



**US Army Corps
of Engineers ®**

EIRS Bulletin

Engineering Improvement Recommendation System

No. 98-02

Date: 22 April 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 5 enclosures as follows:

ENCL 1: ENGINEERING AND DESIGN - Minimizing Efflorescence on Masonry Construction

ENCL 2: ENGINEERING AND DESIGN - Use of Current Guide Specifications

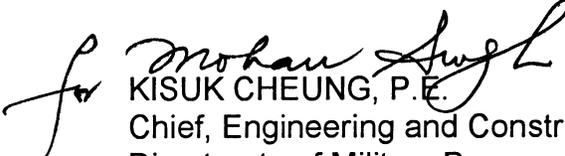
ENCL 3: ENGINEERING AND DESIGN - Distribution of EIRS Bulletins

ENCL 4: RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS - ENG Form 3078 Follow-up Actions

ENCL 5: CURRENT DESIGN CRITERIA - Recently Issued Criteria

FOR THE COMMANDER:

5 Encls


KISUK CHEUNG, P.E.

Chief, Engineering and Construction Division
Directorate of Military Programs

ENGINEERING AND DESIGN

Minimizing Efflorescence on Masonry Construction:

a. Problem: Efflorescence continues to be a concern at the installations throughout the Army. The unsightly condition detracts from an otherwise attractive structure. Efflorescence is not harmful in itself but gives the appearance of an inferior product. Efflorescence is a condition that exists in virtually all masonry construction. The extent varies depending on climatic conditions and construction materials. It is a deposit of water-soluble salts left on the surface of masonry as the water evaporates. Three conditions must exist before efflorescence will occur: (1) there must be water-soluble salts present in the masonry units or mortar, (2) there must be sufficient moisture in the masonry structure to put the salts into solution, and (3) there must be a path for the solution to migrate through to the surface where the moisture can evaporate leaving the dissolved material as a precipitate.

b. Probable Solution: Elimination of any one of these factors will prevent efflorescence. Efflorescence is affected by temperature, humidity, and wind. In the summer, even after long rainy periods, moisture evaporates so rapidly that comparatively small amounts of salts are brought to the surface. Efflorescence is more common in the winter months when the evaporation rate is slower. Some salts such as calcium hydroxide are more soluble in cold weather. To minimize efflorescence in new construction, decrease the amounts of soluble salts present in the masonry materials, decrease water present in the masonry assembly, and prevent the passage of moisture through the masonry. Proper design and construction quality assurance measures relative to masonry structures will minimize the occurrence of efflorescence. Examples are flashing details, capping, tight head and bed joints. Sealers are not recommended since this could lock in water vapor and the hydrostatic pressure that can build up will result in spalling of the surface. Tuckpointing can be done however this is expensive. Close attention to the details that will eliminate the entrance of water from the start is the best solution. Integrated teamwork between the architects and structural engineers will certainly improve the quality of design that will prevent entry of water into the masonry structure. Workmanship affects water permeance of masonry more than any other factor. The points on the wall-face most accessible to the entrance of water are at the junctures of brick and mortar. Unbonded mortar joints and unfilled mortar joints will cause excessive water penetration into the wall. Mortar having high water retentivity should be used with highly absorptive brick during hot, dry weather.

Mortar having low water retentivity should be used with low absorptive brick during cold weather.

c. Implementation: Minimizing the Soluble Salts

1. Use washed sand that meets the requirements of ASTM C33 (ASTM 1992b) for concrete and ASTM C 144 (ASTM 1992c) for mortar.

2. Use low-alkali cement.

3. Use dehydrated lime free from calcium sulfate when using lime for mortar.

4. Use clean mixing water. Do not use salt water.

5. Never use masonry units known to effloresce while stockpiled. Use brick passing efflorescence tests in ASTM C67 (ASTM 1992d).

6. Be certain the mixer, mortar box, mortarboards, and tools are not contaminated or corroded.

7. Consider using autoclaved concrete masonry units.

8. Materials should be stored in such a manner as to avoid their saturation by rain, snow, and ground moisture, as well as contamination from salts.

Minimizing Moisture and Water Penetration into Masonry

1. Prevent inadequate hydration of cementitious materials caused by cold temperatures, premature drying, or improper use of admixtures. Provide curing methods as specified.

2. Prevent entry of water by giving proper attention to design details for correct installation of water stops, flashing, and copings.

3. During construction, all walls should be kept dry by covering with a waterproof membrane at the end of each day's work or when rain is expected.

4. Install vapor barriers in exterior walls or apply coatings to interior surfaces which will minimize condensation within masonry.

5. Tool all mortar joints with a V- or concave-shaped jointer to compact the mortar at the exposed surface and create a tight bond between the mortar and masonry units.

6. Carefully plan the installation of lawn sprinklers or other water source so that

walls are not subjected to unnecessary wetting.

7. If feasible, use wide overhanging roofs to protect walls from rainfall.

8. Design for pressure equalization between the outside and the void within the masonry wall.

Removal of Efflorescence

A. Efflorescence is relatively easy to remove compared to other stains. Many efflorescing salts are water soluble, and many will disappear with normal weathering. Efflorescence should be removed in warm, dry weather, since removal in cold, wet weather may bring more salts to the surface. To minimize the effects of cleaning an effloresced masonry wall, always begin with the gentlest method possible and progress toward harsher methods as needed. A suggested sequence of test approaches for removal of efflorescence is:

1. Dry scrubbing with a stiff fiber brush.
2. Wetting down the surface, scrubbing with a stiff fiber brush, followed by low-pressure water.
3. Steam cleaning or high-pressure washing.
4. Chemical cleaning compounds.
5. Abrasive blasting, either wet or dry.

B. Dilute acids (muriatic, phosphoric, and acetic) are normally the chemicals selected when removing efflorescence with chemicals. A very dilute acid (1 part muriatic acid to 19 parts water) should be tried first before stronger acid solutions are used. Listed below are dilutions that may be used:

- 1 part muriatic acid in 9 to 19 parts water
- 1 part phosphoric acid in 9 parts water
- 1 part phosphoric and 1 part acetic acids in 19 parts water.

C. For efflorescence that is deep into the masonry, a poultice may be used. A poultice is a paste made with a solvent or reagent and an inert material. It works by dissolving the efflorescence and leaching or pulling the solution into the poultice. The inert material may be fuller's earth, diatomaceous earth, bentonite, or a paper pulp. The wall is saturated for several days by spraying with water until wetting has occurred for a considerable depth. When the wetting process is complete, the absorbent inert material is made into a paste with water. The poultice is then plastered on to the wet wall. As the poultice dries out, it draws salt-laden water from the masonry.

ENGINEERING AND DESIGN

Use of Current Guide Specifications:

a. Problem: Reports indicate that some offices have selected guide specifications for use in projects based on information other than that contained in the current index of Corps of Engineers Guide Specifications (CEGS). This has resulted in outdated requirements being used in projects.

b. Probable Solution: The most current CEGS must be used in the preparation of project specifications. The current CEGS and CEGS Index are maintained on a monthly basis on the TECHINFO internet site (<http://www.hnd.usace.army.mil/techinfo/index.htm>) and on a quarterly basis on the Construction Criteria Base (CCB) System available from the National Institute of Building Sciences (NIBS) by calling 202-289-7800 or by internet link from TECHINFO.

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, USACE offices were given the opportunity to designate a point of contact (POC) to receive EIRS Bulletins by e-mail in PDF format. It is recognized that many offices now find that the availability of EIRS Bulletins on the internet is adequate for their need; however, some offices may not be aware that they can appoint a POC to receive EIRS Bulletins in electronic format for redistribution within their organization.

b. Probable Solution: New requests for designation of a POC to receive EIRS Bulletins in PDF format may be e-mailed to "*eirsbulletin@smtp.hnd.usace.army.mil*". New editions of the EIRS Bulletin, and many back issues, will continue to be available on the TECHINFO Internet site at "*http://www.hnd.usace.army.mil/techinfo/index.htm*". After 30 September, 1998 EIRS Bulletins will be available only on TECHINFO.

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>
1039	CEGS-02222	CESAD-ET
1043	CEGS-16263	CENWS-EN
1044	CEGS-13977	CEMP-EC
1047	CEGS-09250	CESAS-EN
1048	CEGS-15400	CEMP-EC
1049	CEGS-13202	CEMP-EC
1050	CEGS-15895	CESWF-EC
1052	CEGS-15400	CEMP-EC

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE

HUGHES GAA
NAJIDI
SINGH md
CEMPE

DOCUMENT NUMBER AND DATE
CEGS-02222 (July 1989)

DOCUMENT TITLE
EXCAVATION, TRENCHING, AND BACKFILLING FOR ULILITY 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 <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
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	SIGNATURE
30 Sep 1997	<i>[Signature]</i>

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
11/3/97	<i>for moham Singh</i>

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 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.

Paragraph 2.1.1 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

```
<html>
<head>
<title>02222 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS (14)
JUL89</title>
</head>
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*****
DEPARTMENT OF THE ARMY                CEGS-02222 (July 1989)
U.S. ARMY CORPS OF ENGINEERS          -----
                                     Superseding
                                     CEGS-02221 (September 1986)
                                     GUIDE SPECIFICATION FOR MILITARY CONSTRUCTION
Includes note relocation Special change (August 1995)
Includes changes through Notice 7 (May 1995)
Includes Text Adjustment 1 (March 1991)
Latest Notice change indicated by \&&\ tokens
*****
```

```
SECTION 02222
<a href="./coeasc/02222.htm"> EXCAVATION, TRENCHING, AND BACKFILLING FOR
UTILITIES SYSTEMS </a>
07/89
```

```
*****
NOTE: This guide specification covers the
requirements for excavation, trenching, and
backfilling for utilities systems to the points of
connection within 1.5 m (5 feet) of the buildings.
This guide specification is to be used in the
preparation of project specifications in accordance
with ER 1110-345-720.
*****
```

1.1 REFERENCES

```
*****
NOTE: Issue (date) of references included in
project specifications need not be more current than
provided by the latest change (Notice) to this guide
specification.
*****
```

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 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

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE

CENWS-CO-QA
1 October 1997

DOCUMENT NUMBER AND DATE
CEGS-16263
June 1997

DOCUMENT TITLE
Diesel-Generator Set Stationary 100-2500 KW, with Auxiliaries

DOCUMENT TYPE

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

- MILITARY

 CIVIL WORKS

SUBJECT
Skid Mounted Base Fuel Tank

ROUTING (Check)

ACTION RECOMMENDED BY DISTRICT COMMANDER

FROM:
CENWS-CC-QA
District Commander
U.S. Army Engineer District, SEATTLE
P.O. Box 3755
SEATTLE, WA 98124

(See Sheet 2)
OFFICE SYMBOL: CENWS-EN
NAME AND TITLE (Print or Type): P.M. O'Dell, P.E., Chief, Engineering Division
DATE: for
SIGNATURE: [Signature]

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

INFORMATION COPY OF THIS ENG FORM 3078 WAS SENT 29 Oct 97
(Date)

1b. TO:
NP-ET-E
Division Commander
U.S. Army Engineer Division, NWD
P.O. Box 2870
Portland OR
97208-2870

Forwarded for evaluation. The definitions in CEGS 16263 for "self-supporting" and "integral" day tank" are ambiguous, as subject proposal illustrates. Recommend that the USACE Fire Protection Engineer be consulted as to the need for base-mounted tanks to be double-walled.
OFFICE SYMBOL: CENWD-ET
NAME AND TITLE (Print or Type): DAVID N KELLER, P.E. Chief, Engineering Division
DATE: NOV 12 1997
SIGNATURE: [Signature]

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

COMMENTS OR ACTION BY COMMANDER, USACE
Concur except reference to "doublewall tank construction" will be deleted.
OFFICE SYMBOL: CEMP-E
NAME AND TITLE (Print or Type): KISUK CHEUNG, P.E. C, ENGR AND CONST DIV., DM/P
DATE: 4/17/98
SIGNATURE: for Mohan [Signature]

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

COMMENTS BY DIVISION COMMANDER
OFFICE SYMBOL: [Blank]
NAME AND TITLE (Print or Type): [Blank]
DATE: [Blank]
SIGNATURE: [Blank]

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

COPY FURNISHED

1043

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)

OFFICE SYMBOL AND DATE
CENWS-CO-QA
1 October 1997

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

1. PROBLEM:

No option for skid mounted base fuel tank. Skid mounted base tanks are often more desirable and economical than a separate (above ground or underground) fuel tank; and, are especially suited for self contained units.

2. RECOMMENDED SOLUTION:

See marked up CEGS-16263 excerpt (enclosure 1). Also, see typical catalog cut (enclosure 2).

NAME OF SUBMITTER (Optional)

Louis J. Feller, P.E.

WORK TELEPHONE NUMBER (Optional)

(206) 764-3481

///

2.3.4.2 Capacity, Standby

Each day-tank shall have capacity [as shown] [to supply fuel to the engine for an uninterrupted [4-hour] [] period at 100 percent rated load without being refilled; **and for day tanks**, plus any fuel which may be returned to the main fuel storage tank. The calculation of the capacity of each day tank shall incorporate the requirement to stop the supply of fuel into the day tank at 90 percent of the ultimate volume of the tank].

2.3.4.3 Drain Line

Each day-tank drain line shall be accessible and equipped with a shutoff valve. Self-supporting day tanks shall be arranged to allow drainage into a 305 mm (12 inch) (12 inch) tall bucket.

2.3.4.4 Local Fuel Fill

Each local fuel fill port on the day-tank shall be provided with a screw-on cap **[and a spill basin]**.

2.3.4.5 Fuel Level Controls (day tanks only)

a. Each day tank shall have a float-switch assembly to perform the following functions: (1) Start the supply of fuel into the day tank when the fuel level is at the "Low" level mark, 75 percent of the total tank capacity. (2) Stop the supply of fuel into the day tank when the fuel level is at 90 percent of the total tank capacity. (3) Activate the "Overfill Fuel Level" alarm at 95 percent of the total tank volume. (4) Activate the "Low Fuel Level" alarm at 70 percent of the total tank volume. (5) Activate the automatic fuel supply shut-off valve located on the fill line of the day tank and shut down the fuel pump which supplies fuel to the day tank at 95 percent of the total tank volume. The flow of fuel shall be stopped before any fuel can be forced into the fuel overflow line.

2.3.4.6 Arrangement

[Integral day tanks may allow gravity flow into the engine. Gravity flow tanks shall be provided with an internal or external valve located as near as possible to the shell of the tank. The valve shall close when the engine is not operating. Integral day tanks shall be provided with any necessary pumps to supply fuel to the engine as recommended by the generator set manufacturer. The overflow connection and the fuel supply line for integral day tanks which do not rely upon gravity flow shall be arranged so that the highest possible fuel level is below the fuel injectors.] [Each self-supporting day tank shall either be arranged so that the fuel level in the day tank remains above the suction port of the engine driven fuel pump or be provided with a transfer pump to provide fuel to the engine driven pump. The overflow connection and fuel supply line shall be arranged so that the highest possible fuel level is below the fuel injectors.] The fuel supply line from the day tank to the manufacturer's standard engine connection shall be welded pipe.

2.3.5 Fuel Supply System

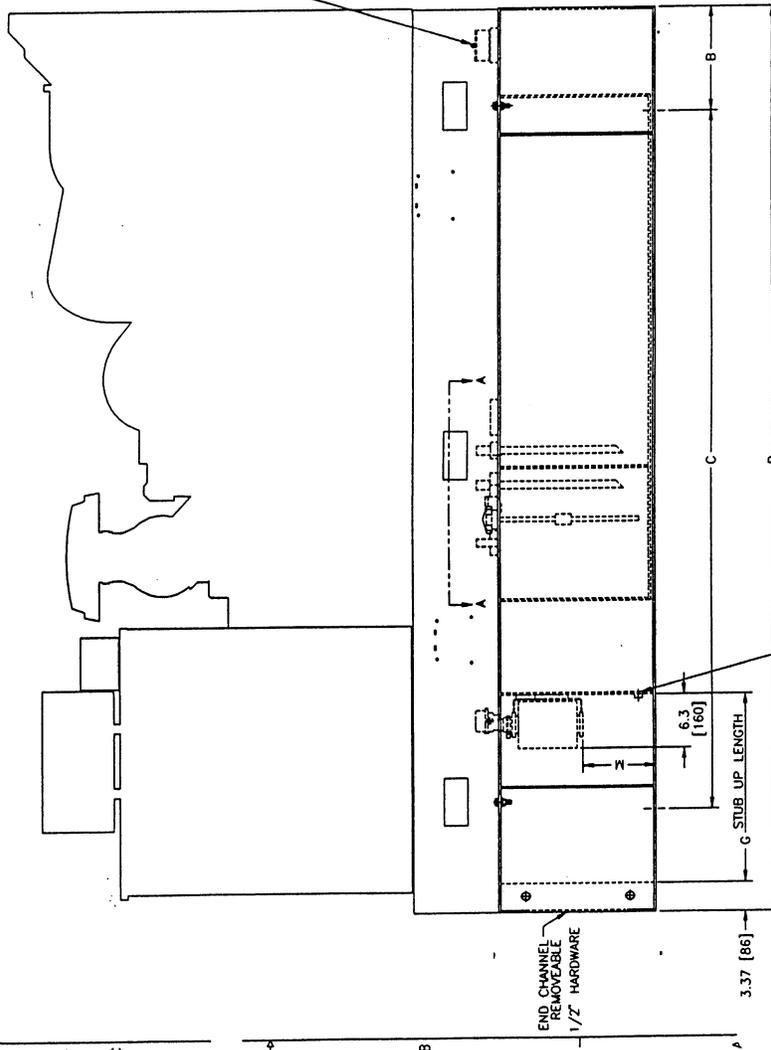
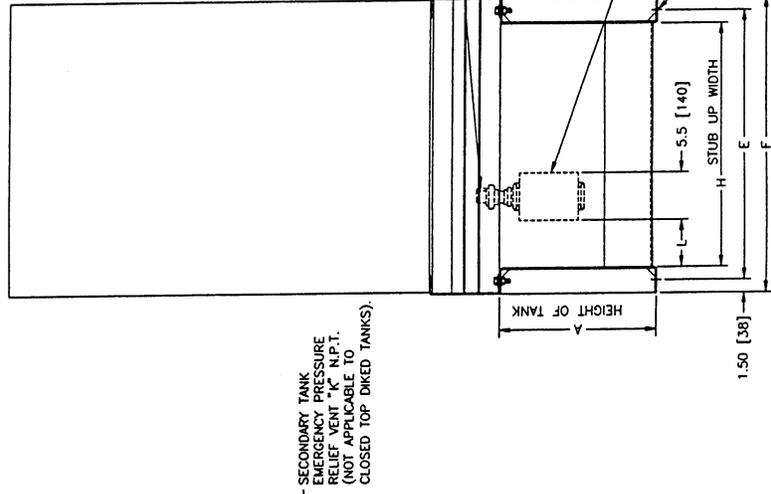
The fuel supply from the main storage of fuel to the day tank shall be as specified in Section 13202 FUEL STORAGE SYSTEMS.

MODEL	CAPACITY GAL.	A-	B-	C-	D-	E-	F-	G-	H-	J-	K- [N.P.T.]	L-	M-	TANK WEIGHT APPROX. LBS. [KG]	DAY TANK MODEL AVAILABLE
20	20	12.5 [318]	9.0	52.0 [1321]	75.0 [1905]	26.0 [660]	29.0 [737]	16.62 [422]	23.0 [584]	.562 [14]	Z	5.4 [137]	2.8 [71]	360 [163]	YES [DMG. SHEET 3]
30-60	45	12.5 [318]	8.0	66.0 [1676]	82.0 [2083]	26.0 [660]	29.0 [737]	16.62 [422]	23.0 [584]	.562 [14]	Z	5.4 [137]	2.8 [71]	360 [163]	YES [DMG. SHEET 3]
80-100	130	24 [610]	10.0	76.0 [1930]	86.0 [2438]	31.0 [787]	34.0 [864]	19.62 [498]	23.0 [584]	.562 [14]	Z	5.4 [137]	2.8 [71]	670 [304]	YES [DMG. SHEET 3]
125	275	18 [457]	12.0	80.5 [2045]	104.5 [2653]	31.0 [787]	34.0 [864]	19.62 [498]	28.0 [711]	.562 [14]	Z	5.4 [137]	2.8 [71]	1050 [476]	YES [DMG. SHEET 3]
150	200	18 [457]	12.0	87.0 [2210]	113.0 [2870]	42.0 [1067]	45.0 [1143]	16.62 [422]	39.0 [991]	1.000 [25]	Z	5.4 [137]	2.8 [71]	1280 [581]	YES [DMG. SHEET 3]
180 O.S.	250	24 [610]	12.0	87.0 [2210]	113.0 [2870]	42.0 [1067]	45.0 [1143]	16.62 [422]	39.0 [991]	1.000 [25]	Z	5.4 [137]	2.8 [71]	1160 [526]	YES [DMG. SHEET 3]
375	375	36 [914]	12.0	87.0 [2210]	113.0 [2870]	42.0 [1067]	45.0 [1143]	21.62 [549]	39.0 [991]	1.000 [25]	Z	5.4 [137]	2.8 [71]	1500 [680]	NO

NOTES:
THE SMALLEST CAPACITY TANK IN EACH MODEL
MAY BE ORDERED STANDARD OR AS A DAY TANK.
TANKS MAY BE ORDERED AS SECONDARY CONTAINMENT
OR CLOSED TOP DIKED.



- VIEW A-A
- FITTINGS:
1. "K" NPT FOR EMERGENCY VENT
 2. 2" NPT FILL FOR OPTIONAL FUEL CAP RISER OR MECHANICAL LEVEL GAUGE - STANDARD
 3. 2" MECHANICAL LEVEL GAUGE - STANDARD
 4. 1-1/2" NPT FOR OPTIONAL LOW NORMAL VENT OR 5" RISER
 5. 1/2" DIP TUBE-FUEL SUPPLY AND 1/2" TO 1/4" REDUCER
 6. 1/2" DIP TUBE-FUEL RETURN AND 1/2" TO 1/4" REDUCER
 7. 2" NPT FOR OPTIONAL LOW LEVEL ALARM
 8. 2" NPT FOR OPTIONAL SENSOR/ PUMP CONTROL FLOAT
 9. 1/2" NPT FOR OVERFLOW (2 GPM PUMP MAX)
 10. 3/8" NPT FOR DAY TANK PUMP FILL



KOHLER CO.
1000 W. 10TH ST. ST. LOUIS, MO. 63104
PHONE: 314-241-1000
FAX: 314-241-1001
WWW.KOHLER.COM

DATE: 1-27-94
REV: 5-31-94
APP: 7
DIMENSION PRINT

20-180 DDC SERIES 40 DUAL WALLED
SUB-BASE FUEL TANKS (DIESEL ONLY)

DIMENSIONS IN [] ARE MILLIMETER EQUIVALENTS

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE
CEMP-EC, 12 Jan 1998

DOCUMENT NUMBER AND DATE
CEGS 13977

DOCUMENT TITLE
Blast Resistant Doors

DOCUMENT TYPE

DRAWING ((STANDARD) (DEFINITIVE))

SPECIFICATION ((GUIDE) (STANDARD))

DESIGN GUIDES

TECHNICAL MANUAL

ENGINEER MANUAL

ENGINEER REGULATION

OTHER

MILITARY

CIVIL WORKS

SUBJECT
Galvanized Finish for Exterior Steel Doors

ROUTING (Check)

FROM:

District Commander
U.S. Army Engineer District,

ACTION RECOMMENDED BY DISTRICT COMMANDER

(See Sheet 2)

OFFICE SYMBOL

NAME AND TITLE *(Print or Type)*

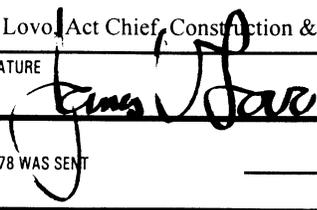
CEMP-EC

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

DATE

13 Jan 98

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)*

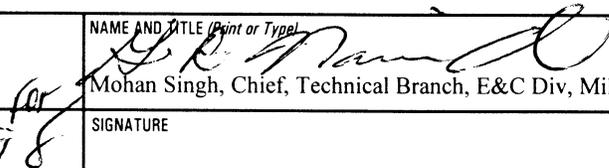
CEMP-ET

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

DATE

16 Jan 98

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)*

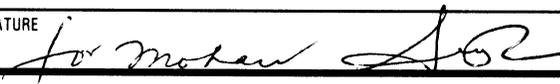
CEMP-E_T

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

DATE

16 Jan 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
CEMP-EC, Jim Lovo, Robert Chesi, C J Harris

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)

OFFICE SYMBOL AND DATE

CEMP-CE
12 Jan 1998PROBLEM DESCRIPTION AND ACTION RECOMMENDED *(Use additional sheets if necessary.)*

1.

PROBLEM:

CEGS- 13977, Blast Resistant Doors, Para 2.5.1.1 has galvanizing as an option. CEGS 08110, Steel Doors and Frames requires galvanizing for exterior doors.

2.

RECOMMENDED SOLUTION:

Since most blast doors are exterior, make this requirement mandatory in CEGS 13977 for exterior blast doors.

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

CESAS-CD-QT

6 Oct 97

DOCUMENT NUMBER AND DATE
CEGS 09250

DOCUMENT TITLE
GYPSUM WALLBOARD

DOCUMENT TYPE

DRAWING ((STANDARD) (DEFINITIVE))

SPECIFICATION ((GUIDE) (STANDARD))

MILITARY

DESIGN GUIDES

TECHNICAL MANUAL

CIVIL WORKS

ENGINEER MANUAL

ENGINEER REGULATION

OTHER

SUBJECT
PARAGRAPH 3.4 APPLICATION OF GYPSUM BOARD

ROUTING /Check/

ACTION RECOMMENDED BY DISTRICT COMMANDER

FROM:

District Commander
U.S. Army Engineer District,

ATTN: CESAS-EN
P.O. Box 889
Savannah, GA 31402

(See Sheet 2)

OFFICE SYMBOL
CESAS-EN

NAME AND TITLE *(Print or Type)*
Joseph H. Rogers, Jr, Chief, Engineering Division

DATE
10.6.97

SIGNATURE
Joseph H Rogers Jr

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: CESAD-EN-TM
Forsyth St., SW
Atlanta, GA 30335

COMMENTS, ACTION, OR RECOMMENDATION BY DIVISION COMMANDER

CONCUR W/ RECOMMENDATION.

OFFICE SYMBOL
CESAD-ET-EA

NAME AND TITLE *(Print or Type)*
STEPHEN GOODIN, DIVISION ARCHITECT

DATE
2 Jan 1998

SIGNATURE
Stephen Goodin

2. TO:

HQUSACE (CEMP-EA)
WASH DC 20314-1000

COMMENTS OR ACTION BY COMMANDER, USACE

Your recommendation will be incorporated into the next notice to
CEGS 09250, Gypsum Wall Board.

OFFICE SYMBOL
CEMP-E

NAME AND TITLE *(Print or Type)*
for Mohan Singh
KISUK CHEUNG, P.E. C, ENGR & CONSTR BR., D/MP

DATE
3/31/98

SIGNATURE
for Mohan Singh

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,

ATTN: CESAS-CD-QT
P.O. Box 889
Savannah, GA 31402

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RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)

OFFICE SYMBOL AND DATE
CESAS-CD-QT

6 Oct 97

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

1. PROBLEM:

PARAGRAPH 3.4 APPLICATION OF GYPSUM BOARD

- a. Paragraph 3.4 Application of Gypsum Board states that "gypsum board shall be installed in accordance with ASTM C 840".
- b. ASTM C 840 still allows water resistant gypsum board to be installed on ceilings per paragraph 17.3.1.
- c. CEGS-09250 paragraph 2.4.3 (notes to the specifier) directs the designer to not use water resistant gypsum board on ceilings.
- d. The Uniform Building Code Section 4712 forbids the use of water resistant gypsum board on ceilings.
- e. The major gypsum board producers also do not recommend water resistant board on ceilings.

2. RECOMMENDED SOLUTION:

Suggest revising paragraph 3.4 as follows:

Change the first sentence to read "Gypsum board shall be installed in accordance with ASTM C 840 with the exception that water resistant gypsum board shall not be used on ceilings".

NAME OF SUBMITTER (Optional)
Steven L. Winfrey, RAWORK TELEPHONE NUMBER (Optional)
(912) 652-6050

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE

CEMP-EC
19 FEB 1998

DOCUMENT NUMBER AND DATE
15400
DATED 08/94

DOCUMENT TITLE
CEGS 15400 PLUMBING GENERAL

DOCUMENT TYPE

DRAWING ((STANDARD) (DEFINITIVE)) SPECIFICATION ((GUIDE) (STANDARD))

DESIGN GUIDES TECHNICAL MANUAL

ENGINEER MANUAL ENGINEER REGULATION OTHER

MILITARY

CIVIL WORKS

SUBJECT
TESTING OF PLUMBING SYSTEMS

ROUTING (Check)

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

ACTION RECOMMENDED BY DISTRICT COMMANDER
(See Sheet 2)

OFFICE SYMBOL CEMP-EC	NAME AND TITLE (Print or Type) GARY G. BAUER, MECHANICAL ENGINEER
DATE 19 Feb 1998	SIGNATURE <i>Gary G. Bauer P.E.</i>

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 CEMP-EC	NAME AND TITLE (Print or Type) JAMES LOVO, ACTING CHIEF CONSTRUCTION BRANCH
DATE <i>2/19/98</i>	SIGNATURE <i>[Signature]</i>

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

COMMENTS OR ACTION BY COMMANDER, USACE
Concur. Specification will be revised.

OFFICE SYMBOL CEMP-E	NAME AND TITLE (Print or Type) KISUK CHEUNG, P.E. C, ENGR and CONSTR DIV. D/MP
DATE <i>4/17/98</i>	SIGNATURE <i>for motion [Signature]</i>

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

19 FEB 1998

PROBLEM DESCRIPTION AND ACTION RECOMMENDED *(Use additional sheets if necessary.)***1. PROBLEM:**

Presently CEGS 15400 paragraph 3.9.1 Plumbing System states "The plumbing system shall be tested in accordance with NAPHCC-01." The testing requirements are included in chapter 15 of NAPHCC-01. There are several test requirements listed in chapter 15. During construction discussions frequently occur with the contractor over the testing requirements for the plumbing system. Since each test is not referenced directly in the specifications it is not always clear which test in NAPHCC applies to the contract.

2. RECOMMENDED SOLUTION:

For clarity and to insure that all the plumbing tests are performed modify paragraph 3.9.1 Plumbing Systems to specify each test. See below, make the same changes to CEGS 15405.

3.9.1 Plumbing System

The following tests shall be performed on the plumbing system in accordance with procedures in NAPHCC-01 Chapter 15.

- Rough Plumbing test of the drainage and vent systems
- Finished Plumbing test of the drainage and vent systems
- Building Sewers
- Water Supply System .

NAME OF SUBMITTER *(Optional)*

Gary G. Bauer

WORK TELEPHONE NUMBER *(Optional)*

(202) 761-0205

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

OFFICE SYMBOL AND DATE

CEMP-EC

26 FEB-98

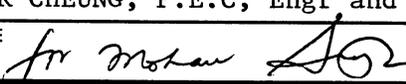
DOCUMENT NUMBER AND DATE CEGS 13202 JUNE 1997	DOCUMENT TITLE FUEL STORAGE SYSTEMS	
DOCUMENT TYPE <input type="checkbox"/> DRAWING ((STANDARD) (DEFINITIVE)) <input checked="" type="checkbox"/> SPECIFICATION ((GUIDE) (STANDARD)) <input type="checkbox"/> DESIGN GUIDES <input type="checkbox"/> TECHNICAL 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
INSTALLATION OF UNDERGROUND STORAGE TANKS

ROUTING (Check)	ACTION RECOMMENDED BY DISTRICT COMMANDER <i>(See Sheet 2)</i>	
FROM: District Commander U.S. Army Engineer District,	OFFICE SYMBOL CEMP-EC	NAME AND TITLE (Print or Type) GARY G. BAUER, P.E. MECHANICAL ENGINEER
	DATE 26 Feb 1998	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	
	OFFICE SYMBOL CEMP-EC	NAME AND TITLE (Print or Type) ROBERT CHESI CHIEF CONSTRUCTION EVALUATION
	DATE 26 Feb 1998	SIGNATURE 

2. TO: HQUSACE (CEMP-EA) WASH DC 20314-1000	COMMENTS OR ACTION BY COMMANDER, USAGE Concur. References to UL 1615 will be changed to API RP 1615.	
	OFFICE SYMBOL CEMP-E	NAME AND TITLE (Print or Type) KISUK CHEUNG, P.E.C, Engr and Const Div. D/MP
	DATE 4/17/98	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
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RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS (Cont'd)

OFFICE SYMBOL AND DATE

CEMP-EC

26-FEB-1998

PROBLEM DESCRIPTION AND ACTION RECOMMENDED *(Use additional sheets if necessary.)***1. PROBLEM:**

CEGS 13202 Paragraph 3.1.1 states "Installation of belowground storage tanks shall be in accordance with UL 1615 except as modified herein". The subject of UL 1615 is Refrigeration Equipment not Installation of Underground Petroleum Storage Systems. According to UL they do not have a standard for installation of underground storage tanks.

2. RECOMMENDED SOLUTION:

Delete the reference to UL 1615 from paragraph 3.1.1 and the publications list on page 11.

NAME OF SUBMITTER *(Optional)*

Gary G. Bauer

WORK TELEPHONE NUMBER *(Optional)*

(202) 761-0205

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

9 Feb 98

DOCUMENT NUMBER AND DATE
CEGS-15895 (Feb 94)
w/Notice 4 (Feb 96)

DOCUMENT TITLE
AIR SUPPLY, DISTRIBUTION, VENTILATION, AND
EXHAUST SYSTEM

DOCUMENT TYPE

DRAWING ((STANDARD) [DEFINITIVE]) SPECIFICATION ((GUIDE) [STANDARD])

DESIGN GUIDES TECHNICAL MANUAL

ENGINEER MANUAL ENGINEER REGULATION OTHER

MILITARY

CIVIL WORKS

SUBJECT
Paragraph 3.1.16.1 Duct Conveying Smoke and Grease Laden Vapors

ROUTING (Check)

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

ATTN: CESWF-EC-CS
Fort Worth, TX
76102-0300

ACTION RECOMMENDED BY DISTRICT COMMANDER
(See Sheet 2)

OFFICE SYMBOL: CESWF-EC NAME AND TITLE (Print or Type): R. TERRY COOMES, P.E., Chief, Engineering and Construction Division

DATE: 2/13/98 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,

ATTN: CESWD-ED-T
Dallas, TX
75242-0216

COMMENTS, ACTION, OR RECOMMENDATION BY DIVISION COMMANDER
Concur, recommend approval. *[Signature]*

OFFICE SYMBOL: CESWD-ETS NAME AND TITLE (Print or Type): PAUL D. ROBINSON, P.E., Director, Engineering & Technical Services Dir.

DATE: 2/27/98 SIGNATURE: *[Signature]*

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

COMMENTS OR ACTION BY COMMANDER, USACE
Concur.

OFFICE SYMBOL: CEMP-E NAME AND TITLE (Print or Type): KISUK CHEUNG, P.E. C, ENGR. & CONSTR. BRD/MP

DATE: 3-31-98 SIGNATURE: *[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-DM
9 Feb 98

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

1. PROBLEM:

See Attached Sheet.

2. RECOMMENDED SOLUTION:

See Attached Sheet.

NAME OF SUBMITTER (Optional)

Jack Osborne, P.E.

WORK TELEPHONE NUMBER (Optional)

(817) 978-2297

SUBJECT: CEGS 15895, Paragraph 3.1.16.1 Duct Conveying Smoke and Grease Laden Vapors

1. PROBLEM:

Paragraph 3.1.16.1, Ducts Conveying Smoke and Grease Laden Vapors, bracketed sentence: [Duct construction shall include external perimeter angle iron welded joint reinforcement ...]. The duct material within this paragraph has options of 304 or 316 stainless steel, or carbon steel. Angle iron, by definition, is carbon steel and should not be welded to the stainless. Also, this paragraph gives the reinforcement spacing, but not the dimensions of angle.

2. RECOMMENDED SOLUTION:

Revise "Note to the designer" and Paragraph 3.1.16.1 to read:

NOTE: The requirements in NFPA 96 pertaining to enclosures around kitchen exhaust ducts shall be shown on the drawings.

The referenced SMACNA Duct Construction Manual does not cover negative pressures in excess of 3 inches water gauge. If the static pressure within the duct will exceed 3 inches negative, then the spacing and duct thickness must be indicated on the drawings and the paragraph edited accordingly.

3.1.16.1 Ducts Conveying Smoke and Grease Laden Vapors

Ducts conveying smoke and grease laden vapors shall conform to requirements of NFPA 96. Seams, joints, penetrations, and duct-to-hood collar connections shall have a liquid tight continuous external weld. Duct material shall be [minimum 1.3 mm (18 gauge), Type 304L or 316L, stainless steel] [minimum 1.6 mm (16 gauge) carbon steel]. [Duct construction shall include external perimeter angle sized in accordance SMACNA 06, except welded joint reinforcement shall be on maximum of 600 mm (24 inch) centers; continuously welded companion angle bolted flanged joints with flexible ceramic cloth gaskets where indicated; pitched to drain at low points; welded pipe coupling-plug drains at low points; welded fire protection and detergent cleaning penetration; steel framed, stud bolted, and flexible ceramic cloth gasketed cleaning access provisions where indicated. Angles, pipe couplings, frames, bolts, etc shall be same material as that specified for the duct unless indicated otherwise.]

RECOMMENDED CHANGES TO ENGINEERING DOCUMENTS

(Submit a separate form in quadruplicate for each report)

(ER 1110-345-100)

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

DOCUMENT NUMBER AND DATE
CEGS 15400

DOCUMENT TITLE
GENERAL PURPOSE PLUMBING

DOCUMENT TYPE

DRAWING ((STANDARD) (DEFINITIVE)) SPECIFICATION ((GUIDE) (STANDARD))

DESIGN GUIDES TECHNICAL MANUAL

ENGINEER MANUAL ENGINEER REGULATION OTHER

MILITARY

CIVIL WORKS

SUBJECT
PHENOLIC RESIN COATINGS FOR WATER HEATERS

ROUTING (Check)		ACTION RECOMMENDED BY DISTRICT COMMANDER	
FROM: District Commander U.S. Army Engineer District,		(See Sheet 2)	
		OFFICE SYMBOL CEMP-EC	NAME AND TITLE (Print or Type) GARY G. BAUER, P.E., MECHANICAL ENGINEER
		DATE 28 Jan 1998	SIGNATURE <i>Gary G. Bauer</i>

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 CEMP-EC
	NAME AND TITLE (Print or Type) JAMES LOYO, ACTING CHIEF CONSTRUCTION BRANCH
	DATE 28 Jan 98
	SIGNATURE <i>James Loyo</i>

2. TO: HQUSACE (CEMP-EA) WASH DC 20314-1000	COMMENTS OR ACTION BY COMMANDER, USACE Concur. Specifications will be revised.
	OFFICE SYMBOL CEMP-E
	NAME AND TITLE (Print or Type) KISUK CHEUNG, C, ENGR & CONST. DIV., D/MP
	DATE 0402198
	SIGNATURE <i>Kisuk Cheung</i>

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

28-JAN-1998

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

1. PROBLEM:

Presently CEGS 15400 General Purpose Plumbing paragraphs 3.9.2 Phenolic Resin Coatings and 3.9.2.1 Test Panels states:

3.9.2 Phenolic Resin Coatings

"A certificate of compliance shall be submitted by the coating manufacturer that documents successful use of coating system under service conditions indicated on the drawings for a minimum of 2 years at three different locations, and that the coating material and application comply with the testing procedures outlined."

3.9.2.1 Test Panel

"Steel test panel substance shall be 0.607 mm (24 gauge) 24 gauge in thickness. The panels shall be coated with one coat wash primer, then pigmented baking phenolic to a dry film thickness of 0.10 to 0.15 mm, 4 to 6 mil, then clear baking phenolic to total dry film thickness of 0.13 to 0.18 mm. 5 to 7 mil. The panels shall then be subjected to the tests specified below:" etc.

Both paragraphs deal with product certification or testing and are listed under the main paragraph 3.9. All other tests listed under paragraph 3.9 are field tests.

2. RECOMMENDED SOLUTION:

Paragraphs 3.9.2 relates to product certification and 3.9.2.1 relates to product testing. All other tests listed in paragraph 3.9 TESTS FLUSHING AND STERILIZATION are field tests. For clarity, the recommendation is to move paragraphs 3.9.2 and 3.9.2.1 to paragraph 2.10.7 Phenolic Resin Coatings since both paragraphs relate to the product testing and certification requirements that the resin coatings on water heaters must meet.

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 1110-3-483	Clothes Dryer Exhaust Venting	MAR 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
ETL 1110-3-489	Domestic Water Heaters for Barracks	APR 98