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UNIFIED FACILITIES CRITERIA (UFC)

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS) FORMAT STANDARD



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U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING COMMAND (Preparing Activity)

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

Record of Changes (changes are indicated by \1\ ... /1/)

Change No.	Date	Location
<u>2</u>	<u>September 23 2005</u>	<u>Throughout text - incorporated changes from MIL-STD-3007 and changes to the Section template.</u>
<u>3</u>	<u>January 27, 2006</u>	<u>New Foreword</u>
<u>4</u>	<u>December 14, 2006</u>	<u>Throughout text - incorporated changes from MIL-STD-3007F and CSI MasterFormat 2004.</u>

FOREWORD

The Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with [USD\(AT&L\) Memorandum](#) dated 29 May 2002. UFC will be used for all DoD projects and work for other customers where appropriate. All construction outside of the United States is also governed by Status of Forces Agreements (SOFA), Host Nation Funded Construction Agreements (HNFA), and in some instances, Bilateral Infrastructure Agreements (BIA.) Therefore, the acquisition team must ensure compliance with the more stringent of the UFC, the SOFA, the HNFA, and the BIA, as applicable.

UFC are living documents and will be periodically reviewed, updated, and made available to users as part of the Services' responsibility for providing technical criteria for military construction. Headquarters, U.S. Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Command (NAVFAC), and Air Force Civil Engineer Support Agency (AFCEA) are responsible for administration of the UFC system. Defense agencies should contact the preparing service for document interpretation and improvements. Technical content of UFC is the responsibility of the cognizant DoD working group. Recommended changes with supporting rationale should be sent to the respective service proponent office by the following electronic form: [Criteria Change Request \(CCR\)](#). The form is also accessible from the Internet sites listed below.

UFC are effective upon issuance and are distributed only in electronic media from the following source:

- Whole Building Design Guide web site <http://dod.wbdg.org/>.

Hard copies of UFC printed from electronic media should be checked against the current electronic version prior to use to ensure that they are current.

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CHAPTER 1 INTRODUCTION

1-1 PURPOSE AND SCOPE

This UFC provides guidance for the preparation of Unified Facilities Guide Specifications (UFGS). UFGS are published by the Services under the auspices of the Tri-Service Engineering Senior Executive Panel (ESEP). A definition of the ESEP is contained in MIL-STD-3007. UFGS are prepared by Tri-Service committees called Discipline Working Groups (DWG). Publication of UFGS is only by electronic media available from the distribution sources indicated in the Foreword of this UFC. UFGS are not proprietary and are available at no cost to the user.

1-2 APPLICABILITY

This UFC applies to all Tri-Service elements and contractors preparing UFGS.

1-3 REFERENCES

References used in this UFC are:

- MIL-STD-3007, *Standard Practice for Unified Facilities Criteria and Unified Facilities Guide Specifications*
- *MasterFormat 2004 Edition: Numbers & Titles*, Construction Specifications Institute.
- *CSI SectionFormat, A Recommended Format for Construction Specifications Sections*, 1997, Construction Specifications Institute.
- *CSI Manual of Practice*, 1996, Construction Specifications Institute.
- *SpecsIntact Quick Start Guide*,
(<http://specsintact.ksc.nasa.gov/pdf/QSGuide.pdf>)

1-4 CONTENT AND FORMAT

UFGS are for the purpose of translating design criteria into construction requirements that have been coordinated with industry, thereby providing requirements that can be incorporated into construction contracts. Each Tri-Service DWG is responsible for the technical content, format, and overall quality of their UFGS. This UFC establishes the general content and appearance of UFGS publications. The UFGS format is based on the Construction Specifications Institute *SectionFormat* and is designed to be used with SpecsIntact software. An example layout of UFGS is included in Appendix A, and SpecsIntact software includes an electronic template in the proper format.

1-4.1 Content Guidance

Since UFGS are used as a basis for construction contract documents, UFGS must be written in a manner that will facilitate use on the job and preclude misinterpretations

leading to legal complications. UFGS should reference non-Government standards to the greatest extent where appropriate and should avoid repeating the requirements of commercially available criteria and standards. UFGS are broad in their applicability and non-geographical in technical content. In general, requirements or restrictions for specific localities should not be included in UFGS; however, requirements or limitations for various climatic or operating conditions are permitted.

4.1-4.2 Editing UFGS for Projects/4/

UFGS must be edited for project specifications to provide for project requirements and/or restrictions for specific localities./4/

CHAPTER 2 REQUIREMENTS

2-1 ORGANIZATION

Compliance with the guidance provided in this UFC will make the task of preparing UFGS easier and will result in UFGS that are compatible with others in the system. SpecsIntact includes a template (found under "Tools" on the main toolbar) that can be used as a starting point for preparing UFGS and as a pattern for project specification sections for work not covered by guide specifications.

2-1.1 Construction Specifications Institute (CSI)

CSI recommends the use of three parts in each section, and further recommends that a consistent sequence of subject matter be maintained within each part. These recommendations are included in Appendix A and should be followed to the extent practical in UFGS.

2-1.2 Table of Contents

A table of contents for a section can be generated automatically as part of the SpecsIntact print process.

2-1.3 Appendixes

Appendices to a UFGS section can be used, but they are rarely necessary. An appendix may be a separate text file and added manually in the final electronic file for the project or it may be created in \4\SpecsIntact\4/ as part of a section. /2/

2-1.4 Figures

Figures are not provided as part of UFGS sections. When required as part of a project specification, figures must be added manually to the final electronic file.

2-2 FORMAT

2-2.1 Electronic File Format

Use of SpecsIntact software and the SpecsIntact section template in the development of UFGS are mandatory and will assure that page layout, banners, notes, text paragraphs, tables, fonts, page numbers, headers, and other basic elements of a UFGS are consistent within each UFGS document and within the UFGS system. SpecsIntact files are \4\Extensible Markup Language (XML)\4/ format with the extension SEC. SpecsIntact will also publish UFGS in Adobe Acrobat (PDF extension) and Microsoft Word (DOC extension) formats. SpecsIntact can be downloaded from the SpecsIntact web site (<http://specsintact.ksc.nasa.gov/Index.asp>), and the *SpecsIntact Quick Start Guide* provides instructions for its use.

The most current versions of the UFGS are available on the Internet in both PDF and SEC formats from the Whole Building Design Guide DOD web page (<http://dod.wbdg.org/>.) Additionally, the entire UFGS Master, in SEC format, is available on the Internet in a zipped file with the extension ZIP.

2-2.2 Section, Part, and Subpart Numbering

Each UFGS carries an identifying document number in accordance with the CSI MasterFormat. Part and subparts (paragraph and subparagraphs) within the UFGS are numbered in accordance with the SpecsIntact number-period system. Each part and subpart down to the fourth level is numbered.

2-2.3 Subpart Titles

Each numbered subpart must have a title; uppercase for the first subpart (level one) and title case for the second and third level subparts.

2-2.4 Units of Measure (English)(Metric)

SpecsIntact allows tailoring of the project specifications with either English or Metric units of measure. Metric units can be hard or soft. Use hard metric for measurements when products are available in metric units or for direct field measurements, e.g., <MET>50mm<MET>. Use soft metric for measurements when the products are not available in metric units. Soft metric is designated in metric projects with the governing English unit of measure in parenthesis following the metric approximate unit, e.g., <MET>50mm (2 inch)<MET>.

2-2.5 Reference Publications

All references used in the UFGS are listed in the paragraph entitled "REFERENCES". Standards producing organizations cited in the paragraph must be identified with the acronym used by the organization or given an appropriate acronym if none has been assigned by the organization. If there are conflicting acronyms, the acronym posted on the Information Handling System (IHS) will be used. Where dual acronyms may be used to identify the standards producing organization and an underwriting organization, such as ANSI/IEEE, use the issuing organization only, IEEE in this case. In the UFGS, the reference identifier (RID) for the reference must appear and be tagged in the reference paragraph and at all occurrences in the text using the SpecsIntact software. The RID shall consist of the organization acronym and publication number as posted in IHS. Use the most current reference standard in the UFGS unless specific reason exists to cite an earlier version of the standard. The reference title shall consist of the year of publication in parenthesis followed by the title as it is listed in IHS. When the reference includes revisions (R), editions, errata (e), etc., a semi-colon will separate the original date from the latest subsequent date of change. Use the Unified Master Reference List (UMRL) in conjunction with the SpecsIntact software to automatically update the standards referenced in the UFGS. Use private-sector reference standards to the maximum extent possible. This provides common commercial specifications for products and their installation, and reduces the written text in the body of the UFGS.

Avoid referencing a standard and then quoting or repeating portions of the standard in the text of the guide specifications unless it is necessary to repeat a small portion of the standard to improve clarity and readability.

2-2.6 Cross References

Avoid cross-referencing other specification sections and paragraphs in other sections or paragraphs in the same section. When a section cross-reference is necessary, the format is \2\ Section <SRF>\4\01 23 40/4/</SRF> MISCELLANEOUS. /2/ When necessary to reference paragraphs within the same section, reference by paragraph title, not by paragraph number, e.g., paragraph EQUIPMENT.

2-2.7 Brackets

Use brackets for choices of two or more items and for blanks requiring designer input. In addition, brackets may be used to identify text that may not be applicable to all projects; for example, regional requirements, agency requirements, or non-standard technical requirements. Unless the bracketed choices are obvious, provide a designer's note to assist in the editing of the bracketed items. \2\ Where brackets are used around blank spaces to indicate wording to be provided by designer, five under scribed characters should be used inside the brackets. /2/

2-2.8 Tailoring Options

Tailoring options may be used in the UFGS to allow pre-editing of information such as materials, methods, and agency or regional requirements in the creation of the project specification. Agency differences should be reconciled to avoid the need for tailoring options to the greatest extent possible.

2-2.9 Submittal Items

2-2.9.1 Submittal Item Descriptions

\4\Section 01 33 00 SUBMITTAL PROCEDURES contains general requirements for each submittal description number, e.g. SD-01, SD-02. UFGS authors must compare the requirements of each submittal item in a technical section to the descriptions provided in Section 01 33 00 and only specify the submittal requirements that are in addition to those specified in Section 01 33 00./4/

2-2.9.2 Submittal Items Tagged in the Specification Text

Each submittal item listed in the SUBMITTALS paragraph of the UFGS must also appear in one principal subpart of the specification other than the SUBMITTALS paragraph exactly as listed in the SUBMITTALS paragraph, and must be appropriately tagged using the SpecsIntact software. Take care to assure the submittal item tagged in the text reflects the requirements to be verified by that submittal item.

2-2.9.3 **Government Approvals of Submittals**

When a "G" follows a submittal item, it indicates Government approval is required for that item. Use a "G" in submittal tags for items deemed sufficiently critical, complex, or aesthetically significant to merit approval by the Government. Submittal items not designated with a "G" are for information only or approved by the Contractor QC organization, depending on terminology used by the agency. The following examples show the two acceptable formats for submittals items in the UFGS, one with a G and one without.

\4\ _{Fire Hydrants}; _G; <SUB>G[, [AE][AO]
[DO][RO]]</SUB> /4/

or

_{Fire Hydrants}

2-2.9.4 **SD-10, Operation and Maintenance Manuals**

\4\Section 01 78 23 OPERATION AND MAINTENANCE DATA contains specific requirements for O&M manuals of varying complexity and identifies them by "data package". For each SD-10 submittal item in the technical sections, UFGS authors must refer to section 01 78 23 and specify that item with the appropriate data package number. Only specify requirements in technical sections that are in addition to those specified for that data package in Section 01 78 23./4/

2-3 **WRITING STYLE**

Write in a direct, active voice with simple, concise sentences as much as possible. Avoid ambiguous, indefinite terms such as "too short" or "relatively simple." UFGS should supplement the dimensions, sizes, and relationships shown on the drawings with requirements for materials, installation, and other non-graphic requirements. Define what applies in lieu of using "applicable" or other indefinite wording. Do not use "and/or"; do not use the virgule (/) to substitute for "and" or "or." Do not use "etc."; use "e.g.," "for instance," or "such as." Do not use "as shown on the drawings" as this phrase is frequently overlooked by the project spec writer or editor; if used in the text and the item is not shown on the drawings, then the item is not specified.

2-3.1 **Mood, Tense, and Voice**

In general, use the imperative mood (e.g., install equipment) except when clarity requires the use of the indicative mood (e.g., equipment shall be). The term "shall" is used to indicate mandatory contract requirements on the part of the contractor. The term "will" is used to indicate contract requirements to be performed by the Government. Use "can" and "may" to permit choice and identify guidance. Do not use the word "should" in the specification text \2\ for mandatory requirements \4\as "should" implies a contractor option/4/. /2/ The word "should" may be used in the Notes to indicate desirable procedures that are advisory in nature. Do not use the term "furnish" unless

only delivery of material to the site is required. Use "provide" to mean "furnish and install."

2-3.2 Abbreviations and Acronyms

Use of abbreviations and acronyms must follow the practices within the discipline involved and should be defined at their first use in a section. At the first use, write out the term completely and follow with the abbreviation or acronym in parentheses. Use abbreviations for units such as psi, cfm, and kW and be consistent in their use.

2-3.3 Units

Spell out numbers under 10, except units of time and measurement, and use numerals for numbers 10 and above. Dimensions are always presented as numerals, but "one" and "zero" are always spelled out when used singly. Do not repeat a spelled-out figure with a numeral in parentheses.

2-3.4 Terminology

Avoid the use of colloquial terms or jargon. For example, do not use "bulkhead" for wall, "deck" for floor, or "head" for toilet. Eliminate redundant and superfluous wording such as "conforming to," "all," and "type." Avoid the use of indefinite items such as "etc.," "any," and "and/or." Avoid the use of vague words and phrases or escape clauses such as "as may be required," "as necessary," "an approved type," "as approved/directed/determined by the Contracting Officer," "first class workmanship," "securely," "thoroughly," "suitable," "properly," "good working order," "neatly," "carefully," and "installed in a neat and workmanlike manner." Avoid the use of long, compound or hyphenated words such as "hereinbefore" and "hereinafter."

2-3.5 Symbols

Avoid the use of symbols. Never use an apostrophe (') for foot, a quotation mark (") for inch, a degree symbol (°) for degree, or a numeric symbol (#) for pound in subpart text. Spell out or abbreviate such items. However, symbols may be used when both feet and inches are in a dimension (e.g. 8'-8") and in tables. Avoid the use of exponents, subscripts, or superscripts. Spell out such items.

2-3.6 Pronouns

Avoid the use of pronouns "he," "his," "this," "they," "their," "who," "it," and "which." Pronouns should be used sparingly if at all; it is usually better to repeat the noun.

2-3.7 Capitalization

Capitalize "Contractor," "Contracting Officer," "Government," and "Contract" in specifications. The term "Contracting Officer" is used rather than the terms "Officer in Charge of Construction," "Contracting Officer Representative," or "Government Representative."

2-4 **TABLES AND FORMS**

Tables and forms developed with SpecsIntact may be included with the UFGS. Otherwise, tables and forms must be added manually in the final electronic PDF file.

2-5 **CHANGES**

A change is an updating of various requirements in a UFGS and republication of the UFGS with a new date. Changes are of two types as follows:

2-5.1 **Revisions**

Changes as a result of reviewing and rewriting a UFGS during which the Technical Representative considers all aspects of the section are considered revisions. As it is impractical to identify these changes with change tags, include the statement "Revised throughout - changes not indicated by CHG tags" in the banner.

2-5.2 **Limited Changes**

Changes that consider only one issue or a limited number of issues that may or may not be technical in nature are considered limited changes. These changes are identified with change tags using the SpecsIntact software; include the statement "Latest change indicated by CHG tags" in the banner.

2-6 **UFGS APPROVAL**

Coordinate UFGS for approval in accordance with MIL-STD-3007. Discipline representatives assigned by each of the Tri Services must review each UFGS. When appropriate, extend the opportunity for review to major commands, facility users, and private industry. Preparing activities must coordinate new and changed UFGS within their agency and with their counterparts in the other agencies. Upon completion, new and revised UFGS are submitted to the Technical Proponent for final review and approval. Changes to UFGS are subject to coordination and approval of the other agencies whenever the change affects the technical content of the UFGS. However, the Preparing Activity is always obligated to consider and resolve requests from other agencies for changes to UFGS.

APPENDIX A UFGS ORGANIZATION GUIDANCE

The following guidance is based on the paragraph titles and sequence recommended in the *CSI Manual of Practice*. This format has been adopted by the agencies supporting the SpecsIntact software. Use this arrangement to the extent applicable in the preparation of UFGS by eliminating paragraphs which do not apply, and adding additional paragraphs as necessary. **It is important that UFGS authors understand that the paragraphs listed below are not mandatory. Use only those paragraphs that are applicable to the subject being specified, and add any applicable requirements not listed.** It is important that the sequence of information provided herein be followed even when the paragraph titles are adjusted to fit the subject matter being specified. The terms "article," "paragraph," and "subparagraph" have meanings within CSI; however, when referring to these parts in UFGS, the terms "paragraph" and "subparagraph" are used since they are common to other writing.

Paragraph and subparagraph numbering to the third level must be completely numeric. Below the third level, use an alternating alpha-numeric item designation. For example:

(Shown without SpecsIntact tags.)

1.1 PARAGRAPH (level 1)

1.1.1 Paragraph (level 2)

1.1.1.1 Subparagraph (level 3 – levels beyond this level should be avoided)

a. Item

(1) Item

(a) Item

1. Item

\4\ (Shown with SpecsIntact tags - highlighted in red.)

<SPT=1.1>1.1 PARAGRAPH (level 1)

<SPT=1.1.1>1.1.1 Paragraph (level 2)

<SPT=1.1.1.1>1.1.1.1 Subparagraph (level 3 – levels beyond this level should be avoided)

<LST INDENT=-0.33>a. Item</LST>

<ITM INDENT=-0.33>(1) Item</ITM>

<ITM>(a) Item</ITM>

<ITM INDENT=0.33>1. Item</ITM>

</SPT=1.1.1.1></SPT=1.1.1></SPT=1.1> /4/

Do not use progression beyond this level.

The *SpecsIntact Quick Start Guide* gives instructions for how to tag paragraphs using the SpecsIntact software.

PART 1 GENERAL

1.1 REFERENCES

This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

1.2 UNIT PRICES

Measurement and payment requirements will be specified for work subject to extreme variation in estimated quantity when unit price bidding is required. This paragraph is not used for guide specifications covering building components or for other construction features when quantities can be reasonably calculated from information included in the contract.

1.3 SYSTEM DESCRIPTION

This paragraph will be limited to statements describing performance or design requirements and tolerances of a complete system. Limit descriptions to composite and operational properties to the extent necessary to link multiple components of a system together, and to interface with other systems.

1.3.1 Design Requirements

Design requirements may include criteria for structural, thermal, acoustical, or other properties. Tolerances should be stated here only as they apply to the performance of the complete system. Include tolerances of fabrication and installation in their respective paragraphs under Part 1.

1.3.2 Performance Requirements

Performance requirements may include criteria for structural, thermal, acoustical, or other properties. Tolerances should be stated here only as they apply to the performance of the complete system. Include tolerances of fabrication and installation in their respective paragraphs under Part 2.

1.4 SUBMITTALS

Limit Submittals to those necessary for adequate quality control. Submittal requirements are organized using the following eleven classifications:

- SD-01 Preconstruction Submittals
- SD-02 Shop Drawings
- SD-03 Product Data
- SD-04 Samples
- SD-05 Design Data
- SD-06 Test Reports
- SD-07 Certificates
- SD-08 Manufacturer's Instructions
- SD-09 Manufacturer's Field Reports
- SD-10 Operation and Maintenance Data
- SD-11 Closeout Submittals

1.5 QUALITY ASSURANCE

1.5 Qualifications

This paragraph includes statements of qualifications for contractor designers, manufacturers, fabricators, welders, installers, and applicators of products and completed work.

1.5.2 Regulatory Requirements

This paragraph includes obligations for compliance with specific code requirements for contractor-designed items such as wood trusses, labeling such as Underwriters Laboratory, Inc., and requirements of public authorities such as state highway departments.

1.5.5 Pre-Installation Conference

This paragraph can be used to specify conferences to coordinate the work or to sequence related work for sensitive and complex items.

1.6 DELIVERY, STORAGE, AND HANDLING

This paragraph includes the necessary requirements on packing and shipping, acceptance at site, and storage and protection.

1.7 PROJECT/SITE CONDITIONS

1.7.1 Environmental Requirements

This paragraph establishes any physical or environmental limitations or criteria. Such conditions might include temperature, weather, humidity, ventilation, and illumination required for proper installation or application.

1.7.2 Existing Conditions

This paragraph includes statements or references to documents where information may be found pertaining to such items as existing structures or geophysical reports.

1.8 SEQUENCING AND SCHEDULING

This paragraph includes any special sequencing and scheduling required.

1.9 WARRANTY

This paragraph describes special or extended (more than one year) warranty or bond covering the conformance and performance of the work of the section. A thorough understanding of warranties is necessary to develop this paragraph.

1.10 MAINTENANCE

1.10.1 Extra Materials

This paragraph covers items to be furnished to the Government by the Contractor for future maintenance and repair. Include items that might be difficult to obtain because of color or pattern match, or spare parts needed to ensure continued operation of critical equipment. Specifications should identify the items, state the quantities required, and indicate to whom, when, and where items are to be delivered.

1.10.2 Maintenance Service

This paragraph covers provisions for maintenance service as applicable to critical systems, equipment, and landscaping.

PART 2 PRODUCTS

2.1 MATERIALS

This paragraph describes the material to be furnished. Materials specified here are generally those that are independently incorporated into the work under PART 3

EXECUTION. The name used for the material must be consistently used throughout the guide specification. This paragraph is usually omitted when the materials can be included with the description of a particular manufactured unit, equipment, component, or accessory.

2.2 MANUFACTURED UNITS

This paragraph provides statements describing a complete manufactured unit, usually a standard catalog item. Statements may include descriptive requirements for the materials, specific fabrication, finishes, and function. Separate paragraphs for each different item should be used when appropriate. The name used for the manufactured unit must be consistent throughout the guide specification.

2.3 EQUIPMENT

This paragraph provides statements describing the function, operation, and other specific requirements of equipment to be installed in the work. Use separate paragraphs for each different item when appropriate.

2.4 COMPONENTS

This paragraph provides statements describing the specific components of a system, manufactured unit, or type of equipment to be installed in the work. Use separate paragraphs for each different item when appropriate.

2.5 ACCESSORIES

This paragraph provides requirements for subordinate or secondary items that aid and assist primary products specified above or are necessary for preparation or installation of those items. This paragraph should not include basic options available for manufactured units and equipment.

2.6 MIXES

This paragraph provides proportions and procedures for mixing materials. Mixing is the preparation of materials for use and is considered to be part of the manufacturing process even when this work is done onsite. This paragraph is required for products such as asphaltic concrete, portland cement, concrete, mortar, and plaster.

2.7 FABRICATION

This paragraph describes items that must be shop manufactured, fabricated, or assembled before they are delivered to the site.

2.7.1 Shop Assembly

Fabrication may include trial or permanent assembly of equipment and components away from the construction site.

2.7.2 Shop and Factory Finishing

Any shop or factory finishing would normally be specified here.

2.7.3 Tolerances

Allowable variations from specified requirements would normally be specified here.

2.8 TESTS, INSPECTIONS, AND VERIFICATIONS

If tests, inspections, or verifications of products are required at the source, i.e., plant, mill, factory, or shop, they should be specified here.

PART 3 EXECUTION

3.1 EXAMINATION

This paragraph specifies the act of physically determining that conditions are acceptable to receive the primary products of the section. Requirements for verifying suitability of conditions for installation can be specified here. Verifying the absence of defects or errors that would cause defective installation or application of products, or cause latent defects in workmanship and function, can be specified here.

3.2 PREPARATION

This paragraph covers actions required to physically prepare the surface, area, or site to incorporate the primary products of the section.

3.2.1 Protection

This paragraph specifies requirements for protecting the surrounding areas and surfaces.

3.2.2 Surface Preparation

This paragraph describes preparatory work required prior to installation, application, or erection of primary products.

3.3 ERECTION

This paragraph covers actions required to accomplish a specified unit of work in the section, and may include requirements necessary for installation of products furnished under other sections. If products are to be installed according to manufacturer's instructions, then the manufacturer's instructions should be a required submittal as evidence of those requirements. Separate paragraphs for each different item, as appropriate, may be used. The names of the products or the type of work may be incorporated into the paragraph titles, in which case the wording should reflect the generic product or terminology used throughout the contract documents.

3.4 INSTALLATION

This paragraph may be used when more appropriate than paragraph ERECTION.

3.5 APPLICATION

This paragraph may be used when more appropriate than paragraph ERECTION.

3.5.1 Special Techniques

This paragraph describes special procedures for incorporating products. These procedures may include spacings, patterns, or unique treatments. The wording of the paragraph title should reflect the subject matter.

3.5.2 Interface with Other Products

This paragraph provides descriptions specific to compatibility and transition to other materials. This may include incorporating accessories, anchorage, and any special separation or bonding.

3.5.3 Tolerances

This paragraph covers allowable variations in application thickness or from indicated locations.

3.6 FIELD QUALITY CONTROL

3.6.1 Tests

This paragraph defines the tests required for installed or completed work. These tests are different and separate from those required for materials and products prior to installation or application.

3.6.2 Inspection

This paragraph defines the inspections required for installed or completed work. These inspections are different and separate from those required for materials and products prior to installation or application.

3.6.3 Manufacturer Field Service

This paragraph covers specific requirements when manufacturers are to provide field quality control with onsite personnel for instruction or supervision of the installation or application of their products, or for startup or demonstration.

3.7 ADJUSTING AND CLEANING

This paragraph provides final actions to prepare installed equipment or other completed work to properly function or perform.

3.8 DEMONSTRATION

This paragraph covers requirements of the installer or manufacturer to demonstrate the operation and maintenance of equipment to the owner's personnel.

3.9 PROTECTION

This paragraph includes provisions for protecting installed work prior to acceptance of the project. Protection of surrounding areas and surfaces during application or installation is included in paragraph PREPARATION. Include only statements unique to the particular section.

3.10 SCHEDULES

This paragraph includes schedules that indicate where to put what or provides other coordinating data. Schedules are sometimes placed here in the specification section rather than on the drawings. (Only the format for a schedule would normally be included in a UFGS.)