

**RECORD OF REVISIONS**

<b>Rev</b>	<b>Date</b>	<b>Description</b>	<b>POC</b>
0	7/6/99	Initial issue as Facility Construction Specifications Manual consistent with LIR 220-03-01.	Mike Nicolini, FWO-FE
1	2/21/06	New ISD title reflects spec applicability to all LANL work per IMP 342, conversion to 50 divisions, and other minor changes.	Tobin Oruch, ENG-CE
2	10/27/06	Organization and contract reference updates from LANS transition. IMP and ISD number changes based on new Conduct of Engineering IMP 341. Other administrative changes.	Tobin Oruch, CENG
3	11/03/08	Subcontract(or) vice Contract(or) and other terminology changes; required rev numbers on Spec table of contents.	Tobin Oruch, CENG

**PLEASE CONTACT THE ESM GENERAL POC**  
for upkeep, interpretation, and variance issues

<b>LMSM Section 100-200</b>	<a href="#"><u>General POC/Committee</u></a>
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**100 GENERAL REQUIREMENTS**

The use of these LANL Master Specifications and other project-specific sections is governed by Engineering Standards Manual Chapter 1-General, Section Z10, in its Specifications subsection.

The purpose of these additional instructions for writing and editing specifications below are to increase clarity, consistency, and uniformity; reduce recurring errors; and improve communications among project personnel.

In general, also conform to the recommendations of the Construction Specification Institute's Project Resource Manual/CSI Manual of Practice except to the extent this document departs from those recommendations.

**200 SPECIFIC REQUIREMENTS**

**201 Specification Format**

- Follow the Construction Specifications Institute’s MasterFormat and SectionFormat for the basic layout of Division 00 through 49 Specifications.
- If a PART is not to be used in a particular specification, i.e., a Division 01 Specification, PART 2 PRODUCTS, and PART 3 EXECUTION, enter “Not Used” under the heading.
- At the end of each Section put "END OF SECTION" and at the end of the last Specifications Section put both "END OF SECTION" and "END OF SPECIFICATIONS".

## **202 Writing and Editing Specifications**

Conform to the following for writing and editing specifications.

### **202.1 Complete Sentences**

Use complete sentences with verbs.

**No:** "Performance in accordance with ACI 302."

**Yes:** "Perform work in accordance with ACI 302."

**Exceptions:** Manufacturer: Company, Model No.

### **202.2 Write short sentences**

**No:** The approximate locations of cabinets, panelboards, wiring gutters, switches, light outlets, power outlets, etc. are indicated on the Drawings, however the exact location must be determined after thoroughly examining the general building Drawings and by actual measurements taken during construction to avoid conflicts with structural, architectural, or other trades, with all locations subject to approval by the STR.

**Yes:** Break into four sentences as follows:

The locations of cabinets, panelboards, wiring, gutters, switches, light outlets, and power outlets indicated on the Drawings are approximations. Determine the exact locations by thoroughly examining the Drawings and by taking actual measurements during construction. Avoid conflicts with structural and architectural work, as well as with work of other trades. Obtain approval of the STR.

### **202.3 Delete useless words**

**No:** Special attention must be paid to the following New Mexico State Highway Specifications sections and strict conformance thereto ensured as applicable.

**Yes:** Conform to the following New Mexico State Highway Specifications.

### **202.4 Specification on Drawings**

Do not put Specifications on Drawings. Although occasionally practiced, Specifications do not belong on the Drawings. Common violations of this approach are Structural Notes and Specifications on Equipment Lists.

### **202.5 Vague Sentences, Specifications and Terms**

Use precise terms. Be precise. Do not use "etc." in Specifications. Words such as "as needed," and "as required" are too vague. Say exactly what you require. Do not use approximations unless absolutely necessary.

**No:** "Install bracing as needed."

**Yes:** "Install L3x3x1/4 diagonal braces at 48" o.c. as shown on detail...."

### **202.6 Active Imperative**

The Specifications and Drawings are all directed at the General Subcontractor; therefore, using "the Subcontractor must..." is redundant and unnecessary. Start each sentence with a command verb. If absolutely necessary, "must" can be used. Avoid the "passive must" style; it could infer someone other than the Subcontractor is to perform the action. Never use the "passive will."

**No:** "The Subcontractor must verify lines before starting formwork."

**Yes:** "Verify lines before starting formwork."

**Never:** "The lines will be verified before starting formwork."

**Note:** When LANL is self-performing work to Specifications, it is generally not necessary to change "Subcontractor" to "LANL" in most cases, since it should be understood that LANL is to do all the work, or this can be made clear in the Statement of Work or References section. Such terminology changes in the Specifications may be necessary for clarity when LANL is only performing part of the work.

### **202.7 LANL Actions (Will, May)**

For LANL action use "will" : "LANL will provide xxx for installation by the Subcontractor."

For soft LANL actions use "may". "The STR may, in his/her discretion, perform additional compaction tests of the trench backfill."

### **202.8 Performance Specifying**

Avoid dictating the process and procedure. Specify the required salient characteristics of the product.

### **202.9 Consistency**

Use one term throughout the Drawings and Specifications. Be consistent with terminology, especially between Specifications and Drawings. Do not use "grille, louver and diffuser" all to describe the same thing. Do not use "gravel" on the Drawings and "granular fill" in the Specifications to describe the same item.

### **202.10 Overlap Redundancy**

If it's in the boilerplate, don't reword it for the Specifications. If it's in the Specifications, don't repeat it on the Drawings. The more often something is repeated, the greater the likelihood of inconsistency.

**No:** Concrete strength is called out on both the Drawings and the Specifications.

**No:** Trench Drawings are in each discipline plus there are trenching Specifications in Division 33.

### **202.11 Orchestration of Lower-Tier Subcontractors**

Avoid specifying directions to sub-tier subcontractors.

**No:** "Formwork sub-tier subcontractor is responsible to provide blockouts for mechanical and electrical penetrations."

**No:** "The Subcontractor must require the applicator to examine areas and conditions under which painting work is to be applied and notify the Subcontractor, in writing, of conditions detrimental to proper and timely completion of work. Do not proceed until unsatisfactory conditions have been corrected."

**Yes:** Examine areas to be painted. Correct unsatisfactory conditions before proceeding.

### **202.12 Abbreviations**

Use abbreviations sparingly. Don't use abbreviations and acronyms that are only familiar to LANL personnel. Don't use design organization/standards abbreviations unless the full name and address is located in the document.

**No:** DTL, ES-DE, NECS, ACI, NEMA, NFPA.

### **202.13 Specifying Subcontractor Experience**

Avoid specifying Subcontractor experience in general, as this should be given to the buyer of the procurement. If necessary, do the following:

- Do not specify required experience in number of years. Specify required number of satisfactorily completed jobs of equivalent nature and scope to the current task.
- Identify the experience requirement as a submittal item in the affected Specification section and on the submittal list.

**Yes:** "In performing the work of this Section, the Subcontractor (or his/her sub-tier subcontractor) shall be a firm which:

- has satisfactorily performed at least five jobs of equivalent nature and scope of the job herein; and
- is acceptable to the manufacturer of the primary materials."

### **202.14 Specifying Project Scheduling**

Do not specify project scheduling in the Specifications, except for general and essential phasing guidelines.

**No:** "Deliver door frames to job site in time to facilitate coordination of work."

**Yes:** "Prepare septic tank and drainage field for hookup before demolishing existing cesspool."

### 202.15 Laundry Lists

Do not use long-list descriptions of project items or project scope. Let the documents overall describe what is to be done. Something is bound to be left out.

**No:** "Electrical work involves the following":

### 202.16 Submittals

Coordinate submittals correctly. Include specific submittals and their description in each Specification section and in the Submittals List in Section 01 3300.

**No:** "Submittals as per Special Provisions".

**Yes:** "Provide concrete design mix and test data as per ACI 301."

**Problem Area:** Installation instructions requested in the Specifications that are not itemized in the submittal list.

### Inspection

Use "will" for inspection to be done by LANL. The Special Provisions and Division 01 Sections generally say that unless specifically stated otherwise in the Specifications, all inspections will be performed and paid for by LANL. Preparation steps and how many days/hours in advance the Subcontractor must notify the STR is to be specified on a section by section basis.

### 202.18 Warranty

Specify warranty provisions correctly and completely. Warranties, guarantees, protection plans, etc., must be accurately and fully specified as to what is required and what is to be covered, i.e., labor, materials, types of exposure, usage, modes of failures, etc. Emphasize up front details. Avoid tying warranty obligations to scheduled or preventive maintenance.

### 202.19 In-House Standards

Avoid reference to in-house standards. Avoid references to in-house or established LANL standards as a substitute for providing a fully detailed Specification. If absolutely necessary to do so, include a copy of the referenced standards in the documents.

**No:** "Identify piping in accordance with the LANL Engineering Standards Mechanical Section XXX.X."

### 202.20 Reference and Code Listings

Cite reference standards correctly. List Codes, References, and Standards, for all disciplines in Specification Section 01 4219 with full names and addresses. The list is to be prefaced with the statement "To the extent specified elsewhere in these Construction Documents, comply with the requirements of the following standards and associations." Therefore, a listing of references in Part 1 of each Specification section is undesirable and misleading because the specifier falsely

believes he has mandated a requirement when he has only listed a reference. However, the text of individual sections should individually specify conformance to specific codes as required. Include the title of the reference or standard the first time it is listed and just the number thereafter.

**Yes:** After you have confirmed that ACI is included in the Reference Listing in 01 4219, write: "Formwork: Conform to ACI 301 – Structural Concrete for Buildings." Include the title of ACI 301 only the first time it is mentioned in the Specification section.

### 202.21 Scope of Work

Do not include a scope of work for individual Specification sections. The Scope of Work or Summary of Work appears in the Boilerplate only, or perhaps as a Div 00 or 01 section with approval of SUP for external procurements.

### 202.22 Bid Alternatives

Use bid alternates sparingly and only:

- as additive, not deductive;
- if clearly defined on all documents;
- if it is of significant monetary value; and/or
- for maintenance or protective plans funded from separate, non-capital funds;

Use the following Scope of Work format in the Boilerplate (Special Provisions) when using alternates;

- **Base Bid Item:** The Subcontractor must provide all labor, materials, and equipment to construct the ( \_\_\_\_\_ building), and to perform certain related work in accordance with these Subcontract Documents, less Additive Alternate(s).
- **Additive Alternate XX:** If the Subcontract award includes Additive Alternate XX, the Subcontractor must also provide all labor, materials, and equipment to construct Additive Alternate XX (See Drawing No. \_\_\_\_\_ or Spec Section \_\_\_\_.)
- **Note:** The words "Base Bid Item" should be used only if there is an Alternate.

### 202.23 Pre-Bid

Do not specify pre-bid activities. Do not specify "pre-bid" or "with the bid" requirements.

**No:** "Attach previous experience records with all bids."

**No:** "Inspect job site prior to submitting bid."

Products will not be reviewed for "pre-approval" prior to award of Subcontract, so be specific.

**202.24 Related Work**

Do not list "Related Work" in the Specifications unless absolutely essential. If related sections are cited, double-check that the name and section number are correct.

**202.25 Salient Characteristics**

Do not copy a particular manufacturer's Specification unless that is the only desired product. Do not specify only a brand name followed by "or approved equal," since this is addressed by Section 01 2500 Substitution Procedures (see 202.27 below). Doing so may produce a restrictive spec. Instead, develop a spec that states only salient characteristics. These listed salient characteristics are the only criteria against which an approved equal can be judged.

**No:** Cabinets are to be "Quaker Maid" or approved equal.

**Yes:** Provide cabinets 34 1/2" high by 24" deep. Provide doors with self-closing hinges. Mount drawers on roller-type glides in steel tracks. Provide oak or birch wood cabinets, stained-natural and finished with factory-applied polyurethane.

Manufacturer: Quaker Maid, Model No. XXXX, Hass, Yorktown.

**202.26 No Substitution**

Consult with ASM for sole source justification guidance.

Do not state "Use Brand XYZ." That is misleading unless you are specifying XYZ with no substitution. If a sole source justification is approved, state "No substitution" in the following format:

Manufacturer: Company, Model. No substitution.

**202.27 Or Approved Equal**

The Section 01 2500 Substitution Procedures disclaimer implies "or approved equal." Therefore, do not state "or approved equal" after each manufacturer. State the manufacturer in the following format:

Manufacturer: Company, Model.

If the AE desires to list two or more manufacturers/model numbers, it still implies "or approved equal."

**202.28 Exceptions (Reference 202.25, 202.26, 202.27)**

These rules may be disregarded only for products that are specified in accordance with industry standards such as:

- Copper tubing, Type L, hard drawn, ASTM B88.
- Reinforcing bar, #7, ASTM A615, Grade 40.

**202.29 Cross-Reference Check List**

Double-check the following lists:

- Submittal list in Specification 01 3300 to individual Specification sections;
- Drawing list to title sheet to actual sheets;
- Nameplates lists;
- Equipment lists;
- RELATED SECTIONS list in each Specification Section to entire Specification;
- REFERENCES SPECIFIED in individual Specification Sections for inclusion in Specification Section 01 4219, Reference Standards;
- LANL furnished testing for inclusion in Specification section 01 1116.

**202.30 Capitalization**

For consistency, capitalize the following words:

- Subcontractor/Subcontract
- Subcontract Technical Representative
- Subcontract Documents
- Drawings
- General Provisions
- Special Provisions
- Specifications
- LANL
- Work

**202.31 Coordination**

Coordinate the following pro forma (boilerplate) items carefully with the STR:

- Scope of Work Statement (only in pro forma/boilerplate)
- Monetary magnitude of Work.
- Additive Alternatives
- Number of Drawings and drawing package project and C numbers

**202.32 Terminology**

In preparing the Specifications and Drawings use the following guidelines:

<b>Don't Use</b>	<b>Use Instead</b>
1. "constructor"	"Subcontractor"
2. "subcontract" (or previously "contract")	"Subcontract"
3. "Laboratory, government, university, Contractor"	"LANL"
4. "Laboratory" (in reference to a testing lab)	"testing laboratory"

5. "Owner (user) supplied"	"GFE" (Government-furnished equipment)
6. "by others"	"by LANL" or "not in Subcontract (NIS)"
7. "Architect, Architect-Engineer, Subcontract(ing) Officer, Owner, User"	"Subcontract Technical Representative (STR)" [STR after first usage as above]. In rare cases, Subcontract Administrator may be correct and should be used.
8. "index"	"table of contents"
9. "(required by) governing regulations"	Be specific.
10. "comply with LANL standards"	Specify what is required.
11. "industry standards"	Specify what is required.
12. "...must be skilled in their trade"	Specify experience required.
13. "(authorities) having jurisdiction"	None.
14. "at no additional cost to LANL"	None.
15. "in addition to those required elsewhere"	None.
16. "options"	None.
17. "General Provisions" in Specs and Drawings	None.
18. "Special Subcontract Provisions"	"Special Provisions," but only in pro forma (boilerplate)
19. "Special Provisions" in Specs and Drawings	None.
20. "Technical Provisions, Technical Specifications"	"Specifications"
21. "Base Bid" if project does not include alternates	"Work"
22. KSL	LANL or their Support Services Subcontractor

**203 Supporting Documents**

**203.1 Soils Information**

Verify that the soils report is cited in the pro forma (boilerplate) "Instructions to Bidders," reproduce the entire "Soils Report" in the Specifications and reproduce the "Boring Logs" on the Drawings as follows:

- Insert into "Physical Data" of "Instructions to Bidders": "The indications on the Subcontract Drawings or in the Specifications are based on site investigations as compiled in (REPORT NAME AND NUMBER), dated (REPORT DATE), which is reproduced in the Specifications of this Solicitation.
- Such information is not a warranty of subsurface conditions and may not reflect subsurface conditions over the entire proposed construction area. The Bidder shall be responsible for his/her interpretations and use of the information. Also note the applicable General Provision and cautionary statements appearing with such information."
- Insert Specifications Section 02 3000 into the Specifications package.
- On one of the project Drawings, photographically reproduce the boring logs and put the following notes on the same Drawing:

"SOIL BORINGS WERE DRILLED BY (Name of Company). INFORMATION SHOWN HERE IS REPORTED IN GREATER DETAIL IN THE REPORT TITLED (report name and number), WHICH IS REPRODUCED IN THE SPECIFICATIONS OF THIS SUBCONTRACT.

SUCH INFORMATION IS NOT A WARRANTY OF SUBSURFACE CONDITIONS AND MAY NOT REFLECT SUBSURFACE CONDITIONS OVER THE ENTIRE PROPOSED CONSTRUCTION AREA. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR HIS/HER INTERPRETATIONS AND USE OF THE INFORMATION. ALSO NOTE GENERAL PROVISION "SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK."

THE AVAILABILITY OR USE OF THE SOILS INVESTIGATION REPORT AND LOGS OF TEST BORINGS SHALL NOT BE CONSTRUED AS A WAIVER OF THE SUBCONTRACTOR'S DUTY TO EXAMINE THE SITE AND THE CONDITIONS AFFECTING THE WORK, AND DOES NOT RELIEVE THE CONTRACTOR FROM THE RISK OF SOIL OR SUBSURFACE CONDITIONS WHICH COULD REASONABLY BE ANTICIPATED OR FROM PROPERLY FULFILLING THE TERMS OF THE SUBCONTRACT."

#### **204 Submittal of Specification Package**

The final submittal of the specification package must be bound and include a cover sheet (front and back), approval sheet, and a table of contents with revision number of each section (these shall be Rev. 0 for all specs and sections on initial issue; prior to that, draft specs and sections should use Rev. 0a, 0b, etc.).

When more than one volume of specifications is required for a project, note the volume number on the cover sheet and in the table of contents.

Color coding of some specification sections may be required by the LANL Project Leader. Also, if the LANL Project Leader selects LANL to reproduce the specification package, submit the package unbound on white paper. Information contained on the front cover sheet must be approved by the LANL Project Leader.

Refer to samples of the approval sheet and table of contents below.

**204.1 Sample Approval Sheet**

SPECIFICATIONS

FOR

[PROJECT TITLE]

AT THE

LOS ALAMOS NATIONAL LABORATORY

PROJECT IDENTIFICATION NUMBER [ ]

TECHNICAL AREA [ ]

BUILDING [ ]

PREPARED BY

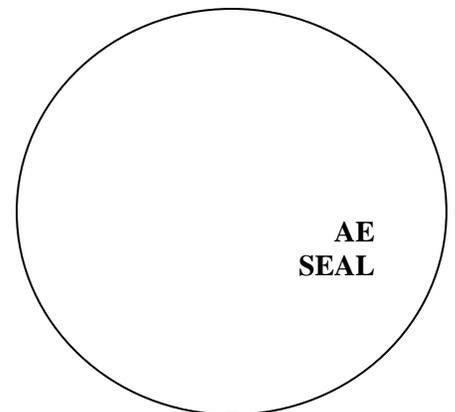
[AE NAME AND ADDRESS]

[signature on file - AE]  
SUBMITTED

[signature on file - LANL Project Leader]  
APPROVED

[\*LANL]  
CLASSIFICATION

[\*Designate "U" for Unclassified and "UCNI" for  
Unclassified Controlled Nuclear Information (UCNI)]



**204.2 Sample Table of Contents**

TABLE OF CONTENTS

SECTION      TITLE

**VOLUME 1**

**DIVISION 1 - GENERAL REQUIREMENTS**

01 1116      WORK BY OWNER      Rev. 0

**DIVISION 2 – EXISTING CONDITIONS**

02 3000      SUBSURFACE INVESTIGATION      Rev. 1

**DIVISION 3 - CONCRETE**

03 3001      REINFORCED CONCRETE      Rev. 0

etc....

**SUPPORTING DOCUMENTS**

STORM WATER POLLUTION PREVENTION PLAN (SWPPP), r0. XX/XX/2007