



**Instituto
Geográfico
Nacional**

SPANISH NATIONAL GEOGRAPHICAL INSTITUTE (I.G.N.)

**Towards interoperability in the metadata of
Cartographic Heritage
and its publication in the Catalogue of the I.G.N.**

Joan Capdevila Subirana
Alejandra Sánchez Maganto
Elena Camacho Arranz
Andrés Arístegui Cortijo

- **Foundation of the Institute**

- **Works:**
 - Cadastral Topography of Spain (1860 – 1870)
 - National Topographical Map 1:50,000 (1870 →)

- **Work done in the Archive since 1996**

- **Conclusions**

❖ FOUNDATION OF THE INSTITUTE

- **Founded in 1870 (after General Statistics Board)**
- **Civil purposes, mainly for taxes**
- **Competences:**
 - Cartography
 - Geodesy
 - Geophysics
 - Astronomy
- **Basic historical works:**
 - Cadastral Topography of Spain 1860-1870 (General Statistics Board)
 - National Topographical Maps 1870→ (Institute)

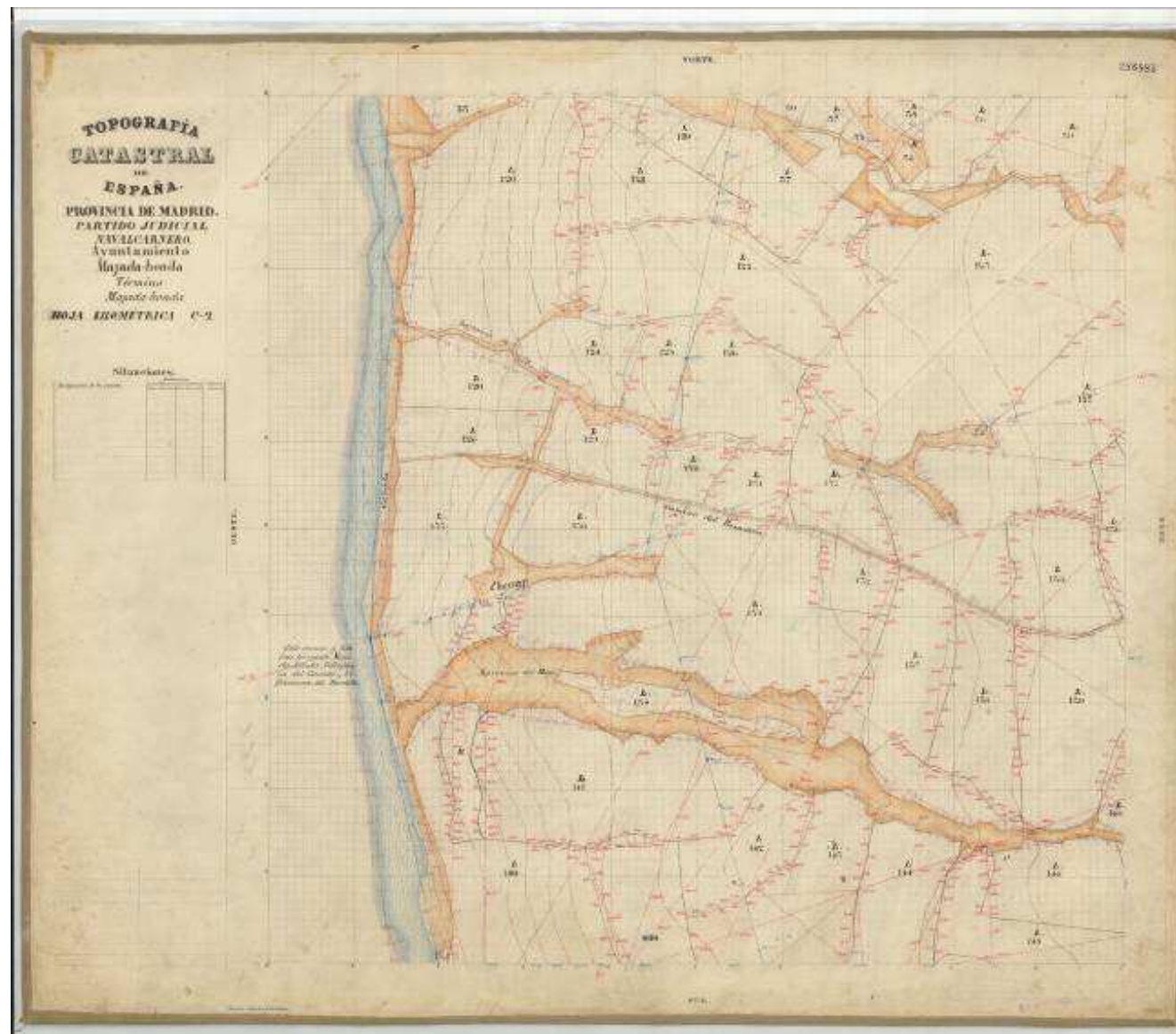


❖ CADASTRAL TOPOGRAPHY OF SPAIN

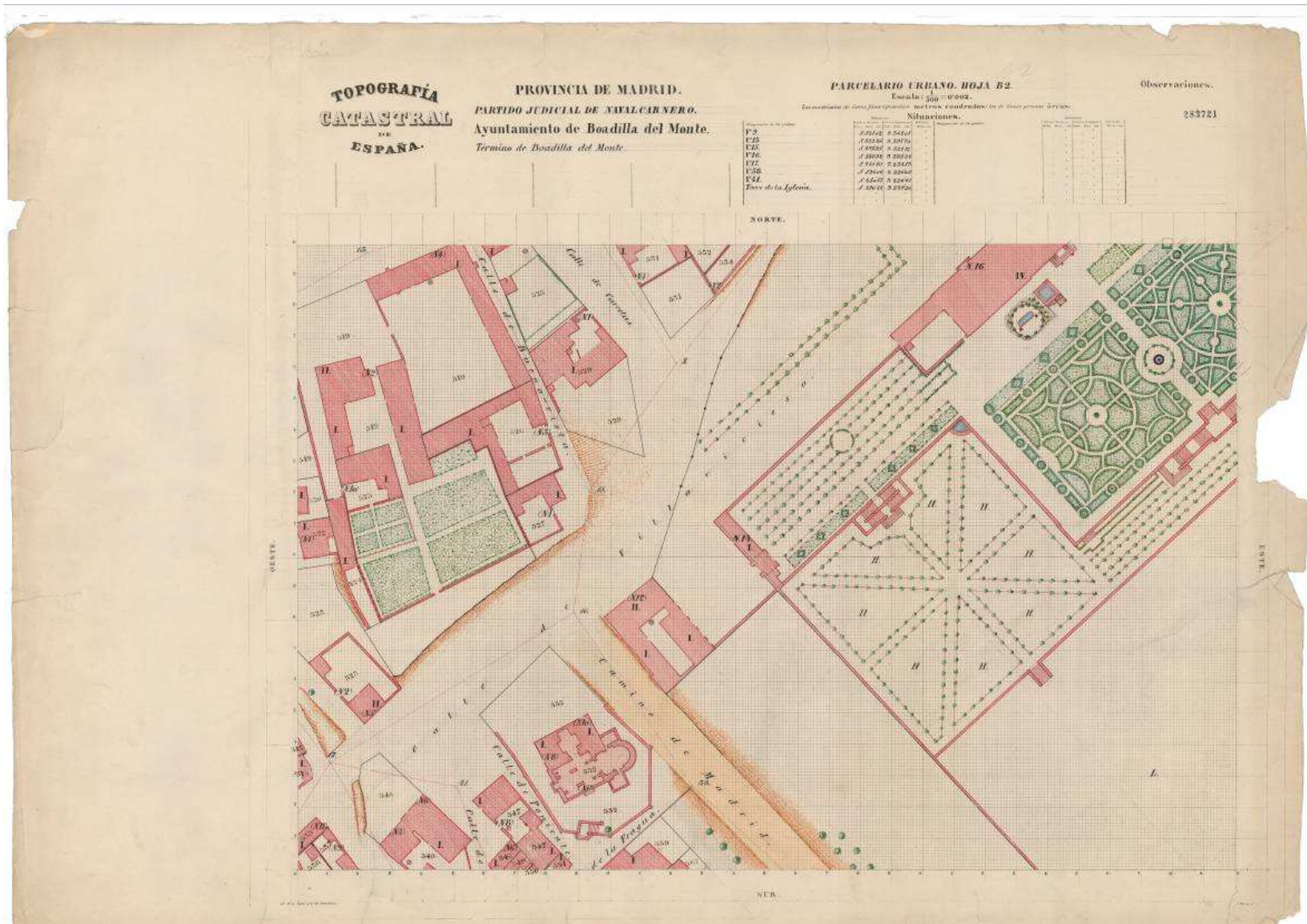
- 1860-1870
- Works:
 - Kilometrical sheets
 - Each sheet 1 km * 1 km
 - Scale 1:2,000
 - Urban sheets
 - Scale 1:500
 - Cadastral statements
- Project was too ambitious → abandoned 1870
- Only finished in some towns within province of Madrid



❖ CADASTRAL TOPOGRAPHY OF SPAIN / Kilometrical sheets 1:2,000



❖ CADASTRAL TOPOGRAPHY OF SPAIN / Urban sheets 1:500



❖ CADASTRAL TOPOGRAPHY OF SPAIN / Cadastral statements

TOPOGRAFÍA CATASTRAL DE ESPAÑA. 1959290

PROVINCIA, Madrid **AYUNTAMIENTO,** Arganda del Rey
Partido judicial, Arganda del Rey **Término,** Arganda del Rey

CÉDULA CATASTRAL — NÚMERO 320

Nombre del sitio, El Huerto **Nombre de la finca,** _____
NOMBRE DEL PROPIETARIO, D. Vicente Vela Bustillo

SITUACIÓN	EDAD	ESTADO	PROVENIENCIA	VECINDAD
Lugar <u>Arganda del Rey</u>	<u>42 años</u>	<u>Campo</u>	<u>Libertad</u>	Lugar <u>Arganda del Rey</u>
Parroquia <u>Madrid</u>				Parroquia <u>Madrid</u>

Superficie total comprendida por el presente 6 28 20
 Se documenta por partida 0 20 00
 por _____
Superficie de la parcela 6 28 20

CULTIVOS.

Superficie (Hectáreas)	Destino (Cultivo)	Superficie (Hectáreas)	Destino (Cultivo)
<u>6 28 20</u>			

OBSERVACIONES.

Yo _____ el propietario firmo,
 Los testigos, _____
 El propietario, Vicente Vela Bustillo

Se confiere con la situación, lindes y tabla de esta parcela, en cuyo punto se halla, de _____ de _____

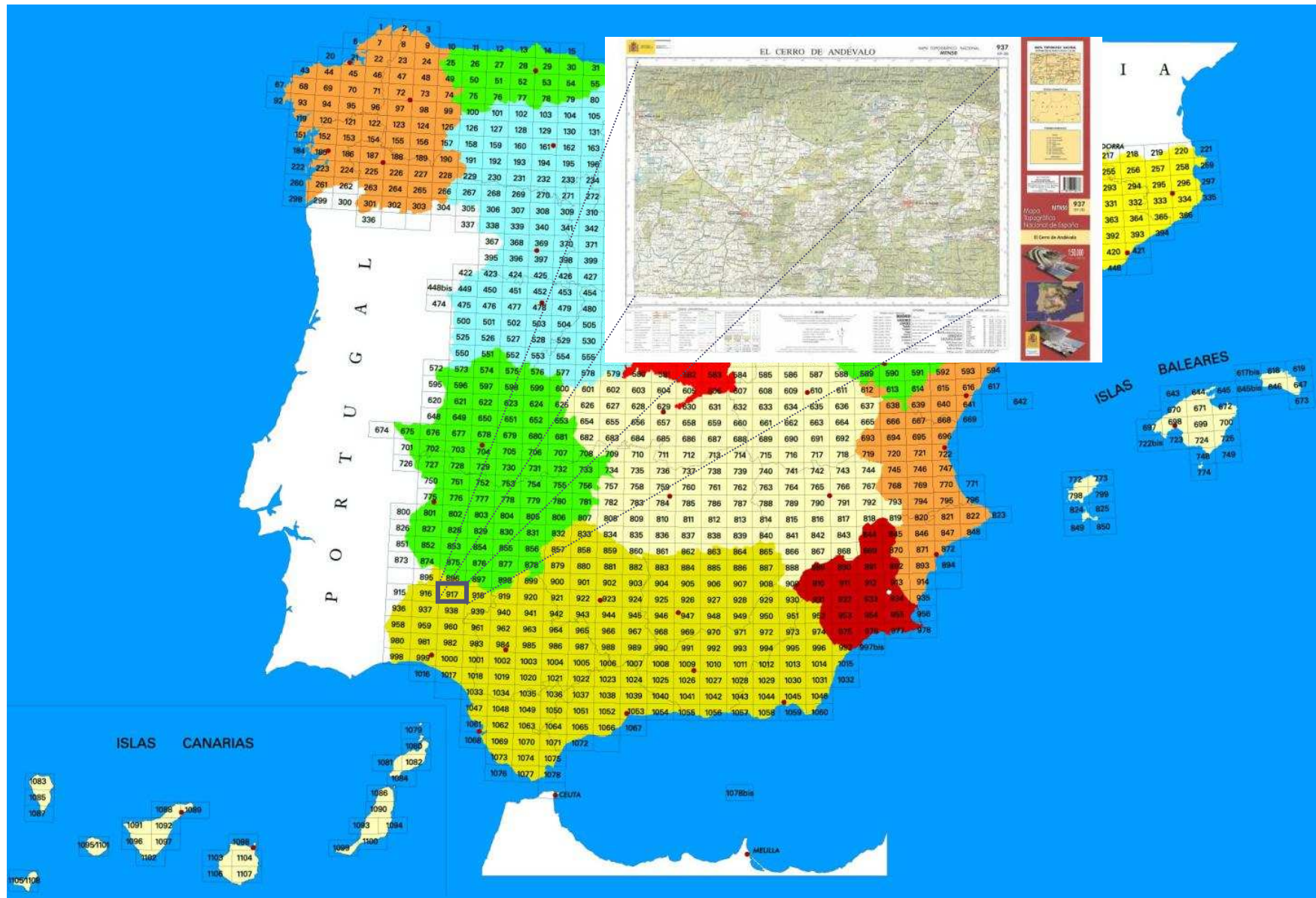
El Municipio, Arganda del Rey
 El propietario, Vicente Vela Bustillo

❖ NATIONAL TOPOGRAPHICAL MAP 1:50,000

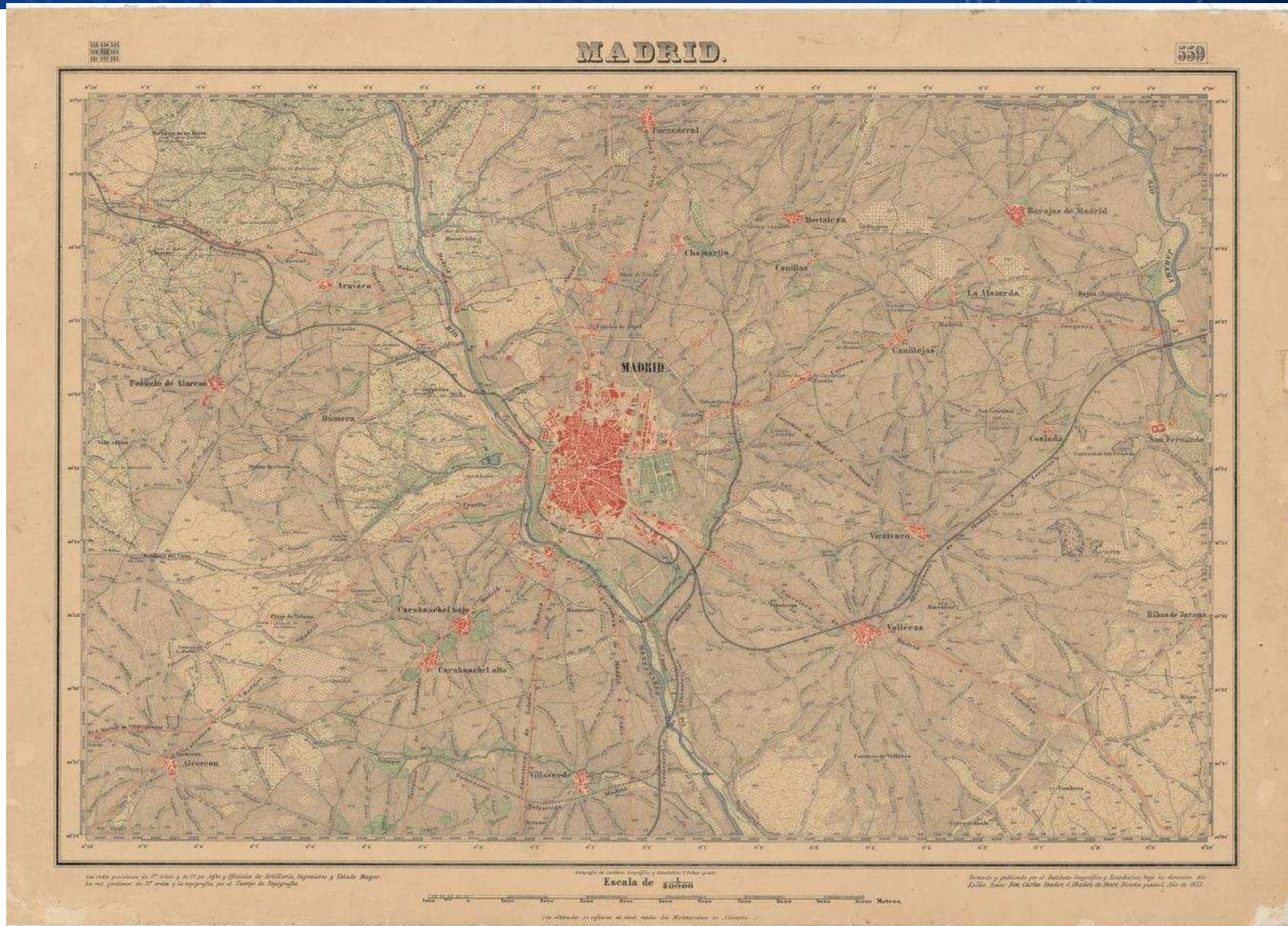
- **1870 →**
 - **First map: Madrid 1875**
 - **Last map: western Gran Canaria 1968**
- **Scale 1:50,000**
- **1114 maps in total**
- **Each map 10' latitude * 20' longitude**
- **First field works based on municipalities**



❖ NATIONAL TOPOGRAPHICAL MAP 1:50,000 / 1114 maps in total



❖ NATIONAL TOPOGRAPHICAL MAP / 1st map: Madrid 1875



❖ NATIONAL TOPOGRAPHICAL MAP 1:50,000 / work stages

■ Work stages:

1- Outlining municipalities

2- Planimetric maps 1:25,000 of each municipality

3- Altimetric maps 1:25,000 of each municipality

4- Built-up area maps 1:5,000 or 1:2,000

5- Outstanding buildings



❖ MTN50 / 1- Outlining municipalities

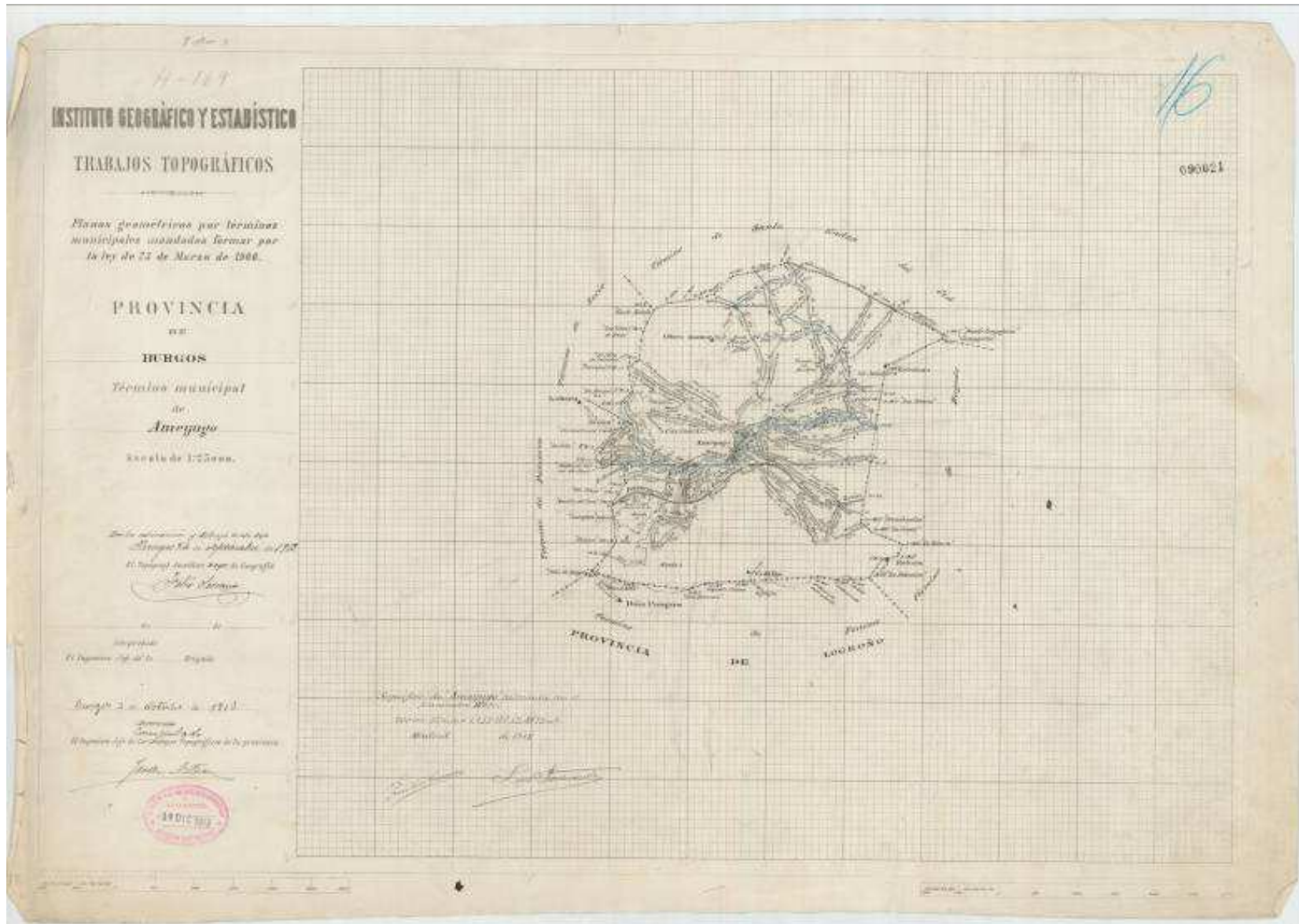
- Boundary line statements and fieldwork notebooks between each town and all municipalities around



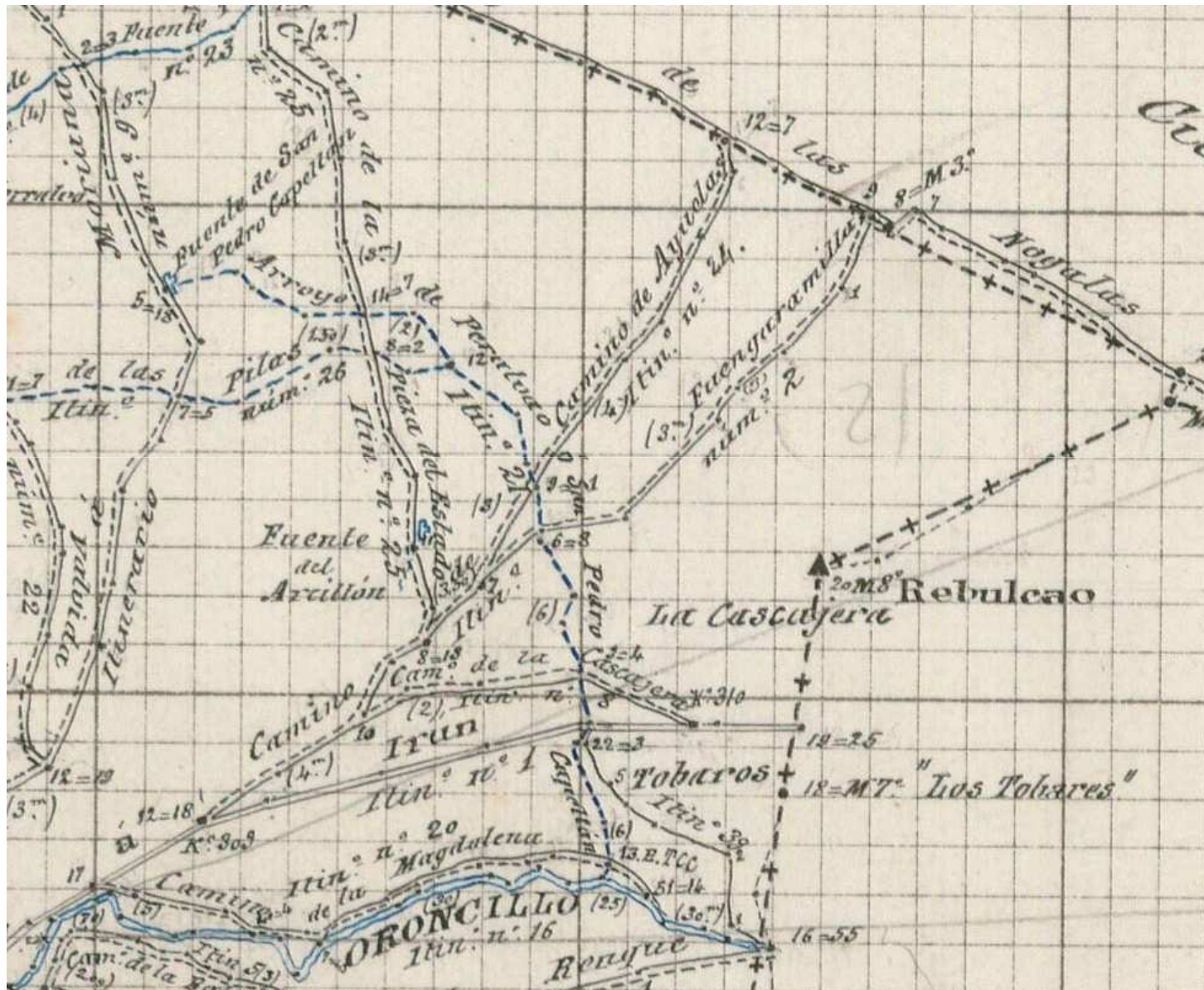
❖ MTN 50 / 2- Planimetric maps 1:25,000

- **Scale 1:25,000**
- **Information:**
 - **Boundary lines**
 - **Roads and paths**
 - **Rivers and streams**
 - **Land use (for taxes)**

❖ MTN 50 / 2- Planimetric maps 1:25,000

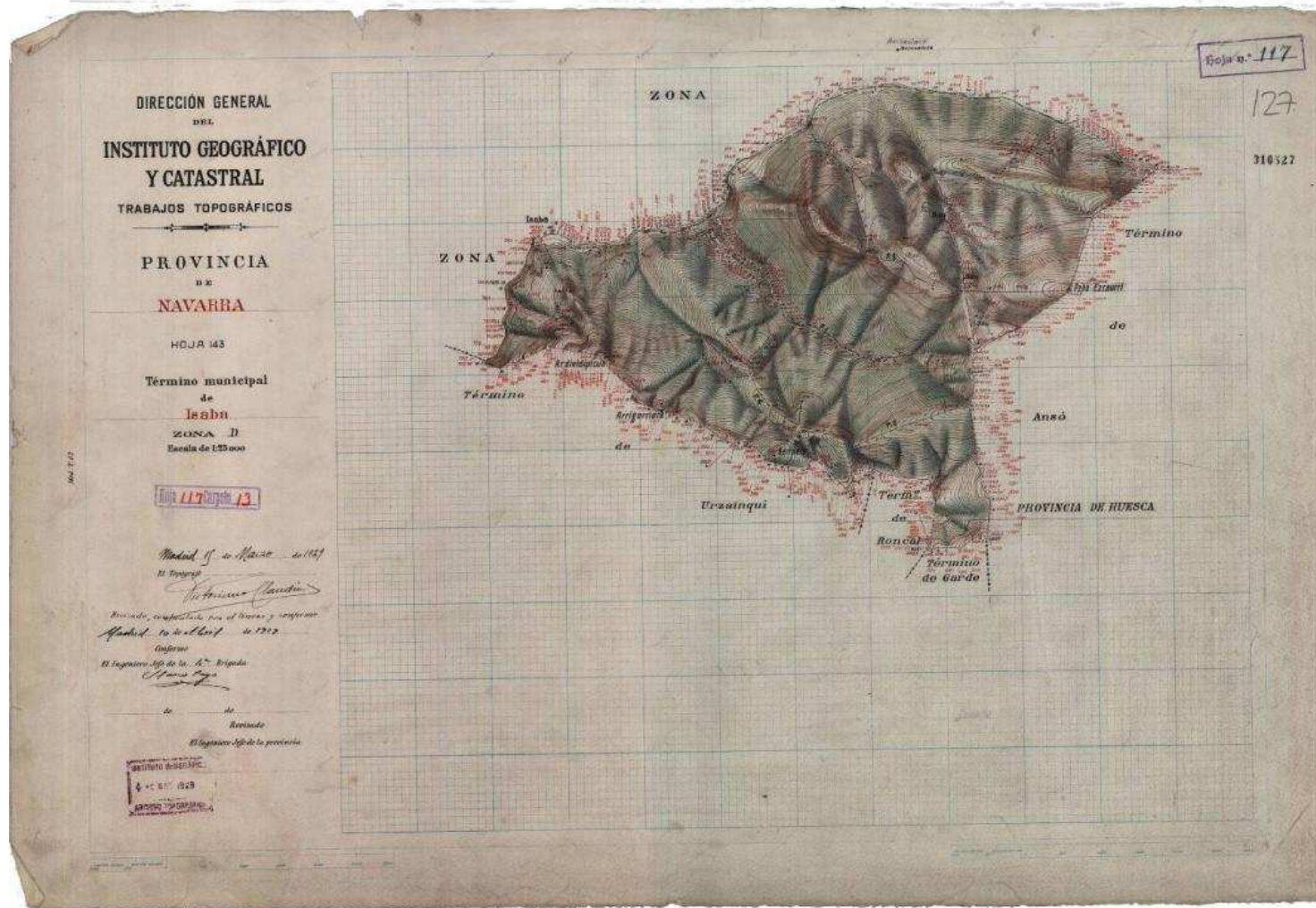


❖ MTN 50 / 2- Planimetric maps 1:25,000

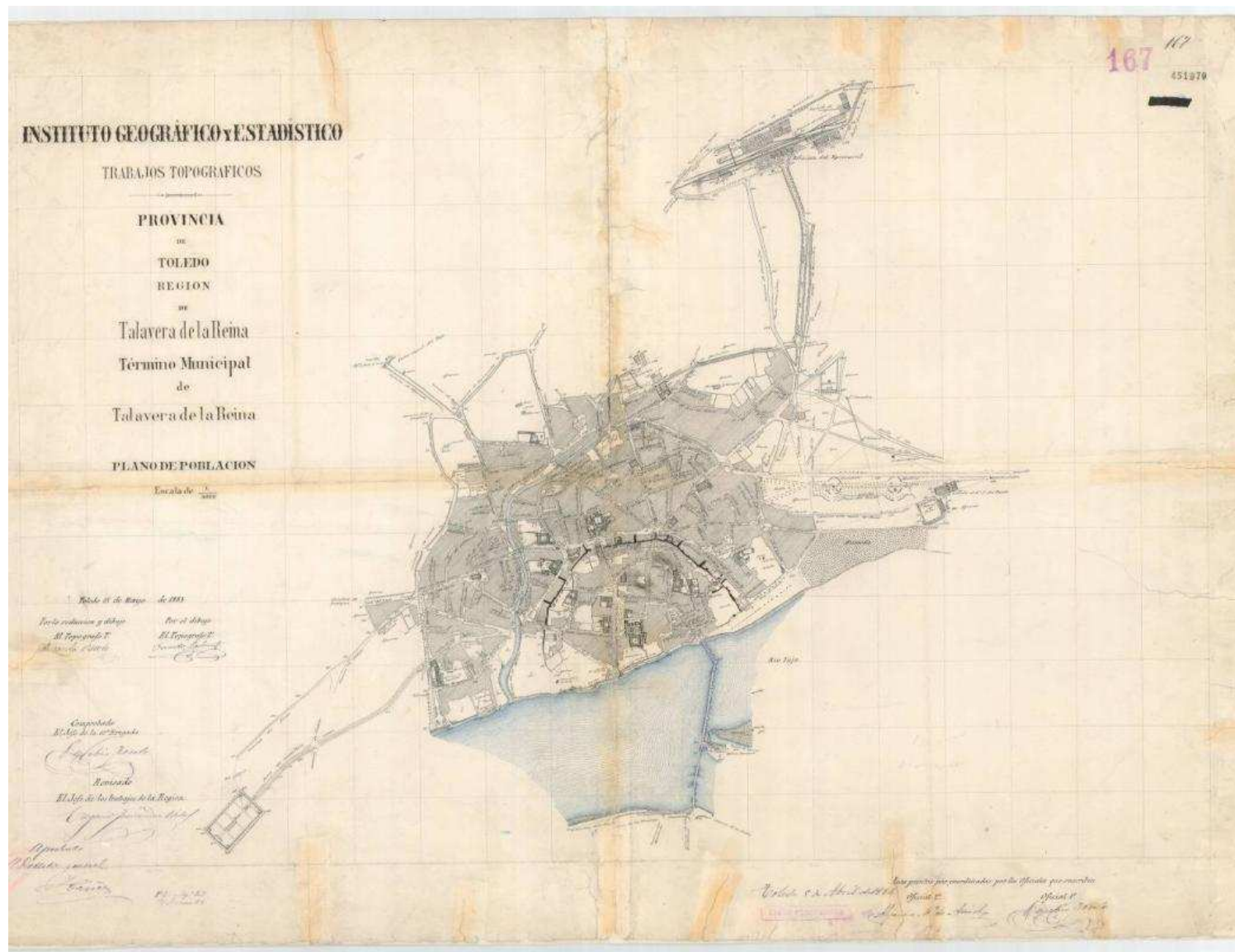


❖ MTN 50 / 3- Altimetric maps 1:25,000

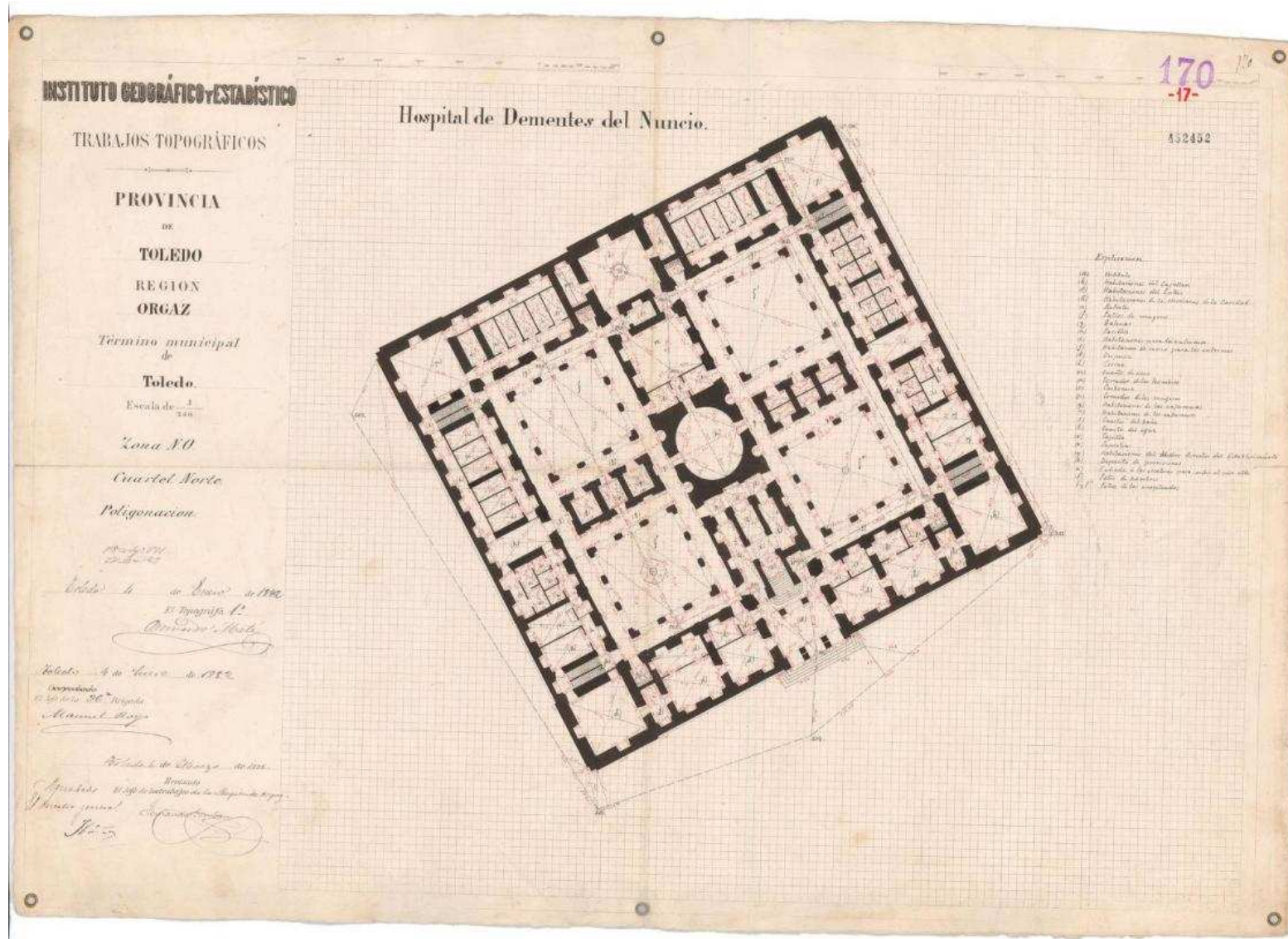
- Contour lines every 10 meters



❖ MTN 50 / 4- Built-up area maps 1:5,000 or 1:2,000



❖ MTN 50 / 5- Outstanding buildings



❖ WORK DONE IN THE ARCHIVE SINCE 1996

- 1 - Digitizing and cataloging boundary line statements in Invesdoc (Oracle 7)
- 2 - Moving database from Oracle 7 to Oracle 9
- 3 - Digitizing and cataloging maps and cadastral statements in Access
- 4 - Moving database from Access to Oracle 9 → joining all information in the same database in Oracle 9
- 5 - Georeferencing some maps and cadastral statements
- 6 - Moving database from Oracle 9 to PostgreSQL (free software)
 - 2009 TOTAL:
 - 80,000 pdf digitized and listed fieldwork notebooks and boundary line statements
 - 50,000 listed maps held in the Archive which were also accessible in jpg and ecw georeferenced format
 - 100,000 pdf listed cadastral statements with their coordinates for their GIS location
- 7 - Creating metadata patterns in CatMDEdit (free software)



❖ 7 - Creating metadata patterns in CatMDEdit

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<!-- Metadata generated with CatMDEdit version 4.5 -->
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  xmlns:iaaacl="http://iaaa.cps.unizar.es/ControlledList/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
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- <gmd:CI_ResponsibleParty>
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  </gmd:individualName>
  - <gmd:organisationName>
    <gco:CharacterString>Instituto Geográfico Nacional</gco:CharacterString>
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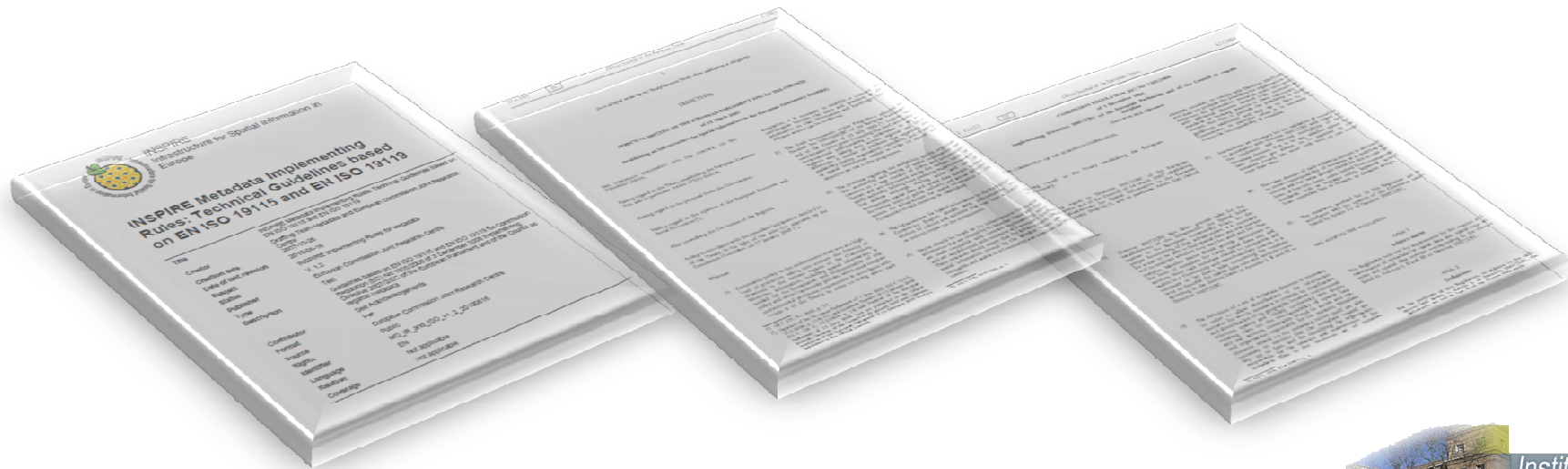
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- 8 - Crossing metadata patterns with database
- 9 - Creating metadata



❖9 - Creating metadata

- **Metadata are INSPIRE and LISIGE compliant**
 - **INSPIRE = European Directive**
 - **LISIGE = Spanish Law 14/2010**
- **INSPIRE:**
 - **EU member states shall create metadata following a specific regulation and these metadata shall be published**



❖9 - Creating metadata

- **INSPIRE and LISIGE are based on Spatial Data Infrastructures:**
 - **SDI = policies, organizational structures and technologies which help locating, accessing and using geographic information over the Internet in an interoperable way**
 - **4 targets:**
 - Promoting the sharing of geographic info among the Spanish Administration in an effective way → improving investment efficiency and guaranteeing the use of common reference data
 - Contributing to the development of e-Government
 - Placing geographic info at the citizen's disposal
 - Encouraging commercial field and academic domain to use this means for their data
 - **SDI rely on Interoperability:**
 - The exchanged information shall not depend on computer architecture or specific formats
 - Applications shall be able to exchange information without human intervention
 - Interoperability can be achieved by using standards which clearly define the behaviour of web services, data and metadata structures, etc
 - However, geographic information has some specificities: georeferencing, information viewer, topological capacities, etc



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- 8 - Crossing metadata patterns with database
- 9 - Creating metadata
- 10 - Including 120,000 metadata in Catalogue of the Institute
- 11 - Catalogue accessible over the Internet



❖ 11- Catalogue accessible over the Internet

- Objective of the Catalogue = including all metadata records of geographic products of IGN and putting them at the users' disposal
- Main features:
 - The cartographic products shown are classified as Dataset, series and Web Services
 - The metadata records for datasets and series are described as ISO 19115 (Metadata Spanish Core model / NEM)
 - Metadata are published via an Open Geospatial Consortium (OGC) Catalogue Service Web (CSW)
 - A bilingual client (Spanish and English) has also been developed using a free software (Geonetwork 2.6.4)



Simple search

Advanced search

Reset

Fill one or more of the following search criteria :

What?

Example: *mapa provincial, cuadrículas, servicio WMS*

Where?

Select area on the map or the region:



- Any -

Search

Select a product type:

- Datasets
- Series
- Tiles
- Web Services

Catalogue news :



Show map

Welcome to the metadata catalogue of the Spanish National Geographic Institute

From this page the user may check the geographical products of IGN, through an extensive collection of metadata, being able to use the presented geographic information.

By searching the user will find descriptive information (metadata) of the series and map sheets, Digital Terrain Models, Topographic Databases, Orthoimagery, Web Map services, and so on.

After consulting the information, if the user is interested in getting these products, the access can be done through the [CNIG Download Center](#) or the [Virtual store](#).

The cartographic products shown in the catalogue are classified as [Dataset](#) and [Web Services](#).



Dataset



Web Services

Furthermore, if you want to view remotely and access all metadata, you can use our Inspire Discovery service, or catalogue service, available at the following URL:

<http://www.ign.es/csw-inspire/servicio>

Simple search

Advanced search

Reset

Fill one or more of the following search criteria :

What?

Example: *mapa provincial, cuadrículas, servicio WMS*

planimetría de villena

Where?

Select area on the map or the region:



- Any -

Search

Select a product type:

- Datasets
- Series
- Tiles
- Web Services

Catalogue news :

Show map

Welcome to the metadata catalogue of the Spanish National Geographic Institute

Aggregated results matching search criteria : 1-10/14 (Page 1/2), 0 selected

Select : all, none

actions on selection

Sort by Relevance



PLANIMETRÍA DEL MUNICIPIO DE VILLENA (ALACANT/ALICANTE:03140) DE 1897-07-21.

Abstract

Planimetría de fecha 1897-07-21 del municipio de Villena (Alacant/Alicante:03140). Mapa manuscrito a escala 1:25000 que recoge la información planimétrica necesaria para la realización del M.T.N. 1/...

No preview available

Metadata



PLANIMETRÍA DEL MUNICIPIO DE VILLENA (ALACANT/ALICANTE:03140) DE 1948-01-23.

Abstract

Planimetría de fecha 1948-01-23 del municipio de Villena (Alacant/Alicante:03140). Mapa manuscrito a escala 1:25000 que recoge la información planimétrica necesaria para la realización del M.T.N. 1/...

No preview available

Metadata



PLANIMETRÍA DEL MUNICIPIO DE VILLENA (ALACANT/ALICANTE:03140) DE 1897-07-11.

Abstract

Planimetría de fecha 1897-07-11 del municipio de Villena (Alacant/Alicante:03140). Mapa manuscrito a escala 1:25000 que recoge la información planimétrica necesaria para la realización del M.T.N. 1/...

No preview available

Metadata



PLANIMETRÍA DEL MUNICIPIO DE VILLENA (ALACANT/ALICANTE:03140) DE 1897-07-21.

[Simple search](#)

[Advanced search](#)

[Reset](#)

Fill one or more of the following search criteria :

What?

Example: *mapa provincial, cuadrículas, servicio WMS*

Where?

Select area on the map or the region:



- Any -

[Search](#)

Select a product type:

- Datasets
- Series
- Tiles
- Web Services

Catalogue news :



Show map



PLANIMETRÍA DEL MUNICIPIO DE VILLENA (ALACANT/ALICANTE:03140) DE 1897-07-21.

Abstract

Planimetría de fecha 1897-07-21 del municipio de Villena (Alacant/Alicante:03140). Mapa manuscrito a escala 1:25000 que recoge la información planimétrica necesaria para la realización del M.T.N. 1/...

No preview available

Metadata

No preview available

Identification info

Title Planimetría del municipio de Villena (Alacant/Alicante:03140) de 1897-07-21.
Date 1897-07-21
Date type **Creation:** Date identifies when the resource was brought into existence
Code Planimetria_municipio_Villena_030266
Codespace www.ign.es

Cited responsible party

Organisation name	Centro Nacional de Información Geográfica	Voice	+34915979514
Role	Distributor: Party who distributes the resource	Delivery point	Calle General Ibáñez Ibero, 3
		City	Madrid
		Administrative area	Madrid
		Postal code	28003
		Country	España
		OnLine resource	http://www.cniq.es
		Hours of service	De lunes a viernes de 9 a 14 horas

Cited responsible party

Individual name	Bonilla Trimiño, Raúl	Voice	Teléfono: +34915979632
Organisation name	Instituto Geográfico Nacional	Facsimile	Fax: +34915979772
Position	Jefe de Sección del Archivo Topográfico	Delivery point	General Ibáñez Ibero, 3
		City	Madrid

Simple search

Advanced search

Reset

Fill one or more of the following search criteria :

What?

Example: *mapa provincial, cuadrículas, servicio WMS*

planimetría de villena

Where?

Select area on the map or the region:



- Any -

Search

Select a product type:

- Datasets
- Series
- Tiles
- Web Services

Catalogue news :



Show map

Organization name	Instituto Geográfico Nacional
Position name	Jefe de Sección del Archivo Topográfico
Delivery point	General Ibáñez Ibero, 3
Postal code	28003
Role	Point of contact: Party who can be contacted for acquiring knowledge about or acquisition of the resource
Use limitation	Este servicio se puede usar de modo libre y gratuito siempre que: sea para usos no comerciales y se mencione al IGN como autor de la información. Es posible la cesión del servicio a un tercero, siempre que el cesionario acepte explícitamente las condiciones de licenciamiento. Para más información Orden FOM 956/2008 (BOE 2008-08-04)
Use constraints	License: Formal permission to do something
Spatial representation type	Grid: Grid data is used to represent geographic data

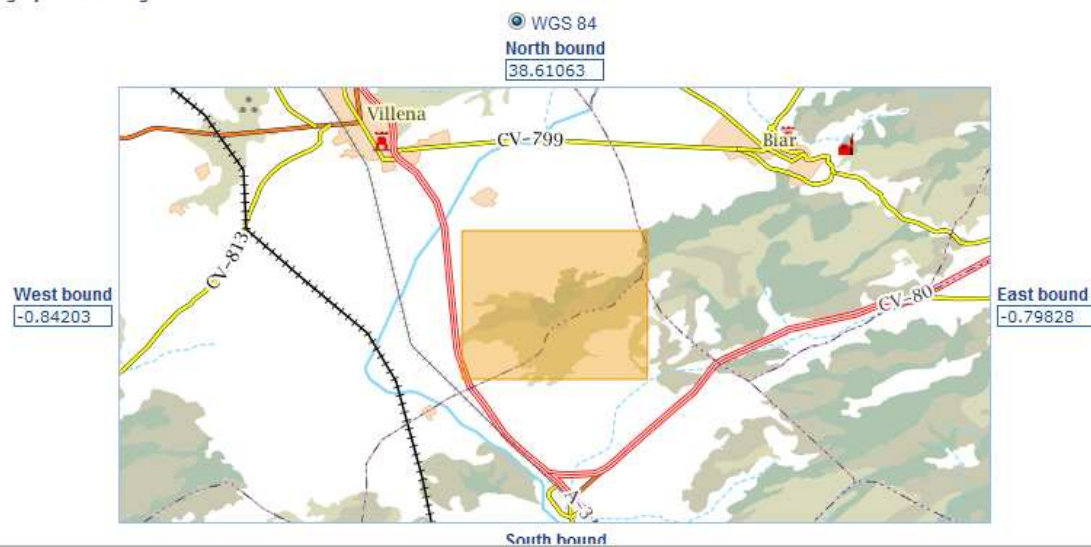
Equivalent scale

Denominator
25000

Language	Spanish; Castilian
Character set	UTF8: 8-bit variable size UCS Transfer Format, based on ISO/IEC 10646
Topic category code	Boundaries
Topic category code	Location
Topic category code	Planning cadastre
Topic category code	Society
Topic category code	Imagery base maps earth cover

Extent

Geographic bounding box



Show map

Simple search

Advanced search

Reset

Fill one or more of the following search criteria :

What?

Example: *mapa provincial, cuadrículas, servicio WMS*

Where?

Select area on the map or the region:



Search

Select a product type:

- Datasets
- Series
- Tiles
- Web Services

Catalogue news :



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From this page the user may check the geographical products of IGN, through an extensive collection of metadata, being able to use the presented geographic information.

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Dataset



Web Services

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<http://www.ign.es/csw-inspire/servicio>

Simple search

Advanced search

Reset

Fill one or more of the following search criteria :

What?

Example: *mapa provincial, cuadrículas, servicio WMS*

Where?

Select area on the map or the region:



Search

Select a product type:

- Datasets
- Series
- Tiles
- Web Services

Catalogue news :



Show map

Welcome to the metadata catalogue of the Spanish National Geographic Institute

Aggregated results matching search criteria : 1-10/4998 (Page1/500), 0 selected

Select : [all](#), [none](#)

Sort by



ALTIMETRÍA DEL MUNICIPIO DE ALBATERA (ALACANT/ALICANTE:03005) DE 1930-03-10.

Abstract

Altimetría de fecha 1930-03-10 del municipio de Albatera (Alacant/Alicante:03005).Mapa manuscrito a escala 1:25000 que recoge la información altimétrica, especialmente las curvas de nivel a una equi...

No preview available



ALTIMETRÍA DEL MUNICIPIO DE BENEJÚZAR (ALACANT/ALICANTE:03024), ALGORFA (ALACANT/ALICANTE:03012), ALMORADÍ (ALACANT/ALICANTE:03015), ORIHUELA (ALACANT/ALICANTE:03099) DE 1930-03-20.

Abstract

Altimetría de fecha 1930-03-20 del municipio de Benejúzar (Alacant/Alicante:03024), Algorfa (Alacant/Alicante:03012), Almoradí (Alacant/Alicante:03015), Orihuela (Alacant/Alicante:03099).Mapa manusc...

No preview available



ALTIMETRÍA DEL MUNICIPIO DE VILLAJYOUSA/VILA JOIOSA, LA (ALACANT/ALICANTE:03139) DE 1938-07-01.

Abstract

Altimetría de fecha 1938-07-01 del municipio de Villajoyosa/Vila Joiosa, la (Alacant/Alicante:03139).Mapa manuscrito a escala 1:25000 que recoge la información altimétrica, especialmente las curvas ...

No preview available



ALTIMETRÍA DEL MUNICIPIO DE CALPE/CALP (ALACANT/ALICANTE:03047) DE 1938-06-22.

Simple search

Advanced search

Reset

Fill one or more of the following search criteria :

What?

Example: *mapa provincial, cuadrículas, servicio WMS*

altimetria

Where?

Select area on the map or the region:



Comunitat Valenciana

Search

Select a product type:

- ▶ Datasets
- ▶ Series
- ▶ Tiles
- ▶ Web Services

Catalogue news :



Show map



ALTIMETRÍA DEL MUNICIPIO DE ALBATERA (ALACANT/ALICANTE:03005) DE 1930-03-10.

Abstract

Altimetría de fecha 1930-03-10 del municipio de Albatera (Alacant/Alicante:03005). Mapa manuscrito a escala 1:25000 que recoge la información altimétrica, especialmente las curvas de nivel a una equi...

No preview available

Metadata

No preview available

Identification info

Title Altimetría del municipio de Albatera (Alacant/Alicante:03005) de 1930-03-10.
 Date 1930-03-10
 Date type **Creation:** Date identifies when the resource was brought into existence
 Date 1955-01-01
 Date type **Revision:** Date identifies when the resource was examined or re-examined and improved or amended
 Code Altimetría_municipio_Albatera_030274
 Codespace www.ign.es

Cited responsible party

Organisation name	Centro Nacional de Información Geográfica	Voice	+34915979514
Role	Distributor: Party who distributes the resource	Delivery point	Calle General Ibáñez Ibero, 3
		City	Madrid
		Administrative area	Madrid
		Postal code	28003
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		OnLine resource	http://www.cniq.es
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Show map

Simple search Advanced search

Reset

Fill one or more of the following search criteria :

What?

Example: *mapa provincial, cuadrículas, servicio WMS*

planos de poblacion de arevalo

Where?

Select area on the map or the region:



- Any -

Search

Select a product type:

- Datasets
- Series
- Tiles
- Web Services

Catalogue news :  GeoRSS

Welcome to the metadata catalogue of the Spanish National Geographic Institute

Aggregated results matching search criteria : 1-1/1 (Page1/1), 0 selected Select : [all](#), [none](#) actions on selection



PLANO DE POBLACIÓN DEL MUNICIPIO DE ARÉVALO (ÁVILA:05016) DE 1933-02-06.

Abstract

Plano de población de fecha 1933-02-06 del municipio de Arévalo (Ávila:05016). Mapa manuscrito a escala 1:2500 que recoge la información de los detalles del casco urbano, especialmente la delimitación...

No preview available

Metadata



Simple search

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Example: *mapa provincial, cuadrículas, servicio WMS*

Where?

Select area on the map or the region:



Search

Select a product type:

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Catalogue news :



Show map

Descriptive keywords ADMINISTRATIVE AREAS.POLITICAL AREAS .
Descriptive keywords Plano de población , Casco urbano , Documento histórico , Mapa (theme).
Descriptive keywords Arévalo , , Arévalo (place).
Descriptive keywords CARTOGRAPHY (theme).
Specific usage Se está utilizando para estudios históricos municipales, de evolución del territorio, toponimia, etc.
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Use constraints **License:** Formal permission to do something
Spatial representation type **Grid:** Grid data is used to represent geographic data

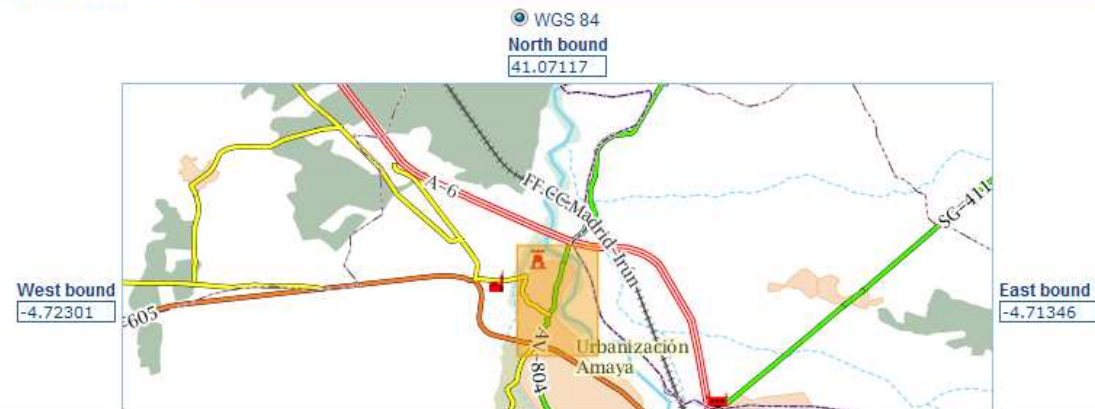
Equivalent scale

Denominator 2500

Language Spanish; Castilian
Character set UTF8: 8-bit variable size UCS Transfer Format, based on ISO/IEC 10646
Topic category code Location
Topic category code Society
Topic category code Imagery base maps earth cover

Extent

Geographic bounding box



❖ CONCLUSIONS

- **The I.G.N. is firmly contributing to the development of Spatial Data Infrastructures within Spain in compliance with the European INSPIRE Directive.**
- **The I.G.N. has developed a Catalogue of geographic information which includes at present 120,000 metadata registers related to the documents held in the Archive, and which shall be extended.**
- **This Catalogue is free and standard and can be consulted from all computers over the Internet.**

