



NGA STANDARDIZATION DOCUMENT

DATA PRODUCT SPECIFICATION (DPS)

1:50,000 and 1:100,000 Scale

Topographic Map (TM)

(2017-04-15)

Version 1.1

- Author:** NGA/Foundation GEOINT Group
- Distribution:** Approved for public release; distribution is unlimited.
- Usage:** This TM Data Product Specification, along with the TM DPS Portrayal Catalog and TM DPS Annotation Catalog, has been approved for use by the NSG Community to produce 1:50,000 and 1:100,000 Scale Topographic Maps.
- Supersession:** This NGA Data Product Specification supersedes "Data Product Specification (DPS), 1:50,000 and 1:100,000 Scale, Topographic Map (TM), v1.0, 2015-06-11".
-

Foreword

The purpose of this document is to describe the content and arrangement of a Topographic Map (TM) for 1:50,000 or 1:100,000 scale. A TM is a hardcopy map characterized by a high level of planimetric detail and quantitative representation of relief using elevation contour lines. The various features shown on the map are represented by standard symbols. These symbols are explained in the margin of the map along with other information about the map and its content. Topographic map content includes symbolization of transportation and cultural features, vertical obstructions, hydrography, hypsography, vegetation, boundaries, geographic place-names, along with a Military Grid Reference System (MGRS) grid.

The Data Product Specification for Topographic Maps consists of three parts:

- **NGA.STND.0035-1_1.1_DPSTM** - This Topographic Map Data Product Specification (TM DPS), which defines the requirements for a Topographic Map product at 1:50,000 or 1:100,000 scale.
- **NGA.STND.0035-2_1.1_DPSTMPC** - The Topographic Map Data Product Specification Portrayal Catalog (TM DPS PC), which defines requirements for the portrayal of feature data on Topographic Maps.
- **NGA.STND.0035-3_1.1_DPSTMAC** - The Topographic Map Data Product Specification Annotation Catalog (TM DPS AC), which defines requirements for the portrayal of non-feature (marginalia) data on Topographic Maps.

Note: *All three of the above documents are required to produce a topographic map product.*

The format of these documents is based on the International Organization for Standardization (ISO) 19131, Geographic information - Data product specifications (2007+A1:2011). This international standard defines a standard format and structure for specifications for geospatial data products. The standard also considers a hardcopy map or chart to be a data product.

This DPS utilizes the GEOINT Structure Implementation Profile (GSIP) as the “language” to express the information requirements for topographic maps. The GSIP is a series of artifacts that define the data model for GEOINT data that is used in the National System for Geospatial Intelligence (NSG). This DPS is a replacement for the DOD specifications (MILSPECs) for 1:50,000 and 1:100,000 scale topographic map products (MIL-T-89301A and MIL-T-89306 respectively). The legacy Feature and Attribute Coding Standard (FACS) defined in MIL-STD-2408, Glossary of Feature and Attribute Definitions (1995) that was used to define topographic map feature and attribute requirements in the MILSPECs has been replaced in this DPS with GSIP artifacts. The Topographic Map Feature Catalog (TM FC) is a subset of the NSG Entity Catalog (NEC), which in turn is the NSG version of the international Defence Geospatial Information Working Group (DGIWG) Feature Data Dictionary (DFDD).

Comments, questions, or suggestions to improve this document should be addressed to the National Geospatial-Intelligence Agency, Foundation GEOINT Group, e-mail: DataProductSpecs@nga.mil.

Table of Contents

1	Overview.....	9
1.1	DPS Title	9
1.2	DPS Version	9
1.3	DPS Reference Date	9
1.4	DPS language.....	9
1.5	DPS Classification	9
1.6	DPS Contact.....	9
1.7	DPS URL	9
1.8	DPS Identifier.....	9
1.9	DPS Maintenance	9
1.10	DPS Keywords.....	10
1.11	DPS topic categories	10
1.12	DPS distribution format	10
1.13	Terms and definitions.....	10
1.13.1	Data product	10
1.13.2	Data product specification.....	10
1.13.3	Dataset	10
1.13.4	Dataset series.....	10
1.14	Abbreviations.....	10
1.15	Informal description of the data product	11
1.15.1	Title.....	11
1.15.2	Acronym	11
1.15.3	Abstract	11
1.15.4	Content.....	11
1.15.5	Spatial extent.....	11
1.15.6	Specific purpose	11
2	Scopes.....	12
2.1	Scope Identification – Scale.....	12
2.1.1	Scope Level.....	12
2.1.2	Level Names.....	12
2.1.3	Level Description	12
2.1.4	Coverage.....	12
2.1.5	Extent	12
2.2	Scope Identification – Colored Light Readability	12

2.2.1	Scope Level	12
2.2.2	Level Names	12
2.2.3	Level Description	12
2.2.4	Coverage	13
2.2.5	Extent	13
2.3	Scope Identification – Languages	13
2.3.1	Scope Level	13
2.3.2	Level Names	13
2.3.3	Level Description	13
2.3.4	Coverage	13
2.3.5	Extent	13
2.4	Scope Identification – Expurgation	13
2.4.1	Scope Level	13
2.4.2	Level Name	13
2.4.3	Level Description	14
2.4.4	Coverage	14
2.4.5	Extent	14
3	Data product identification	14
3.1	Title: Product Name_series_sheet_edition identification numbers	14
3.2	Alternate title (1): Sheet name	14
3.3	Alternate title (2): NATO/National Stock Number (NSN)	14
3.4	Alternate title (3): Reference Number (RN)	14
3.5	Abstract	15
3.6	Purpose	15
3.7	Topic category	15
3.8	Spatial resolution	15
3.9	Geographic extent	15
3.10	Language	15
3.11	Security Constraints	16
3.11.1	Classification	16
3.11.2	Classification Policy	16
3.11.3	Handling Description	16
3.12	Point of contact	16
3.13	Identification scope	17

3.14	Supplemental information	17
3.14.1	Map series	17
3.14.2	Map sheets	19
3.14.3	Edition numbering.....	27
3.14.4	NATO/National Stock Number	29
3.14.5	Reference Number.....	29
3.14.6	Expurgated Sheets	30
4	Data content and structure.....	30
4.1	Feature-based data.....	30
4.2	Feature-based application schema	30
4.3	Feature catalog.....	30
5	Reference systems	31
5.1	Spatial reference system.....	31
5.1.1	Ellipsoid	31
5.1.2	Horizontal datum.....	31
5.1.3	Vertical datum.....	31
5.1.4	Projection.....	31
5.1.5	Grid.....	32
5.1.6	Resources	32
5.2	Temporal reference system	33
6	Data quality.....	33
6.1	Accuracy.....	33
6.1.1	Horizontal accuracy	33
6.1.2	Vertical accuracy	33
6.1.3	Displaced features	33
6.2	Quality scope.....	33
7	Data product delivery	33
7.1	Delivery medium information.....	33
7.2	Delivery format information	34
7.2.1	Format name	34
7.2.2	Language.....	34
7.2.3	Work limits	34
7.2.4	Paper size and dimensions.....	34
8	Metadata.....	35

8.1	Overview/Guidance.....	35
8.1.1	Metadata and the Map Display/Annotation Catalog	35
8.2	NMF Metadata Applicable to the TM.....	35
8.3	NMF Metadata Not Applicable to a Hardcopy Map Product	38
8.4	Additional Metadata for Topographic Maps.....	38
8.4.1	Additional Presentation Information	38
8.4.2	Additional Security Constraint Information	39
8.4.3	Data Content-Derived Information.....	39
8.4.4	Additional Spatial Reference Information	40
9	Data capture	41
9.1	Data capture statement.....	41
10	Data maintenance	41
11	Portrayal.....	41
11.1	Portrayal catalog.....	42
11.2	Annotation catalog	42
12	Additional information	42
12.1	DPS Organization	42
12.2	Supersession.....	44
12.3	Standardization agreements	44
12.3.1	NATO Standardization Agreements (STANAGs)	44
12.4	Background on development of the Topographic Map DPS.....	44
12.5	Cartographic process.....	45
12.6	Map Display	45
12.7	Geographic Portrayal Process	47
12.8	Overall Cartographic Process	49
	Annex A - Feature Catalog.....	A-i

List of Figures and Tables

FIGURE 1. BORDER BREAK FOR ISLAND.	20
FIGURE 2. BORDER BREAK FOR COASTAL LAND.	21
FIGURE 3. SHEET LINE EXTENSION.	21
FIGURE 4. VARIOUS SHEET LINE SHIFTS.	22
FIGURE 5. REPROPORTIONMENT.	22
FIGURE 6. INSETS.	23
FIGURE 7. BASIC DEVELOPMENT OF THE SHEET NUMBER FOR 1:100,000 SCALE MAPS.	24
FIGURE 8. SYSTEM FOR NUMBERING 1:50,000 SCALE MAPS.	25
FIGURE 9. SHEET NUMBERING FOR SERIES CONTAINING A FEW MAPS.	26
FIGURE 10. SHEET LINES, WORK LIMITS AND PAPER/TRIM SIZE.	35
FIGURE 11. DPS COMPONENTS	43
FIGURE 12. ANATOMY OF A MAP DISPLAY.	46
FIGURE 13. INTERIOR ANNOTATION AND OTHER ANNOTATION.	47
FIGURE 14. GEOGRAPHIC PORTRAYAL PROCESS AS CONCEPTUALIZED IN ISO/FDIS 19117.	48
FIGURE 15. THE CARTOGRAPHIC PROCESS FOR A COMPLETE MAP DISPLAY.	49
TABLE 1. STANDARD 1:50,000 AND 1:100,000 SCALE SHEET LINE SIZES AND APPLICABLE LATITUDES	19
TABLE 2. NMF METADATA APPLICABLE TO A TM	38
TABLE 3. ADDITIONAL METADATA RELATED TO PRESENTATION	38
TABLE 4. ADDITIONAL SECURITY CONSTRAINT METADATA	39
TABLE 5. ADDITIONAL METADATA RELATED TO DATA CONTENT	39
TABLE 6. ADDITIONAL SHEET-LEVEL SPATIAL REFERENCE METADATA	40
TABLE 7. ADDITIONAL MAP-LEVEL SPATIAL REFERENCE METADATA	41

1 Overview

1:50,000 and 1:100,000 scale topographic maps are used: by land and air/rotary forces in support of ground operations; for the planning and execution of tactical operations, land navigation, and fire support missions to provide basic terrain analysis information to assist in the Intelligence preparation of the battle space through a standardized graphical representation. This product specification describes the content and arrangement of a Topographic Map (TM).

1.1 DPS Title

Data Product Specification (DPS), 1:50,000 and 1:100,000 Scale Topographic Maps (TM)

1.2 DPS Version

1.1

1.3 DPS Reference Date

15 April 2017

1.4 DPS language

English

1.5 DPS Classification

Unclassified

1.6 DPS Contact

Comments, questions, or suggestions to improve this document should be addressed to the National Geospatial-Intelligence Agency, Foundation GEOINT Group, e-mail: DataProductSpecs@nga.mil.

1.7 DPS URL

This product specification is available at: <https://nsgreg.nga.mil/>

1.8 DPS Identifier

TM DPS

1.9 DPS Maintenance

There is no regular maintenance/update schedule for this product specification. It will be updated as requirements dictate.

1.10 DPS Keywords

topographic, hardcopy, map

1.11 DPS topic categories

010: Imagery/Base Maps/Earth Cover.

1.12 DPS distribution format

This document is distributed in Portable Document Format (PDF).

1.13 Terms and definitions

1.13.1 Data product

Dataset or dataset series that conforms to a data product specification.

1.13.2 Data product specification

A geospatial data product specification is a precise technical description which characterizes a geospatial data product. It includes general information for data identification as well as information on data content and structure, reference systems, data quality aspects, data capture, maintenance, delivery and metadata.

1.13.3 Dataset

Identifiable collection of data

NOTE: A dataset may be a smaller grouping of data which, though limited by some constraint such as spatial extent or feature type, is located physically within a larger dataset. Theoretically, a dataset may be as small as a single feature or feature attribute contained within a larger dataset. A hardcopy map or chart may be considered a dataset.

1.13.4 Dataset series

Collection of datasets sharing the same product specification.

1.14 Abbreviations

AC Annotation Catalog

AS Application Schema

DPS Data Product Specification

GCES GEOINT Content Extraction Specification

FC Feature Catalog

NSG National System for Geospatial Intelligence

PC Portrayal Catalog

TM Topographic Map

1.15 Informal description of the data product

1.15.1 Title

Topographic Map (TM)

1.15.2 Acronym

TM50, TM100

1.15.3 Abstract

A Topographic Map (TM) is a large scale map characterized by a high level of planimetric detail and quantitative representation of relief using elevation contour lines. The various features shown on the map are represented by standard symbols. These symbols are explained in the margin of the map along with other information about the map and its content.

1.15.4 Content

Topographic map content includes symbolization of transportation and cultural features, vertical obstructions, hydrography, hypsography, vegetation, boundaries, geographic place-names, along with a Military Grid Reference System (MGRS) grid. Examples of marginalia annotation include: a map legend to illustrate and define symbols used on the map, a glossary of geographic terms, adjoining sheet diagram, boundaries diagram, bar scales, notes on geographic reference system, datum, elevation contour interval, and sheet identification.

All units of measurement (elevations, heights, lengths, widths) are in meters unless otherwise noted.

1.15.5 Spatial extent

Topographic Maps are produced at 1:50,000 or 1:100,000 scale. At 1:50,000 scale map sheets normally cover 15 arcminutes in the north-south dimension, and 15 arcminutes in the east-west dimension at the equator; at 1:100,000 scale, map sheets normally cover 30 arcminutes in each dimension at the equator. At both scales, the number of arcminutes covered by a map sheet in the east-west dimension increases with distance from the equator, as meridians converge (see Table 1).

1.15.6 Specific purpose

Although primarily a “paper” product, a TM may also be converted to digital “copies” of paper maps, such as Portable Document Format (PDF), or Compressed Arc Digitized Raster Graphic (CADRG). Producing digital copies of Topographic Maps is outside the scope of this DPS.

2 Scopes

The scope of this DPS is to define the product requirements for 1:50,000 and 1:100,000 scale Topographic Maps. The Topographic Map has unique scopes for the following topics of information.

2.1 Scope Identification – Scale

2.1.1 Scope Level

Dataset (map sheet)

2.1.2 Level Names

1:50,000 Scale, 1:100,000 Scale

2.1.3 Level Description

Topographic Maps are produced at two scales - 1:50,000 and 1:100,000 scale. This DPS covers both scales. Capture criteria for geospatial features are referenced in the Local level extraction criteria in the GEOINT Content Extraction Specification (GCES). The Local level is based primarily on a 1:50,000 scale capture criteria. In order to properly portray certain feature geometries on a 1:100,000 scale TM, a conversion of dimensional attributes (area, length, and width) shall be used as a basis for generalizing and rendering applicable symbols. See TM Portrayal Catalog, section 4.1.2.1 for additional information.

2.1.4 Coverage

Not applicable

2.1.5 Extent

Scale applies to the map sheet inside neat lines, but excludes diagrams in margin, which are at smaller scales.

2.2 Scope Identification – Colored Light Readability

2.2.1 Scope Level

Dataset (map sheet)

2.2.2 Level Names

Red-Light Readable, Red-Light and Blue/Green-Light Readable

2.2.3 Level Description

Topographic Maps shall be produced to be readable under red-light conditions. Under unique circumstances, a map may need to be both red-light & blue/green-light readable. Annex C - “Color” of

the Topographic Map Portrayal Catalog (TM PC) defines the color tokens for both red-light readable and, red & blue/green-light readable maps.

2.2.4 Coverage

Not applicable

2.2.5 Extent

Red-Light Readable and, Red & Blue/Green-Light readable apply to the entire map sheet, including margin information.

2.3 Scope Identification – Languages

2.3.1 Scope Level

Dataset (map sheet)

2.3.2 Level Names

Single Language, Multi-Lingual

2.3.3 Level Description

Topographic Maps can be produced in one language, or in multiple languages. See section 3.10 for multi-lingual map requirements.

2.3.4 Coverage

Not applicable

2.3.5 Extent

The language or languages applied to the map are applicable to the entire map sheet, including margin information.

2.4 Scope Identification – Expurgation

2.4.1 Scope Level

Dataset (map sheet)

2.4.2 Level Name

Expurgated area

2.4.3 Level Description

In certain cases (based on supplementary project instructions), the topographic detail on one side of an international boundary on a map may be omitted (expurgated) if the map sheet is primarily intended to support operations on the other side of the boundary. See TM PC section 2.5.1.5 for additional information.

2.4.4 Coverage

Not applicable.

2.4.5 Extent

The extent of the expurgated area normally extends from the boundary (or the river bank if the countries are separated by a water body). In the expurgated area, no topographic detail shall be shown except for Administrative Boundary, Land Water Boundary and Tidal Water. Grid and graticule information is shown for the entire map sheet.

3 Data product identification

3.1 Title: Product Name_series_sheet_edition identification numbers

Each topographic map shall be identified primarily by a unique combination of the product name, series identification number, map sheet identification number, and edition number.

Series, sheet, and edition numbers shall be constructed according to the definitions and principles in sections 3.14.1.2, 3.14.2.3.1, and 3.14.3.

3.2 Alternate title (1): Sheet name

Each topographic map shall also be identified by a sheet name.

Sheet names shall be constructed according to the definitions and principles in section 3.14.2.4.

3.3 Alternate title (2): NATO/National Stock Number (NSN)

Each topographic map shall also be identified by NATO/National Stock Number (NSN).

The NSN shall be constructed according to the definitions and principles in section 3.14.4.

3.4 Alternate title (3): Reference Number (RN)

Each topographic map shall also be identified by a Reference Number (RN).

The RN shall be constructed according to the definitions and principles in section 3.14.5.

3.5 Abstract

The 1:50,000 and 1:100,000 scale Topographic Maps are the primary hardcopy maps used for tactical military operations. They portray transportation and cultural features, vertical obstructions, hydrography, hypsography, vegetation, boundaries, geographic place-names, along with a Military Grid Reference System (MGRS) grid. Annotation in the margin of the map provides basic metadata about the information shown on the map, as well as additional non-feature related information, such as an adjoining sheets diagram, map legend, glossary, etc.

3.6 Purpose

Topographic maps are used: by land and air/rotary forces in support of ground operations; for the planning and execution of tactical operations, land navigation, and fire support missions; to provide basic terrain analysis information to assist in the Intelligence Preparation of the Battle space through a standardized graphical representation.

3.7 Topic category

Not Applicable

3.8 Spatial resolution

1:50,000 or 1:100,000

3.9 Geographic extent

The geographic extent of a TM map sheet shall correspond to a specification of sheet lines. This DPS prescribes no positional limitations for a TM map sheet in terms of geographic location (i.e. this DPS is valid worldwide).

Sheet lines for 1:50,000 and 1:100,000 scale Topographic Maps shall follow an established format as described in section 3.14.2.

3.10 Language

A maximum of three languages shall be employed in the creation of a Topographic Map data product. One of the languages shall always be English. The selection of the languages other than English shall be governed by the provisions of map standardization agreements and/or map agreements applying to specific projects, and shall be specified in supplemental instructions for the project.

3.11 Security Constraints

3.11.1 Classification

The degree of classification is determined in accordance with the provision of Department of Defense Regulation 5200.1.R, "Information Security Program Regulation." The appropriate classification shall be indicated in the security classification guidance for the project.

Other Nations producing topographic maps may have their own authorities for determining the degree of classification.

The security classification of the products generated by the use of this specification should be the lowest category practicable – normally UNCLASSIFIED with some form of restricted dissemination.

3.11.2 Classification Policy

Each map bearing a security classification marking shall also identify the classifier, and shall also contain downgrading or declassification instructions. The appropriate note or statement shall be determined in accordance with the provisions of DoD Regulation 5200.1.R. The specific note shall be indicated in pertinent security classification guidance for the project.

3.11.3 Handling Description

Certain maps, classified or unclassified, require notes which restrict their distribution. When required, the appropriate note shall be specified in the security classification guidance pertaining to the project.

3.11.3.1 Restricted dissemination / LIMITED DISTRIBUTION note

A Restricted Dissemination or LIMITED DISTRIBUTION note is normally required on unclassified maps of areas outside the United States. The exact wording of this note is subject to change. Refer to current guidance and/or supplementary project instructions for the text of this note.

3.11.3.2 Caveat or special handling note

A Caveat or Special Handling Note may be required. Examples:

NOT RELEASABLE TO FOREIGN NATIONALS *[maps classified CONFIDENTIAL or higher]*

RELEASABLE TO NATO

RELEASABLE TO [COUNTRY] AND [INTERNATIONAL ORGANIZATION]

3.12 Point of contact

The point of contact for Topographic Map data products shall be contained in a "users note". See TM Annotation Catalog (AC) section 3.1.7.2 for more details.

Since the point of contact information contained in the users note changes frequently, the Point of Contact for this data product specification (see section 1.4) should be contacted to obtain the latest information.

3.13 Identification scope

Dataset (map sheet)

3.14 Supplemental information

3.14.1 Map series

A series consists of a group of maps which are common to one another in that they:

- Cover a particular geographic area.
- Are on the same sheet line system.
- Are of the same scale or within the same scale group.
- Are prepared under the same cartographic specifications.

Series are planned to cover all or part of a Continental, Regional, Sub-regional, or National area.

Topographic maps are grouped into a map series to facilitate preparation, identification, indexing, storage, and distribution. The map series used for topographic maps are defined in the NATO Index of Regional Areas, Annex C to NATO AGeoP-9 “NATO Specifications for Identification of Hard Copy Land Maps, Aeronautical Charts and Image Plans”.

Each map series shall be identified by a series name and a series number.

3.14.1.1 Series name

The name assigned to a series should normally be the geographic name of the area covered by the series. Rigid rules cannot be established for the assignment of all series names. With exceptions permissible for necessary deviations, the following guidance applies:

- When more than one series, at the same scale, are designed to cover a country or region, each series shall be identified by the Country or Regional name, qualified by a geographic term. Example: Southern Honshu; Central Philippines; Western Russia; Northern Europe.
- When the series covers a large well-known area, it shall be given the name most commonly used to designate that area; usually this is a country name. In such cases, the name shall be spelled in accordance with U.S. DoD policy, which calls for the short form of the country name as approved by the U.S. Board on Geographic Names (BGN).
- When the series covers a small and not widely-known area, it shall be identified by the accepted local name.
- When the series covers an area including the domestic United States, it shall be identified by the applicable state name, i.e. Virginia, Missouri, etc.

3.14.1.2 Series number

The series number shall provide a unique identification for the map series. The series number indicates the geographic area, scale, and series designation of the series.

3.14.1.2.1 Series number format

The series number for 1:100,000 and 1:50,000 topographic maps shall consist of four or five elements and shall be expressed by a capital letter followed by three or four numerals. Examples:

SERIES U711 – Afghanistan, 1:50,000 Scale

SERIES U711G – Afghanistan, 1:50,000 Scale

SERIES U611 - Afghanistan, 1:100,000 Scale

SERIES L7014 - Vietnam, 1:50,000 Scale

3.14.1.2.1.1 First element (geographic area)

The first element (capital letter) shall identify the regional area within which the series falls. These geographic areas are defined in NATO Index of Regional Areas, Annex C to NATO AGeoP-9, which presents a systematic breakdown of the world into Continental, Regional, and Sub-regional areas.

3.14.1.2.1.2 Second element (scale group)

The second element (first numeral) shall identify the scale range or group within which the series falls.

The 1:50,000 Scale Topographic Map falls within scale range number 7, larger than 1:70,000 through 1:35,000. The 1:100,000 Scale Topographic Map falls within scale range number 6, larger than 1:150,000 through 1:70,000. For information on other scale ranges, see NATO Index of Regional Areas, Annex C to NATO AGeoP-9.

3.14.1.2.1.3 Third element (sub-regional area)

The third element (second numeral) shall identify the sub-regional area within which the series falls, following the geographic sub-regions defined in NATO Index of Regional Areas, Annex C to NATO AGeoP-9.

When a series extends beyond a sub-regional area, the third element shall be a "0" (zero). An exception to the rule is in regional areas L, N, Q, and U where the zero is used to designate a sub-regional area.

3.14.1.2.1.4 Fourth element (series designation)

The fourth element (third and fourth numerals) shall be used to distinguish between series whose scales and geographic coverage (and accordingly the first three elements of the series number) are the same. The initial series of such a group shall be given the numeral "1" with subsequent series incremented consecutively as "2, 3, 4...9, 10, 11, etc." The number shall not be used a second time.

3.14.1.2.1.5 Fifth element (special series distinction)

A fifth element (capital letter) may be added to distinguish a regular series over a given area from special series. A special series may be required for several reasons including unique source data, expurgation, or other circumstances. Examples:

“G” in U711G denotes an MGCP Derived Graphic (MDG) or MGCP Topographic Map (MTM) series for Afghanistan, 1:50,000 scale

“S” in U711S denotes a special Dari translated series for Afghanistan, 1:50,000 scale

“Z” in U611Z denotes an expurgated series for Afghanistan, 1:100,000 scale

3.14.2 Map sheets

Sheet lines are the means by which a geographic area is divided to establish the limits of individual sheets. Sheet lines shall generally be formed by parallels of latitude and meridians of longitude. The sheet lines of individual maps are also referred to as neatlines.

3.14.2.1 Establishment of standard sheet lines

The 1:50,000 scale sheet lines shall be based on an established 1:100,000 scale format, which was designed to incorporate pertinent worldwide map series. A quartered 1:100,000 scale map forms four (4) 1:50,000 scale maps (e.g.: the 1:100,000 scale map sheet 4141 of Series L673 quarters into the 1: 50,000 scale sheets 4141-1, 4141-2, 4141-3, and 4141-4 of Series L772).

The establishment of sheet lines is based on the following principles:

- Sheet lines shall be developed on a series or project basis.
- Sheet lines shall be designed to provide map coverage of an area with the minimum number of sheets without unduly impairing the continuity of adjoining sheets.
- Sheet lines shall be so positioned that they coincide with the grid, ellipsoid, and datum junctions wherever possible. Sheet lines may vary within a map series. Table 1 lists the standard 1:50,000 and 1:100,000 scale sheet line sizes and the latitudes at which they occur:

Latitude	Sheet Sizes 1:50,000		Sheet Sizes 1:100,000	
	N-S	E-W	N-S	E-W
0° to 36°	15'	15'	30'	30'
36° to 44°	15'	18'	30'	36'
44° to 50°	15'	20'	30'	40'
50° to 61°	15'	22'30"	30'	45'
61° to 67°	15'	30'	30'	60'
67° to 72°	15'	36'	30'	72'
72° and above	**	**	**	**

**As specified in instructions for the assignment.

Table 1. Standard 1:50,000 and 1:100,000 scale sheet line sizes and applicable latitudes.

3.14.2.2 Departures from standard sheet lines

Certain departures from the standard sheet lines may be required to avoid unnecessary sheets, thereby reducing the number of map sheets in a project. However, these departures shall be kept at a minimum and shall be based on careful consideration of their impact on the overall requirement of continuity of standard sheet lines. Departures from standard sheet lines occur most often in coastal areas, long narrow islands, and large islands with varying widths.

Base considerations when addressing the introduction of departures from standard sheet lines should include the following principles and options:

- Adherence to normal preferred maximum work limits (see section 7.2.3).
- Extent of land topography and the need to show landmark coastal hydrographic features.
- The placement of margin data in open water areas.
- Existence of grid, ellipsoid, and datum junctions.
- Adjustment of sheet lines to avoid decimal parts of second-of-arc.

3.14.2.2.1 Examples of non-standard sheets

The following are examples of departures from standard sheet lines. NOTE: the dashed lines in the figures represent where the standard sheet lines would exist if unadjusted.

3.14.2.2.1.1 Border break extensions

A border break extension (“bump-out”) permits an adjustment to a sheet neatline to accommodate islands of an adjoining area or small points of land (see Figure 1 and Figure 2). When there is a choice of sheets which may contain a border break extension, the sheet which requires the least rearrangement of margin data shall be selected. The neatline is extended around the protruding land mass and incorporates all applicable features within.

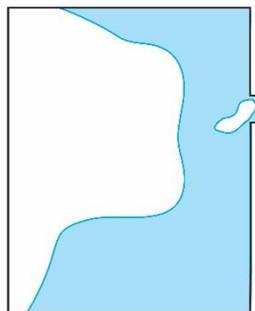


Figure 1. Border break for island.

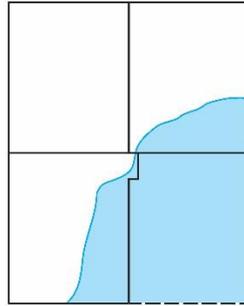


Figure 2. Border break for coastal land.

3.14.2.2.1.2 Extensions

An extension (Figure 3) is the enlargement of a sheet by moving one or more sheet lines to include adjoining land areas.

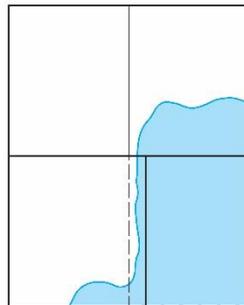


Figure 3. Sheet line extension.

3.14.2.2.1.3 Shifts

A shift is a change in continuity of sheet lines to accommodate a landmass (Figure 4). Sheets that are shifted usually retain the defined sheet dimensions for the area. A shift may involve more than one sheet. Overlapping sheets are permitted only if the overlapped area does not contain land, as shown in the example on the right.

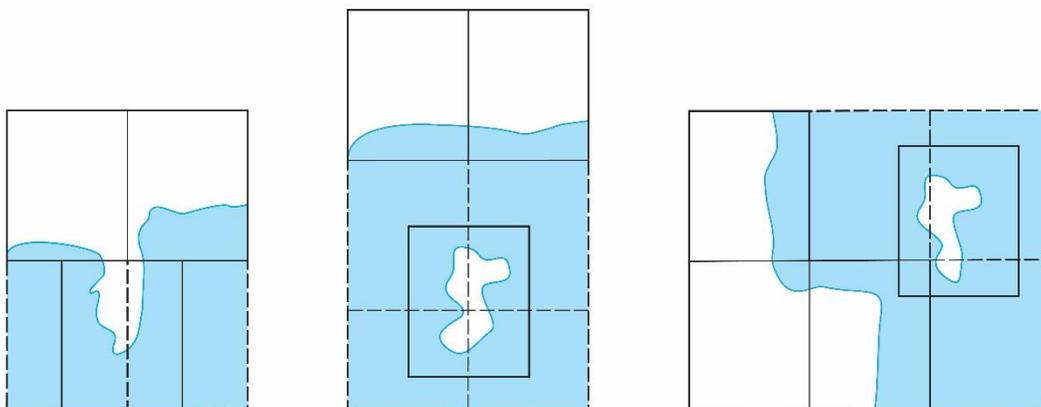


Figure 4. Various sheet line shifts.

3.14.2.2.1.4 Reproportionment

Reproportionment (Figure 5) permits the adjustment of the latitudinal and longitudinal limits of the defined sheet lines.

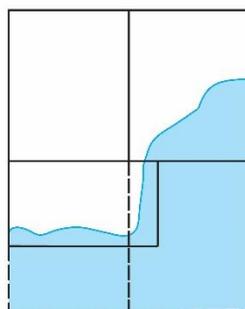


Figure 5. Reproportionment.

3.14.2.2.1.5 Insets

An inset (Figure 6) is a shift of a portion of a sheet covering an island(s) to relocate it within the open water area of another sheet. The inset is relocated on the nearest sheet and preferably along the same line of latitude or longitude.

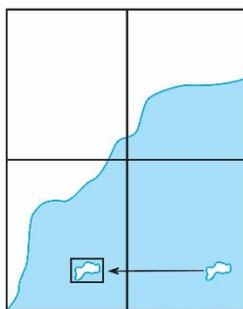


Figure 6. Insets.

3.14.2.2.2 Map sheets and series boundaries

When considered in the context of a map series, the designation of sheet lines, as well as the inclusion of map sheets in a series, may be affected.

3.14.2.2.2.1 Peripheral sheets and extensions

Peripheral sheets of a standard map series may have extended or broken projections to include small land areas. In special situations, standard sheet lines may be shifted to reduce the number of sheets needed to map the area.

A mapping project may include one or more sheets which fall within an adjacent Region or Sub-region which is unmapped at the scale of the project. If a series at the same scale is not planned for the adjacent Region or Sub-region, the sheets in question may be assigned to the series covering the area of the project.

Where a series exists for a specific area, a single map or a small number of maps of different scales, but within the same scale group and within the same area, may be incorporated as part of the existing series instead of establishing a separate series for the odd sheets.

3.14.2.2.2.2 Assignment of peripheral map sheets to series

When determining the limits of a series, the area covered by the peripheral sheets is considered. Example: A series covering France will include some peripheral sheets which contain portions of Spain. If the portion of France, on a peripheral sheet, is greater than that of Spain, the sheet shall be included in the France series. If the portion of Spain is greater, the sheet shall be assigned to the Spain series. This rule may be subject to modifications induced by special mapping requirements, bilateral mapping arrangements, etc.

3.14.2.3 Numbering of map sheets

3.14.2.3.1 Sheet numbering basis

3.14.2.3.1.1 Sheet numbering for 1:100,000 scale maps

The basis for large scale sheet numbering shall be a 1:100,000 scale sheet layout with each sheet systematically identified by a four digit number (see Figure 7).

The four digit sheet number shall be comprised of two significant pairs of digits. The first two digits shall identify the column of 1:100,000 scale sheets, and the second two digits, the row of 1:100,000 scale sheets. The westernmost column of sheets should usually be assigned the number 10 (first two digits), and the southernmost row of sheets the number 10 (second two digits). Therefore, the southwest sheet of the sheet number layout is identified as "Sheet 1010," and is referred to as the sheet of origin. The respective two digit numbers shall increase progressively from the sheet of origin.

In large areas where the number of columns or rows of sheets exceed 99, the first column or row, depending on the extent of the area to be covered, should be given a lower number as 09, 08, 07, etc., to avoid running out of two digit numbers.

The numbering system shall not be limited to a single map series. It may also include adjacent map series of the same format and scale.

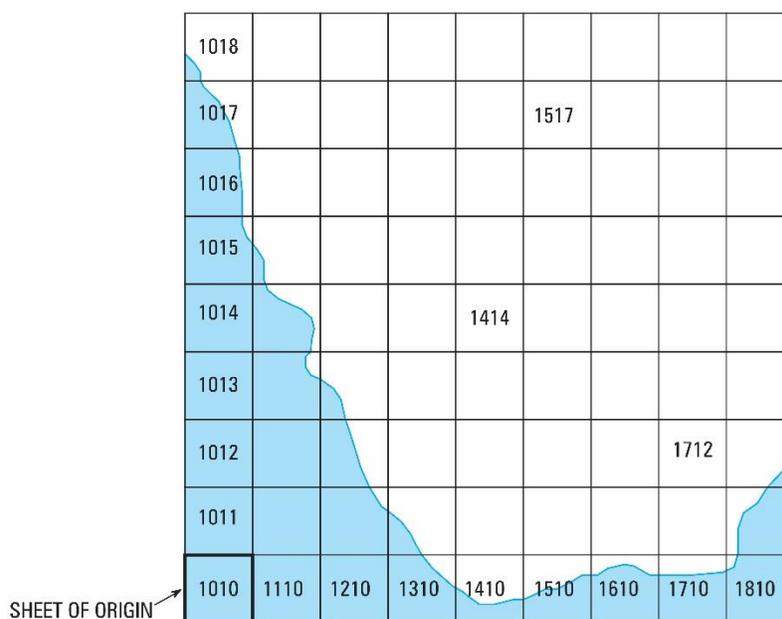


Figure 7. Basic development of the sheet number for 1:100,000 scale maps.

3.14.2.3.1.2 Sheet numbering for 1:50,000 scale maps

For 1:50,000 scale maps, the 1:100,000 scale map shall be quartered (see Figure 8). The four quarters shall retain the number of the 1:100,000 scale map, and shall be supplemented by a dash and the Arabic

numerals -1, -2, -3 and -4, numbered clockwise, beginning with the northeast quarter of the 1:100,000 scale map.

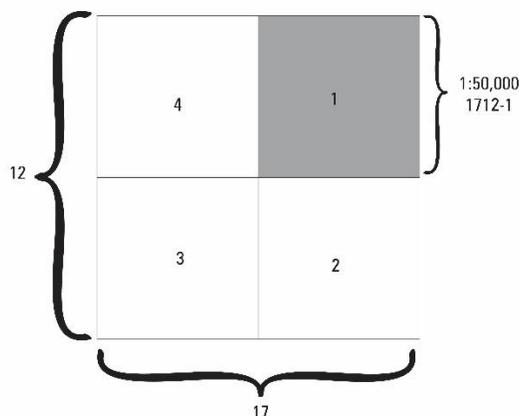


Figure 8. System for numbering 1:50,000 scale maps.

3.14.2.3.2 Sheet numbering with changes from standard sheet lines

3.14.2.3.2.1 Sheet numbers and sheet line breaks/insets

A sheet number shall not be affected by an extension of or a break in a sheet line which is made to include adjacent land areas, or by the inclusion of an inset.

3.14.2.3.2.2 Sheet numbers and sheet line shifts

For a sheet that is shifted from a standard sheet system, the sheet number assigned shall be that which, in the standard system, relates to the greater part of the sheet.

3.14.2.3.2.3 Special sheet numbering systems

A series composed of a small group of sheets which cannot be logically tied to an established numbering system shall follow a special sheet numbering system. Sheets within the series are assigned Arabic numerals beginning with "1" (Figure 9). The area covered by the series is laid out with the numbers reading from left to right in rows which are arranged from top to bottom. The word "SHEET" precedes the numbers. Example:

1	2	3	4	} SHEET 8
5	6	7	8	
9	10	11	12	

Figure 9. Sheet numbering for series containing a few maps.

3.14.2.4 Naming of map sheets

3.14.2.4.1 Normal sheet naming practices

A map should normally be named after its most outstanding cultural or natural feature. Names of cultural features are preferred over natural features; however, if a natural feature is better known than any cultural feature appearing on the map, the name of the natural feature should be chosen.

The names of rivers, valleys, mountain ranges and other features extending over several sheets should be avoided when selecting a sheet name. In addition, area, locality and tribal names should not be used as a sheet name. Names of destroyed populated places or features should not be used as a sheet name when a natural feature is more prominent.

When the feature is divided by the neatline(s) separating two or more sheets and is the best known feature on each of the sheets, the feature name is followed by the geographic term (in parenthesis) describing the portion of the feature for which the sheet is being named. Examples:

“STUTTGART (NORTH)” and “STUTTGART (SOUTH)”

“KABOL (NORTHWEST)”, “KABOL (NORTHEAST)”, “KABOL (SOUTHWEST)” and “KABOL (SOUTHEAST)”

3.14.2.4.1.1 Spelling of sheet name

The sheet name shall be spelled to correspond exactly to the name of the outstanding feature as it is shown in the map interior. Diacritics, hyphens, and apostrophes shall only be shown if they appear with the name in the interior of the map.

3.14.2.4.2 Alternate sheet naming practices

When a sheet does not contain a named cultural or natural feature, the name of any adjacent sheet (typically 8 sheets) may be used in conjunction with the appropriate directional term. The adjacent sheet that has the most prominent name shall be selected. For example: “EAST OF TARA” shall be used for the sheet immediately to the east of the sheet with the sheet name “TARA”; “NORTHWEST OF SPRINGFIELD” shall be used for the sheet immediately to northwest of the sheet with the sheet name “SPRINGFIELD”.

In cases where the 8 adjacent sheets are also devoid of any named feature that could be used as a sheet name option, the sheet number of the map being produced may be used as the sheet name. Project planning should consider changing the sheet(s) scale to 1:100,000 to eliminate the need to utilize sheet numbers as a sheet name.

3.14.2.4.3 Sheet names for copied maps

When a map is copied from or based on a foreign map, and uses the same sheet lines, the name of the original map should usually be retained.

3.14.2.4.4 Uniqueness of sheet names

Sheet names shall not be duplicated within a map series. Individual maps should be given distinct sheet names wherever possible.

3.14.2.4.5 Coordination of sheet names between scales

Sheet names of 1:50,000 and 1:100,000 scale maps shall be coordinated whenever possible. The sheet name for a 1:100,000 map should be the sheet name of one of the 1:50,000 maps covering the same geographic area. The most prominent feature used for the sheet names of the 1:50,000 maps should be selected as the sheet name for the 1:100,000 map. Conversely, the sheet name of the 1:100,000 map should be used as the sheet name for the applicable 1:50,000 map. For example, a 1:100,000 map named "SPRINGFIELD" would have associated 1:50,000 sheets named "SPRINGFIELD (NORTHWEST)", "SPRINGFIELD (NORTHEAST)", "SPRINGFIELD (SOUTHWEST)" and "SPRINGFIELD (SOUTHEAST)".

3.14.3 Edition numbering

The edition number shall identify the publication sequence of an individual map. Edition numbers shall run consecutively. A map bearing a higher edition number in the same series is assumed to contain more recent information than the same map bearing a lower edition number.

3.14.3.1 Standard edition designation

The standard edition designation shall consist of the word "Edition", a [space], a cardinal number, a dash, and the coded initial of the mapping agency responsible for the edition. Examples:

EDITION 1-NGA

EDITION 2-MCE

EDITION 3-GSGS

On maps produced by subsidiaries and affiliates of national mapping agencies, the coded initials of the preparing unit may be included as suffixed parenthetical code. Example:

EDITION 2- NGA (USAEUR)

The organization responsible for new military mapping in a given area shall also be responsible for coordinating the edition number. This does not prohibit another agency or its affiliate from producing a new edition. It is mandatory, however, for the producer to coordinate the edition number with the responsible organization. Similarly, it is mandatory that mapping units affiliated with NGA coordinate the assignment of edition numbers with NGA. "Edition 1" is always applied to maps in a given series which are produced for the first time.

3.14.3.2 Advancement of edition number

The edition number shall be advanced in the following instances:

- Any map on which an alteration or revision is made to the factual data shown on the map, or any alteration that affects the operational soundness of the map. Examples would be the addition of a new grid or the revision of boundary information.
- A newly constructed map which is to replace an existing map.
- A map converted from a non-standard military scale within the same scale range. Examples: a 1:50,000 scale map which replaces a 1:63,360 scale map and retains the same series number; a 1:100,000 scale map which replaces a 1:75,000 scale map and retains the same series number.

The advancement of an edition number constitutes authority to destroy stock and reproduction materials of the preceding edition.

3.14.3.2.1 Facsimile reprints

The edition number shall not be advanced for facsimile reprints on which no changes are made to map content or margin data.

The only authorized modifications to the facsimile reprints are:

- The addition of the NATO/National Stock Number (NSN), the Reference Number (RN) and bar code to introduce map products of other national mapping agencies into the NGA distribution system;
- The addition, deletion, or change of the coded initials or agency seal of the printing element or the printing date;
- The update of any security note (i.e. Limited Distribution);
- The update of the users note.

3.14.3.3 Edition numbering for provisional, emergency, special, and temporary printings

The word "edition" shall be used only in conjunction with the edition number. The words "provisional," "emergency," "special," "temporary," etc., shall not be used as prefixes to the word "edition." Such prefixes may be used in conjunction with the word "printing," in which case an edition number is not shown.

3.14.4 NATO/National Stock Number

The NATO/National Stock Number (NSN) consists of a 13 digit number and is used to uniquely identify the map in the Defense Logistics Information Service (DLIS).

The NSN shall be displayed on the map in human-readable and bar-code forms. See TM AC section 3.1.5.1 for details.

3.14.5 Reference Number

The Reference Number (RN) shall consist of an alphanumeric designation not to exceed 15 characters. The RN shall be constructed as follows:

- The first five units shall be reserved for the series number. The letter “X” is shown as the fifth unit when the series number consists of four units.
- The 6th through 15th units shall be reserved for the sheet number. The dash in 1:50,000 scale sheet numbers is not included in the reference number.

When displayed on the map, the RN shall be prefixed by “REF. NO.” See the TM AC section 3.1.5.2 for details.

Examples of NGA Reference Numbers used with topographic maps are shown as follows:

- For Series P773, Sheet Number 4779-3:
REF. NO. P773X47793
- For Series L7018, Sheet Number 4624-1:
REF. NO. L701846241
- For Series U711G, Sheet Number 2275-3:
REF. NO. U711G22753
- For Series E671, Sheet Number 1970:
REF. NO. E671X1970
- For Series E671Z, Sheet Number 1970:
REF. NO. E671Z1970

3.14.5.1 Modification of reference numbers for classified maps

When a modification of reference numbers is required for classified maps, guidance shall be included in the pertinent classification guide.

3.14.6 Expurgated Sheets

On map sheets containing expurgated areas (areas where map information is not shown) the fifth element of the series number is shown with a “Z” to distinguish it from a map sheet of the same area which is not expurgated. The sheet name shall also be changed to reflect the most outstanding feature within the non-expurgated area of the sheet. See section 2.5.5 of the TM PC for additional information on the treatment of sheets containing expurgated areas.

4 Data content and structure

The 1:50,000 and 1:100,000 scale Topographic Maps are feature-based hardcopy map products, based on the graphic symbolization of geospatial features contained within the map sheet limits.

4.1 Feature-based data

The Topographic Map Feature Catalog (TM FC) Annex A.1 shall be a subset of the NSG Entity Catalog (NEC) consisting of those features relevant for portrayal on a 1:50,000 or 1:100,000 scale topographic map. Likewise, the Topographic Map Application Schema shall be a subset of the NSG Application Schema (NAS) consisting of those features relevant for portrayal on a 1:50,000 or 1:100,000 scale topographic map. Features not listed in Annex A.1 shall not be portrayed.

Features shall be portrayed based on the symbol criteria contained in TM PC. However, not every instance of a feature may be symbolized on a TM. Some feature geometries or combinations of feature attributes and enumerants are not to be portrayed.

4.2 Feature-based application schema

The NSG Application Schema (NAS) is available from the NSG Standards Registry at:

NAS (UML):

<https://nsgreg.nga.mil/doc/view?i=81039>

NAS (Excel workbook):

<https://nsgreg.nga.mil/doc/view?i=81045>

4.3 Feature catalog

See Annex A for the Topographic Map Feature Catalog (TM FC).

5 Reference systems

5.1 Spatial reference system

World Geodetic System 1984 (WGS 84).

5.1.1 Ellipsoid

The ellipsoid for 1:50,000 and 1:100,000 Topographic Maps shall be World Geodetic System 1984 (WGS 84).

5.1.2 Horizontal datum

The horizontal datum for 1:50,000 and 1:100,000 Topographic Maps shall be World Geodetic System 1984 (WGS 84).

5.1.3 Vertical datum

The vertical datum for 1:50,000 and 1:100,000 Topographic Maps shall be Mean Sea Level (MSL) as determined by the appropriate Earth Gravity Model (EGM).

The EGM clarifier may be added to the Vertical Datum note in the margin if it is known. An example is as follows:

"VERTICAL DATUM.....MEAN SEA LEVEL (EGM96)"

5.1.4 Projection

The projection for 1:50,000 or 1:100,000 scale Topographic Maps shall be the Transverse Mercator between 84 degrees north latitude and 80 degrees south latitude. The Polar Stereographic projection shall be used for maps north of 84 degrees north latitude and south of 80 degrees south latitude. Any requirement for any projection other than those mentioned here should be specified in supplementary instructions provided as part of the project assignment.

The use of geographic coordinates as a system of reference is based on the expression of position by latitude and longitude in degrees, minutes and decimal minutes. The projection shall be represented on the 1:50,000 and the 1:100,000 scale map by limiting sheet lines (neatlines) and a series of evenly-spaced projection intersections in the map interior. These intersections shall be at 5 minutes of arc intervals for 1:50,000 scale and 10 minutes of arc intervals for 1:100,000 scale. The sheet lines of standard 1:50,000 or 1:100,000 scale maps shall show the meridians (lines of longitude) as straight lines, and parallels (lines of latitude) which effect curvature through the connection of straight line segments between successive intermediate projection intersections. The intersections of the parallels and meridians of the projection shall be plotted within 0.15 mm of the computed position.

5.1.5 Grid

The Universal Transverse Mercator (UTM) or Universal Polar Stereographic (UPS) grid shall be shown on 1:50,000 and 1:100,000 Topographic Maps. The Military Grid Reference System (MGRS) shall be used to express positions in terms of UTM and UPS grid coordinates. Between 84 degrees north latitude and 80 degrees south latitude, the standard grid shall be the UTM grid. The UPS grid shall be used for maps north of 84 degrees north latitude and south of 80 degrees south latitude.

The grid interval on 1:50,000 and 1:100,000 scale maps shall be 1,000 meters in both northing and easting. The grid shall be constructed on a given sheet so that the distances between adjacent grid lines shall not vary more than 0.15 mm from the computed grid interval; and the overall distances between the first full grid lines, complementing those of adjoining sheets, shall not vary more than 0.15 mm from their computer measurements.

5.1.6 Resources

Explanatory data and specifications can be found in: NGA.STND.0037_2.0.0_GRIDS, NGA Standardization Document "Universal Grids and Grid Reference Systems (28 February 2014) Version 2.0.0" and NGA.RP.0002_2.0.0_UTMUPS, NGA Standardization Document "The Universal Grids Based on the Transverse Mercator and Polar Stereographic Map-Projections (25 March 2014) Version 2.0.0". These documents pertain to:

- Descriptive data and parameters for worldwide application of datums, ellipsoids, projections, and grids.
- Explanations on the use of the Military Grid Reference System and Geographic Coordinate Reference Systems.
- Definitions, specifications, and illustrations of treatments of grid(s) and graticule(s) for the primary map, inset maps and map margin of 1:100,000 scale maps and larger.
- Treatment of grid zone junctions.
- Treatment of applicable declination diagrams.
- Figures (diagrams) with definitive illustrations delimiting worldwide coverage of geodetic datums, ellipsoids, grids and grid reference systems.
- Appropriate sheet margin guidance for all subject related requirements.

These geomatic standards are available from the NSG Standards Registry at:

NGA.STND.0037_2.0.0_GRIDS:

<https://nsgreg.nga.mil/doc/view?i=4057>

NGA.RP.0002_2.0.0_UTMUPS

<https://nsgreg.nga.mil/doc/view?i=4056>

5.2 Temporal reference system

Temporal reference systems are not applicable to Topographic Maps.

6 Data quality

6.1 Accuracy

6.1.1 Horizontal accuracy

Absolute horizontal accuracy shall be within 1.0 mm at hardcopy map scale (50 meters at 1:50,000 scale and 100 meters at 1:100,000 scale) circular error (CE) at the 90% confidence level.

- *Circular error is an accuracy figure representing the stated percentage of probability that any point expressed as a function of two linear components (e.g., horizontal position) will be within the given figure.*

6.1.2 Vertical accuracy

Absolute vertical accuracy shall be one elevation contour interval linear error (LE) at 90% confidence level.

- *Linear error is a one dimensional error (such as an error in elevation) defined by the normal distribution function.*

6.1.3 Displaced features

The accuracies stated above shall be for well-defined points such as drainage confluences, major transportation crossing points, survey points, or the equivalent. Feature symbols which are displaced shall be excluded from the accuracy requirement stated above.

6.2 Quality scope

Data quality measures are applicable to the entire map sheet.

7 Data product delivery

7.1 Delivery medium information

Topographic maps at 1:50,000 and 1:100,000 scale shall be delivered as paper map sheets.

Topographic maps may also be converted to digital “copies” of paper maps, in formats such as Portable Document Format (PDF), GeoPDF, Compressed Arc Digitized Raster Graphic (CADRG), or Enhanced Compressed Raster Graphic (ECRG). How digital copies of topographic maps are produced is outside of

the scope of this DPS, but is addressed in format-specific specifications, for example, U.S. MIL-PRF-89038 or NATO STANAG 7098 for CADRG, or U.S. MIL-PRF-32283 for Enhanced Compressed Raster Graphic (ECRG).

7.2 Delivery format information

7.2.1 Format name

Hardcopy map.

7.2.2 Language

The languages of the delivery format shall be the languages for the Topographic Map data product as a whole. See 3.10 for a discussion of the languages of delivery for topographic map sheets.

7.2.3 Work limits

Work limits define the area available for a map to be plotted or printed on a roll or sheet of paper. Dimensions are expressed in linear units of measure.

The normal preferred work limits shall be 558.8 mm (22 inches) east-west and 723.9 mm (28.5 inches) north-south.

If necessary, these limits may be increased up to a maximum of 609.6 mm (24 inches) east-west and 749.3 mm (29.5 inches) north-south, in order to accommodate:

- wider sheet areas located at latitudes between 14°N and 14°S;
- extended marginalia (i.e. bi/tri-lingual translations); or
- departures from standard sheet lines (see 3.14.2.2).

Any variance beyond these maximum work limits shall be specified in supplemental project instructions.

7.2.4 Paper size and dimensions

Paper/trim size pertains to the overall dimensions on which a map may be plotted and/or cut after printing. Dimensions are expressed in linear units of measure.

The paper/trim size shall be a total of 12.7 mm (0.5 inches) greater in each direction than the work limits, or 6.35 mm (0.25 inches) around each edge.

The normal preferred paper/trim size shall be 571.5 mm (22.5 inches) east-west and 736.6 mm (29 inches) north-south.

If necessary, the maximum paper/trim size may be increased to 622.3 mm (24.5 inches) east-west and 762.0 mm (30 inches) north-south.

Figure 10 illustrates sheet lines, preferred work limits, and preferred paper/trim size pictorially (see also TM AC, Annex B - Style Sheets).

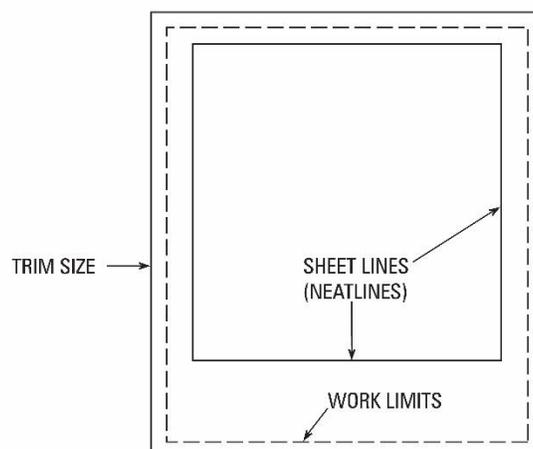


Figure 10. Sheet lines, work limits and paper/trim size.

8 Metadata

8.1 Overview/Guidance

Metadata for the NSG is defined in the NSG Metadata Foundation (NMF). The NMF defines both mandatory and optional metadata elements for a resource or data product.

In addition to the metadata elements included in the NMF, additional metadata elements have been identified that are applicable to/required for the production of a Topographic Map sheet.

This section lists the NMF and non-NMF metadata elements applicable to a Topographic Map. Many of these elements are described more fully elsewhere in this document; this section is meant to be a complete listing for reference purposes.

8.1.1 Metadata and the Map Display/Annotation Catalog

Annotations on a Topographic Map sheet (Map Display) are the primary vehicle for conveying metadata values for that map sheet (Topographic Map) or the product as a whole. Both Annotation Symbols and Annotation Rules may be parameterized, using the values of metadata elements as input. See the TM Annotation Catalog for more details.

8.2 NMF Metadata Applicable to the TM

Table 2 describes those Topographic Map metadata elements that correspond to mandatory or optional NMF metadata elements. In many cases, more than one TM metadata element may correspond to a NMF equivalent.

The structure of the table is as follows:

- Name: The name of the metadata element.
- NMF Element Correspondence: The NMF metadata element to which this corresponds.
- Mandatory/Optional: Denotes M (for mandatory) or O (for optional) NMF Metadata. Describes whether population of this element is mandatory to be NMF compliant.
- Multiplicity (Mult.): The number of values this element may represent.
- Description: Description how of the element is populated from the map sheet.
- Data Type: The UML data type of the element.
- Reference (Ref.): The section of the TM DPS (or associated Catalog) that describes this metadata element and its use in more detail.

Name	NMF Element Correspondence	Mandatory (M) or Optional (O)	Mult.	Description	Data Type	Ref.
Sheet Scale	Resource Spatial Resolution	M	1	The scale (representative fraction) of the map sheet. (1:50,000 or 1:100,000).	MD_Resolution	DPS 3.8
Sheet Name	Resource Title	M	1	The unique name of the map sheet.	CharacterString	DPS 3.2
Sheet Production Date	Resource Date	M	1	The production date (YYYY) of the map sheet.	Date	AC 3.1.7.1
File Preparation Date	Resource Date	M	1	The preparation date (MM-YYYY) of the file used to make the map sheet.	Date	AC 3.1.7.3
Copyright Date	Resource Date	M	1	The copyright date (YYYY) of the map sheet.	Date	AC 3.1.7.4
Abstract	Resource Abstract	M	1	An abstract describing the product.	CharacterString	DPS 3.5
Display Language	Resource Language	M	1..*	The language(s) of presentation of the map sheet.	LanguageCode	DPS 3.10
Topic Category	Resource Topic Category	M	1..*	The main theme(s) of the dataset.	CharacterString	DPS 3.7
Sheet Extent	Geographic Location	M	1	The geographic extent of the map sheet.	EX_Extent	DPS 3.9
Classification (Code)	Security Classification	M	1	The security classification of the map sheet.	MD_ClassificationCode	DPS 3.11

Classification System	Security Classification System	M	1	The classification system used to derive the security classification of the map sheet.	CharacterString	DPS 3.11
Product Name	Product Name	M	1	The name of the product.	CharacterString	DPS 1.15.1
Sheet Number	Resource Identifier	M	1	The sheet number identifying a map sheet.	CharacterString	DPS 3.1
Series Number	Resource Identifier	M	1	The series number identifying a map series.	CharacterString	DPS 3.1
Edition Number	Resource Identifier	M	1	The edition number of the map sheet.	CharacterString	DPS 3.1
Reference Number (RN)	Resource Identifier	M	1	The unique Reference Number (RN) of the map sheet.	CharacterString	DPS 3.4
NATO/National Stock Number (NSN)	Resource Identifier	M	1	The unique NATO/National Stock Number (NSN) of the map sheet.	CharacterString	DPS 3.3
Series Name	Resource Identifier	M	1	The name of the map series.	CharacterString	DPS 3.14.1
Producing Agency	Resource Originator	M	1	The agency responsible for producing the map sheet.	CharacterString	AC 3.1.7.1
Producing Agency Code	Resource Originator	M	1	The abbreviation for the producing agency.	CharacterString	AC 3.1
Point of Contact	Resource Point of Contact	M	1	The point of contact for the map sheet.	CI_ResponsibleParty	AC 3.1.7.2
Data Content Lineage	Lineage	O	1..*	The lineage of the data content represented on the map sheet.	LI_Lineage	AC 3.4.2
Ellipsoid	Reference System	M	1	The ellipsoid to be used for the map sheet.	CharacterString	DPS 5.1.1
Horizontal Datum	Reference System	M	1	The horizontal datum to be applied to the map sheet.	CD_Datum	DPS 5.1.2
Vertical Datum	Reference System	M	1	The vertical datum to be applied to the map sheet.	CD_VerticalDatum	DPS 5.1.3

Projection	Reference System	M	1	The projection to be used for map sheets.	CharacterString	DPS 5.1.4
Grid System	Reference System	M	1	The grid system to be used for map sheets.	CharacterString	DPS 5.1.5
Declassification Information	Declassification Date, Declassification Event	O	1	Declassification information for a classified map sheet.	CharacterString	DPS 3.10

Table 2. NMF metadata applicable to a TM.

8.3 NMF Metadata Not Applicable to a Hardcopy Map Product

The following mandatory NMF metadata elements have been identified as not applicable to a hardcopy product:

- Resource character set
- Resource category
- Metadata point of contact
- Metadata date stamp
- Metadata standard name
- Metadata standard version
- Keywords
- Hierarchy level and name

8.4 Additional Metadata for Topographic Maps

The tables in this section list additional categorized metadata elements that have been identified as important for constructing a Topographic Map, and thus may appear in the criteria of Annotation Rules or as parameters for Annotations.

8.4.1 Additional Presentation Information

Table 3 describes additional metadata elements needed to drive textual annotations on the TM sheet.

Name	Multiplicity	Description	Data Type	Reference
Glossary Terms and Definitions	0..*	The terms and definitions to be displayed in the glossary.	CharacterString	AC 3.6
Miscellaneous Note Text	0..*	The text of the miscellaneous notes to appear on the map.	CharacterString	AC 3.7
Users Note Text	1	The text of the Users Note as required by supplementary instructions.	CharacterString	AC 3.1.7.2
Copyright Note Text	1	The text of the Copyright Note as required by supplementary instructions.	CharacterString	AC 3.1.7.4
Viewing Conditions - Red and Blue/Green-Light Readability	1	Whether or not the map sheet is blue/green-light readable in addition to red-light readable.	Boolean	DPS 7.2.4

Table 3. Additional metadata related to presentation

8.4.2 Additional Security Constraint Information

Table 4 describes information about the security classification and constraints of a Topographic Map that are not otherwise covered by NMF metadata elements.

Name	Multiplicity	Description	Data Type	Reference
Limited Distribution Note Required	1	Whether or not a limited distribution note is required for this map sheet.	Boolean	DPS 3.10.1
Limited Distribution Note Text	1	The text of the Limited Distribution Note as required by supplementary instructions.	CharacterString	DPS 3.10.1
Special Handling Information	0..1	Any security caveats or special handling instructions related to the map sheet.	CharacterString	DPS 3.10.2

Table 4. Additional security constraint metadata.

8.4.3 Data Content-Derived Information

Table 5 describes metadata elements representing information derived from the data content portrayed on the Topographic Map.

Name	Multiplicity	Description	Data Type	Reference
Data Content	1	The data content represented on the map sheet.	CharacterString	DPS 4
Data Content – Countries Depicted	1..*	The countries shown on the map sheet.	CharacterString	DPS 4
Data Content - Intermediate Elevation Contour Interval	1	The primary (intermediate) elevation contour interval represented by the elevation contour data for the map sheet.	Integer	DPS 4
Data Content – Supplementary Elevation Contour Interval	0..*	The supplementary elevation contour interval(s) represented by the elevation contour data for the map sheet.	Integer	DPS 4
Data Content – Maximum Elevation	1	The maximum elevation value over the geographic extent of the map sheet.	Integer	DPS 4
Data Content – Minimum Elevation	1	The minimum elevation value over the geographic extent of the map sheet.	Integer	DPS 4

Table 5. Additional metadata related to data content.

8.4.4 Additional Spatial Reference Information

8.4.4.1 Sheet-Level Spatial Reference Information

Table 6 describes additional spatial reference-related metadata elements applicable to a Topographic Map sheet as a whole.

Name	Multiplicity	Description	Data Type	Reference
Epoch Date	1	The standard epoch year (divisible by five, such as 2010, 2015, etc.) of latest isogonic data.	Date	AC 3.3.1.3
Latitude Second Equivalence	1	The equivalent distance in meters for one second of latitude, given the extent/geodetic information of the map sheet.	Double	AC 3.3.1.6
Longitude Second Equivalence	1	The equivalent distance in meters for one second of longitude, given the extent/geodetic information of the map sheet.	Double	AC 3.3.1.6
Sheet Line System	1	The sheet line system used to define the borders of the map sheet.	CharacterString	DPS 3.14.2
100,000m Grid Square Identifier	1..*	The 100,000m grid square identifier(s) overlapping this map extent.	CharacterString	AC 3.3.1
JOG-A Sheet Number	1	The Joint Operations Graphic-Air (JOG-A) sheet number to which the area of the map sheet corresponds.	CharacterString	AC 3.3.6.1

Table 6. Additional sheet-level spatial reference metadata.

8.4.4.2 Map-Specific Spatial Reference Information

Table 7 describes spatial reference metadata elements that are specific to one or more of the Maps within the Map Display (see section 12.6).

In addition to the primary map, one or more insets may be present on the TM sheet, depending on the geographic extent of the sheet (see section 3.14.2 for further discussion of insets). Both the primary map and the insets require specific values for their construction and for the parameterization of the Annotations that accompany them. Accordingly, each map (primary and each inset) will have its own set of values for the following metadata elements. (The TM AC specifies which set of values should be used for a given map-specific annotation.)

Name	Multiplicity	Description	Data Type	Reference
Map Extent	1	The geographic extent of the map (as distinct from the overall extent depicted on the map sheet).	EX_Extent	DPS 3.9
Map Major Grid Zone	1..*	The major grid zone(s) to be shown on the map.	CharacterString	DPS 5.1.5

Map Major Grid Zone Designation	1..*	The full designation, including latitude band, of the major grid zone(s) to be shown on the map.	CharacterString	DPS 5.1.5
Map Major Grid Convergence Info	1..*	The convergence info for the major grid(s) on the map.	CharacterString	AC 3.3.1.3
Map Major Grid Magnetic Angle Info	1..*	The magnetic angle(s) for the major grid(s) on the map.	CharacterString	AC 3.3.1.3
Map Minor Grid Zone	0..*	The minor grid zone(s) to be shown on the map.	CharacterString	DPS 5.1.5
Map Minor Grid Zone Designation	0..*	The full designation, including latitude band, of the minor grid zone(s) to be shown on the map.	CharacterString	DPS 5.1.5
Map Minor Grid Convergence Info	0..*	The convergence info for the minor grid(s) on the map.	CharacterString	AC 3.3.1.3
Map Minor Grid Magnetic Angle Info	0..*	The magnetic angle(s) for the minor grid(s) on the map.	CharacterString	AC 3.3.1.3

Table 7. Additional map-level spatial reference metadata.

9 Data capture

9.1 Data capture statement

Geospatial information portrayed on NGA Topographic Maps at 1:50,000 or 1:100,000 scales shall be taken from NGA's GEOINT foundation, which includes topographic, maritime, aeronautical, boundaries, elevation and geographic names.

Extraction guides shall define the criteria and circumstances under which each feature is collected. The GEOINT Content Extraction Specification (GCES) is available at:

<https://geo.aitcnet.org/GCES/pages/topicIndexByName.html>

10 Data maintenance

Topographic Maps do not have an established maintenance/update cycle. The date of currency is indicated in the margin (see TM AC 3.4.2 for details).

11 Portrayal

The portrayal of geospatial features and annotations shown on 1:50,000 and 1:100,000 scale Topographic Maps shall be defined in the TM PC and TM AC. The ISO 19131, Data Product Specification allows for multiple portrayal and annotation catalogs to exist, the use of which will result in different portrayals, depending on delivery format and/or user needs.

11.1 Portrayal catalog

The TM PC presents symbol descriptions, symbol rules, labeling rules, generalization rules, finishing rules and additional informative guidance associated with feature portrayal on hardcopy topographic maps. Features portrayed on a TM include topographic, aeronautical, boundary, elevation, and maritime.

The TM PC (NGA.STND.0035-2_1.1_DPSTMPC) is available from the NSG Standards Registry at:

<https://nsgreg.nga.mil/>

11.2 Annotation catalog

The TM AC presents rules for including, composing, and placing annotations (marginalia) in the map display on hardcopy topographic maps. The TM AC incorporates information currently found in text and map style sheets.

The TM AC (NGA.STND.0035-3_1.1_DPSTMAC) is available from the NSG Standards Registry at:

<https://nsgreg.nga.mil/>

12 Additional information

12.1 DPS Organization

This DPS is organized in accordance with ISO 19131, Data Product Specification. Several of the sections in this DPS refer to external resources to document product requirements, including:

- NSG Application Schema (NAS)
- GEOINT Content Extraction Specification (GCES)
- Topographic Map Portrayal Catalog (TM PC)
- Topographic Map Annotation Catalog (TM AC)

These external resources are available from the National System for Geospatial Intelligence (NSG) Standards Registry.

Because ISO 19131 allows for multiple portrayals of a TM dataset, the possibility exists to have more than one portrayal catalog, and more than one annotation catalog, for a dataset. Figure 11 illustrates the relationship between the components of this DPS.

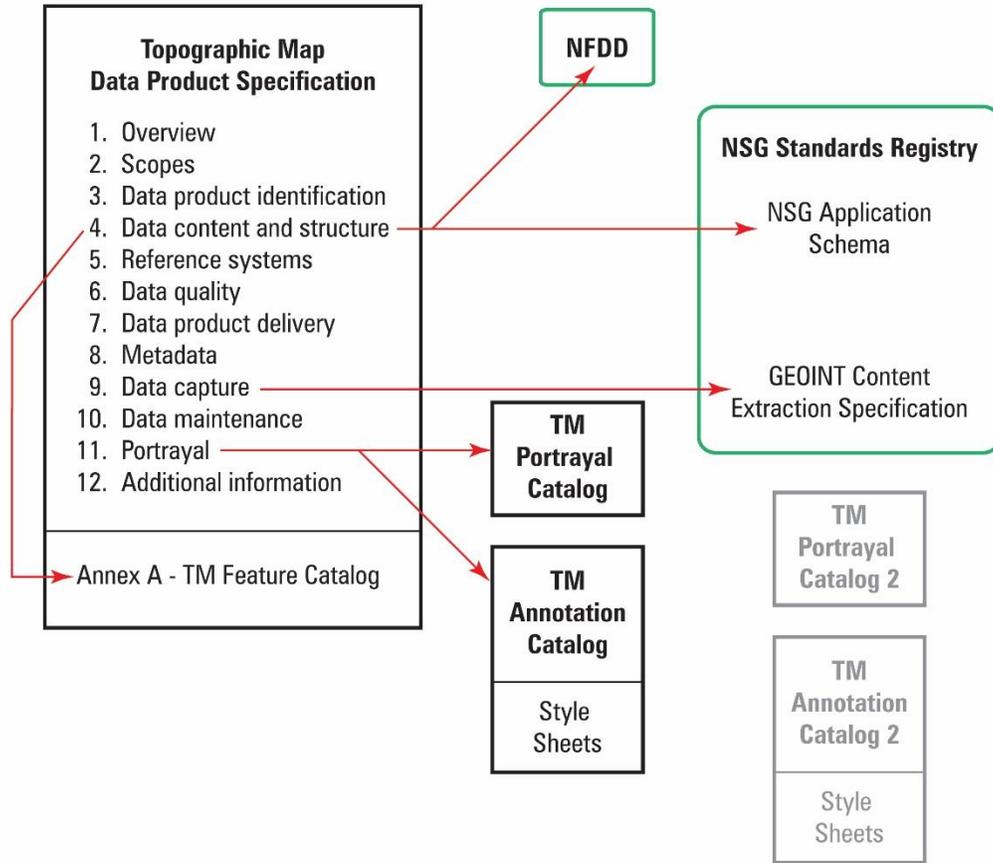


Figure 11. DPS Components

12.2 Supersession

This NGA Data Product Specification supersedes “Data Product Specification (DPS), 1:50,000 and 1:100,000 Scale, Topographic Map (TM), v1.0, 2015-06-11”, as well as MIL-T-89301A, 1:50,000 Scale Topographic Maps, and MIL-T-89306, 1:100,000 Scale Topographic Maps.

12.3 Standardization agreements

This specification implements the international standardization agreements listed below. When amendment, revision, or cancellation of this specification is proposed, the preparing activity must coordinate the action with the U.S. National Point of Contact for the international standardization agreement, as identified in the ASSIST database at <https://assist.dla.mil>

12.3.1 NATO Standardization Agreements (STANAGs)

- 2211 JSB/IGOE Geodetic Datums, Spheroids, Grids and Grid References
- 2215 JSB/IGOE Evaluation Of Land Maps, Aeronautical Charts And Digital Topographic Data
- 3666 Maximum Size for Maps, Aeronautical Charts and Other Geospatial Products
- 3675 JSB/IGOE Symbols on Land Maps, Aeronautical Charts and Special Naval Charts
- 3676 JSB/IGOE Marginal Information on Land Maps and Aeronautical Charts
- 3677 JSB/IGOE Standard Scales for Land Maps and Aeronautical Charts
- 3689 JSB/IGOE Place Name Spelling on Maps and Charts
- 7136 JSB/IGOE Identification of Land Maps, Aeronautical Charts, Digital Geographic Datasets and Media Containing Datasets (Excluding Hydrographic Products)
- NATO AGeoP-9 NATO Specifications for Identification of Hard Copy Land Maps, Aeronautical Charts and Image Plans

12.4 Background on development of the Topographic Map DPS

The official specifications pertaining to topographic maps for the U.S. military, and also used by partners in NGA’s co-production programs, have been U.S. Department of Defense Specifications (MILSPEC) MIL-T-89301A, 1:50,000 Scale Topographic Maps, and MIL-T-89306, 1:100,000 Scale Topographic Maps. These specifications were published in 1995 and referenced MIL-STD-2408, Mapping, Charting & Geodesy Glossary of Feature and Attribute Definitions, which specifies the since superseded Feature/Attribute Coding Standard (FACS) for encoding the data that was used to produce these maps.

Over the past several years NGA has transitioned to a content centric environment based upon the NSG Foundation GEOINT Data Strategy, which maintains data through a standard data model. Service partners are integrating this concept in their geospatial production systems. An example of this are the modern NGA datasets, which are based on the GEOINT Structure Implementation Profile (GSIP) family of standards, to include the NSG Feature Data Dictionary (NFDD) (*NGA’s standards compliant extension of the NATO standard Defense Geospatial Information Working Group Feature Data Dictionary (DFDD)*) and accompanying NSG Entity Catalog (NEC). These GSIP standards are second generation successors to FACS. The new DPS is based on the GSIP, which is the current data model for the NSG. The TM DPS is GSIP

compliant, *e.g.*, the TM DPS FC is a profile of the NSG Entity Catalog (NEC). The new DPS provides integrated support for both 1:50,000 and 1:100,000 scales of topographic maps.

12.5 Cartographic process

The following concepts describe a cartographic process for creating a map display (hardcopy or digital) that accurately and effectively portrays feature data and associated metadata (as annotation). Information on the cartographic process is provided in this DPS to provide a general understanding of the process and to illustrate the terminology used in this DPS. The international standard for portrayal of geospatial information is ISO 19117, Geographic information portrayal. That standard indicates that typically there are two types of information included in a geospatial dataset: geographic information (the data) and metadata. Metadata is depicted by annotations.

12.6 Map Display

The highest level concept present in a topographic map is the map display (Figure 12). The current section describes the anatomy of a map display, as well as the maps within.

A Map consists of:

- Feature Portrayal (geographic information / feature data)
- Annotation (metadata)

A Map Display consists of 1 or more maps:

- Primary Map (~ map sheet)
- Inset Map(s)
- Margin mini-maps (Annotations)

Each Map in the Map Display has:

- Map Interior (inside neatline)
- Map Margin (outside neatline)

The Map Interior (Figure 13) contains:

- Geographic Information (Feature data)
- Annotation (Interior Annotation within the neatline) – see blue outlines:
 - Georeferencing annotations (e.g. grids, graticules)
 - Geo-oriented annotations (e.g. grid labels)

The Map Margin contains:

- Annotation (Interior Annotations related to the neatline)
 - Geo-oriented annotations (e.g. grid and graticule ticks and labels)
- Annotation (other)

- Geographic annotations (e.g., "mini-maps", boundaries diagram, adjoining sheets diagram)
- Geo-oriented annotations (e.g., declination diagram, scale bar, slope guide)
- Non-geographic orientations (e.g. symbol legend, copyright notice)

Map Display Design (Style Sheet):

- Specifies content and placement of maps, including the arrangement of interior and other annotations
- May employ "open space" over map interiors for arrangement of inset maps, etc.

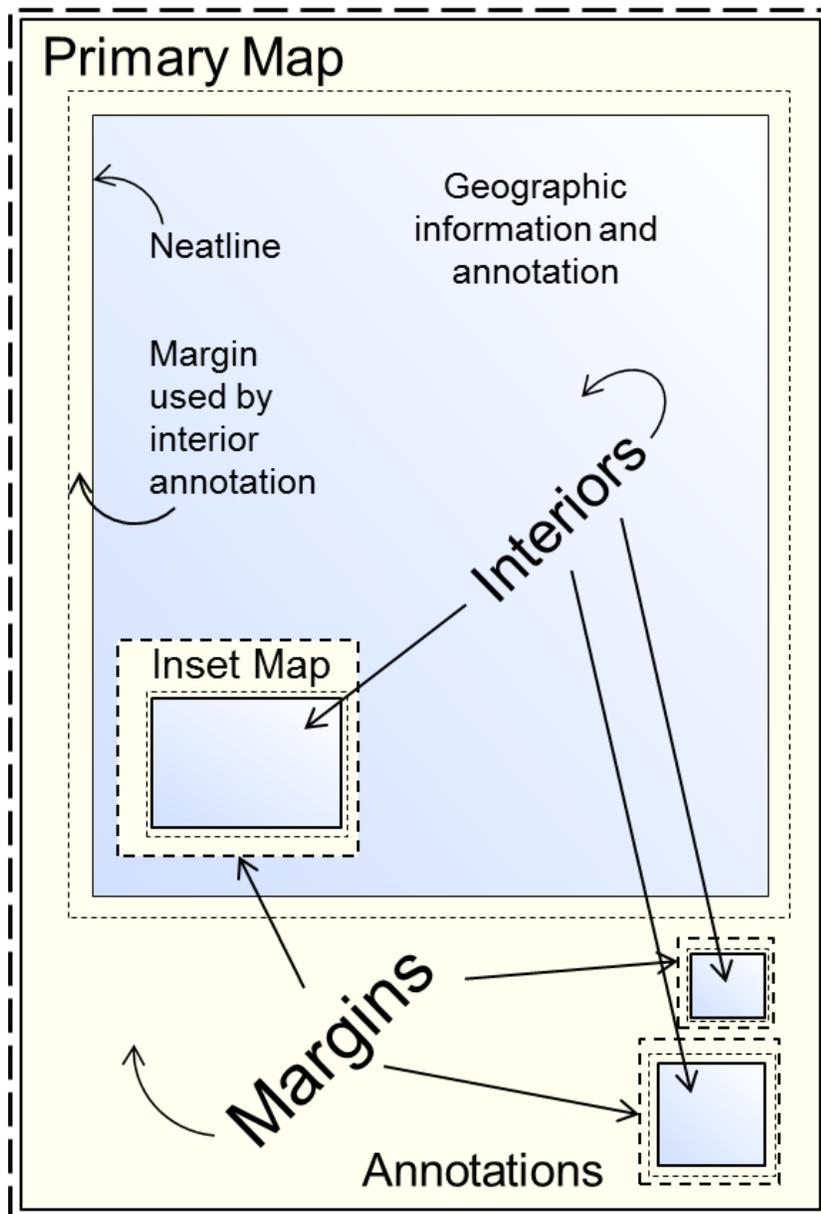


Figure 12. Anatomy of a Map Display.

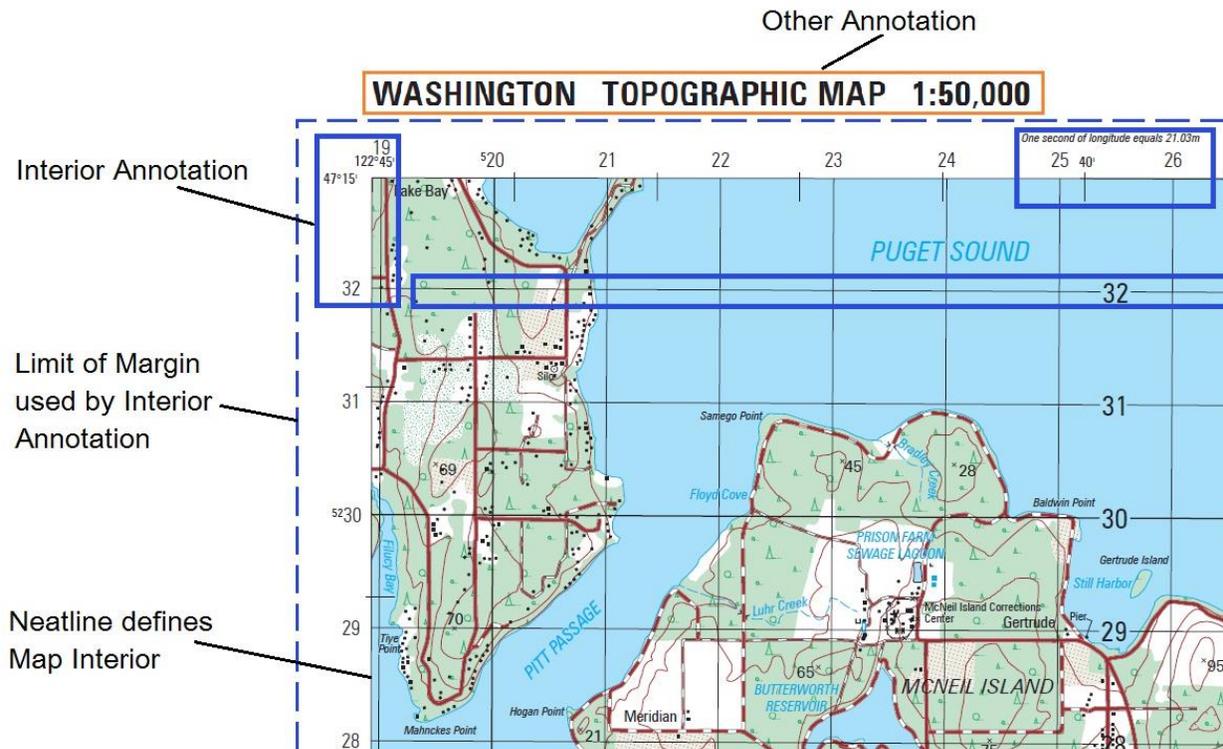


Figure 13. Interior Annotation and Other Annotation.

12.7 Geographic Portrayal Process

Whether automated, hand-crafted, or a combination thereof, the process of portraying geospatial information, i.e., attributed geospatial features, can be depicted as shown in Figure 14.

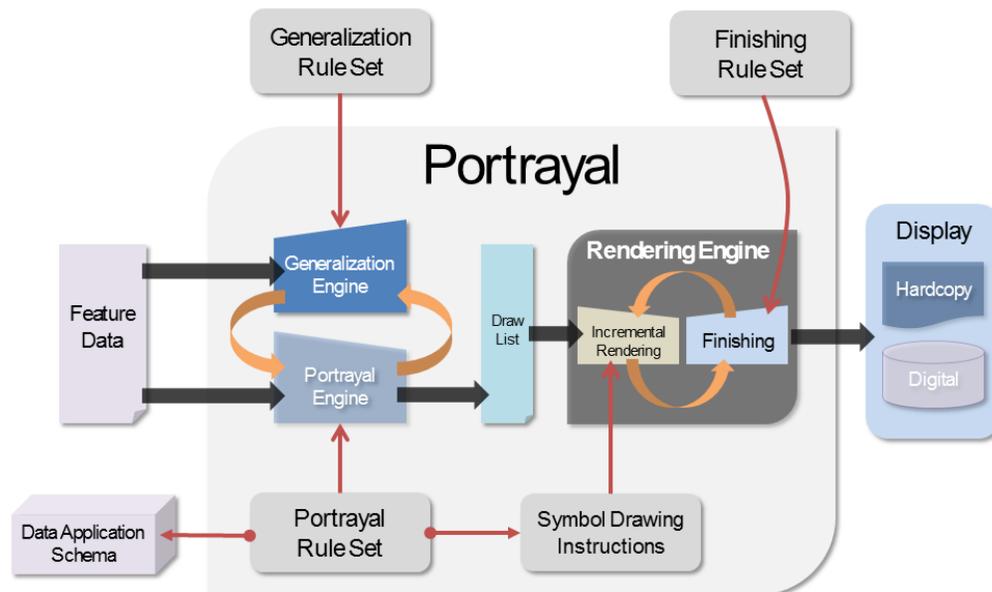


Figure 14. Geographic Portrayal Process as conceptualized in ISO/FDIS 19117.

Figure 14 can be summarized as follows. Feature data that is managed according to a well-defined schema (encoding model) feeds a portrayal process whose first step is to apply generalization rules that guide any changes in the aggregation or delineation of a feature.

Generalization may result in assigning different display geometry to the feature as it is represented on the portrayal draw list. The portrayal engine coordinates with the generalization engine to determine which portrayal function (portrayal rule) applies to the feature – resulting in the assignment of a symbol code and progressing to the portrayal draw list along with labeling instructions.

The rendering engine takes features from the draw list and applies the associated symbol definitions along with geographic display geometries. To this point, each feature, now represented as a symbol, has been manipulated as an individual entity – with no consideration for other features/symbols on the draw list. The function of the finishing process is to consider sets of features/symbols that must be made to co-exist in the display space and make adjustments that yield the desired cartographic result. Finishing rules provide a structured way for specifying finishing adjustments. Some symbols must be geospatially displaced to ensure readability when otherwise multiple symbols would “overprint” one another. Finishing rules will indicate which type of feature stays geospatially accurate and which type of feature gets displaced. Some rules apply to labeling.

It is the geographic portrayal finishing process that most heavily involves the skill and experience of a cartographer. Automated methods can achieve various levels of success for the generalization and displacement of features, but for the most demanding projects there is no better solution than the cartographer's judgment and experience.

The end result of the geographic portrayal process is the map interior (minus annotation) for a map display – hardcopy or digital.

12.8 Overall Cartographic Process

The overall cartographic process addresses both geographic feature portrayal and annotation to create a complete map display. Figure 15 builds on the geographic feature portrayal process to illustrate this point.

All the rules and symbol definitions important to geographic feature portrayal are managed in a portrayal catalog. Also in the portrayal catalog is a representation for portrayal context – the conditions not associated with features and their attributes for invoking a particular rule, e.g., whether the map is red-light readable.

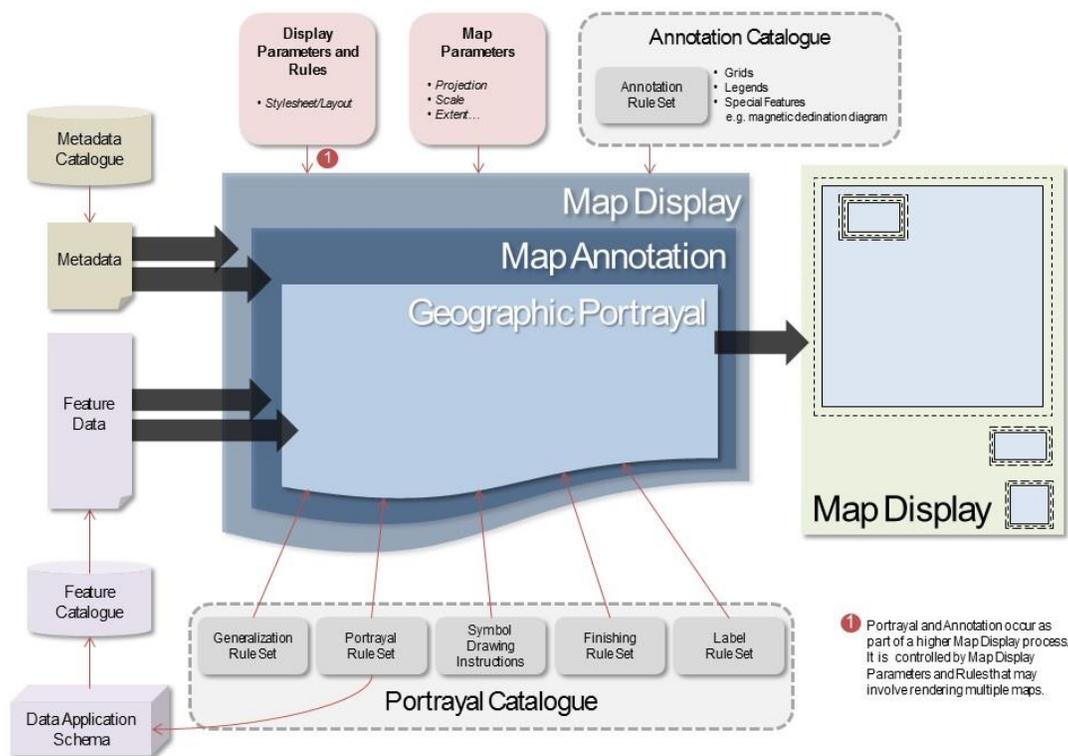


Figure 15. The cartographic process for a complete map display.

Working clockwise from the portrayal catalog, the figure acknowledges a feature catalog for maintaining the semantics for encoding features and attributes (on which the application depends). As well as feature data, metadata is a crucial aspect of any geospatial dataset and map display. For example, portrayal context consists of metadata (though that subtlety is not depicted). Just as there is a feature catalog, there is a metadata catalog that defines the structure for metadata. This structure informs the definition and content of display parameters and rules, which is how metadata drives the layout and content of the map

display, to include map parameters and annotation. Very similar to the portrayal catalog there is an annotation catalog. The annotation catalog manages rules for presenting metadata in the map display.

The greater map display process encompasses the geographic portrayal process and the annotation process, all of which feed on feature data and metadata as depicted. Certain annotations are georeferenced (e.g., graticule and grids), while certain others are geo-oriented (e.g., declination diagram, road objective). For this reason the map annotation process includes the geographic portrayal process in order to help place such annotations in the map display and even facilitate finishing, e.g., grid ladder labeling, insets and annotation over “open water” of the primary map’s interior.

The end result of the cartographic process is a map display. A hardcopy topographic map represents an extensive application of the cartographic process. However, the same process can be scaled back to achieve the simplest of displays, e.g., digital street maps on a mobile device where annotation may be nothing more than a cursor coordinate readout.

Annex A - Feature Catalog

This Feature Catalog contains only a subset of descriptive information for each feature contained in the TM DPS. The NSG Entity Catalog (NEC) should be referenced for all other applicable information (to include pertinent enumerant values, definitions and descriptions). The NEC (Excel workbook format) is available from the NSG Standards Registry at:

<https://nsgreg.nga.mil/doc/view?i=80534>

Annex A.1 - lists the feature name and feature code, followed by a definition and description (when applicable) of that feature. Following the feature information is a listing of all of the attributes used in the symbol, labeling, finishing and/or generalization rules for the respective feature.

Annex A.2 - lists all of the attributes shown in Annex A.1, followed by the definition and description of that attribute. A <DESC> identifier (when applicable) is used to denote when the attribute's definition ends and the attribute's description begins.

Administrative Boundary (FA000)

Definition: A boundary between administratively controlled regions.

Attributes: Boundary Status [BST], Geopolitical Entity : Geographic Name Information (1) : Full Name (first side) [ZI005_FNAA], Geopolitical Entity : Geographic Name Information (2) : Full Name (second side) [ZI005_FNAB], Geopolitical Line Type [LSP]

Administrative Subdivision (FA003)

Definition: An administratively subordinate subdivision of a geopolitical entity.

Description: A geopolitical entity (country) is typically divided into first-, second-, and lower-order administrative subdivisions. First-order administrative subdivisions are immediately subordinate to the government of the geopolitical entity, with second- and lower-order subdivisions subordinate to those above them. Examples: (first-order) a United States state, a German Land, a French region; a Canadian province; (second-order) a U.S. county, a French department; (third-order) a U.S. township, a French arrondissement; (lower-levels) a French commune.

Attributes: BGN Administrative Level [BAL], Geographic Name Information : Full Name [ZI005_FNA]

Aerial (AT011)

Definition: A device that is used for emitting and/or sensing electromagnetic energy.

Description: For example, used to transmit and/or receive electronic signals as on a radio tower or to capture electromagnetic energy as in radio astronomy.

Attributes: Height Above Surface Level [HGT]

Aerial Farm (AT012)

Definition: A collection of aerials that are collocated and serve a common purpose.

Description: They may be organized either to function as a single larger virtual device (for example: a phased array) or function relatively independently of each other (for example: pointed in different directions and operating at different frequencies as at a satellite communication ground station).

Attributes: Angle of Orientation [AOO], Area [ARA], Physical Condition [PCF]

Aerodrome Beacon (GB013)

Definition: A beacon used to indicate the location of an aerodrome from the air.

Description: Aerodrome beacons may consist of either a rotating light source or a strobe light.

Attributes: Navigation Light Characteristic [CHA]

Aircraft Hangar (GB230)

Definition: A building for housing aircraft.

Attributes: Angle of Orientation [AOO], Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Amphitheatre (AK164)

Definition: A small tract of level ground serving as a stage that is surrounded by rising slopes (either naturally occurring or artificially constructed) supporting tiered seating (for example: benches).

Description: Generally oval or circular in overall shape and typically used for live theatrical presentations, concerts, opera or dance productions, cinema, and/or other stage productions.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Amusement Park (AK030)

Definition: A predominantly man-made facility equipped with recreational devices.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Amusement Park Attraction (AK020)

Definition: A large structure located in an amusement park.

Attributes: Amusement Attraction Type [AMA], Height Above Surface Level [HGT]

Anchorage (BB010)

Definition: An area of relatively uniform water depth with no cables, pipelines, or hazardous obstructions present on the seafloor, in which vessels anchor or may anchor.

Description: Anchorage areas are additionally determined by: the depth of water in comparison to the tidal range; the material of the seafloor bottom; local environmental effects of wind and currents; and proximity to hazards to navigation, adjacent ships, and harbor traffic lanes. Although the anchorage refers to an identified area along the water surface, its physical structure is considered to be the material and condition of the seafloor below. An anchorage can be physically damaged by natural events (for example: an earthquake or tsunami) by which the preferred seafloor bottom type can change, or hazardous obstructions can be created or moved into the anchorage area.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA]

Annotated Location (ZD045)

Definition: A location at which text pertaining to that location is annotated.

Description: For example, a characteristic or activity pertaining to the location may be described.

Attributes: Note : Memorandum [ZI006_MEM]

Apron (GB015)

Definition: A defined area, on a land aerodrome/heliport, intended to accommodate aircraft/helicopters for purposes of loading and unloading passengers, mail or cargo, and for fuelling, parking or maintenance.

Attributes: Width [WID]

Aquatic Vegetation (BD061)

Definition: A region of waterborne cellular or vascular plants (for example: algae, grasses, reeds, and water hyacinths).

Description: The vegetation may be moored (for example: sea grass and reeds) or floating (for example: sargasso and water hyacinths).

Attributes: Vegetation Species [VSP], Water Level Effect [WLE]

Aqueduct (BH010)

Definition: A pipe or artificial channel that is designed to transport water from a remote source, usually by gravity, for freshwater supply, agricultural, and/or industrial use.

Description: It may be supported by a bridge.

Attributes: Aqueduct Type [ATC], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF], Supported by Bridge Span [SBB], Width [WID]

Archeological Site (AL012)

Definition: A site where remains of past civilizations or human activity have been discovered.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT]

Asphalt Lake (DA005)

Definition: A natural accumulation of liquid asphalt.

Astronomical Observatory (AL142)

- Definition:** A building designed and equipped (for example: with a telescope) for making observations of celestial objects (including the earth in relation to them), of space, and of the universe as a whole.
- Description:** Typically incorporates a dome-shaped covering that may be opened in order to expose instruments to the sky or closed to protect them from the weather.
- Attributes:** Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]
-

Barn (AJ085)

- Definition:** A roofed farm building designed for sheltering harvested crops (for example: hay), livestock (for example: cattle), and/or farm machinery (for example: tractors and plows).
- Attributes:** Angle of Orientation [AOO], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]
-

Basin Gate (BI045)

- Definition:** A gate that impounds water within a basin or chamber that is used by watercraft.
- Description:** For example, gates used at locks or dry docks.
- Attributes:** Angle of Orientation [AOO], Basin Gate Type [BGT]
-

Billboard (AG050)

- Definition:** A large outdoor board for advertisements.
- Description:** May be attached to another structure or self-supporting. Usually elevated so as to be seen for a significant distance.
- Attributes:** Height Above Surface Level [HGT]
-

Blast Furnace (AC010)

- Definition:** A smelting furnace in which a blast of air is used, especially one for iron-smelting using a compressed hot air blast.
- Attributes:** Height Above Surface Level [HGT]
-

Bog (BH015)

- Definition:** A permanently wet area of land consisting of incompletely decayed organic material and mainly stagnant fresh water.
- Description:** It is generally too soft to bear the weight of any heavy body. A subtype of the more generalized wetland.
- Attributes:** Area [ARA], Bog Type [BOC]
-

Boundary Monument (ZB030)

- Definition:** A marker identifying the location of a surveyed boundary line.
- Attributes:** Geographic Name Information : Full Name [ZI005_FNA]
-

Bridge (AQ040)

- Definition:** A structure that connects two locations and provides for the passage of a transportation route (for example: a road or a railway) over a terrain obstacle (for example: a waterbody, a gully, and/or a road).
- Description:** A bridge consists of a set of two abutments and/or zero or more bridge piers joined by bridge spans. A bridge may serve, for example, as an overpass or a viaduct. In the context of a bridge, the scope of the term 'transportation route' includes the transportation of liquids or gases by means of either pipelines or aqueducts.
- Attributes:** Angle of Orientation [AOO], Bridge Opening Type [BOT], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Length [LZN], Physical Condition [PCF], Transportation System Type [TRS]
-

Bridge Superstructure (AQ050)

- Definition:** A superstructure of a bridge, above the lowest deck, not including pylons or towers.
- Attributes:** Height Above Surface Level [HGT]
-

Bridge Tower (AQ055)

Definition: A tower and/or pylon from which the deck of a bridge is suspended.

Attributes: Height Above Surface Level [HGT], Highest Elevation [ZVH]

Brush (EB070)

Definition: A tract covered mainly by short, uncultured, woody plants that have been stunted by an environmental limitation (for example: low rainfall or nutrient-poor soil).

Description: Typically, coverage can range from sparse to differentiated (where the vegetation is close but not tangled together). The woody plants include bushes, scrub, shrubs and/or low stunted trees. The predominant height of the vegetation is usually less than 3 metres.

Building (AL013)

Definition: A free-standing self-supporting construction that is roofed, usually walled, and is intended for human occupancy (for example: a place of work or recreation) and/or habitation.

Description: For example, a dormitory, a bank, and a restaurant.

Attributes: Angle of Orientation [AOO], Area [ARA], Feature Function [FFN], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Religious Information : Religious Designation [ZI037_REL], Religious Information : Religious Facility Type [ZI037_RFA], Width [WID]

Building Superstructure (AL018)

Definition: A supplemental portion of a building which rises from the roof but is not considered to be a portion of the roof.

Attributes: Height Above Surface Level [HGT]

Built Up Area (AL020)

Definition: A tract containing a concentration of buildings and/or other structures.

Attributes: Built-up Area Density Category [BAC], Geographic Name Information : Full Name (first) [ZI005_FNA], Geographic Name Information : Full Name (second) [ZI005_FNA2], Physical Condition [PCF]

Cable (AT005)

Definition: A single continuous rope-like bundle consisting of multiple strands.

Description: The strands may be individually insulated and/or protected and the cable as a whole sheathed. Cables may be used for load bearing (for example, supporting or suspending equipment and/or structures), transmitting electrical power, and/or communicating signals (for example, by electrical or optical means).

Attributes: Cable Type [CAB], Height Above Surface Level [HGT], Highest Elevation [ZVH], Length [LZN], Physical Condition [PCF], Vertical Relative Location [LOC]

Cableway (AT041)

Definition: A suspended transportation system consisting of one or more load cables, supporting pylons, carrier units (for example: cars or buckets intended to transport people, material, and/or equipment) and usually stations.

Description: A cableway consists of carrier units attached to load cables which are strung between pylons and/or stations. For example, a ski-lift.

Attributes: Cableway Type [CAT], Height Above Surface Level [HGT], Highest Elevation [ZVH], Length [LZN]

Cairn (AL025)

Definition: A heap of stones piled up as a memorial or a landmark.

Camp (AI030)

Definition: An encampment where tents and/or other easily moveable structures (for example: yurts) serve as full-time, temporary, or seasonal residences.

Attributes: Feature Function [FFN], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Camp Site (AK060)

Definition: A designated place for recreational camping.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Cane (EC010)

Definition: A tract covered mainly by large treelike grasses.

Description: For example, bamboo and sugarcane.

Caravan Park (AI020)

Definition: A prepared site, typically including facilities, used for holiday accommodations where caravans and/or motor homes are parked.

Description: Caravans are travel trailers towed behind vehicles while motor homes are self-contained vehicles used for both travel and accommodations. Facilities may include utility connections (for example: water, power, or gas), convenience store(s), showers, laundry facilities, and swimming pools.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Cart Track (AP010)

Definition: An unimproved road.

Description: The surface is usually rough (for example: rutted) and minimally prepared (for example: packed earth or thinly covered with gravel).

Attributes: Route Pavement Information : Road Weather Restriction [ZI016_WTC]

Castle (AL375)

Definition: A single large fortified building that has thick walls, battlements, and often the presence of a moat, and is commonly of some historical significance.

Description: Historically castles were designed and constructed as defensive structures situated so as to dominate the surrounding countryside. With advancing technology, especially artillery, they have become obsolete for military defensive purposes and are now valued primarily for their historical significance. In more recent times elaborate country houses were built incorporating many design elements of a castle but which were not fully capable of being used as defensive structures. Examples of castles of both types include Doue-la-Fontaine and Neuschwanstein.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Castle Complex (AL376)

Definition: A fortified complex of buildings and related structures that consists principally of a central keep with surrounding thick walls, battlements, and often the presence of a moat, and is commonly of some historical significance.

Description: A castle complex may be quite extensive, including multiple distinct buildings of diverse function. Historically castle complexes were designed and constructed as defensive structures situated so as to dominate the surrounding countryside. With advancing technology, especially artillery, they have become obsolete for military defensive purposes and are now valued primarily for their historical significance. Examples of castle complexes include Prague and Windsor Castles.

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Catalytic Cracker (AC020)

Definition: A device in which the separation of petroleum is carried out in the presence of a catalyst.

Attributes: Angle of Orientation [AOO], Height Above Surface Level [HGT], Physical Condition [PCF]

Causeway Structure (AQ063)

Definition: A solid raised way across a terrain obstacle (for example: a wetland or a body of shallow water) that is intended to support a transportation route (for example: a road or a railway).

Description: The causeway structure is often constructed from local fill supplemented by other materials (for example: rocks, boulders or gravel) and consists of a solid linear structure in the configuration of an embankment. Causeway structures are built just high enough to insure that the transportation route will remain passable during periods of flooding, tides and seasonal rainfall. Culverts may occur along the length of the causeway structure and individual sections of the causeway structure may be interrupted by bridges.

Attributes: Geographic Name Information : Full Name [Z1005_FNA]

Cave Mouth (DB029)

Definition: The entrance to an interconnected series of naturally occurring subterranean chambers.

Description: Typically located in limestone, and often open to the Earth's surface either vertically or horizontally. Alterations may have been made to the cave mouth.

Attributes: Geographic Name Information : Full Name [Z1005_FNA]

Cemetery (AL030)

Definition: A site and associated structures devoted to the burial of the dead.

Description: Examples of structures that may be found in a cemetery include graves, grave markers, tombs, funerary urns, and columbaria.

Attributes: Area [ARA], Geographic Name Information : Full Name [Z1005_FNA], Religious Information : Religious Designation [Z1037_REL]

Checkpoint (AH070)

Definition: A location to control passage and/or to register, declare and/or inspect goods, vehicles and/or people.

Attributes: Geographic Name Information : Full Name [Z1005_FNA]

Cistern (BI010)

Definition: A man-made container used for the collection and/or storage of water.

Attributes: Angle of Orientation [AOO]

Cleared Way (EC040)

Definition: A man-made cleared strip through a vegetated region.

Description: May be designed to: provide access for a road, railroad, pipeline, power transmission line, or electrical signal line; demarcate a boundary; obtain survey line-of-sight; or to impede the progress of forest fires (a firebreak).

Conservation Area (FA210)

Definition: An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

Description: As determined, for example, by the International Union for Conservation of Nature and Natural Resources (IUCN).

Attributes: Conservation Area Management Category [CAM], Geographic Name Information : Full Name [Z1005_FNA]

Control Tower (AQ060)

Definition: A structure that houses personnel and equipment used to control the flow of traffic within a specified range of an installation.

Description: Examples of installations that use control towers are aerodromes, railways, and maritime routes.

Attributes: Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Conveyor (AF020)

Definition: A device for conveying articles or materials from one location to another during manufacture or processing using a continuously moving mechanism.

Description: Usually long, thin, and rectangular, and located above ground surface. It can be situated horizontally, vertically, at a slope between flat and upright, or in a combination of these postures. In general, conveyor systems consist of the bucket, screw (auger), apron, or flight conveyors to load silos or bunkers. Other systems use a series of rollers to move a range of products from relatively lightweight luggage and cargo packages at transportation terminals, up to heavyweight plate steel and ingots in industrial mills. The most common system is the belt conveyor. Some systems use a combination of these designs such as shallow buckets (or flat plates) attached to a belt conveyor. Conveyors can be used for long distance transportation (ifor example, kilometres) of materials. Long distance conveyor systems are usually constructed in segments to accommodate changes in direction where needed.

Attributes: Height Above Surface Level [HGT], Highest Elevation [ZVH]

Cooling Facility (AD055)

Definition: A facility for the removal of thermal energy (for example: by generating and circulating chilled water) for cooling purposes.

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Cooling Tower (AF030)

Definition: A tall tower for cooling hot water from an industrial process before reuse.

Attributes: Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF]

Crane (AF040)

Definition: Equipment for lifting, shifting, and lowering objects or materials by means of a swinging boom or with the lifting apparatus supported on an overhead track.

Attributes: Height Above Surface Level [HGT], Location Referenced to Shoreline [SRL]

Crevasse (BJ031)

Definition: A deep crack or fissure in a glacier that results from differential movement of ice.

Crevice (DB061)

Definition: A narrow opening or fissure produced by a crack in the land, especially in rock.

Description: May also describe a deep vertical opening in the terrain that appears after an earthquake.

Crop Land (EA010)

Definition: An area that has been tilled for the planting of crops.

Attributes: Area [ARA], Crop Information : Farming Pattern [ZI013_FFP], Crop Information : Permanent Irrigation [ZI013_PIG]

Culvert (AQ065)

Definition: An enclosed channel for carrying a watercourse (for example: a stream, a sewer, or a drain) under a route (for example: a road, a railway, or an embankment).

Description: Usually the construction of the route is unaffected.

Attributes: Angle of Orientation [AOO]

Cut Line (DB071)

Definition: The demarcation line between a cut and the surrounding land surface.

Dam (BI020)

Definition: A barrier constructed to hold back water and raise its level to form a reservoir or to prevent flooding.

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Structural Material Type [MCC], Transportation System Type [TRS], Dam Crest Width [WOC], Dam Crest Length [LDC]

Defensive Revetment (GB050)

Definition: A raised construction that protects a military asset (for example: aircraft or fighting vehicle), equipment (for example: radar station), and/or facility (for example: surface-to-air missile site) from hostile action.

Description: Defensive revetments may be constructed of sandbags, concrete, compacted earth, or other material such as logs or metal. They offer protection against low flying splinters, shrapnel, and/or projectiles from bombs, rockets, grenades, small arms fire and other line-of-sight weapons. High-angle, low-velocity fragments will still impact the exposed site.

Dish Aerial (AT010)

Definition: A concave-shaped aerial that is used for emitting and/or sensing electromagnetic energy.

Description: For example, used to transmit and/or receive electronic signals as at a satellite station or to capture electromagnetic energy as in radio astronomy.

Attributes: Height Above Surface Level [HGT]

Disposal Site (AB000)

Definition: A prepared or reserved site on land for the collection and/or deposition of waste, refuse or discarded material.

Attributes: By-product [PBY], Height Above Surface Level [HGT]

Ditch (BH030)

Definition: An artificial waterway with no flow, or a controlled flow, usually unlined, used for draining or irrigating land.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Water Resource Information : Hydrologic Persistence [ZI024_HYP]

Dolphin (BB080)

Definition: A post or group of posts used for mooring, warping a ship or as an aid to navigation.

Dragon's Teeth (AL060)

Definition: Upward-pointing obstacles laid in the ground to slow or stop the movement of vehicles.

Description: Typically constructed of regularly spaced concrete or metal shapes laid in single or multiple rows.

Drive In Theatre (AK070)

Definition: A place where motion pictures are shown while viewers remain in their vehicles.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Dry Dock (BB090)

Definition: An artificial basin fitted with a gate or caisson into which vessels can be floated and the water pumped out to expose the bottom of the vessel.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Length [LZN], Physical Condition [PCF], Width [WID]

Electric Power Station (AD010)

Definition: A facility including one or more buildings and equipment used for electric power generation.

Description: An electric power station consists of one or more power generating units, each consisting of the full set of equipment required to generate power and capable of independent operation. The power generating units are located on one or more contiguous or adjacent properties, are under the common control of the same entity and supply power through a common connection to the electric grid. Electric power stations most commonly are used to generate electricity for long distance transmission.

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF], Power Source [POS]

Elevation Contour (CA010)

Definition: A line connecting points having the same elevation value relative to a vertical datum.

Attributes: Elevation Surface Category [ESC], Highest Elevation [ZVH], Hypsography Portrayal Type [HQC], Sand Dune Stabilized [SAD]

Embankment (DB090)

Definition: A man-made raised long mound of earth or other material.

Attributes: Embankment Type [FIC], Transportation System Type [TRS]

Engine Test Cell (AF060)

Definition: A structure wherein aircraft or rocket engines are tested.

Description: The most common test cells are used for testing the performance characteristics of jet engines and are typically located at military aerodromes or aerospace research and development facilities. Test cells for liquid-fueled rocket booster engines are unique, massive structures (for example: the test cell located at Stennis Space Flight Center in the U.S.).

Attributes: Angle of Orientation [AOO], Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Engineered Earthwork (AH025)

Definition: An excavation and/or embankment created by remolding the natural configuration of the terrain for the purpose of enhancing the defense of a site from armed attack.

Description: The earthwork may include ancillary elements (for example: a palisade) or reinforcements (for example: a concrete facing).

Attributes: Engineered Earthwork Type [EET]

Esker (DB100)

Definition: A long, narrow ridge of sand and gravel deposited by a glacial stream.

Excavating Machine (AF050)

Definition: A mechanical device for removing materials from the ground.

Description: For example, a dredger, a powershovel, and a dragline.

Attributes: Height Above Surface Level [HGT]

Extraction Mine (AA010)

Definition: An excavation made in the terrain for the purpose of extracting and/or exploiting natural resources.

Attributes: Area [ARA], Extraction Mine Type [MZN], Feature Function [FFN], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF], Product [PPO]

Facility (AL010)

- Definition:** An area that has been developed to perform a specific principal function, consisting of one or more vertical constructions (for example: structures or buildings), horizontal constructions (for example: pavements, roads, rail tracks, or bridges), and/or supporting utilities (for example: power lines, water supply, or sewerage), plus the underlying land.
- Description:** For example, an industrial plant consisting of building(s), shipping dock(s), storage area(s), power transformer(s), heating and/or cooling equipment, vehicle parking, roads, railroad tracks, and perimeter fences and gates.
- Attributes:** Angle of Orientation [AOO], Feature Function [FFN], Geographic Name Information : Full Name [ZI005_FNA], Manufacturing Information : Product [ZI014_PPO], Physical Condition [PCF]
-

Fairground (AK090)

- Definition:** An area where permanent facilities exist to hold outdoor fairs, circuses or exhibitions.
- Attributes:** Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Fence (AL070)

- Definition:** A man-made barrier of relatively light structure used as an enclosure or boundary.
- Description:** Similar structures that are constructed of heavy materials (for example: stone, rock or masonry) are classified as walls.
-

Ferry Crossing (AQ070)

- Definition:** A route where a ferry crosses from one shore to another.
- Attributes:** Geographic Name Information : Full Name [ZI005_FNA], Length [LZN], Transportation System Type [TRS]
-

Ferry Station (AQ080)

- Definition:** A location where a ferry takes on or discharges its load.
- Attributes:** Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]
-

Firing Range (FA015)

- Definition:** A site designated for the purpose of discharging firearms or detonating munitions.
- Attributes:** Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Fish Farm Facility (BH051)

- Definition:** A facility involved in the breeding (hatching and associated activities) and cultivation (raising for release or harvesting) of fish in tanks or landlocked enclosures.
- Description:** Fish species raised on fish farms include, for example, salmon, catfish, tilapia, cod, carp, and trout.
- Attributes:** Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Fish Weir (BB110)

- Definition:** A fence of stakes or wall of stones set in a river or along the shore to direct fish towards fish traps or nets.
- Description:** The weir is shaped so as to encourage fish to naturally congregate, usually based on river or tidal flow. Although generally consisting of linear segments on rivers, in shore areas one or more components may be curved so as to form an enclosure with a narrow entrance. When constructed of stones the thickness of the wall constitutes a permanent hazard to maritime navigation.
- Attributes:** Angle of Orientation [AOO]
-

Flagpole (AL073)

- Definition:** A staff or pole on which a flag is raised.
- Attributes:** Height Above Surface Level [HGT]
-

Flare Pipe (AF070)

Definition: An open-ended pipe at which waste gases are burned.

Attributes: Height Above Surface Level [HGT], Location Referenced to Shoreline [SRL]

Floating Dry Dock (BB199)

Definition: A form of dry dock consisting of a floating structure of one or more sections which can be partly submerged by controlled flooding to receive a vessel, then raised by pumping out the water so that the vessel's bottom can be exposed.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Length [LZN], Physical Condition [PCF], Width [WID]

Flood Control Structure (BI044)

Definition: An artificial structure or gate that is utilized as a defense against flooding or storm surges.

Description: Consideration should be given to using the more specific Dam or Embankment features where appropriate in lieu of Flood Control Structure.

Attributes: Flood Control Structure Type [FCS], Length [LZN], Width [WID]

Ford (BH070)

Definition: A shallow place in a body of water used as a crossing.

Foreshore (BA023)

Definition: The part of the shore or beach which lies between the low water mark and the upper limit of normal wave action.

Forest (EC015)

Definition: A tract of land primarily covered by trees and undergrowth.

Description: The area is sometimes mixed with pasture.

Attributes: Area [ARA], Canopy Cover [DMT], Foliage Type [TRE], Geographic Name Information : Full Name [ZI005_FNA]

Forest Clearing (EC060)

Definition: A site in a forest or wood(s) that has been cleared, often for slash and burn agriculture and/or as a result of clear-cutting logging.

Description: May also occur from natural causes such as a forest fire.

Fortified Building (AH055)

Definition: A building that is specifically designed or reinforced to provide for defense from armed attack.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Fountain (BH075)

Definition: A monumental and/or ornamental structure containing moving water, often including jets, falls, or other decorative features.

Description: The structure is often of a civic nature; the water is typically recirculated.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Fuel Storage Facility (AM075)

Definition: A facility for the storage of fuel (for example: jet fuel, gasoline, or diesel oil).

Description: The fuel is typically stored in large tanks that may be partially or wholly buried and is accompanied by metering and dispensing equipment. Facilities may range in size from a small stockpile of drums (sometimes termed a 'fuel dump') to a large perimeter-controlled site with multiple permanent surface tanks, in-ground pipelines and associated equipment (sometimes termed a 'fuel depot').

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Gantry (AL080)

Definition: A permanent raised structure used to support equipment (for example: cranes, signal lights, or signs) while spanning over or around an object (for example: over a road or railroad, or around a ship hull or rocket).

Description: A gantry may be moveable (for example: a rocket gantry may be repositioned away from the launch pad when pre-launch preparations are complete). A 'scaffold' is a structure that may be similar in appearance but is assembled only for temporary use (for example: during external repair of a building).

Attributes: Height Above Surface Level [HGT]

Gate (AP040)

Definition: A barrier on a transportation route (for example: a road, a railway, a tunnel, or a bridge) that controls passage (may be opened and closed).

Attributes: Angle of Orientation [AOO], Gate Use [GTC]

Geologic Fault (DB110)

Definition: A fracture or zone of fractures in a rock formation, marked by the relative displacement on either side of the plane of the fracture.

Description: The intersection of a geologic fault with the ground surface is termed the 'fault trace' and is commonly plotted on maps to represent a fault. Since geologic faults do not usually consist of a single, clean fracture, the term 'fault zone' (or 'distributed fault') is often used when referring to the zone of complex deformation and numerous small fractures that is associated with the fault plane.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Geophysical Data Track Line (FA091)

Definition: A track along which a series of geophysical data observations are distributed.

Geopolitical Entity (FA002)

Definition: A region controlled by a political community having an organized government and possessing internal and external sovereignty, most often as a State but sometimes having a dependent relationship on another political authority or a special sovereignty status.

Description: The degree of sovereignty may be limited in specific areas (for example: matters of economic, administrative, legislative, judicial, military and/or foreign policy). The region controlled by a sovereign geopolitical entity is commonly referred to as a 'country'.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Geopolitical Entity Type [GEC]

Geothermal Outlet (DB115)

Definition: A terrain surface feature controlled by or derived from the heat of the Earth's interior.

Description: For example, a hot spring.

Attributes: Direction of Flow [DOF], Geographic Name Information : Full Name [ZI005_FNA], Geothermal Outlet Type [GOT]

Glacier (BJ030)

Definition: A large mass or river of ice formed by accumulation and compaction of snow on higher ground that is moving slowly down a slope or valley from above the snowline.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA]

Golf Course (AK100)

Definition: A tract of land on which golf is played.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Golf Driving Range (AK101)

Definition: A parcel of land used for practicing golf shots.

Attributes: Physical Condition [PCF]

Grain Elevator (AM030)

Definition: A tall structure, equipped for loading, unloading, processing, and/or storing grain.

Attributes: Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Grain Storage Structure (AM020)

Definition: An enclosed container, used for storing grain or fodder.

Attributes: Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Grandstand (AK110)

Definition: A structure for special viewing of outdoor events, usually roofed, that has tiers of seats or standing room for spectators.

Attributes: Height Above Surface Level [HGT]

Grassland (EB010)

Definition: A tract covered mainly by grasses that have little or no woody tissue.

Description: For example, pasture, meadow, and steppe.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Vegetation Characteristic [VEG]

Greenhouse (AJ110)

Definition: A structure, sometimes recognized as a building, constructed primarily of transparent material (for example: glass or plastic), in which temperature and humidity can be controlled for the cultivation and/or protection of plants.

Description: Greenhouses can range in size from very large conservatories such as the Palm House at Kew Gardens in England to row covers. Many of the large public greenhouse conservatories are used for growing tender and rare plants. Commercial greenhouses are often state-of-the-art production facilities for vegetables or flowers. Row covers and similar structures are usually made of a lightweight transparent material placed directly above rows of crops on a supporting framework to form a low tunnel. The transparent materials on these structures may be temporary being removed once the crop is well-established. At times, the entire structure may be removed.

Attributes: Angle of Orientation [AOO], Height Above Surface Level [HGT], Length [LZN], Width [WID]

Hardened Aircraft Shelter (GB250)

Definition: A hardened structure built above or partially above ground that encloses aircraft to provide protection from enemy attack.

Description: The shelter is closed by blast resistant doors and is generally limited in size, only accommodating one or two relatively smaller (for example: fighter) aircraft. Those built to NATO specifications are designed to withstand a direct hit by a 226 kilogram bomb.

Attributes: Angle of Orientation [AOO], Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Hazardous Rock (BD130)

Definition: An isolated rocky formation or a single large stone or coral, usually one constituting a danger to navigation.

Description: May be either dry, awash, or below the water surface.

Attributes: Hydrographic Vertical Positioning Information : Water Level Effect [ZI025_WLE]

Heating Facility (AD050)

Definition: A facility for the generation of thermal energy for heating purposes.

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Hedgerow (EA020)

Definition: A continuous growth of shrubs planted as a fence, a boundary, and/or a windbreak.

Helipad (GB030)

Definition: A designated area, usually with a prepared surface, used for the take-off, landing, or parking of helicopters.

Description: This prepared surface could either be located on land or on a platform over water. It may or may not be associated with an aerodrome. For example: a hospital helipad, and an offshore rig helipad.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Helipad Associated Facility [HAF], Physical Condition [PCF]

Heliport (GB035)

Definition: An aerodrome intended to be used for the arrival, landing, takeoff or departure of vertical takeoff and landing aircraft/helicopters.

Attributes: Aerodrome Elevation [ZVA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Holding Pen (AJ030)

Definition: An enclosed tract on which livestock are temporarily kept.

Description: For example, a sheepfold, a holding paddock, a livestock pen, a feedlot, and/or a stock yard. The enclosure may be by, for example, a fence or a wall.

Attributes: Angle of Orientation [AOO]

Hop Field (EA055)

Definition: A tract covered by the systematic planting of hop vines.

Attributes: Area [ARA], Crop Information : Farming Pattern [ZI013_FFP], Geographic Name Information : Full Name [ZI005_FNA]

Hopper (AF080)

Definition: A top-loaded funnel-shaped structure for temporary holding of loose material which will be dispensed from its bottom.

Attributes: Height Above Surface Level [HGT]

Hulk (BD181)

Definition: A vessel, either stranded aground or permanently moored, that is no longer seaworthy due to an inoperable propulsion plant or compromised vessel integrity.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT]

Hummock (BH077)

Definition: A place of higher elevation within a wetland (for example: a swamp, a bog, or a marsh).

Hut (AL099)

Definition: A small, simple free-standing (detached) self-contained residence usually having only a single multi-function room.

Description: May be intended only as temporary (for example: by displaced persons) or seasonal (for example: during seasonal livestock movement) residence. May be crude (for example: quickly built from locally-available natural materials) or relatively modern in construction and austere furnished (for example: a Norwegian 'hytte').

Attributes: Angle of Orientation [AOO]

Hydrocarbon Products Facility (AC040)

Definition: A facility involved in the production or distribution of petroleum, oil and/or natural gas products.

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Manufacturing Information : Product [ZI014_PPO], Physical Condition [PCF]

Hydrocarbons Field (AA052)

Definition: An area where the presence of recoverable petroleum, oil, and/or natural gas has been identified.

Description: The field can exist regardless of current exploitation activities.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Product [PPO]

Ice Cliff (BJ040)

Definition: The vertical face of a glacier or ice shelf.

Ice Peak (BJ060)

Definition: A rocky peak projecting above a surrounding ice field that may be perpetually covered with ice.

Attributes: Structural Material Type [MCC]

Ice Route (AQ075)

Definition: A route over a frozen watercourse.

Description: Usually marked and intended to support substantial vehicle traffic. Often designed as an alternate to a seasonally-closed ferry crossing.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Ice Shelf (BJ065)

Definition: A floating ice sheet of considerable thickness that is normally attached to the land along its landward edge.

Description: Ice shelves are the seaward extension of land glaciers. Limited areas of the ice shelf may be aground where the glacier first enters the water and possibly in other places offshore. Ice shelves are usually of great horizontal extent and have a level or gently undulating surface. The seaward edge of an ice shelf is termed an 'ice cliff'.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Industrial Farm (AL270)

Definition: An estate or large farm operating on the plantation economy model in which the farm operates as a single economic unit whose operations are based on agricultural mass production of a few staple crops (for example: cotton, tobacco, sugar cane, bananas, and/or rubber) that are typically not indigenous to the region.

Description: Plantation economies are often dependent on distant (for example: export) markets as the crops are harvested in large quantities. Historically, industrial farms were often found in former European colonies and termed 'plantations'.

Attributes: Area [ARA], Crop Information : Crop Species [ZI013_CSP], Crop Information : Farming Pattern [ZI013_FFP], Geographic Name Information : Full Name [ZI005_FNA]

Industrial Furnace (AC060)

Definition: A structure used in material processing that employs heating to harden (for example: to fire brick or ceramic), pyrolyse (for example: convert coal to coke, or limestone to lime), burn (for example: to incinerate waste), or dry (for example: lumber).

Description: May assume many forms, for example a domed 'beehive' kiln or a long linear coke oven battery.

Attributes: Angle of Orientation [AOO], Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Product [PPO], Width [WID]

Inland Waterbody (BH082)

Definition: A body of water that is entirely surrounded by land.

Description: It may occur in a natural terrain depression in which water collects, or may be impounded by a dam, or formed by its bed being hollowed out of the soil, or formed by embanking and/or damming up a natural hollow (for example: by a beaver dam). Inland waterbodies have many uses such as: a source of water for irrigation, industrial processes, human consumption, and recreation. Impounded inland waterbodies may also be used for flood control.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Man-made Shoreline [MNS], Physical Condition [PCF], Water Resource Information : Hydrologic Persistence [ZI024_HYP]

Island (BA030)

Definition: A land mass, other than a continent, surrounded by water.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Land Aerodrome (GB005)

Definition: An aerodrome on land intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

Attributes: Aerodrome Elevation [ZVA], Airfield Symbol Type [ASY], Geographic Name Information : Full Name [ZI005_FNA], ICAO Location Indicator [IKO], Physical Condition [PCF]

Land Subject To Inundation (BH090)

Definition: A tract periodically covered by flood water, excluding tidal waters.

Attributes: Inundation Type [INU]

Land Water Boundary (BA010)

Definition: The line where a land mass is in contact with a body of water and the tide state or river stage are unspecified.

Description: It may be in either the littoral or inland waters. In the littoral, consideration should be given to using the more specific high water or low water lines based on the nature of the source data collection.

Attributes: Shoreline Type [SLT]

Launch Pad (GB040)

Definition: A designated site or structure from which a rocket or missile is launched.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF]

Leader Line (No Code)

Definition: A line leading from a location point or symbol to the supporting information or text label.

Description: The color of the leader line matches the color of the corresponding feature it is pointing to.

Light Support Structure (AL110)

Definition: A structure serving as a support for one or more lights.

Description: For example, a light standard or a lamp post.

Attributes: Height Above Surface Level [HGT]

Light Vessel (BC070)

Definition: A distinctively marked vessel anchored or moored at a charted point, to serve as an aid to navigation.

Description: By night, it displays a characteristic light(s) and is usually equipped with other devices (for example: a fog signal, a submarine sound signal, and/or a radio-beacon) to assist navigation.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT]

Lighthouse (BC050)

Definition: A distinctive structure on or off a coast exhibiting a major light designed to serve as an aid to navigation.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Lock (BI030)

Definition: An enclosure with a pair or series of gates used for raising or lowering vessels as they pass from one water level to another.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Length [LZN], Physical Condition [PCF], Width [WID]

Manor House (AL371)

Definition: A large and imposing house with many rooms, and often of architectural significance, which is located on a large rural estate.

Description: The term 'Manor House' covers a range of buildings from relatively modest rectories up to the largest and grandest country houses termed 'stately homes'. Titular names of manor houses frequently carry a suffix such as 'House', 'Manor(s)', 'Tower(s)', 'Hall', 'Park', 'Grange', 'Court', or 'Palace'. Historically, manor houses were residences for the landed gentry or the very wealthy. Although this still applicable today, many are used for different functions such as museums, hotels, amusement, hospitals, religious activities, and schools. A lack of fortification features distinguishes a manor house from a castle. The estate surrounding a manor house is typically at least several square kilometres in extent, often with a garden in the immediate vicinity of the house and a larger park beyond for aesthetic, recreational, and/or agricultural purposes.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Manufactured Home Park (AI021)

Definition: A site for the semi-permanent parking of manufactured homes used as dwellings and designed without a permanent foundation.

Description: Manufactured homes are prefabricated homes built in factories, rather than on-site, and then taken to the place where they will be occupied. They are usually transported by tractor-trailers over public roads to sites which are often in rural areas or high-density developments. While these houses are usually placed in one location and left there permanently, they do retain the ability to be moved as this is a requirement in many areas. Behind the cosmetic work fitted at installation to hide the base, there are strong trailer frames, axles, wheels and tow-hitches.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Mariculture Site (BH050)

Definition: A site where marine organisms are cultivated for food and other products in either the open ocean, in an enclosed section of the ocean, or in tanks, ponds or raceways that are filled with seawater (for example: the farming of marine fish, prawns, or oysters in saltwater ponds).

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Marsh (ED010)

- Definition:** A soft, poorly drained wetland that is characterized by the growth of only non-woody plants (for example: grasses) and often forms a transition region between a waterbody and land.
- Description:** It is subject to frequent or tidal inundations, but not considered to be continually under water. It lacks trees. A subtype of the more generalized wetland.
- Attributes:** Area [ARA], Geographic Name Information : Full Name [ZI005_FNA]
-

Memorial Monument (AL130)

- Definition:** A marker erected and/or maintained as a memorial to a person and/or event.
- Attributes:** Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]
-

Military Installation (SU001)

- Definition:** An installation designed for military use.
- Description:** For example, used to perform military operations, initiate forward movements, and/or furnish supplies. Often protected by fortifications or natural advantages.
- Attributes:** Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Mine Shaft Superstructure (AA020)

- Definition:** A structure over a vertical mine shaft containing machinery (for example: a winding head or hoist) used to transport minerals, equipment, and/or workers between the surface and various levels within the mine.
- Description:** It is usually the most prominent structure at a shaft mining facility.
- Attributes:** Height Above Surface Level [HGT]
-

Minefield (AL065)

- Definition:** A site laid with explosive mines.
- Attributes:** Area [ARA], Geographic Name Information : Full Name [ZI005_FNA]
-

Mineral Pile (AM040)

- Definition:** A man-made heap of mining or quarrying products that does not contain waste materials.
- Description:** For example, a pile of coal or quarried stones.
- Attributes:** Height Above Surface Level [HGT], Raw Material [PRW]
-

Missile Site (AL120)

- Definition:** A site and related facilities for storing and launching missiles.
- Attributes:** Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Moat (BH100)

- Definition:** A trench surrounding a tract of land and serving as a barrier.
- Description:** It is usually filled with water.
- Attributes:** Water Resource Information : Hydrologic Persistence [ZI024_HYP]
-

Mooring Mast (AQ110)

- Definition:** A mast used to secure an airship.
- Attributes:** Height Above Surface Level [HGT]
-

Moraine (BJ020)

- Definition:** An accumulation of soil and stone debris deposited by a glacier.
-

Motor Vehicle Station (AQ170)

Definition: A building at, or in which, motor vehicles are refuelled, serviced, and sometimes repaired.

Description: Usually accompanied by several prominently placed petrol pumps.

Attributes: Angle of Orientation [AOO], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Mountain Pass (DB150)

Definition: A narrow route through a mountainous region or over a mountain range.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Highest Elevation [ZVH]

Munition Storage Facility (AM065)

Definition: A facility for the storage of munitions (for example: bombs, missiles, warheads, mines or ammunition).

Description: Specifically, storage of weapons charged with: explosives; propellant; pyrotechnics; initiating composition; or nuclear, chemical, or biological material for use in military operations. Facilities may range in size from a small stockpile of munitions (sometimes termed an 'ammo dump') that may be revetted to a large perimeter-controlled site with multiple dispersed bunkers laid out to minimize the effect of accidental detonation (sometimes termed a 'munitions depot').

Attributes: Angle of Orientation [AOO], Located Underground [LUN], Physical Condition [PCF]

Named Location (ZD040)

Definition: A location that normally does not appear as a specific, characterized object but that has a name that is required to be displayed in association with that location.

Description: For example, the name of the Alps or the Sahara.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Named Location Type [NLT]

Natural Pool (BH170)

Definition: A naturally formed pool of water.

Description: It is usually fed by surface drainage from the surrounding region and/or water arising from an underground source (for example: a spring or a resurgence).

Attributes: Direction of Flow [DOF], Geographic Name Information : Full Name [ZI005_FNA], Water Resource Information : Hydrologic Persistence [ZIO24_HYP], Water Resource Information : Water Type [ZIO24_SCC]

Navigable Canal (BH020)

Definition: An artificial waterway with no flow, or a controlled flow, usable or built for navigation.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF], Water Resource Information : Hydrologic Persistence [ZIO24_HYP], Width [WID]

Non Building Structure (AL014)

Definition: A free-standing self-supporting construction (for example: a large piece of equipment) designed to support human activities (for example: agriculture, manufacturing, or mining) but not intended for human occupancy and/or habitation (for example: a house, a bank, an office, or a stadium).

Description: May have only limited protection from the weather (for example: a hayrick) and often composed of components specialized for a particular activity (for example: animal feeding, material storage, or traffic control) or process (for example: chemical reaction, heating, mixing, or physical shaping). For example, a cane press, a cement mill, a cotton gin, a distillation tower, and a rock crusher.

Attributes: Height Above Surface Level [HGT]

Non Water Well (AA054)

- Definition:** A shaft sunk into the ground to reach and tap a supply of liquids and/or gases other than water intended for use in agriculture or domestic consumption.
- Description:** Typically drilled to tap underground reservoirs of hydrocarbons (for example: petroleum or natural gas). May also, for example, yield geothermally heated liquids for use in power generation or heating, or brine for use in the extraction of salt.
- Attributes:** Product [PPO]

Nuclear Reactor Containment (AD041)

- Definition:** A building-like structure intended to create a barrier against the release of radioactivity generated during nuclear power operations.
- Description:** The structure is usually heavily reinforced. It houses equipment used to manage a self-sustaining nuclear reaction of fissile material. The consequent release of energy may be used to generate electricity, as in a power plant.
- Attributes:** Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Oasis (EC020)

- Definition:** A fertile tract of land that occurs in a desert wherever a permanent supply of fresh water is available.
- Description:** Oasis vary in size from a pond with a group of date palms around small springs to the oasis cities of the deserts with extended agricultural cultivation.
- Attributes:** Area [ARA], Geographic Name Information : Full Name [ZI005_FNA]

Offshore Construction (BD115)

- Definition:** An artificial structure that is located offshore.
- Description:** It usually has a surface that is raised above the sea and may be used as a working stage for conducting offshore operations (for example: drilling for petroleum and/or natural gas, loading and/or unloading vessels, or navigation support).
- Attributes:** Area [ARA], Height Above Surface Level [HGT], Offshore Construction Primary Structure [OCS], Physical Condition [PCF]

Orchard (EA040)

- Definition:** A tract covered by systematic plantings of trees that yield fruits (including nuts).
- Attributes:** Area [ARA], Crop Information : Crop Species [ZI013_CSP], Crop Information : Farming Pattern [ZI013_FFP], Geographic Name Information : Full Name [ZI005_FNA]

Outdoor Theatre Screen (AK080)

- Definition:** A large outdoor screen for showing motion pictures.
- Attributes:** Height Above Surface Level [HGT]

Park (AK120)

- Definition:** An area of defined limits which is set aside for human recreation and enjoyment and/or for historic preservation purposes, and is usually maintained in a natural, semi-natural, or ornamentally planted state.
- Description:** Parks may be in urban areas such as Central Park in New York City or in less developed areas such as Poplar Forest in Forest, Virginia, where Thomas Jefferson's plantation and plantation house are located.
- Attributes:** Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Parking Garage (AQ141)

- Definition:** A designated, multi-level, structure used for parking and/or storing vehicles.
- Description:** May be present as part of a building or as a separate structure.
- Attributes:** Angle of Orientation [AOO], Height Above Surface Level [HGT], Located Underground [LUN], Physical Condition [PCF], Width [WID]

Particle Accelerator (AL140)

Definition: An apparatus for imparting high velocities to charged particles.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF], Width [WID]

Penstock (BH110)

Definition: A pipeline that is used by hydroelectric plants to transport water by gravity from a reservoir to the turbine(s).

Attributes: Vertical Relative Location [LOC]

Pipeline (AQ113)

Definition: A connected set of pipes for conveying liquids, slurries, or gases.

Description: Usually for long distances and often located underground.

Attributes: Physical Condition [PCF], Product [PPO], Vertical Relative Location [LOC]

Plant Nursery (EA030)

Definition: A tract where plants (for example: shrubs, flowers, and/or trees) are grown for transplanting, seed, and/or grafting.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA]

Point of Change (No Code)

Definition: A graphic indication of a change in an attribute of a feature that is not otherwise depicted symbolically.

Description: For example, the change in the number of lanes along a Road.

Port (BB009)

Definition: A place provided with terminal and transfer facilities for loading and/or discharging cargo or passengers, usually located in a harbour.

Description: A port and its related waters together comprise a harbour.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Power Substation (AD030)

Definition: A facility, along a power transmission line, in which electric current is switched, transformed, and/or converted.

Attributes: Angle of Orientation [AOO], Area [ARA], Physical Condition [PCF]

Public Square (AL170)

Definition: An open site that serves as a public meeting location in a built-up area.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Pumping Station (AQ116)

Definition: A facility to move solids, liquids or gases by means of pressure or suction.

Attributes: Angle of Orientation [AOO], Physical Condition [PCF], Product [PPO]

Pylon (AT042)

Definition: A pylon or pole used to support one or more cables.

Attributes: Height Above Surface Level [HGT], Highest Elevation [ZVH]

Racetrack (AK130)

Definition: A ground or tract marked out for racing.

Description: The track may be banked to facilitate high-speed racing, either by grading of the terrain or the use of structures. The bank angle may exceed 30 arc degrees and such structures can reach significant heights.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Length [LZN]

Radar Station (AT045)

- Definition:** A facility utilizing radar to detect and analyze objects (for example: aircraft, artificial satellites, asteroids, and/or missiles) and/or environmental phenomena (for example: tornadoes).
- Description:** May include both a radar aerial as well as a structure housing radar equipment.
- Attributes:** Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Railway (AN010)

- Definition:** One or more railway tracks comprising a network that is operated for the conveyance of passengers and/or goods.
- Attributes:** Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF], Railway Use [RRC], Track Information : Railway Gauge [ZI017_GAW], Track Information : Railway Gauge Classification [ZI017_RGC], Track Information : Railway in Road [ZI017_RIR], Track Information : Railway Power Method [ZI017_RRA], Track or Lane Count [LTN], Vertical Relative Location [LOC]
-

Railway Sidetrack (AN050)

- Definition:** A stretch of railway track connected to a main railway and used for temporary storage, passing, loading, and/or unloading.
- Attributes:** Physical Condition [PCF], Track Information : Railway Gauge Classification [ZI017_RGC], Track Information : Railway Power Method [ZI017_RRA], Vertical Relative Location [LOC]
-

Railway Turntable (AN075)

- Definition:** A rotating platform with railway tracks used for turning locomotives and/or railway carriages.
- Description:** May be enclosed within a structure.
- Attributes:** Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Railway Yard (AN060)

- Definition:** A system of railway tracks and associated structures that are located within defined limits and that provide for loading, unloading, and/or assembling trains.
- Attributes:** Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Rapids (BH120)

- Definition:** Portions of a stream with accelerated current where it descends rapidly but without a break in the slope of the bed sufficient to form a waterfall.
- Description:** The surface is usually broken by boulders and rocks.
- Attributes:** Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Length [LZN], Width [WID]
-

Recycling Site (AB010)

- Definition:** A site engaged in the wrecking, dismantling, storage, recycling, and/or disposal of discarded or scrap products.
- Description:** For example, a wrecking yard or a scrap yard.
- Attributes:** Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Reef (BD120)

- Definition:** A mass of rock or coral which either reaches close to the sea surface or is exposed at low tide, posing a hazard to navigation.
- Attributes:** Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Hydrographic Vertical Positioning Information : Water Level Effect [ZI025_WLE], Length [LZN]
-

Rice Field (BH135)

- Definition:** A tract that is periodically covered with water and is used for growing rice.
- Attributes:** Area [ARA], Crop Information : Farming Pattern [ZI013_FFP]
-

Rig (AA040)

Definition: A superstructure fitted for drilling or lifting operations for extraction and/or exploitation of natural resources.

Attributes: Height Above Surface Level [HGT], Location Referenced to Shoreline [SRL], Product [PPO]

River (BH140)

Definition: A natural flowing watercourse.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Water Resource Information : Hydrologic Persistence [ZI024_HYP], Width [WID]

River Flow Arrow (No Code)

Definition: A graphic indication of the direction of the flow of water of perennial rivers when not apparent from relief portrayal.

Road (AP030)

Definition: A route with a specially prepared surface that is intended for use by wheeled vehicles.

Attributes: Centerline Spacing [MWG], Divided [SEP], Geographic Name Information : Full Name [ZI005_FNA], Median Present [MES], Physical Condition [PCF], Roadway Type [RTY], Route Pavement Information : Road Weather Restriction [ZI016_WTC], Route Pavement Information : Route Surface Composition [ZI016_ROC], Through Route [THR], Track or Lane Count [LTN], Vertical Relative Location [LOC]

Road Interchange (AP020)

Definition: A system of interconnecting roads (sometimes called ramps) located at a road junction that provides for the free movement of traffic between two or more routes on different levels.

Description: A road interchange utilizes grade separation and bridges to permit traffic on at least one road to pass through the junction without directly crossing any other traffic stream.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Road Route Marker (No Code)

Definition: A graphic indication of the official numbered designation of international, national motorway, national, and secondary routes.

Attributes: Route Identification <route designation type> [RIN_ROI], Route Identification <route designation> [RIN_RTN]

Roadside Rest Area (AQ135)

Definition: A roadside place usually having facilities for people and/or vehicles.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Rock Formation (DB160)

Definition: A significant outcropping of exposed bedrock.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Roundhouse (AN076)

Definition: A circular or semicircular building, with a railway turntable in the centre, used for storing and/or repairing railway locomotives.

Description: The railway turntable may be either completely covered, partially covered or not covered, and partially or completely surrounded by the building.

Attributes: Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Ruins (AL200)

Definition: The deteriorated remains of an unspecified structure.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT]

Runway (GB055)

Definition: A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

Attributes: Aerodrome Pavement Information : Aerodrome Movement Area Surface Composition [ZI019_ASU], Physical Condition [PCF], Width [WID]

Sabkha (BH160)

Definition: A natural depression in arid or semi-arid regions whose bed is covered with salt encrusted clayey soil.

Description: Found especially in North Africa and Arabia.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA]

Salt Evaporator (BH155)

Definition: Shallow pools, normally man-made, used for the natural evaporation of water for the collection of salt.

Attributes: Area [ARA]

Salt Flat (BH150)

Definition: A flat area of natural surface salt deposits.

Description: May also be used to describe smaller areas; these are commonly termed salt pans.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA]

Sand Dunes (DB170)

Definition: One or more mounds or ridges of sand usually formed by the wind.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Sand Dune Orientation [SDO], Sand Dune Stabilized [SAD], Sand Dune Type [SDT]

Scoreboard (AK161)

Definition: A large outdoor board for publicly displaying the score in an athletic event.

Description: Usually associated with a sports stadium or major playing field.

Attributes: Height Above Surface Level [HGT]

Seaplane Run (GB070)

Definition: A designated portion of water that is outlined by visual surface markings and used by seaplanes to land and take-off.

Settlement (AL105)

Definition: A continuously occupied concentration of tents or lightweight fixed structures (for example: huts) serving as residences.

Description: May also include supporting non-residential (for example: commercial) structures.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Settling Pond (AC030)

Definition: A small reservoir where solid matter is precipitated from a liquid by evaporating or settling.

Sewage Treatment Plant (AC507)

Definition: An operational area with buildings and other facilities for the purification of wastewater.

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Shanty Town (AL208)

- Definition:** A section of a built-up area consisting chiefly of densely packed shacks and having few, if any, streets and no public facilities.
- Description:** Usually located on the outskirts of the built-up area. The shacks are generally crude, improvised, and made from salvaged materials.
- Attributes:** Geographic Name Information : Full Name [ZI005_FNA]
-

Shed (AL019)

- Definition:** A small building, generally of light construction, that usually has one or more open sides.
- Description:** Typically used for storage.
- Attributes:** Angle of Orientation [AOO], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]
-

Ship Elevator (BI006)

- Definition:** A device used to raise ships vertically between water bodies with different elevations.
- Description:** Normally ship elevators consist of water filled chambers which can be raised or lowered by means of mechanical devices. Commonly used to move ships between navigable canals where locks would be impractical.
- Attributes:** Area [ARA], Height Above Surface Level [HGT], Highest Elevation [ZVH]
-

Shipyard (BB241)

- Definition:** A large enclosed area adjoining the sea or a major river, including facilities in which ships are built or repaired.
- Attributes:** Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Shopping Complex (AG030)

- Definition:** A commercial facility tenanted by multiple retail stores (for example: household goods, clothing, or books), restaurants (for example: a food court), entertainment venues (for example: a movie theatre or electronic games arcade), and/or other businesses (for example: professional services), that is completely enclosed, climate controlled, has a common public arcade (for example: furnished with decorative plantings, benches, and/or fountains) and a common vehicle parking area (for example: a parking lot or parking garage).
- Description:** When the commercial entrances open onto the interior of the complex (public access being by means of central entries and broad corridors) it may consist of multiple levels connected by escalators and is often termed a 'shopping mall'. When the commercial entrances open towards the exterior of the complex and access to individual commercial entrances is directly from an adjacent vehicle parking area it consists of a single level and is often termed a 'shopping centre' or 'shopping plaza'.
- Attributes:** Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]
-

Shoreline Construction (BB081)

- Definition:** An artificial structure attached to land bordering a body of water and fixed in position.
- Description:** It is usually fixed to the waterbody bottom (for example: a mole) but may occasionally be fixed in position (for example: attached to the shore at one end and held between pilings at the other), but floating. Shoreline constructions are normally used for berthing and/or protection.
- Attributes:** Geographic Name Information : Full Name [ZI005_FNA], Shoreline Construction Type [PWC], Water Level Effect [WLE]
-

Shoreline Ramp (BB082)

- Definition:** A ramp-like structure on a shoreline that is intended to facilitate the movement of vessels and/or materials (for example: logs) into or out of the water.
- Attributes:** Water Level Effect [WLE]
-

Ski Jump (AK150)

Definition: A man-made structure consisting of a steep ramp levelling off at the end and built on a natural slope, used in ski-jumping.

Attributes: Area [ARA], Height Above Surface Level [HGT], Highest Elevation [ZVH]

Sluice Gate (BI040)

Definition: A gate used to regulate the flow or level of water in a watercourse (for example: stream, irrigation ditch, or sluice).

Description: Sluice gates are normally installed in a superstructure and/or frame and most commonly slide vertically to open but on occasion may instead slide horizontally. When opened they allow water to flow under or beside the gate. Commonly sluice gates will be installed perpendicular to the orientation of the flow of water within a watercourse and will be constructed as wide as the watercourse they regulate. Sluice gates may also be installed along the margins of watercourses for the purpose of controlling or permitting the flow of water to or from that watercourse into adjacent watercourses. Sluice gates may be used to regulate both tidal or non-tidal waters.

Attributes: Angle of Orientation [AOO]

Smokestack (AF010)

Definition: A vertical structure containing a passage or flue for discharging smoke and gases of combustion.

Attributes: Height Above Surface Level [HGT]

Snag (BD140)

Definition: A substantial item of woody vegetation (for example: tree, trunk, or bush) or a broken structural pile that is embedded in the bottom of a body of water (for example: ocean, river or inland waterbody) thereby creating a hazard to water travel.

Description: The visibility of the snag at the water surface will depend in its size and the existing water depth.

Attributes: Water Level Effect [WLE]

Snow Ice Field (BJ100)

Definition: A large area permanently covered by snow and/or ice.

Description: May cover land and/or water.

Attributes: Area [ARA], Frozen Cover Type [SIC], Geographic Name Information : Full Name [ZI005_FNA]

Soil Surface Region (DA010)

Definition: A region of the land that is homogeneous with respect to a soil characteristic.

Attributes: Area [ARA], Terrain Morphology [SRD], Terrain Surface Material [TSM]

Solar Farm (AD025)

Definition: An extensive collection of solar panels that are collocated and serve a common purpose (for example: the generation of electricity or the generation of heating steam and/or water).

Description: The collection is often organized as an array covering many hundreds of square metres in area and it may be controlled so as to track the direction of the sun throughout the day.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Space Facility (AL351)

Definition: A facility that is used to support space related activities (for example: services such as assembly, launching or recovery of spacecraft or managing flight operations).

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Spillway (BH165)

Definition: A passage for surplus water to run over or around a dam.

Attributes: Width [WID]

Sports Ground (AK040)

Definition: An open area where sporting events, exercises, and/or games occur.

Description: For example, an athletic field, a playing field, and/or a sports field.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Spot Elevation (CA030)

Definition: A designated location with an elevation value relative to a vertical datum.

Attributes: Elevation Surface Category [ESC], Highest Elevation [ZVH], Sand Dune Stabilized [SAD]

Stadium (AK160)

Definition: A field and/or stage partly or completely surrounded by a structure designed to allow spectators to stand or sit while viewing an event.

Description: The field and/or stage may be enclosed in a building or be outdoors. Stadiums are surrounded on most or all sides by tiered seating for spectators. Often designed in size and shape to accommodate specific sports (for example: baseball, football, basketball or ice hockey), theater or musical performances.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF]

Steep Terrain Face (DB010)

Definition: A steep, vertical, or overhanging face of rock and/or soil.

Description: For example, an escarpment, a bluff, or a cliff.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Stopway (GB045)

Definition: A defined rectangular area on the ground at the end of the take-off run available that has been prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take-off.

Attributes: Width [WID]

Storage Depot (AM010)

Definition: A tract used for the storage of products and/or supplies.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Located Underground [LUN], Physical Condition [PCF]

Storage Tank (AM070)

Definition: A container used for the storage of liquids and/or gases that is not supported by a tower.

Attributes: Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Product [PPO], Structure Shape [SSC]

Structural Pile (BD100)

Definition: A long pile (for example: a heavy timber or section of steel, wood, or concrete) forced into the earth that may serve as a support (for example: for a pier) or as a free standing pole within a marine environment.

Attributes: Hydrographic Vertical Positioning Information : Water Level Effect [ZI025_WLE]

Surface Bunker (AM060)

Definition: A surface structure that may be covered and/or surrounded with earth and is resistant to ordnance.

Description: Used, for example, for storage and/or aircraft protection.

Attributes: Physical Condition [PCF], Product [PPO]

Survey Point (ZB050)

Definition: A location where horizontal and/or vertical control has been determined by surveying methods.

Description: Surveys are used to establish positions (horizontal or vertical) of selected points. The points are then used to reference other survey observations or measurements.

Attributes: Base Elevation [BEL], Survey Point Type [SUY]

Swamp (ED020)

Definition: A seasonally flooded, poorly drained wetland with more woody plants than a marsh and better drainage than a bog.

Description: It is covered with water all or most of the year, and accumulating dead vegetation does not rapidly decay. It can exist on flat-lying areas created by certain geomorphic environments. The vegetation mainly consists of hydrophytic trees and/or scrubs whose roots are adapted to wet conditions, with an open to very dense canopy closure. A subtype of the more generalized wetland.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Vegetation Species [VSP]

Swimming Pool (AK170)

Definition: A man-made pool used for swimming outdoors.

Attributes: Length [LZN], Width [WID]

Tank Farm (AM071)

Definition: A tract of land occupied by large-capacity tanks in which petroleum, natural gas, or liquid petrochemicals are stored.

Description: The tanks are usually round, constructed from metal plates, and separated from each other by berms intended to contain any leakage.

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF], Product [PPO]

Taxiway (GB075)

Definition: A defined path at an aerodrome established for the taxiing of aircraft and intended to provide a ground movement link between one part of the aerodrome and another.

Attributes: Width [WID]

Test Site (FA100)

Definition: A site for the testing of technical products and equipment.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Tethered Balloon (AL510)

Definition: A balloon that is tethered to the ground at an anchoring device (for example: a ring and pad) or substantial structure (for example: a mooring tower).

Description: It is usually deployed for extended periods of time and may be used, for example, for weather sensing and/or observation of the surrounding terrain.

Attributes: Height Above Surface Level [HGT]

Thicket (EB020)

Definition: A tract covered mainly by low-growing, uncultured, woody plants that are thickly tangled together.

Description: For example, covered by brushwood and/or stunted trees. The predominant height may be up to 6-8 metres.

Tidal Water (BA040)

Definition: Any water the level of which changes periodically due to tidal action.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Tomb (AL036)

Definition: A structure within which a corpse is entombed.

Description: It is often a building-like structure that may be partly or wholly underground (except for its entrance), but may be a simple enclosure cut into solid rock (for example: into a cliff face or inside of a cave). It may contain a single corpse or a related group (for example: a family) may be entombed together.

Attributes: Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Religious Information : Religious Designation [ZI037_REL], Width [WID]

Tower (AL241)

Definition: A relatively tall, narrow structure that may either stand alone or may form part of another structure.

Description: Usually of a square, circular, or rectangular cross-section.

Attributes: Height Above Surface Level [HGT], Tower Type [TTC]

Trail (AP050)

Definition: A path worn by the passage of people or animals.

Attributes: Route Pavement Information : Road Weather Restriction [ZI016_WTC]

Training Site (FA165)

Definition: A site reserved for training.

Attributes: Controlling Authority [CAA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Transportation Route Protection Structure (AL211)

Definition: A structure built over and/or along a transportation route designed to prevent damage to, or blockage of, the route from rock slides, snow slides and/or weather phenomena.

Description: For example, a snow shed, a rock shed or a gallery. These structures are usually located in rugged mountainous regions.

Attributes: Length [LZN], Width [WID]

Transportation Station (AQ125)

Definition: A station, usually having associated structures, which serves as a place for disembarking or taking on passengers or freight along a transportation route.

Description: Transportation routes may include railway, pipeline, road, water or air. Transportation stations may have associated structures for vehicle parking or ticket sales.

Attributes: Angle of Orientation [AOO], Area [ARA], Feature Function [FFN], Geographic Name Information : Full Name [ZI005_FNA], Height Above Surface Level [HGT], Physical Condition [PCF], Transportation System Type [TRS], Width [WID]

Tree (EC005)

Definition: An individual woody perennial plant, typically having a single stem or trunk growing to a considerable height and bearing lateral branches at some distance from the ground.

Description: May be distinguished by its relative isolation from other features, thus serving as a landmark.

Attributes: Foliage Type [TRE]

Tundra (BJ110)

Definition: A vast, nearly level, treeless arctic region usually with a marshy surface and underlying permafrost.

Tunnel (AQ130)

- Definition:** An underground passage that is open at both ends and usually contains a land transportation route (for example: a road and/or a railway).
- Description:** Commonly used to pass through a hill or mountain, or under a river or road. May also provide underground passage in a mine.
- Attributes:** Geographic Name Information : Full Name [ZI005_FNA], Length [LZN], Transportation System Type [2] [TRS2], Transportation System Type [TRS], Width [WID]
-

Tunnel Mouth (AQ095)

- Definition:** The opening of a tunnel into a larger space (for example: onto the terrain surface).
- Description:** A tunnel is usually open to the terrain surface at both ends, but may sometimes lead to an enclosed space, for example: leading to an underground bunker, into an underground mine (termed an 'adit') or into an underground railway station.
-

Underground Bunker (AH060)

- Definition:** A reinforced underground shelter.
- Description:** May be located within a mountain or buried below the terrain. Often used as an underground facility for military command, control, and/or troop billeting.
- Attributes:** Hazard Shelter Intended Use [HST], Physical Condition [PCF]
-

Underground Dwelling (AL250)

- Definition:** Underground living quarters.
-

UNESCO World Heritage Site (No Code)

- Definition:** A site which has been officially recognized by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as being unique or exceptional for its cultural, historical or scientific significance.
- Description:** May be a cultural, natural or mixed site which UNESCO regards as being important to the collective interests of humanity.
-

Vanishing Point (BH145)

- Definition:** The location at which a watercourse disappears into the terrain.
- Attributes:** Direction of Flow [DOF], Watercourse Sink Type [WST]
-

Vehicle Lot (AQ140)

- Definition:** A tract used for storing and/or parking vehicles (for example: recreational vehicles) and/or vessels.
-

Vertical Obstruction (No Code)

- Definition:** A graphic symbol that indicates a feature that extends 46 meters or more above the surrounding terrain.
- Description:** The normal symbol for the feature is replaced by the vertical obstruction symbol and labeled, indicating the feature name/description of the obstruction and its applicable heights.
- Attributes:** Height Above Surface Level [HGT], Highest Elevation [ZVH]
-

Vineyard (EA050)

- Definition:** A tract covered by the systematic planting of grape vines.
- Attributes:** Area [ARA], Crop Information : Farming Pattern [ZI013_FFP], Geographic Name Information : Full Name [ZI005_FNA]
-

Void Collection Area (ZD020)

- Definition:** A data collection region lacking suitable source coverage and/or where data is not required.
- Attributes:** Area [ARA]
-

Volcanic Dyke (DB190)

Definition: A sheet of rock filling a fissure that sometimes shows as a terrain ridge.

Description: Especially a mass of igneous rock that has intruded upwards through strata.

Volcano (DB180)

Definition: A hill or mountain situated over an opening or openings in the Earth's crust through which lava, cinders, steam, and/or gases, are or have been expelled.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Wall (AL260)

Definition: A solid man-made barrier of generally heavy material used as an enclosure, boundary, or for protection.

Attributes: Geographic Name Information : Full Name [ZI005_FNA]

Waste Heap (AB507)

Definition: An area where heaped material (for example: waste or spoil) is deposited.

Description: Waste heaps may be located at disposal sites or in unsanctioned and unprepared locations where illegal dumping takes place. Illegal dumping sites are usually composed of materials produced in the immediately surrounding area; for example, in a residential neighborhood their content would principally be household trash. Illegal dumping sites have no associated structures or facilities.

Attributes: Height Above Surface Level [HGT]

Water Aerodrome (GB065)

Definition: An aerodrome intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft on water.

Attributes: Aerodrome Elevation [ZVA], Airfield Symbol Type [ASY], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Water Intake Tower (BI050)

Definition: A tower-like structure associated with a dam or water source and used for the intake of water.

Attributes: Area [ARA], Height Above Surface Level [HGT]

Water Mill (AJ055)

Definition: A structure that uses a water wheel or turbine to drive a mechanical process (for example: grinding grain into flour, cutting timber into lumber, or stripping bark from trees for use in tanning).

Description: A water mill that only generates electricity is more usually termed a 'hydroelectric plant'.

Attributes: Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Water Race (BH065)

Definition: An artificial channel for a current of water, especially one built to provide water for industrial or agricultural purposes or for transporting water-borne materials.

Description: For example, a sluice, a flume, or a tailrace.

Attributes: Vertical Relative Location [LOC], Water Race Type [WRT]

Water Tower (AM080)

Definition: A tower supporting an elevated storage tank of water.

Attributes: Height Above Surface Level [HGT]

Water Treatment Bed (BH040)

Definition: A tract for the treatment of water that consists of a bed of material where water is aerated or filtered.

Attributes: Area [ARA]

Water Well (BH230)

Definition: A shaft sunk into the ground to reach and tap a supply of water intended for uses other than power generation, heating or the extraction of minerals.

Description: May be, for example, drilled to tap deep underground reservoirs or dug to reach a shallow water table. Dug wells are typically circular, lined with masonry, have a stone border and a structure built above then for lowering and raising a bucket.

Attributes: Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF], Water Resource Information : Hydrologic Persistence [ZI024_HYP], Water Resource Information : Water Type [ZI024_SCC]

Waterfall (BH180)

Definition: A vertically descending part of a watercourse where it falls from a height (for example: over a rock or a precipice).

Description: In place names, commonly shortened to 'fall' or 'falls', for example, 'Niagara Falls'.

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA]

Waterwork (BH220)

Definition: An establishment for storing, purifying, and supplying an area or town with water.

Attributes: Angle of Orientation [AOO], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Wind Farm (AD060)

Definition: A collection of windmotors that are collocated and are organized as a single power generation unit.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Wind Turbine (AJ051)

Definition: A tower and associated equipment that generates electrical power from wind.

Attributes: Height Above Surface Level [HGT], Location Referenced to Shoreline [SRL]

Windmill (AJ050)

Definition: A system of vanes attached to a tower and driven by wind (excluding wind turbines).

Attributes: Area [ARA], Height Above Surface Level [HGT], Physical Condition [PCF], Width [WID]

Wreck (BD180)

Definition: The ruined remains of a stranded or sunken vessel that has been rendered useless.

Attributes: Height Above Surface Level [HGT], Hydrographic Vertical Positioning Information : Water Level Effect [ZI025_WLE]

Zoo (AK180)

Definition: A site where wild animals are kept for exhibition to the public, that may also support breeding and/or study.

Attributes: Angle of Orientation [AOO], Area [ARA], Geographic Name Information : Full Name [ZI005_FNA], Physical Condition [PCF]

Attribute	Definition and/or Description
Aerodrome Elevation [ZVA]	The vertical distance above Mean Sea Level (MSL) of the highest point of the landing area.
Aerodrome Pavement Information : Aerodrome Movement Area Surface Composition [ZI019_ASU]	The type of the predominant material of which a surface of the movement area is composed. [DESC] Example surfaces include: asphalt, concrete, or grass.
Airfield Symbol Type [ASY]	The type of airfield symbol designation.
Amusement Attraction Type [AMA]	The type of an amusement park attraction based on its geometric form, appearance, configuration, and/or use.
Angle of Orientation [AOO]	The angular distance in the horizontal plane measured from true north (0 degrees) clockwise to the major axis of the feature. [DESC] If the feature is square, the axis 0 up to 90 degrees is recorded. If the feature is circular, 360 degrees is recorded.
Aqueduct Type [ATC]	The type of an aqueduct based on its structure.
Area [ARA]	The area within the delineation of the feature.
Base Elevation [BEL]	The vertical distance from a specified vertical datum to the terrain surface of or at the base of the feature. [DESC] If the feature is not supported above the surface by another feature then the base of the feature is usually located at ground or water level on the downhill/downstream side. For non-inland water bodies, the water level is usually understood to be Mean Sea Level (MSL). In the case of a survey marker (monument) this is usually the elevation assigned to the marker (monument).
Basin Gate Type [BGT]	The type of a basin gate based on its structure and/or intended use.
BGN Administrative Level [BAL]	The level of an administrative subdivision of a country as established by the U.S. Board on Geographic Names (BGN). [DESC] The BGN is a management body established to maintain uniform geographic name usage throughout the U.S. Government.
Bog Type [BOC]	The type of a bog or fen based on its morphology and/or dominant vegetation. [DESC] A fen is similar to a bog but may have alkaline, neutral, or only slightly acid peaty soil whereas a bog is generally very acidic. In both cases the vegetation is usually dominated by peat mosses, ericaceous shrubs, and sedges.
Boundary Status [BST]	The status of delimitation of a boundary.
Bridge Opening Type [BOT]	The type of structure or mechanism by which a bridge or bridge span is moved to allow passage of a vessel.
Built-up Area Density Category [BAC]	A general evaluation of the density of a built-up area, as a category.
By-product [PBY]	The principal by-product(s) of a production, mining, or agricultural activity. [DESC] If multiple by-products are specified then they are usually listed in descending order of importance.
Cable Type [CAB]	The type of a cable based on its use.
Cableway Type [CAT]	The type of a cableway based on structure and/or function.
Canopy Cover [DMT]	The fraction of canopy cover within a defined area during the season of maximum foliage. [DESC] The canopy is formed by the upper branches of the trees in a forest forming a more or less continuous layer.
Centerline Spacing [MWG]	The distance between the centrelines of the two travelled ways of a divided highway.

Attribute	Definition and/or Description
Conservation Area Management Category [CAM]	The category of a protected area based on level of protection and the enabling laws of the controlling entity (for example: State) or rules of international organization (for example: as determined by the International Union for Conservation of Nature and Natural Resources (IUCN)).
Controlling Authority [CAA]	The controlling authority responsible for a facility or site. [DESC] Controlling authorities may be distinguished by organizational level (for example: national, sub-national, or military district) and/or type (for example: private or public).
Crop Information : Crop Species [ZI013_CSP]	The predominant species of a crop land.
Crop Information : Farming Pattern [ZI013_FFP]	The general arrangement(s) and/or pattern(s) of farming fields.
Crop Information : Permanent Irrigation [ZI013_PIG]	An indication that a field is continuously used for cultivation and permanent irrigation is required due to the natural aridity of the area.
Dam Crest Length [LDC]	The centreline distance measured along the crest of a dam, and in the horizontal plane.
Dam Crest Width [WOC]	The average distance across the crest of a dam. [DESC] The width is measured perpendicular to the crest centreline.
Direction of Flow [DOF]	The bearing of movement or direction of the flow.
Divided [SEP]	An indication that the lanes or tracks in a land transportation route (for example: a road or a railway), are horizontally separated (for example: by a median strip) and not adjoining. [DESC] May be used to indicate the separation of opposing flows of traffic in order to improve safety or to meet route engineering restrictions by some means. For example, the two travelled ways of a divided highway may pass at different elevations along the side of a mountain or may diverge when passing around significant engineering obstacles (for example: rocky outcrops).
Elevation Surface Category [ESC]	The category of surface for which an elevation is determined.
Embankment Type [FIC]	The type of an embankment based on its use and/or relationship to the surrounding terrain.
Engineered Earthwork Type [EET]	The type of an excavation and/or embankment created for the purpose of enhancing the defense of a site from armed attack.
Extraction Mine Type [MZN]	The type of an extraction mine.
Feature Function [FFN]	The purpose(s) of, or intended role(s) served by, the feature.
Flood Control Structure Type [FCS]	The type of a flood control structure based on its structure and/or intended use.
Foliage Type [TRE]	The predominant foliage type of the vegetation.
Frozen Cover Type [SIC]	The type of a covering of snow and/or ice based on its composition and structure.
Gate Use [GTC]	The type of a gate (or similar route barrier) based on its intended use.
Geographic Name Information : Full Name (first) [ZI005_FNA]	A complete name that is used to designate the entity as that designation would normally be written by the originating culture on a map or chart. [DESC] It is generally considered to consist of a specific part, a generic part, and any articles or prepositions. The order of the parts may vary with the generic part appearing at the beginning, middle or end.

Attribute

Definition and/or Description

Geographic Name Information : Full Name (second) [Z1005_FNA2]	A complete name that is used to designate the entity as that designation would normally be written by the originating culture on a map or chart. [DESC] It is generally considered to consist of a specific part, a generic part, and any articles or prepositions. The order of the parts may vary with the generic part appearing at the beginning, middle or end.
Geographic Name Information : Full Name [Z1005_FNA]	A complete name that is used to designate the entity as that designation would normally be written by the originating culture on a map or chart. [DESC] It is generally considered to consist of a specific part, a generic part, and any articles or prepositions. The order of the parts may vary with the generic part appearing at the beginning, middle or end.
Geopolitical Entity : Geographic Name Information (1) : Full Name (first side) [Z1005_FNAA]	A complete name that is used to designate the entity as that designation would normally be written by the originating culture on a map or chart. [DESC] It is generally considered to consist of a specific part, a generic part, and any articles or prepositions. The order of the parts may vary with the generic part appearing at the beginning, middle or end.
Geopolitical Entity : Geographic Name Information (2) : Full Name (second side) [Z1005_FNAB]	A complete name that is used to designate the entity as that designation would normally be written by the originating culture on a map or chart. [DESC] It is generally considered to consist of a specific part, a generic part, and any articles or prepositions. The order of the parts may vary with the generic part appearing at the beginning, middle or end.
Geopolitical Entity Type [GEC]	The type of a legally recognized geopolitical entity (for example: a State or a zone).
Geopolitical Line Type [LSP]	The type of a geopolitical dividing line (for example: a boundary or a line of separation) based on the nature of its establishment and/or recognition.
Geothermal Outlet Type [GOT]	The type of a geothermal outlet based on its morphology.
Hazard Shelter Intended Use [HST]	The intended use(s) of a designated hazard protection shelter based on the kind of emergency. [DESC] Hazard shelters may be located inside buildings or other structures. Shelters may be equipped with disaster supplies and equipment such as food and cots.
Height Above Surface Level [HGT]	The vertical distance measured from the lowest point of the base of the feature at ground or water level (downhill/downstream side) to the tallest point of the feature. [DESC] For non-inland water bodies, the water level is usually understood to be Mean Sea Level (MSL). Note that the feature may be supported above the surface by another feature (for example: a tower supported by a building) and as a consequence the value of the Height Above Surface Level is different (larger) than the base-to-top height of the feature (for example: supported tower) itself.
Helipad Associated Facility [HAF]	The type of facility or building that is associated with a freestanding helipad.
Highest Elevation [ZVH]	The elevation from a specified vertical datum to the highest point on a feature. [DESC] In the case of multiple features that may be stacked on each other (for example: a railway on a bridge, a superstructure on a building, or an aerial on a tower) the highest elevation is that of the entire feature stack. For example, the highest elevation of a church is that of its steeple and not that of the roof of the church itself. The church itself may have a height above surface level that excludes the additional height of the steeple superstructure located on the church roof.
Hydrographic Vertical Positioning Information : Water Level Effect [Z1025_WLE]	The relationship between the feature and surrounding (including covering and/or underlying) water.
Hypsography Portrayal Type [HQC]	The type of a hypsographic portrayal line (for example: a contour line) based on the topography represented and/or portrayal interval. [DESC] A contour line is an imaginary line on the ground connecting an infinite number of points of equal elevation. The vertical measurement between two contour lines is called the contour interval. Contour lines are numbered to indicate the elevation value of the contour line.

Attribute	Definition and/or Description
ICAO Location Indicator [IKO]	The identifier that is assigned to a location in accordance with rules prescribed by the International Civil Aviation Organization (ICAO) in Document 7910. [DESC] If available this indicator shall be used as primary for identification.
Inundation Type [INU]	The type of an inundation based on the cause of the flooding.
Length [LZN]	The dimension of a feature taken along its primary alignment of use and generally in the horizontal plane. [DESC] The primary alignment of a feature is its established direction of flow or use (for example: a road, a power line, a river, a rapid, and/or a bridge). A feature-specific rule may apply. In the case of a bridge, the length is the distance between the bridge abutments along the bridge centreline. In the case of a dam, the length is the distance along the dam crest. If no established direction of flow or use exists then (1) if the feature is irregular in shape its length is its greatest horizontal dimension (see Attribute: 'Greatest Horizontal Extent'), else (2) if the feature is regular in shape then a shape-specific rule may apply: for a rectangular feature, the length of the longer axis; for a round feature, the diameter.
Located Underground [LUN]	The feature (for example: a parking garage, storage tank, or a transportation station) is located underground.
Location Referenced to Shoreline [SRL]	The location of an object in relation to a land water boundary.
Man-made Shoreline [MNS]	An indication that a body of water is completely surrounded by a man-made shoreline.
Manufacturing Information : Product [ZI014_PPO]	The principal product(s) resulting from a production, mining, or agricultural activity. [DESC] If multiple products are specified then they are usually listed in descending order of importance.
Median Present [MES]	An indication that the lanes or tracks of a divided land transportation route (for example: a road or a railway) are separated by a vertical median barrier. [DESC] Often used to separate opposing flows of traffic in order to improve safety. For example, may be a substantial concrete barrier of approximately 1 metre height.
Named Location Type [NLT]	The type of a location that normally does not appear as a specific, characterized object but that has a name that is required to be displayed in association with that location.
Navigation Light Characteristic [CHA]	The sequence, grouping, and/or distinctive character (rythm and colour or colours) of a navigation light.
Note : Memorandum [ZI006_MEM]	A narrative or other textual description that records observation(s) and/or event(s) associated with a particular subject (for example: a data instance, a data set or a data processing activity). [DESC] No restriction is placed on its length.
Offshore Construction Primary Structure [OCS]	The type of primary structure of an offshore construction upon which various pieces of operation-specific equipment are affixed.
Physical Condition [PCF]	The physical condition of a man-made structure, as a whole, including the inside and/or outside of the structure and any contained and/or associated equipment. [DESC] The physical condition applies to any phase of the life cycle of a man-made structure from construction to destruction. Examples of man-made structures include roads, navigable canals, buildings, towers, aerodromes and facilities.
Power Source [POS]	The energy source(s) employed to generate power for off-site distribution.
Product [PPO]	The principal product(s) resulting from a production, mining, or agricultural activity. [DESC] If multiple products are specified then they are usually listed in descending order of importance.
Railway Use [RRC]	The use(s) to which a railway is put as part of a transportation system.

Attribute	Definition and/or Description
Raw Material [PRW]	The principal 'raw', or input, material(s) involved in a production activity. [DESC] If multiple 'raw' materials are specified then they are usually listed in descending order of importance.
Religious Information : Religious Designation [ZI037_REL]	A designation denoting a religion or system of belief.
Religious Information : Religious Facility Type [ZI037_RFA]	The type of a facility, building, structure or site that is designed or designated to be used for religious activities, based on its structure and/or the principal activity for which it was designed.
Roadway Type [RTY]	The type of a roadway based on its design and/or location.
Route Identification <route designation type> [RIN_ROI]	The type of designation(s) of a road network according to the nature of service that it is intended to provide, as designated by international, national and/or other administrative authorities. [DESC] The type(s) of route designation may continue along ferry crossing or ice routes in order to provide continuity with the transportation network.
Route Identification <route designation> [RIN_RTN]	The official designation assigned to a route. [DESC] For example, 'I-95', 'A-1', 'E-6', or 'M-5'. The route designation may continue along ferry crossing or ice routes in order to provide continuity with the transportation network.
Route Pavement Information : Road Weather Restriction [ZI016_WTC]	The type of weather conditions under which a road is usable.
Route Pavement Information : Route Surface Composition [ZI016_ROC]	The composition(s) of a durable surface (for example: a pavement) intended to sustain ground traffic (for example: vehicular traffic or foot traffic). [DESC] Depending on the traffic situation (for example: on a floor, in a courtyard, or on a road) different compositions may be used, however in general such surfaces are composed of pieces of a hard material fitted closely together (for example: cobble-stone or brick) or of an undivided hard layer (for example: concrete) so as to give a compact, uniform, and smooth surface.
Sand Dune Orientation [SDO]	The characteristic direction of the steep slope face from the crest of a sand dune. [DESC] Normally, the angular distance measured from true north (0 degrees) clockwise to the direction of the steep slope face in the downwind direction (0-360 degrees).
Sand Dune Stabilized [SAD]	An indication that the height and location of a sand dune, or area of sand dunes, is unchanging. [DESC] The dune(s) are usually vegetated and in consequence they are relatively unaffected by the scouring action of local winds.
Sand Dune Type [SDT]	The type of a sand dune based on its shape and/or structure.
Shoreline Construction Type [PWC]	The type of a shoreline construction (for example: a pier, a wharf, or a quay). [DESC] May be used as a means of subtyping Feature: 'Shoreline Construction'.
Shoreline Type [SLT]	The physical characteristics of a shoreline.
Structural Material Type [MCC]	The primary type(s) of material composing a feature, exclusive of the surface. [DESC] The basis for 'primary' may be, for example, compositional dominance or structural organization.
Structure Shape [SSC]	The geometric form, appearance, and/or configuration of the feature as a whole.
Supported by Bridge Span [SBB]	The object is at least partially supported by, or passes across, a bridge span. [DESC] For example, an aqueduct carried across a valley by one or more bridge spans.
Survey Point Type [SUUY]	The type of a survey point based on the purpose for which it is established.
Terrain Morphology [SRD]	The type of terrain morphology based on composition and/or configuration. [DESC] Terrain morphology influences military operations such as mobility prediction, mining of construction materials, and identification of potential landing sites.

Attribute	Definition and/or Description
Terrain Surface Material [TSM]	The type(s) of material that compose the surface layer of the terrain.
Through Route [THR]	An indication that a ground transportation route (for example: road, cart track or trail) is the most direct way through (both into and then out of) a built-up area or populated place. [DESC] Routes may branch off of the main through route providing an alternate through route out of the built-up area or populated place. The direct or alternate ways through a built-up area or populated place may consist of the quickest or shortest route. A through route may have devices (for example: traffic lights) to control traffic flow.
Tower Type [TTC]	The type of a tower based on its intended use(s).
Track Information : Railway Gauge [ZI017_GAW]	The distance between a single pair of rails of a railway, measured along the shortest distance from inside rail to inside rail.
Track Information : Railway Gauge Classification [ZI017_RGC]	The classification of a railway based on the distance between a single pair of rails, measured along the shortest distance from inside rail to inside rail.
Track Information : Railway in Road [ZI017_RIR]	An indication that a railway track is located within the bounds of a roadbed. [DESC] For example, an infrequently used railway spur in a roadway or a carline running (regularly) in a roadway.
Track Information : Railway Power Method [ZI017_RRA]	The method by which electrical power is distributed on a railway, if any.
Track or Lane Count [LTN]	The total number of independent, parallel paths (for example: a railway track and/or a road lane) in both directions within a route.
Transportation System Type [2] [TRS2]	The type of a transportation system based on the type(s) of vehicles employed and/or the nature(s) of the objects transported.
Transportation System Type [TRS]	The type of a transportation system based on the type(s) of vehicles employed and/or the nature(s) of the objects transported.
Vegetation Characteristic [VEG]	The type of a vegetated area based on species, biome, physiography and/or structural organization.
Vegetation Species [VSP]	The predominant species of a tract of vegetation.
Vertical Relative Location [LOC]	The relationship between the feature and the underlying ground (terrain) or waterbody bottom.
Water Level Effect [WLE]	The relationship between the feature and surrounding (including covering and/or underlying) water.
Water Race Type [WRT]	The type of a water race based on its structure and/or intended purpose.
Water Resource Information : Hydrologic Persistence [ZI024_HYP]	The degree of persistence of water in an inland water body (for example: a spring, a flowing stream, a lake or a pond). [DESC] Inland water bodies may also include, for example, crevices, ditches, fountains, and water troughs.
Water Resource Information : Water Type [ZI024_SCC]	The type of available water based on its composition.
Watercourse Sink Type [WST]	The type of the sink of a watercourse.

Attribute**Definition and/or Description**

Width [WID]

The dimension of a feature taken perpendicular to its primary alignment of use and generally in the horizontal plane. [DESC] The primary alignment of a feature is its established direction of flow or use (for example: a road, a power line right-of-way, a river, rapid, and/or a bridge). A feature-specific rule may apply. In the case of a bridge, the width is the distance perpendicular to the bridge centre-line and generally in the horizontal plane. In the case of a dam, the width is the distance perpendicular to (across the) the dam crest. If no such direction of flow or use exists then (1) if the feature is irregular in shape its width is taken perpendicular to the direction of its greatest horizontal dimension (see Attribute: 'Greatest Horizontal Extent'), else (2) if the feature is regular in shape then a shape-specific rule may apply: for a rectangular feature, the length of the shorter axis; for a round feature, the diameter.
