

Army Regulation 420-16

Facilities Engineering

Facilities Engineering Reports

**Headquarters
Department of the Army
Washington, DC
30 September 1987**

UNCLASSIFIED

SUMMARY of CHANGE

AR 420-16

Facilities Engineering Reports

This revision--

- o Changes the reporting instructions of the Army's real property maintenance activities (chap 1).
- o Updates and simplifies the forms and instructions for preparing and submitting the Unconstrained Requirements Report (chap 2).
- o Updates the recurring maintenance factors (para 2-12).
- o Updates and simplifies the forms and instructions for preparing and submitting the Direct Backlog Status Report (chap 3).
- o Updates and simplifies the forms and instructions for the Technical Data Feeder Report (chap 4).

Effective 1 October 1987

Facilities Engineering

Facilities Engineering Reports

By Order of the Secretary of the Army:

CARL E. VUONO

*General, United States Army
Chief of Staff*

Official:

R. L. DILWORTH

*Brigadier General, United States Army
The Adjutant General*

Code DI-L-1415B, OMB approval number 0704-0188, Expiration Date: 30 June 89.)

Applicability. This regulation applies to the Active Army and the U.S. Army Reserve, including Government-owned contractor-operated installations. It does not apply to the Army National Guard.

Proponent and exception authority. The proponent agency of this regulation is the Office of the Chief of Engineers.

Impact on New Manning System. This regulation does not contain information that affects the New Manning System.

Army management control process. This regulation is subject to the requirements of AR 11-2. It contains internal control provisions but does not contain checklists for conducting internal control reviews. These checklists are contained in DA Circular 11-86-3.

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from HQDA (DA EN-ZCP-B), WASH DC 20310-2600.

Interim changes. Interim changes to this regulation are not official unless they

are authenticated by The Adjutant General. Users will destroy interim changes on their expiration dates unless sooner superseded or rescinded.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to HQDA (DA EN-ZCP-B), WASH DC 20310-2600.

Distribution. Distribution of this publication is made in accordance with DA Form 12-9A-R requirements for 420 series publications. The number of copies distributed to a given subscriber is the number of copies requested in Block 356 of the subscriber's DA Form 12-9A-R. AR 420-16 distribution is C for the Active Army, None for the ARNG, and C for the USAR. Existing account quantities will be adjusted and new account quantities will be established upon receipt of a signed DA Form 12-9U-R (Subscription for Army UPDATE Publications Requirements) from the publications account holder.

History. This UPDATE printing publishes a revision which is effective 1 October 1987. Because the structure of the entire revised text has been reorganized, no attempt has been made to highlight changes from the earlier regulation dated 15 July 1983.

Summary. This regulation updates and simplifies the forms and instructions for preparing and submitting the Unconstrained Requirements Report, the Direct Backlog Status Report, and the Technical Data Feeder Report. (Reference DID

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*This regulation supersedes AR 420-16, 15 July 1983, and rescinds DA Form 4223-2-R, Jul 83 (RCS ENG-304).

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Glossary

Chapter 1 Introduction

1-1. Purpose

This regulation sets forth responsibilities and procedures for preparing facilities engineering reports dealing with real property maintenance activities (RPMA).

1-2. References

Required and related publications and prescribed forms are listed in appendix A.

1-3. Explanation of abbreviations and terms

Abbreviations and special terms used in this regulation are explained in the glossary.

1-4. Responsibilities

- a.* The Chief of Engineers will—
 - (1) Establish facilities engineering reports policies, procedures, and forms.
 - (2) Consolidate RPMA and housing statistical data received from major Army commands (MACOMs), except as noted in *b* and *c* below.
 - (3) Prepare, publish, and distribute the Facilities Engineering and Housing Annual Summary of Operations.
- b.* The Chief, Army Reserve will consolidate, or arrange for the consolidation of the following reports as they apply to Operation and Maintenance, Army Reserve (OMAR):
 - (1) Unconstrained Requirements Report.
 - (2) Direct Backlog Status Report.
- c.* The Assistant Secretary of the Army (Research, Development and Acquisition) will consolidate, or arrange for the consolidation of the following reports as they apply to research, development, test, and evaluation (RDTE):
 - (1) Unconstrained Requirements Report.
 - (2) Direct Backlog Status Report.
- d.* The Commanding Generals of MACOMs will—
 - (1) Review and evaluate reports received from Army installations under their jurisdiction.
 - (2) Prepare consolidated reports.
 - (3) Furnish installation and consolidated reports to HQDA (DAEN-ZCP-B), WASH DC 20310-2600, by required due dates.
 - (4) Ensure that internal controls are in place and executed as required.
- e.* Installation Directors of Engineering and Housing (DEH) will—
 - (1) Prepare the facilities engineering reports.
 - (2) Submit reports by their required due dates.
- f.* Engineer personnel at each level of command will review reports to ensure—
 - (1) Data are factual and correct.
 - (2) An analysis is made of the data, and comparisons are made with prior year data to determine whether plus or minus changes are reasonable.
 - (3) Research is made of unusually low or high unit costs and other out-of-line situations (for example, plus or minus 5 percent changes in square feet from year to year).

1-5. Report preparation methods

- a.* Installations that do not provide input data to the Headquarters, Integrated Facilities System data base will prepare reports manually.
- b.* The Technical Data Feeder Report will be prepared by automatic data processing methods if the following conditions have been met:
 - (1) Prior to submission in automated mode, coordination with the Facilities Engineering Support Agency (FESA) will be accomplished. Communications should be sent to the Commander, U.S. Army Facilities Engineering Support Agency, ATTN: FESA-SQ, Fort Belvoir, VA 22060-5516.
 - (2) The procedures and formats in the Integrated Facilities System User's Manual are followed.

1-6. Army maintenance and repair (M&R) policy

- a.* Projects having an impact on the quality of life of the soldier and unit readiness must be given the highest priority for accomplishment.
- b.* The following facilities categories are listed in priority sequence:
 - (1) Operational facilities.
 - (2) Housing and dining facilities.

- (3) Critical utilities systems.
- (4) Medical facilities.
- (5) Maintenance shops.
- (6) Community facilities at remote sites.
- (7) All other.

c. Variations from the priority sequence in *b* above may occur when the MACOM commander has determined the existence of and approved overriding factors that require a deviation.

1-7. Management of Army real property

a. Effective management of Army real property, particularly M&R, requires planning and programming of RPMA resources.

b. Planning and programming for RPMA resources will support program proposals and budget requests needed to attain specific Army objectives.

c. Army installations and activities are required to report on progress in the use of resources. The reports form one element of a system to evaluate RPMA management. Other elements of this process include—

- (1) Observations by Army Staff members when on liaison visits.
 - (2) Analysis of such factors as the backlog of maintenance and repair (BMAR) as compared to estimates shown in the plans.
- d. Evaluation of reports will be done at all command levels.

1-8. Contractor-operated installations

AR 5-20 covers the process of determining whether installation activities will be performed by Government personnel or by commercial contractors, including Government-owned contractor-operated (GOCO). The requirements of AR 420-16 must be satisfied whether activities are performed in-house or by contractors. The MACOM/installation is responsible for ensuring that the contract provisions include the method of submitting adequate, accurate, and timely data. This is consistent with the direction provided by the Department of the Army in its guidance regarding commercial activities.

1-9. Unit of measure prefixes

The unit prefixes listed in table 1-1 are among those adopted by the International Committee on Weights and Measures.

**Table 1-1
Unit codes, prefixes, and definitions**

Code	Prefix	Definition
T	Tera	10 (12th power) (trillion)
G	Giga	10 (9th power) (billion)
M	Mega	10 (6th power) (million)
K	Kilo	10 (3rd power) (thousand)
H	hecto	10 (2nd power) (hundred)
Da	deka	10 (ten)

1-10. Report submission dates

The submission dates for the reports in this regulation are shown in table 1-2.

**Table 1–2
Reports calendar**

Chapter	Report title	Period covered	Due date at HQDA
2	Unconstrained Requirements Report	1 Oct–30 Sep	15 Jan
3	Direct Backlog Status Report		
	a. Quarterly direct BMAR obligations component	1 Oct–31 Dec 1 Oct–31 Mar 1 Oct–30 Jun 1 Oct–30 Sep	4 Feb 4 May 4 Aug 4 Nov
	b. FY direct unfinanced BMAR component	1 Oct–30 Sep	4 Nov
	c. FY summary analysis of direct backlog changes component	1 Oct–30 Sep	4 Nov
	d. FY direct AFH DMAR component	1 Oct–30 Sep	4 Nov
4	Technical Data Feeder Report	1 Oct–30 Sep	30 Nov

Chapter 2 Unconstrained Requirements Report (RCS 0704–0188)

2–1. Unconstrained Requirements Report (DA Form 4223–R)

a. The Unconstrained Requirements Report (URR) will be prepared on DA Form 4223–R. DA Form 4223–R will be reproduced locally on 8½– by 11–inch paper. A copy for local reproduction purposes is at the back of this regulation.

b. Separate URRs will be submitted for the following appropriations and funds: Operation and Maintenance, Army (OMA), Operation and Maintenance, Army Reserve (OMAR), Research, Development, Test and Evaluation (RDTE), Other Procurement, Army (OPA), and Army Family Housing (AFH).

2–2. Applicability

This chapter does not apply to the following:

- a. Installations or activities located in officially designated combat zones or civil functions under control of the Secretary of the Army.
- b. Communications activities not included in AR 37–100–XX.
- c. National Guard elements.

2–3. Purpose of the URR

The URR is a program document designed to disclose the total unconstrained requirements needed to operate and maintain the Army’s real property investment worldwide.

- a. URR information is used to—
 - (1) Develop Army–wide, MACOM, installation, community, and activity RPMA requirements.
 - (2) Present Army–wide RPMA requirements during the planning phase of the planning, programming, budgeting, execution, and review system cycle. Unconstrained Army planning requirements are developed during the planning phase.
 - (3) Develop the initial phases of the Army Program Objective Memorandum.
 - (4) Develop RPMA budget requests, including exhibits and tables.
 - (5) Allocate to MACOMs funds that are, in turn, redistributed to installations, communities, and activities.
 - (6) Manage the Army’s RPMA program.
 - (7) Develop and revise policies, programs, and standards.
 - (8) Report to other authorities such as Department of Defense (DOD), Office of Management and Budget (OMB), and the Congress.
 - (9) Respond to various requests for information received during the fiscal year without the need to canvass MACOMs to furnish such information on a case–by–case basis.
- b. The integrated planning, programming, and budgeting system assists in devising and conducting the overall RPMA program by bringing the following together:
 - (1) Annual and long–range work plans that are validated by engineer elements and accurately show unconstrained requirements.
 - (2) Annual submission of reports in support of Army budget requests.
 - (3) Uniform systems for—
 - a. Cost accounts in programming, budgeting, accounting, reporting, and evaluating the RPMA program.
 - b. Cost accounting standards for reporting on RPMA.

2-4. Preparation of DA Form 4223-R

When preparing the report, follow the instructions that appear in front of DA Form 4223-R.

2-5. Report due dates

MACOMs will—

- a. Establish report due dates and other instructions for installations, communities, and activities under their jurisdiction to ensure timely submission of reports.
- b. Combine feeder data reports submitted by their installations, communities, and activities.
- c. Prepare a separate consolidated report for each appropriation and fund covering the budget year, budget year plus 1, and budget year plus 2. Under the new multi-year budgeting arrangement, the budget year covers two fiscal years which are to be separately reported; for example, two separate reports are to be prepared covering Fiscal Years 1990 and 1991. The budget year plus 1 would cover Fiscal Year 1992, and the budget year plus 2 would cover Fiscal Year 1993.
- d. Send three copies of each consolidated report to HQDA (DAEN-ZCP-B), WASH DC 20310-2600, so as to arrive not later than 15 January each year.

2-6. Annual recurring requirements

a. Annual recurring requirements (ARR) represent the level of operations, M&R, and services needed to sustain occupant activities, prevent avoidable deterioration of the physical plant, and preserve real property in accordance with established engineering standards while adequately supporting assigned missions. ARR can be accomplished by either the in-house work force or by contract.

b. Specific guidance that governs the determination of ARR by functional accounts is outlined below.

(1) *Operation of utilities.* The ARR for utilities is that level of utility support needed to sustain all activities consistent with norms for geographic areas, activities serviced, and composition of the physical plant. The program will be developed to meet conservation goals considering good engineering practice for plant operations and will incorporate benefits resulting from the investment made to improve economy and efficiency of utility plants and systems. The key to a properly developed ARR is accurate workload based on good engineering practices for plant operations and on reliable utilities consumption estimates. Historical precedence may assist in developing utilities consumption. Current estimates of unit costs will be used in developing costs.

(2) *Maintenance and repair* The ARR for M&R is the extent of work (excluding BMAR projects) that needs to be done during a given fiscal year to keep facilities in serviceable condition in accordance with maintenance standards and to prevent premature deterioration of the physical plant. To allow for unforeseen emergencies and urgent repairs, new projects may be added during the year. ARR consists of scheduled work such as painting and roofing; minor repairs such as fixing electrical outlets, plumbing fixtures, or air conditioning units; preventive maintenance; and cyclical maintenance such as cleaning boilers and heating systems, grass cutting, or tree pruning. These jobs can be done in-house or by contract, but should be done by the most economical method. Recurring maintenance factors will be developed based on quantified data and equitable treatment of comparable facilities. Program development for fiscal years will be preceded by an analysis of exceptionally high installation costs as compared to other installations for comparable functional accounts.

(3) *Minor construction* The ARR for minor construction is the total planned new work to be accomplished. Funding guidance limits new work obligations to 10 percent of the sum of the ARR for M&R (K Account) plus the minor construction (L Account). It can be exceeded where Army initiatives are included (for example, force modernization, force structure changes, force protection, and energy conservation projects). The program represents the degree of minor construction needed to be funded with operation and maintenance (O&M) resources. Minor construction not accomplished by year end does not qualify as backlog of maintenance and repair (BMAR).

(4) *Engineer support* ARR for engineer support is the level of support authorized by regulations and justified in accordance with workload and identifiable circumstances that substantiate the degree of support programmed. The key to a properly developed ARR is the output (custodial service per square foot, cubic yards of refuse collected, and so forth) versus the most economic costs.

2-7. One-time requirements

a. One-time requirements are those additional requirements not covered by ARR. Each such requirement would have a beginning and ending date. Most one-time requirements would be completed within 1 or 2 fiscal years. Upon completion, they would become either part of ARR or would be dropped.

b. Examples of one-time requirements are shown below.

(1) Changes in mission, programs, and operational needs.

(2) A division may be transferred to your installation or community. This may necessitate the opening of additional barracks, causing increases in utility, maintenance, custodial, and refuse collection services. Depending on the timing of the transfer, this may be completed within 1 or 2 fiscal years. Thereafter, any increased costs would become part of ARR.

(3) Five percent of the roofs are planned for replacement each year. The damage from weather is so severe that it becomes necessary during a given fiscal year to replace 15 percent of the roofs. Under such a circumstance, 5 percent of the dollars are ARR, and 10 percent are one-time requirements. Other examples include excessive damage to pipes caused by acts of nature, and barracks severely damaged.

(4) Higher authority has directed special studies/surveys be conducted by a given timeframe. Efforts require contractual support services. Additional one-time resources in support thereof would need to be programmed.

2-8. Backlog of maintenance and repair

a. BMAR is a fiscal yearend measurement of M&R of real property (not equipment) work that remains as a firm requirement and was not started during the fiscal year due to a lack of resources. To be eligible for consideration as BMAR, real property M&R work requirements must have been included on an approved annual work plan that includes unfunded requirements. (See DA Pam 420-6, chap 3, for guidance on this annual work plan.) When BMAR is started by in-house personnel, or contract funds are obligated for the work, this is considered to be work in process and is no longer BMAR.

b. BMAR provides only for the M&R of real property work needed to restore failed (deteriorated) or failing (deteriorating) facilities or components to an operative condition, or to a state that prevents further deterioration. BMAR consists of work chargeable only to the M&R of real property account.

c. The following categories are not eligible BMAR, except as otherwise noted:

(1) M&R of real property requirements not included on an approved annual work plan and not reflected on a URR.
(2) M&R of real property requirements included on an approved annual work plan and reflected on a URR when work has been started either by in-house personnel or contract funds have been obligated.

(3) Projects with an estimated cost of less than \$10,000. (This assumes that ARR will be adequate to routinely fund such projects.)

(4) Preventive maintenance projects and tasks.

(5) Real property inspection and review projects and tasks. However, deficiencies that are converted into M&R of real property requirements included on an approved annual work plan and URR, after design and cost estimates are developed, qualify as BMAR.

(6) M&R of real property scheduled for demolition.

(7) M&R of real property requirements financed by foreign governments.

(8) Repetitive maintenance requirements normally accomplished through issuance of repetitive maintenance requirements orders.

(9) Recurring work requirements such as filter changes, storm drains, or work done by service contract such as elevator maintenance and floor sanding.

(10) Scheduled maintenance requirements. However, scheduled maintenance requirements repeated at long intervals—years rather than months—that are unfinanced at the end of the fiscal year qualify as BMAR. Examples include surface treatment of pavements, scheduled painting, and cleaning the interiors of water mains.

(11) Projects covering replacement of a functioning component of a facility regardless of age.

(12) Work identified as construction or alteration under AR 415-35 or other work not associated with restoring deteriorated facilities.

(13) Projects involving addition of a component not previously a part of the structure.

(14) Real property facility modernization projects. However, associated M&R that normally would have been done if modernization programs had not been implemented does qualify as BMAR.

2-9. Manageable BMAR level

a. Manageable BMAR level is designed to prevent continued deterioration of real property. A manageable BMAR level consists primarily of those lower priority BMAR projects whose deferral due to insufficient funds is economically justifiable and does not impact significantly on mission or morale. In addition, the manageable BMAR level often includes BMAR projects logically deferred for reasons such as pending stationing or mission change decisions, possible future funding through other programs, or the need for project accomplishment simultaneously with or subsequent to other related work. Deferred projects are still required to bring facilities up to an acceptable level to meet their intended purposes. Each MACOM should carefully weight the acceptable level of criticality below which requirements may be deferred.

b. To arrive at an appropriate manageable BMAR level, a MACOM requires a suitable system to—

(1) Score and rank valid BMAR projects in priority order to reflect their degree of need and the resources impact. Scoring is usually accomplished through a weighted average process.

(2) Determine the priority score below which BMAR projects will be deferred.

2-10. Deferred maintenance and repair (DMAR)

DMAR is related to family housing only. DMAR is synonymous with BMAR described in paragraph 2-8.

2-11. MACOM variance explanations

a. Each MACOM will include a narrative explanation when its consolidated report data exceeds the variances described below. Such explanations will enable a more adequate and timely response to questions raised by officials in Army, DOD, OMB, and the Congress, as well as by the U.S. Army Audit Agency, the Congressional Budget Office, and the U.S. General Accounting Office (GAO).

(1) Maintenance and repair of real property and engineer support

(a) Each fiscal year variance that exceeds plus or minus 3 percent at the fiscal year total dollar requirements level (column g of DA Form 4223-R) will be briefly but clearly explained by the MACOM.

(b) Upon preparing a consolidated report covering, for example, fiscal years 1989, 1990, and 1991, a total dollar comparison needs to be made by the MACOM of each of those 3 fiscal years, plus fiscal year 1988 of the prior year's report, as illustrated in figure 2-1. The plus 4.0 percent variance needs to be briefly but clearly explained by the MACOM.

Fiscal Year	1988	1989	1990	1991
Total & (millions)	\$170	\$174	\$181	\$176
\$ Variance	—	+\$4	+\$7	-\$5
% Variance	—	+2.4%	+4.0%	-2.8%

Figure 2-1. Example of M&R and engineer support variances

(2) Operation of utilities.

(a) Executive Order 12003 directed all Federal activities to reduce energy consumption in facilities by 20 percent between fiscal years 1975 and 1985 on a British Thermal Unit (BTU) per square foot basis. About 83 percent of the Army's energy is consumed in support of facilities. The Army reduced facilities energy used during this 10-year period by about 22 percent.

(b) New 10-year reduction goals have been established. In furtherance of the new goals, any dollar increase at the consolidated fiscal year total dollar requirements level (column g of DA Form 4223-R) must be briefly but clearly explained by the MACOM.

(c) Upon preparing a consolidated report covering, for example, fiscal years 1989, 1990, and 1991, a total dollar comparison needs to be made by the MACOM of each of those 3 fiscal years, plus fiscal year 1988 of the prior year's report. An example of this comparison is shown at figure 2-2. The plus \$2 million increase needs to be briefly but clearly explained by the MACOM.

Fiscal Year	1988	1989	1990	1991
Total & (millions)	\$93	\$93	\$92	\$94
\$ Variance	—	—	-\$1	+\$2

Figure 2-2. Example of operations of utilities variances

(3) *Minor construction.*

(a) In accordance with funding guidance, the consolidated total dollar requirements of minor construction may not exceed 10 percent of the dollar sum of M&R of real property and minor construction. It can be exceeded where Army initiatives are involved (for example, force modernization, force structure, force protection, and energy construction projects).

(b) Comparisons for fiscal years 1989, 1990, and 1991 are shown in figure 2–3. The 11.9 percent needs to be briefly but clearly explained by the MACOM.

Fiscal Year	1989	1990	1991
Total M&R & minor construction (million \$)	\$120	\$122	\$126
Minor construction (million \$)	\$11	\$12	\$15
% of total	9.2%	9.8%	11.9%

Figure 2–3. Example of minor construction variances

b. MACOMs may request supplemental information and data from the installations, communities, and activities under their jurisdiction for internal management purposes.

2–12. Recurring maintenance factors (RMFs)

a. Constant dollar factors should be used to calculate recurring maintenance requirements. No attempt should be made to estimate potential inflationary impacts. The factors should follow the guidance provided in Command Operating Budget instructions.

b. Recurring maintenance factors are listed in table 2–1. These RMFs—

(1) May be used to calculate recurring maintenance and repair requirements for the current and program years. These factors may be adjusted to account for differences in the availability and cost of labor in each geographical area. AR 415–17 will be used to adjust the standard RMFs in table 2–1.

(2) Indicate the amount estimated to be required to repair and maintain facilities for a fiscal year. To estimate fiscal year funds needed by an installation, multiply the applicable RMF by the annual quantity of the unit measure.

(3) Are based on fiscal year 1980–1986 data. RMFs are expressed in dollars per unit of measure. For example, 2314.11 for an FGC in K square feet means 2314.11/1000 square feet equals 2.31 per square foot.

(4) Can be used as stated in developing the URR. However, users of these factors are encouraged to develop local RMFs that are relevant to their operation.

**Table 2–1
Recurring Maintenance Factors**

Codes FGC & AMS	Activity description	Unit of measure	Recurring Maintenance factor
84110 K1	Water systems treatment and filtration plants	K gal–day	13.73
84130 K1	Water systems treatment and filtration sources	K gal–day	2.37
84470 K1	Water systems wells	K gal–day	10.38
84210 K1	Water systems distribution systems mains and laterals	K lin ft	392.58
84220 K1	Water systems distribution systems pumping stations	K gal–day	3.80

**Table 2-1
Recurring Maintenance Factors—Continued**

Codes FGC & AMS	Activity description	Unit of measure	Recurring Maintenance factor
84230 K1	Water systems distribution systems storage	K gal-cap	8.02
83111 K1	Sewer systems primary treatment plants	K gal-day	46.27
83112 K1	Sewer systems secondary treatment plants	K gal-day	28.33
83113 K1	Sewer systems advanced waste water treatment plants	K gal-day	11.11
83114 K1	Sewer systems industrial waste treatment facilities	K gal-day	26.32
83210 K1	Sewage collection systems sanitary mains and laterals	K lin ft	449.38
83230 K1	Sewage collection systems sanitary pumping plants	K gal-day	4.83
83240 K1	Sewage collection system industrial waste mains and laterals	K lin ft	64.03
83230A K1	Sewage collection system industrial waste pumping plants	K gal-day	6.17
81100 K1	Electric systems electric generating plants	KVA cap	18.69
81241 K1	Electric distribution systems—overhead	K lin ft	205.65
81242 K1	Electric distribution systems—underground	K lin ft	180.31
81260 K1	Electric distribution transformers	KVA cap	1.09
81230 K1	Exterior lighting	No lts	38.39
81300 K1	Substations and switching stations	No plts	2,024.47
82131 K1	Gas-fired boiler plants over 3.5 MBTU per hour capacity	M BTU	722.63
82121 K1	Oil-fired boiler plants over 3.5 MBTU per hour capacity	M BTU	990.50
82111 K1	Coal-fired boiler plants over 3.5 MBTU per hour capacity	M BTU	1,533.95
82132 K1	Gas-fired heating plants over 3.5 MBTU per hour capacity	M BTU	834.18
82122 K1	Oil-fired heating plants over 3.5 MBTU per hour capacity	M BTU	1,501.16
82112 K1	Coal-fired heating plants .75 to 3.5 MBTU per hour capacity	M BTU	3,369.54
82133 K1	Gas-fired heating plants .75 to 3.5 MBTU per hour capacity	M BTU	1,141.79
82123 K1	Oil-fired heating plants .75 to 3.5 MBTU per hour capacity	M BTU	2,389.74
82113 K1	Coal-fired heating plants .75 to 3.5 MBTU per hour capacity	M BTU	1,560.49
82134 K1	Gas-fired heating plants under .75 MBTU per hour capacity	M BTU	633.15
82124 K1	Oil-fired heating plants under .75 MBTU per hour capacity	M BTU	1,475.98

**Table 2-1
Recurring Maintenance Factors—Continued**

Codes FGC & AMS	Activity description	Unit of measure	Recurring Maintenance factor
82114 K1	Coal-fired heating plants under .75 MBTU per hour capacity	M BTU	1,051.19
82200 K1	Steam and hot water distribution systems	K lin ft	2,141.61
82400 K1	Gas distribution systems	K lin ft	265.47
82300 K1	Gas storage and generating facilities	No facil	116.51
82611 K1	Air conditioning plants—over 100 ton capacity	Ton cap	63.07
82612 K1	Air conditioning plants—25–100 ton capacity	Ton cap	73.19
82613 K1	Air conditioning plants—5–25 ton capacity	Ton cap	134.28
82614 K1	Air conditioning plants—under 5 ton capacity	Ton cap	31.92
82621 K1	Refrigeration—5 HP and over (ex cold storage plants)	HP cap	59.71
82622 K1	Refrigeration—under 5 HP (Ex cold storage plants)	HP cap	76.42
43000 K1	Cold storage plants—including ice manufacturing	HP cap	129.52
82631 K1	Mech. vent. and evap. cooling	Units	54.84
40000A K1	Liquid storage facilities	Facil	1,822.62
88200 K1	Intrusion detection systems	Systems	514.55
17100 K2	Training buildings	K sq ft	719.60
21000 K2	Maintenance and Production Buildings	K sq ft	902.10
20000 K2	Research, development, and test buildings	K sq ft	1,024.98
42000 K2	Storage Buildings	K sq ft	251.95
51000 K2	Hospital and medical buildings	K sq ft	1,438.63
60000 K2	Administration buildings	K sq ft	1,386.00
72000 K2	Bachelor housing buildings	K sq ft	1,243.19
73000 K2	Community buildings	K sq ft	1,248.16
71000 K2	Family housing buildings	K sq ft	983.05
80000 K2	Utility plant buildings	K sq ft	990.01
10000 K2	Other buildings—categories not otherwise assigned	K sq ft	775.56
87500 K3	Improved grounds	Acre	175.25

**Table 2-1
Recurring Maintenance Factors—Continued**

Codes FGC & AMS	Activity description	Unit of measure	Recurring Maintenance factor
87610 K3	Other than improved grounds	Acre	1.28
86015 K4	Railroads—active—including MOB and RDF trackage	K lin ft	200.40
85100 K5	Roads—concrete and bituminous	K sq ft	341.92
85100A K5	Roads—other miscellaneous	K sq ft	93.92
11000 K5	Airfield pavements—concrete and bituminous	K sq ft	343.50
11000A K5	Airfield pavements—other miscellaneous	K sq ft	75.49
85200 K5	Parking, open storage and walks—concrete and bituminous	K sq yds	130.91
85200A K5	Parking, open storage and walks, other miscellaneous	K sq yds	63.97
85300 K5	Bridges and trestles—railroad	Lin ft	42.27
98000 K8	Maintenance and repair—inactive facilities and installations	K sq ft	486.30

2-13. Report accuracy

- a. RPMA reporting will be compatible and reconcilable to summary level information contained in other applicable resource and management information systems.
- b. Feeder and consolidated reports will be carefully reviewed before submission to ensure accuracy. Accurate information is essential to enhance planning, programming, budgetary, and allocation decisions.

Chapter 3 Direct Backlog Status Report (RCS 0704-0188)

3-1. Direct Backlog Status Report (DA Form 4954-R)

- a. The DA Form 4954-R (Direct Backlog Status Report) is the primary source of information used to inform officials in the Army, DOD, OMB, the Congress, and the GAO of the progress being made in containing backlogs.
- b. DA Form 4954-R will be reproduced locally on 8½- by 11-inch paper. A copy for local reproduction purposes is at the back of this regulation.
- c. See paragraphs 2-8, 2-9, and 2-10 for descriptions of BMAR, manageable BMAR level, and DMAR that must be considered in preparing this report.
- d. Guides in AR 415-28 will be reviewed in preparing this report.

3-2. Preparation of DA Form 4954-R

- a. DA Form 4954-R is a multiple use form designed for progressively preparing the following four related components of the Direct Backlog Status Report:
 - (1) Quarterly Direct BMAR Obligations.
 - (2) FY Direct Unfinanced BMAR.
 - (3) FY Summary Analysis of Direct Backlog Changes.
 - (4) FY Direct Unfinanced AFH DMAR.
- b. When preparing the report, follow the instructions that appear in front of DA Form 4954-R.

3-3. Installation, community, and activity due dates

MACOMs will—

- a. Establish report due dates and other instructions for installations, communities, and activities under their jurisdiction.

- b. Combine the feeder data submitted by their installations, communities, and activities.
- c. Prepare a separate consolidated report for each appropriation and fund.
- d. Carefully review feeder and consolidated reports before submission to ensure accuracy.

3-4. MACOM quarterly direct BMAR obligations component due dates

MACOMs will send two copies of each consolidated quarterly direct BMAR obligations component to HQDA (DAEN-ZCP-B), WASH DC 20310-2600, so as to arrive by the due dates indicated in table 3-1. Each quarterly component will progressively contain the cumulative BMAR fiscal year obligations.

**Table 3-1
Schedule for consolidated quarterly direct BMAR obligations submissions**

Quarter ending date	Cumulative obligations	Due at HQDA
31 Dec	1 Oct – 31 Dec	4 Feb
31 Mar	1 Oct – 31 Mar	4 May
30 June	1 Oct – 30 June	4 Aug
30 Sep	1 Oct – 30 Sep	4 Nov

3-5. MACOM fiscal year component due date

a. MACOMs will send two copies of the following fiscal year consolidated components to HQDA (DAEN-ZCP-B), WASH DC 20310-2600, so as to arrive no later than 4 November:

- (1) FY Direct Unfinanced BMAR.
- (2) FY Summary Analysis of Direct Backlog Changes.
- (3) FY Direct Unfinanced AFH DMAR.

b. When any BMAR appropriation or fund is less than \$25,000 (line 8, component C of DA Form 4954-R), submit a letter listing each applicable appropriation and fund and the total amount involved in lieu of preparing component B, FY Direct Unfinanced BMAR.

Chapter 4

Technical Data Feeder Report (RCS 0704-0188)

4-1. Technical Data Feeder Report (DA Form 2788-R)

a. The Technical Data Feeder Report (TDFR) will be prepared on DA Form 2788-R. DA Form 2788-R will be reproduced locally on 8½- by 11-inch paper. A copy for local reproduction purposes is located at the back of this regulation.

b. See paragraphs 2-8, 2-9, and 2-10 for descriptions of BMAR, manageable BMAR level, and DMAR that must be considered in preparing this report.

4-2. Applicability

a. This report applies to the Active Army and the U.S. Army Reserve. It includes installations and communities operating under a lease either to or from DA.

b. This report does not apply to the following:

- (1) Elements of the Army National Guard.
- (2) Reserve industrial facilities leased or permitted to a private corporation.

4-3. Purpose of the TDFR

This report is designed to provide prior year operating costs and performance data for all RPMA work done at Army installations and communities. It facilitates in making a management and technical evaluation of the adequacy of the facilities engineering operation.

4-4. Uses

Program and operating managers make day-to-day decisions that impact RPMA workload performance and result in financial obligations and expenditures. Adequate financial control requires not only that program and operating managers keep abreast of what products and services actually cost but, also, why. Information contained in the TDFR enables tracking of program execution. It has multiple uses at different Army levels.

- a. At the installation and community level, the information can be used to—
 - (1) Provide cost center and product center workload productivity and operating cost information.
 - (2) Evaluate whether program, productivity, and cost objectives are being met and exceeded.
 - (3) Determine whether unit and overall costs are in line with expected costs.
 - (4) Compare short- and long-range workload productivity and operating cost trends.
 - (5) Locate outstanding areas.
 - (6) Identify emerging low workload productivity and high-cost problem areas.
 - (7) Initiate timely management action designed to increase workload productivity and reduce operating costs, including whether methods need to be streamlined and whether manual processes need to be replaced by automated processes.
 - (8) Provide a factual basis for comparing in-house workload productivity and operating cost information against that in the private sector.
 - (9) Monitor contractor performance to ensure that such performance is satisfactory and cost effective, as required by the provisions of AR 5-20.
 - (10) Determine fixed facility costs on a square foot basis.
 - (11) Brief installation and community commanders.
 - (12) Recommend changes in policies, programs, and standards.
- b. At the MACOM level, the information can be used to—
 - (1) Compare installation and community workload performance and operating cost trends.
 - (2) Plan and conduct cross-cutting functional studies of low workload productivity and high cost areas.
 - (3) Recommend changes in policies, programs, and standards.
- c. At the HQDA level, the information can be used to—
 - (1) Compare MACOM, installation, and community workload performance and operating cost trends.
 - (2) Prepare the Facilities Engineering and Housing Annual Summary of Operations.
 - (3) Respond to requests received during the fiscal year.
 - (4) Develop and revise policies, programs, and standards.

4-5. Preparation and submission of DA Form 2788-R

- a. Installations and communities will—
 - (1) Prepare DA Form 2788-R each year as of the end of the fiscal year, unless authorized by their MACOMs to provide input data directly to the Headquarters, Integrated Facilities System (IFS) data base.
 - (2) Prepare one consolidated report covering all appropriations and funds. The carrier appropriation or fund of the reporting activity will be shown on each page of the report, for example, OMA, AIF.
 - (3) Include data on RPMA type contracts or other operations not processed through the installation's carrier program reimbursable procedures. An example of this is when the family housing activity awards a contract using the AFH appropriation as a direct cite on the contract award.
 - (4) Send three copies of each completed report to their MACOMs in accordance with the due date and supplemental instructions issued by the MACOMs.
- b. MACOMs will—
 - (1) Establish report due dates and other instructions for installations, communities, and activities under their jurisdiction to ensure timely submission of reports.
 - (2) Send two copies of each installation and community report to HQDA (DAEN-ZCP-B), WASH DC 20310-2600, so as to arrive not later than 30 November.
- c. Preparation instructions are located in front of the form.

4-6. Automated submission of data

- a. Prior to initial automated submission of data, coordination with the Facilities Engineering Support Agency will be accomplished. PAXMAIL communication is the preferred method and should be sent to V3FESA. Other types of communications should be sent to the Commander, U.S. Army Facilities Engineering Support Agency, ATTN: FESA-SQ, Fort Belvoir, VA 22060-5516.
- b. All parent installations and communities currently on an installation integrated facilities system (IFS) will follow the technical data submission procedures contained in the Headquarters IFS Technical Data Subsystem Student Manual.
- c. Installations and communities that have IFS are directed to use the automated mode for submission of this data. It is incumbent upon each such installation and community to ensure that—
 - (1) Their IFS data base is up-to-date with all costs recorded and that real property records are accurate.
 - (2) Responsible personnel have been trained in the use of the IFS.
 - (3) There is adequate telecommunications capability.

d. All parent installations and communities on the Headquarters IFS Project Management and Prioritization Subsystem (PMAP) will automatically have their unfinanced workload information available for review and update in the Technical Data Subsystem. All other installations must enter their information interactively by updating the work projects segment of the Technical Data Subsystem.

4-7. Contractor preparation of report

a. AR 5-20 prescribes policies, procedures, and responsibilities for managing and carrying out the Commercial Activities Program.

b. MACOMs/installations will arrange to obtain at least the data specified in *d* below from GOCOs and at such other installations and communities where RPMA functions have been contracted out. MACOMs/installations should ensure that contractors submit complete, accurate, and timely reports. Contractor submissions will be in accordance with the instructions of the MACOMs/installations.

c. Contractor data may be provided either manually or by ADP input methods (tape, disk, card) compatible with system data input methods. The method of providing required data must be clearly and completely detailed in the contract. This is consistent with the direction provided by the Department of the Army in its guidance regarding commercial activities.

d. When the manual mode of submission is the Technical Data Feeder Report, a contractor will be required to complete the quantities and contract columns of part IV, Operating Costs and Performance Data, of DA Form 2788-R for each applicable line item. Only Government furnished supplies, labor, and other elements of expense will be separately identified in the supplies, labor, and other columns and lines. The applicable columns and lines of parts I, II, and III must also be completed.

e. The MACOM/installation may transmit contractor furnished data via the manual or automated mode. If the manual mode is the Technical Data Feeder Report, the installation should send three copies of each such report to its MACOM. The MACOM should send two copies of each such report to HQDA (DAEN-ZCP-B), WASH DC 20310-2600, so as to arrive no later than 30 November.

4-8. Activity preparation of report

a. Activities that do not operate installations but obligate Operation and Maintenance, Army or Army Family Housing Management Account funds, either directly or indirectly, must include such obligations on Part II of the DA Form 2788-R.

b. Such activities need not prepare the remainder of the report unless the MACOM/installation indicates that additional data are required for internal management purposes.

c. Four copies of the report will be furnished to the installation, which will retain one copy and send three copies of each report to its MACOM. The MACOM will retain one copy and send two copies of each report to HQDA (DAEN-ZCP-B), WASH DC 20310-2600, so as to arrive not later than 30 November.

4-9. Report distribution

a. A copy of the installation volume of the Facilities Engineering and Housing Annual Summary of Operations will be furnished to the following at the installation, community, and MACOM levels:

- (1) DEH or equivalent.
- (2) Chief, Buildings and Grounds Branch or equivalent.
- (3) Chief, Utilities Branch or equivalent.

b. Installation performance data includes information that might be procurement sensitive, depending on the status of the commercial activities program at an installation. Installation performance data are detailed for each functional account. Distribution of this volume is limited to authorized DOD agencies and activities.

Appendix A References

Section I Required Publications

AR 5–20

Commercial Activities Program. (Cited in paras 1–8, 4–4, and 4–7.)

AR 37–100–XX

The Army Management Structure. (Cited in para 2–2.)

AR 415–17

Cost Estimating for Military Programs. (Cited in para 2–12.)

AR 415–28

Department of the Army Facility Classes and Construction Categories. (Cited in para 3–1.)

AR 415–35

Minor Construction, Emergency Construction, and Replacement of Facilities Damaged or Destroyed. (Cited in para 2–8.)

DA Pam 420–6

Facilities Engineering Resources Management System. (Cited in para 2–8.)

Section II Related Publications

A related publication is merely a source of information. The user does not have to read it to understand this regulation.

AR 11–27

Army Energy Program.

AR 37–108

General Accounting and Reporting for Finance and Accounting Offices.

AR 37–110

Budgeting, Accounting, Reporting, and Responsibilities for Industrial Funded Installations and Activities.

AR 420–10

Facilities Engineering: General Provisions, Organization, Functions, and Personnel.

DA Pam 210–1

U.S. Army Installations and Major Activities.

Section III Prescribed Forms

DA Form 4223–R

Unconstrained Requirements Report. (Prescribed in para 2–1.)

DA Form 4954–R

Direct Backlog Status Report. (Prescribed in para 3–1.)

DA Form 2788–R

Technical Data Feeder Report. (Prescribed in para 4–1.)

Glossary

Section I Abbreviations

AIF

Army Industrial Fund

ARR

annual recurring requirements

BMAR

backlog of maintenance and repair

DEH

Director of Engineering and Housing

DMAR

deferred maintenance and repair

GOCO

Government-owned contractor-operated

IFS

Integrated Facilities System

MACOM

major Army command

M&R

maintenance and repair

O&M

operation and maintenance

OMA

Operation and Maintenance, Army

OMAR

Operation and Maintenance, Army Reserve

RMF

recurring maintenance factor

RPMA

real property maintenance activities

RDTE

research, development, test, and evaluation

TDFR

Technical Data Feeder Report

URR

Unconstrained Requirements Report

Section II

Terms

Backlog of maintenance and repair

A fiscal yearend measurement of M&R of real property (not equipment) work that remains as a firm requirement and was not started during the FY due to a lack of resources.

Backlog of maintenance and repair at Army industrial installations

An annual measurement at the end of each FY of that real property facilities M&R work that was required to maintain the facilities readiness (high or low), but could not be accomplished (in this sense obligated) within funds provided during the FY.

Contractor operated

A facility operated by a GOCO or other contractor who has overall mission responsibilities.

Contractor performed functions

Functions performed by a contractor at a facility (for example, refuse handling, custodial services, pest control services).

Deferred maintenance and repair (DMAR)

A term that applies to Army family housing facilities. This term is synonymous with BMAR.

Maintenance

Work required to preserve or restore real property facilities to their operative condition. It includes work done to prevent damage to facilities that otherwise would be more costly to restore; also includes work done to sustain existing components (for example, renewal of disposal filters, painting, caulking, refastening loose siding, and sealing asphalt pavements).

Manageable BMAR level

The lower level of priority BMAR projects deferred for various reasons.

Minor repair

Work such as the repair of steps, wall receptacles, and door knobs; replacement of faucet washers; and spot painting.

Preventive maintenance

- a.* Routine inspection of facilities under standing operating orders.
- b.* Minor repair by preventive maintenance teams to prevent further deterioration, to provide for health and safety, and to restore the appearance of repaired components.

Repair

The restoration of failed real property facilities or components to an operative condition. This repair includes—

- a.* Overhauling, overlaying, reprocessing, or replacing constituent parts that have been damaged by wear or tear in use.
- b.* Correcting conditions that adversely affect using a facility for its intended purpose.

Recurring maintenance

The day-to-day cyclic work required to prevent initial failures and further deterioration of facilities. Included are such tasks as leaf raking, grass cutting, pruning, scheduled lubrication of motors, and changing of filters.

Section III

Special Abbreviations and Terms

There are no special terms.

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