

Army Standard for General Purpose Maintenance Facility (GPMF)

Description: The General Purpose Maintenance Facility (GPMF) is intended primarily for the maintenance, repair, and sustainment of vehicles and equipment assigned to units supported by the Logistics Readiness Center (LRC) Maintenance Division.

Applicability:

- This Standard expresses the intent of, and limits to, components of the facility. It is modular, scalable and expandable to provide maximum flexibility in its application for both new construction and as a reference for renovation/repurposing of existing facilities.
- The GPMF provides operational space for the LRC Maintenance Division. The using/tenant organizations may consist of Table of Distribution and Authorization (TDA) direct hire personnel, Contractors or a combination.
- The GPMF is not envisioned to provide operations space for Table of Organization and Equipment (TO&E) or TDA units directly supporting TO&E units (Fleet Maintenance Expansion (FMX)).
- General Purpose Maintenance Facilities (GPMF) campuses are for the maintenance, repair, and storage of sustainment items and equipment assigned to units supported by the LRC Maintenance Division. The GPMF campus can be comprised of the Maintenance Facility (Repair Bays), with maintenance support activities and required workshop areas), ancillary facilities (Paint Booth, Media Bay, Container Repair) and vehicle parking for vehicles to be maintained, dead-lined and occupant parking.
- The GPMF Army Standard applies to planning and programming for all U.S. Army Installations.
- This Standard allows for the development of the individual LRC Facility Allowance for CATCODE 21885 (GPMF).
 - The resulting Allowance will require validation at the individual LRC Maintenance Division locations to ensure that all mission nuances are captured and reflected in the developed Facility Requirement.
- This Standard covers all Military Construction Army (MCA) and Sustainment Restoration Modernization (SRM) funded Army GPMF. The size of an Army GPMF shall be based on the identified core mission at the Installation, to include Regional missions, as assigned by Army Sustainment Command (ASC). All projects must be reviewed by the USACE CoS to ensure conformance with the Army Standard. Waivers from the Army Standard must be requested in accordance with AR 420-1.
- The number of tactical vehicles and trailers assigned to Units supported by the LRC Maintenance Division is the primary factor in determining the number of Bays allowed. Identified workshop functions are also to be considered for a GPMF campus. In all instances, the primary source for determining baseline allowances is the Real Property Planning and Analysis System (RPLANS).

Waivers:

- Approval for exceptions and waivers from Army Standards must be requested in accordance with the AR 420-1. As the proponent, DCS G-4 must validate and approve the request.
- Deviations based on gaps or shortfalls in addressing either doctrinal, functional, operational, or readiness requirements shall be forwarded through the Army chain of command to the ARSTAF Functional Proponent (ODCS G-4) prior to submission as an Army Standard waiver request in order to expedite the review process.
- All waiver requests to this Army Standard require GPMF Center of Standardization

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(COS) conflict resolution prior to submission by the Garrison Commander.

- Garrison Army Standard waiver request submissions must be received in sufficient time to allow the GPMF FDT to complete review and development of recommendations or courses of action for the Army Facilities Standardization Committee to consider prior to implementation into project design.
- All Headquarters, Department of the Army (HQDA) approved waivers shall be documented in installation master plans thereby serving as the installations modified standards for the facility type affected.
- Late submissions and/or project delays are NOT sufficient stand-alone justification for accelerated review or other dispensation to meeting the Army Standard contained herein.

The Guidance Section provides instructions and definitions necessary for the application of the mandatory requirements contained in the tabular section of the Army Standard. As such, they are used in conjunction with the Army Standard in order to ensure the intent and embedded functionality contained herein will meet the Army's mandatory requirements set forth by this standard.

Planning Criteria

Army Standards are not intended to provide broader design criteria such as space allocation, functional layouts, or basic layouts more appropriately contained in the supporting and conforming Criteria. Nor are they intended to rigidly define collective facility authorizations more appropriately adjudicated by the Army Requirements Group.

This Army Standard, and approved Army space criteria are applied together in an iterative and co-dependent way to provide a standardized but adaptable approach to facility standardization. Each serves a different purpose to ensure mandatory functions and operability are provided uniformly and at the right size. The primary source for determining authorized allowances, in every instance, is the Real Property Planning and Analysis System (RPLANS) which incorporates current criteria approved by the Army Requirements Group.

Item	Mandatory Criteria
Site Selection & Planning	<ol style="list-style-type: none">1. The GPMF shall be sited in accordance with the approved Installation Real Property Master Plan.2. Every effort shall be made to ensure planning incorporates components/elements located elsewhere on post to achieve a more consolidated campus for overall mission efficiency.
Mission Planning, Physical Security and Safety	Controlled access to the GPMF and associated vehicles and equipment storage/holding areas shall be established between LRC Director and the Provost Marshall's office.
GPMF Campus Footprint	<ol style="list-style-type: none">1. The Footprint includes Admin/Shop Control, Vehicle Maintenance and Sustainment, Workshops, and hardstand to support organizational and non-organizational vehicles and equipment.2. Ideally, when multiple buildings are used to support the GPMF mission, the proximity of

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Item	Mandatory Criteria
	buildings should be such that they can be enclosed in a single campus.
Primary Facility Scope and Capacity (CATCode 21885)	The scope of the primary facility will be based on the number and type of default modules plus any exception modules approved by ASC to support special local or regional missions.
Vehicle Maintenance Bays (CATCode 21885)	<ol style="list-style-type: none"> 1. All GPMF new construction will use a 32' x 64' (to a maximum of 32' x 96') structural bay for repair and maintenance areas as stipulated in the Guidance paragraph below. The structural bay size should be considered in evaluating the feasibility of a renovation/repurposing project. 2. All bays will have a drive-through (in/out) feature and be free of intermediate support columns. <p>The following functions, when required, should normally be located outside the main facility:</p> <ol style="list-style-type: none"> 1. Paint Media/Blast 2. Paint Booth 3. Container Repair
Admin Core Module (CATCode 21885)	<p>These functions are to be included in the Admin/Core module as appropriate to the specific mission of the LRC:</p> <ol style="list-style-type: none"> 1. Admin & Shop control 2. Tool storage 3. Carpenter (can be collocated with Shipping & Receiving) 4. Parts storage (shop stock) 5. Bench repair 6. Arms vault 7. COMSEC vault 8. Secure storage 9. Training area 10. Break room 11. A/V equipment repair 12. Component Repair 13. Darkroom 14. Diagnostic equipment repair 15. Electronic 16. Locksmith 17. NBC protective equipment repair w Dark Room 18. Small Arms 19. Latrines, and utility room functions will be consolidated in an Admin Core Module of the GPMF as stipulated in the Guidance section below.
Workshop Area	<ol style="list-style-type: none"> 1. Artillery repair 2. Canvas 3. Engine Test 4. Fire Systems 5. Metal

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Item	Mandatory Criteria
	6. Paint Prep 7. Radiator Repair 8. Refrigeration 9. Small Engine 10. Scheduled maintenance 11. Tire Repair 12. Welding 13. Cylinder Shop 14. Gauge Shop 15. Battery Shop 16. Transmission Shop
Overhead Lift	All GPMF primary facilities shall provide overhead lift with accessibility to all Repair and Maintenance Bay work areas. <ol style="list-style-type: none"> 1. As a minimum, provide one (1) 10-ton bridge crane covering all structural bays for each GPMF. 2. As a minimum, one 35-ton bridge crane. With sufficient hook height, will be provided per GPMF Heavy Repair area in the campus as anticipated for any pass-back maintenance of large tactical vehicles.
Power & Data Connectivity	Provide power and data connectivity to all bays, workshop area, and the Admin Core Module. SIPRNET access may be required.
Secure Storage	Provide a minimum of 900 NSF of secure storage in each GPMF: <ol style="list-style-type: none"> 1. 300 NSF – Arms Room IAW AR 190-11 2. 300 NSF – Communication Equipment Storage 3. 300 NSF – Non-Sensitive Secure Storage
Tool Supply Allowance	Provide a minimum of 600 NSF for Tool Room
Organizational Vehicle Parking (CATCode 85210)	Parking for LRC vehicles should be separated from vehicles and equipment awaiting repair or maintenance by a physical barrier (i.e., fence).
Non-Organizational Vehicle Parking (NOVP) (CATCode 85215)	NOVP will be provided for personnel working in the GPMF in the vicinity of the facility.

Guidance Section

General. The following guidance for application of the GPMF Army Standard is provided for design agent use in coordination with the Garrison DPW. All design agents shall incorporate the key mandatory design features described herein in close coordination with the USACE designated Center of Standardization (COS) for GPMFs. All GPMF Military Construction (MILCON) projects must be reviewed by the COS.

1. This section of the Army Standard is a necessary component for determining the application and implementation of this standard. The COS, in coordination with the GPMF Facility Design Team (FDT), is the final arbitrator for any conflicts or inconsistencies in the application of these standards as well as a mandatory review prior to the submission of any formal waiver requests by the Installation. Citing project execution delays is insufficient justification for expedited review or other accelerated dispensation for deviating from meeting the Army Standards contained herein. Late submissions must be substantiated by unforeseen and documented life

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safety, health, and welfare, or compelling mission imperatives that cannot be met without an approved waiver.

2. The GPMF is a major Installation Readiness operations facility with functional, operational, and spatial relationships potentially critical to meeting mission. When a critical need for spatial or land use consideration exists for siting and implementing this Army Standard, guidance is provided to minimize or preclude functional and operational impacts on the GPMF and its Installation Readiness support requirements. Primary guidance should always align with the approved Installation Master Plan held by the Garrison DPW and the Army Command ACOM with Command/Control authority for the LRC Maintenance mission. The use of this Standard is intended for the recapitalization of existing facilities under an SRM project delivery, as well as MCA in a new construction delivery.

3. These same parameters are used by other Army activities in the doctrinal, organizational, training, and materiel domains and are adopted herein to simplify coordination and preclude misinterpretation when synchronizing requirements across the Army.

4. Space modules, criteria, or components of the GPMF Campus shall be used to develop space allowances and/or requirements before consideration for the development of unique or specialized space allowances different from those outlined in this Army Standard. When standard space modules, criteria, and/or components are not used, the DCS G-4 Functional Proponent, in coordination with the GPMF FDT and CoS, will review and validate functional or operational requirements prior to the development of any unique or specialized space allowance(s) and before incorporating into a project programming document or facility design.

Design Philosophy.

1. The GPMF campus is a major component of the overall LRC maintenance mission. Functional, operational, and spatial relationships critical to meeting mission requirements are embedded in the layout and spatial relationships of the primary facilities or sub-elements of a GPMF Campus. By definition, the use of the term “campus” in this standard refers to multiple facility types that are “packaged” to meet the LRC maintenance mission objectives while optimizing the GPMF footprint. When there is a critical need for spatial or land use consideration for siting and implementing this Army Standard, guidance is provided to minimize or preclude functional and operational impacts on the GPMF campus, these Installation, or Regional support requirements.

2. The GPMF campus represents a consolidation of critical functional/mission areas as cited above. The GPMF maximizes and builds upon the increased connectivity being developed for Installation wide logistics and support efficiencies.

3. To reduce repetitive construction modification of facilities to accommodate change, the GPMF shall adopt a modular, scalable and adaptive, multipurpose programming philosophy to reduce reliance on construction and the disruption to its efficiency and support mission.

4. Additional design considerations are:

- Maximum use of natural light so that facilities remain usable during periods of lost utility support
- Economy of construction
- Durable facilities to withstand the rigors of multiple users
- Pre-fabricated construction components and/or modular construction that satisfies facility durability and functional requirements

Application Guidance.

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This section addresses the logical approach for developing the scope for an LRC Maintenance Division facility Allowance by area. This method is incorporated into the RPLANS algorithm for calculating the programmatic allowance.

The programmatic allowance is the baseline requirement. It should be validated at each LRC Maintenance Division to identify any unique mission elements or functions not addressed in the allowance calculation to adjust the facility requirement IAW AR 405-70 when appropriate.

1. Site Selection and Planning. Site selection and Real Property Master Planning for GPMF's shall meet the layout and configuration determined previously in an approved Area Development Plan (ADP) to the maximum extent possible. When installations are precluded from meeting the consolidation requirements and alternatives considered, their associated limitations shall be documented in the installation Real Property Master Plan ADP with a summary forwarded to HQ IMCOM-G4 for Army-wide implications assessment.

a. Determining when and how to apply the GPMF Army Standard is based on the existence of an LRC Maintenance Operation at the Installation.

b. The GPMF primary facility space allocation shall be based on Category Code 21885. Space allowances are to be quantified in RPLANS.

c. When multiple buildings are anticipated to provide space for the GPMF functions, the buildings should be consolidated into a campus of well-planned elements with appropriate adjacencies. Consolidation reduces operations and sustainment costs as well as allows for better mission management. (The Carpentry function can be aligned with the function that is primarily supported.)

d. When land area constraints preclude a contiguous area, maximum consolidation is required with planning assistance from all operational stakeholders.

e. Primary Facility Scope and Capacity (CATCode 21885). Structural Bay Modules are combined with Admin Core Modules and Workshop Areas into baseline operational a GPMF facility.

f. The structural bay module represents quantity four 32' x 16' work areas spanning a 32' x 64' structural bay. A similar structural bay is used as the Admin Core floor grid to simplify space allowance calculations. The Large Structural Bay (if required) is 32' x 96'.

g. All structural bays are equipped with roll-up coiling doors along the building exterior.

h. The GPMF Admin core does not require a maintenance/inspection pit.

i. The facility shall be connected to the Installation wide area network system (WAN) and telephone system in accordance with Installation Telecommunications business rules. Secure Internet Protocol Routing Network (SIPRNET) access may be required.

2. Admin/Shop Control. The Core Area contains the Administrative area. This area will provide space for:

a. Admin & Shop control

i. Office space will be provided. All office space shall be Open Office* except for Private Offices* for the Facility Manager and Contracting Officer's Representative (COR).

- Private Offices are allocated 150 NSF plus 25% circulation = 180 NSF

- Open Offices are allocated 48 NSF per Occupant + 100% Circulation = 96 NSF

b. Conference Room

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- i. A 10-person Conference Room will be provided.
- c. Training area
 - i. Training Area will be provided.
- d. Break room (Can be spread through facility, if needed)
 - i. A Break room will be provided.
- e. Latrines, Individual Lockers and Showers (Can be spread through facility, if needed)
 - i. Latrines will be provided.
 - ii. Individual lockers will be provided at one per building occupant.
 - iii. Showers will be provided at 1 per Structural Bay.
- f. Mechanical space is to be provided.

3. Repair/Maintenance Bays.

- a. Identify the Organizations that are supported by the LRC Maintenance Division. This is particularly relevant if there is another sustainment maintenance activity on the Installation. (Fleet Maintenance Expansion (FMX) or similar).
- b. Determine the Total Maintenance Load (TML); This is calculated by:
 - i. taking the number of vehicles reported by tenants assigned to the base as determined by RPLANS or another requirements analysis
 - ii. 10% is added to this number to account for trailers.
 - The result is the TML for the LRC Maintenance Division.

Table 1: TML calculation example

Installation	Total No. of Supported Vehicles	TML
Fort Anywhere	3,450 x 1.1	3,795

- c. Calculate the total Repair Bays needed. Bay sizes and relationships are shown in Table 2.

Table 2: Space definition of Repair/Maintenance Bays

Large Structural Bay	Structural Bay	Repair Bay	Work Area
1	1	2	4
32' x 96'	32' x 64'	32' x 32'	16' x 32'
3,072 NSF	2,048 NSF	1,024 NSF	512 NSF

- i. Utilizing the TML, apply the multiplication factor of 0.005, rounded up to the next even number of structural bays. The result is the Required Repair Bay equivalents. This Bay calculation is based on a 64' deep Structural Bay.

It is recognized by this Standard that a deeper bay may be required to accommodate the Army's largest equipment. Therefore, the maximum authorized bay depth is 96'. These larger bays will be justified by the LRC Maintenance Division which has the mission to support such vehicles.

Table 3: Number of Repair Bays Calculation example

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TML	Factor	Repair Bay Equivalents
3,795	0.005	20

- The Installation Type factor is applied to the Repair Bay equivalents to determine the mix of Heavy Repair Structural Bays and Light Structural Bays.
 - i. The Light Repair Bay Equivalents are then divided by 2 (for Structural Bays) and the Heavy bays are subtracted from that number to produce the number of Structural Bays needed to support Light Maintenance.
 - ii. The Light and Heavy are added to produce the number of Total Structural Bays required.
 - iii. Identify if a Large Structural Bay is required to account for large vehicles (HET/HEMMT/Mobile Artillery etc.). If such a Bay is justified, then one of the Structural Bays is to be identified as a Large Structural Bay.

Table 4: Installation Types

Installation Type	Definition	Light %	Heavy %
R1	Infantry	90	10
R2	STRYKER/Artillery	80	20
R3	ABCT	70	30
S	Sustainment	90	10
T	Training	90	10
T1	Training w/ Heavy Equipment (EN)	80	20

Table 5: Number of Repair Bays with Inst Type factor example

Type	Repair Bay Equiv.	Light	Heavy	TOTAL
R2	20	16 Repair Bays	4 Structural Bays * with one identified as Large is required	
				<u>12 Structural Bays</u>

4. Workshop Areas.

- a. Workshop Areas are an integral part of the LRC Maintenance Division mission.
- b. The Workshop Functional Areas are considered Default or Exception to calculate facility allowances:
 - i. Default – These Functional Areas are described in this Standard and have Allowances calculated in RPLANS for LRC Maintenance Division organizations. These Functional Areas are included in the basic RPLANS Allowance calculations.
 - ii. Exception – These Functional Areas are assumed to be required by a select number of LRC Maintenance Division. These requirements for these Functional Areas must be validated by ASC to justify to RPLANS Requirements calculations.

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- iii. The following Table identifies the Workshop Functional Areas and their identification as Default or Exception:

Table 6: Workshop Functional Areas by Default/Exception

DEFAULT		D	
EXCEPTION		E	
FUNCTIONAL AREA	LOCATION	NSF	D/E
A/V equipment repair	CORE	512	E
Artillery repair	BAY	2,048	E
Auto Repair	BAY	512	D
Battery Shop	BAY	512	E
Canvas	BAY	1,024	E
Carpentry ***	BAY	1,024	D
Component Repair	CORE	512	D
Container Repair	EXTERNAL	1,024	E
Cylinder Shop	BAY	512	E
Darkroom	CORE	150	E
Diagnostic equipment repair	CORE	512	D
Electronic	CORE	512	D
Engine Test	BAY	1,024	E
Fire Systems	BAY	512	E
Gauge Shop	BAY	512	E
HVY Veh Repair	BAY	2,048	D
Locksmith	CORE	512	E
Metal	BAY	1,024	D
NBC protective equipment repair	CORE	512	E
Paint Booth	EXTERNAL	-	E
Paint Media/Blast	EXTERNAL	-	E
Paint Prep	BAY	2,048	E
Radiator Repair	BAY	512	E
Refrigeration	BAY	512	E
Scheduled maintenance bay	BAY	1,024	D
Small Arms	CORE	700	D
Small Engine	BAY	512	D
Tire Repair	BAY	512	E
Tool Room	CORE	512	D
Transmission Shop	BAY	512	E
Welding	BAY	1,024	D

- iv. Thought needs to be given to the Functional Relationships between certain Workshop Areas and the Maintenance Areas. This can vary by the availability of existing space in existing facilities.
- v. The Carpentry Shop is an exception as this Functional Area can be collocated with other LRC missions.
- vi. The Functional Areas marked as “External” are considered to be sited/placed outside of the GPMF. The Paint mission function is normally regionalized and are usually a Commercial Off-The-Shelf (COTS system. It is recommended that the Container Repair function be placed outside the main GPMF due to the excessive noise than can be generated by this activity.
- vii. The NSF sizes of the Functional Areas will only apply if that Functional Area is indeed required by the specific LRC Maintenance Division.

5. Hardstands.

- a. Hardstand Areas are to be provided for:
 - i. Organizational Vehicle Parking;

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- Organizational Parking (CC 85210) is to be provided based on the Total Maintenance Load and other assigned Regional missions.
- Organizational Parking requirement is to be initially calculated at 3 times the number of Repair Bays x 75 SY.
- ii. Holding / Deadlining
 - Holding / Deadlining (CC 85210) requirements areas are to be initially calculated a 2 times the number of Repair Bays x 75 SY.
- iii. Container Repair
 - Container Repair (CC 45210) is to be calculated at a minimum of 4,000 SY (100 X 40' Containers, not stacked).
- iv. Non-Organizational Vehicle Parking
 - Non-Organizational Parking (CC 85215) is to be calculated at 36 SY per documented occupant of the GPMF Campus.
- v. Maintenance Facility Aprons;
 - Maintenance Facility Aprons. A standard access apron clearance of 45 feet is required along both sides and both ends of the maintenance building. A minimum circulation lane 20 feet in width surrounds this area and is required for vehicular circulation routes.

Reference Criteria. The designs should use latest editions of the following design criteria:

- IBC - International building code
- NFPA 13 Standard for the Installation of Sprinkler Systems
- NFPA 101 Life Safety Code
- Uniform Federal Accessibility Standards (UFAS) Federal Standard 795
- Energy Policy Act 2005 (EPACT05)
- Executive Order 13423 (E.O. 13424), Strengthening Federal Environmental Energy and Transportation Management
- Army SOD LEED NC Silver Policy
- AR 190-16, Physical Security
- AR 190-51, Security of Unclassified Army Property (Sensitive and Nonsensitive)
- AR 210-20, Real Property Master Planning for Army Installations
- AR 405-70, Utilization of Real Property
- AR 415-15, Army Military Construction Program Development and Execution
- AR 420-1, Army Military Construction Program Development and Execution
- AR 420-90, Fire Prevention and Protection
- DA PAM 415-28, Facility Guide To Army Real Property Category Codes
- UFC 1-200-01 Design: General Building Requirements
- UFC 3-600-01, Design: Fire Protection Engineering for Facilities
- UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings
- Standard Definitive Design for COF
- ER 1110-3-113, Engineering and Design, Department of the Army Facilities Standardization Program
- ETL 1110-3-491, Sustainable Design for Military Facilities
- D/CID 6/4, Personnel Security
- USAISE, Technical Criteria for the Installation Information Infrastructure Architecture (IA3)
- Real Property Classification System (RPCS) DoD Web