FESHM 7010: ES&H PROGRAM FOR CONSTRUCTION

Revision History

Author	Description of Change	Revision No. & Date
Ed Crumpley	Initial release Chapter 7010 entitled, Subcontractor Construction ES&H Program – Fixed Priced Construction	Revision January 2001
Jolie Macier	Clarified the definition of Construction Coordinator and clarified the role and responsibilities.	Revision June 2003
Elaine McCluskey	Added TM/CC Qualifications as outlined in Table 1	Revision March 2006
Russ Alber	Minor modification, categorized price limits related to construction cost	Revision May 2007
Ken Collins	Combined 7010 and 7011 into one chapter, added Center & Exhibit A thereby canceling FESHM 7011.	Revision November 2010
Jim Niehoff	Modified ES&H Roles and Responsibilities pertaining to review and acceptance of Subcontractor's ES&H program, removed LOTO II and NFPA 70E training requirements from General Construction from Table 1 Qualifications Criteria, corrected grammar, reformatted to comply with FESHM Format, and removed acceptance/review form.	Revision July 2011

TABLE OF CONTENTS

1.0 INTRODUCTION

At Fermilab the health and safety of all who work here is paramount. We believe that the most effective and least costly way to accomplish our goals is to do so safely, without injury to workers, the public, or the environment. We believe that the most effective, well-managed businesses are those that share our view of the importance of working safely. Working safely and in an environmentally sound manner is simply good business. We will only engage subcontractors and their sub tier contractors to work on the Fermilab site who share the view that working safely cannot be an afterthought or an added cost.

This chapter describes Fermilab's program, procedures and safety requirements for all construction work. Construction tends to have greater exposures to hazards and therefore; higher injury and property damage rates. Though, experience has shown that careful planning and review can reduce the rate at which accidents occur.

This chapter also describes requirements for Fermilab employees who will be entering construction areas or who oversee subcontractor construction activities.

The level of Fermilab review and oversight of construction activities is commensurate with the risk and complexity of the work activity. A basic distinction is made between construction work which is fully specified and documented and that which is conducted on a progressive basis, with more reliance on field decision making. In the former case, the construction work is considered "coordinated" by a Construction Coordinator (CC). When construction is subcontracted with less formal definition, it may be managed on a "task basis" by a Task Manager (TM). The common occurrence of task management is with Time and Material construction contracts.

The significant difference between the two oversight roles lies in the assignment of responsibility for safety planning and hazard assessment. Task Managers must understand the detailed nature of work assignments for tradesmen. They serve to specify Fermilab requirements as a job progresses, working closely with subcontractors, supervisors, and workers.

A Construction Coordinator oversees or coordinates construction when supervision and management is included in the subcontract scope and the work processes and required outcomes are well understood. The CC relies on the subcontractor to plan the means and methods to safely and effectively accomplish construction objectives.

While the majority of the Fermilab procedures in Section 5 below are based on the construction coordination model, the Task Manager is also responsible for complying with the permitting, coordination, documentation, and other requirements. Construction Coordinators may have additional responsibilities identified in the procedures of Section 5.

2.0 REFERENCES

- 29 CFR 1926 – Safety and Health Regulations for Construction
- NFPA-70E (2009) - Standard for Electrical Safety in the Workplace
- 10 CFR Part 851 - Worker Safety and Health Program
- Form 7010-F1 - Subcontractor's Safety Information Questionnaire
- Form 7010-F2 - Pre-Construction Checklist
- Form 7010-F3 - Subcontractor's ES&H Stop Work Order
- Form 7010-F4 - Subcontractor's Performance Assessment
- Form 7010-F5 - Subcontractor's Evaluation
- Form 7010-F6 - (Optional) ES&H Plan Acceptance or Disapproval
- Appendix 1, Multi-Organization Construction Walk Through
- Appendix 2, ES&H Assessment Guidance
- Appendix 3, Mobile Crane Safe To Operate Review
- Appendix 4, Exhibit A – Schedule & Supplementary Terms & Conditions

3.0 DEFINITIONS

- **Competent Person** - One who is capable of identifying existing and predictable hazards on the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.

- **Construction** - Means construction, alteration, demolition, or repair (including dredging, excavating, and painting) of buildings, structures or other real property. For purposes of this definition, the terms "buildings, structures, or other real property" include, but are not limited to, improvements of all types, such as bridges, dams, plants, highways, parkways, streets, subways, tunnels, sewers, mains, power lines, cemeteries, pumping stations, railways, airport facilities, terminals, docks, piers, wharves, ways, lighthouses, buoys, jetties, breakwaters, levees, canals, and channels. Construction does not include the manufacture, production, furnishing, assembly, alteration, repair, processing or other kinds of personal property.

- **Construction Coordinator (CC)** - A person specifically assigned to oversee the work of a construction subcontract for conformance to the subcontract agreements/documents. Construction Coordinators serve as the primary construction point of contact between the subcontractor and the laboratory. However, the Construction Coordinators do not directly supervise subcontractor employees or direct construction work, as is the case for Task Managers.

  Note: The FESS Engineering Department primarily furnishes Construction Coordinators, which is at times supported by outside A/E personnel under FESS direction.

- **Construction Manager (CM)** - The individual with overall responsibility for the construction phase of the project, including baseline, schedule, budget, quality, and ES&H. The CC assumes the responsibilities of the CM if a CM is not assigned to the project.

- **Environment, Safety, and Health (ES&H) Audit** - A formal review of a line management and subcontractors' activities, documentation, and management systems to verify compliance with the ES&H program as defined by their accepted ES&H Plan and the subcontract.

- **ES&H Construction Oversight** - Activities of ES&H personnel aimed at assessing a project to verify compliance with laws and regulations as well as Fermilab policies and procedures, contract requirements and the accepted subcontractor's ES&H plan. Oversight includes audits of the activities of all line management in support of Fermilab's safety efforts.

- **ES&H Inspection** - An on-site review of construction work activities using the established subcontractor ES&H plan and the subcontract as review criteria

- **Excavation** - Any man-made cut, cavity, trench, or depression in the earth's surface formed by earth removal, where employee exposure can be reasonably anticipated and employee entry into the excavation is a requirement of the work activity.

- **Hazard Analysis (HA)** - The process by which hazards and controls are identified and formally documented for all anticipated phases of work.

- **Imminent Danger** - Any condition or practice that could reasonably be expected to cause death or serious physical harm (permanent or prolonged impairment of the body or temporary disablement requiring hospitalization) to employee or the public, or irreparable environmental harm unless immediate actions are taken.

- **Integrated Project Team (IPT)** - Multi-organizational team of staff members brought together to manage a specific project through design, procurement, and construction. The IPT is formally established for a plant-funded project in the Project Execution Plan.

- **Integrated ES&H Management** - The Fermilab process which systematically integrates excellence in environment, safety, and health into the management and work practices of all activities at all levels so that the mission is achieved while protecting the public, the workers, and the environment.

- **Landlord** - The Division/Section/Center (D/S/C) responsible for the facility or space where work is planned or occurring.

- **Mobile Crane** - A crane consisting of a rotating superstructure, operating machinery, and operator's station and boom; mounted on a crane carrier equipped with axles and rubber-tired wheels for travel, a power source(s), and having either a single or separate stations for operating and driving. Its function is to lift, lower and swing loads with boom raising and lowering capabilities and a superstructure that can rotate 360 degrees.

- **Pre-Construction Meeting** - The meeting chaired by the Procurement Department with the subcontractor, CM, CC, Project Manager, ES&H, Security, and any interested Laboratory personnel prior to construction start.

- **Procurement Administrator (PA)** - The Business Services Section procurement representative, with Laboratory signature authority, is responsible for the negotiation and administration of subcontract terms and conditions.

- **Project ES&H Support** - Individual(s) designated to provide ES&H support services to the Project Manager and the Integrated Project Team. If no Project ES&H Support is assigned in the Project Execution Plan, the responsibilities of this individual revert to the ESH Section.

- **Project Execution Plan (PEP)** - A document created by the Project Manager in which the roles and responsibilities for the Integrated Project Team, including ES&H management are identified. Expectations for inspections, reports, etc. are addressed in this report. Typically performed on General Plant Project(s) (GPP).

- **Project Manager (PM)** - The line management individual directly involved and accountable for overall project control and the application of specific control measures to ensure successful completion of project objectives.

- **Requisitioner** - The person or organization responsible for developing the written scope of work and submitting it to the Procurement Office.

- **Reviewing Official (RO)** - The individual who has the final signature authority on the subcontractor performance evaluation. That signature authority is given to the Head, Business Services Section.

- **Senior Safety Officer (SSO)** - An individual who is assigned duties as the principal ES&H advisor to the division/center/section head.

- **Task Manager (TM)** - A Division/Section/Center designated individual specifically assigned to oversee and direct construction work activity. The Task Manager has responsibility for assuring that hazard assessments are developed for the work, as prescribed in FESHM 2060 – Work Planning and Hazard Analysis. An approved TM list indicating individual experience and competency to direct specific work activities can be found at http://esh.fnal.gov/xms/Audience-Pages/TM-CC-SC

- **T&M Manager** - The individual assigned to oversee a set of trade specific subcontracts from which Fermilab supervised labor and other work can be ordered. The T&M Manger is responsible for the overall subcontract compliance effort and operating procedures for specific subcontracts. This individual serves as the focal point for administration of the assigned subcontracts.

4.0 RESPONSIBILITIES

The Chief Operating Officer is responsible for updating the TM list on an annual basis.

4.1 The Division/Center/Section (D/C/S) Head is responsible for ensuring implementation of the requirements of this chapter for those construction activities managed by his/her staff. The D/S/C head is also responsible for ensuring a qualified CC/TM is assigned.

4.2 The Project Manager (PM):

- Completing scope of project on time, within budget, safely, and in an environmentally responsible manner.
- Assembling the IPT.
- Developing the PEP.
- Arranging for the Project ES&H Support personnel, as appropriate.
- Reviewing incident reports.

4.3 The Construction Manager (CM):

- Reviewing/accepting the subcontractor ES&H plan, including revisions, on behalf of the Laboratory.
- Acting as the single point of communication with the subcontractor on safety issues.
- Monitoring subcontractor and sub-tier contractor ES&H performance, including elements of the subcontract that address Integrated Safety Management.
- Participating in the Preconstruction Meeting to establish ES&H expectations for the project.
- Approving the Notice to Proceed.
- Monitoring the Construction Coordinator's Deficiency log.
- Reviewing the subcontractor's excavation work plan.
- Making weekly safety inspections of projects and documenting the inspection results.
- Identifying the need for and schedule of the Multi-Organization Walk-through.
- Issuing noncompliance memos to the subcontractor.
- Chairing weekly meeting with the subcontractor to review progress, including ES&H performance.
- Developing a call tree for incident reporting.
- Issuing the incident report.
- Participating in the subcontractor performance review at completion of the subcontract.

4.4 The Construction Coordinator (CC):

- Serving as first line of contact with the subcontractor field organization.
- Monitoring and enforcing subcontractor compliance with their ES&H Program (or ISM plan, if required), the ES&H requirements in subcontract, and the hazard assessments for the scope of work.

- Reviewing and accepting the subcontractor hazard analysis, providing input as needed.
- Ensuring that no work is performed by the subcontractor or sub-tier contractor until the hazard analysis has been accepted, and reviewed and signed off by each subcontractor and sub-tier contract employee on the job.
- Obtaining the required work permits.
- Preparing and distributing the Work Permit/Notification form.
- Participating in Preconstruction meetings to establish ES&H expectations.
- Ensuring that all subcontractor and sub-tier contractor employees attend Fermilab's Subcontractor Orientation and other Fermilab-provided training.
- Documenting noncompliance and drafting related memos for the Construction Manager.
- Participating in weekly construction progress meetings with subcontractor.
- Ensuring that goods and services meet specifications.
- Initiating call tree upon subcontractor report of an incident.
- Obtaining incident report from the subcontractor.
- Preparing independent incident report for the Construction Manager.
- Tracking and reporting to ES&H subcontractor and sub-tier contractor work hours by the seventh day of the month following the end of the quarter.
- Attending the subcontractor's daily planning meetings, weekly toolbox meetings, and monthly ES&H training.
- Participating in subcontractor performance review at end of the subcontract.
- Reviewing the condition of mobile cranes used as part of the project, using the guidance in Technical Appendix 1, "Mobile Crane – Safe to Operate Review Items".
- Verifying the training of those involved in high hazard activities with specific training requirements identified in Section 5.7.
- Additional training verification may be required based on the phases of work in the HA.

4.5 The Task Manager (TM) is responsible for overseeing all aspects of the construction activity assigned. ES&H Responsibilities include:

- Planning and directing all work activities.
- Assisting the subcontractor in preparing the HA, and obtaining all required reviews and acceptances (reference FESHM 2060).
- Reviewing HA with subcontractor employees, seeking their input, and making changes as appropriate.
- Assuring that all subcontractor employees sign the HA.
- Assuring that the subcontractor performs no work until the HA has been accepted, reviewed and signed off by each employee.
- Acting as competent person for the job.
- Assuring subcontractor employees have received all appropriate training.
- Obtaining the required work permits.
- Preparing and distributing the Work Permit/Notification (WPN) form.

- Conducting pre-job work planning meeting with subcontractor employees to assure they understand the work activity, ES&H hazards, and mitigation measures.
- Notifying the Senior Safety Officer (SSO) of any employee injuries.
- Coordinates and contributes to subcontractor incident investigations.
- Informing the Senior Safety Officer (SSO) of ES&H noncompliance issues.
- Submitting subcontractor performance review when requested (http://esh.fnal.gov/xms/FESHM).
- Reviewing the condition of any mobile crane used as part of the project, using the guidance in Technical Appendix 1.
- Conducting and documenting daily inspections of excavations.

4.6 **The FESS T&M Manager** oversees the overall effort on FESS T&M subcontracts. Responsibilities include:

- Developing subcontract and operating procedures.
- Auditing subcontractor performance.
- Arranging for Subcontractor Orientation and General Employee Radiation Training (GERT) for T&M subcontractor employees.

4.7 **The Project ES&H Support**, if assigned, is responsible for providing consultation and interpretation support to the Integrated Project Team. If no project ES&H Support is identified in the Project Execution Plan, these responsibilities will be carried out by the ES&H. These include:

- Assisting in the preparation of the PEP, as requested.
- Participating in proposal conferences, as requested.
- Participating in Preconstruction meeting, as requested.
- Assisting the CC with the review of the hazard analysis, as requested.
- Providing field ES&H consultation to the CC, as requested.
- Attending weekly construction meetings, as requested.
- Participating in weekly project team meetings, as requested.
- Reviewing investigation reports for completeness. Assist as requested.
- Notifying the Medical Department of any subcontractor or sub-tier contractor injuries with 24 hours of being informed of the incident.
- Inputting incident investigation information into Computerized Accident Investigation Reporting System (CAIRS) as required.
- Developing Lessons Learned and submitting them to ES&H Section for posting on web page.
- Conducting ES&H inspections as requested by the Integrated Project Management Team.
- Participating as a team member in the evaluation of the subcontractor

4.8 **The Senior Safety Officer (SSO)**

- Reviewing purchase requisitions to ensure appropriate safety requirements are identified (See FESHM 5010).
- Providing support and oversight of construction projects under $25, 000, including communicating observations to the CC.
- Negotiating with the ES&H Section as to oversight and support responsibilities for projects under $25K. Notifying the CC of the negotiation.
- Assisting the CC with the review of the HA, as requested.
- Reviewing and approving the Work Permit and Notification form (see FESHM 2020).
- Assisting the CC in conducting incident investigations, as requested.
- Participating as a team member in the evaluation of the subcontractor.

4.9 The ES&H Section Provides oversight for construction safety. Although subcontractor safety is a line responsibility, the ES&H Section will provide support to the construction manager, project manager, and construction coordinator upon request, as well as oversight of the construction safety management for construction projects awarded greater than $25K in subcontract cost. For the projects less than $25K in subcontract costs, support and oversight will be negotiated between the Division/Center/Section Senior Safety Officer (SSO) and the ES&H Section. Responsibilities include:

- Evaluating/accepting the subcontractor safety questioner submittal as part of the initial proposal.
- When requested, reviewing the subcontractor ES&H plan for the construction manager and making recommendations regarding compliance with 10 CFR 851 Subpart C.
- Maintaining file copies of the subcontractor ES&H plan.
- Providing Subcontractor Orientation, including the principles and core functions of Integrated Safety Management to subcontractor and sub-tier employees and providing proof of attendance.
- Providing other Fermilab-specific training to subcontractor and sub-tier contractor personnel, as requested by the CC. This includes hazard analysis training.
- Conducting documented ES&H inspections and audits of construction activities on site. Observations will be provided verbally and in writing to the CC for disposition. Construction activities include weekly construction meeting with subcontractor, work planning meetings, toolbox and monthly ES&H meetings, preconstruction meetings, reviewing incident investigation reports and lessons learned documents.
- Interpreting OSHA requirements for construction work, as requested.
- Assisting the construction coordinator in the review of the hazard analysis, as requested.
- Participating in subcontractor performance reviews as necessary.
- Providing additional field support when requested.

4.10 The Procurement Administrator (PA)

- Administering all contractual requirements.

- Obtaining the Fermilab Subcontractor Safety Information Questionnaire Form from potential bidders and submitting it to ES&H Section for review and acceptance.
- Obtaining from the subcontractor a minimum of two copies of their ES&H Plan for distribution to the ES&H Section and the CM.
- Incorporating the Subcontractors ES&H Plan as part of the contractual requirements.
- Issuing the Notice to Proceed after all safety and contractual requirements are satisfied.
- Notifying subcontractors of the requirement to attend the construction safety orientation and any other Fermilab required training.
- Chairing pre-construction meetings.
- Completing the applicable section of the Subcontractor Performance Evaluation form (Form 7010-F4).
- Coordinating, and chairing the meeting to complete the Subcontractor Performance Evaluation process.
- Notifying the subcontractor of issues and concerns.
- Closing out the Subcontract.

4.11 The Requisitioner

- Preparing a scope of work and the subcontract specifications that clearly describes the work. Information required in the, Appendix 4 entitled Exhibit A shall be completed and the Exhibit appended to the requisition. Exhibit A found at the end of this chapter.

5.0 PROCEDURES

5.1 Qualification of Subcontractors

The subcontractor must have their past safety performance evaluated and accepted before any construction subcontract can be awarded. The subcontract documents shall prescribe which submittals are required. Specifically, the subcontractor's past safety performance will be evaluated against any or all of the following criteria when the information is available;

a. Fermilab Subcontractor Safety Information Questionnaire form, and/or;
b. Subcontractor experience modification rate (EMR), and/or;
c. On-site safety performance as documented. See the "Subcontractors Evaluation" procedure in this document.

The PA sends the completed form (Fermilab Subcontractor Safety Information Questionnaire Form 7010-F1 and supporting documentation to the ES&H Section for Fixed Price subcontracts and to the respective D/S/C ES&H Department for T&M subcontracts for review and acceptance. The ES&H Section or the D/S/C ES&H Department will review and provide comments and acceptance to the PA within 3 working days.

The subcontractor must show an experience modification rate (EMR) of less than one (1) and a three-year safety record equal to or less than 85% of the most current U. S. Department of Labor-Bureau of Labor Statistics General Construction statistics for Total Recordable Case Rate (TRC) and Days Away, Restricted, or Transferred (DART) Case Rate as reported in the BLS Occupational Injury and Illness Data. The subcontractor's on-site performance, as documented in formal evaluations provided to Procurement, will be considered as well. ESH-SEP will contact Procurement to review any evaluations they may have on file.

5.2 Subcontractor's ES&H Program Review and Acceptance

If requested in the subcontract documents, the subcontractor shall submit two (2) copies of a program that describes the company's ES&H Program for evaluation to determine if the subcontractor safety policies and procedures meet the expectations of Fermilab management. If no ES&H program is requested the subcontractor shall submit a document that include but not necessarily limited to:

a. The name of the Competent Person for the project and his/her qualifications.
b. The name of the competent person and qualifications for excavations if an excavations is part of the activities, or;
c. The name of the competent person for scaffold construction and qualifications if scaffolds are to be used.
d. A list of the project activities for which hazard analyses will be written and submitted.

Note: For small simple jobs an HA may be all that is required to meet requirements. For larger or complex projects, multiple HAs may be required as discussed in the

"Hazard Analysis" section below. In those cases, a listing of all activities for which separate HAs will be submitted is required.

The PA shall not issue a Notice to Proceed (NTP) until the subcontractor has submitted an acceptable plan if one is required or, in lieu of a plan the information in (a) to (d) above.

When ES&H Section notifies the PA of acceptance of the subcontractor's safety record, the requirement for a written ES&H program plan will be identified. If a written plan is not required, the CM may proceed directly to the HA requirement.

The PA distributes the subcontractor's ES&H Program to the CM and ES&H Admin. The copy of the program to the CM is logged and reviewed. An optional Form F6 may be used to review and accept subcontractor's ES&H Program.

This document copy will be used by ES&H Section to perform a review upon request from the CM and make recommendations and to verify compliance during oversight visits to the construction project. After review and any exceptions addressed by the subcontractor, the subcontractor's ES&H program is valid for a three-year period; however, the CM will review the plan for completeness with each new project.

ES&H Section shall keep the subcontractor ES&H Plan during the construction phase, or for three years, whichever is longer. The copy provided to the CM will be filed with the project files when construction is completed.

There may be conditions under which a modification to the subcontractor ES&H Plan is justified. Examples include, but are not limited to:

- Change in work scope not addressed in the accepted plan;
- A new OSHA standard has become effective;
- New equipment has come to market with better technology; or
- A best practice not previously considered.

In any of these cases, the subcontractor shall submit a written memo to the PA. This memo must state the section of the plan proposed for revision, justification for the change, supporting documentation available and the proposed wording to be inserted in the plan. The PA will forward a copy of the memo to the CM and ES&H Section. If the modifications are accepted, the CM will issue an acceptance letter to the PA with a copy to ES&H Section. ES&H Section will keep a copy of the request and documentation with the subcontractor's ES&H plan.

5.3 Hazard Analysis

A written Hazard Analysis (HA) is required for <u>all</u> construction work, regardless of who performs the work. The HA document shall identify all hazards associated with each phase of work, and the work processes to be employed to eliminate or reduce those hazards. Each identifiable feature within a project requires a written hazard analysis. Work will not

proceed on that feature until the task manager/construction coordinator has assured an HA has been prepared, reviewed, and accepted. New or unanticipated hazards encountered with each project phase or change in specific operations within that phase must be addressed and added to the HA as the project develops.

The HA must identify the construction oversight process used by Fermilab. Construction Coordination is appropriate when the subcontractor has accepted responsibility for work supervision and management, and the work processes and required outcomes are well understood. Task management is appropriate when a Fermilab approved Task Manager accepts responsibility for planning and directing work activities, and acts as the competent person for the work.

The CC must assure that the subcontractor understands the HA process and is able to conduct a thorough hazard assessment and prepare a hazard analysis.

HAs submitted by the subcontractor or sub-tier contractor (via the Subcontractor), reviewed and accepted by the CC. It is recommended that the CC consult with the Project ES&H Support and/or the ES&H Section. The PA will not issue the Notice to Proceed (NTP) until the CM sends notification of the hazard analysis acceptance to the PA. For large projects, only the initial HA is required to be accepted prior to NTP.

Change orders give rise to new hazards for the workers or may cost the Laboratory greatly if property damage is the end result of an accident. If new hazards are present due to new work activity, the HA must be revised. The HA must be reviewed with the subcontract personnel due to the additional risks that may be introduced.

If there will be two or more groups (subcontractors and/or employees) working in the same area, and yet operating under different HAs, the TM/CC must coordinate activities with the other TM/CC/supervisor. Any conflicts between the two HAs must be resolved before work begins. Both working groups must review and sign each other's HA.

For projects involving only electrical work less than 600 volts, the Electrical Hazard Analysis/Work Permit form found in FESHM Chapter 5042 is sufficient as long as <u>all</u> hazards including electrical hazards are identified and dealt with.

The completed HA form with the signature page <u>must be posted</u> at the jobsite. This can be accomplished through a variety of means, including use of the subcontractor's bulletin board or a clipboard. If posting is not feasible, due to the location of the work, the HA should be located in a place so that it is easily available to all affected employees (subcontractors, sub-tier employees, Fermilab employees). If the jobsite conditions are such that the HA could get destroyed, the original should be saved and a copy posted.

HA records are to be retained with the subcontract file until the dismantlement or disposal of the facility, equipment, system, or process.

5.4 Pre-Construction Meeting

All construction projects equal to or greater than $100,000 require a pre-construction meeting. For projects under $100,000, a meeting may be held at the request of the CM or CC chaired by the PA. The ES&H Section representative will attend this meeting in an advisory capacity to the CM. The Project ES&H Support personnel and/or division/section Senior Safety Officer will attend to ensure that local ES&H considerations are conveyed to the subcontractor. The subcontractor's competent person or owner must attend as well. The CM will use Form 7010-F2 - Pre-Construction Checklist to review contractual ES&H requirements with the subcontractor.

5.5 Training of Task Manager/Construction Coordinator

Assignment of a TM/CC is an important link in the subcontractor safety program. The TM/CC is the ES&H presence in the field, as well as the quality control and field technical representative to the CM. Before assignment as a TM/CC, an employee must, at a minimum, complete training as follows:

- OS000009/CR OSHA Construction Safety 30 Hour
- FN000303- Construction Management & Safety (mandatory)
- Excavation Competent Person (mandatory if an excavation is part of the construction activities).
- Training required by the areas where the work will be performed and/or the nature of the activity (e.g. Radiation Worker, ODH, Controlled Access).
- Scaffolding Competent Person (mandatory if a scaffold erection is part of the construction activities).

For additional information on availability of courses contact the ES&H Section.

5.6 Task Manager/Construction Coordinator Qualification Criteria

Table 1 below compiles the qualification criteria and maintenance of qualifications requirements for employees involved in construction management under the construction specialties.

Table 1
TM/CC Qualification Criteria

Category	Education/Experience	Training	Mentoring	Step 1. Continuing Education
General Construction	- 2 yr. Degree in construction related field; or, - 3 yrs. Experience in construction related trade	- OSHA 30-Hour - Modified Construction Management & Safety	Yes, mentor discretion on length	- 8 hours per year Seminars, class or trade shows - Quarterly updates
Excavation	Manage 1+ excavation Per year	- OSHA 30 Hour - Modified Construction Management & Safety - OSHA Competent Person for excavation	Yes (mentor discretion on length)	- 8 hours per year Seminars, class or trade shows - Quarterly updates
Rigging	BS Engineering or 5+ years of experience	- OSHA 30 Hour - Modified Construction Management & Safety - Rigging course	Yes (mentor discretion on length)	- 8 hours per year Seminars, class or trade shows - Quarterly updates
Piping	BSME, BSCE Or 5-years experience	- OSHA 30 Hour - - Modified Construction Management & Safety - Pressure vessel orientation	Yes (mentor discretion on length)	- 8 hours per year Seminars, class or trade shows - Quarterly updates
HVAC	BSME Or, 5-years experience	- OSHA 30 Hour - Modified Construction Management & Safety - NFPA 70E (See ITNA)	Yes (mentor discretion on length)	- 8 hours per year Seminars, class or trade shows - Quarterly updates
Electrical	BSEE or 5-years exp.	- OSHA 30 Hour - Modified Construction Management & Safety - LOTO II (See ITNA) NFPA-70E (See ITNA)	Yes (mentor discretion on length)	- 8 hours per year Seminars, class or trade shows - Quarterly updates

5.7 Training of Subcontractor Personnel

All subcontractor employees who will not be escorted by a trained Fermilab employee are required to attend a safety orientation before start of work. The ES&H Section will provide this orientation daily at 0730 AM. The training will be documented with an attendance sheet and a card that the subcontractor employee must carry at all times while working at Fermilab. If the subcontractor employee is unable to produce the card, the employee will be required to stop work until the card can be produced or until the subcontractor employee attends the orientation again. The orientation expires two (2) years from the date of attendance.

TM/CC whose subcontractor needs to enter radiological controlled areas or radiation areas must coordinate training in advance by sending an e-mail to GERT@fnal.gov with the number of people needing training, date training needed, and company affiliation. This information must be sent one working day in advance for GERT (no later than 3 pm), and 1 week in advance for Radiological Worker.

The subcontractor shall be responsible to assure that employees (including sub-tier contractor employees) are able to understand Fermilab's ES&H requirements. ES&H Section has produced a Spanish version of both Subcontractor Orientation and GERT. It is up to the TM/CC to arrange for this specialized training, either through their division/section or through ES&H Section.

All subcontractors and sub-tier contractors performing work on Fermilab shall provide safety training, medical surveillance, and safety equipment, including personal protective equipment (PPE) for their employees. Exceptions involve hazards that are unusual due to the nature of work at Fermilab. In particular, the Laboratory will provide training, medical surveillance, and equipment for subcontractors working in radiation areas or in buildings/spaces designated as oxygen deficiency hazard (ODH) areas. Additional training, surveillance and equipment will be provided as stipulated in the contract documents.

All subcontracts shall contain a statement formally notifying the subcontractor and all sub-tier contractors that they are required to maintain records of training completed by all personnel working on the Fermilab site. Training needs shall be based upon statutory requirements, Fermilab requirements, the nature and complexity of the work, and/or the associated hazards. These training and associated medical records will be subject to audit and verification by Fermilab. Training records for certain high hazard activities shall be inspected prior to exposing employees to the respective hazard. The activities that require verification of training prior to execution of work are:

- Entry into a permit-required confined space.
- Entry into a facility or area classified as ODH.
- Entry into a radioactive or controlled work area.
- Lead and asbestos work.
- Use of respiratory protection when potential exposure levels will be above established limits (medical clearance, fit testing, and training).
- Fall Protection.

- Lockout/Tagout.
- Electrical activities that require compliance with NFPA 70E.

The TM/CC should audit other types of ES&H training such as erecting and using scaffolding, excavations and other training at random.

5.8 Work Permit and Notification (WPN)

The TM/CC is responsible for completing the WPN and submitting it for review and approval as described in FESHM 2020. The TM/CC is responsible for securing all permits required for the work activity.

5.9 Delivery Personnel

Delivery personnel coming to construction sites are required to use PPE applicable to their own activities. When outside their vehicle, they must wear PPE as specified in the HA when within the construction designated area. Subcontractors are responsible for notifying delivery personnel of PPE requirements or providing delivery personnel with the personal protective equipment required by the hazard analysis.

5.10 Emergency Services

Occasionally, it is necessary for subcontractors to provide emergency repair services on site, but timing may not allow the subcontractor to submit a safety program. In these cases, an HA is required to be prepared by the TM/CC with the subcontractor. This may be accomplished in the field. The subcontractor must agree to comply with Fermilab ES&H regulations for the duration of the subcontract. Under no circumstances shall an emergency serve as exemption from complying with safety requirements.

5.11 Inspection of and Visitors to Construction Sites

All persons entering a construction site must notify the CM or TM/CC and immediately review and sign the HA. All persons entering a construction site must wear the work clothing as well as the PPE defined in the HA.

The CM/CC is responsible for conducting and documenting ES&H inspections of the work activity and monitoring the subcontractors' performance to verify compliance with the Subcontractor's ES&H program and adherence to the HA. The frequency of these visits should be sufficient to regularly identify and correct safety concerns. The frequency will be based upon the complexity of the project or specific activities, hazard level, and the subcontractor's demonstrated level of compliance. Regardless of the frequency of inspections, the CM/CC must contact the subcontractor daily to review the work planned for the day.

The CM will determine whether a formal evaluation/assessment process is an appropriate tool to use for conducting oversight inspections of the construction activities. The CM will

follow the Multi-Organization Construction Site Safety Walkthrough procedure. This requirement shall be documented in the PEP.

ES&H Section, the project ES&H Support personnel (if assigned), and/or the landlord D/S/C SSO will perform oversight inspections of construction sites as well. The frequency of inspections shall be determined based upon the complexity of the project or specific activity, hazard level, and the subcontractor's demonstrated level of compliance. Inspection of the jobsite should include a review of site conditions, work activities, review of subcontractor's inspection results, follow-up (site and equipment inspections for themselves and sub-tier activities), and spot-checking of equipment, including heavy equipment. All inspection activities must be documented, discussing both good and less than adequate work practices. Copies of the documentation shall be distributed to the TM/CC, the ES&H oversight personnel, CM, PM, and PA.

5.12 ES&H Audits of Subcontractor's Program

ES&H Section audits of a subcontractor's safety program (confined space safety, fall protection program, or safety orientation program, etc.) should be performed on an as needed basis or at the request of the Construction Coordinator, Project Manager, or Construction Manager. When projects are scheduled to last more than 12 months, an ES&H audit should be conducted at six-month intervals. These audits will be coordinated with the CC and the subcontractor safety representative.

5.13 Stop Work Activity Authority

Fermilab employees have the authority to stop construction activities if an imminent danger condition is noted or perceived. After the work activity is stopped, whoever stopped the work activity shall contact the TM/CC; who will gain consensus from the subcontractor on restart conditions. This is an informal process designed to stop work, quickly abate the hazard, and restart the work.

Occasionally, a more formal work stoppage process must be invoked. If exposure to the hazard cannot be abated quickly, or if consensus cannot be reached as to the corrective action, the CM/CC shall stop the associated work using the Subcontractor ES&H Stop Work Order Form F3. Refusal by the subcontractor to stop the work activity when requested may result in termination of the subcontract. It must be noted that the stop work activity authority is to stop a specific activity within a project and <u>not</u> an entire project.

Authority to restart an activity after a formal Stop Work Order has been issued resides with the D/C/S head after consultation with other appropriate organizations and individuals, such as the PM, CM, CC, D/S/C SSO, ES&H, and PA. The Subcontractor ES&H Stop Work Order will be used to restart work.

Just as Fermilab employees have a duty to safely resolve dangerous conditions, so do subcontractor employees. This duty should be addressed in the subcontractor ES&H plan.

5.14 Work Clothing on Construction Sites

Anyone entering a construction area must wear sturdy work type shoes or boots that cover the ankle. Tennis or canvas shoes, sandals, shoes with open toes or heels, or shoes with narrow high heels cannot be worn on the job site. Long trousers and short sleeve shirts covering the ball of the shoulder must be worn as well. Tank tops, mesh shirts, cutoff shirts, and sleeveless shirts are not allowed. Clothing must not hang loose to the point where it may be caught in moving machinery, or snag onto dangerous objects.

For construction personnel who perform welding and cutting, operate rotating machinery, or are exposed to chemicals, fire or other such hazards, must contain their hair to a point where there is no danger of their hair catching fire, dipping into toxic chemicals, acids, or being caught in rotating machinery.

Besides the mandatory work clothing stipulated above, the HA must specify other types of PPE that may be needed to address hazards. Hardhats, safety glasses with rigid plastic side shields, gloves and any other personal protective equipment needed to protect workers and employees must be identified in the HA. When hardhats are specified as mandatory in the hazard analysis these hats must be worn with the brim in a forward position. The construction hard hat must be easily recognized as such.

5.15 Electrical Safety

Fermilab is required to follow NFPA 70E, reference FESHM 5042 and has flowed these requirements down to their subcontractor through contract documents. Subcontractor employees who may be exposed to energized conductors within the flash protection boundary must meet the training requirements stated in Art. 110.6 of NFPA-70E and wear FR clothing and protective equipment suitable for the exposure. Proof of training shall be provided to the construction coordinator prior to any energized work or work under lockout/tagout.

Relocatable power taps (RPTs) also referred to as “power taps” are not allowed in a construction area or similar locations.

Ground Fault Circuit Interrupters (GFCIs) are the only accepted method to protect construction workers from the hazard of electrocution when hand held power tools are used. Subcontractors and their sub-tier contractors shall supply portable GFCIs for the use of their work force if GFCI protected circuits are not available at the point of use.

5.16 Excavations

Excavations shall be carried out in compliance with 29 CFR 1926.650, FESHM 7030, “Excavation” and FESHM 8012, “Sedimentation and Erosion Control Planning”. The subcontractor’s competent person must be present at all times when the ground is being excavated. Daily inspections are required and must be documented.

5.17 Loaning of Fermilab Tools and Tool Inspections

Fermilab does not loan tools and equipment unless the tool or equipment is specifically authorized in the subcontract. Excluded from this policy are non-powered hand held tools and lockout/tagout locks and tags.

Conditions may arise where a TM/CC finds it absolutely necessary to loan power tools or a piece of equipment. In these instances the tool or equipment may be loaned but under very strict conditions. To loan a tool or equipment:

a. There must be a compelling reason.
b. The subcontractor and the TM/CC must inspect the loaned item.
c. The subcontractor superintendent whose employee will be using the tool or equipment must certify in writing that the employee had training in the use of the tool or equipment.
d. The subcontractor superintendent releases Fermilab in writing of any liability if an injury occurs to the subcontractor employee while using the tool or equipment owned by Fermilab.
e. The subcontractor superintendent accepts the tool for the intended use.

Form 7020-F2 found in FESHM 7020 shall be used for this purpose. The original shall be sent to the PA after the tool is returned to Fermilab's control.

5.18 Tool Inspections

Tool inspections of subcontractor owned tools are the responsibility of the subcontractor. Random inspections to verify compliance may be conducted by the TM/CC and ES&H Section construction safety personnel.

Heavy equipment such as mobile cranes are unique pieces of equipment whose maintenance and operation are covered by the ANSI standards which are part of the Laboratory's Work Smart Set of standards. This equipment must be inspected by the subcontractor or sub-tier contractor before use on site. The TM/CC is responsible for assuring this inspection has been completed and any corrective actions taken before the equipment is used.

If a crane is being used on site, the TM/CC must also review the condition of the crane, using the guidance, "Mobile Crane – Safe to Operate Review Items". ES&H Section is available to assist the TM/CC with these inspections

5.19 Tool Box Meetings

Subcontractors will conduct, as minimum, weekly and monthly toolbox meetings. It is intended that the subcontractor and sub-tier contractors use these meetings to address safety issues of the current construction phase of work. The weekly five-minute safety meeting discussion shall be documented with an attendance sheet and a thorough description of the topic. The monthly meeting shall be approximately one hour long and shall be used to

emphasize special job conditions, procedures and applicable standards. The monthly meeting will be documented in the same fashion as the weekly meeting. Minutes of the meetings will be submitted to the CC for filing in the construction project file.

5.20 Accident Investigation and Reporting

All incidents and near misses will be reported to the TM/CC who will in turn notify the CM, PM, Project ES&H Support personnel or the D/C/S SSO, the ES&H Section, and PA. Subcontractors are expected to conduct a thorough investigation and submit a report within two working days of the occurrence or near miss. The subcontractor will use their internal accident/incident report forms found in their ES&H Plan. The subcontractor will identify root causes and corrective actions in the report.

The CM shall have the report submitted to the project ES&H support personnel for entry into CAIRS within six (6) calendar days of report of the incident.

All incident and near miss reports shall be sent to ES&H Section within six (6) calendar days of generation of the report.

The Project ES&H Support personnel or the D/C/S SSO is responsible for the development of lessons learned. All incidents entered into the CAIRS database, must have lessons learned determined. Development of lessons learned for near misses is at the discretion of the project ES&H support personnel or the D/C/S SSO. Any lessons learned developed shall be sent to ES&H Section for information and possible distribution site wide.

5.21 Close Out of Subcontracts

The PA will retain funds until the subcontractor has satisfied all terms and conditions of the subcontract, which includes submittal of any ES&H related documents or reports.

5.22 Subcontractor Evaluations

Each completed project equal to or greater than $100,000 shall be reviewed for quality of work, adherence to the schedule and cost, and the effectiveness of the subcontractor's ES&H program. This overall assessment will be used as a basis for future solicitations. Subcontractors will be informed at the pre-construction meeting that they are responsible for safety performance and that an evaluation will be performed at the completion of the contracted work.

The PA will chair the meeting and bring all interested parties together to complete the evaluation. As a minimum, invited personnel will include the CM, PM, CC, D/C/S SSO, and ES&H Section. Fermilab Subcontractor Performance Evaluation Form 7010-F4 for construction will be used for this purpose. Completed evaluations forms shall be retained in the Procurement Section and a copy sent to ES&H Section.

Projects less than $100,000 may be evaluated at the discretion of the interested parties using Form 7010-F5. If an evaluation is requested, the PA will conduct the meeting as described above.

The PA may issue an interim Subcontractor Evaluation any time performance is determined to be less than satisfactory.