project could easily slip several weeks, perhaps months.

Verifying the Return of GFP and Salvaged Property.

At the end of the project, all GFP not incorporated into the work must be returned to the Government as well as any specified salvaged property. The CM first verifies GFP included in the construction; then, compares those quantities with quantities recorded on the GFP inventory, prepared when custody was originally transferred, to determine if any excess GFP exists. Finally, the CM coordinates and oversees custody transfer back to the Government.

CM Support Services: Typical Statement of Work

Review GFP purchase orders to determine whether purchased items are properly specified and that delivery dates will get the property on site before it is needed.

Conduct expediting services as required to protect scheduled delivery dates. Report as directed on delivery status and advise the COTR of expected or confirmed delays in delivery.

CM Activity ADVERTISE / BID / AWARD CONTRACT

Description Perform activities required by applicable FAR provisions or other regulations. Includes advertisement of the procurement, job shows, pre-bid conferences, answering bidders' inquiries and bid analysis to determine the low responsible bidder.

Primary Interests

AD : FAR compliance.

FSED: Answer technical queries, adherence to procurement schedules, award to competent bidder.

CSU: **Job shows.**

CUSTOMER Coordinate with facility operational schedules.

Support Provided

FSED Technical Branches: Respond to bidders' technical inquiries.

PIO:

DESIGNER Resource **for** technical inquiries.

CSU Support job shows.

Process Decisions

Are activities in compliance with **FAR?**

Are all bidders' queries correctly answered?

Process Requirements

Construction documents. Knowledge of FAR requirements. Job show dates.

Deliverables

Bid document, IFB process documentation bid analysis documents, notice of award, list of bidders' inquiries and written responses.

Task Order Available

Yes. For answering bidders' inquiries and job show attendance only. **See** standard **scope of** work in Section (4) of this manual. (Inspectors are typically tasked to attend job shows as part of the inspection services. Refer to the Langley Inspection Manual in Appendix (12).)

CM Activity CONDUCT PRECONSTRUCTIONACTIVITY

Description Issue notice of award and complete **post** award activity leading up to on-site activity by the construction contractor. Includes review of bonds and insurance certificates, confirmation of contractor qualifications and conducting the preconstruction conference. This activity **begins** after determination **of** the low responsible bidder and continues through the preconstruction conference.

Primary Interests

AD : FAR and contract compliance

FSED: Technical qualifications and preparation **of** the construction contractor for on-site activity

Early coordination **of** construction contractor's on-site activity

CSU: Advance notice of on-site activity. Coordination.

Support Provided

FSED Technical Branches:

Resource for technical issues.

PIO: Staff **support** to contracting officer.

DESIGNER Resource for technical issues.

CSU: **Coordination** with customer.

Process Decisions:

Applicable FAR requirements complied with?

Contract requirements complied with?

Efforts coordinated with all effected NASA LaRC organizations?

Process Requirements:

Knowledge **of** FAR and contract requirements.

Deliverables:

Inspection **task** orders typically include inspection presence at the preconstruction conference. Refer to the Langley Inspection Manual in Appendix (12).

Task Order Available:

No

CM Activity **PREPARE/CONDUCT PROJECT COORDINATION COMMITTEE (PCC) MEETING BRIEFS**

Description Prepare and deliver briefings for monthly PCC meetings. Report on schedule and budget performance and make projections of time to complete and cost at completion based upon construction contractor's latest schedule and progress to date. Identify major changes or problems and proposed solutions.

Primary **Interests**

FSED: Effective communication of project status to program managers.

Support Provided

PIO: Information source for current contract status. Prepare slides and reports.

CSU Verify contract work in place status.

Process Decisions: None.

Process Requirements: Updated construction schedule. Updated change logs and submittal logs. Documentation of site activity.

Deliverables: PCC briefing materials.

Task Order Available: Yes, but only for the preparation of the PCC briefs. Conducting the brief is the responsibility of the TPE, the COTR, or the Alternate COTR

CM Activity PROGRESS PAYMENT FUNCTIONS

Description Receive, record and distribute contractor invoices for review and approval and make recommendations to the Contracting Officer for progress payments to the construction contractor per FAR, contract requirements, and NASA LaRC procedures.

Verify the work in place matches the percent complete amount on the invoice. **Make** recommendations regarding retainage. **See** Appendix (7) for **FSED instructions** on specific aspects of progress payments

Primary Interests

AD: **FAR** and contract compliance. Avoid over/under payment.

FSED: Avoid over/under payment

CSU: Avoid payment for rejected or unapproved work or materials.

Support Provided:

FSED: Verify work in place is accepted. Resource for technical compliance. Recommends payment amounts to the contracting officer based upon progress of the work. Provide COTR and CMT required signatures.

CSU: Verify percentage complete.

Process Decisions

Do invoice amounts match accepted work in place?
Is construction on schedule? What is the appropriate percentage for retainage?

Process Requirements

Contractor's invoice.
Inventory of work in place.
Updated construction schedule.

Deliverables

Progress Payment Logs & Certified Payroll logs
Monthly Progress Payment Analysis Worksheet

Task Order Available

Yes. Support services to evaluate percentage complete and to review certified payrolls are included in standard **scope** of work for inspection task orders. Progress payment analysis, if desired, is Listed separately in the CM **task** order.

PROCESS NARRATIVE for Progress Payment Functions

Construction contractors depend on timely progress payments to finance operations. Moreover, **fair** and timely payments for completed work are required under **FAR** Clause 52.232-27, Prompt Payment for Construction Contracts, which is included in most NASA LaRC contracts. The clause states **that** progress payments are due 14 days after receipt of the contractor's payment request by the Government billing office. The clause also obligates the Government to pay an interest penalty if it fails to pay an approved progress payment by the due date.

Sometimes, progress payments generate disagreements between the contractor **and** the Government because contractors tend to error on the side of overstating the amount of work in place while Government agents are primarily interested in avoiding overpayment for the value of work completed.

The Inspector and the general contractor should reach a consensus on the percent complete to be invoiced each month-before the general submits his voucher.

Reaching a concurrence between the contractor and the government on the percentage of the work completed before the contractor makes a formal billing is advantageous to both parties. It helps prevent the construction contractor from inadvertently overpaying subcontractors and vendors and reduces the likelihood that non-conforming work will be paid for.

An approach that **has** proven effective in determining the value of completed work is for the contractor's superintendent and the Government inspector to independently review work in place, then, meet to jointly develop completion percentages. Using **this** approach, the contractor can be reasonably confident of **being** paid the amount requested and the Government can **be** confident that processing the payment request will proceed smoothly and quickly.

Invoice Routing—(See Attached Process Chart)

Contractors send pay requests to Commercial Accounting **Financial** Management Division (FMD). FMD verifies packages are complete and properly certified.

Following its review, FMD sends copies **of** the contractor's detailed breakdown of completed work to the CSU, MS/428. **If** not consulted by the contractor prior to submitting the payment request, the CSU validates the contractor's stated completion percentages and verifies that the breakdown is based on an approved schedule **of** values. Over-billed line items are marked to reflect the percent complete recommended by the CSU. Otherwise, completion percentages are reviewed to verify that completion percentages and unit prices on the payment request agree with the values previously agreed upon.

The CM should evaluate the contractor's progress against the current approved progress schedule and notes variances. **If** actual progress has not kept pace with the schedule, grounds for retention may exist. **Also**, if the contractor's progress is such that completion of the work within the contract performance period appears doubtful, a "cure notice" may **be** required to protect the government's interests. A "cure notice" is a letter signed by the CO, detailing the specifics of a contractor's faulty performance and requesting a detailed corrective plan of action.

Under FAR Clause 52.232-5, Payments Under Fixed-Price Construction Contracts, allows the CO to retain a maximum of 10% **of** the payment amount **if** the contractor's progress is judged to be unsatisfactory. A test of unsatisfactory progress includes:

1. Actual work in place **is** less than planned for the payment request date as shown **on** the current approved progress schedule.

2. The contractor's lack of progress **is** due predominantly to **his failure** to diligently prosecute the **work**. Delays **caused** by conditions, which have **affected** the contractor's progress but were beyond his control, **do** not constitute unsatisfactory performance. Change orders, unforeseen site conditions, and work delays related to unusually adverse weather **or** conflicting government operations **are** examples of mitigating circumstances which should **be** considered when evaluating retainage amounts.

For a more detailed treatment of payment criteria for construction contracts, refer to FAR Clauses 52.2362; 52.243-4; 52.249-10 and 52.222-7

The CM **should also** verify that the contractor's certified payrolls are accounted **for**. Certified payrolls, fully and correctly executed, provide evidence that the contractor **is** complying **with** contract **labor** standards. Missing payrolls and payroll discrepancies may be **grounds for withholding funds** to **finance** potential labor violations.

The CM presents **his** findings and recommendations to the COTR who assesses the **recommendation** and makes final recommendations for payment to the CO. Recommendations to retain **or** withhold funds must **be** justified in writing.

The Contracting Officer authorizes payment

Procedure Deliverables

1. Annotated copy of contractor pay request showing recommended changes. (As required)
2. Report on Analysis of Contractor's Progress.
3. Listing of missing payrolls and payrolls referred to Industrial Relations Office.
4. Log of contractor's pay requests

PROCESS INVOICES ¹

CONSTRUCTION CONTRACTOR	CONSTRUCTION MANAGEMENT	PROCESS CONTROLS	PROJECT MANAGEMENT (COTR/TPE)	CONTRACTING (CO/PIO)	FINANCIAL MANAGEMENT
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CONTRACTED SERVICES OPTIONAL

INHERENTLY GOVERNMENT FUNCTIONS

RECEIVES
INVOICE:
VERIFIES PACKAGE
COMPLETE

LOGS DATE
PRECEDING
ACTIVITY
COMPLETED

VALIDATES
INVOICE:
MAKES
CORRECTION AS
WARRANTED ²

EVALUATES GC'S ²
PROGRESS:
NOTES VARIANCES
FROM APPROVED
SCHEDULE

VERIFIES
RECEIPT AND
ACCURACY OF
CERTIFIED
PAYROLLS
NOTES VARIANCES ²

RECOMMENDS
AMOUNT OF
PAYMENT/
RETENTION

LOGS DATE
COMPLETE

AUTHORIZES
PAYMENT

CORRECTIVE
ACTION
WARRANTED

ISSUES
CURE
NOTICE

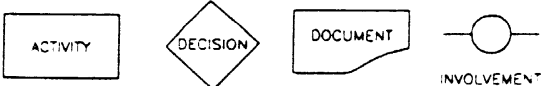
ISSUES
PAYMENT

CURE

CHECK

LOGS DATE
PRECEDING
ACTIVITY
COMPLETED

LEGEND



NOTES:

1. MAXIMUM TIME ALLOWED TO COMPLETE ENTIRE PROCESS
14 CALENDAR DAYS
2. TYPICALLY PERFORMED BY INSPECTION SERVICES

**PAY
CHART**

CM Activity **PROGRESS SCHEDULE FUNCTIONS**

Description Analyze the contractors baseline schedule and monthly schedule updates, including both completed and planned work, to assess contractor's compliance with required completion dates. Compare schedule updates and projections to actual work in place. Where appropriate, investigate solutions to pending schedule constraints. Prepare response or cure letter to contractor as appropriate.

Primary Interests
AD: Schedule maintained. Avoid delays and claims.
FSED: **FAR** and Contract compliance. Avoid delay claims.
CSU Contract compliance. Schedule allows **quality** workmanship and adequate **inspection**.

CUSTOMER Coordination with facility activities.

Support Provided:
CSU: Verify contractor's work in place status.

Process Decisions Is contractor adequately prosecuting the work? Are schedule constraints and delays apparent? If so, can they be avoided by appropriate management action?

Process Requirements Contract schedule requirements. Change order effects. Contractors work history. Documentation of site activity.

Deliverable 1. Milestone schedule and monthly reports
2. Progress photos

Task Order Available Yes

PROCESS NARRATIVE for PROGRESS SCHEDULE FUNCTIONS

Contractors are required to submit a monthly progress schedule consisting of a chart and a technical narrative. The chart compares the contractor's assessment of actual progress to date in completing the various parts of the project with planned progress, as reflected by the contractor's latest approved progress schedule.

Monthly progress schedule updates should be critically evaluated to determine if the contractor's current **operating** schedule is realistic; that is, can the contractor achieve the milestones indicated given the project's current status and the contractor's recent performance. If the schedule appears unrealistic, the contractor should be asked to explain how the milestones indicated will be achieved, and to present evidence to support questionable facts and assumptions. If, after discussing the schedule with the contractor, the reviewer remains skeptical, he should present his findings and recommendations to the COTR for further action.

THE CRITICAL PATH AND ITS LIMITATIONS

A construction project can be broken down into a collection of activities, some of which cannot begin until others are complete. Such activities are commonly called "dependent" activities. For example, a logical progression for constructing a building is site work, foundations, floor slab, structural framing, walls, roof, and interior finishing. Every activity in this sequence is "dependent" upon completion of the one immediately preceding it.

The sequence of dependent activities that span the longest time period on a project is called the "critical path." Every additional day required to complete a critical path activity extends the completion of the project one day. Likewise, completing a critical path activity one day earlier than expected reduces the projected completion date by a day. A manager interested in knowing whether a project will finish on time should focus primarily on critical path activities.

Critical path scheduling methods are powerful analytic tools, unfortunately, determining a project's critical path is not a simple process. Even with the current scheduling software, scheduling a project and generating a critical path schedule is time consuming. The critical path is typically a function of the methods employed by the construction contractor, so it is difficult for a CM to develop an independent critical path schedule. Even if the contractor provides a critical path schedule, analyzing it in the limited time available is often difficult and leads to imprecise conclusions about the progress of the job.

USE OF A GOVERNMENT MILESTONE SCHEDULE

An alternative exists for the CM who wants to verify contractor progress and check schedule projections without dedicating large amounts of time to critical path techniques. It involves using a milestone schedule to establish completion dates for critical events. Unlike the critical path schedule, it is not concerned with the sequence or duration of various activities. Instead, milestones, or significant points in the construction process, are singled out from the overall project. Expected dates for achieving the milestone are set from the contractor's overall project schedule.

A milestone schedule is developed by analyzing the contractor's schedule of construction which is a required submittal under the contract. Key events such as submissions for approval and delivery of long lead items, completion of underground work, drying-in a structure, utility tie-ins, etc., are extracted from the contractor's project schedule. Appropriate dates are fixed for each event.

A planned milestone schedule can be developed from the contractor's initial progress schedule. The analysis of subsequent schedules then reduces to comparing the current milestones to those originally projected.

If the contractor submits a revised schedule, the revised dates for the milestones can be determined so that future schedule submission can be compared to the updated milestone schedule.

Data **base** applications provide a convenient means **for** managing milestone schedules. Appendix (8) provides a sample data base **structure**, adaptable to DBASE III Microsoft ACCESS **or compatible** applications, which can be used to create and manage a milestone schedule.

Maintain Photographic Records of Job Progress

Photographs are **useful** in documenting construction progress, property damage, technical details, materials used, methods **of** installation, and preexisting site conditions.

The **Primary** purpose **of** progress photographs **is to show** the **amount and type of work** completed since the last progress photographs were taken. **Progress** photographs are **useful (1)** in presenting project briefings, (2) in motivating improved performance from a **poorly** performing contractor, and (3) **as evidence** to support adverse actions **based on** lack **of** progress.

To be useful as an historical record, a progress photograph must **be** labeled. The following information should **be** recorded on the back **of** every progress photograph: (1) Project, **(2)** Date & Time photograph taken, (3) Description of subject, **(4)** Location where camera stationed, (5) Direction **of** shot, (6) Photographer's name, (7) Serial number.

CM Support Services: Typical Statement of Work

Review the contractor's progress schedule submittals monthly. Evaluate the contractor's current operating schedule considering the current state of completion of each phase **of** the work and the contractor's recent performance. If the schedule appears unrealistic, identify specific areas **that** are questionable and explain your reasoning. Present findings to the project TPE. If authorized to proceed further, meet with the contractor's project manager to review the findings and to consider additional information the contractor might have to offer. Report findings and recommendations to the project TPE.

Deliverables. Report (monthly **or** as requested)

Information Reauired. Contractor's monthly report.

Develop a milestone schedule **based** on the contractor's approved baseline progress schedule. Monitor attainment **of** milestones and report dates when milestones are achieved. Update the schedule as appropriate based upon the construction contractor's updated schedule.

Deliverables. Milestone schedule. **monthly** reports.

Reauired Information. Contractor's approved schedule.

Compile a collection of progress photographs, which document construction. One set of photographs will be taken before groundbreaking. After construction begins, one set will be taken around the 15th of every month, until all construction work is finally completed and delivered. Submit one set of photographs to the project TPE by the 25th of every month

Deliverables

- 1. Progress Photographs (as requested)**
- 2. Negatives File (end of project)**

Information Required. Special instructions

CM Activity	CONDUCT COORDINATION MEETINGS
Description	At appropriate intervals, conduct job progress and coordination meetings with the general contractor and other interested parties. Set agenda, record action items, issue minutes. Manage action items.
Primary Interests	Purpose of meetings is to identify critical work or management activities, which must be completed, or problems, which must be solved to maintain job progress.
FSED:	Maintain schedule and contract compliance. Efficient problem resolution. Claim avoidance.
AD:	FAR and Contract compliance. Claim avoidance.
CSU	Contract compliance. Facilitate job progress.
CUSTOMER:	Coordination with facility activities.
Support Provided	
AD:	Resource for FAR compliance.
CSU:	Coordinate on-site activity. Monitor job status.
Process Decisions	Is work progressing on schedule and per contract requirements? Are there any apparent conflicts or pending delays? If so, can they be mitigated?
Process Requirements	Contractor's updated schedule. Change order status. Submittal status. Knowledge of FAR and contract requirements.
Deliverable	Meeting agenda. Meeting minutes with action items list.
Task Order Available	Yes.

PROCESS NARRATIVE for Construction Coordination Meetings

Coordination meetings with members **of** the contractor's project team provide an opportunity for parties to exchange information regarding the status **of** in-process actions, to discuss issues **of** mutual interest, and to engage in collective problem solving and decision making. Meeting topics typically include:

1. Scheduling issues: work progress. utility outages, submittals, material deliveries, and recovery plans.
2. Administrative issues: payments, **RFI's**, contract changes, proposals, disputes, and property transfer.
3. Technical issues: work around, quality standards.

CM Support Services: Typical Statement of Work

Conduct **periodic** coordination meetings with the construction contractor. Solicit agenda topics from the **contractor's** project manager, the project COTR, and the TPE. Distribute a meeting agenda **no less than** one working day before the meeting. Record meeting minutes and prepare action lists summarizing commitments made during meetings. Distribute minutes and action **lists** within 5 working **days** following the meeting.

Deliverables for Coordination Meetings.

Agendas

Meeting Minutes

Action **Lists.**

CM Activity TECHNICAL SUBMITTAL FUNCTIONS

Description Process and evaluate submittals to determine **that** proposed materials and methods comply with contract requirements. Make approvals, return for correction, or take other review action **as** required by contract specification Section 01300, "Submittals". Annotate and stamp submittals. Indicate required distributions. Check submittal **status** log for accuracy. Manage the submittal review process to maintain job schedule and avoid claims. (Submittal log functions and distribution are **handled** by the **FSED Submittals Processing Team**).

Primary Interests

FSED: **Technical** compliance. Action based upon engineering review.
DESIGNER: **Technical** compliance. Recommend action. Review **the submittal**.
CSU: Contract compliance. Facilitate work in place.

Support Provided

DESIGNER: Resource for evaluation of submittals. -
CSU Verify that materials delivered conform to approved submittals.

Process Decisions

Is submittal complete? Does it give adequate assurance that material or equipment will **meet** contract requirements?

Process Requirements

Contract requirements. Contractor's submittals.

Deliverable

Submittal status log. Status reports. Reviewed submittals.

Task Order Available

Yes.

PROCESS NARRATIVE for CONTRACTOR SUBMITTALS

Section 01300 of the construction contract specifications address submittal requirements in general and each technical section of the specifications lists the specific submittals, which the contractor is to submit prior to furnishing the material to the job.

Submittals are a very important and very time consuming construction management activity. Careful attention to the submittal process can help avoid delays and technical problems later in the job.

The CM is responsible for verifying that all submittals are properly reviewed to determine that the proposed materials described in the submittals comply with contract requirements. Submittal reviews are performed either by the CM, by the designer, or by other support engineers.

The submittal reviewer recommends action--approval, or otherwise--to the COTR who signs the submittal transmittal and takes action for the government.

The Submittal Process

The submittal process, as illustrated in the attached chart, involves 3 main government functions: (1) Process Control, (2) Technical Review and Approval, and (3) Submittal Management.

Process control involves the accounting of the submittal receipt, distribution and return to the contractor. Technical review **is** the comparison of the submittal to the contract specifications and submittal management **is** the oversight **of** the complete process for schedule and contract compliance.

The **three** key positions in the process are the Submittal **Processing Team** (SPT) the Reviewing Engineer (RE) and the COTR. These positions may **be** filled by separate individuals or the functions may **be** carried out by the CM. Typically, the **SPT** functions are performed by service contract personnel **or** A/E contract personnel.

The contractor sends all submittals directly to the SPT as directed by Section 01300. After logging receipt of a submittal, the SPT **forwards** the package to the assigned RE, with copies **of** the transmittal sheets to the COTR and the TPE.

After completing the review, the RE recommends appropriate action and fills out the corresponding boxes on the transmittal sheet. Packages are then sent to the COTR for approval.

*See Appendix 9
For Additional Submittal
Processing Information*

After the COTR signs the transmittal sheet, and completes the submittal **form** for correct distribution, the submittal package **goes** back to the SPT. For approved submittals, the SPT distributes per distribution instructions. For submittals marked "Returned for Corrections," the custodian **r e m s** the original package to the contractor and sends copies of the signed submittal transmittal to the COTR and PIO.

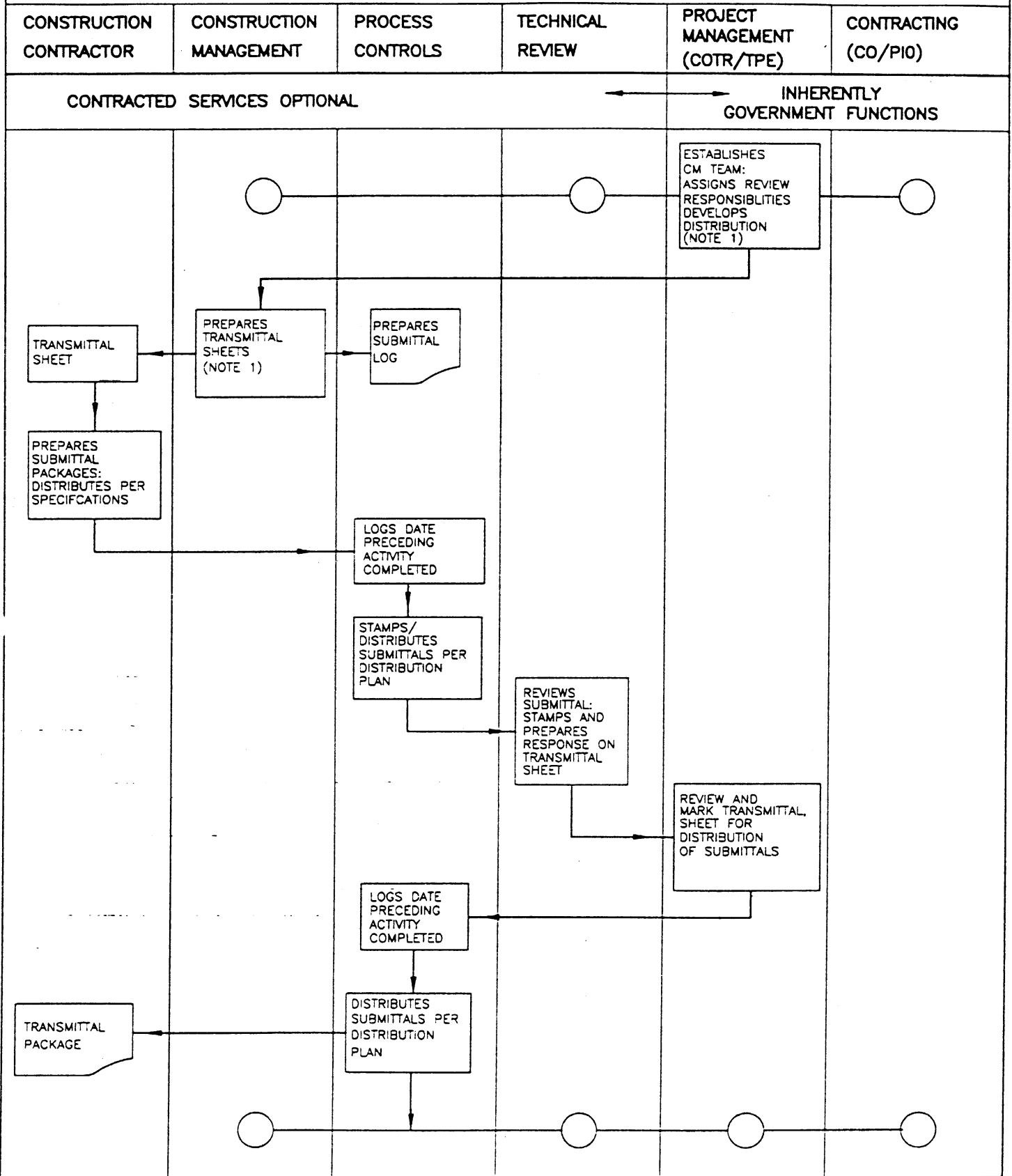
If a package is not reviewed and returned to the custodian within ten working days, follow up action is initiated.

Pre Construction Preparation for Submittal **Review**

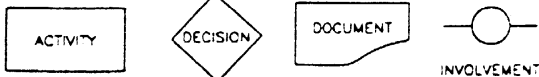
The submittal process requires the COTR/TPE to assign review responsibilities and develop distribution plans prior to the start of construction. Such plans should be developed during the latter stages of design when the project construction management team is being assembled. Such assures enough time to prepare a submittal log and submittal transmittal sheets.

The extent to which the COTR/TPE becomes involved with submittals can **be** tailored to suit individual project needs. For example, there may be submittals the COTR/TPE **may** want to review personally. In such cases, the COTR/TPE designates himself as the RE, and seeks technical assistance **from** supporting engineers as needed.

SUBMITTAL REVIEW PROCESS



LEGEND



NOTES:

1. COMPLETE BEFORE CONTRACT AWARD

SUBMITTAL CHART

The Submittal Log

A well designed, properly maintained submittal **log** is **required** to maintain effective control over the process (See Appendix 9). It serves as a consolidated **List** of all required submittals and provides the current **status** of each: Not received, **In** process, Approved, Awaiting resubmittal, etc. It **can** be used to identify overdue submittals, measure the time **required** to process completed submittals, and identify any in-process submittals.

A database application is recommended for efficient submittal management, Appendix (9) **contains** the output of a database structure, which **can be used** in **DBASE III Plus**, Alpha4, **Microsoft ACCESS** or similar applications, which will accommodate *.DBF formatted files.

The application in Appendix (9) accepts the **ASCII** file output **from** the SPECSINTACT/Excel submittal extract program developed by **FSED**. The submittal extract program searches the contract documents **for** submittal requirements and lists them **in** file output direct to an applications program. This minimizes the **need** to page through the specifications in a search **for** submittal requirements.

The CM, TPE or COTR should carefully review the **program** output and the contract specifications to verify that all submittals are listed. Typically, the extract program **only** lists 80 to 90 percent **of** the required submittals. Selected submittal entries may need to be added **manually** to the log.

CM Support Services; Typical Statement of Work

The standard statement **of** work in Section (4) lists the submittal management services that are available through the **FSED** support service contract. The submittal log is produced and submittal-processing **functions** are handled through the dedicated **task** order **for** submittal processing. This work is **performed** by **FSED's** support service or A/E service contract. **If** a **task** order **for** submittal reviews is not issued, the COTR or TPE must **perform** the function or find other resources to accomplish the following **tasks**:

(I) Manage the Submittal Process

Review the submittal logs prepared by the Submittal Processing **Team** (SPT). Make revisions as required. Provide periodic reports detailing the current **status** of all submittals, highlighting submittals requiring management attention, and **analyzing** the submittal process's effect **on** the project. When appropriate, take action to enlist the construction contractor's cooperation in satisfying contract submittal requirements.

Deliverables from the Submittal Management Process

- a) Update Submittal **Log**.
- b) Pre-printed submittal transmittal sheets to **be** used **by** the construction contractor in forwarding submittals to **NASA**.
- c) Reports.
- d) **Draft** correspondence to the construction contractor where appropriate to direct attention to delinquent or disapproved submittals.

(2) Review Technical Submittals

(1) Review submittals, **as** assigned, **to** determine whether products proposed for **use** in the construction satisfy contract **specifications**. Determine (a) whether the submittal package is complete, (b) whether the **data** provided is sufficient, and (c) whether the products described are acceptable. Fill out the transmittal sheet to indicate proposed action, and send the entire package **to** the COTR for approval.

Deliverables from the Technical Submittal Review

- (a) Reviewed package marked up with comments. Review memos and comments as required documenting the review. Notations on conversations and citations of reference which were consulted.

CM Activity PROCESS VALUE ENGINEERING PROPOSALS

Description Evaluate value engineering proposals and coordinate reviews **among** appropriate parties. Initiate actions to accept and implement the proposals if the evaluation leads to acceptance.

Primary Interests Maintain functional requirements. Reduce cost of work.
FSED: FAR compliance. Reduce cost of work.
AD: Maintain design criteria
DESIGNER: Maintain functional requirements.
CUSTOMER

Support Provided Resource to evaluate **VE proposal**
DESIGNER Verify facility operational needs are met **by** VE proposal
CUSTOMER

Process Decisions Will the **VE proposal** satisfy the technical and functional requirements of the project? Are other work elements effected, if so, is the effect accommodated? Should the proposal be accepted?

Process Requirements VE proposal. Contract documents. Customer's design criteria. Current project status information.

Deliverable VE Analysis Report

Task Order Available Yes.

CM Activity	CONTRACT DOCUMENTATION FUNCTIONS
Description	Maintain control of contract correspondence to assure that issues are handled promptly and effectively. Facilitate timely and accurate responses in order to avoid delays, rework, and disputes.
	Includes drafting correspondence for COTR or CO signature.
Primary Interests	
AD:	Correct interpretation of contract documents. Claim avoidance. FAR compliance
FSED:	Contract compliance. Claim avoidance. On schedule performance.
C S U	Correct interpretation of contract documents. Facilitate work in place. Avoid rework .
Support Provided	
AD:	Resource for FAR/contract requirements.
FSED PIO:	-Draft correspondence on selected topics.
CSU:	Provide contract status information.
Process Decisions	Are all issues being addressed to the satisfaction of both parties within approximately 30 days from the time the issue is identified?
Process Requirements	Contract requirements. Updated correspondence logs. Updated contract status information.
Deliverable	Contract correspondence log and file of contract correspondence
Task Order Available	Yes.

PROCESS NARRATIVE for DOCUMENTING CONTRACT ISSUES

Managing contract correspondence is a time consuming **task** and one which **has** significant effect on the timely progress **of** the work. Without an effective control system management action on issues raised in contract correspondence **is** often delayed.

Most letters **or** other contract documents require **a** response from the government--and the response is typically needed **within a** definite time **period** in order to avoid delay.

Document Control Using **a** Correspondence **Log**

A correspondence log is an effective tool for maintaining control of the process. It serves as a consolidated list **of** all incoming correspondence requiring action, identifies the primary action assignee and notes an action due date.

With Action by and Action to information concisely recorded, the log becomes a useful tool for managing timely responses. The log should be developed as a **data base** application in order to easily identify articles for which action **is** overdue. By sorting the log entries by due date, or by action

code, the **CM** can quickly obtain a **status** report **of** correspondence issues.

Incoming documents which require a response are logged in when received. If the **person** who logs the document will not personally respond to it it is distributed to the appropriate individual(s). When a response is **sent**, the date is logged.

By monitoring the log contents and the receipt and response dates a manager can verify that issues are being addressed. Delayed responses can be investigated and acted upon appropriately.

Requests for Information (RFI) Logs

The **RFI** is a **special** contract correspondence process through which one contracting party requests contract information from another. It is a formal **process that, although** intended to **be** easily **used**, is nonetheless, typically reserved for verifying that the other party is complying with the contract terms, or else, **for** requesting information needed in order to **maintain** compliance with the contract.

A predefined RFI **form**, like the sample in Appendix (10) provides a convenient format for making inquiries and replying to them. On a given job, the forms are sometimes numbered sequentially, however, parties to the contract typically **use** their **own** numbering systems and sequential numbering is often difficult to maintain.

The contractor or the Government may originate an **RFI**. For example, a contractor unclear as to the proper interpretation of an ambiguous specification submits an RFI to the Government. Likewise, a **TPE** with reservations concerning the methods a contractor plans to **use** in performing a task submits an RFI to the contractor.

Responses to RFI's are time sensitive. LaRC policy establishes a five working day response time. RFI's should be included in the correspondence **log** so that timely response can be maintained. **The** attached RFI chart **shows** the process.

CM Support Services; Typical Statement of Work

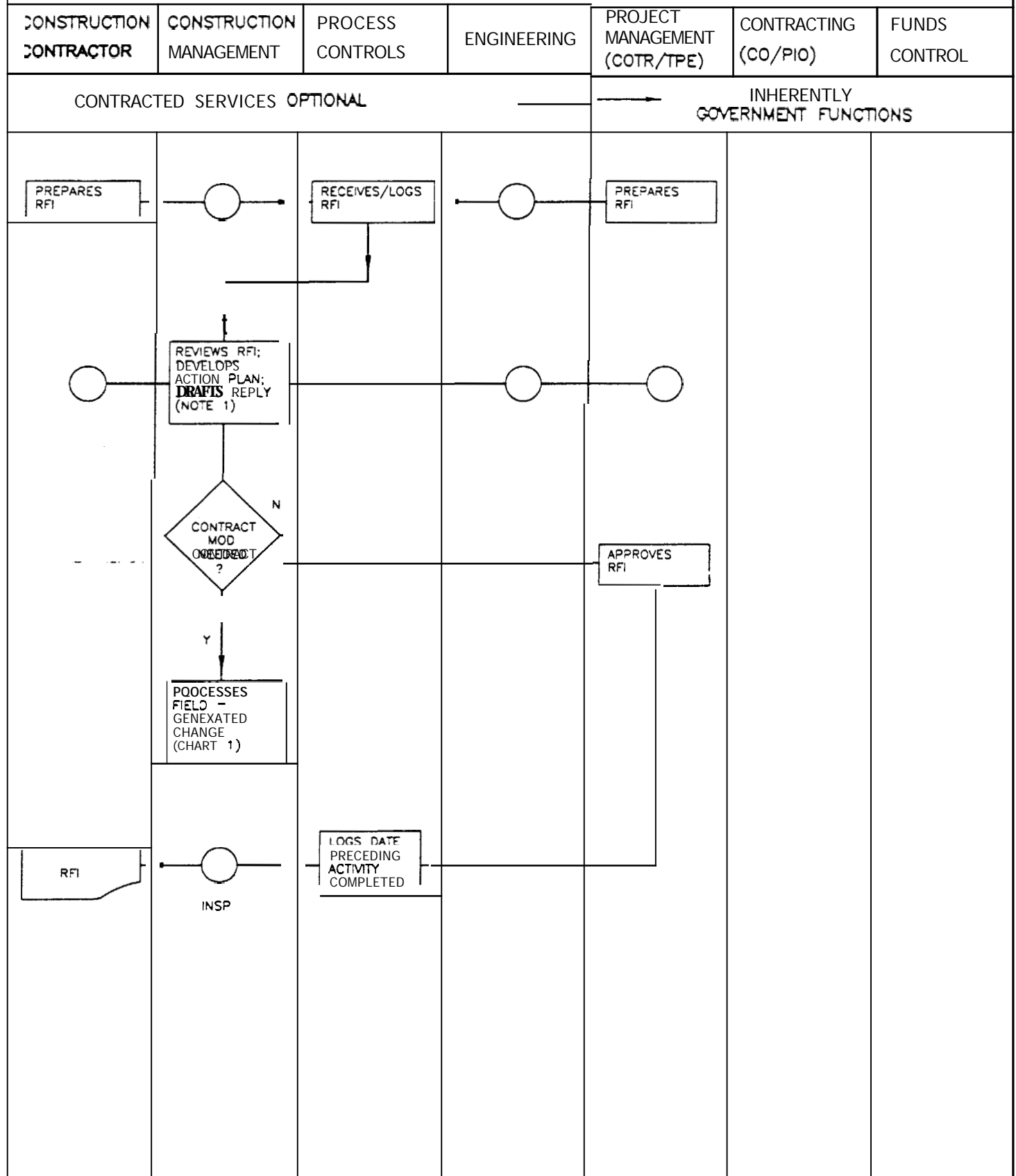
The standard statements of work in Section (4) **lists** the document management services that are available through the FSED support service contract. If a task order for document management is not used, the COTR or TPE must perform the function or find other resources to accomplish the following tasks:

a. Manage Contract Correspondence

- 1) Produce and maintain a correspondence log, which records the date of receipt, internal processing dates and response dates as well as brief notations of the issue contained in the correspondence.

Receive and log all incoming correspondence, assign action based on attached guidelines, and send copies of all correspondence packages to the COTR. A correspondence package typically includes: 1) copy of letter, 2) where appropriate: (a) draft response, (b) indication of **no** action required.

PROCESS REQUEST FOR INFORMATION (RFI)



LEGEND	<div style="border: 1px solid black; padding: 2px; display: inline-block;">ACTIVITY</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">DECISION</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">DOCUMENT</div>	<div style="text-align: center;">○ INVOLVEMENT</div>	NOTES: 1. MAXIMUM TIME ALLOWED TO COMPLETE: 5 WORKING DAYS	RFI CHART
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(c) supporting documentation.

Provide periodic reports **listing** unanswered correspondence, action due dates, and action assignees. **For** overdue correspondence **identify** interim actions taken to satisfy the originator and provide a revised due date.

b. Manage RFI's

1) Receive and log **RFI's** and distribute **to** the appropriate individual **for** action based on established guidelines. Send copies **of all RFI's** to the COTR. Include RFI's in the reports discussed above.

c. Deliverables for Correspondence and RFI Management

1. Correspondence **Log**

2. Periodic reports

CM Activity **INSPECTION FUNCTIONS**

Description Conduct **inspections**, witness tests and perform other QA/QC functions as required to verify that work in place complies with the contract documents. Facilitate on-site work to ~~maintain~~ job progress and avoid claims.

Develop inspection plans, risk management plans, test and inspection logs and other management and administrative tools to support ~~inspection~~ effort.

Perform inspection functions in accordance with the Langley Inspection ~~Manual~~ and other applicable NASA LaRC procedures.

Primary Interests

CSU: Assure contract compliance
DESIGNER: Adhere to critical design criteria.
FSED: Contract compliance. Claim avoidance. ~~Maintain~~ schedule.
AD: Contract compliance. Claim avoidance.
CUSTOMER: **Coordination** with facility operations. **Adhere to project** requirements.
FSSD/OSEMA: NASA LaRC operational requirements and Safety/Environmental compliance

Support Provided

AD: FAR and contract compliance
FSED Tech Branches & DESIGN: Technical resource for interpretation of contract documents
FSED CMT: Inspection Task Area Manager
CUSTOMER: Coordination with facility operational requirements
FSSD/OSEMA: Utility outage coordination/safety and environmental resource

Process Decisions

Is work in place in compliance with plans and specifications, including referenced specifications and building codes?

Process Requirements

Plans and specification with addenda and modifications.

Deliverable

Logbooks. Inspection Plans. Test Reports. Non-compliance.

Task Order Available

Yes. Refer to Langley Inspection ~~Manual~~ standard scope of work for inspection services, included in Appendix (12).

PROCESS NARRATIVE for INSPECTION FUNCTIONS

The Inspector **is** the construction contractor's **primary** point of contact for all matters related to performance of the contract work. In addition to verifying the contractor's compliance with the contract requirements, the inspector also:

1. Coordinates construction activities with other scheduled NASA activities.
2. Assists contractors in obtaining required NASA permits and clearances.
3. Coordinates utility outages.
4. Contributes to pre-job safety briefings.
5. Verifies pay requests and reviews contractor certified payrolls.
6. Verifies that the contractor observes accident reporting procedures.
7. Serves as a technical advisor to the Construction Manager, the COTR and the TPE in matters concerning field conditions and trade practices.

The Langley Inspection **Manual** contains detailed procedures related to **all** inspection functions assigned to the Inspector. See Appendix (12).

Inspection Plans

Inspection plans list a project's core inspection requirements. The purpose of the **plan** is to identify **high** risk elements **of** the work—sometimes referred to **as** "critical areas"—and provide a basis for determining the **minimum** level of effort needed to provide reasonable assurance that **the** contractor's work complies with the contract documents.

"Reasonable assurance" implies the assumption **of** risk. **Risk**, **as** the term is used here, **is** an evaluation of "exposure to loss." In the **inspection** planning process, risk is evaluated **as** the product of the loss if **an** accident occurs and the probability that such an accident will occur. Containment risk is made in terms of the level of inspection that is required to mitigate the risk.

In developing an inspection plan, (A partial inspection plan sample is included in Appendix (11).), subjective assessments of loss and probability of occurrence are substituted for numerical values. **Instead** of calculating risk by multiplying a probability by a loss factor, qualitative terms are related **through** a risk assessment matrix, shown in Appendix (11). The matrix suggests an appropriate level of inspection based **upon** the particular qualifications of **loss** and probability for each element of work.

Formulating an inspection plan consists of (1) identifying elements **of** construction, which are thought to have significant risk, and (2) selecting an inspection level for each element.

Verifying Technical Compliance and Use of Non-Compliance Notices

Verifying the construction contractor's compliance with the contract is the primary responsibility of the Inspector. Inspectors, however, do not have authority to reject work so their job is to discover construction defects, point them out to the contractor, and verify the correction of those defects or **notify** appropriate parties that the defects remain uncorrected.

Incidents involving non-conforming **work** should be resolved by the inspector and the contractor's superintendent arriving at a mutually acceptable interpretation of what the contract requires and what the contractor will do to **fulfill** its contractual responsibilities. The Non-Compliance Report process, shown in the attached chart, addresses those situations where agreement cannot be reached **between** the superintendent and the inspector.

In such cases, the CM will review the facts, discuss the issues with the parties involved to clarify their positions, and assess whether a discrepancy exists. **If** the CM agrees that a discrepancy exists and the contractor continues to disagree, the CM will initiate a Discrepancy Notice (DN), after reaching concurrence with the COTR, usually in the **form** of an RFI.

The DN informs the contractor that a construction discrepancy exists and requests the contractor to either correct the discrepancy **or** state in writing **his** interpretation of the contract and how the work conforms.

PROCESS NON-COMPLIANCE REPORT

CONSTRUCTION
CONTRACTOR

CONSTRUCTION
MANAGEMENT

PROCESS
CONTROLS

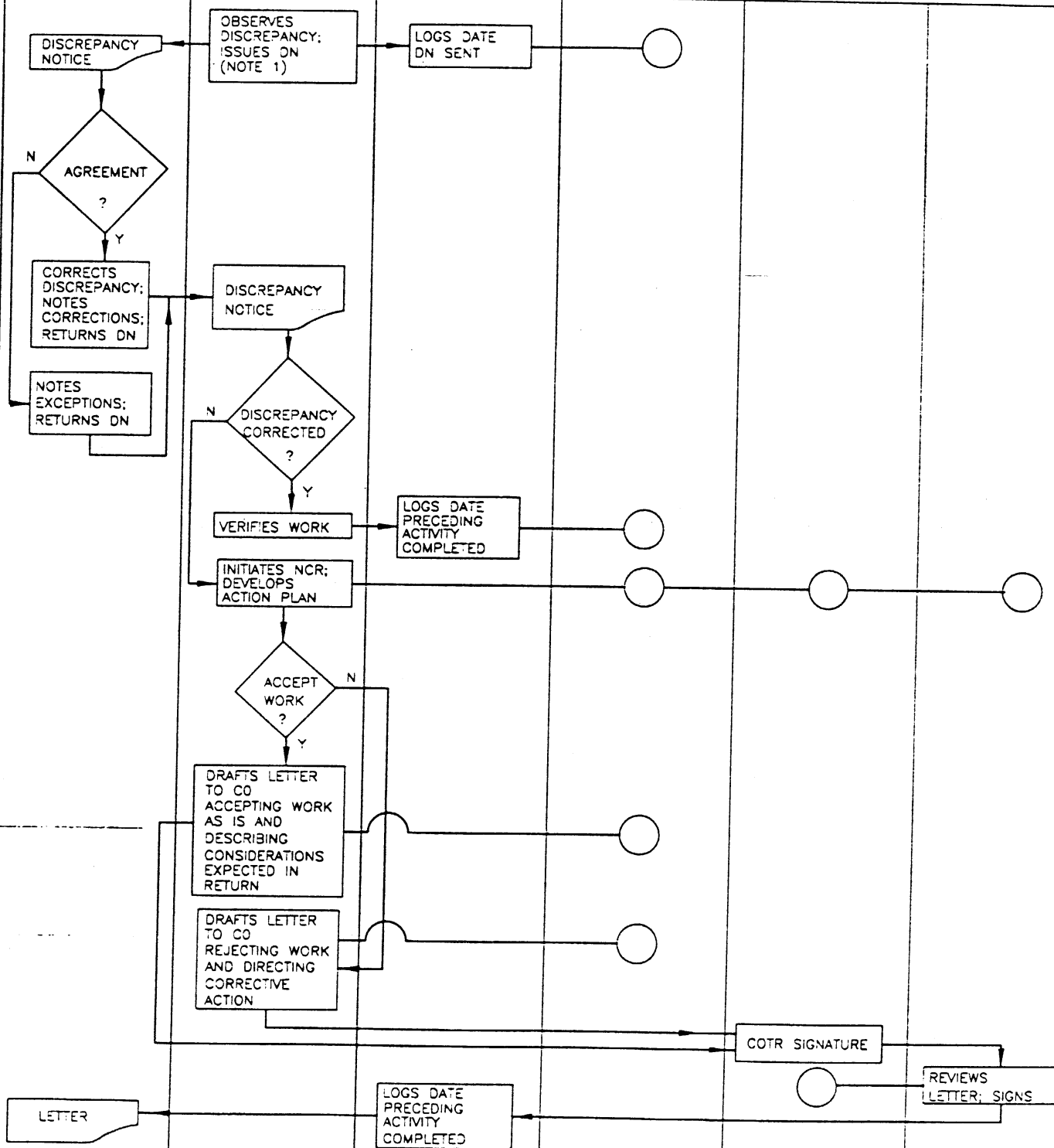
ENGINEERING

PROJECT
MANAGEMENT
(COTR/TPE)

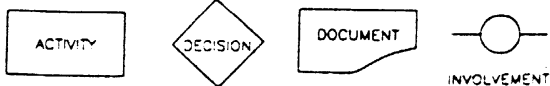
CONTRACTING
(CO/PIO)

CONTRACTED SERVICES OPTIONAL

← INHERENTLY
GOVERNMENT FUNCTIONS →



LEGEND



NOTES:

1. UNDER NORMAL CIRCUMSTANCES, A DN WILL NOT BE ISSUED IF THE CONTRACTOR ACKNOWLEDGES THE DISCREPANCY IMMEDIATELY AND AGREES TO CORRECT IT.

**NCR
CHART**

If, after 5 working days, the contractor does not respond to the DN or takes exception with the CM's position, the CM initiates a Noncompliance Report (NCR). The NCR process, as described on the back of NASA Langley Form "Noncompliance Report for Formal Contracts", Appendix (12), records input from appropriate NASA parties and recommends an appropriate course of action to the contracting officer.

An NCR can result in three possible outcomes:

- a. The Contracting Officer agrees with the contractor's interpretation of the contract and accepts the work as is.
- b. The Contracting Officer agrees that the contractor has not performed according to the contract and directs the defective work be corrected.
- c. The Contracting Officer agrees that the contractor has not performed according to the contract, accepts the defective work as is, and requests the contractor's deductive proposal for relaxing the terms of the contract.

Regardless of the outcome, the contractor must be informed of the Contracting Officer's decision. The CM prepares a letter for CO's signature which explains the government's position.

CM Support Services; Typical Statement of Work

The standard statement of work in Section (4) includes Inspection Functions which can be ordered as part of a task order for construction management or which can be ordered separately without including any other CM support for the project.

Unlike other CM services, Inspection Functions cannot normally be provided by in house FSED resources. As a minimum, all projects are typically supported with inspection services through the division's support service or A/E service contract. Special provisions must be arranged through the division's management if inspection services are not ordered for a project.

Deliverables for Inspection Functions

1. Inspection Logs
2. Inspection Plan
3. Non Compliance Notices
4. Other documentation as identified in the task order

CM Activity **MANAGE CHANGE ORDER PROCESSES**

Description Identify or confirm changed conditions and coordinate the development of change order documentation including RFC's, RFP's, drawing or specification revisions or other instructions to the contractor. Prepare government estimate, evaluate contractors proposal, conduct negotiations and issue change orders per FAR and NASA LaRC procedures.

Maintain control logs and manage the change process to maintain job progress and avoid delays, claims, or other adverse action.

Primary Interests

AD: FAR and contract compliance. Claim avoidance.
FSED: Cost and schedule control. Meet project criteria. Claim avoidance.
DESIGNER: Maintain design integrity. Fulfill engineer of record responsibilities.
CUSTOMER: Meet project criteria. Coordinate with facility operations.

Primary Process Decisions

Does a changed condition exist? How should it best be handled? If a change is issued, is the price reasonable? Are schedule effects addressed?

Deliverable

Change Order Log. RFC/RFP package.
Change Estimate. Negotiating Report.

Process Requirements

Status of work in place. Contract requirements and project requirements. Funding limitations.

Task Order Available

Yes.

PROCESS NARRATIVE for Managing Change Orders

A change order is any order issued by the Contracting Officer to modify, add to, or otherwise alter the work from that originally set forth in the contract. Under FAR Clause 52.243-4, Changes, any written or oral order by the Contracting Officer that is interpreted as a change order is to be treated as a change provided that the Contractor gives written notice of such interpretation to the Contracting Officer.

Under the FAR, actions or statements by the Government, not intended to be a change order, may be treated as one if the Contractor provides written notice stating the date, circumstances and source of the order that the Contractor is interpreting as a change. The FAR provides for adjustment to the contract price for changes that increase or decrease the Contractor's cost or the time required for performance.

Changes include additions to or deletions from the work, changes in the methods of construction or manner of work performance, changes in Government-furnished property or facilities, or changes in the contract time or order of the work. Changes may be executed to correct errors in the contract documents or they may be Contractor proposed deviations approved by the CO and where appropriate, by the designer.

Origins of Contract Changes

Contract changes originate from two primary sources:

1. Directed changes
2. Constructive Changes

Directed Changes. A directed change **occurs** when the Government directs **the** Contractor to perform work that differs from **or is** in addition to the contract-specified work. A directed change may be additive **or** deductive in nature.

Constructive Changes. Actions **or** failures to act **by the Government that** increase **the** Contractor's **cost and/or time of performance also constitute** contract changes. These are called constructive changes and **must be asserted** in writing by the Contractor. **Reasons** for constructive changes include:

- a. Defective Plans and Specifications.

This is defined as an error or omission in the contract documents which causes the contractor's work to **be** more costly or time consuming than originally planned.

The Government warrants the plans and specifications as accurate representations of existing conditions and new work to **be provided by** the Contractor. If the contract document **specify** an end product that cannot be produced **or** results that cannot be attained using current technology, the contractor cannot **perform** and is entitled to compensation for costs incurred in an attempt to perform to the defective specification.

- b. Higher Standard of Performance than Specified

If the Government requires the contractor to perform a task not specifically required by the contract or to use more expensive materials than those specified the contractor may have grounds for requesting a contract price adjustment.

This **type** of change can occur when a Government agent, in response to a contractor's request for information, clarifies a contract ambiguity and in doing so prescribes a higher standard of performance than originally interpreted by the Contractor.

- c. Improper Inspection and Rejection

If the contractor can show that the Government (i.e., the CM **or** the Inspector) rejected work which met the contract's specified requirements, the contractor may have grounds for seeking compensation for any rework he was required to perform.

- d. Change in Method of Performance

This **type** of change occurs when, in spite **of** the contractor's plans to accomplish a task in a specific manner, the Government directs the contractor to use another method. If the task is more expensive to perform

using the Government method, the contractor **may be** entitled to a contract price adjustment.

e. Change in Construction Sequence/Acceleration

If the Government prevents the contractor from performing according to its approved progress schedule or otherwise causes the contractor to deviate from its approved schedule, the contractor **be** entitled to a contract price adjustment for any resulting damages.

Acceleration refers to **an** act by a Government agent causing the contractor to **increase its** rate of production **This** usually occurs when a contractor **has** fallen behind schedule, **and** completing the construction by the original contract completion **date is** important to a user. **To be** entitled to a contract price adjustment based on acceleration, a contractor **must show (1)** that, **had** the contract **period** been properly adjusted for Government-caused delays at the **time** the order to accelerate was issued, the contractor would not have been behind schedule, and (2) that the contractor incurred additional costs as a result of the order.

Sometimes, a user will specify a required completion date based on a scheduled event that presumes construction is complete. **An** example is the scheduled **start** of a contract to install new equipment in a facility currently under construction. **In** such a case, if the expected cost of delaying the start of the follow-on contract exceeds the cost of accelerating the current contract, it may **be** appropriate to pay the Contractor for **an** accelerated completion.

Accordingly, suggestions to the contractor to accelerate the work for the sake of making up lost time is inherently risky. If it happens that (1) the contractor is behind schedule and no legitimate grounds appear to exist for extending the performance period. or (2) compelling reasons exist to complete the construction earlier *than* the contractor projects, accelerating contractor performance may be advisable. However, formulate a working plan and hold open discussions **with** the contractor before issuing a notice to accelerate the work.

f. Failure to Disclose Critical Information

If information critical to accurately estimating the cost of the work **is** not disclosed in the contract, and the contractor cannot **be** reasonably expected to ~~seek~~ and obtain that **information** from another source prior to preparing its bid, the contractor may be entitled to a contract price adjustment for any resulting damages.

There are five change orders processes:

1. Emergency Field Directed Changes (EFDC)
2. Field Generated Request for Change (FGRC)
3. Unilateral Change Order
4. Supplemental Agreements
5. Field Orders and User Requests

Process change orders as directed by **NASA LaRC 436** letter dated June 13, 1995, (Appendix (13)). It defines procedures for processing RFC's (Requests for Change) and EFDC's (Emergency Field Directed Changes).

EFDC's

These are written orders issued to overcome conditions, which **may** impede the contractor's progress. The COTR may independently issue EFDC's expected to cost less **than** \$7,000; EFDC's expected to exceed that amount must **be** co-signed by the Contracting Officer. Charts 1, 2, 3, and 4 describe the change process, including the development of an EFDC, and the issuing of a change order.

After an EFDC is issued, the CM develops a **Request** for Change (RFC) package, consisting **of** a detailed statement of work (SOW), a sketch if needed, and a Government estimate to complete the work. FSED **policy** requires delivery of this package to the Contracting Officer no more **than** 2 working days following the issue of an EFDC. Appendix (14) is a form for recording daily EFDC activity.

Field Generated Change Reauests (FGCR)

A FGCR arises from the discovery of field conditions not anticipated when the contract documents were prepared. Unrecorded underground obstructions and utility lines encountered while excavating are common types of conditions which prompt FGCR's.

As Chart 1, 2 and 3 show, the contractor is usually the first to discover an unanticipated field condition. The contractor's first point of contact following discovery is its assigned inspector. The contractor and the inspector ordinarily evaluate the situation and develop a proposed course of action.

The inspector then notifies the CM, who reviews the situation and any proposal presented; then, discusses the situation with the COTR, the TPE and/or the designer. Jointly they develop an action plan.

FGCR's often require immediate action to avoid **or** minimize work stoppages. **Work** stoppages not only delay completion of the work, but can result in damage claims from the contractor. **If** a work stoppage **has** occurred or is likely to occur before a written change order is issued, the Government may issue an Emergency Field Directed Change (EFDC), described above, after an acceptable **program** has been determined.

Unilateral Change Orders

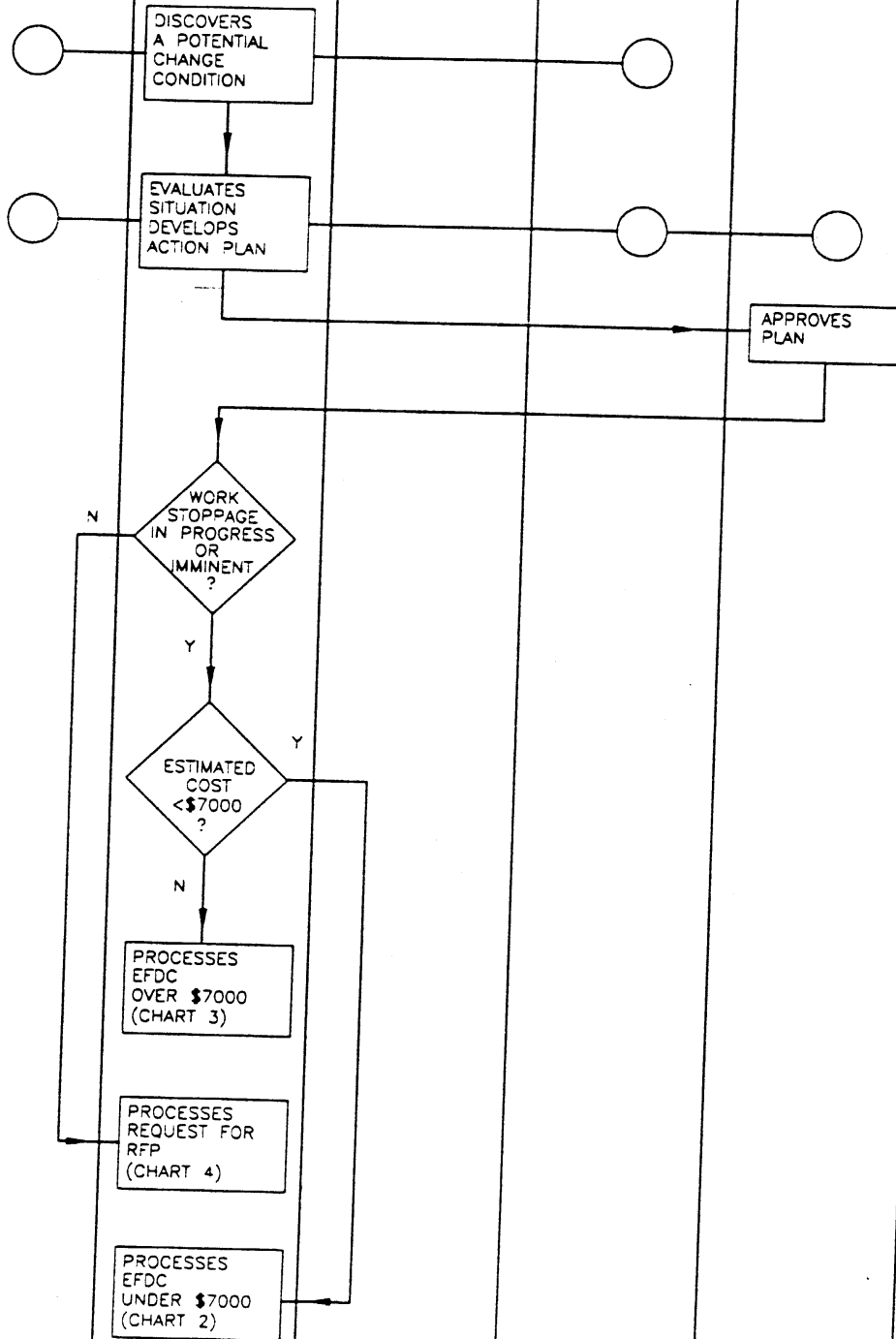
These are written orders issued by the Contracting Officer without the contractor's concurrence. Their primary purpose is to authorize payment for additional work that must be performed before a Supplemental Agreement is processed. They **also** provide a means of adjusting the contract price **or** performance period when negotiations fail to produce agreement between the contracting parties.

PROCESS FIELD-GENERATED CHANGE REQUEST

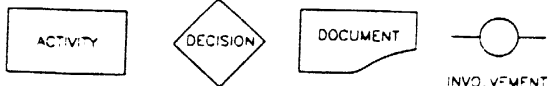
CONSTRUCTION CONTRACTOR	CONSTRUCTION MANAGEMENT	PROCESS CONTROLS	ENGINEERING	PROJECT MANAGEMENT (COTR/TPE)	CONTRACTING (CO/PIO)	FUNDS CONTROL
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CONTRACTED SERVICES OPTIONAL

← INHERENTLY GOVERNMENT FUNCTIONS →



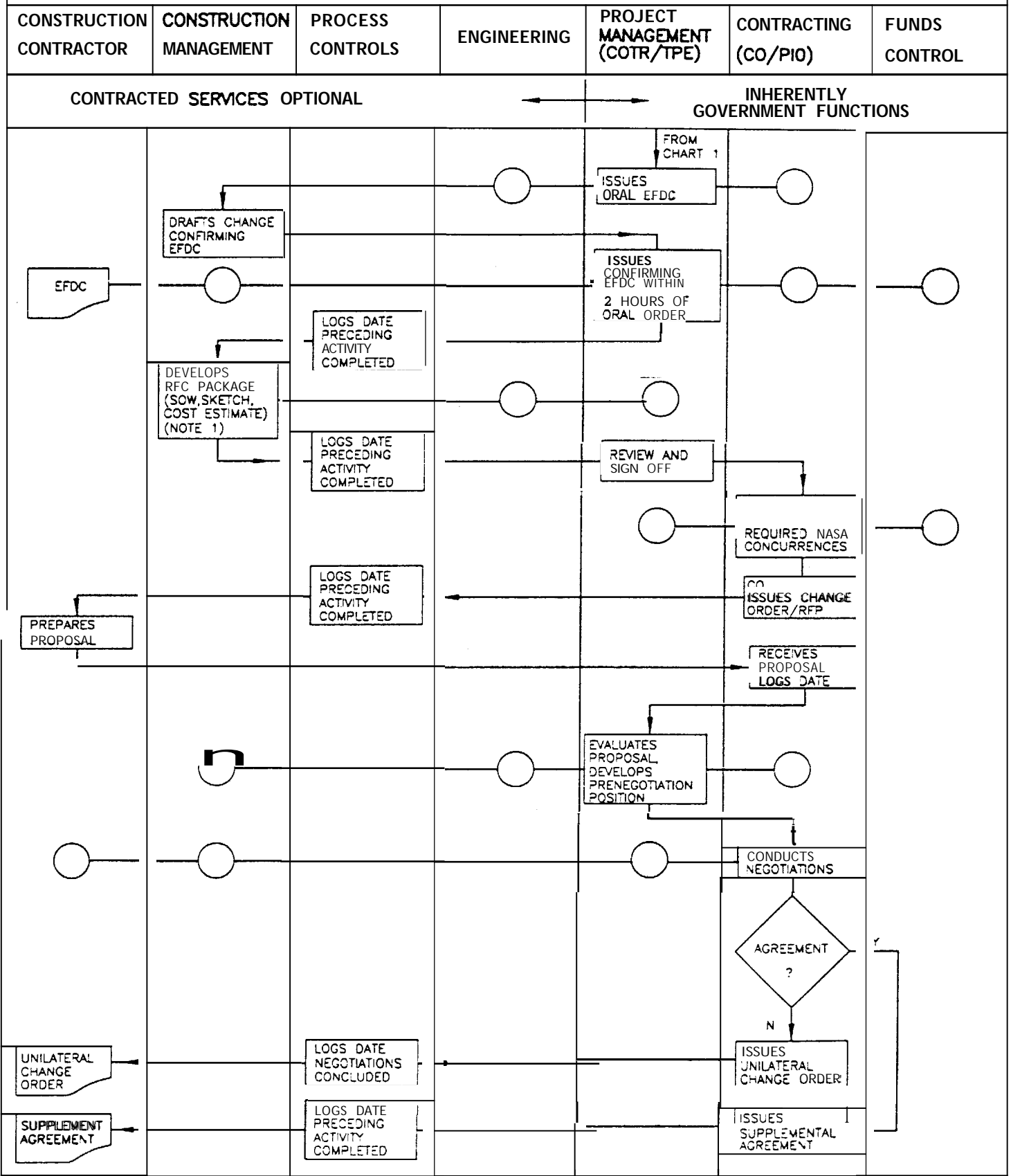
LEGEND



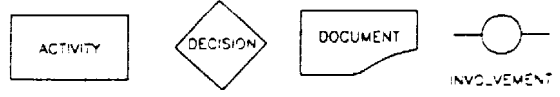
NOTES:

CHART
1

ISSUE EFDC UNDER \$7000



LEGEND



NOTES:

1 MAXIMUM TIME ALLOWED TO DELIVER RFC PACKAGE TO CONTRACTING OFFICER 2 WORKING DAYS

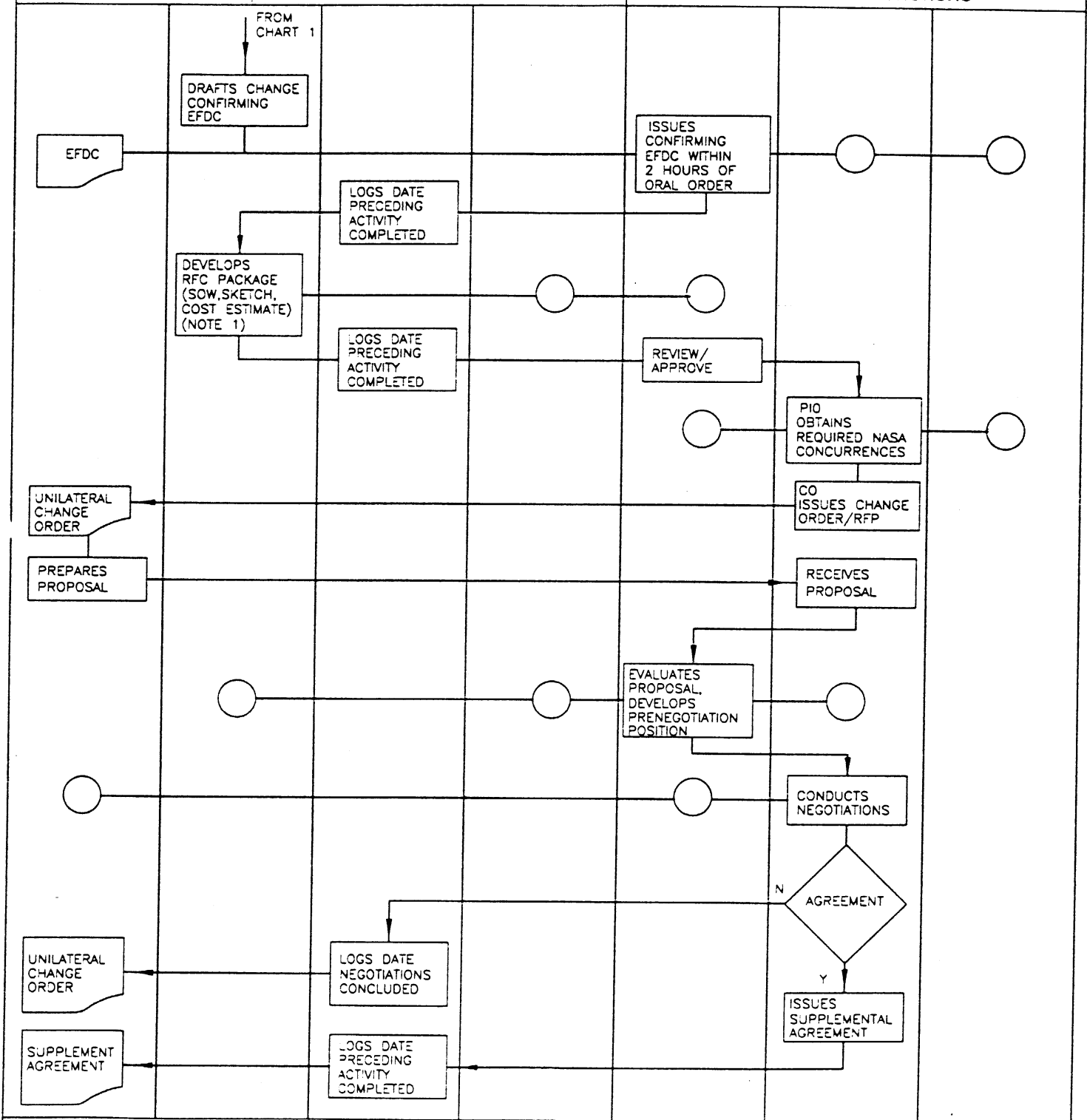
CHART 2

ISSUE EFDC OVER \$7000

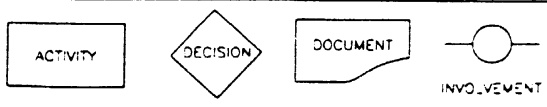
CONSTRUCTION CONTRACTOR	CONSTRUCTION MANAGEMENT	PROCESS CONTROLS	ENGINEERING	PROJECT MANAGEMENT (COTR/TPE)	CONTRACTING (CO/PIO)	FUNDS CONTROL
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← CONTRACTED SERVICES OPTIONAL →

← INHERENTLY
GOVERNMENT FUNCTIONS →



LEGEND

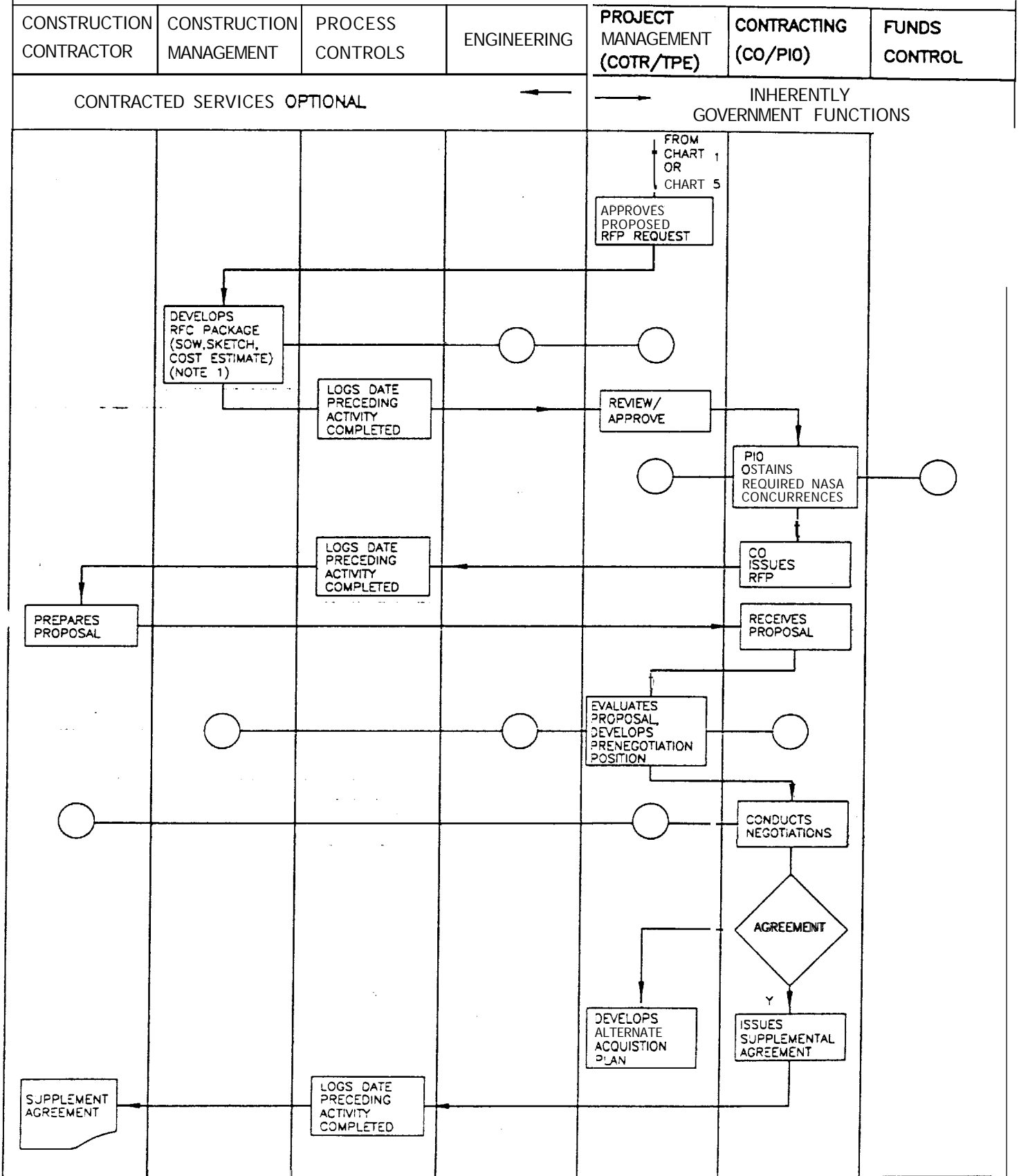


NOTES:

1. MAXIMUM TIME ALLOWED TO DELIVER RFC PACKAGE: 2 WORKING DAYS

**CHART
3**

PROCESS REQUEST FOR RFP



LEGEND <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px; width: 40px; text-align: center;">ACTIVITY</div> <div style="border: 1px solid black; padding: 2px; width: 40px; text-align: center;">DECISION</div> <div style="border: 1px solid black; padding: 2px; width: 40px; text-align: center;">DOCUMENT</div> <div style="text-align: center;">○ INVOLVEMENT</div> </div>	NOTES: 1. MAXIMUM TIME ALLOWED TO DELIVER RFC PACKAGE. 2 WORKING DAYS	CHART 4
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Supplemental Agreements

These **are** bilaterally executed contract modifications where both parties agree **on** the terms and conditions set forth. They are used to finalize **EFDC's** and Unilateral Change Orders. Unless conditions dictate that an EFDC **be** issued, a Supplemental Agreement authorizes the contractor to proceed **with** the change work. Supplemental Agreements are the preferred **means of** implementing contract changes. **Chart 2** includes the process **of** issuing the supplemental agreements.

Field Orders

These are written orders issued by the CM, and accepted by the contractor, **that** meet the following conditions:

- a) **Work** will result in no significant change in either the contractor's cost **or** time **of** performance.
- b) Work **will** not significantly alter the form **or** function of the completed facility.
- c) Work **can be** safely performed without specialized engineering support.
- d) The construction contractor and CM agree **on** the methods and materials to perform the work.

Field Orders must **be** signed by both the Construction Manager and an authorized representative of the construction contractor. When executed, information copies of field orders will be distributed as follows: COTR/TPE, **PIO**, Contract Specialist, and Safety.

A Field Order is not an official contract change order. Rather, it is a record of agreement between the contractor and the Government **on two** basic points: (1) how work not clearly defined in the contract documents will be performed, and (2) there is a negligible difference in cost and time to perform the **work**, when compared with the work as originally planned.

User Reauests

User requirements sometimes change after award of a construction contract, but before the new facilities have been completed and turned over by the contractor. Such an event often prompts a user to request a change to the contract. Chart 5 models the User Requested Change process.

Additive **user** requested changes must satisfy the following conditions for acceptance:

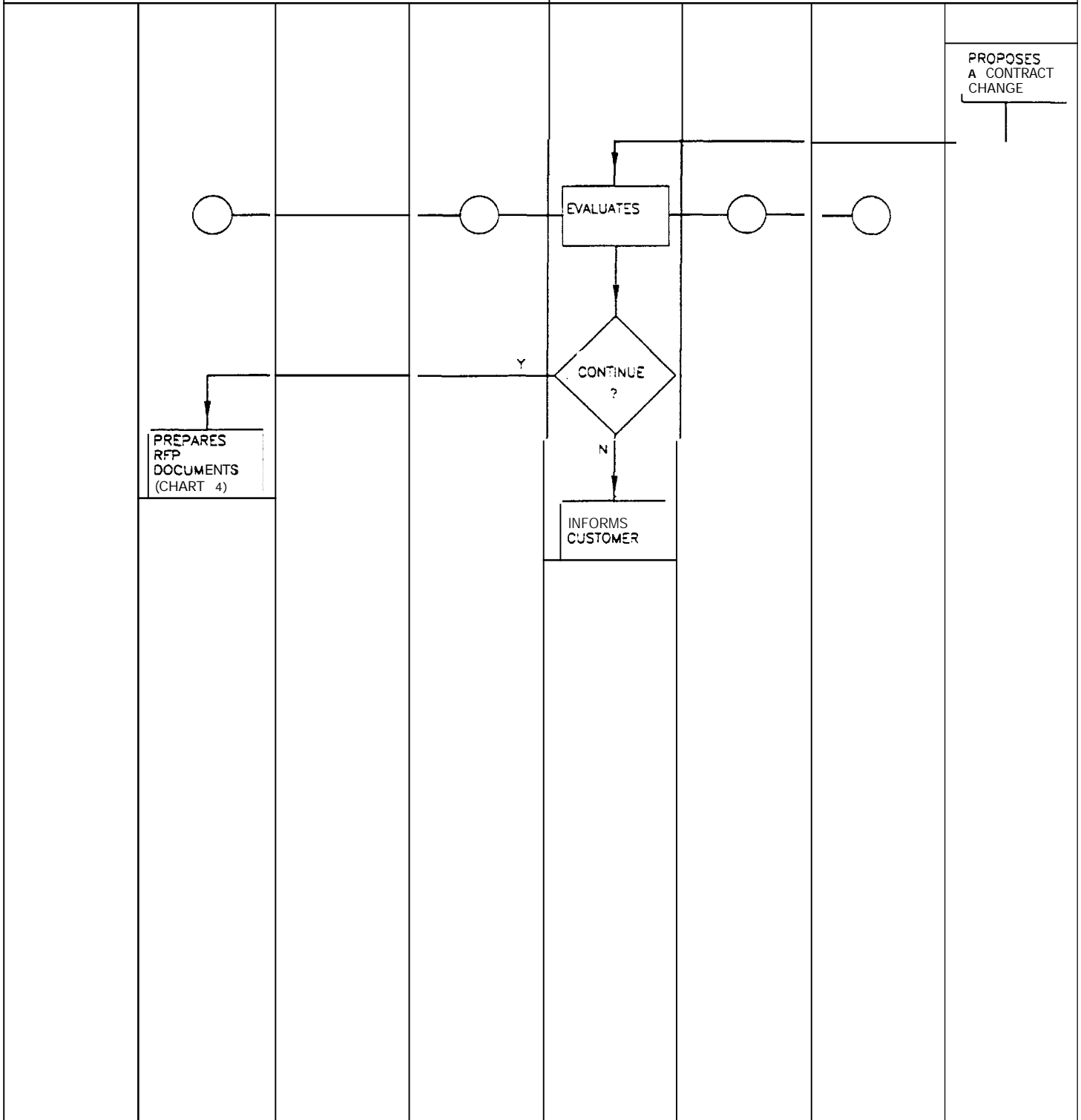
- a. Sufficient project funds must be available to finance the new work.
- b. The benefits of doing the work by change order to the contract, a sole-source procurement, must outweigh the additional cost.
- c. The work must be within the contract scope. **To be with** the contract scope, new **work** must fit the general description of work found in Section 01010 of the contract.
- d. Impact **on** project schedule.

The project COTR decides whether to recommend a proposal to the Contracting Officer **for** accomplishment by contract change order. In evaluating a proposal the COTR may enlist the support of the TPE, **PIO**, the CM, and others.

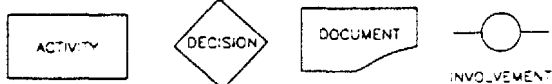
PROCESS USER-REQUESTED CHANGE

CONSTRUCTION CONTRACTOR	CONSTRUCTION MANAGEMENT	PROCESS CONTROLS	ENGINEERING	PROJECT MANAGEMENT (COTR/TPE)	CONTRACTING (CO/PIO)	FUNDS CONTROL	CUSTOMER
----------------------------	----------------------------	---------------------	-------------	-------------------------------------	-------------------------	------------------	----------

CONTRACTED SERVICES OPTIONAL



LEGEND



NOTES:

CHART
5

*Change Order Price Negotiation Is
An Inherent Governmental
Function And Is Not Performed By
A/E Or Support Service Contract
Personnel*

Negotiating Changes

Unless the Contractor responds to a change with a proposal **that** is agreeable to the Government in every aspect, the terms and conditions, which govern the change, will have to **be** negotiated.

Generally speaking, negotiation is the process leading to an agreement **or** understanding **about** such contract essentials **as price**, time, **specifications** and terms. The process **of** negotiation involves:

1. **The** preparation **of an** initial position by **each** party;
2. The **analysis** and evaluation **of** the other **party's** position;
3. Adjustment **of** one's **own** position to accept **as many of** the other party's views **as** possible.

For **most** changes, **only** the CO is authorized to conduct negotiations. However, the CM plays a strong supporting role. Defining a **scope of** work, preparing a Government estimate, analyzing the contractor's proposal, and recommending a pre-negotiation position are specific tasks that the CM may **be** expected to perform.

The process begins with developing a complete, detailed knowledge **of** the work or tasks included in the proposed change. **A** good way to gain such insight is to plan the work like a contractor. Developing a critical **path**, milestone, **or** gantt chart schedule showing **(1)** how the change itself will **be** accomplished and **(2)** how the change will fit within the existing project, is a planning approach commonly used by contractors that gives a very clear understanding of the work process. Besides providing basic understanding of how the work can be accomplished, the schedule approach also identifies manpower and material requirements for use in preparing a Government cost estimate.

A Government cost estimate is essential. The contract schedule of values is often a readily convenient source for pricing **data**. If the specific cost elements included in the change cannot **be** found in the contract schedule of values, check schedules from other contracts involving similar work.

Other possible sources include various construction cost-estimating guides available commercially.

*Refer to Part 31 of the FAR for a
discussion of allowable costs for
construction contract change
orders.*

The Government estimate should include all costs associated with the change, direct and indirect. Direct costs are the costs **of** labor, material, and equipment required to perform the change work. Indirect costs are all other costs incurred as a result of the change. These include the impact of the change **on** the performance **of** other contract work (i.e., lost efficiency) and the cost **of** extending the contractor's performance time (i.e., extended overhead).

Because the indirect costs mentioned above are difficult to estimate, they **are** often neglected until the contractor's proposal arrives, and then considered only **if** they appear excessive in the contractor's proposal. **This** approach is undesirable for at least two reasons: **(1)** it compromises the independence **of** the Government estimate, thereby biasing the outcome of negotiations in favor **of** the contractor; and **(2)** it extends the time required

to prepare for negotiations following receipt **of** the contractor's proposal.

Analysis of the contractor's proposal may disclose unsupported and unallowable costs. Unsupported costs **require** further **justification** for acceptance. Unsupported costs include unit prices that differ significantly ($\pm 10\%$) from comparable prices in the Government estimate and cost elements not included in the Government estimate. When **unsupported** costs are discovered, **ask** the contractor to provide additional information to explain how the **costs** were determined. Unallowable costs **are** expressly forbidden for recovery on Government contracts.

Costs **are** not the only negotiable elements to **be** considered in **preparing for** negotiations. Sometimes contractors will accept **a** lower price in exchange for additional contract time, especially if they are behind schedule and trying to avoid liquidated damages. **Relaxing** a specification can **also** produce price concessions from the contractor. Obviously, controlling time and quality are important; and the negotiator may decide that trading time **or** quality for price concessions is not in the Government's **best** interests. The point is to develop options, maneuvering room, for the negotiator in the event an impasse develops.

Begin negotiations only after an initial position has been developed. The CO and COTR may wish to involve other members of the project team directly, **or** she/he may enter negotiations with the contractor alone. The team approach is best if the change involves technology outside the **COTR's** field of expertise, or other team members have contributed **significantly** in preparing the Government position. Regardless of who sits as a member of the team, only the CO is authorized to act. The CO may select another member of the team to serve as spokesperson during negotiations; however, the CO should always be present and ready to intervene if necessary.

There are two ways in which the negotiator can approach negotiation:

1. Consider the package as a whole;
2. Treat each of the elements separately and resolve each, one at a time, to arrive at a package agreement.

Perhaps the most effective method is to combine both approaches. Discuss the items one by one, noting points of disagreement. Discuss the differences without trying to resolve each **as** they occur. Decide which are most important to the Government and which can be relieved to some degree. Listen attentively to the Contractor as he explains his position **on** each point with the idea of detecting those he considers most important. Try first to reach **an** understanding **on** what work and what **tasks** are involved. When you are in agreement **on** the "what" and the "how," **talk** price. Try to arrive at a general meeting of the minds so that the agreed upon solution will represent not an agreement on individual items but a resolution of all of the points of disagreement.

To keep a tactical advantage during negotiations the following principles are suggested:

1. Work **on** the big issues; don't get bogged down in details. Don't haggle.
2. Be flexible in your position. Know the point where you will accept

- compromise.
3. Offer alternatives.
 4. **If** an approach doesn't work, don't keep trying to **use** it **Use** another.
 5. Concentrate **on** "making a deal."

Of course, the act of negotiation achieves **nothing** if the negotiators do not have authority to commit to an agreement. Before beginning any talks, the spokesperson must have a clear understanding of the Government's negotiation objectives and what concessions can **be** made to achieve those objectives. The spokesperson should also confirm that the Contractor's representative has full authority to enter into a binding agreement.

Setting the physical stage for negotiations **is also** important- **Choose** a time and place away from the job so that all parties can work without **interruption**. Make sure that needed tools such as pencils, paper, copies of the contract documents, technical publications, etc. are available for reference. Never **start** before being totally prepared. Once started, try to initially pick points of agreement to set the tone of the meeting as cooperative rather **than** adversarial. If the precedent for agreement can **be** established early **on**, it will be easier to agree later **on** the tough issues.

Lastly, in spite of your best efforts, negotiations **may** fail to produce total agreement with the contractor **on** every aspect of the change. If that happens and an EFDC was issued, a unilateral change order may **be** required to authorize full payment to the contractor for the work performed. Before adjourning, attempt to settle with the contractor's spokesperson **on** the specific points of disagreement; then, if appropriate, tell the contractor the amount of any additional price and time adjustments you will recommend to the Contracting Officer. If an EFDC was not issued, consider other options in addition to a unilateral change order, such as (1) postponing the work until the current contract is complete, or (2) having the work performed by another contractor.

Successful negotiations are a zero-sum game; that is, they do not produce a winner and a loser. Successful negotiations are achieved if both parties leave a negotiation feeling that the agreement reached was fair and equitable and they can look forward to continuing to do business together.

Documenting the Change

Once negotiations are complete, a record of negotiations must be prepared. Documentation includes the following information:

1. Change Order identification **data**.
2. Recommended wording of the change,
3. Reason for the change,
4. Contractor's proposal (CP) and Government estimate (GE),
5. The Government's pre-negotiation position with a narrative describing how it was determined,
6. The agreed-upon contract price adjustment with a narrative describing how the parties resolved their differences,
7. The agreed-upon contract time adjustment with a nanative describing how it was determined,
8. A statement indicating whether the price includes secondary impacts or

not, the amount allowed for secondary impacts, and how that amount was determined.

Appendix (15) is a **form** for documenting contract change negotiations.

CM Support Services: Typical Statement of Work

1. Manage contractor Requests for **Information** (RFI's). Research contract documents and perform field surveys **as** required to collect requested information. Keep NASA project managers **informed** of **RFI's** and obtain their concurrence on responses. Respond to **RFI's** within 5 working days **of** receipt.
2. Review and develop technical proposals for accommodating unforeseen site conditions. Present proposals to NASA project managers (i.e., COTR and TPE) for approval. Draft Emergency Field Directed Changes (EFDC's) and deliver to the COTR within two hours of **an oral** order. Develop Request for Change (RFC) packages, consisting of a detailed statement of work (SOW), an engineering sketch, and a detailed cost estimate. Deliver RFC packages **for** changes that involve an EFDC **no** more than two working days after the EFDC is issued. **For** other changes, RFC delivery dates are negotiable. See Appendix (10) and Chart No's. 1 through 4, Pages 65 through 68.
3. Establish and maintain a change order management control system. Provide a (weekly/biweekly/monthly) report which summarizes the status of all in-process change orders.
4. Analyze the contractor's change proposals. Develop pre-negotiation cost objectives and provide supporting **data**. Provide additional assistance as requested by NASA negotiators.
5. Draft narrative reports documenting the results **of** negotiations. Deliver reports to the COTR five working days after negotiations conclude.

Deliverables

1. Reports summarizing CM performance processing **RFI's**
2. RFC packages, Written **EFDC's**
3. Change order Management Reports
4. Pre-negotiations objectives report
5. Records **of** negotiations.

Required Information/Prerequisites

1. NASA parties to be consulted **in** preparing **RFI** responses.
2. None
3. Management Objectives
4. Prerequisite: Prepared RFC package.
5. Prerequisite: Observed negotiations.

CM Activity MAINTAIN LESSONS LEARNED

Description Provide information to the project team regarding construction problem, misinterpretations, change orders and other on-site developments—knowledge **of** which may contribute to an improved facilities acquisition process. Maintain Lessons Learned files. Distribute to appropriate parties.

**Primary Interests
FSED:**

Process improvement. Better designs and facility lifecycles.

DESIGNER

Process improvement. Better designs.

CSU

Process improvement. More constructible designs.

**Primary Process
Decisions**

What could be done better to improve the quality **of** the constructed product? Where should the steps **be** taken? **Who** should **be** advised **of** the lesson learned?

—

Process Requirements

Knowledge of job progress. Contract plans and specifications.

Deliverable

Lessons Learned Report (Appendix 16)

Task Order Available

Yes.

CM Activity MAINTAIN AS-BUILT DRAWINGS

Description Review the contractor's redlined as-built drawings for accuracy and completeness. Make modifications **as** required.

Transfer **as** built redlines to CAD facility base-line drawings. For tunnel control systems and other work incorporated into the facility resume, **perform** point to point checks during construction and verify contractor's red lines. Obtain signatures and verify redline to CAD translation of point to point as-built control drawings.

Primary Interests

CSU: Verify contractor as-built and point to point redlines. Verify redline to CAD **translations.**

FSED: Accurate, timely as-built record and configuration control drawings. Conduct underground as-built surveys.

OSEMA: Configuration control integrity.
CUSTOMER Configuration control integrity and availability of as-built conditions.

Support Provided

CSU: Verify construction contractor's redlines.

Point to point verification for CCD work.

OSEMA: Resource for Facility System Safety Management.

Process Decisions

Are contractor's redlines accurate? Are red lines to CAD translations accurate? Proper signatures obtained? Distributions made?

Process Requirements

Contractor's as-built red lines.

Deliverable

CADD As-built files and disks. Provide cards for placement into engineering drawing files.

Task Order Available

Yes. The Langley Inspection **Manual** includes as-built **drawing** verification as a routine inspection function. (See Appendix 12).

PROCESS NARRATIVE for the AS-BUILT DRAWING PROCESS

FSED contract documents usually require the construction contractor to maintain a set of contract drawings that include all approved changes and as-built conditions. The contract also requires that the contractor keep these drawings continually updated and available at the job site. These drawings are commonly **known as** "As-builts."

Maintaining the as-built drawings is responsibility of the construction contractor, verifying that the contractor is doing it is the inspector's responsibility, and overseeing the complete as-built cycle and assuring updated drawings are delivered to the facility is the CM's **task**. The as-built process included:

1. Verifying that the construction contractor is maintaining as-built drawings **as** required.
2. Verifying that as-built drawings are complete and correct.
3. Revising record copies of the contract drawings to reflect as-built conditions when construction is completed.

Recommended Procedures:

1. Meet with the inspector and the contractor shortly after the job site office opens to **discuss** procedures for maintaining as-builts. Find out who the contractor has appointed to record changes and what controls have been established to ensure no changes are inadvertently overlooked. Also, outline for the contractor your **program** for fulfilling your responsibilities and jointly establish a system **for** labeling changes on the **drawings**.
2. **As** a step in the process of validating a contractor's pay request, verify **that** as-builts accurately reflect changes reported **as** 100% complete.
3. Verify that approved deviations authorized **by** field orders are recorded **on** as-builts. Work authorized by a field order is usually completed the same day the order is issued. Allow at **least two** working days following field order issue to **pass** before **checking as-builts**.
4. Review the contractor's as-builts when submitted at the end of the project to verify that all changes are accounted for. Verify point to point checks conducted for all designated control drawings.
5. Revise the original contract drawings to reflect changes shown in the as-builts.

CM Support Services: Typical Statement of Work

The standard statement of work in Section (4) includes support service for the Maintenance of As-Built Drawings. **If** a task order is not used, the COTR or **TPE** must perform the function or find other resources to accomplish the following tasks.

1. Verify that the contractor's as-built drawings include approved changes reported 100% complete by the contractor on a partial pay request. Verify that approved deviations authorized by field orders are recorded in the contractor's as-builts **5** working **days** after a field order is issued. Report cases of non-compliance to the COTR. Review the contractor's as-builts when submitted at the end of the project to verify that all changes are recorded. Verify point to point checks conducted for all designated control drawings.
2. Revise the **original** contract **drawings** to reflect changes **shown** in the as-builts.

Deliverables

1. Contractor redline drawings
2. Written report-noting discrepancies **on** as-builts as submitted
3. Finished Record Drawings
4. CADD discs
5. Drawing cards for each revised drawing.

CM Activity CLAIM PROCESSING FUNCTIONS

Description When disputes or potential claims become apparent, institute appropriate measures to record significant events as required to document job progress and contractual actions. Take appropriate measures to substantiate government and contractor actions for dispute and claim processing.

When claims develop assemble documentation, **evaluate** contractor **and** government positions and make recommendations for claim negotiations and settlement.

Primary Interests

FSED: Claim avoidance. Satisfactory settlement of disputes.

AD: **FAR and** contract compliance. Claim avoidance.

csu: Contract compliance. Facilitate work on site. Accurate job documentation.

Support Provided

Staff work required to document government actions and substantiate government position.

FSED:

csu: Verify on-site activity, site conditions, actual work sequences.

Process Decisions

Do job conditions warrant additional actions to collect job information and document on-site activity? What information is needed? How should it be collected?

What is best course action if a claim is filed? How should actions be pursued?

Process Requirements

Knowledge of job site conditions. Job documentation. Contract requirements.

Task Order Available

Yes.

PROCESS NARRATIVE for CLAIM PROCESSING FUNCTIONS

A claim is an action initiated to resolve a contractual point of contention between the Government and the contractor. FAR 52.233-1, Disputes, defines a claim as "a written demand or assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to this contract."

A claim is usually filed after the parties have tried and failed to settle an issue. Technically, a claim against the government does not arise until the contractor has asked for and received a contracting officer's decision which results in an unfavorable judgement against the contractor and which is then appealed.

Claims arise over a number of issues: (1) interpretation of the contract, (2) what constitutes extra work on the contract; (3) payments, (4) contract time extensions, (5) damages for Government-directed acceleration or slowdown, (6) damages associated with an Government-caused delay, (7) defective drawings or specifications, (8) unforeseen site conditions. In general, any issue whose outcome may increase the contractots cost or time of performance is a potential claim. Unilateral change orders and other

Government actions that interfere with the contractor's work plans often lead to contractor claims.

Documentation is an important element of any claims preparation strategy. Unrecorded facts supporting or refuting a claim are often difficult to establish after a claim is filed. The CM is responsible for documenting potential claims.

Photographs are an effective means of documenting field conditions, defective work or material or other physical evidence associated with a potential claim. However, care must be taken to properly label photographs likely to be used as evidence in resolving a claim.

A common point of contention is the cost of performing work associated with a contract change when the contractor is working under an indefinite quantity/undefinitized change or in the case of constructive changes. The best approach is to avoid these situations. If they do arise, however, controversies can be minimized if the parties jointly document the actual cost of performance as the work proceeds. Appendix (14) is a form designed for this purpose. It establishes what resources (i.e., labor, material, and equipment) were actually used on a specific task on a certain date.

Notify the COTR of all potential claims as soon as the issue is identified and understood.

CM Support Services: Typical Statement of Work

The standard statement of work in Section (4) includes support services for Claim Processing which can be ordered as part of a construction management task order. If a task order is not used, the COTR must perform the function or find other resources to accomplish the following tasks:

1. Document potential claims with photographs and daily reports itemizing related costs. Consider all unilateral change orders, Government interference, and situations likely to increase the contract's cost and/or time of performance as potential claims. Notify the COTR when a potential claim situation arises and solicit guidance as to the type and number of photographs to take. Provide the COTR an accounting of actual costs for potential claims three working days after the additional work is complete.

Deliverables for Claim Processing Functions

Photographs and Cost reports.

CM Activity **CLOSE OUT AND ACCEPTANCE FUNCTIONS**

Description Conduct acceptance and close out procedures from pre-final inspections through final inspection and punchlist completion. Assure completion of all contact close out and project start up activities.

Primary Interests

AD: FAR and Contract compliance. Prompt closeout. Avoidance of liquidated damages.

FSED: Contract compliance. **Expeditious** punchlist completion. Start-up enabling successful turnover to customer.

CSU: Thorough pre-final and final inspections. **Expeditious** completion of punchlist

CUSTOMER Project criteria met. **Expeditious** punchlist completion and facility turnover. Training and documentation delivered.

Support Provided

AD: Resource for expediting/enforcing punchlist completion and closeout.

FSED PIO: Prepare punchlist documentation. Document **final** inspections.

CSU: Verify that work in place is complete. Coordinate punch list completion. Generate pre-final punchlists.

Process Decisions

Are all start-up, turn over and close out requirements of the contract satisfied? **Any** unresolved issues? What actions are required to resolve them?

Process Requirements

Contract requirements. Project requirements.

Task Order Available

Yes.

PROCESS NARRATIVE for CLOSEOUT AND ACCEPTANCE FUNCTIONS

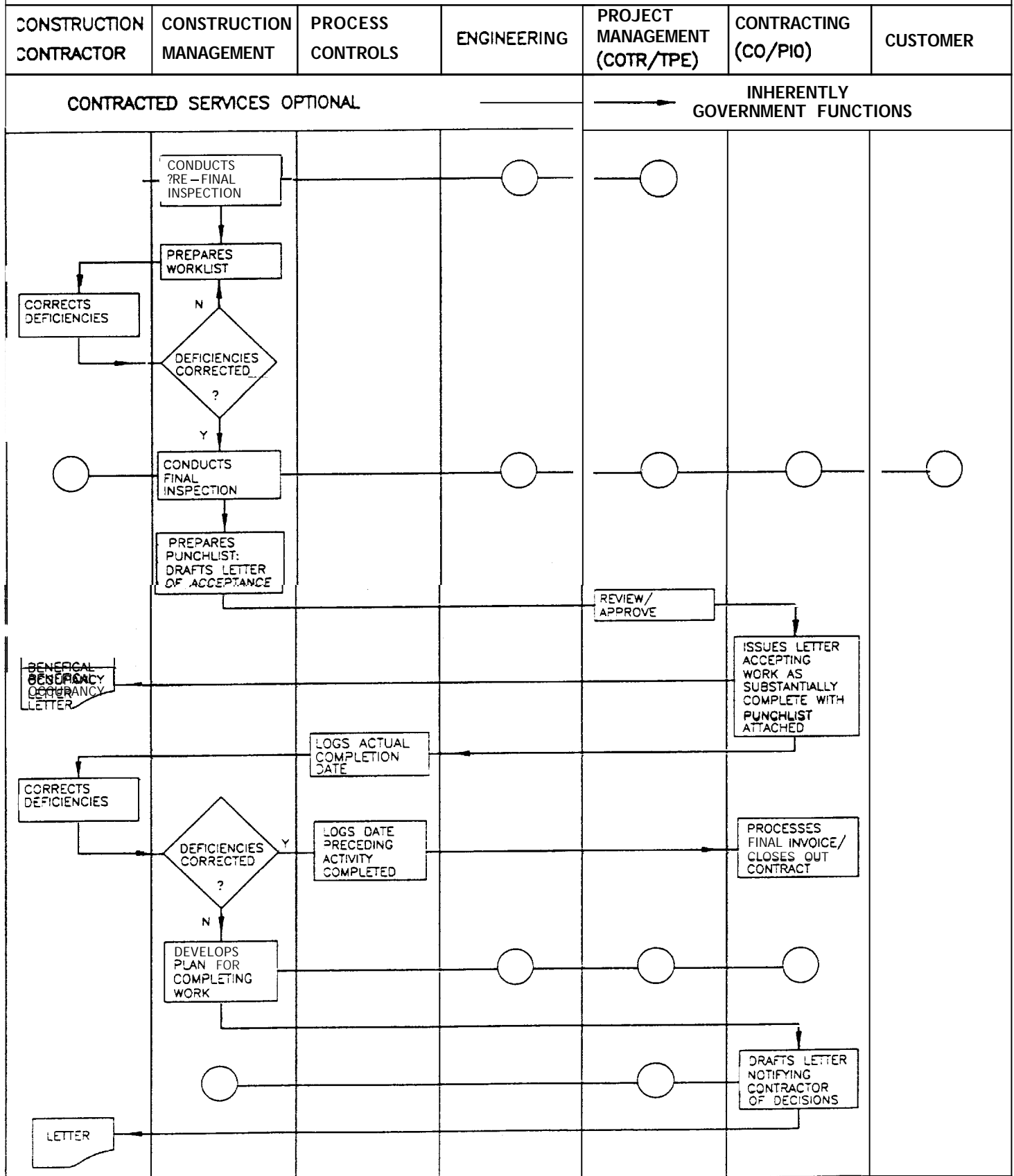
Contract close out functions are important to the satisfactory completion of a project. A marginally successful construction effort can be satisfactorily completed if close out proceeds well and an otherwise notable effort can be diminished if the contract closeout is long and drawn out and leaves issues **unresolved** or incomplete. The attached procedure **Chart 10** outlines the acceptance **and** closeout process.

A. The Prefinal Field Inspection

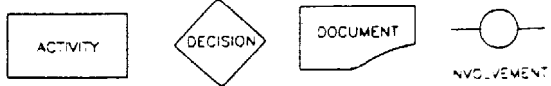
As project work nears completion, the CM and project inspectors meet with the contractor to discuss the process leading up to final inspection and acceptance of the completed work. Prior to that meeting, the inspectors work with the contractors field staff and subcontractors to prepare a prefinal checklist, which identifies all work that must be completed in preparation for the prefinal inspection.

When notified by the lead inspector that preparations are complete, the CM schedules a prefinal inspection. Participants should include, as a minimum, the CM, lead and support inspectors, and the NASA's COTR. Other parties, as designated by the COTR, may also attend. The primary purpose of the inspection is to identify any remaining discrepancies to be performed

ACCEPTANCE OF COMPLETED WORK



LEGEND



NOTES:

1. SEE APPENDIX 18

COMPLETE CHART

in preparation for the final inspection. Only work within the current contract scope may be included on the prefinal work list. Any additional work required to complete the project to the user's satisfaction is handled with a change order or performed under a separate contract after completion of the work in progress.

When the Contractor advises that the project is ready, the CM staff and the contractor jointly inspect the completed work. All discrepancies listed on the work list should be corrected before scheduling the final inspection. If the contract completion date is imminent and the user anxious to take beneficial occupancy, it may not be possible to delay the final inspection until all work identified in the prefinal is complete. Nonetheless, every effort should be made to bring the work to a level of completeness that will result in a minimum punchlist.

B. The Final Inspection

When the job is ready, the CM notifies all parties of a time and meeting place. The inspection party should include, at a minimum, the following individuals:

- o the prime contractor's designated agent.
- the CM.
- the lead inspector.
- the NASA COTR or designated agent (TPE).
- o User agents (Facility Coordinator, Research TPE).
- The Contract Specialist from Acquisition.
- The FSED Contract administrator from the PIO.

The CM records all questions and comments during the final inspection and, within two days, publishes minutes of the proceedings. Copies of the minutes are distributed to all members of the final inspection party and any others designated by the NASA Project COTR. A proposed final punchlist, screened and approved by the Project COTR, is attached. Addressees are requested to submit additional proposed punchlist items to the COTR within 5 working days.

C. Acceptance of the Work

The CM and FSED's PIO meets with the Contractor to establish a definite timetable for completing all remaining contract actions. PIO drafts a letter, for the CM and COTR's concurrence and the CO's signature, to the Contractor accepting the contract work as substantially complete and listing all punchlist items. (See Appendix (18).)

When notified by the contractor that all remaining construction work is complete or when the time for completing the work has elapsed, the inspector and as appropriate other project construction management team members and the contractor jointly inspect the work. If the work is acceptable and the contractor has fulfilled all other contractual obligations, the Contracting Officer invites the contractor to submit a final invoice. Otherwise, the Contracting Officer notifies the contractor that any actions remaining incomplete after a definite date will be completed by others and backcharged to the contractor. Both of these transactions are in writing. FSED's PIO and the COTR, in consultation with the CM prepares these

letters for the Contracting Officer's **signature**.

D. Delivery of Contractor **Documentation**

In **addition** to the construction, the Contractor is **also** obligated **to** provide an assortment of technical **data** describing the completed facilities. The CM is responsible **for verifying** that all required data, as listed in the submittal log, **is** in the Government's possession before the contractor's final invoice is processed.

E. Contract Closeout

When satisfied that **both** the contractor and the Government have **fulfilled all** of their **contractual** obligations, the CM notifies the COTR that the contract is ready to closeout. Appendix **(18)** is a checklist **of** completion and closeout activities.

CM Activity	EVALUATE CM/INSPECTION TASK ORDERS
Description	Evaluate engineering support service contractor performance per FSED contract management plan and applicable NASA LaRC procedures. Forms for the evaluation of inspection and construction management task order services are included in Appendix (5).
Primary Interests	
FSED:	Accurate evaluations per applicable procedures.
AD:	FAR and support service contract compliance.
Support Provided	
FSED ESFPB:	Make recommendations based upon FSED policy and provisions of the engineering support service contract management plan
FSED Technical Branches:	Evaluate contractor performance.
FSED C M T	Task Area Manager
Process Decisions	How well was task order work performed? What grade should be issued based upon the quality, timeliness, and efficiency of the support service contractor?
Process Requirements	Task order deliverables and scope of work. Knowledge of job progress and job progress documentation.
Deliverable	Task Order Evaluation Worksheets
Task Order Available	No.

SECTION (4) DIRECTORY
GUIDELINES FOR CONSTRUCTION MANAGEMENT
TASK ORDER DEVELOPMENT

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Contracted Construction Management Services.....	Pg 86
CM Task Order Development	Pg 87
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Standard Statement of Work for CM/Inspection Services	Pg 89
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INTRODUCTION

The construction management **functions** described earlier in **this manual** represent the broad range of activities that are generally **required to be** performed during the construction phase of facility acquisition project. **As** project manager, the TPE is charged with cradle to grave responsibility for a project and **unless** construction phase activities **are** assigned to **others**, the **TPE remains** accountable.

As noted in Section (2) **FSED has** a number of options for providing construction management services, including:

1. The TPE acts **as** the construction manager and **as** the **COTR**,
2. Obtaining the services through other **FSED** in-house resources (Construction Management **Team**) or,
3. **Through FSED's** support service contract or A/E service contract (SSC). ---

If construction management functions are to be provided **through** in house **FSED** resources, the **TPE** should contact the **FSED** CMT leader and his branch management to coordinate arrangements for staffing the project team with appropriate individuals. If construction management functions are to be supported with SSC resources the procedures in this section of the manual should **be** followed.

CONTRACTED CONSTRUCTION MANAGEMENT SERVICES

Construction management is made available **through FSED's** SSC by means of task orders which are developed to procure **specific** services for selected projects. The Task **Area** Manager (**TAM**) the **TPE** or the appointed COTR or CM initiates the development of the **task** order. To avoid developing **an** original statement of **work** for each construction management task order, a standard which can **be** easily modified is provided. The standard statement of work lists all the CM functions defined in Section (3) **of the manual**.

To write a **task** order select, the desired services fill, in appropriate information about the project, **and** provide additional task order instructions where required **to** completely specify the services desired.

Issuing a construction management task order **is** a three step process.

1. **A scope** of work is developed (using the standard CM statement of work) and issued to the contractor,
2. The **government** and the support service contractor prepare independent cost estimates,
3. The government and the contractor reach a concurrence **on** the scope of work and **the** target cost for **services** specified.

To increase efficiency and effectiveness, construction management provided **through** the support service contractor or A/E service contract leverages traditional inspection services. Under contracted construction management, most **of** the field interface with the construction contractor continues to **be** provided by the inspection **staff**.

A task order for inspection **is** required even if contract support **service** for Construction Management is not desired **on** a project. **FSED** policy **requires** **task** orders for inspection services **on all** construction projects. **Inspection task** orders are issued by the CM team in collaboration with **the** project **TPE** or CM. Refer to the Langley Inspection Manual and **CMT** Leader for assistance with inspection task orders.

Typically, concurrence **on** the cost of the CM **work** is reached in the following manner:

- The **TAM** issues the CM **task** order with **an initial authorization** and a statement of work.
- **The** contractor evaluates the **task** order and prepares a cost **estimate**. The government prepares **a** cost estimate concurrently.
- The contractor submits a cost estimate. **Concurrence** is reached **through** communication between **the** TPE the COTR or the TAM and the contractor's task manager. Communication may **be** over the phone with the conversation documented appropriately to allow a revision to the **initial task** order authorization.
- A revised task order is issued.

Task order **status** is reported monthly per the terms of the service contract or A/E service contract and weekly or bi-weekly cost reports are typically made available to the government by the contractor. The task monitor is responsible for managing the task order funding per the **FSED** SSC contract management plan. **An** on-line Task Order Management **Information** System (**TOMIS**) is also available to the project COTR and TAM for monitoring task order status.

If the **task** order costs exceed the amount authorized either the funding must **be** revised with sufficient funds or the scope of work must **be** decreased. In such cases, the work statement/cost estimating procedure is **repeated** and appropriate revisions are made to the task order.

CM TASK ORDER DEVELOPMENT

A well-defined work statements is the first step in developing a **task** order. By using the standard statement **of** work contained in **this** section the effort required to develop the task orders is minimized

If services other than those listed **on** the **standard** statement of **work** are required, care should be taken to define the service concisely. For example, work statements such as "Monitor the construction contractor's adherence to the contract time and schedule and notify the NASA COTR of any schedule problems" should be avoided. A suggested wording would read: "During the course of regular site visits (or insert some minimum frequency), the construction contractor's schedule shall **be** noted and compared to the current approved baseline schedule. Report findings to the COTR in Writing within 2 days of the visit."

The rationale for such wording is efficiency and accountability. Reviewing a schedule at **specified** intervals allows more efficient **use** of **man hours**. Additionally, the term "monitor" **is** a vague concept which could **be** interpreted to imply an extensive effort or a close working relationship with

the construction contractor **on** the one hand or an indefinite loosely controlled effort on the other. The suggested wording defines a deliverable and a time frame for providing it

Construction management activities require a considerable amount **of** time for the manager to become familiar with the project and for the CM **staff** to develop job control logs and other control documents. Accordingly, the CM task order should **be** issued **prior to the construction phase**.

The initial task order authorization should **be** issued and funding authorized prior to the preconstruction conference for the construction contract. **Final** concurrence on the **of** the **services** and resolution **of any issues** regarding the **scope of** work should also **be reached prior to the pre-construction conference**.

If the support service contractor is to **be** involved **in** answering pre-bid construction contractor queries, the task order should **be** issued **soon** after the IFB is distributed.

Since it takes about a week to process a task order, requests for CM task orders complete with a defined statement of work and **funding** should **be** delivered to the CMT leader seven to ten days before the preconstruction conference.

Evaluating the task order at the completion of the services is the responsibility of the task monitor and the task area manager. The contract management plan outlines the evaluation procedure. Sample evaluation forms for CM functions are included in Appendix (20).

CM TASK STANDARD WORK STATEMENT

Section (3) **of** the manual presents an extensive list of construction management services and indicates which services **are** available through a support service contractor. To make it easier to use the contracted support services, standard work statements have been developed and packaged in checklist **form**.

A reproducible copy of the standard work statements are included in **this** section. **To** issue the CM **task** order, simply select the items which **will be** included in the **task** order. Then review of work for each item (contained in Section (3)) and make modifications if required in the space provided for "Additional Instructions."

Task order work statements should to preserve a "continuity of function". Maintaining "continuity of function" means that the services requested under the task order are packaged in such a way that:

1. processes are not interrupted,
2. each step **of** the process adds value, and
3. an opportunity to evaluate the support service contractor's performance is provided.

The **standard** statement **of** work maintains continuity **of** function **by** referring to specific services, which should **be** included as a prerequisite for other **services**. For example, **Manage the Submittal Process** is a **CM** function, which can **be** tasked to the service contractor. However, it should not **be** included in a task order unless the contractor is **also** tasked with producing a **submittal** log as specified in the item **Produce and Update Project Submittal Log**.

STATEMENT OF **WORK**
CONSTRUCTION MANAGEMENT/INSPECTION SERVICES

Project Title:

Task Order No:

Use this Standard Statement of Work to Develop Inspection and CM Task Order. Reproducible Copies are included in Appendix (5).

Provide the following construction management and engineering support services in accordance with the procedures contained in the LCMM **and** in the Additional **Instructions** contained in this task order.

Engineering support services shall be provided during the construction phase **of** the project as limited by the **task** order initiation and **required** completion dates, which are identified on the **task** order document.

Nothing in this task order is intended to authorize the CM to direct the construction contractor to perform work. **The** CM shall not give verbal or written instructions to the construction contractor which direct the contractor to perform work or dictate a method of construction or which may **be** reasonably interpreted by the construction contractor as directions or methods.

- (1) **See** specification No. 0-00-0000.0000, Section 01010, Summary of Work, **Parts** 1.1, 1.1.1, and 1.1.2 for project summary.
- (2) Contract **Drawings** are listed **in** specification No. 0-00-0000.0000, Section 01010, Summary of **Work, Part** 1.3.
- (3) — sets of drawings and specifications will **be** furnished.
- (4) The contractor **shall** coordinate services, maintain communication and **obtain** required consultation and approvals as specified in **this** **task** order with those listed below, and **from** **time** to time, with others not specifically listed. Such coordination, communication and required consultations and approvals **shall be** conducted per the NASA/LaRC Construction Management **Manual (LCMM)**, unless otherwise noted in the Additional Instructions to this **task** order.

Agent

Mail Stop/Phone

Contracting Officer:

COTR:

TPE/Project Manager:

Mechanical TPE:

Electrical TPE:

Other Support TPE:
Research Customer:
Contract Administrator:
PIO Administrator:
Inspection **Task Area** Manager:
Safety POC:
Environmental POC:
Facility Coordinator/FSH:
Others: (See listing contained in the Additional **Instructions** to this **task** order.)

LISTING OF ORDERED SERVICES

INSPECTION SERVICES

No: IS1
Verify Technical Compliance & Facilitate On-site Work

Provide inspection services per the Langley Inspection **Manual**. Develop an inspection plan that defines the project's **core** inspection activities. Distribute plans to the Project TPE and Inspection **TAM**. Provide services as specified in the **Langley Inspection Manual** and in supplementary instructions **furnished** with this task order.

No: IS2
Document Lessons Learned

Document problems encountered **during** construction which **might be** minimized **or** eliminated by measures taken earlier in the project. Recommend actions for avoiding similar problems on future projects. Distribute the report to the project COTR, the designer, and others as designated below (See Additional Instructions). Included in the lessons learned (1) Problem Statement, (2) Discussion of the problem's effect on the project's cost and schedule, (3) Probable cause, (4) Recommendation for avoiding the problem or reducing its impact on future projects.

No: IS3
Constructability Reviews

Review the **draft** contract documents (i.e., **drawings** and specifications) and document errors, omissions, contradictions or other statements which may lead to construction changes, unnecessary costs or time required to complete the work **or** other hindrances to job progress.

PRECONSTRUCTION SERVICES

No: PC1
Obtain ~~Permits~~

Determine the permits required by law to **be** obtained prior to construction. Research the requirements for obtaining required permits. Prepare a schedule for completing the application process for each permit. Consistent with agency requirements and the approved schedule, prepare documentation packages for submittal as directed in the additional instructions of this work order.

No: PC2
IFB Services

Receive and log questions that are identified by the COTR. Respond directly to requests for assistance in locating information within the contract documents. If the required information cannot be found, refer the matter to the COTR. Provide a written brief of the issue to the COTR with recommended action.

SUBMITTALS PROCESSING

No: SP1
Manage the submittal process

Review the submittal log prepared by the Submittal Processing Team (SPT). Make revisions as required. Provide periodic reports to the COTR detailing the current status of all submittals, highlighting submittals requiring management attention and proposing appropriate action. When requested, take action as approved by the COTR to assist the construction contractor in satisfying contract submittal requirements.

No: SP2
Review submittals

Review submittals to determine whether products proposed for use in the construction satisfy contract specifications. Determine (a) whether the submittal package is complete, (b) whether the data provided is sufficient, and (c) whether the products described are acceptable. Fill out the transmittal sheet to indicate proposed action, and process the submittal package per LCMM or as directed in the Additional Instructions. Unless otherwise directed, perform reviews within 10 calendar days of receipt of the submittal package. When recommending disapproval or conditional approval, note the item's objectionable properties and the minimum standards the item must satisfy. Notify TPE or COTR in advance of paperwork when submittals are not acceptable.

CONTRACT CHANGE ORDER SUPPORT SERVICES

No: CO1
Process Value Engineering
Change Proposals (VECP's).

Review VECP's submitted by the contractor. Verify that proposals include all information required by FAR 52.248-3, Part (c). Make recommendations regarding the effect of the proposal on the functional capability of the completed facility. Report findings and recommendations to the COTR within 15 days after receipt of VECP.

No: CO2
Process contractor Requests for
Information (RFI's).

Research contract documents and perform field surveys as required to collect requested information. Fax a copy of all incoming RFI's to the project COTR and obtain the COTR's concurrence on responses. Respond to RFI's within 5 calendar days of receipt. If an answer cannot be provided within 5 days, respond with an acknowledgement to the construction contractor advising expected date on which answer will be provided. (Include task No. DM2 w/ this task.)

No: CO3
Process Requests for Proposal
(RFP's).

Review and develop technical proposals for changing the contract. Present proposals to the project COTR for approval. Draft Emergency Field Directed Changes (EFDC's) and deliver to the COTR within two hours of an oral order. Develop Request for Change (RFC) packages, consisting of a detailed statement of work (SOW), an engineering sketch, and a detailed cost estimate. Deliver RFC packages for changes that involve an EFDC no more than two working days after the EFDC is issued. For proposal, RFP delivery dates are negotiable. Oral order to proceed is COTR's responsibility.

No: CO4
Change Order Drafting Services

Provide **drafting** services, as directed, to document proposed changes in the contract drawings. Civil, mechanical, electrical, structural, and architectural **drafting** services are anticipated. Tasks will typically involve modifying existing NASA project drawings to reflect engineering information provided by NASA engineers via red-lined contract drawings or sketches. Project drawings in AutoCAD format will be provided. **Tasks** will ordinarily be completed in five working **days**. If more than five days will be needed to complete a **task**, give the COTR a proposed delivery date within two working days of task order receipt.

No: CO5
Monitor RFC's in process

Establish and **maintain** an RFC management control **system**. Provide a (weekly/biweekly/ **monthly**) **report** which summarizes the status of all in-process RFC's. (Include **task No. C03** and **task No. DM2 w/ this task**.)

PROGRESS MANAGEMENT SERVICES

No: PM1
Review contractor progress schedule submittals

Review the contractor's progress schedule submittals monthly, and **assess** the contractor's ability to meet contract completion dates. Evaluate the contractor's current schedule in light of progress thus far, **known** constraints, and the contractor's recent **performance**. Where appropriate, propose actions **for** removing constraints. Report findings and recommendations to the project COTR. Draft cure letter to contractor as directed.

No: PM2
Develop a Government Milestone Schedule

Develop a milestone schedule based on the contractor's approved baseline progress schedule. **Monitor** attainment of milestones and report dates when milestones are achieved. Update the schedule as appropriate based upon the construction contractor's updated schedule.

No: PM3
-Review Contractor Progress Payment Requests

Compare the contractor's progress as shown on validated progress payment requests against the current approved progress schedule and note variances. When actual progress falls behind planned, identify probable causes and recommend corrective action to the COTR.

No: PM4
Maintain Photographic Records of Job Progress

Compile sets of progress photographs, which document construction. Take one set of photographs shortly before ground breaking. After construction begins, take one set around the 15th of every month, until all construction work is finally completed and delivered. Submit one set of photographs to the project COTR by the 25th of every month.

No: PM5
Prepare Project Coordination Meeting Reports

Review contractor's monthly progress report. Verify the validity of factual information presented. Prepare PCC briefing materials, as enumerated below (See Additional Instructions), based on validated information from the contractor and NASA project team members.

No: PM6
Provide staff support

When requested by the **COTR**, participate in conferences or **meetings**, called to address schedule, technical or other matters and involving one or more of the following: NASA, the contractor, the designer or other parties. Perform the following services as directed by the **COTR**: Prepare agendas; **perform pre/post-meeting staff work**, offer **technical opinions** and recommendations, prepare and distribute reports, minutes, and action item **lists**.

No: PM7
Coordinate Supply of GFP

Coordinate the delivery of Government **furnished** property, (materials and equipment) as **specified in** the project specifications. **Verify** the **GFP conforms** to the specifications, expedite delivery of **GFP as directed**, **facilitate** and document **the transfer of GFP custody**, and **facilitate and document return of excess GFP and/or salvaged materials**

DOCUMENTATION MANAGEMENT SERVICES

No: DM1
Manage contract correspondence

Produce and **maintain** a correspondence **log**. Receive and **log all** incoming correspondence. Distribute for appropriate action per the guidelines provided **below (See Additional Instructions)**. Send copies of **all** correspondence to the **COTR** with a transmittal sheet indicating **(1)** date received, **(2)** action assigned phone number, and **(3)** action due date. Provide monthly reports listing unanswered correspondence, action due dates, and action assignees. **For** overdue correspondence, **identify** interim actions taken to **satisfy** the originator and provide a revised due date. When directed by the **COTR**, prepare correspondence for **COTR's signature**.

No: DM2
Manage RFI's

Produce and **maintain** an RFI log. Receive and log all incoming **RFI's**. Assign action based on guidelines provided below (**See Additional Instructions**). Send copies of **all RFI's** to the **COTR**. Provide monthly reports **listing** unanswered **RFI's**, action due dates, **and** action assignees. When **response** cannot be made within **5 working days**, provide a brief explanation of the time required to respond, **identify** interim actions taken to satisfy the originator, and provide a revised due date. Prepare **RFI response** for signature by the **COTR**.

No: DM3
Support Contract Closeout and Work Acceptance

Manage the process leading up to **final** acceptance of the completed construction and contract closeout as described in Section 3 of the NASA **LaRC** Construction Management Handbook.

No: DM4
Review Contractor As-built Drawings

Concurrent with other planned or directed visits to the **job site**, verify that the construction contractor's as-built drawings are maintained up-to-date and reflect work in place as amended by change orders. Verify that Government approved and documented deviations are recorded in the contractor's as-built drawings. Report cases of non-compliance to the **COTR**. In addition to reviews during the project, review the contractor's as-builts when submitted at the end of the project and verify that **all** changes are recorded.

No: DM5
Produce **As-built Record Drawings**

Revise the **original** contract drawings to **reflect** changes recorded in the contractor's approved as-built drawings. **Unless otherwise** indicated in additional **instructions** below, provide completed drawings within 30 working **days**.

No: DM6
Documenting Potential claims

Document potential claims with **photographs** and daily reports itemizing related costs. Consider **all** unilateral change orders, Government interference, and situations likely to **increase the** contractor's cost and/or **time of performance as** potential claims. **Notify** the COTR **when a potential claim** situation **arises and** solicit **guidance** as to the **type and number of photographs** to take. **Provide** the COTR an accounting of actual costs for potential claims **three working days** after **the additional work** is complete. (Include ~~task~~ No.'s DM2, PM1, C03 w/ this task)

Check **if additional instructions** are included. -

ADDITIONAL INSTRUCTIONS

Mark if additional pages are attached.

SECTION (5) APPENDICES

List of Appendices

<u>TITLE</u>	<u>APPENDICES</u>
✓ A Primer on Constructability	1
✓ Constructability Review Work Sheets	2
✓ FAR Acquisition Planning Commentary	3
✓ CM Organization Work Sheet & COTR Designation Letter	4
✓ Task Order Forms and Task Order Development and Evaluation Worksheets	5
✓ Government Furnished Property (GFP) Custody Transfer Document	6
✓ FSED Instruction for Payments for Materials on/off-site	7
✓ Database Structure for Government Milestone Schedule	8
✓ Submittal Log and Submittal Database Structure	9
✓ RFI Form	10
✓ Inspection Level Classification and Risk Based Inspection Plan	11
✓ NASA LaRC Inspection Manual and LaRC Non-Compliance Notice	12
✓ FSED Change Order Instruction w/ Worksheets	13
✓ Indefinite Quantity/Unfinalized Change Order Record for Recording Daily Time and Materials	14
✓ Contract Change Order Negotiation Record	15
✓ Lessons Learned Data Base	16
✓ Beneficial Occupancy Letter	17
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LIST OF FIGURES

LaRC Construction Project Organization

Partial List of LMI pertaining to Construction Activities

Organizational Involvement Table

CM Activity List

Constructability Review Sheet

Sample Submittal Log

Prefinal Checklist

Close-out Checklist

APPENDIX (1)

This appendix is extracted from the Construction Industry Institute Publication, Constructability a Primer, Publication 3-1, July 1986. The University of Texas at Austin, 3208 Red River, Suite 300, Austin TX, 78705-2650.

Constructability is the optimum use of construction knowledge and experience in planning, design, procurement, and field operations to achieve overall project objectives. Maximum benefits occur when people with construction knowledge and experience become involved at the very beginning of a project. This is illustrated by the following chart (Figure 1).

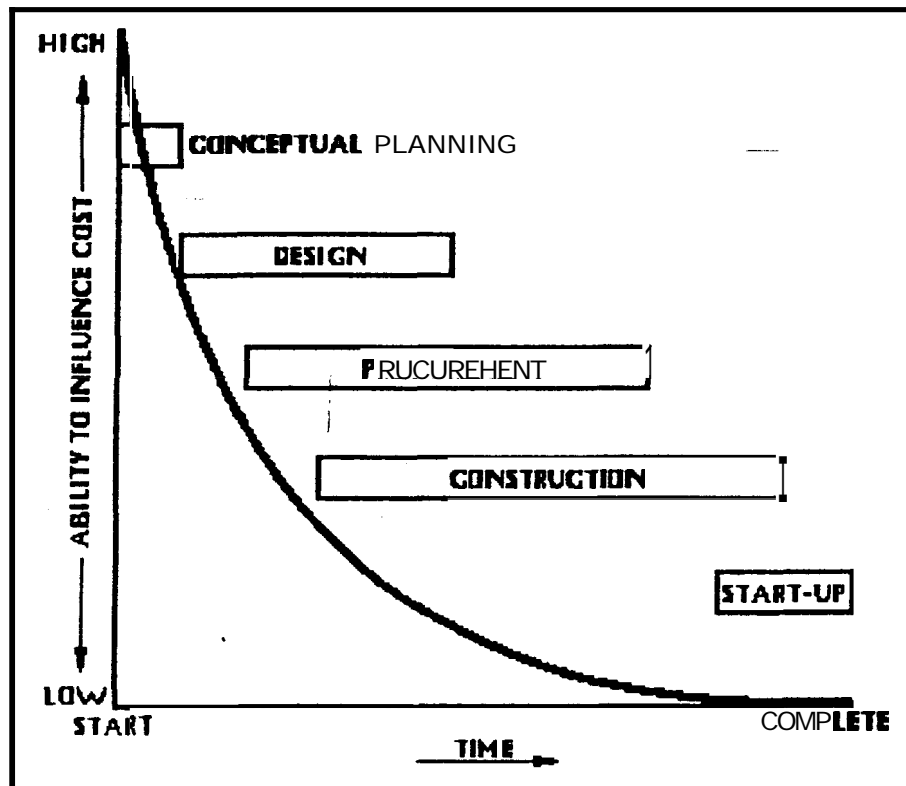


Figure 1. Ability To Influence Final Cost Over Project Life

Constructability is not just:

- determining more efficient methods of construction after mobilization of field forces.
- allowing construction to review engineering documents periodically during the design phase.
- assigning construction personnel to the engineering office during design.
- A modularization or preassembly program.

Although the above activities are a part of constructability, they are only that, a part. Only through the effective and timely integration of constructability input into planning and design as well as field operations will the potential benefits of constructability be achieved.

Industry tends to separate the individual functions involved in capital projects. Design tends to place emphasis on minimizing its costs. Construction focuses on minimizing field costs. Fine-tuning the individual parts, however **does** not yield the most successful project. Constructability integrated these parts and is one of the most powerful tools owners can use **on** their projects.

CURRENT PRACTICES

Projects that emphasize constructability have four common characteristics.

1. Owner and contractor (design and construction) managers are committed to the cost effectiveness of the whole project. They **recognize** the high cost influence of early project decisions.
2. These managers use constructability as a major **tool** in meeting project objectives concerning cost and schedule.
3. These managers bring construction aboard early. This means finding the right kind of construction personnel - experienced people with a full understanding of how a project **is** planned and built, not just people who may **be** available because they are between jobs.
4. Designers are receptive to improving constructability. They **think** constructability, request construction input freely, and evaluate that input objectively.

Six basic constructability concepts are generally applicable to the conceptual planning phase of any project.

1. Constructability programs are made an integral part of project execution plans.
2. Project planning actively involves construction knowledge and experience.
3. Early construction involvement is considered in development of contracting strategy.
4. Overall project schedules are construction driven.
5. Basic design approaches consider **major** construction methods.
- 6, Site layouts promote efficient construction as well **as** efficient operation and maintenance.

Similarly, seven basic concepts are generally applicable to the design and procurement phases of any project.

1. Design and procurement schedules are construction-driven.
2. Design are configured **to** enable efficient construction.
3. Design elements **are** standardized.
4. Construction efficiency is considered in specification development.
5. Module/preassembly designs are prepared to facilitate fabrication, transport, and installation.
6. Designs promote construction accessibility of personnel, material, and equipment.
7. Design facilitate construction under adverse weather conditions.

The synopses on the following pages illustrate the benefits of constructability efforts on these projects:

- Refinery Expansion
- Jet Engine Overhaul Facility Restoration
- Electric Generating Station

A discussion of how to implement a constructability program follows these project summaries.

Refinery Expansion

A major oil company recently completed a refinery expansion under budget and ahead of schedule in the Gulf Coast area. This was the first project in which the owner utilized an aggressive constructability program.

The program focused on preassembly techniques which permitted parallel field activities. The owner arranged for early assignment of key construction personnel to the engineering office to assist in developing the strategies to be utilized. Constructability effort included the following:

- Specifications were reviewed jointly by the owner, designer, and constructor in order to simplify and standardize design.
- The project schedule was construction driven.
- Equipment and vessels were fitted with piping, instrumentation, platforms, and insulation in an adjacent laydown area prior to setting. Major savings results from reduced scaffolding, improved material management, and improved worker productivity.
- Process piperacks were preassembled in 100-foot modules concurrent with onsite civil and underground work. Seventeen piperack modules enabled significant schedule gains.
- Pipe spools were preassembled onsite and adjacent to the work areas. This resulted in excellent productivity and quality control.

The owner learned many lessons, the most important being that constructability does pay. This particular refinery expansion project was completed 14 months early with a 23 percent (\$253 million) savings from the original estimate. Constructability played a significant role in achieving these benefits.

Jet Engine Overhaul Facility Restoration

A critical 48-acre government building that houses jet engine overhaul facilities was partially destroyed by a fire in the roof. A \$60 million restoration project enabled the replacement of 17 acres of roof and the associated mechanical and electrical systems in 10 months on schedule and within budget.

The owner organized an integrated team of design and construction people, and used a cost-reimbursable contracting method to permit a fast-track approach. The following constructability actions resulted:

- The project schedule was construction-driven.
- The contractor and the designer agreed on construction methods, materials, and techniques. The design reflected the site constraints and accessibility.
- The structural frame was reconstructed to allow two open alleyways for cranes that would lift materials and equipment.
- Rubber-tired scooters moved materials and equipment into place on the roof.
- Helicopter skycranes lifted large, preassembled air-handling units into place.

This emergency restoration project demonstrates that constructability can benefit urgent projects as well as more conventional ones.

Electric Generating Station

An electric generating station unit with a capacity of 720,000 kilowatts went into commercial operation four months ahead of schedule and \$200 million under budget.

Starting in the conceptual planning phase, a highly qualified group of construction personnel participated in pre-construction planning and provided constructability inputs, such as the following:

- Project construction schedule established engineering required dates and material delivery dates.
- Plant orientation was revised for better construction access.

- Layout and design of temporary facilities for multiple contractors avoided double-handling of materials, enabled ready access to work areas, and provided prefabrication areas adjacent to the work site.
- Special construction studies covered rigging of heavy lifts, construction equipment access and utilization, sequencing of steel erection, and major equipment installation and offsite prefabrication/modularization.
- Contractor work packages were designed to minimize field interfaces.
- Changes to drawings and specifications were recommended to shorten the construction schedule and reduce costs.

The benefits attained on this project clearly demonstrate that an effective constructability program was a major factor in achieving the completion ahead of schedule and under budget.

IMPLEMENTING A CONSTRUCTABILITY PROGRAM

A constructability program must be specific to the user. Different programs may emphasize different constructability concepts depending on the user's role in a project.

Before developing a program, self-examination is required. Do barriers or resistance to a constructability program exist? Does the owner have qualified constructability personnel or will outside resources be required? What current practices should be incorporated into the program? These are only a few of the questions to be asked.

An owner may have in-house construction resources, or may hire a consultant to provide constructability input. The owner also may rely on a design/build contractor, an architect/engineer, a construction manager, or a construction contractor to provide construction knowledge and experience. In any of these cases, the contractual relationships must specify the constructability objectives of the project and the roles of the participants.

While programs and contractual arrangements vary from company to company, certain critical ingredients must be included in all programs. A constructability program must:

- Clearly communicate senior management's commitment to constructability and generate similar commitment from all project participants.
- Encourage teamwork, creativity, new ideas, and new approaches.
- Assign one individual as program director who possesses leadership, communication skills, and a knowledge of the organization's operation.
- Start constructability as early as possible.
- Emphasize total project integration, not optimization of individual parts.
- Establish a constructability procedure for inclusion in project execution plans.
- Evaluate progress and results.

CONCLUSION

Constructability works - frequently with dramatic results.

The projects described in the publication demonstrate that implementation of a constructability program with early construction involvement will result better projects --- lower costs, better productivity, and earlier project completion.

Who can afford to pass up constructability benefits?

Project					Date Due (TPE)	
Location					Date Received (TPE)	
	Architectural		Mechanical		Preliminary	Reviewer
	Structural		Electrical		90% Submittal	Date Returned (Reviewer)
			Specs & Estimates		100% Submittal	
	Item No.	Review Comments (Make general comments on last sheet)				Designer Action/Response

Construction Schedule (No. DAYS _____)

<p>Special Requirements (Attach if necessary)</p> 	<p>Concurrence _____</p> <p style="text-align: center;">TPE</p>
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PART 7 —ACQUISITION PLANNING

[1 29,750]

7.000 Scope of part.

This part prescribes policies and procedures for—

- (a) Developing acquisition plans;
- (b) Determining whether to use commercial or Government resources for acquisition of supplies or services; and
- (c) Deciding whether it is more economical, to lease equipment rather than purchase it.

SUBPART 7.1 —ACQUISITION PLANS

[1 29,751]

7.101 Definitions.

“Acquisition planning” means the process by which the efforts of all personnel responsible for an acquisition are coordinated and integrated through a comprehensive plan for fulfilling the agency need in a timely manner and at a reasonable cost. It includes developing the overall strategy for managing the acquisition.

“Acquisition streamlining,” as used in this subpart means any effort that results in more efficient and effective use of resources to design and develop, or produce quality systems. This includes ensuring that only necessary and cost-effective requirements are included, at the most appropriate time in the acquisition cycle, in solicitations and resulting contracts for the design, development, and production of new systems, or for modifications to existing systems that involve redesign of systems or subsystems.

“Design-to-cost” is a concept that establishes cost elements as management goals to achieve the best balance between life-cycle cost, acceptable performance, and schedule. Under this concept, cost is a design constraint during the design and development phases and a management discipline throughout the acquisition and operation of the system or equipment.

“Life-cycle cost” means the total cost to the Government of acquiring, operating, sup

“Market survey” means attempts to ascertain whether other qualified sources capable of satisfying the Government’s requirement exist. This testing of the marketplace may range from written or telephone contacts with knowledgeable federal and non-federal experts regarding similar or duplicate requirements, and the results of any market test recently undertaken, to the more formal sources-sought announcements in pertinent publications (e.g., technical/scientific journals, or the Commerce Business Daily), or solicitations for information or planning purposes. (see 15.405)

“Planner,” as used in this subpart, means the designated person or office responsible for developing and maintaining a written plan, or for the planning function in those acquisitions not requiring a written plan. [FAC 84-5, 50 FR 1734, 1/11/85, effective 4/1/85; FAC 84-39, 53 FR 34226, 9/2/88, effective 10/3/88]

[1 29,752]

7.102 Policy.

Agencies shall perform acquisition planning and conduct market surveys for all acquisitions in order to promote and provide for full and open competition (see Part 6), or, when full and open competition is not required in accordance with Part 6, to obtain competition to the maximum extent practicable, with due regard to the nature of the supplies and services to be acquired (10 U.S.C. 2301(a)(5) and 41 U.S.C. 253A(a)(1)). This planning shall integrate the efforts of all personnel responsible for significant aspects of the acquisition. The purpose of this planning is to ensure that the Government meets its needs in the most effective, economical, and timely manner. Agencies that have a detailed acquisition planning system in place that generally meets the requirements of 7.104 and 7.105 need not revise their system to specifically meet all of these requirements. [FAC 84-13, 50 FR 52433, 12/23/85, effective 2/3/86]

[1 29,753]

7.103 Agency-herd responsibilities. ^{1/2}

entered into without full and open competition on the basis of a lack of acquisition planning or contracts related to the amount of funds available to the agency for acquisitions (10 U.S.C. 2304(f)(5) and 41 U.S.C. 253(f)(5)(A)).

(b) Ensuring that acquisition planners address the requirement to specify needs, develop specifications, and to solicit offers in such a manner to promote and provide for full and open competition with due regard to the nature of the supplies and services to be acquired (10 U.S.C. 2305(a)(1)(A) and 41 U.S.C. 253A(a)(1)). (See Part 6 and 10.002.)

(c) Establishing criteria and thresholds at which increasingly greater detail and formality in the planning process is required as the acquisition becomes more complex and costly, specifying those cases in which a written plan shall be prepared;

(d) Writing plans either on a system basis or on an individual contract basis, depending upon the acquisition;

(e) Ensuring that the principles of this subpart are used, as appropriate, for those acquisitions that do not require a written plan as well as for those that do;

(f) Designating planners for acquisitions;

(g) Reviewing and approving acquisition plans and revisions to these plans;

(h) Establishing criteria and thresholds at which design-two and life-cycle-cost techniques will be used;

(i) Establishing standard acquisition plan formats, if desired, suitable to agency needs; and

(j) Waiving requirements of detail and formality, as necessary, in planning for acquisitions having compressed delivery or performance schedules because of the urgency of the need.

(k) Assuring that the contracting officer, prior to contracting reviews:

(1) The acquisition history of the supplies and services; and

(2) A description of the supplies, including, when necessary for adequate description, a picture, drawing, diagram, or other graphic representation. [FAC 84-5, 50 FR 1735, 1/11/85, effective 4/1/85; FAC 84-10, 50 FR 27561, 7/3/85, effective 7/3/85]

¶ 29,754 FAR 7.104

7.104 General procedures.

(a) Acquisition planning should begin as soon as the agency need is identified, preferably well in advance of the fiscal year in which contract award is necessary. In developing the plan, the planner shall form a team consisting of all those who will be responsible for significant aspects of the acquisition, such as contracting, fiscal, legal, and technical personnel. The planner should review previous plans for similar acquisitions and discuss them with the key personnel involved in those acquisitions. At key dates specified in the plan or whenever significant changes occur, and no less often than annually, the planner shall review the plan and, if appropriate, revise it.

(b) Requirements and logistics personnel should avoid issuing requirements on an urgent basis or with unrealistic delivery or performance schedules, since it generally restricts competition and increases prices. Early in the planning process, the planner should consult requirements and logistics personnel who determine type, quality, quantity, and delivery requirements.

(c) The planner shall coordinate with and secure the concurrence of the contracting officer in all acquisition planning. If the plan proposes using other than full and open competition, the plan shall also be coordinated with the cognizant competition advocate. [FAC 84-5, 50 FR 1735, 1/11/85, effective 4/1/85; FAC 84-13, 50 FR 52433, 12/23/85, effective 2/3/86]

¶ 29,755

7.105 Contents of written acquisition plans.

In order to facilitate attainment of the acquisition objectives, the plan must identify those milestones at which decisions should be made (see subparagraph (b)(19) below). The plan shall address all the technical, business, management, and other significant considerations that will control the acquisition. The specific content of plans will vary, depending on the nature, circumstances, and stage of the acquisition. In preparing the plan, the planner shall follow the applicable instructions in paragraphs (a) and (b) below, together with the agency's implementing procedures.

(a) Acquisition background and objectives.

(1) **Statement of need.** Introduce the plan by a brief statement of need. Summarize the technical and contractual history of the acquisition. Discuss feasible acquisition alternatives and any related in-house effort.

(2) **Applicable conditions.** State all significant conditions affecting the acquisition, such as (i) requirements for compatibility with existing or future systems or programs and (ii) any known cost, schedule, and capability or performance constraints.

(3) **Cost.** Set forth the established cost goals for the acquisition and the rationale supporting them, and discuss related cost concepts to be employed, including, as appropriate, the following items:

(i) **Life-cycle cost.** Discuss how life-cycle cost will be considered. If it is not used, explain why. If appropriate, discuss the cost model used to develop life-cycle-cost estimates.

(ii) **Design-to-cost.** Describe the design-to-cost objective(s) and underlying assumptions, including the rationale for quantity, learning-curve, and economic adjustment factors. Describe how objectives are to be applied, tracked, and enforced. Indicate specific related solicitation and contractual requirements to be imposed.

(iii) **Application of should-cost.** Describe the application of should-cost analysis to the acquisition (see 15.810).

(4) **Capability or performance.** Specify the required capabilities or performance characteristics of the supplies or services being acquired and state how they are related to the need.

(5) **Delivery or performance-period requirements.** Describe the basis for establishing delivery or performance-period requirements (see Subpart 12.1). Explain and provide reasons for any urgency if it results in concurrency of development and production or constitutes justification for not providing for full and open competition.

(6) **Trade-offs.** Discuss the expected consequences of trade-offs among the various cost, capability or performance, and schedule goals.

(7) **Risks.** Discuss technical, cost, and schedule risks and describe what efforts are planned or underway to reduce risk and the consequences of failure to achieve goals. If concurrency of development and production

is planned, discuss its effects on cost and schedule risks.

(8) **Acquisition streamlining.** If specifically designated by the requiring agency as a program subject to acquisition streamlining, discuss plans and procedures to

(i) Encourage industry participation by using draft solicitations, presolicitation conferences, and other means of stimulating industry involvement during design and development in recommending the most appropriate application and tailoring of contract requirements;

(ii) Select and tailor only the necessary and cost-effective requirements; and

(iii) State the timeframe for identifying which of those specifications and standards, originally provided for guidance only, shall become mandatory (see 10.002(c)).

(b) **Plan of action.** (1) **Sources.** Indicate the prospective sources of supplies and/or services that can meet the need. Consider required sources of supplies and services (see Part 8). Include consideration of small business, small disadvantaged business, and labor surplus area concerns (see Parts 19 and 20). If the acquisition or a part of it is for commercial or commercial-type products (see Part 11), address the results of market research and analysis and indicate their impact on the various elements of the plan. If the acquisition or part of it is for other than commercial or commercial-type products, address the extent and results of the market survey conducted or the reasons one was not or will not be conducted.

(2) **Competition.** (i) Describe how competition will be sought, promoted, and sustained throughout the course of the acquisition. If full and open competition is not contemplated cite the authority in 6.302, discuss the basis for the application of that authority, identify the source(s), and discuss why full and open competition cannot be obtained.

(ii) Identify the major components or subsystems. Discuss component breakout plans relative to these major components or subsystems. Describe how competition will be sought, promoted, and sustained for these components or subsystems.

(iii) Describe how competition will be sought, promoted, and sustained for spares and repair parts. Identify the key logistic milestones, such as technical data delivery schedules and acquisition method coding conferences, that affect competition,

FAR 7.105 929,755

tion is both feasible and desirable, describe how such subcontract competition will be sought, promoted and sustained throughout the course of acquisition. Identify any known barriers to increasing subcontract competition and address how to overcome them.

(3) Source-selection procedures. Discuss the source-selection procedures for the acquisition, including the timing for submission and evaluation of proposals, and the relationship of evaluation factors to the attainment of the acquisition objectives (see Subpart 15.6).

(4) Contracting considerations. For each contract contemplated, discuss contract type selection (see Part 16); use of multiyear contracting, options, or other special contracting methods (see Part 17); any special clauses, special solicitation provisions, or FAR deviations required (see Subpart 1.4); whether sealed bidding or negotiation will be used and why; whether equipment will be acquired by lease or purchase (see Subpart 7.4) and why; and any other contracting considerations.

(5) Budgeting and funding. Describe how budget estimates were derived and discuss the schedule for obtaining adequate funds at the time when they are required (see Subpart 32.7).

(6) Product descriptions. In accordance with Part 10, explain the choice of product description types to be used in the acquisition.

(7) Priorities, allocations, and allotments. When urgency of the requirement dictates a particularly short delivery or performance schedule, certain priorities may apply. If so, specify the method for obtaining and using priorities, allocations, and allotments, and the reasons for them (see Subpart 12.3).

(8) Contractor versus Government performance. Address the consideration given to OMB Circular No. A-76 (see Subpart 7.3).

(9) Management information requirements. Discuss, as appropriate, what management system will be used by the Government to monitor the contractor's effort.

(10) Make or buy. Discuss any consideration given to make-or-buy programs (see Subpart 15.7).

(11) Test and evaluation. To the extent applicable, describe the test program of the

contractor and the Government. Describe the test program for each major phase of a major system acquisition. If concurrency is planned, discuss the extent of testing to be accomplished before production release.

(12) Logistics considerations. Describe—

(i) The assumptions determining contractor or agency support, both initially and over the life of the acquisition, including consideration of contractor or agency maintenance and servicing (see Subpart 7.3) and distribution of commercial products (see Part 11);

(ii) The reliability, maintainability, and quality assurance requirements, including any planned use of warranties (see Part 46); and

(iii) The requirements for contractor data (including repurchase data) and data rights, their estimated cost, and the use to be made of the data (see Part 27).

(iv) Standardization concepts, including the necessity to designate, in accordance with agency procedures, technical equipment as "standard" so that future purchases of the equipment can be made from the same manufacturing source.

(13) Government-furnished property. Indicate any property to be furnished to contractors, including material and facilities, and discuss any associated considerations, such as its availability or the schedule for its acquisition (see Part 45).

(14) Government-furnished information. Discuss any Government information, such as manuals, drawings, and test data, to be provided to prospective offerors and contractors.

(15) Environmental considerations. Discuss environmental issues associated with the acquisition, the applicability of an environmental assessment or environmental impact statement (see 40 CFR 1502), the proposed resolution of environmental issues, and any environment-related requirements to be included in solicitations and contracts.

(16) Security considerations. For acquisitions dealing with classified matters, discuss how adequate security will be established, maintained, and monitored (see Subpart 4.4).

(17) Other considerations. Discuss, as applicable, energy conservation measures, standardization concepts, the industrial readiness program, the Defense Production Act, the Occupational Safety and Health

Act, foreign sales implications, and any other matters germane to the plan not covered elsewhere.

(18) Milestones for the acquisition cycle. Address the following steps and any others appropriate:

Acquisition plan approval.

Statement of work.

Specifications.

Data requirements.

Completion of acquisition-package preparation.

Purchase request.

Justification and approval for other than full and open competition where applicable and/or any required D&F approval.

Issuance of synopsis.

Issuance of solicitation.

Evaluations of proposals, audits, and field reports.

Beginning and completion of negotiations.

Contract preparation, review, and clearance.

Contract award.

(19) Identification of participants in acquisition plan preparation. List the individuals who participated in preparing the acquisition plan, giving contact information for each. [FAC 84-5, 50 FR 1735, 1/11/85, effective 4/1/85; FAC 84-37, 53 FR 17856, 5/18/88, effective 6/17/88; FAC 84-39, 53 FR 34226, 9/2/88, effective 10/3/88]

[1 29,756]

7.106 Additional requirements for major systems.

(a) In planning for the solicitation of a major system (see Part 34) development contract, planners shall consider requiring offerors to include, in their offers, proposals to incorporate in the designs of a major system—

(1) Items which are currently available within the supply system of the agency responsible for the major system, available elsewhere in the national supply system, or commercially available from more than one source; and

(2) Items which the Government will be able to acquire competitively in the future if they are likely to be needed in substantial quantities during the item's service life.

(b) In planning for the solicitation of a major system (see Part 34) production contract, planners shall consider requiring offerors to include, in their offers, proposals identifying opportunities to assure that the Government will be able to obtain, on a competitive basis, items acquired in connection with the system that are likely to be acquired in substantial quantities during the service life of the system. Proposals submitted in response to such requirements may include the following:

(1) Proposals to provide the Government the right to use technical data to be provided under the contract for competitive future acquisitions, together with the cost to the Government, if any, of acquiring such technical data and the right to use such data.

(2) Proposals for the qualification or development of multiple sources of supply for competitive future acquisitions.

(c) In determining whether to apply paragraphs (a) and (b) above, planners shall consider the purposes for which the system is being acquired and the technology necessary to meet the system's required capabilities. If such proposals are required, the contracting officer shall consider them in evaluating competing offers. In noncompetitive awards, the factors in paragraphs (a) and (b), above may be considered by the contracting officer as objectives in negotiating the contract. (FAC 84-10, 50 FR 27561, 7/3/85, effective 7/3/85)

SUBPART 7.2 — PLANNING FOR THE PURCHASE OF SUPPLIES IN ECONOMIC QUANTITIES

[FAC 84-11, 50 FR 35475, 8/30/85, effective 8/30/85]

[1 29,757]

7.200 Scope of subpart.

This subpart prescribes policies and procedures for gathering information from offerors to assist the Government in planning the most advantageous quantities in which supplies should be purchased.

APPE .X (4)
Langley Construction Management Manual

Construction Project Organization Directory
Project: _____

TITLE	NAME	M/S	PHONE	FAX	REMARKS
Contracting Officer					
Contract Specialist					
COTR					
TPE					
CM					
PIO					
Support Engineer (Elec.)					
Support Engineer (Mech.)					
Support Engineer (Struct.)					
Lead Inspector					
Support Inspector					
Support Inspector					
Support inspector					
Safety Office					

NOTES:

CC: Team Member
Team Member
Branch Head

(4)A

CONSTRUCTION CONTRACTS



Contracting Officer Technical Representative (COTR) Delegation

FROM:

CONTRACTOR

CONTRACT NO.

1. Pursuant to the Federal Acquisition Regulation (FAR) and NASA FAR Supplement, you are hereby appointed the Contracting Officer Technical Representative (COTR) for the contract identified above. The COTR's function is to serve as technical liaison between the Contractor and the Contracting Officer. The COTR is responsible for monitoring the Contractor's performance and delivery of the final product and/or services under the contract. Specific duties and responsibilities are listed in paragraph 3 below.

2. The duties delegated in this letter are not redelegable. The COTR is cautioned that he or she may be personally liable for actions taken or direction given beyond the authorities delegated in this letter.

3. The following authority and responsibilities, when checked below, are hereby delegated to the individual appointed by paragraph 1 above:

a. Monitor contract performance and immediately report all problems related to it to the Contracting Officer. Keep the Contracting Officer informed, both orally and in writing, of the status of the contract and performance of its requirements. No periodic reports, as such, are required, but care should be taken to promptly report any potential disagreement or controversy that may arise.

b. Establish, and provide to the Contracting Officer, a surveillance plan that will ensure receipt of the quantity and kinds of supplies or services required by the contract.

c. Perform on-site surveillance in accordance with the surveillance plan (see paragraph 3b above). Document surveillance activities and provide a copy of documentation to the Contracting Officer (see paragraph 3a above). Assure technical proficiency and compliance with the technical provisions of the contract by review and verification of the performance of the work accomplished by the Contractor. Coordinate with Defense Contract Administration Services (DCAS) when a partial contract administration delegation has been made to that agency to ensure that there is no duplication of administrative efforts.

d. Ensure that the Contractor complies with the defined Statement of Work or specifications included in the contract. Assist the Contractor and the Contracting Officer in interpreting technical requirements of the contract scope of work or specifications. Differences of opinion shall be referred to the Contracting Officer for resolution.

e. Assure that the Contractor uses the levels of personnel contracted for and necessary for performance of contractual requirements and that the level of personnel contracted for is not diluted by the excessive use of lower caliber personnel.

f. Review and evaluate the Contractor's progress in relation to expenditures and advise the Contracting Officer of any disparity indicating excessive or deficient funding.

g. Review Contractor invoices and recommend approval/disapproval for payment is appropriate. Such review shall be completed in a manner so as to allow timely payment under the Prompt Payment Act and avoidance of payment of interest penalties.

h. Recommend in writing to the Contracting Officer any changes desired in scope and/or technical provisions of the contract with justification for the proposed action. If the Contractor proposes a change, obtain Contractor's written statement to that effect and forward it to the Contracting Officer together with your analysis and recommendation. **YOU ARE NOT DELEGATED TO AUTHORIZE ANY CHANGES IN THE STATEMENT OF WORK OR SPECIFICATIONS OR DUTIES OF THE PARTIES AS STATED IN THE CONTRACT.**

Inspection Menu Of Services

(Complete **this form** and deliver or mail to Gary Stergin at
MS 447 immediately after Construction Contract Award)

Contract Data

Contract No. IAS1-	Project Title:	Contractor:		
Performance Period: (days)	Award Amount:	COTR	Contract Officer	TPE

NOTE: Planning inspection services will be an important element of the inspection strategy. Inspectors are required to have an inspection plan for each project (in addition to specifications and drawings). As TPE of this project you and your supporting team (electrical, mechanical, structural) are requested to list significant areas of inspection. **These** areas are what you feel are critical in the construction process. Please list below any other significant inspection points that should be field witnessed, verified, and recorded.

Construction Services

Pre-Award / Preconstruction Services

- Spec Reviews
- Site Visits (Job Show)
- Attend Pre-Construction Conference
- Escort to Safety Briefing
- Coordination / Facilitation
- Utility Outages
- Obtain Permits
- Security Escort
- Overtime

Technical Inspection

- Quality Assurance Plan
- Verification of Contract Compliance (QA/QC)
- QA/QC Documentation
- Special Inspections
- Technical Consultation
- Final Inspection / Contract Closeout

OTHER COMMENTS:

X-Ray requirements (approximate number of welded joints and size)	No. of welded joints and size
Configuration Control requirements (if yes, approximate number of drawings)	<input type="checkbox"/> Yes <input type="checkbox"/> No No. of drawings
Overtime and/or shift change requirement, e.g. utility outages	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Percent equipment cost vs. total contract cost	_____ %
Projected dates of off-site inspections (shop visits)	/ / / /

Construction Management Services Statement of Work (SOW) Estimated Project Man-hours

Date:

Task No.:

Contract Data

Contract No. NAS1-	Project Title:	Specification No.:		
Performance Period: (days)	Award Amount:	COTR	Contract Officer	TPE

Inspection Services

- IS1 - Verify Technical Compliance and Facilitate On-Site Work
- IS2 - Document Lessons Learned
- IS3 - Constructability Reviews

Preconstruction Services

- PC1 - Obtain Permits
- PC2 - Document and Coordinate Responses to Bidders Queries

Submittal Processing

- SP1 - Produce and Update the Project Submittal Log
- SP2 - Review Submittals
- SP3 - Manage the Submittal Process

Contract Change Order Support Services

- C01 - Process Value Engineering Change Proposals
- C02 - Process Contractor Request for information (RFI)
- C03 - Process Request For Change (RFCs)
- C04 - Change Order Drafting Services
- C05 - Monitor RFCs in Process

Project Management Services

- PM1 - Review Contractor Progress Schedule Submittals
- PM2 - Develop A Government Milestone Schedule
- PM3 - Verify Contractor Progress Payment Requests
- PM4 - Monitor Performance of Job Progress
- PM5 - Prepare Project Performance Reports
- PM6 - Provide Site Support

Documentation Management Services

- DM1 - Manage Contract Correspondence
- DM2 - Manage RFIs
- DM3 - Acceptance of Completed Work
- DM4 - Review Contractor As-built Drawings
- DM5 - Provide As-built Record Drawings
- DM6 - Documenting Potential Claims
- Other

NOTE: See the NASA LaRC Construction Management manual for definition of services.

Estimated Man-hours
Cost Per Hour
TOTAL COSTS \$

Appendix 5
Langley Construction Management Manual

STATEMENT OF WORK
CONSTRUCTION MANAGEMENT/INSPECTION SERVICES

Project Title:
Task Order No:

Provide the following construction management and engineering support services in accordance with the procedures contained in the LCMM and in the Additional Instructions contained in this task order.

Engineering support services shall be provided during the construction phase of the project as limited by the task order initiation and required completion dates, which are identified on the task order document.

Nothing in this task order is intended to authorize the CM to direct the construction contractor to perform work. The CM shall not give verbal or written instructions to the construction contractor which direct the contractor to perform work or dictate a method of construction or which may be reasonably interpreted by the construction contractor as directions or methods.

- (1) See specification No. 0-00-0000.0000, Section 01010, Summary of Work, Parts 1.1.1.1.1, and 1.1.2 for project summary.
- (2) Contract Drawings are listed in specification No. 0-00-0000.0000, Section 01010, Summary of Work, Part 1.3.
- (3) _____ sets of drawings and specifications will be furnished.
- (4) The contractor shall coordinate services, maintain communication and obtain required consultation and approvals as specified in this task order with those listed below, and from time to time, with others not specifically listed. Such coordination, communication and required consultations and approvals shall be conducted per the NASA/LaRC Construction Management Manual (LCMM), unless otherwise noted in the Additional Instructions to this task order.

Agent

Mail Stop/Phone

Contracting Officer:
COTR:
TPE/Project Manager:
Mechanical TPE:
Electrical TPE:
Other Support TPE:
Research Customer:
Contract Administrator:
PIO Administrator:
Inspection Task Area Manager:
Safety POC:
Environmental POC:
Facility Coordinator/FSH:

Others: (See listing contained in the Additional Instructions to this task order.)

LISTING OF ORDERED SERVICES

INSPECTION SERVICES

**No: IS1
Verify Technical
Compliance & Facilitate
On-site Work**

Provide inspection services per the Langley Inspection Manual. Develop an inspection plan that defines the project's core inspection activities. Distribute plans to the Project TPE and Inspection **TAM**. Provide services as specified in the Langley Inspection **Manual** and in supplementary instructions furnished with this **task** order.

**No: IS2
Document Lessons Learned**

Document problems encountered during construction which might be minimized or eliminated by measures taken earlier in the project. Recommend actions for avoiding similar problems on future projects. Distribute the report to the project COTR, the designer, and others as designated below (See Additional Instructions). Included in the lessons learned (1) Problem Statement (2) Discussion of the problem's effect on the project's cost and schedule, (3) Probable cause, (4) Recommendation for avoiding the problem or reducing its impact on future projects.

**No: IS3
Constructability Reviews**

Review the **draft** contract documents (i.e., drawings and specifications) and document errors, omissions, contradictions or other statements which may lead to construction changes, unnecessary costs or time required to complete the work or other hindrances to job progress.

PRECONSTRUCTION SERVICES

**No: PC1
Obtain Permits**

Determine the permits required by law to be obtained prior to construction. Research the requirements for obtaining required permits. Prepare a schedule for completing the application process for each permit. Consistent with agency requirements and the approved schedule, prepare documentation packages for submittal as directed in the additional instructions of this work order.

**No: PC2
IFB Services**

Receive and log questions that are identified by the COTR. Respond directly to requests for assistance in locating information within the contract documents. If the required information cannot be found, refer the matter to the COTR. Provide a written brief of the issue to the COTR with recommended action.

SUBMITTALS PROCESSING

**No: SP1
Manage the submittal
process**

Review the submittal log prepared by the Submittal Processing Team (SPT). Make revisions as required. Provide periodic reports to the COTR detailing the current status of all submittals, highlighting submittals requiring management attention and proposing appropriate action. When requested, take action as approved by the COTR to assist the construction contractor in satisfying contract submittal requirements.

**No: SP2
Review submittals**

Review submittals to determine whether products proposed **for use** in the construction satisfy contract specifications. Determine (a) whether the submittal package is complete, (b) whether the **data** provided is sufficient, and (c) whether the products described are acceptable. Fill out the transmittal sheet to indicate proposed action, and process the submittal package **per** LCMM or as directed in the Additional Instructions. Unless otherwise directed, perform reviews within **10** calendar days **of** receipt of the submittal package. When recommending disapproval or conditional approval, note the item's objectionable properties and the minimum **standards** the item must satisfy. **Notify** TPE or COTR in advance **of** paperwork when submittals **are** not acceptable.

CONTRACT CHANGE ORDER SUPPORT SERVICES

**No: C01
Process Value Engineering
Change Proposals
(VECP's).**

Review VECP's submitted by the contractor. Verify that proposals include all **information** required by FAR 52.248-3, Part (c). Make recommendations regarding the effect **of** the proposal **on** the functional capability **of** the completed facility. Report findings **and** recommendations to the COTR within 15 days after receipt of VECP.

**No: C02
Process contractor
Requests for Information
(RFI's).**

Research contract documents and perform field surveys as **required** to collect requested information. **Fax** a copy of all incoming **RFI's** to the project COTR and obtain the COTR's concurrence **on** responses. Respond to RFI's within 5 calendar days of receipt. **If** an answer cannot be provided **within** 5 days, respond with an acknowledgement to the construction contractor advising expected date **on** which answer will be provided. (Include task No. DM2 w/ this task.)

**No: C03
Process Requests for
Proposal (RFP's).**

Review and develop technical **proposals for** changing the contract. Present proposals to the project COTR for approval. **Draft** Emergency Field Directed Changes (EFDC's) and deliver to the COTR within two hours **of** an oral order. Develop Request **for** Change (RFC) packages, consisting of a detailed statement of work (SOW), an engineering sketch, and a detailed cost estimate. Deliver RFC packages for changes **that** involve an EFDC **no** more than two working days after the EFDC is issued. For proposal, RFP delivery dates are negotiable. Oral order **to** proceed is COTR's responsibility.

**No: C04
Change Order Drafting
Services**

Provide drafting services, as directed. **to** document proposed changes in the contract drawings. Civil, mechanical, electrical, structural, and architectural drafting services are anticipated. Tasks will typically involve modifying existing NASA project drawings to reflect engineering information provided by NASA engineers via red-lined contract drawings or sketches. Project drawings in AutoCAD format will **be** provided. Tasks will ordinarily **be** completed in five working days. **If** more *than* five days will **be** needed to complete a **task**, give the COTR a proposed delivery date within two working days of task order receipt.

No: COS
Monitor RFC's in process

Establish and maintain an RFC management control system. Provide a (weekly/biweekly/ monthly) report which summarizes the status of all in-process RFC's. (Include task No. CO3 and task No. DM2 w/ this task.)

No: PM1
**Review contractor progress
schedule submittals**

PROGRESS MANAGEMENT SERVICES

Review the contractor's progress schedule submittals monthly, and assess the contractor's ability to meet contract completion dates. Evaluate the contractor's current schedule in light of progress thus far, known constraints, and the contractor's recent performance. Where appropriate, propose actions for removing constraints. Report findings and recommendations to the project COTR. Draft cure letter to contractor as directed.

No: PM2
**Develop a Government
Milestone Schedule**

Develop a milestone schedule based on the contractor's approved baseline progress schedule. Monitor attainment of milestones and report dates when milestones are achieved. Update the schedule as appropriate based upon the construction contractor's updated schedule.

No: PM3
**-Review Contractor
Progress Payment Requests**

Compare the contractor's progress as shown on validated progress payment requests against the current approved progress schedule and note variances. When actual progress falls behind planned, identify probable causes and recommend corrective action to the COTR.

No: PM4
**Maintain Photographic
Records of Job Progress**

Compile sets of progress photographs, which document construction. Take one set of photographs shortly before ground breaking. After construction begins, take one set around the 15th of every month, until all construction work is finally completed and delivered. Submit one set of photographs to the project COTR by the 25th of every month.

No: PM5
**Prepare Project
Coordination Meeting
Reports**

Review contractor's monthly progress report. Verify the validity of factual information presented. Prepare PCC briefing materials, as enumerated below (See Additional Instructions), based on validated information from the contractor and NASA project team members.

No: PM6
Provide staff support

When requested by the COTR, participate in conferences or meetings, called to address schedule, technical or other matters and involving one or more of the following: NASA, the contractor, the designer or other parties. Perform the following services as directed by the COTR: Prepare agendas; perform pre/post-meeting staff work, offer technical opinions and recommendations, prepare and distribute reports, minutes, and action item lists.

No: PM7
Coordinate Supply of GFP

Coordinate the delivery of Government furnished property. (materials and equipment) as specified in the project specifications. Verify the GFP conforms to the specifications, expedite delivery of GFP as directed, facilitate and document the transfer of GFP custody, and facilitate and document return of excess GFP and/or salvaged materials.

DOCUMENTATION MANAGEMENT SERVICES

No: DM1 Manage contract correspondence

Produce and maintain a correspondence log. Receive and log all incoming correspondence. Distribute ~~for~~ appropriate action per the guidelines provided below (See Additional Instructions). Send copies of all correspondence to the COTR with a transmittal sheet indicating (1) date received, (2) action assignee/phone number, and (3) action due date. Provide monthly reports listing unanswered correspondence, action due dates, and action assignees. For overdue correspondence, identify interim actions taken to satisfy the originator and provide a revised due date. When directed by the COTR, prepare correspondence for COTR's signature.

No: DM2 Manage RFI's

Produce and maintain an RFI log. Receive and log all incoming ~~RFI's~~. Assign action based on guidelines provided below (See Additional Instructions). Send copies of all ~~RFI's~~ to the COTR. Provide monthly reports listing unanswered ~~RFI's~~, action due dates, and action assignees. When response cannot be made within 5 working days, provide a brief explanation of the time required to respond, identify interim actions taken to satisfy the originator, and provide a revised due date. Prepare RFI response ~~for~~ signature by the COTR.

No: DM3 support contract Closeout and Work Acceptance

Manage the process leading up to ~~final~~ acceptance of the completed construction and contract closeout as described in Section 3 of the NASA LaRC Construction Management Handbook.

No: DM4 Review Contractor As-built Drawings

Concurrent with other planned or directed visits to the job site, verify that the construction contractor's as-built drawings are maintained up-to-date and reflect work in place as amended by change orders. Verify that Government approved and documented deviations are recorded in the contractor's as-built drawings. Report cases of non-compliance to the COTR. In addition to reviews during the project, review the contractor's as-builts when submitted at the end of the project and verify that all changes are recorded.

No: DM5 Produce As-built Record Drawings

Revise the original contract drawings to reflect changes recorded in the contractor's approved as-built drawings. Unless otherwise indicated in additional instructions below, provide completed drawings within 30 working days.

No: DM6 Documenting Potential Claims

Document potential claims with photographs and daily reports itemizing related costs. Consider all unilateral change orders, Government interference, and situations likely to increase the contractor's cost and/or time of performance as potential claims. Notify the COTR when a potential claim situation arises and solicit guidance as to the ~~type~~ and number of photographs to take. Provide the COTR an accounting of actual costs for potential claims three working days after the additional work is complete. (Include ~~task~~ No.'s DM2, PM1, CO3 w/ this task.)

Check if additional instructions are included.

ADDITIONAL INSTRUCTIONS

Mark $\frac{1}{2}$ additional pages are attached.

Contract NAS1-19400 Performance Metrics for Construction Inspection Task Order

Task No: _____
Initiation Date: _____
Evaluation Date: _____

***Quality** The degree to which Inspection/CM performance satisfies task order requirements. Use the applicable factors listed below to **assist** in your evaluation. Comment on specific areas **where** performance exceeds requirements, or specific weaknesses if requirements were not met.

1. Was inferior workmanship accepted or were unnecessarily tight tolerances or standards applied? (field observed)

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	---------------------	----------------	--------------

Comments: _____

2. Arc significant inspection activities documented ? Inspection /Risk Management Plan developed ? (logbook)

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	------------------	------	---------------------	----------------	--------------

Comments: _____

EX+	EX	EX-	VG+	VG	VG-	G+	G	G-	S+	S	S-	U
-----	----	-----	-----	----	-----	----	---	----	----	---	----	---

Welding: _____

Configuration Control: _____

Supervision/Management: _____

***Timeliness** Evaluate contractors responsiveness to schedule, milestones, and Government priorities. Consider all factors that affected contractors ability to facilitate on-time performance by the construction contractor.

1. Timeliness of discovery and reporting of non-complying work. (punch list)

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	---------------------	----------------	--------------

Comments: _____

2. Working days required to process pay vouchers. (data)

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: 1-3 days 4-5 days 6-7 days 8-10 days >10 days

3. Number of working days from punch list completion to task order closeout. (data)

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: 1-10 days 11-16 days >16 days

4. Working days required to process contract payrolls from date received. (data)

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: 1-10 days 11-15 days >15 days

EX+	EX	EX-	VG+	VG	VG-	G+	G	G-	S+	S	S-	U
-----	----	-----	-----	----	-----	----	---	----	----	---	----	---

mechanical/Plumbing:

Welding:

Confiouration Control:

Supervision/Management:

Efficiency

Evaluate contractors efficiency in performing the work, considering the difficulty and complexity of the requirement versus the man-hours required to complete the task. Consider contractors ability to accommodate field changes, delays, and other site contingencies while maintaining the task order budget.

Authorized Dollars _____ Dollars Used _____

1. Managed man-hours and funding. (file)

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments:

inspection cost estimate and estimate to complete are thoroughly developed and based on sound judgment. (file)

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments:

3. Inspection team coordinated services to provide efficient inspection effort. (field observed)

5

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: _____

4. Is the Inspection team efficiently using the plans and specifications in the inspection process? (field observed)

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: _____

The Overall Efficiency of Inspection on this Task is Characterized as:

Excellent			Very Good			Good			Satisfactory			Unsatisfactory
EX+	EX	EX-	VG+	VG	VG-	G+	G	G-	S+	S	S-	U

Comments:

Architectural/Structural: _____

Electrical: _____

Mechanical /Plumbing : _____

Welding: _____

Configuration Control: _____

Supervision/Management: _____

EX+	EX	EX-	VG+	VG	VG-	G+	G	G-	S+	S	S-	U
-----	----	-----	-----	----	-----	----	---	----	----	---	----	---

Additional Comments:

Task Manager

Date

**Contract NAS1-19400 Performance Evaluation
for Construction Management Task Orders**

Title: _____

Task No: _____

***Quality**

Establish the degree to which the Contractor's performance **and** the completed work satisfies work order requirements. Use the applicable factors listed below to assist in your evaluation. Comment on specific **areas** where performance exceeds requirements, or specific weaknesses if requirements were not met. Identify the factors that you consider most important to your task as "key factors".

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	------------------	------	--------------	----------------	--------------

Comments: _____

2. Recording of Contract Events and Project Records

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Notobserved
-----------	-----------	------	--------------	----------------	-------------

Comments: _____

3. Contract Correspondence

--	--	--

Comments: _____

4. Communicatic between the SvT Construction fan: n the NASA X

--	--	--	--	--

Comments: _____

5. Coordination & Communications between SvT Construction Manager and s.

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	------------------	------	--------------	----------------	--------------

Comments: _____

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: _____

--	--	--	--	--	--

Comments:
Submittals: _____

Schedules: _____

Other Documents: _____

--	--	--	--	--	--

Comments: _____

--	--	--	--	--	--

Comments: _____

--	--	--	--	--	--

Comments:
Scope Definition _____ **RFC** _____

Estimates _____

11. Facilitates Adherence of the Construction Contractors' Compliance with the Contract & NASA LaRC Procedures

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: _____

--	--	--	--	--

Comments: _____

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: _____

--	--	--	--	--

Comments: _____

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: _____

The Overall Quality of Work on this Task is Characterized as:

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments:
 Architectural/Structural: _____

 Electrical: _____

 Mechanical: _____

 Other: _____

***Timeliness** Evaluate the Contractor's responsiveness to schedule, milestones, and Government priorities. Consider all factors that affected the contractor's ability to facilitate on-time performance by the construction contractor.

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: _____

***Efficiency**

Evaluate the Contractor's efficiency in performing the work considering the difficulty and complexity of the requirement versus the man-hours required to complete the task.

Authorized Man-Hours _____ Man-Hours Used _____

Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Not Observed
-----------	-----------	------	--------------	----------------	--------------

Comments: _____

***Overall Rating** The overall rating of this task is:

(Place an x in the area of the evaluation bar that best describes the overall rating of the task/performance)

EX+	EX	EX-	VG+	VG	VG-	G+	G	G-	S+	S	S-	U
-----	----	-----	-----	----	-----	----	---	----	----	---	----	---

Comments: _____

Additional Comments: _____

Task Managers Signature _____ Date _____

(8)
6

MEMORANDUM TO FILE

From: _____

Subj: **TRANSFER OF GFM/GFE FOR CONTRACT NASI-** _____,
TITLE: _____

The following items were transferred to _____
on _____ (Contractor)
(Date)

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SERIAL #</u>	<u>CONDITION</u>
-----------------	--------------------	-----------------	------------------

The contractor acknowledges receipt of the above listed items. All items have been inspected and thoroughly checked and are in new unused condition.

Accepted by:
Name _____
Title _____

Witnessed by:
Name _____
Title _____



Transfer and/or Notification of Compliance of Accountability of Real Property

1. FROM (Installation/Activity):		. DATE				3. JOB NO.			<i>Installation Use Only</i>		
		CONTRACT NO.				5. PROJECT NO.					
TO (Installation Activity)		FACILITIES DATA 1) <input type="checkbox"/> NEW CONSTR. (2) <input type="checkbox"/> EXISTING FACIL. 3) <input type="checkbox"/> CAPITAL IMP. (4) <input type="checkbox"/> OTHER (Specify)				b. OCCUPANCY AND COMPLETION DATA (1) <input type="checkbox"/> BENEF. OCCUP. (2) <input type="checkbox"/> PHYSICAL COM. (3) <input type="checkbox"/> FINANCIAL COM. (4) <input type="checkbox"/> OTHER (Specify)			c. TRANSFER (1) <input type="checkbox"/> BETWEEN INSTAL. (2) <input type="checkbox"/> OTHER GOVT. AGENCY		
		EN NO. 8.		FACILITY CLASS. CODE 9.	FACILITY DESCRIPTION 10.	O. OF UNITS 11.	TYPE 12.	JNIT. OF AEAS. 13.	TOTAL QUANTITY 14.	COST 16.	DRAWING NUMBER(S) 16.
18. AUTHORIZED BY (Signature)				19. TITLE				20. DATE			
21. ACCEPTED BY (Signature)				22. TITLE				23. DATE		24. PROPERTY VOUCHER NO.	

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665-5225

NASA

Trison

7

Reply to Ann of

447

June 22, 1990

TO: Distribution

FROM: 447/Head, Specifications and Contract Coordination
Office, FENG
126/Head, Grants, Supply, and Construction Contracts
Branch, AD

SUBJECT: Progress Payments Including Payment for Materials
On-Site or for Materials Off-Site

Progress payments are a form of financial assistance to contractors. Financial aid to contractors may assist in expanding production capacity, increasing competition, speeding performance and furthering the Government's Small Business Program. To obtain these benefits, it is Government policy to help finance contracts if this is likely to make performance more prompt, efficient, and cost effective.

We normally pay 100 percent progress payments for **work** delivered and installed on construction contracts. However, we should not pay contractors for a percentage of work that exceeds actual performance, since in the event of default, the bonding company's liability is reduced by the amount of overpayment. However, when the work is substantially complete, the payments under fixed-price construction contracts FAR clause allows the Contracting Officer to withhold the necessary funds to protect the Government until contract completion and acceptance.

In addition, the above **FAR** clause allows for (at the Contracting Officer's discretion) payment for material delivered on-site prior to installation.

The following provides the NASA LaRC's policy concerning payment for materials that are delivered but not installed.

When reviewing an invoice requesting payment for material on-site, the material **should** be in one of the **following** two categories:

- a. Construction material such as brick, steel, insulation, roofing material, wire, conduit, pipe, etc.

Policy: Materials in this category can be paid for at 100 percent of **the** material cost provided the submittals have

been reviewed and approved, the material in question is properly stored, the exact quantity has been verified to be on-site, and the material complies with the contract requirements and approved submittals.

- b. Mechanical and electrical equipment such as chillers, pumps, air handling units, heaters, switch gear, duplex switch boards, transformers, wind tunnel equipment, etc. (any equipment where the contractor is required to demonstrate functional operation, conduct performance/ acceptance tests, or provide start-up services).

Policy: Materials in this category should only be paid for at **80** percent of material cost until final acceptance provided the submittals have been reviewed and approved, the material and equipment in question is properly stored, and the exact quantity has been verified to be on-site.


An exception to this 80 percent - 20 percent rule would be "when the price breakdown for progress payments has two line items" such as:

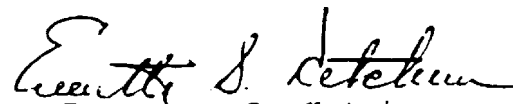
chiller equipment	Material	Labor
start up, testing, O&M manuals		Labor

In this case, you could pay **full** material price for the chiller equipment, or a percentage between **80** and 100 percent, since the Contracting Officer has discretion.

The construction contracts payments **FAR** clause also allows for payment when material is delivered to the Contractor at locations other than the site if the contract specifically authorizes payment for material stored off-site.

Policy: **NASA** LaRC solicitations will not allow for payment when material is delivered off-site except for rare exceptions. These exceptional cases should be addressed during the Spec. Review process. Also, the Contracting Officer will only grant this exception when overwhelming justification reveals that the benefits or cost savings are worth the risk of payment for off-site acceptance.


 Henry L. Livas, Jr.
 46837


 Everette S. Ketchum
 42404

Distribution:
All FENG D Personnel

cc:
447/SCCO Files
126/ESKetchum

447/HLLivas, Jr.:ljj 6-20-90 (46837)
436/JEK)E/C

APPENDIX (8)

Langley Construction Management Manual

Suggested data structure for a Government milestone schedule.

This appendix contains a suggested layout for a database or spreadsheet application to track a construction contractor's schedule. Each milestone record consists of 10 fields as indicated in the field listed below.

The database can be created in a desktop spreadsheet or database application (such as Excel, Quattro Pro, ACCESS, FoxPro or Dbase), for use during a construction contract. The field listing gives the recommended size and type of field and describes what data to be recorded in each field. The prompt information can be used for a database application, which allows the entry of a user defined prompt for the data.

<u>FIELD</u>	<u>DESCRIPTION</u>
CONTRACTNO (Field 1) Type Value Size User Defined Prompt	Construction Contract Number Character User Entered 13 (E) Last 5 digits of NAS1- contract number
REVISIONNO (Field 2) Type Value Size User Defined Prompt	Schedule Revision Number Numeric User Entered 5 (E) Milestone Schedule Revision Number
MS_IDNO (Field 3) Type Value Size User Defined Prompt	Milestone Identification Number Numeric User Entered 7 (E) User defined ID Number for the milestone
ACTIVITY (Field 4) Type Value Size User Defined Prompt	Construction Activity Description Character User Entered 25 (E) Name of the Milestone
MS_DATE (Field 5) Type Value Size User Defined Prompt	Milestone Date Date User Entered 8 (E) Original Milestone Date from Contractor Schedule

CRITICAL (Field 6)

Type

Value

Size

Automatic Capitalization Mode

User Defined Prompt

Indicates if the Milestone is **on** the Critical Path

Character

User Entered

1

Capitalize entire field

(E) "Y" if on Critical Path, otherwise "N"

I_T_D (Field 7)

Type

Value

Size

User Defined Prompt

Elapsed Time since Contract Award

Numeric

User Entered

3

(E) Elapsed days from NTP to Milestone Date

REV_DATE (Field 8)

Type

Value

Size

User Defined Prompt

Revision Date

Date

User Entered

8

(E) Date of Revision

REACHED-ON (Field 9)

Type

Value

Size

User Defined Prompt

Date Milestone is Reached

Date

User Entered

8

Date Milestone is Reached

REMARKS (Field 10)

Type

Value

User Defined Prompt

Remarks

Memo

User Entered

(E) Remarks, if any

(8)
9

S.A. AMPLG

September 7, 1994

Mr. John Taylor
Contracting Officers Technical Representative
Contract NAS1-20279(C)
NASA LaRC, Mail Stop 457
Hampton, VA 23681-0001

Re: Contract NAS 1-20235, Thermal Acoustic Fatigue Apparatus, Bldg 1221A
Submittal Log
F|LOGCOVER.496

Enclosed is a copy of the contract submittal log which we prepared by extracting the submittal requirements from various sections and paragraphs of the specifications. The submittal requirements listed in the contract documents are sometimes obscure or redundant and extracting a completely accurate log of required submittals is prone to error. Accordingly, the log should not be considered as a binding contract document, however, it is useful in recording, tracking and managing the submittal process.

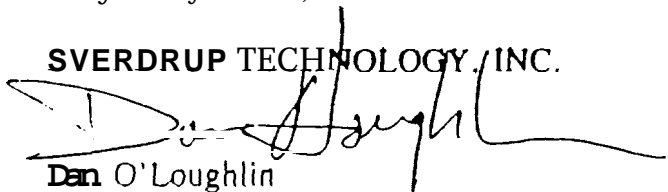
Under the CM task order issued to Sverdrup, we will be monitoring the submittal process for the government as well as reviewing the majority of the contractor's technical submittals. Please contact me if you want current submittal status information.

Please review the log and verify if the reviewing organizations listed on it correspond to your strategy for the submittal review process. Unless otherwise directed, we will plan to review and recommend approval/disapproval on the construction contractor's technical submittals indicated to be reviewed by SVT design or SVT construction services.

I have provided a copy of the log to Advex Corporation. Please call me if you have any questions.

Very Truly Yours,

SVERDRUP TECHNOLOGY, INC.



Dan O'Loughlin

cc: Advex Corporation, Charles Jackson
925/S. Prothro

CONTRACT SUBMITTALS

PROJECT: Replace Electrical Substations B-1212 &
 CONTRACI: **NASI-97120**
 CONIRACIOR: Mallory Electric Co. POC: R. L. Mallory, Vice President

DATE: **02/23/1998**
 PAGE: 1 of 17

TRM#	LOG-NO	SD_NO	DESCRIPTION OF SUBMITTAL	FOR	SCHEDULED RECEIPT	ACTUAL RECEIPT	DATE RETURNED	AC	RESUBMTL RECEIVED	RESUBMTL RETURNED	AC
SPEC SECTION: 01011, General And Administrative Requirements											
013	1	SD-04	Drawings As-Built Drawings Reviewer: F. Strehle	A		01/29/1998	01/29/1998	RE			
	2	SD-08	Statements MATERIALS AND EQUIPMENT SUBSTITUTIONS Reviewer: F. Strehle	A							
	4	SD-08	Statements APPLICATION FOR MAKING CONNECTION TO UTI Reviewer: F. Strehle	A							
	6	SD-08	STATEMENTS UTILITY OUTAGE REQUESTS Reviewer: F. Strehle	A							
006	7	SD-08	SIATEMENTS ELECTRICAL WORKER'S QUALIFICATIONS Reviewer: F. Strehle	A		10/03/1997	10/17/1997	AC			
	9	SD-18	RECORDS INVOICES Reviewer: F. Strehle	A							
	10	SD-18	RECORDS CONTRACTOR RELEASE FORM Reviewer: F. Strehle	R							
	11	SD-18	RECORDS PRICE BREAKDOWN FOR MODIFICATION PROPOSA Reviewer: F. Strehle	A							
Lettc	13	SD-18	RECORDS PRICE BREAKDOWN FOR PROGRESS PAYMENTS Reviewer: F. Strehle	A		10/08/1997	10/17/1997	A			
	15	SD-18	RECORDS ORDER STATUS REPORTS Reviewer: F. Strehle	I							

APPROVAL/ACTION CODES:

FOR: A=Approval; R=Review; I=Information

Action taken: A=Approved; AC=Approved with noted Corrections; R=Returned for corrections; RE=Reviewed; RC=Reviewed with Corrections; NR=Not Reviewed.

TECHNICAL SUBMITTAL FORM				Date Received.		Distribution			
TO Contracting Officer Technical Representative									
FROM: Contractor									
Contract No		Title							
TO BE COMPLETED BY CONTRACTOR									
Submittal Date		Submittal () New () Previous		Submittal Number		Previous Submittal No		Action Item No.	
GOV'T ACTION									
Item No.	Specification Section Para No./Dwg No.	SD No.	DESCRIPTION OF MATERIAL (Include Type, Model No., Catalog No., Mfg, Etc.)				Action Code	initial	
Spec. Deviation		No <input type="checkbox"/> Yes <input type="checkbox"/> Attach Justification		Contractor Signature			Date		
Gov't Action Codes: A-Approved: AC-Approved with corrections as noted: R-Returned for corrections; RE-Reviewed: RC-Reviewed with comment									

FOR GOVERNMENT USE ONLY			
To Reviewer:	M/S	To Reviewer: Date	From Reviewer: Date
SCT Rep (when spec deviation) Signature & Date		Transmittal No	
COTR	Signature		Date

CONTINUATION SHEET FOR TECHNICAL SUBMITTAL FORM

TO Contracting Officer Technical Representative

FROM: Contractor

Contract No

Title

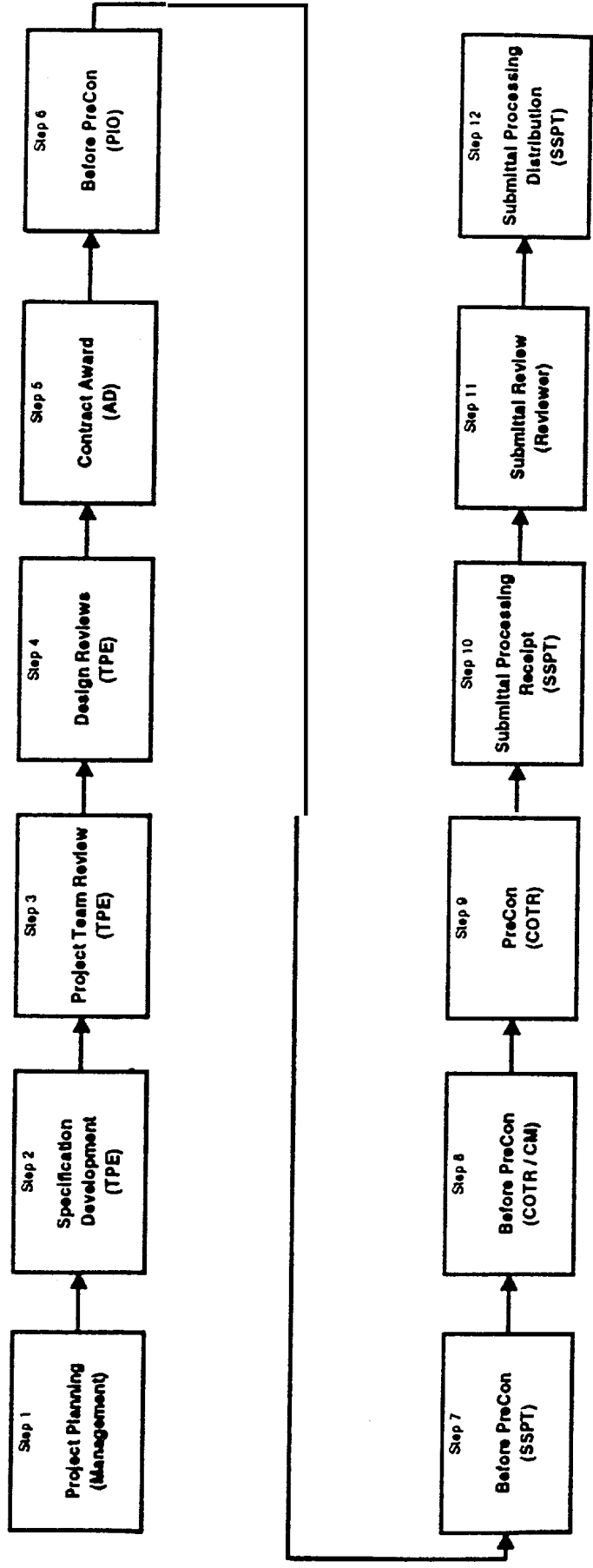
TO BE COMPLETED BY CONTRACTOR

Submittal Date		Submittal () New () Previous		Submittal Number	Previous Submittal No	GOV'T ACTION	
Item No.	Specification Section Para No./Dwg No.	SD No.	DESCRIPTION OF MATERIAL <small>(Include Type, Model No., Catalog No., Mfg. Etc)</small>			Action Code	Initial

Typed or Printed Name (Contractor) _____ Signature _____ Date _____

Gov't Action Codes: **A-Approved;** **AC-Approved with corrections as noted;**
R-Returned for corrections; **RE-Reviewed;** **RC-Reviewed with comment**

Revised Submittal Process June 13, 1997



9

Revised Submittal Process

June 13, 1997

Step 1 - Project Planning (Management)

- Assign Design Team Personnel
- Assign Construction Manager

Step 2 - Specification Development - (TPE)

- Develop specific submittal requirements for each section of the specification (Sample - Attachment A)
- Utilize the Submittal Register to establish submittal requirements (Sample - Attachment B)
- Designate COTR submittals to Mail Stop 465 - **All** technical submittals and correspondence for the COTR shall be processed through Mail Stop **465** - Sverdrup Submittal Processing Team (SSPT) located in the Center Core of Building 1209.
- Establish submittal copy requirements (6-typical)

Fundamentals of Submittal Development

The TPE has the responsibility of coordinating the development of the entire specification package, including submittals.

The TPE (and the WPMs on the design team) have the responsibility to select the appropriate submittals for the particular project to achieve the delicate balance between too many submittals and not enough submittals.

Submittals cost money - the Contractor's cost to generate, and the Government's cost to review; however, Submittals are **also** an important part of the construction package. The Contractor is required to deliver **all** of the submittals identified in the specifications.

Submittal requirements must be specific enough for the Contractor to clearly understand what is required. Also, it is important to remember that the Construction Manager (or someone other than the TPE who developed the specification) may be reviewing the submittals during construction; therefore, the Construction Manager assigned to the project should be involved in the development of the submittal requirements. Remember, general requirements lead to increased iterations ... which cost more time and money.

The Submittal Register must be used during the development of the specifications to establish the submittal requirements.

UL 467

(1984; 6th Ed; Nov 14, 1986) UL Standard
for Safety Grounding and Bonding Equipment

1.2 GENERAL REQUIREMENTS

Section 16003, "General Electrical Provisions," applies to work specified in this section.

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01300, "Submittals," in sufficient detail to show full compliance with the specification:

SD-01 Data

Manufacturer's Catalog Data shall be submitted for the following items:

Incoming Sections
Transformer Sections
Outgoing Sections
Switchgear Components
Waterproof Enclosures
Solid State Trip Devices
Instrument Transformers

Equipment and Foundation Data for Secondary Unit Substations shall include plan dimensions of foundations and relative elevations, equipment weight and operating loads, horizontal and vertical loads, horizontal and vertical clearances for installation, and size and location of anchor bolts.

Equipment and Performance Data shall include Manufacturer's Original Time-Current Characteristics Curves, on translucent paper 11 x 17 inches for all Fuses and Solid-state Trip Devices.

SD-04 Drawings

Connection Diagrams shall be submitted indicating the relations and connections of the following items:

Incoming Sections
Transformer Sections
Outgoing Sections
Switchgear Components

Layout Drawings shall show the general physical layout of all controls, the interconnection of one system (or portion of system) with another, and internal tubing, wiring, and other devices.

Fabrication Drawings shall be Submitted for the following items consisting of fabrication and assembly details to be performed in the factory.

SUBMITTAL REG.

Project Title

practice

Location:

Contractor:

Lead Designer:

TRANS CONTROL NO	SPEC SECTION NO	SD NO, AND TYPE OF SUBMITTAL MATERIAL OR PRODUCT	SPEC PARA NO.	GOVT OR A/E REVIEWER	DATE DUE FROM CONTRACTR	DATE RCV FROM CONTRACTR	APPROVING AUTHORITY ACTION			DATE DUE BACK TO CONTRACTR	DATE MLD TO CONTRACTR	REMARKS
							DATE FRM LEAD TO REVIEWER	DATE FRM REVIEWER TO LEAD	ACT CODE			
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
	05120	SD-01 Data	1.3									
		Manufacturer's Catalog Data										
		Bolts, Nuts and Washers										
		Paint Materials										
		Nonshrink Grout										
		Epoxy-Resin Grout										
		Cement Grout										
		SD-04 Drawings	1.3									
		Fabrication Drawings										
		Structural Steel										
		Accessories										
		Installation Drawings										
		Structural Steel Units										
		SD-13 Certificates	1.3									
		Certificates of Compliance										
		Structural Steel										
		Bolts, Nuts and Washers										
		Shop Painting Materials										
		Nonshrink Grout										
		Epoxy-Resin Grout										
		Cement Grout										
	1SOSS	SD-08 Statements	1.3									
	15055	Certified Welding Procedure										
		Specifications (WPS)										
		Certified Brazing Procedure										
		Specifications (BPS)										
		Certified Procedure Qualification										
		Records (PQR)										
		Certified Welder Performance										
		Qualifications (WPQ)										
		Certified Brazer Performance										
		Qualifications (BPQ)										

* NASA Notes

Approved by

Blank Contract Officer

ACTION CODES: NR Not Reviewed AN Approved as Noted

A Approved RFC Returned for Correction

(Others may be prescribed by the Transmittal Form)

9
/

Revised Submittal Process June 13, 1997

Submittals for commercial materials that can be readily verified in the field through material inspections should be minimized.

Step 3 - Project Team Review (TPE)

- The TPE should conduct a project team review of the project documents, including specifications and submittal requirements prior to the formal design and specification reviews. The Construction Manager should participate in the project team review.

Step 4 - Design Reviews (TPE)

- The types of reviews selected for the particular project (PDR, CDR, Table Top Review/Oversight Committee, Spec Review, etc.) shall be in accordance with FSED memorandum "Facility Project Review Requirements for FSED Designed Projects" dated **April 26, 1995**, and FSED memorandum "Design Review Process Diagram" dated October 29, 1996.
- The Construction Manager shall participate in all reviews

Step 5 - Contract Award (AD)

- Responsibility - Acquisition Division

Step 6 - Before Preconstruction Conference/ NTP (PIO)

- Provide contract information to SvT Submittal Processing Team (M/S 465)
Information shall include:
 - Contract Number
 - Award Date
 - Contract Duration
 - Contractor Name and Address
 - COTR and Alternate
 - Submittal Distribution (Coordinate with COTR)
 - Attachment C - ~~Form~~ Letter

National Aeronautics and
Space Administration
Langley Research Center
Hampton, VA 23681-0001



Reply to Attn of: 447

TO: 465/Sverdrup Submittal Processing Team
FROM: 447/Contract Specialist, Program Integration Office, FSED
SUBJECT: Construction Contract NAS1-_____ (c)

The subject contract was awarded to: _____

Submittal and construction document processing is requested for the duration of this _____ day contract.

COTR Assigned:
Mail Stop:

Nancy N. Shields
46841

Submittal Distribution:
126/Contract Files
447/Engineering Files (1)
428/Inspection (2)
447/N. Shields

ATTACHMENT C

5 /

Revised Submittal Process June 13,1997

Step 7 - Before Preconstruction Conference/ NTP (COTR / CM)

- Develops submittal distribution (Coordinate with PIO)
- Prepares Technical Submittal Form for construction Contractor (Sample - Attachment D) Complete form as follows:
 - TO: Mail Stop 465 + (Contract Number)
 - FROM: Contractor Name
Mailing Address
 - Contract Number
 - Project Title
 - Distribution
 - TO: Contractor Name and Mailing Address
 - COTR Name
- Provide completed copy of Technical Submittal Form to PIO
- Designate reviewers for submittals on Submittal Register

Step 8 - Before Preconstruction Conference/ NTP (SSPT)

- Receives contract information from PIO
- Receives reviewer designations from COTR
- Establish submittal log for tracking submittals
- Submittal team ready for project submittals

Step 9 - Preconstruction Conference (COTR)

- Deliver completed Technical Submittal Form to Contractor (paper and/or electronic copy)
- Provide directions to Contractor for hand delivered submittals (Room 187, B1209)
- Provide copy of Submittal Register with Transmittal Control Numbers to Contractor
- Emphasize to Contractor:
 - The need to submit the correct number of copies for each submittal (The number of copies required is indicated by code in the Contract Specifications Section 01300 - Submittal Summary)
 - The need to submit documents in a timely manner
 - The need to accurately identify submittals using the Transmittal Control Number on the Submittal Register

TECHNICAL SUBMITTAL FORM				Date Received:		Distribution: 126/Contract Files 447/Eng. Files (1) 447/PIO/Shields 428/Inspection (2) *447/Mayhew (1) 447/Stergin (1) 447/Morris (1) 443/Johnson (1) 441/McCreery (1)		
TO: Mail Stop 465, Contract NAS1-20319(c) NASA, Langley Research Center, Hampton, Va. 23681-0001								
FROM: Universal Technologies, Inc. 165 Alsonia Street, Estill Springs, TN 37330								
Contract No. NAS1 - 20319(C)		Title Mods to the 20" Supersonic Wind Tunnel						
TO BE COMPLETED BY CONTRACTOR								
Submittal Date		Submittal () New () Previous		Submittal Number		Previous Submittal No.		
Transmtl. Contr. #	Specification Section Para No./Dwg No.	SD No.	DESCRIPTION OF MATERIAL (Include Type, Model No., Catalog No., Mfg, Etc.)			Action Code	Initial	
Spec. Deviation		No <input type="checkbox"/> Yes <input type="checkbox"/> (Attach Justification)		Contractor Signature			Date	
Gov't Action Codes: A-Approved; AC-Approved with corrections as noted; R-Returned for corrections; RE-Reviewed; RC-Reviewed with comment								
FOR GOVERNMENT USE ONLY								
To Reviewer:			M/S		To Reviewer: Date		From Reviewer: Date	
Comments								
PIO Rep (when spec. deviation) Signature & Date				Transmittal No.:		Reviewer's Signature & Date		
						Reviewer's Signature & Date		
TO: Universal Technologies, Inc. 165 Alsonia Street, Estill Springs, TN 37330				Signature		Date		
COTR: Jim Mayhew				Signature		Date		

Revised Submittal Process June 13, 1997

- The need to review submittals from Subcontractors for completeness and proper identification prior to submitting to the Government
- Discuss with the Contractor how we expect a multiple item, complex submittal to be organized. (Option: Use a separate Technical Submittal Form for each submittal. Multiple item submittals typically need to be reviewed by more than one reviewer and are more difficult to track)
- Remind the Contractor that submittals marked "Approved with Corrections" or "**Reviewed** with Corrections" are required to be updated and resubmitted within 15 calendar days after receipt of the marked submittals.
- **Discuss** the process for delivering a preliminary copy of complex submittals which might require several iterations'

Step 10 - Submittal Processing- Receipt (SSPT)

- Submittals received from Contractor
- Mail **Stop 465 (81209, Center Core)**
- Enter the following data into the Submittal Log
 - Date received
 - Number of copies received
 - Specification Section Number
 - **SD Number**
 - Description of Material
 - Government action required
 - Date to reviewer
 - Date due from reviewer (**5 days** after receipt)
- Copy Technical Submittal **Form** and keep for record
- **Copy** Technical Submittal Form and distribute in accordance with the distribution indicated on the Technical Submittal Form **by a** •
- Attach action item form (Attachment **E**) and deliver to Reviewer Mail Stop

Step 11 - Submittal Review (Reviewer)

- SSPT delivers package to appropriate reviewer
 - Review and complete Technical Submittal Form with comments, signature and **date**, indicating **the** appropriate action:
 - **A** - Approved
 - **AC** - Approved with Corrections as noted
-

ACTION ITEM FORM

Action Item No:

Date Received:

Project Title:

Contract Number:

1. Reviewer:
2. COTR:
3. SSPT:

Note: Please review the attached material, provide required contract action, stamp and initial all copies, obtain COTR signature, and return the attached material to M S 465/Sverdrup Submittal Processing Team (Center Core, Building 1209).

DATE DUE: _____

Revised Submittal Process June 13, 1997

- R - Returned for corrections
- RE - REviewed
- RC - Reviewed with Comments
- Stamp and initial copies of submittal
- Reviewer returns completed package to COTR
- COTR reviews, assembles and organizes **submittal pac** cage
- COTR verifies distribution list and signs technical submittal form
- COTR returns completed package, with distribution properly marked, to SSPT (B1209, Center Core)

Submittal Stamping Requirements

Each submittal must be stamped and initialed with either the "Approved" stamp **or** the "Reviewed" stamp. It is left to the judgment of the reviewer whether each page of the submittal must be stamped and initialed **or** whether the submittal cover sheet only is to be stamped. The reviewer should consider the information contained in the submittal as **well** as the relationship between the Government and the Contractor when evaluating the stamping requirements for a particular submittal.

Tips for Easy Submittal Review

The best way to reduce the time required to review and return incomplete submittals to the Contractor is to have the submittal requirements clearly and completely defined in the specification.

If a submittal is expected to require several iterations (such as a test plan), the **TPE** should contact the Contractor and request a preliminary copy of the submittal. The preliminary copy can be reviewed and comments provided to the Contractor before the document is formally submitted with multiple copies. This procedure can be discussed with the Contractor at the Preconstruction Conference.

The reviewer must use good judgment when comments on submittals are lengthy:

- If the submittal **is** to be stamped "Returned for Corrections," the reviewer (COTR) could mark-up one copy of the submittal and return it to the Contractor, make a copy for his records, and distribute only the completed Technical Submittal Form to other project members.

REQUEST FOR INFORMATION (R.F.I.)

Distribution:

TO:

Contract No.
NASI -

Project No. Project Title

RFI No.

Date Submitted

Title

CONTRACTOR REPLY BELOW

Reply:

Contractor Signature

Date

Return To:

Description of Levels of Inspection
for Use in Developing Risk Assessment/Inspection Plans
FILE LEVEL

Classification of Inspection Levels

Inspection effort is classified into 4 categories which are--from **lowest** level to highest:

- Acceptance Inspection
- Point Inspection
- Methods Inspection
- Full-Time Inspection

The inspection categories provide a **convenient means** for **identifying** the inspection support for a particular element or phase of work. Each category **includes** the support provided in the lower levels.

Acceptance Inspection

"Acceptance Inspection" is inspection of the finished **product** without significant **attention** paid to the **installation** process. It does, however, involve **more** than an acceptance or rejection of **work** when a job or phase is **complete**. Acceptance inspection includes verifying materials--preferably **before they** are installed, **verifying** test results, **and** conducting final inspection of the finished work. An acceptance inspections **is** the **minimum** level of support and is routinely provided by Sverdrup **under inspection task** orders **unless** otherwise directed.

Point Inspection

Point inspection verifies **workmanship** at **established** milestones. It includes rough-in and **phase** inspections of the type **which** precede an "Okay to cover" order. Examples: Between paint coatings, **Rough-ins**, fabrication **fit-ups**, inspection between trades.

Methods Inspection

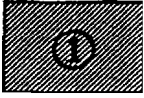

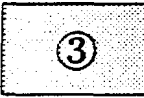
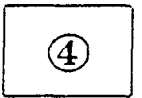
Methods inspection provides the support required to verify that the construction procedures and **methods** employed by the contractor and his **tradesmen** comply with specified practice. Support is sufficient **for** verifying that workmanship practices comply with the plans and **specifications**. Examples: Placing structural concrete, process piping and steel fabrication, erection of structural masonry.

Full Time Inspection

Provide? inspection support whenever the contractor is actively working--either on a complete job or on specific phases of the work. Examples: High Voltage splicing, Air Balance/Control set up **work**, location of utilities.

RISK ASSESSMENT MATRIX FOR EVALUATING APPROPRIATE MINIMUM LEVELS OF INSPECTION

SEVERITY OF CONSEQUENCES	PROBABILITY OF MISHAP			
	D IMPROBABLE	C REMOTE	B PROBABLE	A HIGHLY PROBABLE
I CATASTROPHIC		②	①	
II CRITICAL				
III MARGINAL	④			
IV NEGLIGIBLE				③

INSPECTION LEVEL	 ①	FULL-TIME	 ②	METHODS	 ③	POINT INSPECTION	 ④	ACCEPTANCE
---------------------	---	-----------	---	---------	--	---------------------	---	------------

SEVERITY OF CONSEQUENCES					
CATEGORY/ DESCRIPTIVE WORD	PERSONNEL ILLNESS/ INJURY	EQUIPMENT LOSS (\$)	SCHEDULE DELAY	ESSENTIAL FUNCTIONS	ENVIRONMENTAL CONSIDERATIONS
I Catastrophic	Death or Permanent Injury	>500K	>1 YR	Complete Loss of Function	Long-Term (5Yrs or Greater) Environmental Damage or Requiring >\$500K to Correct and/or In Penalties
II Critical	Severe Injury or Severe Occupation Illness	100K to 500K	4 Months to 1 Yr	Function Impaired Not Able to Recover	Medium-Term (1-5 Yrs) Environmental Damage or Requiring \$100K - \$500K to Correct and/or In Penalties
III Marginal	Minor Injury or Minor Occupation Illness	1K to 100K	1 - 4 Months	Function Impaired But Repairable	Short-Term (<1 Yr) Environmental Damage or Requiring \$1K - \$100K to Correct and/or In Penalties
IV Negligible	No Injury or Illness	<1K	<1 Month	No Significant Affect	Minor Environmental Damage Readily Repaired and/or Requiring <\$1K to Correct and/or In Penalties

PROBABILITY OF MISHAP		
LEVEL	DESCRIPTIVE WORD	DEFINITION
A	Highly Probable	Highly Likely to Occur in System Life Cycle
B	Probable	Likely to Occur in System Life Cycle
C	Remote	Not Likely to Occur in System Life Cycle But Possible
D	Improbable	Probability of Occurrence Cannot be Distinguish from Zero

NONCOMPLIANCE REPORT FOR FORMAL CONTRACTS

NASA Langley Research Center

12

PROJECT TITLE/LOCATION _____

TRACT NUMBER _____

PRIME CONTRACTOR _____

DRAWING/SPECIFICATION NUMBER _____

DATE IDENTIFIED _____

TYPE OF NONCOMPLIANCE

Direct Deviation From Contract Drawings or Specifications

- A. Equipment or materials that differ from approved submittals.
- B. Incorrect color.
- C. Work performed by uncertified or unqualified personnel.
- D. Other _____

Unsatisfactory Workmanship

- A. Uneven or poor finish to surfaces.
- B. Untrue or poor fitting joints.
- C. Unplumb or unsquare work.
- D. Loose or poorly fitting units.
- E. Other _____

BRIEF DESCRIPTION OF DEVIATION (*Requirement vs Actual*)

INSPECTOR'S SIGNATURE _____

CHIEF INSPECTOR'S SIGNATURE _____

DATE _____

RECOMMENDED ACTION

(Rejection, Acceptance, Acceptance with Credit to be Negotiated, Acceptance with Trade-off.)

AUTHORIZATION FOR DISPOSITION OF RECOMMENDED ACTIONS

1.	TPE _____ Date _____	2.	Contract Administrator _____ Date _____
3.	Contracting Officer _____ Date _____	4.	Other _____ Date _____

ACTIONS COMPLETED

1.	Received by Contract Administrator: (Signature) _____	Date _____
2.	Rejection Letter Sent to Contractor: (Signature and Title) _____	Date _____
3.	Modification to Contract Executed by: (Signature) _____	Date _____
4.	Noncompliance Corrected: (Signature) _____ Inspector: _____ Chief Inspector: _____	Date _____

NASA

Langley Research Center

Construction Inspection Manual *(Revision 1)*



*Facility Systems Engineering
Division*

*Engineering Support and Facility
Projects Branch*

Construction Management Team

11 May, 1998

NASA LaRC CONSTRUCTION INSPECTION SERVICES MANUAL

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 - 1. Utility Outages
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INTRODUCTION

The **NASA LaRC Construction Inspection Manual** is a handbook compiled by the Engineering Support and Facility Projects Branch of the Facilities Systems Engineering Division, Langley Research Center, Hampton, Va. Its purpose is to assist construction inspectors, technicians, engineers and construction managers in the inspection of construction projects at the Langley Research Center.

This manual is directed primarily to Construction Inspectors. However, Technical Project Engineers (TPE), Contracting Officer's Technical Representatives (COTR) and personnel in acquisition, operations support and safety as well as other branches and divisions will find it a useful guide for their involvement in Langley construction projects. Those not familiar with **NASA's** policies regarding construction projects should also refer to **the NASA LaRC Construction Management Manual** and the **NASA Facility Project Implementation Handbook**.

In summary, **NASA LaRC** has unique requirements for construction inspection services, techniques and deliverables. **This** manual attempts to list those services, explain their functions and describe the deliverables for each element. Inspectors should become familiar with the contents of this manual to ensure that all **NASA LaRC** requirements and construction contract requirements are being met. Questions and suggestions pertaining to interpretation, revisions and improvements are desired and invited; submit them to **NASA LaRC**, Facility Systems Engineering Division, Construction Management Team, Inspection **TAM** (MS447).

Duties and Responsibilities

The duties and responsibilities of construction inspectors at **NASA LaRC** are many and varied, encompassing more than a knowledge of actual construction practices. The construction inspectors play a vital role in the execution of construction projects. **As** the on-site representative of the contract team, they are involved in all aspects of the construction process, and are instrumental in ensuring that the Government gets the best quality construction for the available dollar.

The construction inspector's primary responsibility is to verify that the work in place complies with the contract plans and specifications and attest that proposed methods will result in complying work. The construction inspector must also confirm that the work is done safely, that payment requests are accurate, and that testing is properly performed. They must inspect, check and witness, prepare logbooks, refer to submittals, issue deficiency notices (non-compliance) and perform other functions deemed necessary to complete the assigned mission.

Construction inspectors are support service contractors funded through a Cost Plus Incentive Fee contract arrangement with **NASA LaRC**. Services are requested and paid for by a direct cost accounting, task order approach. Construction inspection services are requested, estimated, managed, funded and evaluated on an individual task order basis.

Construction inspectors, hereafter referred to as inspectors, are members of the Construction Services Unit (CSU) which also includes supervisory and secretarial personnel.

Construction inspection services provided are for the sole benefit of the Government. The presence or absence of an inspector does not:

- a. Relieve the construction contractor of responsibility for providing adequate quality control measures
- b. Relieve the construction contractor of responsibility for damage to or loss of material before acceptance
- c. Constitute or imply acceptance
- d. Affect the continuing rights of the Government after acceptance of the completed work
- e. Relieve the construction contractor of the responsibility for job site safety and protection of government facilities/equipment during construction

Standards of Conduct

The inspector's attitude in dealing with the construction contractors must be cooperative, firm and unbiased. The inspectors should be cordial and impartial and a businesslike relationship must be maintained at all times. Inspectors should never allow themselves to become involved in arguments or to lose their temper with contractor personnel. If a situation starts to deteriorate, the inspector should leave as quickly as possible and request the contracting officer's assistance. Inspectors should not fall into the trap of running the job for the contractor and must be extremely careful in offering him solutions to his problems. Often when the suggested solution doesn't work, the contractor may claim that he was directed to follow the suggestion and that the Government is liable to pay for the rework. Inspectors should carefully choose their words when the contractor starts probing him for acceptable solutions.

When practical, inspectors should avoid direct dealings with subcontractors. NASA has no contractual relationship with subcontractors as the contract is with the prime. When inspectors must deal with subcontractors, they should ensure that it is in the presence of and with concurrence from the prime contractor's representative.

SCOPE OF WORK

The primary responsibility of inspectors is to ensure that **work** is in conformance with contract requirements. Inspectors are the eyes and ears on the project, and, **must be** alert to monitor, report and record all significant happenings on the **job**. Inspection services shall be provided for activities dealing with site preparation, foundation, masonry, structural steel, interior wall partitions, millwrights, pipefitting, floors, doors, mechanical systems, roofing, electrical systems, controls systems, painting and coatings, heating, ventilation and air conditioning systems. Construction inspection functions include, but are not limited to; technical inspection, site coordination/facilitation, construction contract administration support, radiographic monitoring, pre-award services, safety, task order information management, **and** warranty issues. These services **and** functions shall **be** provided both at LaRC **and** at remote shops and vendor locations.

• Deliverables •

As a quick reference aid, the construction inspection deliverables discussed in the “Scope of Work” sections are listed below:

Section A: *Inspection plans, non-compliance forms, “reportable event” log entries, “inspection-as-built” drawings and specs., test results, field verifications, and “red-line” drawings.*

Section B: *The processing of utility outage request forms, digging permits and confined space entry permits and the issuance of work permits and overtime reports.*

Section C: *Contractor performance log, submittal file, work list, completion check list, contract evaluation form, certified payroll report, invoice log, and task order closeout report.*

Section D: *Time, location and radiation level logbook entries.*

Section E: *Pre-construction spec. review evaluations.*

Section F: *Monthly report of noted construction site safety violations.*

Section G: *Task order management database.*

Section H: *Construction inspection records.*

Technical Inspection (Section A)

Quality Assurance Planning

Each inspector must familiarize himself in detail with all the contract requirements, plans and specifications. The contract drawings and specifications shall be studied and any points not understood should be discussed for clarification. An inspection plan shall be developed based on contract requirements, risk assessment and other significant inspection points supplied by the Government. The inspection plan will list the proposed type and level of inspection required and shall be submitted to the Government representative (TPE, Inspection **TAM**) for review. It is important that each inspector have a thorough understanding of the contractual and technical requirements of the **work**, including shop drawings **and** submittals.

Verification of Contract Compliance

The inspector's primary responsibility is to verify that the work in place conforms to acceptable industry standards and is in compliance with the contract plans **and** specifications. Verification shall be achieved through some or any combination of the following "level of inspection" techniques:

1) Acceptance Inspection - inspection of the finished product without significant attention paid to the installation process. Acceptance inspection includes verifying materials prior to installation, verifying test results, and conducting final inspections of the finished work.

2) Point Inspection - verification of workmanship at established milestones as noted in the plans and specs. It also includes rough-in and phase inspections of the **type** which precede an "Okay to cover" order. Examples: between paint coatings, rough-ins, and fabrication fit-ups.

3) Methods Inspection - verification of construction procedures and methods employed by the contractor and **his** tradesman with specified practice. Examples: Placing structural concrete, process piping and steel fabrication, and erection of structural masonry.

4) Full Time Inspection - inspection support whenever the contractor is actively working. Examples: high voltage splicing, air balance/control set-up work.

The "level of inspection" will be determined by the inspection team to meet inspection criteria contained in the task order. The task order will take into account scope of work and availability of funds. Acceptance inspection is the minimum level of support and is routinely provided, unless otherwise requested.

In addition to "level of inspection" techniques, functional checks shall **be** performed to verify that the newly constructed system operates as designed. Functional checks range from verification of circuit breakers, switches, control valves and alarm panels, to operation of complex control circuits. These checks need to be coordinated with the cognizant Government and construction contractor representative to eliminate interference with other operations. **No** system shall be operated in an unsafe mode and all safety precautions shall be taken, including "red-tag" requirements.

Inspectors have **no** authority to authorize deviations ~~from~~ contract requirements, to interfere with the methods of performance by the construction contractor, or to issue instruction directly to any contractor personnel, unless the methods being used are unsafe. Non-compliance with requirements, and unacceptable performance or safety violations shall be reported to the appropriate **NASA** personnel in a timely manner. The construction contractor's superintendent shall also be notified of any deviations from the contract requirements so that corrective action can be taken. It is non-productive to notify the contractor of discrepancies at a later date when corrective action becomes difficult and costly. **Therefore, timely discovery and reporting of non-complying work is critical.** If the contractor is unwilling or unable to comply, the inspector should generate a non-compliance form, as described in the QA/QC Documentation section of this manual, which details the discrepancy and forward it to the **NASA** Inspection TAM and cognizant NASA Technical Representative (COTR or TPE) for signature.

It is the Government's requirement that contract work conforms in **all** respects with the contract plans and specifications and that workmanship is of the highest possible **quality**. Inferior workmanship will not be accepted. The plans and specifications should not be considered as desirable goals, but rather as minimum standards **which** must be met or exceeded. If quality is to be achieved, competent inspection must be applied to the materials and workmanship of each project.

QA/QC Documentation

In addition to verification of contract compliance, inspectors shall attest and document that work in place complies and maintain a logbook of "reportable events". Construction activities which are considered "reportable events" consist of acceptance tests, critical path delays, contract change orders, non-complying work, materials inspections, request for information (**RFI's**), significant meetings, utility outages, and work permits, as well as other atypical construction activities. Reportable events shall be recorded on the Construction Services Record, NASA-FSED Form 1050 (attach. 1) and shall be maintained for review.

Other QA/QC documentation pertinent to contract compliance includes inspection-as-builts and inspection reports. Inspection-as-builts are contract drawings which have been marked and dated by the inspector to indicate work inspected and accepted. Inspection-as-builts shall be supplemented by other inspection reports and relevant documents as appropriate, including concrete test reports and delivery tickets, material certifications, hydrostatic and pneumatic test reports and welding inspection documents. Inspection-as-builts and inspection reports shall accompany the Construction Services Records and shall be maintained for review.

When inspectors discover a deficiency, every effort should be made to convince the contractor of the deficiency by noting the applicable specifications and/or contract drawings. Any unresolved deviations from contract drawings/specifications or unacceptable workmanship shall be considered non complying work. Non complying work shall be documented on Noncompliance Reports, NASA Langley Form **N-1477** (Formal Contracts) and **N-1478** (Informal Contracts) **attach. 2 & 3**. Noncompliance reports shall contain a brief description of the deviation, specification or drawing number, and recommended action. The appropriate signatures shall be obtained and the report distributed to the contracting officer in a timely manner.

Special Inspections

In addition to visual inspections and functional checks, inspectors are required to perform special inspections for systems maintained under the Configuration Management plan. The Configuration Management plan is described in the Langley Handbook **LHB 1740.4**. Any special inspection requirements will be noted on the inspection request form and funded through the inspection task order.

Special inspection requirements involve verification of point to point (P2P) wiring checks on electrical systems and field verification of construction as-built drawings. Field verified construction drawings shall be submitted to the COTR or TPE to be

incorporated into the Facility Baseline List (FBL). Any existing Configuration Controlled Documents (CCD) affected by construction are typically “red-lined” by the NASA TPE, listed on a Change Notification Sheet (CNS) and submitted to the NASA Facility Coordinator or Facility Safety Head. However, the NASA TPE may choose to approve additional construction management money for the inspector to “red-line” existing CCD drawings. This request should be coordinated through the NASA Inspection TAM who will issue a revision to the inspection task order.

Technical Consultation

Inspectors are called upon to advise and suggest solutions to technical and administrative problems. They interface with NASA and contract personnel on a daily basis and are requested to attend meetings and conferences. Inspectors are a valuable source of information and provide input which facilitates the construction process. They are asked to comment on job progress, perform field surveys to gather data and attest to the reasonableness of construction contract change order (RFC's) man-hour estimates. The information they supply is useful when responding to contractor requests for information (RFI's) and contractor overtime requests. —

Site Coordination/ Facilitation (Section B)

Inspectors shall facilitate construction contractor site activities which interface with ongoing NASA operations to include utility outages, permits, and security. Inspectors shall facilitate the construction process within their area of expertise. Inspection services should make it easier for all parties to complete the project on time and within the specified budget.

Utility Outages

The facility coordinator shall be briefed and consulted when requesting outages which may affect other operations within the facility. Any work that requires securing water, air, steam, electrical or fire suppression systems shall be documented on the FSSD form N-1437 (*attach.4*) and submitted to the appropriate NASA personnel. Localized outages of facility sub-systems can be obtained by direct request to the facility coordinator. Outages requiring red “hold-off” tags will be the responsibility of the safety operator and will be discussed in the safety section of this manual.

Permits

Inspectors shall facilitate the acquisition of work permits, digging permits and confined space permits. Work permits (*attach.5*) shall be obtained for each construction project and shall contain the construction contractors name, location of work and expected start and finish dates. Once the proper signatures are obtained, the permit shall be posted at the job site.

Inspectors shall facilitate the acquisition of digging permits which are required for any work that exceeds six inches of subsurface penetration and is issued by the NASA subsurface utility coordinator. Surveyors will locate and mark underground utilities prior

to issuing permits and shall again be notified prior to backfilling. Digging permits shall be posted at the job site until backfilling is complete. Where appropriate and when funded to do so, inspectors shall stay on site to verify that the construction contractor hand **digs** to expose the subsurface utilities.

Confined space permits, as defined in Section 01060 of the Construction Contract Specifications, are required for any work which has a limited means of egress, and which is subject to the accumulation of an actual or potentially hazardous atmosphere or a potential for engulfment. The construction contractor will be provided a "Confined Space Entry Permit" application, which he shall complete and submit to the assigned inspector, for Safety Manager approval, at least 48 hours prior to beginning work. The "Confined Space Entry Permit" requires the construction contractor to specify the procedures intended for use to insure that continuous atmospheric testing is accomplished and that the contractor has designated confined space monitors to insure worker safety. Once approved, the inspector shall post the permit at the work site.

Security

Inspectors are required to report site security concerns to the NASA security office and shall report any unlawful or illegal activities. After hours or overtime work in secured facilities, badge and pass clearances and traffic control requirements shall be coordinated with the appropriate security personnel. During construction, inspectors may be requested to provide escort services in secured areas, however inspectors are not security guards and therefore are not liable for physical security.

Overtime

Contract completion dates are normally set so as not to require work in excess of eight hours per day and 40 hours per week. In order to ensure that the contract work is being accomplished without undue hardship on the user and to permit the inspector to verify contract compliance, normal working hours are established for each contract and are typically cited in Section 01011 of the Construction Contract Specifications.

Unless special scheduling requirements are specified, the intent **is** for the contractor to do the work within the hours allotted. However, due to varying site conditions or schedule delays, the contractor may request permission to work overtime. The requirements for overtime requests are described in the Construction Contract Spec. Section 01011 and shall be coordinated through the assigned inspector. The Construction Services Unit (**CSU**) shall prepare and submit to the **NASA** Inspection TAM an overtime report listing all contractors and inspectors who request overtime. Once approved, the request is signed and returned to the CSU for distribution to NASA security and the construction contractor.

Construction Contract Administration Support (Section C)

Inspection services provide support to various construction contract administration functions. These services include collecting and reviewing of certified payrolls and progress payments, documenting construction contractors performance, attending pre-construction conferences and processing contract closeout documents.

Certified Payrolls

Certified payroll submittals are required under Federal Acquisition Regulations (FAR) and related Davis Bacon laws for construction contracts. Inspectors shall collect, date, review and attest to the accuracy of certified payrolls within fifteen calendar days. Payrolls which do not match the wage determination rate, as defined by the Department of Labor, shall be returned for correction. Any issues which cannot be resolved, shall be referred to the NASA industry relations office. Once reviewed, the certified payrolls shall be forwarded to engineering files.

Progress Payments

Section 01300 of the Construction Contract Specifications requires construction contractors to submit monthly progress payments (invoices). Inspectors shall receive progress payment submittals from NASA acquisition for review and verification. Inspectors shall verify that "percent complete" claims are reasonable and accurate based on site visits, contract schedule and knowledge of construction progress and that only approved materials are considered for payment. Any exceptions shall be noted and referred to the appropriate NASA personnel (COTR) for changes. The required signatures shall be obtained and the progress payment returned to acquisition within ten calendar days. Final payments will not be approved until the construction contractor has submitted accurate as-built drawings.

Contractor Performance Documentation (Logbook)

When new contracts are awarded, inspectors shall establish a construction logbook which contains the project name, contract number, task order number, name of assigned inspectors and the construction contractor's name. The logbook will serve as the collection point for contractor performance documentation, daily construction reports supplied by the construction contractor (*attach. 6*) and all QA/QC documentation which was previously defined in the "Technical Inspection" (section A) of this manual. The project inspection team shall maintain this system of records and reports and shall make them available for review. At the completion of the contract, the logbooks shall be submitted for review by the NASA Inspection TAM and forwarded to the Contract Administrator.

In addition to construction logbooks, the inspection team shall establish and maintain a file of all contract submittals and modifications. Submittals shall be referenced during the inspection process to verify material acceptance and contract compliance. All contract modifications shall be incorporated into the inspector's set of plans and specifications and shall be used in the inspection process.

Pre-Construction Conference

The purpose of the pre-construction conference is to establish administrative procedures which are to be followed in the execution of the contract and are a mandatory requirement as cited in Section 0101 1 of the **NASA** Construction Contract Specification. Pre-construction conferences are designed to introduce the construction contractors to the key project personnel from **NASA** and the assigned inspector.

The assigned lead inspector for each project shall attend pre-construction conferences. While in attendance, the inspector shall have a copy of the contract plans and specifications and shall be prepared to discuss job related inspection concerns and receive pertinent information which may impact his job. Pre-construction conferences will be scheduled by the Contracting Officer who will notify the Construction Services Unit of the date, time and place.

Contract Closeout

When the construction contractor has completed work and a final inspection has been requested, the inspection team will document all outstanding work items onto a Work List report. Prior to final inspection, the Work List will be distributed to the **NASA** Contracting Officer (CO), TPE and the construction contractor. Based upon the contents of the Work List, the CO can: (1) elect to continue with the final inspection, or (2) advise the contractor that the work is not substantially complete and the final inspection rescheduled. If a final is held, the TPE, Lead Inspector and Contractor will create a Punchlist (**attach.8 part 5**) by adding to or modifying/deleting items from the Work List, based upon the judgment of those involved in the final inspection. If a final is not held, the CO will instruct the contractor to request a final when the work is complete. (See **attach.7 fig 1.1-1.6**)

The Punchlist will be transmitted to the contractor with a copy to the inspector. The Contracting Officer will specify a time for completion of the Punchlist and will be contacted by the contractor when completed. The inspector shall inspect the completed Punchlist within 24 hours after being notified by the Contracting Officer that it is complete. The Construction Contract Completion Check List FSED-CCL (**attach.8**) will be signed by the inspector after the punchlist inspection is successfully completed or, if no punchlist is generated, at the final inspection. (See **attach.7 fig 1.7-1.10**)

At completion, the Construction Services Unit will collect and submit the inspection logbooks, Construction Contract Evaluation SF 1420 (**attach.9**), certified payroll report, invoice log and task order close out report to the **NASA** Inspection TAM. The Inspection TAM will review and evaluate the inspection task order and forward the close out documents to the **NASA** Specs. and Contracts Team. The logbooks will be sent to the Contracting Officer for filing. (See **attach.7 fig 2.1-2.3**)

Radiographic Monitoring (Section D)

NASA construction contracts often require the use of contract radiography operations for the nondestructive testing (NDT) of welds, castings and piping. When the contractor is ready to radiograph his welding work, he will verbally request radiographic monitoring support from the inspector as required by contract spec section 01060 and NASA LHB 1710.5. The assigned inspector shall coordinate this request with the inspection supervisor who develops a manpower plan. The inspection supervisor can assign an NDT monitor or an NDT certified inspector to monitor the site. All time for this service shall be charged to the inspection task order.

Inspectors and monitors shall read and become familiar with all procedures listed in LHB 1710.5 v-14 so as to verify strict adherence by the construction contractor. Monitors shall maintain a record of the time, location and radiation levels measured at representative locations on the control area boundary. Measurements shall be made at one hour intervals during the operation and recorded in the inspection logbook.

Pre-Award (Section E)

Construction phase services are required prior to award of the construction contract. These pre-award services include attendance at site visits, involvement in spec. reviews, and preparation of cost estimates for the remainder of the construction phase services required for the task order.

Site Visits

Site visits (job shows) are scheduled to allow potential bidders the opportunity to view the actual job site to collect data which may be useful in preparing a more accurate cost estimate. The assigned inspector will visit the job site with all of the interested construction contractors and the NASA personnel to answer any job related questions. Time spent on site visits shall be charged to the inspection task order.

Spec. Review

Due to a continuing increase in construction cost and the unique needs of our customers, it is important that projects be designed and constructed as rapidly as possible. Design reviews at all levels should be efficient and timely. In keeping with this policy and in order to utilize the experience and expertise of inspectors, pre-construction spec. reviews are essential. Therefore, inspectors shall provide constructability comments to pre-award spec. reviews.

The assigned inspector receives two sets of plans and specifications approximately one week prior to the spec. review meeting. He separates the spec. packages by trade and delivers them to the appropriate trade specific inspector assigned to that job. The trade inspector critiques the spec. section related to his area of expertise and makes recommendations based on lessons learned from previous jobs. He also looks for drawing discrepancies, unrealistic or unnecessary spec. requirements, and/or requirements which were inadvertently omitted. In this respect, the following checklist has been prepared:

1. Are existing site conditions accurately shown on drawings?
2. Is completion time reasonable considering job constraints, such as work scheduling restrictions and seasonality of the work?
3. Is WBS for contractor's progress schedule appropriate?
4. Are conditions and procedures for obtaining access to the jobsite clearly set forth?
5. Is Govt. furnished property clearly identified? Availability dates indicated?
6. Are material storage areas defined?
7. Are restrictions affecting the contractors ability to perform clearly defined (e.g., availability of parking, material delivery routes, requirements for working in occupied spaces)?
8. Ensure that any landscaping requirements for the planting season are commensurate with contract duration.
9. Comment on any observed conflicts between the plans and specifications, or between various disciplines. Are electrical and mechanical system layouts compatible?
10. Value engineering proposals (i.e., can significant savings be realized using different methods or materials than those specified?)
11. Are lessons learned on previous projects being applied?

When completed, the marked up set of plans and specs. are then returned to the NASA Inspection TAM for review. Time spent on spec. review evaluations shall be charged to the inspection task order.

Task Order Cost Estimates

The support service contractor shall develop cost estimates for the entire list of construction phase services requested for the construction project. These estimates will be used in negotiations with the Government to determine the Target Cost for each task order.

Safety (Section F)

Construction Site

Construction site safety is the responsibility of the construction contractor and is enforced by the NASA LaRC Office of Safety and Facility Assurance (OSFA) and OSHA. Inspectors are required to notify the appropriate parties whenever safety violations or unsafe practices become evident while conducting technical or administrative inspection duties. It is not the inspector's responsibility to look for safety violations or conduct daily

safety inspections. However, the inspector is responsible for verification of contract compliance requirements stated in the specification safety section (01060) and can **issue a stop work request** if imminent danger exists.

Obvious safety violations shall be reported to the site superintendent for immediate resolution. If the violation is not able to be resolved, or continues to occur, the NASA LaRC Office of Safety and Facility Assurance shall be contacted. A monthly report of all noted safety violations shall be submitted to the NASA LaRC Office of Safety and Facility Assurance and Inspection TAM.

Projects which involve environmental safety hazards, such as PCB's, asbestos **and** lead paint, shall be closely monitored for compliance. Any violations which may cause leakage or contamination require timely response. The inspector shall verify that the contaminated area is clear and secure and immediately contact the appropriate Office of Safety, Environment, and Mission Assurance (OSEMA) personnel.

ALL inspectors shall read and become familiar with the NASA LaRC Safety Clearance Procedures (**RED-TAG**) (LAPG-1710.10) safety program and **be** aware that any violation is grounds for dismissal of the offending individual. The inspection staff shall have **NASA** LaRC certified Safety Operators who are qualified to install and remove red "hold-off" tags on low voltage (600v and below) power systems and low pressure piping (350 psi and below) systems for construction contracts only. Prior to installing red "hold-off" tags, the inspector shall contact the Facility Coordinator or his alternate to receive the **RED-TAG** stub and shall have the Facility Coordinator initial the inspection log sheet attesting to the fact that the proposed outage is acceptable. Inspectors shall forward all other safety clearance requests to the appropriate NASA Safety Operator or contact the NASA duty officer for coordination of safety clearances

Safety Briefing

The prime construction contractor is required to attend a safety briefing prior to any site work as stated in Section 01060 of the Construction Contract Specifications. Badges and vehicle passes will not be issued until the on-site superintendent has been to the safety briefing. The contractor shall coordinate safety briefings through the assigned inspector who will meet and escort the contractor to the safety briefing. The inspector shall have with him a copy of the contract specs. and shall be prepared to discuss potential job specific safety concerns. It is the prime contractor's responsibility to brief his subcontractors on safety requirements and can also request their presence at the safety briefing.

Task Order Management Information System (Section G)

The Construction Services Unit (**CSU**) shall maintain a computer based task order management information system (**TOMIS**) and an electronic file management process which includes periodic backup of database records. Database software shall be network version, DOS or Windows ready and as a minimum, be able to run on a 486 PC. The task

order database shall contain contract and task order cost data, schedule information, and project information. Each new job received in the **CSU shall be** entered into **TOMIS** and shall **be** accessible through a local area network.

TOMIS shall be able to display current on line data to the **NASA** Inspection **TAM** with read/write capability and shall **be** used to generate hard copy reports when requested. Access to **TOMIS** shall be controlled so as to maintain hardware and software integrity.

Warranty Issues (Section H)

Construction contractors are obligated, for a one year warranty period (**from** BOD), to return for rework or repair of faulty equipment. Customers typically contact the project inspector to report failures which are considered warranty related. Inspectors shall then determine whether the warranty period has expired and inform the customer accordingly. **If** work is within warranty period, the inspector is responsible for contacting the construction contractor to schedule a time for rework. If expired, the inspector shall direct the customer to **the** appropriate **NASA** work control personnel.

The inspector shall arrange for appropriate badges and passes and shall **be** available to escort or meet the contractor at the site when necessary. The inspector shall coordinate any additional support reasonably required to resolve the problem. **All** "call back" warranty work shall be documented on Construction Services Record, **NASA-FSED** form 1050(*attach.1*) and shall be charged to the warranty task order.

SUPPORT SERVICE CONTRACT ADMINISTRATION

- Deliverables -

The construction inspection deliverables which are discussed in the following section include inspection cost estimates and cost to complete estimates.

As stated in the introduction section of this manual, construction inspectors are support service contractors funded through a Cost Plus Incentive Fee contract arrangement with NASA **LaRC**. Services are requested and paid for by a direct cost accounting, task order approach. Construction inspection services are requested, estimated, managed, funded and evaluated on an individual task order basis.

NASA **LaRC** personnel shall request construction inspection services by submitting a funded task order and scope of work to the NASA **FSED** Inspection TAM (*attach. 10*). Once approved, the task order is routed through the COTR and applied to the support service contract. A copy of the task order and scope of work are then transmitted to the **CSU** at **MS 428**. At that time, a new database record is entered using the **task** order number and other project data as described in the "Task Order Management Information System" (section **G**) of this manual. Work done as part of the Pre-Award services will be issued through a blanket task order with sub-task numbers given to each construction project to facilitate accountability of funding for each project. The remaining services to be provided for each project will be issued through individual task orders. The services to be included and the Target Cost will be negotiated prior to award and whenever task order revisions are necessary.

The NASA TAM and the support service contractor will develop independent cost estimates which will be used during negotiations. The support service contractor will use the estimate generated and paid for as part of the Pre-Award services. Estimates shall be based on sound judgment and knowledge of the job, realizing that differing site conditions, poor contractor performance and construction change orders prolong performance period and tend to increase inspection cost. The Inspection **TAM** will discuss the estimate and seek concurrence from the project TPE prior to funding.

To insure funding accountability for each task order, inspectors shall charge time to the inspection task order number related to the project they are inspecting. As available funds decrease, the **CSU** may be requested to provide an estimate to complete worksheet (ETC). NASA must then direct the support service contractor to budget the remaining hours to complete the task or revise the task order for additional funding.

Once the project has been completed, closeout documentation submitted and all task order charges applied, the COTR is requested to close the task. The database record is archived to a closed status and no additional charges incurred. The original task order will be signed in the closeout block by the NASA COTR and the Support Service Contract Manager.

CSU inspectors shall maintain a professional, working relationship with all internal and external customers and shall communicate to NASA potential problems and continuous

improvement suggestions related to the support service contract agreement. **NASA** must **be** confident that inspections are being performed satisfactorily within the **ethical** and fiscal guidelines established for public service. Therefore, client confidence is an extremely important product of the **CSU**. Additional support service contract information related to technical performance, business and technical management, cost and safety, can **be** found in the Contract Management Plan and Incentive Fee Evaluation Plan.

PERFORMANCE EVALUATION METRICS

Construction inspection task orders are rated for quality, timeliness and cost of performance. The overall rating of the Performance Evaluations (*attach.11*) determines the amount of incentive fee paid to the support service contractor at semi-annual periods. Since the incentive fee process is effective in improving the support service contractor's performance, it is imperative to provide fair and tangible metrics, as well as detailed comments/justification to support performance ratings. Performance data is gathered by reviewing logbooks, database reports, site visits, meetings and client input.

Quality factors include the verification of documentation of inspection activities, accuracy of inspection plans, and verification of contract compliance. The number of days required to process pay vouchers, contract payrolls and task order closeouts are also performance considerations.

Attachment I

Date: / / Time: :
mm dd yr hh: mm

Bldg: _____

Job: _____

Name: _____

- TPE
- ITAM
- COTR
- CO/CA
- CM
- Designer
- Lead/Insp
- Fac Coord/SH
- GC Supt

C Complete
 I Incomplete
 F Filed

Additional Report

CONSTRUCTION INSPECTION RECORD

Additional Pages
page of

- | | | |
|---|---|---|
| <input type="checkbox"/> Mtg/Conversation/Communication | <input type="checkbox"/> Specification Variance | <input type="checkbox"/> Interference |
| <input type="checkbox"/> Non Conforming Work | <input type="checkbox"/> Permit/EEO Tag | <input type="checkbox"/> Safety/Environ Issue |
| <input type="checkbox"/> Material Deliveries | <input type="checkbox"/> Utility Outage | <input type="checkbox"/> Labor/Wage Det |
| <input type="checkbox"/> Potential/Actual Claim/Delay | <input type="checkbox"/> OT Request | <input type="checkbox"/> RFI |
| <input type="checkbox"/> Test/Inspection | <input type="checkbox"/> Spec Review | <input type="checkbox"/> |

- STATUS
- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 1 Sec/Para/Subpara | <input type="checkbox"/> 3 Sec/Para/Subpara | <input type="checkbox"/> 1 Sht/View/Detail | <input type="checkbox"/> 3 Sht/View/Detail |
| <input type="checkbox"/> 2 Sec/Para/Subpara | <input type="checkbox"/> 4 Sec/Para/Subpara | <input type="checkbox"/> 2 Sht/View/Detail | <input type="checkbox"/> 4 Sht/View/Detail |

COE

Mtl Inspection

Wkmanship Inspection

Whole Partial
 Accept Reject Not Inspect

System: _____
 Criteria: _____
 Pass Fail Not Observed

- End User -

FM: _____
 Contractor
 / /
 mm dd yr

TO: _____
 COTR/TAM
 Request authorization to work designated hours as per Section 01011
 : :
 hr P to hr P

Justification: See comments

Inspector's Remarks: See comments

Inspection Req'd ? Y N

Over-E

Inspector	Contractor (Copy recv)	CO/COTR (Copy recv)
-----------	------------------------	---------------------

Copy 1: Originator
 Copy 2: Lead Inspector
 Copy 3: Other

Attachment 2

NONCOMPLIANCE REPORT FOR FORMAL CONTRACTS

NASA Langley Research Center

PROJECT TITLE/LOCATION _____

CONTRACT NUMBER _____

PRIME CONTRACTOR _____

DRAWING/SPECIFICATION NUMBER _____

DATE IDENTIFIED _____

TYPE OF NONCOMPLIANCE

Direct Deviation From Contract Drawings or Specifications

- A. Equipment or materials that differ from approved submittals.
- B. **Incorrect** color.
- C. **Work performed** by **uncertified** or unqualified personnel.
- D. **Other** _____

Unsatisfactory Workmanship

- A. **Uneven** or **poor finish** to surfaces
- B. **Untrue** or **poor fitting joints**.
- C. Unplumb or unsquare **work**
- D. Loose or poorly fitting units.
- E. **Other** _____

BRIEF DESCRIPTION OF DEVIATION (Requirement vs Actual)

INSPECTOR'S SIGNATURE _____

CHIEF INSPECTOR'S SIGNATURE _____

DATE _____

RECOMMENDED ACTION

(Rejection. Acceptance. Acceptance with **Credit** to be Negotiated. Acceptance with Trade-off.)

1.	TPE _____ Date _____	2.	Contract Administrator _____ Date _____
3.	Contracting Officer _____ Date _____	4.	Other _____ Date _____

1.	Received by Contract Administrator: (Signature)	Date
	Rejection Letter Sent to Contractor: (Signature and Title)	Date
	Modification to Contract Executed by: (Signature)	Date
4.	Noncompliance Corrected: (Signature) Inspector: _____ Chief Inspector: _____	Date

Attachment 3

NONCOMPLIANCE REPORT FOR INFORMAL CONTRACTS

NASA Langley Research Center

PROJECT TITLE/LOCATION

CONTRACT NUMBER	PRIME CONTRACTOR
DRAWING/SPECIFICATION NUMBER	DATE IDENTIFIED

TYPE OF NONCOMPLIANCE

Direct Deviation From Contract Drawings or Specifications

A. Equipment or **materials** that differ from **approved submittals**.
B. **Incorrect color**.
C. Work performed by **uncertified** or unqualified personnel.
D. **Other** _____

Unsatisfactory Workmanship

A. Uneven or **poor** finish to surfaces.
B. **Untrue** or poor fitting joints.
C. **Unplumb** or **unsquare** work.
D. Loose or **poorly** fitting units.
E. **Other** _____

BRIEF DESCRIPTION OF DEVIATION (Requirement vs Actual)

INSPECTOR'S SIGNATURE	CHIEF INSPECTOR'S SIGNATURE	DATE

AUTHORIZATION FOR DISPOSITION OF RECOMMENDED ACTIONS

TPE _____	2	Contracting Officer _____
Date _____		Date _____

Received by Contracting Officer: (Signature)	Date
Rejection Lener Sent to Contractor: (Signature and Title)	Date
Modification to Contract Executed by: (Signature)	Date
4. Noncompliance Corrected: (Signature) Inspector- _____ Chief Inspector: _____	Date

Attachment 4

REQUEST FOR SECURING UTILITIES

Date of Request

Notification Requirements

Electrical (4 days) M.S. 171

Major Utilities (2 days) M.S. 177

General Utilities (4 hrs.) M.S. 166A

High Pressure Air (5 days) M.S. 164D

Contractor Name/Other

Contract/Work Order Number

Building/Facility

Description of Task

RED TAG INFORMATION

II Name

Organization

Phone

III

Concurrence of Facility Coordinator (Signature Required)

Date

IV

Date to be Secured

Time Off

Date to be Reactivated

Time On

NOTE: Notification to reactivate shall not be any later than 2:45 p.m. during normal work shift unless prior arrangements are made.

V

Will Monitor or Inspector be required during shutdown time?

Yes

No

Monitor

Full Time

Part Time

Inspector

VI

Signature of Requester/Inspector

Date

VII

Signature and Approval of Section Head or Supervisor

Date

Attachment 5

Permit No. _____

RESEARCH FACILITIES
WORK PERMIT

TO BE POSTED AT WORK SITE WHILE WORK IS IN PROGRESS

CONTRACTOR/OTHERS _____

LOCATION _____

PERMIT DATE _____

PERMIT EXPIRATION DATE _____

FACILITIES CONFIGURATION DATE

START DATE _____
COMPLETION DATE _____

FACILITY SAFETY HEAD/FAC. COORDINATOR

START DATE _____
COMPLETION DATE _____

Gary P. Stergin

CONSTRUCTION MANAGER/
INSPECTION TASK AREA MANAGER
GARY STERGIN, H/S 457
EXT. 4-5100

START DATE _____
COMPLETION DATE _____

REMARKS :

Attachment 6

DATE _____

DAILY CONSTRUCTION REPORT

CONTRACT NO.	TITLE AND LOCATION
--------------	--------------------

CONTRACTOR	SUPERINTENDENT OR FOREMAN	ACTIVITY CHECK
------------	---------------------------	----------------

WEATHER	TEMPERATURE °F	
---------	----------------	--

WEATHER EFFECTS DELAY CRITICAL PATH ACTIVITY YES NO

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provided below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER		NON COMPLIANCE	MTL REC'D	TEST PERFORMED

TOTAL WORK HOURS ON JOB SITE THIS DATE	<p style="text-align: center;">WERE THERE ANY LOST TIME ACCIDENTS THIS DATE?</p> <p style="text-align: center;"><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p style="text-align: center;">IF YES, A COPY OF THE COMPLETED NASA FORM 95 IS REQUIRED</p>
--	--

DESCRIPTION	DATE FIRST ON JOB (First time only)	HOURS WORKED THIS DATE	HOURS IDLED	DATE OF FINAL REMOVAL FROM JOB SITE

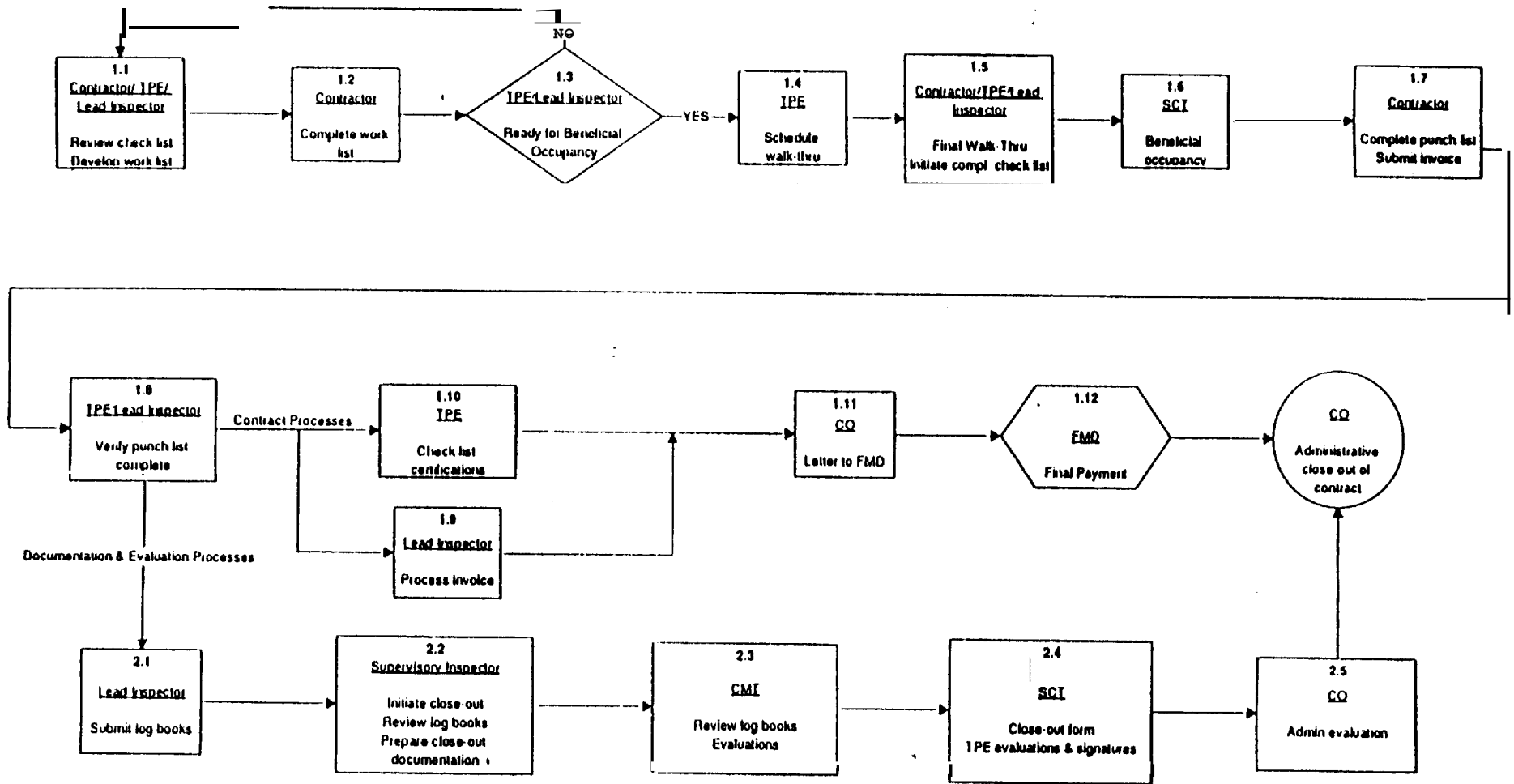
Check if continued on other side _____ CONTRACTOR/SUPERINTENDENT _____ DATE _____

INSPECTOR'S REMARKS AND/OR EXCEPTIONS TO THIS REPORT.

Check if continued on other side _____ INSPECTOR _____ DATE _____

Attachment 7

Close-out Process Key Activities



Attachment 8

Construction Contract Completion Check List

Contract No. _____ Title _____

contractor _____ Date _____

Part 1 - Lead Inspector

- Buildings, water and **electrical** connections, and **sanitary** conveniences **furnished** by **the Contractor** have been removed.
- Shrubs, **grass**, **sidewalks**, roadways, etc. have been replaced or restored to an acceptable condition.
- Work-site returned to clean and acceptable condition.
- Government-Furnished Property has been accounted for and scrap materials have **been** disposed of properly.
- Keys have **been** turned over to proper custodian.
- Work List **items** have been completed.
- **RED - TAGS RELEASED**

Part 2 - Specifications & Contracts Team

- Contractor badges have been **returned** to Badge & Pass Office.

Part 3 - Configuration Management

- Subsurface **utility** information received.

Part 4 - Engineering

- Contractor** has complied with all submittal requirements.
- Government **owned** sketches, **record** drawings, utility layouts, etc. have been returned to **the Contracting Officer**.
- Communications Section has been **advised** of fire alarm/detection systems.

Construction Contract
Completion Check List

Part 5 - Project Punch List Items

-
-
-
-
-
-
-
-
-
-

Part 6 - Certifications

- I certify, to my knowledge, the Contractor has met all contractual requirements.

Lead Inspector

Date

Technical Project Engineer

Date

Subsurface Facilities Coordinator

Date

Engineering Contract Specialist

Date

Attachment 9

**FOR OFFICIAL USE ONLY
(WHEN COMPLETED)**

PERFORMANCE EVALUATION – CONSTRUCTION CONTRACTS

1. CONTRACT NUMBER

PART I – GENERAL CONTRACT DATA

2. CONTRACTOR (Name, address and ZIP code)

3. TYPE OF CONTRACT (Check)

A. ADVERTISED
B. NEGOTIATED

CPFF FIRM FIXED PRICE OTHER (Specify)

4. COMPLEXITY OF WORK

DIFFICULT ROUTINE

5. DESCRIPTION AND LOCATION OF WORK

6. FISCAL DATA	A. AMOUNT OF BASIC CONTRACT	B. TOTAL AMOUNT OF MODIFICATION	C. LIQUIDATED DAMAGES ASSESSED	D. NET AMOUNT PAID TO CONTRACTOR
	\$	\$	\$	\$
7. SIGNIFICANT DATES	A. DATE OF AWARD	B. ORIGINAL CONTRACT COMPLETION DATE	C. REVISED CONTRACT COMPLETION DATE	D. DATE WORK ACC.

8. TYPE AND EXTENT OF SUBCONTRACTING

PART II – PERFORMANCE EVALUATION OF CONTRACT (Check appropriate box)

9. PERFORMANCE ELEMENTS	OUTSTANDING	SATISFACTORY	UNSATISFACTORY
A. QUALITY OF WORK			
B. TIMELY PERFORMANCE			
C. EFFECTIVENESS OF MANAGEMENT			
D. COMPLIANCE WITH LABOR STANDARDS			
E. COMPLIANCE WITH SAFETY STANDARDS			

10. OVERALL EVALUATION

OUTSTANDING (Explain in Item 13, on reverse) SATISFACTORY UNSATISFACTORY (Explain in Item 14, on reverse)

11. EVALUATED BY

A. ORGANIZATION (Type or print)

B. NAME AND TITLE (Type or print)

C. SIGNATURE

D. DATE

12. EVALUATION REVIEWED BY

A. ORGANIZATION (Type or print)

B. NAME AND TITLE (Type or print)

C. SIGNATURE

D. DATE

FOR OFFICIAL USE ONLY
(WHEN COMPLETED)

13. REMARKS ON OUTSTANDING PERFORMANCE AS INDICATED BY THE CONTRACTOR'S PERFORMANCE ON THIS CONTRACT. IF YOU CONSIDER THE CONTRACTOR TO BE OUTSTANDING, SET FORTH FACTUAL DATA SUPPORTING THIS OBSERVATION. THESE DATA MUST BE IN SUFFICIENT DETAIL TO ASSIST CONTRACTING OFFICERS IN SELECTING CONTRACTORS THAT HAVE DEMONSTRATED OUTSTANDING QUALITY OF WORK AND RELIABILITY. (Continue on separate sheet, if needed.)

14. EXPLANATION OF UNSATISFACTORY EVALUATION - FOR EACH UNSATISFACTORY ELEMENT, PROVIDE FACTS CONCERNING SPECIFIC EVENTS OR ACTIONS TO JUSTIFY THE EVALUATION (e.g., extent of Government inspection required, rework required, subcontracting, cooperation of contractor, quality of workmen and adequacy of equipment). THESE DATA MUST BE IN SUFFICIENT DETAIL TO ASSIST CONTRACTING OFFICERS IN DETERMINING THE CONTRACTOR'S RESPONSIBILITY. (Continue on separate sheet, if needed.)

Attachment 10

FACILITY SYSTEMS ENGINEERING DIVISION
Engineering support Services
Task Order

Facility No. and Name	Task No.	Work Order No.
-----------------------	----------	----------------

Title: _____

Description: **Provide CM/Inspection for Pre-Award/Construction services on title project.**

<u>Spec. No.</u>	<u>Contract No.</u>	<u>Title</u>	<u>TPE/CM</u>	<u>Phone</u>

Continue on separate sheet if necessary

End Product: **Construction Services per specifications and drawings or SOW.**

Requester Organizational Code	Purchase Request No.	Program No.	Job Order No.

Schedule & Resources	Original	Change in Scope			
		Rev. 1	Rev. 2	Rev. 3	Rev. 4
REQUIRED COMPLETION DATE					
ESTIMATED HOURS					
AUTHORIZED DOLLARS (includes cost plus fee)					

APPROVALS			CHANGE IN SCOPE			
			Rev. 1	Rev. 2	Rev. 3	Rev. 4
Task Monitor/TPE	Ext.	Date				
Approved	Ext.	Date				
Task Area Manager	Ext.	Date				
Authorized For Contract Performance						
		Date				

TASK ORDER CLOSE OUT

Expended Cost _____	Expended Hours _____
Fee _____	Delivery Date _____
Subcontracts _____	Project Mgr. _____ Date _____
Total W.O. Dollars _____	Contract Manager _____ Date _____



436

JUN 13 1995

Reply to Attn of

TO: Distribution

FROM: 436/Assistant Chief, Facility Systems Engineering Division

SUBJECT: Procedures for Processing Requests for Change (**RFCs**) and Emergency Field Directed Changes (**EFDCs**)

REF: (a) NASA **FAR** Supplement Subpart 18-42.2
(b) **NASA** Facility Project Implementation Handbook, Chapter 6.5.5
(c) **FAR** Part 36.203

This letter supersedes the previous Procedures for Processing Requests for Change (RFCs) and Emergency Field Directed Changes (EFDCs) dated November 10, 1994.

Purpose

To establish suggested procedures for processing RFCs and EFDCs.

Responsibilities

FSED Technical Project Engineers (TPEs) and Contracting Officer Technical Representatives (COTRs) are responsible for recommending (in writing) to the Contracting Officer any changes desired in scope and/or technical provisions of the contract, along with a cost estimate and justification for the proposed action. In addition, when an on-site emergency situation arises, COTRs have the authority to issue EFDCs as long as the estimated cost does not exceed \$7,000. EFDCs expected to exceed \$7,000 must be issued by the Acquisition Division's Contracting Officers, per Reference (a). In addition, the availability of estimated funds shall be affirmed by the Division Program Analyst on all **EFDC** documentation.

Examples for issuing an Emergency Field Direction are as follows:

- To avoid delay/stop in site work
- To accommodate differing site conditions
- To correct safety/hazard situations

Since EFDCs are the exception rather than the rule, the **majority** of contract modifications should be initiated as Request for Proposal (RFP) or Change Order (CO).

LaRC Memo to Distribution, George W. Ivey, Jr., dated 5 May 1975

Enclosures:

- (1) RFC Flow Diagram
- (2) FSED RFC Forms
- (3) FSED/OSEMA Memo of Understanding
- (4) Estimate for Contract Modification Form
- (5) EFDC Form

Distribution:

ALL FSED Personnel

126/S. S. Ray (6)

421/H. T. Garrido

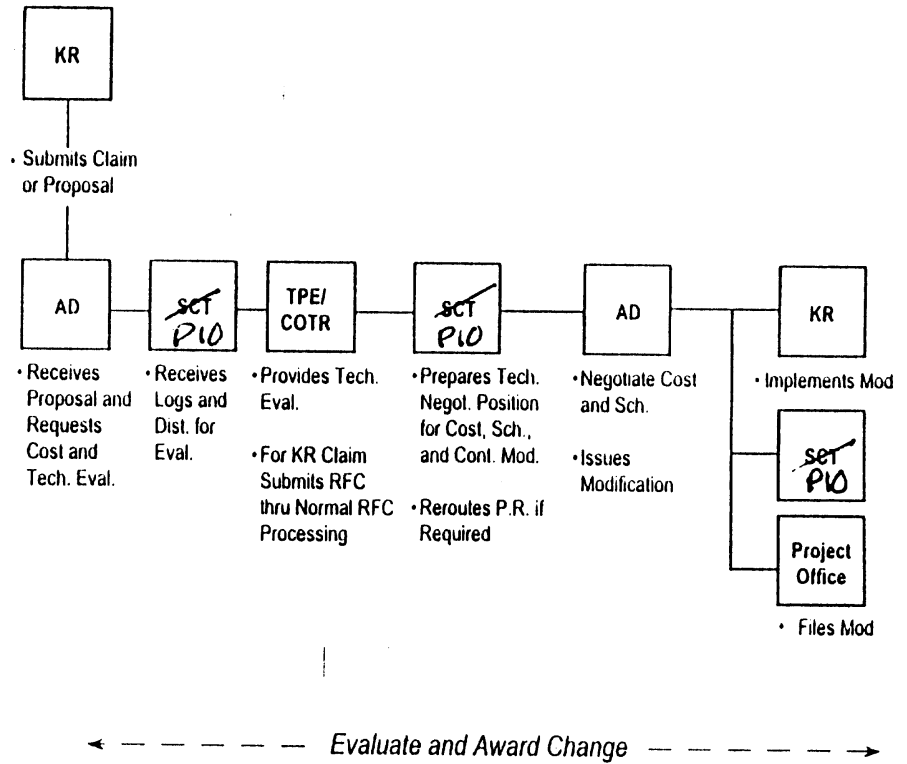
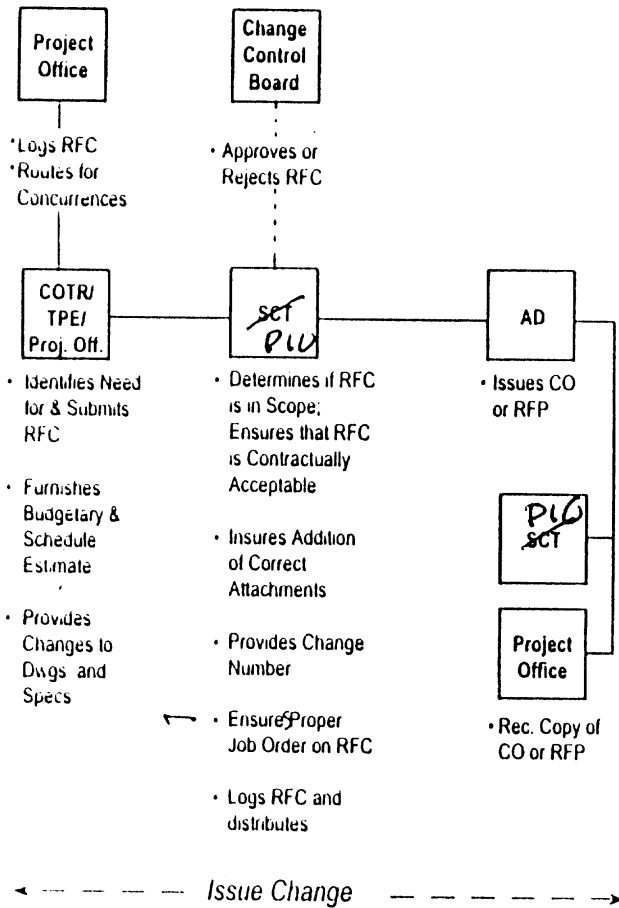
429/V. W. Wessel

447/ESFPB

447/NNShields:alw 5/1/95 (47216)

436/CEG *and for*

RFC FLOW DIAGRAM



LEGEND	
AD	- Acquisition Division
CO	- Change Order
KR	- Contractor
TPE	- Technical Project Engineer
PR	- Purchase Request
RFC	- Request for Change
RFP	- Request for Proposal
PIO	- PROGRAM INTEGRATION OFFICE
SCT	- Specifications and Contract Team
COTR	- Contracting Officer Technical Representative

PROJECT		RFC _____
SPECIFICATION REVISION		
SECTION	DESCRIPTION	

ADDITIONAL EXPLANATION TO CONTRACTING OFFICER (IF NECESSARY)

CONTRACT TITLE: _____

CONTRACT NO: _____

13

DESCRIPTION: _____

PRIME CONTRACTOR'S WORK				Revisions/Comments
1. Direct Materials				
2. Sales Tax on Materials	4.5% of line 1	%		
3. Direct Labor				
4. Insurance, Taxes, and Fringe Benefits	% of line 3	%		
5. Rental Equipment				
6. Sales Tax on Rental Equipment	4.5% of line 5	%		
7. Equipment Ownership & Operating Expenses				
8. SUBTOTAL (Add lines 1 - 7)				

Prime Remarks: _____

SUBCONTRACTOR'S WORK				Revisions/Comments
9. Direct Materials				
10. Sales Tax on Materials	4.5% of line 9	%		
11. Direct Labor				
12. Insurance, Taxes, and Fringe Benefits	% of line 11	%		
13. Rental Equipment				
14. Sales Tax on Rental Equipment	% of line 13	%		
15. Equipment Ownership & Operating Expenses				
16. SUBTOTAL (Add lines 9 - 15)				
17. Overhead	% of line 16	%		
SUBTOTAL (Add lines 16 & 17)				
Profit	% of line 18	%		
SUBTOTAL (Add lines 18 & 19)				

Sub's Remarks: _____

SUMMARY				Revisions/Comments
21. Prime Contractor's Work (from line 8)				
22. Sub-contractor's Work (from line 20)				
23. SUBTOTAL (Add lines 21 & 22)				
24. Prime's Home Office Overhead	% of line 23	%		
25. SUBTOTAL (Add lines 23 & 24)				
26. Prime Profit	% of line 25	%		
27. SUBTOTAL (Add lines 25 - 26)				
28. Prime Contractor's Bond Premium	% of line 27	%		
29. TOTAL COST (Add lines 25 & 26)				

Estimated time extension and justification _____

Contractor Name: _____

Contractor Name: _____

Signature & Title of preparer _____

Date: _____

BREAKDOWN OF DIRECT COSTS

Contract No. _____

Date: _____

ITEMS OF WORK FOR Prime Contractor	QTY	UNIT	MATERIAL		LABOR		R	EQUIPMENT	
			Unit Cost	Total Cost	Unit Cost	Total Cost		Total	
DIRECT Prime Contractor's TOTALS							R	Total (Rental)	
							O	Total (Owned)	

ITEMS OF WORK FOR Subcontractor	QTY	UNIT	MATERIAL		LABOR		R	EQUIPMENT		
			Unit Cost	Total Cost	Unit cost	Total Cost		Days	Rate	Total
DIRECT Sub-contractor's TOTALS							R	Total (Rental)		
							O	Total (Owned)		

MEMORANDUM OF UNDERSTANDING

Delegation of Limited Safety Office Sign-Off Authority

for

Request for Changes (RFCs) and


Emergency Field Directed Changes (**EFDCs**)

This memorandum of understanding recognizes that some RFCs and EFDCs do not impact safety considerations. These RFCs/EFDCs are for routine contract modifications and are administrative in nature or involve minor changes in work. They typically involve within-scope changes such as: time extensions, removal or installation of additional contractually specified materials, stop and resume work orders, and funding changes.

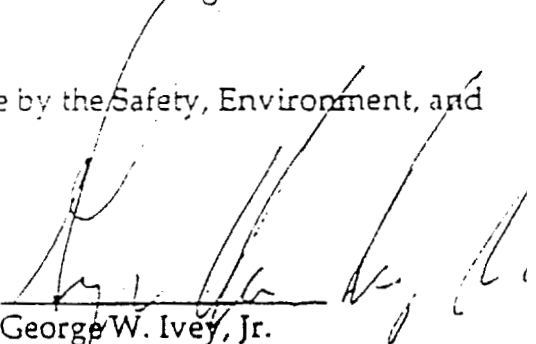
In order to simplify RFC/EFDC processing for the above instances, delegation to sign for Safety Office concurrence is hereby given to the Facility Systems Engineering Division COTR, TPE, or Technical Unit Leader. This delegation does not alter existing safety responsibility and organization requirements.

Any uncertainty on safety impact requires concurrence by the Safety, Environment, and Mission Assurance Office on the RFC/EFDC.

Approved:


H. T. Garrido
Director, Office Of Safety,
Environment, and Mission
Assurance

Approved:


George W. Ivey, Jr.
Engineering Division

Date:

5/31/94

Date:

5/31/94

ENCLOSURE (1)

EMERGENCY FIELD DIRECTED CHANGE (EFDC) ORDER

Contractor:

NOTE:

- Cost incurred by the Contractor for work performed under this order shall not exceed COTR's authorized amount of \$ _____
- A proposal for cost and time extensions justified for this work shall be submitted to the Contracting Officer within 10 days of issuance of this EFDC.
- Questions regarding this EFDC shall be directed to the COTR and/or Contracting Officer, before any work is performed.

Contract No. NAS1	Title		
RFC No.	Issue Date	Change Title	
Initiator	Date		

DISTRIBUTION	
126/AD/	_____
447/SCT/	
428/Inspection	_____
/COTR	_____

COTR	Signature	Date	FSED - Program Analyst
------	-----------	------	------------------------

Definitions

- P I O
- a) EFDCs (Enclosure 5) are provided to the Contractor with a copy forwarded directly to Acquisition and ~~SET~~ within 2 hours of the direction. This will normally be followed by a complete RFC package delivered to ~~SET~~ within 3 working days of the written direction. In those cases where major drawing revisions would cause a delay in processing an RFC within the time allowed, Acquisition has agreed to issue a change order, contingent upon having the approved drawing changes by the time the Change Order is definitized.
- b) Change Orders are written orders signed by the Contracting Officer that, pursuant to the Changes Clause, direct the Contractor to make changes within the general scope of the contract with or without the consent of the Contractor. The Contractor must perform the change work; however, the Contractor will have an opportunity to submit a request for equitable adjustment. Change Orders may add work that increases the cost of the contract, delete work that reduces the cost of the contract, or make nu-cost changes.

Note: Unpriced contract changes allow a Contractor to start work and incur costs before NASA and the Contractor agree on terms and conditions, including price. Until firm prices are negotiated, the Contractor has limited incentive to control costs. If work is completed before pricing the change, the Government will not have the opportunity to review the Contractor's proposed costs and evaluate for more efficient production methods or management controls. Per Reference (b), it is NASA's policy that a contract modification to construction contracts be issued only after negotiations are completed. As a result, all contract modifications should be by Supplement Agreement unless urgency dictates the use of Change Orders or EFDCs. A modification provides a means of changing a contract and may either be unilateral (signed by a Contracting Officer - Change Order) or bilateral (signed by both the Contractor and the Contracting Officer - Supplemental Agreement). Contract modifications, including unilateral changes, shall be priced and have funds reserved before their execution.

- c) Bilateral Modifications, called Supplemental Agreements, are negotiated and signed by both the Contractor and the Contracting Officer prior to start of work. The effective date shall be the date agreed upon by the contracting parties. Supplemental Agreements are used to effect the following actions:
- 1) Finalize the negotiated agreements resulting from the issuance of a Change Order.
 - 2) Reflect agreements, between the Contracting Officer and Contractor, modifying the terms subsequent to a RFP.

RFC Processing

The RFC flow diagram (Enclosure 1) delineates the steps in processing an RFC within FSED, along with Contractor and Acquisition Division interface. **FSED** COTRs, TPEs, and (~~SET~~) will work as a team in developing complete RFC packages that include the RFC, drawings, detailed Government cost estimates, and a Purchase Request. A "complete" RFC package will contain sufficient detail to permit the Contracting Officer to issue the desired direction to the Contractor without further clarification. (It is suggested that the technical person preparing the RFC package contact the ~~SET~~ Contract Specialist shortly after requirement Jet ermination).

P10

The RFC forms (Enclosure 2) will be used to document the scope, reason, and cost/schedule impact of the proposed contract modification. It is FSED's policy that RFCs be initiated by use of paragraph description and/or sketches to identify scope of change. Revised drawings are only necessary for very intricate RFCs that require a detailed description of scope of work. An **EFDC** will not normally be initiated if the RFC requires the level of detail that necessitates revised drawings. If the change cannot be described adequately, a drawing section/detail can be marked-up to show the change. This can be a "sketch" or page-size drawing. When contract drawings are not revised during the RFP negotiation period, the TPE must ensure that the modifications are incorporated into the As-Builts.

The Office of Safety Environmental and Mission Assurance (OSEMA) approval may be obtained telephonically and signed by the COTR, TPE, or Technical Team Leader. This telephonic approval can be waived for routine or administrative RFCs that obviously do not impact safety considerations. FSED personnel are required to inform the OSEMA and obtain their written (or telephonic) approval whenever doubt exists concerning safety impact. This waiver per (Enclosure 3) is a delegation for FSED technical personnel to sign for the OSEMA whenever they judge that the RFC obviously has no safety impact. This delegation does not alter existing safety responsibility and organization requirements. RFCs with no safety impact typically involve proposed modifications such as time extensions, removal or installation of additional specified materials, stop and resume work orders, and funding changes.

A Government estimate, signed and dated, is required for each RFC. Per Reference (c), the estimate shall be prepared in as much detail as though the Government were competing for award. The Government estimate must be prepared prior to receipt of the Contractor's proposal. Estimates should be based upon standard estimating manuals, where practicable with adjustments to fit existing site conditions, local expertise, local material prices, labor efficiency, etc. In addition, the approved rate and unit prices in the contracts price breakdown for determining progress payments should be consulted where appropriate.

The FSED Proposal/Estimate for Contract Modifications Form (Enclosure 4) will be utilized for the Government estimate and included in the RFC package. It is FSED's policy to utilize the typical percentage mark-ups on (Enclosure 4) when computing the

Government estimate. TPEs or COTRs may deviate from this policy if they determine that the suggested form rates are not appropriate for a particular condition, or if they are able to demonstrate that a particular Contractor can justify higher or lower rates. In order to facilitate proposal evaluation, Enclosure 4, without percentage mark-ups will be included in solicitations as a suggested format for Contractors' proposals for contract modifications. In addition, Acquisition has agreed to pursue the establishment of "remaining contract mark-up rates" during the negotiation of the initial Contractor proposal.

The following signatures are required when processing an RFC and the accompanying Purchase Request:

- a) **RFC Forms** - Concurrence signatures as indicated on the RFC form except that Branch Head signature is not required unless the RFC is estimated to cost in excess of \$25,000. Please note that Branch Heads and ~~SEF~~ may request higher level concurrence (at their discretion) than the above directed threshold requirements.
- b) **Purchase Requests** - Proposed modifications of less than \$25,000 shall only be signed (concurrence for electronic Purchase Requests) by the FSED Program Analyst since the necessary technical signatures are already on the RFC form. The FSED Division Chief shall sign/concur all CoF Purchase Requests that exceed \$25,000.

Upon receipt of the RFC package, with the required technical signatures, the ~~SEF~~ **PIO** Contract Specialist will review the package for completeness and assign an RFC number and will keep a log of RFC receipt, approval, and transmission to Acquisition. The Program Analyst will serve as Funds Control Manager and will check the availability of CoF funds prior to concurrence on the electronic Purchase Request. The ~~SEF~~ Contract Specialist will forward the fully executed RFC package to Acquisition within 2 working days of receipt. The ~~SEF~~ Contract Specialist will also forward a copy of the RFC Form, (without attachments) to the Head, OSEMA.

Change Control Board (CCB) (with the TPE as Presenter) is established for proposed modifications that justify detailed review:

FSED Division Chief, Chairman
FSED Assistant Division Chief, Alternate Chairman
FSED Head, Facilities Engineering Branch
FSED Head, Electrical and Electronic Systems Branch
FSED Head, Process Systems Branch
FSED Head, Engineering Support and Facility Projects Branch
OSEMA Head, Office of Safety, Environmental, and Mission Assurance

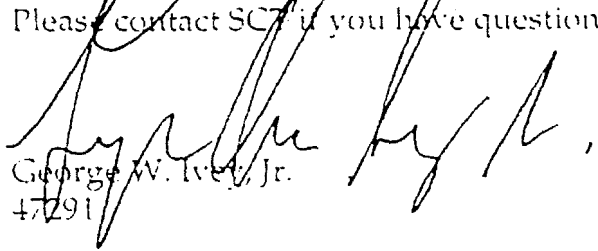
A CCB will be scheduled whenever one of the above board members requests that the Board be convened. The Chief, FSED, will chair all CCBs.

The COTR/TPE handwritten technical evaluations of Contractors' proposals (which provide the NASA pre-negotiation position) will be routed within **6 working days** to ~~SET~~ **PIO** for processing to Acquisition. All technical evaluations should reveal the logic, rationale, historical data, or reference sources (such as "Means Data") which support the NASA pre-negotiation position. Such influences as experienced on similar programs and inputs from other Langley activities having unique expertise directly applicable to the effort, or segments thereof, should be cited to the extent appropriate. Careful review of the requested time extensions for changed work/conditions will be made to ensure that adequate substantiation has been provided by the Contractor. The ~~SET~~ Contract Specialist will forward the completed technical evaluation to Acquisition within **3 working days** of receipt. Acquisition has targeted 18 calendar days to negotiate and forward the unsigned modification to the Contractor for signature. **A copy** of the dated modification transmittal letter and unsigned modification will be provided to ~~SET~~ **PIO**

When requested by Acquisition, the COTR, TPE, or ~~SET~~ Contract Specialist will assist in the negotiation of contract modifications.

COTRs are reminded that along with the authority to issue EFDCs, there is the responsibility to follow these procedures and to ensure that the actual cost of the change does not exceed the EFDC authority cited in the COTR delegation. In those instances where actual costs exceed the EFDC estimate, explanation and justification for the differences shall be detailed and thorough.

Please contact SET if you have questions concerning the FSED RFC procedures.


George W. Ivey, Jr.
47291

Date:

From: Contracting Officer's Technical Representative

To: Contracting Officer

Subj: CONTRACT MODIFICATION RECOMMENDATION
Contract NASI-*****

- Encl:
- (1) Contractor Proposal in the amount of \$_____ dated _____
 - (2) Government Estimate *in* the amount of \$_____ dated _____
 - (3) Government Pre-negotiations Position (PNP) of \$_____ dated _____
 - (4) **Markup** of PNP showing how negotiated price was determined

1. A contract modification worded substantially as follows is proposed **[Enter the recommended wording of the change]:** _____

TIME EXTENSION: ____ days ! PRICE: \$_____

2. This change is necessary because of the following conditions **[Describe the conditions that resulted in the change proposal]:** _____

3. Negotiations took place on _____ (date). _____ (name) represented the contractor; _____ (name) represented the Government. The following people were also in attendance: _____

4. As enclosure (3) shows, the Government PNP for the change was \$_____. This amount was based on quantities, prices, labor hours, equipment hours, and overhead, profit, and bond markups shown in the Contractor Proposal, enclosure (1), with the following exceptions **[Identify cost elements from the independent Government Estimate, enclosure (2), upon which the PNP was based]:** _____

(16)
15

5. During negotiations, the parties agreed on \$_____ as a fair and reasonable price for the change. This amount is based on the Government's pre-negotiations position, modified as shown on enclosure (4) and as described below **[Identify cost elements changed during negotiations and explain your reasoning for deviating from the PNP]**: _____

6. The parties also agreed on a contract time extension of _____ calendar days. The additional time is necessary for the following reasons **[Explain how the change affected the contractor's schedule]**: _____

7. The negotiated price allows for the following secondary impacts **[Identify the impacts (e.g., loss of efficiency, extended field overhead, expenses), the amount allowed for each, and describe how those allowances were determined]**: _____

8. Approval for the change was obtained from: _____ (name) on _____ (date).

9. The designer of record is _____ (Company/NASA). A liability claim against the designer appears _____ (appropriate/inappropriate).

Construction Services
Report of Lessons Learned During Construction

Lessons Learned for Work

Specified under Division--> 1000

SPEC. SECTION	PROJECT NAME	FACILITY NO.	CONTRACT NO.	POINT OF CONTACT
	Mods To Jet Exit Test Facility	1234	NASI-19695	R. Hare

1. Communication of changes from NASA TPE and SvT Construction Manager to SvT Inspector was inadequate. Inspector often found contractor working on changes, issued from the TPE or CM, which he did not have a copy of.

Proposed Solution: Formalize change order routing and routing of drawing revisions to include advance copy or concurrent copies of information forwarded to the contractor. Main issue which was not addressed on this project was the passing of drawings from the SvT CM direct to the inspector and contractor w/o formal approval by the NASA TPE.

Lessons Learned for Work

Specified under Division--> 2000

SPEC. SECTION	PROJECT NAME	FACILITY NO.	CONTRACT NO.	POINT OF CONTACT
	Mods To 30 X 60 E/W TRF	643	NASI-19652	O'Loughlin

1. CONDITION: EXCAVATION WHERE CASINGS WERE INSTALLED UNDER TAXIWAYS ERODED SEVERELY REQUIRING EXTENSIVE RESHORING AND GROUTING UNDER THE RIGID PAVEMENT. CONTRACTOR'S FAILURE TO ADEQUATELY DEWATER AND SHORE AGGRAVATED THE CONDITION.

SOLUTION: WHEN DESIGNING CASINGS UNDER PAVEMENT OR STRUCTURES, WHEN SPACE PERMITS, DETAIL THE CASING INSTALLATION SO THAT THE CASING EXTENDS FAR ENOUGH PAST THE STRUCTURE TO PERMIT A 1:1 SURFACE SLOPE FROM THE FINISH GRADE AT THE STRUCTURE TO THE INVERT OF THE CASING.

THIS DETAIL PERMITS AN EASIER, LESS EXPENSIVE CASING INSTALLATION AND AVOIDS THE POTENTIAL OF CREATING DANGEROUS EROSION OR UNDERMINING CONDITIONS AT THE EXCAVATION.

This report presents various lessons learned during the construction phase of CofF and Minor Construction contracts at NASA LaRC, Hampton, VA. For more information about a particular entry, contact the person listed as point of contact under each citation.

(91) (#)

126

Subject: **NASA Contract NAS1-** _____

A final inspection of the subject contract work was conducted on _____. As a result of this ~~final~~ inspection, the following discrepancies remain to be completed by your ~~firm~~:

General

- 1.
- 2.
- 3.
- 4.
- 5.

Electrical

- 1.
- 2.
- 3.
- 4.
- 5.

Mechanical

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

In consideration that these remaining discrepancies do not impact use of the facility, the Government accepts the contract work for beneficial occupancy as of close of business, _____. This acceptance does not relieve the Contractor of the responsibility to complete their corrective work, nor does it waive any ~~of~~ the remaining requirements of ~~the~~ referenced contract.

You are requested to proceed promptly in the correction of these discrepancies so as to not interfere with the use of the facility by the Government. The Contracting Officer Technical Representative shall be notified when corrective action has been completed in order to verify each item. The Contractor is expected to complete all corrective work, including verification, by _____ Should all items not be completed by _____, the Government may at its option, complete the remaining items and reduce the total contract price by unilateral modification in the amount of the cost incurred as determined by the Contracting Officer. The necessity of such action will result in an unsatisfactory performance evaluation and could affect your consideration for future contracts.

Your continued cooperation toward the expedient completion of these remaining contract requirements is appreciated.

Contracting Officer

- cc:
- 126/Contracting Files/
- 428/CSU
- 447/Engineering Files
- ___/COTR/
- ___/TPE/
- ___/PIO/

447/NNShields:alw (date) (472 16)

436/JRR

Process for Construction Contract Close-out

1. Contract Processes

1.1 Contractor, TPE, Lead Inspector

- Review Construction Contract Completion Check List form (FSED CCL) and develop work list

1.2 Contractor

- Completes items on work list

1.3 Contractor, TPE, Lead Inspector

- Agree that **job** is complete and ready for final walk-through
 - No punch list items should be anticipated

1.4 TPE

- Schedules final walk-through
- Notifies SCT & CO of schedule for final walk-through
- Notifies RPE/Customer of schedule for final walk-through

1.5 Contractor, TPE, Lead Inspector (Optional: SCT & CO)

- Conduct final walk-through
- Review Construction Contract Completion Check List form (FSED CCL) and complete punch list section of form (FSED CCL Part 5)

Note: The TPE is responsible for initiating the **CCL** at the final walk-through and is responsible for the completion and certification of the CCL. TPE to retain the original copy of the CCL until all punch list items are complete.

Process for Construction Contract Close-out

1.6 SCT

- Writes letter to contractor for CO signature:
 - Government accepts beneficial **use/occupancy**
 - Identifies punch list items (copy of punch list items generated during walk-through - **FSED CCL Part 5**)
 - Punch list items to be completed by contract completion date
 - Punch list items to **be** completed within **xx** days after the date of the beneficial **use/occupancy** letter
 - SCT initial by-line, file copies to ESFPB & **FSED**

1.7 Contractor

- Completes punch list items (**FSEDCCL Part 5**) by contract completion date
- Notifies lead inspector that punch list items are complete
- Submits **final** invoice **and** contractor's release form to **FMD**

1.8 TPE/Lead inspector

- Verify punch list items complete (**FSED CCL Parts 1, 4, & 5**)

1.9 Lead Inspector

- Processes final invoice

1.10 TPE

- Notifies CO that punch list items are complete
- Obtains Construction Contract Completion Check List form certifications (**FSEDCCL Parts 2, 3, & 6**)
- Copy of certified Construction Contract Completion Check List form (**FSED CCL**) to AD through SCT

18

Process for Construction Contract Close-out

- 1.11 Contractina Officer (upon receipt of certified Construction Contract Completion Check List form - FSED CCL & invoice)
- Prepares letter to FMD
 - Contract complete
 - Recommend final payment
 - Payment shall be made within 30 days of receipt of certified Construction Contract Completion Check List form (FSED CCL)
- 1.12 FMD - Cost and Commercial Accounting (upon receipt of letter from CO, approved invoice & contractor's release form)
- Process final payment and release (NF-778)
 - Copy of final paid invoice to:
 - 126/AD
 - 447/SCT (for distribution to TPE & Engineering Files)

Process for Construction Contract Close-out

2. Documentation & Evaluation Processes

2.1 Lead Inspector

- Notifies Supervisory Inspector that job is complete
- **Provides** file copy of CCL with **Lead** Inspector's signature to Supervisory Inspector
- Submits log **books** to **Supervisory** Inspector

2.2 Supervisory Inspector (upon receipt of log **books**)

- Reviews **log** books
- Prepares self-evaluation form (evaluation of inspection services)
- Prepares invoice **log**
- Prepares payroll log
- Writes close-out letter (form letter)
- Prepares log transferal form
- Prepares close-out report
 - cost of **job**
 - cost of inspection (% of total cost)
- Sends entire package to Construction Management Team (Inspection TAM)

2.3 Construction Management Team (Inspection TAM)

- Reviews log **books**
- Prepares evaluation of inspection services
- Sends log **books** and payroll **log** to CO

Process for Construction Contract Close-out

2.4 SCT (upon receipt of CCL)

- Prepares & distributes property statement form (NF-1046)
- Initiates close-out form (SF-1420)
 - Completes items 1,2, 3, 5, 6, 7A-7D of SF-1420
- Routes close-out form for evaluation and signatures
 - TPE [evaluates contractor's performance (SF-1420 Back)]
 - Completes items 4, **8**, 9, 10, 11, 13 of SF-1420
 - TPE's Branch Head
 - Subsurface Facilities Coordinator
 - SCT
 - Completes item 12 of SF-1420
- Sends close-out package to **CO**
 - cc: TPE, CMT, Engineering Files

2.5 Contractina Officer (upon receipt of close-out package & **log** books)

Note: Close-out package and **log** books shall be forwarded to **CO** within 60 days after certification of construction contract completion check list (CCLPart 6)

- Reviews contractor technical performance evaluation (SF-1420)
- Prepares contractor administrative performance evaluation (SF-1420)
- Retain original close-out package with contract files
- Copy of completed close-out package to SCT **M/S 447**

(18)

**CONTRACT CLOSEOUT
CHECKLIST**

	<u>CONDITION</u>	<u>VERIFIED BY</u>	<u>DATE</u>
a.	No outstanding RFC's	_____	_____
h.	No outstanding contract time extensions	_____	_____
c.	Construction site cleaned-up	_____	_____
d.	Final inspection conducted: punchlist delivered	_____	_____
e.	Final contract photographs taken	_____	_____
f.	As-built drawings received & accepted	_____	_____
g.	Configuration Control drawings received	_____	_____
h.	Warranties/Completed Operation Insurance received & delivered	_____	_____
t.	Spare parts received & delivered	_____	_____
j.	O&M Manuals received & delivered	_____	_____
k.	User training performed	_____	_____
l.	Keys received & delivered	_____	_____
m.	Government property received & delivered	_____	_____
n.	Personnel passes/permits returned	_____	_____
o.	Final punchlist discrepancies corrected	_____	_____
p.	Acceptance letter sent to contractor	_____	_____
q.	Final release received	_____	_____
r.	Final payment request received	_____	_____
s.	CM contract files delivered	_____	_____

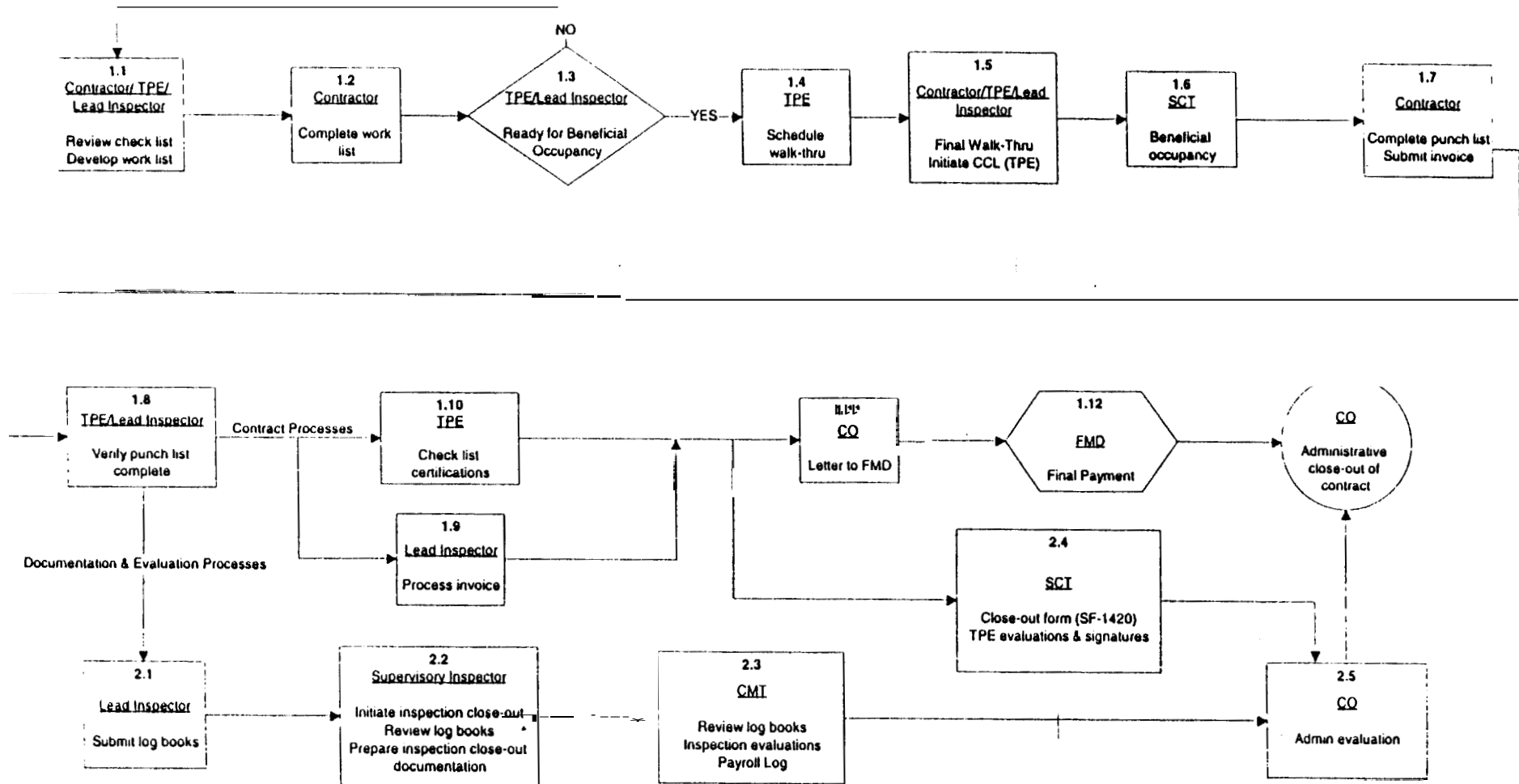
Figure 6

Process for Construction Contract Close-out

TABLE OF ACRONYMS

AD - Acquisition Division
CCL - Completion Check List
CMT - Construction Management Team
CO - Contracting Officer
ESFPB - Engineering Support and Facility Projects Branch
FMD - Financial Management Division
FSED - Facility Systems Engineering Division
M/S - Mail Stop
NF - NASA Form
RPE - Research Project Engineer
SCT - Specifications and Contracts Team
SF - Standard Form
TAM - **Task** Area Manager
TPE - Technical Project Engineer

Close-out Process Key Activities



**FOR OFFICIAL USE ONLY
(WHEN COMPLETED)**

18

PERFORMANCE EVALUATION – CONSTRUCTION CONTRACTS

I. CONTRACT NUMBER

PART I – GENERAL CONTRACT DATA

TRACTOR (Name, address and ZIP code)

3. TYPE OF CONTRACT (Check)

A. ADVERTISED
B. NEGOTIATED

CPFF FIRM FIXED PRICE OTHER (Specify)

4. COMPLEXITY OF WORK

DIFFICULT ROUTINE

5. DESCRIPTION AND LOCATION OF WORK

6. FISCAL DATA	A. AMOUNT OF BASIC CONTRACT	B. TOTAL AMOUNT OF MODIFICATION	C. LIQUIDATED DAMAGES ASSESSED	D. NET AMOUNT PAID CONTRACTOR
	\$	\$	\$	\$
7. SIGNIFICANT DATES	A. DATE OF AWARD	B. ORIGINAL CONTRACT COMPLETION DATE	C. REVISED CONTRACT COMPLETION DATE	D. DATE WORK ACCEPTED

8. TYPE AND EXTENT OF SUBCONTRACTING

PART II – PERFORMANCE EVALUATION OF CONTRACT (Check appropriate box)

9. PERFORMANCE ELEMENTS

OUTSTANDING SATISFACTORY UNSATISFACTORY

A. QUALITY OF WORK			
B. TIMELY PERFORMANCE			
C. EFFECTIVENESS OF MANAGEMENT			
D. COMPLIANCE WITH LABOR STANDARDS			
E. COMPLIANCE WITH SAFETY STANDARDS			

10. OVERALL EVALUATION

OUTSTANDING (Explain in Item 13, on reverse) SATISFACTORY UNSATISFACTORY (Explain in Item 14, on reverse)

11. EVALUATED BY

A. ORGANIZATION (Type or print)	11. EVALUATED BY		
B. NAME AND TITLE (Type or print)	C. SIGNATURE	D. DATE	
12. EVALUATION REVIEWED BY			
A. ORGANIZATION (Type or print)			

B. NAME AND TITLE (Type or print)	C. SIGNATURE	D. DATE
-----------------------------------	--------------	---------

National Aeronautics and
Space Administration
Langley Research Center
Hampton, VA 23681-0001



19

OCT 21 1996

Reply to Attn of

441

TO: FSED Distribution
FROM: 436/Chief, Facility Systems Engineering Division
SUBJECT: Process for Construction Contract Close-out

A new process for construction contract close-out has been in effect since August 1995. A team of FSED, AD, and Inspection personnel reviewed the process and identified modifications which will improve the process. TPEs are required to follow the process when closing out a construction contract.

This memorandum establishes the use of the enclosed process to provide a more efficient method to close-out a construction contract.

The enclosed Process for Construction Contract Close-out supersedes the process dated August 29, 1995.

A handwritten signature in cursive script that reads "Carl E. Gray Jr".

Carl E. Gray, Jr.
47214

Enclosure

cc:
FSED Employees
436/FSED
441/R. L. McCreery
441/FEB

441/RLMcCreery:kdg 10/1/96 (46915) *RF* 10/2/96

441/RBR *RBR*


CHECK -
PERSONNEL SYSTEMS
X-1-110

19/

MEMORANDUM OF UNDERSTANDING

Implementation of Revised Process for Construction Contract **Close-out**

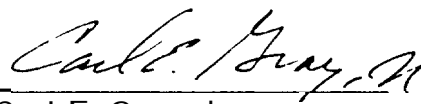
This memorandum of understanding recognizes that the successful implementation of the revised construction contract close-out process involves Acquisition, FMD, and FSED personnel. The revised process establishes the use of the certified Construction Contract Completion Check List as verification that all contractual requirements have been met. Final payment to the contractor shall be made within 30 days of the Contracting Officer's receipt of the certified Construction Contract Completion Check List. Additionally, the in-house documentation and review process has been streamlined such that the close-out documentation and log books will be **forwarded** to the Contracting Officer within 60 days after verification of punch list item completion.

Approved: 
William R. Kivett
Chief, Acquisition Division

Date: 10-8-96

Approved: 
James H. Ogiba
Chief, Financial Management
Division

Date: 10/13/96

Approved: 
Carl E. Gray, Jr.
Chief, Facility Systems
Engineering Division

Date: 10-2-96

APPENDIX 19

The listed publications and books are an additional source of information for design, construction, and construction management topics. References are available within FSED or at the LaRC Technical Library.

NASA Facility Projects Implementation Handbook, NHB 8820.2, National Aeronautics and Space Administration

Facilities Engineering Handbook, NHB 7320.1B, National Aeronautics and Space Administration

NASI-98128
Exhibit C

EXHIBIT C – CONTRACT DOCUMENTATION REQUIREMENTS

I. DOCUMENTATION PREPARATION/SUBMISSION INSTRUCTIONS

A. Monthly TO Status--The Contractor shall submit monthly status reports for each Task Order. Task Orders may be summarized in one report unless otherwise stipulated in individual DOs. Reports shall be in spreadsheet form, supported by brief narrative comments, to include:

1. TO Number, current modification number and date
2. TO Title
3. NASA TO Monitor, NASA manager, and Contractor TO Leader
4. A narrative statement of work accomplished during the report period
5. A statement of current and potential problem areas and proposed corrective action
6. Estimated Completion Date
7. Cost Data (when applicable)
8. Earned value

The monthly progress report shall be submitted within 10 days after the end of each calendar monthly report period.

B. Financial Management Reports

1. The Contractor shall submit a monthly financial management report as provided by the Section I clause entitled "NASA Contractor Financial Management Reporting." This report shall be submitted utilizing NASA Form 533M, Monthly Contractor Financial Management Report, in accordance with submission instructions contained on the reverse side of the form. (Columns 8a and 8b, 533M, shall contain estimates for the following two successive months).

2. For this indefinite delivery contract a 533M shall be provided for the reporting levels identified below:

- a. Contract Total (Includes the sum of all authorized cost-type TOs)
- b. Due not later than the 10th working day following the close of the Contractor's accounting period being reported.
- c. Each 533M shall include a narrative explanation for variances exceeding five percent between planned hours/dollars and actual hours/dollars for each reporting category (at the total contract level only).

3. In addition, cost detail associated with the following elements shall be included in each of the above, if applicable.

- a. Direct Labor Hours
- b. Direct Labor Dollars
- c. Overtime Premium Dollars:
- d. Other Direct Costs (ODC's)
- e. Overhead
- f. G&A
- g. Total Estimated Cost

C. Quarterly Financial Management Report--The Contractor shall submit a financial report at the contract level, detailed by categories specified in paragraph 3 above on NASA Form 5330 at times, and in accordance with the instructions contained on the reverse side of the form. The initial report shall be due 10 working days after the award of the contract.

D. Property in the Custody of Contractors (NASA Form 1018)--The Contractor shall submit the NASA Form 1018 no later than October 31 of each year in accordance with the Section G clause entitled "Financial Reporting of NASA Property in the Custody of Contractors."

E. Safety Plan--Within 30 calendar days after the effective date of the contract, the Contractor shall submit a detailed safety plan showing how the Contractor intends to protect the life, health, and well being of NASA and Contractor employees as well as property and equipment. This plan, as approved by the Contracting Officer, should contain, as a minimum the following:

- 1. Points of Contact and Responsibility--Organizational flow chart and description of responsibilities of each employee in your organization for safety.
- 2. Employee Safety Training, Certification and Programs--Detailed information on type of training required, parties responsible for certification, and outline of applicable regulations. Detail company programs which emphasize personal safety and motivate employees to be safety conscious.
- 3. LaRC Safety Policies/Procedures--Recognition of applicable LaRC safety policies and procedures such as Langley Handbook 1710.10, LaRC Red Tag System.
- 4. Accident Investigation and Reporting--Procedures for investigating and reporting accidents/incidents including immediate notification to the NASA LaRC Safety Manager of all injuries and damage to equipment or facilities.
- 5. Hazardous Operations--
 - (a) Description of hazardous operations involved in contract performance.
 - (b) Plans for apprising employees of all hazards to which they may be exposed.

(c) Proper conditions and precautions for safe use and exposure to hazardous operations. Include recognition of LHB 1710.12, Potentially Hazardous Materials.

6. People with Disabilities--In accordance with the Americans with Disabilities Act, the plans should specify that prior to assigning a person with disabilities to this contract, the Contractor shall contact the Disability Program Manager at (757) 864-7718.

7. Other Safety Considerations--Any other safety considerations unique to your operation.

F. Subcontracting Reports--The Contractor shall submit Standard Form 294, Subcontracting Report for Individual Contracts, Standard Form 295, Summary Subcontractor Report, and in accordance with the instructions on the reverse of the form.

In addition to the instructions on the reverse of the SF 295, the Contractor is required to comply with Clause 1852.219-75, Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Reporting.

G. Federal Contractor Veterans Employment Report--In compliance with Clause 52.222-37, Employment Reports on Special Disabled Veterans and Veterans of the Vietnam Era, the Contractor shall submit the Federal Contractor Veterans Employment Report (VETS-100) as required by this clause.

H. Evidence of Insurance--The Contractor shall submit evidence of the insurance coverage, required by the NASA Clause 1852.228-75 in Section I entitled "Minimum Insurance Coverage" (Le., a Certificate of Insurance or other confirmation), to the Contracting Officer prior to performing under this contract.

I. Quality Plan--Within 30 calendar days after the effective date of the contract, the Contractor shall submit a quality plan which addresses how contract quality requirements will be met. The plan and subsequent revisions will be reviewed and approved by the Contracting Officer or the designated representative.

II. DOCUMENT DISTRIBUTION REQUIREMENTS

A. Unless otherwise specified elsewhere in this contract, reports and other documentation shall be submitted f.o.b. destination as specified below, addressed as follows:

National Aeronautics and Space Administration
Langley Research Center
Attn: _____, Mail Stop
Contract NAS1-
Hampton, VA 23681-0001

B. The following letter codes designate the recipients of reports and other documentation which are required to be delivered to Langley Research Center by the Contractor:

- A--Contract Administrator, Mail Stop 126
- B--Contracting Officer's Technical Representative, Mail Stop , Mail Stop **447**
- C--Cost Accounting, Mail Stop 135 (via Mail Stop 175)
- D--Safety Officer, Mail Stop **429**
- E--Property Administrator, Mail Stop
- F--Small Business Specialist, Mail Stop 144
- G--Security Officer, Mail Stop 450
- H--Instructions on Form

C. The following are the distribution requirements for reports and other documentation required to be delivered f.o.b. destination. The numeral following the letter code specifies the number of copies to be provided:

<u>DOCUMENT</u>	<u>LETTER CODE DISTRIBUTION</u>
Monthly TO Status	A-1, B-1
Financial Management Report	A-1, B-1, C-2
Report of Government-Owned/Contractor-Held Property (NASA Form 1018)	B-1, E-4
Safety Plan	B-1, D-1
Subcontracting Report for Individual Contracts (Standard Form 294)	A-1, F-1
Summary Subcontractor Report (Standard Form 295)	H-1
Federal Contractor Veterans Employment Report (VETS-100)	H-1
Evidence of Insurance	A-1, B-1
Quality Plan	A-1, B-1
NASA Form 531 and Standard Form 85P (Ref. Clause 1852.204-76)	A-1, G-1

D. When the Contract Administrator (**A**) is not designated above to receive a copy of a report or document, the Contractor shall furnish a copy of the report/document transmittal letter to the Contract Administrator. The Contractor shall also furnish a copy of the transmittal letter and a copy of each Financial Management Report to the delegated Administrative Contracting Officer of the cognizant DoD (or other agency) contract administrative services component.

AGREEMENT

Between

SVERDRUP TECHNOLOGY, INC.
Langley Division

And

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, AFL-CIO
Local Union 1340

(Inspectors)

February 29, 1996

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AGREEMENT

Between

Sverdrup Technology, Inc., Langley Division

And

International Brotherhood of Electrical Workers, Local Union 1340

PREAMBLE

THIS AGREEMENT entered into this 29th day of February, 1996 by and between Sverdrup Technology, Inc., Langley Division, (hereinafter referred to as the "Company"), and **Local** Union No. 1340, of the International Brotherhood of Electrical Workers, AFL-CIO, (hereinafter referred to as the "Union"), for the purpose of all Construction Inspection work assigned to the Company by the National Aeronautics and Space Administration, (hereinafter referred to as "NASA"), under the Engineering Support Services Contract and performed by the employees of the Company covered by this Agreement only within NASA, Langley Research Center site and sites and properties related thereto.

WHEREAS, it is the intent of the parties to establish and maintain the highest standard of ethics within the Construction Services Unit. In order to achieve those standards the Company and the Union shall jointly establish reasonable policies and rules regarding actual or potential conflicts of interest within the Unit.

WHEREAS, the Company is engaged in the business of Construction Inspection (as defined in Article V) **and** this work is of importance to the **Union**, and it being recognized that unique **skills** are required to satisfactorily perform this **type** of work, the Union and the Company wish to enter into an agreement for their mutual benefit covering work of this nature.

WHEREAS, the Company and the Union desire to mutually establish hours of work and working conditions for the employees to the end that satisfactory conditions and harmonious relations will continue to exist for the benefit of both parties to this Agreement.

WHEREAS, the Union, its members and all of those employees represented by the Union, agree to use its and/or their best endeavors to protect the interest of the Company, to consider the Company's property and to give service and/or work of the highest productive quality.

WHEREAS, the Company and the Union have a mutual interest in providing construction inspection services to NASA's Langley Research Center and hence a practical system which enables harmonious and efficient working relationships between the parties is necessary,

NOW **THEREFORE** the parties agree to the following:

ARTICLE I

TERM OF AGREEMENT

Section 1. This agreement shall take effect February 29, 1996 and shall remain in effect through February 28, 1999.

Section 2. Either party desiring to change or terminate this Agreement must notify the other in writing by registered mail at least sixty (60) days prior to expiration. When Notice for changes only is given, the nature of the changes desired must be specified in the Notice and until a satisfactory conclusion is reached in the matter of such changes, the original provision shall remain in full force and effect. Neither party hereto may reopen this Agreement for negotiations on **any** issue, either economic or non economic, during this contract period or by extension thereof, except **as** provided in Section 3.

Section 3. **This** Agreement shall be subject to amendments at any time by mutual consent of **the** parties hereto. Any such amendment agreed upon shall be reduced to writing **and** signed by the parties hereto. The Union may submit the amendments to the International office of the Union, as it relates solely to compliance with State and Federal regulations.

ARTICLE II

RECOGNITION

Section 1. **The** bargaining unit under this Agreement shall comprise Construction Inspection employees including X-ray Monitors of the Company **as** specified in the NLRB Certification of Representation (CASE NO. 5-RC-12653).

Section 2. The Company:

- (a) Agrees to recognize the Union as herein duly constituted for the purpose of bargaining collectively and administering this the Agreement for the employees.
- (b) Agrees to bargain collectively with the Union and to be governed by the terms of this Agreement.

ARTICLE III

MANAGEMENT RIGHTS

The Management of the plant and the direction of working forces and of the affairs of the Company, including the right to hire, discipline, suspend or discharge for cause, and the right to reduce forces due to lack of work or curtailment of production shall be vested exclusively in the Management of the Company. Management shall also have the exclusive right to assign or transfer

employees, adopt new or changed methods of performing the work, to relieve employees from duty because of lack of work, to make rules and regulations and to change such rules **and** regulations.

The Company has the right to establish new classifications provided it does not downgrade the pay scale of existing employees. An employee hired to fill a new classification of work shall be limited to performing within such classification, except in unusual or extenuating circumstances.

In the event the Company establishes such new classifications, the parties shall promptly enter negotiations to establish an agreeable wage rate. In the meantime, the Company shall have the right to implement their proposed wage rate with the understanding that a retroactive adjustment may be made subsequent to final agreement of the parties.

It is recognized that the Company shall continue to have the exclusive right to determine partial or permanent discontinuance or shut down of operations.

It is understood and **agreed** that any of the rights, powers or authority the Company had prior to the signing of this Agreement are retained by the Company except those specifically abridged, granted or modified by this Agreement. The listing of specific Management rights in this Article is not intended to be, nor shall it be considered a restriction of or waiver of any of the rights of the Company not listed and not specifically surrendered in this Agreement, whether or not such rights have been exercised in the past.

ARTICLE IV

SCOPE OF WORK

This Agreement covers Construction Inspection work assigned to the Company by NASA under the Engineering Support Services Contract and performed by the employees of the Company covered by this Agreement only within the NASA, Langley Research Center site and sites and properties related thereto.

ARTICLE V

DEFINITIONS

Section 1. Construction Inspection is defined as any work assigned by the Company which is in accordance with the terms of the Company's Engineering Support Services Contract with **NASA** and which is in compliance with the Company's obligation to perform any such work under the terms of that contract and conforming with the NLRB certification. A position description for construction inspectors is summarized in Appendix D.

ARTICLE VI

GRIEVANCE PROCEDURE

Section 1. Procedures

All grievances that may arise will be handled in the following manner. No grievance shall be filed, or processed at Step II based on facts, or events, or omission, which have occurred more than six (6) normal work days before grievance is filed. In cases involving dismissal or suspension for just cause, the grievance may be instituted at Step III.

STEP I: Prior to processing any written grievance, any employee who believes he has a grievance, must discuss it with his immediate supervisor, with his steward being present. If the employee is dissatisfied with the answer given by his supervisor, or no answer is given within three (3) normal work days, Step II will be followed

STEP II: The employee and his steward shall present to the Division Manager a written grievance form provided by the Company (which has been approved by Company and Union) stating what the grievance is and the remedy sought. If the Division Manager's decision is not agreeable with the union, or is not given within three (3) normal working days, Step III will be followed.

STEP III: The Division Manager (or his designated representative) within three (3) normal work days after his written decision not agreeable with the union, or failure to give a decision, shall meet at the union's request with the Local Union Business Manager, or his designated representative. If the Division Manager's decision is not agreeable with the union or is not given within five (5) normal work days, then the Union may request to arbitrate the matter.

STEP IV: The Union may, no later than five (5) normal work days after receipt of the Company's decision in Step III, submit the matter to arbitration by requesting that the Federal Mediation and Conciliation Service submit a list of five (5) names of arbitrators, from which the Company and the Union shall choose an impartial arbitrator to decide the matter. Following receipt of the list of names of arbitrators, the parties shall then alternately strike the names from the panel and the name remaining shall be the case. The determination of which party is to strike first shall be determined by a coin flip. Striking shall take place within seven (7) normal work days of receipt of the arbitrator list.

Section 2. Arbitration

In the event that grievance procedures lead to arbitration, the expense of the impartial Arbitrator shall be shared equally by both parties. The Company shall attempt to provide facilities at Langley Research Center provided, however, if no facilities are available at the Center, the Union and the Company agree to equally share expenses incurred in the hearing room. Furthermore:

- (a) The findings of the Arbitrator shall be binding on both parties.
- (b) Except by mutual written agreement to the contrary, only one grievance shall be taken to arbitration at any one time before the same arbitrator.
- (c) The impartial Arbitrator shall only have jurisdiction and authority to determine the meaning, application of, or compliance with the provisions of this Agreement and shall not have jurisdiction or authority to add or detract from or alter in any way such provisions or any rules of discipline attached hereto.

Section 3. Time limits

All time limits stated in this Article shall be treated as jurisdictional in nature, and the failure to follow any of the set time limits shall result in the grievance being void and waived, and the matter shall end without resort to arbitration. A normal work day is defined as any day on which any bargaining unit employee is at work, Monday through Friday, except holidays.

ARTICLE VII

UNION REPRESENTATIVES

Section 1. Representatives of the Union shall have access to the job during working hours on union business, provided they do not interfere with the work of employees, and further provided they obtain prior authorization from the Company.

Section 2. The Union has the right to appoint a Steward from the Unit at the Company. The Company shall be notified and furnished the name of the Steward in writing. The Company will deal with the designated Steward until such designated Steward has been revoked in writing by the Union. Such Steward shall be allowed reasonable time (to be scheduled with his supervisor) during the regular working hours without loss of pay to see that the terms and conditions of this Agreement are observed. In no event shall the presence of the Steward disrupt or interfere with the work of the Company because of his faithful performance of duties as Steward. No Steward shall be discriminated against by the Company because of his faithful performance of duties of Steward. The Steward, or alternate, shall be called in by the supervisor before any employee is disciplined.

ARTICLE VIII

REFERRAL OF EMPLOYEES

Section 1. When employees are required, the Company shall request from the Local Union that the required number of applicants be referred for employment. The following minimum standards shall apply.

- (a) The selection of applicants for referral to jobs shall be on a nondiscriminatory basis and shall not be based on, or in any way affected by Union membership, by-laws, rules, regulations, constitutional provisions, or any other aspect or obligation of Union

membership, policy, or requirement. Local Union 1340, International Brotherhood of Electrical Workers, application for referral to the Project covered by this Agreement regardless of race, color, sex, handicap, national or ethnic origin. It does not discriminate on the basis of race, color, sex, handicap or disability, national or ethnic origin in the referral of applicants.

- (b) The Company shall retain the right to select or reject any applicant referred by the Local Union, and shall have the further right to select any applicant from among those referred by the Union. When the Company requests an applicant or referral from the Union, the Union will refer such applicant within forty-eight (48) hours [two (2) normal work days] and in the event the Union fails to refer an applicant within that period of time, the Company is free to utilize other sources to fill its manpower needs.
- (c) The Local Union shall post in places where notices to employees and applicants for employment are customarily posted, all provisions relating to the function of its hiring arrangements, including the provisions herein set forth. The Company shall similarly post in places where notices to employees and applicants for employment are customarily posted, all provisions relating to the function and operation of the hiring arrangements including these provisions.
- (d) The Union agrees to indemnify and hold the Company harmless against any and all claims, demands, suits, costs and/or any other forms of action and assumes any and all liabilities and expenses that shall arise out of or by reason of the Union's administration of the hiring hall referred to in this Article. It is also expressly understood that those applicants that are referred by the Union will be selected on a nondiscriminatory basis and that the Company shall assume the liabilities that attach for failure to hire an applicant referred by the Union.
- (e) The Union agrees to recognize the Company's Affirmative Action Program and will refer qualified job applicants according to established underutilization goals.

Section 2 In addition to the forgoing minimum standards, the Local Union agrees to refer all applicants for employment to this project according to the standards for criteria uniformly applied to any project in the area. An Appeals Committee is hereby established composed of one member appointed by the Union, one member appointed by the Company and a public member appointed by both these members. It shall be the function of the Appeals Committee to consider any complaint of any employee or applicant for employment arising out of the administration by the Local Union of Section 1 of this Agreement. The Appeals Committee shall have the power to make a final and binding decision on any such complaint which shall be complied with by the Local Union. The Appeals Committee is authorized to issue procedural rules for the conduct of its business but it is not authorized to add to, subtract from, or modify any of the provisions of this Agreement and its decisions shall be in accord with this Agreement.

Section 3. The designation and determination of the number of foremen and other supervisory personnel is the responsibility of the Company.

Section 4. The above hiring provisions have been entered into in order to comply with the Mountain Pacific doctrine of the National Labor Relations Board. Upon any Board or court decision or administrative ruling modifying or changing the Mountain Pacific doctrine, either party to this Agreement shall have the right to re-open negotiations pertaining to this Article by giving the other party thirty (30) calendar days written notice.

ARTICLE IX

UNION SECURITY

It is agreed that **all** employees coming under the terms of this Agreement **shall be** required to make application to joining the Union within thirty (30) days of employment or Agreement, whichever is later, and as a condition of continued employment, must maintain membership in good standing for the life of this Agreement and any renewal thereof. In the event the Union requests the Company to dismiss an employee to comply with the provisions of this Article, such request **shall be** complied with by the Company.

ARTICLE X

WAGES

Section 1. Wage rates set forth in Appendix "A", attached hereto, and made a part hereof, are to be paid to those employees listed under Appendix "A" for this term of this Agreement.

Section 2. Wages will be paid bi-weekly by means of direct mailing or deposit to be selected by the employee. The payroll period to close at midnight on Friday.

Section 3. The Company **agrees** to make available to **all** employees United States Savings Bonds and United Way through payroll deductions.

Section 4. Working and Basic Dues Check-Off:

The Company agrees that it will make Union Working Dues Deductions from the pay of all members working under the terms of this Agreement in the amount of one and one-half percent (1.5%) of gross bi-weekly pay plus Basic Bi-Weekly Union Dues of the basis of individually signed payroll deduction authorizations on the form set out below in Section 5. The Company will make these deductions bi-weekly as designated in the individually signed payroll deduction authorizations. The Employer will pay the aggregate of such deductions monthly to the Financial Secretary of the Union, who shall be authorized to issue a receipt in the name of the Union. Along with the check for the amount of the calendar monthly deductions, the Company shall send mutually agreed number of

copies of a form furnished by the Union which sets forth the **name**, social security number, the number of clock hours worked, and his gross earnings for the calendar month, and **said** copies will **be** executed to cover the aggregate number of bi-weekly payrolls in each calendar month. The check and/or respective monies shall be transmitted not later than fifteen (**IS**) days after the end of the month for which deductions are being made.

Section 5. Deduction **Form** Employees will complete and submit the payroll deduction form included in Appendix C.

ARTICLE XI

DAY WORK CONDITIONS

Section 1. Eight (8) hours **per** day shall constitute a standard work day normally **between** the hours of 7:00 a.m. and 3:30 p.m. Forty (40) hours per pay period shall constitute **a** normal week's work. The Company may alter the work day to accomplish peak and valley workloads. **In** the event an employee works more than eight (8) hours in a work day but less than forty (40) hours in any pay period, the employee may receive comp time in lieu of overtime not to exceed three (3) hours a day or ten (10) hours a week excluding Saturday and Sunday. Such comp time must be taken by the end of the normal work week, in which it occurred.

Section 2. *All* time worked in excess of forty (40) hours shall be paid for at the rate of time and one half (1-1/2). Time worked includes all non-productive leave hours excluding health fund benefit coverage and worker's compensation.

Section 3. **The** Company may change the starting and quitting times of any shift, on a permanent or temporary basis.

Section 4. Employees called back to work after the conclusion of their regular shift hours shall be compensated for a minimum of three (3) hours at the appropriate overtime rate regardless of whether the employee called is required to work the entire three (3) hours. In addition, any employee called back to work after his regular shift hours shall be promptly excused upon completion of the job which he **was** called in to **perform**.

Section 5. If assigned, employees shall perform the overtime work required. Employees actively working the task requiring overtime shall perform the overtime work required. The Company and **Union** shall establish an overtime policy which will balance the assignment of overtime equitably **by** classification. This will normally be balanced within plus or minus ten percent on an annual basis. The overtime policy is set **forth** in Appendix B.

Section 6. Except for temporary and part time employees, employees terminated by reason of lay-off shall be notified in writing at least two (2) weeks prior to such termination date. Employees who are laid off or discharged will be paid all monies by the end of the **next** pay period, providing all indebtedness and obligations to the Company by the employee are satisfied.

Section 7. In the event an employee is changed from regular to **part** time or temporary status, and if the employee is change back to regular status within the next 12 months, sick leave balances will **be** reinstated.

ARTICLE XII

WORK SHIFTS

Section 1. When so elected by the Company, multiple shifts **normally** consisting of **no** less than eight (8) hours may be worked. When two (2) or three (3) shifts are worked, the first or day shift, shall **normally be** established from 7:00 a.m. to 3:30 p.m.; the second shift shall normally be established from 3:00 p.m. to 11:30 p.m.; and third shift shall normally be established ~~from, 11:00 p.m. to 7:30 a.m.)~~ **A** thirty (30) minute lunch shall normally be taken approximately midway through the **shift** plus or minus one hour. Lunches not observed during **this time period** at the direction **of** the Company will **be** counted **as** hours worked and paid at the appropriate rate. Shift schedules may **be** changed to accommodate construction contractor activity.

Section 2. The pay for the second shift shall **be** straight time plus seven and one half (7-1/2) percent; and the third shift rate of pay shall be straight time plus ten (10) percent.

Section 3. Eligibility for shift differential shall **be** based upon th2 majority of **non** overtime hours worked **on** a given **shift** in accordance with the following sub-sections.

Section 3a ~~Shift~~ differential shall not be applicable to non productive leave hours for employees **on** temporary shift assignment; except **for** holidays, when the employee works ~~the~~ day before and the day after the holiday. Temporary assignment is defined **as** working an assigned **shift** for less than 30 **normal** work days.

Section 3b. Temporary shift assignments may be made for any period less than 30 **normal** work days.

Section 4. Except in the case of part time, temporary, or X-Ray Monitors, when shift changes from or to temporary or regularly assigned shifts are directed, there shall be a **minimum** of 16 hours between any assigned **shift**. If such changes prevent the employee from working a 40 hour week, then the **employee** shall be paid for **non** worked hours at the day shift rate, but not in excess of 8 **non** worked hours for any one change. Part time, temporary or X-Ray Monitors shall be permitted **a** minimum of 8 hours between shift changes.

ARTICLE XIII

HOLIDAYS LEAVES JURYPAY AND PENSION

Section 1. Holidays.*

(a) The following days shall be observed as holidays under this Agreement:

New Year's Day
Martin Luther King Day
President's Day
Memorial Day
Independence Day

Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day

* The above holidays will be observed **on** the same day that **NASA** observes them.

- (b) In the event the government proclaims a permanent holiday other than those listed in Section 1 above, then the employees shall be granted that holiday. If an employee is scheduled to work on a holiday, but fails to do so, he will receive no holiday pay.
- (c) An employee who works **on** one of the above-listed holidays shall **be** paid at time and one-half (1-1/2) his straight-time rate of pay for all hours worked on that holiday, in addition to any holiday pay for which he may **be** qualified.
- (d) To be eligible for holiday pay, an employee must work his regularly scheduled day before the holiday and his regularly scheduled day after the holiday unless **on** approved, scheduled vacation, bereavement leave, **jury** duty, or due to sickness or accident with proper physician documentation.

Section 2. Administrative Leave.

On days which are not recognized as holidays under Section 1 above, but where the Government, because of special events and occasions substantially reduces the normal activity at the Center because of such special events or occasions, and allows reimbursement to the Company, the following provisions shall apply:

- (a) Those employees who are required to work will be paid at their straight-time hourly rate; provided, however, that said employees will have a compensatory day off at their straight time base rate of pay for such compensatory time.
- (b) Those employees who are not required to work will receive a day's compensation at their regular straight-time hourly rates.

Section 3. Definition.

The interpretation of man-hours worked and hours worked for the purpose of vacation and sick leave accruals is all straight-time hours to include paid non-productive time, i.e., vacation, sick leave, holidays, and other time which is not directly chargeable to work orders, such as the R2. account.

Section 4. Annual Leave.

- (a) Employees with less than three (3) years shall earn one (1) hour Annual Leave per year for every twenty (20) man-hours worked.
- (b) Employees with three (3) years, but less than fifteen (15) years shall earn (1) hour Annual Leave for every thirteen (13) man-hours worked.
- (c) Employees with more than fifteen (15) years shall earn one (1) hour Annual Leave for every ten (10) man-hours worked.
- (d) Employees may only carry over a maximum of 240 hours of Annual Leave at year ending December 31.
- (e) Length of service includes the whole span of continuous service **with the** present (successor) contractor and with the predecessor contractors in the performance of similar work at the same Federal facility.
- (f) Employees desiring to take annual leave must receive permission from the Company by 9:00 a.m. the day before annual leave is desired. The Company may grant emergency vacations for extreme emergencies. Such granting of emergency leave shall be at the Company's discretion and not subject to the grievance procedure. Effective upon signing this Agreement, each employee will be allowed two unscheduled annual leave absences to be taken at the employee's discretion. The employee will have two (2) opportunities annually to take this unscheduled annual leave. The total number of hours for both unscheduled absences can not exceed eight (8) hours. Time is charged to employee's annual leave.
- (g) Employees who schedule vacations of one (1) week or more and who submit a written request through Payroll three (3) weeks or more in advance of the vacation starting time, will be paid vacation allowance prior to the end of the work shift on the last work day preceding the vacation schedule. All employees requesting advance vacation pay must begin their vacation on Monday.
- (h) All vacation hours taken by employees are subject to the approval of management. Employees must submit requests for vacation at least two weeks prior to start of vacations of 40 or more hours.

Section 5. Sick Leave.

- (a) Employees **will** earn (1) hour of sick leave for every (20) hours worked.

- (b) Employees absent from work because of illness must, upon reasonable request in accordance with the company's sick leave policy, submit administratively acceptable evidence that they were ill and unable to work.
- (c) Employees may accumulate all unused sick leave from one year to the next.
- (d) Any employee abusing sick leave benefits will be subject to immediate discharge.
- (e) Employees absent from work because of illness must inform the Company of the telephone number and address where they may be reached during such time of illness.

Section 6. Jury Duty or Witness Appearance.

- (a) Regular, ~~full-time~~ employees are permitted time off with pay to serve on a **jury** or to appear **as a** grand jury witness (if not the accused) upon presentation **of their** court notice or subpoena to their supervisor. Employees must give their supervisors evidence of time served in court and fees paid, and are paid their straight-time pay less fees received from the court. If **no** fees are paid by the court, the Company pays the **full** amount.
- (b) Regular, full-time employees serving **as** a witness other than before the grand jury are allowed time off but will be paid only if serving at the request of the Company or NASA.

Section 7. Bereavement Leave.

- (a) In the event of a verifiable death in an employee's immediate family of any of the following relatives: Spouse, child, mother, father, brother, sister, father-in-law or mother-in-law, the employee shall **be** entitled to be absent from work for a period not to exceed two ~~normal~~ working days to afford ~~him~~ an opportunity to attend the funeral and/or participate in other matters relating to the death of the deceased. This period of time shall not exceed one (1) normal work day following the funeral. During such absence, the employee shall be compensated at his regular straight-time hourly rate for each eight (8) hour work day absent.
- (b) **In** the event of a verifiable death of an employee's grandparent or an employee's ~~grandchild~~, the employee shall **be** granted one day off to attend the funeral, providing the funeral occurs **on** a normal work day and providing the employee attends the funeral. During such absence, the employee shall be compensated at his regular straight-time hourly rate for the eight (8) hour work day absent.

Section 8. Retirement Fund.

- (a) The Company agrees to contribute on behalf of all regular non-probationary employees

working under the term of this Agreement, seven and one-half percent (7-1/2%) of their gross bi-weekly pay, excluding any health and welfare, uniforms or safety equipment allowances, into the Southern Electrical Retirement Fund.

- (b) The company agrees to **be** bound by the terms of the Agreement and Declaration of Trust establishing the Southern Electrical Retirement Fund and all rules and regulations adopted by the Trustees of the Fund from time to time, provided the Fund continues to be maintained as a tax exempt trust under the relevant provisions of the Internal Revenue Code and otherwise conforms to all requirements of the law.
- (c) The company and the Local Union agree that the Trustees heretofore appointed to the Southern Electrical Retirement Fund by the National Electrical Contractors Association, **Virginia** Chapter, and the Local Union, and **as** they shall from time to time **be** replaced, shall represent the Company **and** the Local Union, respectively.
- (d) Contributions shall be transmitted by the Company to the plan administrator not later than fifteen (15) days after the end of the month for which contributions are being made. Along with the contributions, the Company shall furnish to the plan administrator, a mutually agreeable form setting forth the employee's name, Social Security number, gross monthly earnings, hours worked, and the amount contributed by the Company for each employee covered by the terms of this Agreement. Contributions for all bi-weekly payroll periods ending during the calendar month shall be included in the report for that month.

ARTICLE XIV

TRAVEL

During the term of this Agreement, subsistence, travel allowance, mileage, per diem, or pay for travel **time** shall not be paid to any employee covered by the terms of this Agreement unless approved by the Division Manager.

ARTICLE XV

SUPERVISION

The Company reserves the right to send into the area of work as many supervisors and engineers as it deems necessary to **carry** out the work covered by this Agreement. Such management personnel shall not be prohibited from performing construction inspections under certain circumstances such **as**:

- (1) during absences of bargaining unit inspector
- (2) during emergencies

- (3) on large contracts when special problems exist or may be anticipated, and
- (4) when variations in task order workload create requirements for personnel of limited duration anticipated to be less than two hours per day and **no** greater than 10 hours per week, excluding all holidays and overtime hours, per Task Order number. This occurs after all efforts have been exhausted to assign task to a bargaining unit inspector.

It is not the intent of the parties that the Company will utilize supervisors or engineers to inspect construction projects on a full-time basis, **nor** that new supervisor or management positions be established for the sole purpose of replacing Union personnel.

ARTICLE XVI

SAFETY IN THE WORK PLACE

The employees covered by this Agreement shall, at all times while in the employ of the Company, be bound by the safety rules and safety regulations **as** established by the Company. **All** employees will be issued Company safety manuals.

The Company has a vital interest in maintaining safe, healthful and efficient working conditions for its employees. Being under the influence of alcohol or drugs (illegal or prescribed) on the job may **pose** serious safety and health **risks** not only to the user but to all industrial equipment, vehicles and other employees. The possession and **use**, distribution or sale of an illegal substance or alcohol in the work place shall not be tolerated and may result in termination and prosecution.

The Company and the **Union** recognize that their health and future are dependent upon the physical and psychological health of their employees and members. Accordingly, it is the right, obligation and intent of the Company to maintain and the Union to support, a safe, healthful **and** efficient working environment for all.

In the event the Company has reasonable suspicion that the employee is engaged in substance abuse it shall have the right to require a urinalysis test for confirmation. The Union recognizes and supports the Company's drug testing policy.

ARTICLE XVII

WORK RULES

The Union agrees that the Company has the sole and exclusive right to establish reasonable rules, policies **and** regulations not in conflict with the express terms of this Agreement governing employment and working conditions.

The Company agrees to provide copies of such rules, policies, and regulations to the Union ten (10) days in advance of their becoming effective. **This** period will allow the Union **an** opportunity to review the rules, policies and regulations prior to implementation. Under special and compelling circumstances, such as a NASA Directive or **a** safety requirement, implementation may become effective immediately upon notification of the Union.

ARTICLE XVIII

SENIORITY

Section 1. In the event of reduction of the work force, employees with the shortest length of service in their classification, will be laid off first.

Section 2. **All** new regular employees shall be on a probationary period for a **period** of ninety (90) calendar days. Probationary employees shall receive the wages and the fringe benefits, **as** described in this Agreement. New regular employees shall have no seniority until the probationary period has been completed. After completion of the probationary period, **an** employee's seniority shall then **be** credited from the date of hiring.

Probationary employees shall receive a performance review on or about thirty (30), sixty (60), and eighty-five (85) days after date of hire. Any decisions by the Company to terminate probationary employees on the basis of response to supervision, attendance, or ability to perform assigned tasks, shall be final and will not be subject to Article VI (Grievance Procedures) of this Agreement. This applies to the termination of a probationary employee only.

Section 3. A seniority roster shall be prepared and posted by the Company every 12 months. Any discrepancies with posting must be submitted in writing within 15 calendar days.

Section 4. Seniority shall be canceled and terminated upon the happening of any of the following events:

- (a) An employee quits.
- (b) An employee is discharged
- (c) **An** employee fails to return to work within five (5) days of notice of recall given by the Company by registered or certified mail.
- (d) Settlement has been made for total disability
- (e) An employee has retired
- (f) **An** employee has been in layoff status or is absent because of sickness or injury for more than twelve (12) months.

ARTICLE XIX

PROTECTIVE LEGISLATION

All employees covered by this Agreement shall have the protection of all existing Federal, State, and Local laws applicable to employees in general.

ARTICLE XX

PERIODIC CONFERENCE

Periodic conferences shall be held by the parties from time to time for the purpose of discussing matters of mutual interest.

ARTICLE XXI

GENERAL SAVINGS CLAUSE

Any provisions in this Agreement which are in contravention of any Federal, State, Local, or County regulation or laws affecting all or part of the limits covered by this Agreement shall be suspended in operation within the limits to which such law or regulation is in affect. Such suspension shall not affect the operation of any such provisions covered by this Agreement, to which the law or regulation is not applicable. Nor shall it affect the operations of the remainder of the provisions of the Agreement within the limits to which law or regulation **is** applicable.

ARTICLE XXII

WORK STOPPAGE

During ~~the~~ life of this Agreement, the Union agrees there shall be no strikes, work stoppages, slowdowns, interruptions, sympathy strikes, or delays of work of any **nature**, whether in protest of matters **of** actions covered by the Agreement, or matters or actions not referable thereto and not within the normal bargaining relationship between the parties and whether or not based upon alleged violations of State or Federal law, for any purpose whatsoever. Neither the Union nor any employee shall observe any organizational picket line.

Any employee who encourages or participates in a strike, stoppage, sit down, slowdown, sympathy strike, organizational picketing, or organized curtailment of work, as set out in this provision shall be subject to discharge.

In the event a strike occurs with another bargaining group, employees covered by this collective bargaining agreement shall not be assigned to perform the struck work.

ARTICLE XXIII

LANGLEY FEDERAL CREDIT UNION
PAYROLL DEDUCTIONS AND DIRECT DEPOSITS

The Company agrees to payroll deduction authorization and direct deposition, if duly signed by the employee, for the Langley Federal Credit Union, and said money **will** be forwarded to the Credit Union, subject to the following:

- (1) *All* authorizations for Langley Federal Credit Union checkoff will be honored by the Company only **upon** the receipt by the Company of executed forms sent to the Company by the Credit Union.
- (2) All cancellations for Credit Union checkoffs will be honored by the Company only upon **the** receipt by the Company of properly executed forms sent to the Company **by the** Credit Union.
- (3) *All* cancellations of increases or decreases in such checkoffs, which are received by the Company a minimum of three (3) working days prior to the close of a pay period will be processed by the Company effective with that pay period; provided, however, at least thirty (30) days have lapsed since processing a change notice for the affected employee.

The Union agrees to save the Company harmless from any action or claims growing out of these deductions (checkoff) and commenced by any employee or former employee of the Company. The Company's sole responsibility is to forward the monies deducted to the Credit Union bi-weekly. The checkoff period to close midnight on Friday and payment to be mailed on or before the Friday of the following week.

ARTICLE XXIV

HEALTH AND WELFARE

Section 1. Policy

(a) The Company will fund the **IBEW** Local Union 1340 Health Fund in the amounts designated in Section 2.

Section 2 Funding and Membership

(a) Entry into the program is restricted to new hires at the time of hiring or existing employees between May 1 and May 30 of each year.

(b) Effective 29 February, 1996 through 28 February 1997, employees electing to participate in the Health Fund will have a per pay period deduction of \$4.04 for employee only coverage, \$8.89 for employee and 1 dependent coverage and \$11.11 for 2 or more dependents coverage. The Company

will contribute the difference in the monthly premium cost and the employee deduction.

(c) Annual increases in premium costs, as requested by the Health Fund Trustees, up to and including five percent (5%) per year during the period of 1 March 1997 through 28 February 1999 shall be borne by the Company. Annual increases in premium costs greater than five percent (5%) up to and including fifteen percent (15%) shall be shared on the basis of fifty percent (50%) by the Company and fifty percent (50%) by the Employee. Annual increases in premium costs greater than fifteen percent (15%) shall be borne by the Employee.

(d) Provided there is no annual increase in premium costs requested by the Health Fund Trustees on 1 March, 1997, the unused increase will be added to 1 March, 1998. On 1 March, 1998, if a premium increase is requested by the Health Fund Trustees, the first ten percent (10%) in increased premium costs shall be borne by the Company. Increases in premium costs greater than ten percent (10%) up to and including twenty percent (20%) will be shared on the basis of fifty percent (50%) by the Company and fifty percent (50%) by the Employee. Annual increases in premium costs greater than twenty percent (20%) shall be borne by the Employee.

(e) All employees within the unit shall have the option of enrolling in the IBEW Local Union 1340 Health Fund, or at the individual employee's option may elect to receive fifty-four (.54) cents per hour in lieu of accepting the Health Fund.

(f) As of May 1, 1996, employee contribution deductions will be made in accordance with Section 125 of the Internal Revenue Code.

Section 3. Group Life, Accidental Death/Dismemberment and Disability Insurance

The Company will continue to fund the IBEW Local Union 1340 Group Life, Accidental Death and Dismemberment, and Accident/Sickness Disability Insurance for all employees. Any increase in premium costs shall be borne by the employee.

ARTICLE XXV

AWARD FEE SHARING

The Company agrees to provide a portion of the award fee to regular, full-time employees in accordance with the same plan approved for salaried employees in the Division, which provides the following:

(a) Payments will be based on award fees received during the calendar year.


(b) Payments will be made once each year during the month of December to employees who are on the active payroll at the time of disbursement.

(c) Eligibility will be determined by the number of months the employee is on the active payroll during the calendar year. Employees who are on the payroll as of the 15th of the month will be credited with a full month's share.

IN **WITNESS WHEREOF**, the parties hereto have executed this Agreement consisting of 26 pages, which has been signed on this twenty-eighth day of February, 1996.

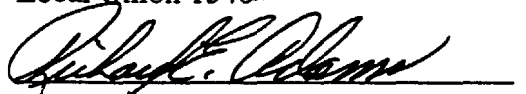
FOR THE COMPANY:

SVERDRUP TECHNOLOGY, INC.
Langley Division


Paul E. Sensmeier, Manager

FOR **THE** UNION:

INTERNATIONAL BROTHERHOOD OF
ELECTRICAL WORKERS, AFL-CIO
Local Union 1340.


Richard E. Adams, Business Manager.

APPENDIX A
WAGE SCHEDULE

Section 1. The Company agrees to pay the following hourly rates for the classifications listed below:

MINIMUM WAGE RATE PER HOUR

	<u>Effective</u> <u>29 Feb 1996</u>	<u>Effective</u> <u>1 March 1997</u>	<u>Effective</u> <u>1 March 1998</u>
Construction Inspector	15.99	16.51	17.01
X-Ray Monitor	8.55	8.83	9.09

Section 2. Temporary hires (working in accordance with Article XI for a period not to exceed 120 days) shall receive the established rate plus an amount of 20% ~~of~~ the established rate in lieu of benefits.

Section 3. ~~Part~~ time hires shall receive the established rate plus ~~an~~ amount of 20% of the established rate in lieu of benefits.

APPENDIX B

JOB ASSIGNMENTS AND OVERTIME

1. The Supervisor, Construction Services and supervisory inspectors will review and assign the lead inspector and support inspectors according to work load and trade requirements.
2. Overtime or compensatory time counts in overtime accrual totals.
3. When two inspectors have the same amount of overtime-roster hours, alphabetical order will be used to determine the overtime assignment.
4. During normal work hours, an inspector has to **be** present to accept or reject overtime.
5. The inspector **will be** allowed a maximum of thirty minutes to either accept or reject overtime.
6. Weekend overtime will be canvassed by Thursday afternoon prior to close of business when notice by the Company permits. On short notice by the Company, canvassing will be conducted as soon as notification is received.
7. Weekday overtime will be canvassed as soon as notification is received.
8. **All** overtime **shall be** extended to the low overtime-roster inspector within the classification required.
9. Assigned inspector may cover emergency or unscheduled overtime. If that inspector cannot cover this overtime, he **will be** charged and the low overtime-roster inspector will be given the option to work.
10. The assigned inspector shall be responsible for arranging overtime and briefing inspector from low list. Low list inspector that will cover overtime shall notify security and maintain proper logs for that work.
11. Lowest overtime-roster inspector can work if overtime is multi-craft and no uninspected work is being covered up. **If** some work is being concealed which has not been inspected, then lowest qualified inspector shall be assigned to check work before concealment.
12. In the event no one accepts the work after all qualified inspectors are canvassed, the assigned inspector within the classification will be required to work.
13. New employees shall start with highest hours plus one hour of that classification.
14. The Company and the Union agree to the above procedure in order to level overtime opportunity within \pm 10% on an annual basis within a classification.

APPENDIX C

UNION DUES DEDUCTION FORM

TO: SVERDRUP TECHNOLOGY, INC. ,Langley Division (EMPLOYER)

I hereby authorize and **direct** you to deduct Union working dues bi-weekly **from** my pay, **plus** monthly basic Union dues, both amounts of which are to be determined by the Local Union by-laws **and** the **IBEW** Constitution and to **forward** same monthly to the Financial Secretary of the Union in accordance with the Agreement between the Union and the Company. This deduction shall **be** made from all wages earned by me while working in the jurisdiction of Local Union 1340, **IBEW**.

This authorization **and** direction shall be irrevocable for a **period** of one (1) year from the date hereof or until the anniversary date of the present Agreement, whichever is sooner, at which time I may revoke it by giving the Employer written notice any time with thirty (30) days prior to the expiration of the year period, or thirty (30) days prior to the anniversary date of the present Agreement, whichever occurs sooner. If no such notice is given, **this** authorization shall be irrevocable for successive one (1) year periods thereafter, or for successive contract periods, whichever are shorter, with the same period of revocation at the end of each such period and shall continue thereafter in full force and effect until revoked by written notice to you.

Date: _____ Signed: _____

Social Security Number: _____

APPENDIX D

SUMMARY POSITION DESCRIPTION FOR CONSTRUCTION INSPECTORS

Section 1. General

Construction Inspectors examine any of a variety of construction goods, services or operations, within designated trades, for conformance to contract requirements as documented by plans, specifications, reference specifications, approved submittals, codes and industry practice. Conducts Quality Control (QC) activity on assigned contracts and performs Quality Assurance (QA) of construction contractors' inspection and testing activities. Monitors tests to verify procedure and results. Conducts tests to demonstrate compliance. Examine? raw materials for quality, and manufactured items for defects and for conformance to specifications, visually and using sample models and instruments, such as scales, gauges, templates, calipers and micrometers. Verifies that established standards are maintained relative to such matters as transportations and storage, health and safety, security, sanitation, business practices, operations and services. When required, affixes seals or tags to approved items. Ascertains that licenses and permits have been obtained and displayed. Confers with officials, interprets regulations and codes, and assists in altering methods and practices to meet established standards. Investigates complaints and violations, prepares reports of findings and action taken or recommended and testifies in court. Recommends changes in standards, administrative procedures, facilities, methods, and practices. Performs other tasks as outlined in the current revision of the NASA Langley Inspection Manual.

Section 2. Physical Requirements, Description of Environment, and Other Essential Functions

Requires mobility through construction sites including climbing, crawling, access to confined spaces and heights to 70 ft maximum. Depth perception is required, with or without correction. Ability to hear normal conversation and remote alarms not visually apparent. Capable of carrying documents and test instruments (maximum wt. 30 lbs), move materials to gain access and passage (maximum wt. 100 lbs) and ability to use tools and test instruments. Ability to operate motor vehicles and work at heights up to 70 ft.

Work is performed indoors and outdoors in all weather conditions. Exposed to noise, dust, hazardous materials, chemicals, high noise, electricity, and high pressure systems on construction sites. Requires good oral and written communication skills with the ability to communicate effectively with tradesmen and other contractor personnel, technicians and engineers. Must be able to obtain, as a minimum, an ADP clearance. and obtain other security clearances when required.

Ability to use the following tools: desk top or lap top computer, hand held radio, telephne, pager, copiers and miscellaneous test equipment pertaining to respective trades, such as: continuity testers, micrometers, volt meters, amp meters, flow hood, pitot tube, windsor probe/schmidt hammer, Hi-pot and Megger meters, holiday testers, concrete slump and test cylinders apparatus, builder's level, and miscellaneous tools.

NAS1-98128
Exhibit E

LAST INVENTORY DATE: 04-23-97
PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Date Rec'd	Unit Price	Part No.	Serial No.	Comments

LOCATION: Survey Storage Area						
GOVERNMENT ID: 50						
00154						
		09/17/1991	18.00			Rack Storage

LOCATION: Equipment Room						
GOVERNMENT ID: 53						
00155						
		09/17/1991	49.00			Cabinet, Storage

GOVERNMENT ID: 56						
00156						
		09/17/1991	135.00			Cabinet, File

GOVERNMENT ID: 1848						
00158						
		09/17/1991	49.00			Cabinet, Filing, Steel

LOCATION: Werth Teachey Office						
GOVERNMENT ID: 1916						
00159 HON						
		09/17/1991	105.00			(Brown) Cabinet, Filing, 2-Drw

LOCATION: Equipment Room						
GOVERNMENT ID: 667						
00160						
		09/17/1991	111.00			Cabinet, File, Steel, Black

LAST INVENTORY DATE: 04-23-97

PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Part No.	Serial No.
Comments	Date Rec'd	Unit Price	Descrip.
=====			
GOVERNMENT ID: 669			
00161	09/17/1991	111.00	Cabinet, File, Steel, Leg
=====			
GOVERNMENT ID: 668			
00162	09/17/1991	351.00	Cabinet, File, Steel, Black
=====			
GOVERNMENT ID: 696			
00163	09/17/1991	49.00	Cabinet, File, Steel
=====			
GOVERNMENT ID: 54			
00164	09/17/1991	71.00	Cabinet, File
=====			
GOVERNMENT ID: 1901			
00165	Hamilton		
	09/17/1991	300.00	Drawing Files, 5-Drawer
=====			
GOVERNMENT ID: 1902			
00166	Hamilton		
	09/17/1991	300.00	Drawing Files, 5-Drawer
=====			

LAST INVENTORY DATE: 04-23-97

PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

SVT No.	Manufacturer	Part No.	Serial No.
Comments	Date Rec'd	Unit Price	Descrip.
LOCATION: Blue Line Room			
GOVERNMENT ID: 1900			
00168	Ozalid, Inc.	595SPV	1561 / ECM 1090833
	09/17/1991	5026.00	Print Machine, Diazo
LOCATION: Survey Storage Area			
GOVERNMENT ID: 1619			
00173	Aqua-Tronics	A-7	478 / ECM 138034
	09/17/1991	560.00	Locator Cable W/Case, Aqua-Tro
LOCATION: Beige Sto. Cabinet			
GOVERNMENT ID: 1619A			
00174	Aqua-Tronics		549156
	09/17/1991	0.00	Inductor Coupler, Aqua-Tronics
GOVERNMENT ID: 1622			
00175	Fisher	TW	861331
	09/17/1991	300.00	Pipe Locator, Fisher
GOVERNMENT ID: 1623			
00176	Aqua-Tronics	A-6	2565
	09/17/1991	688.00	Pipe Locator, Aqua-Tronics
GOVERNMENT ID: 1624			
00177	Buff Science Institute		25275
	09/17/1991	600.00	Level Precision W/Tripod

LAST INVENTORY DATE: 04-23-97

PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Part No.	Serial No.	Comments
Date Rec'd	Unit Price	Descrip.		

LOCATION: Van (David)				
GOVERNMENT ID: 1624a				
00178				
09/17/1991	0.00	Level Rod		

LOCATION: Beige Sto. Cabinet				
GOVERNMENT ID: 1625				
00179	Lnitz, Inc.	35643 / B1C	11785 / ECN 849287	
09/17/1991	1346.00	Level Auto W/Tripod, Lnitz		

LOCATION: Van (Werth)				
GOVERNMENT ID: 1625A				
00180	Lnitz, Inc.			
09/17/1991	0.00	Rod W/Cover, Lnitz, Inc.		

LOCATION: Beige Sto. Cabinet				
GOVERNMENT ID: 1625B				
00181	Topcon		6306	
09/17/1991	0.00	Centering Platform, Topcon		

LOCATION: Survey Storage Area				
GOVERNMENT ID: 1626				
00182	Biddle	656601	10160	
09/17/1991	515.00	Locator Cable W/Case, Biddle		

LOCATION: Empty Room Next T.K.				
GOVERNMENT ID: 1628				
00183	Motorola, Inc.	MX330	278ADC2312 / ECN 0471059	
09/17/1991	1000.00	Trans. Radio HH W/Charger		

LAST INVENTORY DATE: 04-23-97
PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Date Rec'd	Unit Price	Part No.	Serial No.	Comments

GOVERNMENT ID: 1628a						
00184		09/17/1991	900.00	Charger Item		

LOCATION: Beige Sto. Cabinet						
GOVERNMENT ID: 1629						
00185	Nikon, Inc.	09/17/1991	7297.00	NTD-4 Theodolite W/Tripod, Nikon	300606 / ECM 0220557	

LOCATION: Van						
GOVERNMENT ID: 1629A						
00186		09/17/1991	0.00	Tripod (Extra)		

LOCATION: Beige Sto. Cabinet						
GOVERNMENT ID: 1629B						
00187	Nikon, Inc.	09/17/1991	0.00	W-3 Tribrach, Nikon	670003	

GOVERNMENT ID: 1629C						
00188		09/17/1991	0.00	Triple Prism Mount W/Refl.	676PSM100	

GOVERNMENT ID: 1629d						
00189	Nikon Inc.	09/17/1991	0.00	Battery Pack W/Conv & Charger		

LAST INVENTORY DATE: 04-23-97

PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Part No.	Serial No.
Date Rec'd	Unit Price	Descrip.	
Comments			

GOVERNMENT ID: 1629E			
00190	Nikon, Inc.		6PSM0155
09/17/1991	0.00	Soft Case (1 Of 2 Cases)	

GOVERNMENT ID: 1629F			
00191	Nikon Inc.		6PSM015
09/17/1991	0.00	Soft Case (2 Of 2 Cases)	

LOCATION: Empty Room Next T.K.			
GOVERNMENT ID: 1632			
00192	Motorola Inc.	HX330	278ACU2886 / ECN 0138037
09/17/1991	1000.00	Trans. Radio. HH, W/Chgr.	

LOCATION: Belge Sto. Cabinet			
GOVERNMENT ID: 1633			
00193	K&E Inc.	N/A	127098 / ECN 0138033
09/17/1991	1200.00	Transit W/Tripot, K&E Inc.	

LOCATION: Empty Room Next T.K.			
GOVERNMENT ID: 1637			
00194	Motorola Inc.	N/A	420ANG0099 / ECN 0849290
09/17/1991	1725.00	Trans. Radio HH W/Charger	

LOCATION: Werth Teachey Office			
GOVERNMENT ID: 1639			
00195	Motorola Inc.	MAXAR80	475MM0855 / ECN 0849289
09/17/1991	1100.00	Trans. Base Sat. Antenna	

GOVERNMENT OWNED EQUIPMENT REPORT
Contract WAS1-19400

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LAST INVENTORY DATE: 04-23-97

PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Date Rec'd	Unit Price	Part No.	Serial No.

Comments					

LOCATION: Beige Sto. Cabinet					
GOVERNMENT ID: 1640					
00196	Metrotech	09/17/1991	1898.00	810A	015839 / ECN 0849260
Line Tracer, Pipe & Cable					

GOVERNMENT ID: 1642					
00197	Aqua-Tronics	09/17/1991	750.00	A-6	2851
Locator Pipe, Aqua-Tronics					

LOCATION: Empty Room Next T.K.					
GOVERNMENT ID: 1644					
00198	Motorola	09/17/1991	1000.00	MX330	27BACU2885 / ECN 0138038
Trans. Radio HH, W/Charger					

LOCATION: Beige Sto. Cabinet					
GOVERNMENT ID: 1648					
00199	Leitz Inc.	09/17/1991	1435.00	7372-55	09222 / ECN 0547974
Level Auto, Leitz					

GOVERNMENT ID: 1651					
00201	Leitz, Inc.	09/17/1991	550.00	7372-14	ECN 547975
Micrometer Optical, Leitz					

GOVERNMENT ID: 1652					
00202	Metro-Tech	09/17/1991	235.00		
Inductive Clamp, Metro-Tech					

LAST INVENTORY DATE: 04-23-97

PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Part No.	Serial No.
Comments	Date Rec'd	Unit Price	Descrip.

GOVERNMENT ID: 1654			
00203	Nikon, Inc.	NTD4	301209 / ECM 0849288
	09/17/1991	6800.00	Theodolite W/Tripod, Nikon

GOVERNMENT ID: 1654B			
00205	Nikon, Inc.	6PSM100	
	09/17/1991	0.00	Single Prism Mount W/Refl.

GOVERNMENT ID: 1654C			
00206	Nikon, Inc.	6920205	
	09/17/1991	0.00	Mini-Prism Set, Nikon

LOCATION: Van			
GOVERNMENT ID: 1654D			
00207	Nikon, Inc.		
	09/17/1991	0.00	Range Pole Tripod, Nikon

LOCATION: Beige Sto. Cabinet			
GOVERNMENT ID: 1654E			
00208	Nikon, Inc.		
	09/17/1991	0.00	Battery Pack W/Conv. & Charger

GOVERNMENT ID: 1654F			
00209	Nikon, Inc.		
	09/17/1991	0.00	Soft Case (1 Of 2 Cases)

LAST INVENTORY DATE: 04-23-97
 PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Part No.	Serial No.
Comments	Date Rec'd	Unit Price	Descrip.
00210	Nikon, Inc.		
	09/17/1991	0.00	Soft Case (2 Of 2 Cases)
GOVERNMENT ID: 1657			
00211	Fisher	TW6	12694
	09/17/1991	470.00	Locator Cable & Pipe, Fisher
LOCATION: Van (David)			
GOVERNMENT ID: 1913			
00213	Lifkin		14623
	09/17/1991	200.00	Tape, Steel (100 Ft), Lifkin
LOCATION: Van (Kit)			
GOVERNMENT ID: 1914			
00214	Lifkin		14623
	09/17/1991	200.00	Tape, Steel (100 Ft), Lifkin
LOCATION: Beige Sto. Cabinet			
GOVERNMENT ID: 1915			
00215	Scully/Metrotech	810	001185 / ECN 0428085
	09/17/1991	1265.00	Locator Cable, Scully/Metrotec
LOCATION: Equipment Room			
GOVERNMENT ID: 52			
00216			
	09/17/1991	18.00	Rack Storage

LAST INVENTORY DATE: 04-23-97
PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Part No.	Serial No.
Comments	Date Rec'd	Unit Price	Descrip.

LOCATION: Front Desk			
GOVERNMENT ID: 177721			
00263	IBM	Selectric II	ECN 530247
	02/18/1992	693.00	Brown Typewriter, IBM

LOCATION: Conference Room			
GOVERNMENT ID:			
00267			
	01/28/1993	100.00	File Cabinet (Black) 4 Drawers

LOCATION: Equipment Room			
GOVERNMENT ID:			
00268			
	01/28/1993	100.00	File Cabinet (Belge) 5 Drawers

LOCATION: Mech. Print Room			
GOVERNMENT ID:			
00269	Plan Hold Filing Systems		
	03/23/1993	100.00	Engineering Dwg Storage File

00270	Plan Hold Filing Systems		
	03/23/1993	100.00	Engineering Dwg Storage File

LOCATION: Langley Storage Rm.			
GOVERNMENT ID: G073981			
00271	Gateway 2000	486	N/A / ECN G073981
	05/14/1993	9001.00	Computer, Micro 486, Gateway

GOVERNMENT OWNED EQUIPMENT REPORT
 Contract NAS1-19400

10/30/1997 16:02:15

LAST INVENTORY DATE: 04-23-97

PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer Date Rec'd	Unit Price	Part No. Descrip.	Serial No.
Comments				

GOVERNMENT ID: G076086				
00272	Gateway 2000 05/14/1993	4845.00	486 Computer, Micro 486, Gateway	N/A / ECH G076086

GOVERNMENT ID: G076087				
00273	Gateway 2000 05/14/1993	3005.00	486 Computer, Micro 486, Gateway	N/A / ECH G076087

GOVERNMENT ID: G076088				
00274	Gateway 2000 05/14/1993	4845.00	486 Computer, Micro 486, Gateway	N/A / ECH G076088

LOCATION: Survey Area Hallway				
GOVERNMENT ID: G076267				
00275	Versatec Incorporated 05/14/1993	15235.00	8524HR Plotter, Versatec Incorp.	K42122206C / ECH G076267

LOCATION: Ed Abraham Office				
GOVERNMENT ID: 1084165				
00277	NEC Inc. 05/14/1993	2395.00	JC2002VMA1 Monitor, NEC Inc.	OYC00502S / ECH 1084165

LOCATION: Yolanda Matthews				
GOVERNMENT ID: 1087074				
00278	NEC Inc. 05/14/1993	2204.35	JC2002VMA1 Monitor, NEC Inc.	16D00087S / ECH 1087074

LAST INVENTORY DATE: 04-23-97

PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Date Rec'd	Unit Price	Part No.	Serial No.
=====					
00279	Mitsubishi	05/14/1993	2009.00	HL6955SETK	205001665 / ECN 1158326
Comments: LOCATION: Roger Rogers Office					
GOVERNMENT ID: 1158326					
=====					
00280	Kurta Corp.	05/14/1993	1805.00	Series 3	91015017 / ECN 1084396
Comments: LOCATION: Ed Abraham Office					
GOVERNMENT ID: 1084396					
=====					
00281	Kurta Corp.	05/14/1993	1805.00	Series 3	90120295 / ECN 1084397
Comments: LOCATION: Werth Teachey Office					
GOVERNMENT ID: 1084397					
=====					
00282	Kurta Corp.	05/14/1993	2410.00	Series Three	89033114 / ECN 0060927
Comments: LOCATION: Kit Cain Office					
GOVERNMENT ID: 0060927					
=====					
00283	Kurta Corp.	05/14/1993	2117.00	Series Three	90035057 / ECN G076022
Comments: LOCATION: Survey Area Empty Rm					
GOVERNMENT ID: G076022					
=====					
00284	Logitech	05/14/1993	80.00	Series 9	LV249001634
Comments: LOCATION: Library Drawer					
GOVERNMENT ID:					
=====					

LAST INVENTORY DATE: 04-23-97
PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Part No.	Serial No.
Date Rec'd	Unit Price	Descrip.	
Comments			

LOCATION: Ed Abraham Office			
GOVERNMENT ID:			
00285	AutoCAD		110-10083060
05/14/1993	2400.00	Software, Autodesk Rel. 11	

LOCATION: Need To Know			
GOVERNMENT ID:			
00286	AutoCAD		110-10083061
05/14/1993	2400.00	Software, Autodesk Rel. 11	

00287	AutoCAD		110-10049258
05/14/1993	2400.00	Software, Autodesk Rel. 11	

LOCATION: R. Vontheumer Office			
GOVERNMENT ID:			
00288	AutoCAD		110-10049576
05/14/1993	2400.00	Software, Autodesk Rel. 11	

LOCATION: Anot Krizkak-Cohen			
GOVERNMENT ID:			
00289	Leigh		
05/14/1993	30.00	Solid Modeling With AutoCad	

LOCATION: Need To Know			
GOVERNMENT ID:			
00290	New Riders Publishing		
05/14/1993	30.00	Inside AutoCad (Release 11)	

PERFORMED BY: Mrs. Lesa Nelson & Mr. W.W. Teachey

Svt No.	Manufacturer	Part No.	Serial No.
Comments	Date Rec'd	Unit Price	Descrip.

LOCATION: Ed Abraham Office

GOVERNMENT ID:

00291

New Riders Publishing

05/14/1993

30.00

Inside Autolisp (Release 10)

LOCATION: Need To Know

GOVERNMENT ID:

00292

New Riders Publishing

05/14/1993

30.00

Inside Autolisp

LOCATION: Anot Krizhak-Cohen

GOVERNMENT ID:

00293

New Riders Publishing

05/14/1993

30.00

Customizing AutoCad

LOCATION: Werth Teachey Office

GOVERNMENT ID:

00352

07/21/1993

30.00

Desk Lamp

LOCATION: Van

GOVERNMENT ID: 1648A

00376

09/17/1991

0.00

Level Rod, 25 Ft.

GOVERNMENT ID: 1863

00377

Fisher

TW6

12166

09/17/1991

450.00

Locator Cable & Pipe, Fisher

Work assignments normally between 0700 and 1530 weekdays. Overtime and second and/or third shift as required. Regular, daily, punctual attendance is required to maintain inspection schedules with contractors and to communicate with the client.

Section 3. Task Order Accounting and Client Management

Task Order Accountability: Plan and execute the inspection of assigned task orders to avoid exceeding authorized expenditure limits. Plan site visits and other task activity to accommodate the inherent risks identified in the work, the authorized levels of funding and client requests.

Task Estimating and Reporting: When queried, provide estimates of required inspection hours for initial task order estimates or for estimates to complete task orders in progress. Provide current status and report on significant events relevant to inspection task orders and to the associated construction contract.

Administrative tasks: Maintain individual time card in accordance with current company procedures. Advise supervisor when conditions indicate that authorized funding is not sufficient to permit the levels of inspection assigned by the risk assessment plan, or if no plan is developed, when funding is not sufficient to permit levels of inspection judged appropriate by the inspector.

Client Communication: Maintain communication with the NASA TPE, COTR, Construction Manager (CM) or other client authority as directed in the task order and NASA directives or Company procedures. Query the TPE or COTR at approximately the 30%, 60% and closeout phases of construction to ascertain that services provided are meeting the client's expectations.

Task Team Communication: Maintain communication with other construction inspectors and with other company personnel including the inspection supervisor, lead inspector, construction manager and designers as needed to render efficient and timely services. Provide information regarding contractor on-site personnel and subcontractors as required to maintain database information at the Construction Services Unit.

Task Order Closeout Activity: Submit final deliverables and coordinate task order closeout in accordance with current Company procedures.

Section 4. Inspection Methods and Deliverables

Construction Inspection Record: (Log books) Maintain records of inspection activity by documenting recordable events in the format specified by current Company procedures. Prepare inspection records integral with the conduct of inspection services, whenever possible, prior to leaving the job site on each visit. Submit inspection records at frequencies and in the format specified by current Company procedures.

Inspection As-Built Drawings: Maintain inspection as-built drawings up to date within 15 days of site activity. Submit completed as-built drawings with contract close out documentation.

Work/Punch Lists: Prepare and submit work lists and/or punch lists when appropriate. Prepare lists in accordance with Company procedures.

Inspection of Work in Place: Carry pertinent plans in hand when entering a job site for the purpose of inspecting and accepting work in place.

Other QA/QC Documentation: Develop other QA/QC documents or review documentation prepared by others, including, but not limited to, Radiographic, Visual and other **NDE** documentation, Hydrostatic and Pneumatic pressure test reports, Certificates of Compliance, Photographic records, inspection checklists, Point to Point wiring diagrams, construction contractor's as-built drawings, weld maps, non-compliance notices and continuity and resistance reports for electrical conductors.

Section 5. Other Duties

Risk Assessment Planning: Review Risk Based Inspection Plans for completeness, and for appropriateness of inspection levels assigned to identified risks.

Travel: Perform inspection activities at sites other than NASA LaRC as directed in specific task orders.

Warranty: Support the client's efforts to obtain warranty services commensurate with the availability of funding and as directed by supervisor.

Safety/Security Compliance Issues: Verify the construction contractor's compliance with the safety and security provisions of the contract in accordance with current Company procedures.

Specification Reviews: Review plans and specifications, subject to time and funding limitations, prior to the release of bid documents as requested by the client. Review documents for constructability issues and for best trade practices and document the review in accordance with current Company procedures.

Assistance of Contract Administration: Communicate site conditions and current status to supervisor and client personnel. Make recommendations as requested. Communicate notices and other contract actions to the construction contractor as directed by supervisor, COTR, TPE, CO, Contract Administrator (**CA**), CM, or other appropriate authority. Discuss scope definition of contract modifications, including Emergency Field **Directed** Changes, as requested by the above listed personnel, to define reasonable limits on materials, man hours, equipment requirements and work methods. Review construction contractors' certified payrolls and recommend approval/disapproval action to the client. Review construction contractors' invoices and attest to the reasonableness of the amount invoiced. Facilitate transfer of GFE/M and salvaged materials.

Coordination of NASA/Construction Contractor Activities: Facilitate construction contractor activities through communication and coordination with appropriate Facility Safety Heads and/or Facility Coordinators, and with effected LaRC activities in accordance with current client or Company procedures. Prepare and submit requests for utility outages, overtime, and other applications required by the client. Coordinate dig pennits and safety briefings. Perform other coordination activities as required by current procedures.

Meetings/Facilitation: Attend meetings as directed by the client or by Company procedures, including, but not limited to: preconstruction conferences, site visits, job site conferences and final inspections. Discuss field solutions to design or construction problems or interferences and the work plans to carry out approved solutions. Document activity on Construction Inspection Records.

Other Duties: Perform other duties as required by the current revision of NASA's Langley Inspection Manual or by Company procedures developed to support the scope of work identified in the manual.

94-2544 VA, NORFOLK

08/04/98

FOR OFFICIAL USE ONLY BY FEDERAL AGENCIES PARTICIPATING IN MOU WITH DOL
REGISTER OF WAGE DETERMINATION UNDER U.S. DEPARTMENT OF LABOR

THE SERVICE CONTRACT ACT

EMPLOYMENT STANDARDS ADMINISTRATION

By direction of the Secretary of Labor

WAGE AND HOUR DIVISION
Washington, D.C. 20210

Wage Determination No.: 94-2544

Revision No.: 16

Division of

Wage Determinations

Date of Last Revision: 07/29/1998

State): North Carolina, Virginia

Areas: North Carolina COUNTIES OF Camden, Chowan, Currituck, Gates,
Pasquotank, Perquimans
Virginia COUNTIES OF Gloucester, Isle of Wight, James City, Mathews,
Southampton, Surry, York, Chesapeake, Hampton, Newport News, Norfolk
Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg

** Fringe Benefits Required For All Occupations Included In
This Wage Determination Follow The Occupational Listing **

OCCUPATION CODE AND TITLE

MINIMUM HOURLY WAGE

Administrative Support and Clerical Occupations:

01011 Accounting Clerk I	\$ 6.75
01012 Accounting Clerk II	\$ 8.52
01013 Accounting Clerk III	\$ 10.60
01014 Accounting Clerk IV	\$ 11.50
01030 Court Reporter	\$ 10.81
01050 Dispatcher, Motor Vehicle	\$ 9.23
01060 Document Preparation Clerk	\$ 9.29
01070 Messenger (Courier)	\$ 7.34
01090 Duplicating Machine Operator	\$ 9.29
01110 Film/Tape Librarian	\$ 9.28
01115 General Clerk I	\$ 7.34
01116 General Clerk II	\$ 9.03
01117 General Clerk III	\$ 11.23
01118 General Clerk IV	\$ 12.55
01120 Housing Referral Assistant	\$ 11.98
01131 Key Entry Operator I -	\$ 7.78
01132 Key Entry Operator II	\$ 9.79
01191 Order Clerk I -	\$ 7.40
01192 Order Clerk II	\$ 9.68
01261 Personnel Assistant (Employment) I	\$ 8.85
01262 Personnel Assistant (Employment) II	\$ 10.23
01263 Personnel Assistant (Employment) III	\$ 10.80
01264 Personnel Assistant (Employment) IV	\$ 12.38
01270 Production Control Clerk	\$ 11.98
01290 Rental Clerk	\$ 9.28
01300 Scheduler, Maintenance	\$ 9.28
01311 Secretary I	\$ 9.28
01312 Secretary II	\$ 10.80
01313 Secretary III	\$ 12.38
01314 Secretary IV	\$ 14.46
01315 Secretary V	\$ 15.18
01320 Service Order Dispatcher	\$ 9.28
01341 Stenographer I	\$ 8.78

01342 Stenographer II	\$ 9.86
01400 Supply Technician	\$ 11.50
01420 Survey Worker (Interviewer)	\$ 10.80
01460 Switchboard Operator-Receptionist	\$ 8.08
01510 Test Examiner	\$ 10.80
01520 Test Proctor	\$ 10.80
01531 Travel Clerk I	\$ 7.25
01532 Travel Clerk II	\$ 7.74
01533 Travel Clerk III	\$ 8.32
01611 Word Processor I	\$ 10.00
01612 Word Processor II	\$ 11.27
01613 Word Processor III	\$ 12.62

Automatic Data Processing Occupations:

03010 Computer Data Librarian	\$ 8.26
03041 Computer Operator I	\$ 9.25
03042 Computer Operator II	\$ 10.70
03043 Computer Operator III	\$ 13.25
03044 Computer Operator IV	\$ 15.34
03045 Computer Operator V	\$ 16.31
03071 Computer Programmer I 1/	\$ 13.38
03072 Computer Programmer II 1/	\$ 15.15
03073 Computer Programmer III 1/	\$ 18.05
03074 Computer Programmer IV 1/	\$ 21.52
03101 Computer Systems Analyst I 1/	\$ 17.62
03102 Computer Systems Analyst II 1/	\$ 20.28
03103 Computer Systems Analyst III 1/	\$ 24.98
03160 Peripheral Equipment Operator	\$ 8.26

Automotive Service Occupations:

05005 Automobile Body Repairer, Fiberglass	\$ 16.22
05010 Automotive Glass Installer	\$ 14.79
05040 Automotive Worker	\$ 14.79
05070 Electrician, Automotive	\$ 15.49
05100 Mobile Equipment Servicer	\$ 13.37
05130 Motor Equipment Metal Mechanic	\$ 16.22
05160 Motor Equipment Metal Worker	\$ 14.79
05190 Motor Vehicle Mechanic	\$ 16.22
05220 Motor Vehicle Mechanic Helper	\$ 12.61
05250 Motor Vehicle Upholstery Worker	\$ 14.07
05280 Motor Vehicle Wrecker	\$ 14.79
05310 Painter, Automotive	\$ 15.49
05340 Radiator Repair Specialist	\$ 14.07
05370 Tire Repairer	\$ 13.37
05400 Transmission Repair Specialist	\$ 16.22

Food Preparation and Service Occupations:

07010 Baker	\$ 8.68
07041 Cook I	\$ 7.85
07042 Cook II	\$ 8.68
07070 Dishwasher	\$ 6.05
07100 Food Service Worker (Cafeteria Worker)	\$ 6.05
07130 Meat Cutter	\$ 8.68
07250 Waiter/Waitress	\$ 6.58

Furniture Maintenance and Repair Occupations:

09010 Electrostatic Spray Painter	\$ 15.49
09040 Furniture Handler	\$ 11.21
09070 Furniture Refinisher	\$ 15.49
09100 Furniture Refinisher Helper	\$ 12.61
09110 Furniture Repairer, Minor	\$ 14.07
09130 Upholsterer	\$ 15.49

General Service and Support Occupations:

11030 Cleaner, Vehicles	\$ 6.05
11060 Elevator Operator	\$ 6.05
11090 Gardener	\$ 7.75
11121 Housekeeping Aide I	\$ 5.93
11122 Housekeeping Aide II	\$ 6.49
11150 Janitor	\$ 6.05
11210 Laborer, Grounds Maintenance	\$ 6.58
11240 Maid or Houseman	\$ 5.52
11270 Pest Controller	\$ 8.25
11300 Refuse Collector	\$ 6.05
11330 Tractor Operator	\$ 7.38
11360 Window Cleaner	\$ 6.58

Health Occupations:

12020 Dental Assistant	\$ 10.26
12040 Emergency Medical Technician/Paramedic Ambulance Driver	\$ 10.26
12071 Licensed Practical Nurse I	\$ 8.17
12072 Licensed Practical Nurse II	\$ 9.17
12073 Licensed Practical Nurse III	\$ 10.26
12100 Medical Assistant	\$ 9.17
12130 Medical Laboratory Technician	\$ 9.17
12160 Medical Record Clerk	\$ 9.17
12190 Medical Record Technician	\$ 12.71
12221 Nursing Assistant I	\$ 6.66
12222 Nursing Assistant II	\$ 7.49
12223 Nursing Assistant III	\$ 8.17
12224 Nursing Assistant IV	\$ 9.17
12250 Pharmacy Technician	\$ 11.44
12280 Phlebotomist	\$ 9.17
12311 Registered Nurse I	\$ 12.71
12312 Registered Nurse II	\$ 15.55
12313 Registered Nurse III, Specialist	\$ 15.55
12314 Registered Nurse IIII	\$ 18.82
12315 Registered Nurse IIII, Anesthetist	\$ 18.82
12316 Registered Nurse IV	\$ 22.55

Information and Arts Occupations:

13002 Audiovisual Librarian	\$ 11.96
13011 Exhibits Specialist I	\$ 15.02
13012 Exhibits Specialist II	\$ 18.25
13013 Exhibits Specialist III	\$ 20.27
13041 Illustrator I	\$ 15.02
13042 Illustrator II	\$ 18.25
13043 Illustrator III	\$ 20.27
13047 Librarian	\$ 13.75
13050 Library Technician	\$ 11.02
13071 Photographer I	\$ 11.33
13072 Photographer II	\$ 15.02
13073 Photographer III	\$ 18.25
13074 Photographer IV	\$ 20.27

13075 Photographer V	\$ 24.53
Laundry, Drycleaning, Pressing and Related Occups:	
15010 Assembler	\$ 5.79
15030 Counter Attendant	\$ 5.79
15040 Dry Cleaner	\$ 6.94
15070 Finisher, Flatwork, Machine	\$ 5.79
15090 Presser, Hand	\$ 5.79
15100 Presser, Machine, Drycleaning	\$ 5.79
15130 Presser, Machine, Shirts	\$ 5.79
15160 Presser, Machine, Wearing Apparel, Laundry	\$ 5.79
15190 Sewing Machine Operator	\$ 7.39
15220 Tailor	\$ 7.86
15250 Washer, Machine	\$ 6.19
Machine Tool Operation and Repair Occupations:	
19010 Machine-Tool Operator (Toolroom)	\$ 15.49
19040 Tool and Die Maker	\$ 17.84
Materials Handling and Packing Occupations:	
21010 Fuel Distribution System Operator	\$ 13.37
21020 Material Coordinator	\$ 12.19
21030 Material Expediter	\$ 12.19
21040 Material Handling Laborer	\$ 7.44
21050 Order Filler	\$ 8.46
21071 Forklift Operator	\$ 9.05
21080 Production Line Worker (Food Processing)	\$ 10.54
21100 Shipping/Receiving Clerk	\$ 3.35
21130 Shipping Packer	\$ 8.35
21140 Store Worker I	\$ 8.40
21150 Stock Clerk (Shelf Stocker; Store Worker 11)	\$ 10.22
21210 Tools and Parts Attendant	\$ 10.95
21400 Warehouse Specialist	\$ 10.54
Mechanics and Maintenance and Repair Occupations:	
23010 Aircraft Mechanic	\$ 16.22
23040 Aircraft Mechanic Helper	\$ 12.61
23050 Aircraft Quality Control Inspector	\$ 16.94
23060 Aircraft Servicer	\$ 14.07
23070 Aircraft Worker	\$ 14.79
23100 Appliance Mechanic	\$ 15.49
23120 Bicycle Repairer	\$ 13.37
23125 Cable Splicer	\$ 16.22
23130 Carpenter, Maintenance	\$ 15.49
23140 Carper Layer	\$ 14.79
23160 Electrician, Maintenance	\$ 16.22
23181 Electronics Technician, Maintenance I	\$ 13.99
23182 Electronics Technician, Maintenance II	\$ 14.31
23183 Electronics Technician, Maintenance III	\$ 15.33
23260 Fabric Worker	\$ 14.07
23290 Fire Alarm System Mechanic	\$ 16.22
23310 Fire Extinguisher Repairer	\$ 13.37
23340 Fuel Distribution System Mechanic	\$ 16.22
23370 General Maintenance Worker	\$ 14.79
23400 Heating, Refrigeration and Air-conditioning Mechanic	\$ 16.22
23430 Heavy Equipment Mechanic	\$ 16.22

23440 Heavy Equipment Operator	\$ 16.22
23460 Instrument Mechanic	\$ 16.22
23470 Laborer	\$ 9.68
23500 Locksmith	\$ 15.49
23530 Machinery Maintenance Mechanic	\$ 16.18
23550 Machinist, Maintenance	\$ 16.22
23580 Maintenance Trades Helper	\$ 12.61
23640 Millwright	\$ 16.22
23700 Office Appliance Repairer	\$ 15.49
23740 Painter, Aircraft	\$ 15.49
23760 Painter, Maintenance	\$ 15.49
23790 Pipefitter, Maintenance	\$ 16.22

23800 Plumber, Maintenance	\$ 15.49
23820 Pneudraulic Systems Mechanic	\$ 16.22
23850 Rigger	\$ 16.22
23870 Scale Mechanic	\$ 14.79
23890 Sheet-Metal Worker, Maintenance	\$ 16.22
23910 Small Engine Mechanic	\$ 14.79
23930 Telecommunications Mechanic I	\$ 16.22
23931 Telecommunications Mechanic II	\$ 16.94
23950 Telephone Lineman	\$ 16.22
23960 Welder, Combination, Maintenance	\$ 16.22
23965 Well Driller	\$ 16.22
23970 Woodcraft Worker	\$ 16.22
23980 Woodworker	\$ 13.37

Personal Needs Occupations:

24570 Child Care Attendant	\$ 6.34
24580 Child Care Center Clerk	\$ 7.91
24600 Chore Aide	\$ 5.15
24630 Homemaker	\$ 8.33

Plant and System Operation Occupations:

25010 Boiler Tender	\$ 16.22
25040 Sewage Plant Operator	\$ 15.49
25070 Stationary Engineer	\$ 16.22
25190 Ventilation Equipment Tender	\$ 12.61
25210 Water Treatment Plant Operator	\$ 15.49

Protective Service Occupations:

27004 Alarm Monitor	\$ 7.21
27006 Corrections Officer	\$ 11.47
27010 Court Security Officer	\$ 11.91
27040 Detention Officer	\$ 11.47
27070 Firefighter	\$ 11.47
27101 Guard I	\$ 6.03
27102 Guard II	\$ 7.21
27130 Police Officer	\$ 14.25

Stevedoring/Longshoremen Occupational Services:

28010 Blocker and Bracer	\$ 12.33
28020 Hatch Tender	\$ 12.33
28030 Line Handler	\$ 12.33
28040 Stevedore I	\$ 11.80
28050 Stevedore II	\$ 12.96

Technical Occupations:

29010 Air Traffic Control Specialist, Center 2/	\$ 24.47
29011 Air Traffic Control Specialist, Station 2/	\$ 16.87
29012 Air Traffic Control Specialist, Terminal 2/	\$ 18.59
29023 Archeological Technician I	\$ 11.43
29024 Archeological Technician II	\$ 12.85
29025 Archeological Technician III	\$ 15.87
29030 Cartographic Technician	\$ 15.87
29035 Computer Based Training (CBT) Specialist/Instructor	\$ 17.62
29040 Civil Engineering Technician	\$ 15.87
29061 Drafter I	\$ 10.07
29062 Drafter II	\$ 11.33
29063 Drafter III	\$ 14.24
29064 Drafter IV	\$ 17.30
29081 Engineering Technician I	\$ 11.50
29082 Engineering Technician II	\$ 12.30
29083 Engineering Technician III	\$ 15.15
29084 Engineering Technician IV	\$ 18.35
29085 Engineering Technician V	\$ 21.43
29086 Engineering Technician VI	\$ 26.48
29090 Environmental Technician	\$ 15.87
29100 Flight Simulator/Instructor (Pilot)	\$ 20.28
29150 Graphic Artist	\$ 17.62
29160 Instructor	\$ 15.23
29210 Laboratory Technician	\$ 11.83
29240 Mathematical Technician	\$ 15.87
29361 Paralegal/Legal Assistant I	\$ 10.80
29362 Paralegal/Legal Assistant II	\$ 13.12
29363 Paralegal/Legal Assistant III	\$ 16.05
29364 Paralegal/Legal Assistant IV	\$ 19.42
29390 Photooptics Technician	\$ 15.87
29480 Technical Writer	\$ 15.02
29491 Unexploded Ordnance Technician I	\$ 15.55
29492 Unexploded Ordnance Technician II	\$ 18.82
29493 Unexploded Ordnance Technician III	\$ 22.85
29494 Unexploded Safety Escort	\$ 15.55
29495 Unexploded Sweep Personnel	\$ 15.55
29620 Weather Observer, Senior 3/	\$ 12.80
29621 Weather Observer, Combined Upper Air & Surface Programs 3/	\$ 11.83
29622 Weather Observer, Upper Air 3/	\$ 11.83

Transportation/Mobile Equipment Operation Occups:

31030 Bus Driver	\$ 9.42
31260 Parking and Lot Attendant	\$ 6.98
31290 Shuttle Bus Driver	\$ 9.01
31300 Taxi Driver	\$ 8.50
31361 Truckdriver, Light Truck	\$ 9.01
31362 Truckdriver, Medium Truck	\$ 9.42
31363 Truckdriver, Heavy Truck	\$ 10.50
31364 Truckdriver, Tractor-Trailer	\$ 10.50

Miscellaneous Occupations:

99020 Animal Caretaker	\$ 7.00
99030 Cashier	\$ 5.93
99041 Carnival Equipment Operator	\$ 7.38
99042 Carnival Equipment Repairer	\$ 7.75
99043 Carnival Worker	\$ 6.05

99050 Desk Clerk	\$ 7.00
99095 Embalmer	\$ 17.63
99300 Lifeguard	\$ 5.36
99310 Mortician	\$ 17.63
99350 Park Attendant (Aide)	\$ 6.73
99400 Photofinishing Worker (Photo Lab Tech., Darkroom Tech)	\$ 6.01
99500 Recreation Specialist	\$ 13.04
99510 Recycling Worker	\$ 7.41
99610 Sales Clerk	\$ 5.36
99620 School Crossing Guard (Crosswalk Attendant)	\$ 6.05
99630 Sports Official	\$ 5.36
99658 Survey Party Chief (Chief of Party)	\$ 7.85
99659 Surveying Technician (Instr. Person/Surveyor Asst./Instr.)	\$ 7.50
99660 Surveying Aide	\$ 5.15
99690 Swimming Pool Operator	\$ 8.68
99720 Vending Machine Attendant	\$ 7.41
99730 Vending Machine Repairer	\$ 8.68
99740 Vending Machine Repairer Helper	\$ 7.41

** Fringe Benefits Required For All Occupations Included In
This Wage Determination **

HEALTH & WELFARE: Life, accident, and health insurance plans, sick leave, pension plans, civic and personal leave, severance pay, and savings and thrift plans. Minimum employer contributions costing an average of \$2.56 per hour computed on the basis of all hours worked by service employees employed on the contract.

VACATION: 2 weeks paid vacation after 1 year of service with a contractor or successor; 3 weeks after 8 years; 4 weeks after 15 years. Length of service includes the whole span of continuous service with the present contractor or successor, wherever employed, and with predecessor contractors in the performance of similar work at the same Federal facility. (See 29 CFR 4.173)

HOLIDAYS: Minimum of ten paid holidays per year: New Year's Day, Martin Luther King Jr.'s Birthday, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, and Christmas Day. (A contractor may substitute for any of the named holidays another day off with pay in accordance with a plan communicated to the employees involved.) (See 29 CFR 4.174)

1/

Does not apply to employees employed in a bona fide executive, administrative, or professional capacity as defined and delineated in 29 CFR 541. (See 29 CFR 4.156)

2/

APPLICABLE TO AIR TRAFFIC CONTROLLERS ONLY - NIGHT DIFFERENTIAL: An employee is entitled to pay for all work performed between the hours of 6:00 P.M. and 6:00 A.M. at the rate of basic pay plus a night pay differential amounting to 10 percent of the rate of basic pay.

3/

WEATHER OBSERVERS - NIGHT PAY & SUNDAY PAY: If you work at night as part of a regular tour of duty, you will earn a night differential and receive an additional 10% of basic pay for any hours worked between 6pm and 6am. If you are a full-time employee (40 hours a week) and Sunday is part of your regularly scheduled workweek, you are paid at your rate of basic pay plus a

Sunday premium of 25% of your basic rate for each hour of Sunday work which is not overtime (i.e. occasional work on Sunday outside the normal tour of duty is considered overtime work).

**** UNIFORM ALLOWANCE ****

If employees are required to wear uniforms in the performance of this contract (either by the terms of the Government contract, by the employer, by the state or local law, etc.), the cost of furnishing such uniforms and maintaining (by laundering or dry

cleaning) such uniforms is an expense that may not be borne by an employee where such cost reduces the hourly rate below that required by the wage determination. The Department of Labor will accept payment in accordance with the following standards as compliance:

The contractor or subcontractor is required to furnish all employees with an adequate number of uniforms without cost or to reimburse employees for the actual cost of the uniforms. In addition, where uniform cleaning and maintenance is made the responsibility of the employee, all contractors and subcontractors subject to this wage determination shall (in the absence of a bona fide collective bargaining agreement providing for a different amount, or the furnishing of contrary affirmative proof as to the actual cost), reimburse all employees for such cleaning and maintenance at a rate of **\$4.25** per week (or \$.85 cents per day). However, in those instances where the uniforms furnished are made of "wash and wear" materials, may be routinely washed and dried with other personal garments, and do not require any special treatment such as dry cleaning, daily washing, or commercial laundering in order to meet the cleanliness or appearance standards set by the terms of the Government contract, by the contractor, by law, or by the nature of the work, there is no requirement that employees be reimbursed for uniform maintenance costs.

**** NOTES APPLYING TO THIS WAGE DETERMINATION ****

Source of Occupational Titles and Descriptions:

The duties of employees under job titles listed are those described in the "Service Contract Act Directory of Occupations," Fourth Edition, January 1993, as amended by the Second Supplement, dated August 1995, unless otherwise indicated. This publication may be obtained from the Superintendent of Documents, at **202-783-3238**, or by writing to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. **20402**. Copies of specific job descriptions may also be obtained from the appropriate contracting officer.

REQUEST FOR AUTHORIZATION OF ADDITIONAL CLASSIFICATION AND WAGE RATE
{Standard Form **1444 (SF 1444)**}

Conformance Process:

The contracting officer shall require that any class of service employee which is not listed herein and which is to be employed under the contract (i.e., the work to be performed is not performed by any classification listed in the wage determination), be classified by the contractor so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between

such unlisted classifications and the classifications listed in the wage determination. Such conformed classes of employees shall be paid the monetary wages and furnished the fringe benefits as are determined. Such conforming process shall be initiated by the contractor prior to the performance of contract work by such unlisted class(es) of employees. The conformed classification, wage rate, and/or fringe benefits shall be retroactive to the commencement date of the contract. {See Section 4.6 (C)(vi)} When multiple wage determinations are included in a contract, a separate SF 1444 should be prepared for each wage determination to which a class(es) is to be conformed.

The process for preparing a conformance request is as follows:

1) When preparing the bid, the contractor identifies the need for a conformed occupation) and computes a proposed rate).

2) After contract award, the contractor prepares a written report listing in order proposed classification title), a Federal grade equivalency (FGE) for each proposed classification), job description), and rationale for proposed wage rate), including information regarding the agreement or disagreement of the authorized representative of the employees involved, or where there is no authorized representative, the employees themselves. This report should be submitted to the contracting officer no later than 30 days after such unlisted class(es) of employees performs any contract work.

3) The contracting officer reviews the proposed action and promptly submits a report of the action, together with the agency's recommendations and pertinent information including the position of the contractor and the employees, to the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, for review. (See section 4.6(b)(2) of Regulations 29 CFR Part 4).

4) Within 30 days of receipt, the Wage and Hour Division approves, modifies, or disapproves the action via transmittal to the agency contracting officer, or notifies the contracting officer that additional time will be required to process the request.

5) The contracting officer transmits the Wage and Hour decision to the contractor.

6) The contractor informs the affected employees.

Information required by the Regulations must be submitted on SF 1444 or bond paper.

When preparing a conformance request, the "Service Contract Act Directory of Occupations" (the Directory) should be used to compare job definitions to insure that duties requested are not performed by a classification already listed in the wage determination. Remember, it is not the job title, but the required tasks that determine whether a class is included in an established wage determination. Conformances may not be used to artificially split, combine, or subdivide classifications listed in the wage determination.

NASI-98128
Exhibit F

NEW	E O N OLD	DESCRIPTION MANUFACTURER	SERIAL NO MODEL NO	USER NAME CUST NAME	ACQ DOCUMENT ACQ DATE	BLDG ROOM	COST
0035336		TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	355AVE0110 H01KDH9AA7AH	OGBURN, JOHN E. III STERGIN, GARY P.,	L 54912D 95/02/15	1164 100	906.
0035337		TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	355AVE0108 H01KDH9AA7AH	HIBBITTS, BOBBY L., STERGIN, GARY P.,	L 54912D 95/02/15	1164 100	906.
0035338		TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	355AVE0103 H01KDH9AA7AH	DAVIS, WILLIAM K. STERGIN, GARY P.,	L 54912D 95/02/15	1164 100	906.
0035368		TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	355AVE0109 H01KDH9AA7AH	BROWN, GEORGE STERGIN, GARY P.,	L 54912D 95/02/15	1164 100	906.
0035369		TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	355AVE0101 H01KDH9AA7AH	GRUBBS, JAMES R. STERGIN, GARY P.,	L 54912D 95/02/15	1164 100	906.
0035370		TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	355AVE0107 H01KDH9AA7AH	BUTCHER, TOMMY W. STERGIN, GARY P.,	L 54912D 95/02/15	1164 100	906.
0035373		TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	355AVE0099 H01KDH9AA7AH	DAVIS, LEROY P. STERGIN, GARY P.,	L 54912D 95/02/15	1164 100	906.
0035376		TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	355AVE0097 H01KDH9AA7AH	FAY, JOHN D. STERGIN, GARY P.,	L 54912D 95/02/15	1164 100	906.
0035377		TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	355AVE0100 H01KDH9AA7AH	JACOB, ROY JR. STERGIN, GARY P.,	L 54912D 95/02/15	1164 100	906.
0035378		TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	355AVE0104 H01KDH9AA7AH	DUNN, WILLIE S. STERGIN, GARY P.,	L 54912D 95/02/15	1164 100	906.
1423872		TRANSCEIVER, RADIO MOTOROLA INC	740CVA0122 L1475A	OGBURN, JOHN E. III STERGIN, GARY P.,	L 54912D 95/01/13	1164 100	288.
1423871		TRANSCEIVER, RADIO MOTOROLA INC	740CVA0124 L1475A	OGBURN, JOHN E. III STERGIN, GARY P.,	L 54912D 95/01/13	1164 103	288.
1158799		DISPLAY UNIT GATEWAY 2000	TB9D54380 PMV144800	OGBURN, JOHN E. III STERGIN, GARY P.,	L 23682D 92/11/17	1164 109	400.
1158800		COMPUTER, MICRO GATEWAY 2000	1022055 DESKTOP	OGBURN, JOHN E. III STERGIN, GARY P.,	L 23682D 92/11/17	1164 109	2,060.
0021827		MULTIMETER, DIGITAL	53911091	BUTCHER, TOMMY W.	L 9167D	1164	261.

NEW	E C II GLD	DESCRIPTION MANUFACTURER	SERIAL NO MODEL NO	USER NAME CUST NAME	ACQ DOCUMENT ACQ DATE	BLDG ROOM	COST
		FLUKE JOHN MFG CO INC	87	STERGIN, GARY P.,	92/01/30	.100	
0281223		RECORDER, TAPE, AUDIO LANIER BUSINESS PROD F-STENO-	493387 P124POCKET CADD	JACOB, ROY JR. STERGIN, GARY P.,	L 82895B 85/03/20	1164 .100	254.
0411720	180122	TYPEWRITER INTERNATIONAL BUSINESS MACHINE	3588915 895	PACK, LAURA A. STERGIN, GARY P.,	L 68820A 77/11/01	1164 .100	747.
0778516	778516	RECORDER, TAPE, AUDIO SONY CORP	56192 M205A	HIBBITTS, BOBBY L., STERGIN, GARY P.,	L 63847B 84/02/03	1164 .100	119.
1604674		MULTIMETER, DIGITAL FLUKE JOHN MFG CO INC	66740333 85	FAY, JOHN D. STERGIN, GARY P.,	B GGK31001 97/02/21	1209 108	305.
G074605		COMPUTER, MICRO GATEWAY 2000	52015 386/25	STAPLER, WILTA J. SHIELDS, NANCY N.,	L 74165C 90/05/08	1209 .187A	4,430.
0061957		PRINTER, ADP HEWLETT-PACKARD CO	2830J29005 33447A	STAPLER, WILTA J. SHIELDS, NANCY N.,	L 54586C 89/05/10	1209 .187A	2,650.
1088635		DISK DRIVE UNIT HITACHI MFG CO	K1D022340 CDR1700S	STAPLER, WILTA J. SHIELDS, NANCY N.,	L 4722D 91/10/08	1209 .187A	1,488.
1088636		DISK DRIVE UNIT HITACHI MFG CO	K1D021913 CDR1700S	STAPLER, WILTA J. SHIELDS, NANCY N.,	L 4722D 91/10/08	1209 .187A	938.
1255868		DISPLAY UNIT GATEWAY 2000	MALA39029 CS1572FS	STAPLER, WILTA J. SHIELDS, NANCY N.,	L 34378D 93/06/10	1209 .187A	400.
1261941		DISPLAY UNIT SIGMA DESIGNS INC	44062CM 02001	STAPLER, WILTA J. SHIELDS, NANCY N.,	L 47125D 94/05/09	1209 .187A	1,470.
0058266		TYPEWRITER, ELECTRIC MATSUSHITA ELEC INDUS CO	8HM29B22269 KX-E400	STAPLER, WILTA J. SHIELDS, NANCY N.,	L 44881C 88/10/07	1209 .187C	365.
0282173		COMPOSING MACHINE MERLIN MACHINE CORP	503361 100	STAPLER, WILTA J. SHIELDS, NANCY N.,	L 86562B 85/05/30	1209 .187C	1,616.
0283314		READER/PRINTER, MICROFICHE CANON USA MICROGRAPHICS DIV	33107387 PC-P70	STAPLER, WILTA J. SHIELDS, NANCY N.,	L 87862B 85/07/17	1209 .187C	2,679.
0425992	190774	CABINET, MICROFICHE BOORUM AND PEASE CO	NONE 35126	STAPLER, WILTA J. SHIELDS, NANCY N.,	L 34725B 82/02/26	1209 .187C	1,003.

NEW	E C II OLD	DESCRIPTION MANUFACTURER	SERIAL NO MODEL NO	USER NAME CUST NAME	ACQ DOCUMENT ACQ DATE	BLDG ROOM	COST
	1160225	DISPLAY UNIT GATEWAY 2000	TB9E48942 PMV1448HI	STAPLER, WILTA J. SHIELDS, NANCY H.,	L 28683D 93/03/10	1209 .187C	400.
	1160235	COMPUTER, MICRO GATEWAY 2000	1232828 SLIMLINE	STAPLER, WILTA J. SHIELDS, NANCY H.,	L 28683D 93/03/10	1209 .187C	1,650.
	0533617	TRANSCEIVER, RADIO MOTOROLA INC AUTOMOTIVE PROD	278AJW0623 H43AAU1110H	DAVIS, WILLIAM K. STERGIN, GARY P.,	L 75851B 84/11/26	1265T	1,313.

• *** TOTAL NUMBER OF ITEMS ASSIGNED TO CONTRACT HAS 1 19400 32 VALUE OF EQUIPMENT IS 34184

EXHIBIT G

Items That Must Contain Recycled Content for FY98

Vehicular Products:

Engine Coolants
Re-Refined Lubricating Oil
Motor Vehicle Lubricating Oil
Retread Tires
Tracked by Vehicle Type

Construction Products:

Building Insulation
Carpet
Cement and Concrete Containing Ground
Granulated Blast Furnace (GGBF) Slag
Cement and Concrete Containing
Coal Fly Ash
Consolidated and Reprocessed Latex Paint
Floor Tiles
Patio Blocks
Shower and Restroom Dividers and Partitions
Structural Fiberboard
Laminated Paperwork

Transportation Products:

Channelizers
Delineators
Flexible Delineators
Parking Stops
Traffic Barricades
Traffic Cones

Park and Recreation Products:

Plastic Fencing
Playground Surfaces
Running Tracks

Landscaping Products:

Garden and Soaker Hoses
Hydraulic Mulch
Lawn and Garden Edging
Yard Trimmings Compost

Non-Paper Office Products:

Binders
Office Recycling Containers
Office Recycling Receptacles
Plastic Desktop Accessories

Plastic Envelopes
Plastic Trash Bags
Printer Ribbons
Toner Cartridges

Paper and Paper Products:

Uncoated Printing and Writing Papers
Reprographic Paper
Offset Paper
Tablet Paper
Forms Bond
Envelope Paper
Cotton Fiber Paper
Test and Cover Paper
Supercalendered
Check Safety Paper
Coated Printing and Writing Papers
Coated Printing Paper
Carbonless
Bristols
File Folders
Dyed Filling Products
Cards
Pressboard Report Covers and Binders
Tags and Tickets
Newsprint
Tissue Products
Bathroom Tissue
Paper Towels
Paper Napkins
Facial Tissues
Industrial Wipes
Paperboard and Packaging Products
Corrugated Containers
Solid Fiber Boxes
Folding Cartons
Industrial Paperboard
Padded Mailers
Carrierboard
Brown Paper
Miscellaneous Products
Tray Liners
Pallets
