



**US Army Corps
of Engineers ®**

EIRS Bulletin

Engineering Improvement Recommendation System

No. 98-04

Date: 22 December 1998

The Engineering Improvement Recommendation System Bulletin is part of our Information Feedback System and is used in military construction programs to expedite dissemination of information regarding problems. The probable solutions included in the EIRS BULLETIN have not been thoroughly explored or staffed. Accordingly, these probable solutions do not represent a final HQUSACE position, and their use is not mandatory. Probable solutions are considered as informational in nature for the purpose of permitting prompt consideration by the field. EIRS Bulletin recipients are encouraged to comment on the probable solutions presented so that other viewpoints can be considered in the development of the final HQUSACE position. Since changes to criteria approved by ENG Form 3078, Recommended Changes to Engineering Documents, are expected to remain firm, they are identified as final solutions and should be used in current design. To defray printing costs, local reproduction of this bulletin is authorized. This issue of the EIRS Bulletin contains four enclosures as follows:

ENCL 1: Update on Omega Sprinklers

ENCL 2: Revisions Made to the Brigade (BDE) and Battalion (BN) Headquarters (HQ) Buildings

ENCL 3: ENG Form 3078 Follow-up Actions

ENCL 4: Current Design Criteria

FOR THE COMMANDER:

4 Encls

DWIGHT A. BERANEK, P.E.
Chief, Engineering and Construction Division
Directorate of Military Programs

ENGINEERING AND DESIGN

Update on Omega Sprinklers:

a. Problem: EIRS Bulletin 97-07 listed procedures for testing and replacing Omega model sprinkler heads manufactured by the Central Sprinkler Company. The procedures recommended by Central consisted of sending sample Omega sprinklers from each building to Central. If testing found any of the samples not operating properly, Central would have provided replacement sprinklers for the entire building and may assist with the actual replacement of sprinklers. These procedures are no longer applicable. On October 14, 1998, the U.S. Consumer Product Safety Commission (CPSC) won a court decision to recall all Omega sprinkler heads, approximately 8.4 million sprinklers. As part of the settlement agreement, Central has asked Underwriter's Laboratories to withdraw its listing for all Omega brand fire sprinklers.

CPSC alleged that, on average, between 30 and 40 percent of the Omega sprinklers removed from various locations across the country for testing failed to activate as they should. In some buildings, all Omegas tested failed to activate. CPSC is warning consumers that they are at risk of bodily injury or death and should have Omega sprinklers replaced as soon as possible. CPSC is urging consumers to take immediate action to determine whether the buildings where they live or work are equipped with Omegas, and if so, to call the Omega Sprinkler Recall Hotline at (800) 896-5685 or make contact at the website, www.omegarecall.com to participate in the recall. The website containing the CPSC news release concerning the court decision and recall is www.cpsc.gov/cpscpub/prerel/prhtml99/99008.html.

Users should be able to determine whether their buildings or homes are equipped with Omega sprinklers. On most models, occupants will be able to see three flat round disks stacked one above the other with a small space between each disk. Central will send users a packet of information to help them identify the Omega sprinklers or users can obtain this information on website, www.omegarecall.com.

The recall of the Omega sprinklers include models referred to or marked as follows:

C1 (or C-1),
CIA (or C-1A),
C-1A PRO (or C1-A PRO), C1-A PRO QR,
EC-20, EC-20A,
R-1, R-1A, R-M,
Flow Control (FC, Flow Control-FC),
Protector-M or M Protector (upright, pendent Sidewall, Sidewall EC),
EC-12 RES,
HEC-12, HEC-12 EC, HEC-12 EC PRO, HEC-12 ID, HEC-12 PRO, HEC-12 PRO QR,
HEC-20,
Prohibitor QR and AC.

Encl 1 (2 pages)

b. Probable Solution: The following action is recommended:

(1) For new construction, the sprinkler guide specifications have been modified in May 1998 to prohibit sprinkler heads that utilized an internal o-ring. Investigation indicated that failures are caused by crystallization around or swelling of the o-rings in the Omega sprinklers. Omega sprinklers utilize an internal o-ring design. By prohibiting the o-ring design, Omega sprinklers as well as other models that utilize internal o-rings are not allowed in Corps projects. Designers and construction engineers should ensure that the latest sprinkler guide specifications are being used and that sprinklers with an internal o-ring are not provided.

(2) In existing buildings, the DPW (or his representative) or the user should survey sprinkler systems to determine if Omega sprinklers are present. If found, the responsible party should contact Central Sprinkler Company as soon as possible. Central is offering consumers free replacement glass bulb fire sprinklers and reimbursement for removal and replacement. Contact Central Sprinkler Company by calling the Omega Sprinkler Recall Hotline at (800) 896-5685 or making contact at their website. For consumers to get any monetary reimbursement for installation costs, they must submit proof of claim and release to Central, postmarked by August 1, 1999. The CPSC urges consumers to take immediate action.

(3) This EIRS Bulletin supercedes guidance provided in EIRS Bulletin 97-07, *Omega Sprinkler Alert*. The point of contact for this bulletin is Mr. Robert M. DiAngelo, HQUSACE/CEMP-ET, at (202) 761-4803.

ENGINEERING AND DESIGN

Revisions Made to the Brigade (BDE) and Battalion (BN) Headquarters (HQ) Buildings:

a. Problem: Based on lessons-learned and feedback received from the design and construction of recent BDE and BN HQ facilities that were based on the Department of the Army (DA) Standard Design Packages for the BDE and BN HQ Facilities, the following deficiencies needed to be addressed:

1) A Fire Protection/Life Safety Plan, along with a narrative, that identifies the extinguishing system, exits, fire rating of walls, alarm/detection system, and emergency lighting does not exist in the Standard.

2) The stairs in the 2-story BN HQ Facility do not adequately meet NFPA requirements.

3) The "service core" area (i.e., elevator, restrooms, and shower rooms) of the 2-story BN HQ Facility does not function well for circulation and privacy.

4) Telecommunications closets are missing from the Standard.

5) The number of toilet fixtures are inadequate for the BDE and 1-story BN HQ Facilities.

6) An optional "Troop Aid Station" does not exist in the Standard.

b. Probable Solution: The DA Standard Design Package for BDE and BN HQ Buildings has been revised to include a Fire Protection/Life Safety Plan and Narrative; to correct the stairs in accordance with NFPA requirements for the 2-story BN HQ Facility; to provide a better functional arrangement for the "service core" area of the 2-story BN HQ Facility; to include telecommunications closets to comply with TIA/EIA 568-A (Commercial Building Telecommunications Cabling Standard) and EIA/TIA 569 (Commercial Building Standard for Telecommunications Pathways and Spaces); to increase the number of toilet fixtures in the BDE and 1-story BN HQ Facilities; and to incorporate an "optional" Troop Aid Station. Due to these modifications, the gross area allowances listed in Technical Instruction TI 800-01, Design Criteria, dated 20 July 1998, for BDE and for BN HQ (with and without classrooms) Buildings will be revised as follows:

1) One-story Battalion HQs with Classrooms: no change to Small (1130m²), Medium (1327m²), and Large (1523m²) overall layouts. However, the Troop Aid Station option will add 181m² to each layout.

2) One-story Battalion HQs w/o Classrooms: Small (changed from 675m² to 705m²), Medium (changed from 872m² to 901m²), and Large (changed from 1069m² to 1098m²). Also, the Troop Aid Station option will add 181m² to each layout.

3) Two-story Battalion HQs with Classrooms but w/o Troop Aid Station option: Small (first floor changed from 694m² to 710m² and the second floor changed from 418m² to 431m²; therefore, the total Gross Area changed from 1112m² to 1141m²), Medium (first floor changed from 769m² to 783m² and the second floor changed from 490m² to 504m²; therefore, the total Gross Area changed from 1259m² to 1287m²), and Large (first floor changed from 864m² to 881m² and the second floor changed from 588m² to 602m²; therefore, the total Gross Area changed from 1452m² to 1483m²).

4) Two-story Battalion HQs with Classrooms and Troop Aid Station option: Small (first floor changes from 710m² to 748m² and the second floor changes from 431m² to 488m² for a total Gross Area change from 1141m² to 1236m²), Medium (first floor changes from 783m² to 839m² and the second floor changes from 504m² to 579m² for a total Gross Area change from 1287m² to 1418m²), and Large (first floor changes from 881m² to 979m² and the second floor changes from 602m² to 700m² for a total Gross Area change from 1483m² to 1679m²).

5) One-story Brigade HQs: The total Gross Area has changed from 938.3m² to 967m². Also, the Troop Aid Station option will add 181m² to each layout.

c. Implementation: In accordance with AR 415-15 and ER 1110-3-113, the use of designs developed under the DA Facilities Standardization Program, such as the DA Standard Design Packages for BDE and BN Headquarters Buildings, are mandatory for use and unjustifiable deviations will not be made. The implementation of these revisions is considered to have routine application.

d. Additional Information: For additional information concerning the revisions to the Standard Design Packages, contact:

- 1) Center of Standardization (COS) for BDE and BN HQ Buildings
Mr. Greg Bridgestock, CESP-K-ED-M
Telephone: (916) 557-5127
Facsimile: (916) 557-7865
E-mail: gbridgestock@spk.usace.army.mil
- 2) HQUSACE Proponent for BDE and BN HQ Buildings
Mr. Jeffery T Hooghouse, AIA, CEMP-ET
Telephone: (202) 761-1069
Facsimile: (202) 761-8815
E-mail: jeffery.t.hooghouse@usace.army.mil

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

ENG Form 3078 Follow-up Actions:

a. Problem: ENG Forms 3078 which indicate an affirmative action by HQUSACE are provided to the originating USACE Commands. Since the ENG Forms 3078 will result in changes to the criteria and guidance, all USACE Commands should receive the same information to be used in criteria designs.

b. Probable Solution: Reviewed ENG Forms 3078 which make a commitment to change guide specifications, manuals, etc. will be included in the EIRS Bulletin, unless the change has been accomplished. This enclosure includes a copy of approved ENG Forms 3078.

ENG FORMS 3078

<u>CONTROL NO.</u>	<u>PUB NO.</u>	<u>OFFICE SYMBOL</u>
1064	CEGS-01320	CENWO-CD
1065	CEGS-14630	CESWF-EC
1069	CEGS-15990	CEMP-EC
1076	CEGS-05120	CENAB-CO
ID-10	CEGS-09250	CESAS-CD-QT
ID-11	CEGS-06100	CESAS-CD-QT

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE

CENWO-CD-BH-G

22 May 1998

DOCUMENT NUMBER AND DATE

CEGS 01320 (06/97)

DOCUMENT TITLE

PROJECT SCHEDULE

DOCUMENT TYPE

- DRAWING ((STANDARD) (DEFINITIVE)) SPECIFICATION ((GUIDE) (STANDARD))
 DESIGN GUIDES TECHNICAL MANUAL
 ENGINEER MANUAL ENGINEER REGULATION OTHER

MILITARY

CIVIL WORKS

SUBJECT

GENERAL REVISIONS

ROUTING (Check)

FROM:

District Commander
U.S. Army Engineer District,

ACTION RECOMMENDED BY DISTRICT COMMANDER

(See Sheet 2)

OFFICE SYMBOL

CENWO-CD

NAME AND TITLE (Print or Type)

for Robert J. Vodicka, Acting Chief, Const. Div.

DATE

5/27/98

SIGNATURE

[Handwritten Signature]

1a.

TO:
HQUSACE (CEMP-EA)
WASH DC 20314-1000

INFORMATION COPY OF THIS ENG FORM 3078 WAS SENT _____

(Date)

1b.

TO:
Division Commander
U.S. Army Engineer Division,
Missouri River Region
Northwestern Division
Attn CENWO-MR-ET-C

COMMENTS, ACTION, OR RECOMMENDATION BY DIVISION COMMANDER

Recommend Approval

OFFICE SYMBOL

CENWO-MR-ET-C

NAME AND TITLE (Print or Type)

Eric Anthony Arnold
Construction Program Manager

DATE

22 July

SIGNATURE

[Handwritten Signature]

2.

TO:
HQUSACE (CEMP-EA)
WASH DC 20314-1000

COMMENTS OR ACTION BY COMMANDER, USACE

See attached comments.

OFFICE SYMBOL

CEMP-E

NAME AND TITLE (Print or Type)

for *[Signature]*
DWIGHT A. BERANEK, P.E., C., ENGR & CONST DIV

DATE

1 Sep 98

SIGNATURE

3.

TO:
Division Commander
U.S. Army Engineer Division,

COMMENTS BY DIVISION COMMANDER

OFFICE SYMBOL

NAME AND TITLE (Print or Type)

DATE

SIGNATURE

4.

RETURN TO:
District Commander
U.S. Army Engineer District,

COPY FURNISHED

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)OFFICE SYMBOL AND DATE
CENWO-CD-BH-G
22 MAY 1998PROBLEM DESCRIPTION AND ACTION RECOMMENDED *(Use additional sheets if necessary.)***1. PROBLEM:**

PROJECT SCHEDULE NEEDS SOME GENERAL REVISIONS TO MINIMIZE DESIGN EDITING, ESTABLISH SOME ADDITIONAL REQUIREMENTS FOR ENFORCEMENT, CLARIFY THE PROCEDURE FOR SUBMITTING AND CLARIFY TECHNICAL REQUIREMENTS.

2. RECOMMENDED SOLUTION:

SEE ATTACHED SECTION. NOTE SHADED TEXT IS TEXT THAT NEEDS TO BE DELETED AND DOUBLE UNDERLINED TEXT IS TEXT THAT NEEDS TO BE ADDED.

NAME OF SUBMITTER *(Optional)*
STEVE HASNERWORK TELEPHONE NUMBER *(Optional)*
(701) 594-5016

ENG Form 3078 Continuation

CEMP-E Response to CENWO-CD-BH-G Recommendation for CEGS-01320, Project Schedule, dated June 1997, CEMP-E Action No. 1064:

Partially concur. Recommendations will be incorporated essentially as annotated on the attached CEGS, except as follows:

Notes will be included/retained at the beginning of the text to which they apply.

Paragraph 1.2., Qualifications. The first sentence will be retained; the rest will be deleted.

Paragraph 3.3.5., Default Progress Data Disallowed. The two new sentences will be added; however, a note to designers will be added to indicate that the new sentences may be deleted if not necessary.

Paragraphs 3.4.1. and 3.4.2, Preliminary and Initial Project Schedule Submission. Nonconcur; no changes will be made.

Paragraph 3.5.1., Data Disks. Concur; however, a bracketed blank option will be included in the first sentence, i.e., "[Two] [____]".

Paragraph 3.5.2., Narrative Report. Concur; however, a bracketed blank option will be included in the third sentence, i.e., "[2] [__]".

Paragraph 3.5.4.2., Logic Report. Concur; however the paragraph number will be included in the reference in the first new sentence, i.e., "...information listed in paragraph 3.5.4., Schedule Reports."

Paragraph 3.5.5.1., Continuous FLOW. Although not part of the recommendation, following "The activity" in the second sentence, the text "or event" will be deleted.

Paragraph 3.6.3., Progress Meeting Contents. The last sentence will be revised as follows: "As a minimum, the Contractor shall address the following items on an activity by activity basis during each progress meeting:".

GUIDE SPECIFICATION FOR MILITARY CONSTRUCTION

OMAHA UPDATE MARCH 1998

Use this guide specification for projects meeting one of the following conditions:

(a) Projects where the current working estimate (CWE) is over 2 million dollars and work is of a sufficiently complex nature (Building projects, projects under a tight time schedule, etc.)

(b) On special projects (under 2 million dollars) of a complex nature for which Construction Division will direct the use of this section.

(c) Projects where Evaluated Total Cost Method (ETCM) of contracting is used. ETCM should be avoided for projects costing less than one million dollars.

1. NOTE: This guide specification covers the requirements for the preparation and maintenance of the project schedule. This guide specification is to be used in the preparation of project specifications in accordance with ER 1110-345-700.
2. NOTE: Selection of the optional requirements in this CEGS should be coordinated with Construction Division to ensure that the schedule requirements are appropriate for the complexity of the constructability portion of the BCOE review. See ER 415-1-11. Paragraphs may not be removed from this specification except as noted.

If it is desired to monitor a Contractor's schedule by use of an in-house program, this will require use of the Standard Data Exchange Format. Use of proprietary systems shall not be specified. See ER 1-1-11 and Appendix.

3. NOTE: NOT USED Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

Indicate submittal classification in the blank space using "CA" when the submittal requires Government approval or "FIO" when the submittal is for information only.

4. NOTE: NOT USED Delete last two sentences if not necessary.
5. NOTE: Delete this or any of the following seven paragraphs when not required by the project.

6. NOTE: Delete last two sentences if not necessary.
7. NOTE: Delete last two sentences if not necessary.
8. NOTE: Delete this or any of the following two paragraphs when not required by the project.
9. NOTE: Delete this paragraph if not necessary.
10. NOTE: Delete this paragraph if not necessary.
11. NOTE: Delete this paragraph if not necessary.
12. NOTE: Other reports are available and may be specified as needed. Care should be exercised so as not to require excessive reports which will not contribute to effective management.

SECTION 01320
PROJECT SCHEDULE

06/97
(Omaha Update 03/98)

Attachments: ER 1-1-11 (Appendix A), Standard Data Exchange Format Specification

#(1)#

PART 1. GENERAL

#(2)#

1.1. SUBMITTALS (Not Applicable)

#(3)#

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section \-01330-\ SUBMITTAL PROCEDURES:

SD-07 Schedules\

Initial Project Schedule\; *GA*\.

Preliminary Project Schedule\; *[_____]*\.

Periodic Schedule Updates\; *GA*\.

[Three] [_____] copies of the schedules showing codes, values, categories, numbers, items, etc., as required.

SD-08 Statements\

Qualifications\; *[_____]*\.

Documentation showing qualifications of personnel preparing schedule reports.

SD-09 Reports\

Narrative Report\; *[_____]*\.

Schedule Reports\; *[_____]*\.

[Three] [_____] copies of the reports showing numbers, descriptions, dates, float, starts, finishes, durations, sequences, etc., as required.

1.2. *QUALIFICATIONS*\

#(4)#

The Contractor shall designate an authorized representative who shall be responsible for the preparation of all required project schedule reports. This person shall have previously created and reviewed computerized schedules.

Qualifications of this individual shall be submitted to the Contracting Officer for review with the Preliminary Project Schedule submission.

PART 2. PRODUCTS (Not Applicable)

PART 3. EXECUTION

3.1. GENERAL

Pursuant to the Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS, a Project Schedule as described below shall be prepared. The scheduling of construction shall be the responsibility of the Contractor. Contractor management personnel shall actively participate in its development. Subcontractors and suppliers working on the project [shall] [may] also contribute in developing and maintaining an accurate Project Schedule. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

3.2. BASIS FOR PAYMENT

The schedule shall be the basis for measuring Contractor progress. Lack of an approved schedule or scheduling personnel shall result in an inability of the Contracting Officer to evaluate Contractor progress for the purposes of payment. Failure of the Contractor to provide all information, as specified below, shall result in the disapproval of the entire Project Schedule submission and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. In the case where Project Schedule revisions have been directed by the Contracting Officer and those revisions have not been included in the Project Schedule, then the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until revisions to the Project Schedule have been made.

3.3. PROJECT SCHEDULE

The computer software system utilized by the Contractor to produce the Project Schedule shall be capable of providing all requirements of this specification. Failure of the Contractor to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information shall require approval by the Contracting Officer.

3.3.1. Use of the Critical Path Method

The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The Contractor shall provide the Project Schedule in either the Precedence Diagram Method (PDM) or the Arrow Diagram Method (ADM).

3.3.2. Level of Detail Required

With the exception of the initial and preliminary schedule submission, the Project Schedule shall include an appropriate level of detail. Failure to develop or update the Project Schedule or provide data to the Contracting Officer at the appropriate level of detail, as specified by the Contracting Officer,

shall result in the disapproval of the schedule. The Contracting Officer will use, but is not limited to, the following conditions to determine the appropriate level of detail to be used in the Project Schedule.

3.3.2.1. Activity Durations

Contractor submissions shall follow the direction of the Contracting Officer regarding reasonable activity durations. Reasonable Durations are those that allow the progress of activities to be accurately determined between payment periods (usually less than 2 percent of all non-procurement activities' Original Durations shall be greater than 20 days).

3.3.2.2. Procurement Activities

Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the project schedule. Long lead materials and equipment are those materials that have a procurement cycle of over 90 days. Examples of procurement process activities include, but are not limited to: submittals, approvals, procurement, fabrication, and delivery, installation, start-up, and testing.

3.3.2.3. Government Activities

Government and other agency activities that could impact progress shall be shown. These activities include, but are not limited to: approvals, inspections, utility tie-in, Government Furnished Equipment (GFE) and notice to proceed for phasing requirements.

3.3.2.4. NOT USED Workers Per Day

(5)

All activities shall have an estimate of the average number of workers per day that are expected to be used during the execution of the activity. If no workers are required for an activity, in the case of activities related to procurement, for example, then the activity shall be identified as using zero workers per day. The workers per day information for each activity shall be identified by the Workers Per Day Code.

3.3.2.5. Responsibility

All activities shall be identified in the project schedule by the party responsible to perform the work. Responsibility includes, but is not limited to, the subcontracting firm, contractor work force, or government agency performing a given task. Activities shall not belong to more than one responsible party. The responsible party for each activity shall be identified by the Responsibility Code.

3.3.2.6. Work Areas

All activities shall be identified in the project schedule by the work area in which the activity occurs. Activities shall not be allowed to cover more than

one work area. The work area of each activity shall be identified by the Work Area Code.

3.3.2.7. Modification or Claim Number

Any activity that is added or changed by contract modification or used to justify claimed time shall be identified by a mod or claim code that changed the activity. Activities shall not belong to more than one modification or claim item. The modification or claim number of each activity shall be identified by the Mod or Claim Number. Whenever possible, changes will be added to the schedule by adding new activities. Existing activities will not normally be changed to reflect modifications.

3.3.2.8. Bid Item

All activities shall be identified in the project schedule by the Bid Item to which the activity belongs. An activity shall not contain work in more than one bid item. the bid item for each appropriate activity shall be identified by the Bid Item Code.

3.3.2.9. Phase of Work

All activities shall be identified in the project schedule by the phases of work in which the activity occurs. Activities shall not contain work in more than one phase of work. The project phase of each activity shall be by the unique Phase of Work Code.

3.3.2.10. Category of Work

All Activities shall be identified in the project schedule according to the category of work which best describes the activity. Category of work refers, but is not limited, to the procurement chain of activities including such items as submittals, approvals, procurement, fabrication, delivery, installation, start-up, and testing. The category of work for each activity shall be identified by the Category of Work Code.

3.3.2.11. Feature of Work

All activities shall be identified in the project schedule according to the feature of work to which the activity belongs. Feature of work refers, but is not limited to a work breakdown structure for the project. The feature of work for each activity shall be identified by the Feature of Work Code.

3.3.3. Scheduled Project Completion

The schedule interval shall extend from notice-to-proceed to the contract completion date.

3.3.3.1. Project Start Date

The schedule shall start no earlier than the date that the Notice to Proceed (NTP) was acknowledged. The Contractor shall include as the first activity in the project schedule an activity called "Start Project". The "Start Project" activity shall have: an "ES" constraint, a constraint date equal to the date that the NTP was acknowledged, and a zero day duration.

3.3.3.2. Constraint of Last Activity

(7)

Completion of the last activity in the schedule shall be constrained by the contract completion date. Calculation on project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the critical path. The Contractor shall include as the last activity in the project schedule an activity call "End Project". The "End Project" activity shall have: an "LF" constraint, a constraint date equal to the completion date for the project, and a zero day duration.

3.3.3.3. Early Project Completion

In the event the project schedule shows completion of the project prior to the contract completion date, the Contractor shall identify those activities that have been accelerated and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. Contractor shall specifically address each of the activities noted in the narrative report at every project schedule update period to assist the Contracting Officer in evaluating the Contractor's ability to actually complete prior to the contract period.

3.3.4. Interim Completion Dates

Contractually specified interim completion dates shall also be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date.

3.3.4.1. Start Phase

(8)

The Contractor shall include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have: an "ES" constraint, a constraint date equal to the date that the NTP was acknowledged, and a zero day duration.

3.3.4.2. End Phase

The Contractor shall include as the last activity in a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have: an "LF" constraint, a constraint date equal to the completion date for the project, and a zero day duration.

3.3.4.3. Phase X

The Contractor shall include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5. Default Progress Data Disallowed

Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual Start and Finish dates on the CPM schedule shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the Actual Start and Finish dates on the Daily Quality Control report for every in-progress or completed activity and Ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. Additionally, the updating of the percent complete and the remaining duration of any activity shall be independent functions. Program features which calculate one of these parameters from the other shall be disabled.

3.3.6. Out-of-Sequence Progress

Activities that have posted progress without all preceding logic being satisfied predecessors being completed (Out-of-Sequence Progress) will be allowed only on a case-by-case approval of the Contracting Officer. The Contracting Officer may direct that changes in schedule logic be made to correct any or all out-of-sequence work. The Contractor shall propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule.

3.3.7. NOT USED Extended Non-Work Periods

*(9)#

Designation of Holidays to account for non-work periods of over [5] [] days will not be allowed. Non-work periods of over [5] [] days shall be identified by addition of activities that represent the delays. Modifications to the logic of the project schedule shall be made to link those activities that may have been impacted by the delays to the newly added delay activities.

3.3.8. Negative Lags

Lag durations contained in the project schedule shall not have a negative value.

3.4. PROJECT SCHEDULE SUBMISSIONS

The Contractor shall provide the submissions as described below. The data disk, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

3.4.1. Preliminary Project Schedule Submission

The Preliminary Project Schedule, defining the Contractor's planned operations for at least the first [60] [] calendar days shall be submitted for approval within [20] [] calendar days after Notice to Proceed is acknowledged. The approved preliminary schedule shall be used for payment purposes not to exceed [60] [] calendar days after Notice to Proceed.

3.4.2. Initial Project Schedule Submission

The Initial Project Schedule shall be submitted for approval within [40] [] calendar days after Notice to Proceed. The schedule shall provide a reasonable sequence of activities which represent work through the entire project and shall be at a reasonable level of detail.

3.4.3. Periodic Schedule Updates

Based on the results of progress meetings, specified in "Periodic Progress Meetings," the Contractor shall submit periodic schedule updates. These submissions shall enable the Contracting Officer or to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgement of the Contracting Officer or authorized representative, is necessary for verifying the contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made.

3.4.4. Standard Activity Coding Dictionary

(10)

The Contractor must use the activity coding structure defined in the SDEF format in Appendix A. This exact structure is mandatory, even if some fields are not used.

The Contractor shall submit, with the Initial Project Schedule, a coding scheme that shall be used throughout the project for all activity codes contained in the schedule. The coding scheme submitted shall list the values for each activity code category and translate those values into project specific designations. For example, a Responsibility Code Value, "ELE", may be identified as "Electrical Subcontractor." Activity code values shall represent the same information throughout the duration of the contract. Once approved with the Initial Project Schedule submission, changes to the activity coding scheme must be approved by the Contracting Officer.

3.5. SUBMISSION REQUIREMENTS

The following items shall be submitted by the Contractor for the preliminary submission, initial submission, and every periodic project schedule update throughout the life of the project:

3.5.1. Data Disks

[Three] [Two] data disks containing the project schedule shall be provided. Data on the disks shall be in the format specified in [] must strictly adhere to the SDEF format specified in appendix A at the end of this section.

3.5.1.1. File Medium

Required data shall be submitted on [3.5] [] disks, formatted to hold [1.44 MB] [] of data, under the [MS-DOS] [] [Version 5.0] [] [Version 5.x, or 6.x unless otherwise approved by the Contracting Officer. operating system

3.5.1.2. Disk Label

A permanent exterior label shall be affixed to each disk submitted. The label shall indicate the type of schedule (Preliminary, Initial, Update, or Change), full contract number, project name, project location, data date, name and telephone number of person responsible for the schedule, and the [MS-DOS] [] version used to format the disk.

3.5.1.3. File Name

(II)

Each file submitted shall have a name related to either the schedule data date, project name, or contract number. The Contractor shall develop a naming convention that will ensure that the names of the files submitted are unique. The Contractor shall submit the file naming convention to the Contracting Officer for approval.

3.5.2. Narrative Report

A Narrative Report shall be provided with the preliminary, initial and each update of the project schedule. This report shall be provided as the basis of the Contractor's progress payment request. The Narrative Report shall include: a description of activities along the [4][2] most critical paths, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to relay to the Government, the Contractor's thorough analysis of the schedule output and it's plans to compensate for any problems, either current or potential, which are revealed through that analysis.

3.5.3. Approved Changes Verification

Only project schedule changes that have been previously approved by the Contracting Officer shall be included in the schedule submission. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4. Schedule Reports

The format for each activity for the schedule reports listed below shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float. Actual Start and Actual Finish Dates shall be printed for those activities in progress or completed.

3.5.4.1. Activity Report

A list of all activities sorted according to [activity number] [or] ["I-NODE" AND "J-NODE"] and then sorted according to Early Start Date. For completed activities the Actual Start Date shall be used as the secondary sort.

3.5.4.2. Logic Report

A list of Preceding and Succeeding activities for every activity in ascending order by activity number and then sorted according to Early Start Date. For completed activities the Actual Start Date shall be used as the secondary sort. Preceding and succeeding activities will include all information listed in paragraph, Schedule Reports. A blank line will be left between each activity grouping.

3.5.4.3. Total Float Report

A list of all incomplete activities sorted in ascending order of total float. Activities which have the same amount of total float shall be listed in ascending order of Early Start Dates. Completed activities will not be shown on this report.

3.5.4.4. Earnings Report

(12)

A compilation of the Contractor's Total Earnings on the project from the Notice to Proceed until the most recent Monthly Progress Meeting. This report shall reflect the Earnings of specific activities based on the agreements made in the field and approved between the Contractor and Contracting Officer at the most recent Monthly Progress Meeting. Provided that the Contractor has provided a complete schedule update, this report shall serve as the basis of determining Contractor Payment. Activities shall be grouped by bid item and sorted by activity numbers. This report shall: sum all activities in a bid item and provide a bid item percent; and complete and sum all bid items to provide a total project percent complete. The printed report shall contain, for each activity: [Activity Number] [or] ["i-node" and "j-node"], Activity Description, Original Budgeted Amount, Total Quantity, Quantity to Date, Percent Complete (based on cost), Earnings to Date.

3.5.5. Network Diagram

The network diagram shall be required on the initial schedule submission [and on [monthly] [or] [quarterly] schedule update submissions] [_____]. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1. Continuous Flow

Diagrams shall show a continuous flow from left to right with no arrows from right to left. The activity or event number, description, duration, and estimated earned value shall be shown on the diagram.

3.5.5.2. Project Milestone Dates

Dates shall be shown on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3. Critical Path

The critical path shall be clearly shown.

3.5.5.4. Banding

Activities shall be grouped to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5. S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6. PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include a monthly onsite meeting or other regular intervals mutually agreed to at the preconstruction conference. During this meeting the Contractor shall describe, on an activity by activity basis, all proposed revisions and adjustments to the project schedule required to reflect the current status of the project. The Contracting Officer will approve activity progress, proposed revisions, and adjustments as appropriate.

3.6.1. Meeting Attendance

The Contractor's Project Manager and Scheduler shall attend the regular progress meeting.

3.6.2. Update Submission Following Progress Meeting

A complete update of the project schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, shall be submitted not later than 4 working days after the monthly progress meeting.

3.6.3. Progress Meeting Contents

Update information, including Actual Start Dates, Actual Finish Dates, Remaining Durations, and Cost-to-Date shall be subject to the approval of the Contracting Officer. As a minimum, the following minimum set of items which the Contractor shall address, on an activity by activity basis, during each progress meeting, the following items:

3.6.3.1. Start and Finish Dates

The Actual Start and Actual Finish dates for each activity currently in-progress or completed activities.

3.6.3.2. Time Completion

The estimated Remaining Duration for each activity in-progress. Time-based progress calculations must be based on Remaining Duration for each activity.

3.6.3.3. Cost Completion

The earnings for each activity started. Payment will be based on earnings for each in-progress or completed activity. Payment for individual activities will not be made for work that contains quality defects. A portion of the overall project amount may be retained based on delays of activities.

3.6.3.4. Logic Changes

All logic changes pertaining to Notice to Proceed on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, lag durations, and other changes that have been made pursuant to contract provisions shall be specifically identified and discussed.

3.6.3.5. Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary, and 3) changes required to correct a schedule which does not represent the actual or planned prosecution and progress of the work.

3.7. REQUESTS FOR TIME EXTENSIONS

In the event the Contractor requests an extension of the contract completion date, or any interim milestone date, he shall furnish such justification, project schedule data and supporting evidence as the Contracting Officer may deem necessary for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof of delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is obligatory to any approvals.

3.7.1. Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the schedule, will not be a cause for a time extension to the contract completion date.

3.7.2. Submission Requirements

The Contractor shall submit a justification for each request for a change in the contract completion date of under 2 weeks based upon the most recent schedule update at the time of the Notice to Proceed or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

- a. A list of affected activities, with their associated project schedule activity number.
- b. A brief explanation of the causes of the change.
- c. An analysis of the overall impact of the changes proposed.
- d. A sub-network of the affected area.

Activities impacted in each justification for change shall be identified by a unique activity code contained in the required data file.

3.7.3. Additional Submission Requirements

For any requested time extension of over 2 weeks, the Contracting Officer may request an interim update with revised activities for a specific change request. The Contractor shall provide this disk within 4 days of the Contracting Officer's request.

3.8. DIRECTED CHANGES

If Notice to Proceed (NTP) is issued for changes prior to settlement of price and/or time, the Contractor shall submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The proposed revisions to the schedule will be approved by the Contracting Officer prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted, and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, the Contractor shall advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9. OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE
CESWF-EC-CS
CESWF-EC-DM*DiAngello/McCarthy*

2 Jul 98

DOCUMENT NUMBER AND DATE
CEGS-14630 (May 93)
w/Not #5 (Nov 97)DOCUMENT TITLE
Overhead Electric Cranes

DOCUMENT TYPE

- DRAWING ((STANDARD) [DEFINITIVE]) SPECIFICATION ((GUIDE) [STANDARD])
- DESIGN GUIDES TECHNICAL MANUAL
- ENGINEER MANUAL ENGINEER REGULATION OTHER

 MILITARY CIVIL WORKS

SUBJECT

Brakes and Hoist Drums

ROUTING (Check)

ACTION RECOMMENDED BY DISTRICT COMMANDER

FROM:

District Commander
U.S. Army Engineer District,
ATTN: CESWF-EC-CS
Fort Worth, TX
76102-0300

(See Sheet 2)

OFFICE SYMBOL

CESWF-EC

NAME AND TITLE (Print or Type)

TOMMY KIDD, P.E.
Acting Chief, Engineering and Construction Division

DATE

2 July 1998

SIGNATURE

1a. TO:
HQUSACE (CEMP-EA)
WASH DC 20314-1000

INFORMATION COPY OF THIS ENG FORM 3078 WAS SENT _____

(Date)

1b. TO:
Division Commander
U.S. Army Engineer Division,
ATTN: CESWD-ED-T
Dallas, TX
75242-0216

COMMENTS, ACTION, OR RECOMMENDATION BY DIVISION COMMANDER

Concur - recommend approval

OFFICE SYMBOL

CESWD-ETE-T

NAME AND TITLE (Print or Type)

PAUL D. ROBINSON, P.E.
Director, Engineering & Technical Services Dir.

DATE

5 July 98

SIGNATURE

2. TO:
HQUSACE (CEMP-EA)
WASH DC 20314-1000

COMMENTS OR ACTION BY COMMANDER, USACE

See attached sheet.

OFFICE SYMBOL

CEMP-E

NAME AND TITLE (Print or Type)

DWIGHT A. BERANEK, P.E., C ENGR AND CONST DIV.

DATE

SIGNATURE

3. TO:
Division Commander
U.S. Army Engineer Division,
ATTN: CESWD-ED-T
Dallas, TX
75242-0216

COMMENTS BY DIVISION COMMANDER

OFFICE SYMBOL

NAME AND TITLE (Print or Type)

DATE

SIGNATURE

4. RETURN TO:
District Commander
U.S. Army Engineer District,
ATTN: CESWF-EC-CS
Fort Worth, TX
76102-0300

COPY FURNISHED

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)

OFFICE SYMBOL AND DATE
CESWF-EC-CS
CESWF-EC-D 1
2 Jul 98

PROBLEM DISCRPTION AND ACTION RECOMMENDED (Use additional sheets if necessary.)

1. PROBLEM:

See Attached Sheets.

2. RECOMMENDED SOLUTION:

See Attached Sheets.

NAME OF SUBMITTER (Optional)

Jack Osborne (CESWF-EC-D 1)

WORK TELEPHONE NUMBER (Optional)

817 978-2297
()

SUBJECT: Brakes and Hoist Drums

1. PROBLEM:

Paragraph **2.3.7 Brakes**, references shoe or disc brakes only. There is also a conical brake available.

1. SOLUTION:

Change the first and second ^{or} sentence in **paragraph 2.3.7** to read: "Brakes shall be of the shoe, disc ^{or} conical type with thermal capacity suitable for class and service specified in this section. Shoe, disc and conical brakes shall be spring-set and electrically-released by a continuously rated direct acting magnet."

Change the second sentence in **paragraph 2.3.7.1 Hoist Holding Brakes** from: "Holding brake shall be disc or shoe design, applied to one of the following:" to read: "Holding brake shall be disc, shoe or conical design, applied to one of the following:"

Change the fourth sentence in **paragraph 2.3.7.1 Hoist Holding Brakes** from: "Primary brake shall be a spring-set, electrically-released, disc or shoe type brake." to read: "Primary brake shall be a spring-set, electrically-released, disc, shoe or conical type brake."

Change the first and second sentence in **paragraph 2.3.7.3 Trolley Brake** from: "[Trolley braking system shall be provided with spring-applied and electrically-released shoe brakes or disc brakes.] [Trolley braking system shall be provided with electrically-operated and hydraulically-operated shoe brakes or disc brakes." to read: "[Trolley braking system shall be provided with spring-applied and electrically-released shoe, disc or conical brakes.] [Trolley braking system shall be provided with electrically-operated and hydraulically-operated shoe, disc, or conical brakes."

Change the first and second sentence in **paragraph 2.3.7.4 Bridge Brakes** from: "[Bridge braking system shall be provided with a spring-applied and electrically-released single shoe or disc brake for each bridge drive motor.] [Bridge braking system shall be provided with electrically-operated and hydraulically-operated shoe or disc brakes." to read: "[Bridge braking system shall be provided with a spring-applied and electrically-released single shoe, disc or conical brake for each bridge drive motor.] [Bridge braking system shall be provided with electrically-operated and hydraulically-operated shoe, disc or conical brakes."

2. PROBLEM:

Paragraph 2.3.5 Hoist Drums, states that the drum diameter shall not be less than 24 times the diameter of the hoist cable. Using the particular size increases the cost class A - D cranes and does not provide a large enough drum for class E and F cranes. This specification refers to the CMAA standards in which Table 4.6.4-1 shows a range of drum sizes depending on the cable type and class.

2. SOLUTION:

Above **paragraph 2.3.5 hoist drums**, place a notes section with the following:

NOTE: If using a 6x37 class rope, use the following rope diameter multiplier that matches the class of the crane. A&B=16, C=18, D=20, E=24 and F=30. If using a 6x19 class rope, use the following rope diameter multiplier that matches the class of the crane. A&B=20, C&D=24, E&F=30. For example, a class C crane with a 6x37 class rope shall have a drum diameter not less than 18" times the diameter of the hoist cable. Also replace 24" in the second sentence with [16] [18] [20] [24] [30]."

SUBJECT: 3078 initiated by CESWF-EC-CS and CESWF-EC-DM, 2 July 1998; CEGS 14630
OVERHEAD ELECTRIC CRANES

1. The following are comments on the problems stated in the subject 3078:

a. Problem 1, Concur, without comment.

b. Problem 2, Concur with the problem identification. However, the solution should be to remove the second sentence of Paragraph 2.3.5 Hoist Drums, "Diameter of the drum shall be not less than 24 times the diameter of the hoist cable." The proposed solution of the 3078 repeated what was in CMAA which only addresses multiple girder, electric overhead traveling cranes. Single girder, electric overhead traveling cranes which are addressed in CMAA 74 are not addressed by the proposed solution. Since CEGS 14630 in Paragraph 1.5.2 requires compliance to CMAA 70 and CMAA 74, specifying the hoist drum size is not necessary and only adds verbiage to the guide specification. The recommended solution is to remove the sentence in question.

2. Action: CEGS 14630 will be modified by notice to incorporate approved changes.

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE
CEMP-EC
29 AUG 1998

DOCUMENT NUMBER AND DATE
CEGS 15990, JAN 1997

DOCUMENT TITLE
TAB OF HVAC SYSTEMS

DOCUMENT TYPE

DRAWING ((STANDARD) (DEFINITIVE))

SPECIFICATION ((GUIDE) (STANDARD))

MILITARY

DESIGN GUIDES

TECHNICAL MANUAL

CIVIL WORKS

ENGINEER MANUAL

ENGINEER REGULATION

OTHER

SUBJECT
TAB OF HVAC SYSTEMS WITH HOODS

ROUTING *(Check)*

ACTION RECOMMENDED BY DISTRICT COMMANDER

FROM:

(See Sheet 2)

District Commander
U.S. Army Engineer District,

OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

CEMP-EC

GARY G. BAUER, P.E.
MECHANICAL ENGINEER

DATE
29 Aug 1998

SIGNATURE



1a. TO:
HQUSACE (CEMP-EA)
WASH DC 20314-1000

INFORMATION COPY OF THIS ENG FORM 3078 WAS SENT

(Date)

1b. TO:
Division Commander
U.S. Army Engineer Division,

COMMENTS, ACTION, OR RECOMMENDATION BY DIVISION COMMANDER

OFFICE SYMBOL

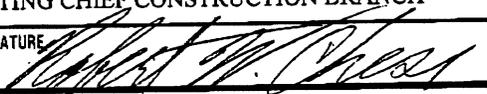
NAME AND TITLE *(Print or Type)*

CEMP-EC

ROBERT CHESI, P.E.
ACTING CHIEF CONSTRUCTION BRANCH

DATE
29 Aug 1998

SIGNATURE



2. TO:
HQUSACE (CEMP-EA)
WASH DC 20314-1000

COMMENTS OR ACTION BY COMMANDER, USACE

See attached sheet. (Attached 1).

OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

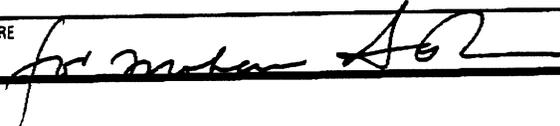
CEMP-E

DWIGHT A. BERANEK, P.E., C, ENGR AND CONST DIV.

DATE

12/14/90

SIGNATURE



3. TO:
Division Commander
U.S. Army Engineer Division,

COMMENTS BY DIVISION COMMANDER

OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

DATE

SIGNATURE

4. RETURN TO:
District Commander
U.S. Army Engineer District.

COPY FURNISHED

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)

OFFICE SYMBOL AND DATE

CEMP-EC

29 AUG 1998

PROBLEM DESCRIPTION AND ACTION RECOMMENDED (Use additional sheets if necessary.)

1. PROBLEM:

Presently CEGS 15990, TAB of HVAC Systems, does not address the TAB requirements of HVAC Systems with hoods. Kitchen hoods for dining halls, hospitals and clinics are the type most frequently encountered. Fume hoods frequently found in laboratory buildings and hospitals also need to be included. The verification of the capture velocity of each hood during TAB is necessary to ensure entrainment of steam, grease laden vapors, gases and solid materials. The interaction of the hood with the make-up air system, which must be operational during the TAB process, shall be verified. The interaction of the exhaust hood and the fire extinguishing system shall be confirmed during TAB of the HVAC system. This should include remote manual pull stations, mechanical or electrical devices, detectors, actuators, fire-actuated dampers, etc., shall be checked for proper operation during the TAB process.

2. RECOMMENDED SOLUTION:

Include the TAB of hoods in CEGS 15990. Require make-up air systems to be in operation when balancing takes place. ✓ Make sure the hoods are installed and tested per listing. ✓ Hoods in kitchens and dining halls are affected by the position of building entrance and kitchen doors. Hood capture velocity should be checked with the doors in various positions. ✓ Final velocity readings should be done with cooking equipment operating to ensure satisfactory performance under actual conditions. In addition to velocity readings, static pressure readings of the pressure differential between the room and the hood should be recorded in a convenient reference point at each hood or intake device. This will permit easy future checks designed to spot any deviation in exhaust volumes from original volumes. The requirement for a follow-up inspection of the entire exhaust system including the grease removal system during the first year to confirm proper operation should be included in the specifications.

NAME OF SUBMITTER (Optional)

GARY BAUER

WORK TELEPHONE NUMBER (Optional)

(202) 761-0205

ATTACHMENT 1

No attempt was made in CEGS 15990 to cover all possible systems especially laboratory and other exhaust hood systems with project specific requirements. Kitchen exhaust hoods are common and it is appropriate to add requirements in the TAB spec since some points are not covered in NEBB, AABC or ASHRAE. Pertaining to the Recommended Solution of the 3078 submitted by Gary Bauer:

1. Require make-up air systems to be in operation when balancing takes place.
 - This point is covered by NEBB, AABC and ASHRAE.
2. Make sure the hoods are installed and tested per listing.
 - This would be out of place to mention in CEGS 15990. It is normally covered by words similar to, "all equipment shall be installed in strict accordance to the latest manufacturer's recommendation" on the plans if not in a CEGS.
3. Hoods in kitchens and dining halls are affected by the position of building entrance and kitchen doors. Hood capture velocity should be checked with the doors in various positions.
 - Kitchen spaces are supposed to be in a negative pressure range compared to surrounding spaces. If these hoods are not drawing air as required there is building air flow problem or an improper functioning hood fan. A sentence will be added to CEGS 15990 informing the TAB team that deficient hood fan results may not mean incorrect fan performance but may be the result of improper building air flows. This may be demonstrated by testing exhaust hoods with kitchen doors open or closed. See change to 15990 below.
4. Final velocity readings should be done with cooking equipment operating to ensure satisfactory performance under actual conditions.
 - If the tested exhaust hoods show adequate readings for airflow, face velocity and so on then these hoods should perform as required for the application. An additional demonstration could be viewed during commissioning but a delay for an additional TAB of the hoods during actual kitchen operating conditions seems unnecessary.
5. In addition to velocity readings, static pressure readings of the pressure differential between the room and the hood should be recorded in a convenient reference point at each hood or intake device. This will permit easy future checks designed to spot any deviation in exhaust volumes from original volumes.
 - The hood face area is constant. A different face velocity will yield a new volume flow. The new velocity can be compared with face velocity of the original balanced state to reveal changes in air volume flow.

6. The requirement for a follow-up inspection of the entire exhaust system including the grease removal system during the first year to confirm proper operation should be included in the specifications.

- ASHRAE requires every two years for this testing. Should we really leave a contract open this long to re-check these hood exhausts?

ACTIONS

CEGS 15990:

Add the following sentences to the designer's note of paragraph 3.5.1

During the TAB of kitchen exhaust hoods, incorrect building air flows may affect the performance of fans. Opening of kitchen entrance doors may produce correct exhaust hood air flows while closed doors yield deficient readings. TAB of kitchen exhaust hoods should be performed after make-up air flows are balanced and with the kitchen entrance doors both opened and closed.

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE
CENAB-CO-SQ
20 FEB 98

DOCUMENT NUMBER AND DATE

CEGS-05120, April 1989

DOCUMENT TITLE

Structural Steel

DOCUMENT TYPE

DRAWING (STANDARD) (DEFINITIVE)

SPECIFICATION (GUIDE) (STANDARD)

MILITARY

DESIGN GUIDES

TECHNICAL MANUAL

CIVIL WORKS

ENGINEER MANUAL

ENGINEER REGULATION

OTHER

SUBJECT

ROUTING (Check)

ACTION RECOMMENDED BY DISTRICT COMMANDER

FROM:

District Commander
U.S. Army Engineer District

(See Sheet 2)

OFFICE SYMBOL

CENAB-CO

NAME AND TITLE (Print or Type)

JEFFREY J. WEBER, P.E. Acting Chief, Construction Division

DATE

23 Feb 98

SIGNATURE

1a.

TO:
HQUSACE (CEMP-EA)
WASH DC 20314-1000

INFORMATION COPY OF THIS ENG FORM 3078 WAS SENT

25 February 1998
(Date)

1b.

TO:
Division Commander
U.S. Army Engineer Division

COMMENTS, ACTION, OR RECOMMENDATION BY DIVISION COMMANDER

OFFICE SYMBOL

DATE

NAME AND TITLE (Print or Type)

SIGNATURE

2.

TO:
HQUSACE (CEMP-EA)
WASH DC 20314-1000

COMMENTS OR ACTION BY COMMANDER, USACE

Concur.

OFFICE SYMBOL

CEMP-ET

DATE

2 Dec 98

NAME AND TITLE (Print or Type)

DWIGHT A. BERANEK, P.E., CHIEF, ENG & CONST. DIV.

SIGNATURE

3.

TO:
Division Commander
U.S. Army Engineer Division

COMMENTS BY DIVISION COMMANDER

OFFICE SYMBOL

DATE

NAME AND TITLE (Print or Type)

SIGNATURE

4.

RETURN TO:
District Commander
U.S. Army Engineer District

COPY FURNISHED

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)Sheet 2 of 3
20 FEB 98

Subject: CEGS-05120, STRUCTURAL STEEL, Para. 1.3

CENAB-CO-SQ

PROBLEM:

Unsafe erection practices by contractors.

Baltimore District has had two truss collapses since September of 1996, both caused by erectors who did not provide adequate temporary bracing for trusses during erection. These were the Mologne Guest House, WRAMC, DC, in September of 1996 and the Company Operations Facility(COF) building of the Unaccompanied Enlisted Personnel Housing(UEPH) project, Ft. Detrick, MD, in August 1997. Several workers were injured.

Poor erection practices with respect to steel frames have also been found to frequently occur. Many contractors and erectors have the misconception that steel columns can be allowed to be freestanding during erection in all cases. In general, steel columns are not designed to be freestanding. Column base plate connections to footings are generally designed for bearing and shear, not moment resistance. The column footing is also generally not designed for overturning resistance.

Also, cable X-bracing is not consistently provided by the erectors. Erectors often provide only a diagonal cable (not an X) in a frame and often do not provide cables in each frame or in each direction.

Currently the Structural Steel specification (05120), para. 1.3, requires the following:

"Erection plan of the structural steel framing is required. Erection plan shall conform to the requirements of AISC S303, shall be submitted prior to erection, and shall describe all necessary temporary supports, including the sequence of installation and removal."

The AISC S303 code is the "AISC Code of Standard Practice for Steel Buildings and Bridges" and states that the erector is responsible for determining the necessary temporary supports but does not require the erector to have any particular qualifications for doing this. The experience of the erector is relied upon. However, what worked for the last job may not work for the next job, as evidenced by the truss collapses mentioned above.

Also, erectors are often willing to take the risk of the column or frame falling in order to avoid what they often feel is unnecessary work of guying or cable bracing. The contractor's risk is the government's risk and it is a risk that should not be taken.

RECOMMENDED SOLUTION:

For low-rise structural steel buildings, (a majority of our military work), require the designer to design the structure to be erected in accordance with AISC Design Guide #10, "Erection Bracing of Low-Rise Structural Steel Buildings", and require the contractor to erect in accordance with this manual. If the building is a non-low-rise structural steel buildings or if it is a structure that has complex erection requirements, have the guide specification require the contractor to submit an erection plan that has been reviewed, stamped and sealed by a structural engineer with a Professional Engineering license.

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)	Sheet 3 of 3
Subject: CEGS-05120, STRUCTURAL STEEL, Para. 1.3	CENAB-CO-SQ 20 FEB 98

Revise guide specification para. 1.3, Submittals, as follows:

Erection; []

NOTE 1: For low-rise structural steel buildings (60 feet tall or less and a maximum of 2 stories) the designer shall design the structure to be erected in accordance with AISC Design Guide #10, "Erection Bracing of Low-Rise Structural Steel Buildings", and edit the paragraph below to require the contractor to erect in accordance with this manual.

NOTE 2: If the building is a non-low-rise structural steel buildings or if it is a structure that has complex erection requirements, edit the paragraph below to require the contractor to submit an erection plan that has been reviewed, stamped and sealed by a structural engineer with a Professional Engineering license.

"Erection plan of the structural steel framing is required. Erection plan shall conform to the requirements of AISC S303 [and AISC Design Guide #10, "Erection Bracing of Low-Rise Structural Steel Buildings"], shall be submitted prior to erection, and shall describe all necessary temporary supports, including the sequence of installation and removal. [Erection plan shall be reviewed, stamped and sealed by a structural engineer with a Professional Engineering license issued by the state in which the project is located.]"

The cost of a review by a licensed engineer is minimal and is warranted for non-low rise steel buildings, or structures with complex erection requirements. The erectors judgment should not be solely relied upon for this life-safety issue. An engineer can make an analytical determination of adequacy of an erection plan, an erector generally cannot. The above mentioned collapses would not have occurred if flaws in the erection plan were found through a review by a professional engineer.

Requiring the steel to be designed for erection by the AISC Design Guide #10 will not be a major effort for the designer. The designer need only check his design against the prescriptive requirements listed in the manual and increase sizes of elements accordingly. Also, use of the manual will take the guess-work out of erection for the contractor and improve safety. Cable bracing procedures will be specified.

In addition to changing the guide specification, designing for erection by this manual must be made a Corps-wide design requirement. The new requirements should be implemented by sending out an ETL and a Construction Bulletin on the subject and inserting the requirement in the AEI to inform all those involved.

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Recommended Changes to Engineering Documents Data

Identification No.	10
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Document No	CEGS 09250
Document Title	GYPSUM WALLBOARD
Subject	ANCORAGE FOR WALL MOUNTED EQUIPMENT
Problem	There are no requirements in this section for providing any type solid backing or blocking for the installation of accessories or other wall mounted equipment. A recent construction site visit found toilet accessories being installed on gypsum board/metal stud walls only by means of dry-wall anchors. This is totally inadequate for barracks and similar type buildings subject to physical abuse.
Solution	Add a paragraph titled, Blocking, under paragraph 3.1 Interior Wall Framing as follows: Blocking shall be provided as necessary for all mounted equipment. Blocking shall be metal or wood and shall be cut to fit between framing members and rigidly anchored thereto. Under no circumstances will accessories and other wall mounted equipment be allowed be anchored directly to gypsum wallboard.
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E-mail Address of Director of Engineering & Technical Services	
Date	

3 October 1998 Concur. Frank Norcross, HQUSACE (CEMP-ET)

Recommended Changes to Engineering Documents Data

Identification No.	11
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Document No	CEGS 06100
Document Title	ROUGH CARPENTRY
Subject	MANUAL FOR WOOD FRAME CONSTRUCTION
Problem	While AF & PC T11-WCD1 (1988) Manual for Wood Frame Construction is listed among References, in the subject specification, it is not currently referenced in any other paragraph. This manual has been an important part of the curriculum of the General Construction Inspection Corps Prospect Course and provides valuable guidance for all involved in installation & inspection of wood frame construction .
Solution	Add the following opening sentence in paragraph 3.1 Installation of Framing: General framing shall be in accordance with applicable requirements of AF & PC T11-WCD1.
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E-mail Address of Engineering Chief or Construction Chief	homer.g.mcbrayer@sas02.usace.army.mil
E-mail Address of Director of Engineering & Technical Services	Carl Postlewate SAD@CESAS
Date	1998-10-01 00:00:00

15 October 1998 Concur. Stanley J. Swaford, HQUSACE (CEMP-ET)

CURRENT DESIGN CRITERIA

Recently Issued Criteria:

a. Problem: There have been instances where current design criteria were not used in project designs because designers were not aware of recently issued Engineering and Design documents.

b. Probable Solution: With the use of electronic distribution methods, recently issued Engineering and Design documents are now available to a wider user base and available in a much shorter time. Distribution methods now include the following:

(1) Current Military Programs Engineering and design criteria are available on the TECHINFO web site at ***<http://www.hnd.usace.army.mil/techinfo/index.htm>***. For further information on TECHINFO, call the Huntsville Engineering and Support Center, CEHNC-ED-ES-G, at (256) 895-1821 between 8:00 a.m. and 4:00 p.m., Central Time. A listing of recently updated engineering and design documents, including guide specifications for construction, is at web site ***<http://www.hnd.usace.army.mil/techinfo/misc/pubchg.pdf>***.

(2) New Engineering and Design criteria for Civil Works and Military Programs issued during the last 180 days are available at the HQUSACE web site at ***<http://www.usace.army.mil/inet/usace-docs/new-pubs/>***.

(3) Engineering and Design criteria for Civil Works and Military Programs are also distributed on the Construction criteria Base (CCB) System, National Institute of Building Sciences (NIBS). CCB is available in CD-ROM format and is on the CCB web site at ***<http://www.nibs.org/ccb>***. Information about subscribing to CCB may be obtained by calling NIBS at (202) 289-7800.