MAS-CON-0004

STREAMLINED NEW ACQUISITION PROCESS (SNAP) SPECIAL PROVISIONS

LAWRENCE LIVERMORE NATIONAL SECURITY, LLC (LLNS)

LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL)

Livermore, California 94550

FACILITIES & INFRASTRUCTURE DIRECTORATE (F&I)

EF/lw March 20, 2013

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SECTION 01 25 00 — SUBSTITUTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. The work specified in this section consists of preparing, submitting, amending, and updating lists of products or materials which the Subcontractor proposes to furnish and install instead of those indicated.

B. Documentation procedures.

C. Subcontractor certifications.

1.02 SUBMITTAL PROCEDURES

A. Substitutes for Specified Items: Wherever catalog numbers and specific brands or trade names followed by the designation “or equal” are used in conjunction with a designated material, product, thing, or service mentioned in these specifications, they are used to establish the standards of quality, utility, and appearance required. Substitutions that are equal in quality, utility, and appearance to those specified will be approved, unless the Statement of Work states “no substitutions.” Substitutions are subject to the following provisions:

A.1 Submit all substitutions in writing, for LLNS approval. For this purpose, submit to the Construction Manager within 14 calendar days after the date of commencement specified in the Notice to Proceed, a typewritten list containing a description of each proposed substitute item or material.

A.2 Append to this list sufficient data, drawings, samples, literature, or other detailed information as will demonstrate to LLNS that the proposed substitute is equal in quality, utility, physical size, and appearance to the item or material specified.

A.3 LLNS will approve, in writing, such proposed substitutions as are determined by LLNS to be equal in quality, utility, and appearance to the items or material specified. Such approval will not relieve the Subcontractor from complying with the requirements of the drawings and specifications, and the Subcontractor shall be responsible at its own expense for any changes resulting from proposed substitutions that affect other parts of its own work or the work of other subcontractors.

A.4 Subcontractor failure to submit proposed substitutions for approval in the manner described above and within the time prescribed shall be sufficient cause for disapproval by LLNS of any substitutions otherwise proposed.

A.5 Wherever catalog numbers and specific brands or trade names not followed by the designation “or equal” are used in conjunction with a designated material, product, thing, or service mentioned in the Statement of Work, no substitutions will be approved.

A.6 If the use of substitute products or materials involves redesign of other parts of the work, LLNS' cost for redesign will be charged to the Subcontractor. If this substitution is found to affect the work of others on the project, the cost of this additional work of others will also be charged to the Subcontractor.

B. Selection of Alternate Manufacturers: Wherever more than one manufacturer's product is specified, the first named manufacturer is the basis for the project design and the use of alternative "or equal" manufacturers' products or substitutes may require modifications in the project design and construction. The Subcontractor shall assume costs required to make necessary revisions and modifications including additional costs to LLNS for evaluations of modification of the project design submitted.

B.1 When materials are specified by manufacturer's name and product number, "or equal," submit manufacturer's products in accordance with the requirements for substitute items.

B.2 If LLNS, in review of the list of materials and equipment, requires revisions or corrections to be made or shop drawings and/or supplemental data to be submitted, promptly do so. If any proposed substitute is judged by LLNS to be unacceptable, provide the specified item; further submissions will not be allowed, unless directed by LLNS.

B.3 Physical samples may be required. If tests for the determination of quality and utility are required by LLNS, they shall be made by a testing laboratory, with acceptance of the test procedure first given by LLNS, and at the expense of the Subcontractor.

1.03 DOCUMENTATION PROCEDURES

A. Provide an itemized comparison of proposed substitution to the item specified. Provide, in a tabular form the differences in materials, size, finish, estimated life, estimated maintenance, availability of spare parts and repair services, energy consumption, performance capacity, salvageability, and manufacturer's warranties. Include the following:

A.1 Identification of materials, products or supplies, including manufacturer's name, catalog name and number, and the manufacturer's address and telephone number.

A.2 Installation characteristics, installation drawings and manufacturer's literature, including product description, performance and test data, and reference standards if pertinent.

A.3 Name and address of projects on which the product was used under similar circumstances, and date of installation.

A.4 Effect of change on project schedule. Demonstrate redesign due to substitution will not alter project schedule.

A.5 Accurate cost data for the proposed substitution in comparison with the product specified.

A.6 Equitable adjustment and credit which the Subcontractor proposes to offer LLNS.

A.7 When applicable or requested by LLNS, provide off-the-shelf samples of the specified item and the proposed substitution.

A.8 Description of how this substitution impacts other related systems and work of others.

1.04 SUBCONTRACTOR CERTIFICATIONS

A. Certify the following when making a request for substitution:

A.1 The Subcontractor has personally investigated the proposed item and believes it to be equivalent, or superior, to that shown or specified; and the Subcontractor shall update the information as new or different data becomes known.

A.2 The Subcontractor shall furnish the same guarantee for the substitution as for the product specified.

A.3 The Subcontractor shall coordinate the installation of the accepted substitution into the work, and will make those changes, subject to LLNS approval, required for the work to be complete in all respects.

A.4 The Subcontractor waives all claims for additional costs related to the substitution.

A.5 Cost data are complete, including related costs, except LLNS costs for redesign or review of the Subcontractor's design.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

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SECTION 01 26 46 — CHANGE ORDER PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals

B. Change order documentation procedure

C. Directive change orders

D. Emergency change orders

E. Change order adjustments

F. Fully burdened labor rates for change order work

1.02 SUBMITTALS

A. Submit name of the individual authorized to receive change order documents and be responsible for informing others in the Subcontractor's employ of changes to the work. Provide name of individual who has signatory power for change orders.

B. Change Order Forms: Utilize the change order forms included as attachments 01 26 46-1 and 01 26 46-2.

1.03 CHANGE ORDER DOCUMENTATION PROCEDURE

A. Instructions:

A.1 The information listed below is required to be submitted by the Subcontractor and any affected lower-tier subcontractor(s) with any proposal for additive or deductive changes or modifications to the subcontract. Previously submitted information used to substantiate a prior proposal is not required to be resubmitted with the new proposal, provided the information is explicitly referenced and identified. Higher-tier subcontractors are responsible for performing cost/price analysis on their lower-tier subcontractors. In the event the higher-tier subcontractor is unable to perform the required cost/price analyses, the higher-tier subcontractor shall ensure that all lower-tier subcontractor proposals include the required submission information identified below. Proposals that do not include, as a minimum, the required information listed below, will be returned for resubmission. Construction delays resulting from incomplete or improper change order or claim proposals shall be the responsibility of the submitting Subcontractor.

A.2 Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the work.

B. General Submittals: Submit all proposals for additive or deductive changes or modifications to the subcontract to the Contract Administrator c/o the Construction Manager and include the following:

B.1 A summary of all costs by cost element.

B.2 Identification, description, and submittal of all rate agreements utilized.

B.3 Submit cost data substantiating all costs by element. If requested by the Contract Administrator, identification and submittal of cost or pricing data based on verifiable factual information.

B.4 If requested by the Contract Administrator, submit documentation and explanation of the estimating process used, including the judgmental factors applied and the mathematical or other methods used in the estimate, including those used in projecting from known data.

B.5 Schedule impact for each change order. Provide a critical path network showing the effect of the proposed change on the schedule as of the time of the change and analysis of the proposed change to the critical path of the schedule. Requests for time extensions will not be considered without the appropriate schedule justification.

C. Materials: Proposals involving materials shall include the following:

C.1 An explanation of the basis for the kinds, quantities, and cost of all material elements proposed.

C.2 A priced bill of material for the entire proposal showing part number/description, unit cost, quantity required, extended cost, basis for the proposed price (quotation, prior purchase, similar item, and like items), and the rationale for the proposed price unless an alternate method of estimating material costs has been accepted by LLNS.

C.3 A summary by class of material (subcontracts, purchase parts, raw materials, and like items) showing base material costs and any factors applied (i.e., escalation, attrition, usage variance, and like items) and the basis for the development and application of these factors.

C.4 Specific subcontract effort to be performed and identification of each subcontractor. For each subcontract change, provide a listing by source, item, quantity, and price, including the results of review of subcontract proposals. Where the required data or reviews have not been made available, provide the reasons for the omission.

C.5 Identification of any inter-organizational transfers. Provide complete supporting data and basis for these transfers.

D. Direct Labor: Proposals involving direct labor shall include the following:

D.1 Identification of labor hours by task and labor category/skill mix.

D.2 A component breakdown of each labor rate by category. Identify any adjustment factors to these rates including the effect of union agreements and like items.

E. Other Jobsite Costs: Proposals involving other jobsite costs shall include a list of all other costs by category and/or element (i.e., utilities, equipment rental, and supervision) and provide supporting schedules and rationale for the amount proposed for each category element. Rental charges for necessary machinery and equipment, exclusive of hand tools, used directly in the performance of the change order shall be at rates not exceeding competitive rates, as approved by LLNS, obtainable from unrelated third parties in the area of the project site.

F. Markups: Proposals involving markups shall reflect the allowable percentages, in accordance with subpart 1.06 “Change Order Adjustments.”

G. Review and validate all lower-tier subcontractor pricing proposals by the Subcontractor prior to submittal to the Contract Administrator. Failure to thoroughly review and validate lower-tier subcontractor price proposals may be grounds for rejection.

1.04 DIRECTED CHANGE ORDERS

A. In certain instances the Contract Administrator may deem it necessary to issue a directed change order instructing the Subcontractor to proceed with a change in the work, for subsequent definition by modification of the subcontract.

B. The directed change order will describe changes in the work, a “not to exceed” price and a schedule to complete the work established by the Construction Manager and approved by the Contract Administrator.

C. Promptly execute the change in work.

D. Comply with the procedures outlined in subpart 1.03 above for documentation of the change order.

1.05 EMERGENCY CHANGE ORDERS

A. When deemed necessary by LLNS to protect the safety of individuals or prevent physical damage to the building or site, an emergency change order may be issued to the Subcontractor.

B. Immediately execute the change in work.

C. Comply with the documentation procedures for directed change orders outlined in subpart 1.03 above.

1.06 CHANGE ORDER ADJUSTMENTS

A. Price adjustments resulting from change orders not covered by unit price or alternate bids shall be determined in accordance with the following pricing formula:

A.1 For change order work performed by the Subcontractor, the pricing shall be based on the estimated direct cost for labor, payroll taxes and fringe benefits, materials, supplies, sales taxes, applicable insurance (e.g., worker’s compensation), plus a fixed mark-up rate of 15% (G&A and overhead) on such direct costs and 10% profit (profit percentage taken from direct costs plus overhead), to which shall be added any related bond costs. Such estimated costs

shall be consistent with the contract cost principles and procedures for construction contracts in the General Provisions clause entitled “Change Order Adjustments.”

A.2 For change order work performed by a first-tier subcontractor of the Subcontractor, the first-tier subcontractor’s pricing shall be based on the estimated direct costs plus the fixed mark-up rate of 15% (overhead) and 10% (profit) as established in paragraph A.1 above, to which the Subcontractor may add 5% plus any related bond charges.

A.3 For change order work performed by a second-tier and/or lower-tier subcontractor(s), the pricing shall be based on the estimated direct costs plus the fixed mark-up rate of 15% (overhead) and 10% (profit) as established in paragraph A.1 above, to which the higher-tier subcontractor(s) may add a fixed mark-up rate of 5%, (overhead and profit) and the Subcontractor may add a fixed mark-up rate of 5% (overhead and profit) plus any related bond charges. No increases for overhead and profit will be allowed above these fixed mark-up rates, regardless of the number of subcontractors involved.

A.4 Markup rates shall be considered to include insurance (except workers compensation), field and office supervisors and assistants, watchmen, use of small tools, incidental job burdens, and general home office expenses. No separate allowance will be made for these items.

B. For reductions or omissions not covered by unit prices or alternate bids, the Subcontractor agrees that LLNS shall be credited with the estimated cost of the labor, materials, supplies, transportation, payroll taxes, sales taxes, insurance, bond costs, overhead and profit (overhead and profit shall be not less than 5% per each tier of subcontractor) that would have been incurred in connection with the reduced or omitted work, and that such estimated costs shall be consistent with the contract cost principles and procedures for construction contracts in the General Provisions clause entitled “Change Order Adjustments.”

C. Claims for change order work that involve adjustments in time for performance of the work shall include justification for the requested time adjustment.

D. LLNS will require change order accounting. For each change or series of related changes, maintain separate accounts, by job order or other suitable accounting procedure, of all incurred segregable, direct costs, both changed and not changed, allocable to the change. Maintain such accounts until the parties agree to an equitable adjustment for the changes ordered by LLNS or the matter is conclusively resolved.

1.07 FULLY BURDENED LABOR RATES FOR CHANGE ORDER WORK

A. Within 14 calendar days after issuance of notice to proceed, submit fully burdened labor rates for each class of personnel of the Subcontractor. When requested by LLNS, submit fully burdened labor rates for any lower-tier subcontractor regardless of tier. These wage rates will be used for future change order negotiations. Refer to attachment 01 26 46-3 for a sample form.

B. Provide separate breakdown for apprentice (include as many levels as necessary), journeyman, foreman, and general foreman, as applicable. Do not use a composite rate. Include a wage rate for straight time, time-and-one-half, and double time.

C. A comprehensive breakdown of each labor classification may include but is not necessarily limited to:

Base Wage (Davis Bacon)	Pension/Trust Fund	Unemployment	SUTA
Vacation	Apprentice Fund	Social Security	SUI
Health & Welfare	Training Fund	FUTA	

Worker's Compensation Insurance
Date through which wage rate is valid

D. NOTE: Any category other than those listed above shall include a detailed explanation as to what it constitutes (e.g., other, miscellaneous funds, and like items).

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION
(Attachments 01 26 46-1, 01 26 46-2, and 01 26 46-3 follow.)

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ATTACHMENT 01 26 46-1 SAMPLE CHANGE ORDER FORM

PROJECT TITLE:			DATE:	PFN NO:
CHANGE ORDER:			REVISION NO:	ACCOUNT NO:
REQUESTER	ESTIMATOR	CHECKER	APPROVED BY	DRAWING NO:
				DRAWING DATE:

DESCRIPTION			UNIT						TOTAL					
			Labor		Equipment		Material	Sub	Labor		Equip.	Material	Sub	Total
Item	Unit	Quantity	Hours	Rate	Hours	Rate	$	Contract	Hours	$	$	$	Contract	$
									0	0	0	0	0	0
									0	0	0	0	0	0
									0	0	0	0	0	0
									0	0	0	0	0	0
									0	0	0	0	0	0
									0	0	0	0	0	0
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									0	0	0	0	0	0
									0	0	0	0	0	0
									0	0	0	0	0	0
									0	0	0	0	0	0
									0	0	0	0	0	0
									0	0	0	0	0	0
									0	0	0	0	0	0
Sales Tax	%	8.75%							0	0	0	0	0	0
SUBTOTAL THIS PAGE									**0**	**0**	**0**	**0**	**0**	**$0**

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ATTACHMENT 01 26 46-2-SAMPLE CHANGE ORDER SUMMARY SHEET

CHANGE ORDER SUMMARY SHEET

Change Order No _____ Date _____
Project Title _____ Contract # _____
_____ Acct _____
PFN _____

Requested by _____
Estimated by _____ Checked by _____ (Lee Phillips)

Contractor Material, Equipment & Labor (including sales tax)

Material	
Equipment	
Labor	
Subtotal:	
Contractor Overhead 15%	
Contractor Profit _____	
Contractor Material, Equipment & Labor Total:	

SubContractors

SubContractor #1	
SubContractor #2	
SubContractor #3	
Contractor Mark-Up On Sub 5%	
SubContractors Total:	
Contractor Material, Equipment, Labor & SubContractor Subtotal:	
Insurance _____	
Bond _____	
Subtotal:	
LLNS Estimated Change Order Cost:	
Contractor's Submitted Change Order Cost:	
Variance:	

Recommended Fair & Reasonable Cost: _____
Time Extension @ **0** Work Days
Reviewed by _____ Date _____

NOTE:
Contractor's submitted change order costs appear to be fair and reasonable. Quantities verified by jobsite visit.
Recommend LLNS estimated change order cost to be fair and reasonable. Quantities verified by jobsite visit.
Modified schedule required with time extension.
See backup pages for details.

LLNS PO Change Order.xls Page 1 of 1 Summary

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ATTACHMENT 0126 46-**3 WAGE RATE SPREADSHEET (Sample Form)**

SUBCONTRACTOR											
CRAFT											
Rates good until:											
	Apprentice			*Journeyman*			*Foreman*			*General Foreman*	
	Straight time	*Time & 1/2*	*Double time*	*Straight time*	*Time & 1/2*	*Double time*	*Straight time*	*Time & 1/2*	*Double time*	*Straight time*	*Time & 1/2*
Base Rate											
Taxes & Insurance											
FICA (Social Security)											
FUTA											
SUTA											
SUI											
Workers Compensation											
Total Taxes & Insurance %											
% of Taxes & Insurance x Base Rate											
Fringe Benefits											
Health & Welfare											
Pension/Trust											
Apprentice Fund											
Training Fund											
Ind. Pro.											
Annuity											
Vacation											
Other (list)											
Total Fringe Benefits											
Total Base + Ins/Tax + Benefits											

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SECTION 01 29 00 — APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

Procedures for preparation and submittal of applications for payment

1.02 SCHEDULE OF VALUES

Provide a preliminary segregation of the subcontract price itemizing the estimated cost of each class of work and submit it to LLNS within 10 calendar days of Notice to Proceed. Each item shall include a prorated allowance for profit, insurance, and overhead expense and the total of the items shall equal the subcontract price. Bond expense shall not be prorated but shall be shown as a separate item. This segregation, when approved by LLNS, shall become the basis for determining progress payments when progress payments are required. Submit final schedule of values within 30 calendar days of Notice to Proceed. The first progress payment will not be made until the schedule of values has been submitted.

1.03 FORMAT

A. Use the “Application and Certificate for Payment” and “Continuation Sheet” forms included in the subcontract. An electronic version is available upon request to LLNS’ Contract Administrator.

B. For each item, provide a column for listing each of the following:

B.1 Item number

B.2 Description of work

B.3 Cost breakdown/schedule of values specified above

B.4 Previous applications

B.5 Work in place and stored materials under this application

B.6 Authorized change orders

B.7 Total completed and stored to date of application

B.8 Percentage of completion

B.9 Balance to finish

B.10 Retainage

1.04 PREPARATION OF APPLICATIONS

A. Subcontractor shall submit signed and certified applications using the electronic forms furnished by LLNS.

B. Use data from approved cost breakdown/schedule of values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

C. List each authorized change order as an extension on the continuation sheet, listing change order number and dollar amount as for an original item of work.

D. Submit final application for payment as specified in section 01 77 00 “Project Closeout.”

1.05 SUBMITTAL PROCEDURES

Submit an updated progress payment schedule in accordance with section 01 32 00 “Schedules” with each application for payment.

1.06 SUBSTANTIATING DATA

A. When LLNS requires substantiating information, submit data justifying dollar amounts or percentages complete for items in question.

B. Provide one copy of data with cover letter for each copy of pay application submittal. Show application number, date, line item number, WBS (where used), and description.

C. Secure prior LLNS approval and submit substantiating documentation in accordance with the subcontract article entitled “Price and Payment Procedures” for any off-site stored products.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 30 00 — ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 INTENT AND ARRANGEMENT OF DOCUMENTS

A. It is intended that these special provisions and drawings in conjunction with the Statement of Work, contain the necessary requirements to perform the entire work properly. Every item necessarily required may not be specifically mentioned or shown. All systems and equipment shall be complete and operable unless expressly stated otherwise.

B. Titles and headings to divisions, sections, and paragraphs in these subcontract documents are introduced for convenience and shall not be taken as a correct or complete segregation of the several units of materials and labor. No responsibility either direct or implied is assumed by LLNS or its designated representative for missions or duplications by the Subcontractor or its subcontractors, due to real or alleged error in arrangement of matter in the subcontract documents.

C. The terms of the subcontract and the General Provisions apply to each section of these specifications as fully as if repeated within that division.

D. Items listed in these special provisions are not necessarily all inclusive. The Subcontractor shall be responsible for performance and completion of the work in accordance with the scope of work detailed in the Statement of Work.

E. Portions of these specifications are of the abbreviated, simplified type and may include incomplete sentences.

E.1 Omissions of words or phrases such as “The Subcontractor shall,” “in conformity with,” “shall be,” “as noted on the drawings,” “in accordance with details,” “a,” “the” and “all” are intentional. Omitted words or phrases shall be supplied by inference in the same manner as they are when a “note” occurs on the drawings.

E.2 Such terms as “approved,” “approved equal,” “as directed,” “as required,” “as permitted,” “acceptable,” “satisfactory,” mean by or to LLNS.

1.02 DEFINITION OF TERMS

A. Application: The definition of terms used in the subcontract, the drawings, and special provisions are as follows and shall apply throughout.

B. LLNS: The term “LLNS” shall mean Lawrence Livermore National Security, LLC.

B.1 Construction Managers: The LLNS person responsible for all technical matters during execution of a construction subcontract.

B.2 Contract Administrators: The LLNS person responsible for all business matters of a contractual nature pertaining to a construction subcontract.

C. Subcontractor: The person, company, or corporation responsible for the execution of a construction subcontract, or any portion thereof, that has been awarded by LLNS. This term

shall include the general or any and all prime Subcontractor(s), all lower tier subcontractors, and suppliers. The term "Subcontractor" may refer to any lower-tier subcontractor concerned with the section or division of the special provisions in which the term is used. This in no way relieves the Subcontractor from sole responsibility for completing the entire work as required by the subcontract.

D. Subcontract: The agreement between LLNS and the Subcontractor.

E. By Others: The work indicated by this term means that the work is not included in this subcontract. The acronym NIC (not included in contract) means "by others."

F. Furnish, Install, and Provide:

F.1 Furnish: Supply and deliver to project site, ready for installation.

F.2 Install: Place in position for service or use.

F.3 Provide: Furnish and install, complete and ready for intended use.

G. LLNL or Site 200: LLNS' Lawrence Livermore National Laboratory (LLNL), east of Livermore, Alameda County, California.

H. Site 300: LLNS' test site located in Alameda and San Joaquin Counties, approximately 18 miles east of Livermore on Tesla Road, or approximately 10 miles southwest of Tracy on Corral Hollow Road.

1.03 RESPONSIBILITIES

A. The Subcontractor shall:

A.1 Proceed promptly with the performance of the specific Statement of Work, items specified in these special provisions, and any technical instructions of the nature prescribed in this section issued by the Construction Manager.

A.2 Direct all communications to LLNS through the Construction Manager.

A.3 Notify the Contract Administrator in writing within 24 hours of receipt, if in the opinion of the Subcontractor, the Construction Manager has issued technical instructions or directions to the Subcontractor that exceed the Construction Manager's authority as defined in following paragraph 1.03.C. Do not proceed, but request the Contract Administrator to modify the subcontract accordingly.

B. The Construction Manager will:

B.1 Supply all technical decisions required of LLNS relating to the drawings, special provisions, and other construction data furnished to the Subcontractor pursuant to the subcontract or necessary for successful performance of the work;

B.2 Monitor the Subcontractor's safety program for compliance with LLNS requirements and other applicable codes and regulations, and responsibility for general surveillance over the implementation of security procedures;

B.3 Participate in the initiation and preparation of technical changes in the applicable drawings, special provisions, and other construction data;

B.4 Provide quality assurance oversight of work in progress;

B.5 Authorize and require the Subcontractor to correct defects discovered in partially or fully completed construction work;

B.6 Review for LLNS approval, Subcontractor invoices for payment based upon percentage of completed work;

B.7 Render decisions or otherwise act for LLNS in the areas designated herein. The Subcontractor shall refer questions, submittals, and like items, in these designated areas to the Construction Manager. Neither the rights of general supervision, direction, inspection, review, comment, or approval conferred on the Construction Manager, nor its exercise of these rights, shall relieve the Subcontractor from any obligations set forth in the subcontract documents except LLNS' written acceptance of specific portions of work containing patent defects if such defects have been called to the Construction Manager's attention, in writing by the Subcontractor, before the Construction Manager's review and approval;

B.8 Provide coordination of multiple prime subcontracts, including scheduling and interface between other Subcontractors.

B.9 Conduct weekly construction meetings, coordination meetings, and preinstallation meetings as defined in section 01 31 19 "Coordination and Meetings."

B.10 Issue written technical instructions within the scope of work stated in the subcontract.

C. Limits of Construction Manager Authority: The Construction Manager will not issue technical instructions or directions, either oral or in writing, which would:

C.1 Constitute an assignment of work outside the general scope of the work covered by this subcontract; or

C.2 Increase or decrease the price for performance of the work or the time required for performance of the work covered by this subcontract; or

C.3 Change any express term or condition of the subcontract; or

C.4 Unreasonably interfere with the Subcontractor's ability to perform and complete the work, as required under the subcontract. The term "unreasonably" shall be quantifiable by either time or cost.

D. The Contract Administrator will:

D.1 Conduct all business matters of a contractual nature and all administrative duties associated with the construction subcontract;

D.2 Process all formal changes to the construction subcontract as required;

D.3 Negotiate changes in the terms, conditions, or provisions of the subcontract relative to price, quantities, detailed progress schedules (as related to overall subcontract time), or on the agreed time for performance;

D.4 Act as LLNS' Representative authorized to effect a binding change and negotiate any adjustments with the Subcontractor; and

D.5 Upon receiving notification from the Subcontractor alleging that the Construction Manager has exceeded its authority as defined in paragraph 1.03.C:

D.5.a Advise the Subcontractor in writing within five days that the technical instruction or direction is within the scope of the subcontract effort and does not constitute a change under section 01 26 46 "Change Order Procedures," or

D.5.b Advise the Subcontractor within five days that LLNS will issue a written modification.

D.6 Authorize any technical instruction from the Construction Manager by issuing a written modification to this subcontract as provided in section 01 26 46 "Change Order Procedures."

1.04 PRE-PROPOSAL SITE VISIT

The Subcontractor shall attend a pre-proposal site visit in which the Statement of Work will be validated by the Subcontractor at the jobsite. The Subcontractor shall clarify the Statement of Work in consultation with LLNS to the degree necessary to successfully perform the work.

1.05 SITE STAFFING AND WORK HOURS

A. Site Staffing: As a minimum, provide staff positions for the following:

A.1 Construction Superintendent:

A.1.a The construction superintendent shall be knowledgeable of the project's hazards and have full authority to act on behalf of the Subcontractor. The construction superintendent shall make frequent and regular inspections of the construction jobsite to identify and correct any instances of noncompliance with project safety and health requirements.

A.1.b The construction superintendent shall be in residence at the jobsite at all times, including overtime hours and shift work hours, when work is being performed by the Subcontractor or its lower-tier subcontractors. If the Subcontractor's superintendent leaves the jobsite while work is being performed, LLNS will stop all work. Any costs that the Subcontractor might incur due to said stoppage will be solely at the Subcontractor's expense.

A.2 Safety Officer: The construction superintendent can assume this role.

B. Work Hours:

B.1 Site 200: Standard work hours at Site 200 are Monday through Friday from 7:00 a.m. to 6:00 p.m. excepting LLNL holidays.

B.2 Site 300: Standard work hours at Site 300 are Monday through Thursday from 7:00 a.m. to 5:30 p.m. excepting LLNL holidays.

B.3 Submit requests for nonstandard work hours to the Construction Manager at least 48 hours in advance.

1.06 ACCURACY OF DATA

A. The data in the Statement of Work and on the drawings are as exact as could be secured, but their absolute accuracy cannot be guaranteed. These data are for the assistance and guidance of the Subcontractor and exact locations, distances, levels, and like items will be governed by the work.

B. Take these data with the understanding that the drawings and the Statement of Work may be supplemented by more detailed information intended to aid construction without changing the scope or cost of the work. Conform to them without additional cost to LLNS.

C. Before starting the work, check all lines, levels, and dimensions shown on the drawings against field conditions (reference section 01 31 19 “Coordination and Meetings”). If discrepancies are discovered, report them to the Construction Manager at once. In the event of discrepancies, do not proceed with the work until the Construction Manager gives direction.

1.07 SURVEY DATA

Where applicable, LLNS has provided on the drawings, the location of horizontal and vertical control points in the vicinity of the site. Transfer said data to the site for the proper execution of the work.

1.08 SALVABLE AND EXCESS MATERIALS

A. Do not use salvable material dismantled from existing work in new construction unless specifically indicated otherwise in the Statement of Work.

B. All materials noted to be dismantled, and reinstalled shall be dismantled and stored in such a manner to prevent damage. The Subcontractor is responsible for the condition of these materials until they are reinstalled and accepted by LLNS.

C. All materials noted to be dismantled, salvaged, and to remain the property of LLNS shall be stored in such a manner as to prevent damage. The Subcontractor is responsible for the condition of these materials until accepted by LLNS.

D. All other materials dismantled from existing work and released through LLNS to the Subcontractor shall become the Subcontractor's property. Immediately remove these materials from the site.

1.09 EMERGENCY REPAIRS

LLNS reserves the right to make emergency repairs as required to keep equipment in operation without voiding the Subcontractor's guarantee or relieving the Subcontractor of its responsibilities.

1.10 LLNS' PARTIAL OCCUPANCY OR USE

LLNS reserves the right to occupy any completed or partially completed portion of the work provided that LLNS and the Subcontractor have accepted, in writing, the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, utilities, damage to the work, insurance and the period for correction of the work and commencement of warranties required by the subcontract documents for such portions of the work partially used or occupied by LLNS. In the event the Subcontractor and LLNS are unable to agree upon the matters set forth above, LLNS may nevertheless use or occupy any completed or partially completed portion of the work. Immediately prior to such partial occupancy or use of the work, or portions thereof, LLNS and the Subcontractor shall jointly inspect the portions of the work to be occupied or to be used to determine and record the condition of the work.

1.11 FINAL ACCEPTANCE

A. Provide written notice to the Construction Manager when the work is ready for final inspection and acceptance, stating that the Subcontractor has carefully inspected all portions of the work, has reviewed in detail the Statement of Work and, that to the best of the Subcontractor's knowledge, all conditions of the subcontract documents have been fulfilled. Provide as-built drawings prior to the request for final inspection.

B. Upon receipt of this notice, LLNS and the Subcontractor shall make a joint inspection of the work. After deficiencies, if any, have been corrected or accounted for, the Final Acceptance will be issued and recorded by LLNS.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 31 19 — COORDINATION AND MEETINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Coordination and project conditions

B. Field engineering

C. Preconstruction meeting

D. Coordination meetings

E. Preinstallation meetings

1.02 COORDINATION AND PROJECT CONDITIONS

A. Coordinate and schedule the work of all tiered subcontractors, and provide all information required by them for proper scheduling and execution of the work. In the same manner, the Subcontractor shall coordinate its work with that of LLNS and any other Subcontractor(s) operating in the area or as directed by the Construction Manager, including reasonable adjustments of schedule in order to allow other Subcontractor(s) or LLNS to do their work.

B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities supplied and installed by others. Coordinate work having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

C. Routing and Coordination of Installations:

C.1 Schedule and coordinate the work of all tiered subcontractors having installation responsibilities both with respect to the sequence of work and the allocation of space for routing among the trades. The Subcontractor’s accepted construction project schedule shall clearly indicate the planned sequence of work in such areas and any proposed departure from it affecting or potentially affecting coordination of the overall installation shall be brought promptly, in writing, to the attention of LLNS and the Construction Manager.

C.2 When requested in the Statement of Work, prepare or have prepared detailed shop drawings in plan view, with cross-sections as necessary, indicating proposed installation plans. These drawings shall depict actual elevations and linear dimensions, and all routing changes, transitions, and major offsets deemed necessary to accomplish the installation. Individual shop drawings may be prepared for each trade working within the designated space or area; however, the coordination of the consolidated installation shall remain the responsibility of the Subcontractor. Submit these shop drawings to the Construction Manager for review prior to commencement of installation, and provide copies to each installer having work in the area.

C.3 Should unavoidable conflicts be encountered during the preparation or review of the shop drawings, or during construction, promptly bring them to the attention of the Construction Manager, in writing, for resolution.

C.4 Where the drawings are diagrammatic, showing only the general arrangement of the systems, fit materials and equipment to other parts of the equipment and make adjustments as necessary or required to resolve space problems and preserve service room. In the event a major rerouting of a system appears necessary, prepare and submit for approval, shop drawings of the proposed rearrangement.

C.5 Carefully investigate the structural and finish conditions affecting the work and arrange such work accordingly, providing such fittings, equipment, accessories, and like items, as may be required to meet such conditions, at no additional cost to LLNS.

D. Coordinate scheduled work with other Subcontractors on jobsite.

1.03 FIELD ENGINEERING

A. When surveying is included in the Statement of Work, comply with the requirements of this subpart.

B. Employ a land surveyor registered in the State of California and acceptable to LLNS to provide field engineering services. Submit for review, the survey's qualifications (i.e., licensing and past experience).

B.1 Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

B.2 Verify set-backs and easements; confirm drawing dimensions and elevations.

C. Submit a copy of the final site drawing signed and certified by the land surveyor that the elevations and locations of the work are in conformance with the subcontract documents.

1.04 PRECONSTRUCTION MEETING

A. The Contract Administrator will schedule a meeting after notice of award and prior to notice to proceed.

B. Attendance Required: The Contract Administrator, Construction Manager, Subcontractor, and any tiered subcontractors as required.

C. Agenda:

C.1 Safety submittals and training requirements

C.2 Submission of proposed preliminary project schedule

C.3 Designation of personnel representing the parties in subcontract

C.4 Use of premises by LLNS and Subcontractor

C.5 LLNS' requirements and partial occupancy

C.6 Temporary facilities and controls provided by LLNS

C.7 Discussion of procedures and processing of field decisions, safety, submittals, substitutions, applications for payments, proposal request, change orders, request for information, and project closeout procedures

C.8 Scheduling, sequence of construction, and scheduling of inspection and testing

C.9 Surveying

C.10 Security and housekeeping procedures

C.11 Procedures for maintaining project record documents (as-builts)

C.12 Requirements for start-up of equipment

D. The Construction Manager will record minutes and distribute copies as soon as practical after meeting to each participant and those affected by decisions made.

1.05 COORDINATION MEETINGS

A. Weekly coordination meetings will be arranged and conducted by the Construction Manager. The purpose of these meetings will be to discuss progress of the work, jobsite safety, coordination issues between prime Subcontractors, and other pertinent project concerns. The Subcontractor shall be represented by its project manager, site superintendent, safety officer, and lower-tiered subcontractors as required by the Construction Manager. Other attendees may include LLNS personnel who may be affected by the work.

B. The Construction Manager will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.

C. Agenda:

C.1 Project safety

C.2 Review minutes of previous meetings

C.3 Review of work progress

C.4 Field observations, problems, and decisions

C.5 Identification of problems which impede planned progress

C.6 Review of submittal schedule and status of submittals

C.7 Review of off-site fabrication and delivery schedules

C.8 Maintenance of project schedule

C.9 Corrective measures to regain projected schedules

C.10 Planned progress during succeeding work period

C.11 Coordination of projected progress

C.12 Maintenance of quality and work standards

C.13 Effect of proposed changes on project schedule and coordination

C.14 Other business relating to work

C.15 Status of change orders

D. The Construction Manager will record and prepare minutes of the meetings and will distribute copies as soon as practical after meeting to each participant and those affected by decisions made.

1.06 PREINSTALLATION MEETINGS

A. When required in individual specification sections (which may be part of the Statement of Work) or as determined by the Construction Manager, the Construction Manager will convene a preinstallation meeting at the site prior to commencing work of specified section.

B. The Subcontractor shall require the attendance of parties directly affecting, or affected by, work of the specific section.

C. The Construction Manager will prepare agenda and preside at meetings to:

C.1 Review conditions of proposed installation, preparation, and installation procedures.

C.2 Review coordination with related work of other Subcontractors on site.

D. The Construction Manager will record minutes and distribute copies as soon as practical after meeting to each participant and those affected by decisions made.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 32 00 — SCHEDULES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project schedules

B. Progress payment schedules

C. Method of operations

D. Initial schedule submittal and updates

E. Schedule revisions

F. Distribution

G. Holiday schedule

1.02 PROJECT SCHEDULES

A. General: Submit the project schedule to the Construction Manager for review and acceptance as noted in subpart 1.05 “Initial Schedule Submittal and Updates.” The schedule shall show in detail the planned sequence of all work items, including design, demolition, fabrication and delivery of structures and equipment, critical submittals, long-lead items, when the Subcontractor requires LLNS-furnished equipment/material at the jobsite, and planned electrical shutdowns for mechanical and electrical tie-ins; and shall clearly indicate the critical path.

B. Type: Schedule type shall be as indicated in the Statement of Work. If Gant Chart, see appendix C for a sample. If Critical Path Method (CPM), use Microsoft Project to build the schedule.

C. Format:

C.1 Sequence of Listings: List by chronological order of the start of each item of work.

C.2 Sheet Size: Multiples of 8-1/2 x 11 inches or as requested by the Construction Manager.

C.3 Scale and Spacing: Per sample in appendix C or as requested by the Construction Manager.

C.4 Quantity: Submit one electronic copy or the number of hard copies which the Subcontractor requires to be returned, plus three hard copies which will be retained by the Construction Manager.

D. Content:

D.1 Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction. Show any activity with a duration of greater than or equal to

five working days. Define activities in sufficient detail and limited duration to allow for ease of tracking.

D.2 Identify work of separate stages or phases and other logically grouped activities.

D.3 Clearly identify critical portions of the schedule. The submitted schedule shall take into consideration all milestone dates so identified by LLNS.

D.4 Show accumulated percentage of completion of each item, and total percentage of work completed, as of the first day of each month. Also, provide actual start and finish dates for each activity.

D.5 Include critical submittals and identify procurement of long-lead items in the schedule. Indicate decision dates for selection of finishes. For projects designated "large," provide a separate schedule of submittal dates for shop drawings, product data, and samples, including LLNS-furnished equipment/materials, and dates reviewed submittals will be required from LLNS. (Reference section 01 33 00 "Submittals.")

D.6 Indicate delivery dates for all pieces of equipment.

D.7 Take into consideration time needed for inspection of individual portions of the work.

D.8 Cost Loading: Assign a cost of work for every activity as required by the cost breakdown/schedule of values. Cost shall include allocation for labor, materials, equipment, overhead, bonds, and profit. Where appropriate, activities which do not have costs tied to them shall be associated with or tied to a summary activity by WBS.

D.9 Coordinate content and cost loading criteria with cost breakdown/schedule of values for both the project schedule and the progress payment schedule.

D.10 For CPM schedules, provide the following additional information:

D.10.a Summary Level: Identify each second level summary item by work breakdown structure (WBS), or the LLNS-approved cost breakdown/schedule of values.

D.10.b Responsibility Code: Identify by code number the trade to be employed in each activity.

D.10.c Float Analysis: List early and late start, early and late finish dates for each activity. Identify total float time for each activity.

D.10.d Resource Loading: Assign resources (manpower, equipment, materials, and others) required for every activity.

1.03 PROGRESS PAYMENT SCHEDULES

A. From the completed project schedule, develop and submit a progress payment schedule in the form of a Gantt (bar) chart.

B. Identify each second level summary item in accordance with LLNS-approved cost breakdown schedule of values.

1.04 METHOD OF OPERATIONS

A. For CPM schedules, establish method of operation with LLNS concurrent with the submittal of the complete project schedule. Submit one electronic and three hard copies of the work statement.

B. The work statement shall include:

B.1 Description of work method for each on-site work element of five working days or more.

B.2 Detailed narrative statements of assumptions and conditions which provide supportive information for conclusions represented in the network schedules. Indicate proposed areas for work and for storage of specific materials, proposed use of equipment, and assumptions and methods which determine durations and sequences represented in specific areas of the network analysis and schedule.

B.3 Manpower-loading for each on-site work element of five working days or more.

1.05 INITIAL SCHEDULE SUBMITTAL AND UPDATES

A. Initial Submittal: Submit the preliminary project schedule and progress payment schedule within 7 calendar days of Notice to Proceed for review, comment, and coordination with work of separate subcontracts. Incorporate review comments recommended by the Construction Manager.

B. Project Schedule Updates:

B.1 Prepare a three-week look-ahead schedule for use and distribution during the weekly coordination meeting. This schedule shall clearly define all current and projected work for that time frame, including interfaces (e.g., staging, schedule, interferences and like items) with LLNS special equipment installation and other ongoing construction packages. Identify required inspections. Be prepared to discuss this schedule in detail at the weekly coordination meeting.

B.2 Update the project schedule weekly and submit it to LLNS for review.

B.3 LLNS acceptance of the Subcontractor’s project schedule does not relieve the Subcontractor of responsibility for the accuracy or feasibility of the schedule or for its ability to meet the subcontract completion date. Such acceptance does not warrant, acknowledge, or admit the reasonableness of durations or logic of the Subcontractor’s schedule.

C. Progress Payment Schedule Updates: Submit revised progress payment schedule with each application for payment. Approval of Subcontractor monthly progress payment is contingent upon the submittal of a current, accurate, and logical schedule acceptable to the Construction Manager.

1.06 SCHEDULE REVISIONS

A. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes. Clearly identify proposed change orders which affect the schedule. Do

not make any changes to scheduled milestone dates without prior LLNS approval. Only the Contract Administrator can approve extensions of time.

B. Provide narrative report to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken, or proposed (including recovery schedules), and its effect including the effect of changes on schedules of separate prime subcontracts. Immediately notify the Construction Manager of any potential sequencing or phasing conflicts with separate prime subcontracts which may arise.

C. The Construction Manager reserves the right to modify or change the sequencing of activities or utilize float time as needed to benefit the overall project. In the event such changes affect the overall subcontract completion or subcontract amount, the Subcontractor shall not proceed with the change. Instead, the Subcontractor shall follow the procedures outlined in section 01 30 00 “Administrative Requirements,” subsection 1.03 A, and request that the Contract Administrator modify the subcontract in accordance with section 01 26 46 “Change Order Procedures.”

1.07 DISTRIBUTION

A. Distribute copies of reviewed schedules to the Subcontractor’s project site file, lower-tiered subcontractors, suppliers, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

1.08 HOLIDAY SCHEDULE

Construction work days are to be scheduled using the list of holidays attached to the subcontract. Make prior arrangements with the Construction Manager if access to the site is required on those days.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 33 00 — SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittal Procedures: General procedures, design/shop drawings and product data, calculations, and manufacturer's written instructions.

B. Samples.

C. Daily reports.

D. Test reports and design data.

E. Certificates.

F. Manufacturer's field reports.

G. Submittal register.

H. Administrative submittals

1.02 SUBMITTAL PROCEDURES

A. General Procedures:

A.1 Submit drawings, product data (including material specifications and data sheets), manufacturer's instructions, maintenance manuals, and other submittals identified in the Statement of Work. Check the correctness of all submittal documents, including those of lower-tier subcontractors prior to submitting them to the Construction Manager for approval by LLNS. If LLNS determines the Subcontractor's submittal to be incomplete or unacceptable, the Construction Manager will return it to the Subcontractor as "incomplete." Immediately resubmit a complete and acceptable submittal to LLNS by the second submission.

A.2 Establish a schedule and procedure for the submittals that will ensure their timely submittal, review, and LLNS approval or review, return, and resubmittal. Identify critical submittals and shop drawings on the schedule. No delay will be allowed in the progress of the job attributable to Subcontractor failure to make required submittals per the approved project schedule and submittal register (see subpart 1.08 "Submittal Register"). Advise the Contract Administrator and the Construction Manager of any submittal that may be delayed and provide a recovery schedule. Do not begin any work related to or impacted by any submittal until said submittal has been approved, or written direction to proceed has been received from the Construction Manager.

A.3 Drawings and data, whether prepared by the Subcontractor or its suppliers, shall be submitted as the instruments of the Subcontractor. Therefore, prior to submittal, ascertain that equipment and/or materials covered by submittals meet all requirements of subcontract drawings and these special provisions, and conform to structural and space conditions.

A.4 Provide submittals for each separate piece of material or equipment, with job title and subcontract number identified. Submittals shall be numbered consecutively for each different submittal.

A.5 Provide space on all shop drawings and submittals for Subcontractor and LLNS review stamps.

A.6 Distribution: Each submittal shall be accompanied by a LLNS-provided form, completed as indicated.

A.6.a Submit seven hard copies or one electronic copy of all drawings and data with transmittal form to:

Construction Management, L-655
Project Management Engineering and
Construction Department
Lawrence Livermore National Laboratory
P. O. Box 808
Livermore, California 94551
Attention: Construction Manager
Subcontract No. [_____]

A.6.b Submit one copy of transmittal form to:

Supply Chain Management Department, L-650
Lawrence Livermore National Laboratory
P. O. Box 5502
Livermore, California 94551
Attention: Contract Administrator
Subcontract No. [_____]

A.7 Submittal Review:

A.7.a LLNS will review drawings and data for conformance with the intent of the design. The approval of the drawings or data shall not relieve the Subcontractor from any errors of dimensions, quantities, or other errors, which may develop later. Approval of the aforementioned documents shall not relieve the Subcontractor from responsibility for deviations from the subcontract drawings and these special provisions unless the Subcontractor, in writing, specifically called attention to the proposed deviations at the time said deviations were submitted and has received approval for the deviations in writing.

A.7.b LLNS' comments and the Subcontractor's required action will be indicated by notation on the submittals or by inclusion in the letter of transmittal. The review comments will generally be classed as follows:

- "APPROVED," "REVIEWED," or "NO EXCEPTIONS TAKEN" Submittals so noted will generally be classed as drawings and data which appear to be satisfactory without requiring correction.

- "APPROVED AS NOTED" This category will cover drawings and data which, with the corrections noted or marked on submittal, appear to be satisfactory and require no

further LLNS review prior to construction. Revised drawings reflecting corrections shall be provided.

- "REVISE AND RESUBMIT" Submittals so noted will require a corrected resubmittal for one or more of the following reasons. A revised submittal shall be resubmitted and receive LLNS approval prior to commencement of related work.
  - Drawings and data require corrections, as noted, prior to final review.
  - Drawings and data are incomplete and require more detailed information prior to final review.
  - Drawings and data do not meet the requirement of subcontract documents.
- "REJECTED" A submittal may be rejected if it is not in compliance with the subcontract documents, or if it proposes an "or equal" substitution without following the proper procedures or documentation. A superseding submittal shall be resubmitted and receive LLNS approval prior to commencement of related work.

A.8 Return of Submittals:

A.8.a The Construction Manager will return marked submittals to the Subcontractor within 14 calendar days. Note that timely reviews are dependent upon complete submittals in strict accordance with these instructions. Notify the Construction Manager if the project schedule requires a shorter submittal review period.

A.8.b One hard copy or an electronic copy of the drawings and data will be returned to the Subcontractor with appropriate stamps and notations. When directed, make indicated changes and corrections, promptly resubmitting three hard copies or an electronic copy, as many times as required to obtain approval.

A.9 Subcontractor Resubmittal:

A.9.a When revised for resubmission, identify all changes made since previous submission.

A.9.b Distribute copies of reviewed submittals to lower-tiered subcontractors as appropriate. Instruct parties to promptly report any inability to comply with requirements.

B. Shop Drawings:

B.1 Submit shop drawings as required by the Statement of Work or as LLNS otherwise requests, for review in accordance with the instruction herein.

B.2 Submit shop drawings for proposed rearrangements of equipment and materials, and for substitutions in equipment and materials, which differ from those detailed on the subcontract drawings in accordance with sections 01 31 19 "Coordination and Meetings" and 01 25 00 "Substitutions." These shop drawings shall be uniform and conform to the subcontract drawings in quality, size, and detail. All costs resulting from such substitutions shall be the Subcontractor's responsibility.

B.3 All shop drawings shall be independently checked and signed.

C. Design/Shop Drawings: Generally, Subcontractor drawing submittals will be limited to shop drawings. When the Statement of Work indicates the work includes design, also conform to the following paragraphs for design/shop drawings.

C.1 Submit design/shop drawings as required by the Statement of Work or as LLNS otherwise requests, for review in accordance with the instruction herein.

C.2 Design/shop drawings shall generally conform to and comply with the U.S. National CAD Standard (NCS) available through the National Institute of Building Science (NIBS). For purposes of the Statement of Work the term "consultant" used in the referenced standards shall mean the Subcontractor or the applicable engineering discipline, as appropriate.

C.3 All notations, dimensioning and lettering on drawings shall be of a scale to permit legible half-sized reduction. Minimum acceptable sizes are 1/8 inch for handwritten and computer-generated notes, and 1/4 inch for all major labels. Sheet size shall be 22 x 34 inches (D size) or 34 x 44 inches (E size).

C.4 Design/shop drawings shall include one or more title sheets that provide the following:

- Main title for construction package
- List of drawings with Subcontractor drawing number, title, and revision number
- General notes
- Abbreviations

C.5 All plan drawings shall have a north arrow.

C.6 All design/shop drawings shall have a graphic scale for each scale used on that sheet, with the following required scales:

- Plan: 1/4 inch = 1 foot (1:50)
- All elevations: 1/4 inch = 1 foot (1:50)
- Section: 1/4 inch = 1 foot (1:50)
- Detail: as required for clarity (1:5, 1:10, or 1:20)

C.7 The design/shop drawing package shall include all drawings needed to provide a full and complete construction package and shall specifically include all drawings specified in this document.

C.8 All design/shop drawings shall be approved and stamped by a professional engineer or architect of the appropriate discipline registered to practice in the State of California.

D. Product Data:

D.1 Submit product data as required by the Statement of Work or as LLNS otherwise requests, for review in accordance with the instruction herein.

D.2 Product data shall be annotated to clearly indicate make, model, and/or identification numbers of items being submitted for approval.

E. Calculations:

E.1 Use good form and legible lettering in recording all calculations. Prior to listing the actual calculations, state all known parameters, along with all references, formulae, assumptions, and constants used. Make all calculations on 8-1/2 x 11-inch computation paper. All calculations shall be project specific and shall be approved and stamped by a professional engineer/architect registered/licensed to practice in the State of California. Do not submit generic or "boilerplate" calculations.

E.2 Standard, recognized computation techniques, including use of computer codes, shall be used; shortcut methods and rules of thumb are not acceptable. Present the computations in well-indexed document form. The names (not initials) of the engineer/architect shall appear on each handwritten sheet along with the date of origin. Each computation shall be independently checked for reasonableness of result and proper methodology by an engineer/architect having professional credentials (i.e., registered engineer or architect).

F. Manufacturer’s Written Instructions: Where any materials are specified to be installed "according to manufacturer's written instructions," submit three hard copies or an electronic copy of such required instructions at time required in the submittal register. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.03 SAMPLES

A. Samples for Review: Submit samples to the Construction Manager for LLNS review for the limited purpose of checking for conformance with information given and the design concept expressed in the subcontract documents.

B. Samples for Information: Submit samples to the Construction Manager for information only.

C. Samples for Selection:

C.1 Submit samples to the Construction Manager for aesthetic, color, or finish selection by LLNS.

C.2 Submit samples of finishes from the full range of manufacturers’ standard colors, textures, and patterns for LLNS selection and verification of quality and utility.

C.3 After review, produce duplicates of LLNS selections and distribute in accordance with subpart 1.02 above.

D. Submit samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

E. Include identification on each sample, with full project information.

F. Submit the number of samples indicated in the Statement of Work; one sample will be retained by LLNS.

G. Reviewed samples which may be used in the work as indicated in the Statement of Work.

H. Samples will not be used for testing purposes unless specifically stated in the Statement of Work.

1.04 DAILY REPORTS

A. Submit one copy of construction daily reports to the Construction Manager at the end of each business day.

B. Include current activities in progress and areas worked, crew sizes by craft, weather conditions for that day, tests and inspections which occurred that day, and major equipment and material deliveries, and a summary of quality problems, non-conformances and resolutions, when applicable.

C. Submit copies of pre-task safety planning reports on a daily basis as required in the approved safety plan.

1.05 TEST REPORTS AND DESIGN DATA

A. Submit for LLNS' review.

B. Submit test reports and design data for assessing conformance of tested items/components with the design concept expressed in the subcontract documents.

1.06 CERTIFICATES

A. When specified in the Statement of Work, submit seven hard copies of certification by the manufacturer, installation/application subcontractor, or the Subcontractor to the Construction Manager for review.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product, but LLNS approval is required.

1.07 MANUFACTURER'S FIELD REPORTS

A. Submit two hard copies or one electronic copy of field reports to the Construction Manager for review within 14 calendar days of observation.

B. Review for the limited purpose of assessing conformance with information given and the design concept expressed in the subcontract documents.

1.08 SUBMITTAL REGISTER

Submit at the preconstruction meeting, a comprehensive submittals register. This listing shall not be construed as limiting the type and number of Subcontractor submittals, which may be required or advisable in order to facilitate the correct execution of the work. Further required

submittals shall be as stated in the Statement of Work and administrative submittals listed below.

1.09 ADMINISTRATIVE SUBMITTALS

A. Submit within 10 calendar days after the notice of award, a list of the Subcontractor's subcontractors. Include subcontractors' telephone numbers and addresses.

B. Various sections of these special provisions list submittal requirements of administrative nature, as listed in table 01 33 00-1, below. Unless specifically indicated otherwise, submit these using the same process as specified for other submittals in this section.

TABLE 01 33 00-1: ADMINISTRATIVE SUBMITTALS

SECTION	DESCRIPTION OF SUBMITTAL
01 25 00	Typewritten list containing a description of each proposed substitute item or material
	Documentation showing proposed substitute is equal to specified
	Samples
	Supporting documentation
	Subcontractor certifications
01 29 00	Application for payment
	Cost breakdown/schedule of values
01 30 00	Proposed superintendent resume
	Request for nonstandard work hours
01 31 19	Copy of final site drawing signed and certified by land surveyor
01 33 00	Comprehensive submittal register (see appendix B for form)
	Shop drawings or design/shop drawings
	Product data
	Manufacturer's written instructions
	Maintenance manuals
	Calculations and computation techniques
	Samples
	Daily reports
	Test reports and design data
	Certificates (if applicable)
	Manufacturer's field reports
01 35 20	Special permits and proof that AHJ has been notified (if applicable)
01 35 23	Description of accident prevention program
	Injury, accident, fire, property damage report for past two years
	Site-specific work plan, including task-specific safety plans
	JHA
	Name and qualifications of on-site person designated responsible for safety, accident prevention, and fire protection
	Verification that each employee understands the safety plan
	Copies of safety education training certificates for each employee, including NIF training if applicable
	Operations with potential hazardous exposure to workers

TABLE 01 33 00-1: ADMINISTRATIVE SUBMITTALS	
SECTION	DESCRIPTION OF SUBMITTAL
	Buried and hidden utilities survey (if applicable)
	Excavation and drilling permit request (if applicable)
	Excavation and trenching plan (if applicable)
	Critical lift plan (if applicable)
01 35 43	Disposal manifests for special waste if applicable
	Solid waste management plan (SWMP)
	Material safety data sheets (MSDS)
	Hazardous material inventory (attachment 01 35 43-2)
01 45 00	48-hour notice prior to operations requiring testing laboratory services
	Full-scale mockups (if applicable)
	Field service observation report (if applicable)
	Material samples required for laboratory testing
01 50 00	48-hour notice of large shipments/deliveries
	Telephone service forms (appendix E) if service is desired
01 77 00	Project record documents
	Draft and final maintenance and materials manuals
	Warranty/guarantee documentation
	Written certification project is ready for final inspection and acceptance
	Final application for payment
	Spare parts, maintenance, and extra products as specified

PART 2 PRODUCT

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 35 20 — PERMITTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. On-site permitting and authorizations, including general work permits, authorizations, and specific hazard permits

B. Off-site special permitting

C. Off-site agency notifications

1.02 REFERENCES

A. The following documents form a part of these specifications to the extent stated herein.

B. State of California

California Labor Code	Section 7301.1

C. Bay Area Air Quality Management District (BAAQMD)

BAAQMD	Asbestos Demolition and Renovation Regulation 11 Rule 2

D. San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD)

SJVUAPCD	National Emission Standards for Hazardous Air Pollutants Regulation IV (Adopts NESHAP Standards) Rule 4002

1.03 ON-SITE PERMITTING AND AUTHORIZATIONS

A. General: There are several permits required for work at LLNL and Site 300, and special permits required for work in particular facilities or within certain directorates. LLNS is responsible for obtaining these permits and authorizations on behalf of the Subcontractor, and the Subcontractor is responsible for scheduling the work to allow time to obtain these permits and complying with the requirements of the permits. Refer to the schedule at the end of this section for a general listing of permits issued on site. The Construction Manager will coordinate this activity.

B. NIF Directorate Work Permits: A NIF work permit is required for all work within the NIF directorate, which is coordinated through the work control center in Building 581 prior to the daily work team meeting and start of work.

C. Specific Hazard Permits: In addition to general work permits, specific hazard permits may be required. Refer to the Statement of Work for “Other” permits.

D. Modifications or Connections to Existing Utilities: If modifications or connections to the existing utilities (e.g., electric power, water, gas, communications and air) require an interruption of services, give the Construction Manager written notice 14 calendar days prior to the desired modification or connection or as defined in the Statement of Work, so a utilities outage permit can be obtained.

1.04 OFF-SITE SPECIAL PERMITTING

A. Although generally, LLNS is not required to secure permits from local jurisdictions for work on site, certain types of work may entail obtaining permits from off-site agencies. Examples include elevator construction, soil remediation due to contamination, closing existing underground water tanks, and other environmentally regulated activities. In such instances, LLNS may be required to obtain the permit, but the Subcontractor may also be required to prepare documentation for the permit. Other permits require the Subcontractor to obtain the permit. In both cases, the Subcontractor shall comply with all regulations regarding the work under the issued permit. Refer to the following paragraphs and the Statement of Work for a listing of such special requirements.

B. Elevator Construction Permit: When constructing an elevator, lift, or hoist, obtain all necessary permits from the State of California in accordance with California Labor Code section 7301.1. The Subcontractor shall be solely responsible for obtaining these permits, and shall bear any consequences of delays associated with the issuance of permits.

1.05 OFF-SITE AGENCY NOTIFICATIONS

A. When the Subcontractor is conducting certain activities on site, off-site agencies having jurisdiction over this work must be notified. Two examples of such an activity are demolition and asbestos-abatement work, which require the Subcontractor to provide at least 10-days prior notification to the local air resource board (BAAQMD or SJVUAPCD.)

B. Before beginning work that requires off-site agency notification, submit proof to LLNS that the agency has received such notification.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 ON-SITE PERMITTING

Refer to the following table 01 35 20-1 for a general listing of on-site permits and the Statement of Work for anticipated job-specific permits.

TABLE 01 35 20-1: ON-SITE PERMITTING

TYPE	DESCRIPTION	REFERENCE
Soil and Excavation	Soil disturbance	01 35 23
Concrete Penetrations”		01 35 23
Burn	Thermal heat & spark-producing activities	01 35 23

TABLE 01 35 20-1: ON-SITE PERMITTING		
TYPE	DESCRIPTION	REFERENCE
Utility Outages:		
Fire Sprinkler Outage		
Mechanical Outage		
Low-Voltage Outage		
NIF Work Permits	Work within NIF Directorate	
Energized Electrical Work		
Roof Access		01 35 23
Building/Equipment Drain Outage	Installing, removing, or modifying structure system or component drainage system	

END OF SECTION

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SECTION 01 35 23 — GENERAL SAFETY PROVISIONS

PART 1 GENERAL

1.01 INTEGRATION OF ENVIRONMENT, SAFETY, AND HEALTH (ES&H) INTO WORK PLANNING AND EXECUTION

A. For the purposes of this section, safety is understood to encompass environment, safety and health, including pollution prevention and waste minimization; and employees is understood to include Subcontractor employees and lower-tier subcontractor employees performing work under this subcontract, and LLNS employees.

B. In performing work under this subcontract, the Subcontractor shall work safely, in a manner that ensures adequate protection for employees, the public, and the environment; and be accountable for the safe performance of the work in accordance with all applicable ES&H requirements. The Subcontractor shall exercise a degree of care commensurate with the work and the associated hazards. The Subcontractor shall ensure that management of ES&H functions and activities becomes an integral but visible part of the Subcontractor's work planning and execution processes.

C. The Subcontractor shall take adequate steps and precautions for the safety of, and shall provide adequate protection to prevent damage, injury, or loss to, the following:

C.1 LLNS or Subcontractor employees involved in the subcontract work and other persons who may be affected thereby.

C.2 The completed subcontract work in place, and other materials and equipment to be incorporated therein, whether in storage on or off the project site, under care, custody, or control of the Subcontractor or lower-tier subcontractors.

C.3 Other property that may be present at the project jobsite and other adjoining areas.

D. The Subcontractor shall, in the performance of work, ensure that:

D.1 Subcontractor line management is responsible for the protection of employees, the public, and the environment. Subcontractor line management includes those Subcontractor and lower-tier subcontractor employees managing or supervising employees performing work.

D.2 Clear and unambiguous lines of authority and responsibility for ES&H are established and maintained at all Subcontractor organizational levels.

D.3 Subcontractor personnel possess the experience, skills, knowledge, and abilities that are necessary to discharge their responsibilities.

D.4 Resources are effectively allocated to address ES&H considerations for the work to be performed; and protecting employees, the public, and the environment is a priority whenever activities are planned and performed.

D.5 Before work is performed, the associated hazards are evaluated and the ES&H standards and requirements contained or referenced in this subcontract, are implemented or fulfilled by the Subcontractor, so as to provide adequate assurance that employees, the public, and the environment are protected from potential adverse consequences of the work to be performed.

D.6 Administrative and engineering controls to prevent and mitigate hazards are tailored to the work being performed and associated hazards. Emphasis should be on designing the work and/or controls to reduce or eliminate the hazards and to prevent accidents and unplanned releases and exposures, including the use of personal protective equipment as necessary.

D.7 The "conditions and requirements" to be satisfied for work to be initiated and conducted are established and agreed-upon by LLNS and the Subcontractor. These agreed upon "conditions and requirements" are requirements of this subcontract and binding upon the Subcontractor.

E. The Subcontractor shall manage and perform the work in accordance with a safety management system (System) documented in a Subcontractor safety plan, that fulfills all conditions in paragraph B above at a minimum. See subpart 1.03 for safety plan requirements.

F. The System shall describe how the Subcontractor will establish, document, and implement safety performance objectives and commitments. The System shall also describe how the Subcontractor will measure system effectiveness.

G. The Subcontractor shall comply with, and assist LLNS in complying with, ES&H requirements of all applicable laws and regulations, and applicable directives identified in this subcontract. The Subcontractor shall cooperate with LLNS, federal, state, and local agencies having jurisdiction over ES&H matters under this subcontract.

H. The Subcontractor shall promptly evaluate and resolve any noncompliance with applicable ES&H requirements of this subcontract and their safety plan. If the Subcontractor fails to provide resolution or if, at any time, the Subcontractor's acts or failure to act cause substantial harm or an imminent danger to the environment or health and safety of employees or the public, LLNS may issue an order stopping work in whole or in part. Any stop work order issued by a LLNS Representative under this clause shall be without prejudice to any other legal or contractual rights of LLNS or U.S. Government. In the event that LLNS issues a stop work order, an order authorizing the resumption of the work may be issued at the discretion of LLNS. The Subcontractor shall not be entitled to an extension of time or additional compensation or damages by reason of, or in connection with, any work stoppage ordered in accordance with this clause.

I. Regardless of the performer of the work, the Subcontractor shall be responsible for compliance with the ES&H requirements applicable to this subcontract and for initiating, maintaining, and supervising all safety provisions, precautions, and programs in the course of the performance of the subcontract.

J. The Subcontractor shall be responsible for ensuring that its employees and all lower-tier subcontractor employees performing under this subcontract comply with the ES&H requirements applicable to this subcontract. Accordingly, the Subcontractor shall apply the ES&H requirements of this subcontract to all lower-tier subcontractors to the extent necessary to ensure Subcontractor compliance with the ES&H requirements. The Subcontractor shall include a clause substantially the same as this paragraph in lower-tier

subcontracts involving complex or hazardous work. Such subcontracts shall provide for the right to stop work under the conditions described in paragraph 1.02.C.7.e of this section.

K. The Subcontractor shall provide comprehensive occupational medicine services for its employees (workers) as necessary, in compliance with applicable laws and regulations. LLNS reserves the right to direct, and to review and approve, the specific occupational medicine services provided by the Subcontractor. The Subcontractor shall immediately report to LLNS any occupational injury, illness, or release of hazardous materials into the environment, associated with performance under this subcontract. The Subcontractor shall additionally cooperate with LLNS and provide a written report of the incident (e.g., a first report of injury). This includes allowing LLNS to review the Subcontractor's logs and summaries of all recordable occupational injuries and illnesses (OSHA No. 300 and 300A Forms or State Equivalent) maintained by the Subcontractor.

L. The Subcontractor shall allow LLNS access to all Subcontractor written Injury and Illness Prevention Program (IIPP) established, or which is by law to be established.

1.02 SUBCONTRACTOR SAFETY PROGRAM

A. The Subcontractor is solely responsible for initiating, maintaining, and supervising all safety provisions, precautions, and programs in the course of the performance of the subcontract.

B. LLNS has established an LLNL Worker Safety and Health Program (LLNL WSHP) implementing the requirement of Subpart C of 10 CFR 851, for all work performed at LLNL jobsites, including work performed by the Subcontractor and its lower-tier subcontractors. The requirements of the LLNL WSHP pertaining to the Subcontractor and its lower-tier subcontractors are reflected in the following incorporated documents:

B.1 The provisions contained in these specifications,

B.2 The Subcontractor's approved safety plan, job hazard analysis (JHA), and Subcontractor Area Hazards Control List (SAHCL).

C. Management Responsibilities and Worker Rights: The Subcontractor and its lower-tier subcontractors shall provide a workplace at the LLNL site that is free from recognized hazards with the potential to cause death or serious physical harm and ensure that work is performed in accordance with these specifications.

C.1 Assign worker safety and health responsibilities, evaluate personnel performance, and hold personnel accountable for worker safety and health performance.

C.2 Where required by these specifications, use qualified worker safety and health professionals (e.g., certified industrial hygienist or certified safety professions).

C.3 Provide workers with access to information relevant to the worker safety and health, including:

C.3.a The Subcontractor's safety plan, JHA, task-specific safety plans, and any other relevant health and safety documents.

C.3.b Applicable injury/illness information from OSHA No. 300 and 300A Forms (or California State equivalents), subject to Freedom of Information Act restrictions.

C.3.c LLNS provided health and safety information and publications.

C.3.d LLNS provided 10 CFR 851 worker's rights poster, to be posted at the jobsite.

C.4 Provide measures for workers to report, without reprisal, job-related fatalities, injuries, illnesses, incidents, and hazards and make suggestions for mitigating hazards. Promptly respond to such reports and suggestions.

C.5 Provide regular communication with workers about workplace health and safety matters.

C.6 Provide procedures that permit workers to stop work or decline to perform tasks they reasonably believe to be dangerous (refer to paragraph 1.02.C.7.e, below).

C.7 Inform workers of their rights, which include:

C.7.a Access to the health and safety information described in 1.02.C.3, above.

C.7.b Notification when monitoring indicates overexposure to hazardous materials.

C.7.c Right to observe monitoring and receive the results of their own exposure monitoring.

C.7.d Express concerns related to worker safety and health.

C.7.e The right to stop work or decline to perform an assigned task based on a reasonable belief that the task poses an imminent risk of death, serious physical harm, or other serious hazard in circumstances where there is insufficient time to use normal hazard reporting procedures.

C.8 During periods of active construction, the Subcontractor shall have a Safety Officer in accordance with section 01 30 00, 1.04.A.3. The Safety Officer shall be knowledgeable of the project's hazards and have full authority to act on behalf of the Subcontractor. The Safety Officer shall make frequent and regular inspections of the construction jobsite to identify and correct any instances of noncompliance with project safety and health requirements. An additional duty of the Safety Officer shall be the prevention of accidents.

D. Hazard Assessment and Prevention:

D.1 Address all hazard assessments identified in the SAHCL, the Subcontractor's Safety Plan, and the JHA.

D.2 The Subcontractor's workers shall acknowledge being informed of the hazards and protective measures associated with assigned work activities. After the safety orientation (see paragraph 1.05.A) submit an attendance roster with employee signatures verifying that each employee understands the safety plan, and ensure that the attendance roster is always available at the jobsite.

D.3 Instruct workers to report to the Subcontractor's designated representative (see paragraph 1.02.C.8) hazards not previously identified or evaluated. If immediate corrective action is not possible or the hazard falls outside of project scope, immediately notify affected workers, post appropriate warning signs, implement needed interim control measures, and notify LLNS of the action taken. Stop work in the affected area until appropriate protective measures are established.

D.4 Establish and document procedures for routinely assessing workplace hazards produced from chemical, biological, and safety hazards at the jobsite.

D.5 Implement a hazard prevention and abatement process to ensure that all identified and potential hazards at the jobsite are abated in a timely manner.

E. Recordkeeping and Reporting: Report all OSHA recordable injuries and any property damage to LLNS immediately (within one hour of incident). Also conduct an incident investigation and submit a complete written report to LLNS within 24 hours of the incident. LLNS may perform its own investigation. If an injury is involved, provide a daily verbal and written update to LLNS until the claimant is released to full duty and/or claim has been resolved. Work activity records shall be retained and maintained in accordance with applicable state and federal requirements.

1.03 SUBCONTRACTOR JOB HAZARD ANALYSIS (JHA) AND SAFETY PLAN

A. The Subcontractor shall generate a JHA using LLNS' on-line LLNL TIP Tool. First time users will need to establish an account and complete the User Registration for access. The SAHCL number is needed for registration. This number must also be listed as part of the Project Title for tracking purposes when generating a JHA. Instructions for completing the LLNL TIP Tool to generate a JHA is located at: https://supplychain.llnl.gov/jha/index.html. A copy of the completed JHA shall also be provided to the LLNS Contract Administrator.

B. Immediately after the subcontract award and prior to submitting a safety plan, conduct a pre-start job walkthrough to validate the hazards identified in these specifications and the SAHCL and identify any additional hazards not listed. Prepare and submit a safety plan and a JHA in response based on the results of this validation. The work of all lower-tier subcontractors shall be included in the safety plan and JHA. Designate the individuals responsible for on-site implementation of the plan and specify qualifications for those individuals. The safety plan shall also describe how the Subcontractor will:

B.1 Fulfill the management responsibilities of subpart 1.02, above;

B.2 Implement the worker rights and impose the worker responsibilities of these ES&H provisions;

B.3 Define the work activities that will be performed;

B.4 Identify and analyze hazards associated with the work;

B.5 Develop or select applicable controls based on the hazards and requirements of this subcontract;

B.6 Ensure the controls work properly, and perform work within the controls;

B.7 Monitor work and provide feedback on adequacy of controls, and continue to improve safety management;

B.8 List the appropriate safety and health standards applicable to the work activity;

B.9 Describe its injury/illness recording/reporting program;

B.10 List the applicable training for workers (excluding any LLNL training identified in the subcontract);

B.11 Describe its occupational medicine program for workers if required; and

B.12 Describe its emergency procedures while on site, for medical and fire response.

C. In addition, the safety plan shall address:

C.1 Project scope of work.

C.2 Specific construction safety measures required for the project work and specific project site and conditions.

C.3 Controls for common construction hazards.

C.4 Environmental protection.

C.5 Items listed in the SAHCL.

C.6 A comprehensive occupational medicine program for workers stationed at the LLNL jobsite for more than 30 days and are enrolled for any length of time in a medical monitoring program required by 10 CFR 851 or other federal, state, or local regulation.

C.7 Emergency procedures for medical or fire response while on site. See 1.07, below.

D. LLNS will make the final determination on the acceptability of the Subcontractor’s safety plan.

E. Keep one copy of LLNS-approved, safety plan at the jobsite at all times.

F. The following task-specific safety submittals are required when listed in the Statement of Work:

F.1 Task-specific rigging and lifting plan, including steel erection and equipment lifting (refer to paragraph 3.05 for critical lift requirements)

F.2 Traffic control and safe management of circulation for vehicles, pedestrians, and bicyclists around the jobsite and staging/laydown areas

G. In addition to the other safety submittals required by this section, electronically submit and send one hard copy of the following to LLNS for approval within 7 calendar days of Notice to Proceed:

G.1 The name and qualifications of the Subcontractor's safety officer (see paragraph 1.02.C.8).

G.2 A completed hazardous material inventory sheet. A copy of this form is included as attachment 2 to section 01 35 43 "Environmental Protection."

1.04 SUBCONTRACTOR TRAINING PROGRAM

A. Safety Training: The Subcontractor is responsible for the safety education of its employees. Provide safety education training in accordance with all laws and standards and include additional training for site supervision. Training shall continue through the term of the subcontract. Submit copies of training certificates for each employee to LLNS for all operations which require such training prior to performing the work. The records should be representative of the required instruction provided by the subcontract organization. The records should clearly state the training course and instruction provider, the date of training, and employee completion status.

A.1 As a minimum, provide the following training for all pertinent Subcontractor personnel:

A.1.a Employee Orientation Training: Provide orientation training for every employee (including all sub-tier subcontractors) working on the jobsite covering the various safety policies, safety manuals, first aid availability, accident reporting procedures, safety meeting participation, personal protective equipment, enforcement procedures, and any special LLNS-safety requirements that are required in the specifications or the subcontract.

A.1.b Supervisor Safety Training: Supervisor safety training shall cover record keeping, incident investigation, OSHA inspections, H&S documentation requirements, and the OSHA 30-hour course for construction. Submit written verification of the supervisor's safety training and certifications.

A.1.c All employees and sub-tier subcontractors working on the jobsite shall have successfully completed the OSHA 10-hour course for construction. Submit each employee's training course certification to LLNS prior to the start of work.

A.1.d Competent Person Training: Each person designated as a competent person shall attend training on that particular operation. Operations requiring a competent person in accordance with OSHA requirements include, but are not limited to, trenching, excavation and shoring, fall protection, scaffolds, confined space entry, and rigging. Provide, in writing, the names of the designated competent persons for the particular operations and the verification of their training and experience for that operation.

A.1.e Emergency Procedures: Procedures shall cover notification procedures, evacuation routes, mustering points, and accountability. This section shall also be included as part of the employee orientation training specified in paragraph A.1.a above.

A.1.f Lockout/Tagout: Training shall cover each individual piece of energy producing machinery or equipment that is to be removed, installed, serviced, or altered during the project. See subpart 3.09 "Lockout/Tagout LOTO" of this section.

A.2 The following additional training shall be given to all employees performing work:

- Noise for hearing conservation
- Ladder and stairway use
- Proper use of personal protective equipment
- Hazard communication

A.3 The following additional specific training shall be given to all employees performing work when listed in the Statement of Work:

- Confined space entry for personnel working in confined spaces
- Oxy-fuel gas welding and cutting safety for personnel performing oxy-fuel gas welding or cutting
- Powered industrial truck (forklift) for personnel required to operate a forklift
- Incidental crane safety for personnel operating hoists or cranes or rigging for a lift
- Fall protection for personnel required to work at elevations six feet and above
- Basic air purifying respirator training for personnel required to don respirators
- Basic air purifying respirator training fit test for personnel required to don respirators
- Scissor/manlift operator training for personnel required to operate scissor lifts or manlifts
- Scaffold safety for personnel required to work from scaffolding

1.05 SUBCONTRACTOR SAFETY MEETINGS

A. Safety Orientation: Prior to the start of work, attend a LLNS-hosted safety orientation. The orientation will include the viewing of a general safety video, a video describing LLNL's permit process, an overview of construction safety requirements specified in this section, and a discussion of site specific safety requirements. The orientation will take approximately one hour. Prepare an attendance roster in accordance with paragraph 1.02.D.2.

B. Weekly Safety Meetings:

B.1 Conduct weekly meetings as required by OSHA with all on-site Subcontractor and sub-tier subcontractor personnel. Prepare documentation detailing the subject discussed with signatures of all participants for each meeting and submit it to LLNS within 24 hours after the meeting.

B.2 On all projects involving soil-disturbing activities at Site 300, communicate the risk of Valley Fever and discuss the mitigation measures to protect those potentially affected.

C. Daily Safe Plan of Action (SPA) Meetings: Conduct daily SPA meetings with the work crew and each lower-tier subcontractor at the jobsite at the start of work. See appendix A for the SPA process, a sample worksheet, and checklist. For work performed in the NIF directorate, use NIF's SPA. NIF's SPA is also contained in appendix A.

1.06 THRESHOLD LIMITS FOR SAFETY VIOLATIONS

A. General:

A.1 Safety violations are categorized as major and minor and LLNS' Construction Manager (CM) and/or Project Manager (PM) shall determine the violation category.

A.2 Safety violations are assessed on an individual basis. Generally, for minor violations, the three-strike rule applies and for major violations, a one strike rule applies.

B. Minor Violations: A minor violation is defined as unintentional noncompliance with an approved safety plan, work plan, or procedure resulting in a nonlife-threatening situation, no serious bodily injury, no major damage to property or surrounding programmatic operations, and no threat to LLNL security.

B.1 The first minor violation will result in a verbal warning from the CM, who informs the Subcontractor's superintendent of the violation. The Subcontractor's superintendent shall document the violation on the daily report.

B.2 The second violation, which could be unrelated to the first violation, will result in a written warning from the CM. The Subcontractor's superintendent shall provide a written corrective action plan on the form, sign it, and submit it to the CM.

B.3 At the third violation, the CM will document the violation on a safety review form and LLNS will send the Subcontractor a written request for the employee to be released from the site.

C. Major Violations:

C.1 Major violations fall into two categories: an intentional noncompliance to an approved safety plan, work plan, or procedure; and any intentional or unintentional violation resulting in a threat to life, serious bodily injury, major damage to property or surrounding programmatic operations, or a threat to LLNL security.

C.2 At the first major violation, the CM will document the violation on a safety review form and LLNS will send the Subcontractor a written request for the employee to be released from the site.

1.07 EMERGENCIES

In an emergency affecting the safety of persons or property, immediately call 911 from an LLNL system phone or (925) 447-6880 (LLNL Emergency Dispatch Center) from off-site, pay, or cellular phone (service not available at Site 300), and take appropriate action to prevent or minimize damage, injury, or loss, and to preserve the integrity of the emergency site for future investigation. Promptly notify LLNS of the occurrence of such an emergency and the action taken by the Subcontractor. This notice may be oral followed by written confirmation.

1.08 SPECIAL PROVISIONS FOR SITE 300

A. The LLNL Site 300 location is an area where explosives are processed, transported, and tested and the area shall be treated as a hazards area. Subcontractor employees seeking access to the jobsite for the first time under this subcontract shall attend a 15-minute pre-job safety briefing at Site 300 in addition to the safety orientation (see paragraph 1.05.A).

B. Site 300 also has a Valley Fever Hazard. The Valley Fever Hazard and the required training to perform work at Site 300 are described in the Indemnification and Insurance Requirements, "Site 300 Valley Fever Hazard." Any soil disturbance and outdoor dust

generating activities shall use effective dust control, mitigation measures, and respiratory protection for workers as necessary to limit the potential inhalation of spores.

C. Additional work requirements are detailed in the Security and Site Access Provisions.

D. Enforcement of Regulations: Because of the nature of the operating activities at Site 300, all regulations and requirements are strictly enforced and shall be complied with at all times.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 PROTECTION OF PERSONS AND PROPERTY

A. Erect and maintain, as required by existing conditions and performance of the subcontract, adequate safeguards for safety and protection, including: providing adequate lighting and ventilation; posting danger signals and other warning signs against hazards; issuing and posting safety regulations; and notifying LLNS of conditions that could affect LLNS or other subcontractor activities at the project site, adjacent sites, or utilities sites.

B. Notify LLNS when use or storage of explosives, other hazardous materials, equipment, or unusual methods are necessary for the execution and/or performance of the subcontract work. Exercise the utmost care and carry on such activities only under the supervision of properly qualified personnel.

C. Do not perform or permit any part of the subcontract work on the project site to be performed so as to endanger the safety and/or health of persons or property. These safety management processes shall be addressed in the Subcontractor's safety plan.

3.02 PERSONAL PROTECTIVE EQUIPMENT (PPE)

A. Personal Protective Equipment (PPE): Provide and inspect all PPE. In addition, ensure that all Subcontractor employees, lower-tiered subcontractors, and construction vendors use the appropriate PPE at all times. Construction site PPE shall minimally include:

A.1 ANSI Z87.1 "Occupational and Educational Personal Eye and Face Protection Devices" compliant safety glasses

A.2 ANSI Z89.1 "Industrial Head Protection" approved hard hats

A.3 ASTM F 2413 "Performance Requirements for Foot Protection" compliant safety toe work boots ("high tops")

A.4 Appropriate clothing (long pants and shirts with a minimum of 4-inch sleeves)

A.5 High visibility/reflective vests or other acceptable reflective clothing (class II), as required when work is performed in inclement weather or workers are subject to vehicle and/or heavy equipment traffic

A.6 Additional PPE as required by other sections of these specifications, and as specified in the Subcontractor's safety plan.

3.03 SCAFFOLDING AND LADDER SAFETY

A. Before using scaffolding, all personnel must complete a scaffold user training course. The Subcontractor shall ensure all scaffolding is erected, maintained, and disassembled under the supervision of a competent scaffold person by properly trained workers. The Subcontractor shall conduct daily inspections by a designated competent scaffolding person and by the user before access. Makeshift scaffolds are not permitted.

B. The Subcontractor shall use personal fall protection when working from a ladder when the midsection of the worker's torso (i.e., belt buckle) is outside of the side rails of the ladder, or if it is necessary to work backwards from a ladder. Wherever possible, work on ladders shall be performed so the worker is able to face the ladder and maintain three points of contact when climbing or descending. Materials and tools should be raised and lowered by a rope or other mechanical means. All portable ladders must be tied off, or secured to prevent being displaced when the worker's feet are above 6 feet. Stepladders should be tied off whenever possible.

3.04 FALL PROTECTION

Provide fall protection at the work site in accordance with 29 CFR 1926 "Safety and Health Regulations for Construction" Department of Labor. Provide all safety equipment, material, labor, and services required for compliance with this requirement. Warning line systems in compliance with OSHA 29 CFR 1926.502, (f) shall include additional warning lines or demarcation at lower levels when needed to ensure that they are visible at the employee's working level.

3.05 CRANES AND CRITICAL LIFTS

All use of cranes shall identify the types of lifting activity anticipated on the JHA (see paragraph 1.03.A, above). LLNS will determine whether critical lifts are a part of that activity. If LLNS identifies critical lifts as part of the work of this subcontract, the lifts shall be conducted in accordance with the requirements of appendix F.

3.06 AERIAL LIFTS

A. Aerial lifts include any manual vertical aerial platforms, powered vertical aerial platforms, and boom-supported aerial platforms (e.g., extensible boom platforms, articulating boom platforms).

B. When Subcontractor personnel operate aerial lifts, ensure lift operators are trained and qualified to operate the lift in accordance with 29 CFR 1910.66 to 68 and 29 CFR 1926.450 to 454.

C. All aerial lifts and self-propelled elevating work platforms shall only be operated by authorized and qualified workers in accordance with the manufacturer's instructions. Operators shall perform a workplace inspection before use. If traveling 50 feet or more, the platform shall be in the lowered or stowed position. Extensible or articulating booms should

be retracted or folded. The Subcontractor shall obtain the CM's approval if necessary to exit lifts or platforms from a height.

3.07 ROOF ACCESS

Hazards associated with roof access may affect personnel accessing facility roofs and building occupants. Hazards include exhausted gases, fumes, or particles from rooftop stacks, chemical hoods, glove boxes, hot water boilers, and building sewer systems. Other potential hazards include exposure to ionizing and non-ionizing radiation, electrical shock, moving machinery, explosive hazards, or contamination from previous operations or experiments. There are also fall hazards related to working at heights, slips, trips, skylights, and ladder use. LLNL roofs are classified as "General Access" or 'Restricted Access" depending on the hazards associated with accessing the roof. Access policies and controls vary among facilities within both classifications. An LLNS Roof Access Permit may be required to authorize work activities for certain locations. The CM will obtain prior authorization and required LLNS permits to release activities to be performed on LLNL rooftops. The Subcontractor shall ensure that all required procedures are followed for roof access.

3.08 CONFINED SPACES

A. The Statement of Work may require performing work in one or more spaces that meet the Federal OSHA definition of a permit-required confined space. Submit a written confined space entry program document (including a copy of confined space entry permit) along with evidence of worker training that meets the requirements of 29 CFR 1910.146. LLNS will review the submitted document for acceptability and notify the Subcontractor of any deficiencies. All noted deficiencies shall be corrected before performing work in the confined space. The Subcontractor's confined space entry program shall include procedures for coordinating entry operations if both LLNL and Subcontractor personnel will enter the confined space. These joint work activities shall require the Subcontractor to perform their own atmospheric monitoring and utilize their confined space entry permit. LLNL personnel will conduct their own.

B. Subcontractor shall provide for, and train their employees to use, any and all necessary equipment to perform confined space entry. This includes non-entry rescue equipment and calibrated direct-reading atmospheric monitoring equipment.

C. The Subcontractor shall coordinate a pre-start job walkthrough as described in paragraph 1.03.B to review confined space hazards and precautions/procedures to be implemented.

3.09 LOCKOUT/TAGOUT (LOTO)

A. The Subcontractor shall have a program for the isolation and control (lockout/tag) of energy sources for equipment to be worked on in accordance with 29 CFR 1910.147. LOTO of electrical circuits shall be in accordance with 29 CFR 1910.333, Subpart S, "Electrical." The OSHA regulations permit the use of only a tag with no lock; however, this is not allowed at LLNL - both a lock and tag are required. All circuits to be worked on shall be locked with keyed locks (not combination) and tagged. Coordinate all lockout and tagout of circuits in advance with LLNS; do not perform lockout and tagout before obtaining LLNS' approval.

Do not allow a single individual to perform LOTO for other workers. Each affected worker shall apply their own lock and tag.

B. If, during the course of work, a device is encountered that cannot be locked, obtain guidance from LLNS before proceeding.

3.10 WELDING, BURNING, OR FIRE PRODUCING ACTIVITIES

A. All welding shall be performed in accordance with ANSI Z49.1, “Safety in Welding, Cutting, and Allied Processes,” sections 4.3 and E4.3. Do not use thoriated welding rods without the CM’s approval in writing.

B. As part of the LLNS’ program to control fire hazards and negative environmental impacts, burn permits are required for welding, soldering, and other hot-work operations with a high fire potential. The CM will obtain permits from the LLNL Fire Department for the following types of activities: Cutting and welding, heat treating, grinding, powder-driven fasteners, hot riveting, torching, soldering, using tar pots or tar kettles, using open fires for any purpose, barbecuing, and any other heat-producing, spark-producing tasks that could produce a fire hazard. All controls shall be followed as prescribed on the permit and permits shall be posted in the work area until the work is completed.

3.11 HOT OR COLD ENVIRONMENTS

Comply with the thermal stress (cold and hot) recommendations in American Conference of Governmental Industrial Hygienists (ACGIH), ‘‘2005 TLVs and BEIs.”

3.12 HEARING CONSERVATION

A. Hearing Conservation Program: The Subcontractor shall submit a hearing conservation program to protect workers from hearing loss due to noise. The program shall consist of the following elements:

A.1 Identification of Exposed Personnel: Identify personnel who are exposed to noise in excess of the 2005 ACGIH Threshold Limit Value (TLV) for noise.

A.2 Worker Noise Protection:

A.2.a Notification and PPE: Notify workers who are exposed to noise above the TLV and provide them appropriate PPE.

A.2.b Engineered and Administrative Controls: Describe controls used to keep other worker's (i.e., workers not identified in paragraph A.1 above) noise exposure below 85 dBA based on an 8-hour time-weighted average.

A.2.c If baseline noise monitoring has been established for similar activities, then submit to LLNS for review. Conduct noise monitoring for activities not previously base lined. All data shall be documented and kept at the jobsite location.

A.3 At a minimum, the Subcontractor shall:

A.3.a Use the OSHA Required Method for Hearing Protective Device Attenuation, or

A.3.b Using sound level meter set to the A-weighing network, obtain representative sound level readings for the area and/or task and estimate the 8-hour Time Weighted Average (TWA). Subtract 7 dB from the NRR and subtract the result from the estimated 8-hour TWA (dBA).

A.4 Audiometric Testing: For workers identified in paragraph A.1 above perform audiometric testing as required by 29 CFR 1910.95. The Subcontractor shall ensure that audiometric baselines are provided to employees when exposed over the ACGIH 8-hour time-weighted average of 85dba within the first 6 months of being identified to participate in the Subcontractor's Hearing Conservation Program. Annual audiograms shall be provided thereafter.

A.5 Train workers to appropriately use established controls and PPE.

3.13 EXPOSURE PROTECTION FOR SILICA DUST

A. Silica is a basic component of soil, sand, asphalt, stone products, joint compound, abrasive blasting media, and many other masonry building products. Silica dust is generated from work where crystalline silica-containing materials are disturbed. Ensure workers are not exposed to levels of silica dust exceeding 0.025 mg/m3 (the TLV established by the 2006 ACGIH) while conducting work that disturbs crystalline silica-containing materials.

B. Use engineering controls to mitigate silica dust. Engineering controls include, but are not limited to, wet methods, local exhaust ventilation, and HEPA vacuums. Submit intended method(s) of control for review. If personal protective equipment is also required, or if respiratory protection will be used, also submit a personal protective equipment plan and respiratory protection plan. LLNS will review these submittals for conformance with 29 CFR 1926.

C. Submit personal air monitoring measurements collected during representative work with descriptions of the engineering controls and PPE that were utilized that demonstrates worker exposures to silica is below the 2006 version of the ACGIH TLV. Air monitoring shall be conducted in accordance with methods set forth by the National Institute for Occupational Safety and Health (NIOSH). Sample analyses shall be done by a laboratory participating in, and currently judged proficient by the American Industrial Hygiene Association (AIHA) "Proficiency in Analytical Testing" (PAT) Program. Air monitoring data will be reviewed by a LLNS Industrial Hygienist.

D. A HEPA vacuum shall be used to clean up any silica dust and/or slurry generated during concrete or asphalt disturbance. The HEPA vacuum shall be certified in accordance with 3.16, below.

3.14 EXPOSURE PROTECTION FOR ASBESTOS AND LEAD

See section 01 35 43, subpart 1.08 "Asbestos" and subpart 1.09 "Lead."

3.15 EXPOSURE PROTECTION FOR CHEMICALS OR HAZARDOUS SUBSTANCES OTHER THAN ASBESTOS, LEAD, OR SILICA

A. Ensure workers are not exposed to chemicals or hazardous substances at levels exceeding the TLV established by the 2005 ACGIH. Where ACGIH has not established a TLV, use OSHA permissible exposure limits (PELs) defined in 29 CFR 1910 Subpart Z or 29 CFR 1926. Note that ACGIH TLVs are typically more stringent than OSHA PELs. In the case where the PEL is more restrictive than the TLV, workers shall be protected at the lower exposure level.

B. Baseline Exposure Assessment Submittals:

B.1 Submit a description of the engineering controls (e.g., wet methods, ventilation) and personal protective equipment that will be used to mitigate worker exposures to chemicals or hazardous substances. If respiratory protection will be used, also submit a respiratory protection program. LLNS will review these submittals for conformance with 29 CFR 1926.

B.2 Submit personal air monitoring measurements collected during representative work and describe the engineering controls and PPE that were utilized that demonstrates worker exposures to chemicals or hazardous substances is below the relevant exposure standard. Air monitoring shall be conducted in accordance with methods set forth by the National Institute for Occupational Safety and Health (NIOSH) or OSHA where available. Sample analyses shall be done by a laboratory participating in, and currently judged proficient by the American Industrial Hygiene Association (AIHA) “Proficiency in Analytical Testing” (PAT) Program. Air monitoring data will be reviewed by a LLNS Industrial Hygienist.

3.16 HEPA FILTER CERTIFICATION

The filtration efficiency of all HEPA-filtered equipment (e.g., vacuum cleaners, portable exhaust ventilation units, and negative-pressure machines) used for hazardous materials (e.g. asbestos, lead, silica, and like materials) shall be certified within the past 12 months using a challenge aerosol in accordance with ASME N510 and AG1. The documented filtration efficiency for all HEPA-filtered equipment shall be a minimum of 99.97%. Documentation of HEPA filtration system certification shall be provided to LLNS and shall include the name of the certifying organization, the individual that performed the test, the date that the test was conducted, the efficiency of the filter as installed in the equipment, and serial numbers for the equipment and HEPA filter. Attestation of HEPA filtration system testing meeting these criteria can either be a sticker on the equipment or a copy of documentation from the certifying organization. LLNS may conduct performance checks of the HEPA-filtered equipment once they are positioned at the location/building at LLNL where they are intended to be used and prior to commencement of the work.

3.17 ELECTRICAL SAFETY

A. General: Ensure that all necessary safety procedures are followed when working with electricity. In addition, submit a safety plan in accordance with subpart 1.02 “Subcontractor Safety Program” that includes a section on electrical safety. LLNS will review the plan in accordance with section 01 33 00 “Submittals.” Demonstrate in the safety plan that all project-specific electrical safety considerations are addressed, including (but not limited to) the following:

A.1 All electrical work shall be performed by qualified electricians in accordance with NFPA 70E and 29 CFR 1926, subparts K and V, and as provided for in the Subcontractor's safety program.

A.2 If exposed energized parts are encountered where none were expected, particularly during testing of locked- and tagged-out circuits, stop work immediately and contact LLNS for guidance before proceeding.

B. Lockout/Tagout: All circuits to be worked on shall be locked and tagged in accordance with 3.09, above.

C. Work on energized circuits is not anticipated for this project, however, contact LLNS immediately if conditions are encountered that would necessitate working on energized circuits.

D. The Subcontractor may be required to work near potentially hazardous electrical equipment in the course of the project. Address this work in the safety plan and provide persons qualified to perform such work and all necessary safety equipment as specified in NFPA 70E and 29 CFR 1926, subparts K and V. Notify LLNS 14 days in advance of performing the work. LLNS may provide guidance for working in the vicinity of such equipment.

3.18 LOCATING BURIED AND HIDDEN UTILITIES

A. Before performing any soil, concrete, or framed wall penetrations, notify LLNS, complete a location survey, and if required, coordinate with LLNS to secure excavation and drilling permits.

B. Soil and Concrete Procedures:

B.1 General: Permits are required for any soil penetration regardless of depth. Permits may be required for any concrete structure penetration. Notify the CM at least 48 hours in advance of any anticipated concrete drilling. LLNS will determine if scanning is required, or if a permit is required.

B.2 Locator Services: Use the services of LLNS or a LLNS-approved locator. LLNS will furnish a list of approved locators for soil surveys; all concrete locating surveys will be performed by LLNS. LLNS will also furnish all available documentation for the area of proposed excavation or drilling, including drawings, existing survey data, and locating reports. Clearly delineate all areas to be excavated with white paint in accordance with California Code 4216.2. Ensure that these marks remain intact and clearly visible throughout the entire excavation process.

B.3 Excavation and Drilling Permits: No permit will be issued without a completed locating survey. Notify LLNS prior to commencing with the locating survey. Submit the completed locating survey along with a permit request to LLNS; LLNS will issue a permit within 14 working days of receipt of the request and the completed survey. Excavation and drilling work shall commence within 15 days of permit issuance or the permit will expire. Notify LLNS if the period of excavation work will extend beyond 30 days from permit issuance, so that LLNS may extend the permit.

B.4 Excavation: All excavation shall be carried out under the supervision of a competent person as defined by 29 CFR 1926, sections 650 and 651. If feasible, secure utilities by lock and tag procedures in accordance with this section. When excavations are planned, exercise the following cautions as a minimum:

B.4.a When the excavation crosses or is within a 30-inch radius of a known or located utility excavate by hand or air knife until required depth is reached or utility is located.

B.4.b When the Excavation Parallels the Located Utility: Before excavating, test the proposed route of excavation by potholing every 25 feet. Excavate potholes by hand until the required depth is reached or utility is located. If the surveyed depth of the located utility is not uniform, decrease the pothole interval distance to 10 feet. If the potholing operation locates a utility where none was expected, stop the operation and immediately notify LLNS.

B.4.c Place direct burial warning tape and marker along the entire length of and about 2 feet above uncovered subsurface infrastructures during backfilling. Include information on tape and coding in the survey. Place programmable electronic marker balls at the beginning and end of the newly installed utility, every 100 feet of straight runs, and at every turn or offset of the run. LLNS will provide programmable electronic balls and warning tape. On nonmetallic utilities install tracer wire in accordance with figure 1 at the end of this section.

B.4.d If excavation uncovers an unidentified utility, stop excavation in this area and immediately notify LLNS.

B.5 Scanning Procedures: Use a handheld scanner that detects metal and interior wiring in concrete to a depth of at least 3 inches. Hand scanners shall be Zircon “Electronic Metal Locator MT6,” Zircon “Video Scanner 5.0,” or equal. Alternative hand scanners shall be submitted to LLNS for approval before use. Mark the area to be drilled with soapstone, washable crayon, or other non-permanent means prior to performing the survey. If core drilling uncovers an unidentified utility, stop drilling in this area and immediately notify LLNS.

C. Non-Concrete Wall, Floor, or Ceiling Penetration: Any disturbance of a non-concrete surface using, but not limited to, saw cutting, hole drilling, insertion of anchors for earthquake protection/seismic tie-downs, attaching support brackets/clips with screws or molly bolts, hanging of white boards, for utility pipes/conduits, boxes, or panels, by the means of hand tools, or by the use of power and pneumatic tools.

C.1 Definition of Non-Concrete Structure: A wood or metal framed structure, with an outer surface shell consisting of dry wallboard, sheetrock, plaster, stucco, sheet metal, plywood, wood, wood composite, or any other material not consisting of a solid concrete barrier. The structure may be a wall, floor, or ceiling, located in the interior, or on the exterior perimeter of a building, or trailer. The interior space between the framing members may be filled with an insulation material.

C.2 Required PPE: Use safety glasses with side shields and electrical-hazard rated safety shoes for performing any wall penetration. In addition, use Type 0 electrical gloves for any penetration where electrical wiring over 50 V is suspected and can’t be located.

C.3 Penetrations Greater Than 1/4-Inch Into Wall Cavities or Wood and Metal Framing: Whenever a wall cavity is penetrated by more than 1/4-inch, the following shall be observed:

C.3.a Use Proper Analysis Tools: Use non-conductive power or manual tools, such as reamers, screwdrivers, awls, wooden-handled punches, or other blunt instrument with insulated handle. Required hand tools include small 1/8- x 8-inch long small screwdriver, hand jab-saw, battery drill, double insulated corded tools, hole saws, flashlight, fiber optic scope, and scanner. Scanners shall be standard scanners for wood and detector for metal/wire location.

C.3.b Plan the Penetration: Check with the LLNS for known hazards. Lay out and plan the penetration beforehand and identify all hazards on both sides of the wall. If penetration will impact fire walls, security zones, or negative air pressure controls of rooms, stop work and notify LLNS.

C.3.c Identify Exterior Hazards: Surfacing material hazards such as asbestos, beryllium, lead, or other hazardous materials require additional permits, training, and PPE. If suspect hazardous materials are encountered, stop work and notify LLNS.

C.3.d Identify Interior Hazards: Identify wall interior hazards such as electrical, EMT, and other ferrous or non ferrous utilities by scanning, scoping, or cutting a view hole into the surface.

- Hand scan the area to determine location of studs, metal objects, electrical conduits, mechanical pipes, and other obstructions.
- Hand scan the area with a voltage sensitive detector for electrical circuits not in a metal conduit, such as “romex” type wiring.
- Using non-conductive tools, poke a hole for a bore scope, or cut a view hole , at a depth equal to, but not greater the thickness of the surface material layers. View inside structure with a flashlight, or bore scope for utilities.

C.3.e Finding and Anchoring to Framing: Verify framing and spacing to determine best placement for drill or anchoring site, particularly for weight-bearing fasteners. Determine if framing is metal or wood and check correct spacing (e.g., 16 or 24 inches). If framing can’t be found by scanner, check behind walls, under floors, in false ceilings, and on other floor levels (if applicable) to determine spacing. Look inside cabinets and bookshelves for fasteners layout.

C.3.f Relocate penetrations to avoid all identified hazards.

C.3.g Drilling Procedures: Use drill bit or hole saw flagged with tape installed around it to indicate gypsum board depth. Set pilot bit as shallow as possible. Use light pressure to drill a hole to depth gauge with a battery drill. If any resistance other than the gypsum board is detected, stop work and notify LLNS; use jab-saw to finish hole. If obstruction is present, contact LLNS to relocate hole. After first hole is completed, perform a visual check in wall to ensure that no obstructions are present. Follow the same procedure from the other side of the wall to complete opening.

D. As-Builts: Provide utility system as-builts in accordance with the requirements for record drawings in section 01 77 00 “Project Closeout.” Show all utility elevations and all coordinate points at which utility changes of direction occur.

3.19 EXCAVATION AND TRENCHING

A. When the Statement of Work requires any excavation of 5 feet or more in depth, submit to LLNS a detailed plan in conformance with California Code of Regulations (CCR) title 8, California Labor Code sections 6705 and 6707, showing the design of shoring, bracing, sloping, or other provisions to be made to protect workers from the hazard of caving ground during the excavation. The proposed plan shall comply with the standards established by State of California CCR Title 8, Construction Safety Orders and CCR Title 24, California Building Standards Code. If the detailed plan varies from such shoring system standards, it shall be prepared by a registered civil or structural engineer whose name and registration number shall be indicated on the drawings.

B. Special Trench Barricades: In areas of high population density and high pedestrian traffic, provide special open-trench barricades and protection. For open trenches adjacent to occupied buildings, crossing pedestrians, crosswalks and paths, at street intersections, and crossing or adjacent to sidewalks and driveways, the following forms of open-trench protection are required:

B.1 Provide type II barricades, as defined in CALTRANS “Traffic Manual,” positioned on each side of the trench and at a maximum of 10-foot intervals. Spacing on each side of the trench shall alternate to show that a frontal view depicts barricades at 5-foot intervals.

B.2 Position each barricade at least 2 feet away, whenever possible, from the open trench or excavation.

B.3 Provide barricade with a yellow flasher at least 8 inches in diameter. (Note: Temporary barricades used during daylight operations do not require flashers.) Streetside flashers shall be directed parallel with the street; curbside flashers and flashers along pedestrian routes shall be facing in the direction of pedestrian traffic.

B.4 When continuous solid barricades are not provided, attach interconnecting ropes or tape to all barricades. When rope is used, attach streamers at 2- to 3-foot intervals.

B.5 Provide walkways and/or bridges with standard guard rails at all pedestrian crossing points except when trench width is 2 feet or less, a type II barricade straddling trench on either side of the walkway may be used.

B.6 Where vehicle traffic crosses trenching operations, provide metal plate coverings to support all motor vehicles. Adequacy of the metal plate to support traffic loads is the responsibility of the Subcontractor.

END OF SECTION
(Figure 1 follows.)

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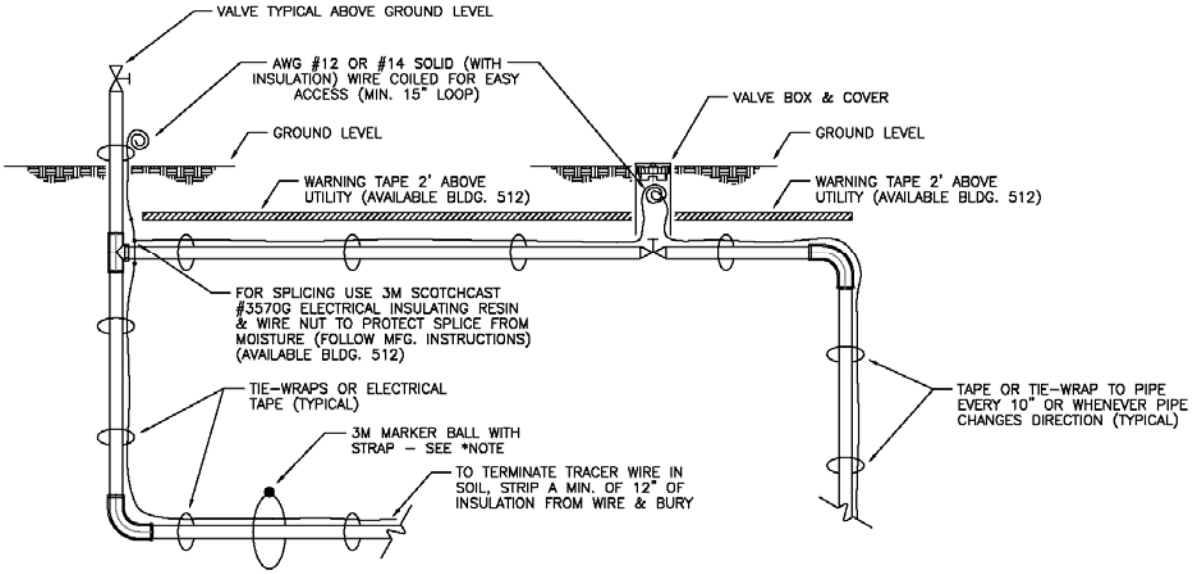
Figure 1. Tracer Wire Installation - Direct Burial of Nonmetallic Piping



* NOTE: PROGRAMMABLE PURPLE 3M MARKER BALLS ARE AVAILABLE THROUGH THE PERMIT DESK. YOU MUST NOTIFY THE PERMIT DESK OF THE TYPE OF UTILITY, DRAWING SHOWING PLACEMENT AREA, DEPTH, PERMIT #, SIZE OF UTILITY, AND ACCOUNT # ALONG WITH WHERE THE MARKER BALL IS TO BE PLACED AND A DAMAGE PREVENTION TECHNICAL COORDINATOR WILL PROGRAM THE BALL, TAKE PICTURES OF THE AREA, AND DIRECT YOU WITH THE PLACEMENT OF THE MARKER BALLS. MARKER BALLS ARE NEVER TO BE BURIED DEEPER THAN 5' AND WILL BE INSTALLED AT THE BEGINNING, END, @ TEES, OR ANY CHANGE OF DIRECTION AS PER PROC-CON-0003.

LOCATING TRACER WIRE INSTALLATION FOR DIRECT BURIAL OF ALL UNDERGROUND UTILITIES

NOT TO SCALE

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SECTION 01 35 23.19 — ASBESTOS SAFETY — CLASS III

Note: This section includes class III asbestos controls for construction work where existing asbestos may be disturbed. "Class III asbestos work" means repair and maintenance operations, where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed.

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section defines requirements for performing class III asbestos work in accordance with CCR title 8, section 1529.

B. Asbestos is only known to be present in the materials indicated in section the Statement of Work.

1.02 REFERENCES

A. The following documents form a part of these specifications to the extent stated herein.

B. Code of Federal Regulations (CFR)

29 CFR 1910	Occupational Safety and Health Standards (Fed/OSHA)
29 CFR 1926	Safety and Health Regulations for the Construction Industry, Department of Labor (DOL)
40 CFR 61	National Emission Standards for Hazardous Air Pollutants (NESHAPS)
40 CFR 763	Asbestos Hazard Emergency Response Act (AHERA)

C. California Code of Regulations (CCR)

CCR Title 8	Industrial Relations (Cal/OSHA Regulations)	
	Section 1529	Asbestos
CCR Title 22	Social Security:	
	Div 4.5	Environmental Health Standards for the Management of Hazardous Waste
CCR Title 26	Toxics	

D. Bay Area Air Quality Management District (BAAQMD)

BAAQMD	Rules and Regulations	
	Regulation 11.	Hazardous Pollutants:
	Rule 2.	Asbestos Demolition, Renovation and Manufacturing

E. San Joaquin Valley Air Pollution Control District (SJVAPCD)

SJVAPCD	National Emission Standards for Hazardous Air Pollutants Regulation IV (Adopts NESHAP Standards) Rule 4002

F. National Institute of Occupational Safety and Health (NIOSH)

NIOSH	Manual of Sampling Data Sheets, Method 7400
NIOSH	Transmission Electron Microscopy (TEM) OSHA Equivalency Method, Method 7402

1.03 SUBMITTALS

A. Asbestos Abatement Plan: Submit to LLNS for approval prior to the start of any handling of asbestos, an "Asbestos Abatement Plan." This plan shall detail the manner in which the Subcontractor shall conduct the specified work and the procedures and equipment to be used to ensure that LLNS and Subcontractor employees are not unnecessarily exposed to asbestos, LLNS facilities are not contaminated, and the environment is protected. This document shall present the engineering, administrative, and personnel-protective controls that ensure compliance with the applicable provisions of these specifications and all applicable regulations and laws. Submit the plan to LLNS for approval prior to the commencement of any work on site. It shall describe the manner in which asbestos-containing waste shall be contained, stored, transported, and disposed. The use of power tools, unless exhausted through a HEPA filter, is prohibited.

B. Prestart Submittals: Provide the following items to LLNS prior to the start of asbestos-handling work:

B.1 Proof of current registration with the California Department of Industrial Relations as a handler of carcinogens

B.2 Proof of notification of California Department of Industrial Relations

B.3 Where applicable, a copy of required demolition notification to local air district (i.e., BAAQMD or SJVAPCD)

B.4 Evidence of employee training meeting the 40 CFR 763 (AHERA), 29 CFR 1910 (Fed/OSHA), and CCR title 8 (Cal/OSHA) requirements for all employees performing the work of this section

B.5 Evidence of training and fit testing of each employee for the use of any respirator to be used, including positive pressure respirators

B.6 Evidence of supervisor training meeting the AHERA, Fed/OSHA, and Cal/OSHA requirements for all supervisors

B.7 Evidence of medical surveillance for all employees using respirator or otherwise, where medical surveillance is required by Fed and Cal/OSHA regulation

B.8 Subcontractor's respiratory protection policy

PART 2 PRODUCTS

2.01 GENERAL

Provide all material, equipment, tools, and devices required to complete the asbestos safety work.

PART 3 EXECUTION

3.01 PROTECTION

A. Use personal-protective equipment (PPE) to minimize Subcontractor employee exposure to asbestos as described in CCR title 8, section 1529.

B. Provide the employees with necessary protective gear including, but not limited to, respirators, protective clothing, boots, goggles, and hardhats, as necessary, and enforce the use of the gear that is provided.

3.02 ENGINEERING CONTROLS AND GENERAL WORK PROCEDURES

Unless specifically exempted by LLNS, all ACM shall be handled in a wet state. Water with an appropriate wetting agent or use a removal encapsulant to wet all materials prior to and during handling. The wetting agent shall be approved by LLNS prior to the start of work.

3.03 CLASS III PROCEDURES AND CONTROLS

A. The Subcontractor is permitted to use class III procedures and controls. Conduct the work using, at a minimum, the following procedures:

A.1 Evacuation Area: Where class III work procedures are used, all persons not directly involved in the asbestos work or lacking the required personnel protective gear, shall be evacuated from the area in which the work is being performed. All nonprotected personnel shall be removed from a radius of 25 feet from the work area. This 25-foot radius shall constitute the perimeter of a restricted access zone and shall be marked by erection of a barrier such as stanchions and warning tape, or approved equivalent.

A.2 Signage: Post the perimeter of the restricted access area around the work zone with the OSHA required warning sign, approved as to form and size by LLNS.

3.04 FRIABLE ACM

A. In addition to other controls of this part, the following steps shall be taken for any work that may involve disturbing friable ACM:

A.1 After obtaining approval from LLNS, shut off or temporarily modify the air-handling system, and restrict other sources of air movement. Notify LLNS at least 14 days prior to any required shutdown so that LLNS can ensure existing facility operations are not jeopardized by a shutdown.

A.2 Use negative-pressure enclosure or glove-bag operations to prevent the spread of any fibers released by the work being performed.

3.05 GLOVE BAG OPERATIONS

A. Use personal protective clothing, such as the “Tyvek” suits, gloves, and a respirator that has been fitted in accordance with OSHA.

B. Isolate the area where the ACM is located. Place barrier tape across the doorways and at least 20 feet around the area where the ACM is located.

C. Place 6-mil plastic sheeting under the glove bag set-up.

D. Ensure that all ventilation units that service the area where the ACM is located are shut off and tagged out.

E. Don the respirator and perform a “negative” and “positive” pressure test. Do not proceed with ACM work without a proper respirator fit.

F. Determine the area where the ACM is to be removed. Place the glove bag next to the pipe and measure how much area will need to be removed. Tape the area on the pipe to delineate the area from which ACM will be removed. Tape the bottom seam of the glove bag. Slit the side seams of the glove bag to fit the pipe diameter. Seal the sides and top seam with tape after placing the necessary tools into the bag. Cut a small hole in the bag in the same area where the wetting wand will be placed during the actual ACM removal stage. Fill the bag with smoke from the smoke tube and seal the hole. Gently squeeze the bag and observe any leaking areas. Tape the leaking areas to achieve an airtight seal. If the pipe lagging is badly damaged or deteriorated the ACM may require wetting or taping to prevent a further release of fibers.

G. Wet the ACM completely prior to removal and keep the ACM wet during the removal process. Use amended water in an airless spray pump. A hand spray bottle may also be used. The hole created for the spray wand can also be used for the HEPA vacuum nozzle.

H. All visible ACM shall be removed from the pipe using a hard brush and amended water while the glove bag is still in place. Wet wipe and spray the pipe with encapsulant prior to removing the glove bag. Special attention shall be given to exposed ends of pipe lagging.

I. Place all tools into one of the armholes and pull inside out. Tape and cut the arm from the glove bag and remove the tools while they are still sealed in the arm or glove.

J. Wet the inside of the bag with amended water and place the vacuum nozzle into the bag to cause the bag to collapse. Unseal the bag and remove from the pipe. Handle waste in accordance with subpart 3.07 “Waste Handling.”

K. The exposed section of pipe shall now be closed and sealed with a non-asbestos material.

L. If the remaining pipe contains ACM, the pipe shall be labeled “DANGER ASBESTOS MATERIAL.”

3.06 NONFRIABLE ACM

A. Nonfriable asbestos that may be encountered is specified in section the Statement of Work

B. Remove all nonfriable ACM under wet conditions.

C. Perform all vacuuming with a HEPA-filtered vacuum only.

D. Mopping or wet wiping may be used to wet-clean debris (which shall be assumed to contain asbestos) from the floor. The mop or wipe is to be moved in one direction for no more than six feet, turned over, and the action is repeated for six more feet in the same direction. At the end of the two passes the mop or wipe is to be rinsed in a water bucket. These actions may be repeated, utilizing the same bucket of water until the water becomes visible soiled.

E. Mop heads and wipes shall be used for one project only. They shall be disposed of by placing them into an asbestos disposal bag at the end of the project. Asbestos-containing rinse water may also require controlled disposal. Contact the Construction Manager (CM) for guidance on disposal of all asbestos-contaminated wastes.

3.07 WASTE HANDLING

A. Dispose of all asbestos-containing waste and all items which have been contaminated with asbestos, other than those items which are to be decontaminated or managed by LLNS.

B. Ensure that all asbestos containing waste is handled, contained, labeled, stored, transported, and disposed of in accordance with applicable laws, codes, and regulations. Mark all vehicles used to transport asbestos-containing waste material as specified below during loading and unloading of waste.

DANGER
ASBESTOS DUST HAZARD
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY

C. Seal waste in airtight containers. Seal the waste in one 6 millimeter gauge or thicker plastic bag and subsequently seal in a second similar bag or metal or plastic drum. Place liquids contaminated with asbestos (e.g., unfiltered shower water) in metal or plastic drums. Ensure proper labeling of secondary bags or drums.

D. LLNS will manage and dispose of all hazardous waste.

3.08 INSPECTIONS AND AIR SAMPLING CONDUCTED BY LLNS

A. LLNS will conduct a variety of inspections of the work site to ensure compliance with the provisions of this section and applicable laws and regulations. These inspections may include, but not be limited to, the following:

A.1 Inspection of the engineering controls used by the Subcontractor

A.2 Inspection of the PPE used by the Subcontractor, including the use of respirators and protective clothing

A.3 Inspection of the work practices used by the Subcontractor, including asbestos wetting and removal procedures, and decontamination procedures

A.4 Perimeter sampling may be conducted to verify the adequacy of the Subcontractor's isolation or class III work procedures. These samples will be taken outside of restricted perimeters established for class III work. Perimeter samples shall be analyzed in accordance with NIOSH 7400. Air samples shall not exceed 0.01 fibers per cubic centimeter (f/cc) of air, or a baseline fiber level established by LLNS, whichever is higher. This is referred to as the "perimeter limit."

A.5 A preclearance visual inspection shall be conducted in the work area after all asbestos has been removed. To successfully pass this inspection, there shall be no visible residue of the removed material. Schedule this inspection with the LLNS Representative at least 24 hours in advance.

A.6 A final clearance sampling may be conducted to verify acceptable air quality within the control area prior to re-occupancy. These samples will be taken inside of restricted perimeters established for class III work. Clearance samples will be analyzed in accordance with NIOSH 7402. All air samples shall not exceed 0.01 f/cc of air.

END OF SECTION

SECTION 01 35 43 — ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.01 ENVIRONMENTAL MANAGEMENT SYSTEM

A. All Subcontractors shall perform the work in a manner that supports LLNS' commitment to be a responsible steward of the environmental resources under its control and the implementation of the LLNS' Environmental Management System (EMS) by incorporating the following actions into planning and conducting the work:

A.1 Protection of the air, water, land, and other natural and cultural resources

A.2 Compliance with all applicable environmental requirements

A.3 Pollution prevention, waste minimization, and resource conservation practices

1.02 STORM WATER POLLUTION PREVENTION

A. Storm Water Pollution Prevention Plan (SWPPP): Maintain continual storm water pollution prevention and perform all work in accordance with LLNS' site-wide Industrial Activity SWPPP and permit to ensure no pollutants are discharged into the storm drainage system. Failure to comply may result in LLNS halting work until the Subcontractor performs remedial action. Copies of LLNS' site-wide SWPPP and current industrial storm water permit are available for Subcontractor review upon request. Refer to appendix D for applicable Best Management Practices (BMPs).

B. The Subcontractor may substitute alternate pollution prevention measures for those identified in LLNS' SWPPP. Submit alternate measures for LLNS review. LLNS acceptance of alternate pollution prevention measures will not relieve the Subcontractor of responsibility for the quality and adequacy of the measures or Subcontractor implementation of them. Such acceptance does not warrant, acknowledge, or admit the quality and adequacy of the alternate pollution prevention measures.

C. Provide all materials and labor required to implement and maintain pollution prevention measures.

D. If pollution is leaving the project site, implement necessary corrective measures. Failure to comply with the requirements of the SWPPP may result in criminal and civil liability of the Subcontractor under the Clean Water Act.

1.03 AIR EMISSIONS

A. Dust Control: Perform dust control as required for the alleviation and prevention of any dust nuisance at, or in the vicinity of, the construction site as it pertains to its work. "Dust nuisance" is defined as airborne soil in sufficient quantity to be visible at any building or location adjacent to the construction site. Methods of dust control shall include:

A.1 Spraying water on loose soil that may become airborne

A.2 Covering all stockpiled excavated material containing soil to preclude wind and water erosion and dispersal during storage

B. Equipment Emissions:

B.1 Ensure all stationary or portable equipment (e.g., generator, air compressors, lifts, etc.) with internal combustion engines rated greater than 50 horsepower is permitted in accordance with Bay Area Air Quality Management District (BAAQMD) or California Air Resources Board (CARB) (for Site 300).

B.2 Ensure all products used and work conducted is in compliance with BAAQMD or San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) regulations and the air permits issued to LLNL facilities in which work is performed. Request list of applicable air permits from LLNS. The Subcontractor shall supply all required information.

1.04 MATERIAL AND WASTE DISCHARGES

A. Do not discharge hazardous materials or wastes into the environment (i.e., air, soil, surface water, and groundwater). Protect all routes of entry to the environment, including direct discharges into air, soil, surface water, storm sewer, sanitary sewer, wells, and drainage channels from construction activities. This shall be achieved by the safe and proper use and storage of tools, equipment, and materials. Inspect construction equipment and vehicles daily for leaks of fuel, engine coolant, and hydraulic fluid. Contain, repair, and immediately report any leaks to the Construction Manager. Immediately report to the Construction Manager any accidental discharges into the environment. Clean up all discharges into the environment according to the guidance provided by LLNS.

B. Discharges to Sanitary Sewer: Do not discharge any hazardous chemicals into the retention or sanitary system. All discharges to the sanitary sewer system must be approved by LLNS Construction Manager

C. Discharges to Ground:

C.1 Excess concrete may be dumped only in lined excavation pits in locations identified and approved by the LLNS Construction Manager (not to ground). The Subcontractor shall remove all dried, excess concrete for proper disposal off site.

C.2 Wash water from cleaning concrete trucks and concrete handling equipment will only be discharged in properly established evaporation pits identified and approved by the LLNS Construction Manager.

C.3 Comply with all Spill Prevention, Control, and Countermeasure (SPCC) requirements in 40 CFR 112 including, but not limited to: storage of all oil and petroleum containers (e.g., gas and diesel) 55 gallons and larger in secondary containment sized to the largest container plus four inches of freeboard; monthly inspection of all oil containers 55 gallons and larger, daily inspection of fueling tanks 55 gallons and larger; maintenance of appropriate spill response materials, and the prevention and/or containment (e.g., drip pans) of leaking equipment.

C.4 Oil container inspectors and oil handlers (personnel moving or filling oil containers) must receive SPCC training either from LLNS or provide LLNS with documentation of equivalent

training. An annual training refresher is required to be taken by oil handling personnel and must be provided either by LLNS or the Subcontractor. The Subcontractor will be required to ensure that all aspects of the SPCC training are implemented on the construction site. Copies of LLNS' site-wide SPCC Plan for Site 200 or the three individual SPCC Plans for Site 300 are available for Subcontractor review upon request.

C.5 Provide all required inspections to the LLNS Construction Manager at a regular frequency or immediately if a spill or leak has occurred.

1.05 PROTECTION OF CULTURAL OR PALEONTOLOGICAL RESOURCES

A. LLNS will clearly mark known cultural or paleontological resource areas within construction zones by staking, fencing, and pink/black diagonally-striped flagging. Avoid these areas during construction. If cultural or paleontological resources are unearthed during construction activities, immediately stop all work within 50 feet of the find until LLNS has assessed it and issued notice to proceed.

A.1 Examples of cultural resources include:

A.1.a Prehistoric cultural deposits such as obsidian or chert flakes or tools; ground-stone mortars, slabs, or pestles; cultural deposits of shell or bone; beads, clothing or woven articles; locally darkened midden (trash) soils; and human interments.

A.1.b Historic-period cultural materials such as foundations or other structural remains; bottles, nails, barbed wire, ceramic pieces, buttons, weathered boards, and tin cans; refuse deposits; backfilled wells or privies; glass and pottery.

A.2 Examples of paleontological resources include: Fossils; bones not of human origin.

B. The Archaeological Resources Protection Act (ARPA) and the Antiquities Act regulate the protection and excavation of cultural and paleontological resources. Under no circumstances may unauthorized individuals remove or disturb any such resources. If discovered, leave in place, note their location, and immediately notify the Construction Manager.

1.06 PROTECTION OF BIOLOGICAL RESOURCES

A. Open Excavations: Protect wildlife from entrapment in steep-walled excavations greater than 1-foot deep as follows:

A.1 Cover excavations completely at the end of each working day, or

A.2 Provide excavations with animal escape ramps constructed of earth fill (>1 foot) or wooden planks (>2 feet). Earth ramps should be used for excavations between 1 and 2 feet in depth.

A.3 Before excavations are filled, thoroughly inspect them for trapped animals. Contact the LLNS Construction Manager to obtain the assistance of a LLNS wildlife biologist to free trapped animals.

B. If an LLNL Endangered Species Awareness briefing is required prior to initiating work, then the Subcontractor shall have all its laborers, craftsman, supervisors, and managers directly involved in this project attend the briefing.

C. Work performed in the vicinity of endangered or threatened species nesting areas during breeding season must be controlled to ensure noise or activities do not impact the species.

D. All workers shall ensure their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered closed trash containers that are not accessible by wildlife.

E. Feeding of any animals at any LLNL site is prohibited.

F. Subcontractors may not bring any animal to any LLNL site.

G. Exclusion Zones: Do not bring construction activities into known or demarcated areas inhabited by local species of importance. LLNS will identify such areas as follows:

G.1 Kit Fox, American Badger, Burrowing Owl Dens, or nest sites: Buffer zones with 750, 300, 200, 50, or 25 foot radii will be surrounded by exclusion fencing consisting of stakes and pink/black diagonally-striped flagging (or possibly with rope or cord).

G.2 Elderberry Bushes: 300 foot radius buffer zone will be indicated by regularly placed signs or pink/black diagonally-striped flagging around the zone perimeter.

G.3 Nest Sites: Buffer zones with 750, 300, 200, 50, or 25 foot radii will be surrounded by exclusion fencing consisting of stakes and pink/black diagonally-striped flagging (or possibly with signage).

G.4 LLNS will notify the Subcontractor of any additional site-specific exclusion areas.

H. If any frog, salamander, or Alameda whipsnake is discovered in the construction area at any time, the Subcontractor shall immediately cease all work in that area, and contact the LLNS Construction Manager.

1.07 CONSERVATION OF ENERGY AND WATER

A. To the maximum extent practicable, the Subcontractor shall implement conservation practices that will reduce the consumption of water and electricity. Reduction practices may include:

A.1 Water Use/Consumption:

A.1.a Reduce LLNS-provided potable water use through signage and shutting off water sources at night to minimize leakage.

A.1.b Turn off water source when not in use.

A.1.c Use water efficient products in work activities, where feasible.

A.2 Electrical Energy Use: Turn off electrical powered items (e.g., tools, office equipment, lights) when not in use.

1.08 ASBESTOS

A. If no disturbance of asbestos is indicated in the statement of work, then LLNS does not anticipate that asbestos will be found in existing materials associated with work to be accomplished under this subcontract. However, if asbestos-containing materials (ACMs) are encountered, immediately stop work, notify the Construction Manager, and wait for further direction regarding resumption of the work.

B. If the statement of work indicates that existing asbestos will be disturbed in the course of work, refer to section 01 35 23.19 “Asbestos Safety — Class III.”

1.09 LEAD

LLNS does not anticipate that lead will be found in existing materials associated with work to be accomplished under this subcontract. However, if lead is encountered, immediately stop work, notify the Construction Manager, and wait for further direction regarding resumption of the work.

1.10 DISPOSAL OF EXCESS SOIL, ASPHALT, CONCRETE, AND OTHER MATERIALS

A. Disposal and Reuse of Excavated and/or Demolished Materials (asphalt, soil, concrete, and other materials):

A.1 Sampling and Evaluation Prior to Start of Work: If the statement of work indicates that materials to be excavated and/or demolished have already be tested for contaminants by LLNS, observe the following:

A.1.a LLNS has completed initial sampling and evaluation.

A.1.b If materials are being sent to a disposal facility, the Subcontractor shall work with the disposal facility can recycle the material.

A.1.c If visible/detectable contamination is encountered, immediately stop work, notify the Construction Manager, and wait for further direction regarding resumption of work. Disposal of any materials demonstrating visual/detectable contamination shall be coordinated through the Construction Manager.

A.2 Sampling and Evaluation During Performance of Work: If the statement of work indicates that materials to be excavated and/or demolished have not yet been tested for contaminants by LLNS, observe the following:

A.2.a LLNS will sample and evaluate all materials resulting from excavating on the project site prior to the Subcontractor removing it from the site.

A.2.b To facilitate sampling and evaluation, arrange for and be responsible for temporary staging of the materials at the jobsite or as directed by LLNS in accordance with current LLNS procedures, until disposal characterization can be completed (usually within 45 days from placement). Stockpile such materials in separate piles. Stake and identify each pile and separate all piles by location. Place the materials on and cover with plastic sheeting at LLNS-designated location and secure against displacement until such materials are tested and approved for disposal.

A.2.c The Construction Manager will provide guidance on how to manage the materials when the analytical results have been received and evaluated.

A.2.d Disposal of such materials demonstrating visual/detectable contamination shall be coordinated through LLNS.

A.3 Clean Soil - Site 300 Projects: Stage excavated clean soil materials at the Site 300 Clean Fill Storage Area. Clean fill from this project may be reused on this project where appropriate. The designated clean fill storage area will be visited during the site visit.

A.4 Clean Soil - Site 200 Projects: Reuse excavated clean soil materials on the Livermore site as directed by LLNS.

B. Special Waste

B.1 Special Waste Disposed of by LLNS: When the statement of work indicates that LLNS will dispose of special waste, observe the following: The debris resulting from excavating and stripping of the project site or demolition that is characterized by LLNS as special waste (waste not allowed for disposal in a class III landfill) shall be placed in LLNS-furnished containers for LLNS disposal.

B.2 Special Waste Disposed of by the Subcontractor: When the statement of work indicates that the subcontractor shall dispose of special waste, observe the following: The debris resulting from excavating and stripping of the project site or demolition that is characterized by LLNS as special waste (waste not allowed for disposal in a class III landfill), upon LLNS approval for removal, shall be arranged for disposal and removed from the site to a permitted class II landfill in accordance with all applicable federal, state, and county regulations. Prior to the handling of such material, contact LLNS for direction. Submit to LLNS copies of disposal manifests showing the date and location of final disposition.

C. Solid Waste Management:

C.1 Prepare a Solid Waste Management Plan (SWMP) utilizing the attached form (attachment 01 35 43-1) and submit it to the LLNS Construction Manager. The SWMP shall include the nonhazardous construction and/or demolition solid waste components (e.g., wood and metals by type) and their proposed disposition (i.e., solid waste disposal or recycling).

C.2 LLNS encourages recycling and solid waste diversion for construction waste and municipal waste generated during the project. The Subcontractor shall use LLNS paper and cardboard recycling bins, where available, to reduce the amount of municipal waste generated.

D. Hazardous Waste:

D.1 The Subcontractor shall be responsible for all wastes generated from hazardous materials used by the Subcontractor, or its lower-tier subcontractors. The Subcontractor shall store, handle, and dispose of such wastes in accordance with applicable federal, state, local environmental regulations, and the Subcontractor’s Safety Plan. These wastes may include, but are not limited to, batteries, paints, solvents, oils, and greases as well as their empty containers. All waste (e.g., spent hazardous materials, spill cleanup, and like items) generated during performance of the work shall be evaluated by the Subcontractor according

to the requirements in CCR Title 22 Section 66261 and 66262 to determine if it meets the definition of a hazardous waste.

D.2 The debris that is characterized by LLNS as hazardous waste shall be placed in LLNS-furnished containers for LLNS disposal. Prior to the handling of such material, contact LLNS for direction.

D.3 All hazardous waste will be managed according to the requirements in CCR Title 22 Section 66262.34. If the Subcontractor needs to establish a less than 90-day storage facility to store the waste, contact the LLNS to review and approve the location and construction of the storage area. The Subcontractor shall only use properly licensed transporters to remove hazardous waste from LLNL to a properly licensed disposal facility approved by LLNS.

1.11 SUBCONTRACTOR USE AND MANAGEMENT OF NONHAZARDOUS AND HAZARDOUS MATERIALS

A. Nonhazardous Materials Use:

A.1 LLNS has implemented a program to reduce or eliminate the use, and release of certain toxic and hazardous chemicals and materials. Subcontractors are expected to support LLNS' program. The Subcontractor shall, to the maximum extent possible without conflicting with the technical requirements of the subcontract reduce or eliminate the use, and release of certain toxic and hazardous chemicals and materials through the following:

A.1.a Subcontractors are encouraged to use more environmentally benign solvents and solvent-free alternative systems that reduce or eliminate the use of hazardous substances and/or the generation of hazardous waste. The Subcontractor should also purchase hazardous materials in container sizes and amounts that minimize the amount of excess material generated by the project.

A.1.b The Subcontractor is encouraged to reuse and/or recycle surplus commodities and by-products.

A.1.c The Subcontractor shall implement appropriate management practices for nonhazardous and hazardous materials brought on-site to comply with federal, state, and local regulations including but not limited to: (a) Do not store materials or waste near storm drainage systems, (b) Use of secondary containment berms for containers of liquid materials, c) Performing inspection of storage areas, d) Appropriate labeling of containers.

B. Hazardous Materials Use:

B.1 The use of certain hazardous materials must be tracked and reported to federal and state agencies. The Subcontractor shall discuss with the LLNS Construction Manager the types of hazardous materials to be used in work activities to determine if any materials must be tracked. The Subcontractor shall maintain all tracking documents identified by LLNS and provide the documents to LLNS when the work activity is completed.

B.2 The Subcontractor is encouraged to purchase hazardous materials in container sizes and amounts that minimize the amount of excess material generated by the work.

B.3 Material Safety Data Sheets (MSDS): The Subcontractor shall submit material safety data sheets to the LLNS Construction Manager for all chemicals, oils, solvents, paints, epoxies, adhesives, petrochemicals, or similar materials to be used on site. The Subcontractor shall maintain copies of these MSDS in a readily accessible location on-site. Store materials in containers in accordance with the requirements of the MSDS within the construction boundary or as directed by the Construction Manager in accordance with SWPPP. Remove and dispose of all such materials not incorporated in the work in accordance with the applicable federal, state, and local regulations.

B.4 Hazardous Materials Inventory: The Subcontractor shall also complete, and submit to the LLNS Construction Manager the LLNL Hazardous Material Inventory form attachment 01 35 43-2. Copies of the completed forms shall be retained, by the Subcontractor, with the MSDS for the work. If any hazardous materials required by the specifications are to remain on site at the end of the project, advise LLNS Representative and contact the LLNL ChemTrack Hotline (424-4404).

B.5 Transportation of Hazardous Materials: The Subcontractor shall comply with applicable federal and state regulations when transporting hazardous materials to the LLNL site. The Subcontractor shall comply with all posted traffic signs and speed limits at LLNL sites.

1.13 CONTROLLED ITEMS AND MATERIALS

A. The Subcontractor shall not use or bring any of the controlled items or materials listed below to LLNL Sites 200 or 300 without prior written approval from LLNS.

A.1 Asbestos products

A.2 Lead or lead-based paint materials (defined as having greater than 600 ppm lead)

A.3 Hazardous materials with MSDS (See paragraph 1.11.B.3)

A.4 Corrosive or toxic chemicals

A.5 Flammable or combustible liquids

A.6 Radioactive materials

A.7 Radiation generating devices

A.8 Non-ionizing radiation generating devices

A.9 Explosives

A.10 Thoriated welding rods

PART 2 PRODUCTS and PART 3 EXECUTION

Not used

END OF SECTION
(Attachments 01 35 43-1 and -2 follow)

Attachment 01 35 43-1

SOLID WASTE MANAGEMENT PLAN (SWMP)

Company Name_____ Date_____

Company Contact_____ Phone_____

Mailing Address_____

Task Description_____

SOLID WASTE COMPONENT	DISPOSITION	TONNAGE

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Attachment 01 35 43-2

Lawrence Livermore National Security, LLC (LLNS)
Lawrence Livermore National Laboratory (LLNL)
Hazardous Material Inventory

Project information:

Project Name:	**Subcontract No.:**
Est. Project Start Date:	**Est. Project End Date:**

Instructions:

1. Please list hazardous materials below for which the manufacturer or producer has prepared a Material Safety Data Sheet (MSDS).

2. Indicate the quantity of each hazardous material (pounds, gallons, and the like) to be handled at the jobsite.

3. Provide a completed copy of this inventory form to LLNS Construction Manager, L-514.

4. Notify the ChemTrack Hotline on ext.4-4404 if any materials will be left on site after the project is completed.

Material	Quantity	Material	Quantity

(Additional space for inventory information is provided on the next page.)

For more information regarding this inventory:

Subcontractor Name:	Date:
Contact Name:	Telephone No.:

Questions? Please call the ChemTrack Hotline, ext.4-4404

3/96 Rev.0

Lawrence Livermore National Security, LLC (LLNS)
Lawrence Livermore National Laboratory (LLNL)
Hazardous Material Inventory
Continuation Sheet

Material	Quantity	Material	Quantity

SECTION 01 42 00 — CODES AND STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. All work performed shall be in accordance with the edition of the codes and standards in effect as of January 1 of the year the subcontract is awarded, unless otherwise noted.

A.1 Throughout the subcontract documents, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics.

A.2 Where materials or workmanship are required by these subcontract documents to meet or exceed the specifically named code or standard, provide materials and workmanship which meet or exceed the specifically named code or standard.

1.02 QUALITY CONTROL

A. Compliance with Pertinent Codes and Standards: In procuring all items used in this work, verify the detailed requirements of the specifically named codes and standards and verify that the items procured for use in this work meet or exceed the specified requirements.

B. Rejection of Nonconforming Items: LLNS reserves the right to reject items incorporated into the work which fail to meet the specified minimum requirements. LLNS further reserves the right, without prejudice to other recourse, to accept nonconforming items subject to an adjustment in the subcontract amount as accepted by LLNS.

C. Nationally Recognized Testing Laboratory (NRTL):

C.1 Materials shall be tested and listed or labeled by a nationally recognized testing laboratory (NRTL) recognized by the Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.7 such as, but not limited to, Underwriters Laboratories (UL) or FM Global (FM). In cases where no material of the type specified is NRTL listed, submit all relevant technical data regarding the proposed material, in writing, to LLNS for resolution in accordance with section 01 33 00 “Submittals.”

C.2 LLNS may, solely at its option, require the Subcontractor to submit additional manufacturer's information, such as specific testing procedures used, conditions under which testing was performed, and/or other details of the tests.

1.03 CODES AND STANDARDS

A. Comply with the codes and standards promulgated by the following agencies and organizations and those identified in the Statement of Work. Bring any conflicts between the Statement of Work, special provisions, drawings, and the referenced documents to the attention of LLNS, in writing, for resolution before taking any related action. Where differences exist between codes and standards, the one with the most stringent requirement, as determined by LLNS, shall apply.

B. Code of Federal Regulations (CFR)

29 CFR 1904	Parts 1904.4-11, 29-33, 44, and 46; Recording and Reporting Occupational Injuries and Illnesses
29 CFR 1910	Occupational Safety and Health Standards, Department of Labor
29 CFR 1910.7	Definition and Requirements for a Nationally Recognized Testing Laboratory
29 CFR 1926	Safety and Health Regulations for Construction, Department of Labor

C. California Code of Regulations (CCR)

Title 24	Part 2: California Building Code (CBC) Part 4: California Mechanical Code (CMC) Part 5: California Plumbing Code (CPC)

D. American National Standards Institute (ANSI)

ANSI A10 Series	Safety Requirements for Construction
ANSI B30 Series	Safety Standards for Cranes and Hoists
ANSI Z49.1	Safety in Welding, Cutting, and Allied Processes
ANSI Z88.2	American National Standard for Respiratory Protection

E. National Fire Protection Association (NFPA)

NFPA 70	National Electrical Code
NFPA 70E	Standard for Electrical Safety in the Workplace
NFPA 101	Life Safety Code
NFPA 241	Standard for Safeguarding Construction, Alteration, and Demolition Operations

Fire Codes, as applicable

F. Comply with all applicable federal, state, and local safety, health, and environmental regulations and the Subcontractor’s approved safety plan.

PART 2 PRODUCTS and PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 45 00 — QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Material inspection

B. Manufacturers' field services

C. Testing laboratory services

D. Schedule of LLNS-provided inspections and tests

1.02 MATERIAL INSPECTION

A. Suspect/counterfeit materials are prohibited under the general provisions clause entitled "Quality of Materials and Supplies." LLNS may conduct periodic inspections of Subcontractor materials for compliance.

B. Subcontractor Examination:

B.1 Promptly examine shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

B.2 Receive LLNS-furnished equipment/materials shipped to the jobsite and examine them in accordance with the above requirements.

1.03 MANUFACTURERS' FIELD SERVICES

A. When specified in the Statement of Work, require supplier or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment and/or services as applicable, and to make appropriate recommendations.

B. Submit the representative's written report to LLNS listing observations and recommendations.

1.04 TESTING LABORATORY SERVICES

A. When laboratory services are included in the Statement of Work, LLNS will employ and pay for services of an independent testing laboratory to perform inspections, tests, and other services listed in the Statement of Work.

B. After each inspection and test, LLNS will direct the testing laboratory to promptly submit two copies of testing laboratory report to LLNS and one copy to the Subcontractor. The report will include: Date issued, project title, name of inspector, date and time of sampling or inspection, identification of product, location in the project, type of inspection or test, date of test, results of tests, and conformance with subcontract documents. When requested by LLNS, the testing laboratory will provide interpretation of test results.

C. Cooperate with testing laboratory personnel; provide access to work, furnish tools, samples of materials, design mix, equipment, storage, and assistance as requested.

C.1 Deliver to testing laboratory at designated location adequate samples of materials proposed to be used that require testing, together with proposed mix designs.

C.2 Notify LLNS 48 hours prior to expected time for operations requiring testing services.

C.3 Make arrangements with testing laboratory and pay for additional samples and tests performed for the Subcontractor's convenience.

D. If tests indicate work does not meet specified requirements, remove and replace work at no additional cost to LLNS.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 50 00 — TEMPORARY FACILITIES/CONTROLS AND SITE CLEAN UP

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary utilities

B. Temporary ventilation

C. Project site access controls

D. Traffic control

E. Barriers

F. Protection of installed work

G. Protection of existing structures and trees

H. Progress cleaning and waste removal

I. Field offices, sheds, and break areas

J. Removal of utilities, facilities, and controls

1.02 REFERENCES

A. The following documents form a part of these specifications to the extent stated herein.

B. Bay Area Air Quality Management District (BAAQMD)

C. San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD)

D. American Conference of Governmental Industrial Hygienists (ACGIH)

ACGIH	Industrial Ventilation Manual

1.03 TEMPORARY ELECTRICITY

A. Temporary power, telephone service, water, and sanitary facilities are as listed in the Statement of Work.

B. Temporary Power:

B.1 If the Statement of Work indicates power is not available, provide temporary power, such as portable generators, for the Subcontractor’s construction purposes. Use of temporary portable generators shall be in accordance with the local air quality management district BAAQMD or SJVUAPCD as applicable rules and regulations. Permits and/or use of registered inter-district equipment may be required.

B.2 If the Statement of Work indicates power is available, the Subcontractor shall bear the expense of connections of electricity from LLNS on-site sources. Exercise reasonable care to conserve LLNS-furnished power and take the following minimal energy conservation measures:

B.2.a Turn off all unnecessary construction lights and equipment at the close of each workday.

B.2.b Set thermostats in construction office and any other facilities under Subcontractor control at the following: 78°F for cooling and 65°F for heating.

B.2.c Install 7-day time clock on construction offices and any other facilities under Subcontractor control that will provide for off-hour as well as weekend electrical power shutdown.

B.3 LLNS does not guarantee amounts available nor will LLNS be responsible for interruptions in service.

B.4 Temporary service installed by and for the Subcontractor shall be removed and utilities restored to their initial condition by the Subcontractor at the completion of the subcontract.

B.5 Provide and maintain the electrical power distribution system downstream of LLNS-furnished electrical service.

C. All temporary electric power shall be protected by ground fault circuit interrupters. Daisy-chaining of extension cords is not permitted.

D. Temporary Water Service:

D.1 Potable water is the responsibility of the Subcontractor.

D.2 If the Statement of Work indicates construction water is available with proper connection to an LLNL fire hydrant or hose bib, LLNS will provide an adapter for Subcontractor use. Provide backflow preventer acceptable to LLNL Fire Department. Do not remove the adapter and exercise reasonable care to conserve LLNS-supplied water.

E. Temporary Sanitary Facilities: If the Statement of Work indicates toilet facilities are not available, provide and maintain portable chemical toilets for use at locations LLNS has approved, and remove them from the site upon completion of the subcontract.

1.04 GENERAL SANITATION

The Subcontractor shall ensure that the construction work place conforms to the requirements of 29 CFR 1926.51.

1.05 TEMPORARY VENTILATION

Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent inhalation exposure and potential contamination caused by the generation of dust, fumes, vapors, or gases. Use ventilation to maintain the concentrations of air contaminants below standards applicable at LLNL. Provide ventilation in accordance with ACGIH “Industrial Ventilation Manual.”

1.06 BARRIERS

A. Provide and maintain suitable temporary barricades, fences, and other structures as required for the protection of public traffic and employees; provide walks around any obstructions; and maintain on or near the construction, sufficient light to protect all personnel from injury. All barricades shall have electrically operated warning lights during hours of darkness. No open-flame lights will be permitted.

B. Provide protective closure facilities, such as roofing, canopies, and/or seals at existing buildings where connections or modifications are being made, to prevent the entry of rain and other weather elements so that equipment, facilities and structure are protected and retained in operating condition.

C. Protect vehicular traffic, parked vehicles, stored materials, site, and structures from damage.

1.07 PROJECT SITE ACCESS CONTROLS

Establish clear limits of construction area and entry control. Provide entry-control sign-in boards, properly delineated boundaries, list of facility points of contact (FPOCs), access requirements, and the like.

1.08 TRAFFIC CONTROL

A. Give at least 48 hour notice to the Construction Manager whenever large shipments or deliveries are expected at the jobsite.

B. Provide full-time flagman whenever heavy equipment or trucks are crossing or entering onto LLNL or Site 300 roads, parking lots, or pathways.

1.09 PROTECTION OF INSTALLED WORK

A. Protect installed work and provide special protection where specified in individual specification sections or in the Statement of Work.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

1.10 PROTECTION OF EXISTING STRUCTURES AND TREES

Protect existing structures and all trees and shrubbery to remain against damage. Repair or replace structures, streets, curbs, utilities, and landscaping damaged due to the Subcontractor’s construction activities at no additional cost to LLNS. Replace each tree removed or damaged with a boxed specimen, 6 inch minimum trunk diameter, of like kind at locations directed by LLNS. Provide for temporary watering of existing trees and ground cover where existing irrigation is disrupted by construction. Replace damaged or removed irrigation at completion of work.

1.11 PROGRESS CLEANING AND WASTE REMOVAL

Keep the construction area clean at all times and remove accumulated debris, waste materials, and rubbish each day in accordance with the Subcontractor's solid waste management plan (section 01 35 43 "Environmental Protection"). Assign required manpower to perform clean up and provide dumpsters for rubbish, debris, and nonhazardous waste materials. If, in the opinion of LLNS, the jobsite has not been kept clean and orderly and presents a potential safety or fire hazard, the Subcontractor may be required to stop work in the affected area and immediately correct the defects at no additional cost to LLNS, including lost time for clean-up effort. Supply a full-time laborer one day a week for the time the Subcontractor is performing work on site, to assist in general project site clean up. Refer to section 01 77 00 "Project Closeout" for final cleaning.

1.12 FIELD OFFICES, SHEDS, AND BREAK AREAS

Provide all temporary storage, office space, and break areas that may be required at the site for the safe and proper storage of tools, materials, and Subcontractor employee use. Locate these temporary facilities where directed by the Construction Manager. Remove them promptly at completion of work.

1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials prior to final inspection and as directed by the Construction Manager.

B. Remove temporary underground installations to the minimum depth required or as indicated on the subcontract documents. Grade site as indicated or restore to original condition.

C. Clean and repair damage caused by work or use of temporary work.

D. Restore existing and permanent facilities used during construction to original condition.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 52 00 — STORAGE AND PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Transportation and handling

B. Storage and protection

C. Repairs and replacements

1.02 TRANSPORTATION AND HANDLING

A. Transport and handle products in accordance with manufacturer's written instructions.

B. Provide equipment and personnel to handle products by methods that prevent soiling, disfigurement, or damage.

C. Promptly remove damaged material and unsuitable items from the jobsite and promptly replace with material meeting the specified requirements at no additional cost to LLNS.

1.03 STORAGE AND PROTECTION

A. Except as directed by the Construction Manager, store and protect products in accordance with manufacturers' written instructions.

B. Store with seals and labels intact and legible.

C. Store sensitive products in weather-tight, climate controlled, enclosures in an environment favorable to product.

D. Provide equipment and personnel to store products by methods that prevent soiling, disfigurement, or damage.

E. Exterior Storage:

E.1 When the Statement of Work indicates exterior storage space is available, comply with the following:

E.1.a For exterior storage of fabricated products, place on supports aboveground.

E.1.b Cover products subject to deterioration with impervious sheet covering and provisions for water runoff. Provide ventilation to prevent condensation and degradation of products.

E.1.c Arrange storage of products in accordance with section 01 35 43 "Environmental Protection" to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

E.1.d Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

E.1.e Store all material to prevent contamination of storm water runoff.

E.2 When the Statement of Work indicates on-site exterior storage space for Subcontractor materials is not available, provide bonded off-site storage and protection for materials as needed at no additional cost to LLNS.

F. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.

G. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Construction Manager.

1.04 REPAIRS AND REPLACEMENTS

A. In event of damage, promptly make replacements and repairs as directed by the Construction Manager and at no additional cost to LLNS.

B. Additional time required to secure replacements and to make repairs will not be considered by the Construction Manager to justify an extension in the subcontract time of completion.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 77 00 — PROJECT CLOSEOUT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Closeout procedures

B. Final cleaning

C. Adjusting

D. Project record documents

E. General requirements for manuals

F. Warranties

G. Spare parts and maintenance products

H. Demonstration

I. Maintenance service

1.02 CLOSEOUT PROCEDURES

A. Submit written certification that subcontract documents have been reviewed, work has been inspected, is complete in accordance with subcontract documents, and is ready for LLNS review and inspection.

B. Provide submittals to LLNS that are required by the subcontract documents.

C. Submit final application for payment identifying total adjusted subcontract sum, previous payments, and sum remaining due.

1.03 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. Clean debris from drainage systems.

C. Clean site; sweep paved areas, rake clean landscaped surfaces.

D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.04 ADJUSTING

Adjust operating products and equipment to manufacturer’s specifications and recommendations, to ensure smooth and unhindered operation.

1.05 PROJECT RECORD DOCUMENTS

A. Preparation of Project Record Documents: Maintain, as a minimum, on site one set of drawings, the Statement of Work, addenda, change orders, and other modifications to the subcontract, reviewed submittals, manufacturer's written instructions for assembly, installation and adjusting, and test and inspection reports, including batching records, fabrication travelers, laboratory and field test reports, survey records, and the like.

A.1 Ensure daily entries are complete and accurate, enabling future reference by LLNS. Record information concurrent with construction progress.

A.2 Store project record documents separate from documents used for construction.

B. Drawings: Legibly mark each item to record actual construction. Minimum lettering size on full-size drawings shall be 1/8-inch high, block style, vertical upper case. Do not use paste-on details or mark on the back side of drawings. Include at the minimum, the following:

B.1 Measured depths of foundations in relation to finish first floor datum

B.2 Changes in the horizontal and vertical locations of new and existing underground utilities and appurtenances, referenced by LLNL coordinates or to permanent surface improvements

B.3 Measured locations of building piping and appurtenances concealed in construction, referenced to visible and accessible features of the work

B.4 Field changes of dimensions and details

B.5 Details, especially utilities discovered in the course of work and not on original subcontract drawings or LLNS-approved design/shop drawings

B.6 Special attention shall be applied to showing changes in the following areas:

- Buried or concealed (inaccessible without demolition) work
- Structural modifications
- Pneumatic, electrical, and electronic control systems

C. Product Data: Record actual products installed, including the following:

C.1 Manufacturer's name and product model and number

C.2 Product options utilized

C.3 Changes made by addenda and subcontract modifications

D. Final Submittal of Project Documents: Prior to final acceptance inspection, submit project record documents, as defined above, to LLNS.

D.1 Hard Copy: Final submittal shall include one complete hard-copy set of full-sized drawings and product data fully illustrating all revisions made in the course of the work. Hard copies shall be vellum (sepia and bond copies not acceptable).

D.2 Electronic Copy: When indicated in the Statement of Work to submit an electronic copy, submit updated design/shop drawings showing all new and revised work, in an Autodesk supported version of AutoCAD, on CD-ROM. Also submit product data in pdf (portable document format) files.

D.2.a Drawings shall generally conform to and comply with the U.S. National CAD Standard (NCS) available through the National Institute of Building Science (NIBS). For purposes of these special provisions, the term “consultant” used in the referenced standard shall mean the Subcontractor or the applicable engineering discipline, as appropriate.

D.2.b Include all nonstandard fonts (.shx file). Special fonts require LLNS approval. Utilize the LLNL coordinate system for site drawing layouts. Show entities as layer specific with separate text layers.

D.2.c Treat linetypes, entities, and colors “BYLAYER” only. Include a layering schedule (uniquely and consistently named for each design discipline) and legend of blocks and symbols used.

D.2.d All Xrefs shall be bound to the drawing.

D.2.e Data inserted into the drawing that cannot be bound or OLE’d shall have the same name as the file number. Information that cannot be permanently attached to the drawing shall be saved together.

D.2.f Submit each drawing as a separate stand-alone file.

1.06 GENERAL REQUIREMENTS FOR MANUALS

A. Quality Assurance: Prepare instructions and data by personnel experienced in maintenance and operation of described products.

B. Compile operating and maintenance data in the form of manuals appropriate for care and maintenance of products provided under the subcontract and specific information requested in the Statement of Work.

C. Submittal of Manuals:

C.1 Submit two copies of preliminary draft of proposed formats and outlines of contents before start of work. LLNS will review draft and return one copy with comments.

C.2 Submit six sets of revised final volumes in final form within 10 days after final inspection.

D. Format:

D.1 Prepare data in the form of an instructional manual.

D.2 Binders: 8-1/2 x 11 inch, three side-ring type “D” binder with durable plastic cover.

D.3 Cover: Identify each binder with typed or printed title in capital letters (e.g, OPERATION AND MAINTENANCE MANUAL). Identify title of project, identify building/structure applicable, and identify subject matter of contents.

D.4 Dividers: Provide tabbed dividers for each separate product and system with typed description of product and major component parts of equipment.

D.5 Text: Manufacturer's printed data or typewritten data on 20 pound bond paper.

D.6 Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

E. Operation and Maintenance Data Manual Content:

E.1 Part 1: Directory, listing names, addresses, and telephone numbers of the Plant Operations Engineer, Subcontractor, lower-tiered subcontractors, and major equipment suppliers.

E.2 Part 2: Operation and maintenance instructions arranged by equipment and or system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of subcontractors and suppliers. Identify the following:

- Significant design criteria
- Equipment list and description
- Parts list for each component, including recommended spare parts
- Operating instructions
- Maintenance instructions for equipment and systems

E.3 Part 3: Project documents and certificates including the following:

- Shop drawings, product data, and calculations
- Certificates
- Photocopies of warranties

F. Materials and Finishes Manual Content:

F.1 Building Products, Applied Materials, and Finishes: Include manufacturer and (name, address, phone number) product data, with catalog number, size, composition, and color and texture designations. Provide information for reordering custom manufactured products.

F.2 Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

F.3 Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

F.4 Additional Requirements: As specified in individual specification sections.

F.5 Provide a listing in table of contents for design data with tabbed fly sheet and space for insertion of data.

1.07 WARRANTIES

A. The Subcontractor shall submit a warranty/master equipment list as shown in attachment 01 77 00-1 to this section. LLNS will provide an electronic form on request.

B. Form of Submittals:

B.1 Bind in 8-1/2 x 11 inch, three side-ring type “D” binders with durable plastic covers.

B.2 Cover: Identify each binder with typed or printed title WARRANTIES. Identify with title of project; name, address, and telephone number of the Subcontractor and equipment supplier; and name of responsible company principal.

B.3 Table of Contents: Neatly typed, in the sequence of the table of contents of the project manual with each item identified with the number and title of the specification section in which specified and the name of product or work item.

B.4 Separate each warranty with index tab sheets keyed to the table of contents listing. Provide full information using separate typed sheets as necessary. List the Subcontractor, supplier, and manufacturer with name, address, and telephone number of responsible company principal.

C. Preparation of Submittals:

C.1 Obtain warranties, guarantees, bonds, and service and maintenance contracts executed in quadruplicate by responsible Subcontractors, suppliers, and manufacturers, within 14 calendar days after acceptance of the applicable item of work. Except for items put into use with LLNS’ permission, leave date of beginning of time of warranty until the date of substantial completion is determined.

C.2 Provide a copy of each warranty/guarantee and service contract issued. Include an information sheet for LLNS personnel giving:

C.2.a Proper procedures in the event of failure

C.2.b Required maintenance to maintain contracts

C.2.c Instances which might affect the validity of contracts

C.3 Verify that documents are in proper form, comply with subcontract documents, contain full information, and are notarized.

C.4 Co-execute submittals when required.

C.5 Submit six original, signed copies, of each.

D. Timing for Submittals:

D.1 For equipment or component parts of equipment put into service during construction with LLNS’ permission, submit documents within 14 calendar days after acceptance of said equipment by LLNS.

D.2 Make other submittals within 14 calendar days after date of substantial completion, prior to final application for payment.

D.3 For items of work for which acceptance is delayed beyond date of substantial completion, submit within 14 calendar days after acceptance, listing the date of acceptance as the beginning of the warranty period.

E. Construction and Installation Workmanship Warranty: Warranty for work performed, including rework and installation, labor and material, where applicable, shall be for a period of one year from the date of final acceptance of the work, in accordance with the clause entitled “Warranty of Construction” in the General Provisions.

F. Equipment, Subsystem, and Component Warranty: Warranty for equipment, subsystems, and manufactured components shall be for a period of 24 months from the date the item was delivered to the site or 12 months from the date of first operation, whichever occurs first. The warranty obligation includes field labor and material to remedy the problem, as well as replacement of defective parts, components, any whole equipment items as may be required.

G. Specific Warranties: Specific warranties of construction items, specified in the Statement of Work shall take precedence over the warranties stated in paragraphs D and E above.

1.08 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra products in quantities specified in the Statement of Work.

B. Deliver to project site and place in location as directed by the Construction Manager. Obtain receipt prior to final payment.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 DEMONSTRATION

A. Before final inspection, instruct LLNS’ designated personnel in operation, adjustment, and maintenance of products, equipment, and systems at agreed upon times. Length of instructions shall be based upon times indicated in the Statement of Work.

B. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

C. Prepare and insert additional data in operation and maintenance manual when need for such data becomes apparent during instruction.

3.02 MAINTENANCE SERVICE

A. Furnish service and maintenance of components for the period of time and coverage indicated in the Statement of Work. Start of maintenance period begins on date of final acceptance or from the date LLNS takes beneficial occupancy.

B. Maintenance service shall not be assigned or transferred to any agent or sub-subcontractor without prior written consent of LLNS.

END OF SECTION
(Attachment 01 77 00-1 follows)

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Attachment 01 77 00-1

FORM-BUS-0002 WARRANTY MASTER EQUIPMENT LIST REPORT

"B331 Replace ACHPS-06 Project"

Item No.	Type	Equipment ID No.	Status	Room	Location	Area Served	Circuit Number	Panel Location	Manufacturer	Model No.	Serial Number	CFM	E.S.P. in W.C.	Supply Fan HP	Volts/Ph/Hz	Main Circuit Amps	Max. Fuse Breaker Size	Cooling Total Air Capacity (MBH 1000BTU/Hr)	Refrigerant	Nom. Tons	Min. EER/Efficiency	ARI Net Capacity Heating BTU/HR @ 47 Deg. F (MBH 1000BTU/Hr)	Start of Warranty/ (Beneficial Occupancy)	Warranty Found (Y/N/NA)	Warranty Recorded (Y/N/NA)	Warranty Coverage/ Period	Status	Installer/Contractor Responsible for the Warranty	Specification Requirements / Notes
1	Air Source Unit Heat Pump	612ACHPS-01	Ordered	Roof	B612	Rooms 104 & 107	1177A-27	Room 100	York	XP150E36E2TZZ5	TBD	3,400	0.5	3	208V, 3 PH, 60 Cycle	167 AMPS	175 AMPS	156	R410A	12.5	11	144	TBD	TBD	TBD	TBD	TBD	TBD	YORK, CARRIER OR EQUAL, PPS #0496, 26 KW SUPPLEMENTAL ELECTRICAL HEAT, PROVIDE ROOM THERMOSTAT AND COMMUNICATION CONNECTIVITY WITH BACNET/IP/
SAMPLE Input Above																													
1																													
2																													
3																													
4																													
5																													
6																													

FORM-BUS-0002 Warranty MEL Report.xlsx 1 of 1 3/15/13 Rev. 0

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APPENDIX A: SUBCONTRACTOR SAFE PLAN OF ACTION (SPA) PROCESS/SAFE PLAN OF ACTION (SPA) PROCESS FOR NIF

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APPENDIX A: SUBCONTRACTOR SAFE PLAN OF ACTION (SPA) PROCESS

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1.01 Purpose and Scope:

A. This procedure establishes requirements for preparing a Safe Plan of Action (SPA) for construction projects at Lawrence Livermore National Security, LCC (LLNS') Lawrence Livermore National Laboratory (LLNL).

B. Description: The SPA is a task-driven process designed to ensure that every task receives proper safety planning prior to starting work. The SPA shall become part of the daily work authorization for all work activities.

C. Intent: The SPA is a task-and-time-specific process that supplements other processes in place to help foster safe, timely, and quality work at the jobsite. It shall be developed as a team effort by Subcontractor's work crew and superintendent before any task is begun. The intent is to systematically plan specific tasks to be conducted in a safe and effective manner. The SPA does not replace procedures set forth in Subcontractor's site safety program, but reinforces particular aspects of safety pertaining to specific day's work.

1.02 Responsibilities: Implementation of the SPA process is the responsibility of Subcontractor's management, field teams, and LLNS' project team. Authority to perform identified tasks may be delegated to other qualified personnel, but responsibility remains with those named above.

A. Subcontractor's Management Team: Subcontractor's management team (project manager and superintendent) is responsible for:

A.1 Ensuring adequate training in the SPA process for all personnel working at the construction site.

A.2 Monitoring content of completed SPA forms for quality and completeness.

A.3 Reporting SPA worksheet content to LLNS on a monthly basis.

B. Subcontractor's Field Team (superintendent and work crew):

B.1 Subcontractor's Superintendent: Subcontractor's superintendent is responsible for:

B.1.a Becoming knowledgeable of the SPA process.

B.1.b Providing on-the-job training for Subcontractor's work crew.

B.1.c Conducting meetings at the start of each new task or shift to lead the work crew through the job-planning process and development of the SPA worksheet.

B.1.d Documenting the SPA using the attached worksheet.

B.2 Subcontractor's Work Crew: Subcontractor's work crew is responsible for:

B.2.a Becoming knowledgeable of the SPA process.

B.2.b Completing necessary training in the SPA process.

B.2.c Participating in preparation of the worksheet at the start of each new task or shift.

B.2.d Conducting work activities in accordance with the SPA.

C. LLNS Project Team (Project Manager, Construction Manager, and Construction Inspector):

C.1 LLNS' Project Manager is responsible for:

C.1.a Ensuring the project team members are trained in the SPA process.

C.1.b Making provisions for adequate Subcontractor training and proper implementation of the SPA process.

C.1.c Reviewing a sampling of Subcontractor's completed SPA forms on a routine basis for appropriate content.

C.2 LLNS' Construction Manager is responsible for:

C.2.a Reviewing Subcontractor's completed SPA worksheets for consistency and adequate coverage.

C.2.b Continuously monitoring the overall SPA process for effectiveness and informing the Project Manager and other team members of its findings.

C.2.c Identifying any additional training needs for Subcontractor's superintendent or work crew.

C.3 LLNS' Construction Inspector is responsible for:

C.3.a Conducting training of Subcontractor personnel in the SPA process.

C.3.b Field monitoring the SPA process to assure Subcontractor's work crews comply with the SPA requirements.

1.03 Process: The sequence of action steps in the SPA process and responsible individuals for each step are as described below.

A. Identify Work Area and Task: Generally, the work to be performed will be covered in Subcontractor's site-specific safety plan. The SPA shall cover specific tasks to be performed within a shift in a particular work area. Note: A clear understanding of

what the job entails from beginning to end is essential for an accurate and complete SPA.

B. Develop a Safe Plan of Action: Subcontractor's work crew assigned to perform the work shall develop the SPA during the daily Pre-Job Breifing meeting, with guidance from Subcontractor's superintendent. Subcontractor's superintendent shall lead the work crew as they plan their work for the shift and solicit their participation in identifying hazards and hazard control measures, such as personnel protective equipment (PPE), required training, permits, procedures, and like items.

C. Document SPAs: Subcontractor's superintendent shall document SPAs using the attached worksheet. Each member of Subcontractor's field team shall sign the completed worksheet. Signatures indicate the individuals have participated in development of the worksheet, understand the hazards, and agree to follow the completed worksheet.

D. Conduct SPA Meetings: Subcontractor's superintendent shall conduct a daily Pre-job/SPA meeting and discuss all tasks to be performed that day. This is a brief (generally not more than 10 minutes) safety meeting to discuss tasks to be conducted during the work shift. When a task is continued from a previous day, the meeting shall include a review of the current SPA and consideration of any new hazards or conditions that could exist. The SPA meeting may be combined with a "tool-box" meeting or "morning safety" meeting; however, the meeting shall include a review of the SPA currently in effect, or development of a new worksheet, and sign-off by each worker and the superintendent as noted in paragraphs C and D above.

E. Post Completed SPAWorksheets: Subcontractor's superintendent shall post the completed worksheet immediately adjacent to the work area such that anyone may review the form throughout the work shift. In case of an incident, the SPA shall be immediately evaluated for work conditions and procedures.

F. Retain Completed SPA Worksheets: Subcontractor's superintendent shall retain all SPA worksheets. Furnish signed and dated copies of all worksheets to LLNS' Construction Manager upon completion of the form and again at completion of the tasks described in the worksheet.

G. Review the SPA Process: Subcontractor shall verify the content and quality of the SPA worksheets completed by its employees and lower-tier subcontractors. LLNS' Construction Manager will utilize appropriate sampling techniques to monitor the quality of completed worksheets.

1.04 Documentation: Each SPA shall be documented using the attached form, FORM-CON-0003 *Subcontractor Safe Plan of Action (SPA) Worksheet*. Subcontractor shall retain hard copies of each worksheet for the duration of the activity. LLNS' Construction Manager will also retain a copy of all SPA records.

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☐Maintenance

☐Construction

Lawrence Livermore National Laboratory
Subcontractor Safe Plan of Action (SPA) Worksheet

IWS#_____ Task(s) #_____ Work Order#_____

Subcontractor: _____ Sub-tier: _____ Craft: _____ LLNS Responsible Individual Name and #: _____

Date: _____ Location of Task: _____ Equipment #:_____

MAJOR WORK STEPS OF TASK	POTENTIAL HAZARDS	CONTROLS / SAFETY PLAN	TOOLS REQUIRED

Task Specific Required Inspection	
Daily Lift Inspection	Inspected By/Name
Harness Inspection	Inspected By/Name
Fire Extinguisher Inspection Current	Inspected By/Name
Cords – Properly Inspected by Each User	Documented Below by Signature
All Existing Systems Enabled	Inspected By/Name

Work Area Questions

Is there adjacent work and/or co-occupancy in work area? ___Yes ___No

Other workers adjacent above or below work area? ___Yes ___No

Did you notify them of your presence? ___Yes ___No

Did you coordinate with adjacent work? ___Yes ___No

Can you proceed with working safely? ___Yes ___No

Barricades Set Up ___Yes ___ No Removed at end of task ___Yes ___No

Pre-job briefing has been completed and each employee is taking the responsibility to ensure that all required training for this work activity is current, and that they are competent and qualified on all required tools/equipment – Signature and Employee/Badge Number

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

Subcontractor Foreman/Superintendent Signature: _____

Instructions: Complete this form per task, per day. **1.** Fill in the IWS number, task, location and date. **2**. List **major work steps** of this task. **3**. Using the back side of this form as a guide, walk-through the work area and list **potential hazards** involved with each work step. **4**. List controls or **safety plan** to mitigate those hazards. **5**. List **required tools** to perform the job safely. **6**. Have each worker review the work area; assist with completing this form, sign name and documents employee/badge number. **NOTE**: Multi Craft jobs require each discipline to complete a separate form for their task. Review with all workers in work area. Each worker signs and documents employee/badge number on all worksheets. **7**. Ensure all copies of SPA(s) are submitted to LLNS for retention. **NOTE: Work shall pause if conditions change, *job scope changes, or a deficiency in the plan is noted.* If any injuries or incidents occur, respond as appropriate, then immediately contact the LLNS Responsible Individual.**

Permits/Required Reviews

- ❑ Facility Work Permit
- ❑ Concrete/Asphalt Penetration Permit
- ❑ Confined Space
- ❑ Critical Lift
- ❑ Building Drain Work
- ❑ Excavation /Shoring Permit (Underground Location)
- ❑ Fire/Burning Permit
- ❑ Hoisting & Rigging Assembly/Breakdown
- ❑ Asbestos/Lead Work
- ❑ Lock Out/Tag Out
- ❑ Pneumatic Test
- ❑ Roof Access Permit
- ❑ Steel Erection/Decking/ Grating Plan
- ❑ Working on Energized Circuits & Equipment
- ❑ Low Voltage Outage Permit

Required PPE

- ❑ Hard Hat/Correct Class
- ❑ Ear Plugs/Ear Muffs
- ❑ Eye Protection
- ❑ Safety Glasses
- ❑ Face Shield
- ❑ Chemical Goggles
- ❑ Welding Hood
- ❑ Respiratory Protection
- ❑ Special Clothing
- ❑ Tyvek
- ❑ Nomex III
- ❑ Rain Suit
- ❑ Safety Vest (Class II or III)
- ❑ Other _____

Hand/Arm Protection

- ❑ Arm Sleeves
- ❑ Cut-Resistant Gloves
- ❑ Welders Gloves
- ❑ Nitrle Gloves
- ❑ Rubber Gloves
- ❑ Elect Insulated Gloves
- ❑ Other _____

Foot Protection

- ❑ Safety Toe Boots
- ❑ Rubber Boots
- ❑ Rubber Boots cover
- ❑ Dielectric Footwear

Fall Protection

- ❑ Harness
- ❑ Lanyard
- ❑ Fall Restraint Anchor Point
- ❑ Fall Arrest Anchor point
- ❑ Tool Tethers
- ❑ Retractable Device
- ❑ Horizontal Lifeline system
- ❑ Warning Line System
- ❑ Temporary Guardrail System
- ❑ Fall Rescue/Retrieval Plan

Hazards	**Safety Plan**
☐ Overhead Utilities	☐ De-energization Req. ☐ Insulation Bankets Req. ☐ Wire Watcher Req. ☐ Req. Clearance Distance ☐ Safe Work Zone Marked
☐ Crane or other Lifting Equipment Lifting, Rigging Objects	☐ Signalman Assigned ☐ Tag Lines in Use ☐ Lifting Equip Inspected ☐ Area Around Crane Barricaded ☐ Rigger Plan/Personal Protected
☐ Aerial Lift/Platform	☐ 100% Tie Off ☐ Daily Inspection ☐ Training Current ☐ Access Permit/Custodial Possession Placard
☐ Electrical	☐ Lockout/Tagout ☐ Required Permit ☐ Multi Energized Source? ☐ Confirm Equip. is De-energized ☐ Review Elect. Safety Procedures
☐ Excavations	☐ Required Permit ☐ Inspect Prior to Entering ☐ Barricades ☐ Proper Sloping/Shoring ☐ Access/Egress Provided
☐ Fire Hazard = Cut, Weld, Burn, Grind, Solder	☐ Required Permit ☐ Fire Extinguishers ☐ Fire Watch ☐ Adjacent Areas Protected ☐ Unnecessary Flammable Material Removed
☐ Vehicular Traffic and/or Heavy Equipment	☐ Traffic Barricades ☐ Cones ☐ Signs ☐ Flagman ☐ Lane Closure ☐ Communication with Equipment Operator ☐ Surface Condition
☐ Noise > 85 db	☐ Hearing Protection Required ☐ Ear Plugs/Muffs
☐ Hand & Power Tools	☐ Inspect General Cond. ☐ Identified PPE Required for Each Tool ☐ Review Safety Operation Manual ☐ Guarding OK ☐ GFCI in Use
☐ Hand Hazards	☐ Check for Sharp Tools, Materials & Equipment ☐ PPE Gloves ☐ Protect Sharp Edges as Necessary
☐ Manual Lifting	☐ Review Proper Lifting Tech. ☐ Hand Protection Req. ☐ Clear Pathway ☐ Back Support Belts ☐ Identify Material Requiring Lifting Equip.
☐ Ladders	☐ Inspect General Cond. before Use ☐ Quarterly Ladder Inspection ☐ Ladder Tied Off ☐ Proper Angle/Placement ☐ Review Ladder Safety
☐ Scaffolds	☐ Inspect General Cond. before Use ☐ Tags in Place & Properly Secured ☐ Footings Adequate ☐ Toe Boards Used ☐ Material Properly Stored
☐ Slips, Trips, Falls	☐ Inspect for Trip Hazards ☐ Extension Cords Properly Secured ☐ Work Zone Free of Debris ☐ Tools & Material Properly Stored
☐ Pinch Points Exposed (Rotating Equipment)	☐ Review Area for Potential Pinch Points or Exposed Rotating Equipment ☐ Near Operating Equip? ☐ Hand/Body Position ☐ Loose Clothing?
☐ Working w/ Chemicals	☐ Task Creates Potential for Direct Contact with Hazardous Chemicals ☐ Review MSDS ☐ Have Proper Containers & Labels ☐ PPE
☐ Heat / Cold Stress Potential	☐ Heat-Stress Monitoring (>85 degrees) ☐ Liquids Available ☐ Cool-Down Periods ☐ Sunscreen ☐ Review Heat/Cold Stress
☐ Body Mechanics	☐ Proper Clothing ☐ Wind Chill (<32 degrees) ☐ Warm-Up Periods
☐ Environment (Endangered Species)	☐ Air Emissions ☐ Water Discharge ☐ Hazardous/Other Wastes ☐ Awareness of Endangered Species & Habitant Area
☐ Natural or Site Hazards	☐ Weather ☐ Terrain ☐ Adjacent Operations ☐ Biological Hazards ☐ Animal/Reptiles/Insect Hazards
☐ Barricades/Covers for Overhead Work	☐ Caution Barricade Tape Req. ☐ Danger Barricade Tape Req. ☐ Warning Signs ☐ Cover Over Opening ☐ Rigid Railing Req.
☐ Underground Utilities (Line Locating)	☐ Review As-Builts ☐ Subsurface Surveys ☐ Received Dig Permit ☐ Required Clearance Distance ☐ Safe Work Zone Marked ☐ Walk Around
☐ Transporting Materials on Vehicle	☐ Tie Down All Loads ☐ Secure Materials on Racks ☐ Flag Ext. Material
☐ Moving/Falling Objects from Height	☐ Tether Small Objects ☐ Use Rope, Canvas Bag ☐ Barricade Around Potential Fall Area
☐ Pressurized Gas Hazard	☐ LOTO Process ☐ Take Care Near Small Fragile Lines
☐ Laser Hazard/Beampath	☐ Stay Outside of Identified Areas ☐ Proper Laser Eyewear
☐ O2 Deficiency, Argon Hazard and/or Freon	☐ Observe Signs ☐ Use O2 Monitor ☐ Involve ES&H Team ☐ Sniff before entry
☐ Wall/Ceiling Penetration	☐ Scan Area Where Penetration Will Take Place ☐ Perform Walk Around
☐ Magnetic Field Hazards	☐ No Pacemakers, Defibrillators ☐ Heed Warning Signs

APPENDIX A: SAFE PLAN OF ACTION (SPA) PROCESS FOR NIF

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1. PURPOSE AND SCOPE

1.1 Purpose

This procedure establishes the process for conducting and documenting the Safe Plan of Action (SPA) and Work Team Meeting for work performed within the National Ignition Facility and Photon Science (NIF&PS) Directorate (hereafter referred to as Directorate). This process does not apply within the NIF Facility (see Procedure 5.10, *Safe Plan of Action Process*). The SPA and Work Team meeting process is intended to ensure that every task receives the proper safety and security planning prior to beginning work. The task-driven SPA is a tool that supervisors and workers shall use to facilitate joint discussions and task planning so that the tasks can be accomplished in a safe and effective manner.

1.2 Scope

The SPA process shall be performed by the supervisor or designee and workers before the tasks begin. When completed and signed by the workers, the SPA Form documents the confirmation of readiness to perform work for the work day.

2. RESPONSIBILITIES

2.1 IWS Authorizing Individual

NIF & PS acts as the Authorizing Organization responsible for the performance of a work activity. NIF & PS PAD has delegated authority to authorize work (act as the Authorizing Individual [AI]) to the Program Directors, who may make further delegations. AIs authorize work by approving IWSs and associated safety plans, work procedures, and other ES&H documentation. The AI determines the priorities in completing the work objectives, ensures the work is within the safety basis, and the hazards and environmental aspects are identified and appropriately controlled before authorizing and approving the work.

2.2 IWS Responsible Individual

The Responsible Individual (RI) is the person directly responsible for an operation, activity, or group of activities. The RI may be at any level within the organization and is formally identified by the activity's AI. The RI communicates ES&H expectations to workers on their activities and holds the workers accountable for their performance. The RI is normally considered to be the Work Supervisor for an activity. The RI must identify the work area, the scope of work to be performed, the task breakdown, identify hazards and associated controls, verify that the work has been approved and released, identify PPE requirements, delegate specific assignment for each individual associated with the work team, lead the work team through the pre-job team meeting/ SPA, and sign the draft SPA.

2.3 Daily Work Team Leader

In the absence of the RI during work execution, the RI responsibilities are delegated to a Daily Work Team Leader (DWTL). The DWTL will function in the same capacity as the RI with the exception of developing and implementing new controls that have not been authorized on the IWS. In the event that the RI relinquishes the RI responsibilities in the middle of a shift, the DWTL shall ensure that he/she understands the scope of work, hazards and controls listed on the SPA before taking over the responsibility.

2.4 Work Team Member/Worker

Workers shall understand the scope of work to become aware of the hazards, controls, environmental aspects, and requirements associated with their assigned task(s). This includes becoming aware of the hazards and requirements associated with facilities where they work. Also, workers shall participate in a work team meeting prior to performing work, read and sign the SPA and shall perform work only within established limits of stated controls, their competence, training, authority, and work scope. Workers shall report any workplace incidents, especially those that result in injury, illness, environmental releases, or property damage, and cooperate with all follow-up actions, including any work restrictions.

3. PROCESS

The sequence of activities involved in this procedure is illustrated in **Attachment A—Process Flow Map for Safe Plan of Action**. The sequential action steps of the process are described below, with individuals responsible for each action indicated in *italics*. The steps are identified by number in **Attachment A**.

3.1 Identify Work Area and Task

The *Work Supervisor** must identify the work area(s) and the specific task(s) to be performed during the work period or shift. (For research and development [R&D] and production activities, a work period may be up to one week). The work to be performed must already be covered in an approved Integration Work Sheet (IWS).

A clear understanding of which task(s) will be performed and what each task(s) entails from beginning to end is essential to the development of an accurate and complete SPA. The SPA shall be a synopsis of the IWS for each task, and identifies the PPE, tools/equipment/supplies, procedures, permits, and inspections/calibrations/certifications required to be in place before the work takes place. The *Work Supervisor* shall consider the complexity of the work, the size and experience of the work team, the magnitude of hazards involved and work location hazards when planning for the work. The *Work Supervisor* then leads the workers through the job planning process for the work period or shift.

* The *Work Supervisor* at the Directorate is the *Integration Work Sheet Responsible Individual (IWS RI)* or the designated *Daily Work Team Leader (DWTL).*

3.2 Develop and Document the Safe Plan of Action

The *Work Supervisor* prepares a draft of the SPA. Examples of the forms that can be used are provided in **Attachment B**. Work groups can modify this form or use other formats if it better suits their work. In addition, the following checklist/guidance documents are provided to assist with the development of the SPA:

- **Attachment C**: **R&D and Production Activities Safe Plan of Action Checklist/Guidance**—a quick reference identifying hazards commonly encountered in the R&D and Production work environments. It also provides controls to mitigate the hazards.
- **Attachment D**: **Construction and Maintenance Activities Safe Plan of Action Checklist/Guidance**—a quick reference identifying hazards commonly encountered in the construction and maintenance activity work environments. It also provides controls to mitigate the hazards.

3.3 Conduct the Work Team Meeting

Starting with the draft SPA, the *Work Supervisor* conducts the Work Team Meeting with the workers at least daily and at minimum weekly or whenever a task presents a change of hazards from the previous tasks for R&D and production activities. (For R&D and production activities, the work team meeting may be conducted weekly, but may not be conducted less frequently). The Work Team Meeting is used to discuss and incorporate situational information and worker input at the work location. This is the final opportunity to establish readiness before the actual work proceeds. If work team meetings are conducted weekly, the worker(s) shall review the approved SPA prior to initiating work for the shift to ensure that work scope is consistent with the planned work activity. Subsequently, the worker(s) shall sign the SPA after it has been reviewed.

The *Work Supervisor* leads the workers as they plan their work for the work period or shift. Worker participation and discussion are encouraged, and worker feedback is used to ensure that:

- All tasks to be performed are listed on the SPA Form.
- Task hazards and hazard controls for each task are reviewed.
- Task assignments for each worker are defined.
- Past experience and lessons learned are used to improve the work.

Once all worker comments are incorporated, the *Work Supervisor* finalizes the SPA. If it becomes necessary to add a task to or remove a task from the work plan during the work period, the work team shall reconvene to discuss the changes and the potential impacts to their work in progress.

In conducting the Work Team Meeting, it is important that the *Work Supervisor* and the work team consider the following kinds of situational factors, among others, as they relate to the specific activities to be performed that day:

- All the workers who are needed in order to perform the tasks safely are present, trained and qualified, and are fit for duty.
- Established controls are verified to be in place and they remain effective.
- Procedures are approved and accurate (are applicable to the work, and are the current version).
- Hazard-specific permits are approved, are valid for the work period, and are posted.
- The correct tools, equipment, supplies, and PPE are available in sufficient quantity, are in serviceable condition, and (where applicable) are inspected, calibrated, and certified.
- Environmental factors are considered, such as lighting levels, wind or other weather, noise, wet/dry conditions, neighboring work, distractions.
- Workers are reminded of their responsibility to pause work to receive clarification on the tasks, hazards, and controls—and to immediately stop work that represents an imminent danger.
- Situation-critical task steps are identified and discussed.
- Error precursors are recognized, and defenses are developed to prevent, mitigate, or recover from human errors.

The Work Team Meeting can be combined with a "tool-box" meeting or "morning safety" meeting.

3.4 Sign the SPA

The *Work Supervisor* and every worker must sign the final SPA form. The signature indicates that the team member has participated in the SPA development, understands the hazards, and agrees to follow the developed plan.

If it is determined that work scope and conditions have not changed at the start of a new work shift, then the completed SPA form can be used again, but the *workers* must review the approved SPA prior to initiating work to ensure that work scope is consistent with the planned work activity. Subsequently, the worker(s) shall sign the SPA after it has been reviewed.

3.5 Post Completed SPA for Review

The *Work Supervisor* will either post the completed SPA forms immediately adjacent to the work area or keep the SPA in his or her possession so that it may be reviewed by anyone at any time throughout the work period or shift.

3.6 Manage the Work

The *Work Supervisor* shall ensure that the work activity is conducted within the scope as described on the SPA and/or work permit and that the workers appropriately implement the required controls. All *work team members* are required to follow the SPA.

3.7 Update the SPA

Changes to work scope or conditions require an update to the signed SPA form or generation of a new SPA form. When a change is necessary, the *Work Supervisor* shall review the IWS that authorizes the work to ensure that the changes do not expand the previously authorized IWS work scope, introduce new unanalyzed hazards, or alter the approved controls. If the situation requires major changes to the IWS, the IWS must be revised, authorized and approved before the work may proceed. Subsequently, the *Work Supervisor* shall:

- Add the new task(s) and/or hazard(s) and controls to the signed or new SPA form.
- Discuss the change and solicit worker input during a work team meeting before proceeding with the new work scope or condition.
- Sign the revised or new SPA form.
- Post the revised or new SPA form.

3.8 Monitor the SPA Process

The *IWS RI* shall verify the quality of the SPA forms completed by his/her workers and contractors (if applicable) by spot checking SPA forms for content.

IWS AIs shall field monitor the SPA forms being used in the activities that they authorize to ensure quality and effectiveness.

3.9 Documents and Records

Hard copies of the completed SPA forms shall be retained at the work site for one week following the completion of the work activity. There is no requirement for archiving the SPA.

4. DEFINITIONS

AI	Authorizing Individual
DWTL	Daily Work Team Leader
ES&H	environment, safety and health
IWS	Integration Work Sheet
PPE	personal protective equipment
R&D	research and development
RI	Responsible Individual
SPA	Safe Plan of Action

5. REFERENCES

Not applicable.

6. ATTACHMENTS

Attachment A—Process Flow Map for Safe Plan of Action

Attachment B—Safe Plan of Action Form (Examples 1 & 2)

Attachment C—R&D and Production Activities Safe Plan of Action Checklist/Guidance

Attachment D—Construction and Maintenance Activities Safe Plan of Action Checklist/Guidance

7. REVISION LOG

Rev.	Date	ECR No.	Pages Affected	Brief Description of Revision
AA	10/2011	N/A	All	Initial release
AB	06/2012	28322	All	Edits were made to incorporate ES&H Manual Document 2.2 requirements with respects to pre-job briefs.

8. APPROVALS AND STAKEHOLDERS

The following roles are affected by this procedure. The current incumbents have been notified of the document changes.

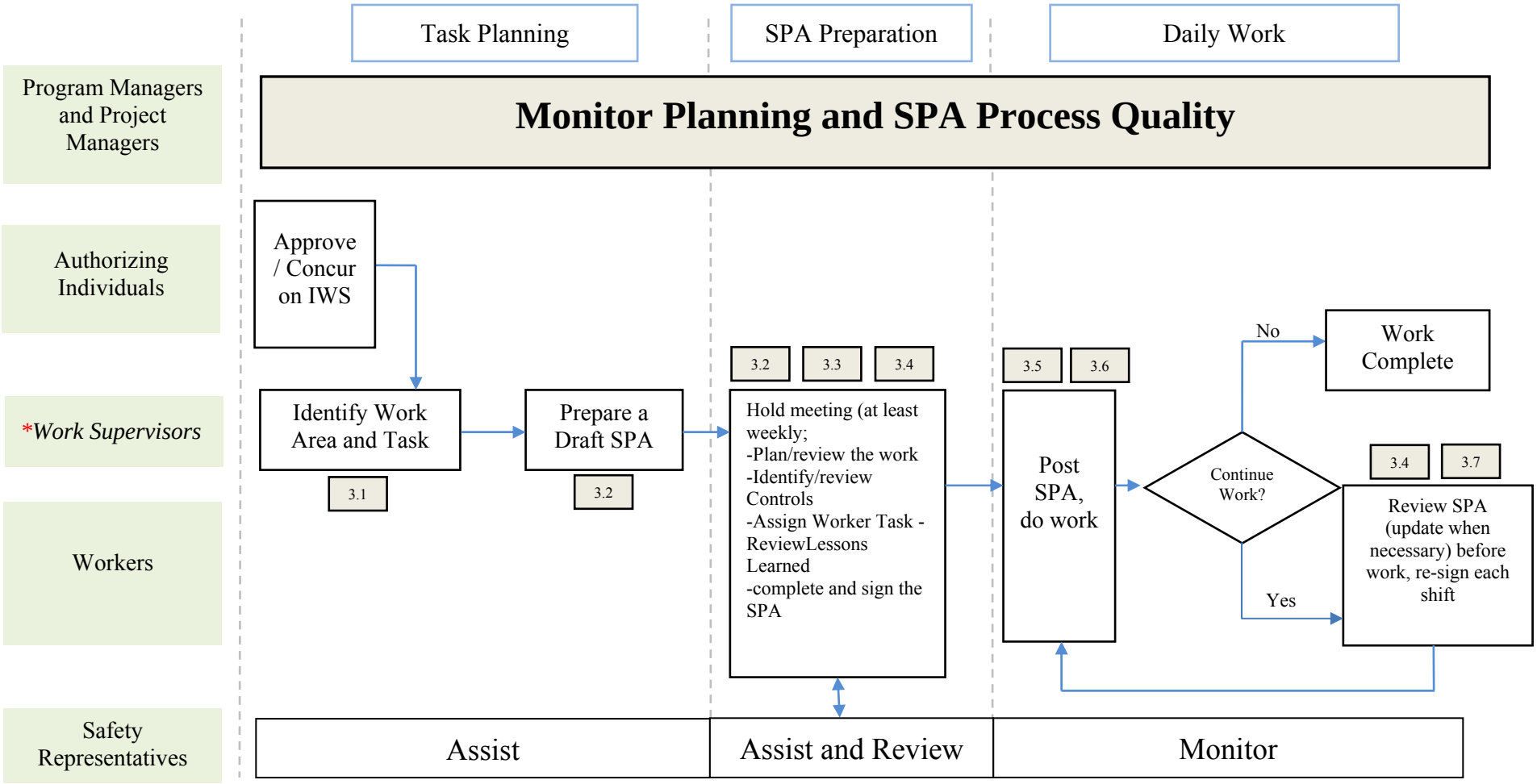
Stakeholders—Not Applicable

This procedure has been signed electronically in ECMS by the following people.

Action	Name	Title
Prepared by	Prennie Pascual	NIF & PS Program ES&H Manager
Concurred by	Sandra Brereton	Deputy Operations Manager, NIF and Photon Science Directorate
Approved by	Valerie Roberts	Deputy Principal Associate Director, NIF and Photon Science Directorate

Attachment A: Process Flow Map for Safe Plan of Action

(Numbers correspond to procedure steps)



**Work Supervisors* are Integrated Worksheet Responsible Individuals (IWS RI) or the designated Daily Work Team Leaders (DWTL).

Attachment B: Example 1
SAFE PLAN OF ACTION

IWS Number: _____ **Date:** _____

Work Location: _____ **Work Permit No.** *(If Applicable)*: _____

Task Description:	Recognized / Unanticipated Hazards:	Safe Plan:	Tools Required To Do the Job Safely:

Other Considerations:

❑ Facility Status Board checked for work release. Discuss restrictions, if any.

❑ Verify that all inspections, calibrations, certifications are current

❑ Co-Occupancy in the work area. If it exists, notify other workers (above, below, adjacent) of your presence, and coordinate with adjacent work supervisor

❑ Review Off-normal event response and notification process (NIF&PS Procedure 5.21).

TEAM MEMBER SIGNATURES *(Acknowledgement that worker agrees to proceed with work in accordance with the controls specified above.)*

The signature below certifies the completion of the Hazard Assessment and Safe Plan of Action by the crew. Report all injuries or incidents to your *Work Supervisor* immediately.

DWTL/RI/Work Supervisor Signature: _____ Date: _____

Instructions: *1. Write the IWS Number, Work Location, Date(s) of the proposed work in the spaces provided. 2. Conduct a walk-through survey of work area to be aware of current conditions. 3. Write the steps of the task in a safe sequence. 4. List all possible hazards involved in each step. 5. In the Safe Plan column, provide the controls that will be implemented to prevent the hazards and injury from occurring. 6. In the fourth column, list tools needed to do the job, additional safety equipment, PPE, etc. 7. Have each team member who will use this SPA sign in the spaces provided at the bottom. 8. Review the SPA at the end of the task for improvements and provide feedback to Work Supervisor.*

(NOTE: You should pause work for a potentially unsafe condition that can be corrected with minimal time and effort. You must stop work when: safety limits are exceeded, a new hazard is encountered, controls are not (or can't be) followed as written and discussed in the pre-job brief, or anytime you feel that it is dangerous to proceed.)

Attachment B: Example 2
SAFE PLAN OF ACTION

IWS Number: _____ **Effective Date:** _____

Work Location: _____ **Work Permit No.** *(If Applicable)*: _____

Task No.	Task Description	Recognized / Unanticipated Hazards	Safe Plan	Tools Required To Do the Job Safely

Other Considerations:

❑ Facility Status Board checked for work release. Discuss restrictions, if any.
❑ Verify that all inspections, calibrations, certifications are current
❑ Co-Occupancy in the work area. If it exists, notify other workers (above, below, adjacent) of your presence, and coordinate with adjacent work supervisor
❑ Review Off-normal event response and notification process (NIF&PS Procedure 5.21)

TEAM MEMBER SIGNATURES (Acknowledgement that worker agrees to proceed with work in accordance with the controls specified above.)

Worker/Guest Name	Date	Task Nos.	Date	Task Nos.	Date	Task Nos.	Date	Task Nos.	Date	Task Nos.

The signature below certifies the completion of the Hazard Assessment and Safe Plan of Action by the crew. Report all injuries or incidents to your *Work Supervisor* immediately.

DWTL/RI/Work Supervisor Signature: _____ Date: _____

Instructions: *1. Write the IWS Number, Work Location, Effective Date of the proposed work in the spaces provided. 2. Conduct a walk-through survey of work area to be aware of current conditions. 3. Write the steps of the task in a safe sequence. 4. List all possible hazards involved in each step. 5. In the Safe Plan column, provide the controls that will be implemented to prevent the hazards and injury from occurring. 6. In the fifth column, list tools needed to do the job, additional safety equipment, PPE, etc. 7. Have each team member who will use this SPA initial under the Date column and the Task No(s). they will be performing under the corresponding column. 8. Review the SPA at the end of the task for improvements and provide feedback to Work Supervisor.*

(NOTE: You should pause work for a potentially unsafe condition that can be corrected with minimal time and effort. You must stop work when: safety limits are exceeded, a new hazard is encountered, controls are not (or can't be) followed as written and discussed in the pre-job brief, or anytime you feel that it is dangerous to proceed.)

Attachment C
R&D and Production Activities Safe Plan of Action Checklist/Guidance
(Review Checklist While Completing Safe Plan of Action)

Required Plans & Hazard Permits

☐ Confined Space Permit	☐ Hot Work Permit	☐ Confined Space Permit	☐ Electrically Hazardous Work Permit	☐ Wall/Floor Penetration Permit
☐ Concrete Structure Penetration Permit	☐ Hoisting & Rigging Safety Review	☐ LockOut/Tag Out Plan		

Personal Protective Equipment (PPE)

General PPE	Eye Protection	1.1 Hand Protection	Foot Protection	Special Clothing
☐ All PPE is serviceable ☐ Hard Hat – Correct Class ☐ Ear Plugs/Ear Muffs ☐ Specific Task _____	☐ Safety Glasses ☐ Face Shield ☐ Chemical Goggles	☐ Cut Resistant Gloves ☐ Nitrile Gloves ☐ Rubber Gloves ☐ Elect. Insulated Gloves w/Protectors	☐ Safety Toe Boots ☐ Rubber Boots	☐ Nomex III

Hazards and Safe Plan

☐ **Crane or other lifting equipment**
☐ Signal man assigned ☐ Personnel protected from overhead load ☐ Tag lines ☐ Lifting equipment inspected ☐ 10' of power lines ☐ Area around crane barricaded

☐ **Lifting, rigging objects (large objects)**
☐ Proper rigging ☐ Critical lift plan ☐ Barricade below ☐ Rigging plan ☐ Cover area below work

☐ **Working at heights**
☐ Tether tools/small objects ☐ Use rope, canvas bag, lifting hardware ☐ Barricade area ☐ Secure all items not securely attached to belt (safety glasses, hard hat)
☐ Inspect personnel lift

☐ **Manual lifting/ergonomic**
☐ Identified material requiring lifting equipment ☐ Hand protection required ☐ Reviewed proper lifting tech.

☐ **Wall, floor penetration**
☐ Permits ☐ Involve FPOC ☐ Use locator equipment ☐ Inspected prior to entering ☐ Visually inspect ☐ Drill pilot hole ☐ Barricades provided ☐ Inspect
☐ Access/egress provided

☐ **Fire hazard (cutting and soldering)**
☐ Adjacent area protected ☐ Unnecessary flammable material removed

☐ **Vehicular traffic and/or heavy equipment**
☐ Traffic Barricades ☐ Flagmen ☐ Communication with equipment operator ☐ Cones ☐ Lane closure ☐ Signs

☐ **Noise >85 dB**
Hearing protection is required: ☐ Ear plugs ☐ Ear Muffs ☐ Both

☐ **Hand & power tools**
☐ Inspect general cond. ☐ Identified PPE required for each tool ☐ GFCI in use ☐ Reviewed safety requirements in operators manual(s) ☐ Guarding OK

☐ **Hand hazards**
☐ PPE gloves, etc. ☐ Protect sharp edges as necessary ☐ Sharp tools, material, equipment: _____

☐ **Ladders**
☐ Inspect general cond. before use ☐ Ladder tied off ☐ Ladder inspected within last quarter ☐ Reviewed ladder safety ☐ Proper angle and placement

☐ **Slips, Trips Falls**
☐ Inspect for trip hazards ☐ Tools & material properly stored ☐ Hazards marked ☐ Extension cords properly secured ☐ Work zone free of debris

☐ **Pinch points**
☐ Working near operating equipment ☐ Hand/Body positioning ☐ List potential pinch points: _____

☐ **Working w/chemicals**
☐ The task creates potential for direct contact with hazardous chemicals ☐ Review MSDS hazards and precautions ☐ Have proper containers and labels
☐ Have identified proper PPE (respirators, clothing, gloves, etc.)

☐ **Environmental**
☐ Air emissions ☐ Hazardous wastes ☐ Pollution prevention ☐ Water discharge ☐ Other wastes ☐ Waste minimization

☐ **Magnetic field hazards**
☐ Heed warning signs ☐ No pacemakers, defibrillators

☐ **Barricades/hole covers**
☐ Caution barricade tape required ☐ Rigid railing required ☐ Danger barricade tape required ☐ Proper hole covers ☐ Warning signs required

☐ **Electrical/mechanical**
☐ Reviewed electrical safety procedures ☐ Permit required on or near energized equipment ☐ Confirm that equipment is de-energized ☐ Lock Out/Tag Out/Try
☐ Ensure electrical cords are in serviceable condition

☐ **Laser hazard** ☐ Stay outside identified areas ☐ LOTO ☐ Barricades/beacons ☐ Proper laser eyewear OD_____Wavelength_____ ☐ Eyewear free of scratches/damage
☐ **Vacuum/vent** ☐ LOTO process ☐ Sign/barricade ☐ Hearing protection posted
☐ **Housekeeping** ☐ Use material storage tags ☐ Area free and clear of excess material ☐ Clean up at end of work period/shift
Additional Information

Attachment D
Construction and Maintenance Activities Safe Plan of Action Checklist/Guidance

(Review checklist while completing Safe Plan of Action.)

Required Hazard Permits	Hazards	Safe Plan
☐ NIF Work Permit	☐ Overhead utilities	Power de-energization required. Insulation blankets required ☐ Wire watcher required
☐ Confined Space		Required clearance distance = _____Ft. ☐ Safe work zone marked
☐ Critical Lift	☐ Crane or other	☐ Signalman assigned ☐ Tag lines ☐ Area around crane barricaded ☐ 10' of power lines
☐ Hoisting & Rigging Safety Review	Lifting equipment	☐ Lifting equipment inspected ☐ Personnel protected from overhead load
☐ Soil Disturbance	☐ Lifting, rigging objects	Proper rigging rigging plan critical lift plan cover area below work barricade below
☐ Concrete Structure Penetration	(large objects)	
☐ Hot Work	☐ Moving objects to/from/at	☐Tether small objects. use rope, canvas bag, lifting hardware. barricade area
☐ Pneumatic Test	heights	Use netting/fire blanker for preventing falling small tools, materials and debris
☐ Boom Proximity, Assembly/Brkdown.	☐ Manual lifting/Ergonomics	☐ Reviewed proper lifting tech. ☐ Identified material requiring lifting equipment
☐ Exit from Lift to Work Area		Hand protection required ☐ Warm-up periods☐ Additional information below
☐ Steel Erection/Decking/Grating Plan	☐ Excavations/wall, floor	☐ Permits ☐ Inspected prior to entering ☐ Proper sloping/shoring
☐ Lock Out/Tag Out	penetration	☐ Barricades provided ☐ Access/egress provided ☐ Protection from accumulated water
☐ Request for Shutdown	☐ Fire hazard = cut, weld,	☐ Permit ☐ Fire Extinguishers ☐ Fire watch ☐ Adjacent area protected
☐ Electrically Hazardous Work	burn, grind, solder	☐ Unnecessary flammable material removed ☐ Additional info below
☐ Radiation Work Permit for Visitors	☐ Vehicular traffic and/or	☐ Traffic Barricades ☐ Cones ☐ Signs ☐ Flagmen ☐ Lane closure
☐ Exit from Lift to Work Area	heavy equipment	☐ Communication with equipment operator ☐ Additional information below
	☐ Noise >85 dB	☐ Hearing protection is required: ☐ Ear plugs ☐ Ear Muffs ☐ Both ☐ Additional info below
	☐ Hand & power tools	☐ Inspect general cond. ☐ GFCI in use ☐ Identified PPE required for each tool
Required PPE		☐ Reviewed safety requirements in operators manual(s) ☐ Guarding OK☐ Additional info below
☐ All PPE in serviceable condition		
☐ Hard Hat – Correct Class		
☐ Ear Plugs/Ear Muffs	☐ Hand hazards	Sharp tools, material, equipment: _____
☐ Specific Task _____		☐ PPE gloves, etc. ☐ Protect sharp edges as necessary ☐ Additional info below
Eye Protection	☐ Underground utilities	☐ Reviewed as-builts ☐ Subsurface surveys ☐ Received excavation permit
☐ Safety Glasses		Required clearance distance = _____ Ft. ☐ Safe work zone marked
☐ Face Shield	☐ Ladders	☐ Inspect general cond. before use ☐ Ladder inspected within last quarter
☐ Chemical Goggles		☐ Ladder tied off ☐ Proper angle and placement ☐ Reviewed ladder safety
☐ Welding Hood	☐ Scaffolds	Inspect general condition before use Tags in place Properly secured Scaffold sign-off
Hand Protection		Toe boards used ☐ Footings adequate☐ Materials properly stored on scaffold
☐ Cut Resistant Gloves	☐ Slips, Trips Falls	☐ Inspect for trip hazards ☐ Hazards marked ☐ Tools & material properly stored
☐ Welders Gloves		☐ Extension cords properly secured ☐ Work zone free of debris ☐ Additional information below
☐ Nitrile Gloves	☐ Pinch points	List potential pinch points: _____
☐ Rubber Gloves		☐ Working near operating equipment ☐ Hand/Body positioning ☐ Additional information below
☐ Elect. Insulated Gloves w/ Protectors	☐ Working w/ chemicals	☐ The task creates potential for direct contact with hazardous chemicals.
Foot Protection		Review MSDS hazards and precautions ☐ Have proper containers and labels.
☐ Sturdy Work Boots		Have identified proper PPE (respirators, clothing, gloves, etc.)
☐ Safety Toe Boots	☐ Wall/ceiling/floor penetration	☐ Involve FPOC ☐ Visually inspect ☐ Use locator equipment ☐ Drill pilot hole ☐ Inspect
☐ Rubber Boots	☐ Environmental	☐ Air emissions ☐ Water discharge ☐ Hazardous wastes ☐ Other wastes
☐ Rubber Boot Covers		☐ Pollution prevention Waste minimization
	☐ Beampath entry	See OSP controls. LOTO
	☐ Brittle window hazard	Hearing damage potential: Observe signs near rupture panels. No access during first vac cycle
Respiratory Protection		with new optic. LOTO
☐ Dust Mask (NIOSH Approved)		
☐ Air Purifying Respirator	☐ Magnetic field hazards	No pacemakers, defibrillators. Heed warning signs
☐ Supplied Air Respirator	☐ Working at height	Proper fall protection ☐ Inspect Yoyo (secured to 3000 lb cap support) ☐ Identify safe/secure tie
		off point (5000 lb capacity) ☐ Tether tools/small objects ☐ Inspect beam straps
☐ SCBA	☐ Barricades/hole covers	Caution barricade tape required Danger barricade tape required Rigid railing required
☐ Emergency Escape Respirator		Proper hole covers Warning signs required
	☐ JLG / Scissor lift	☐ Tie Off (JLG only) Daily Inspection. Access Permit/Custodial Possession Placard
Special Clothing		Properly trained
☐ Tyvek ®	☐ Electrical/Mechanical	☐ Lock Out/Tag Out/Try ☐ Permit required? ☐ Confirm that equipment is de-energized
		☐ Reviewed electrical safety procedures ☐ Additional info below
☐ Poly-Coated Tyvek ®	☐ Active line (gas/elec.) hazard	LOTO process Take care near small fragile lines
☐ Nomex III ®	☐ Laser hazard	Stay outside identified areas. Proper laser eyewear OD_____ Wavelength_____
		☐ Eyewear free of scratches/damage LOTO
☐ Rain Suit	☐ Vacuum/vent	LOTO process See IWS/OSP. Barricade Hearing protection posted

☐ Safety Vest	☐ O_2 Deficiency, argon hazard	Observe signs. Use O_2 monitor ☐ Involve IH. Sniff before entry LOTO
Fall Protection	☐ Transporting large objects, LRUs, pallets	Follow OSP. Use of pallets, carts. Secure items to pallets, carts
☐ Harness – Double lanyard required		
☐ Tool Tethers	☐ Housekeeping	Area free and clear of excess material. Use material storage tags. Clean up at end of shift
☐ Anchorage Point Available		↓ Additional Information ↓
☐ Additional Anchorage Required		
☐ Retractable Device Required		
☐ Horizontal Lifeline System Required		
☐ Fall Clearance Distance Adequate		
☐ Fall Rescue/Retrieval Plan Set Up		

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APPENDIX B: NOT USED

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APPENDIX C: SCHEDULE

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CONSTRUCTION PROJECT SCHEDULE

LAWRENCE LIVERMORE NATIONAL SECURITY, LLC
LAWRENCE LIVERMORE NATIONAL LABORATORY
LIVERMORE, CA 94550

SUBCONTRACT NO.: 123–456–789

DATE: Oct 1, 2007

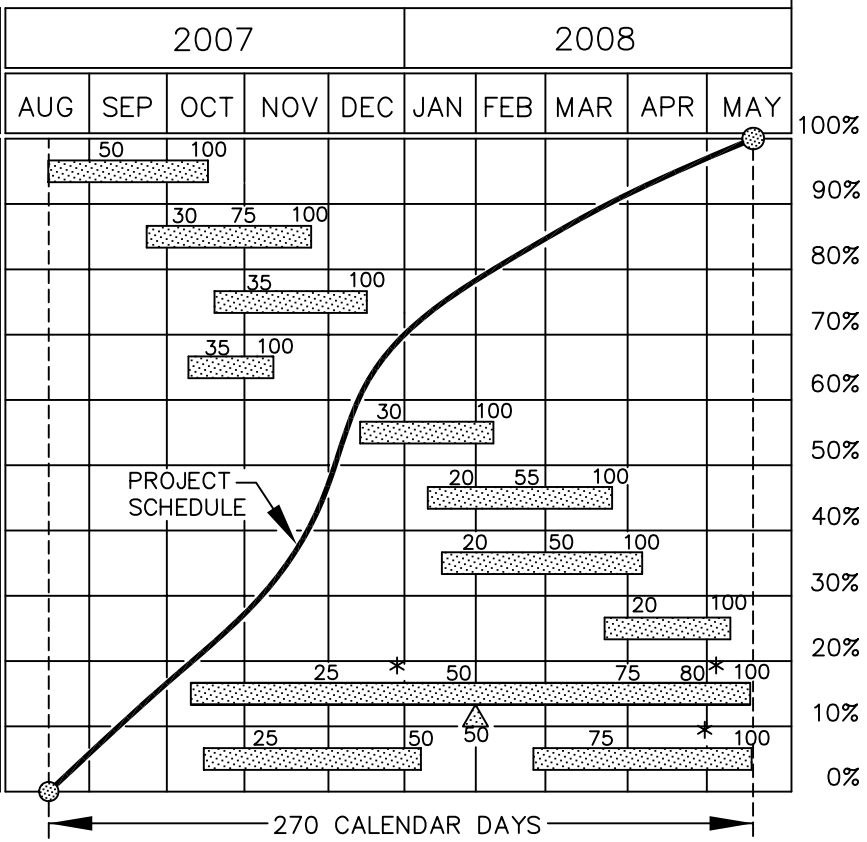
REV. NO.: 6

SUBCONTRACT TITLE: Title of Construction Project

SUBCONTRACTOR'S NAME: ABC Construction Co.

SUBCONTRACTOR'S ADDRESS/PHONE: Number One ABC Construction Plaza Road
Gainfully Employed, NY 12345 (555) 123–4567

Division No.	Areas of Work	% of Total Project
2	SITE WORK	10
3	CONCRETE	16
5	METALS	4
6	WOOD AND PLASTIC	8
7	THERMAL AND MOISTURE CONTROL	4
8	DOORS AND WINDOWS	5
9	FINISHES	8
10	SPECIALTIES	3
15	MECHANICAL	24
16	ELECTRICAL	18



LEGEND: * UTILITY TIE–IN (VERIFY DATE AND TIME).

△ LLNS–PROVIDED EQUIPMENT REQUIRED AT THE LLNL SITE.

10 35 NUMBERS INDICATE THE PERCENTAGE OF COMPLETION PLANNED IN THIS DIVISION BY THE END OF THE MONTH.

NOTICE TO PROCEED DATE _____

DATE OF 50% COMPLETION _____

COMPLETION DATE _____

ACAD FILE: CNPRSC

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APPENDIX D: BEST MANAGEMENT PRACTICES (BMPs) (SITE 200)

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5. Steps to Reduce Pollution

5.1. Best Management Practices

WDR 95-174 requires LLNL to describe storm water management controls appropriate for the facility, including BMPs. The BMPs must reduce the contamination or potential for contamination of storm water. BMPs can be simple and low cost (such as keeping work areas clean and free of debris) or expensive (such as installing structural controls). Most of the BMPs discussed in this chapter have been previously implemented at LLNL as required by environment, safety, and health regulations, or as prudent practices. **Appendix C**, **Table C-1** summarizes activities potentially contributing contaminants to storm water discharges and BMPs that are implemented to minimize the impacts of these activities on storm water discharges.

WDR 95-174 requires LLNL to describe BMPs in the following areas as appropriate:

1. **Good housekeeping**: Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material-handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water drainage system.

2. **Spill prevention and response**: Areas where significant materials can spill into, or otherwise enter, the storm water drainage systems and the systems accompanying drainage points shall be identified. Specific material handling procedures, storage requirements, and cleanup equipment and procedures shall be identified, as appropriate. The necessary equipment to implement a cleanup shall be available as well as personnel trained in proper response, containment, and cleanup of spills. Internal reporting procedures for spills of significant materials have been established.

3. **Source control**: Source controls include elimination or reduction of the use of toxic pollutants, covering of pollutant source areas, sweeping of paved areas, containment of potential pollutants, labeling all storm drain inlets with "No Dumping" signs, and isolation/separation of industrial from nonindustrial pollutant sources so that runoff from these areas does not mix, etc.

4. **Storm water management practices**: Storm water management practices are practices other than those that control the source of pollutants. They shall include treatment/conveyance structures such as drop inlets, channels, retention/detention basins, treatment vaults, infiltration galleries, filters, and oil/water separators. Based on the assessment of the potential of various sources to contribute pollutants to storm water discharges in significant quantities, additional storm water management practices to remove pollutants from storm water discharges shall be implemented and design criteria described.

5. **Sediment and erosion controls**: Sediment and erosion control measures that minimize erosion around the storm water drainage and discharge points such as riprap, re-vegetation, slope stabilization, shall be described and implemented (see **Appendix E** for definitions of erosion controls and sediment controls).

6. **Employee training**: Employee training programs shall inform all personnel responsible for implementing the SWPPP. Training should address spill response, good housekeeping, and material management practices. New employee and refresher training schedules should be identified.

7. **Inspections**: Trained personnel shall perform all inspections. Material handling areas shall be inspected for evidence of, or the potential for, pollutants entering storm water discharges. A tracking or follow-up procedure shall be pursued to ensure that an appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded. Inspection records shall be retained for five years.

8. **Records**: A tracking and follow-up procedure shall be described to ensure that adequate response and corrective actions have been taken in response to inspections.

5.2. Best Management Practices for Specific Activities

This section describes the BMPs LLNL has in place to minimize the impact of activities described in **Chapter 3** on storm water discharges. BMPs were selected from *Stormwater Best Management Practice Handbooks* (CASQA, 2003) and evaluated for applicability to those activities at the Livermore site. In addition to BMPs identified in the storm water handbook, this SWPPP establishes BMPs for activities unique to the Livermore site. The format of this section follows the format of the *Stormwater Best Management Practice Handbooks* and LLNL staff are encouraged to go to these handbooks when more detail on a specific practice is needed.

5.2.1. Non-storm Water Discharges

Description

The effort is to eliminate non-permitted, non-storm water discharges to the storm drain system and eliminate non-storm water discharges covered under WDR 95-174 when practical. The approach outlined below is currently in place.

Each Principal Associate Director is responsible for ensuring that all of the Principal Directorate's facility connections to the storm water drainage system are proper. Each Principal Associate Director annually certifies that their Principal Directorate has a mechanism in place to ensure that all non-permitted, non-storm water discharges to the storm water drainage system have been eliminated. Each Principal Associate Director is responsible for ensuring that there is a system in place to evaluate whether non-storm water discharges to the storm water drainage system that are allowed under WDR 95-174 can be eliminated as required in Provision C8 of WDR 95-174. **Section 3.1** describes the Maintenance and Utility Services Department's Building Drain Management Database available to each Principal Directorate to assist in making this evaluation. The Maintenance and Utility Services Department Facility and Maintenance Management Division Leader is responsible for ensuring that the storm drainage system is maintained and repaired.

Approach

The following approaches are used to identify non-storm water discharges and ensure that all connections are proper:

- Maintain and update the Building Drain Management Database
  - Track changes to building drains. This database is maintained by Maintenance and Utility Services Department for all work it performs. Each Principal Directorate is responsible for providing Maintenance and Utility Services Department with information on work it performs so that this information can be included in the database. The database is available for use by each Principal Directorate.
- Visually inspect each discharge point during dry weather.
- Review piping schematic "as-built" drawings.
  - Review the piping schematic of pipes and drainage systems used to carry wastewater, cooling water, sanitary wastes, etc.
  - Review the "as-built" piping schematic to determine if there are any connections to the storm drainage system.
  - Inspect the path of floor drains in older buildings.
- Smoke test sanitary sewer lines.
  - Smoke test wastewater collection systems to detect connections between the storm water and wastewater collection systems.
- Dye test wastewater systems.
  - Perform a dye test by releasing a dye into either the sanitary or process wastewater system and examining the discharge points from the storm water drainage system for discoloration whenever the destination of a building drain connection is unknown.
- Inspect sanitary and storm sewer lines with a remote camera.
  - Use a remote camera to visually identify cracks, offsets, etc., in the sanitary and storm sewer lines.
- Maintain and repair the storm drainage system and the sanitary sewer system.
- Follow the standard new drain connection guidelines.
  - New connections will follow *Guidelines for the Specification and Use of Building Drain Connections* (Vellinger, 1994) and are documented in the building drain management database.
- Repair or permit inappropriate connections to the storm drainage system.
  - The EPD department head ensures that NPDES permits are obtained, where appropriate, for all continued discharges of non-storm water to the storm water drainage system. The discharges are covered by WDR 95-174, and are managed using the applicable BMPs identified in **Table 5-1**. Non-storm water discharges that the Regional Board did not permit were eliminated in 1995 through the Building Drain Repair Project.
  - As required in Provision C.8 of WDR 95-174, non-storm water discharges allowed under this permit are eliminated when practical to do so. For example, minor non-storm water discharges could be routed to the sanitary sewer system or engineered to ground when a building is newly constructed or remodeled.

- For newly discovered discharges or new discharges not covered in WDR 95-174 or the *Technical Report for the Report of Waste Discharges to Renew NPDES Permit CA0030023* (Mathews, 2000), the following steps are taken:

  Upon discovery of a discharge to the storm water drainage system, LLNL first determines if the discharge is on the list of permitted discharges (e.g., previously unknown air conditioner).

  If it is on the list of permitted discharges, LLNL adds the specific location of the discharge to the Building Drain Management Database, but does not report the discharge to the Regional Board.

  If the discharge does not have permit coverage, LLNL determines if the discharge can be eliminated.

  If the discharge cannot be eliminated, LLNL determines the likely pollutants in the effluent based on the process, generator knowledge, etc.

  If the suspected pollutants pose a threat to water quality objectives, LLNL ceases the discharge immediately.

  If no threat is suspected, the discharge is allowed to continue, pending analytical results. LLNL samples and analyzes the discharge for suspected pollutants. If analytical results indicate only a minimal or limited threat to water quality, LLNL submits the results, along with a discussion of why the discharge is necessary, to the Regional Board for approval of the continued discharge.

For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

Table 5-1. Specific non-storm water discharges allowed by WDR 95-174.

Permitted non-storm water discharges	Best management practices
Building conduits	
Floor drains and floor sinks	Only the following floor drains and discharges are allowed to remain connected to the storm water drainage system. (See BMPs at the end of the list of floor drains and floor sinks.) B111 Room 191, inspector test valve B121 Room 4009, air conditioner condensate, inspector test valves, temperature pressure relief valves, potable water, low-conductivity water B121 Room 4049, air conditioner condensate, temperature pressure relief valves B121 Room 4099, air conditioner condensate, temperature pressure relief valves B151 Roof, air conditioner, inspector test valve, temperature pressure relief valves B231 Room 1470, air conditioner condensate B261 Room 1350, air conditioner condensate B318 Room 1014, hose bib B318 Room 1020, back-flow preventor, temperature pressure relief valve B391 Room 2240, air conditioner condensate, air humidifier B412 Room 1041A, hose bib B451 Room 1059, back-flow preventor, inspector test valve B4725 Room 1116, air conditioner condensate B4725 Room 1124, air conditioners B490 Outside, low-conductivity water, inspector test valve B490 Room B160A, air conditioner condensate, inspector test valve, back-flow preventor B543 Room 1200, no sources B551E Room 3202, air conditioner B551E Room 3204, no sources B551E Room 3208, no sources B551E Room 3210, no sources B551W Room 3101, hose bib B551W Room 3103, temperature pressure relief valve, back-flow preventor, hose bib B551W Room 3105, no sources B551W Room 3105A, temperature pressure relief valve, back-flow preventor B551W Room 3107, no sources B551W Room 3109, hose bib B551W Room B100, inspector test valve, hose bib, emergency eyewash, air conditioner condensate, temperature pressure relief valves, back-flow preventor B571 Hallway, no sources ***BMPs*** Where floor drains remain connected to the storm water drainage system, the facility safety plan shall identify the connected drain and the following procedures shall be implemented: • Floor drains and floor sinks discharging to the storm water drainage system are labeled to distinguish them from those discharging to the sanitary sewer. • Storage of chemicals is discouraged in rooms with conduits that discharge to the environment. Where such storage is necessary, secondary containment and spill response kits are required. Any spill inside these rooms shall be responded to as if it is an outdoor spill. • Cleaning floors in rooms with conduits that discharge to the storm water drainage system is limited to sweeping and damp mopping.

(continued)

Table 5-1 Specific non-storm water discharges allowed by WDR 95-174 (continued).

Permitted non-storm water discharges	Best management practice
Building conduits	
Cup sinks	Only cup sinks and equipment identified below are allowed to remain connected to the storm water drainage system. (See BMPs at the end of the list of cup sinks.) B125 Outside, back-flow preventor B131 Room 1638, air conditioner condensate B131 Outside, air conditioner condensate B153 Room 1111, back-flow preventor B162 Room 1000, back-flow preventor B162 Room 2201, no sources B162 Room 2202, emergency eyewash B162 Room 2211, temperature relief valve B165 Outside, back-flow preventor B166 Outside, inspector test valve B171 Room 130, back-flow preventor, air conditioner condensate B171 Room 108, back-flow preventor B171 Outside, back-flow preventor B174 Room 1303, back-flow preventor B176 Outside, roof drain B231 Room 1010, back-flow preventor B231 Room 2754, no sources B241 Room 1600, potable water B241 Room 1586, back-flow preventor B251 Room 1118, back-flow preventor B254 Room 100, ceiling, back-flow preventor B272 Outside 1010, air conditioner condensate B272 Room 1001A, back-flow preventor B298 Outside 172, back-flow preventor B321 Room 1177, back-flow preventor B321 Room 1415, no sources B321 Room 1437, back-flow preventor B321 Roof, air conditioner condensate B391 Outside, inspector test valve B391 Room 2240, two air humidifiers B4302 Outside 138, rainwater from roof drain B435 Outside, two inspector test valves B446 Outside, back-flow preventor B451 Room 1059, 3 back-flow preventors B490 Room B160B, air conditioner condensate B490 Room 1008, rainwater from roof B494 Room 1000, inspector test valve B511 Hallway, air conditioner condensate B511 Room 1101, no sources B511 Room 130A, ice maker

(continued)

Table 5-1. Specific non-storm water discharges allowed by WDR 95-174 (continued).

Permitted non-storm water discharges	Best management practice
Building conduits (concluded)	
Cup sinks (concluded)	B514 Room 110, no sources B551W Room 3105A, back-flow preventor B696 Truck bay, back-flow preventor B698 Room 1000, back-flow preventor ***BMPs*** Building support personnel have been notified of the destination of the cup sinks that discharge to the storm water drainage system and the limitation on connections to them. Future improper connections to these conduits will be prevented through tracking new connections in the Building Drain Management Database.
Equipment sources	
Air conditioners	None proposed beyond the standard BMPs for outdoor equipment (**Section 5.2.7**). No treatment chemicals are added. Units that discharge elevated metals as a result of corrosion in the system have condensate captured and characterized for proper disposal.
Temperature pressure relief valves	None proposed.
Ice makers	None proposed beyond the standard BMPs for outdoor equipment (**Section 5.2.7**).
Air compressors	All compressor tank drains are plumbed to the sanitary sewer. Only condensate drains (known as filter drains) on air distribution lines are allowed under WDR 95-174 to be discharged to ground or the storm water drainage system. No BMPs are proposed beyond the standard BMPs for outdoor equipment (**Section 5.2.7**).
Air humidifiers	None proposed.
Building and grounds maintenance	
Landscape irrigation	Minimize use of water to prevent excess runoff. Follow BMPs for pesticide and fertilizer application.
Exterior building washing	Minimize use of water to the greatest extent practical and if possible direct rinsewater to a landscaped area. Use no soaps, detergents, or other cleaning chemicals. All other wash waters containing soaps, detergents, or other chemicals are contained and properly disposed. Trisodium phosphate (TSP) may be used only on buildings and trailers to prepare the surface for painting as allowed by Regional Board staff and documented in the Record of Communication (ROC) dated June 14, 1999. (Chou 1999) The following BMPs identified in the ROC should be followed: Use a 0.5% solution applied manually on the surface of the trailer or building. The water is washed off the trailer with a garden hose. Trailer washing occurs during June through August. The discharge should be either contained or redirected to landscaping to infiltrate into the soil. Local storm drain inlets are covered with mats. TSP is not to be used in the Lake Haussmann (previously known as Drainage Retention Basin) watershed. Wastewater from exterior building washing when removing bird droppings must be managed to prevent any discharge to the storm drainage system. If the washing activity occurs on a roof, evaluate the roof for potential contamination caused by rooftop equipment and ventilation systems. Contain wash water for sampling and proper disposal if there is a potential for contaminants on the roof.

(continued)

Table 5-1. Specific non-storm water discharges allowed by WDR 95-174 (continued).

Permitted non-storm water discharges	Best management practice
Building and grounds maintenance	
Pavement washing	Use no soaps, detergents, or other cleaning chemicals. Maintenance and custodial staff are encouraged to use dry-cleaning methods for pavement cleaning. Water is used only when deemed necessary. Care is taken to ensure that water-washed areas have had no spills or toxic or hazardous materials, and that the spills were properly cleaned prior to any washing activity. Minimize water use.
Window washing	Rinse only with potable water or clean in a way that ensures that cleaners are not discharged to ground. Minimize water use.
Storm drainage system maintenance	Manually remove or vacuum debris to the extent feasible when water is used to flush sections of the storm water drainage system. When underground conduits are cleaned, a plug is installed downstream. The fresh water is vacuumed out of the storm drainage system and managed for proper disposal. When cleaning aboveground swales and culverts, minimize water use and use filter barriers downstream to capture any debris mobilized by the flushing operation. When removing debris from culverts along the unpaved Arroyo Mocho access road that extends from Mines Road to LLNL's pump station, to the extent feasible, manually remove dirt and debris prior to flushing. Where safety permits, use filter barriers to capture flushed sediments. When the storm water drainage systems are slip-lined or need to be thoroughly cleaned, follow the Maintenance and Utility Services Department's procedure for minimizing contaminants to the storm water drainage system from storm drain lining.
Hose bibs and drinking fountains	None proposed beyond the standard BMPs for outdoor equipment (**Section 5.2.7**).
Uncontaminated ground water discharges	
• Sumps	No discharge to the storm water drainage system or ground is allowed from sump pumps located in areas where ground water is influenced by contaminated zones.
• Ground water well purging	Discharges occur in compliance with CERCLA agreements.
Rain water in utility boxes	
• Electric utility boxes	All water collected in electrical utility boxes is tested and, if contaminated, disposed of properly as the analysis indicates. Where accumulated data indicate a downward trend in pollutant concentration toward routinely finding uncontaminated water in the electrical vaults, a screening procedure similar to the procedures used for disposal of rainwater collected in secondary containment will be developed. In emergency situations, water from electrical utility vaults may need to be immediately pumped to alleviate a safety hazard. In these cases, workers are instructed to contain as much water as possible, and preferably pump the remaining water to a landscaped area. The pumped water must be sampled and analyzed and, if contaminated, the discharge must be reported to the Regional Board.
• Communication and water utility boxes	Rainwater collected in communications and water utility boxes is discharged directly to ground or the storm drainage systems.
Rainwater collected in secondary containment	Water collected in secondary containment berms is evaluated prior to release following procedures in **Appendix D**.

(continued)

Table 5-1. Specific non-storm water discharges allowed by WDR 95-174 (continued).

Permitted non-storm water discharges	Best management practice
Building and grounds maintenance continued	
Rinsing activities	Equipment temporarily or permanently stored outside may require rinsing to remove accumulated dust or ice or as a maintenance activity. Hose off with potable water only. Minimize water use to the extent possible. Use of chemical cleaners, soaps, or detergents is prohibited unless the rinse water is contained and properly disposed. Water used to rinse sampling equipment (e.g., split spoons) may not be discharged to the street, storm water drainage system, arroyos, other drainage channels, or other locations where water would not percolate into the ground. Rinse water from sample equipment used in areas of known contamination is collected in containers and for proper disposal and is not discharged to ground.
Uncontaminated excavated mud	Mud generated during use of high-pressure water jet excavations is vacuumed into a portable tank. Prior to performing the excavation, EPD staff evaluates the site for contamination following procedures identified in *ES&H Manual*, Document 33.3, "Management of Soil and Debris" (LLNL, 2008c). Mud generated from uncontaminated areas is dewatered at designated areas at the Livermore site. Designated areas are designed to contain the mud, prevent storm water run-on, and prevent runoff from entering the storm drainage system. The dewatered uncontaminated mud is periodically removed and either reused on site or disposed at a landfill. Muds generated from contaminated areas is managed to prevent discharge to either the storm drainage system or ground and is properly characterized for disposal.
Fire suppression and safety systems	
Emergency eye wash	After use in an emergency, follow emergency response and recovery procedures to address any contamination that may need to be cleaned up.
• Portable eye wash	Discharges from tests are allowed. Direct discharges to landscaped areas if possible.
• Hard-plumbed eye washes	Discharges from tests are allowed. Direct discharges to landscaped areas if possible.
Safety showers	If the safety shower is used in an emergency, follow normal emergency response and recovery procedures to address any contamination that may need to be cleaned up. Test water may be discharged to the storm water drainage system. Direct discharge to landscaped areas when possible.
Building fire sprinkler system tests • Inspector test valves • Main drain tests • Deluge valve tests	When no chemicals are added to the fire suppression system, test water may be discharged to the storm water drainage system. Measures are taken to ensure that no property damage, including erosion, results from the tests. When used in an emergency, normal emergency response and recovery procedures are followed to address any contamination.
Fire hydrant testing	When test will result in a discharge of more than 10,000 gallons, call your Environmental Analyst to coordinate notification to the Regional Board. The permit requires LLNL to: • Notify the Regional Board at least ten working days prior to the discharge. • Dechlorinate the discharge and ensure that the discharge is free of any pollutants in concentrations that could affect the beneficial uses of the receiving waters. • Use erosion control measures during discharge to prevent soil erosion at the release site, within drainage channels, or in the streambeds. Erosion prevention measures may include the use of a banana tube to direct flow away from erosion-prone areas and the use of hoses if necessary to direct the discharge to a suitable discharge location. Discharges of less than 10,000 gallons may be discharged to the storm water drainage system with procedures implemented to prevent erosion.

(continued)

Table 5-1. Specific non-storm water discharges allowed by WDR 95-174 (continued).

Permitted non-storm water discharges	Best management practice
Fire suppression and safety systems continued	
Annual in-service fire apparatus pump testing	Fire apparatus pumps are taken to the City of Livermore Fire Department test pit for testing. On occasion these tests may be performed onsite and the water will be discharged to Lake Haussmann (formerly known as the Drainage Retention Basin).
Wet hose drills	Implement erosion prevention measures.
Hose tests	Implement erosion prevention measures.
Fire apparatus rinsing	Rinsed one to two times per week at the Fire House using a minimum amount of potable water and wiped down. No soaps, detergents, or chemical cleaners can be used. When a full cleaning is required, the equipment is taken to an approved wash facility.
Fire service pump test	Flow tests that release potable water are limited to when there are problems with the system. All other tests do not result in a release of water. Water from these pump tests is directed into the air and, if possible, toward the north buffer zone to minimize the impact of the water to the arroyo (especially, the arroyo channel and banks) and to minimize excessive off-site flow. Combined water from pump tests will not exceed 10,000 gallons. If more than 10,000 gallons of water are discharged to the storm water drainage system (including the arroyo), the permit requires LLNL to: • Notify the Regional Board at least ten working days prior to the discharge. • Dechlorinate the discharge and ensure that the discharge is free of any pollutants in concentrations that could affect the beneficial uses of the receiving waters. • Use erosion control measures during discharge to prevent soil erosion at the release site, within drainage channels, or in the streambeds. Erosion prevention measures may include the use of a banana tube to direct flow away from erosion-prone areas and the use of hoses if necessary to direct the discharge to a suitable discharge location. Discharges of less than 10,000 gallons may be discharged to the storm water drainage system with procedures implemented to prevent erosion.
Water systems	
Drinking water tanks	If more than 10,000 gallons of water are discharged to the storm water drainage system (including the arroyo), the permit requires LLNL to: • Notify the Regional Board at least ten working days prior to the discharge. • Dechlorinate the discharge and ensure that the discharge is free of any pollutants in concentrations that could affect the beneficial uses of the receiving waters. • Use erosion control measures during discharge to prevent soil erosion at the release site, within drainage channels, or in the streambeds (e.g., controlling the release flow rate). • Notify SNL, California Department of Fish and Game (CDFG), and Zone 7. • Follow Maintenance and Utility Services Department Engineering Utilities Operations Procedure UOP 3007 (LLNL, 2005b). Discharges of less than 10,000 gallons may be discharged to the storm water drainage system with procedures implemented to prevent erosion.

(continued)

Table 5-1. Specific non-storm water discharges allowed by WDR 95-174 (continued).

Permitted non-storm water discharges	Best management practice
Water systems	
Mocho standpipes	If more than 10,000 gallons of water are discharged to the storm water drainage system (including the arroyo), the permit requires LLNL to: • Notify the Regional Board at least ten working days prior to the discharge. • Dechlorinate the discharge and ensure that the discharge is free of any pollutants in concentrations that could affect the beneficial uses of the receiving waters. • Use erosion control measures during discharge to prevent soil erosion at the release site, within drainage channels, or in the streambeds (e.g., controlling the release flow rate). • Follow Maintenance and Utility Services Department UOP 3007 (LLNL, 2005b). Discharges of less than 10,000 gallons may be discharged to the storm water drainage system with procedures implemented to prevent erosion.
Low-conductivity water tanks	If more than 10,000 gallons of water are discharged to the storm water drainage system (including the arroyo), the permit requires LLNL to: • Notify the Regional Board at least ten working days prior to the discharge. • Use erosion control measures during discharge to prevent soil erosion at the release site, within drainage channels, or in the stream beds (e.g., controlling the release flow rate). Discharges of less than 10,000 gallons may be discharged to the storm water drainage system with procedures implemented to prevent erosion.
Deionized water tanks	If more than 10,000 gallons of water are discharged to the storm water drainage system (including the arroyo), the permit requires LLNL to: • Notify the Regional Board at least ten working days prior to the discharge. • Use erosion control measure during discharge to prevent soil erosion at the release site, within drainage channels, or in the streambeds (e.g., controlling the release flow rate). Discharges of less than 10,000 gallons may be discharged to the storm water drainage system with procedures implemented to prevent erosion.
Piping	Small discharge volumes of potable, deionized water or low-conductivity water are allowed as part of maintenance activities. Repairs to piping should follow Maintenance and Utility Services Department UOP 3007 (LLNL, 2005b).
System flushing	If more than 10,000 gallons of water are discharged to the storm water drainage system (including the arroyo), the permit requires LLNL to: • Notify the Regional Board at least ten working days prior to the discharge. • Dechlorinate the discharge and ensure that the discharge is free of any pollutants in concentrations that could affect the beneficial uses of the receiving waters. • Use erosion control measures during discharge to prevent soil erosion at the release site, within drainage channels, or in the streambeds. Erosion prevention measures may include the use of a banana tube to direct flow away from erosion-prone areas and the use of hoses if necessary to direct discharges to a suitable discharge location. Discharges of less than 10,000 gallons may be discharged to the storm water drainage system with procedures implemented to prevent erosion.

(continued)

Table 5-1. Specific non-storm water discharges allowed by WDR 95-174 (concluded).

Permitted non-Storm water Discharges	Best management practice
Water systems	
New water system pipe and broken line replacement	Hydrostatic testing is done using potable water. Take steps to prevent water from entering the storm water drainage system at the completion of the test. When it is not possible to prevent flow into the storm water drainage system, extend the flow path to allow chlorine dissipation prior to the flow entering the arroyos. Take steps to prevent erosion of storm drainage channels. Ensure that the flow path is not over contaminated areas. Pipe disinfecting waters are directed to the sanitary sewer or contained in the pipe and dechlorinated because of the chlorine residual contained in these waters (approximately 100 mg/L). Follow Maintenance and Utility Services Department UOP 3007 (LLNL, 2005b).
Low conductivity system shut down	Discharges are allowed in the event of a power outage or when the low-conductivity water shuts down until flow is restored. If the discharge is greater than 10,000 gallons, the permit requires LLNL to: • Notify the Regional Board at least ten working days prior to the discharge. • Use erosion control measures during discharges to prevent soil erosion at the release site, within drainage channels, or in the streambeds (e.g., controlling the release flow rate). Discharges of less than 10,000 gallons may be discharged to the storm water drainage system with procedures implemented to prevent erosion.
Back-flow prevention devices	Test water may be discharged to the ground or storm water drainage system.

5.2.2. Vehicle and Equipment Fueling

Description

The effort is to prevent fuel spills and leaks and reduce their impacts to storm water. The approach outlined below is currently in place. Fleet Management in the Maintenance and Utility Services Department is responsible for ensuring that operations are conducted at the Building 611 maintenance area following the approach identified below. The Maintenance and Utility Services Department Maintenance Production Division Leader is responsible for ensuring that this approach is followed for mobile fueling operations. When program staff conduct remote fueling operations, the Principal Associate Director for that program is responsible for ensuring that BMPs are incorporated in the work.

Approach

- Pave central automotive vehicle fueling areas (Fleet Management at Building 611) with concrete, prevent storm water run-on, and cover the fueling area. In satellite areas, apply surface sealant to paved areas where covering is not feasible.
- Install vapor recovery nozzles to help control drips as well as air pollution.
- Discourage "topping-off" of fuel tanks.
- Provide spill response awareness training for personnel who handle hazardous materials.
- Post proper fueling instructions.
- Equip areas with spill kits containing dry, absorbent materials to clean up spills.
- Develop and implement spill response plans (e.g., *Spill Prevention Control and Countermeasure Plan*).

- Maintain a site-wide, 24-hour spill response capability. LLNL contracts with Alameda County Fire Department to provide on site hazardous materials response. Because they maintain a station on site they can respond quickly to an emergency involving outdoor storage of liquids.
- Dispense fuel for vehicles at designated fueling sites.
- Protect storm drains (e.g., temporary placement of absorbent pigs) when mobile fueling operations occur near storm drains.
- Use drip pans when fueling vehicles or equipment outside the Fleet Management, Building 611.
- Prohibit unattended fueling operations except for the Fleet Management, Building 611 where automatic shut-off valves are in place.

5.2.3. Vehicle and Equipment Washing and Steam Cleaning

Description

The effort is to prevent or reduce the discharge of pollutants to storm water from vehicle and equipment washing and steam cleaning. The approach outlined below is currently in place. The Fleet Management Superintendent of the Maintenance and Utility Services Department and the Maintenance Production Division Leader of the Maintenance and Utility Services Department are responsible for ensuring that the approach below is followed at designated wash areas. Each Principal Associate Director is responsible for ensuring that programmatic personnel do not wash equipment or vehicles outside designated areas.

Approach

- Use designated wash areas (Buildings 511 and 611) for vehicle and equipment cleaning (where practical) to prevent discharge to the storm drain system. Designated wash areas should have the following characteristics:
  - Paved with concrete.
  - Sloped for wash water collection.
  - Plumbed discharge to the sanitary sewer through an oil/water separator and included in the permit issued by the Water Resource Division (WRD) of the City of Livermore.
  - Sumps cleaned out routinely.
- Prevent steam cleaning wash water from entering the storm drainage system.
- Wash concrete, street sweepers, and gardening equipment (using no soaps, detergent, or additives) in the designated contained percolation areas (located in the labor yard and gardeners yard southeast of parking lot F-2). This wash area is designed to allow wastewater to percolate into the ground and prevent it from running into the storm drainage system. Trimmings and debris are to be removed and properly disposed of after they are dry. Gardeners' equipment may also be rinsed onto lawn areas where the rinse water percolates into the landscaping.
- Post instructions for proper use of cleaning equipment at the Building 511 and Building 611 wash areas.

For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

5.2.4. Vehicle and Equipment Maintenance and Repair

Description

The effort is to prevent or reduce the discharge of pollutants to storm water from vehicle and equipment maintenance and repair by running a dry shop. The approach outlined below is currently in place. The Fleet Management Superintendent is responsible for ensuring that fleet maintenance operations are conducted at the Building 611 maintenance area following the approach identified below. The Maintenance Production Division Leader in the Maintenance and Utility Services Department is responsible for ensuring that this approach is followed for vehicle and equipment maintenance and repair conducted by Plant Engineering. Equipment maintenance follows Maintenance and Utility Services Department's *Maintenance Operations Procedure Maintenance Activities To Minimize Adverse Effects on Storm Water Quality (MOP-01001)* (LLNL, 1995). Each Principal Associate Director is responsible for ensuring that equipment maintenance and repair performed in his or her Principal Directorate follows the approach outlined below.

Approach

- Prevent excessive buildup of oil and grease on equipment.
- Use drip pans or containers under equipment that might leak.
- Perform equipment and vehicle maintenance in designated areas that are designed to prevent discharges to the storm drainage system, or use drip pans or containers for vehicles and equipment that might drip.
- Inspect vehicles and equipment for leaks on a routine basis (such as during scheduled maintenance).
- Use secondary containment for hazardous liquid products and wastes that may enter the environment.
- Prohibit pouring materials down drains, discharging to the storm water drainage system, or hosing down work areas; encourage the use of dry sweeping.
- Clean small spills with rags; perform general cleanup with damp mops and larger spills with absorbent material.
- Minimize the use of toxic solvents. Use environmentally approved substitutes whenever practical.
- Make sure oil filters are completely drained and crushed before recycling them.
- Clean maintenance area storm drainage system inlets regularly.
- Collect and properly manage (dispose of or recycle) used grease, oil, oil filters, antifreeze, cleaning solutions, automotive batteries, and hydraulic and transmission fluids.
- Train employees on proper procedures to prevent contaminants from entering the storm water drainage system.
- Store idle equipment under cover where practical.

- For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

5.2.5. Transportation and Loading/Unloading of Industrial Materials and Waste

Description

The effort is to prevent or reduce the discharge of pollutants to storm water from transportation and outdoor loading/unloading of materials and wastes. The approach outlined below is currently in place. Each Principal Associate Director is responsible for ensuring that this approach is followed in areas within his or her responsibility.

Approach

- Cover major, long-term, hazardous material outdoor storage areas to reduce exposure of materials to rain.
- Clean up spills immediately.
- Equip vehicles used to transport hazardous waste with appropriate spill kits as required in *ES&H Manual,* Document 21.2 (LLNL, 2005a).
- Provide spill response awareness training for personnel who handle hazardous materials.
- Maintain a site-wide, 24-hour spill response capability. LLNL contracts with Alameda Count Fire Department to provide on site hazardous materials response. Because they maintain a station on site they can respond quickly to an emergency involving a release to the environment.
- Require training for forklift operators.
- Ensure that LLNL loading and tie-down requirements are met per *ES&H Manual,* Document 21.2 (LLNL, 2005a).
- Provide safe driver training for delivery truck drivers and loading/unloading equipment operators.
- Park tanker trucks or delivery vehicles away from unprotected storm drains or manholes, or provide temporary protection.
- Use drip pans under hose connections.
- Design major loading/unloading areas to prevent storm water run-on:
  - Use grading or berming.
  - Position roof downspouts to direct storm water away from loading/unloading areas.

For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

5.2.6. Outdoor Container Storage of Liquids

Description

Liquid product and waste storage containers are protected from rainfall, run-on, runoff, and wind dispersal by several methods. The approach outlined below is currently in place. It is the responsibility of each Principal Associate Director to ensure that these BMPs are followed. Containers that are drum-size and smaller are typically stored in portable weatherproof storage buildings where practical. These buildings typically provide secondary containment and, when required, protection from fire. In other areas, Ramada-type roof structures are used.

Approach

- Protect materials from rainfall, run-on, runoff, and wind dispersal by using one or more of the following or equivalent approaches where practical.
  - Store materials indoors.
  - Cover the storage area with a roof.
  - Minimize storm water run-on by enclosing the area or using other similar mechanisms.
  - Use "storage sheds" for storage of liquid containers.
  - Use covered dumpsters for waste product containers.
- Provide oil product and waste tanks that are 55 gallons or larger, or are located in environmentally sensitive areas, with secondary containment, see *Spill Prevention Control and Countermeasure Plan – Livermore Site* (Brigdon, 2008, or the most current version).
- Provide all other tanks (except water tanks) and containers with compatible secondary containment in the form of impervious berms, dikes, and pallets with basins in case of leaks.
- Follow procedures in **Appendix D** when releasing rainwater collected in secondary containment.
- Store liquids to meet federal, state, and local requirements for storage of oil and hazardous materials including secondary containment, spill response, contingency plans, employee training, segregation of incompatible material, record keeping, and inspections.
- Train personnel handling hazardous materials on proper storage and spill response awareness.
- Maintain a site-wide, 24-hour spill response capability. LLNL contracts with Alameda County Fire Department to provide on site hazardous materials response. Because they maintain a station on site they can respond quickly to an emergency involving outdoor storage of liquids.
- Store reactive or ignitable materials in accordance with fire codes (e.g., National Fire Protection Act).

For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

5.2.7. Outdoor Process Equipment Operations and Maintenance

Description

The effort is to prevent or reduce the discharge of pollutants to storm water from outdoor process equipment operations and maintenance by reducing the amount of waste created, enclosing or covering all or some of the equipment and installing secondary containment where practical, and training employees. The approach outlined below is currently in place. It is the responsibility of each Principal Associate Director to ensure that BMPs are followed in the areas of his or her responsibility.

Approach

- Alter the activity to prevent exposure of pollutants to storm water, if practical:
  - Perform the activity during dry periods only.
  - Minimize the use of toxic solvents and substitute nonhazardous or less hazardous materials whenever practical.
- Minimize contact with storm water through berming and drainage routing to prevent run-on when practical.
- Follow procedures in **Appendix D** when releasing rainwater collected in berms or drip pans.
- Develop and implement spill response plans (e.g., *Spill Prevention Control and Countermeasure Plan*).
- Provide spill response awareness training for personnel who handle hazardous materials.
- Move activities indoors or to a covered area when practical.
- Collect effluent streams and manage per LLNL policies, which include connecting to retention tanks, containerizing, or connecting process equipment areas to the sanitary sewer (if permitted by the WRD).
- Vacuum and contain saw cut slurry for characterization and proper disposition when working in a contaminated area. When working in an uncontaminated area vacuum and contain saw cut for management similar to concrete rinse water: discharge onto a designated soil area to percolate and evaporate or into a lined basin. When water has evaporated or percolated, remove residue and dispose to a landfill.
- Store idle equipment under cover when practical.

For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

5.2.8. Outdoor Storage of Raw Materials, Products, and Byproducts

Description

Raw materials, products, and by-products that have the potential to become mobile are typically protected from rainfall, run-on, runoff, and wind dispersal by the approach described below. The approach outlined below is currently in place. It is the responsibility of each Principal Associate Director to ensure that these BMPs are followed in the areas of his or her responsibility.

Approach

- Protect materials and products from rainfall run-on, runoff, and wind dispersal with one or more of the following, where practical:
  - Store materials indoors.
  - Cover with a roof, place in a storage shed, or cover temporarily (e.g., tarps).
  - Provide secondary containment.
  - Minimize run-on.
- Inspect hazardous, mixed, combined, or radioactive waste storage containers to detect any signs of deterioration and remedy as required by law or LLNL policy.
- Sweep parking lots or other surfaces near bulk materials storage areas periodically to remove debris blown or tracked in from storage areas.
- Provide spill response awareness training for personnel who handle hazardous materials.
- Maintain a site-wide, 24-hour emergency response. LLNL contracts with Alameda County Fire Department to provide on site hazardous materials response. Because they maintain a station on site they can respond quickly to an emergency involving outdoor storage of materials.
- Keep liquids in designated areas.
- Keep outdoor storage containers in good condition.
- Develop and implement spill response plans (e.g., *Spill Prevention Control and Countermeasure Plan*).
- Slope bulk storage areas to prevent ponding, especially where pollutants can be leached out of the materials (e.g., compost, logs, and wood chips).
- Store idle equipment under cover where practical.

For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

5.2.9. Waste Handling and Disposal

Description

The effort is to prevent the discharge of pollutants to storm water from waste handling and disposal by tracking waste generation, storage, and disposal; reduce waste generation and disposal through source reduction, re-use, and recycling; and prevent run-on and runoff from waste management areas. The approach outlined below is currently in place. Management of the major hazardous waste treatment, storage, and disposal facilities is the responsibility of the RHWM Division Leader. The responsibility for managing Principal Directorate WAAs and other waste handling areas is the responsibility of each Principal Associate Director owning the facility.

Approach

- Provide training and supervision for all waste generators in proper waste handling practices.

- Provide secondary containment for chemical hazardous waste containers and hazardous waste retention tanks.
- Inspect hazardous waste underground storage tanks daily. Inspect (at least monthly or as required by state and local regulations) waste containers and retention tanks for signs of deterioration and remedy as needed.
- Inspect waste management areas for spills and leaks routinely.
- Develop and implement spill response plans for LLNL, including specific plans for WAAs, recycling units, and RHWM facilities.
- Equip hazardous materials storage areas with spill kits containing dry absorbent materials to contain, collect, and store spilled materials.
- Use only LLNL-approved containers for containment of hazardous waste, radiological waste, mixed waste, combined waste, nonsewerable waste, and biohazardous waste.
- Containerize ground water pumps, test and purge water from environmental investigations and environmental monitoring activities, and manage according to CERCLA agreements.
- Maintain a hazardous materials usage inventory to limit waste generation (e.g., ChemTrack database and Chemical Exchange Warehouse [CHEW]).
- Maintain an active waste minimization program (e.g., material substituting, recycling, process modification).
- Manifest hazardous, radiological, mixed, combined, and biohazardous waste.
- Segregate and separate waste by compatibility.
- Cover/enclose or berm wastewater management areas whenever practical to prevent contact with run-on or runoff.
- Use covered, leak-free trash and debris dumpsters and recycling bins when practical.
- Equip waste transport vehicles with appropriate spill cleanup equipment.
- Minimize spills and fugitive losses from waste loading systems.
- Minimize sediments or wastes from being tracked off site.

For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

5.2.10. Management of Contaminated or Erodible Surface Areas

Description

Prevent or reduce the discharge of pollutants to storm water from contaminated or erodible surface areas by leaving as much vegetation on site as possible (without obstructing flood control design peak flows), minimizing soil exposure time, stabilizing exposed soils, and preventing storm water run-on and runoff. The approach outlined below is currently in place. It is the responsibility of the Operations and Business Directorate Principal Associate Director to ensure that the approach described below is followed. Each Principal Associate Director is responsible for ensuring that this approach is followed on projects that his or her directorate performs or funds.

Approach

This BMP approach primarily addresses soils that are not so contaminated as to exceed established hazardous waste threshold criteria. More aggressive control practices that prevent runoff are required when hazardous waste threshold criteria are exceeded in the soil, and these practices are usually defined in cleanup plans. Sediment itself is considered a pollutant, and can carry other pollutants off in the storm water. Erosion control techniques should be used as the primary BMP with sediment control techniques serving as backup and for temporary protection.

- Preserve existing vegetation wherever practical.
- Segregate contaminated soils in disturbed areas and place them in protected piles to prevent run-on and runoff.
- Revegetate as soon as practical (hydroseeding, landscaping).
- Use chemical stabilization. The stabilizing agent must be selected to ensure that no pollutant is released as a result of the application of the agent.
- Remove contaminated soils or, where practical, use bioremediation.
- Use temporary vegetation (e.g., hydroseeding).
- Use erosion control fabrics.
- Use riprap and gravels to protect inlets and flow lines.
- Use dust control measures to protect soil from being mobilized by wind (e.g., wetting soil, mulches, gravels, and covering).
- Filter or settle sediment-laden runoff prior to discharge. It should be noted that any filter mechanism slows the storm water flow rate and may result in flooding if not maintained and planned properly. Straw bales are particularly prone to causing flooding and provide inadequate filtration; they should be avoided in most circumstances. Straw bales and silt fences may not be used in storm drain swales and channels as sediment filters.
- See BMPs described in the *Stormwater Best Management Practice Handbook*: *Construction* (CASQA, 2003)
- Manage soil following of the *ES&H Manual,* Document 33.3 (LLNL, 2008c) and as described in the *LLNL Report of Waste Discharge for Beneficial Reuse of Soil at the Livermore Site, Technical Report* (Folks, 1997).

For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

5.2.11. Building and Grounds Maintenance

Description

The effort is to prevent or reduce the discharge of pollutants to storm water from building and grounds maintenance by washing and cleaning up with as little water as possible, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the storm water drainage system. The approach outlined below is currently in place. The Maintenance and Utility Services Department Maintenance Production Division Leader is responsible for ensuring that building and grounds maintenance is conducted in a manner consistent with this approach.

Approach

- Preserve and/or plant native vegetation where practical to reduce water, fertilizer, and pesticide needs.
- Use only U.S. Environmental Protection Agency (EPA) and California approved pesticides and fertilizers.
- Avoid using pesticides and fertilizers within 25-feet of a storm drain or arroyo, or when rain is predicted.
- Inspect the storm water drainage system routinely, and clear as needed (see **Table 5-1** for applicable BMPs).
- Dry sweep paved areas routinely.
- Dispose of wastes properly and prohibit non-permitted, regulated wastewater from entering the ground and storm water drainage system.
- Apply salt sparingly to reduce the amount that strays off the applied surfaces and that could end up in the storm water drainage system. Collect (sweep up and dispose of) excess salt on the applied surfaces prior to the next forecasted rain event.
- Collect water and slurry generated by the water-jet for management at designated areas (see **Table 5-1**).
- Follow BMPs identified in **Table 5-1** for specific non-storm water discharges related to building and grounds maintenance activities.

For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

5.2.12. Building Repair, Remodeling, Construction, and Demolition

Description

The effort is to prevent or reduce the discharge of pollutants to storm water from building repair, remodeling, construction, and demolition by using sediment and erosion controls, enclosing or covering building material storage areas, using good housekeeping practices, using nonhazardous or less hazardous alternative products, and training employees. The approach outlined below is currently in place. It is the responsibility of the Operations and Business Directorate Principal Associate Director to ensure that this approach is followed for work performed by the Maintenance and Utility Services Department. Each Principal Associate Director of a Principal Directorate not using the Maintenance and Utility Services Department services is responsible for ensuring that the Principal Directorate staff follows this approach.

Approach

Where applicable, use BMPs identified in the *Stormwater Best Management Practice Handbook: Construction* (CASQA, 2003). These BMPs include, but are not limited to:

- Use sediment control techniques when bare soil is temporarily exposed.
- Use soil erosion control techniques when practical where bare ground is temporarily exposed.
- Use permanent soil erosion control techniques in areas where buildings are removed and not replaced (e.g., landscaping, hydroseeding, mulching, or graveling).

- Enclose painting operations, as appropriate, to be consistent with local air quality regulations and the Occupational Safety and Health Act (OSHA).
- Properly store materials that are normally used in repair and remodeling (e.g., paints and solvents).
- Cover materials of particular concern (e.g., soil piles, chemical storage, paints) that are exposed to weather, especially during the rainy season.
- Properly store and dispose of waste materials generated from the activity. See Factsheet WM5 in *Stormwater Best Management Practice Handbook: Construction* (CASQA, 2003).
- Provide spill response training for personnel who handle hazardous materials.
- Maintain good housekeeping practices while work is underway, and remove debris in a timely manner.
- Inform on-site contractors of required practices for management and disposition of wastes, discharges, and spills, and provide appropriate provisions in the contract to enforce these policies.
- Prevent discharges of non-permitted wastewater to the storm water drainage system.
- Train LLNL and contract employees and provide oversight of subcontractors.
- Protect nearby storm drains to minimize the chance of inadvertent discharge of residual paints, liquids, or powders.
- Advise concrete delivery truck drivers of the proper place to wash out their trucks.
- Clean the storm water drainage system in accordance with LLNL BMPs (see **Table 5-1**) in the immediate vicinity of the construction activity when it is completed.
- Filter or settle sediment-laden runoff prior to discharge (avoid use of straw bales; see **Section 5.2.10**).

For a quick reference on disposal alternatives for specific wastes, see **Appendix C**, **Table C-2**.

APPENDIX E: NOT USED

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APPENDIX F: CRITICAL LIFTS

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APPENDIX F

CRITICAL LIFTS

A. The Subcontractor shall appoint a Person-In-Charge (PIC) for the entire operation. The PIC shall meet the definitions of appointed, designated, and qualified as described below, and shall be present at the lift site during the entire lifting operation:

1. Appointed: Assigned specific responsibilities by the Subcontractor.

2. Designated: Selected or assigned by the Subcontractor as being qualified to perform specific duties.

3. Qualified: A person who, by possession of a recognized degree, certificate, or professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated an ability and competence to solve or resolve problems relating to the subject matter and work.

B. The PIC shall prepare and submit a pre-job critical lift plan or procedure that defines the operation to LLNS for approval before conducting the lift. The critical lift plan/procedure shall include the following:

1. Identification of the items to be moved, the weight, dimensions, and center of gravity of the load, and any hazardous or toxic materials that are present.

2. Identification of operating equipment to be used, by type and rated capacity.

3. Rigging sketches that include (as applicable): Identification and rated capacity of slings, lifting bars, rigging accessories, and below-the-hook lifting devices.

    a. Load-indicating devices
    b. Load vectors
    c. Lifting points
    d. Sling angles
    e. Boom and swing angles
    f. Methods of attachment
    g. Crane orientations
    h. Other factors affecting equipment capacity

4. Operating procedures and special instructions to operators including rigging precautions and safety measures to be followed as applicable.

C. Experienced operators who have been trained and qualified to operate the specific equipment to be used shall be assigned to make the lift.

D. Only designated, qualified signalers shall give signals to the operator. *However, the operator shall obey a STOP signal at all times, no matter who gives the signal.*

F. A pre-lift meeting between the Subcontractor and LLNS shall be conducted prior to making a critical lift. During this meeting the critical lift plan/procedure shall be reviewed and questions shall be resolved.

G. If required by the critical lift procedure, a practice lift shall be done before the critical lift. Conditions for a practice lift should closely simulate actual conditions involving weight, rigging selection and configuration, load movement path, and other relevant factors. Practice lifts should be done by the same crew, using the same lifting equipment.

END OF APPENDIX F

APPENDIX G: NOT USED

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