



ACQUISITION,
TECHNOLOGY
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

FEB - 4 2013

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY
(INSTALLATIONS, ENERGY AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE NAVY
(ENERGY, INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE AIR FORCE
(INSTALLATIONS, ENVIRONMENT AND
LOGISTICS)
DIRECTOR, FACILITIES SERVICES DIRECTORATE,
WASHINGTON HEADQUARTERS SERVICES

SUBJECT: Revised Implementation Goals for the Linear Segmentation Capability of the Real Property Inventory Requirements (RPIR)

Reference: (a) DUSD(I&E) Memorandum, "Revised Implementation Goals for Linear Segment Data Elements of the Real Property Inventory Requirements (RPIR)," November 25, 2008

The implementation date for documenting the full extent of the Department's linear structures (e.g., linear segmentation) for real property accountability is extended to September 30, 2017. Currently, the DoD's linear structures (such as electrical and water/wastewater distribution systems) are not fully documented and therefore, accurately calculate plant replacement value, and improve the Facilities Sustainment Models. For example, instead of reporting a total of 14 miles of electric distribution at an installation, a breakout of linear structures was requested such that the 8 miles of 13.2 kV distribution is uniquely identified separately from the remaining 6 miles that is constructed at 4.16 kV. This is known as "linear segmentation". Linear segmentation documentation was to be completed by the end of FY12.

This memorandum updates the target date established in Reference (a), and promulgates the decision made during the September 20, 2012 Real Property & Installations Life Cycle Investment Review Board meeting to more completely define DoD's linear structures by FY17.

Further, to ensure that we stay on track with this goal, the Military Departments and Washington Headquarters Services are requested to submit annual reports describing the status of their linear segmentation implementation plans. The report shall be submitted by June 30th of each calendar year until implementation is complete. Should resourcing to complete this goal become an issue, the Components are requested to discuss these issues during the annual program reviews.

My point of contact is Mr. Robert Coffman, (571) 372-6840, robert.coffman@osd.mil.

John Conger

Acting Deputy Under Secretary of Defense
(Installations and Environment)



OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

ACQUISITION,
TECHNOLOGY
AND LOGISTICS

3 April 2009

MEMORANDUM FOR CHIEF OF NAVAL OPERATIONS (N-46)
ASSISTANT SECRETARY OF THE ARMY
(INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE NAVY
(INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE AIR FORCE
(INSTALLATIONS, ENVIRONMENT AND LOGISTICS)
DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE
(INSTALLATIONS AND ENVIRONMENT)
DIRECTOR, DEFENSE LOGISTICS AGENCY
DIRECTOR, DEFENSE FACILITIES, WASHINGTON
HEADQUARTERS SERVICES
ARMY ASSISTANT CHIEF OF STAFF FOR
INSTALLATION MANAGEMENT
MARINE CORPS ASSISTANT DEPUTY COMMANDANT
FOR INSTALLATIONS AND LOGISTICS (FACILITIES)
AIR FORCE CIVIL ENGINEER

SUBJECT: Department of Defense Guide for Segmenting Types of Linear Structures

The Real Property Inventory Requirements (RPIR), published January 2005, established a transformed real property accountability business process and data standards required to manage real property assets throughout their lifecycle. To ensure consistency, the Real Property Networks and Linear Structures (RPNLS) Working Group (WG) was established by the Installations and Environment Domain Governance Board (I&E DGB) to develop business rules for sound, consistent segmentation of linear structures.

The RPNLS WG has completed the Department of Defense Guide for Segmenting Types of Linear Structures. Each Military Department and Defense Agency responsible for the inventory of those linear structure assets identified therein will provide for the consistent segmentation and measurement of those linear structures following the methodology provided in this guide. The I&E DGB has requested completion of linear segmentation by the fourth quarter of FY 2012.



The guide is attached for your reference and will be made available on the Business Enterprise Integration Web site upon completion of security review. If you have any questions concerning this guide, please contact Mr. Robert Coffman at 703-604-4615, robert.coffman@osd.mil.

A handwritten signature in black ink that reads "Lora D. Muchmore". The signature is written in a cursive style with a large initial 'L'.

Lora Muchmore
Office of the Deputy Under Secretary of Defense
(Installations and Environment)
Business Enterprise Integration

Attachment:
As stated

Department of Defense Guide for Segmenting Types of Linear Structures



**Office of the Deputy Under Secretary of Defense
(Installations & Environment)**

Business Enterprise Integration Directorate

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Overview

The Real Property Inventory Requirements (RPIR), published January 2005, established a transformed real property accountability business process and data standards required to manage real property assets throughout their lifecycle. To ensure consistency, the Real Property Networks and Linear Structures (RPNLS) Working Group (WG)¹ was established by the Installations and Environment Domain Governance Board to develop business rules for sound, consistent segmentation of linear structures. This document was developed by the RPNLS WG to provide Department-wide methods for segmenting linear structures.

As defined in Department of Defense Instruction (DoDI) 4165.14 (see Attachment B, Section E2.1.14), a linear structure is “A facility whose function requires that it traverse land (such as a road, rail line, pipeline, fence, pavement). Includes distribution systems that provide a common service or commodity to more than one building or structure.” Linear structures are constructed across the earth—above, on, and below the surface of the ground or water—with one physical dimension (usually length) significantly greater than the other dimensions. A linear structure generally provides the transport mechanism that enables the flow of a service or commodity from its source to its intended destination.

In most cases, asset managers manage linear structures by segment. It is these particular linear structures this document seeks to address. Linear structure segmentation usually occurs at locations in the linear structure asset where there is a change in the physical properties that affect the flow of the commodity or service. For example in a potable water system, physical property changes could include differences in pipe material, thickness of the pipe wall, pipe diameter, or date of construction.

To manage the asset at the segment level, the asset manager needs to know the asset’s physical characteristics such as pipe diameter, age, material, pressure rating, and other essential asset management data. To manage the real property inventory, the Real Property Accountable Officer (RPAO) needs the total unit of measure quantity of the combined segments and be informed by the asset manager whenever this total or other inventory attributes change. Both the Asset Manager and the RPAO are also involved in restoration, modernization, and total replacement decisions as both are impacted by the results.

Requirement

Each Military Department and Defense Agency responsible for the inventory of those linear structure assets identified herein will provide for the consistent segmentation and measurement of those linear structures following the methodology provided in this guide.

Segmentation of identified linear structures will be completed by September 2012 according to each Military Department and Defense Agency’s approved implementation

¹ Formerly the Linear Structures Scope Team

plan² and in accordance with the segmentation business rules provided in this document. If segmentation is required, the information provided through the asset segmentation will serve as the basis for the real property inventory record.

Systems or programs used to perform and maintain segmentation information of linear structures will provide linkage to the real property inventory through usage of the linear structure's Real Property Unique Identifier (RPUID), as well as the Real Property Site Unique Identifier (RPSUID) for the site on which the linear structure is located. Both RPUID and RPSUID are defined in the RPIR. The current list of data entities, data elements, definitions, business rules, and all other associated metadata for RPIR are published in the Real Property Information Model.

Where a methodology provided in this guide comes into conflict with the methodology provided in an Army Construction Engineering Research Laboratory (USA-CERL) produced sustainment management system for that asset type, the USA-CERL published methodology will be used.

USA-CERL will coordinate methodology changes through their established working groups and with the Office of the Deputy Under Secretary of Defense (Installations and Environment), Business Enterprise Directorate (BEI).

The Director, BEI, is responsible for the maintenance of this document and oversight of the associated initiatives of the communities of interest relative to this effort.

² Deputy Under Secretary of Defense (Installations and Environment) Memorandum, "Revised Implementation Goals for Linear Segment Data Elements of the Real Property Inventory Requirements (RPIR)," November 25, 2008

Implementation Business Rules

Rules specific to various linear structure types are provided in the appropriate sections of this document. The following business rules apply to all linear structures:

1. Each linear structure asset is a real property asset.
2. Each linear structure asset has an RPUID.
3. Each linear structure asset is bound to one and only one real property site.
4. A linear structure asset contains *one or more* linear structure segments.
5. The real property dimension of a linear structure asset is the sum of the real property dimensions of that linear structure asset's segments.
6. A linear structure segment must be associated with one and only one RPUID.
7. A linear structure asset may be comprised of multiple Category Codes (CATCODEs).
8. Multiple linear structure assets of one Facility Analysis Category (FAC) may exist on a site if they are discontinuous or not connected.
9. Each linear structure asset begins at the installation boundary or point where DoD's interest begins as stipulated in easements, rights-of-way, etc.
10. The linear structure asset is segmented where a non-linear real property asset (a linear structure known as a node) is connected to the linear structure.
11. The linear structure asset is segmented where there are changes in the characteristics that affect capacity or delivery of a service or commodity such as installation date, diameter, type material, and type of service. Where this business rule comes into conflict with the methodology provided in a USA-CERL produced sustainment management system for that asset type, the USA-CERL published methodology will be used.
12. Modification of the Real Property Inventory will be undertaken in the event of:
 - *Acquisition*: If a new linear structure asset is constructed or acquired, a new real property asset record will be created and a new RPUID will be assigned when the construction or acquisition contract is signed.
 - *Renovation*: If a linear structure asset is partially or totally modified, the original RPUID will be retained but the real property asset record attributes may change.
 - *Expansion*: If a linear structure asset is expanded, the original RPUID will be retained but the real property asset record attributes must be updated. Contiguous segments may be added without the creation of a new asset.
 - *Disposal*: If the attributes of a linear structure change (for example, a portion of a road is disposed) the real property asset record must be updated to reflect the changes. Segments may be deleted without the full disposal of the asset.

Linear Structure Types

The following pages provide the definitions, business rules, FAC, and additional considerations for the following types of linear structures:

- Airfield Pavements
- Railroad and Crane Tracks

- Roadways and Parking Areas
- Pipes (e.g., petroleum, oils, and lubricants (POL); water; sewer; steam)
- Electrical Utilities

Facility Analysis Categories (FACs)

This implementation guide provides Facility Analysis Categories (FACs) related to various linear structures. These codes are part of the Real Property Classification System (RPCS), the hierarchical scheme of real property types and functions used to identify, categorize, and analyze the DoD inventory of land and facilities around the world. RPCS is comprised of a five-tier structure represented by numerical codes, from the most general single digit codes, to four-digit FAC, to five- or six- digit codes that represent the most specific types of facilities. The RPCS also includes the unit of measure for each FAC. If the unit of measure for the pertinent asset management system differs from the unit of measure in the RPCS, the conversion factors provided in the RPCS should be used. The RPCS is available at:

http://www.acq.osd.mil/ie/irm/ProgramAnalysis_Budget/ToolAndMetrics/RPCS/rpcs.shtml

Airfield Pavements

Airfields are linear structures that are comprised of multiple assets. From an asset management perspective, engineers cannot evaluate an airfield pavement system as a single entity because pavement areas vary greatly in:

- Type
- Use
- Thickness
- Construction history
- Traffic area
- Condition

For assessment purposes, airfield pavement is divided segments with common characteristics.

The predominant pavement management system in the Department of Defense is PAVER. The segmentation taxonomy of PAVER is network, branch, and section. A branch is the same as a real property asset; and a section of a branch is a segment of the asset. One proposed PAVER linear structure segmentation schema is shown in Figure 1.

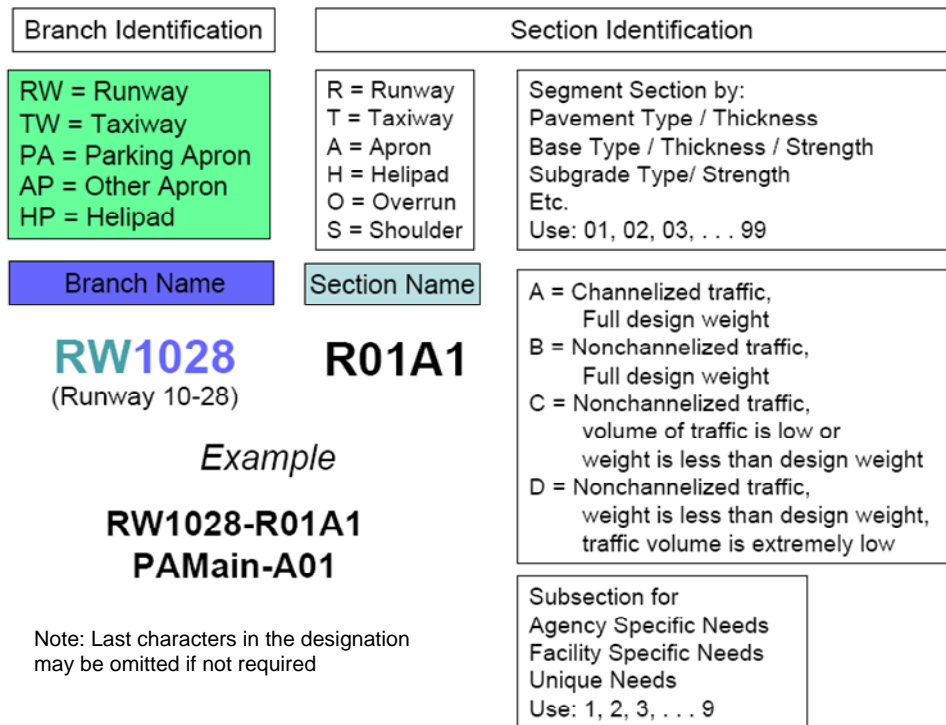


Figure 1 Linear Structure Segment Designation Schema

The asset user community determines the name of the asset. Segment designations may change over time to reflect changes in airfield operations, as well as changes resulting from maintenance, repair, and expansion projects. As the airfield asset user community changes the use of an asset, that change must be reflected in the segment designation. For example, a runway may be re-designated by the asset user community as a taxiway.

The old runway segment designations should be changed to reflect the new use as a taxiway.

Additional Considerations

Area: Area is not simply length multiplied by width, as a pavement is often an irregular polygon. The workgroup recommendation is to use data from actual field measurements to determine the true area; with the caveat that PAVER asset measures must reconcile with the RPI total asset quantity.

Junctions: The two-dimensional area (footprint) of a segment of pavement should not be “double-counted” by including that area in multiple assets. The pavement of intersections is typically assigned to one of the intersecting assets. In unusual cases the local airfield manager has discretion for designating how much of the surface area of the junction each asset will receive. The delineation and the methodology used should be documented in the sustainment management system.

Thresholds: The location of runway thresholds can be determined based on the runway markings. These markings vary according to service, class and/or category of runway, whether it is mixed use (shared with commercial traffic), and which standards apply. Markings in the continental United States are consistent with the Unified Facilities Criteria (UFC). Outside the continental United States, International Civil Aviation Organization standards are used.

Taxiways and Aprons: In some instances, portions of the taxiway will be contiguous with the apron and other portions will not. In these cases portions of the taxiway may be marked using taxiway criteria and other portions will be marked using taxi lane criteria. In general, if the airfield manager has established a taxiway designation, the pavement should be treated as a taxiway.

Shoulders: Shoulders may be paved or unpaved as defined in UFC 3-260-01. This section specifically addresses paved shoulders.

Business Rules

1. Where pavement assets intersect, the pavement surface area is part of the asset highest in the order of precedence. The order of precedence is:
 - a. Runways
 - b. Taxiways
 - c. Aprons
 - d. Helipads
2. A single apron, runway, or taxiway is a single asset in the RPI, even if it is built with multiple construction techniques or differing materials.

Runways

1. The area of a runway is the length multiplied by the width.
2. The length of a runway is measured from the outer edge of the thresholds between the runway and the overruns.

3. The width of a runway is measured from the outer edge of the load-bearing pavement on one side to the outer edge of the load-bearing pavement on the other side.
4. If portions of a runway are abandoned, the width is measured from the outside edge of the runway marking on one side to the outside edge of the runway marking on the other. The remaining pavement may be considered shoulder pavement.

Overruns

1. The length of an overrun begins at the outer edge of the runway threshold and ends where specified by design criteria or at the edge of pavement, whichever is lesser.
2. The width of the overrun should equal that of the supported runway.

Taxiways

1. The local airfield operations community defines the start and stop points of a taxiway.
2. The width of a taxiway is measured to the outer edges of the load-bearing pavement, or to the edge of a marking in the case where the taxiway abuts another asset or where the taxiway utilizes existing pavements; either active, such as along an apron, or inactive, such as within the boundaries of a previous active runway.
3. Taxi lanes should be inventoried as part of the apron(s) they traverse, with the exception of Refueling Lanes that are typically regarded as Taxiways.

Aprons

1. Aprons are measured to the edge of load-bearing pavement, or to the edge of a marking in the case where the apron abuts another asset.
2. Hangar approach slabs should be categorized as part of the larger apron.

Helipads

1. Helipads are measured to the edge of load-bearing pavement, or to the edge of a marking in the case where the apron abuts another asset.
2. Areas on existing runways and taxiways marked for helicopter landing will be categorized and counted as runway or taxiway pavement and will not receive an HP designation.

Shoulders

1. The length of the shoulder is the length of the associated load-bearing pavement.
2. Shoulders may be noncontiguous where they are interrupted by intersecting sections.
3. Shoulder width should be measured from the outer edge of the load-bearing pavement to the edge of the shoulder pavement.
4. In cases where load bearing pavement is being used as shoulder (as described in the runway example above), measure the shoulder from the outside edge of the marking to the edge of pavement.

Unsurfaced Airfield Assets

1. Marked unsurfaced airfield assets are measured in the same manner as their surfaced counterparts above.
2. Unmarked unsurfaced airfield assets are measured as specified by design criteria, based on centerline.

Designations

The following designations for assets and segments should be used in the Military Services' asset management systems.

| Asset | Asset Designation | Segment Designation | Examples |
|--|-------------------|---------------------|---|
| Runways | RW | - | All classes/categories of runways, helicopter runways, and assault landing strips |
| Overruns | RW | <i>O</i> | Overruns on all classes/categories of runways, helicopter runways, and assault landing strips |
| Taxiways | TW | - | Any pavement that has been given a taxiway designation by the airfield manager |
| Parking Aprons | PA | - | Main parking aprons and any other structure intended for long-term aircraft parking |
| Pads and Miscellaneous Airfield Pavement | AP | - | Wash racks, arm-dearm pads, compass roses, and any other structure not intended for long-term aircraft parking |
| Helipads | HP | - | Helipads that lie within main parking aprons or those that are stand-alone structures intended for helicopter operation and/or long-term parking of helicopters |
| Shoulders | | <i>S</i> | Any paved surface adjacent to a runway, taxiway, or apron intended as a cover to minimize Foreign Object Debris |

Assets and Facility Analysis Categories

| FAC | FAC Title | Description |
|------|---|--|
| 1111 | Fixed-Wing Runway, Surfaced | A paved surface designed for the landing and takeoff of fixed-wing aircraft that can also accommodate rotary-wing aircraft. The surface is usually concrete or asphalt. Runway lighting is not included, but is captured under Facility Analysis Category 1361. |
| 1112 | Rotary-Wing Landing Area, Surfaced | A paved surface designed for the landing and takeoff of rotary wing aircraft. The surface is usually concrete or asphalt. It can be either a helipad or a runway. Helipad or runway lighting is not included, but is captured under Facility Analysis Category 1361. |
| 1113 | Runway Overrun Area, Surfaced | An extension of a runway surface. The surface is usually concrete or asphalt. |
| 1114 | Runway, Unsurfaced | An unpaved surface designed for the landing and takeoff of fixed-wing aircraft. |
| 1121 | Taxiway, Surfaced | A paved surface designed for the movement of fixed-wing aircraft. The surface is usually concrete or asphalt. Taxiway lighting is not included, but is captured under Facility Analysis Category 1361. |
| 1122 | Rotary-Wing Taxiway, Surfaced | A paved surface designed for the movement of rotary-wing aircraft. The surface is usually concrete or asphalt. Taxiway lighting is not included, but is captured under Facility Analysis Category 1361. |
| 1131 | Aircraft Apron, Surfaced | A paved surface designed for standing fixed-wing or rotary-wing aircraft. The surface is usually concrete or asphalt. Aprons support such activities as aircraft parking, loading, and maintenance. |
| 1161 | Compass Calibration Pad, Surfaced | A paved area in a magnetically quiet zone of the airfield used for the precise calibration of all types of air navigational equipment. The surface is usually concrete or asphalt. |
| 1162 | Missile Launching Pad, Surfaced | A paved surface designed for the erection and launching of a guided missile. The surface is usually concrete. |
| 1163 | Aircraft Washing Pad, Surfaced | A paved surface designed for washing of standing fixed-wing or rotary-wing aircraft. The surface is usually concrete or asphalt. |
| 1164 | Miscellaneous Airfield Pavement, Surfaced | A paved airfield surface designed for a function other than those included in other airfield pavement Facility Analysis Categories. The surface is usually concrete or asphalt. |
| 1165 | Airfield Pavement Shoulder | The shoulders of runways, taxiways, etc. |
| 1166 | Miscellaneous Airfield Pavement, Unsurfaced | An unpaved airfield surface designed for a function other than those included in other airfield pavement Facility Analysis Categories. The surface can be dirt, gravel, or grass. |
| 1167 | Airfield Rinse Facility | A central facility for rinsing aircraft to remove dirt and pollutants. |

Railroad and Crane Tracks

Railroad tracks enter an installation at one or more connections with a commercial railroad. Within the installation, the tracks generally branch out into a loose tree structure where each branch of the tree constitutes a track. Figure 2³ is a generic example that displays the various tracks that make up the Fort Example rail network.

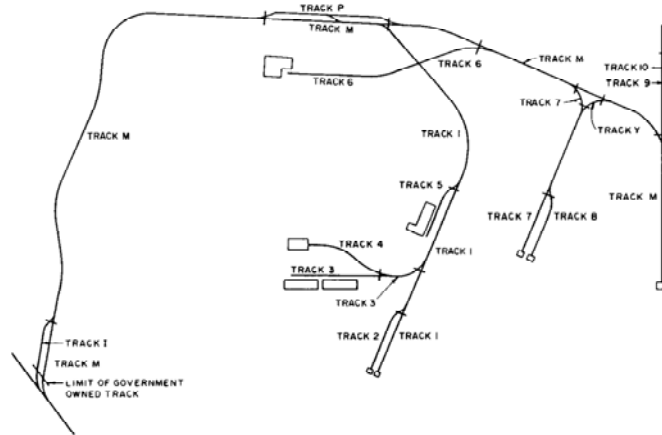


Figure 2 Fort Example Rail Network

Across the Services, the predominant railroad maintenance management system (railroad track sustainment management system) is RAILER. The (RAILER) Army Construction Engineering Research Laboratory (USA-CERL) Technical Report M-88/13, August 1988, Railroad Maintenance Management System Rail details the track segment and segment identification methodology. The railroad sustainment management system, RAILER, only supports standard gauge train tracks but the RAILER methodology and segmentation rules apply to other rail track systems such as cranes.

Figure 3 is a representation of the RAILER database structure. For linear segmentation purposes, the Installation Information, Track Segments, and the Inventory are the blocks of interest.

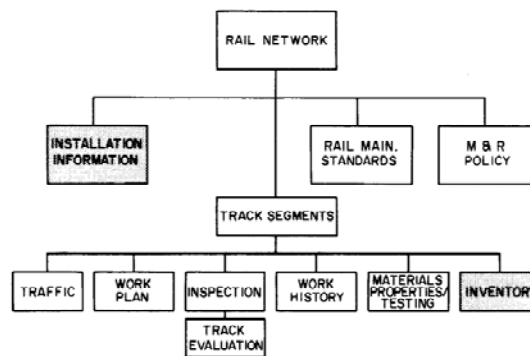


Figure 3 RAILER Database Structure Overview

³ Figures 2 and 3: Maintenance Management of U.S. Army Railroad Networks - The RAILER System: Component Identification and Inventory Procedures.

Figure 4 is a hierarchical view of RAILER where rail network is the RAILER term that represents the collection of all railroad areas within an installation. Similarly, rail area is the RAILER term that represents the collection of all rail tracks and rail track represents the collection of all rail segments.

The track segment identifier is the track name (identified in the work group as an alphanumeric field with a length of 30 characters) concatenated with the track segment number (an alphanumeric field with a length of 8 characters).⁴ Figure 5 is an example of one rail network segmentation schema.

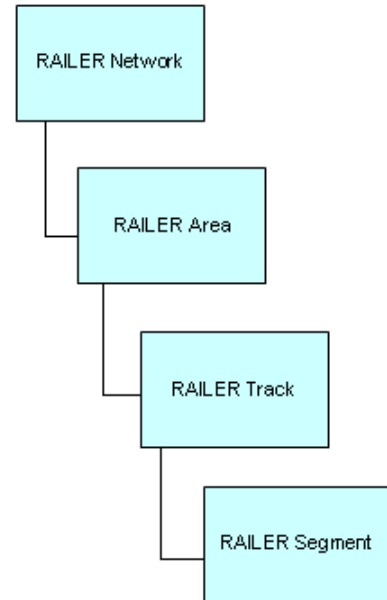


Figure 4 RAILER Hierarchical View

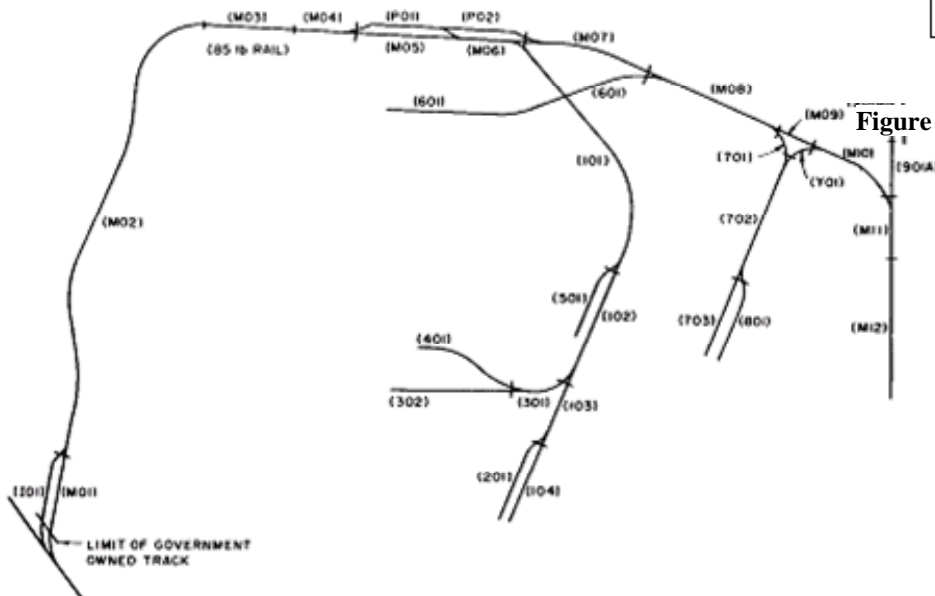


Figure 5 Example Rail Network Track and Segmentation Schema

Business Rules

1. A rail network (or area) contains one or more rail tracks.
2. Rail track segments are assigned a segment identification designator.
3. Segmentation of a railroad at a rail or road crossing extends to the center of the rail or road crossing.
4. A crane rail track system must follow RAILER methodology and segmentation rules.

⁴ Maintenance Management of U.S. Army Railroad Networks - The RAILER System: Component Identification and Inventory Procedures, page 37

5. Although there may be abandoned or inactive rail track, without the physical removal of the tracks, data deletion or archival should not occur in the sustainment or asset management systems until the accountable real property system is adjusted or reflects or, at a minimum, is notified of the change in data requirement.

Assets and Facility Analysis Categories

| FAC | FAC Title | Description |
|------|----------------|---|
| 8601 | Railroad Track | Rail track to include spurs, sidings, yards, and turnouts. Track includes two parallel rails, crossties, and roadbed. |

Roadways

Roadways and parking areas are paved, unpaved, or partially paved. As a whole, they can vary in physical dimensions as well as construction materials but generally remain constant in dimension and construction material from end to end along the length of individual linear structure. Detailed definitions are as follows:

Paved surface – An area of the ground overlaid with a material such as concrete, asphalt, macadam, brick, or cobblestone.

Unpaved surface – An area of ground not overlaid with a paving material although it may receive a surface application such as dirt, gravel, or chemical treatment to mitigate dust and erosion.

Roadway (road) - Roadways include named roads, streets, lanes, boulevards, and other ingress or egress routes intended for vehicular traffic. If unnamed, the roadway is a driveway (which would include an alley) or in the case of an entry to a parking lot, it is an integral part of the parking lot.

Across the Services, the predominant pavement management system is PAVER. However, the Army is the only Military Service that mandates use of PAVER to manage their pavement assets. Components can use PAVER to manage both paved and unpaved assets.

The segmentation taxonomy of PAVER is network, branch, and section as shown in Figure 6.

- The network may equate to the entire roadway system on an installation or just to an individual site. Vehicle parking lots may be included in the roadway network or they may have their own network.
- A branch is a named road or an individual parking lot.
- A section is a portion of a branch that differs in pavement character from other sections such that further segmentation is required to uniquely identify that section. For example, if the only difference in a road is the pavement material type – concrete for part of the road and asphalt for the remainder of the road – that road branch has two sections.

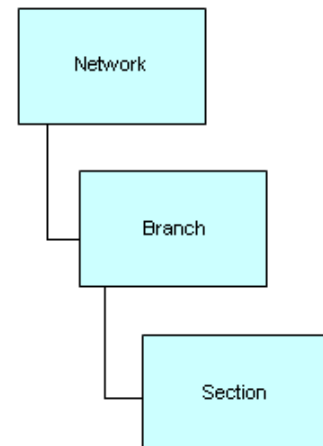


Figure 6 PAVER Hierarchy

Business Rules

Roadways

1. The center rectangular area where two paved roadways intersect is part of the primary roadway, or assigned to one roadway should both roadways have the same priority i.e. primary, secondary, or tertiary.
2. The roadway starts at the point of DoD legal interest; generally the installation boundary or at the intersection with another road or real property asset.

3. The roadway may end at the intersection of another road, real property asset, installation boundary, or at the point of termination for vehicular traffic.
4. The width of paved roadways is measured from back of curb to back of curb, or from back of shoulder to back of shoulder, across the linear dimension of the roadway.
5. The width of unpaved roadways is measured from the intended load-bearing surface to intended load-bearing surface across the linear dimension of the roadway.
6. For roadway sections with multiple widths, measure the width as a weighted average width.

Parking Areas

1. Measure a parking area from the abutment with a named road or another real property asset or to the edge of the prepared surface. The measure is the total area, except as noted under Driveways.

Driveways

1. Measure a driveway from the abutment with a named road or other real property asset or to the edge of the prepared surface.

Assets and Facility Analysis Categories

| FAC | FAC Title | Description |
|------|--|--|
| 8511 | Road, Surfaced | A hard-surfaced road. The surface is usually either concrete or asphalt. The secondary unit of measure (MI) will be measured in lane miles. The FAC includes a factor for markings, signage, and a curb or shoulder. |
| 8512 | Road, Unsurfaced | An unpaved road. The surface is usually gravel, measured between the edges of the road surface. The secondary unit of measure (MI) will be measured in centerline miles. |
| 8521 | Vehicle Parking, Surfaced | A paved surface for parking private and/or government owned vehicles and equipment in individual parking spots/locations. The surface is usually asphalt. |
| 8522 | Vehicle Parking and Staging Area, Unsurfaced | An unpaved surface for parking and/or staging private and/or government owned vehicles and equipment. The surface is usually gravel. |
| 8523 | Vehicle Staging Area, Surfaced | A surfaced area for the permanent organizational parking and/or temporary holding of vehicles and equipment awaiting deployment. This FAC is not intended for surfaced parking areas designated for individual vehicle parking spots identified under FAC 8521 or un-surfaced parking and storage designated under FAC 8522. |
| 8526 | Miscellaneous Paved Area | Paved surfaces that are not included in another Facility Analysis Category. |

Pipes

Generally, the phrase “linear structure pipe asset” refers to those pipes that are part of a real property system (distribution, collection, return, or supply) and that are not a component of a building or structure. The following examples illustrate segmentation for this type of linear structure.

In Figure 7, there are: one real property site (RPSUID); four AVGAS Underground tanks (FAC 1241); and four individual (non-connected) distribution systems (FAC 1251).

Within the real property inventory, there is one RPUID for **each** tank (structure) and one RPUID for **each** distribution system (linear structure) for a total of eight assets, each with its own individual RPUID.

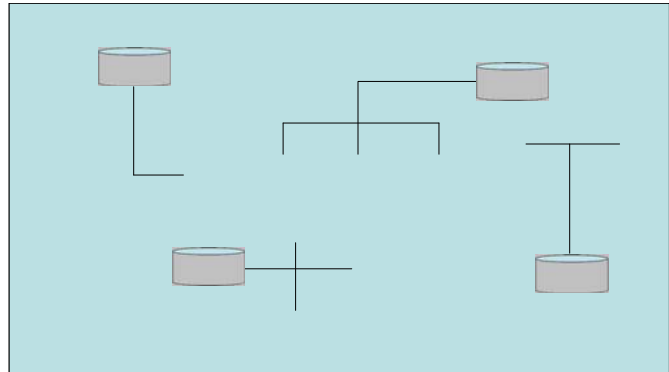


Figure 7 Non-connected Distribution System

In Figure 8, there are: one real property site (RPSUID); four AVGAS Underground tanks (FAC 1241); and one interconnected distribution system (FAC 1251).

Within the real property inventory, there is one RPUID for **each** tank (structure) and one RPUID for the interconnected distribution system (linear structure) for a total of five assets, each with its own individual RPUID.

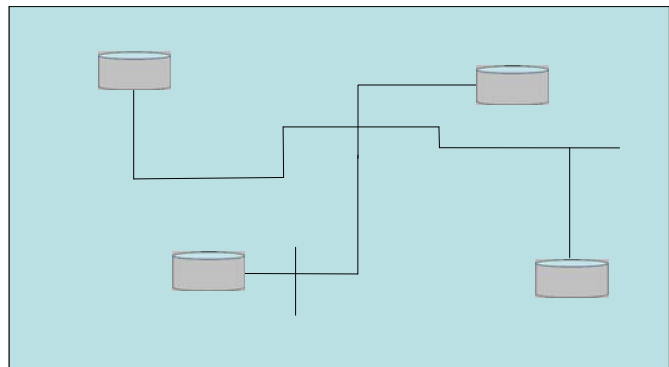


Figure 8 Interconnected Distribution System

The linear structure asset is segmented where there are changes in the characteristics that affect capacity or delivery of a service or commodity such as installation date, diameter, type material, and type of service. The linear structure is also normally segmented where a non-linear real property asset (also known as a node) is connected to the linear structure. Nomenclature for pipe asset segments may be developed by adapting the segmentation taxonomy of WPIPER, PAVER or RAILER.

Assets and Facility Analysis Categories

| FAC | FAC Title | Description |
|------|---|---|
| 1251 | POL Pipeline | Pipelines for the transfer of operating and reserve supplies of petroleum, oil, and lubricant products. |
| 8221 | Heat Distribution Line | A pipeline for the transmission of hot water or steam between a central heating plant and the facilities to be heated. |
| 8241 | Heat Gas Distribution Line | A pipeline for the transmission of gas to be used directly in heat production. |
| 8271 | Chilled Water and Refrigerant Distribution Line | Pipelines for the transport of water or other coolants between a central cooling plant and the facilities to be cooled. |
| 8321 | Sewer and Industrial Waste Line | A pipeline for the transport of sewage or industrial waste between the source, holding facilities, and/or treatment facilities. |
| 8421 | Water Distribution Line, Potable | Pipelines for the distribution of water that is safe for drinking. |
| 8432 | Water Distribution Line, Fire Protection | Pipelines for the distribution of water that is intended for fire fighting. |
| 8451 | Water Distribution Line, Non-Potable | Pipelines for the distribution of water that, in its natural condition, is not safe for drinking. |
| 8930 | Installation Gas Distribution Line | Distribution pipes for the transfer of oxygen, nitrogen, carbon dioxide, compressed air and other non-heating gasses. |

Electrical Utilities

Generally, the phrase “linear structure utility asset” or “electrical utility linear structure asset” refers to those electrical utilities that are part of a real property distribution system and that are not a component of a building or structure.

The linear structure asset is segmented where there are changes in the characteristics that affect capacity or delivery of a service or commodity such as installation date, diameter, type material, and type of service. The linear structure is also normally segmented where a non-linear real property asset (also known as a node) is connected to the linear structure. Nomenclature for electrical asset segments may be developed by adapting the segmentation taxonomy of WPIPER, PAVER or RAILER.

| FAC | FAC Title | Description |
|------|---|--|
| 8121 | Electrical Power Distribution Line, Overhead | The overhead lines for the transmission of electrical power between source, substations and switching stations, and end users. The unit of measure (LF) is defined as the LF of electrical circuit. |
| 8123 | Electrical Power Distribution Line, Underground | The underground lines for the transmission of electrical power between source, substations and switching stations, and end users. The unit of measure (LF) is defined as the LF of electrical circuit. |

Attachment A: References

DoDI 4165.14, March 31, 2006,

<http://www.dtic.mil/whs/directives/corres/html/416514.htm>

Maintenance Management of U.S. Army Railroad Networks - The RAILER System: Component Identification and Inventory Procedures,

<http://www.cecer.army.mil/td/tips/pub/detailLinear Structure.cfm?PUBID=292&TOP=1>

Micro PAVER Version 6.0 User's Manual,

<http://www.cecer.army.mil/paver/Documents/6.0UserManual.pdf>

Real Property Inventory Requirements (RPIR) Document, January 2005,

http://www.acq.osd.mil/ie/bei/rpir/rpir_1-19-05.pdf#pagemode=bookmarks&page=1

WPIPER 1.0 With Flow Reduction Module, June 1996,

<http://owwww.cecer.army.mil/TechReports/VanBlaricumWPIPER/VanBlaricumWPIPER.pdf>

Attachment B: Real Property Definitions

Source: DoDI 4165.14, Enclosure 2, March 31, 2006

E2.1.1. Building. A roofed and floored facility enclosed by exterior walls and consisting of one or more levels that is suitable for single or multiple functions.

E2.1.2. Cadastral Survey. A land survey defining boundaries, property lines, and other measurements pertaining to an official register of ownership, known as a cadastre.

E2.1.3. Capital Improvement. An action having the effect of increasing a real property asset's capacity, size, efficiency, useful life, or modifying its function.

E2.1.4. Disposal. Any authorized method (e.g., demolition, transfer, etc.) of permanently divesting the Department of Defense of legal interest in and control of a real property asset.

E2.1.5. Excess. Property under the control of a Federal Agency that the head of the Agency determines is not required to meet the Agency's needs or responsibilities.

E2.1.6. Facility. A building, structure, or linear structure out to an imaginary line surrounding a facility at a distance of five feet from the foundation that, barring specific direction to the contrary such as a utility privatization agreement, denotes what is included in the basic record for the facility (e.g., landscaping, sidewalks, utility connections). This imaginary line is what is commonly referred to as the "five-foot line."

E2.1.7. Facility Analysis Category (FAC). A classification of real property types within a "Basic Category," represented by a four-digit code. DoD FACs aggregate Military Department categories into common groupings based upon commonality of function, unit of measure, and unit costs.

E2.1.8. Forecast. A prediction of future RPI assets.

E2.1.9. Historic Asset. Historic properties, as defined by the National Historic Preservation Act, are those properties listed on, or eligible for listing on, the National Register of Historic Places (National Register). The National Register establishes specific criteria for the identification and evaluation of historic properties (36 CFR 60.4).

E2.1.10. Historic Status. The status of the facility with respect to the National Register of Historic Places.

E2.1.11. Installation. A base, camp, post, station, yard, center, or other activity, including leased facilities, under the jurisdiction, custody, or control of the Secretary of Defense or the Secretary of a Military Department or, in the case of an activity in a foreign country, under the operational control of the Secretary of Defense or the Secretary of a Military Department, without regard to the duration of operational control. An installation may include one or more sites.

E2.1.12. Land. A portion of the earth's surface distinguishable by boundaries. The types of land assets in the RPI include everything from unimproved wilderness areas to central urban developments. Land will be inventoried by parcel, starting when the parcel was transferred into a Military Department's or the WHS custody and control.

E2.1.13. Land Parcel. A specific area of land whose perimeter is delineated by a cadastral survey.

E2.1.14. Linear Structure. A facility whose function requires that it traverse land (such as a road, rail line, pipeline, fence, pavement). Includes distribution systems that provide a common service or commodity to more than one building or structure.

E2.1.15. Military Department Category. Also known as CATCODE. The most detailed classification of real property that describes a specific real property type and function, represented by a numerical code of five (Departments of the Army and the Navy) or six (Department of the Air Force) digits. Military Department categories are established by the Military Departments.

E2.1.16. Predominant Use. The primary use of a real property asset based upon the largest quantity of usage for a specific activity or function.

E2.1.17. Real Property. Land and improvements to land (i.e., facilities). It includes equipment affixed and built into the facility as an integral part of the facility (such as heating systems), but not movable equipment (e.g., plant equipment, industrial equipment, buoys). In many instances this term is synonymous with real estate.

E2.1.18. Real Property Accountable Officer (RPAO). An individual who, based on his or her training, knowledge, and experience in real property management, accountability, and control procedures, is appointed by proper authority, and shall:

E2.1.18.1. Establish and maintain an organization's formal property records, systems, and financial records, in connection with Government real property, irrespective of whether the property is in the individual's possession;

E2.1.18.2. Ensure that all transactions can be audited in their entirety; and

E2.1.18.3. Implement and adhere to associated internal controls.

E2.1.19. Real Property Asset. An individual facility or land parcel.

E2.1.20. Real Property Unique Identifier (RPUID). A non-intelligent code used to permanently and uniquely identify a DoD real property asset.

E2.1.21. Real Property Site Unique Identifier (RPSUID). A non-intelligent code used to permanently and uniquely identify a DoD real property site.

E2.1.22. Site. Physical (geographic) location that is or was owned by, leased to, or otherwise possessed by a DoD Component. Each site is assigned to a single installation. A site may exist in one of three forms:

E2.1.22.1. Land only, where there are no facilities present and where the land consists of either a single land parcel or two or more contiguous land parcels.

E2.1.22.2. Facility or facilities only, where the underlying land is neither owned nor controlled by the government. A stand-alone facility can be a site. If a facility is not a stand-alone facility, it must be assigned to a site.

E2.1.22.3. Land and all the facilities thereon, where the land consists of either a single land parcel or two or more contiguous land parcels.

E2.1.23. Structure. A facility, other than a building or linear structure, which is constructed on or in the land.

E2.1.24. Sustainment. The maintenance and repair activities necessary to keep a typical inventory of facilities in good working order over their expected service life. It includes regularly scheduled adjustments and inspections, preventive maintenance tasks, and emergency response and service calls for minor repairs. It also includes major repairs or replacement of facility components (usually accomplished by contract) that are expected to occur periodically throughout the facility service life. This includes regular roof replacement, refinishing wall surfaces, repairing and replacing electrical, heating, and cooling systems, replacing tile and carpeting, and similar types of work.