



**US Army Corps
of Engineers ®**

EIRS Bulletin

Engineering Improvement Recommendation System

No. 98-01

Date: 27 February 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 7 enclosures as follows:

ENCL 1: ENGINEERING AND DESIGN - Distribution of EIRS Bulletins

ENCL 2: ENGINEERING AND DESIGN - Ventilation For Flammable and HazMat Storage Facilities and Hazardous Waste Storage Facilities

ENCL 3: ENGINEERING AND DESIGN - Reference Publications

ENCL 4: ENGINEERING AND DESIGN - Revised ENG Form 3078

ENCL 5: ENGINEERING AND DESIGN - Combining of CEGS and CWGS Systems

ENCL 6: RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS - ENG Form 3078 Follow-up Actions

ENCL 7: CURRENT DESIGN CRITERIA - Recently Issued Criteria

FOR THE COMMANDER:

7 Encls


KISUK CHEUNG, P.E.
Chief, Engineering and Construction Division
Directorate of Military Programs

ENGINEERING AND DESIGN

Distribution of EIRS Bulletins:

- a. Problem: EIRS Bulletin 97-10 announced that hard copy distribution of EIRS Bulletins would not be made after 30 September 1998. To keep distribution costs as low as possible from now until 30 September 1998, EIRS Bulletin addressees were asked to review their needs to see if it would be possible to reduce hard copy distribution before the established cutoff date.

- b. Probable Solution: Response from addressees has been encouraging in that very few indicated a need for hard copy during the transition period. On the basis of these responses, this edition of the EIRS Bulletin (98-01) will be the last general hard copy distribution of the publication. Future editions will be distributed by e-mail in Adobe® PDF format as requested and will also be posted on the TECHINFO Internet site at "<http://www.hnd.usace.army.mil/techinfo/index.htm>". Many back issues are already available at this site. Requests received for hard copy in response to EIRS Bulletin 97-10 will be honored until the final cutoff date of 30 September 1998. New requests to be included on the electronic distribution list may be e-mailed to "eirsbulletin@smtp.hnd.usace.army.mil".

ENGINEERING AND DESIGN

Ventilation For Flammable and HazMat Storage Facilities and Hazardous Waste Storage Facilities:

a. Problem: Military Handbook (MIL-HDBK) 1008C, Fire Protection For Facilities Engineering, Design and Construction, does not specifically list ventilation requirements for flammable and hazardous material storage facilities and for hazardous waste storage facilities, but references MIL-HDBK 1032/2, Covered Storage. This handbook requires 6 air changes per hour, which exceeds current National Fire Protection Association (NFPA) and industry standards.

b. Probable Solution: NFPA Standard 30, Flammable and Combustible Liquid Code and the Factory Mutual Loss Prevention Data Sheet 7-29, Flammable Liquids in Drums and Small Containers, are widely accepted industry standards for fire protection of flammable and combustible liquid storage facilities. Based on these two documents, the following ventilation criteria was developed and will be used for flammable and hazardous material storage facilities, as well as for hazardous waste storage facilities.

(1) Provide 0.15 cu m/min/sq m (0.5 cfm/sq ft) of mechanical ventilation. Make-up air outlet and exhaust inlet openings will be within 0.3 m (12 in.) of the floor and arranged so that the air sweeps across all floor areas. Ventilation systems shall operate continuously and be monitored by a signal light or some other means so that any loss of ventilation would be detected promptly. Loss of ventilation will also result in a trouble signal transmitted to the installation fire department.

(2) In cold regions where outside air requires heating, recirculation of air may be used, if monitored with a fail-safe Lower Explosion Limit (LEL) detection system and if the electrical equipment in the space is suitable for Class I, Division 2 occupancies. The ventilation system will be arranged to stop recirculation and return to full exhaust when vapor concentration reaches one-fourth of the LEL in any space. As a minimum, a separate LEL detection system will be provided for each space and monitor the return air from that individual space only. Cost analysis should be performed to determine most life cycle cost effective approach. In all cases, minimum outside air will be provided to meet or exceed ASHRAE Standard 62 requirements.

(3) These ventilation requirements are applicable to storage areas only. In areas where flammable liquids are dispensed or transferred from one container to another (e.g. recoupment area), the ventilation requirement will be 0.3 cu m/min/sq m (1 cfm/sq ft) of floor area with no recirculation. Electrical equipment in the space will be suitable for Class I, Division 1 occupancies

(4) Health and industrial hygiene requirements applicable to storage of specific hazardous chemicals will also be incorporated into the design of facility ventilation system. Providing additional ventilation to remove excessive heat build-up is permitted. This can be accomplished by natural venting or a separate mechanical exhaust system.

c. Implementation: The implementation of these changes to criteria is considered to have *special application* as defined by ER 1110-345-100.

ENGINEERING AND DESIGN

Reference Publications:

- a. Problem: Reference publications used for the design and construction of facilities are many and varied--and expensive. A recent Corps-wide survey indicates that annual reference publication costs at District and Centers average \$39,000 per office. Costs at Divisions average \$9,000 per office for a rounded total of \$1,700,000 per year. With today's declining resources, many offices are finding it increasingly difficult to buy the references they need.

- b. Probable Solution: The Construction Criteria Base (CCB) Steering Committee is working with DoD and other agencies to make reference publications available to government agencies (and DoD contractors) via the CCB CD-ROM System. Many of the less expensive reference publications are already available on this system, and more are being added all the time. CCB currently has about 50% of the references used by 80% of the organizations that use CCB. Current negotiations are projected to add the ASTMs to CCB this FY. Other such "central buy" purchases are also being considered for substantial savings. As the Services already enjoy free subscriptions to CCB through the DoD bulk purchase, CCB offers a cost-effective approach for the Corps to gain access to reference documents.

ENGINEERING AND DESIGN

Revised ENG Form 3078:

a. Problem: Routing to HQUSACE of ENG Form 3078, Recommended Changes to Engineering Documents, is shown on the stock forms as HQUSACE (CEMP-EA); but as a result of a realignment of functions, the action office for ENG Forms 3078 is HQUSACE (CEMP-ET).

b. Probable Solution: ENG Form 3078, Recommended Changes to Engineering Documents, dated March 1992, with the correct HQUSACE routing is now available in electronic format for use with PerFORM Pro, PerFORM Pro Plus, ProPluss, or FormFlow software. The electronic form is available for downloading from internet site:

<http://www.usace.army.mil/inet/usace-docs/forms/formlib-all/>

Hardcopy stock forms may continue to be used, but the HQUSACE preprinted address should be changed to direct the submission to CEMP-ET.

ENGINEERING AND DESIGN

Combining of CEGS and CWGS Systems:

a. Problem: Corps of Engineers guide specifications for military construction (CEGS) and Corps of Engineers guide specifications for Civil Works construction (CWGS) have been maintained as separate systems. This has resulted in some duplication of subject matter coverage and has required two management systems.

b. Probable Solution: A decision has been made to combine the CEGS system and the CWGS system into a single CEGS system. This will result in a more consistent policy on the use of guide specifications, increased efficiencies in the production and maintenance of guide specifications, and general improvement in document quality. The transition process has started with a coordinated section numbering of specifications in accordance with the Construction Specifications Institute (CSI) recommendations contained in their MasterFormat. Other actions will be taken as the opportunity arises. More information on this effort and other specifications related matters is available on TECHINFO under the heading Additional Specifications Information.

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>
1034	CEAGS-02222A	CESAD-ET
1035	CEGS-02221	CESAD-ET
1036	CEGS-02225	CESAD-ET
1037	CEAGS-02221A	CESAD-ET
1038	CEAGS-02225A	CESAD-ET
1041	CEGS-05120	CENWD-MR-ET-E
1045	CEGS-08700	CEMP-CE
1046	CEGS-15400 CEGS-15556 CEGS-15650	CEMP-EC

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE

DOCUMENT NUMBER AND DATE
CEGS-02222A (April 1991)

DOCUMENT TITLE
EARTHWORK FOR UTILITY SYSTEMS

DOCUMENT TYPE

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

- MILITARY
 CIVIL WORKS

SUBJECT

Satisfactory/Unsatisfactory Material

ROUTING (Check)

ACTION RECOMMENDED BY DISTRICT COMMANDER

FROM:
District Commander
U.S. Army Engineer District,

(See Sheet 2)

OFFICE SYMBOL NAME AND TITLE (Print or Type)

DATE SIGNATURE

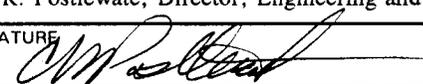
1a. TO:
HQUSACE (CEMP-EA)
WASH DC 20314-1000

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
Recommend Approval - See page two of two

OFFICE SYMBOL NAME AND TITLE (Print or Type)
CESAD-ET Carl R. Postlewait, Director, Engineering and Technical Services

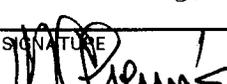
DATE SIGNATURE
30 Sep 1997 

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

COMMENTS OR ACTION BY COMMANDER, USACE

Concur

OFFICE SYMBOL NAME AND TITLE (Print or Type)
CEMP-ET Kisuk Cheung, P.E., C, Engr. & Const. Div., D/MP

DATE 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

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

1. PROBLEM:

Paragraph 2.1.1 sets forth the satisfactory material using the unified soil classification. Once this paragraph is incorporated into the contract specifications all other material should be unsatisfactory. However, paragraph 2.1.2 specifies unsatisfactory material using the unified soil classification.

The problem occurs when an error is made and all soil classifications are not covered, or when the material carries a dual classification and dual classifications are not covered in either paragraph. When either of these occur, the basic rule of law is that the interpretation would go against the drafter.

(NOTE: The legend included with some boring logs lists the Unified Soil Classifications and then, in a separate block titled "additional soil classifications" list the dual-classifications.)

2. RECOMMENDED SOLUTION:

Delete the paragraph referencing unsatisfactory material. It is not necessary and only adds confusion. Once the satisfactory material is specified all other material becomes unsatisfactory whether spelled out or not.

NAME OF SUBMITTER (Optional)

A. George Baker

WORK TELEPHONE NUMBER (Optional)

(404) 331-6813

2.1 MATERIALS

NOTE: Satisfactory material will be defined in accordance with locally available materials, type of installation, etc., and all satisfactory classes will be listed in the contract specification in accordance with the Unified Soil Classification System (ASTM D 2487).

2.1.1 Satisfactory Materials

Satisfactory materials shall consist of any material classified by ASTM D 2487 as [_____] GW, GP, and SW.

2.1.2 Unsatisfactory Materials

NOTE: Unsatisfactory material will be defined in accordance with locally available materials, type of installation, etc., and all unsatisfactory classes will be listed in the project specification in accordance with the Unified Soil Classification System (ASTM D 2487). Normally stones larger than 75 mm (3 inches) are considered unsatisfactory.

Unsatisfactory materials shall be materials that do not comply with the requirements for satisfactory materials. Unsatisfactory materials include but are not limited to those materials containing roots and other organic matter, trash, debris, frozen materials and stones larger than [_____] millimeters, (inches,) and materials classified in ASTM D 2487, as [_____] PT, OH, and OL. Unsatisfactory materials also include man-made fills, refuse, or backfills from previous construction.

DEPARTMENT OF THE ARMY CEAGS-02222A (April 1991)
U.S. ARMY CORPS OF ENGINEERS -----
ABRIDGED GUIDE SPECIFICATION FOR MILITARY CONSTRUCTION
Includes note relocation Special change (November 1995)
Includes Text Adjustment Change (Section 01300 Reference) (June 1997)
Includes changes through Notice 5 (May 1995)
Latest Notice change indicated by \&\ tokens

SECTION 02222A
EARTHWORK FOR UTILITIES SYSTEMS
04/91

NOTE: This guide specification covers earthwork
for utility systems. This specification is based
on CEAGS-02222, July 1989, including Notice \&7&\.

1.1 REFERENCES

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

- AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)
- ASTM D 422 (1963; R 1990) Particle-Size Analysis of Soils
 - ASTM D 1556 (1990) Density and Unit Weight of Soil in Place by the Sand-Cone Method
 - ASTM D 1557 (1991) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))
 - ASTM D 2167 \&(1994)\ Density and Unit Weight of Soil in Place by the Rubber Balloon Method
 - ASTM D 2487 (1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
 - ASTM D 2922 (1991) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

NOTE: The designer will address any work that will
interrupt the chemical barrier for termite protection.

1.2 REMOVAL OF EXISTING FEATURES

Existing features shall be removed as indicated and as specified in Section [_____].

1.3 DEFINITIONS

Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557.

1.4 SUBMITTALS

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-09 Reports
- Copies of all laboratory and field test reports within 24 hours of the completion of the test.

NOTE: Material will be defined in accordance with

local conditions and will be listed in accordance with the Unified Soil Classification System (ASTM D 2487).

2.1 SATISFACTORY MATERIALS

Satisfactory materials shall consist of any material classified by ASTM D 2487 as [_____] GW, GP, and SW.

2.2 UNSATISFACTORY MATERIALS

Unsatisfactory materials shall be materials that do not comply with the requirements for satisfactory materials. Unsatisfactory materials include but are not limited to those materials containing roots and other organic matter, trash, debris, frozen materials and stones larger than 75 mm, (3 inches,) and materials classified in ASTM D 2487, as [_____] PT, OH, and OL.

2.3 COHESIONLESS AND COHESIVE MATERIALS

Cohesionless materials shall include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.

2.4 UNYIELDING MATERIAL

Unyielding material shall consist of rock and gravelly soils with stones greater than 75 mm (3 inches) in any dimension or as defined by the

pipe manufacturer, whichever is smaller.

2.5 UNSTABLE MATERIAL

Unstable material shall consist of materials too wet to properly support the utility pipe, conduit, or appurtenant structure.

2.6 SELECT GRANULAR MATERIAL

Select granular material shall consist of well-graded sand, gravel, crushed gravel, crushed stone or crushed slag composed of hard, tough and durable particles, and shall contain not more than 10 percent by weight of material passing a 0.075 mm (No. 200) mesh sieve and no less than 95 percent by weight passing the 25 mm (1 inch) sieve. The maximum allowable aggregate size shall be 8 mm per 100 mm (1 inch per foot) of pipe diameter not to exceed 75 mm, (3 inches,) or the maximum size recommended by the pipe manufacturer, whichever is smaller.

2.7 INITIAL BACKFILL MATERIAL

Initial backfill shall consist of select granular material or satisfactory materials free from rocks [_____] mm (inches) (inches) or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller.

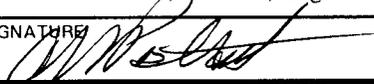
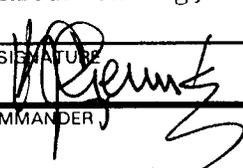
2.8 PLASTIC MARKING TAPE

Plastic marking tape shall be acid and alkali-resistant polyethylene film, 152 mm (6 inches) (6 inches) wide with minimum thickness of 0.102 mm (0.004 inch). (0.004 inch.) Tape shall have a minimum strength of 12.1 MPa (1750 psi) (1750 psi) lengthwise and 10.3 MPa (1500 psi) (1500 psi) crosswise. The tape shall be manufactured with integral wires, foil backing or other means to enable detection by a metal detector when the tape is buried up to 1 meter (3 feet) deep. The tape shall be of a type specifically manufactured for marking and locating underground utilities. The metallic core of the tape shall be encased in a protective jacket or provided with other means to protect it from corrosion. Tape color shall be as specified in TABLE 1 and shall bear a continuous printed inscription describing the specific utility.

TABLE 1. Tape Color

Red:	Electric
Yellow:	Gas, Oil, Dangerous Materials
Orange:	Telephone, Telegraph, Television, Police, and Fire Communications
Blue:	Water Systems
Green:	Sewer Systems

3.1 EXCAVATION

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS <i>(Submit a separate form in quadruplicate for each report)</i> <i>(ER 1110-345-100)</i>		OFFICE SYMBOL AND DATE
DOCUMENT NUMBER AND DATE CEGS-02221 (March 1991)	DOCUMENT TITLE EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS	
DOCUMENT TYPE		
<input type="checkbox"/> DRAWING ((STANDARD) (DEFINITIVE)) <input checked="" type="checkbox"/> SPECIFICATION ((GUIDE) (STANDARD)) <input type="checkbox"/> DESIGN GUIDES <input type="checkbox"/> TECHNICAL MANUAL <input type="checkbox"/> ENGINEER MANUAL <input type="checkbox"/> ENGINEER REGULATION <input type="checkbox"/> OTHER		<input checked="" type="checkbox"/> MILITARY <input type="checkbox"/> CIVIL WORKS
SUBJECT Satisfactory/Unsatisfactory Material		
ROUTING <i>(Check)</i>	ACTION RECOMMENDED BY DISTRICT COMMANDER	
FROM: District Commander U.S. Army Engineer District,	<i>(See Sheet 2)</i>	
	OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
	DATE	SIGNATURE
1a. TO: HQUSACE (CEMP-EA) WASH DC 20314-1000	INFORMATION COPY OF THIS ENG FORM 3078 WAS SENT _____ <i>(Date)</i>	
1b. TO: Division Commander U.S. Army Engineer Division,	COMMENTS, ACTION, OR RECOMMENDATION BY DIVISION COMMANDER Recommend Approval - See page two of two	
	OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
	CESAD-ET	Carl R. Postlewaite, Director, Engineering and Technical Services
	DATE 30 Sep 1997	SIGNATURE 
2. TO: HQUSACE (CEMP-EA) WASH DC 20314-1000	COMMENTS OR ACTION BY COMMANDER, USACE Concur	
	OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
	CEMP-ET	Kisuk Cheung, P.E., C, Engr. & Const. Div., D/MP
	DATE	SIGNATURE 
3. TO: Division Commander U.S. Army Engineer Division,	COMMENTS BY DIVISION COMMANDER 	
	OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
	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

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

1. PROBLEM:

Paragrap2.1 sets forth the satisfactory material using the unified soil classification. Once this paragraph is incorporated into the contract specifications all other material should be unsatisfactory. However, paragraph 2.2 specifies unsatisfactory material using the unified soil classification.

The problem occurs when an error is made and all soil classifications are not covered, or when the material carries a dual classification and dual classifications are not covered in either paragraph. When either of these occur, the basic rule of law is that the interpretation would go against the drafter.

(NOTE: The legend included with some boring logs lists the Unified Soil Classisfications and then, in a separate block titled "additional soil classifications" list the dual-classifications.)

2. RECOMMENDED SOLUTION:

Delete the paragraph referencing unsatisfactory material It is not necessary and only adds confusion. Once the satisfactory material is specified all other material becomes unsatisfactory whether spelled out or not.

Paragraph 2.1 should have the phrase "and shall be free of trash, debris, roots and other organic material, frozen material or stones larger than 75mm in any dimension." added to the end of the sentence.

NAME OF SUBMITTER (*Optional*)

A. George Baker

WORK TELEPHONE NUMBER (*Optional*)

(404) 331-6813

DEPARTMENT OF THE ARMY CEGS-02221 (March 1991)

U.S. ARMY CORPS OF ENGINEERS -----

GUIDE SPECIFICATION FOR MILITARY CONSTRUCTION

Includes note relocation Special change (August 1995)

Includes changes through Notice 5 (March 1996)

Latest Notice change indicated by \&\ tokens

SECTION 02221

[EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS](http://coeasc/02221.htm)

03/91

NOTE: This guide specification covers the requirements for excavation, filling and

backfilling, dewatering, shoring, and grading for building construction. This guide specification is to be used in the preparation of project specifications in accordance with ER 1110-345-720.

NOTE: This guide specification does not include provisions for separate measurement and payment for any work specified herein. Measurement and payment paragraphs may be provided in the contract specifications when unit-price payment is more equitable for rock excavation, borrow excavation, and the removal and replacement of unsatisfactory material below grades indicated. The guide includes

2221

□2.1 MATERIALS

□2.1.1 Satisfactory Materials

□ *****

□ NOTE: Unified soil classification GW, GP, GM, GC,
 □ SW, SP, SM, SC, ML, CL, MH and CH will be classified
 □ as either satisfactory or unsatisfactory and
 □ inserted in the blanks. Whether the materials are
 □ satisfactory will depend largely on the climatic and
 □ water conditions prevailing at the site, purpose of
 □ the fill, and the economic limitations of the
 □ project. Determination will be made in accordance
 □ with information contained in ASTM D 2487, TM
 □ 5-818-1/ AFM 88-3, Chapter 7, and with local
 □ experience.

□ *****

□ Satisfactory materials include materials classified in ASTM D 2487 as
 □ GW, GP, SW, [_____] [_____] and [_____] and shall be free of trash,
 □ debris, roots or other organic matter, or stones larger than 75 mm (3
 □ inches) in any dimension.

□2.1.2 Unsatisfactory Materials

□ Unsatisfactory materials include materials classified in ASTM D 2487 as
 □ Pt, OH, OL, [_____] [_____] and [_____] and any other materials not
 □ defined as satisfactory.

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE

DOCUMENT NUMBER AND DATE
CEGS-02225 (December 1994)

DOCUMENT TITLE
EARTHWORK FOR ROADWAYS, RAILROADS, AND AIRFIELDS

DOCUMENT TYPE

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

- MILITARY
 CIVIL WORKS

SUBJECT

Satisfactory/Unsatisfactory Material

ROUTING *(Check)*

ACTION RECOMMENDED BY DISTRICT COMMANDER

FROM:
District Commander
U.S. Army Engineer District,

(See Sheet 2)

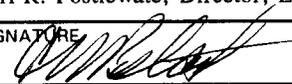
OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
DATE	SIGNATURE

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,

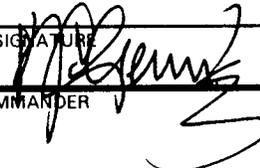
COMMENTS, ACTION, OR RECOMMENDATION BY DIVISION COMMANDER

OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
CEMAD-ET	Carl R. Postlewate, Director, Engineering and Technical Services
DATE	SIGNATURE
30 Sep 1997	

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

COMMENTS OR ACTION BY COMMANDER, USACE

Concur

OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
CEMP-ET	Kisuk Cheung, P.E., C, Engr. & Const. Div., D/MP
DATE	SIGNATURE
	

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

COMMENTS BY DIVISION COMMANDER

OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
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

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

1. PROBLEM:

Paragraph 1.4.1 sets forth the satisfactory material using the unified soil classification. Once this paragraph is incorporated into the contract specifications all other material should be unsatisfactory. However, paragraph 1.4.2 specifies unsatisfactory material using the unified soil classification.

The problem occurs when an error is made and all soil classifications are not covered, or when the material carries a dual classification and dual classifications are not covered in either paragraph. When either of these occur, the basic rule of law is that the interpretation would go against the drafter.

(NOTE: The legend included with some boring logs lists the Unified Soil Classifications and then, in a separate block titled "additional soil classifications" list the dual-classifications.)

↑
spelling

2. RECOMMENDED SOLUTION:

Delete the paragraph referencing unsatisfactory material. It is not necessary and only adds confusion. Once the satisfactory material is specified all other material becomes unsatisfactory whether spelled out or not.

NAME OF SUBMITTER (Optional)

A. George Baker

WORK TELEPHONE NUMBER (Optional)

(404) 331-6813

02225 EARTHWORK FOR ROADWAYS, RAILROADS, AND AIRFIELDS (18) DEC94

DEPARTMENT OF THE ARMY

CEGS-02225 (December 1994)

U.S. ARMY CORPS OF ENGINEERS

Superseding

CEGS-02225 (July 1989)

CEGS-02210 (December 1988)

GUIDE SPECIFICATION FOR MILITARY CONSTRUCTION

Includes note relocation Special change (August 1995)

Includes changes through Notice 1 (April 1996)

Latest Notice change indicated by \&&\ tokens

SECTION 02225

EARTHWORK FOR ROADWAYS, RAILROADS, AND AIRFIELDS

12/94

NOTE: This guide specification covers the requirements for excavation, embankment, preparation of subgrades and grading for roadways, railroads, and airfields including excavation, filling, and shaping of drainageways. This guide specification is to be used in the preparation of

Satisfactory materials shall comprise any materials classified by, ASTM D 2487 as GW, GP, SW, [_____]. Satisfactory materials for grading shall be free from roots and other organic matter, trash, debris, and frozen materials and stones larger than 150 mm (6 inches) in any dimension.

1.4.2 Unsatisfactory Materials

NOTE: Unsatisfactory material will be defined in accordance with locally available materials, design slopes, etc., and unsuitable classes will be listed in the project specifications in accordance with ASTM D 2487. Last sentence should be edited to delete inapplicable materials.

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Materials classified in ASTM D 2487 as [_____], Pt, OH, and OL are unsatisfactory. Unsatisfactory materials also include man-made fills, refuse, or backfills from previous construction.

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE

DOCUMENT NUMBER AND DATE
CEGS-02221A (March 1992)

DOCUMENT TITLE
EARTHWORK FOR BUILDINGS

DOCUMENT TYPE

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

- MILITARY
 CIVIL WORKS

SUBJECT

Satisfactory/Unsatisfactory Material

ROUTING (Check)

ACTION RECOMMENDED BY DISTRICT COMMANDER

FROM:
District Commander
U.S. Army Engineer District,

(See Sheet 2)

OFFICE SYMBOL	NAME AND TITLE (Print or Type)
DATE	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
Recommend Approval - See page two of two

OFFICE SYMBOL	NAME AND TITLE (Print or Type)
CEAD-ET	Carl R. Postlewaite, Director, Engineering and Technical Services
DATE	SIGNATURE
30 Sep 1997	

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

COMMENTS OR ACTION BY COMMANDER, USACE

Concur

OFFICE SYMBOL	NAME AND TITLE (Print or Type)
CEMP-ET	Kisuk Cheung, P.E., C, Engr. & Const. Div., D/MP
DATE	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

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

1. PROBLEM:

Paragraph 2.1.1 sets forth the satisfactory material using the unified soil classification. Once this paragraph is incorporated into the contract specifications all other material should be unsatisfactory. However, paragraph 2.1.2 specifies unsatisfactory material using the unified soil classification.

The problem occurs when an error is made and all soil classifications are not covered, or when the material carries a dual classification and dual classifications are not covered in either paragraph. When either of these occur, the basic rule of law is that the interpretation would go against the drafter.

(NOTE: The legend included with some boring logs lists the Unified Soil Classifications and then, in a separate block titled "additional soil classifications" list the dual-classifications.)

2. RECOMMENDED SOLUTION:

Delete the paragraph referencing unsatisfactory material. It is not necessary and only adds confusion. Once the satisfactory material is specified all other material becomes unsatisfactory whether spelled out or not.

NAME OF SUBMITTER (Optional)

A. George Baker

WORK TELEPHONE NUMBER (Optional)

(404) 331-6813

DEPARTMENT OF THE ARMY CEAGS-02221A (March 1992)
U.S. ARMY CORPS OF ENGINEERS -----
ABRIDGED GUIDE SPECIFICATION FOR MILITARY CONSTRUCTION
Includes note relocation Special change (November 1995)
Includes Text Adjustment Change (Section 01300 Reference) (June 1997)
Includes changes through Notice 4 (March 1996)
Latest Notice change indicated by \&\ tokens

SECTION 02221A
EARTHWORK FOR BUILDINGS
03/92

NOTE: This guide specification covers earthwork
for buildings. This Specification is based on
CEGS-02221 dated March 1991, including Notice \&5&\.

1.1 REFERENCES

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

- AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
- ASTM D 1556 (1990) Density and Unit Weight of Soil in Place by the Sand-Cone Method
 - ASTM D 1557 (1991) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
 - ASTM D 2167 (1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
 - ASTM D 2487 (1993) Classification of Soils For Engineering Purposes (Unified Soil Classification System)
 - ASTM D 4318 (1993) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.2 DEFINITIONS

NOTE: ASTM D 1557 may not be applicable for certain free-draining types of soils, in which case the

applicable requirements will be substituted. See ASTM D 1557 for details.

Degree of compaction required is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated hereinafter as percent laboratory maximum density.

1.3 SUBMITTALS

NOTE: 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 "GA" when the submittal requires Government approval or "FIO" when the submittal is for information only.

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-09 Reports
Field Density Tests; [____]. Testing of Backfill Materials; [____].

2.1 MATERIALS

2.1.1 Satisfactory Materials

NOTE: See ASTM D 2487 and TM 5-818-1/AFM 88-3 for guidance in determining satisfactory and unsatisfactory materials.

Satisfactory materials include materials classified in ASTM D 2487 as GW, GP, SW, [____,] and [____] and shall be free of trash, debris, roots or other organic matter, or stones larger than 75 mm (3 inches) in any dimension.

2.1.2 Unsatisfactory Materials

Unsatisfactory materials include materials classified in ASTM D 2487 as Pt, OH, OL, [____,] and [____] and any other materials not defined as satisfactory.

2.1.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC,

SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.

2.1.4 Expansive Soils

Expansive soils are defined as soils that have a plasticity index greater than or equal to 25 when tested in accordance with ASTM D 4318.

2.1.5 Nonfrost Susceptible (NFS) Material

Nonfrost susceptible material shall be a uniformly graded washed sand with a maximum particle size of [____] mm ([____] inch) and less than 5 percent passing the 0.075 mm (No. 200) size sieve, and with not more than 3 percent by weight finer than 0.02 mm grain size.

2.2 CAPILLARY WATER BARRIER

Capillary Water Barrier shall consist of clean, crushed, nonporous rock, crushed gravel, or uncrushed gravel. The maximum particle size shall be 37.5 mm (1-1/2 inches) and no more than 2 percent by weight shall pass the 4.75 mm (No. 4) size sieve.

3.1 CLEARING AND GRUBBING

The areas within lines 1.5 m (5 feet) outside of each building and structure line shall be cleared and grubbed of trees, stumps, roots, brush and other vegetation, debris, existing foundations, pavements, utility lines, structures, fences, and other items that would interfere with construction operations. Stumps, logs, roots, and other organic matter shall be completely removed and the resulting depressions shall be filled with satisfactory material, placed and compacted in accordance with paragraph FILLING AND BACKFILLING. Materials removed shall be disposed of [in the designated waste disposal areas] [outside the limits of Government-controlled property at the Contractor's responsibility].

3.2 TOPSOIL

Topsoil shall be stripped to a depth of [____] mm ([____] inches) below existing grade within the designated excavations and grading lines and deposited in storage piles for later use. Excess topsoil shall be disposed as specified for excess excavated material.

3.3 EXCAVATION

Excavation shall be as indicated for each building, structure, and footing except as specified. Excavation shall include trenching for utility and foundation drainage systems to a point 1.5 m (5 feet) beyond the building line for outside grease interceptors, underground fuel tanks, and all work incidental thereto. Excavation shall extend a sufficient distance

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE

DOCUMENT NUMBER AND DATE
CEGS-02225A (February 1991)

DOCUMENT TITLE
EARTHWORK FOR ROADWAYS AND RAILROADS

DOCUMENT TYPE

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

- MILITARY
 CIVIL WORKS

SUBJECT

Satisfactory/Unsatisfactory Material

ROUTING *(Check)*

ACTION RECOMMENDED BY DISTRICT COMMANDER

FROM:
District Commander
U.S. Army Engineer District,

(See Sheet 2)

OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

DATE

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
Recommend Approval - See page two of two

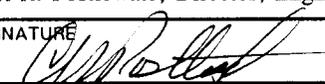
OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

CESAD-ET

Carl R. Postlewaite, Director, Engineering and Technical Services

DATE
30 Sep 1997

SIGNATURE


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

COMMENTS OR ACTION BY COMMANDER, USACE

Concur

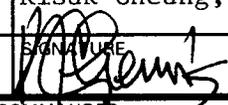
OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

CEMP-ET

Kisuk Cheung, P.E., C, Engr. & Const. Div., D/MP

DATE

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

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

1. PROBLEM:

Paragraph 2.1.1 sets forth the satisfactory material using the unified soil classification. Once this paragraph is incorporated into the contract specifications all other material should be unsatisfactory. However, paragraph 2.1.2 specifies unsatisfactory material using the unified soil classification.

The problem occurs when an error is made and all soil classifications are not covered, or when the material carries a dual classification and dual classifications are not covered in either paragraph. When either of these occur, the basic rule of law is that the interpretation would go against the drafter.

(NOTE: The legend included with some boring logs lists the Unified Soil Classifications and then, in a separate block titled "additional soil classifications" list the dual-classifications.)

2. RECOMMENDED SOLUTION:

Delete the paragraph referencing unsatisfactory material. It is not necessary and only adds confusion. Once the satisfactory material is specified all other material becomes unsatisfactory whether spelled out or not.

NAME OF SUBMITTER (Optional)

A. George Baker

WORK TELEPHONE NUMBER (Optional)

(404) 331-6813

 DEPARTMENT OF THE ARMY CEAGS-02225A (February 1991)
 U.S. ARMY CORPS OF ENGINEERS -----
 ABRIDGED GUIDE SPECIFICATION FOR MILITARY CONSTRUCTION
 Includes metric Special change (September 1993)
 Includes changes through Notice 3 (November 1993)
 Latest Notice change indicated by \&\ tokens

SECTION 02225A
EARTHWORK FOR ROADWAYS AND RAILROADS
 02/91

 NOTE: See Additional Notes A through D.

1.1 REFERENCES

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

- AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
- ASTM C 136 \&(1992)\ Sieve Analysis of Fine and Coarse Aggregates
 - ASTM D 422 (1963; R 1990) Particle-Size Analysis of Soils
 - ASTM D 1140 \&(1992)\ Amount of Material in Soils Finer than the No. 200 (75-micrometer) Sieve
 - ASTM D 1556 (1990) Density and Unit Weight of Soil In Place by the Sand-Cone Method
 - ASTM D 1557 (1991) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))
 - ASTM D 2167 (1984; R 1990) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
 - ASTM D 2487 \&(1992) Classification of Soils for Engineering Purposes (Unified Soil Classification System)\&
 - ASTM D 2922 (1991) Density of Soil and Soil Aggregate In Place by Nuclear Methods (Shallow Depth)

 - ASTM D 2937 (1983; R 1990) Density of Soil in Place by the Drive-Cylinder Method
 - ASTM D 3017 (1988) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
 - ASTM D 4318 (1984) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01300
 SUBMITTAL DESCRIPTIONS:

SD-09 Reports
 Testing; [____].
 Within 24 hours of conclusion of physical tests, [____] copies of test results, including calibration curves and results of calibration tests.

1.3 DEFINITIONS

1.3.1 Satisfactory Materials

 NOTE: Material will be defined in accordance with the Unified Soil Classification System, ASTM D 2487.

 Satisfactory materials shall comprise any materials classified by, ASTM D 2487 as GW, GP, SW, [____], free of organic or frozen materials and

rocks with any dimensions greater than 75 mm. (3 inches.)

1.3.2 Unsatisfactory Materials

Unsatisfactory materials shall comprise any materials classified by ASTM D 2487 as Pt, OH, OL, [_____].

1.3.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic. Testing required for classifying materials shall be in accordance with ASTM D 4318, ASTM C 136, ASTM D 422, and ASTM D 1140.

1.3.4 Degree of Compaction

Degree of compaction required is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 \&\. This will be abbreviated below as a percent of laboratory maximum density.

1.4 CLASSIFICATION OF EXCAVATION

No consideration will be given to the nature of the materials, and all excavation will be designated as unclassified excavation.

1.5 BLASTING

Blasting will not be permitted.

1.6 UTILIZATION OF EXCAVATED MATERIALS

All unsatisfactory materials removed from excavations shall be disposed of in designated waste disposal or spoil areas. Newly designated waste areas on Government-controlled land shall be cleared and grubbed before disposal of waste material thereon.

3.1 STRIPPING OF TOPSOIL

NOTE: Surface soil that is a heavy clay, predominantly sandy, or is lean in grass- and plant-growth qualities, will not be saved.

Where indicated, topsoil shall be stripped to a depth of 150 mm. (6 inches.) Topsoil shall be spread on areas already graded and prepared for topsoil, or deposited in stockpiles at locations indicated. Topsoil shall be kept separate from other excavated materials, brush, litter, objectionable weeds, roots, stones larger than 50 mm (2 inches) in diameter, and other materials that would interfere with planting and maintenance operations.

3.2 EXCAVATION

The Contractor shall perform excavation of every type of material encountered within the limits of the project, to the lines, grades, and elevations indicated and as specified herein. Grading shall be in conformity with the typical sections shown and the tolerances specified in paragraph FINISHING. Satisfactory excavated materials shall be transported to and placed in fill or embankment within the limits of the work. Material required for fill or embankment in excess of that produced by excavation within the grading limits shall be excavated from the borrow areas indicated or from other approved areas selected by the Contractor as specified herein.

3.2.1 Ditches, Gutters, and Channel Changes

Care shall be taken not to excavate ditches and gutters below grades shown. The Contractor shall maintain all excavations free from detrimental quantities of leaves, brush, sticks, trash, and other debris until final acceptance of the work.

3.2.2 Drainage Structures

Trenches and foundation pits shall be of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Rock or other hard foundation material shall be cleaned of loose debris and cut to a firm surface either level, stepped, or serrated, as shown or as directed. Loose disintegrated rock

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS <i>(Submit a separate form in quadruplicate for each report)</i> <i>(ER 1110-345-100)</i>		OFFICE SYMBOL AND DATE CENWD-MR-ET-E
DOCUMENT NUMBER AND DATE CEGS-05120	DOCUMENT TITLE STRUCTURAL STEEL	
DOCUMENT TYPE <input type="checkbox"/> DRAWING ((STANDARD) (DEFINITIVE)) <input checked="" type="checkbox"/> SPECIFICATION ((GUIDE) (STANDARD)) <input type="checkbox"/> DESIGN GUIDES <input type="checkbox"/> TECHNICAL MANUAL <input type="checkbox"/> ENGINEER MANUAL <input type="checkbox"/> ENGINEER REGULATION <input type="checkbox"/> OTHER		<input checked="" type="checkbox"/> MILITARY <input type="checkbox"/> CIVIL WORKS
SUBJECT ADDITIONAL REQUIREMENTS FOR SPRAY APPLIED FIREPROOFING		
ROUTING <i>(Check)</i>		ACTION RECOMMENDED BY DISTRICT COMMANDER <i>(See Sheet 2)</i>
FROM: District Commander U.S. Army Engineer District,		OFFICE SYMBOL
		NAME AND TITLE <i>(Print or Type)</i>
		DATE
		SIGNATURE
1a. TO: HQUSACE (CEMP-EA) WASH DC 20314-1000	INFORMATION COPY OF THIS ENG FORM 3078 WAS SENT _____ <i>(Date)</i>	
1b. TO: Division Commander U.S. Army Engineer Division,	COMMENTS, ACTION, OR RECOMMENDATION BY DIVISION COMMANDER See attached comments.	
	OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
	CENWD-MR-ET-E	KRISTINE L. ALLAMAN, P.E. Chief, Engineering Division
	DATE 25 NOV 97	SIGNATURE <i>Des Raj Soyal</i>
2. TO: HQUSACE (CEMP-EA) WASH DC 20314-1000	COMMENTS OR ACTION BY COMMANDER, USACE SEE ATTACHED SHEET.	
	OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
	CEMP-E	KISUK CHEUNG, P.E. C, ENGR AND CONST. DIV., D/MP
	DATE 6 Jan 98	SIGNATURE
3. TO: Division Commander U.S. Army Engineer Division,	COMMENTS BY DIVISION COMMANDER	
	OFFICE SYMBOL	NAME AND TITLE <i>(Print or Type)</i>
	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
CENWD-MR-ET-E

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

1.

PROBLEM:

Recommend approval of 3078 from CENWK-EP-DA and DS for document CEGS 05120, Structural Steel, dated 10-17-97, with the following change:

Delete the last sentence proposed for paragraph "3.3 STRUCTURAL STEEL TO RECEIVE FIREPROOFING" and substitute the following sentence:

"See the drawings for locations of steel to receive fireproofing and apply the fireproofing in accordance with Specifications Section 07250, Spray-Applied Fireproofing."

2.

RECOMMENDED SOLUTION:

NAME OF SUBMITTER (Optional)

WORK TELEPHONE NUMBER (Optional)

CEMP-ET

8 December 1997

SUBJECT: 3078 initiated by CENWK-EP-DA, 17 Oct 1997; CEGS 05120, STRUCTURAL STEEL

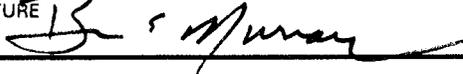
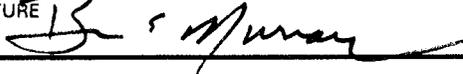
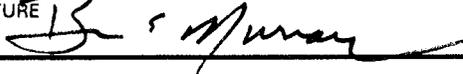
1. Concur, except for the following:

Delete the last sentence proposed for paragraph, "3.3 STRUCTURAL STEEL TO RECEIVE FIREPROOFING" and substitute the following sentence:

"See specification section 07250 Spray-Applied Fireproofing."

2. The reason for above change is that CEGS 07250 usually specifies the extent of steel receiving fireproofing, and not the drawings, unless CEGS 07250 indicates such.

25

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS <i>(Submit a separate form in quadruplicate for each report)</i> <i>(ER 1110-345-100)</i>		OFFICE SYMBOL AND DATE CENWK-EP-DA CENWK-EP-DS				
DOCUMENT NUMBER AND DATE CEGS-05120	DOCUMENT TITLE STRUCTURAL STEEL					
DOCUMENT TYPE <input type="checkbox"/> DRAWING ((STANDARD) (DEFINITIVE)) <input checked="" type="checkbox"/> SPECIFICATION ((GUIDE) (STANDARD)) <input type="checkbox"/> DESIGN GUIDES <input type="checkbox"/> TECHNICAL MANUAL <input type="checkbox"/> ENGINEER MANUAL <input type="checkbox"/> ENGINEER REGULATION <input type="checkbox"/> OTHER		<input checked="" type="checkbox"/> MILITARY <input type="checkbox"/> CIVIL WORKS				
SUBJECT ADDITIONAL REQUIREMENTS FOR SPRAY APPLIED FIREPROOFING						
ROUTING (Check)		ACTION RECOMMENDED BY DISTRICT COMMANDER <i>(See Sheet 2)</i>				
FROM: District Commander U.S. Army Engineer District,		<table border="1"> <tr> <td>OFFICE SYMBOL CENWK-EP</td> <td>NAME AND TITLE (Print or Type) BRUCE C. MURRAY, P.E. CHIEF, ENGINEERING AND PLANNING DIVISION</td> </tr> <tr> <td>DATE 10-17-97</td> <td>SIGNATURE </td> </tr> </table>	OFFICE SYMBOL CENWK-EP	NAME AND TITLE (Print or Type) BRUCE C. MURRAY, P.E. CHIEF, ENGINEERING AND PLANNING DIVISION	DATE 10-17-97	SIGNATURE 
OFFICE SYMBOL CENWK-EP	NAME AND TITLE (Print or Type) BRUCE C. MURRAY, P.E. CHIEF, ENGINEERING AND PLANNING DIVISION					
DATE 10-17-97	SIGNATURE 					
<input checked="" type="checkbox"/> 1a. TO: HQUSACE (CEMP-EA)	INFORMATION COPY OF THIS ENG FORM 3078 WAS SENT _____ (Date)					
<input checked="" type="checkbox"/> 1b. TO: Division Commander U.S. Army Engineer Division,	COMMENTS, ACTION, OR RECOMMENDATION BY DIVISION COMMANDER <table border="1"> <tr> <td>OFFICE SYMBOL CEMRR-ET</td> <td>NAME AND TITLE (Print or Type) KRISTENE L. ALLAMAN CHIEF, ENGINEERING DIVISION</td> </tr> <tr> <td>DATE</td> <td>SIGNATURE</td> </tr> </table>		OFFICE SYMBOL CEMRR-ET	NAME AND TITLE (Print or Type) KRISTENE L. ALLAMAN CHIEF, ENGINEERING DIVISION	DATE	SIGNATURE
OFFICE SYMBOL CEMRR-ET	NAME AND TITLE (Print or Type) KRISTENE L. ALLAMAN CHIEF, ENGINEERING DIVISION					
DATE	SIGNATURE					
<input checked="" type="checkbox"/> 2. TO: HQUSACE (CEMP-EA) WASH DC 20314-1000	COMMENTS OR ACTION BY COMMANDER, USACE See 3078 # 1041 <table border="1"> <tr> <td>OFFICE SYMBOL CEMP-EA</td> <td>NAME AND TITLE (Print or Type) KISUK CHEUNG, P.E. CHIEF, ENGINEERING DIVISION</td> </tr> <tr> <td>DATE</td> <td>SIGNATURE</td> </tr> </table>		OFFICE SYMBOL CEMP-EA	NAME AND TITLE (Print or Type) KISUK CHEUNG, P.E. CHIEF, ENGINEERING DIVISION	DATE	SIGNATURE
OFFICE SYMBOL CEMP-EA	NAME AND TITLE (Print or Type) KISUK CHEUNG, P.E. CHIEF, ENGINEERING DIVISION					
DATE	SIGNATURE					
<input checked="" type="checkbox"/> 3. TO: Division Commander U.S. Army Engineer Division,	COMMENTS BY DIVISION COMMANDER <table border="1"> <tr> <td>OFFICE SYMBOL CEMRR-ET</td> <td>NAME AND TITLE (Print or Type) KRISTENE L. ALLAMAN CHIEF, ENGINEERING DIVISION</td> </tr> <tr> <td>DATE</td> <td>SIGNATURE</td> </tr> </table>		OFFICE SYMBOL CEMRR-ET	NAME AND TITLE (Print or Type) KRISTENE L. ALLAMAN CHIEF, ENGINEERING DIVISION	DATE	SIGNATURE
OFFICE SYMBOL CEMRR-ET	NAME AND TITLE (Print or Type) KRISTENE L. ALLAMAN CHIEF, ENGINEERING DIVISION					
DATE	SIGNATURE					
<input checked="" type="checkbox"/> 4. RETURN TO: District Commander U.S. Army Engineer District,	COPY FURNISHED					

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)

OFFICE SYMBOL AND DATE
CENWK-EP-DA
CENWK-EP-DS

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

1. PROBLEM:

THERE IS ONLY ONE MENTION OF SPECIAL TREATMENT FOR STEEL TO RECEIVE SPRAY APPLIED FIREPROOFING IN CEGS-05120, STRUCTURAL STEEL. THIS IS IN SECTION 3 UNDER FABRICATION.

"Structural steelwork, except surfaces of steel to be encased in concrete, surfaces to be field welded, surfaces to be fireproofed, and contact surfaces of friction-type high-strength bolted connections shall be prepared for painting in accordance with the AISC-04 and primed with the specified paint."

THERE IS NO COORDINATION STATEMENT REFERENCING SPECIFICATION SECTION 07250, SPRAY APPLIED FIREPROOFING OR ANY INDICATION AS TO WHICH STEEL IS TO BE FIREPROOFED. IF THIS STEEL IS PAINTED OR NOT PROPERLY CLEANED. A CONTRACT MODIFICATION MAY BE REQUIRED TO PROPERLY PREPARE THE STEEL FOR APPLICATION OF THE FIREPROOFING.

2. RECOMMENDED SOLUTION:

Add the following new paragraphs to the guide specification, CEGS-05120.

NOTE TO DESIGNER: Co-ordinate with the architect/fire protection engineer. If spray applied fireproofing is being used, include the paragraph below in the specification. Include the weight of the fireproofing in the building dead loads.

3.3 STRUCTURAL STEEL TO RECEIVE FIREPROOFING

Steel, which is to receive sprayed-on fireproofing, shall be free of all grease, mill oil, paraffin, dirt, salt, scale, loose rust and other contaminants which would impair adhesion of the fireproofing. Any required cleaning shall be done prior to installation using a cleaning method that is compatible with the sprayed-on fireproofing. No steel, which is to receive sprayed-on fireproofing, shall be painted unless the paint is compatible with the fireproofing being applied. See the drawings for locations of steel to receive fireproofing and specification section 07250, Spray-Applied Fireproofing.

NAME OF SUBMITTER (Optional)

JOHN BOURDO, CHIEF, ARCHITECTURAL SECTION

WORK TELEPHONE NUMBER (Optional)

(816) 983-3236

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE
CEMP-EC, 14 Jan 1998

DOCUMENT NUMBER AND DATE
CEGS 08700, June 1997

DOCUMENT TITLE
Builders' Hardware

DOCUMENT TYPE

DRAWING ((STANDARD) (DEFINITIVE))

SPECIFICATION ((GUIDE) (STANDARD))

DESIGN GUIDES

TECHNICAL MANUAL

MILITARY

ENGINEER MANUAL

ENGINEER REGULATION

OTHER

CIVIL WORKS

SUBJECT
Hinge Mounted Door Stops

ROUTING *(Check)*

ACTION RECOMMENDED BY DISTRICT COMMANDER

(See Sheet 2)

FROM:
District Commander
U.S. Army Engineer District,

OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

CEMP-CE

Jim Lovo, Act Chief, Construction & Design Branch, E&C Div, Military Programs

DATE

14 Jan 98

SIGNATURE

[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

Concur.

OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

CEMP-ET

Mohan Singh, Chief, Technical Branch, E&C Div, Military Programs

DATE

2/4/98

SIGNATURE

[Signature]

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

COMMENTS OR ACTION BY COMMANDER, USACE

Concur.

OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

CEMP-E

Kisuk Cheung, Chief, E&C Division, Military Programs

DATE

2/4/98

SIGNATURE

[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
CEMP-EC, Jim Lovo, Robert Chesi, C J Harris

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)

OFFICE SYMBOL AND DATE
CEMP-EC, 14 Jan 1998

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

1. PROBLEM:

Hinge mounted door stops impart a huge mechanical disadvantage to the hinge, which transmits a very large force to the end of the door stop. This can be especially destructive to hollow core wooden doors, such as those specified for family housing. Also, there is a tendency to wrack the hinges on all types of doors with very little applied force.

2. RECOMMENDED SOLUTION:

Hinge mounted door stops should be expressly prohibited by CEGS 08700.

NAME OF SUBMITTER (Optional)

C J Harris

WORK TELEPHONE NUMBER (Optional)

(202) 761-8801

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE
CEMP-EC
16-JAN-1998

DOCUMENT NUMBER AND DATE
15400 08/94, 15556 01/90, AND
15650 07/92

DOCUMENT TITLE
15400 PLUMBING GENERAL, 15556 FORCE HOT WATER HEATING
AND 15650 CENTRAL REFRIGERATED AC SYSTEMS.

DOCUMENT TYPE

DRAWING ((STANDARD) (DEFINITIVE))

SPECIFICATION ((GUIDE) (STANDARD))

MILITARY

DESIGN GUIDES

TECHNICAL MANUAL

CIVIL WORKS

ENGINEER MANUAL

ENGINEER REGULATION

OTHER

SUBJECT
TESTING REQUIREMENTS FOR BACKFLOW PREVENTERS

ROUTING *(Check)*

ACTION RECOMMENDED BY DISTRICT COMMANDER

FROM:
District Commander
U.S. Army Engineer District,

(See Sheet 2)

OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

CEMP-EC

GARY G. BAUER MECHANICAL ENGINEER

DATE
16 Jan 1998

SIGNATURE
Gary G. Bauer P.E.

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

JAMES LOVO, ACTING CHIEF CONSTRUCTION BRANCH

DATE
20 Jan 98

SIGNATURE
James Lovo

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

COMMENTS OR ACTION BY COMMANDER, USACE

Concur.

OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

CEMP-E

KISUK CHEUNG, C, ENGR & CONST. DIV, D/MP

DATE
1/30/98

SIGNATURE
Kisuk Cheung

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

16-JAN-1998

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

1. PROBLEM:

Backflow Preventers are not uniformly referenced between the different specification sections in division 15. Presently CEGS 15650, 15556 and 15569 make the following statements in reference to Backflow Preventers.

CEGS 15650, Paragraph 2.11.2.13 states "Backflow preventers shall be in accordance with section 15400 PLUMBING GENERAL PURPOSE."

CEGS 15556, Paragraph 2.6 states " Connections shall be provided which include consecutively in line a strainer, backflow prevention device, and water pressure regulator. The backflow prevention device shall be provided as indicated and in compliance with Section 15400 PLUMBING, GENERAL PURPOSE."

CEGS 15569, Paragraph 3.2.1, only has a note to the designer which states "Note: A backflow preventer is required and will be described on the drawings. The backflow preventer will be as specified in Section 15400 PLUMBING, GENERAL PURPOSE or Section 15405 PLUMBING, HOSTPITAL."

2. RECOMMENDED SOLUTION:

Change each specification section in division 15 that requires a backflow preventer and references CEGS 15400 GENERAL PURPOSE PLUMBING to read uniformly. Each section should reference CEGS 15400 for both the standards that the backflow preventer must comply with in CEGS 15400 paragraph 2.5 and the testing requirements for backflow preventers in paragraph 3.9.1.1. Presently each specification does not specifically reference the field testing requirements in CEGS 15400 making it difficult to get the test performed on each backflow preventer.

NAME OF SUBMITTER (Optional)

GARY G. BAUER

WORK TELEPHONE NUMBER (Optional)

(202) 761-0205

CURRENT DESIGN CRITERIA

Recently Issued Criteria:

a. Problem: There have been instances where current design criteria were not used in project designs because recently issued Engineering and Design documents were placed in a central office file and were not distributed to design personnel who need to be aware of the current criteria and guidance.

b. Probable Solution: From all reports, EIRS Bulletins are widely circulated within Engineering Division of USACE Commands and are readily accessible to all engineering and design personnel. This enclosure includes a listing of recently issued criteria.

Engineering and Design criteria for Civil Works and Military Programs are distributed by 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. Current Military Programs Engineering and design criteria are also available on our 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, CEHND-ED-ES-G, at (205) 895-1821 between 8:00 a.m. and 4:00 p.m., Central Time.

PUBLICATION LIST

<u>PUB-NO.</u>	<u>PUBLICATION</u>	<u>PUB-DATE</u>
ETL 1110-1-181	Procurement of Energy Efficient Liquid Chillers	JAN 98
ETL 1110-3-487	Use of Petroleum Contaminated Soil In Cold-Mix Asphalt Stabilized Base Course	MAR 98
ETL 1110-3-488	Design and Construction Management Practices for Concrete Pavements	MAR 98