A/E Consultant Handbook
Engineering Department

Facilities Engineering Services Section
April 2008
The primary objective at Fermilab is that operations be conducted in a safe, deliberate and controlled manner. The role of the FESS/E procedures is to provide the best knowledge available in order to accomplish the task.

This A/E Consultant Handbook provides a compilation of the FESS/Engineering policies and procedures specific to the utilization of A/E Consultants.

This A/E Handbook provides guidance for the A/E Consultant services and is intended as a supplement to the A/E subcontract. In all cases the A/E subcontract shall take precedence over the procedures in this A/E Consultant Handbook.
SECTION I  INTRODUCTION

SECTION II  POLICIES

FEP 2 – Safety     April 15, 2008
FEP 4 – Sustainability  April 15, 2008
FEP 5 – Tailoring    April 15, 2008
FEP 9 – Consultant Support April 15, 2008

SECTION III  PROCEDURES

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8.3.5.1 – Document Reviews, dated April 15, 2008
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10.3.5.2 – Project Correspondence, dated April 15, 2008
10.3.5.3 – Drawing Requirements, dated April 15, 2008
12.4.5.1 – AE Consultant Invoicing, dated April 15, 2008
1.0 Purpose

The purpose of this handbook is to establish basic procedures and technical standards for architectural and engineering (A/E) professional services provided to Fermilab. It is to supplement the Subcontract under which the A/E firm performs its services.

This handbook does not necessarily represent procedures and requirements in all aspects of performing the service. It is intended as a convenient source for FESS/Engineering personnel and the AE Consultant to find procedural and technical direction. The contents will from time to time be supplemented with updated procedures and standards.

This document is comprised of only general procedures and standards that apply to all construction projects at Fermilab. Specific detailed information about individual projects will be issued to the AE Consultant separately for each project.

2.0 Definitions

For the purposes of this manual definitions are summarized below but are subordinate to the definitions stated in the A/E Services Subcontract.

2.1 "DOE" shall refer to The United States Department of Energy, the Owner of all facilities at Fermilab and the “Authority Having Jurisdiction.”

2.2 The terms "Fermilab Research Alliance, LLC", “Fermi National Accelerator Laboratory”, “Fermi” and "Fermilab" may be used interchangeably and refer to the sole contractor to DOE for all operation and development of facilities at Fermilab.

2.3 The terms “AE Consultant”, "Consultant", "A/E Firm", or "A/E Subcontractor" shall refer to the Architectural/Engineering Subcontractor to Fermilab. Their personnel will be referred to as "representatives" for the purposes of this handbook. The term “Sub-Consultant” shall refer to A/E firms subcontracting to Fermilab's A/E Subcontractors.
INTRODUCTION

2.4 The "Project" shall mean the Scope of Services required from the Consultant as stated in the Task Order and/or Subcontract.

2.5 The titles "Project Manager", "Subcontract Administrator", "Engineering Department Head", "Project Engineer", "Project Coordinator", and "Liaison" refer to Fermilab personnel where referenced in this handbook.

3.0 FESS/Engineering Procedures

The FESS/Engineering procedures are an established method of conducting the operation of the department that incorporates the best knowledge available. These procedures are the documented series of steps taken to accomplish the identified tasks.

The maintenance and distribution of the FESS/E procedures is the responsibility of the FESS/E Department Manager.

In order to better align with current Laboratory business practices, the FESS/E procedures incorporate applicable Department of Energy (DOE) and industry standards. While the use of these standards do not represent formal requirements, their use and reference is essential to the establishment of best identified practices in the FESS/E procedures.

The primary objective of DOE Order 413.3, Program and Project Management For The Acquisition of Capital Assets, is to provide "project management direction for the acquisition of capital assets that are delivered on schedule, within budget, and fully capable of meeting mission performance and environmental, safety, and health standards." While the implementation of this order is required for projects with a Total Project Cost exceeding $20 million, FESS/E has chosen to incorporate these general principals in the execution of projects and the development of procedures.

The Project Management Institute (PMI) is a non-profit advocacy association for the project management profession. PMI defines project management as the “application of knowledge, skills, tools and techniques to a broad range of activities in order to meet the requirements of a particular project.” PMI publishes A Guide to the Project Management Body of Knowledge (PMBOK) that describes a system of process groups and knowledge areas that provide a framework for the management of projects.
The process groups are:
- Initiating
- Planning
- Executing
- Monitoring and Controlling
- Closing

The knowledge areas are:
1. Integration
2. Scope
3. Time
4. Cost
5. Quality Human Resources
6. Communications
7. Risk Management
8. Procurement

PMI combines these processes and knowledge areas into a process chart matrix as shown below.
of Critical Decisions to organize the development and execution of a project. This process, shown in the chart below, serves as the guidance for the organization of the FESS/E procedures.

<table>
<thead>
<tr>
<th>Project Planning Phase</th>
<th>Project Execution Phase</th>
<th>Mission Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preconceptual Planning</td>
<td>Conceptual Design</td>
<td>Operations</td>
</tr>
<tr>
<td>Conceptual Design</td>
<td>Preliminary Design</td>
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<tr>
<td>Preliminary Design</td>
<td>Final Design</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
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</tbody>
</table>

See Page 2 for CDs on Environmental Restoration and Facility Disposition Projects

### Actions Authorized by Critical Decision Approval

- **CD-0**
  - Proceed with conceptual design using program funds
  - Request PED funding

- **CD-1**
  - Allow expenditure of PED funds for design

- **CD-2**
  - Establish baseline budget for construction
  - Continue design
  - Request construction funds

- **CD-3**
  - Approve start of construction

- **CD-4**
  - Approve expenditure of funds for construction
  - Allow start of operations or project closeout

### Critical Decision Prerequisites

- Justification of mission need document
- Acquisition Strategy
- Preconceptual planning
- Mission Need
- Independent Project Review

- Acquisition Plan
- Conceptual Design Report
- Preliminary Project Execution Plan and baseline
- Project Data Sheet for design
- Verification of mission need
- Preliminary Hazard Analysis Report

- Preliminary design
- Review of contractor project management system
- Final Project Execution Plan and performance baseline
- Independent cost estimate
- National Environmental Policy Act documentation
- Project Data Sheet for construction

- Update Project Execution Plan and performance baseline
- Final design and procurement packages
- Verification of mission need
- Budget and congressional authorization and appropriation enacted
- Approval of Safety documentation
- Execution Readiness Independent Review

- Operational Readiness
- Review and acceptance report
- Project transition to operations report
- Final Safety Analysis Report

- After CD-4 Closeout
  - Project closeout report

(**) To the degree appropriate to initiate construction as scheduled.
The FESS/E procedures provide a convergence of concepts contained in DOE Order 413.3 and the organizing principals of the PMI’s Project Management Body of Knowledge (PMBOK).

4.0 FEES/Engineering Organization

Acting as Fermilab’s in-house Architectural/Engineering (A/E) firm, the Engineering department of the Facilities Engineering Services Section (FESS) provides architectural and engineering services for conventional facility design and construction activities and oversees outside A/E Consultants.

The FESS/Engineering vision statement is to:

Provide facilities and infrastructure that meet the initial requirements of the physics community, incorporate flexibility to adapt to changing Laboratory programs, maximize uptime, are economical to construct, operate and maintain, are environmentally responsible, and provide for human comfort and a creative workplace atmosphere.

The FESS/E vision statement supports the FESS mission of:
Our mission is to establish and maintain a dependable base from which high energy physics and other Fermilab programs can be safely accomplished without interruption.

As part of this mission, FESS/E works with internal customer division/sections to develop and execute projects related tasks in order to support the FESS and Fermilab missions.

FESS/E also provides project management skill sets for others projects (including design, inspection, progress monitoring and payment approval for construction activities).

5.0 Project Phases

Projects are classified by size and complexity according to the necessary phasing of design, production, approvals, bidding and construction. Phasing of projects is done in accordance with the requirements of the U.S. Department of Energy.

The phases described below follow the guidance of DOE Order 413.3

5.1 Project Planning Phase

The project planning phase consists of those activities that describe and document the strategic goals and objectives, safety planning and design. The Project Planning Phase usually consists of two (2) sub-phases as listed below.

5.1.1 Preconceptual Planning

This phase of the project approximates the Programming Phase as described by the American Institute of Architects (AIA) and is tailored to meet specific Fermilab requirements. The integrated project team documents the goals, needs, and function of the project including design expectations, budget and pertinent building code, site restriction and ES&H regulations. The integrated project team prepares a written statement setting forth design objectives, constraints, and criteria for a project, including special requirements and systems and site requirements. The integrated project team also prepares a preliminary estimate of the construction costs based on current area, volume, or other unit costs.

5.1.2 Conceptual Design Phase
This phase of the project approximates the Schematic Design Phase as described by the AIA and is tailored to meet specific Fermilab requirements. If a project has completed the Preconceptual Planning Phase, the integrated project team reviews the previous documents before proceeding.

It is not unusual for a project to begin with a Conceptual Design phase in which the integrated project team documents the goals, needs, and function of the project including design expectations, budget and pertinent building code, site restriction and ES&H regulations. DOE Order 413.3 defines a Conceptual Design Report as “an integrated systems engineering effort that results in a clear and concise definition of the project.” Also in this phase, the integrated project team documents the project requirements and prepares schematic studies, text consisting of a written statement setting forth design objectives, constraints, and criteria for a project, including special requirements and systems and site requirements, drawings and other documents illustrating the scale and relationships of the project components and site impact. The integrated project team also prepares a preliminary estimate of the construction costs based on current area, volume, or other unit costs. DOE Order 413.3 states that the “products produced by this planning phase provide the detail necessary to develop a range of estimates for the project cost and schedule.”

5.2 Project Execution Phase
The Project Execution Phase usually consists of three (3) sub phases as listed below.

5.2.1 Preliminary Design
This phase of the project approximates the Design Development Phase as described by the AIA and is tailored to meet specific Fermilab requirements and is also been referred to in the past as the Title 1 phase. In this phase, the integrated project team prepares more detailed drawings and finalizes the design plans, showing correct sizes and shapes for spaces. The design plans indicate significant equipment and experimental apparatus, staging areas, and related ancillary spaces. Of key concern is the documentation of the design process including notes, sketches and calculation that detail the evolution of the design. Also included is an outline of the construction
specifications, listing the major materials to be used, appropriate construction cost estimate and preliminary construction schedule.

5.2.2 Final Design Phase
This phase of the project approximates the Construction Document Phase as described by the AIA and is tailored to meet specific Fermilab requirements. In the past, this phase has been referred to as Title 2. In this phase, the integrated project team will produce the drawings, Exhibit A and Exhibit B (specifications) that set forth the detail requirements for the construction of the project. Also included are the detailed construction cost estimate and construction milestones.

5.2.3 Construction Phase
This is the Construction Phase of the project and has been known previously as Title 3. In this phase, the integrated project team provides professional engineering and architectural support for the construction of the project.

6.0 Fermilab Provided Services
Fermilab will provide the following services and information to support the A/E Consultant during the execution of the work.

6.1 Safety
The Consultant shall observe all Fermilab safety rules, regulations and procedures. Entry to any areas not open to the public must be arranged through FESS/E Contact. For on-site work where the Consultant will not be escorted by Fermilab employees, a Subcontractor Orientation Class and identification badging must be attended prior to beginning work. Other safety training specific to Fermilab may be provided by Fermilab.

Identification of required training will be established at the beginning of each project. The FESS/E contact will arrange for training specific to Fermilab as listed below:

- Subcontractor Orientation Class: This half-hour class consists of a video and retention of a card by each A/E
Consultant employee to verify that the training has occurred. The training expires after 2 years.

- General Employee Radiation Training: This class may be required to enter certain areas of the Laboratory.
- Oxygen Deficiency Hazard: This one-hour class is required, along with a medical exam performed by Fermilab, for entry into areas where there is a potential for oxygen deficiency.
- Radiation Worker: This eight-hour class is necessary for entry into the Fermilab accelerator tunnels and other radiation areas.

Any standard construction industry training, such as confined space, OSHA, lockout-tagout, etc., shall be the responsibility of the A/E Consultant.

6.2 Access to Fermilab Documentation
FESS/Engineering has significant records on the facilities constructed at Fermilab. This information may include:
- Original design drawings;
- Shop drawings and related submittals;
- Monument and benchmark data;
- Vicinity and location plans;
- Underground utility data;
- Aerial Photos.

This documentation will be made available to the A/E Consultant at the beginning of a project. FESS/Engineering personnel will assist the A/E Consultant in locating information in project files and will provide existing raster or AutoCAD electronic files as the need is identified.

6.3 Soil Borings
FESS/Engineering has a large database of existing soil borings and reports from past projects, which will be made available to A/E Consultants on an as-needed basis.

As a project is initiated, the Project Engineer will decide with the A/E Consultant and the FESS/E Contact whether the existing soil information is adequate for a project. If additional information is
needed, Fermilab will arrange for its geotechnical consultant to perform the necessary sampling, testing, and reporting, using design criteria developed from Fermilab and the A/E Consultant.

6.4 CAD/GIS Standards
It is expected that all drawings produced for Fermilab will comply with the FESS CAD and GIS standards. The intent of the CAD and GIS standards is to maintain uniformity in the creation of quality design and construction documents. The CAD and GIS standard documents are a FESS/E organizational asset that will be provided to the AE Consultant upon request.

6.5 Coordination
At the beginning of a project, the A/E Consultant and the FESS/E Contact shall together decide what information may be necessary to research a project. The A/E Consultant should plan to have its staff do some research in the FESS/E archives to aid in the identification of appropriate information. The FESS/E Contact will assist in copying and sending to the A/E Consultant any identified Fermilab documentation.

7.0 A/E Consultant Responsibilities
This section outlines responsibilities A/E Consultants may have when working on projects at Fermilab in addition to basic architectural and engineering design. As detailed below, some are applicable to all projects, while others may be required as part of the project specific tasking request.

7.1 All Projects
These services should be included as part of all projects:

7.1.1 Project directory: The A/E Consultant shall prepare and issue a project directory at the beginning of the project listing the members of the integrated project team including the FESS/E Contact, BSS/Procurement Contract Administrator, Project Coordinator, and representatives of the A/E Consultant and any Sub-consultants participating in the project. The Project Directory is to be distributed to all personnel listed.
7.1.2 Research of existing files: The A/E Consultant shall utilize the Fermilab construction document archives with assistance from FESS/E Contact. The A/E Consultant shall advise Fermilab in writing of any additional information regarding existing conditions required for the project which are not available in the FESS/E records.

7.1.3 Field survey of existing conditions: The A/E Consultant shall make site visits as necessary to become familiar with the existing conditions. Such visits must be scheduled through FESS/E Contact. The A/E Consultant shall be responsible for making field measurements required to complete construction documents.

7.1.4 Meetings: The need for effective communication is identified as a key component for successful project. The A/E Consultant should include the provision for participating in project meetings in all proposals.

7.2 Project Specific Requirements
The following services may be necessary for some projects. If required, the Request for Proposal shall request the services:

7.2.1 Safety plan and hazard analysis: On projects that entail inspection or construction-type activities, the A/E Consultant shall provide a Safety Plan and Hazard Analysis of the work activities. Past projects that have required these include structural inspections and special testing where the A/E Consultants acts a prime consultant with other consultants acting under them.
The complete FESS/Engineering procedures reside in the FESS/Engineering Policy Manual. The policies specific to the use of A/E Consultant services are contained within this handbook. All FESS/Engineering policies are available on request.

The A/E Consultant specific policies are listed below:

FESS/Engineering Policy 2 – Safety
FESS/Engineering Policy 4 – Sustainability
FESS/Engineering Policy 5 – Tailoring
FESS/Engineering Policy 9 – Consultant Support
## FESS/Engineering Policy

**Policy Name:** Safety and Environmental Protection  
**Policy Identifier:** FEP 2  
**Effective Date:** April 15, 2008

### Objective
FESS/E will perform design and construction in a safe and environmentally sound manner.

### Applicability
Design, construction, and project management work under the direction of FESS/Engineering.

### Policy Statement
FESS/E will systematically integrate excellence in environment, safety and health (ES&H) into the management and work practices of all activities at all levels so that safety is achieved while protecting the public, the workers, and the environment.

### Responsibilities
All FESS/E employees shall fully comply with all procedures, instructions and directives contained in the Fermilab Environmental Safety and Health Manual (FESHM) in order to reduce or eliminate hazards in the workplace.

FESS/E Department Head shall review procedures to ensure that FESS/E integrates environment, safety and health protection into all aspects of our work, utilizing the principles and core functions of the Integrated Safety Management System.

FESS/E employees shall ensure that all required training is kept current.

FESS/E supervisors shall ensure that all direct reports are current on all lab and departmental training requirements and that these requirements are documented in the ES&H Training database.

FESS/E Department Head shall ensure that training requirements for all FESS/E employees are kept current and that training deficiencies are kept to a minimum.
<table>
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<th>References</th>
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<tbody>
<tr>
<td>FESS Engineering Policy 5 - Tailoring</td>
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<td>Other</td>
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<tr>
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</table>
## FESS/Engineering Policy

<table>
<thead>
<tr>
<th>Policy Name:</th>
<th>Sustainability</th>
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<tbody>
<tr>
<td>Policy Identifier:</td>
<td>FEP 4</td>
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<tr>
<td>Effective Date:</td>
<td>April 15, 2008</td>
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</table>

### Objective
Provide adequate stewardship of DOE assets.

### Applicability
Design and construction work under the direction of FESS/Engineering.

### Policy Statement
Fermilab incorporates sustainable design principles into the planning, design and construction of projects. This direction is taken from the Fermilab Director’s Policy 3.

Sustainability is broadly defined as the design and implementation of projects to simultaneously minimize their adverse environmental impacts, maximize occupants’ health and well-being, and improve bottom line, life cycle, economic performance. The concept of sustainability is a desirable approach to development that recognizes that resources are limited, and that there is a responsibility of the present generation to preserve resources for future ones.

The United States Green Building Council (USGBC) has developed the Leadership in Energy and Environmental Design (LEED) standard to provide guidance for builders who wish to incorporate sustainable elements into their projects. LEED for new construction (and remodeling) is a set of specific and quantifiable measures, each of which confers a credit towards certification of a project as a “LEED-certified” building.

While Fermilab projects are generally not intended to become LEED certified, the project processes and each project element will be evaluated during the final design phase to reduce their impact on natural resources without sacrificing program objectives. The project design will incorporate maintainability, aesthetics, environmental justice and program requirements to deliver a well-balanced project.

For General Plant Projects and other projects as appropriate, the implementation of guidelines is accomplished by the use of the LEED checklist throughout the life of the project.

### Responsibilities
FESS/E Project Engineer will lead the implementation of this policy.
<table>
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<th>References</th>
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<th>Other</th>
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<td>None noted</td>
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</table>
# FESS/Engineering Policy

**Policy Name:** Tailoring  
**Policy Identifier:** FEP 5  
**Effective Date:** April 15, 2008

## Objective
Provide a flexible approach to the level of detail applied to procedures based on the scale, complexity and particular nature of the activity.

## Applicability
All FESS/E policies, procedures and standards that are not specifically mandated by law, DOE Order, or Fermilab Policies, except as provided by its self contained tailoring policy.

## Policy Statement
Adjustments or applicability to the adherence of FESS/E policies and procedures shall reside at the level of authority and responsibility as determined by the organizations, documents and customs. In the tailoring approach, requirements are applied to a level of detail based on the size, risk, complexity or duration of the task. However, the tailoring is in the degree of detail, not in omitting the requirements altogether. Tailoring of policies and procedures shall be uniform for like or similar applications. Reasonableness standards shall be applied to adjudicate the appropriateness of tailoring.

## Responsibilities
FESS/E Department Head will perform self assessment reviews on a tri-annual (or as necessary) basis to confirm consistency of tailoring within the department.

## References
None noted

## Other
None noted
# FESS/Engineering Policy

**Policy Name:** Consultant Support  
**Policy Identifier:** FEP 9  
**Effective Date:** April 15, 2008

## Objective
Establish fair and uniform guidelines for work with consultant firms.

## Applicability
Design and construction work under the direction of FESS/Engineering.

## Policy Statement
The following policies statements apply to the use of consultant architectural/engineering firms utilized to supplement the in-house FESS/E staff.

1. Selection and tasking of firms will be done in compliance with Business Services Section procedures.  
2. Consultant firms selected by FESS/E will be managed by FESS/E.  
3. FESS/E will not compete consultant firms on the basis of price.

## Responsibilities
FESS/E Department Head will provide oversight and periodic review of use of consultant firms.

## References

## Other
None noted
The organization of the FESS/E procedures is divided into two (2) general groups. The first group is the operational policies of the department listed below:

1. Purpose
2. FESS/E Personnel Procedures
3. Organization Assets

The operational policies include such things as job descriptions, organization chart, work priorities, training and record keeping, self assessments, etc.

The second group contains the policies related to the management of tasks and project. These sub-groups, based on the Project Management Institute’s (PMI) Knowledge Areas are listed below:

4. Integration
5. Scope
6. Time
7. Cost
8. Quality Human Resources
9. Communications
10. Risk Management
11. Procurement

The management group contains five (5) process categories based on the PMI process groups as listed below:

1. Initiating
2. Planning
3. Executing
4. Monitoring and Controlling
5. Closing
The chart below indicates the organization of FESS/E procedures.

### FESS Engineering Procedure Organization

<table>
<thead>
<tr>
<th>FESEE Personnel</th>
<th>1 FESS/E Purpose and overview terms, mission, vision, purpose of procedures</th>
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<tbody>
<tr>
<td>Policies</td>
<td>Org chart, job descriptions, Responsibility matrix, work priorities and assignments, safety training and records, self assessment, staff meetings, group budgeting and accounting, procurements, chargeback, project reporting, correspondence, computer equipment and usage, personnel, outside support</td>
</tr>
<tr>
<td>Documentation and design Standards</td>
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<tr>
<td>Management Group</td>
<td>1 Initiating, 2 Planning, 3 Executing, 4 Monitoring and Controlling, 5 Closing</td>
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<tr>
<td>Integration</td>
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<tr>
<td>Scope</td>
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<td>Time</td>
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<tr>
<td>Quality</td>
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<td>Human Resource</td>
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<td>Communications</td>
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<td>Risk Management</td>
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<tr>
<td>Procurement</td>
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</tbody>
</table>

A further breakdown of each process category incorporates the phasing as described in DOE Order 413.3

- x.x.0 - CD-0 – Those procedures related to CD-0 activities
- x.x.1 – Those procedures related to CD-1 activities
- x.x.2 – Those procedures related to CD-2 activities
- x.x.3 – Those procedures related to CD-3 activities
- x.x.4 – Those procedures related to CD-5 activities
- x.x.5 - Those procedures related to all phases
An example of this nomenclature is shown below for the procedure for Meetings with the identifier of 10.3.5.1

10.3.5.1

- 10 indicates that this is in the Communications Knowledge area
- 3 indicates that this is in the Executing Process group
- 5 Indicates that this applies to all phases of the project
- 1 Indicates the unique identifier of this procedure

The FESS/Engineering procedures specific to the A/E Consultant support are contained within this handbook.
I. Applicability
This procedure applies to projects designated as suitable for incorporation of sustainable design principals. Generally, this applies to General Plant Projects.

The United States Green Building Council (USGBC) has developed the Leadership in Energy and Environmental Design (LEED) standard to provide guidance for builders who wish to incorporate sustainable elements into their projects. LEED for new construction is a set of specific and quantifiable measures, each of which confers a credit towards certification of a project as a “LEED-certified” building.

This checklist serves as the template for the FESS/E process. The checklist is completed and included in the development of a Conceptual Design Report. The checklist is reviewed when the project is issued for proposals and again at the completion of the project. This review allows the project team to measure the design against the baseline objectives developed at the Conceptual Design stage.

II. Responsibilities
The following responsibilities have been identified:

Fermi Project Director
• Participate in evaluation process;

FESS/E Project Manager
• Assembly review team;
• Chair review meetings;
• Transfer project documentation to project file.

FESS/E Project Coordinator
• Participate in reviews

III. Procedure

1.0 Initial Review
The initial review of the project occurs during the development of the Conceptual Design Report and is used to document the sustainable design objectives for the project. As a minimum, the review team consists of the following:
• Fermilab Project Director;
• Project Manager;
• Project Coordinator.

1.1 Using the LEED checklist modified with FESS/E specific information, the review team examines the documents and determines the applicability of the LEED credits to the specific project.
1.2 The completed checklist is included in the Conceptual Design Report.
1.3 The completed checklist is stored in the project file.

2.0 Final Design Review
The integrated project team examines the final design documents that are issued for proposals to understand the changes to the baseline objectives that were documented in Step 1.0 above. The results of this review are retained in the project file.

3.0 Construction Complete Review
The integrated project team examines the project documents at the conclusion of the construction to understand the changes to the baseline objectives that were documented in Step 1.0 and Step 2.0 above. The results of this review are retained in the project file.

IV References
The following references have been identified:

- FESS/Engineering Policy FEP 4, Sustainability

V Revision History

<table>
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<th>Version Number</th>
<th>Date</th>
<th>Author</th>
<th>Change Summary</th>
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VI Other

1.0 Example of FESS/E specific LEED Checklist
1.0 Example of FESS/E specific LEED Checklist.
# Project Checklist

## NOvA Project
F E D S / E n g i n e e r i n g  P r o j e c t  N o .  1 5 - 1 - 3
October 2006

### Indoor Environmental Quality

<table>
<thead>
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<th>Credit</th>
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<td>Minimum IAS Performance</td>
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<td>X</td>
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<tr>
<td>Cred2</td>
<td>Environmental Tobacco Smoke (ETS) Control</td>
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<td>X</td>
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<tr>
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### Innovation & Design Process

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### Project Totals

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Total: 69 Points

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Fermi National Accelerator Laboratory / Kirk Road and Pine Street / P.O. Box 500 / Batavia, IL 60510 / 630.840.3000 / www.fnal.gov / fermilab@fnal.gov

Office of Science / U.S. Department of Energy / Managed by Fermi Research Alliance, LLC
Title: A/E Consultant Progress Reporting

I Applicability
The review of A/E Consultant progress allows for timely reporting of A/E usage and earned value. This procedure applies to projects managed by FESS/E.

II Responsibilities
The following responsibilities have been identified:

A/E Consultant
• Provide progress reporting data to FESS/E Project Engineer.

FESS/E Project Engineer
• Reviews progress data for reasonableness;
• Forwards progress data to FESS/A Budget Office
• Transfer documentation to project file.

BSS/Procurement Contract Administrator
• Reviews progress data for reasonableness.

III Procedure
1.0 Develop Progress Report
The A/E Consultant shall submit a monthly progress status report that contains, as a minimum, the following information:
• Activities completed in the reporting period;
• Activities planned for the coming period;
• Task summary including planned versus earned information;
• Task summary percentage complete;
• Variance analysis;
• Issues and concerns.

The progress report should use the project status information contained in the task proposal as a baseline for tracking purposes.

2.0 Forward Progress Report
The A/E Consultant shall forward the progress report to the FESS/E Project Engineer and the BSS/Procurement Contract Administrator. The transmittal can be in the form of electronic mail or as agreed upon.
3.0 FESS/E Project Engineer Review
3.1 The FESS/E Project Engineer reviews the A/E Consultant Project Status Report for reasonableness.
3.2 The FESS/E Project Engineer forwards the cost data to the FESS/A Budget Office for incorporation into the Task Accounting System.
3.3 The FESS/E Project Engineer transfers the documentation to the project file.

4.0 BSS/Procurement Contract Administrator Review
The BSS/Procurement Contract Administrator reviews the A/E Consultant Project Status Report for reasonableness.

IV References
The following references have been identified:

- FESS/Engineering Policy 5 – Tailoring
- FESS/Engineering Standard Operating Procedure 9.3.5.1 – AE Tasking
- FESS/Engineering Standard Operating Procedure 8.4.5.1 – AE Quality Assurance
- FESS/Engineering Standard Operating Procedure 12.4.5.1 – AE Invoicing

V Revision History

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VI Other

1.0 Example of Baseline Data Submitted with A/E Consultant Proposal
2.0 Example of Typical A/E Consultant Progress Status Report
1.0 Example of Baseline Data Submitted with A/E Consultant Proposal

**Howard Roark Architects, LLP**

March 10, 2008

**Project Information:**
- **Project:** SuperDuper Upgrade
- **FESS/Engineering Project No.** 6-8-99
- **Project Coordinator:** Hugh Jacz

**Description:** Professional A/E services for the SuperDuper upgrade project.

**Baseline Data:**

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<td><strong>$32,425</strong></td>
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**Planned Profile:**
- Month 1 - Issue PDR for Review: $11,125
- Month 2 - Develop FD Documents: $13,300
- Month 3 - Complete FD Documents: $8,000

**TOTAL $32,425**
2.0 Example of Typical A/E Consultant Progress Status Report

HOWARD ROARK ARCHITECTS, LLP

Project Information:
Project: SuperDuper Upgrade
FESS/Engineering Project No. 6-8-99
Project Coordinator: Hugh Jacz

Description: Professional A/E services for the SuperDuper upgrade project.

Progress Data:
Reporting Period – March 1, 2008 through April 1, 2008

Activities Completed in the Reporting Period:
- Data Collection
- Develop Design Recommendations
- Develop Project Definition Report
- Issue Project Definition Report for Fermilab Review

Activities Planned for the Next Period
- Begin development of Final Design Documents

Cost Information

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115 $11,125 102 $9,880

Variance Analysis
- None noted

Issues and Concerns
- Require Fermilab concurrence on design approach contained in Project Definition Report prior to start of Final Design Documents.

1234 MIKS VAN DER ROAD • WRIGHTSVILLE, ILLINOIS • 60001
PHONE: 555-1212 • FAX: 555-1221
Title: Construction Document Signoff

I. Applicability
This procedure applies to projects managed by FESS/E. The signoff of construction documents indicates that the documents are ready to be issued for procurement and that they meet the technical requirements of the project.

II. Responsibilities
The following responsibilities have been identified:

FESS/E Project Engineer
- Develop sign-off sheet;
- Obtain signature sheet from A/E Consultant (if applicable);
- Transfer documentation to project archives at completion of project.

AE Consultant (if applicable)
- Complete signature sheet;
- Forward signature sheet to FESS/E Project Engineer.

FESS Signatories
- Ensure that project document meets the requirements of FESS;
- Sign sheet.

Client Signatories
- Ensure that the project meets the minimum technical requirements for the project;
- Sign sheet.

III. Procedure
1.0 Develop Signature Sheet
The FESS/E Project Engineer develops a signature sheet for the project with, as a minimum, the following signature slots:
- FESS/E Project Coordinator
- FESS/E Project Engineer
- FESS/E Department Head
- FESS Head
- Division/Section/Resource Center Project Contact
2.0 A/E Consultant Letter (if applicable)
The A/E Consultant shall develop a signature sheet that indicates that the project was design in accordance with applicable codes, standards and regulations as required. The letter should be on the A/E Consultant letterhead and be signed and sealed.

This letter should be forwarded to the FESS/E Project Engineer with the deliverables of the Final Design phase.

3.0 Obtain Signatures
The signatories should be contacted and signatures obtained on the signature sheet.

4.0 Documentation
Once the signatures are obtained, the FESS/E Project Engineer transfers the documentation to the project file.

IV References
The following references have been identified:

- FESS/Engineering Policy 5 – Tailoring
- FESS/Engineering Policy 9 – Consultant Support
- FESS/Engineering Standard Operating Procedure 8.4.5.1 – AE Quality Assurance

V Revision History

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VI Other

1.0 Example of Signature Sheet
2.0 Example of A/E Consultant Signature Sheet
1.0 Example of Signature Sheet

Memorandum

To: File

From: S. Dixon

Subject: Signature Sheet
GCC Computer Room C
FESS/Engineering Project No. 8-4-104

This signature sheet replaces the drawing signature requirements for the above listed project issued for proposals:

M. Olson - Task Coordinator

S. Dixon - Project Engineer

E. Crumley - FESS Engineering Manager

R. Orlanda - Task Force

G. Bellendir - Computing Division Project Manager

cc: Project File 8-4-104
2.0 Example of A/E Consultant Signature Sheet

September 13, 2007

Mr. Steve Dixon
Senior Project Administrator
Fermi National Accelerator Laboratory

Mail Station 214 (WHSE)
P.O. Box 500
Batavia, Illinois 60510-0550

Re: Seal and Signature for GCC Computer Room C Project, FESS #8-4-104

Dear Mr. Dixon:

This letter serves to document the State of Illinois Professional Engineer license seal and my signature for the GCC Computer Room C project.

Sincerely,

[Signature]

Steven W. Roys
MEP Senior Engineer, Associate

C: Merle Olson, FESS Engineering, merle0@fnal.gov
Title: Securing Construction Documents

I Applicability
The proper securing of construction documents during the procurement phase of the project ensures that inadvertent changes to the documents do not occur. This procedure applies to projects managed by FESS/E.

II Responsibilities
The following responsibilities have been identified:

AE Consultant (if applicable)
- Produces an electronic set of the construction documents;
- Forwards construction documents to FESS/E Project Engineer.

FESS/E Project Engineer
- Transfer construction documents to project archives.

III Procedure
1.0 A/E Consultant (if applicable)

1.1 The A/E Consultant develops a set of documents (drawings, specifications, exhibit A, etc.) that represent the state of the construction documents that will be issued for solicitation. This should include the signature sheet for the project (see FESS/Engineering Standard Operating Procedure 8.3.2.1 – Construction Document Signoff).

1.2 The electronic form of the construction documents should be provided in an Adobe Acrobat (www.adobe.com) format.

1.3 In addition, the electronic set of the construction documents should be provided in the following format:
   - Drawings: AutoCAD native format;
   - Specifications: Microsoft Word native format;
   - Exhibit A: Microsoft Word native format;

1.4 The A/E Consultant forwards the electronic version of the construction documents to the FESS/E Project Engineer. Preferably, the electronic documents should be provided in a CD-ROM media.

2.0 Transfer Electronic Files
The FESS/E Project Engineer shall move the electronic version of the construction documents to the Archive area of the FESS server.


**IV References**
The following references have been identified:

- FESS/Engineering Policy 5 – Tailoring
- FESS/Engineering Policy 9 – Consultant Support
- FESS/Engineering Standard Operating Procedure 8.4.5.1 – AE Quality Assurance
- FESS/Engineering Standard Operating Procedure 8.3.2.1 – Construction Document Signoff

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**VI Other**
SOP Identifier: 8.3.5.1
Version Number: 1.0
Effective Date: April 15, 2008

Subject Matter Expert: S. Dixon (steveo@fnal.gov)

Title: Document Reviews

I. Applicability
This procedure applies to document reviews for projects managed by FESS/Engineering and is intended to provide a framework for the review and distribution of design and construction documents with the following goals:

- Agreement and documentation of Customer requirements and FESS/E response to those requirements;
- Review of developing designs by Fermilab divisions and sections for:
  - Appropriateness of proposed systems;
  - Impacts on existing systems and operations;
  - Specific technical requirements to be incorporated into the design;
  - Compliance with best and required practices of authority having jurisdiction.
- Notification of affected Fermilab divisions and sections when a project is released for Bid.

For the purposes of this procedure definitions are summarized below:
- “Fermilab” is Fermi National Accelerator Laboratory;
- “FESS/E” is Facilities Engineering Services Section, Engineering department;
- “Customer” is the Fermilab group that tasked FESS/E to develop the design and construction documents.
- “SPOC” is the Single Point Of Contact.
- “Building modifications” are defined as any modification which modifies any structural element of the building, adds or removes additional interior walls, or modifies any of the existing high voltage electrical, HVAC, fire protection, sanitary sewer, potable water, or industrial water services.
- “Construction” is any combination of engineering, procurement, erection, installation, assembly, or fabrication activities involved in creating a new facility or altering, adding to, or rehabilitating an existing facility. It also includes the alternation and repair (including dredging, excavating and painting) of buildings, structures, or other real property, as well as any construction & excavation activities conducted as part of environmental remediation efforts.

II. Responsibilities
The following responsibilities have been identified:

Division/Section/Resource Center Head
- Appoint a Single Point of Contact (SPOC);

Division/Section/Resource Center (D/S/R) SPOC
The Single Point of Contact within each D/S/RC will be responsible for the following:
- Controlled distribution of documents to be reviewed within each Division/Section;
- Ensuring that the documents to be reviewed are routed to the correct groups or individuals within the Division/Section/Resource Center;
• Reviewing the documents to determine the appropriate internal Division/Section/Resource Center routing, considering the specific Division/Section/Resource Center requirements to ensure that the appropriateness of the proposed systems, impacts on existing systems and operations and specific technical requirements in the design is acceptable.
• Ensuring that internal D/S/R comments are reviewed for appropriateness and internal conflict resolution prior to being entered into the comment database;
• Coordinating submission of review comments into the tracking database.

FESS/E Project Engineer
• Establishing the number and type of reviews based on the project requirements;
• Establishing distribution list;
• Coordinate the development of the distribution cover sheet;
• Coordinate the establishment of an electronic file;
• Issuing a review notification;
• Coordinating the response to comments received;

III Procedure

1.0 Establish Review Criteria
The review criteria will be tailored to each specific project and be driven by the project requirements. Listed below are general guidelines for reviews:

1.1 Review Types
Reviews commonly used are listed below

1.1.1 A Comment and Compliance Review (CCR) is used to determine the appropriateness of the proposed systems, impacts on existing systems and operations, specific technical requirements to be incorporated into the design and compliance with best and required practices of the authority having jurisdiction.

1.1.2 Other reviews, driven by project specific requirements may be undertaken. The type, distribution and length of these reviews should be based on the project specific requirements.

1.2 Number of Reviews
At least one (1) CCR is generally required for each phase of the project. For example, a General Plant Project (GPP) usually has a review during the Conceptual Design phase and another during the Final Design Phase. One (1) CCR may be appropriate for smaller scale projects. In the event that a project is not subject to a CCR, documentation should be included in the project file noting the circumstances surrounding this decision.

1.3 Review Timing
The review should occur when a project is sufficiently developed to a point where reviewers are able to determine the impacts on existing systems and operations.

1.4 Review Length
In general, a CCR is ten (10) working days in duration. In the event that a shorter time is provided by project driven requirements, documentation should be included in the project file noting the circumstances surrounding this decision.
2.0 Distribute Review Documents
In general, review documents are distributed, reviewed and commented upon electronically. Listed below are the steps to create and distribute the review documents.

2.1 Create Distribution List
The distribution list for reviews should contain, as a minimum, the following:

2.1.1 FESS/Engineering
   - FESS/E Quality Control Representative
   - Project Engineers

2.1.2 FESS
   - Section Head
   - Department Heads
   - Senior Safety Officer
   - Budget Officer
   - Site Services Group Head
   - Operations Engineering Group Head
   - Wilson Hall Building Manager

2.1.3 Accelerator Division
   - Division Head
   - Deputy Head
   - Operations Department Head
   - Senior Safety Officer
   - Radiation Safety Officer

2.1.4 Business Services Section
   - Deputy Head
   - Telecommunication Department Head
   - Fire Chief
   - Battalion Chief
   - Lieutenant

2.1.5 Single Point of Contact
   - Computing Division
   - ES&H Section
   - Workforce Development and Resources Section
   - Particle Physics Division
   - Technical Division
   - Directorate Chief Operating Officer

2.1.6 Integrated Project Team
   - Customer Contact
   - Project Engineer/Project Manager
   - Project Coordinator
   - BSS/Procurement
2.2 Create Electronic File
The electronic review files should consist of the documents to be reviewed and the distribution cover sheet in an Adobe pdf format. These documents should be located in the Review area of the FESS Archive server in order to be accessible to reviewers outside of FESS.

2.3 Issue Review Notification
Electronic notification of a review should be issued via e-mail and should contain, as a minimum, the following information
- Project Name;
- FESS/E Project Number;
- FESS/E Contact;
- Review Start Date;
- Review End Date;
- Project Description;
- List of Review Documents.

3.0 Comment Collection
Comments that result from reviews are entered by the reviewer into an electronic comment database. This database is a FileMaker Pro database and is currently titled Review Comments.fp5 and is located on fesserver1.

3.1 The comment form will contain, as a minimum, the following information
- Reviewer Name;
- Comment Date;
- FESS/E Project Number;
- Drawing or Specification Reference;
- Comment.

3.2 Reviewers are encouraged to enter “No Comment” in the database for projects reviewed without any exception taken in order to document the review process.

4.0 Comment Response
The integrated project team will respond to comments entered into the electronic database.

5.0 Issue Construction Phase Notification
When a project is sent out for proposals during the construction phase notification is sent to the distribution list that received the reviews. This notification is done via e-mail and is similar to the process described in section 2.0 above.
The following references have been identified:

- FESS/Engineering Policy FEP 9, Consultant Support

**Revision History**

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**Other**

1.0  Example of distribution list
2.0  Example of Review Notification Form
3.0  Example of Comment Form
1.0 Example of distribution list with names as of February 2008.

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<td>C. Williams</td>
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<td>G. Bellendir</td>
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<td><a href="mailto:esh_admin@fnal.gov">esh_admin@fnal.gov</a></td>
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<td>J. Hawkins</td>
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<td>R. Sood</td>
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**TOTAL:** 40
2.0 – Example of Review Notification Form

Comment and Compliance Review
Please review the attached information for appropriateness of the proposed systems, impacts on existing systems and operations, specific technical requirements to be incorporated into the design and compliance with best and required practices of authority having jurisdiction.

Project: Main Injector Neutrino Upgrade (MINU)
FESS/E Project No. 6-6-49
Review Start Date: Tuesday, November 20, 2007
Review End Date: Tuesday, December 4, 2007

Project Description:
The Main Injector Neutrino Upgrade (MINU) project will provide new service buildings to house new power supplies and new kicker magnet support equipment to support the future increase of the NuMI beam power from 400kW to 700 kW. The use of the accumulator ring for the stacking of protons is made possible as well. The project will require construction of two new service buildings around the Main Injector, MI-14 and MI-39, and one small addition at MI-60 to house an anode power supply.

Review Attachments: (Note: Files can be viewed from a FNAL computer only)
Drawings
Exhibit B Specifications

This review is being issued in electronic format. If you'd like a different format, please contact Maria Martinez x6598
4.0 Example of Comment Form

Please ensure that your review included a review of the project for appropriateness of the proposed systems, impacts on existing systems and operations and specific technical requirements to be incorporated into the design.

**PLEASE ENTER THE FOLLOWING INFORMATION**

- **Reviewer:** Ayers, Dukes, Miller, Peterson
- **Project Number:** 15-1-3
- **Project Phase:** Comment and Compliance
- **Comment Date:** September 11, 2007

**COMMENT**

- **Drawing Reference:** E-6
- **Specification Reference:**
- **Comment:** Notes field shows emergency lighting and "night" lights remain on continuously. Must be able to shut off "night" light for light leak tests.

**RESPONSE**

- **Project Contact Response:**
- **Disagree for Reasons Noted Below**
- **Comment:** Code required emergency lighting can not be on a switched leg. Switching of night lights requires further investigation.
Title: **A/E Consultant Quality Assurance**

I. **Applicability**

Project execution requires quality control measures to ensure that the project requirements and goals are achieved.

The A/E Consultant shall implement its own Quality Control program applicable to the services provided to Fermilab. To dovetail with Fermilab's Quality Assurance Program the A/E Consultant shall submit their corporate Quality Assurance Plan. These measures may vary depending on the complexity of the project but should provide means of insuring sound engineering decisions early in the design process, interdisciplinary cross-coordination and minimized errors and omissions.

The A/E Consultant shall submit a Project Specific Quality Control Plan for approval by Fermilab for each tasking purchase order. This may be done by reference to the A/E Consultant's Corporate Quality Assurance Plan, with additional project specific measures stated.

During the course of the performance of services the A/E Consultant shall submit written documentation that the measures proposed in the Project Specific Quality Control Plan have been executed.

II. **Responsibilities**

The following responsibilities have been identified:

**AE Consultant**
- Submit Corporate Quality Control Plan;
- Include Project Specific Quality Control Plan with tasking proposal;
- Transmit to Project Engineer records of the implementation of quality control measures.

**FESS/E Project Engineer**
- Review Project Specific Quality Control Plan submitted with tasking proposal;
- Transfer documentation to project archives at completion of project.

III. **Procedure**

1.0 **Corporate Quality Control Plan**

The AE Consultant submits the Corporate Quality Control Plan to BSS/Procurement prior to the establishment of a master subcontract.

2.0 **Submit Project Specific Quality Control Plan**

The AE Consultant shall include with tasking proposals a Project Specific Quality Control Plan that contains the methods to ensure that quality controls measures are in place for the execution of the task. This document should be tailored to the specific tasking and may reference the Corporate Quality Control Plan.
3.0 **Review Project Specific Quality Control Plan**  
As part of the review of the AE Consultant proposal, the Project Engineer will review the Project Specific Quality Control Plan. Any irregularities/changes should be coordinated with the AE Consultant.

4.0 **Documentation**  
4.1 At the closeout of the project tasking, or as appropriate, the AE Consultant shall submit written documentation that the measures proposed have been executed.  
4.2 Upon receipt of the documentation, the Project Engineer shall review and transfer the documentation to the project archives.

### IV References
The following references have been identified:

- FESS/Engineering Policy 5 – Tailoring
- FESS/Engineering Policy 9 – Consultant Support
- FESS/Engineering Standard Operating Procedure 9.3.5.1 – AE Tasking
- FESS/Engineering Standard Operating Procedure 10.3.5.2 - Meetings

### V Revision History

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### VI Other
I. Applicability
This procedure applies to the establishing tasking purchase orders under a master subcontract with architectural and engineering (A/E) consultant firms.

II. Responsibilities
The following responsibilities have been identified:

FESS/E Project Engineer
- Develop scope, schedule and budget criteria with the Customer contact;
- Prepare Request for Proposal memorandum to BSS/Procurement;
- Review A/E Consultant proposal;
- Prepare and circulate purchase requisition.

BSS/Procurement Contract Administrator
- Issue Request for Proposal to A/E Consultant
- Review A/E Consultant proposal;
- Issue purchase order.

III. Procedure

1.0 Develop Memorandum
The FESS/E Project Engineer is responsible for meeting with client and developing an understanding of the scope, schedule and budget requirements for the project. This information shall be incorporated into a memorandum to Business Services Section, Procurement Department (BSS/P).

The FESS/E Project Engineer will develop a memorandum to BSS/P that requests that a formal Request for Proposal (RFP) be issued to an A/E Consultant. The RFP should, as a minimum, contain the following information:
- Project Description;
- Scope of Services;
- Expected Deliverables;
- Preliminary Schedule;
- Cost;

This memorandum should be addressed to Contract Administrator of BSS/P with copies to the Project File, Division/Section/Research Center Client contact and FESS/E Department Head.
2.0 Issue Request For Proposal
BSS/Procurement will issue a formal letter-format RFP to the A/E Consultant.

3.0 Proposal Preparation
Upon receiving a written request for proposal from BSS/Procurement the A/E Consultant is responsible for preparing a proposal that accurately reflects the cost and schedule implication of the scope of services described in the RFP.

During the proposal preparation, the A/E Consultant may contact the Project Engineer to answer technical questions and to arrange site visits. All contractual issues shall be directed to the BSS/Procurement Contract Administrator.

Unless otherwise specified in the RFP, all proposals shall be submitted within ten (10) business days after receipt.

Fee Proposals shall be sent to the BSS/Procurement Subcontract Administrator with a copy to the FESS/E Project Engineer.

The A/E proposal shall include, as a minimum, the following information:
- **Project description**, describing the A/E’s understanding of the program requirements of the task.
- **Scope of Services**, listing the services and the deliverables offered by the A/E for the fees quoted. Itemize variations, if any, to the requirements stated in this handbook and the A/E Services Subcontract.
- **Schedule**, proposing the time the task or each phase of the task will take to complete, indicated in days or weeks. The time should start from a “NTP” date and not actual dates.
- **Cost**, providing a detailed labor hour and rate breakdown of the proposed fee maximum by phase and task, listing personnel titles as they appear in the A/E Subcontract. Supplement this detail with the submittal of a completed Consultant Price Summary. Include a proposed cap cost for reimbursable expenses if allowed by the A/E Subcontract.
- **Baseline Progress Reporting Requirements**, for the tasking that includes, as a minimum, the following information:
  - Logical, sequential listing of tasks;
  - Expected cost associated with task (including both labor and reimbursables)
  - Monthly projection of expected costs
  - All other requirements required by the A/E Subcontract or RFP.

4.0 Proposal Review
Upon receipt of the A/E proposal, the BSS/P Contract Administrator will forward the proposal to the FESS/E Project Engineer for review and action. If acceptable, a purchase requisition will be written.

5.0 Purchase Requisition
After completing the review of the proposal, the FESS/E Project Engineer develop a purchase requisition and circulates it for signatures.
6.0 Issue Purchase Order
Upon receipt of the approved purchase requisition, the BSS/P Contract Administrator will issue a purchase order for the task. The issuance of the purchase order signifies that point at which the A/E may begin work on the task.

IV References
The following references have been identified:

- FESS/Engineering Policy FEP 9 - Consultant Support
- FESS/Engineering Policy FEP 5 - Tailoring
- FESS/Engineering Standard Operating Procedure 8.4.5.1 – AE Quality Assurance
- FESS/Engineering Standard Operating Procedure 7.4.5.1 – AE Progress Reporting
- FESS/Engineering Standard Operating Procedure 12.4.5.1 – AE Invoicing

V Revision History

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VI Other

1.0 Example of memorandum to BSS/P
2.0 Example of RFP memo to A/E firm
3.0 Example of A/E proposal
Memorandum

October 5, 2007

To: B. Cibic, BSS/Procurement
From: S. Dixon, FESS/Engineering
Subject: Request for Professional Services
Lab BEG Lighting Upgrade
FESS/Engineering Project No. 8-2-151C

Please request a Not-To-Exceed proposal for professional A/E services from Crawford Murphy & Tilly Inc. (CMT) for engineering services for the Lab BEG Lighting Upgrade project.

Description:
The existing interior lighting at the Lab BEG Connection is based on unit fixtures intended for an industrial setting. Recent analysis and client input has determined that a more conventional lighting arrangement is preferred. Such a system was included in the original design, but removed as part of a value management exercise. This task will investigate the possibility of removing the existing system and installing the original design.

Scope:
The tasking should request engineering support for the following phases:

Phase 1 - Investigation
This phase will evaluate the existing electrical systems and develop a recommendation for replacement fixtures. In addition, budget cost estimates will be provided for the proposed upgrades. Specific tasks include:
1. Meetings at Fermilab;
2. Field visits to inspect existing conditions;
3. Investigation of proposed upgrades;
4. Development of budgetary cost estimates;

Phase 2 - Title 2 Documents
This phase will prepare the construction documents suitable for competitive bidding purposes. Specific tasks include:
1. Meetings at Fermilab;
2. Development of drawings;
3. Development of specifications;
Deliverables:
The following is the minimum expected deliverables:

Phase 1: Summary report of investigation/evaluation results
Phase 2: Construction documents

Schedule:
Start Task: November 2007
Complete Phase 1: Start Date + 4 weeks
Complete Phase 2: Start Date + 8 weeks

Bob, could you please forward this proposal to CMF and ask that they contact me to discuss this request for proposal in greater detail. Please request that they return their proposal by October 22, 2007.

Please contact me at x501 with questions.

Cc: E. Crumpley, FESS/E
    E. McHugh: m/s 355
    J. Neubert, FESS/E
    Project File 6-7-16
2.0 Example of RFP memo to A/E firm

October 8, 2007

Mr. Bernard D. Held, P.E.
Crawford, Murphy & Tilly, Inc.
600 North Commons Drive, Suite 107
Aurora, IL 60504

Subject: Request for Professional Services
Lab BEG Lighting Upgrade
FEES/Engineering Project No. 8-2-151C

Dear Mr. Held:

Please submit a Not-To-Exceed proposal for professional A/E services for engineering services for the Lab BEG Lighting Upgrade project.

Description:
The existing interior lighting at the Lab BEG Connection is based on unit fixtures intended for an industrial setting. Recent analysis and client input has determined that a more conventional lighting arrangement is preferred. Such a system was included in the original design, but removed as part of a value management exercise. This task will investigate the possibility of removing the existing system and installing the original design.

Scope:
The tasking should request engineering support for the following phases:

Phase 1 – Investigation
This phase will evaluate the existing electrical systems and develop a recommendation for replacement fixtures. In addition, budget cost estimates will be provided for the proposed upgrades. Specific tasks include:
1. Meetings at Fermilab;
2. Field visits to inspect existing conditions;
3. Investigation of proposed upgrades;
4. Development of budgetary cost estimates;
5. Report preparation

Phase 2 – Title 2 Documents
This phase will prepare the construction documents suitable for competitive bidding purposes. Specific tasks include:
1. Meetings at Fermilab;
2. Development of drawings;
3. Development of specifications;
Deliverables:
The following is the minimum expected deliverables:

Phase 1: Summary report of investigation/evaluation results
Phase 2: Construction documents

Schedule:
Start Task: November 2007
Complete Phase 1: Start Date + 4 weeks
Complete Phase 2: Start Date + 8 weeks

Please submit your proposal by close of business October 22, 2007. Also, please contact Steve Dixon at (630) 840-8501 to discuss this RFP in greater detail.

If you have any questions please feel free to contact me at (630) 840-4255.

Sincerely,

[Signature]

Thomas R. Powers
Procurement Administrator

cc: Steve Dixon, MS 214
    Bob Cibic, MS 210
    File
3.0 Example of A/E proposal

October 22, 2007

Thomas R. Powers
Procurement Administrator
Fermilab
PO Box 500, Mail Station 210
Batavia, IL 60510

Dear Mr. Powers:

Re: Fermilab -- Lab BEG Lighting Upgrade
FESS Engineering Project Number: 8-2-151C

This letter is our response to the October 8 request for proposals for the Lab BEG Lighting Upgrade project. Our proposal is based on a site visit made by CMT's [Redacted], as well as the information provided in the RFP.

Background Information:
The existing interior lighting at the Lab BEG Connection is based on unit fixtures intended for an industrial setting. Recent analysis and user input suggests that a more conventional lighting arrangement would better serve the buildings' use. This project will investigate the possibility of replacing the existing lighting system with a lighting system that conforms with Fermi conventional lighting systems. As a part of this project, CMT will be available for general electrical questions related to the facility.

Project Approach:
CMT intends to perform this project with personnel from our Aurora office. [Redacted] will provide the engineering services with AutoCAD assistance from CMT Aurora office technicians. Our staff is familiar with Fermi design and drafting standards and will follow them for this project. It is our understanding that this project requires an investigative phase to evaluate the existing system and determine requirements for a replacement lighting system, and estimate the costs of replacement. A summary report of these findings will be presented that would conclude Phase 1 (the investigative phase). Fermilab will then determine if the project will proceed. If so, in Phase 2, CMT will design the replacement system, prepare plans, specifications and estimates for the project. CMT will not proceed with Phase 2 without authorization by Fermilab's project manager.

Schedule and Cost:
CMT is prepared to perform this project in substantial conformance with the schedule proposed in the RFP. We understand that a notice to proceed will be issued in November, 2007 with Phase 1 to be completed in four (4) weeks. Once authorized, Phase 2 would follow in approximately eight (8) weeks. We estimate the effort and cost of this project to include 112 man-hours at a cost of [Redacted]. Phase 1 would be approximately 33% of the total effort or [Redacted].

Please call if you have any questions.

Sincerely,

CRAWFORD, MURPHY & TILLY, INC.

Bernard D. Held, P.E.
Sr. Vice President

Items in green redacted for confidentiality purposes
**FERMILAB CONSULTANT PRICE SUMMARY**

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<td>TASK ORDER NO.:</td>
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**PROJECT NAME:** Lab BEG Lighting Upgrade

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**TOTAL LABOR**

**LABOR BY PHASE:**
- STUDY OR CDR
- TITLE I
- TITLE II
- BIDDING
- TITLE III (Constr. a)

**COMPUTER CHARGES (Attach Detail)**

**REIMBURSABLE EXPENSES ESTIMATE**

**TOTAL MAXIMUM FEE** (rounded)

Items in green redacted for confidentiality purposes
### Standard Operating Procedure

Items in green redacted for confidentiality purposes
Title: Amendments

I Applicability
This procedure applies to projects managed by FESS/E. An Amendment is a document that is issued to the offerers during the proposal period prior to the receipt of proposals. An Amendment is used to clarify or modify the scope a project.

II Responsibilities
The following responsibilities have been identified:

FESS/E Project Coordinator
• Assembles amendment documents (text, drawings, etc.);
• Develops Amendment memo.

FESS/E Project Engineer
• Reviews Amendment documents for project impact.

Division/Section Client
• Reviews Amendment documents for project impact.

BSS/Procurement Administrator
• Determines if Amendment impacts the request for proposal period;
• Issues formal Amendment to Offerers.

III Procedure
1.0 Develop Amendment Documents
The FESS/E Project Coordinator develops the Amendment documents that describe in text and/or drawings the modified scope of work. This documentation should include a document with, as a minimum, the following information:
• Amendment Identifier;
• FESS/E Project Name;
• FESS/E Number;

The Amendment documents are reviewed by the FESS/E Project Engineer.

2.0 Distribute Amendment
The Amendment documents are forwarded to the BSS/Procurement Administrator. Copies are provided to the Division/Section/Research Center Client, the FESS/E Project Engineer and the FESS/E Department Head.
3.0 Issue Amendment of Solicitation
The BSS/Procurement Administrator issues the Amendment of Solicitation to the Offerers.

4.0 Documentation
The FESS/E Project Engineer transfers the documentation to the project file.

IV References
The following references have been identified:

- FESS/Engineering Policy 5 – Tailoring
- FESS/Engineering Standard Operating Procedure 10.2.5.3 – Drawing Requirements

V Revision History

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VI Other

1.0 Example of Amendment Document
2.0 Example of Amendment of Solicitation issued by BSS/Procurement Administrator
1.0 Example of Amendment Document

AMENDMENT NO. 1
To the construction documents for:

GCC COMPUTER ROOM-B
FESS/Engineering Project No. 8-4-98D

Fermi National Accelerator Laboratory
Batavia, Illinois

Amendment Date March 08, 2006

Changes/Clarifications to the Drawings:

1. Drawing E-24

Delete this drawing “CARD ACCESS/SECURITY”.

Changes/Clarifications to the Specifications:

1. Addendum-A, Page 7

Add item 13 under “Demolition”

Provide a dust enclosure for the concrete saw cutting, floor removal, ICW pipe removal, excavation, etc. for the installation of new electrical duct bank into the existing Electrical Equipment Room. Enclosure is to ensure that no dust gets into the existing electrical equipment.
2.0 Example of Amendment of Solicitation issued by BSS/Procurement Administrator

AMENDMENT OF SOLICITATION

AMENDMENT NO. 1

DATE OF AMENDMENT: March 9, 2006

SOLICITATION NO. FESS-181175-RWC/REDESIGN

DATE ISSUED: February 13, 2006

PROJECT NO. 8-4-98D

OPENING DATE: March 13, 2006

TITLE OF PROJECT:
GCC Computer Rom B

Bidders must acknowledge this Amendment prior to the hour and date set forth in the solicitation by one of the following methods:
1. By completing the Representations, Certifications and Acknowledgements (Form FL-6)
2. By separate telegram or letter.

If by virtue of this Amendment you desire to change a bid already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the Solicitation and this Amendment and is received prior to the time set for opening.

The above reference Solicitation is amended as follows:

All Planholders are to delete this drawing and the requirements contained therein as Non-applicable to this solicitation.

Reference – Addendum “A” to Exhibit “A”, Page 7.
Add Item 13, under “Demolition,” as follows:

“Provide a dust enclosure for the concrete saw cutting, floor removal, ICW pipe removal, excavation, etc. for the installation of new electrical duct bank into the existing Electrical Equipment Room. Enclosure is to ensure that no dust gets into the existing electrical equipment.”

Solicitation Opening Date: Remains at March 13, 2006 (4:30 p.m., Local Prevailing Time).

All other terms and conditions remain unchanged.

Ron W. Cypret
Senior Procurement Administrator
630/840-3839
FAX 630/840-2907
SOP Identifier: 10.3.3.2
Version Number: 1.0
Effective Date: April 15, 2008

Subject Matter Expert: S. Dixon (steveo@fnal.gov)

Title: Procurement Period Questions

I Applicability
This procedure applies to projects managed by FESS/E.

A Bid Period Question is a communication between a potential Offerer and a member of the integrated project team that occurs while the project is out for solicitations but prior to receipt of proposals.

II Responsibilities
The following responsibilities have been identified:

Project Team Member
- Responds to question from Offerers;
- Documents conversation;
- Forwards conversation documentation.

FESS/E Project Engineer
- Reviews Bid Period Question documentation for project impact;
- Consults with BSS/Procurement Administrator to determine if Amendment to Solicitation is required;
- Transfers documentation to project file.

Division/Section/Resource Center Client
- Reviews Bid Period Question documentation for project impact.

BSS/Procurement Administrator
- Consults with FESS/E Project Engineer to determine if Amendment to Solicitation is required;

III Procedure
1.0 Bid Period Question
The member of the integrated project team that responds to a bid period question documents that question and response to the potential Offerer. The documentation includes, as a minimum, the following information:
- FESS/E Project Name;
- FESS/E Number;
- Date;
- Contact Name;
- Contact Company;
- Contact Telephone Number;
2.0 Distribute Documentation
The Bid Period Question documentation is, as a minimum, forwarded to the following:

- BSS/Procurement Administrator;
- FESS/E Project Engineer;
- FESS/E Project Coordinator;
- FESS/E Manager;
- Division/Section/Resource Center Client.

3.0 Documentation
The FESS/E Project Engineer transfers the documentation to the project file.

IV References
The following references have been identified:

- FESS/Engineering Policy 5 – Tailoring
- FESS/Engineering Standard Operating Procedure 10.2.5.3 – Drawing Requirements
- FESS/Engineering Standard Operating Procedure 10.3.3.1 – Amendments

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VI Other

1.0 Example of Bid Period Question form
1.0 Example of Bid Period Question form

**Bid Period Question**
Project: GCC Computer Room C  
FESS/Engineering Project No. 8-4-104

Date: January 24, 2008  
Contact: Cindy, West Elsdon Electric  
Phone: 1-815-761-3368

**Question:**  
Are the jumper cables between the batteries included in the Fermi-provided batteries for the UPS

**Response:**  
Yes, the battery to battery connections are part of the batteries supplied by Fermilab for installation by the subcontractor. The cables from the batteries to the disconnect switches are not supplied by Fermi and are supplied and installed by the subcontractor.

Steve Dixon  
FESS/Engineering  
Fermi National Accelerator Laboratory  
Phone: (630) 840-8501  
Fax: (630) 840-4980  
E-Mail: steveo@fnal.gov
Title: Meetings

I Applicability
Project execution requires various types of meetings to review progress discuss issues and share information. This procedure provides guidelines for improving the effectiveness and efficiency of meetings and gatherings.

II Responsibilities
The following responsibilities have been identified:

FESS/E Project Engineer
- Determine the need for meetings
- Act as or designate Meeting Facilitator;

Meeting Facilitator
- Ensure meeting follows the agenda;
- Takes, prepares and distributes meeting minutes;
- Ensures meeting schedule and timing rules are followed.

Meeting Participants
- Arrive on time;
- Attend and contribute to meeting discussions.

III Procedure
1.0 Plan Meeting
The Meeting Facilitator completes the activities listed below:
1. Determine meeting type;
2. Determine what must occur prior to the meeting to make it successful;
3. Determine what must be accomplished for the meeting to be completed;
4. Determine who should attend the meeting;
5. Determine what material the participants need ahead of time;
6. Schedule meeting location.

2.0 Announce Meetings
The Meeting Facilitator completes the activities listed below:
1. Issue agenda;
2. Date, time and location of the meeting;
3. Special instruction, if required, in preparation of the meeting;
4. Forward pertinent documentation that should be reviewed prior to the meeting.
3.0 **Conduct Meeting**

The Meeting Facilitator performs the activities listed below:

a. Ensure adequate facilities, room arrangement, and that all equipment is operational;
b. Identify room specific exiting, emergency instructions, bathroom locations and related items;
c. Pass around a sign-in sheet or roster, if appropriate;
d. Summarize roles, goals, objectives, agenda;
e. Ensures meeting schedule and timing rules are followed;
f. Takes meeting minutes that include, as a minimum, the following information:
   - Date;
   - Time;
   - Meeting Location;
   - Project Information (Name, FESS/E Project Number);
   - Attendee information (Name, Affiliation);
   - Topic;
   - Appropriate description of meeting content;
   - Identification of action items including assignment and schedule for completion.

4.0 **Follow Up**

The Meeting Facilitator issues meeting minutes to the project team, usually within five (5) working days of the meeting.

Meetings with detailed and/or complex issues may require the issuance of draft meeting minutes to confirm factual accuracy. The Meeting Facilitator issues the draft meeting minutes. Upon receiving comments, the final meeting minutes should be issued within five (5) working days to the project team.

5.0 **Revisions**

When appropriate, revisions to final meeting minutes should be issued. The revised meeting minutes should be sent to all recipients of the original meeting minutes.

**IV References**

The following references have been identified:

- FESS/Engineering Policy FEP 5, Tailoring
- FESS/Engineering Policy FEP 9, Consultant Support
### V Revision History

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</table>

### VI Other

1.0 Examples of meeting minutes
MEETING MINUTES

No meeting was held on 5/10, but this message will include recent information for the project team.

GGC Tape Robot Room
FESS/Engineering Project No. 84-100
Date: May 10, 2005

Objective: Provide infrastructure to support Robotic Tape Storage functions in the Grid Computer Center.

Attendees:
- Computing Division - G. Bellendir, J. MacNerland, D. Ritchie
- FESS/ - R. Alber, G. Van Zandbergen, C. Federowicz, M. Olson, R. Jedziniak, R. Walton, S. Dixon

This weekly meeting will discuss progress on developing a set of subcontract documents for the adaptive reuse of the existing space into space suitable for robotic tape storage.

The scope of this project includes:

1. The conversion of the existing North Computer Room.
2. The connection of the two (2) existing CRAC units in Computer Room #1.
3. The connection of the existing CRAC unit in the UPS Room.
4. The upgrade of the entrance to the building.

DISCUSSION TOPICS
Listed below are the discussion topics for this project:

Tape Robot Room

1. E. Huedem has reviewed the computing equipment planned for the TRR in order to verify if one (1) 30 Ton CRAC unit is adequate. Here's the assumptions:
   - Computing equipment loads from the tape robots and mover nodes is less than 53 kW;
   - Tape Robot: Temperature of 75 degrees F and 45% relative humidity +/- 10%
   - UPS Equipment: Temperature of 77 degrees F and 0%-95% relative humidity.

2/12/2008
2. Based on the analysis and assumptions, one (1) 30 ton CRAC unit is adequate.

3. There was a request to develop a budgetary cost estimate for installing a 100 kVA standby generator for the Tape Robot Equipment, Mover Nodes and Network Equipment supporting the TRR. Listed below is a summary of the estimated cost for that work:

- 125 kVA Diesel Generator $60,000
- Concrete Pad w/Containment $5,000
- Ductbank with conductors (150 LF) $20,000
- New Panelboards (2) $12,000
- Rework Existing Circuits $15,000

Subtotal $102,000

Suggested Contingency $26,000

Total $128,000

The above estimate is based solely on equipment and expected installation costs and will change as the design is refined. These estimates DO NOT include EDIA or Indirect Cost multipliers that will have to be applied in the event that this work becomes part of a GPP project.

Contingency Analysis

The following is a listing of the scope changes identified during the design phase of the project:

<table>
<thead>
<tr>
<th>Description</th>
<th>Add</th>
<th>Deduct</th>
<th>Balance</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contingency per CCR</td>
<td></td>
<td></td>
<td>$83,000</td>
<td>Includes EDIA and Preprocured</td>
</tr>
<tr>
<td>Demolish Fence at Entry</td>
<td></td>
<td>$1,500</td>
<td>$84,500</td>
<td>Done by others</td>
</tr>
<tr>
<td>Provide Opening at Gas Bottle Room</td>
<td></td>
<td>$2,000</td>
<td>$86,500</td>
<td>Done by others</td>
</tr>
<tr>
<td>Install Door at Gas Bottle Room</td>
<td>$1,200</td>
<td></td>
<td>$86,300</td>
<td></td>
</tr>
<tr>
<td>Infil Opening at Old Entry</td>
<td>$500</td>
<td></td>
<td>$84,800</td>
<td></td>
</tr>
<tr>
<td>Humidifier in Network Room</td>
<td>$14,217</td>
<td></td>
<td>$70,783</td>
<td>Average of Offers</td>
</tr>
<tr>
<td>Increase Size of UPS (20-&gt;40)</td>
<td>$17,000</td>
<td></td>
<td>$53,583</td>
<td></td>
</tr>
<tr>
<td>Provide For Future 40 kVA UPS</td>
<td>$15,000</td>
<td></td>
<td>$38,583</td>
<td>Breaker, conduit and disconnect</td>
</tr>
<tr>
<td>Floor Tile in Network Room</td>
<td>$3,500</td>
<td></td>
<td>$36,083</td>
<td>Patch and install new over exists</td>
</tr>
<tr>
<td>Floor Tile in Lobby</td>
<td>$1,500</td>
<td></td>
<td>$33,583</td>
<td>Patch and install new over exists</td>
</tr>
<tr>
<td>Light Fixtures in TRR (8)</td>
<td>$1,600</td>
<td></td>
<td>$31,983</td>
<td>Assumed use of salvaged fixture</td>
</tr>
</tbody>
</table>

$64,517 $3,500

Baseline Estimate of Construction $377,000

Contingency Usage $49,417

Revised Estimate of Construction $426,417

Available Contingency 8%

For reference, the recently completed HDCF Conversion project required 38% contingency for construction alone.

ACTION ITEMS

The following action items have been identified:

FESS/E

2/12/2008
STEVE DIXON

From: "Steve Dixon" <steveo@fnal.gov>
To: "Travis Barta" <tbar@burnsmcd.com>; "Russell J. Alber" <rarber@fnal.gov>; "Ronald Jedziniak" <rjedziniak@fnal.gov>; "Rodney Walton" <rwalton@fnal.gov>; "Marie L. Olson" <ml Olson@fnal.gov>; "Lee Hammond" <lhammond@fnal.gov>; "Lackowski, Thomas W." <tlorsski@fnal.gov>; "John R. Steenken" <jsteenken@burnsmcd.com>; "John J. Santic" <santic@fnal.gov>; "James H. Niehoff" <jniehoff@fnal.gov>; "Gary Van Zandbergen" <gvanz@fnal.gov>; "Ermi Huedem" <huem@fnal.gov>; "Charles A. Federowicz" <chau@fnal.gov>; "Karen Stelling" <kstelling@burnsmcd.com>
Cc: "Keith W. Schuh" <schuh@fnal.gov>; "Bill Miller" <Miller@ou.edu>; "Earl Peterson" <ep@physics.umn.edu>; "Edward Crumpley" <crumpley@fnal.gov>; "James L. Priest" <priest@fnal.gov>; "John W. Cooper" <cooperj@fnal.gov>; "Marvin L. Marshall" <marshak@umn.edu>; "Ronald E. Ray" <rray@fnal.gov>

Sent: Tuesday, January 23, 2007 10:41 AM

MEETING MINUTES

NOV A Project
FESS/Engineering Project No. 15-1-3
University of Minnesota Project No. 886-06-1711
Burns & McDonnell Project No.s. 44251 (Oggo) & 44267 (KGO)
Date: January 22, 2007

Attendees:
Fermilab: M. Olson, G. VanZandbergen, J. Niehoff, S. Dixon

Meeting Topic: Title 1 Progress Meeting - Architectural Issues

DISCUSSION TOPICS
Listed below are the discussion topics:

1. Proposed Plan Revisions
   o There was a review of two (2) plans prepared by BMD for the Service Building and surrounding area (copies attached)
   o Both plans were well received and incorporated refinements to the original scheme.
   o The plan at 1232-2 provided better maintenance access to the generators. The concept is a lowered panel that could be removed for the installation of the generators. In addition, the panel could be removed in the event that the generators had to be serviced/replaced.
   o The entry vestibule on both plans could be reworked with the interior doors opening to the east to allow the offices to slide to the north and provide a bit more space for the control room space.
   o The consensus was to proceed with the scheme identified as Plan@1232-2 since it offered the benefits of less excavation, better access to the Level 7 walkway at elevation 1240'-4" and took advantage of the views to the southwest portion of the site.

2. Fire Protection
   o The Fire Protection Room is approximately 20' x 22'
   o The current scheme is to provide water storage in interior water tanks in the space shown as the "Water Tank" room.
   o The Fire Protection design will assume that the water tanks are installed and piped to the pump.
   o The roof of the Water Tank Room could match the height of the adjacent Detector Enclosure and provide a clear height of ~30 feet.

1/23/2007
3. Shielding
   o The baffle fill on the roof should extend outward of the Detector Enclosure walls.
   o Several walls in the Service Building were originally indicated as being constructed of baffle-enhanced concrete. The current configuration should be reviewed with the experimenters to determine the required shielding.
   o Typical building sections through the Detector Enclosure and Service Building should be developed for the review.

4. Follow up - These comments were discussed offline after the meeting
   o If possible, there should be access from the Service Building to the Level 5 walkway (1222-10').
   o This looks possible in the Plan@1223.2 scheme.
   o If needed, the Mechanical Room can fill the space shown as Fire Protection Equipment. This Fire Protection Room could then take up space near the Water Tank Room, allowing a direct access to the exterior for installing and maintaining the equipment.

ACTION ITEMS
The following action items have been identified

FESSME

1. Follow up with shielding

WBS 2.9
None identified

Burns and McDonnell

1. Develop plan
2. Provide cross section for shielding review

SCHEDULE
The following preliminary milestones have been discussed.

- Progress Meeting: To Be Determined
- Comment and Compliance Review: mid-February 2007
- Quality Assurance Review: late-March 2007
- Title 1 Complete: late-April 2007
- Director's Review for CD-2/3A: To be scheduled ~ May 2007
- DOE Review for CD-2/3A: To be scheduled ~ July 2007

1/23/2007
Title: Project Correspondence

I Applicability
Project execution requires various types of project correspondence. This procedure provides guidelines for documenting the project related correspondence.

Correspondence related to a project shall be retained and transmitted to Fermilab at the end of each phase of the project or task. Such correspondence shall be treated as design calculations and includes telephone conversations, fax messages, meeting minutes, vendor meeting minutes and other related correspondence.

II Responsibilities
The following responsibilities have been identified:

FESS/E Project Engineer
- Determine the required documentation;
- Transfer documentation to project archives at completion of project;

Participants
- Document correspondence;
- Transmit to Project Engineer.

III Procedure
1.0 Document Conversation
The Participant completes documentation of conversations and vendor meetings with notes that contain the following the activities listed below:

1. Date;
2. Project Information;
3. Participant Information
   a. Name;
   b. Affiliation;
4. Contact Information
   a. Name
   b. Company
   c. Telephone/Fax numbers
5. Topic;
2.0 Transmitt Information
The Participant shall forward the completed correspondence documentation to the FESS/E Project Engineer in a timely manner based on the topic discussed and project impact.

IV References
The following references have been identified:

- FESS/Engineering Standard Operating Procedure 10.3.5.2 - Meetings

V Revision History

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VI Other
Title: Minimum Drawing Requirements

I Applicability
This procedure applies to drawings produced for FESS/E projects.

II Responsibilities
The following responsibilities have been identified:

Drawing Initiator
• Create drawing with required information.

III Procedure

1.0 Create Drawing
All drawings should have, as a minimum, the following information:
• Identification of FES section and Engineering department;
• Name of drawing initiator;
• Date;
• Project name;
• Project number;
• North arrow (of appropriate);
• Scale.

IV References
None noted

V Revision History

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VI Other
SOP Identifier: 12.4.5.1
Version Number: 1.0
Effective Date: April 15, 2008

Subject Matter Expert: S. Dixon (steveo@fnal.gov)

Title: A/E Consultant Invoicing

I. Applicability
This procedure applies to the reviewing and approving invoices for purchase orders under a master subcontract with architectural and engineering (A/E) consultant firms.

II. Responsibilities
The following responsibilities have been identified:

A/E Consultant Contact
• Prepare invoice in accordance with master subcontract and purchase order;
• Submit invoice;

FESS/E Project Engineer
• Review invoice;
• Approve invoice;

III. Procedure

1.0 Prepare Invoice – A/E Consultant
The A/E Consultant shall prepare an invoice with the following information contained as a minimum:
• Master Subcontract Number;
• Tasking Purchase Order Number;
• Unique A/E Invoice Number;
• Billing Period;
• FESS/E Project Name;
• FESS/E Project Number;
• FESS/E Project Engineer Name;
• Description of Services;
• Financial Summary Information;
• Percentage of Fee Expended;
• Percentage of Work Completed;
• Remaining Fee Amount.
2.0 Submit Invoice – A/E Consultant
The A/E Consultant shall submit the invoice to the following address:

Fermi National Accelerator Laboratory
M/S 112
Post Office Box 500
Batavia, Illinois 60510
Attention: BSS/Accounting

3.0 Review Invoice – FESS/E Project Engineer
3.1 Upon receiving an A/E Consultant invoice, the Project Engineer shall review the invoice to determine if the invoice accurately reflects the scope of work completed during the invoice period.
3.2 If the invoice is correct, the “OK To Pay” Invoice box on the invoice approval sheet should be checked, the sheet signed and dated.
3.3 If the invoice is incorrect, the A/E Consultant should be contacted for clarification/correction. A disapproved invoice should be marked with “DISAPPROVED – PLEASE REMOVE FROM SYSTEM” notation.
3.4 Upon completion of the above, the invoice should be forwarded to the FESS Budget Office for tracking as required.

IV References
The following references have been identified:

- FESS/Engineering Policy FEP 9, Consultant Support

V Revision History

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VI Other

1.0 Example of A/E Invoice
2.0 Example of Invoice Approval Sheet
1.0 Example of invoice containing required information.

**HOWARD ROARK ARCHITECTS, LLP**

---INVOICE---

February 19, 2008

FERMILAB
M/S 112
Post Office Box 500
Batavia, Illinois 60510
Attn: BSB/Accounting

Billing Information:
Master Subcontract Number: 561245
Purchase Order Number: 517772
Invoice Number: 517772-1
Billing Period: August 01, 2006 through August 31, 2006

Project Information:
Project: SuperDuper Upgrade
FESS/Engineering Project No. 5-8-99
Project Coordinator: Hugh Jacc

Description: Professional A/E services related to Title 2 services for the SuperDuper upgrade project.

Billing Summary:

<table>
<thead>
<tr>
<th>Description</th>
<th>Purchase Order Limit</th>
<th>Billings This Period</th>
<th>Previous Billings</th>
<th>Total To Date</th>
<th>Remaining</th>
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<tbody>
<tr>
<td>Labor</td>
<td>$40,000.00</td>
<td>$23,795.00</td>
<td>$5,000.00</td>
<td>$28,795.00</td>
<td>$11,204.00</td>
</tr>
<tr>
<td>Direct Costs</td>
<td>$4,000.00</td>
<td>$242.63</td>
<td>$0.00</td>
<td>$242.63</td>
<td>$3,757.37</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$44,000.00</strong></td>
<td><strong>$24,837.63</strong></td>
<td><strong>$5,000.00</strong></td>
<td><strong>$29,837.63</strong></td>
<td><strong>$14,162.37</strong></td>
</tr>
</tbody>
</table>

Percent Expended to Date: 70.2%
Percentage of Task Complete: 80%

**TOTAL AMOUNT DUE THIS INVOICE:** $24,837.63

---

Provide backup data on separate attachment indicating personnel job classification, billing rates, hours expended and subtotaled for each classification and direct costs.
2.0 – Example of Invoice Approval Sheet

FERMI NATIONAL ACCELERATOR LABORATORY
ACCOUNTS PAYABLE AUTHORIZATION
INVOICE APPROVAL

Payment Due Date: 2/17/2008
Please Return Before: 2/14/2008

POWERS, THOMAS R
DIXON, STEVEN J

TO: MAIL STATION:

VENDOR: RJN GROUP
PURCHASE ORDER NUMBER: 574174
INVOICE NUMBER: 11-2101-07-11

CURRENT PAYMENT AMOUNT Redacted

COMMENTS:

☐ OK to Pay Invoice ☐ Hold Invoice

REASON
(If Hold)

REQUISITIONER/TECHNICAL: DATE: 2/19/08

PROCUREMENT/CONTRACTS: DATE: 

ISSUED: 2/7/2008

Record #: 2978