

SECTION 01 33 16

DESIGN AFTER AWARD

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this section to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-STD 3007	Standard Practice For Unified Facilities Criteria And Unified Facilities Guide Specifications
UFC 1-200-01	(2020) DoD Building Code
UFC 3-301-01	(2023; with Change 1, 2023) Structural Engineering
UFC 3-600-01	(2016; with Change 6, 2021) Fire Protection Engineering for Facilities
UFC 4-010-01	(2018; with Change 1, 2020) DoD Minimum Antiterrorism Standards for Buildings

U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1110-345-700	(1997) Design Analysis, Drawings and Specifications
PDC TR 12-08	(2013) Standoff Distances for Japanese Conventional Construction

1.2 SUBMITTALS

Designer of Record Approval and Government Conformance Review is required for submittals with a "R" designation. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-05 Design Data

- Concept (35%) Design Submittal; R
- Intermediate (65%) Design Submittal; R
- Final (95%) Design Submittal; R
- Final Backcheck (100%) Design Submittal; R
- "Cleared For Construction" Submittal; R

1.3 GENERAL DESCRIPTION

This section lists items that must be submitted for review at various milestones following award of a Design-Build Contract.

Design submittals are required at the [Concept stage,][Intermediate stage,][Final stage,][and Final Backcheck stage]. The requirements for each design stage are listed hereinafter.

1.4 DESIGNER

1.4.1 Designer Of Record (DOR) Identification

Identify a DOR for each design area. Minimum requirements of the DORs shall be as indicated in following experience matrix. Submit a list of DORs to the Contracting Officer's Representative.

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Experience Matrix	
Area	Qualifications
Civil	Graduate of an accredited university with a Civil Engineering degree. Two years of work experience as either a U.S. Licensed Professional Civil Engineer or 1 Kyu Doboku Sekou Kanrigishi (1st Class Civil Engineering Works Management Engineer).
Mechanical	Graduate of an accredited university with a Mechanical Engineering degree. Two years of work experience as either a U.S. Licensed Professional Mechanical Engineer or 1 Kyu Kankouji Sekou Kanrigishi (1st Class Building Mechanical and Electrical Engineer).
Electrical	Graduate of an accredited university with an Electrical Engineering degree. Two years of work experience as either a U.S. Licensed Professional Electrical Engineer or 1 Kyu Kankouji Sekou Kanrigishi (1st Class Building Mechanical and Electrical Engineer).
Structural	Graduate of an accredited university with a Structural Engineering degree. Two years of work experience as either a U.S. Licensed Professional Structural Engineer or 1 Kyu Kenchikushi (1st Class Qualified Architect).
Architectural	Graduate of an accredited university with an Architectural degree. Two years of work experience as either a U.S. Licensed Architect or 1 Kyu Kenchikushi (1st Class Qualified Architect).

Experience Matrix	
Area	Qualifications
Fire Protection	Registered U.S. Professional Engineer who has passed the fire protection engineering written examination administered by the National Council of Examiners and Surveying (NCEES) and has a minimum of four (4) years of relevant fire protection engineering experience.
Communications	Graduate of an accredited university with a Communications or Electrical Engineering degree. Two years of work experience designing communication systems for buildings or facilities. Either a U.S. Licensed Registered Communications Distribution Designer (RCDD) or Type 3 Denki Shunin Gijutsusha.
Environmental	Graduate of an accredited university with an Environmental Engineering degree. Two years of experience working with JEGS compliance.
Geotechnical	Graduate of an accredited university with a Civil or related Engineering degree. Two years of work experience as either a U.S. Licensed Professional Engineer or Registered Civil Engineering Consulting Manager (RCCM) with Geotechnical Certification.
Surveying	Graduate of an accredited university with a Civil or related Engineering degree. Two years of work experience as either a U.S. Licensed Professional Engineer or Sokuryo shi Japanese Professional Registration.

For Architecture and Structural Engineering, the highest level of qualification is specified. For Mechanical Engineering, qualification of Kenchiku Setsubishi is higher than 1st class Kankouji Sekou Kanrigishi, and therefore acceptable. For Civil and Geotechnical Engineering, Gijutsushi is higher in qualifications than RCCM, and therefore acceptable.

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1.4.2 DOR Responsibilities

Each DOR shall be responsible for ensuring integrity of their design and design integration in all construction submittals and extensions to design developed by others, such as the Contractor, subcontractors, or suppliers.

All construction drawings and design calculations of the Contractor and any changes to these documents shall be affixed with the registration stamp (seal) of the DOR and that of all consultants, as appropriate, (i.e. structural, civil, mechanical and fire protection engineers) before submittal for review. Approval shall be indicated on all documents by

having the professional stamp/seal of the architect or engineer with personal signature over same appearing on all sheets as applicable to their specialties.

Each DOR shall review and approve all construction submittals and extensions to design, in accordance with the procedures described in Section 01 33 00 SUBMITTAL PROCEDURES. Each DOR shall be responsible for reviewing Requests for Information (RFI), applicable to their area of design responsibility, prior to submission to the Government.

1.5 SEQUENCE OF DESIGN AND CONSTRUCTION

- a. After receipt of the Contract Notice to Proceed (NTP) the Contractor shall initiate design, comply with all design submission requirements as covered under Division 01 General Requirements, and obtain Government review of each submission. No construction shall be started until the Government reviews the Final Backcheck Design submission and determines it satisfactory for purposes of beginning construction. The COR shall notify the Contractor when the design is cleared for construction. The Government shall not grant any time extension for any design resubmittal required when, in the opinion of the ACO or COR, the initial submission failed to meet the minimum quality requirements as set forth in the Contract.
- b. If the Government allows the Contractor to proceed with limited construction based on pending minor revisions to the reviewed Final Backcheck Design submission, no payment shall be made for any in-place construction related to the pending revisions until they are completed, resubmitted and are satisfactory to the Government.
- c. No payment shall be made for any in-place construction until all required submittals have been made, reviewed and are satisfactory to the Government.

1.6 CONTRACTOR'S ROLE DURING DESIGN

The Contractor's construction management key personnel shall be actively involved during the design process to effectively integrate the design and construction requirements of this Contract. In addition to the typical required construction activities, the Contractor's involvement includes, but is not limited to actions such as: integrating the design schedule into the Master Schedule to maximize the effectiveness of fast-tracking design and construction (within the limits allowed in the contract), ensuring constructability and economy of the design, integrating the shop drawing and installation drawing process into the design, executing the material and equipment acquisition programs to meet critical schedules, effectively interfacing the construction QC program with the design QC program, and maintaining and providing the design team with accurate, up-to-date redline and as-built documentation. The Contractor shall require and manage the active involvement of key trade subcontractors in the above activities.

1.7 DESIGN TIMELINE

As indicated in Section [01 32 01.00 10 PROJECT SCHEDULE][01 32 16.00 20 SMALL PROJECT CONSTRUCTION SCHEDULES], the Contractor shall submit for approval, a complete design schedule with all submittals and review times indicated in calendar dates. Update this schedule in accordance with [01 32 01.00 10 PROJECT SCHEDULE][01 32 16.00 20 SMALL PROJECT CONSTRUCTION

SCHEDULES]. No design submittals shall be reviewed or evaluated until after receipt and acceptance of the proposed design/review schedule.

1.8 DEVIATING FROM THE ACCEPTED DESIGN

The Contractor must obtain the approval of the Designer of Record and the Government's concurrence for any Contractor proposed revision to the professionally stamped and sealed and Government reviewed and concurred design, before proceeding with the revision.

- a. The Government reserves the right to non-concur with any revisions to the design, which may impact furniture, furnishings or equipment selections or operations decisions that were made, based on the reviewed and concurred design.
- b. Any revisions to the design, which deviates from the Contract requirements (i.e., the RFP and the accepted proposal), will require a modification, pursuant to the Changes clause, in addition to Government concurrence. The Government reserves the right to disapprove such a revision.
- c. Unless the Government initiates a change to the Contract requirements, or the Government determines that the Government furnished design criteria are incorrect and must be revised, any Contractor initiated proposed change to the Contract requirements, resulting in additional cost, shall strictly be at the Contractor's expense.
- d. The Contractor shall track all approved revisions to the reviewed and accepted design and shall incorporate them into the as-built design documentation, in accordance with agreed procedures. The Designer of Record shall document its professional concurrence on the as-builts for any revisions to the stamped and sealed drawings and specifications.

1.9 DESIGN CONFERENCES

1.9.1 Pre-Performance

As part of the Pre-Performance Conference conducted after the Contract award, key representatives of the Government and the Contractor shall review the design submission and review procedures specified herein, discuss the preliminary design schedule and provisions for phase completion of the D-B documents with construction activities (fast tracking), as appropriate, meet with Corps of Engineers Design Review personnel and key Using Agency points of contact and any other appropriate pre-design discussion items.

1.9.2 Design Charrette

After award of the Contract, the Contractor shall visit the site and conduct extensive interviews, and problem solving discussions with the individual users, base personnel, Corps of Engineers personnel to acquire all necessary site information, review user options, and discuss user needs. The Contractor shall document all discussions. Additionally, the Contractor shall schedule and perform a Design Charrette which is a condensed design meeting with all stakeholders present, if required by the Contract SOW. The design scope shall be finalized as direct result of these meetings.

1.9.3 Design Review Conferences

Review conferences shall be held either on-base or Corps of Engineer's Office for each design submittal. The Contractor shall bring the personnel that developed the design submittal to the review conference. The conferences shall take place approximately one week after the review is complete.

1.10 POST REVIEW CONFERENCE ACTION

Copies of comments, annotated with comment action agreed on, shall be made available to all parties before the conference adjourns. Unresolved problems shall be resolved by immediate follow-on action at the end of conferences. Valid comments shall be incorporated. After receipt of Final Backcheck design documents upon incorporation of backcheck comments, the Contractor may proceed with site and building development activities within the parameters set forth in the Contract and accepted design submittal. The Government, however, reserves the right to reject design document submittals if comments are significant (in the opinion of the Government, it does not comply with the Contract documents nor the level of quality implied).

1.11 CONFERENCE RECORDS

The Contractor shall within three (3) working days after each conference or discussion, prepare a written record of the meeting and/or discussions and submit to the Japan Engineer District Resident Engineer/Contracting Officer Representative identified in the Contract. The written report shall include the project name, Contract number, subject, the name of the participants, an outline of discussions, the recommendations, and conclusions. All meetings, site visits, review conferences, and telephonic discussions require written records. The Contractor shall also provide copies of conference records to the designated Administrative Contracting Officer identified for the Contract. Number each written record for the particular project under design in consecutive order.

1.12 DESIGN SUBMITTALS

The Contractor shall follow the requirements outlined below for all submittals.

1.12.1 Guidance, References, and Precedence

The design shall comply with Department of Defense Uniform Facilities Criteria (UFC), Component Service (Air Force, Army, Navy) Design Standards, the appropriate Installation Design Guide, and the US Army Corps of Engineers planning, design, and construction directive. In the event of conflict between documents and references, precedence shall be given to the following in descending order.

- a. Unified Facilities Criteria (UFC) system prescribed by MIL-STD 3007, which provides planning, design, construction, operations, and maintenance criteria, and applies to all Department of Defense (DoD) commands. UFC are distributed in electronic media from the Whole Building Design Guide (WBDG) website:
http://www.wbdg.org/ccb/browse_cat.php?c=4. UFC 1-200-01 provides guidance for the use of model building codes for design and construction of DoD facilities. Public Law 104-113, National Technology Transfer and Advancement Act of 1995, requires federal use

of private sector consensus standards wherever practicable. The goal of the law is to reduce reliance on Federal standards by using industry standards when there is potential to simplify contracting, increase timeliness and cost effectiveness, and promote the safety and welfare of users.

- b. The Service Component Design Standards provide common facility and infrastructure standards for the relevant Service Component installations. The appropriate installation design standards in conjunction with mission requirements and technical designs and specifications, define requirements for installation maintenance, repair, and construction projects. The Installation Design Standards and Installation Design Guides improve the functional and visual aspects of the installation. The Installation Design Standards follow the concept established in the Joint Service Unified Facilities Criteria Installation Design Manual.
- c. Federal and Industry Standards. All applicable Federal and local industry standards referenced in the scope of work, including those not referenced or listed, constitute criteria for the design of this project, unless otherwise indicated. Applicable Japanese standards may apply.

1.12.2 Quantity of Design Submittals

Submit the documents listed and generally described hereinafter to the Government. Each submittal shall be accompanied by two (2) electronic copies of all documentation and drawings to be provided. The electronic copies shall consist of standard type word processing, spreadsheet, and CAD (AutoCAD or MicroStation) files. The delivery address, quantity and type of the required hardcopy submittals are identified in the table below.

Activity and Address	Drawing set (Size A1)	Design Analysis	Specs	Other Documents
[]Resident Office ATTN: [] [Type in mailing address] DSN: 315-[]-[] COMM: 81-[]-[]-[] EMAIL: []@usace.army.mil	[1]	[1]	[1]	[1]CD
[]	[1]	[1]	[1]	[1]
[]	[1]	[1]	[1]	[1]

1.12.3 Delivery of Design Submittals

Mail or hand deliver all design submittals to the Government during design and construction. For mail delivery use an overnight mailing service. The

Government shall furnish the Contractor addresses where each copy shall be delivered after Contract award.

1.12.4 Transmittal Letter

Each design submittal shall have a transmittal letter accompanying it indicating the date, design percentage, type of submittal, list of items submitted, transmittal number, and point of contact with telephone number.

1.12.5 Late Design Submittal

If a design submittal is over one (1) day late in accordance with the latest design schedule, the Government review period may be extended 7 calendar days. The review conference shall be held the week after the new period. Submittal date revisions must be made in writing at least one (1) week prior to the affected submittal schedules.

1.13 GOVERNMENT REVIEW

After receipt of submittals, the Government shall be allowed twenty-one (21) calendar days to review and comment on each Intermediate and Final Design submittal, except as noted below. The Final Backcheck design submittal shall permit the Government fourteen (14) calendar days to review and ensure the Final Design submittal was updated. For each design submittal, the COR shall furnish the Contractor comments from the various design sections and from other concerned agencies involved in the review process. The review shall be for conformance with the technical requirements of the Contract RFP and the Contractor's proposal. If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he must clearly outline, with ample justification, the reasons for noncompliance within five (5) working days after receipt of these comments in order that the comment can be resolved. All comments must be mutually resolved by the Government and the Contractor. The Contractor shall furnish disposition of all comments, in writing, with the next scheduled submittal. The Contractor is cautioned in that if he believes the action required by any comment exceeds the requirements of this Contract, that he should take no action and notify the COR in writing immediately. Review conferences shall be held for each design submittal at the project's location. The Contractor shall bring the personnel that developed the design submittal to the review conference. These conferences shall take place approximately one week after the twenty-one (21) day review period.

1.13.1 ProjNet (DrChecks)

Although the Contractor may use its own internal system for overall design configuration management, the Government and the Contractor shall use the DrChecks Design Review and Checking System to initiate, respond to, resolve and track Government design compliance review comments. This system may be useful for other data which needs to be interactive or otherwise available for shared use and retrieval. The Contractor shall check the Design Quality Lessons learned (DQLL) through DrChecks and incorporate any applicable Lessons Learned into the design of this project.

1.13.1.1 Tracking Comments in DrChecks

Throughout the design process, the DB Contractor shall enter, track, and back-check comments using the DrChecks system. DOR shall annotate their own discipline specific comments timely to indicate exactly what action

will be taken or why the action is not required. Merely stating "concur" or "will comply" or is not considered a satisfactory response. Comments considered critical by the conference participants shall be flagged as such.

1.13.1.2 DrChecks Review Comments

The DB Contractor shall monitor DrChecks to assure all comments are annotated and agreed to by the designers and reviewers prior to the next submittal. The DrChecks comments and responses shall be printed and included in the design analysis for record.

Conference participants (reviewers) will expect coordination between Design Analysis calculations and the submitted design. Reviewers will also focus on the design submittal's satisfaction of the contract requirements.

The DOR shall answer each comment in DrChecks with a formal response prior to the next submittal, clearly indicating what action will be taken and what drawing/spec will change. DOR are encouraged to directly contact reviewers to discuss and agree to the formal comment responses rather than relying only on DrChecks and review meetings to discuss comments. With the next design conference, reviewers will back-check answers to the comments against the submittal, in addition to reviewing additional design work.

Comments that, in the DB Contractor's opinion, require effort outside the scope of the contract shall be clearly indicated as such in DrChecks. The DB Contractor shall not proceed with work outside the contract until a modification to the contract is properly executed, if one is necessary.

1.13.1.3 DrChecks Initial Account Set-Up

To initialize an office's use of DrChecks, choose a contact person within the office to call the DrChecks Help Desk at 800-428-4357, M-F, 8AM-5PM, Central time. This POC will be given an office password to distribute to others in the office. Individuals can then go to the hyperlink at {<http://www.projnet.org>} and register as a first time user. Upon registration, each user will be given a personal password to the DrChecks system.

Once the office and individuals are registered, the US Army Corps of Engineers's project manager or lead reviewer will assign the individuals and/or offices to the specific project for review. At this point, persons assigned can make comments, annotate comments, and close comments, depending on their particular assignment.

1.13.1.4 DrChecks Comment Evaluation

The role of the DOR is to evaluate and respond to the comments entered by the reviewer. To respond to comments:

1. Log into DrChecks.
2. Click on the appropriate project.
3. Under "Evaluate" click on the number under "Pending".
4. Locate the comments that require your evaluation. (Note: If you

know the comment number you can use the Jump to ID on the left hand side in DrChecks; enter the number and click on go.)

5. Select the appropriate evaluation (concur, non-concur, for information only, or check and resolve) and add the response.
6. Click on the Add button. The evaluation will be added to the database and a fresh screen will appear with the next comment.
7. Once evaluations are all entered, exit DrChecks by choosing "My Account" and then Logout.

1.13.2 Contractor Actions

The disposition of each Government review comment must be clearly annotated. Merely stating "concur" or "will comply" is not considered an adequate indication of actions taken. Not-in-scope comments annotated by the Contractor must be discussed with the Government within five (5) working days.

1.13.3 Design Responsibility and Compliance

Regardless of Government review and comment on design submittals, the Contractor shall be responsible for compliance with all requirements of the RFP and accepted Proposal. Should any non-compliance be discovered during design and/or construction, the Contractor shall be responsible for providing corrective action at no additional cost and/or time impact to the Government in order to comply with the requirements of the Contract.

PART 2 PRODUCTS

2.1 DESIGN ANALYSIS

2.1.1 General

Design Analysis format shall follow guidance from ER 1110-345-700, Appendix B located on Corps of Engineers website:
http://www.publications.usace.army.mil/Portals/76/Publications/EngineerRegulations/ER_1110-345-700.pdf.
This shall exclude part 6 "Exceptions to Appendix B, Requirements."

2.1.2 Format

Use standard A4 size or 8.5 inch by 11 inch paper except that larger sheets may be used when required for graphs or other special calculation forms. All sheets shall be in reproducible form. The material may be typewritten, hand lettered, handwritten, or a combination thereof, provided it is legible. Side margins shall be 1 inch minimum to permit side binding and head to head printing. Bottom margins shall be a minimum of 1 inch with page numbers centered.

2.1.3 Organization

The design analysis shall be sequentially numbered and bound under a cover indicating the name of the facility and project number. The design analysis shall be further classified by the submittal stage. All portions of the design analysis shall be organized and bound by relevant topics.

2.1.4 Design Computations

Calculations are a part of the design analysis. When they are voluminous, bind them separately from the narrative part of the design analysis. Present the design calculations in a clean and legible form incorporating a title page and index for each volume. Furnish a table of contents which shall be an index of the indices, when there is more than one volume. Identify the source of loading conditions, supplementary sketches, graphs, formulae, and references. Explain all assumptions and conclusions. Calculation sheets shall carry the names or initials of the computer and the checker and the dates of calculations and checking. As part of the Contractor's Quality Control System, no portion of the calculations shall be computed and checked by the same person.

When ADPS are used to perform design calculations, the design analysis shall include descriptions of the computer programs used and copies of the ADPS input data and output summaries. When the computer output is large, it may be divided into volumes at logical division points. Precede each set of computer printouts by an index and by a description of the computation performed. If several sets of computations are submitted; they shall be accompanied by a general table of contents in addition to the individual indices. Include the following in the description accompanying each set of ADPS printouts:

- a. Explain the design method, including assumptions, theories and formulae.
- b. Include applicable diagrams, adequately identified.
- c. State exactly the computation performed by the computer.
- d. Provide all necessary explanations of the computer printout format, symbols and abbreviations.
- e. Use adequate and consistent notation.
- f. Provide sufficient information to permit manual checks of the results.

2.2 DRAWINGS

2.2.1 General

Prepare all drawings utilizing Computer-Aided Design and Drafting (CADD) software so that they are well arranged, placed for ready reference and they present complete information. The Contractor shall prepare all CADD files drawings in compliance with the A/E/C CADD Standards (rel 6.0) dated August 2015 (referred to as the "CADD standard") unless otherwise specified. Drawings shall be complete, unnecessary work such as duplicate views, notes and lettering, and repetition of details shall not be permitted. Do not show standard details that are not applicable to the project, and minimize unnecessary wasted space. Do not include details of standard products or items, which are adequately covered by specifications on the drawings. The cover sheet shall be signed and stamped by a principal of the firm who is a registered professional engineer/architect. Each design discipline shall provide a complete list of abbreviations and symbols used in their respective drawings. Do not use shop drawings as design drawings. The design documents shall consist of drawings utilizing metric drawing sheets A1 (594 x 841 mm) or A2 (420 x 594 mm) format unless otherwise specified. The Contractor shall use

standard Corps of Engineers title blocks and borders on all drawings. The Contractor shall submit all CADD files for A/E/C compliance verification and a description of all drawings and drawing file names with each required design submittal.

2.2.2 Methods and Format

Create all drawings utilizing metric units. All CADD files shall utilize one of the following software applications and the version specified (or the latest version):

- a. AutoCAD 2013 (.dwg)
- b. MicroStation V8 (.dgn)

2.2.3 Use of Records Management Directory Structure

- a. The main (root) folder shall be named after the P2 number of the project.
- b. The folder names (under the root folder) are shown on table 2-1, page 13 of the CADD standard. CADD files shall then be properly organized in the applicable folder structure as described. Table 2-1 shall also serve as the sequence or order of drawings.
- c. Model files shall be organized in a sub-folder (in each applicable discipline) called "resource".
- d. Sheet files shall be organized in the applicable discipline folder.
- e. A subfolder called "PDF" shall be created under each applicable discipline folder to store design .pdf files of each submittal percentage phase.
- f. Only English language characters shall be used in the folder names.
- g. The Contractor at their prerogative may delete folders that are not applicable to the design.

2.2.4 Use of A/E/C CADD File Naming System

For the purposes of simplicity model files and sheet files shall be named as described below:

- a. Model files names shall have a minimum of ten characters (reference the CADD standard, figure 2-4, page 12). The first six characters shall be the project P2 number, followed by two characters for the discipline designator, and the last two characters the model file type. The last four characters of the model file name is user definable and may be used at the Contractor's prerogative. Only English alphabet and numerical characters shall be used in file names (no kanji).
- b. The sheet file name shall have a minimum of ten characters (reference the CADD Standard, figure 2-5, page 18). The first six characters shall be the project P2 number, followed by one character for the discipline designator (the level 2 designator shall be used only when more than 99 sheets are needed to subdivide the applicable discipline), and the last two characters the sheet sequence number.

The last three characters of the sheet file name is user definable and shall be used in the event of an amendment or modification.

2.2.5 Use of Reference or Xref Files

The use of reference or xrefs files during the design stage is at the discretion of the designers.

2.2.6 Drawing Sheet Assembly

CADD drawings shall utilize model and sheet files (modelspace and paperspace) and shall be drawn in real world units. The drawings shall be Xref'd or referenced to a scale (see table 3-7, page 35 of the CADD standard) that fits into the Government provided border sheet. The Contractor shall utilize "Option 1" of a drawing sheet assembly (see figure 2-2, page 10 of the CADD standard). The border sheet shall remain at its original scale and only one bordersheet (paperspace) per design file is allowed.

2.2.7 Use of True Type Fonts and Sizes

For file conversion purposes the standard font shall be Arial.ttf and simplex.ttf. Fonts created by third parties or the designers are not permitted. Standard text sizes that may be used are 1.5 mm, 3 mm, 6 mm and 12 mm (text height and width).

2.2.8 Use of Standard Dimensioning and Terminator Symbols

All dimensioning shall be in millimeters (see figure 3-7 through 3-10, pages 38 and 39 of the CADD standard). The preferred terminator for dimensioning shall be the architectural slash. In the event that filled arrowheads are selected ensure that the size of the arrowheads are at a ratio of 3:1 (see page 37 of the CADD standard).

2.2.9 Use of Standard Abbreviations

The use of abbreviations are for use when space is limited within a drawing sheet, otherwise it is recommended the all the words are spelled out versus using abbreviations. Approved abbreviations are available from the National CADD Standard (NCS version 3.1)

2.2.10 Use of Standard Symbols, Patterns, and Line Styles

General symbols such as a two part detail, section and elevation bubbles are to be used. Other approved symbols, patterns, and line styles are located in Appendix D of the CADD Standards.

2.2.11 Government Provided Files

The use of these files is free. The U.S. Army Corps of Engineers (USACE) makes no warranty, impressed or implied, with regards to the use of these files. USACE shall not be liable for any errors or for incidental or consequential damages in connection with the furnishing and performance of these files. The COR shall furnish the Contractor with the following:

- a. A/E/C CADD Standards rel. 6.0 (Main text, Appendix A in pdf format)
- b. Japan Engineer District Title and border sheets (Size A1 and A2 in .dgn and .dwg format)

- c. AutoCAD drawing template and MicroStation library files (.dwt and .dgnlib)
- d. A/E/C Cell and Block Libraries (.cel and .dwg)
- e. A/E/C Line Style Libraries (.rsc and .shx)
- f. A/E/C Pattern Libraries (.cel and .pat)

2.2.12 Submittal Delivery Media and Format

Submit all Design Complete CADD files on the following media.

- a. Before a CADD file is copied on the delivery digital media, the following procedures shall be performed:
 - (1) Remove all extraneous graphics outside the border area of the sheet file. Set the active parameters to a standard setting or those in the Government-furnished template or seed file.
 - (2) Include all files, both graphic and non-graphic, required for the project (i.e., color tables, pen tables, font libraries, cell libraries, user command files, plot files, etc.). All cells/blocks not provided as Government-furnished materials must be provided to the Government as a part of the electronic digital deliverables.
 - (3) Make sure that all support files such as those listed above are in the resource directory and that model files do not include device or directory specifications.
 - (4) Document any fonts, tables, etc., developed by the Contractor or not provided among the Government-furnished materials. The Contractor shall obtain Government approval before using anything other than the Government's standard fonts, line styles, patterns, cells/blocks.
- b. A copy of all CADD data and files developed under this Contract shall be submitted to the Government on electronic digital CAD media for approval by the Government at the Intermediate Design submittal phase, the Final Design submittal stage, and at the Final Backcheck Design submittal phase as required unless otherwise directed by the Contracting Officer.
- c. The external label for each electronic digital media shall contain, as a minimum, the following information:
 - (1) The Project title, design submittal stage, and date.
 - (2) The format and version of operating system software.
 - (3) The name and version of utility software used for preparation (e.g., compression/decompression) and copying files to the media.
 - (4) The A/E name and address.

2.3 SPECIFICATIONS

2.3.1 General

The latest version of Unified Facilities Guide Specifications (UFGS), as established by CSI Manual of Practice, shall be utilized, and can be obtained from the Whole Building Design Guide website http://www.wbdg.org/ccb/browse_cat.php?c=3.

SpecsIntact is an automated specification processing system for use in preparing construction project specifications from the UFGS. The use of SpecsIntact is mandatory. SpecsIntact can be downloaded at <http://specsintact.ksc.nasa.gov/>. The Contractor shall submit SpecsIntact (.sec) files for marked-up and final specifications as required in the Contract.

Federal Specs and MIL Specs have been phased out with a few exceptions. Only those Federal and MIL specs in the current editions of the UFGS may be used. Industry standards (e.g. ASTM, ANSI) shall be used to the greatest extent practicable for description of materials. Japanese Industry Standards (e.g. JIS, JAS) are acceptable, provided that the A-E can provide adequate documentation for COR's approval proving that the Japanese Industry Standards are equivalent to the US Industry Standards. A limited set of modified UFGS incorporating previously identified and accepted Japanese standards and methods (also known as Japan Edited Specifications, or JES) can be found at <https://www.poj.usace.army.mil/Business-With-Us/References/>. When standards are not available for an item, specify by performance criteria instead. Proprietary items are not allowed.

At the Intermediate and Final Design submittal stages, submit edited specifications in marked-up or redlined format. At the Final Backcheck Design submittal stage, execute all previous revisions.

2.3.2 Submittal Register

A Submittal Register indicating the submittal requirements during the construction phase must be prepared by the A-E using SpecsIntact during the design phase of the Contract. The A-E shall be responsible for listing all required submittals necessary to insure the project requirements are complied with. The Register shall identify submittal items such as shop drawings, manufacturer's literature, certificates of compliance, material samples, guarantees, test results, etc. that the Contractor shall submit for review and/or approval action during the life of the construction Contract. The A-E shall include the Submittal Register as an attachment to Section 01 33 00 SUBMITTAL PROCEDURES with the specifications.

PART 3 EXECUTION

3.1 CONCEPT (35%) DESIGN SUBMITTAL

The A-E shall prepare the Concept Design based on the discussions and decisions made at the design charrette.

The Concept Design goal is to demonstrate that the A-E has a thorough understanding of the scope of the project and the owner's requirements, as discussed at the design charrette. At the Concept Design stage, the A-E shall confirm all CADD requirements (i.e.: sheet numbering, sheet size,

A/E/C CADD & USACE standards) with the POJ CADD center.

Concept Design submittal shall consist of, but not limited to, the following:

3.1.1 Design Drawings

- a. Title and general sheets with preliminary haul route.
- b. Project site plan & area site plan.
- c. Construction notes and legend pages (all disciplines); Phasing plan, if required.
- d. Preliminary Building Life Safety Code Analysis.
- e. Civil
 - (1) Project site plan, including required standoff setbacks.
 - (2) Area site plan.
 - (3) General Preliminary Exterior Utility Plans.
 - (4) Complete subsurface investigation and analysis.
- f. Architectural
 - (1) Architectural Plans that consider functional relationships, work area use, security requirements and traffic flow patterns.
 - (2) General Preliminary Building code/life safety code analysis diagrams.
 - (3) Exterior elevations showing principal shapes, fenestrations and exterior finishes.
 - (4) Building sections.
 - (5) General interior finish selections.
- g. Structural
 - (1) General Preliminary Blast Requirements for Exterior Windows and Doors.
- h. Mechanical/Plumbing
 - (1) General Preliminary HVAC, plumbing layouts, including equipment capacities and sizes.
- i. Electrical and Telecommunication
 - (1) General Preliminary electrical, and information systems layout, including equipment capacities and sizes.
- j. Fire Protection
 - (1) Fire Alarm Control Panel configuration, Riser configuration, pipe

size and configuration.

3.1.2 Specifications

List of Technical Specification sections that will be included in the intermediate submittal.

3.1.3 Design Analysis

a. Concept Design Analysis

- (1) Include a discussion of existing conditions and project goals.
- (2) List design assumptions, design calculations referenced criteria, and show initial calculations.
- (3) Include placeholder sections for topics not required in the concept submittal, but needed for the intermediate submittal.
- (4) Narrative description of the approach used and basis for AT measures, and a narrative description of those measures in accordance with UFC 4-010-01.
- (5) Life Safety & Fire protection analysis in accordance with UFC 3-600-01.
- (6) Discussion of types and capacities of HVAC systems, including a description of the selected system.
- (7) Discussion of types and capacities of primary electrical power, conduit, information systems, lighting, and other systems considered, including a description of the selected systems.
- (8) Description of the foundation, including any special requirements such as drilled piers, pilings, and support facilities.
- (9) Site analysis that discusses the opportunities and constraints of the site and include the recommendations from the IDG/Installation.
- (10) Hazard analysis (lead-based paint, asbestos, etc., if required).
- (11) Preliminary erosion control analysis.
- (12) Preliminary plant material analysis that reflects the selection of plant material native to the project area, if required.
- (13) Life cycle cost analysis.
- (14) Building energy simulations, energy conservation studies, and design energy use calculations.
- (15) Corrosion mitigation plan, if required.
- (16) Site specific traffic analysis.
- (17) List of materials and methods of construction to be used.

3.1.4 Cost Estimate

Current working estimate.

3.2 INTERMEDIATE (65%) DESIGN SUBMITTAL

Prepare the Intermediate Design and technical specifications based on Concept Design, project criteria and general instructions.

The Intermediate Design effort shall be a continuation of the Concept Design. The Intermediate Design goals are to show the project is on schedule and at an acceptable level of quality and completeness and demonstrate that A-E's QC process is functioning properly. Submit all QC documentation with the Intermediate Design submittal. Complete coordination amongst design disciplines shall be conducted to review and resolve design conflicts.

Intermediate Design shall consist of, but not limited to, the following:

3.2.1 Design Drawings

- a. Title and general sheets with haul route.
- b. Project site plan & area site plan.
- c. Construction notes and legend pages (all disciplines); Phasing plan, if required.
- d. Building Life Safety Code & Fire Protection Plans including Building Code and Occupancy Analysis.
- e. Complete Discipline coordination of the design.
- f. Civil
 - (1) Existing conditions (topography).
 - (2) Demolition plan.
 - (3) Site plan.
 - (4) Grading plan.
 - (5) Road sections, plans, and profiles.
 - (6) Utility plans and profiles.
 - (7) Civil and site profiles.
 - (8) Geotechnical boring logs.
- g. Architectural
 - (1) Architectural Floor Plans.
 - (2) Reflected Ceiling Plans.
 - (3) Roof Plans.

- (4) Furniture/Equipment Floor Plans and Schedules.
- (5) Exterior elevations.
- (6) Building sections.
- (7) Wall sections.
- (8) Partition Types.
- (9) Air barrier plans and details.
- (10) Interior elevations.
- (11) Door & window types/schedules and details.
- (12) Blast requirements for Exterior Windows and Doors, details.
- (13) Room Finish Materials and Schedule.
- (14) Miscellaneous Details.
- (15) Signage Plans and Schedules.

h. Structural

- (1) Foundation plans.
- (2) Floor framing plans.
- (3) Roof framing plans.
- (4) Foundation Schedule and details.
- (5) Wall sections and details.
- (6) Column Schedules and details.
- (7) Beam/Girder Schedules and details.
- (8) Slab Schedules and details.
- (9) Building sections.

i. Mechanical

- (1) Site Plans.
- (2) HVAC Plans.
- (3) Piping Plans.
- (4) Sections.
- (5) Equipment Control Sequences.
- (6) DDC points list.
- (7) Equipment Schedules.

- (8) Isometrics.
- (9) Riser Diagrams.
- (10) Schematics.
- (11) Details.
- j. Plumbing
 - (1) Site Plans.
 - (2) Plumbing Plans.
 - (3) Sections.
 - (4) Equipment Control Sequences.
 - (5) Fixture Schedules.
 - (6) Isometrics/Riser Diagrams.
 - (7) Details.
- k. Electrical
 - (1) Electrical Legend.
 - (2) Existing Electrical Site plan, indicating power, lighting.
 - (3) Exterior Demolition Plan.
 - (4) Plan view, indicating the interior electrical power plan, including receptacles, HVAC equipment, and specialty items needing power.
 - (5) Plan view, indicating the interior light fixture layout.
 - (6) Preliminary Light fixture schedule.
 - (7) Preliminary Electrical one line diagram.
 - (8) Preliminary one line diagram for any auxiliary systems.
- l. Telecommunication
 - (1) Existing Telecommunication Site plan.
 - (2) Exterior Demolition Plan.
 - (3) Interior Telecommunication Plan.
 - (4) Preliminary Telecommunication one-line diagrams.
- m. Fire Protection
 - (1) Fire Suppression general notes and legend.

- (2) Fire Alarm & Mass Notification general notes and legend.
 - (3) Fire Protection site plans.
 - (4) Fire Suppression details.
 - (5) Fire alarm plans and details.
 - n. Food Service (as required)
 - (1) Equipment Plans and Schedules.
 - (2) Details.
 - o. Audio/Video (as required)
 - (1) AV Plans and Schedules.
 - (2) Details.
- 3.2.2 Technical Specifications
- a. Interim set of Technical Specifications.
 - (1) Technical specifications shall incorporate all comments and revisions from the previous submission.
 - b. Specifications shall include the submittal register (ENG Form 4288) in .csv and .pdf format in this and all subsequent submittals.
 - c. Draft 1354 property form shall be submitted for review.
- 3.2.3 Design Analysis
- a. Intermediate Design Analysis
 - (1) Include a discussion of existing conditions and project goals.
 - (2) List design assumptions, design calculations referenced criteria, and show initial calculations and manufacturer's material and equipment information.
 - (3) Narrative description of the approach used and basis for AT measures, and a narrative description of those measures in accordance with UFC 4-010-01 and PDC TR 12-08.
 - (4) Life Safety & Fire protection analysis including hydraulic calculations in accordance with UFC 3-600-01.
 - (5) Designed HVAC systems types and capacities, including a description of the selected system.
 - (6) Designed primary electrical power types and capacities, conduit, information systems, lighting, and other systems considered, including a description of the selected systems.
 - (7) Designed information systems requirements.
 - (8) Designed food service requirements (as required).

- (9) Designed audio/visual requirements (as required).
- (10) Designed foundation, including any special requirements such as drilled piers, pilings, and support facilities.
- (11) Site analysis that discusses the opportunities and constraints of the site and include the recommendations from the IDG/Installation.
- (12) Hazard analysis, if required.
- (13) Erosion control analysis.
- (14) Landscaping planting plan and a plant material analysis that reflects the selection of plant material native to the project area, if required.
- (15) Life cycle cost analysis.
- (16) Building energy simulations, energy conservation studies, and design energy use calculations.
- (17) Corrosion mitigation plan (as required).
- (18) Economic analyses.
- (19) Justification for use of all U.S. materials/equipment specified in the design to be used in construction when local materials/equipment are excluded.

[b. Provide completed LEED Checklist.]

c. Provide a copy of the project's DD Form 1391.

d. For Renovation Projects: Discussion on property replacement values versus plant replacement values of the existing building(s) and associated implementation triggers for Seismic (UFC 3-301-01) and Anti-Terrorism (UFC 4-010-01) requirements.

3.2.4 Cost Estimate

Current working estimate for budget purposes and back-up cost data and price quotes.

3.2.5 Quality Control

Submit completed Detail Check Review (DCR) and Independent Technical Review (ITR) documents to include: Completed DCR checklists, completed ITR annotated comment sheets in accordance with the project's Scope of Work.

3.3 FINAL (95%) DESIGN SUBMITTAL

The A-E shall prepare the Final Design based on the Intermediate Design, project criteria and general instructions.

The Final Design effort shall be a complete design incorporating and resolving all previous review comments. Complete coordination amongst design disciplines shall be conducted to review and resolve any and all design conflicts. A-E shall conduct a full Quality Control review prior

to the submittal of the Final Design. A-E QC review shall consist of a full Detail Check and Independent Technical Review. The Final Design submittal is the last full review of the Contract documents by the Government. Any significant new information included in this submittal that is not a direct result of a review comment shall be brought to the attention of the reviewer(s) and USACE Project Manager. Provide a brief description of the new information. The design shall be within the project's programmed amount.

All disciplines and specialty systems shall be designed and detailed to provide clear design intent. Design analysis shall include representative sample manufacturer's product information.

Final Design shall consist of, but not limited, to the following:

3.3.1 Design Drawings

- a. Title and general sheets with haul route.
- b. Project site plan & area site plan.
- c. Construction notes and legend pages (all disciplines); Phasing plan (as required).
- d. Building Life Safety Code & Fire Protection Plans including Occupancy Analysis.
- e. Complete Discipline Coordinate of the design.
- f. Civil
 - (1) Completed set of Civil drawings.
- g. Architectural
 - (1) Completed set of Architectural drawings.
- h. Structural
 - (1) Completed set of Structural drawings.
- i. Mechanical & Plumbing
 - (1) Completed set of Mechanical and Plumbing drawings.
- j. Electrical & Telecommunication
 - (1) Completed set of Electrical and Telecommunication drawings.
- k. Fire Protection
 - (1) Completed set of Fire Protection drawings.
- l. Food Service (as required)
 - (1) Completed set of Food Service drawings.
- m. Audio/Video (as required)

- (1) Completed set of Audio/Visual drawings.

3.3.2 Technical Specifications

- a. Completed set of Technical Specifications.
 - (1) Technical specifications shall incorporate all comments and revisions from the previous submission.
- b. Specifications shall include the submittal register (ENG Form 4288) in .csv and .pdf format in this and all subsequent submittals.
- c. Draft 1354 property form shall be submitted for review.

3.3.3 Design Analysis

- a. Final Design Analysis
 - (1) Completed Design Analysis incorporating all comments and revisions from the previous submission.
- [b. Provide completed LEED Checklist.]
- c. Provide a copy of the project DD Form 1391.
- d. For Renovation Projects: Discussion on Property Replacement Values versus plant replacement values of the existing building(s) and associated implementation triggers for Seismic (UFC 3-301-01) and Anti-Terrorism (UFC 4-010-01) requirements.

3.3.4 Cost Estimate

- a. Final working cost estimate with all back-up data, vendor estimates, etc.

3.3.5 Quality Control

- a. Submit Detail Check Review (DCR) and Independent Technical Review (ITR) documents to include: Completed DCR checklists, completed ITR annotated comment sheets in accordance with the project Scope of Work.

3.4 FINAL BACKCHECK (100%) DESIGN SUBMITTAL

The A-E shall prepare the Final Backcheck Design submittal based on the Final Design, project criteria and general instructions.

The Final Backcheck Design submittal shall be complete in every respect, from the Government's perspective. The drawings shall show the name of the reviewer and signature of the Principal of the firm responsible for the design as testimony that this submittal has been reviewed. The submittal shall incorporate all previous review comments. A-E shall provide a response indicating the reason for not incorporating any non-concurred comments. The A-E shall submit a complete response to all previous review comments in DrChecks with the submission.

Final Backcheck Design shall consist of, but not limited to, the following:

3.4.1 Design Drawings

Complete final design construction drawings.

3.4.2 Technical Specifications

Completed set of final technical specifications.

3.4.3 Design Analysis

Complete final design analysis.

3.4.4 Cost Estimate

Complete final working cost estimate.

3.5 "CLEARED FOR CONSTRUCTION" SUBMITTAL

DOR shall submit one (1) hard copy Japanese-style folded and bound sets of A3 size drawings and A4 specifications. Submittal shall be provided to the Resident Office at the Pre-Construction meeting. "Cleared For Construction" Submittal is defined as the complete, government-approved set of drawings and specifications that can be used by the Contractor to build and complete the project.

-- End of Section --