



Macedonia 1:25,000 Spatial Database Data Specification

Rev. 0.1

1 November 2005

State Authority for Geodetic Works
JICA

1 General

1.1 Objective

Spatial Dataset of The data Specification is applied for various purposes as Macedonia national base map scale at 1:25,000. Also it is to be used for various kinds of GIS as frame work. data.

1.2 Spatial Reference System

Spatial reference system and unit of measure is follows;

Table 1-1: Spatial Reference System

Name of Reference System	State co-ordinate System (Bessel)
Name of Ellipsoid	Bessel
Semi-major axis	6377397.155
InverseFlattening	299.1528128156
Name of Reference System in Hight	n/a (Geoid model for estimation of orthometric height was generated with comparison of existing trig point and photosignal points)
Projection System	Gauss-Kruger
Scale Factor at Origin	0.9999
Meridian of Origin	21°00'00" East of Greenwich
Latitude of Origin	Equator
False Easting	500,000.00m
False Northing	0.00m
Unit of Measurement	Meter <input type="checkbox"/> Two Places of decimals <input type="checkbox"/>
Transformation Method (WGS1984 -> Bessel)	Versa-wolf
Transformation Parameter	dx =-521.7476m, dy =-229.4892m, dz =-590.9207m rx =4.02878", ry =4.48836", rz =-15.52067" s =9.7803ppm
Dimension of co-ordinateSystem	3

1.3 Data Format

Data format of dataset is follows;

Table 1-2: Data format

Data format for Vector data	ArcGIS Coverage <input type="checkbox"/> ESRI <input type="checkbox"/> . Only Primary feature (Label/Point, Arc, and Polygon) is applied for Spatial scheme. Composite (Route, Section, and Region) and Secondary feature (Tick, Link, and Annotation) are not applicable.
Data format for Raster data	GeoTIFF Projection system information or Latitude/Longitude is applied for allocation infomation.
Resolution of Raster data	0.50m
Display Scale	1:25,000
Unit of Dataset	7'30" by 7'30" (1:25,000 map Sheet Division)

1.4 Language

Language for Dataset itself and additional information are follows;

Language: Macedonian, English □ write down Macedonia with English as rule □

1.5 Graphics

1.5.1 Color Space

Regulations of color space for displaying data on computer monitor and printing maps are follows;

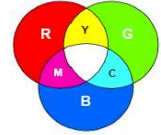














Table 1-3: Color Space

Name of Color	Value in RGB Space	Value in CMYK Space	Remarks
 White	255,255,255	0,0,0,0	-
 Black	0,0,0	0,0,0,100	-
 Red	255,0,0	1,96,91,0	-
 Green	0,255,0	93,0,100,0	-
 LightGreen	128,255,128	51,0,57,0	-
 Blue	0,0,255	96,93,0,0	-
 LightBlue	0,255,255	84,0,0,0	-
 Yellow	255,255,0	3,2,91,0	-
 Orange	255,128,0	1,62,100,0	-
 Brown	128,0,0	33,94,95,25	-
 Gray	128,128,128	43,31,28,13	-
 LightGray	192,192,192	23,16,13,2	-

1.5.2 Line Width

Regulations of Line width for displaying data on computer monitor and printing maps are follows;

Table 1-4: Line Width

Name of Width	Width in mm	Width in Point	Remarks
5	0.05	0.142	-
10	0.10	0.283	-
15	0.15	0.425	-
20	0.20	0.567	-
30	0.30	0.850	-
40	0.40	1.134	-
50	0.50	1.417	-
60	0.60	1.701	-
70	0.70	1.984	-
80	0.80	2.268	-
90	0.90	2.551	-
100	1.00	2.853	-
120	1.20	3.402	-
140	1.40	3.969	-
160	1.60	4.535	-
180	1.80	5.102	-
200	2.00	5.669	-

1.6 Element Identifier

id and uuid naming rules are follows;

id	id must be maintained as unique number in each coverage. id is given from 1 to bigger in sequence with increment 1. Only for internal system use.
uuid (Universally Unique Identifier)	uuid must be maintained as unique number in the product uuid consists of name of mapsheet name and id. mapsheet number: expressed by 5digits element id: expressed by 8digits

1.7 Feature item name encoding

Every feature item has code for simplification of feature item name. Formal names of feature item are encoded as 4 digits according as coverage naming conventions.

1.8 Data entry history attribute

All the elements must have a history attribute. Regulations are follows;

expression	History attribute are expressed as 6 digits. e.g. 200410 (yyyymm)
timing of history attribute	Timing of history attribute is when field identification has taken.
updating	Added and modified elements must have a new history attribute. History of element deletion is not required to record.

2 Overview of Product

2.1 Components of Dataset

Single dataset consists of 1 Workspace and 12 Coverages as 1 mapsheet except raster component.

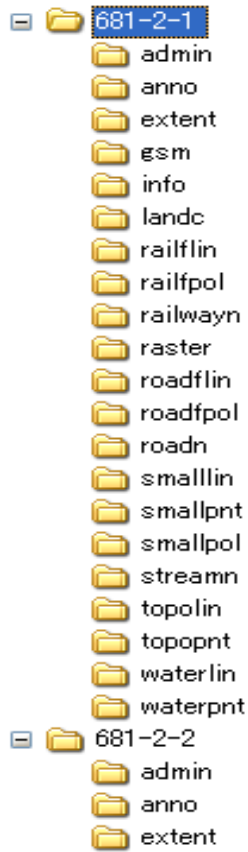


Figure 2-1: Components of Dataset per mapsheet □ example of mapsheet No.681-2-1 □

2.2 Components of Coverage

Components and its outline of coverage are follows. Package consists of coverages depending on type of feature of coverage.

Formal names of coverage are shortened for less than 8 characters (in the bracket) as a file name according as coverage naming conventions.

Table 2-1: Components of Coverage (and referenceRaster)

Name of workspace	Name of package	Name of coverage	Description of coverage
Name of Mapsheet (e.g. 681-4-1)	administrativeArea	extent (extent)	Polygon data of state and other extents
		administrativeArea (admin)	Polygon data of municipality area
	landClassification	landClassification (landc)	Topological Polygon data of land classification
	roadSpace	roadNetwork (roadn)	Topological line data of road network
		polygonalRoadFacility(roadfpol)	Polygon data of road feature
		LinearRoadFacility (roadflin)	Line data of road feature
	railwaySpace	railwayNetwork (railwayn)	Topological line data of railway network
		PolygonalRailwayFacility (railfpol)	Polygon data of railway feature
		linearRailwayFacility (railflin)	Line data of railway feature
	waterSpace	streamNetwork (streamn)	Topological line data of stream network
		pointFeatureRelatedWater(waterpnt)	Point data of feature related water
		linearFeatureRelatedWater(waterlin)	Line data of feature related water
	smallObject	polygonalSmallObject(smallpol)	Polygon data of small object
		linearSmallObject(smalllin)	Line data of small object
		pointSmallObject(smallpnt)	Point data of small object
	topographicFeature	linearTopographicFeature (topolin)	Line data of topographic feature
		pointTopographicFeature (topopnt)	Point data of topographic feature
		gridSurfaceModel (gsm)	Point data of regular grid 3-d surface model
	annotation	annotation(anno)	Point data of annotation
	referenceRaster	n/a	Raster data of ortho photo. Folder for the orthophoto shall be named "raster"

2.3 List of Feature Item

List of Feature Item is follows.

Table 2-2: List of Feature Item

Name of coverage	Name of feature Item	Element type	Code	Remarks
extent(10)	state	polygon	1001	with annotation
	nationalPark	polygon	1002	with annotation
admin(11)	administrativeArea	polygon	1101	with annotation
landc(20)	cultivatedLand	polygon	2001	-
	grapes	polygon	2002	-
	orchard	polygon	2003	-
	riceField	polygon	2004	-
	plantedForest	polygon	2005	-
	deciduousForest	polygon	2006	-
	coniferousForest	polygon	2007	-
	mixedForest	polygon	2008	-
	shrub	polygon	2009	-
	meadow	polygon	2010	-
	sands	polygon	2011	-
	rock	polygon	2012	-
	clay	polygon	2013	-
	peat	polygon	2014	-
	lake	polygon	2015	with annotation
	marsh	polygon	2016	with annotation
	riverSurface	polygon	2017	-
	fishpond	polygon	2018	-
	publicTransportSite	polygon	2019	with annotation
	railwayFacilitySite	polygon	2020	with annotation
	airportFacilitySite	polygon	2021	with annotation
	industrialFacilitySite	polygon	2022	-
	medicalFacilitySite	polygon	2023	-
	publicFacilitySite	polygon	2024	-
	parkSite	polygon	2025	-
	schoolSite	polygon	2026	-
	disposalFacilityLand	polygon	2027	-
	highBuildupLand	polygon	2028	-
	lowBuildupLand	polygon	2029	-
	archeologicalSite	polygon	2030	with annotation
	historicalFacilitySite	polygon	2031	with annotation
	religiousFacilitySite	polygon	2032	with annotation
supplyAndProcessFacilitySite	polygon	2033	-	
stateInstituteSite	polygon	2034	-	
marketSite	polygon	2035	-	
borderCrossingSite	polygon	2036	with annotation	
waterFacilitySite	polygon	2037	-	
materialsFuelSite	polygon	2038	-	
quarrySite	polygon	2039	-	
mineSite	polygon	2040	-	
naturalRaritySite	polygon	2041	-	
roadn(30)	highway	line	3001	-
	highwayTunnel	line	3002	-
	highwayBridge	line	3003	-

	mainroad	line	3004	-
	mainroadTunnel	line	3005	-
	mainroadBridge	line	3006	-
	regionalroad	line	3007	-
	regionalroadTunnel	line	3008	-
	regionallnarrowroadBridge	line	3009	-
	localroad	line	3010	-
	localroadTunnel	line	3011	-
	localroadBridge	line	3012	-
	unpavedroad	line	3013	-
	unpavedroadTunnel	line	3014	-
	unpavedroadBridge	line	3015	-
	street	line	3016	-
	streetTunnel	line	3017	-
	streetBridge	line	3018	-
	underconstructionroad	line	3019	-
	underconstructionroadTunnel	line	3020	-
	underconstructionroadBridge	line	3021	-
	footpath	line	3022	-
	footpathBridge	line	3023	-
roadfpol (31)	tollroadGate	polygon	3101	-
roadflin (31)	roadEmbankment	line	3121	-
	roadCutting	line	3122	-
railway (40)	singletrackRailway	line	4001	-
	singletrackRailwayTunnel	line	4002	-
	singletrackRailwayBridge	line	4003	-
	doubletrackRailway	line	4004	-
	doubletrackRailwayTunnel	line	4005	-
	doubletrackRailwayBridge	line	4006	-
	underconstructionRailway	line	4007	-
	underconstructionRailwayTunnel	line	4008	-
	underconstructionRailwayBridge	line	4009	-
	electricalRailway	line	4010	-
	electricalRailwayTunnel	line	4011	-
	electricalRailwayBridge	line	4012	-
	narrowtrackRailway	line	4013	-
	abandonedRailway	line	4014	-
sidingRailway	line	4015	-	
cableway	line	4016	-	
railfpol (41)	railwayStation	polygon	4101	with annotation
railflin (41)	railwayEmbankment	line	4121	-
	railwayCutting	line	4122	-
streamn(50)	streamUnder5m	line	5001	with annotation
	streamOver5m	line	5002	with annotation
	creekWithCliffInMountain	line	5003	with annotation
	creekWithCliffInFlatland	line	5004	with annotation
	penerateStream	line	5005	with annotation
	canalUnder5m	line	5006	with annotation
	canalOver5m	line	5007	with annotation
seasonalStream	line	5008	with annotation	

waterpnt (51)	spring	point	5101	with annotation
	sourceSalutary	point	5102	with annotation
	watrerflow	point	5103	-
	waterTap	point	5104	-
	waterReservoir	point	5105	-
	waterTankTower	point	5106	-
	pool	point	5107	-
	hydroPowerStation	point	5108	with annotation
	sewageWater	point	5109	-
	waterGate	point	5110	-
	pumpStation	point	5111	-
	waterWorks	point	5112	-
waterlin (51)	waterfall	line	5141	with annotation
	aquaDuct	line	5142	-
	waterPipeLine	line	5143	-
	concreteDam	line	5144	-
	filledDam	line	5145	-
	barrage	line	5146	-
	jetty	line	5147	-
	lakeEmbankment	line	5148	-
	riverEmbankment	line	5149	-
	waterPipeLineUnderground	line	5150	-
smallpol (60)	house	polygon	6001	-
	building	polygon	6002	-
	factory	polygon	6003	with annotation
	hanger	polygon	6004	-
	ruins	polygon	6005	-
	greenHouse	polygon	6006	-
	fortress	polygon	6007	with annotation
	stadium	polygon	6008	-
	christianCemetery	polygon	6009	-
	muslimCemetery	polygon	6010	-
	jewishCemetery	polygon	6011	-
	memorialCemetary	polygon	6012	-
silo	polygon	6013	-	
smalllin (60)	oilPipeLine	line	6041	-
	gasPipeLine	line	6042	-
	powerLine	line	6043	-
	beltConveyer	line	6044	-
	retainingWall	line	6045	-
	rowOfTrees	line	6046	-
smallpnt (60)	churchWith2domes	point	6061	-
	churchWith1dome	point	6062	-
	mosuque	point	6063	-
	synagogue	point	6064	-
	chapel	point	6065	-
	monastery	point	6066	-
	castle	point	6067	-
	school	point	6068	-
hospital	point	6069	-	

	mountaineeringHouse	point	6070	-
	cabin	point	6071	-
	monument	point	6072	-
	memorialPanel	point	6073	-
	municipalityOffice	point	6074	-
	postOffice	point	6075	-
	policeOffice	point	6076	-
	fireStation	point	6077	
	court	point	6078	-
	observationTower	point	6079	-
	factoryChimney	point	6080	-
	petrolStation	point	6081	-
	tank	point	6082	-
	antenna	point	6083	-
	meteorologicalStation	point	6084	-
	airport	point	6085	-
	thermalPowerStation	point	6086	
	transformer	point	6087	-
	isolatedTree	point	6088	-
	groupOfTrees	point	6089	-
topolin (70)	contour50m	line	7001	-
	contour10m	line	7002	-
	contour5m	line	7003	-
	contour2.5m	line	7004	-
	cliff	line	7005	-
	steepSlope	line	7006	-
	breakLine	line	7007	-
topopnt (70)	trigonometricPoint	point	7021	with annotation
	churchAsTrigPoint	point	7022	with annotation
	mosqueAsTrigPoint	point	7023	with annotation
	synagogueAsTrigPoint	point	7024	with annotation
	meteorologicalObservatoryAsTrigPoint	point	7025	with annotation
	antennaAsTrigPoint	point	7026	with annotation
	borderPillarAsTrigPoint	point	7027	with annotation
	chimneyAsTrigPoint	point	7028	with annotation
	benchmark	point	7029	with annotation
	spotHeight	point	7030	with annotation
	borderPillar	point	7031	with annotation
	crossInTheStone	point	7032	with annotation
	photoControlPoint	point	7033	with annotation
gsm(71)	gridSurfaceModel	point	7101	-
anno(80)	peak	point	8001	with annotation
	ridge	point	8002	with annotation
	mountainRange	point	8003	with annotation
	mountainPath	point	8004	with annotation
	canyon	point	8005	with annotation
	valley	point	8006	with annotation
	villageUnder1000	point	8007	with annotation
	villageOver1000	point	8008	with annotation
	townUnder10000	point	8009	with annotation
	town10000To25000	point	8010	with annotation
	townOver25000	point	8011	with annotation

	adjoinState	point	8012	with annotation
	commonName	point	8013	with annotation
	hill	point	8014	with annotation
	mountain	point	8015	with annotation
	roadDirectionAnnotation	point	8016	with annotation
	adjoinMapName	point	8017	with annotation
raster (90)	orthophoto	raster	9001	-

3 Requirement of Feature

3.1 Definition of Feature

administrativeArea Package

extent (extent)

Collect boundary of State and other boundaries necessary to display on topographic map. Collect on 2-dimentional. Multiplicity of Attribute "mName" and "eName" must be same.

Derived from macedonia25000Sdi

Geometric Attribute:

element[1] : geometricalSurface

Attribute table:

field name	field type	field size	multiplcity	remarks
extent#	n/a	n/a	1	Internal id systematically maintained by software
extent-id	text	14	1	implied 1:1 with "id"
extent_item	text	4	1	from itemOfAdministrativeArea
extent_history	int	6	1	"200411" as default
extent_mName	text	50	1	annotation in Macedonian
extent_eName	text	50	1	annotation in English

itemOfExtent

Attribute of "extent_item":

item	definition	remarks
state (1001)	Collect boundary of state with annotation.	<input type="checkbox"/>
nationalPark (1002)	Collect boundary of national parks whose information in provided by government by low with annotation.	Derived from relevant document.

administrativeArea (admin)

Collect boundary of municipality boundaries necessary to display on topographic map. Collect on 2-dimensional. Multiplicity of Attribute "mName" and "eName" must be same.

Derived from macedonia25000Sdi

Geometric Attribute:

element[1] : topologicalSurface

Attribute table:

field name	field type	field size	multiplicity	remarks
admin#	n/a	n/a	1	Internal id systematically maintained by software
admin-id	text	14	1	implied 1:1 with "id"
admin_item	text	4	1	fixed as "administrativeArea"
admin_history	int	6	1	"200411" as default
admin_mName	text	50	1	annotation in Macedonian
admin_eName	text	50	1	annotation in English

Attribute of "admin_item":

item	definition	remarks
administrativeBoundary (1101)	Collect boundary of municipality with annotation.	Derived from relevant document.

landClassification Package

landClassification (landc)

Collect boundary of Landuse polygons and give it attribute. Every point on XY plane must belong to one of "itemOfLandClassification". Collect on 2-dimensional. Multiplicity of Attribute "mName" and "eName" must be same. For data exchange between other CAD and GIS file format, single Label/Point is able to have "itemOfLandClassification" as seed for individual polygon.

Derived from macedonia25000Sdi

Geometric Attribute:

element[1]topographicSurface :

Attribute table:

field name	field type	field size	Multiplicity	remarks
landc#	n/a	n/a	1	Internal id. Systematically maintained by software
landc-id	text	14	1	implied 1:1 with "id"
landc_item	text	4	1	from itemOfLandClassification
landc_history	int	6	1	"200411" as default
landc_mName	text	50	0..1	annotation in Macedonian
landc_eName	text	50	0..1	annotation in English

itemOfLandClassification

Attribute of "landc_item":

item	Definition	remarks
cultivatedLand (2001)	Cultivated land in general except those items listed as follows(e. g. grape, corn, potato, strawberry, tobacco, hop, nursery field and so on) or apply small scale field (one lot 50mx50m:0.25ha or less). Apply large scale cultivated grass land(pasture) for hay harvest. Double cropping e.g. wheat, corn, and etc, it should be included in this item.	-
grapes (2002)	Apply large scale vine yard 50mx50m or more in area.	-
orchard (2003)	Apply large scale orchard 50mx50m or more in area, e.g. citrus, apple, peach, pear, chestnut, nut, olive and so on.	-
riceField (2004)	Apply large scale ricefield 50mx50m or more.	-
PlantedForest (2005)	Apply afforestation area, e.g. popular/pine plantation and so on.	-

deciduousForest (2006)	Apply natural leafy forest such as approx, 5m or more in height.	-
coniferousForest (2007)	Apply natural evergreen forest such as approx, 5m or more in height.	-
mixedForest (2008)	Apply natural mixed forest such as approx, 5m or more in height.	-
shrub (2009)	Apply shrub or bush under approx, 5m in height.	-
meadow(2010)	Apply natural grass land e.g. meadow in highland.	
sands (2011)	Apply sand or gravel land e.g. land in dry riverbed.	-
rock (2012)	Apply rocky land.	-
clay (2013)	Apply clay land.	-
peat (2014)	Apply peat land.	-
lake (2015)	Collect boundary. At river mouse lboundary moust be closed.	with annotation
marsh (2016)	Collect marsh boundary.	with annotation
riverSurface (2017)	Collect boundary of water course. Width 10m or more shall be collected. The mouse of a river must be divided with lake at reasonable place.	-
fishpond (2018)	Collect fishpond boundary.	-
publicTransportSite (2019)	Apply boundary of bus terminal in the respective cities.	with annotation
railwayFacilitySite (2020)	Apply boundary of Railway station, Station square, Switchyard, and other facilities related with railway.	with annotation
airportFacilitySite (2021)	Apply boundary of airport area include small airport for flight plane.	with annotation
industrialFacilitySite (2022)	Apply large scale industrial facility site.	-
medicalFacilitySite (2023)	Apply medical facility site such as hospital, sanatorium.	-
publicFacilitySite (2024)	Apply public museum, libraly, zoo, botanical garden and so on.	-
parkSite (2025)	Apply public park, circus, plaza, amusementpark and so on.	-
schoolSite (2026)	Apply all kind of school and university.	-
disposalFacilityLand (2027)	Apply waste diposal land 25m x25m or more. e.g. garbage / dumping site.	-
highBuildupLand (2028)	Apply Build up area such as 5 stories or more.	-
lowBuildUpLand	Apply build up area such as 4 stories or less.	-

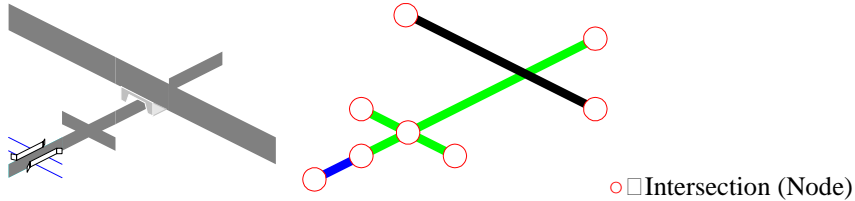
(2029)		
archeologicalSite (2030)	Apply archeological site.	with annotation Derived from relevant document.
historicalFacilitySite (2031)	Apply historical facility site.	with annotation Derived from relevant document.
religiousFacilitySite (2032)	Apply religious facility site such as church, mosque and seetary.	with annotation
supplyAndProcessFacilitySite (2033)	Apply facility site such as water supply plant, sewage plant and so on.	-
stateInstituteSite (2034)	Apply public institution such as ministry, court and so on.	-
marketSite (2035)	Apply market place, exclude shopping arcade.	-
borderCrossingSite (2036)	Apply respective border crossing site to cross the neighbour country.	with annotation
waterFacilitySite (2037)	Apply facilitie related with water except hydro power station.	-
materialsFuelSite (2038)	Apply 50mx50m or more in area for construction and other use.	-
quarrySite (2039)	Apply for stone, gravel, marble, sand.	-
mineSite (2040)	Apply for iron, copper, coal, etc and exclude abandoned mine.	-
naturalRaritySite (2041)	Apply natural rarity valued site.	Derived from relevant document.



roadSpace Package

roadNetwork (roadn)

Collect network of road centerline. Collect on 2-dimensional. Element must connect between intersection and intersection or end. There is no intersection (Node) at overpass or underpass (see description below) Multiplicity of Attribute "mName" and "eName" must be same.



Derived from macedonia25000Sdi

Geometric Attribute :

element[1] : topologicalLine

Attribute table:

field name	field type	field size	multiplicity	remarks
roadn#	n/a	n/a	1	Internal id. Systematically maintained by software
roadn-id	text	14	1	implied 1:1 with "id"
roadn_item	text	30	1	from itemOfRoadNetwork
roadn_history	int	6	1	"200411" as default

itemOfRoadNetwork

Attribute of "roadn_item":

item	definition	remarks
highway (3001)	Apply an exclusive road with tollgate for vehicles 8-11m or more in width. Collect center line	-
highwayTunnel (3002)	Collect center line of tunnel. Both end of element must be connected with part of high-way.	-
highwayBridge (3003)	Collect center line of bridge Both end of element must be connected with part of high-way. length 25m or more.	-
mainroad (3004)	Apply main road paved by concrete or asphalt, approx 7m or more in track width. Collect center line.	-
mainroadTunnel (3005)	Collect center line of tunnel. Both end of element must be connected with part of arterial road.	-

mainroadBridge (3006)	Collect center line of bridge Both end of element must be connected with part of arterial road. Length 25m or more.	-
regionalroad (3007)	Apply regional road paved by thin asphalt or other type, approx 5.5m track width. Collect center line	-
regionalroadTunnel (3008)	Collect center line of tunnel. Both end of element must be connected with part of arterial narrow road.	-
regionalroadBridge (3009)	Collect center line of bridge Both end of element must be connected with part of arterial narrow road. Length 25m or more.	-
localroad (3010)	Apply macadam road, thin asphalt road, maintained carriage roadm approx 3.5-5m track width. Collect center line	-
localroadTunnel (3011)	Collect center line of tunnel. Both end of element must be connected with part of local road.	-
localroadBridge (3012)	Collect center line of bridge Both end of element must be connected with part of local road. Length 25m or more.	-
unpavedroad (3013)	Apply standard carriage road or non-maintained carriage road, approx 2.5-3.5m track width. Collect center line	-
unpavedroadTunnel (3014)	Collect center line of tunnel. Both end of element must be connected with part of unpaved road.	-
unpavedroadBridge (3015)	Collect center line of bridge Both end of element must be connected with part of unpaved road. Length 25m or more.	-
street (3016)	Apply road in urban/ town/ village. Collect center line. Shall be generalized depending on density of streets.	-
streetTunel (3017)	Collect center line of tunnel. Both end of element must be connected with part of street.	-
streetBridge (3018)	Collect center line of bridge Both end of element must be connected with part of street. Length 25m or more.	-
underconstructionroad (3019)	Apply road underconstruction. Collect center line.	-
underconstructionroadTunnel (3020)	Collect center line of tunnel. Both end of element must be connected with part of underconstruction road.	-
underconstructionroadBridge (3021)	Collect center line of bridge Both end of element must be connected with part of underconstruction road. Length 25m or more.	-

footpath (3022)	Apply horse path and foot path approx 2m or less in track width. Collect center line.	-
footpathBridge (3023)	Apply walking exclusive bridge such as wooden/ suspension bridge and so on. Collect center line of bridge Both end of element must be connected with part of footpath. Length 25m or more.	-

linerRoadFacility (roadflin)

Collect liner feature of road facility. . Collect on 2-dimentional. Line must be directional element.

Derived from roadFacility

Geometric Attribute :

element[1] : geometricalLine

Attribute table:

field name	field type	field size	multiplcity	remarks
roadflin#	n/a	n/a	1	Internal id. Systematically maitained by software
roadflin-id	text	14	1	implied 1:1 with "id"
roadflin_item	text	30	1	from itemOfRoadFacility
roadflin_history	int	6	1	"200411" as default

itemOfLinerRoadFacility

Attribute of "roadflin_item":

item	Definition	remarks
roadEmbankment (3121)	Collect upper edge of embankment. Lower edge must be on the right side of the upper edge. As a rule, height 3m ore more and length 75m or more shall be taken.	-
roadCutting (3122)	Collect upper edge of cutting. Lower edge must be on the right side of the upper edge. As a rule, height 3m ore more and length 75m or more shall be taken.	-

polygonalRoadFacility (roadfpol)

Collect polygonal feature of road facility. . Collect on 2-dimentional.

Derived from roadFacility

Geometric Attribute :

element[1] : geometricalSurface

Attribute table:

field name	field type	field size	multitiplicity	remarks
roadfpol#	n/a	n/a	1	Internal id. Systematically maintained by software
roadfpol-id	text	14	1	implied 1:1 with "id"
roadfpol_item	text	30	1	fixed as "tollRoadGate"
roadfpol_history	int	6	1	"200411" as default

Attribute of "roadfpol_item":

item	Definition	remarks
tollroadGate (3101)	Collect toll road gate buildings.	

railwaySpace

railwayNetwork (railwayn)

Collect network of railway centerline. Collect on 2-dimensional. Element must connect between intersection and intersection or end. There is no intersection (Node) at overpass or underpass (same as roadNetwork) Multiplicity of Attribute "mName" and "eName" must be same.

[Derived from macedonia25000Sdi](#)

Geometric Attribute :

element[1] : topologicalLine

Attribute table:

field name	field type	field size	multiplcity	remarks
railwayn#	n/a	n/a	1	Internal id. Systematically maintained by software
railway-id	text	14	1	implied 1:1 with "id"
railway_item	text	30	1	from itemOfRailwayNetwork
railway_history	int	6	1	"200411" as default

itemOfRailwayNetwork

Attribute of "railway_item":

item	definition	remarks
singletrackRailway (4001)	Collect center line of track.	-
singletrackRailwayTunnel (4002)	Collect center line of Tunnel Both end of element must be connected with part of singletrackRailway.	-
singletrackRailwayBridge (4003)	Collect center line of bridge Both end of element must be connected with part of singletrackRailway. Length 25m or more.	-
doubletrackRailway (4004)	Collect center of double tracks.	-
doubletrackRailwayTunnel (4005)	Collect Tunnel Both end of element must be connected with part of doubletrackRailway.	-
doubletrackRailwayBridge (4006)	Collect bridge Both end of element must be connected with part of doubletrackRailway. Length 25m or more.	-
underconstructionRailway (4007)	Apply underconstruction railway.	-
underconstructionRailway Tunnel (4008)	Apply underconstruction railway tunnel.	-
underconstructionRailway Bridge (4009)	Apply underconstruction railway railway. Length 25m or more.	-
electricalRailway (4010)	Apply electrified railway	-

electricalRailwayTunnel (4011)	Collect Tunnel Both end of element must be connected with part of electricalRailway.	-
electricalRailwayBridge (4012)	Collect bridge Both end of element must be connected with part of electricalRailway. Length 25m or more.	-
narrowtrackRailway (4013)	Apply narrow track railway.	Derived from relevant document.
abandonedRailway (4014)	Apply abasndoned railway.	-
sidingRailway (4015)	Apply siding track for service.	-
cableway (4016)	Apply ski lift, ropeway and so on.	-

linerRailwayFacility (railflin)

Collect liner feature of railway facility. Collect on 2-dimentional. Line must be directional element.

[Derived from railwayFacility](#)

[Geometric Attribute :](#)

`element[1] : geometricalLine`

Attribute table:

field name	field type	field size	multiplicity	remarks
railflin#	n/a	n/a	1	Internal id. Systematically maintained by software
railflin-id	text	14	1	implied 1:1 with "id"
railflin_item	text	30	1	from itemOfLinerRailwayFacility
railflin_history	int	6	1	"200411" as default

itemOfLinerRailwayFacility

Attribute of "railflin_item":

item	Definition	remarks
railwayEmbankment (4121)	Collect upper edge of embankment. Lower edge must be on the right side of the upper edge. As a rule, height 3m ore more and length 75m or more shall be taken.	-
railwayCutting (4122)	Collect upper edge of cutting. Lower side must be on the right side of the upper edge. As a rule, height 3m ore more and length 75m or more shall be taken.	-

PolygonalRailwayFacility (railfpol)

Collect polygonal feature of railway facility. Collect on 2-dimensional. Multiplicity of Attribute "mName" and "eName" must be same.

Derived from railwayFacility

Geometric Attribute :

element[1] : geometricalSurface

Attribute table:

field name	field type	field size	,multiplicity	remarks
railfpol#	n/a	n/a	1	Internal id. Systematically maintained by software
railfpol-id	text	14	1	implied 1:1 with "id"
railfpol_item	text	30	1	fixed as "railwayStation"
railfpol_history	int	6	1	"200411" as default
railfpol_mName	text	50	1	annotation in Macedonian
railfpol_eName	text	50	1	annotation in English

Attribute of "railfpol_item":

item	Definition	remarks
railwayStation (4101)	Collect areas of platform, and roof of platforms station.	With annotation.

waterSpace

streamNetwork (streamn)

Collect network of stream centerline. Network must be tree structure. Collect on 2-dimentional. Element must connect between intersection and intersection or end. There is no intersection (Node) at overpass or underpass (same as roadNetwork) Multiplicity of Attribute "mName" and "eName" must be same.

[Derived from macedonia25000Sdi](#)

Geometric Attribute :

element[1] : topologicalLine

Attribute table:

field name	field type	field size	multiplicity	remarks
streamn#	n/a	n/a	1	Internal id. Systematically maintained by software
streamn-id	text	14	1	implied 1:1 with "id"
streamn_item	text	30	1	from itemOfStreamNetwork
streamn_history	int	6	1	"200411" as default
streamn_mName	text	50	1	annotation in Macedonian
streamn_eName	text	50	1	annotation in English

itemOfStreamNetwork

Attribute of "streamn_item":

item	definition	remarks
streamUnder5m (5001)	Stream center line. width less than 5m.	With annotation.
streamOver5m (5002)	Stream center line. width 5m or more	With annotation.
creekWithCliffInMountain (5003)	Stream center line. As a rule, height 3m or more creek shall be taken.	With annotation.
creekWithCliffInFlatland (5004)	Stream center line. As a rule, height 3m or more creek shall be taken.	With annotation.
penerateStream (5005)	Center line for intermittenly stream.	With annotation.
canalUnder5m (5006)	Canal center line. Width less than 5m.	With annotation.
canalOver5m (5007)	Canal center line. Width 5m or more.	With annotation.
seasonalStream	Stream center line. Seasonally appeared..	with annotation.

pointFeatureRelatedWater (waterpnt)

Collect point feature of related with water. Collect on 2-dimensional. Multiplicity of Attribute "mName" and "eName" must be same.

Derived from featureRelatedWater

Geometric Attribute :

element[1] : geometricalPoint

Attribute table:

field name	field type	field size	multiplicity	remarks
waterpnt#	n/a	n/a	1	Internal id. Systematically maintained by software
waterpnt-id	text	14	1	implied 1:1 with "id"
waterpnt_item	text	30	1	from itemOfPointFeatureRelatedWater
waterpnt_history	int	6	1	"200411" as default
waterpnt_mName	text	50	0..1	annotation in Macedonian
waterpnt_eName	text	50	0..1	annotation in English

itemOfPointFeatureRelatedWater

Attribute of "waterpnt_item":

item	definition	remarks
spring (5101)	Apply natural spring to be specified the remarkable / famous one only. e.g. annotated springs on the existing map.	With annotation.
sourceSaluatry (5102)	Apply natural source of salutary or hot spring.	With annotation.
waterflow (5103)	Symbol of water flow direction.collect every river and every mapsheet.	-
waterTap (5104)	Apply source of water supply to hold large facility.	-
waterReservoir (5105)	Apply 25mx25m in area or 25m in Tank's diameter on the ground.	-
waterTankTower (5106)	Apply 25m or more in height.	-
pool (5107)	Apply 50mx25m or morei in area e.g. swimming pool.	-
hydroPowerstation (5108)	Apply large scale hydro power station. Buildings and other structure shall be collected by other feature.	With annotation.
sewageWater (5109)	Apply large scale sewage plant.	-
waterGate (5110)	Apply large scale Watergate e.g. irrigation use.	-
pumpStation (5111)	Apply large scale pumpstation e.g. irrigation use or drinking water facility.	-

waterWorks (5112)	apply purification plant for drinking water.	-
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LinerFeatureRelatedWater (waterlin)

Collect liner feature of related water. Collect on 2-dimensional. Line must be directional element. Multiplicity of Attribute "mName" and "eName" must be same.

Derived from featureRelatedWater

Geometric Attribute :

element[1] : geometricalLine

Attribute table:

field name	field type	field size	multiplicity	remarks
waterlin#	n/a	n/a	1	Internal id. Systematically maintained by software
waterlin-id	text	14	1	implied 1:1 with "id"
waterline_item	text	30	1	from itemOfLinerFeatureRelatedWater
waterlin_history	int	6	1	"200411" as default
waterlin_mName	text	50	0..1	annotation in Macedonian
waterlin_eName	text	50	0..1	annotation in English

itemOfLinerFeatureRelatedWater

Attribute of "waterlin_item":

item	definition	remarks
waterfall (5141)	Apply large scale water fall, e.g. 10m or more in height. Collect line on top end of waterfall	With annotation.
aquaDuct (5142)	Apply canal bridge. Collect center line of aqua duct.	-
waterPipeLine (5143)	Apply water pipe line diameter 50cm or more on ground or underground.	-
concreteDam (5144)	Collect line on top end of dam and bottom end. Both lines must be connected to each other. Collect line clockwise (Target must be right hand side of the line).	-
FilledDam (5145)	Collect line on top end of dam and bottom end. Both lines must be connected to each other. Collect line clockwise (Target must be right hand side of the line).	-

barrage (5146)	Collect line on top end of dam	-
jetty (5147)	Collect center line of jetty.	-
lakeEmbankment (5148)	Embankment for lake. Collect line on top edge. Bottom edge must be on the right side of the top edge. As a rule, height 3m ore more and length 75m or more shall be taken.	-
riverEmbankment (5149)	Embankment for river. Collect line on top end. Bottom side must be on the right side of the top edge. As a rule, height 3m ore more and length 75m or more shall be taken.	-
waterPipeLineUnderground (5150)	As a rule, apply water pipeline under the ground. Express based on existing data. Collect centerline of water supply line.	-



smallObject

pointSmallObject (smallpnt)

Collect point feature of landmark feature. Collect on 2-dimensional. Feature expresses symbol of landmark. Other feature must be applied in case landmark has buildings. Multiplicity of Attribute "mName" and "eName" must be same. Place symbol inside of the object or building if it is to be expressed its entity by polygon.

Geometric Attribute :

element[1] : geometricalPoint

Attribute Table:

field name	field type	field size	multiplcity	remarks
smallpnt#	n/a	n/a	1	Internal id. Systematically maintained by software
smallpnt-id	text	14	1	implied 1:1 with "id"
smallpnt_item	text	30	1	from itemOfPointSmallObject
smallpnt_history	int	6	1	"200411" as default

itemOfPointSmallObject

Attribute of "smallpnt_item":

item	definition	remarks
churchWith2domes (6061)	Apply large scale church with 2 or more domes.	-
churchWith1dome (6062)	Apply large scale church with a dome.	-
mosuque (6063)	Apply all kind of mosuques.	-
synagogue (6064)	Apply all kind of sysnagogues.	-
chapel (6065)	Apply small scale church.	-
monastery (6066)	Apply all kind of monastery.	-
castle (6067)	Apply all kind of castle.	-
school (6068)	Apply all kind of school and university.	-
hospital (6069)	Apply all kind of hospital (medical center) excluded sanatorium and clinic.	-
mountaineeringHouse (6070)	Apply all kind of mountain lodge/ house.	-
cabin (6071)	Apply cabin to small house in the forest or in the mountain side.	-
monument (6072)	Apply memorial/ religious monuments.	-
memorialPanel (6073)	Apply large scale memorial panel	-

	only.	
municipalityOffice (6074)	Apply municipality office.	Derived from relevant document.
postOffice (6075)	Apply head office of post office only, satellite small office excluded.	Derived from relevant document.
policeOffice (6076)	Apply head office of police office only, satellite small office excluded.	-
fireStation (6077)	Apply all kind of fire station.	-
court (6078)	Apply large scale court only.	-
observationTower (6079)	Apply 50m or more in height. Clock tower included.	-
factoryChimney (6080)	Apply 25m or more in height.	-
petrolStation (6081)	Apply petrolstations for vehicles.	-
tank (6082)	Apply 10m or more in diameter.	-
anntena (6083)	Apply 50m or more in height for radio/ TV station, excluded mobile phone anntena.	-
meteologicalStation (6084)	Apply large scale meteorological observatory.	-
airport (6085)	Place point inside polygon of "airportFacilitySite "as symbol.	-
thermalPewreStation (6086)	Apply large scale thermal powerstation.	-
transformer (6087)	Apply transformer linked with power line.	-
isoratedtree (6088)	Apply remarkable tree on the photos.	-
groupOfTrees (6089)	Apply remarkable special trees on the photos.	-



linerSmallObject (smalllin)

Collect liner feature of landmark feature. Collect on 2-dimentional.

Geometric Attribute :

element[1] : geometricalLine

Attribute table:

field name	field type	field size	multiplicity	remarks
smalllin#	n/a	n/a	1	Internal id. Systematically maintained by software
smalllin-id	text	14	1	implied 1:1 with "id"
smalllin_item	text	30	1	from itemOfLinerSmallObject
smalllin_history	int	6	1	"200411" as default

itemOfLinerSmallObject

Attribute of "smalllin_item":

item	definition	remarks
oilPipeLine (6041)	Apply large scale oil pipe line on ground only.	Derived from relevant document.
gaspipeline (6042)	Apply large scale gas pipe line on ground only.	Derived from relevant document.
powerLine (6043)	Apply high tension power line (110kv or more) only.	Derived from relevant document.
beltConbeyer (6044)	Apply facility for transporting materials and so on.	-
retainingWall (6045)	Apply 100m or more in length and 2m or more in height.	-
rowOfTrees (6046)	Apply colonnade of 100m or more in length, e.g. windbreak.	-

polygonalSmallObject (smallpol)

Collect polygonal feature of landmark feature. Collect on 2-dimentional. Multiplicity of Attribute "mName" and "eName" must be same.

Geometric Attribute :

element[1] : geometricalSurface

Attribute table:

field name	field type	field size	multiplcity	remarks
smallpol#	n/a	n/a	1	Internal id. Systematically maitained by software
smallpol-id	text	14	1	implied 1:1 with "id"
smallpol_item	text	30	1	from itemOfPolygonalSmallObject
history	int	6	1	"200411" as default
smallpol_mName	text	50	0..1	annotation in Macedonian
smallpol_eName	text	50	0..1	annotation in English

itemOfPolygonalSmallObject

Attribute of "smallpol_item":

item	definition	remarks
house (6001)	Apply 4 stories or less. 10mx10m or more only. Composition of houses can be generalized as bigger than 10m x10m.	Generarization may be adopted as a rule.
building (6002)	Apply 5 stories or more. 10mx10m or more only. Composition of buildings can be generalized as bigger than 10m x10m.	Generarization may be adopted as a rule.
factory (6003)	Apply industorial/ production facilities including storage in factory. 25m x75m or more only.	With annotation.
hanger (6004)	Apply hanger 75mx25m or more only.	-
ruins (6005)	Apply ruins/ remaing old an ancient/ medieval civilization.	Generarization may be adopted as a rule.
greenHouse (6006)	Apply permanent greenhouse of 75mx25mor more in area.	-
fortress (6007)	Apply fortress/ rampart.	With annotation.
stadium (6008)	Apply large scale building/ facility for all kind of sport.	-

christianCemetery (6009)	Apply 25mx25m or more in area.	-
muslimCemetery (6010)	Apply 25mx25m or more in area.	-
jeiwshCemetery (6011)	Apply 25mx25m or more in area.	-
memorialCemetery (6012)	Apply 25mx25m or more in area.	-
silo (6013)	Apply large scale silo 10m or more indiameter.	-



topographicFeature

PointTopographicFeature (topopnt)

Collect point features for topographic expressions.. Collect on 3-dimentional. Multiplicity of Attribute "mName" and "eName" must be same.

Derived from topographicFeature

Geometric Attribute :

element[1] : geometricalPoint

Attribute table:

field name	field type	field size	multiplicity	remarks
topopnt#	n/a	n/a	1	Internal id. Systematically maintained by software
topopnt-id	text	14	1	implied 1:1 with "id"
topopnt_item	text	30	1	from itemOfPointTopographicFeature
topopnt_history	int	6	1	"200411" as default
topopnt_mName	text	50	1	annotation in Macedonian
topopnt_eName	text	50	1	annotation in English
topopnt_coordX	double	-	1	from survey observation
topopnt_coordY	double	-	1	from survey observation
topopnt_coordZ	double	-	1	from survey observation

itemOfPointTopographicFeature

Attribute of "topopnt_item":

item	definition	remarks
trigonometricalPoint (7021)	Information derived from existing 1:50,000 topomaps or coordinates.	With annotation.
churchAsTrigPoint (7022)	Information derived from existing 1:50,000 topomaps or coordinates.	With annotation.
mosuqueAsTrigPoint (7023)	Information derived from existing 1:50,000 topomaps or coordinates.	With annotation.
synagogueAsTrigPoint (7024)	Information derived from existing 1:50,000 topomaps or coordinates.	With annotation.

meteoologicalObsrvatoryAsTrigPoint (7025)	Information derived from existing 1:50,000 topomaps or coordinates.	With annotation.
anntenaAsTrigPoint (7026)	Information derived from existing 1:50,000 topomaps or coordinates.	With annotation.
borderPillarAsTrigPoint (7027)	Information derived from existing 1:50,000 topomaps or coordinates.	With annotation.
chimneyAsTrigPoint (7028)	Information derived from existing 1:50,000 topomaps or coordinates.	With annotation.
benchmark (7029)	Apply fundamental benchmarks.	With annotation. Derived from relevant document.
spotHeight (7030)	Apply Photogrammetric observation, point per 4km2 as standard dense.	With annotation.
boderPillar (7031)	Information derived from existing 1:50,000 topomaps or coordinates. pillars must be on "state".	With annotation.
crossInTheStone (7032)	Information derived from existing 1:50,000 topomaps or coordinates.	With annotation.
photoContorolPoint (7033)	Apply photo control survey result.	Derived from relevant document.



linerTopographicFeature (topolin)

Collect liner feature of topographic objects. Collect on 3-dimensional. Line must be directional element. Multiplicity of Attribute "mName" and "eName" must be same.

Derived from topographicFeature

Geometric Attribute :

element[1] : geometricalLine

Attribute table:

field name	field type	field size	multiplicity	remarks
topolin#	n/a	n/a	1	Internal id. Systematically maintained by software
topolin-id	text	14	1	implied 1:1 with "id"
topolin_item	text	30	1	from itemOfLinerTopographicFeature
topolin_history	int	6	1	"200411" as default

itemOfLinerTopographicFeature

Attribute of "topolin_item":

item	definition	remarks
contourLine50m (7001)	50m index contour line. Continuously collect line on any itemof feature. Line will be indirectly generated by "gridSurfaceModel","breakLine"	-
contourLine10m (7002)	10m major contour line. Continuously collect line on any itemof feature. Line will be indirectly generated by "gridSurfaceModel","breakLine"	-
contourLine5m (7003)	5m supplementary contour line. Continuously collect line on any itemof feature. Line will be indirectly generated by "gridSurfaceModel","breakLine". Additionally expressed on flatten area.	-
contourLine2.5m (7004)	2.5m supplementary contour line. Continuously collect line on any itemof feature. Line will be indirectly generated by "gridSurfaceModel","breakLine" Additionally expressed on very flatten area.	-
cliff (7005)	As a rule, height 3m ore more and length 75m or more shall be taken. 1. (minimal: width 2mm or less): Collect line of top edge of cliff. Bottom edge must be on the right side of the top edge (clockwise). 2. (With real width): collect line of top edge and bottom edge of cliif as single line. Cliff itself must be on the right side of the line (clockwise).	-
steepSlope (7006)	As a rule, height 3m ore more and length 75m or more shall be taken. 1. (minimal: width 2mm or less): Collect line of top edge of steepSlope. Bottom edge must be on the right edge of the top edge (clockwise).	-

	2. (With real width): collect line of top edge and bottom edge of SteepSlope as single line. Cliff itself must be on the right side of the line (clockwise).	
breakLine (7007)	Apply water courses in mountain, major ridges, and any kind of characteristic terrain edges.. 1 line per 4km2 as standard dense.	-

gridSurfaceModel (gsm)

Regular grid 3-dimentional points. Collect on every 20m on XY plane as feature code 7101.

[Derived from macedonia25000Sdi](#)

Geometric Attribute :

element[1] : geometricalPoint

annotation

annotation (anno)

Collect point data for Annotation with no graphic elements. Collect on 2-dimensional. Multiplicity of Attribute "mName" and "eName" must be same.

[Derived from macedonia25000Sdi](#)

Geometric Attribute :

element[1] : geometricalPoint

Attribute table:

field name	field type	field size	multiplicity	remarks
anno#	n/a	n/a	1	Internal id. Systematically maintained by software
anno-id	text	14	1	implied 1:1 with "id"
anno_item	text	30	1	from itemOfAnnotation
anno_history	int	6	1	"200411" as default
anno_mName	text	50	1	annotation in Macedonian
anno_eName	text	50	1	annotation in English

itemOfAnnotation

Attribute of "anno_item":

item	definition	remarks
peak (8001)	Apply mountain peak.	With annotation.
ridge (8002)	Apply mountain ridge.	With annotation.
mountainRange (8003)	Apply mountain range.	With annotation.
mountainPath (8004)	Apply mountain path.	With annotation.
canyon (8005)	Apply canyon.	With annotation.
valley (8006)	Apply valley.	With annotation.
villageUnder1000 (8007)	Apply village population less than 1000.	With annotation.
villageOver1000 (8008)	Apply village population 1000 or more.	With annotation.
townUnder10000 (8009)	Apply town population 10000 or more.	With annotation.
town10000T25000 (8010)	Apply town population 10000 □ 25000.	With annotation.
townOver25000 (8011)	Apply town population 25000 or more.	With annotation.
adjoinState (8012)	Apply State name adjoin with the state.	With annotation.
commonName (8013)	Apply name commonly used for	With annotation.

	particular place.	
hill (8014)	Apply hill name high approx less than 700m from bottom.	With annotation.
mountain (8015)	Apply mountain name high approx 700m or more from bottom.	With annotation.
roadDirectionAnnotation (8016)	Apply road direction annotation.	With annotation.
AdjoinMapName (8017)	Place adjoin map name beside outside of the neatline. see map legend regulation.	With annotation.



referenceRaster

orthoPhoto

Ortho rectified by "gridSurfaceModel" aerial photo image data as a code 9001. Specifications are follows;

orthoPhoto Specification:

item	definition	remarks
Fomat	GeoTIFF (uncompressed, scanlined)	-
Data unit	1:25,000 map division	-
Cordinate system	Latitude/Longitude	-
Resolution	50cm(GSD)	
out of cropping area	White (r255;g255;b255)	sliver area between mapsheet division and image border.

Store file as GeoTIFF format on every mapsheet.

Derived from referenceRaster

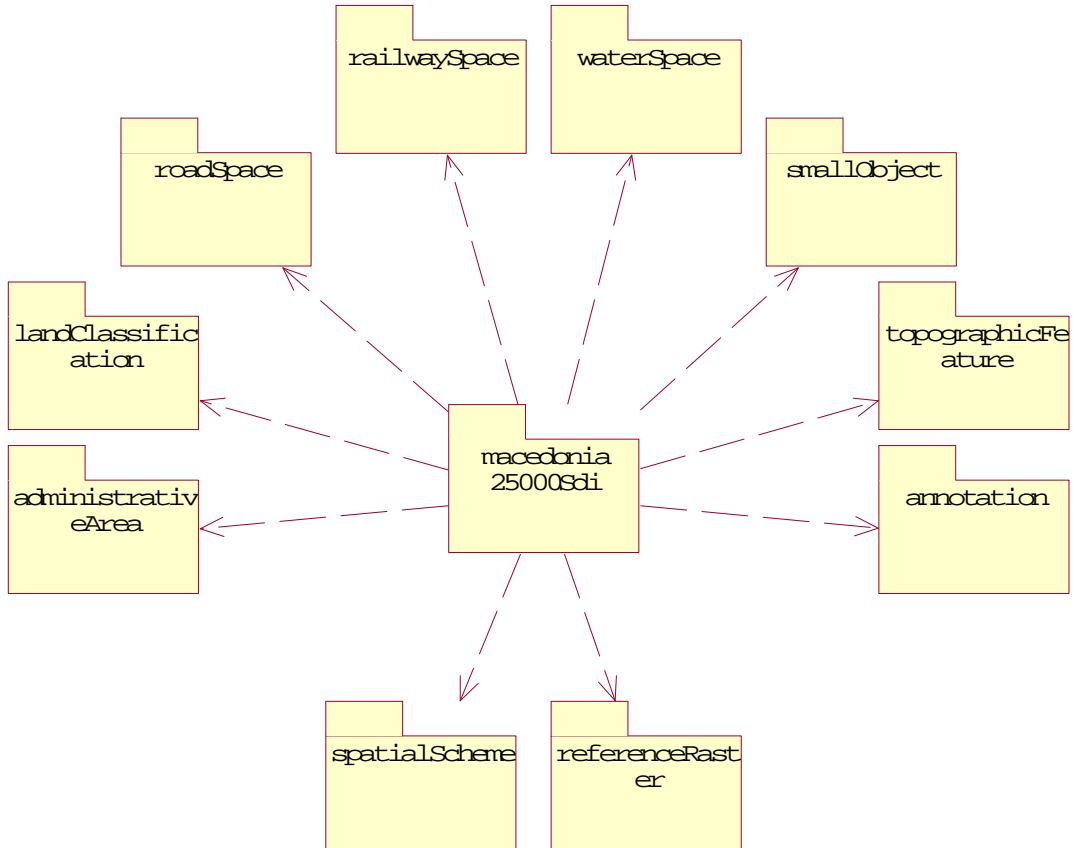
Geometric Attribute :

element : georeferencedRater

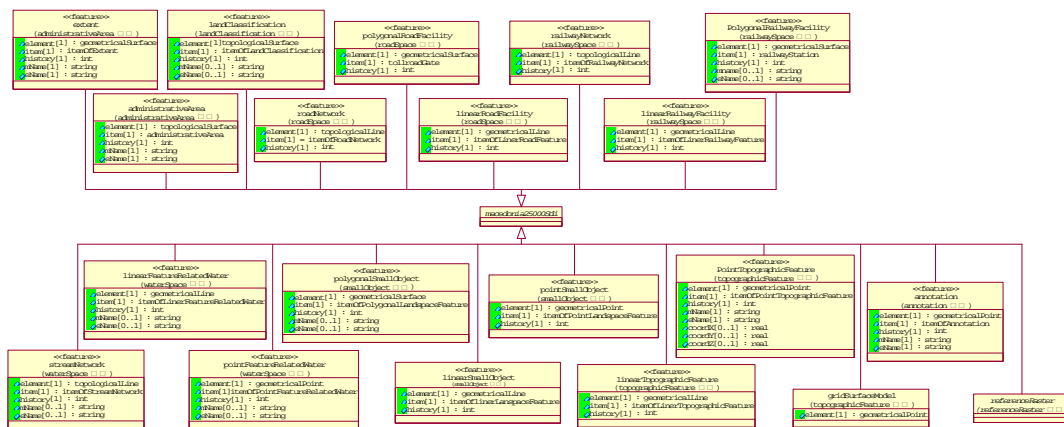
3.2 Definition of Data structure

Data Structure and its attribute are defined following UML static class diagram.

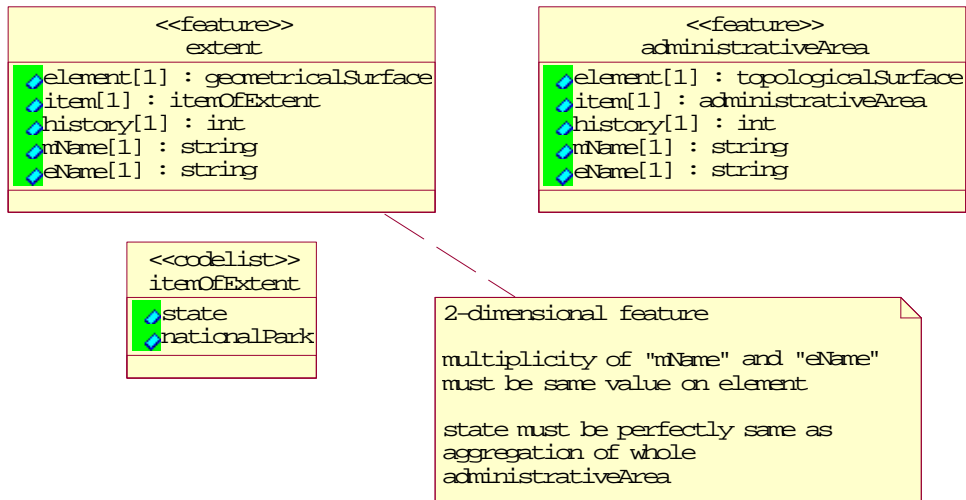
Logocal View



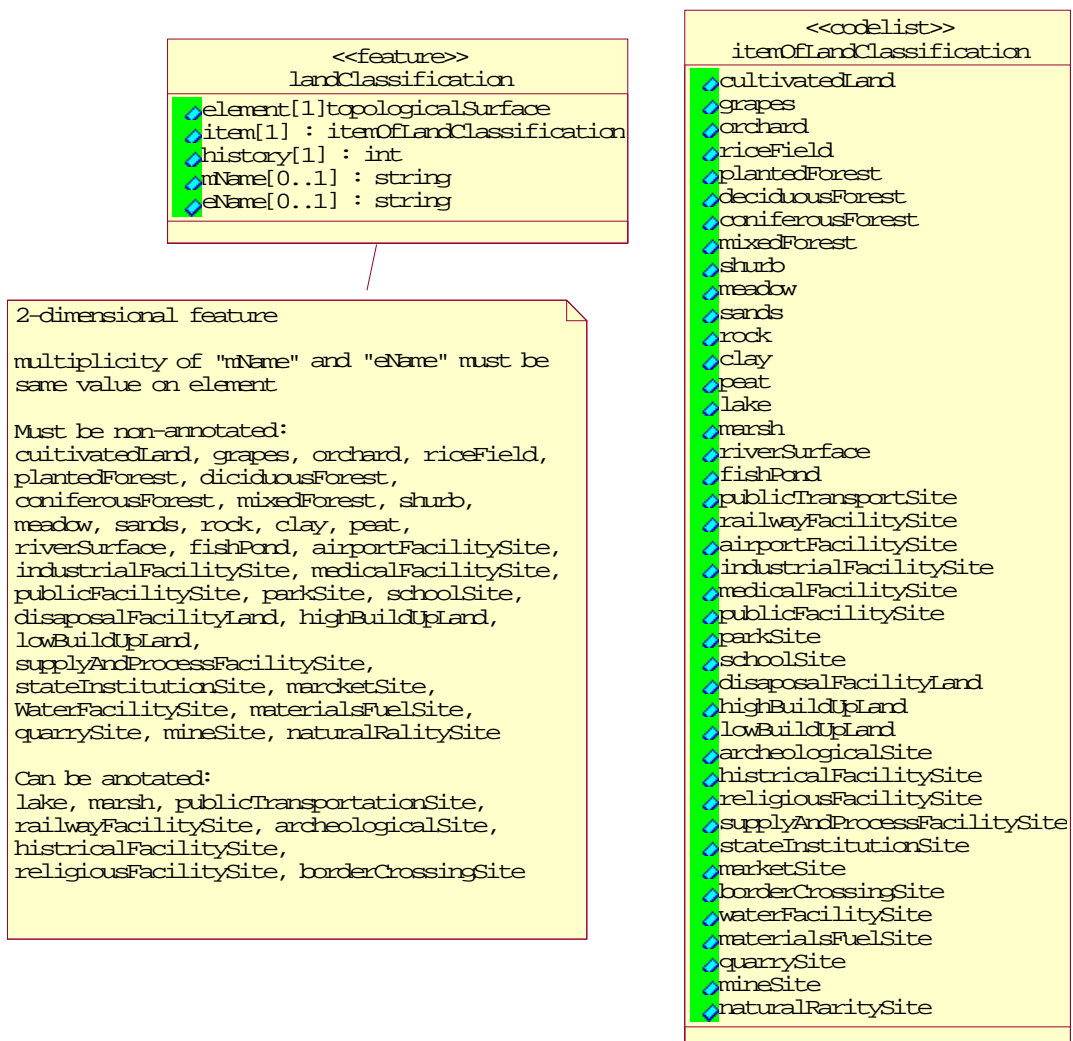
macedonia25000Sdi Package



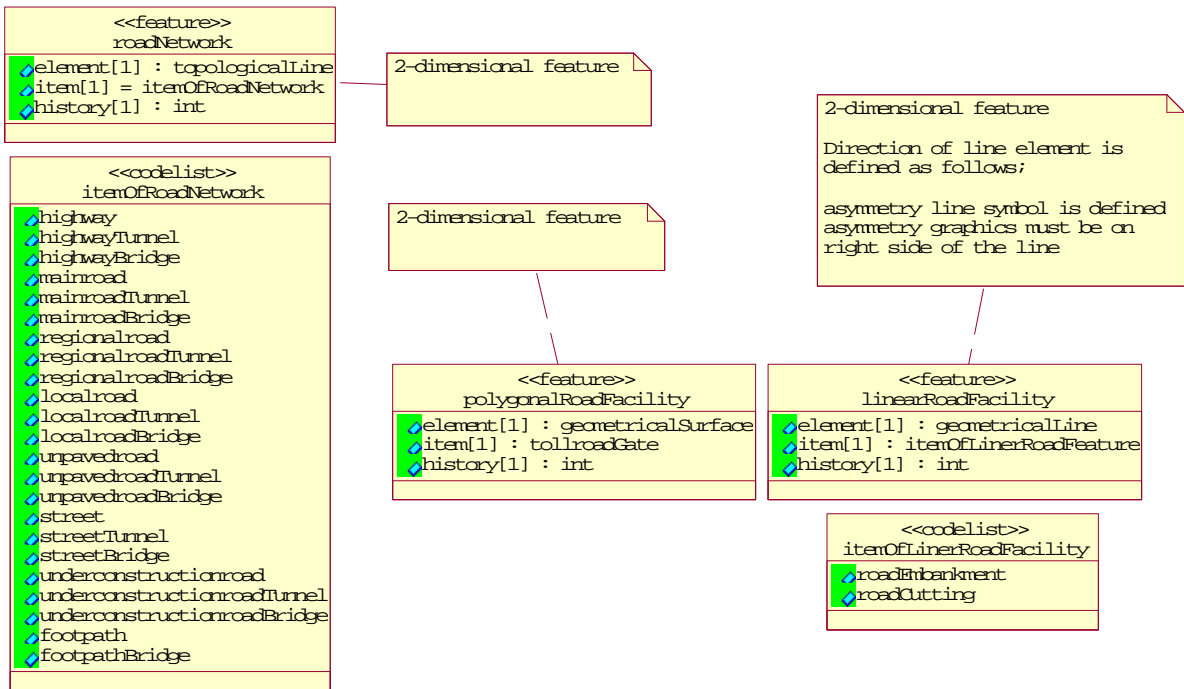
administrativeArea Package



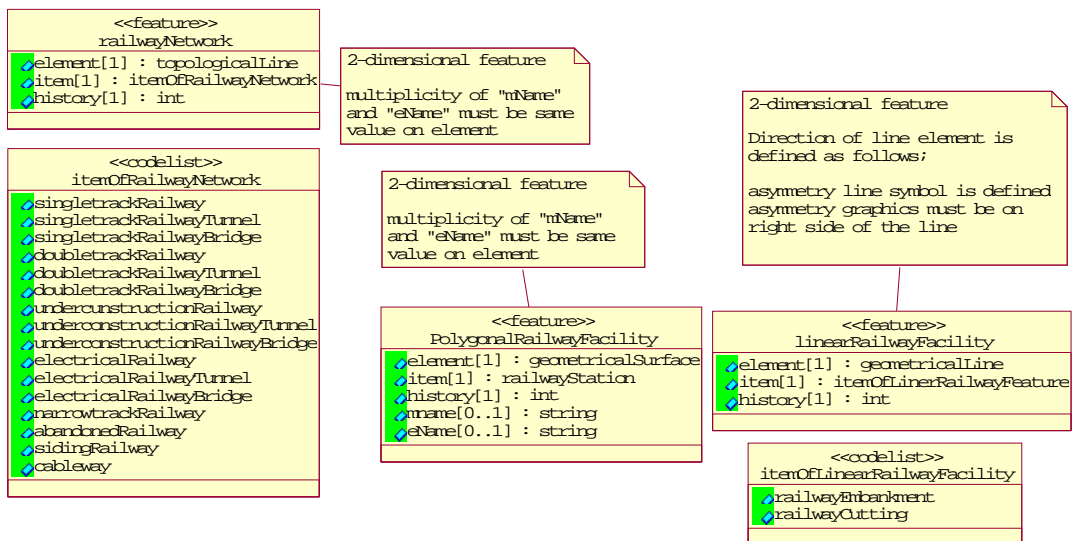
landclassification Package



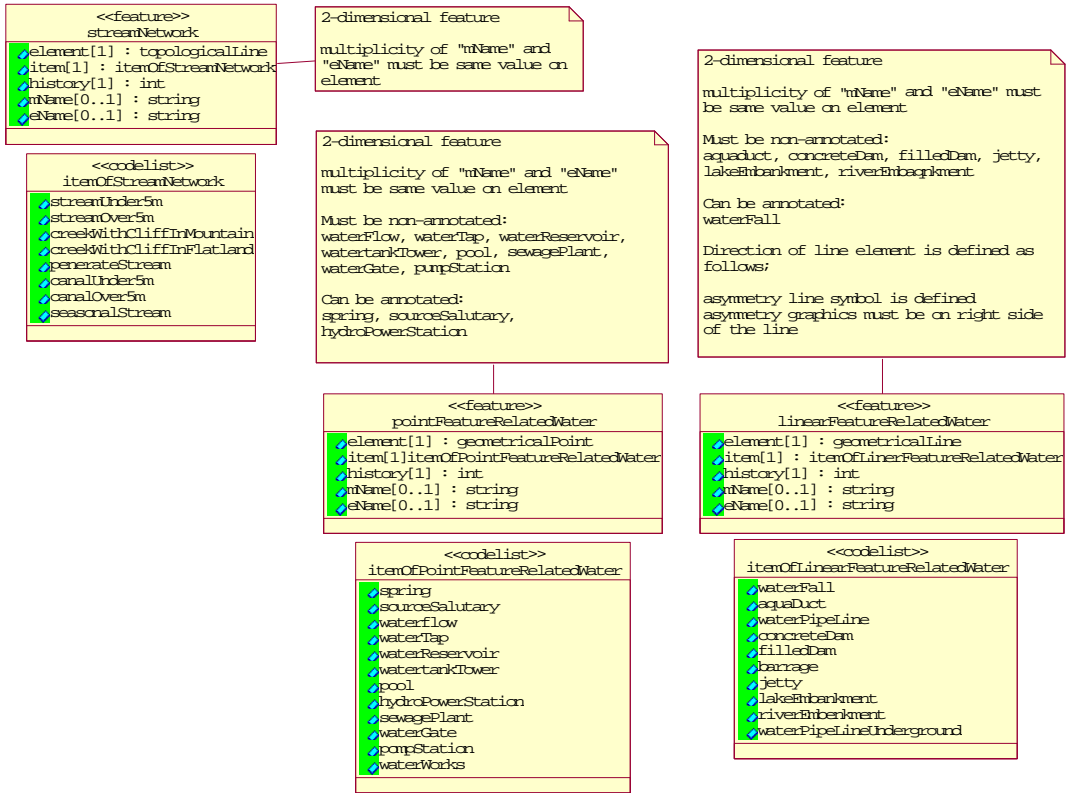
roadSpace Package



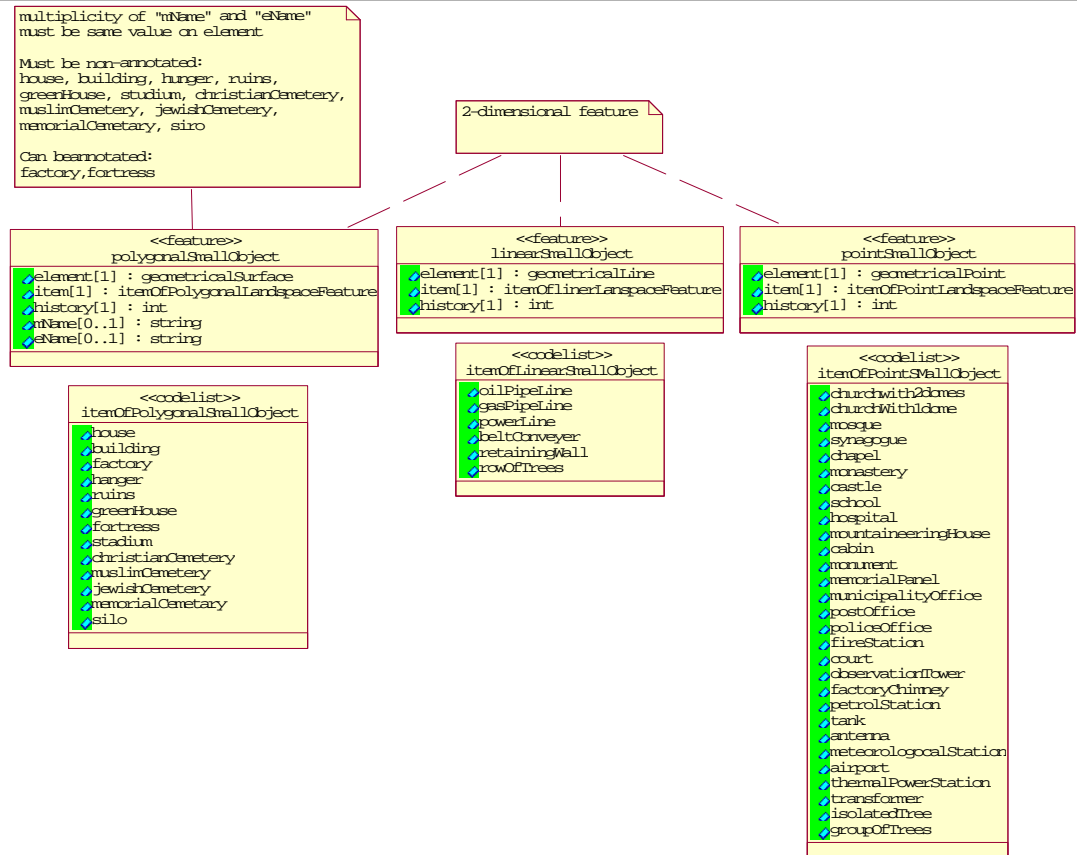
railwaySpace Package



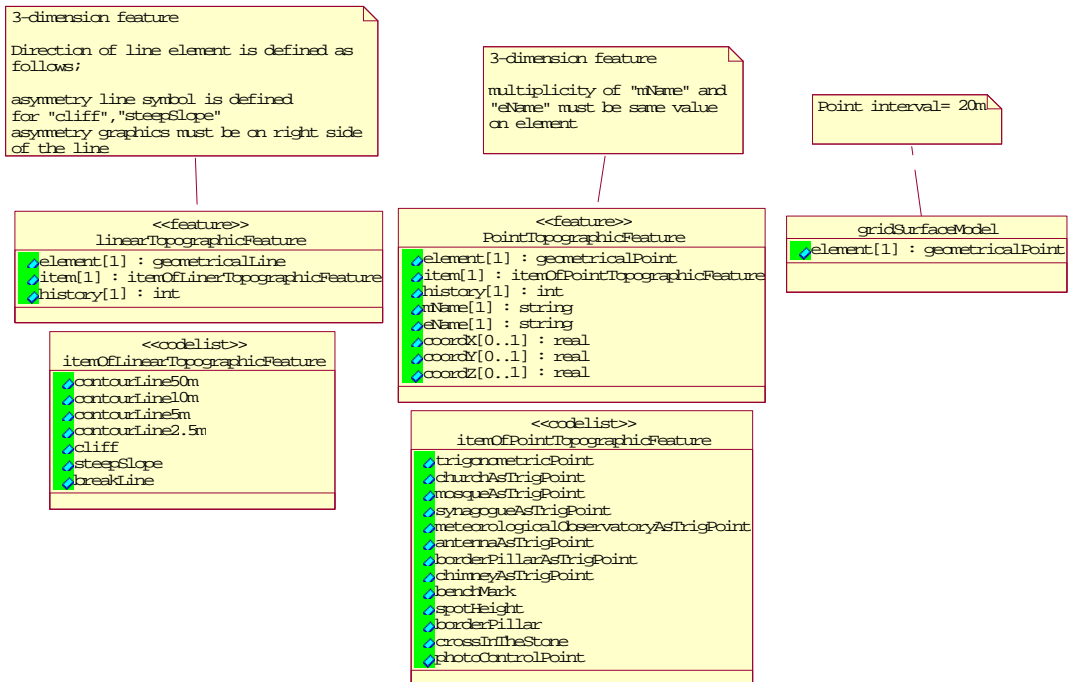
waterSpace Package



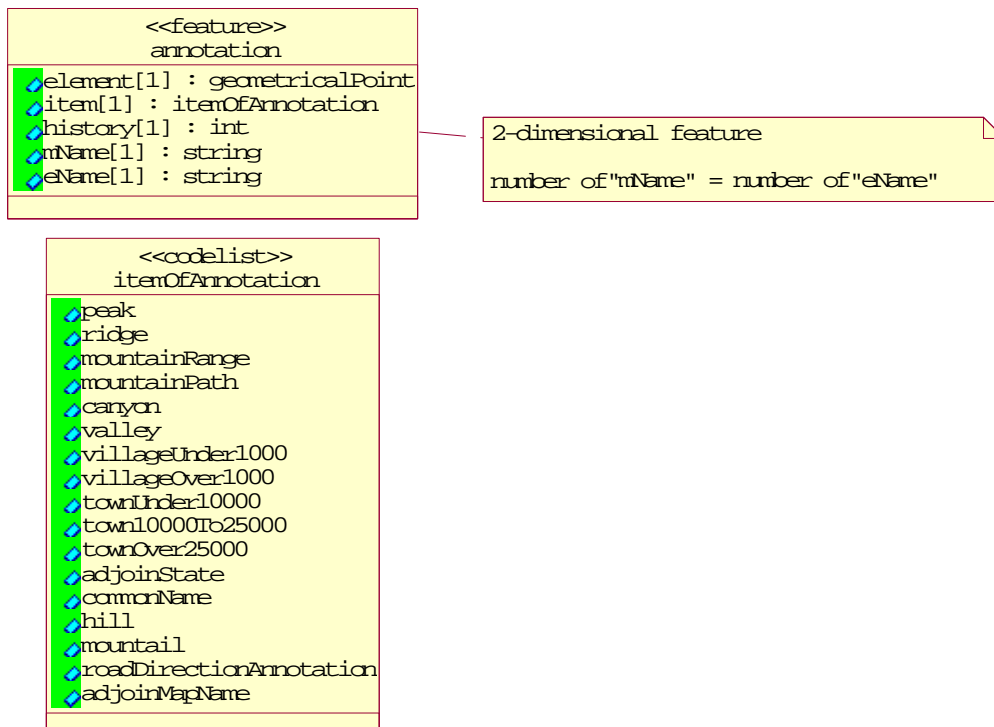
smallObject Package



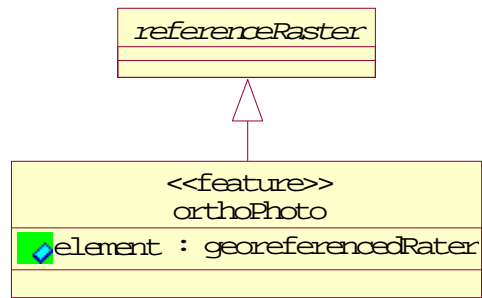
topographicFeature Package



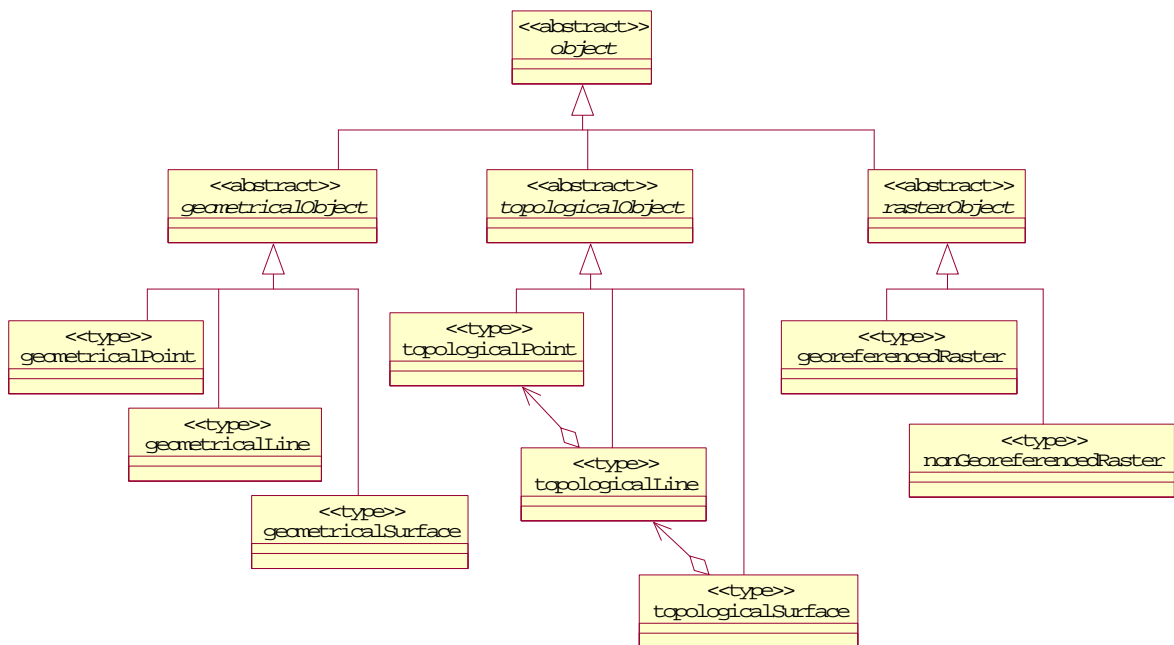
annotation Package



referenceRaster Package



spatialScheme Package



3.3 Definition of Graphics

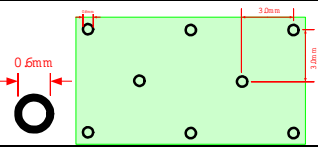

Regulations of graphics of features for displaying data on computer monitor and printing maps are as follows;

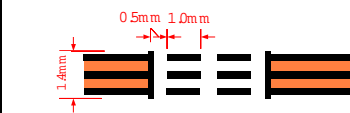
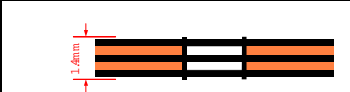

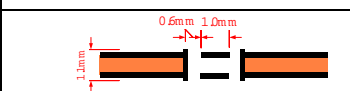
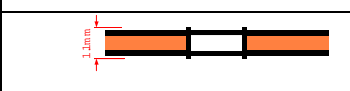

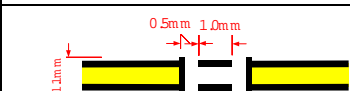
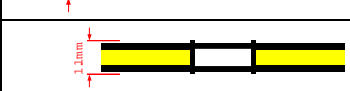

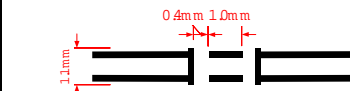
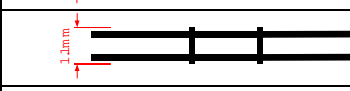
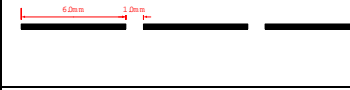
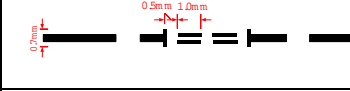
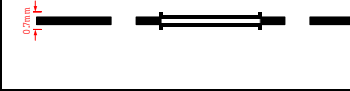
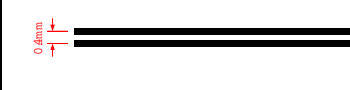
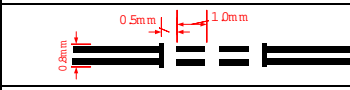
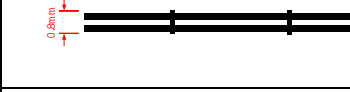
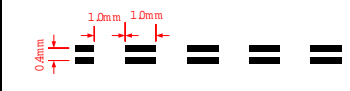
* As a general condition, dimension values in these figures indicate distance between centers of lines (Not outline).


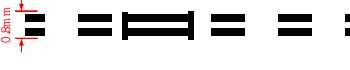


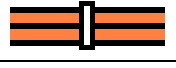
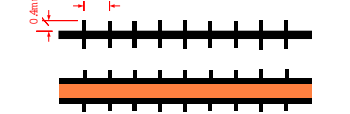
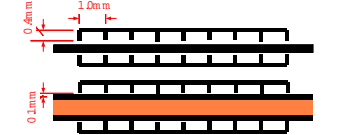

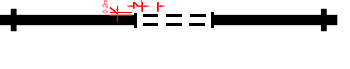
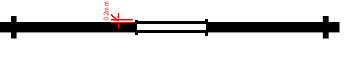
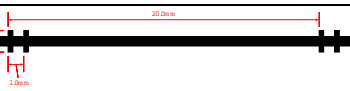
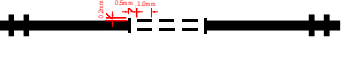
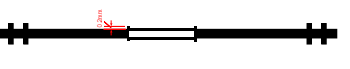
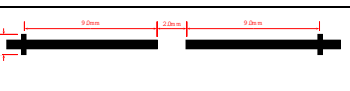

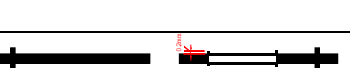
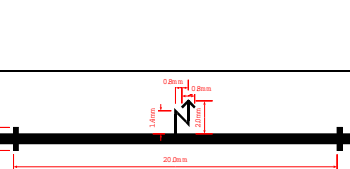
Table 3-1: Graphics

Name of coverage	Name of feature item	Element type	Code of item	graphics	Remarks
extent (10)	state	polygon	1001		color: black width: 0.6, 0.15 Annotation: Font:- Size:-
	nationalPark	polygon	1002		color: black Annotation: Font: gothic Size: 2mm
admin (11)	administrativeArea	polygon	1101		color: black width: 0.4 Annotation: Font: gothic Size: 3mm
landc(20)	cultivated Land	polygon	2001	N/A	-
	grapes	polygon	2002		color: black
	orchard	polygon	2003		color: lightGreen width: 0.10
	riceField	polygon	2004		color: blue width: 0.15
	plantedForest	polygon	2005		color: green, lightGreen width: 0.15 width: 0.10
	deciduous Forest	polygon	2006		color: black, lightGreen width: 0.15 width: 0.10

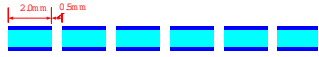

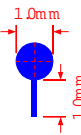
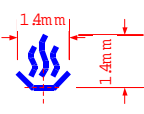
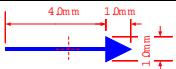
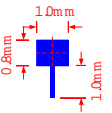
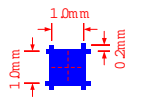

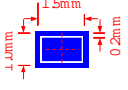

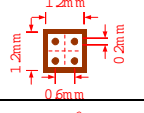
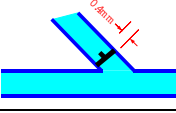

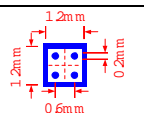
coniferousForest	polygon	2007		color: black, lightGreen width: 0.15 width: 0.10
mixedForest	polygon	2008		color: black, lightGreen width: 0.15 width: 0.10
shrub	polygon	2009		color: green width: 0.15
meadow	polygon	2010		color: black width: 0.15
sands	polygon	2011		color: brown
rock	polygon	2012	N/A	-
clay	polygon	2013	N/A	-
peat	polygon	2014		color: blue, black width: 0.15
lake	polygon	2015		color: blue, lightBlue width: 0.15 Annotation: Font: gothic, italic Size: 2.5mm
marsh	polygon	2016		color: blue width: 0.15 Annotation: Font: gothic, italic Size: 2.5mm
riverSurface	polygon	2017		color: blue, lightBlue width: 0.15
fishpond	polygon	2018		color: blue, lightBlue width: 0.15
publicTransportSite	polygon	2019	N/A	color: black Annotation: Font: roman Size: 1.5mm
railwayFacilitySite	polygon	2020	N/A e.g. Z. st.	color: black Annotation: Font: roman

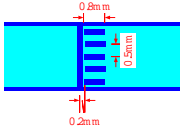
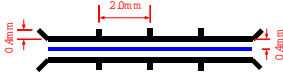
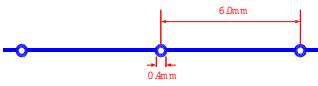
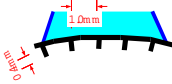
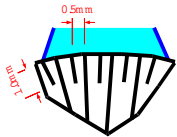
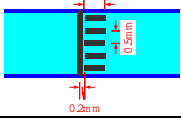
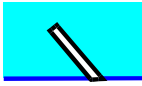
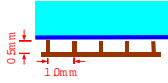
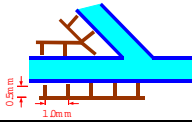
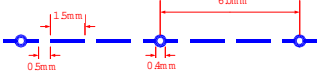



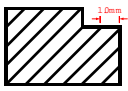
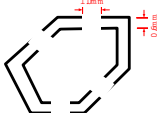

				Size: 1.5mm color: black Annotation: Font: roman Size: 1.5mm	
airportFacilitySite	polygon	2021	N/A		
industrialFacilitySite	polygon	2022	N/A	-	
medicalFacilitySite	polygon	2023	N/A	-	
publicFacilitySite	polygon	2024	N/A	-	
parkSite	polygon	2025		color: black, lightGreen width: 0.15	
schoolSite	polygon	2026	N/A	-	
disposalFacilityLand	polygon	2027	N/A	-	
highBuildUpLand	polygon	2028	N/A	-	
lowBuildUpLand	polygon	2029	N/A	-	
archeologicalSite	polygon	2030	N/A	Annotation: Font: roman Size: 1.5mm	
historicalFacilitySite	polygon	2031	N/A	Annotation: Font: roman Size: 1.5mm	
religiousFacilitySite	polygon	2032	N/A	Annotation: Font: roman Size: 1.5mm	
supplyAndProcessFacilitySite	polygon	2033	N/A	-	
stateInstituteSite	polygon	2034	N/A	-	
marketSite	polygon	2035	N/A	-	
borderCrossingSite	polygon	2036	N/A	Annotation: Font: roman Size: 1.5mm	
waterFacilitySite	polygon	2037	N/A	-	
materialsFuelSite	polygon	2038	N/A	-	
quarrySite	polygon	2039	N/A	-	
mineSite	polygon	2040	N/A	-	
naturalRaritySite	polygon	2041	N/A	-	
roadn(30)	highway	line	3001		color: black, orange width: 0.2

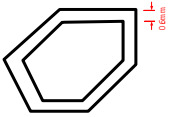

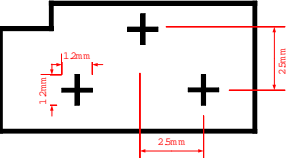
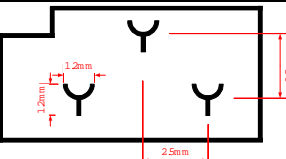
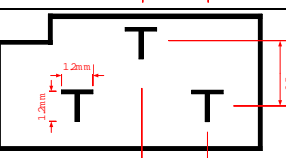
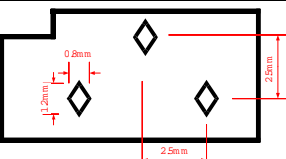

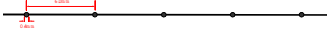
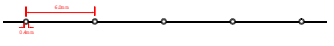
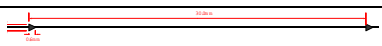
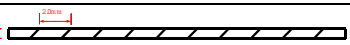
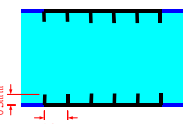

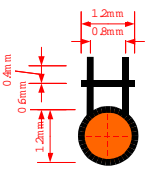
highwayTunnel	line	3002		color: black, white width: 0.2, 0.15
highwayBridge	line	3003		color: black, white width: 0.2, 0.15
mainroad	line	3004		color: black, orange width: 0.2
mainroadTunnel	line	3005		color: black, white width: 0.2, 0.15
mainroadBridge	line	3006		color: black, white width: 0.2, 0.15
regionalroad	line	3007		color: black, yellow width: 0.2
regionalroadTunnel	line	3008		color: black, white width: 0.2, 0.15
regionalroadBridge	line	3009		color: black, white width: 0.2, 0.15
localroad	line	3010		color: black, white width: 0.2
localroadTunnel	line	3011		color: black, white width: 0.2, 0.15
localroadBridge	line	3012		color: black, white width: 0.2, 0.15
unpavedroad	line	3013		color: black width: 0.3
unpavedroadTunnel	line	3014		color: black, white width: 0.3, 0.15
unpavedroadBridge	line	3015		color: black, white width: 0.3, 0.15
street	line	3016		color: black, white width: 0.2
streetTunnel	line	3017		color: black, white width: 0.2, 0.15
streetBridge	line	3018		color: black, white width: 0.2, 0.15
underconstructionroad	line	3019		color: black, white width: 0.2

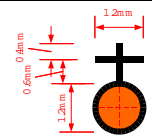
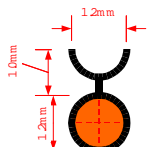
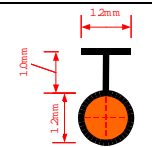
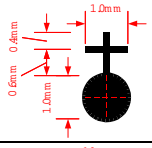
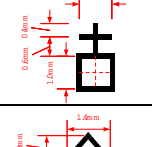
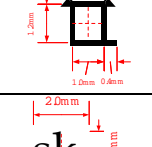
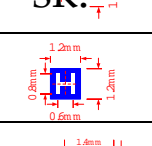
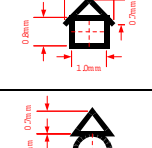
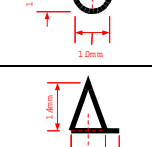
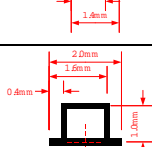
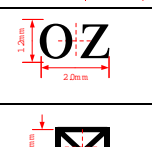
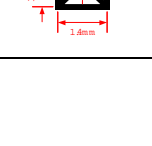
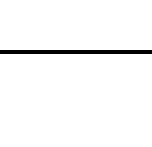

	underconstructionroadTunnel	line	3020		color: black, white width: 0.2, 0.15
	underconstructionroadBridge	line	3021		color: black, white width: 0.2, 0.15
	footpath	line	3022		color: black
	fitpathBridge	line	3023		color: black width: 0.3
roadfpol(31)	tollroadGate	polygon	3101		color: black, white width: 0.15
roadflin(31)	roadEmbankment	line	3121		color: black width: 0.15
	roadCutting	line	3122		color: black width: 0.15
railway(40)	singletrackRailway	line	4001		color: black width: 0.6, 0.3
	singletrackRailwayTunnel	line	4002		color: black, white width: 0.6, 0.3, 0.15
	singletrackRailwayBridge	line	4003		color: black, white width: 0.6, 0.3, 0.15
	doubletrackRailway	line	4004		color: black width: 0.6, 0.3
	doubletrackRailwayTunnel	line	4005		color: black, white width: 0.6, 0.3, 0.15
	doubletrackRailwayBridge	line	4006		color: black, white width: 0.6, 0.3, 0.15
	underconstructionRailway	line	4007		color: black width: 0.6, 0.3
	underconstructionRailwayTunnel	line	4008		color: black, white width: 0.6, 0.3, 0.15
	underconstructionRailwayBridge	line	4009		color: black, white width: 0.6, 0.3, 0.15
	electricalRailway	line	4010		color: black width: 0.6, 0.3, 0.15

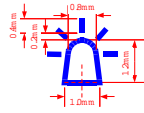
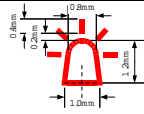
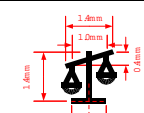
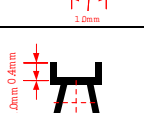
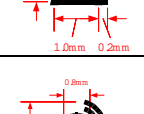
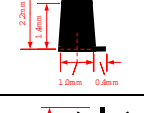
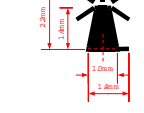
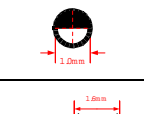
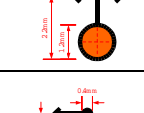
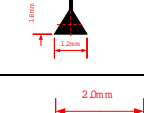
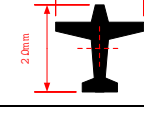
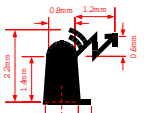
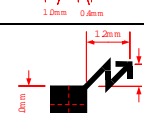
	electrical Railway Tunnel	line	4011		color: black, white width: 0.6, 0.3, 0.15
	electrical Railway Bridge	line	4012		color: black, white width: 0.6, 0.3, 0.15
	narrow track Railway	line	4013		color: black width: 0.3
	abandoned Railway	line	4014		color: black, white width: 0.15
	siding Railway	line	4015		color: black width: 0.15
	cableway	line	4016		color: black width: 0.15
railfpol (41)	railway Station	polygon	4101		color: black, white width: 0.15 Annotation: Font: roman Size: 1.5
railflin (41)	railway Embankment	line	4121		color: black width: 0.15
	railway Cutting	line	4122		color: black width: 0.15
streamn (50)	stream Under 5m	line	5001		color: blue width: 0.15 Annotation: Font: gothic, italic Size: 2mm e.g. <i>Biolska r.</i>
	stream Over 5m	line	5002		color: blue, lightBlue width: 0.15 Annotation: Font: gothic, italic Size: 3mm e.g. <i>Crna r.</i>
	creek With Cliff In Mountain	line	5003		color: blue, brown width: 0.15 Annotation: Font: gothic, italic Size: 1.5mm e.g. <i>Dukavec</i>
	creek With Cliff In Flatland	line	5004		color: blue, brown width: 0.15 Annotation: Font: gothic, italic Size: 1.5mm e.g. <i>Varnica</i>
	penetrate Stream	line	5005		color: blue width: 0.15 Annotation: Font: gothic, italic Size: 1.5mm e.g. <i>Lutur</i> *stream itself is invisible.
	canal Under 5m	line	5006		color: blue width: 0.15 Annotation: Font: gothic, italic Size: 1.5mm









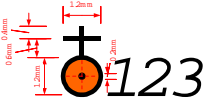
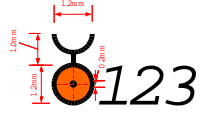
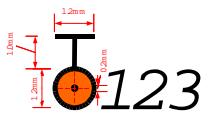

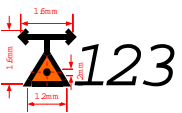

	canalOver 5m	line	5007		color: blue, lightBlue width: 0.15 Annotation: Font: gothic, italic Size:3mm
	seasonalS tream	line	5008		color: blue width: 0.15
waterp nt (51)	spring	point	5101		color: blue width: 0.15 Annotation: Font: gothic, italic Size: 1.5mm
	sourceSal utary	point	5102		color: blue width: 0.15 Annotation: Font: gothic, italic Size: 1.5mm
	watrerflo w	point	5103		color: blue, width: 0.15
	waterTap	point	5104		color: blue width: 0.15
	waterRes ervoir	point	5105		color: blue, width: 0.15
	waterTan kTower	point	5106		color: blue width: 0.15
	pool	point	5107		color: blue, width: 0.15
	hydroPow erStation	point	5108		color: black width: 0.15 Annotation: Font: roman Size: 1.5mm
	sewageW ater	point	5109		color: brown width: 0.15
	waterGate	point	5110		color: black width: 0.2
	pumpStati on	point	5111		color: blue width: 0.15
	waterwor ks	point	5112		color: blue width: 0.15

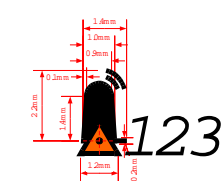
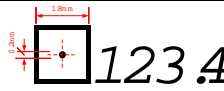
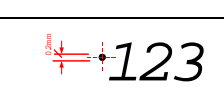
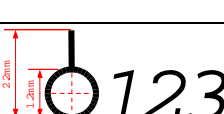
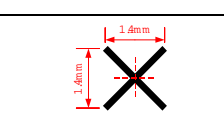
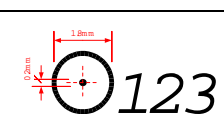
waterlin (51)	waterfall	line	5141		color: blue width: 0.2 Annotation: Font: gothic Size: 1.5mm
	aquaDuct	line	5142		color: black, blue width: 0.2
	waterPipe Line	line	5143		color: blue width: 0.15
	concreteDam	line	5144		color: black width: 0.2
	filledDam	line	5145		color: black, white width: 0.15
	barrage	line	5146		color: black width: 0.2
	jetty	line	5147		color: black, white width: 0.15
	lakeEmbankment	line	5148		color: brown width: 0.15
	riverEmbankment	line	5149		color: brown width: 0.15
	waterPipe LineUnder ground	line	5150		color: blue width: 0.15
smallp l(60)	house	polygon	6001		color: black
	building	polygon	6002		color: black
	factory	polygon	6003		color: black, white width: 0.15 Annotation: Font: roman Size: 1.5mm
	hanger	polygon	6004		color: black, white width: 0.15
	ruins	polygon	6005		color: black, white width: 0.15
	greenhouse	polygon	6006		color: green, white width: 0.15

	fortress	polygon	6007		color: black, white width: 0.15 Annotation: Font: roman Size: 1.5mm
	stadium	polygon	6008		color: black, white width: 0.15
	christianC emetary	polygon	6009		color:black width:0.15
	muslimCe metary	polygon	6010		color:black width:0.15
	jewishCe metary	polygon	6011		color:black width:0.15
	memorial Cemetery	polygon	6012		color:black width:0.15
	silo	polygon	6013		color:black
smalllin (60)	oiliPipeLi ne	line	6041		color:black width: 0.15
	gasPipeLi ne	line	6042		color:black width: 0.15
	powerLin e	line	6043		color:black width: 0.15
	beltConve yer	line	6044		color: black, white width: 0.15
	retaining Wall	line	6045		color:black width: 0.15
	rowOfTre es	line	6046		color: green
smallpn t(60)	churchWi th2domes	point	6061		color: black, orange width: 0.15

churchWithdome	point	6062		color: black, orange width: 0.15
mosuque	point	6063		color: black, orange width: 0.15
synagogu e	point	6064		color: black, orange width: 0.15
chapel	point	6065		color: black width: 0.15
monaster y	point	6066		color: black width: 0.15
castle	point	6067		color: black width: 0.15
school	point	6068		color: black
hospital	point	6069		color: Blue, white width: 0.15
mountain eeringHo use	point	6070		color: black width: 0.15
cabin	point	6071		color: black width: 0.15
monumen t	point	6072		color: black width: 0.15
memorial Panel	point	6073		color: black width: 0.15, 0.2
municipal ityOffice	point	6074		color: black
postOffic e	point	6075		color: black width: 0.15

policeOffice	point	6076		color: blue width: 0.15
fireStation	point	6077		color: red width: 0.15
court	point	6078		color: black width: 0.15
observationTower	point	6079		color: black width: 0.15
factoryChimney	point	6080		color: black width: 0.15
petrolStation	point	6081		color: black width: 0.15
tank	point	6082		color: black width: 0.15
antenna	point	6083		color: black, orange width: 0.15
meteorologicalStation	point	6084		color: black width: 0.15
airport	point	6085		color: black
thermalPowerStation	point	6086		color: black width: 0.15
transformer	point	6087		color: black width: 0.15
isolatedTree	point	6088		color: black width: 0.15

	groupOfTrees	point	6089		color: green width: 0.15
topolin (70)	contour50m	line	7001		color: brown width: 0.15
	contour10m	line	7002		color: brown width: 0.1
	contour5m	line	7003		color: brown width: 0.1
	contour2.5m	line	7004		color: brown
	cliff	line	7005		color: brown width: 0.15
	steepSlope	line	7006		color: brown width: 0.15
	breakLine	line	7007	N/A	Invisible feature on topomap
topopnt (70)	trigonometricPoint	point	7021		color: black, orange width: 0.15 annotation: Font: gothic, italic Size: 1.5mm
	churchAsTrigPoint	point	7022		color: black, orange width: 0.15 annotation: Font: gothic, italic Size: 1.5mm
	mosqueAsTrigPoint	point	7023		color: black, orange width: 0.15 annotation: Font: gothic, italic Size: 1.5mm
	synagogueAsTrigPoint	point	7024		color: black, orange width: 0.15 annotation: Font: gothic, italic Size: 1.5mm
	meteorologicalObservatoryAsTrigPoint	point	7025		color: black, orange width: 0.15 annotation: Font: gothic, italic Size: 1.5mm
	antennaAsTrigPoint	point	7026		color: black, orange width: 0.15 annotation: Font: gothic, italic Size: 1.5mm
	borderPillarAsTrigPoint	point	7027		color: black, orange width: 0.15 annotation: Font: gothic, italic

					Size: 1.5mm
chimney	point	7028		123	color: black, orange width: 0.15 annotation: Font: gothic, italic Size: 1.5mm
benchmark	point	7029		123.4	color: black width: 0.15 annotation: italic, 1.6mm
spotHeight	point	7030		123	color: black width: 0.15 annotation: Font: gothic, italic Size: 1.5mm
borderPillar	point	7031		123	color: black width: 0.15 annotation: italic, annotation: Font: gothic, italic Size: 1.5mm
crossInTheStone	point	7032			color: black width: 0.15 annotation: italic, 1.6mm
photoControlPoint	point	7033		123	color: black width: 0.15 annotation: Font: gothic, italic Size: 1.5mm
gsm (71)	gridSurfaceModel	point	7101	N/A	Invisible feature on topomap
anno (80)	peak	point	8001	e.g. <i>Mali Ruen</i>	color: black annotation: Font: gothic, italic Size: 2.0mm
	ridge	point	8002	e.g. <i>Prevrtentec</i>	color: black annotation: Font: gothic, italic Size: 2.0mm
	mountain Range	point	8003	e.g. <i>Ilinska Planina</i>	color: black annotation: Font: gothic, italic Size: 4.0mm
	mountain Path	point	8004	e.g. Bukovo	color: black annotation: Font: gothic Size: 2.5mm
	canyon	point	8005	e.g. <i>Mariovska Klisura</i>	color: black annotation: Font: gothic, italic Size: 4.0mm
	valley	point	8006	e.g. <i>Jolbrun</i>	color: black annotation: Font: gothic, italic Size: 2.0mm

	villageUnder1000	point	8007	e.g. Klisura	color: black annotation: Font: roman Size: 2.0mm
	villageOver1000	point	8008	e.g. Pirava	color: black annotation: Font: roman Size: 2.5mm
	townUnder10000	point	8009	e.g. VALANDOVO	color: black annotation: Font: roman Size: 2.5mm
	town10000To25000	point	8010	e.g. GEVGELIJA	color: black annotation: Font: roman Size: 3.0mm
	townOver25000	point	8011	e.g. PRELEP	color: black annotation: Font: roman Size: 3.5mm
	adjoinState	point	8012	e.g. ALBANIJA	color: black annotation: Font: gothic, italic Size: 5.0mm
	commonName	point	8013	e.g. Pudono	color: black annotation: Font: gothic Size: 2.0mm
	hill	point	8014	e.g. <i>Rudina</i>	color: black annotation: Font: gothic, italic Size: 2.5mm
	mountain	point	8015	e.g. <i>Boska</i>	color: black annotation: Font: gothic, italic Size: 3.0mm
	roadDirectionAnnotation	point	8016	e.g. Scopje	color: black annotation: Font: gothic Size: 1.5mm
	adjoinMapName	point	8017	e.g. Miravci	color: black annotation: Font: roman Size: 2.0mm
ortho Photo (90)	orthophoto	raster	9001	N/A	-

4 Method of Evaluation and Quality Requirement

4.1 Method of Evaluation

Data Quality Element	Data Quality Sub Element	Name of Measure	Interior / Exterior	Automatic / Manual	Quantitative / Countable	Full / Sampling	Description of Measure
Completeness	Excess	Test A	E	M	Q	S	Manually compare all visible features in the area by referencing ortho photo on prints.
		Test B	E	M	Q	F	Manually check elements which were entered from collected materials.
	Omission	Test A	E	M	Q	S	Manually compare all visible features in the area by referencing ortho photo on prints.
		Test B	E	M	Q	F	Manually check elements which were entered from collected materials.
Logical Consistency	Conceptual Consistency	/	/	/	/	/	/
	Domain Consistency	Test A	I	A	Q	F	Execute check program which examines field name field type, field size, multiplicity, record valid range.
		Test B	I	A	Q	F	Check Dataset extent is only inside map sheet border
	Formal Consistency	Test	I	A	Q	F	Data can be opened by ArcGIS as Coverage format with no opening error. Data can be opened by ArcGIS as GeoTiff format with no opening error (for raster).
Topological Consistency	Test	I	A	Q	F	Execute check program which examines redundant area line and point, selftwisted line and area	
Positional Accuracy	Absolute Exterior Positional Accuracy	/	/	/	/	/	/
	Relative Interior Positional Accuracy	Test	E	M	C	S	Manually compare visible features by referencing ortho photo (or re-observation) at least 100 places on prints.
	Gridded Data Positional Accuracy	/	/	/	/	/	/
Temporal Accuracy	Accuracy of a Time Measurement	/	/	/	/	/	/
	Temporal Consistency	/	/	/	/	/	/
	Temporal Validity	Test	I	A	Q	F	Execute check program which examines temporal validity on attribute field.
Thematic Accuracy	Thematic Classification Correctness	Test	E	M	Q	S	Manually compare all visible features in the area by referencing ortho photo on prints.
	Non Quantitative Attribute Accuracy	Test	E	M	Q	F	Manually check elements which are entered from collected materials.
	Quantitative Attribute Accuracy	/	/	/	/	/	/

Interior: Use only dataset itself

Automatic: Computerized processing,

Quantitative: Calculate percentage of error,

Full: Evaluate all contents

Sampling: Evaluate 10% (Percentage of Area) or more randomly extracted on each map sheet

Exterior: Use other data source or

Manual: Require manual examination

Countable: Count total number of error

4.2 Quality Requirement

4.2.1 extent, admin

Data Quality Element		Requirement	Method
Completeness	Excess	Error: 0%, Comparison between collected information and dataset	Test B
	Omission	Error: 0% Comparison between collected information and dataset	Test B
Logical Consistency	Conceptual Consistency		
	Domain Consistency	Feature item range error: 0%	Test A
		Geographical extent error: 0%	Test B
	Formal Consistency	Error: 0%	Test
Topological Consistency	Error: 0%	Test	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	XY error S.D.: 0.7mm or less Comparison between collected information and dataset	Test
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	Error: 0% (In / Out of Period Range)	Test
Thematic Accuracy	Thematic Classification Correctness	Error: 0% Comparison between collected information and dataset	Test
	Non Quantitative Attribute Accuracy	Error: 0% Comparison between collected information and dataset	Test
	Quantitative Attribute Accuracy		

4.2.2 landc

Data Quality Element		Requirement	Method
Completeness	Excess	Correctness: 2 σ (95.44%)	Test A
	Omission	Correctness: 2 σ (95.44%)	Test A
Logical Consistency	Conceptual Consistency		
	Domain Consistency	Feature item range error: 0%	Test A
		Geographical extent error: 0%	Test B
	Formal Consistency	Error: 0%	Test
Topological Consistency	Error: 0%	Test	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	XY error Max: 0.7mm or less Comparison between ortho photo and dataset	Test
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	Error: 0% (In or Out of Period Range)	Test
Thematic Accuracy	Thematic Classification Correctness	Correctness: 2 σ (95.44%) Comparison between collected information and dataset	Test
	Non Quantitative Attribute Accuracy	Error: 0% Comparison between collected information and dataset	Test
	Quantitative Attribute Accuracy		

4.2.3 roadn, railwayn

Data Quality Element		Requirement	Method
Completeness	Excess	Error: 0%	Test B
	Omission	Error: 0%	Test B
Logical Consistency	Conceptual Consistency		
	Domain Consistency	Feature item range error: 0%	Test A
		Geographical extent error: 0%	Test B
	Formal Consistency	Error: 0%	Test
Topological Consistency	Error: 0%	Test	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	XY error Max: 0.7mm or less Comparison between ortho photo and dataset	Test
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	Error: 0% (In or Out of Period Range)	Test
Thematic Accuracy	Thematic Classification Correctness	Correctness: 2 σ (95.44%) Comparison between collected information and dataset	Test
	Non Quantitative Attribute Accuracy	n/a	n/a
	Quantitative Attribute Accuracy		

4.2.4 streamn

Data Quality Element		Requirement	Method
Completeness	Excess	Error: 0%	Test B
	Omission	Error: 0%	Test B
Logical Consistency	Conceptual Consistency		
	Domain Consistency	Feature item range error: 0%	Test A
		Geographical extent error: 0%	Test B
	Formal Consistency	Error: 0%	Test
Topological Consistency	Error: 0%	Test	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	XY error Max: 0.7mm or less Comparison between ortho photo and dataset	Test
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	Error: 0% (In or Out of Period Range)	Test
Thematic Accuracy	Thematic Classification Correctness	Error: 2 σ (95.44%) Comparison between collected information and dataset	Test
	Non Quantitative Attribute Accuracy	Error: 0% Comparison between collected information and dataset	Test
	Quantitative Attribute Accuracy		

4.2.5 roadfpol, roadflin, railflin, smalllin, smallpnt

Data Quality Element		Requirement	Method
Completeness	Excess	Error: 0%	Test B
	Omission	Error: 0%	Test B
Logical Consistency	Conceptual Consistency		
	Domain Consistency	Feature item range error: 0%	Test A
		Geographical extent error: 0%	Test B
	Formal Consistency	Error: 0%	Test
Topological Consistency	Error: 0%	Test	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	XY error Max: 0.7mm or less Comparison between ortho photo and dataset	Test
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	Error: 0% (In or Out of Period Range)	Test
Thematic Accuracy	Thematic Classification Correctness	Correctness: 2 σ (95.44%) Comparison between collected information and dataset	Test
	Non Quantitative Attribute Accuracy	n/a	n/a
	Quantitative Attribute Accuracy		

4.2.6 railfpol, waterpnt, waterline, smallpol

Data Quality Element		Requirement	Method
Completeness	Excess	Error: 0%	Test B
	Omission	Error: 0%	Test B
Logical Consistency	Conceptual Consistency		
	Domain Consistency	Feature item range error: 0%	Test A
		Geographical extent error: 0%	Test B
	Formal Consistency	Error: 0%	Test
Topological Consistency	Error: 0%	Test	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	XY error Max: 0.7mm or less Comparison between ortho photo and dataset	Test
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	Error: 0% (In or Out of Period Range)	Test
Thematic Accuracy	Thematic Classification Correctness	Correctness: 2 σ (95.44%) Comparison between collected information and dataset	Test
	Non Quantitative Attribute Accuracy	Error: 0% Comparison between collected information and dataset	Test
	Quantitative Attribute Accuracy		

4.2.7 topolin

Data Quality Element		Requirement	Method
Completeness	Excess	Error: 0%	Test B
	Omission	Error: 0%	Test B
Logical Consistency	Conceptual Consistency		
	Domain Consistency	Feature item range error: 0%	Test A
		Geographical extent error: 0%	Test B
	Formal Consistency	Error: 0%	Test
Topological Consistency	Error: 0%	Test	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	Z error Max: 5m or less, Comparison between stereoscopic view and dataset	Test
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	Error: 0% (In or Out of Period Range)	Test
Thematic Accuracy	Thematic Classification Correctness	Error: 0%	Test
	Non Quantitative Attribute Accuracy	n/a	n/a
	Quantitative Attribute Accuracy		

4.2.8 topopnt

Data Quality Element		Requirement	Method
Completeness	Excess	Error: 0%	Test B
	Omission	Error: 0%	Test B
Logical Consistency	Conceptual Consistency		
	Domain Consistency	Feature item range error: 0%	Test A
		Geographical extent error: 0%	Test B
	Formal Consistency	Error: 0%	Test
Topological Consistency	Error: 0%	Test	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	Z error Max: 3.3m or less, Comparison between stereoscopic view or re-observation and dataset	Test
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	Error: 0% (In or Out of Period Range)	Test
Thematic Accuracy	Thematic Classification Correctness	Correctness: 2 σ (95.44%) Comparison between collected information and dataset	Test
	Non Quantitative Attribute Accuracy	Error: 0% Comparison between collected information and dataset	Test
	Quantitative Attribute Accuracy		

4.2.9 gsm

Data Quality Element		Requirement	Method
Completeness	Excess	Error: 0%, Comparison with grid point and dataset	Test B
	Omission	Error: 0%, Comparison with grid point and dataset	Test B
Logical Consistency	Conceptual Consistency		
	Domain Consistency	Feature item range error: 0%	Test A
		Geographical extent error: 0% Extent is minimum rectangle which covers map sheet	Test B
	Formal Consistency	Error: 0%	Test
Topological Consistency	Error: 0%	Test	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	Z error S.D.: 6.12m or less * Re-observe surface by manual or automatic correlation	Test
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	Error: 0% (In or Out of Period Range)	Test
Thematic Accuracy	Thematic Classification Correctness	n/a	n/a
	Non Quantitative Attribute Accuracy	n/a	n/a
	Quantitative Attribute Accuracy		

*1/1,000 of flight height as expected height accuracy for automatic correlation

4.2.10 anno

Data Quality Element		Requirement	Method
Completeness	Excess	Error: 0%, Comparison between collected information and dataset	Test A
	Omission	Error: 0% Comparison between collected information and dataset	Test A
Logical Consistency	Conceptual Consistency		
	Domain Consistency	Feature item range error: 0%	Test A
		Geographical extent error: 0%	Test B
	Formal Consistency	Error: 0%	Test
Topological Consistency	Error: 0%	Test	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	n/a	n/a
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	Error: 0% (In or Out of Period Range)	Test
Thematic Accuracy	Thematic Classification Correctness	Correctness: 2σ (95.44%)	Test
	Non Quantitative Attribute Accuracy	Error: 0%	Test
	Quantitative Attribute Accuracy		

4.2.11 raster

Data Quality Element		Requirement	Method
Completeness	Excess	n/a	n/a
	Omission	n/a	n/a
Logical Consistency	Conceptual Consistency		
	Domain Consistency	n/a	n/a
		Geographical extent error: 0%	Test B
	Formal Consistency	Error: 0% Come with correct resolution and coordinate system information	Test
Topological Consistency	n/a	n/a	
Positional Accuracy	Absolute Exterior Positional Accuracy		
	Relative Interior Positional Accuracy	XY error Max.: 0.7mm or less Comparison between ortho photo and dataset	Test
	Gridded Data Positional		
Temporal Accuracy	Accuracy of a Time Measurement		
	Temporal Consistency		
	Temporal Validity	n/a	n/a
Thematic Accuracy	Thematic Classification Correctness	n/a	n/a
	Non Quantitative Attribute Accuracy	n/a	n/a
	Quantitative Attribute Accuracy		

5 Metadata

Macedonia Metadata profile (MMP2.0) shall be adopted for metadata of the product. Macedonia metadata profile is based on Japan Metadata profile (JMP 2.0).

Necessary elements are extracted from full profile of JMP2.0.

xml metadata file refer xml scheme on to Japan Geographic Survey Insititute.

(<http://zgate.gsi.go.jp/jmp/JMP20.xsd>)

5.1 Unit of Metadata

Metadata file shall be drobided for 25,000 dataset, and each mapsheet.

5.2 Metadata profile

Metadata profile and there explanations are following;

(M) means mandatory element, (O) means optional element.

<MD_Metadata>
<fileIdentifier>(O): unique identifier as a text. Use this strongly recommended
<langage><isoCode>(M): choose code from iso language codelist English is "eng"
<charecterSet>(M): choose character encoding method from iso codelist utf8 is "004".
<parentIdentifier>(O): define parent metadata name. "macedonia25000series"
<contact>(M): information for contact.
<organisationName>(M)
<contactInfo>(O)
<phone>(O)
<voice>(O)
<facsimile>(O)
<address>(O)
<deliveryPoint>(O)
<electronicMailAddress>(O)
<onlineResource>(O)
<linkage>(M): Describe URL
<role>(O): "010" means publisher
<dataStamp>(M): date that created this file
<metadataStandardName>(O): MMP
<metadataStandardVersion>(O): 2.0
<referenceSystemInfo><MD_ReferenceSystem>(O)
<referenceSystemIdentifier>(M)
<authority>(O): name of the document
<title>(M): name of the title
<date>(M)
<date>(M)
<dateType>(M): "003" is reviced date
<code>(M): "State Coordinate System(Bessel)"
<identificationInfo><MD_DataIdentification>(M)
<citation>(M): data source that are used for this product
<title>(M): name of citation data source
<date>
<date>
<dateType>(M): "001" is created date
<abstract>(M): free text
<purpose>(O): free text
<status>(O): "001" means completed.
<discriptiveKeywords><MD_Keywords>(O)
<keyword>(M) : key word for data classification
<type>(O): "002" means lacion
<resourceConstraints><MD_Constraints>(M)
<useLimitation>(M): free text
<spatialRepresentationType>(O): "001" means vector.
<spatialResolution>(O)
<equivalmtScale>(O)
<denominator>(M)
<spatialResolution>(O)

<distance>(O)
<value>(M)
<uom>(M): unit of measure
<UnitOfMeasure>(M)
<mane>(M)
<measurementType>(O): length, height, width, distance and so on
<language><isoCode>(M): "eng" means English
<characterSet>(M): choose character encoding method from iso codelist utf8 is "004".
<topicCategory>(M): "019" means public project and communication
<extent>(M)
<description>(O): summary of extent of dataset
<EX_BoundingPolygon>(O)
<extentTypeCode>(O)
<extentReferenceSystem>(M)
<authority>(M): name of the document
<title>(M): name of the title
<date>(M)
<date>(M)
<dateType>(M): "003" is reviced date
<code>(M): "State Coordinate System(Bessel)"
<polygon>(M)
<polygon><exterior><linearRing><coordinates>(M):polygon node coordinates.
<EX_GeographicBoundingBox>
<extentTypeCode>(O)
<extentReferenceSystem>(M)
<authority>(M): name of the document
<title>(M): name of the title
<date>(M)
<date>(M)
<dateType>(M): "003" is reviced date
<code>(M): "State Coordinate System(Bessel)"
<westBoundLongitude>(M): latitude/longitude in decimal
<eastBoundLongitude>(M): latitude/longitude in decimal
<southBoundLatitude>(M): latitude/longitude in decimal
<northBoundLatitude>(M): latitude/longitude in decimal
<distributionInfo><MD_Distribution>(O)
<distributionFormast><MD_Format>(M): information of data format
<name>(M): name of data format
<version>(M): version of data format

5.3 Sample metadata

Spatial Dataset of The data Specification is applied for various purposes as Macedonia national

```
<?xml version="1.0" encoding="UTF-8"?>
<MD_Metadata xsi:schemaLocation="http://zgate.gsi.go.jp/ch/jmp/
http://zgate.gsi.go.jp/ch/jmp/JMP20.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns="http://zgate.gsi.go.jp/ch/jmp/" xmlns:jmp20="http://zgate.gsi.go.jp/ch/jmp/">
  <identificationInfo>
    <MD_DataIdentification>
      <citation>
        <title>1:40,000 Panchromatic Aerial Phtography</title>
        <date>
          <date>2004-08-01</date>
          <dateType>001</dateType>
        </date>
      </citation>
      <abstract>Level 25, 000 Spatial Database Mapsheet 731-1-2</abstract>
      <purpose>For Topographic map scale 1:25,000, and for GIS application purpose.</purpose>
      <status>001</status>
      <resourceConstraints>
        <MD_Constraints>
          <useLimitation>Use only for not commecial purpose</useLimitation>
        </MD_Constraints>
      </resourceConstraints>
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          <keyword>Grup~in</keyword>
          <type>002</type>
        </MD_Keywords>
      </descriptiveKeywords>
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        </equivalentScale>
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              <measurementType>Resolution</measurementType>
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        <isoCode>eng</isoCode>
      </language>
      <characterSet>004</characterSet>
      <topicCategory>019</topicCategory>
      <extent>
        <description>Extent of mapsheet no.731-1-2Grup~in</description>
        <geographicElement>
          <EX_BoundingPolygon>
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<extentTypeCode>1</extentTypeCode>
<extentReferenceSystem>
  <authority>
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    <date>
      <date>2005-02-09</date>
      <dateType>003</dateType>
    </date>
  </authority>
  <code>State Coordinate System (Bessel)</code>
</extentReferenceSystem>
<polygon>
  <polygon>
    <exterior>
      <LinearRing>
        <coordinates>510354.06,4650710.91 520708.13,4650733.58 520748.61,463652.47
510374.30,4636829.80</coordinates>
      </LinearRing>
    </exterior>
  </polygon>
</EX_BoundingPolygon>
<EX_GeographicBoundingBox>
  <extentTypeCode>1</extentTypeCode>
  <extentReferenceSystem>
    <authority>
      <title>Macedonia 1:25,000 Spatial Database Data Specification Rev.0.1</title>
      <date>
        <date>2005-02-09</date>
        <dateType>003</dateType>
      </date>
    </authority>
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  </extentReferenceSystem>
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  <eastBoundLongitude>21.250</eastBoundLongitude>
  <southBoundLatitude>41.875</southBoundLatitude>
  <northBoundLatitude>42.000</northBoundLatitude>
</EX_GeographicBoundingBox>
</geographicElement>
</extent>
</MD_DataIdentification>
</identificationInfo>
<distributionInfo>
  <MD_Distribution>
    <distributionFormat>
      <MD_Format>
        <name>Arc-GIS Coverage</name>
        <version>n/a</version>
      </MD_Format>
    </distributionFormat>
  </MD_Distribution>
</distributionInfo>
<referenceSystemInfo>
  <MD_ReferenceSystem>
    <referenceSystemIdentifier>
      <authority>
        <title>Macedonia 1:25,000 Spatial Database Data Specification Rev.0.1</title>

```

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  <date>2005-02-09</date>
  <dateType>003</dateType>
</date>
</authority>
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</referenceSystemIdentifier>
</MD_ReferenceSystem>
</referenceSystemInfo>
<fileIdentifier>731-1-2Grup~in</fileIdentifier>
<language>
  <isoCode>eng</isoCode>
</language>
<characterSet>004</characterSet>
<parentIdentifier>macedonia25000series</parentIdentifier>
<contact>
  <organisationName>State Authority for Geodetic Works</organisationName>
  <contactInfo>
    <phone>
      <voice>+389-2-317-0100</voice>
      <facsimile>+389-2-317-1668</facsimile>
    </phone>
    <address>
      <deliveryPoint>Ul. Trifun Hadzi Janev br.4 1 000 Skopje, Macedonia</deliveryPoint>
      <electronicMailAddress>dzgr@katastar.gov.mk</electronicMailAddress>
    </address>
    <onlineResource>
      <linkage>http://www.katastar.gov.mk</linkage>
    </onlineResource>
  </contactInfo>
  <role>010</role>
</contact>
<dateStamp>2005-05-16</dateStamp>
<metadataStandardName>MMP</metadataStandardName>
<metadataStandardVersion>2.0</metadataStandardVersion>
</MD_Metadata>
```

6 Annex.

6.1 Conversion Table for other file format

For data conversion between Coverage and DXF or DGN, Rules for graphics and attributes are defined as following tables;

Table 6-1: Exchange rule between Coverage and DXF or DGN

File format	Rule
AutoCAD DXF	<ul style="list-style-type: none"> <input type="checkbox"/> Format version: DXF 11 <input type="checkbox"/> Applicable elementtype: Point, Line, Linestring, Text <input type="checkbox"/> Thematic Attributes: Not applicable <input type="checkbox"/> Text: Macedonian (English not applicable) <input type="checkbox"/> Attribute for exchange: "AutoCAD-Layer" <input type="checkbox"/> Color: Displaying <input type="checkbox"/> Width: Displaying <input type="checkbox"/> Handling of Polygon feature: Polygon feature will be boundary linestring element and seed point element. <input type="checkbox"/> Graphics color shall be applied color of element as well. <input type="checkbox"/> Unit of File: Every coverage
Microstation DGN	<ul style="list-style-type: none"> <input type="checkbox"/> Format version: Under Microstation/J <input type="checkbox"/> Applicable elementtype: Point, Line, Linestring, Graphic Cell, Text <input type="checkbox"/> Thematic Attributes: Not applicable <input type="checkbox"/> Text: Macedonian (English not applicable) <input type="checkbox"/> Attribute for exchange: "Level" <input type="checkbox"/> Color: Displaying (Use "Default color table") <input type="checkbox"/> Width: follow generic rule (See 1.5.2) <input type="checkbox"/> Handling of Polygon feature: Polygon feature will be boundary linestring element and seed point element. <input type="checkbox"/> Graphics color shall be applied color of element as well (use default color table). <input type="checkbox"/> Unit of File: Every coverage

Table 6-2: Exchange table between Coverage and DXF or DGN

Name of Coverage	name of feature Item	dxf	dgn	remarks
extent(10)	state	Type: Text Layer:1001	Type: Text Lv:1	boundary Type:Line Layer: 0 (dxf) Lv: 63 (dgn)
	nationalPark	Type: Text Layer:1002	Type: Text Lv:2	
admin(11)	administrativArea	Type: Text Layer:1101	Type: Text Lv:1	boundary Type:Line Layer: 0 (dxf) Lv: 63 (dgn)
landc(20)	cultivatedLand	Type:Point Layer:2001	Type:Cell (2001) Lv:1	boundary Type:Line Layer: 0 (dxf) Lv: 63 (dgn)
	grapes	Type:Point Layer:2002	Type:Cell (2002) Lv:2	
	orchard	Type:Point Layer:2003	Type:Cell (2003) Lv:3	
	riceField	Type:Point	Type:Cell (2004)	

	Layer:2004	Lv:4
plantedForest	Type:Point Layer:2005	Type:Cell (2005) Lv:5
deciduousForest	Type:Point Layer:2006	Type:Cell (2006) Lv:6
coniferousForest	Type:Point Layer:2007	Type:Cell (2007) Lv:7
mixedForest	Type:Point Layer:2008	Type:Cell (2008) Lv:8
shurb	Type:Point Layer:2009	Type:Cell (2009) Lv:9
meadow	Type:Point Layer:2010	Type:Cell (2010) Lv:10
sands	Type:Point Layer:2011	Type:Cell (2011) Lv:11
rock	Type:Point Layer:2012	Type:Cell (2012) Lv:12
clay	Type:Point Layer:2013	Type:Cell (2013) Lv:13
peat	Type:Point Layer:2014	Type:Cell (2014) Lv:14
lake	Type:Point, Text Layer:2015	Type:Cell (2015), Text Lv:15
marsh	Type:Point, Text Layer:2016	Type:Cell (2016), Text Lv:16
riverSurface	Type:Point Layer:2017	Type:Cell (2017) Lv:17
fishPond	Type:Point Layer:2018	Type:Cell (2018) Lv:18
publicTransportSite	Type:Point, Text Layer:2019	Type:Cell (2019), Text Lv:19
railwayFacilitySite	Type:Point, Text Layer:2020	Type:Cell (2020), Text Lv:20
airportFacilitySite	Type:Point Layer:2021	Type:Cell (2021) Lv:21
industrialFacilitySite	Type:Point Layer:2022	Type:Cell (2022) Lv:22
medicalFacilitySite	Type:Point Layer:2023	Type:Cell (2023) Lv:23
publicFacilitySite	Type:Point Layer:2024	Type:Cell (2024) Lv:24
parkSite	Type:Point Layer:2025	Type:Cell (2025) Lv:25
schoolSite	Type:Point Layer:2026	Type:Cell (2026) Lv:26
disposalFacilityLand	Type:Point Layer:2027	Type:Cell (2027) Lv:27
highBuildUpLand	Type:Point Layer:2028	Type:Cell (2028) Lv:28
lowBuildUpLand	Type:Point Layer:2029	Type:Cell (2029) Lv:29
archeologicalSite	Type:Point, Text	Type:Cell (2030),

	Layer:2030	Text Lv:30	
historicalFacilitySite	Type:Point, Text Layer:2031	Type:Cell (2031), Text Lv:31	
religiousFacilitySite	Type:Point, Text Layer:2032	Type:Cell (2032), Text Lv:32	
supplyAndProcessFacilitySite	Type:Point Layer:2033	Type:Cell (2033) Lv:33	
stateInstituteSite	Type:Point Layer:2034	Type:Cell (2034) Lv:34	
marketSite	Type:Point Layer:2035	Type:Cell (2035) Lv:35	
borderCrossingSite	Type:Point, Text Layer:2036	Type:Cell (2036), Text Lv:36	
waterFacilitySite	Type:Point Layer:2037	Type:Cell (2037) Lv:37	
materialFuelSite	Type:Point Layer:2038	Type:Cell (2038) Lv:38	
quarrySite	Type:Point Layer:2039	Type:Cell (2039) Lv:39	
mineSite	Type:Point Layer:2040	Type:Cell (2040) Lv:40	
naturalRaritySite	Type:Point Layer:2041	Type:Cell (2041) Lv:41	
roadn (30)	highway	Type:LineString Layer:3001	Type:LineString Lv:1
	highwayTunnel	Type:LineString Layer:3002	Type:LineString Lv:2
	highwayBridge	Type:LineString Layer:3003	Type:LineString Lv:3
	mainroad	Type:LineString Layer:3004	Type:LineString Lv:4
	mainroadTunnel	Type:LineString Layer:3005	Type:LineString Lv:5
	mainroadBridge	Type:LineString Layer:3006	Type:LineString Lv:6
	regionalroad	Type:LineString Layer:3007	Type:LineString Lv:7
	regionalroadTunnel	Type:LineString Layer:3008	Type:LineString Lv:8
	regionalroadBridge	Type:LineString Layer:3009	Type:LineString Lv:9
	localroad	Type:LineString Layer:3010	Type:LineString Lv:10
	localroadTunnel	Type:LineString Layer:3011	Type:LineString Lv:11
	localroadBridge	Type:LineString Layer:3012	Type:LineString Lv:12
	unpavedroad	Type:LineString Layer:3013	Type:LineString Lv:13
	unpavedroadTunnel	Type:LineString Layer:3014	Type:LineString Lv:14
	unpavedroadBridge	Type:LineString	Type:LineString

		Layer:3015	Lv:15	
	street	Type:LineString Layer:3016	Type:LineString Lv:16	
	streetTunnel	Type:LineString Layer:3017	Type:LineString Lv:17	
	streetBridge	Type:LineString Layer:3018	Type:LineString Lv:18	
	underconstructionroad	Type:LineString Layer:3019	Type:LineString Lv:19	
	underconstructionroadTunnel	Type:LineString Layer:3020	Type:LineString Lv:20	
	underconstructionroadBridge	Type:LineString Layer:3021	Type:LineString Lv:21	
	footpath	Type:LineString Layer:3022	Type:LineString Lv:22	
	footpathBridge	Type:LineString Layer:3023	Type:LineString Lv:23	
roadfpol (31)	tollroadGate	Type:LineString Layer:3101	Type:LineString Lv:1	Elements must be closed
roadflin (31)	roadEmbankment	Type:LineString Layer:3121	Type:LineString Lv:21	-
	roadCutting	Type:LineString Layer:3122	Type:LineString Lv:22	
railwayn (40)	singletrackRailway	Type:LineString Layer:4001	Type:LineString Lv:1	-
	singletrackRailwayTunnel	Type:LineString Layer:4002	Type:LineString Lv:2	
	singletrackRailwayBridge	Type:LineString Layer:4003	Type:LineString Lv:3	
	doubletrackRailway	Type:LineString Layer:4004	Type:LineString Lv:4	
	doubletrackRailwayTunnel	Type:LineString Layer:4005	Type:LineString Lv:5	
	doubletrackRailwayBridge	Type:LineString Layer:4006	Type:LineString Lv:6	
	underconstructionRailway	Type:LineString Layer:4007	Type:LineString Lv:7	
	underconstructionRailwayTunnel	Type:LineString Layer:4008	Type:LineString Lv:8	
	underconstructionRailwayBridge	Type:LineString Layer:4009	Type:LineString Lv:9	
	electricalRailway	Type:LineString Layer:4010	Type:LineString Lv:10	
	electricalRailwayTunnel	Type:LineString Layer:4011	Type:LineString Lv:11	
	electricalRailwayBridge	Type:LineString Layer:4012	Type:LineString Lv:12	
	narrowtrackRailway	Type:LineString Layer:4013	Type:LineString Lv:13	
	abandonedRailway	Type:LineString Layer:4014	Type:LineString Lv:14	
	sidingRailway	Type:LineString Layer:4015	Type:LineString Lv:15	
cableway	Type:LineString Layer:4016	Type:LineString Lv:16		
railfpol(41)	railwayStation	Type:LineString	Type:LineString	Elements must be

		Layer:4101	Lv:1	closed
raiflin(41)	railwayEmbankment	Type:LineString Layer:4121	Type:LineString Lv:21	-
	railwayCutting	Type:LineString Layer:4122	Type:LineString Lv:22	
streamn(50)	streamUnder5m	Type:LineString, Text Layer:5001	Type:LineString, Text Lv:1	Origin of text must be exactly on one of linestring node.
	streamOver5m	Type:LineString, Text Layer:5002	Type:LineString, Text Lv:2	
	creekWithCliffInMountain	Type:LineString, Text Layer:5003	Type:LineString, Text Lv:3	
	creekWithCliffInFlatland	Type:LineString, Text Layer:5004	Type:LineString, Text Lv:4	
	penetrateStream	Type:LineString, Text Layer:5005	Type:LineString, Text Lv:5	
	canalUnder5m	Type:LineString, Text Layer:5006	Type:LineString,Text Lv:6	
	canalOver5m	Type:LineString, Text Layer:5007	Type:LineString, Text Lv:7	
	seasonalStream	Type:LineString, Text Layer:5008	Type:LineString, Text Lv:8	
waterpnt(51)	spring	Type:Point, Text Layer:5101	Type:Cell (5101), Text Lv:1	Origin of text must be exactly on the point.
	sourceSalutary	Type:Point, Text Layer:5102	Type:Cell (5102), Text Lv:2	
	watrerflow	Type:Text Layer:5103	Type: Cell (5103) Lv:3	
	waterTap	Type:Text Layer:5104	Type:Cell (5104) Lv:4	
	waterReservoir	Type:Text Layer:5105	Type:Cell (5105) Lv:5	
	waterTankTower	Type:Text Layer:5106	Type:Cell (5106) Lv:6	
	pool	Type:Text Layer:5107	Type:Cell (5107) Lv:7	
	hydroPowerStation	Type:Text Layer:5108	Type:Cell (5108), Text Lv:8	
	sewageWater	Type:Text Layer:5109	Type:Cell (5109) Lv:9	
	waterGate	Type:Text Layer:5110	Type:Cell (5110) Lv:10	
	pumpStation	Type:Text Layer:5111	Type:Cell (5111) Lv:11	
	waterWorks	Type:Text Layer:5112	Type:Cell (5112) Lv:12	

waterlin (51)	waterfall	Type:LineString, Text Layer:5141	Type:LineString, Text Lv:41	Origin of text must be exactly on one of linestring node.
	aquaDuct	Type:LineString Layer:5142	Type:LineString Lv:42	-
	waterPipeLine	Type:LineString Layer:5143	Type:LineString Lv:43	
	concreteDam	Type:LineString Layer:5144	Type:LineString Lv:44	
	filledDam	Type:LineString Layer:5145	Type:LineString Lv:45	
	barrage	Type:LineString Layer:5146	Type:LineString Lv:46	
	jetty	Type:LineString Layer:5147	Type:LineString Lv:47	
	lakeEmbankment	Type:LineString Layer:5148	Type:LineString Lv:48	
	riverEmbankment	Type:LineString Layer:5149	Type:LineString Lv:49	
	waterPipeLineUnder ground	Type:LineString Layer:5150	Type:LineString Lv:50	
	smallpol (60)	house	Type:LineString Layer:6001	Type:LineString Lv:1
building		Type:LineString Layer:6002	Type:LineString Lv:2	
factory		Type:LineString Layer:6003	Type:LineString, Text Lv:3	
hanger		Type:LineString Layer:6004	Type:LineString Lv:4	
ruins		Type:LineString Layer:6005	Type:LineString Lv:5	
greenHouse		Type:LineString Layer:6006	Type:LineString Lv:6	
fortress		Type:LineString Layer:6007	Type:LineString ,Text Lv:7	
stadium		Type:LineString Layer:6008	Type:LineString Lv:8	
christianCemetery		Type:LineString Layer:6009	Type:LineString Lv:9	
muslimCemetery		Type:LineString Layer:6010	Type:LineString Lv:10	
jewishCemetery		Type:LineString Layer:6011	Type:LineString Lv:11	
memorialCemetery		Type:LineString Layer:6012	Type:LineString Lv:12	
silo		Type:LineString Layer:6013	Type:LineString Lv:13	
smalllin (60)		oilipeLine	Type:LineString Layer:6041	Type:LineString Lv:21
	gasPipeLine	Type:LineString Layer:6042	Type:LineString Lv:22	
	powerLine	Type:LineString Layer:6043	Type:LineString Lv:23	

	beltConveyer	Type:LineString Layer:6044	Type:LineString Lv:24	
	retainingWall	Type:LineString Layer:6045	Type:LineString Lv:25	
	rowOfTrees	Type:LineString Layer:6046	Type:LineString Lv:26	
smallpnt (60)	churchWith2domes	Type:Point Layer:6061	Type:Cell (6061) Lv:31	-
	churchWith1dome	Type:Point Layer:6062	Type:Cell (6062) Lv:32	
	mosuque	Type:Point Layer:6063	TypeCell (6063) Lv:33	
	synagogue	Type:Point Layer:6064	Type:Cell (6064) Lv:34	
	chapel	Type:Point Layer:6065	Type:Cell (6065) Lv:35	
	monastery	Type:Point Layer:6066	Type:Cell (6066) Lv:36	
	castle	Type:Point Layer:6067	Type:Cell (6067) Lv:37	
	school	Type:Point Layer:6068	Type:Cell (6068) Lv:38	
	hospital	Type:Point Layer:6069	Type:Cell (6069) Lv:39	
	mountaineeringHous e	Type:Point Layer:6070	Type:Cell (6070) Lv:40	
	cabin	Type:Point Layer:6071	Type:Cell (6071) Lv:41	
	monument	Type:Point Layer:6072	Type:Cell (6072) Lv:42	
	memorialPanel	Type:Point Layer:6073	Type:Cell (6073) Lv:43	
	municipalityOffice	Type:Point Layer:6074	Type:Cell (6074) Lv:44	
	postOffice	Type:Point Layer:6075	Type:Cell (6075) Lv:45	
	policeOffice	Type:Point Layer:6076	Type:Cell (6076) Lv:46	
	fireStation	Type:Point Layer:6077	Type:Cell (6077) Lv:47	
	court	Type:Point Layer:6078	Type:Cell (6078) Lv:48	
	observationTower	Type:Point Layer:6079	Type:Cell (6079) Lv:49	
	factoryChimney	Type:Point Layer:6080	Type:Cell (6080) Lv:50	
	petrolStation	Type:Point Layer:6081	Type:Cell (6081) Lv:51	
	tank	Type:Point Layer:6082	Type:Cell (6082) Lv:52	
	antenna	Type:Point Layer:6083	Type:Cell (6083) Lv:53	
meteorologicalStatio n	Type:Point Layer:6084	Type:Cell (6084) Lv:54		
airport	Type:Point Layer:6085	Type:Cell (6085) Lv:55		

	thermalPowerStation	Type:Point Layer:6086	Type:Cell (6086) Lv:56	
	transformer	Type:Point Layer:6087	Type:Cell (6087) Lv:57	
	isolatedTree	Type:Point Layer:6088	Type:Cell (6088) Lv:58	
	groupOfTrees	Type:Point Layer:6089	Type:Cell (6089) Lv:59	
topolin (70)	contour50m	Type:LineString Layer:7001	Type:LineString Lv:1	-
	contour10m	Type:LineString Layer:7002	Type:LineString Lv:2	
	contour5m	Type:LineString Layer:7003	Type:LineString Lv:3	
	contour2.5m	Type:LineString Layer:7004	Type:LineString Lv:4	
	cliff	Type:LineString Layer:7005	Type:LineString Lv:5	
	steepSlope	Type:LineString Layer:7006	Type:LineString Lv:6	
	breakLine	Type:LineString Layer:7007	Type:LineString Lv:7	
topopnt (70)	trigonometricPoint	Type:Text Layer7021	Type:Text Lv:21	No attribute except name.
	churchAsTrigPoint	Type:Text Layer7022	Type:Text Lv:22	
	mousqueAsTrigPoint	Type:Text Layer7023	Type:Text Lv:23	
	synagogueAsTrigPoint	Type:Text Layer7024	Type:Text Lv:24	
	meteologicalObservatoryAsTrigPoint	Type:Text Layer7025	Type:Text Lv:25	
	antennaAsTrigPoint	Type:Text Layer7026	Type:Text Lv:26	
	borderPillarAsTrigPoint	Type:Text Layer7027	Type:Text Lv:27	
	chimneyAsTrigPoint	Type:Text Layer7028	Type:Text Lv:28	
	benchMark	Type:Text Layer7029	Type:Text Lv:29	
	spotHeight	Type:Text Layer7030	Type:Text Lv:30	
	borderPillar	Type:Text Layer7031	Type:Text Lv:31	
	crossInTheStone	Type:Text Layer7032	Type:Text Lv:32	
	photoControlPoint	Type:Text Layer7033	Type:Text Lv:33	
gsm (71)	gridSurfaceModel	type:Point Layer:7101	Type:Point Lv:1	
anno (80)	peak	Type:Text Layer:8001	Type:Text Lv:1	-
	ridge	Type:Text Layer:8002	Type:Text Lv:2	
	mountainRange	Type:Text Layer:8003	Type:Text Lv:3	

	mountainPath	Type:Text Layer:8004	Type:Text Lv:4	
	canyon	Type:Text Layer:8005	Type:Text Lv:5	
	valley	Type:Text Layer:8006	Type:Text Lv:6	
	villageUnder1000	Type:Text Layer:8007	Type:Text Lv:7	
	villageOver1000	Type:Text Layer:8008	Type:Text Lv:8	
	townUnder10000	Type:Text Layer:8009	Type:Text Lv:9	
	town10000To25000	Type:Text Layer:8010	Type:Text Lv:10	
	townOver25000	Type:Text Layer:8011	Type:Text Lv:11	
	adjoinState	Type:Text Layer:8012	Type:Text Lv:12	
	commonName	Type:Text Layer:8013	Type:Text Lv:13	
	hill	Type:Text Layer:8014	Type:Text Lv:14	
	mountain	Type:Text Layer:8015	Type:Text Lv:15	
	roadDirectionAnnotation	Type:Text Layer:8016	Type:Text Lv:16	
	adjoinMapName	Type:Text Layer:8017	Type:Text Lv:17	
raster (90)	orthophoto	N/A	N/A	-

6.2 Output for Publication

Data Generated for publication is as follows. Generated data must be configured by collect graphics with the specification on software used for publication. Feature item "gridSurfaceModel" and "orthoPhoto" are not part of publication data.

Table 6-2: Specification for Publication

Category	Description	Remarks
Data format	DXF ver.11	-
Component of File	Same as Coverage	19 files per mapsheet
Feature item	Separated by Layer	-
Element type (Point)	No specification of color and size defined.No symbol applied	Follow graphics regurations for specific expressions.
Element type (Line)	No specification of color line stype applied.	Follow graphics regurations for specific expressions.
Element type (Polygon□)	individual polygon	Follow graphics regurations for specific expressions.
Element type (Text)	Font	Windows true type font is applied
Legend	Not included	-

Table 6-3: Structure of data files

	Name of DXF	Description of DXF
1	extent	Polygon data of extent, Its text data of annotation
2	admin	Polygon data of administratve Area. Its text data of annotation
3	landc	Polygon data of land classification Its text data of annotation
4	roadn	Line data of road network Its text data of annotation
5	roadfpol	Polygon data of road feature
6	roadflin	Line data of road feature
7	railwayn	Line data of railway network Its text data of annotation
8	railfpol	Polygon data of railway feature, Its text data of annotation
9	railflin	Line data of railway feature
10	streamn	Line data of stream network
11	waterpnt	Point data of feature related water, Its text data of annotation
12	waterline	Line data of feature related water, Its text data of annotation
13	smallpol	Polygon data of small object, Its text data of annotation
14	smalllin	Line data of small object, Its text data of annotation
15	smallpnt	Point data of small object, Its text data of annotation
16	topolin	Line data of topographic feature
17	topopnt	Point data of topographic feature, Its text data of annotation
18	anno	Text data of annotation
19	mapframe	Merginal line and coordinate grid lines

