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ARCHIVO DEL LABORATORIO DE DOCUMENTACIÓN GEOMÉTRICA DEL PATRIMONIO

ARCHIVE OF THE LABORATORY FOR THE GEOMETRIC DOCUMENTATION OF HERITAGE

Sección de informes de investigación / Research reports section

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Información general / General information		
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TITULO:	Intensive Program ERASMUS: TOPCART. Geometric Documentation of the Heritage (administrative and academic documentation)	:TITLE
FECHA:	abril 2013 / April 2013	:DATE
NUMERO:	LDGP_inv_002	:NUMBER
IDIOMA:	español e inglés / Spanish and English	:LANGUAGE

Resumen	
TITULO:	Programa intensivo ERASMUS: TOPCART. Documentación Geométrica del Patrimonio (documentación administrativa y académica)
TITULO PROYECTO:	Intensive Program ERASMUS: TOPCART 2010 / 2011 Geometric Documentation of Heritage 2009-1-ES1-ERAIP-0013 / 2010-1-ES1-ERA10-0024
ENTIDAD FINANCIADORA:	Organismo Autónomo de Programas Educativos Europeos (OAPEE), Gobierno de La Rioja, Ayuntamiento de Clavijo, Ayuntamiento de Logroño, Ilustre Colegio de Ingenieros Técnicos en Topografía (delegación de La Rioja)
INVESTIGADOR PRINCIPAL:	José Manuel VALLE MELÓN
INVESTIGADORES:	10 profesores y 56 alumnos
PARTICIPANTES:	- Universidad del País Vasco (UPV-EHU) – Spain - National Technical University of Athens (NTUA) – Greece - HafenCity Universität Hamburg (HCU) – Germany - Universidad Politécnica de Madrid (UPM) – Spain - Università degli Studi di Siena – Italy - Vilniaus Gedimino Technikos Universitetas (VGTU) - Lithuania
RESUMEN DEL PROYECTO:	El objetivo principal que se persigue en este proyecto es el intercambio de metodológico práctico, en materias afines a la medida y la representación del patrimonio, entre profesores y fundamentalmente alumnos, de diferentes países. Para la consecución de este fin se ha contado con la participación de un grupo de 56 alumnos y 10 profesores de (Alemania, Italia, Grecia, Lituania y España). Las actividades se han centrado en el desarrollo de proyectos concretos de documentación dentro del Monasterio de San Prudencio (La Rioja, España). En él se han aplicado técnicas digitales de registro de información geométrica, constituidas por receptores GPS, estaciones totales topográficas, escáneres láser y sistemas fotogramétricos. Los datos obtenidos se han documentado y procesado con el fin de obtener las representaciones cartográficas y modelos virtuales de representación que pueden ser difundidas por medio de Internet. Como resultados se pretenden: un conjunto de registros métricos del momento de la intervención, modelos gráficos de difusión e informes técnicos sobre el monumento.
RESUMEN DE LA CONTRIBUCIÓN:	La Universidad del País Vasco ha ejercido de solicitante y coordinadora.
DESCRIPTORES NATURALES:	patrimonio, monasterio, topografía, fotogrametría, láser escáner, arqueología de la arquitectura, educación
DESCRIPTORES CONTROLADOS:	(Procedentes del Tesauro UNESCO [http://databases.unesco.org/thessp/]) Patrimonio Cultural, Reconocimiento Topográfico, Fotogrametría, Edificio Religioso, Arqueología, Movilidad Estudiantil, Docencia

Abstract	
TITLE:	Intensive Program ERASMUS: TOPCART. Geometric Documentation of the Heritage (administrative and academic documentation)
TITLE:	Intensive Program ERASMUS: TOPCART 2010 / 2011 Geometric Documentation of Heritage 2009-1-ES1-ERAIP-0013 / 2010-1-ES1-ERA10-0024
FUNDING AGENCY:	Organismo Autónomo de Programas Educativos Europeos (OAPEE), Government of La Rioja, Town council of Clavijo, City council of Logroño, Spanish Association of Surveyors
MAIN RESEARCHER:	José Manuel VALLE MELÓN
RESEARCHERS:	10 lecturers and 56 students
PARTNERS:	- Universidad del País Vasco (UPV-EHU) – Spain - National Technical University of Athens (NTUA) – Greece - HafenCity Universität Hamburg (HCU) – Germany - Universidad Politécnica de Madrid (UPM) – Spain - Università degli Studi di Siena – Italy - Vilniaus Gedimino Technikos Universitetas (VGTU) - Lithuania
ABSTRACT OF THE PROJECT:	The main objective this project is looking for is the exchange of practical methodologies, in topics related with the measure and representation of heritage, between teachers and specially students from different countries. For the achievement of this aim we counted with the participation of a group of 56 students and 10 lecturers from Germany, Italy, Greece, Lithuania and Spain. Activities focused on the development of concrete projects in documentation of heritage, at the San Prudencio's Monastery. In this site, digital techniques for the acquisition of geometric information from GPS equipment, surveying total stations, laser scanner and photogrammetric systems were put into practice. Obtained data were processed as follows: first of all, they were documented by adding necessary metadata in order to ensure their use in the future, then, processed to obtain cartographic representations and virtual models which can be distributed on the Internet. As results we present: documentation and metric data, graphic models, plans and technical reports on the monument.
ABSTRACT OF THE CONTRIBUTION:	The University of the Basque Country submitted the proposal and coordinated the activity.
NATURAL KEYWORDS:	heritage, monastery, surveying, photogrammetry, laser scanner, building archaeology, learning
CONTROLLED KEYWORDS:	(From the UNESCO's thesaurus [http://databases.unesco.org/thesaurus/]) Cultural Heritage, Surveying, Photogrammetry, Religious Buildings, Archaeology, Student Mobility, Teaching Profession

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OTROS:	Los datos corresponden a una actividad académica colaborativa financiada por la Unión Europea a través del programa ERASMUS (2009-1-ES1-ERAIP-0013 / 2010-1-ES1-ERA10-0024), las universidades participantes, el Gobierno de la Rioja, los ayuntamientos de Clavijo y Logroño, la Universidad de La Rioja y el Ilustre Colegio de Ingenieros Técnicos en Topografía (delegación de La Rioja). Los registros brutos y los resultados quedan a libre disposición de cualquier miembro de los citados organismos así como de cualquier otro con fines docentes, de investigación o de recuperación del Monasterio (entendido este tercero en su sentido más amplio) siempre y cuando se cite la procedencia de los mismos. / Data come from a collaborative activity funded by the European Union through the ERASMUS program (2009-1-ES1-ERAIP-0013 / 2010-1-ES1-ERA10-0024), the above mentioned universities, the Government of La Rioja, the city council of Logroño, the town council of Clavijo, the University of La Rioja and the Spanish Association of Surveyors. Raw datasets and results are freely available for all partners as well as for anyone else as long as the source is said and they use them for scholar purposes, research or the study / restoration of the Monastery.	:OTHERS

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ID PERMANENTE:	http://hdl.handle.net/10810/9906	:PERMANENT ID
ESTRUCTURA:	• **ldgp_inf002_A1solicitud2009-10.pdf**: solicitud del proyecto para el curso 2009-10, en español con notas en inglés / application presented for the academic year 2009-10, in Spanish with notes in English. • **ldgp_inf002_A2informefinal2009-10.pdf**: informe final de la actividad realizada durante el curso 2009-10, en español / final report about the activity done during the year 2009-10, in Spanish. • **ldgp_inf002_A3cierre2009-10.pdf**: contestación de la OAPEE dando por válida la actividad académica 2009-10 e indicando los resultados de la evaluación externa, en español / answer of the OAPEE (Agency for European Educative Programs) where the final report 2009-10 is accepted, it includes the remarks done by the external referees, in Spanish. • **ldgp_inf002_A4solicitud2010-11.pdf**: solicitud del proyecto para el curso 2010-11, en español / application presented for the academic year 2010-11, in Spanish. • **ldgp_inf002_A5informefinal2010-11.pdf**: informe final de la actividad realizada durante el curso 2010-11, en español / final report about the activity done during the year 2010-11, in Spanish. • **ldgp_inf002_A6cierre2010-11.pdf**: contestación de la OAPEE dando por válida la actividad académica 2010-11 e indicando los resultados de la evaluación externa, en español / answer of the OAPEE (Agency for European Educative Programs) where the final report 2010-11 is accepted, it includes the remarks done by the external referees, in Spanish. • **ldgp_inf002_B1CoordinationMeeting.pdf**: este libreto contiene tres documentos relacionados con la visita preliminar realizada con el fin de preparar la actividad: un cuaderno de trabajo para ir repasando los diferentes aspectos a tratar, una encuesta y un resumen de las decisiones tomadas. Estos documentos están en inglés / this booklet is composed by three documents related with the coordination meeting done in order to prepare the activity: a workbook containing the different topic to be decided beforehand, a questionnaire and a summary with the principal decisions taken. These documents are in English. • **ldgp_inf002_B2folletos.pdf**: diversos carteles y folletos sobre la actividad, tanto en español como en inglés / some posters and leaflets about the activity, in Spanish and English. • **ldgp_inf002_B3entrevistaalumnos.pdf**: ejemplo de criterios de valoración de los alumnos candidatos para participar en la actividad, en español / example of the scale used in the selection of the students who would take part in the activity, in Spanish. • **ldgp_inf002_B4calendarios.pdf**: calendarios de la fase conjunta de ambos cursos, en inglés / detailed programs of the two-week activity for both years, in English. • **ldgp_inf002_B5certificates.pdf**: plantillas de los certificados de participación entregados a alumnos y	:FRAMEWORK

	profesores, en inglés / certificates of participation for students and lecturers, in English. • **ldgp_inf002_C1notebook.pdf**: (este documento) ejemplo de cuaderno de campo entregado a cada grupo de alumnos para la realización del trabajo de campo, en inglés / (this document) example of the notebook handed out to each students' group for the fieldwork, in English. • **ldgp_inf002_C2dataset.pdf**: información sobre cómo prepara los datos una vez finalizado el trabajo de campo para que puedan ser archivados, en inglés / information about how to prepare the datasets in order to be archived after the work, in English.	

Cita completa recomendada / Recomended full citation		
CITA:	Various Authors. *Intensive Program ERASMUS: TOPCART. Geometric Documentation of the Heritage (administrative and academic documentation)*. Laboratorio de Documentación Geométrica del Patrimonio (UPV/EHU). 2013	:CITATION

FIELD WORK NOTEBOOK

Group D:

Inside the church

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Annemarie Wisbar
Antonios Kalinyktakis
Andrea Arrighetti
Jorge Miguel Puig Jiménez
Pablo Ibáñez de Elejalde Landa

FOREWORD

The main aim of this notebook is to guide the students during the activities in the site and to ensure that all the data, no matter who collected them, will be interoperable and with the same guarantee. More than a lot of paperwork to fill in we should consider it like a way to make easier the fieldwork.

The content of this notebook includes:

- Safety plan. Guidelines to follow at the site in order to avoid unnecesary risk and enjoy the activity.
- Equipment. Check list before you get / you give back the equipment.
- Surveying stations. Check list with the steps while setting up the total station.
- Photogrammetry: control points. Collection of photographs of the elevations, can be used for annotations or to mark the location of the control points.
- Sketches. Plan outline of your working area that can be useful if you want to make a quick drawing with the position of the laser scans, new stations point or the photogrammetric pairs.
- Benchmarks. Reference network, coordinates and sketches with the location of each point.
- Notes. Whatever you need to annotate.
- Directory. Useful telephone numbers.

IMPORTANT NOTE: This notebook will be collected at the end of the activity as part of the results and it will be used for the evaluation and grading.

SAFETY PLAN

The civil defence service of the government of La Rioja wrote a safety plan for the activity, The original text in Spanish is:

"*Estudio sobre los riesgos, medidas preventivas y elementos de protección necesarios para el desarrollo seguro de la actividad cultural 'Geometric Documentation of Heritage: European integration of technologies' a realizar durante el mes de julio en el entorno de las ruinas del Monasterio de San Prudencio del Municipio de Clavijo (La Rioja)*" by Jaime Torrijo Pascual (CECOP SOS-Rioja 112).

During the following pages we will present an extract with the most significant facts and suggestions, anyhow, the complete document is also at your dispossal.

The first important piece of information that you have to know is that **the telephone number for emergencies is 112**. Regarding the geographical disposition of the site, the time of response of the emercency services will be around 15 minutes (up to the evacuation point, see below).

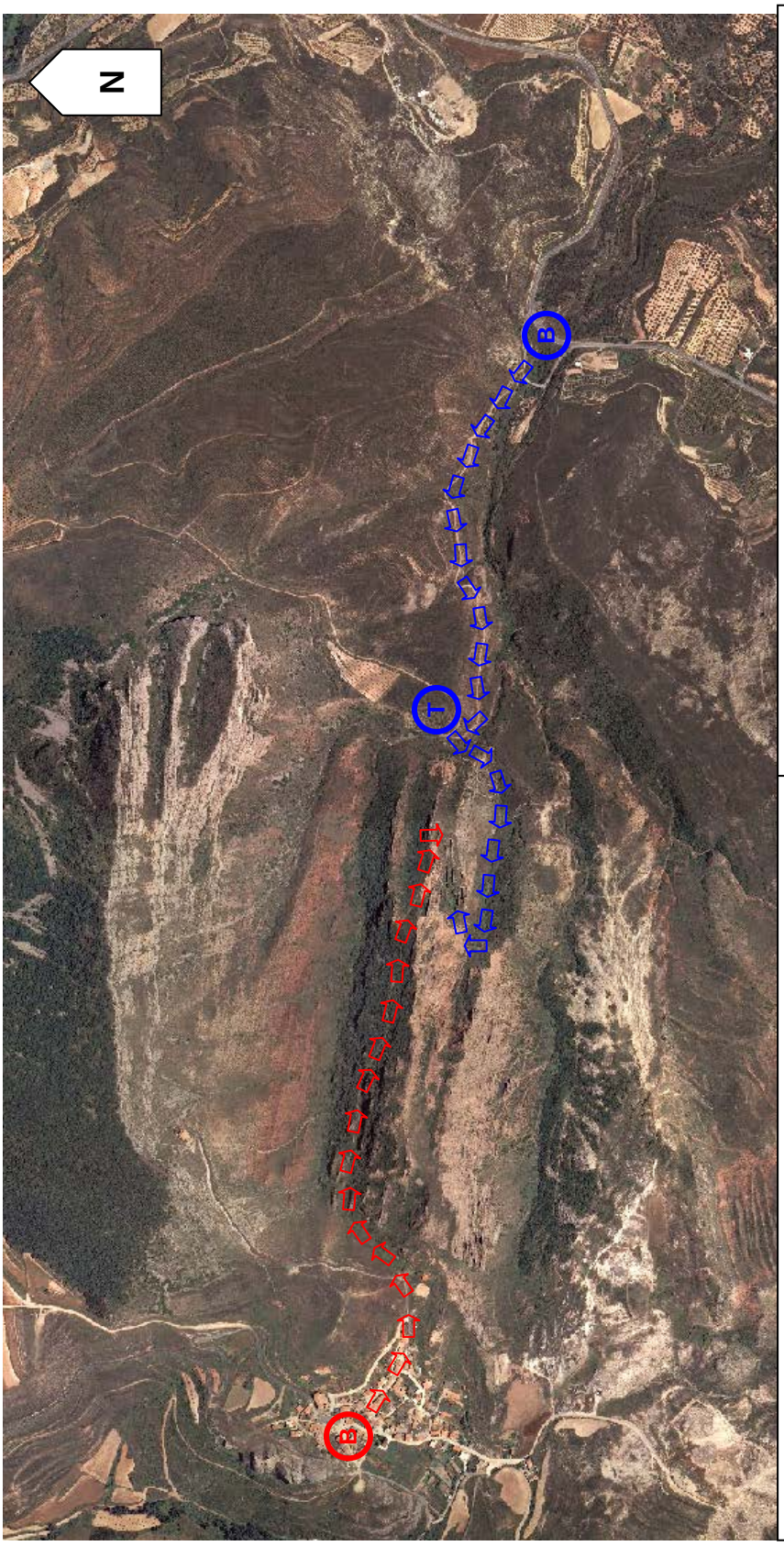
The main environmental risks detected in the plan are:

1. Fire: the Monastery is located in a mediterranean forest area and scrubland. Due to the temperature in July, the area is proned to catch fire. Therefore, **during the fieldwork there will be absolutely forbidden to set any sort of fire or to smoke**. Moreover, we will keep the space neat by picking up all the litter we generate.
2. Summer storm (short but torrential, not very frecuent): generaly they come on the afternoon (we will be on site on mornings).

The site can be accessed from two ways (see PLAN A): a path (in red on the plan) for ramblers that goes down from the town of Clavijo and a land path (in blue on the plan) that goes up from the route LR-250. The latter will be used as main access since the bus can park easily in an abandonated branch of the route. An all-terrain vehicle can go up a bit further and will stay the closest to the site in case it is neccesary to evacuate a participant due to an accident of injury. This old branch will be the evacuation point (or where an ambulance will come if needed).

Both ways will take us around 30 minutes.

PLAN A: Access to the site



Route 2 (blue): from the road up to the site

From an old brach of the route LR-250 (nowadays out of service) we go up a land path, then the path get narrower, we have to go through a small stream bed before facing the last slope. We will use this route most of the times (except for the ones mentioned in the other box).

The bus will left us at the entrance of the town (label "B"). The all-terrain vehicle (4x4) can reach up to the point labeled "T".

Approximate time: 30 min.

Route 1 (red): from Clavijo down to the site

The archaeological site can be accessed from the town of Clavijo, taking a path downhill after a first slope up. We will use this route the first day for the preliminary visit of the site and on Friday 16th since we will have lunch in Clavijo. In the town we will have at our dispossal a bathroom in case of necessity. The bus will left us at the entrance of the town (label "B").

Approximate time: 30 min.

The following map (PLAN B) shows the site with more detail. There will be two meeting points:

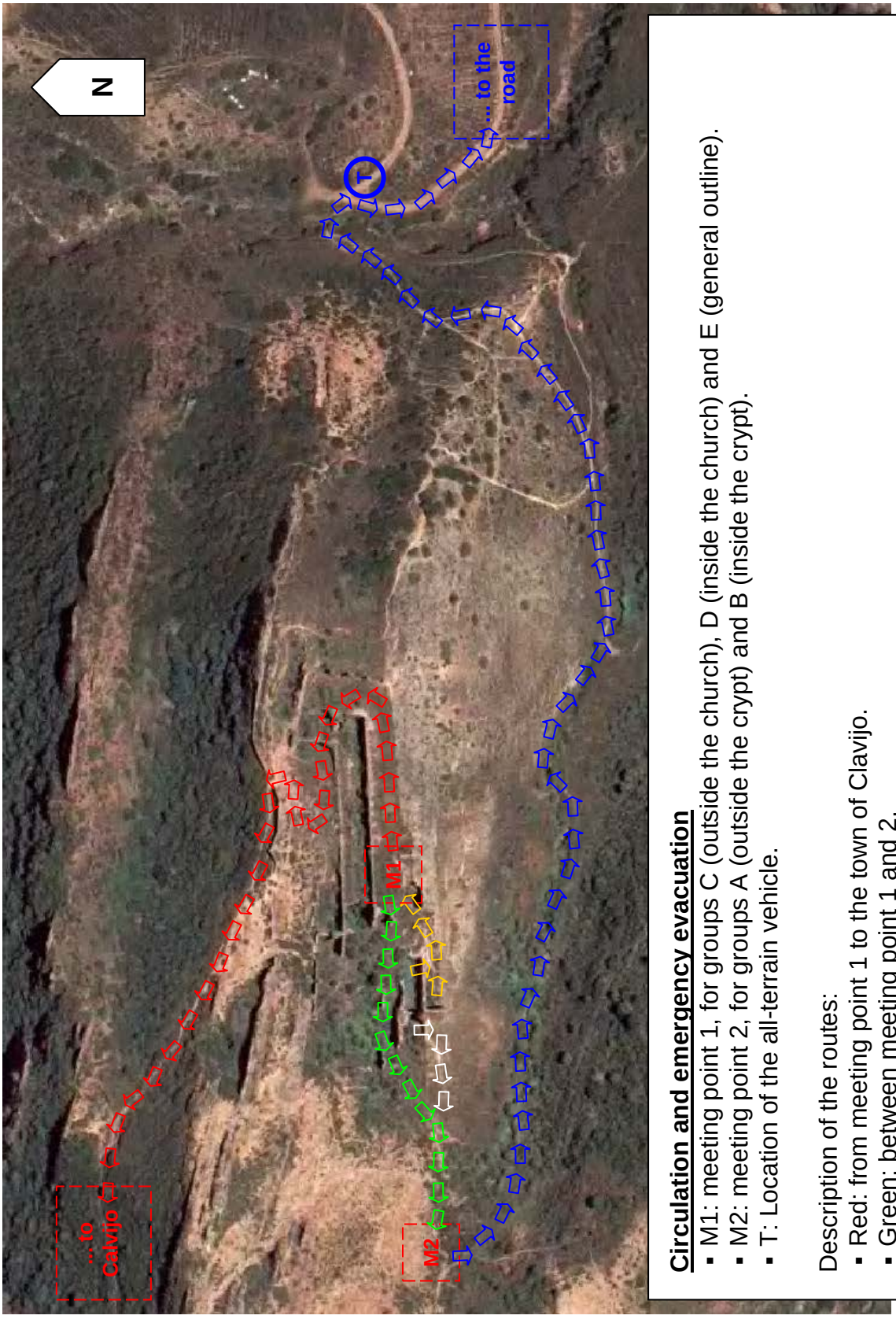
- The first one will be located inside the Monastery. This is a clear space at the eastern of the church. This meeting point will be the reference for groups C (inside the church), D (outside the church) and E (general outline of the Monastery). The yellow trail shows the way from working areas C and D to this meeting point. **At this point there will be a first-aid kid at disposal of anyone who needs it**. Sandra Uceda will be in charge of this first-aid kit, in order to replace the employed material, speak with her each time you get something from the kit.
- The second meeting point is outside the site (west) and will be used for groups A (outside the crypt) and B (inside the crypt).

In order to move from one meeting point to the other we must go along the green trail because the direct conection from the crypt (groups A and B) to the church (groups C and D) is rather unsafe (see PLAN C for more detail). Therefore the crossings marked in the following pictures should be avoided.

We can use the toilets in the town hall of Clavijo, but remenber that it is a 30 minutes' walk from the site along the trail in red (and another 30 minutes to come back). This path will be also used the day we have lunch in Clavijo and the first day during the preliminary visit to the site.

The bus back to Logroño is scheduled at 14:00 and, by that time, we must be down at the road LR-250. Therefore, **by 13:30 all the groups will be gathered at their respective meeting point which might mean that they have finished work a few minutes before. We cannot keep the bus waiting for us, consequently if we do not have finished our work we will carry on the following day**. We will go from the meeting point 1 to the meeting point 2 and then down the blue trail.

PLAN B: Evacuation



Circulation and emergency evacuation

- M1: meeting point 1, for groups C (outside the church), D (inside the church) and E (general outline).
- M2: meeting point 2, for groups A (outside the crypt) and B (inside the crypt).
- T: Location of the all-terrain vehicle.

Description of the routes:

- Red: from meeting point 1 to the town of Clavijo.
- Green: between meeting point 1 and 2.
- Yellow: from working areas C and D to meeting point 1.
- White: from working areas A and B to meeting point 2.
- Blue: from meeting point 2 to the 4x4 vehicle and down to the road.

Once on-site, we must be careful and avoid some risks: fall, slip, lanslides, injuries, cuts and so on. PLAN C shows the most problematic areas in the site.

The way of cross from the working areas A and B of the crypt to the working areas C and D (church) cannot be done directly but turning around as it is marked with the red dotted line.

Some walls and floors are in a bad state, they are presented with yellow starts on the map.

Steep slopes are also drawn with a crisscrossed pattern in blue and sheer drops with a dotted line in red. Walk carefully if close to these areas, specially if you are loaded.

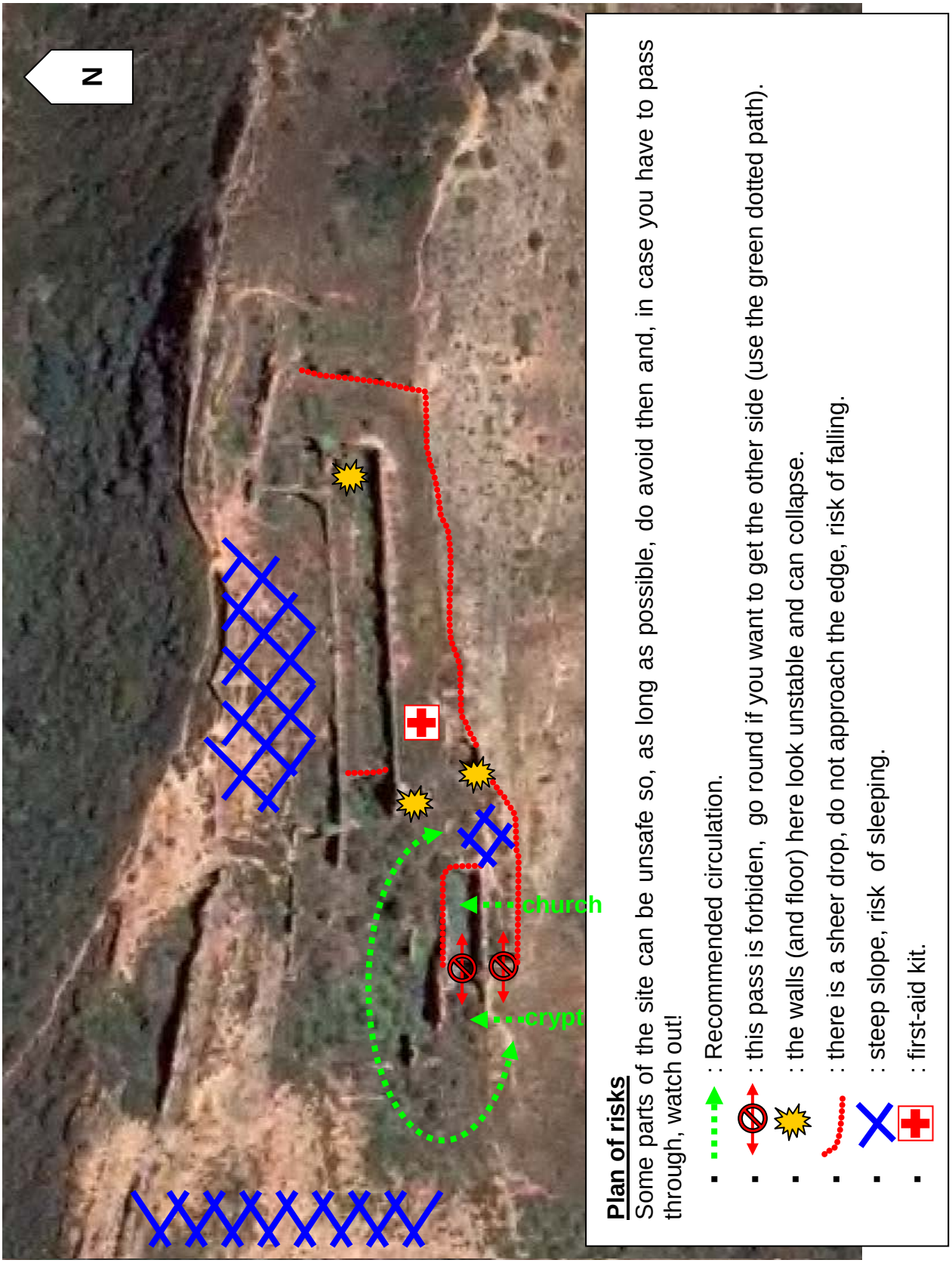
On site, some of this areas will be marked with tape, ropes and signs. Nevertheless, do act with caution.

Procedure in case of accident or hazard:

1. Check the risk and magnitude.
2. Contact with one of the responsibles of the safety on site (José Manuel Valle: -xxx-, Álvaro Rodríguez: -xxx- or Pablo Pérez Vidiella: -xxx-.
3. Assess the posibility of sorting it out by ourselves.
4. Call the 112.

In case of general emergency everyone wil meet at meeting point 1.

PLAN C: Plan of risks



To finish off, here you are some suggestions about safety and comfort on site:

- The weather can be really hot and sunny, we will provide you with a bottle of water for every day. Moreover, in order to prevent sunburns, the use of hat and sun-lotion is always mandatory.

- Do wear suitable suitable shoes, that is: **boots and good socks**. On the other hand, trainers, casual shoes and so on are absolutely unwise.

- Do wear appropriate clothes not only for the weather but also for the kind of terrain. We remind you that we will be in a wild area full of bramble, consequently **do not wear short trousers**. Take care with the insects as well (**bring repellent**); futhermore, the area is frequented by cattle and some wild animals (such as wild boars or roe deers) none of them are dangerous by themselves but they leave excrements and parasites (e.g. ticks).

EQUIPMENT

In this section you will find a set of 6 sheets for each day of fieldwork: Monday 12, Tuesday 13, Wednesday 14, Friday 16 and Monday 19.

The aim of each set is to help you to prepare the equipment that you will need on-site and verify that you give it back ready for its se the next day by another group.

Some box have the border in blue, they should be filled in the day before. On the contrary, the cells in red will be completed once you return to the dormitory and download the data.

There is seven kinds of tables:

1. Tasks to accomplish during today's fieldwork. (e.g. "documenting the crypt with a 360º laser scanner"), and the end of the day you will tick if this task has been fulfilled or not.
2. Required equipment for each task. For each of the task in table 1, write the main equipment you will need (e.g. Z+F laser scan, photogrammetric camera, etc.).
3. Check lists for total stations, laser scanners or GPS. The equipment does not work on its own! The previous day we must ensure that the batteries are charged and the coordinates of the reference network uploaded. Later, when you come back to the office you will download and backup the collected data and leave the equipment ready for next day. Here you will find tables for up to 4 different devices (for instance a total station and 2 GPS receivers).
4. Check lists for a photogrammetric camera. Similar to the table 3, for up to two metric cameras.
5. List with the pieces of equipment used. All the equipment (main elements such as laser scanner or total station plus auxiliary elements suchs as poles, prism, tripods,...) will have a register of material out and material in.
6. Notes.
7. Control. Signature of one of the members of the group (student) and one of the professors verifying that the delivery or the receipt of the material (table 5) is correct.

1.- Tasks to accomplish during today's fieldwork.

	Task	Done? Yes	Done? No	Notes
1				
2				
3				
4				
5				

2.- Required equipment for each task.

	Task	Equipment that will be needed
1		
2		
3		
4		
5		

3.- Check lists for total stations, laser scanners or GPS.

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
Battery 2:			
Battery 3:			
			Done?
Download data to the computer (raw format):			
Data loaded in CAD:			
Data stored in files for archive (exchange formats, ascii,...):			
The name of the files follow the specified criteria:			
Back up:			
Delete data in the device:			
Notes:			

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
Battery 2:			
Battery 3:			
			Done?
Download data to the computer (raw format):			
Data loaded in CAD:			
Data stored in files for archive (exchange formats, ascii,...):			
The name of the files follow the specified criteria:			
Back up:			
Delete data in the device:			
Notes:			

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
Battery 2:			
Battery 3:			
			Done?
Download data to the computer (raw format):			
Data loaded in CAD:			
Data stored in files for archive (exchange formats, ascii,...):			
The name of the files follow the specified criteria:			
Back up:			
Delete data in the device:			
Notes:			

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
Battery 2:			
Battery 3:			
			Done?
Download data to the computer (raw format):			
Data loaded in CAD:			
Data stored in files for archive (exchange formats, ascii,...):			
The name of the files follow the specified criteria:			
Back up:			
Delete data in the device:			
Notes:			

4.- Check lists for a photogrammetric camera.

Model:			
Certificate:			
Battery	Charged?	Memory cards	Clean?
Battery 1:			
Battery 2:			
Battery 3:			
			Done?
Download data from the camera to the computer (raw format):			
Data in working format (e.g. JPEG, PNG, ...):			
Convert raw files to DNG (archive format):			
The name of the files follow the specified criteria:			
Back up:			
Delete memory cards:			
Notes:			

Model:			
Certificate:			
Battery	Charged?	Memory cards	Clean?
Battery 1:			
Battery 2:			
Battery 3:			
			Done?
Download data from the camera to the computer (raw format):			
Data in working format (e.g. JPEG, PNG, ...):			
Convert raw files to DNG (archive format):			
The name of the files follow the specified criteria:			
Back up:			
Delete memory cards:			
Notes:			

5.- List with the pieces of equipment used.

Equipment	Quantity	Out?	Back?	Notes

6.- Notes.

Notes:

7.- Control.

Take equipment		Return equipment	
Date:	Hour:	Date:	Hour:
Student:	Professor:	Student:	Professor:
Signature:	Signature:	Signature:	Signature:

1.- Tasks to accomplish during today's fieldwork.

	Task	Done? Yes	Done? No	Notes
1				
2				
3				
4				
5				

2.- Required equipment for each task.

	Task	Equipment that will be needed
1		
2		
3		
4		
5		

3.- Check lists for total stations, laser scanners or GPS.

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
Battery 2:			
Battery 3:			
			Done?
Download data to the computer (raw format):			
Data loaded in CAD:			
Data stored in files for archive (exchange formats, ascii,...):			
The name of the files follow the specified criteria:			
Back up:			
Delete data in the device:			
Notes:			

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
Battery 2:			
Battery 3:			
			Done?
Download data to the computer (raw format):			
Data loaded in CAD:			
Data stored in files for archive (exchange formats, ascii,...):			
The name of the files follow the specified criteria:			
Back up:			
Delete data in the device:			
Notes:			

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
Battery 2:			
Battery 3:			
			Done?
Download data to the computer (raw format):			
Data loaded in CAD:			
Data stored in files for archive (exchange formats, ascii,...):			
The name of the files follow the specified criteria:			
Back up:			
Delete data in the device:			
Notes:			

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
Battery 2:			
Battery 3:			
			Done?
Download data to the computer (raw format):			
Data loaded in CAD:			
Data stored in files for archive (exchange formats, ascii,...):			
The name of the files follow the specified criteria:			
Back up:			
Delete data in the device:			
Notes:			

4.- Check lists for a photogrammetric camera.

Model:			
Certificate:			
Battery	Charged?	Memory cards	Clean?
Battery 1:			
Battery 2:			
Battery 3:			
			Done?
Download data from the camera to the computer (raw format):			
Data in working format (e.g. JPEG, PNG, ...):			
Convert raw files to DNG (archive format):			
The name of the files follow the specified criteria:			
Back up:			
Delete memory cards:			
Notes:			

Model:			
Certificate:			
Battery	Charged?	Memory cards	Clean?
Battery 1:			
Battery 2:			
Battery 3:			
			Done?
Download data from the camera to the computer (raw format):			
Data in working format (e.g. JPEG, PNG, ...):			
Convert raw files to DNG (archive format):			
The name of the files follow the specified criteria:			
Back up:			
Delete memory cards:			
Notes:			

5.- List with the pieces of equipment used.

Equipment	Quantity	Out?	Back?	Notes

6.- Notes.

Notes:

7.- Control.

Take equipment		Return equipment	
Date:	Hour:	Date:	Hour:
Student:	Professor:	Student:	Professor:
Signature:	Signature:	Signature:	Signature:

1.- Tasks to accomplish during today's fieldwork.

	Task	Done? Yes	Done? No	Notes
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3				
4				
5				

2.- Required equipment for each task.

	Task	Equipment that will be needed
1		
2		
3		
4		
5		

3.- Check lists for total stations, laser scanners or GPS.

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
Battery 2:			
Battery 3:			
			Done?
Download data to the computer (raw format):			
Data loaded in CAD:			
Data stored in files for archive (exchange formats, ascii,...):			
The name of the files follow the specified criteria:			
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Battery	Charged?	Coordinates & Data	Uplodaded?
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			Done?
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The name of the files follow the specified criteria:			
Back up:			
Delete data in the device:			
Notes:			

4.- Check lists for a photogrammetric camera.

Model:			
Certificate:			
Battery	Charged?	Memory cards	Clean?
Battery 1:			
Battery 2:			
Battery 3:			
			Done?
Download data from the camera to the computer (raw format):			
Data in working format (e.g. JPEG, PNG, ...):			
Convert raw files to DNG (archive format):			
The name of the files follow the specified criteria:			
Back up:			
Delete memory cards:			
Notes:			

Model:			
Certificate:			
Battery	Charged?	Memory cards	Clean?
Battery 1:			
Battery 2:			
Battery 3:			
			Done?
Download data from the camera to the computer (raw format):			
Data in working format (e.g. JPEG, PNG, ...):			
Convert raw files to DNG (archive format):			
The name of the files follow the specified criteria:			
Back up:			
Delete memory cards:			
Notes:			

5.- List with the pieces of equipment used.

Equipment	Quantity	Out?	Back?	Notes

6.- Notes.

Notes:

7.- Control.

Take equipment		Return equipment	
Date:	Hour:	Date:	Hour:
Student:	Professor:	Student:	Professor:
Signature:	Signature:	Signature:	Signature:

1.- Tasks to accomplish during today's fieldwork.

	Task	Done? Yes	Done? No	Notes
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	Task	Equipment that will be needed
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3.- Check lists for total stations, laser scanners or GPS.

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
Battery 2:			
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			Done?
Download data to the computer (raw format):			
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Battery	Charged?	Coordinates & Data	Uplodaded?
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			Done?
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The name of the files follow the specified criteria:			
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Delete data in the device:			
Notes:			

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Model:			
Certificate:			
Battery	Charged?	Memory cards	Clean?
Battery 1:			
Battery 2:			
Battery 3:			
			Done?
Download data from the camera to the computer (raw format):			
Data in working format (e.g. JPEG, PNG, ...):			
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The name of the files follow the specified criteria:			
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5.- List with the pieces of equipment used.

Equipment	Quantity	Out?	Back?	Notes

6.- Notes.

Notes:

7.- Control.

Take equipment		Return equipment	
Date:	Hour:	Date:	Hour:
Student:	Professor:	Student:	Professor:
Signature:	Signature:	Signature:	Signature:

1.- Tasks to accomplish during today's fieldwork.

	Task	Done?		Notes
		Yes	No	
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Battery 1:		*Network:*	
Battery 2:			
Battery 3:			
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Delete data in the device:			
Notes:			

Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
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Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
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Battery 3:			
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The name of the files follow the specified criteria:			
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Device:			
Battery	Charged?	Coordinates & Data	Uplodaded?
Battery 1:		*Network:*	
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Certificate:			
Battery	Charged?	Memory cards	Clean?
Battery 1:			
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Data in working format (e.g. JPEG, PNG, ...):			
Convert raw files to DNG (archive format):			
The name of the files follow the specified criteria:			
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Notes:			

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Certificate:			
Battery	Charged?	Memory cards	Clean?
Battery 1:			
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Download data from the camera to the computer (raw format):			
Data in working format (e.g. JPEG, PNG, ...):			
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The name of the files follow the specified criteria:			
Back up:			
Delete memory cards:			
Notes:			

5.- List with the pieces of equipment used.

Equipment	Quantity	Out?	Back?	Notes

6.- Notes.

Notes:

7.- Control.

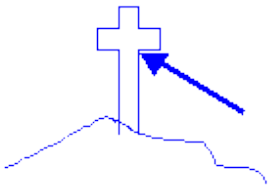
Take equipment		Return equipment	
Date:	Hour:	Date:	Hour:
Student:	Professor:	Student:	Professor:
Signature:	Signature:	Signature:	Signature:

SURVEYING STATIONS

The following templates will be filled in each time you set up the total station. Try to be methodical and complete the sheet for each station in order to ensure that all the data is collected with guarantee.

Station: grA_E03	Day: 2010-07-18	Time (start): 10:30	Time (finish): 12:45
Oriented by:	☐Known Coordinates	☒Resection	☐Other ( )
Accuracy (if known):	X: 0,001 mm	Y: 0,002 mm	Z: 0,005 mm
Scale of the distances:	0,999629		
Just after setting up, we checked the coordintates of point:			BM01
...and the errors were:	X: 0,003 mm	Y: 0,003 mm	Z: 0,005 mm
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:



Cross at the top of the mount (right side).
At the vertex down-right.

Values when setting up	
Hz: 317°21'40"	V: 92°55'50"
Values when leaving	
Hz: 317°21'05"	V: 92°56'10"

Notes:

The points starting by "W" are part of the wall, "E" stands for edge and "G" for gully.

Coordinates of the control points D4_SP045 to D4_SP097.

Just before leaving this station, we checked the coordintates of point:			BM01
...and the errors were:	X: 0,005 mm	Y: 0,004 mm	Z: 0,005 mm
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
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Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
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Sketch of the reference:	*Values when setting up*	
	Hz:	V:
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Notes:			
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Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
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Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
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Notes:			
Just before leaving this station, we checked the coordintates of point:			
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Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
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Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
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Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

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Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
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Sketch of the reference:	*Values when setting up*	
	Hz:	V:
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Notes:			
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Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
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Just after setting up, we checked the coordintates of point:			
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Sketch of the reference:	*Values when setting up*	
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Accuracy (if known):	X:	Y:	Z:
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Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
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Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
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Accuracy (if known):	X:	Y:	Z:
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...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Station:	Day:	Time (start):	Time (finish):
Oriented by:	☐Known Coordinates	☐Resection	☐Other ( )
Accuracy (if known):	X:	Y:	Z:
Scale of the distances:			
Just after setting up, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

Sketch of the reference:	*Values when setting up*	
	Hz:	V:
	Values when leaving	
	Hz:	V:

Notes:			
Just before leaving this station, we checked the coordintates of point:			
...and the errors were:	X:	Y:	Z:
(optional) we also checked the coordinates of point:			
...and the errors were:	X:	Y:	Z:

PHOTOGRAMMETRY: CONTROL POINTS

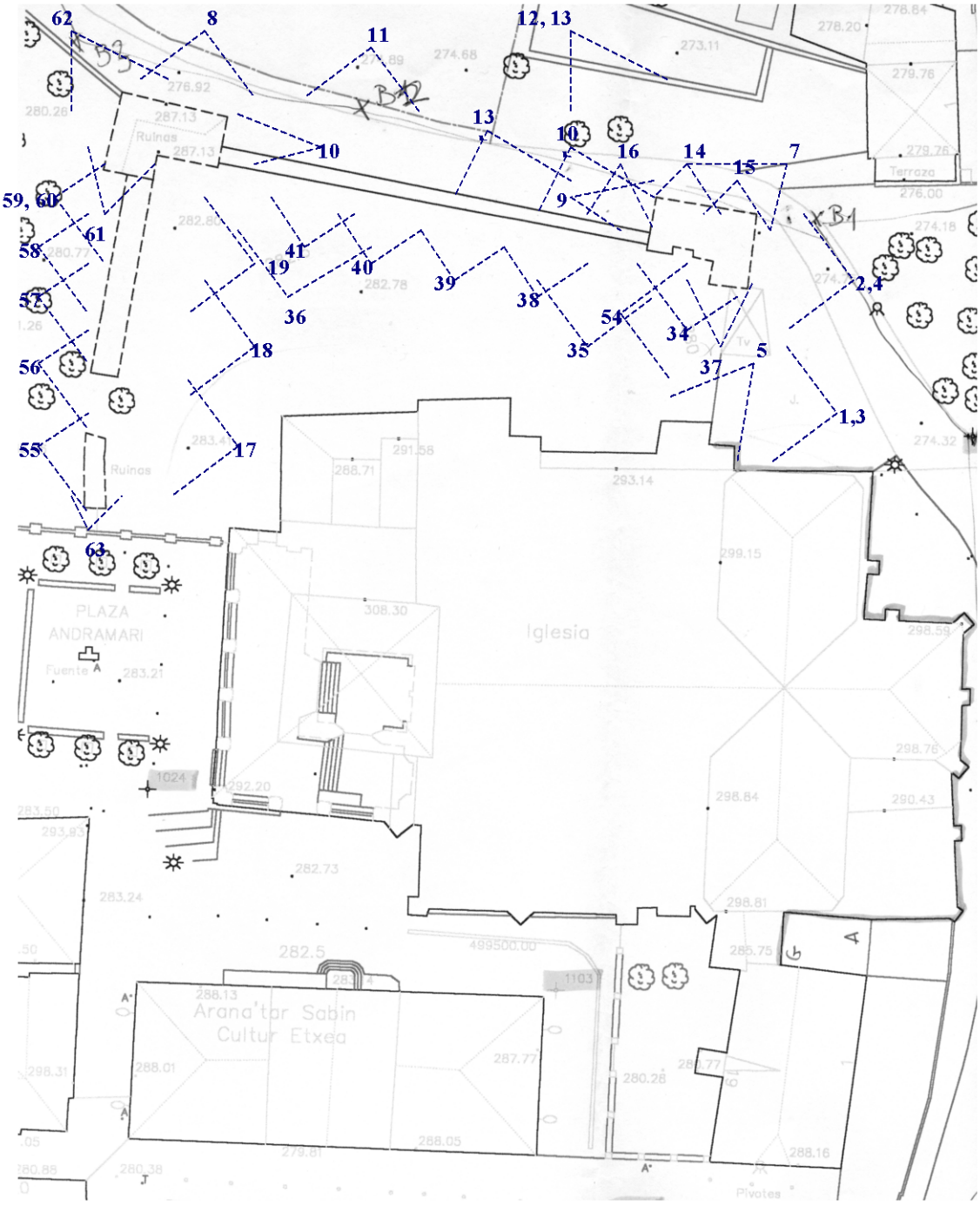
In this section there is a collection of photographs of your working area. The aim of this collection is to be the base for the sketches used to mark the control points (targets and outstanding points) and do annotations useful, for instance, for the orientation of the metric photographs. Moreover, they can be useful for annotations.

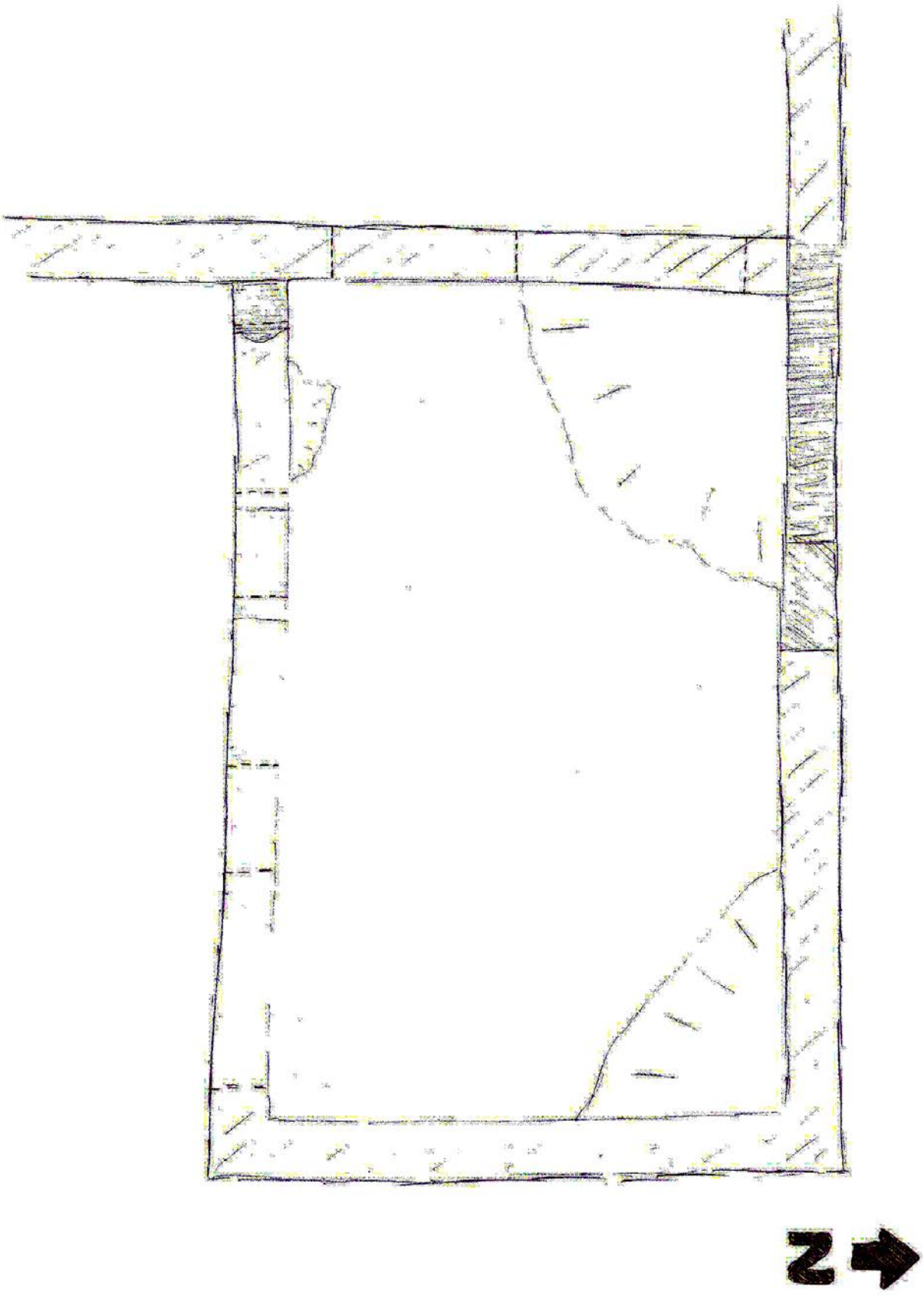
In the following picture we can see the grey boxes defining the photogrammetric pairs and the control points in red -when they are targets- and pink -when they are identifiable points on the surface (in these case, a small line indicate the exact corner)-.

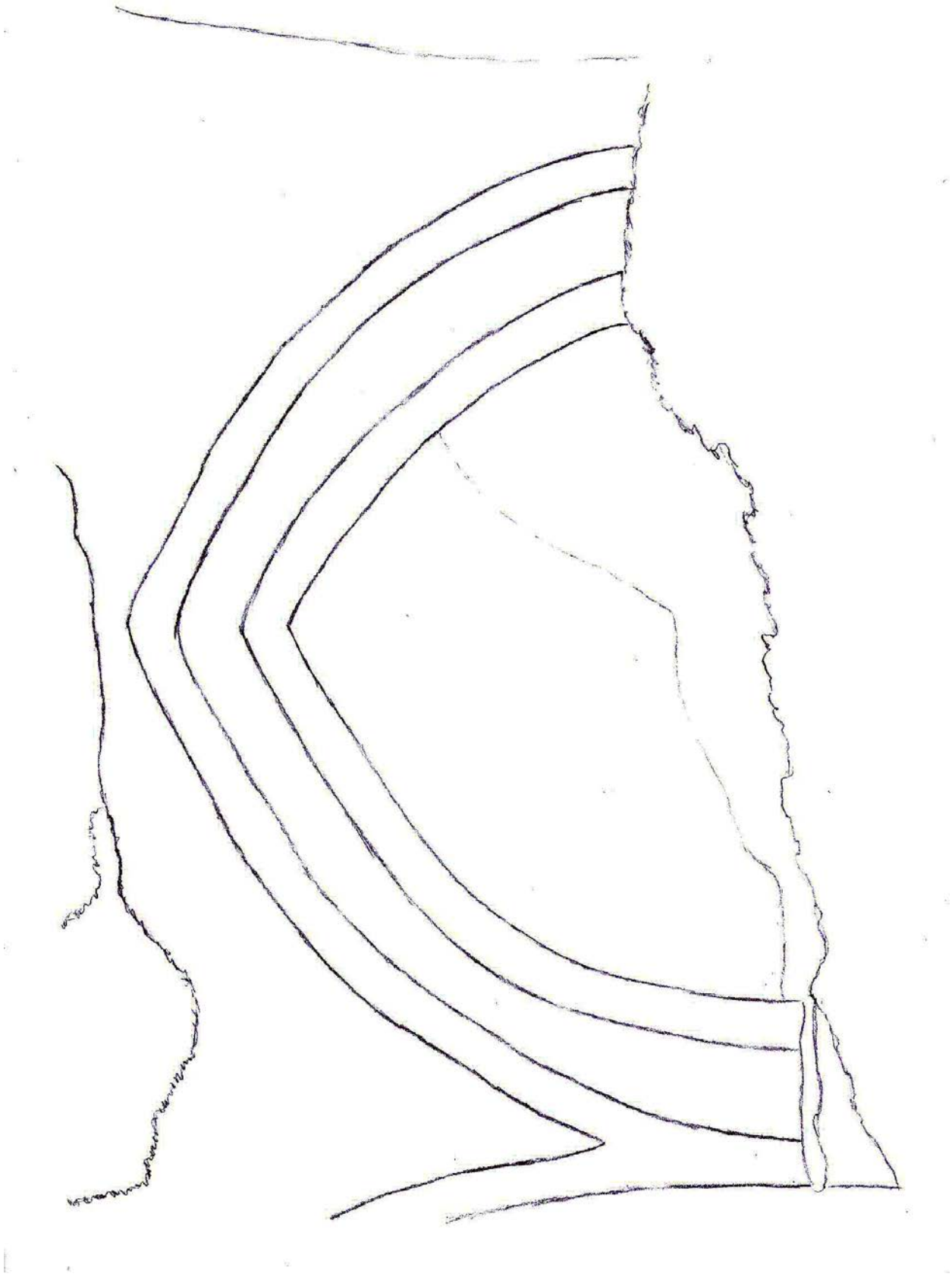
Just in case we made more than one photogrammetric record (or different kinds of annotation), the set of photograph is repeated, this is, there are two copies.

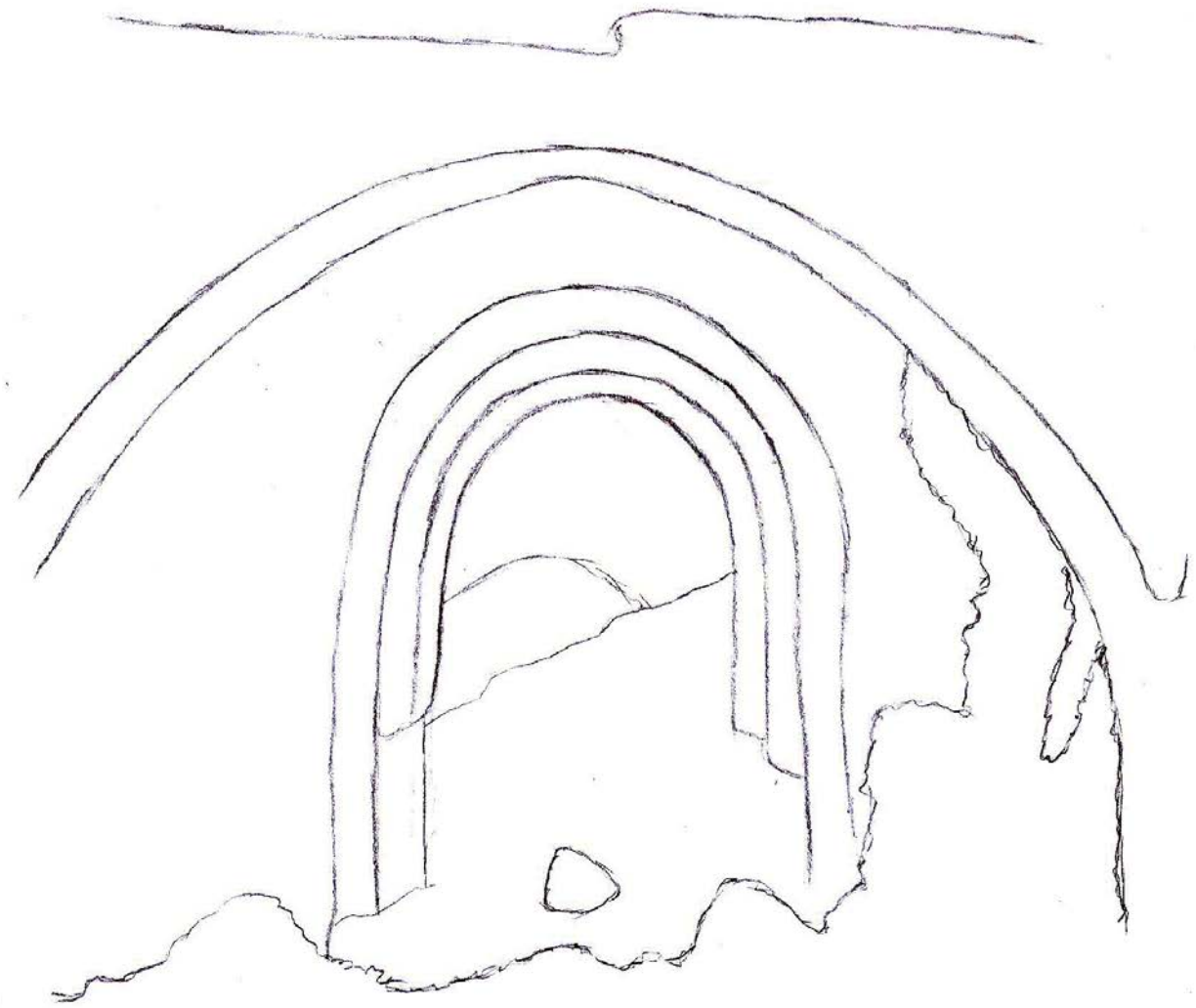
SKETCHES

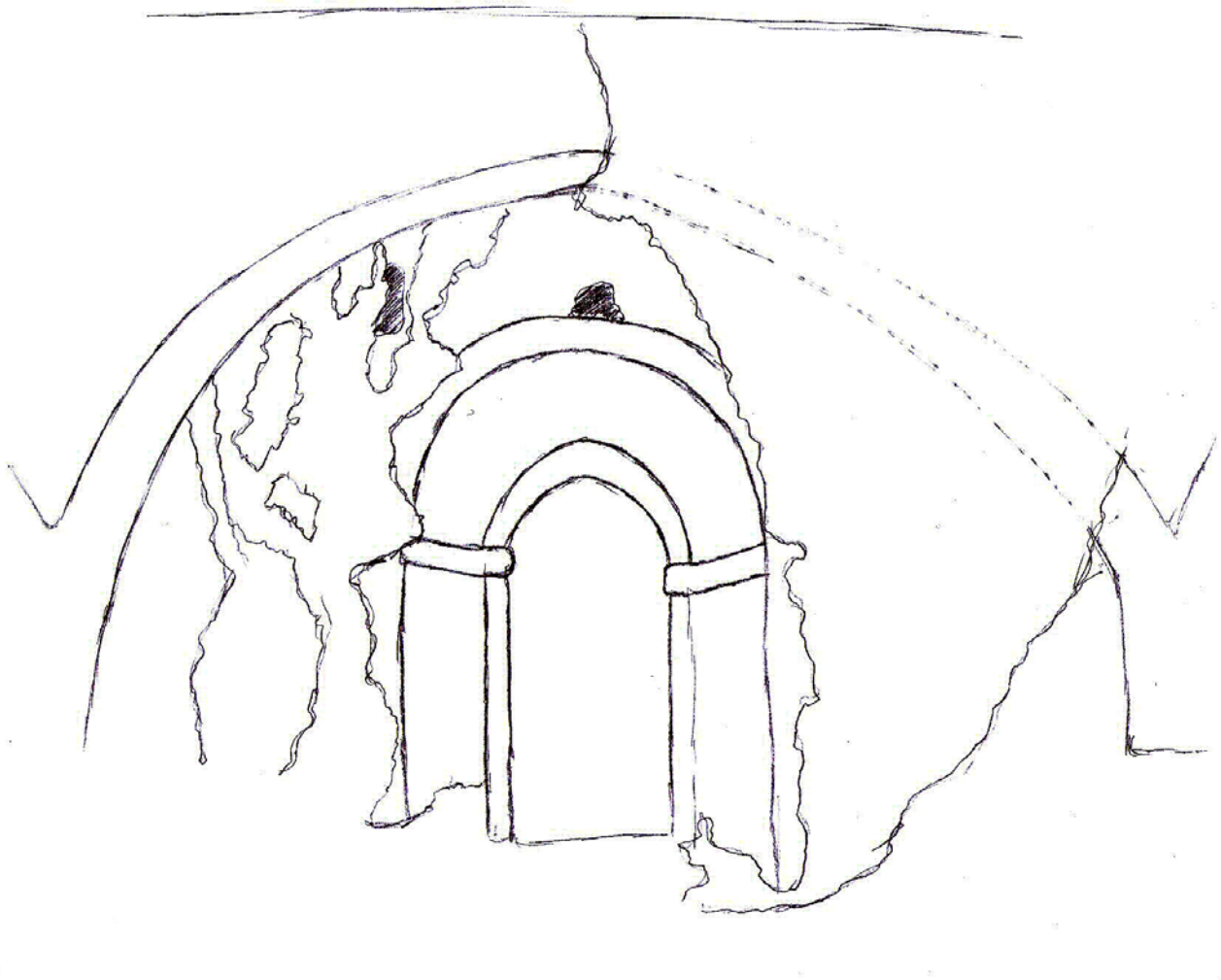
In this section there are some pre-drawn sketches of your working area. They should be completed with the position of the photogrammetric pairs (as the picture below) or the stations and references of the laser scanner.



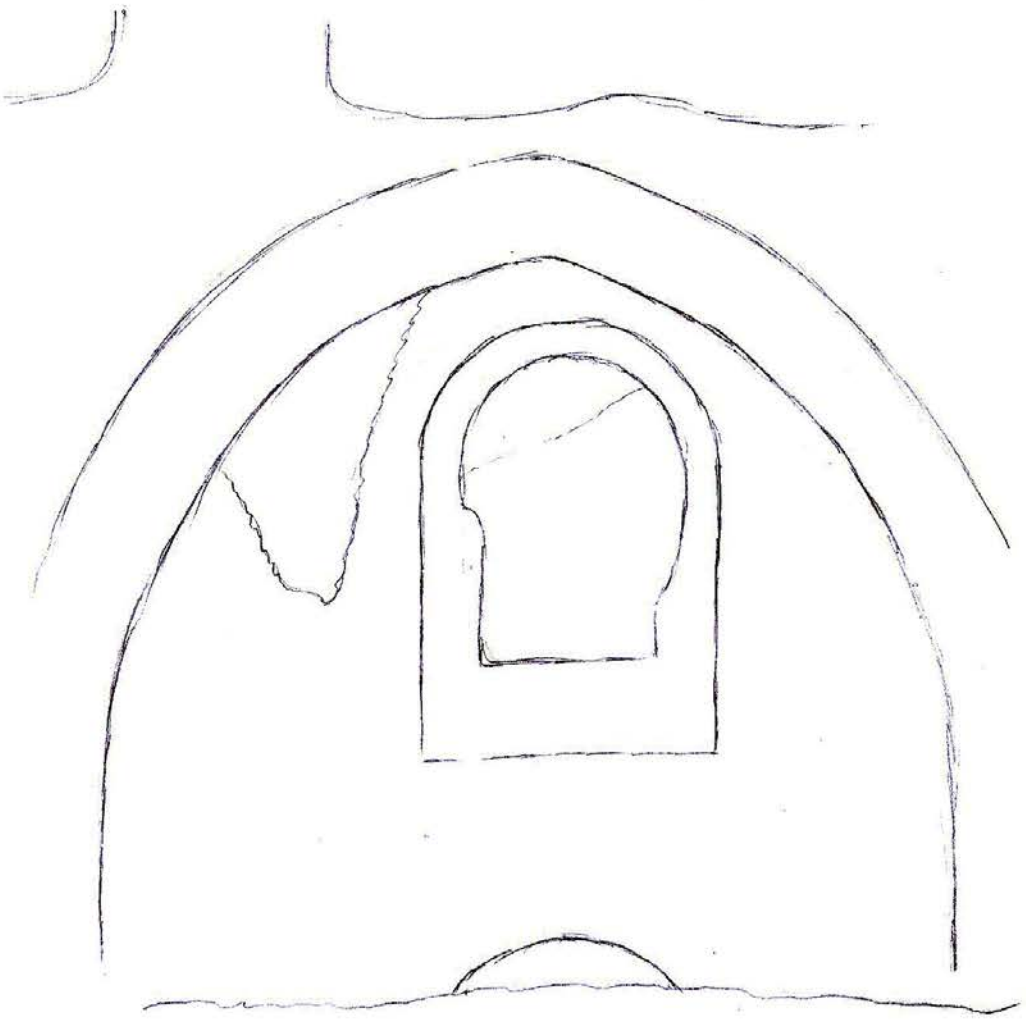




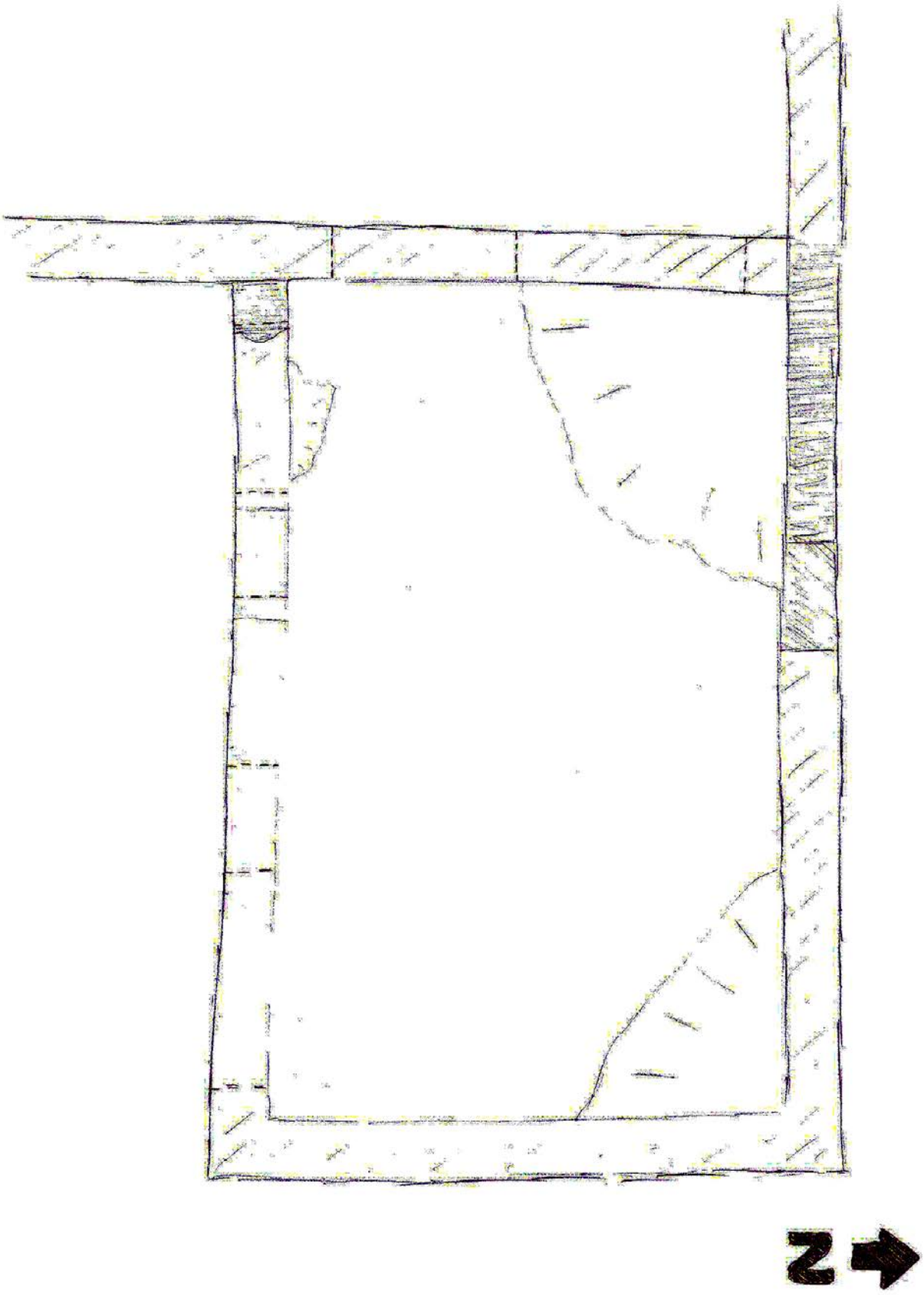


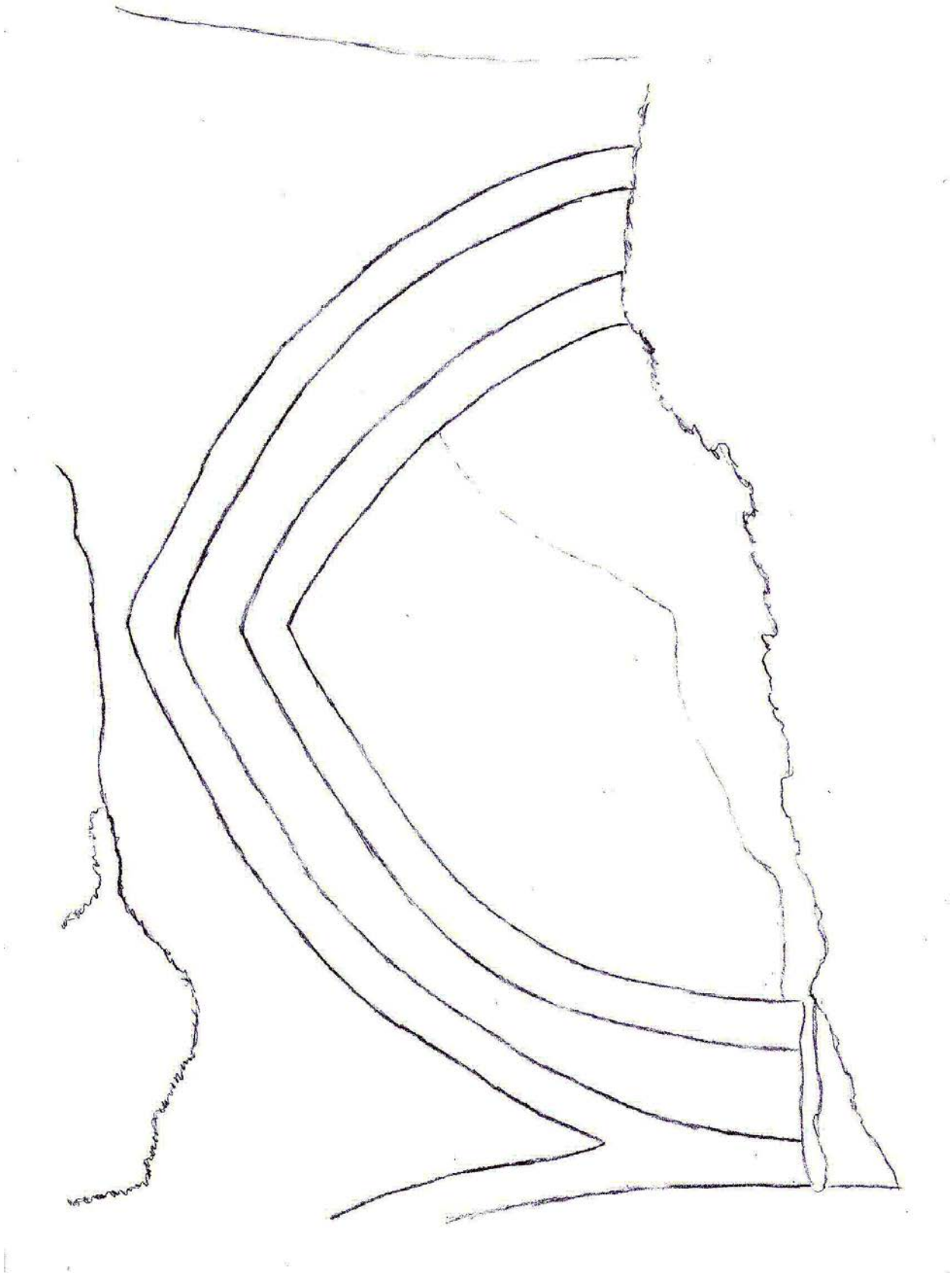


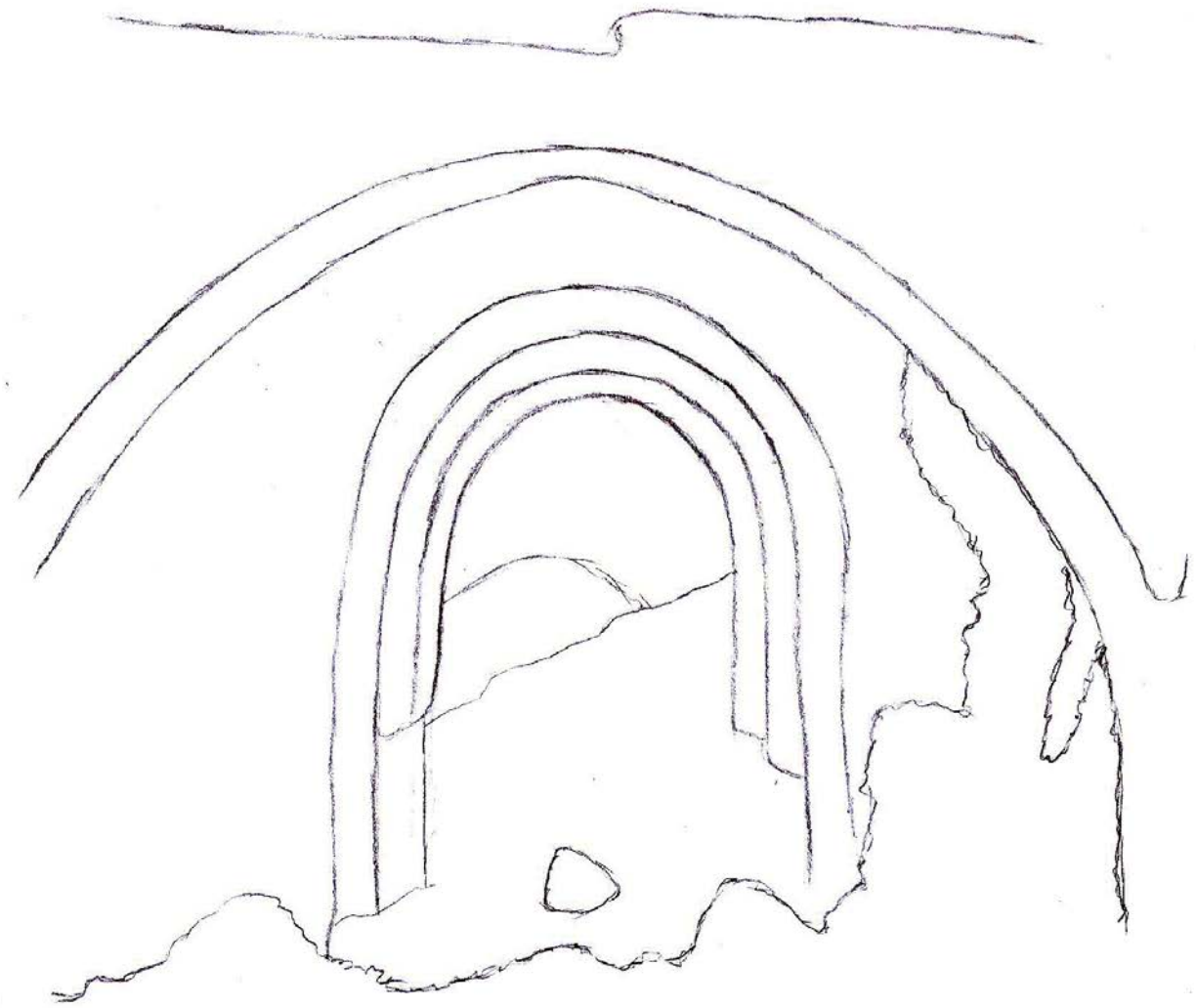
SKETCHES

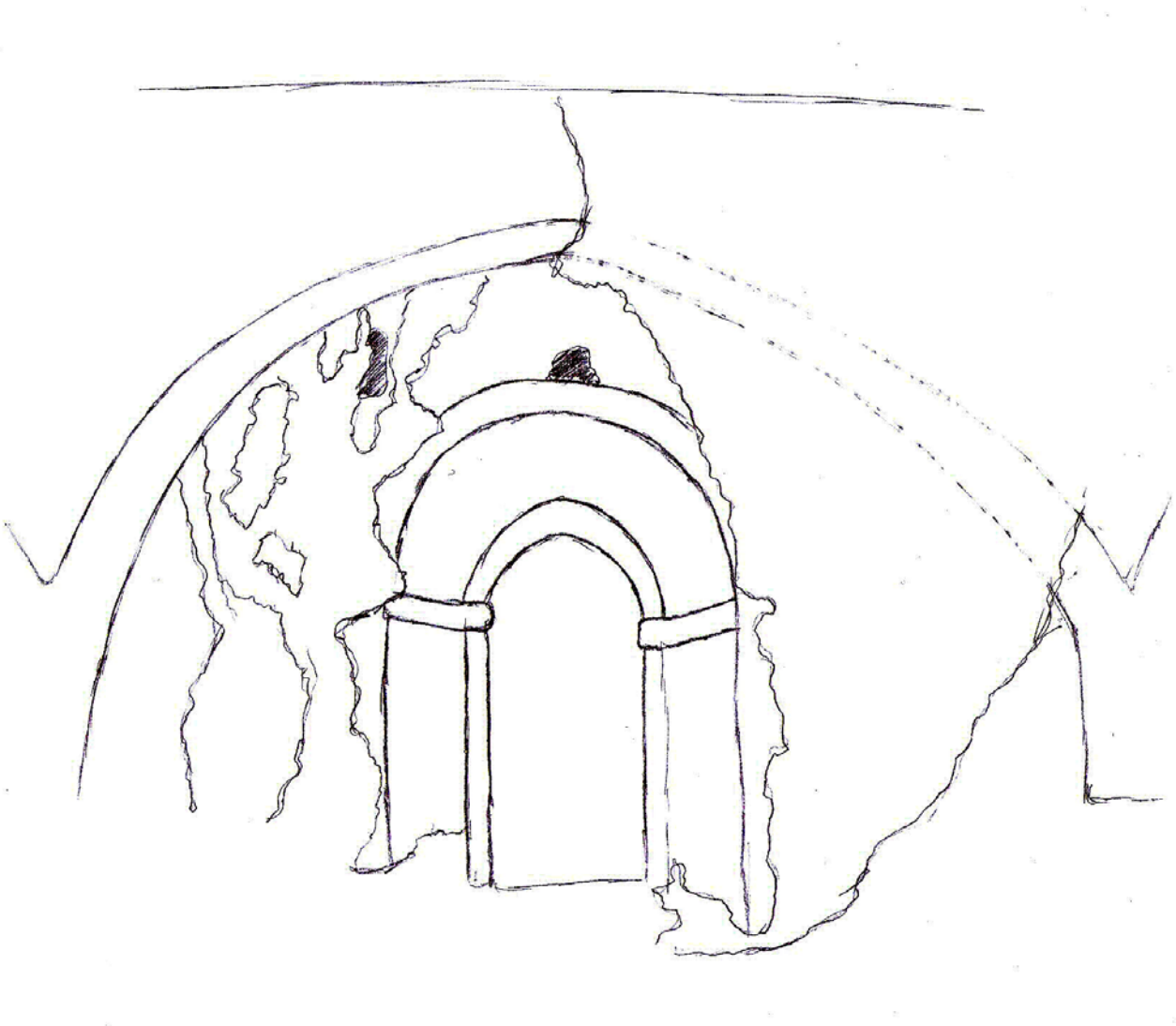


SKETCHES

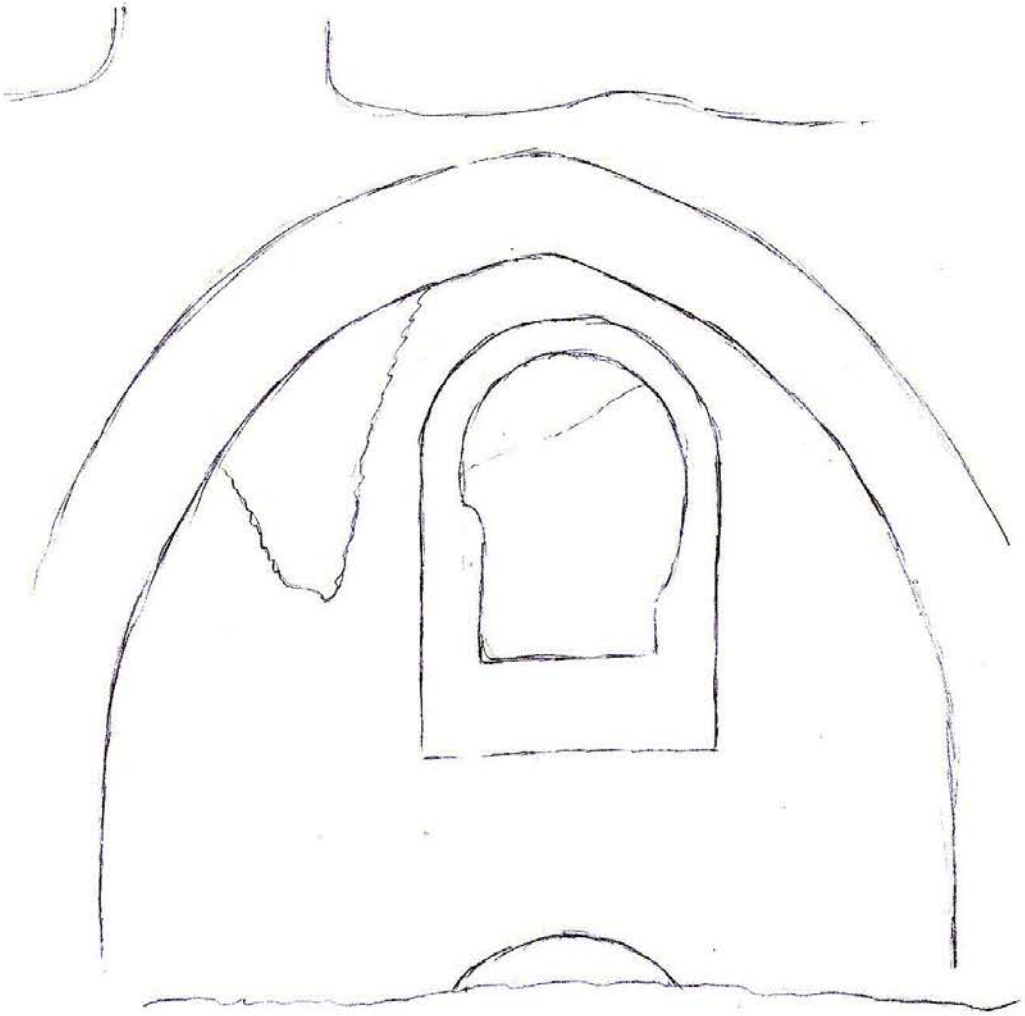








SKETCHES



REFERENCE NETWORK

This plan shows the reference network:

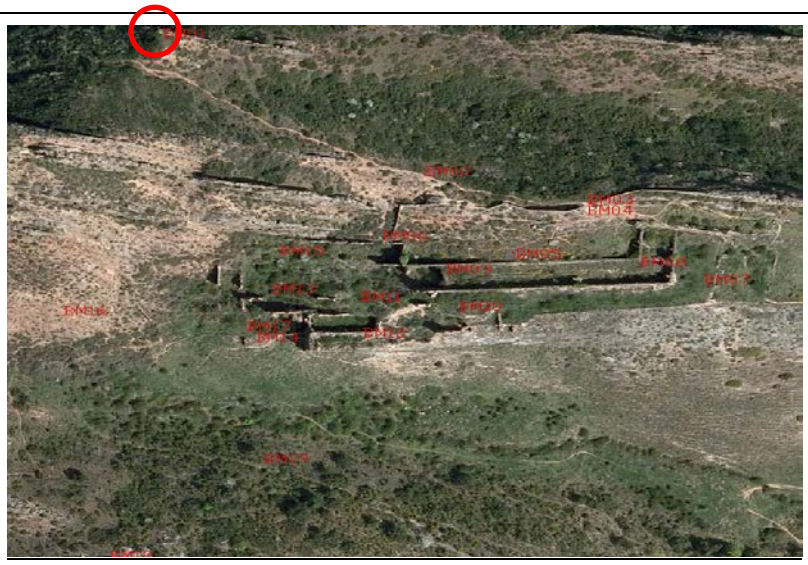
NOTE: The following sheets show the orthometric height (mean sea level), in order to obtain the ellipsoidal height do add 51,61 m.

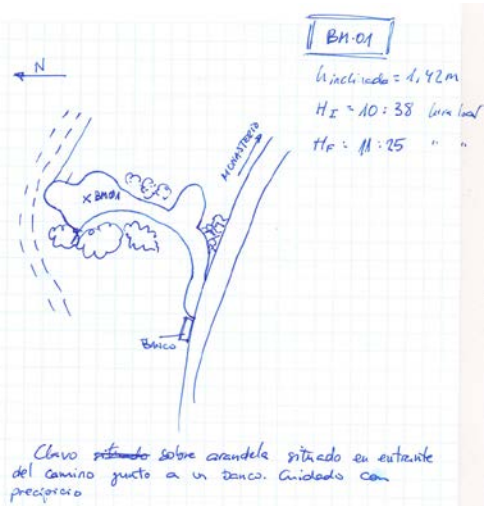
Estación / Benchmark:	**BM01**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548191,917
Municipio / Town Council	Clavijo	Y / Northing :	4688610,010
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	767,846

Reseña literal: Estaca de madera con clavo de acero incrustado, situada en un pequeño montículo, en la margen izquierda del camino que desciende desde el pueblo de Clavijo hacia el yacimiento.

Description:

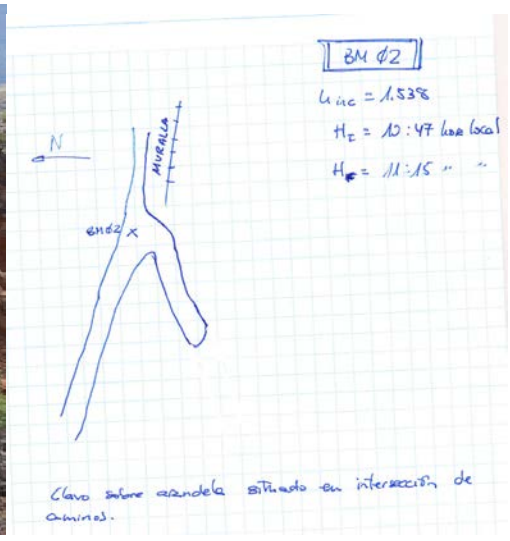
Stainless steel nail on a wooden stake, located on a small mound on the left side of the path that goes down from the village of Clavijo to the site.





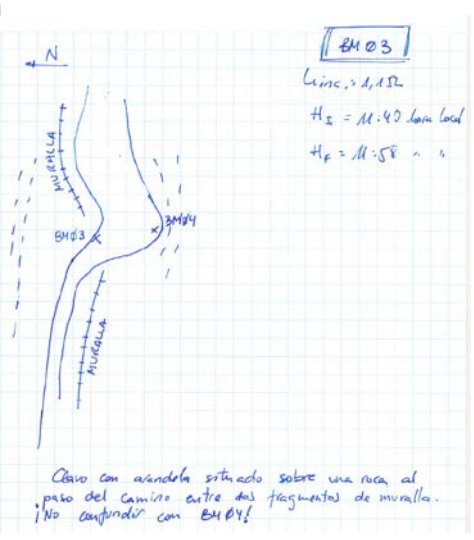
Estación / Benchmark:	**BM02**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548274,826
Municipio / Town Council	Clavijo	Y / Northing :	4688546,960
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	739,763

Reseña literal: Clavo de acero con arandela, situado en un afloramiento rocoso en la mitad del camino que desciende desde el pueblo de Clavijo hacia el yacimiento.
Description: Stainless steel nail with ring, located on an outcrop of rock inside the path that goes down from the village of Clavijo to the site.



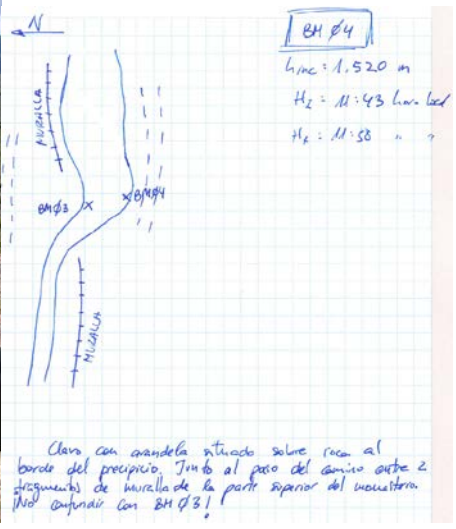
Estación / Benchmark:	**BM03**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548326,177
Municipio / Town Council	Clavijo	Y / Northing :	4688534,190
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	731,991

Reseña literal: Clavo de acero con arandela, situado en un afloramiento rocoso situado al final del camino que desciende desde el pueblo de Clavijo hacia el yacimiento.
Description: Stainless steel nail with ring, located on an outcrop of rock at the end of the path that goes down from the village of Clavijo to the site. Just before entering the site.



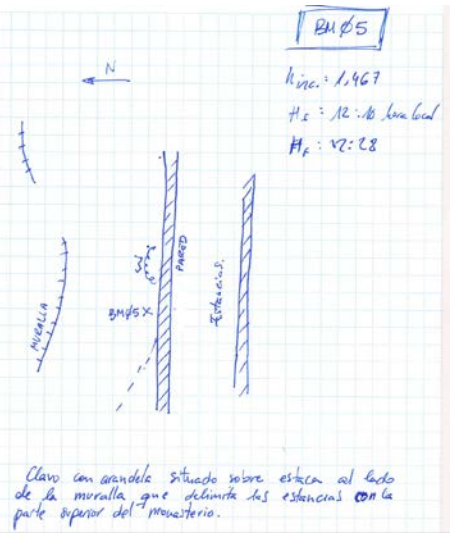
Estación / Benchmark:	**BM04**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548325,922
Municipio / Town Council	Clavijo	Y / Northing :	4688529,230
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	731,612

Reseña literal: Clavo de acero con arandela, situado sobre un afloramiento rocoso, al final del camino que desciende desde el pueblo de Clavijo al yacimiento, en la entrada al yacimiento.
Description: Stainless steel nail with ring, located on an outcrop of rock at the end of the path that goes down from the village of Clavijo to the site. At the site entrance, a few meters inside the site.



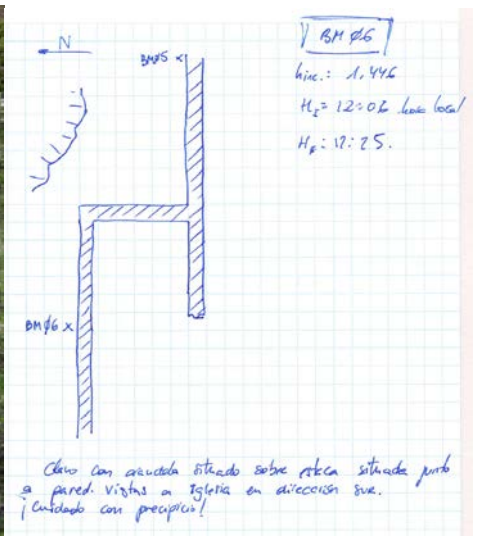
Estación / Benchmark:	**BM05**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548303,476
Municipio / Town Council	Clavijo	Y / Northing :	4688509,110
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	721,635

Reseña literal: Estaca de madera con clavo de acero incrustado, situada dentro del yacimiento hacia la mitad del muro norte de cierre del edificio dedicado a las celdas.
Description: Stainless steel nail on a wooden stake, located inside the site, by the middle of the north wall that includes the building of the cells.



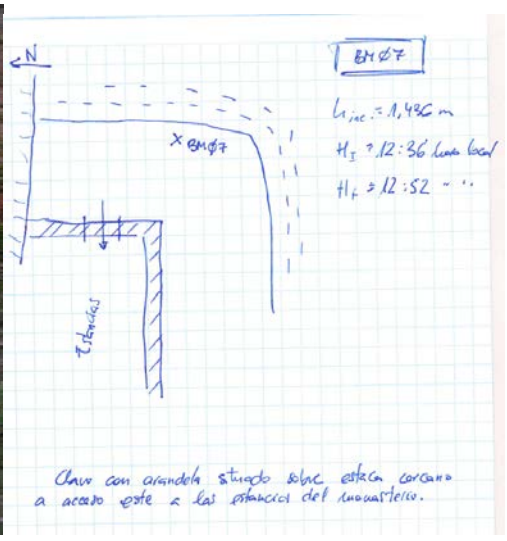
Estación / Benchmark:	**BM06**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548261,404
Municipio / Town Council	Clavijo	Y / Northing :	4688517,700
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	721,191

Reseña literal: Estaca de madera con calvo de acero incrustado, situada dentro del yacimiento en el extremo oeste del muro norte de cierre del edificio dedicado a las celdas.
Description: Stainless steel nail on a wooden stake, located inside the site, at the west extreme of the north wall that includes the building of the cells.



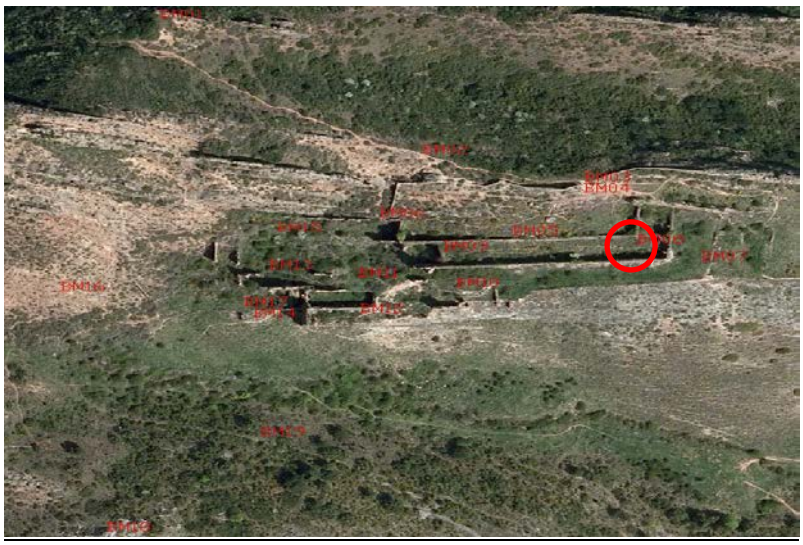
Estación / Benchmark:	**BM07**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548362,971
Municipio / Town Council	Clavijo	Y / Northing :	4688497,580
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	710,407

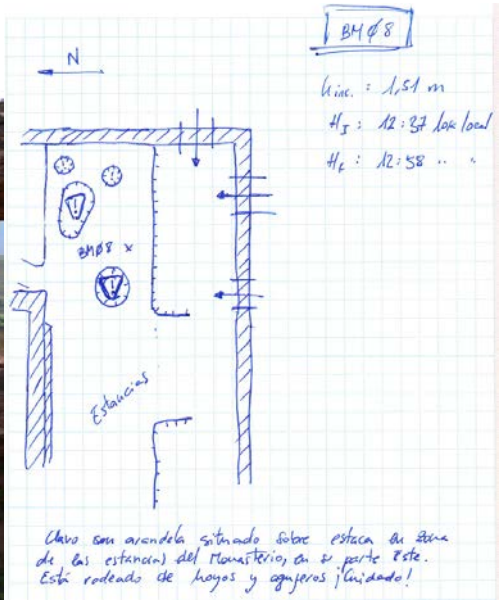
Reseña literal: Estaca de madera con clavo de acero incrustado, situada en el extremo Este del yacimiento, enfrente de la puerta que da acceso al edificio de las celdas.
Description: Stainless steel nail on a wooden stake, located inside the site at its eastern extreme, in front of the door to access the building of the cells.



Estación / Benchmark:	**BM08**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548342,832
Municipio / Town Council	Clavijo	Y / Northing :	4688505,370
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	717,228

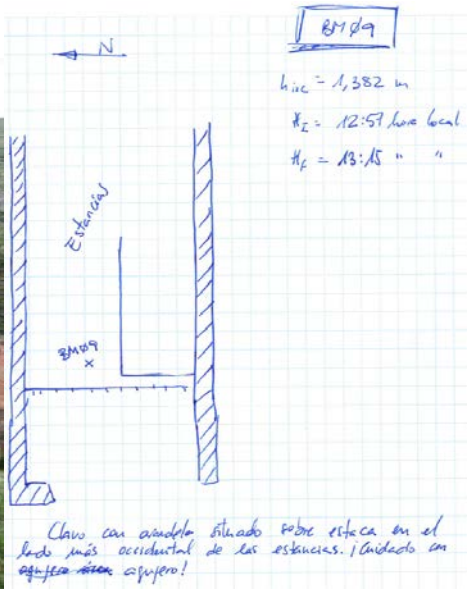
Reseña literal: Estaca de madera con clavo de acero incrustado, situada en el extremo este del edificio que contiene las celdas.
Description: Stainless steel nail on a wooden stake, located inside the site, at the eastern extreme of the building of the cells.





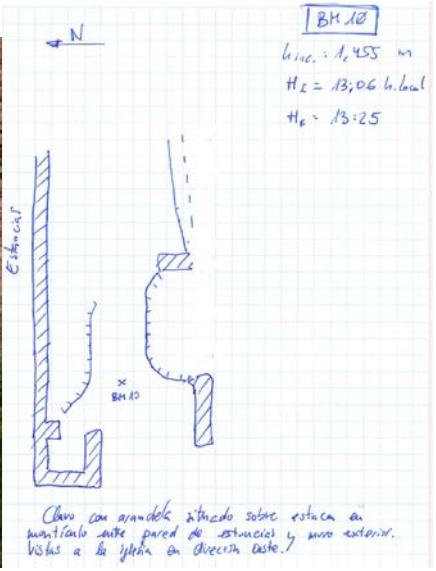
Estación / Benchmark:	**BM09**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548281,308
Municipio / Town Council	Clavijo	Y / Northing :	4688502,200
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	717,222

Reseña literal: Estaca de madera con clavo de acero incrustado, situada en el extremo este del edificio que contiene las celdas.
Description: Stainless steel nail on a wooden stake, located inside the site, at the west extreme of the building of the cells.



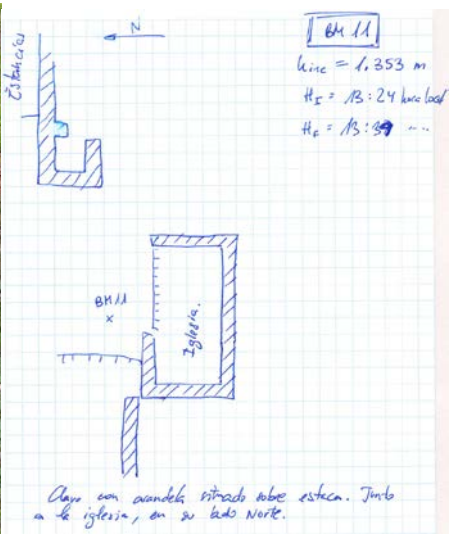
Estación / Benchmark:	**BM10**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548285,647
Municipio / Town Council	Clavijo	Y / Northing :	4688485,310
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	712,009

Reseña literal: Estaca de madera con clavo de acero incrustado, situada sobre un pequeño montículo, en el extremo oeste, del muro sur de cierre del edificio que contiene las celdas.
Description: Stainless steel nail on a wooden stake, at the west extreme of the south wall that include the building of the cells.



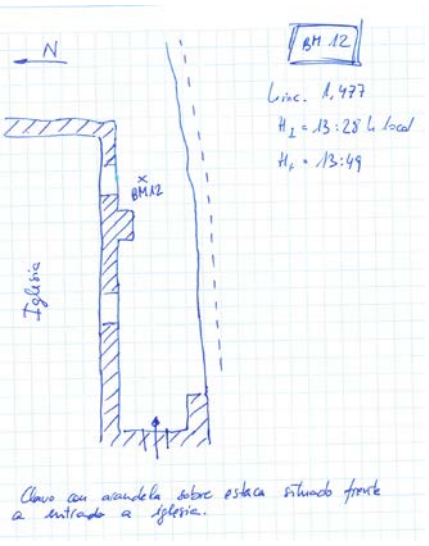
Estación / Benchmark:	**BM11**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548254,571
Municipio / Town Council	Clavijo	Y / Northing :	4688489,600
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	708,973

Reseña literal: Estaca de madera con clavo de acero incrustado, situada al norte del muro norte de cierre de la iglesia.
Description: Stainless steel nail on a wooden stake, at the north of the northern wall that include the church.



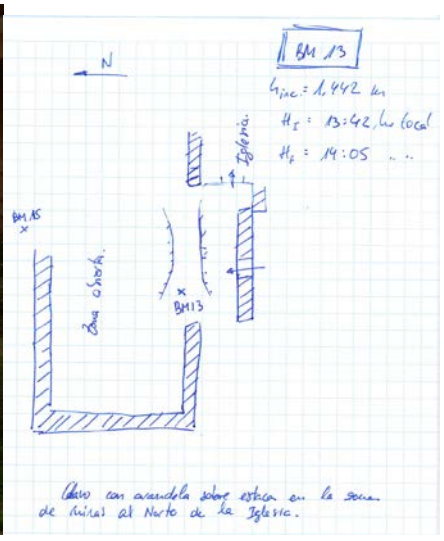
Estación / Benchmark:	**BM12**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548255,182
Municipio / Town Council	Clavijo	Y / Northing :	4688473,360
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	702,698

Reseña literal: Estaca de madera con clavo de acero incrustado, situada enfrente de la ventana que da acceso al interior de la iglesia.
Description: Stainless steel nail on a wooden stake, in front of the window that gives access into the church.



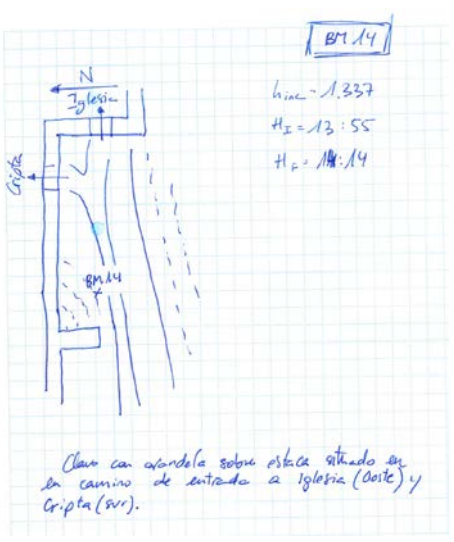
Estación / Benchmark:	**BM13**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548226,258
Municipio / Town Council	Clavijo	Y / Northing :	4688493,320
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	707,259

Reseña literal: Estaca de madera con clavo de acero incrustado, dentro del yacimiento, en el extremo oeste.
Description: Stainless steel nail on a wooden stake, inside the site, at the western extreme.



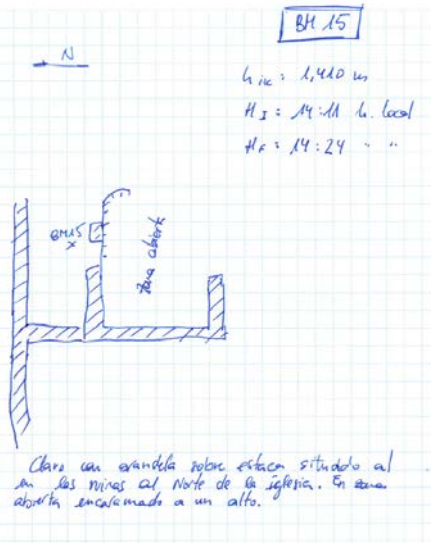
Estación / Benchmark:	**BM14**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548221,385
Municipio / Town Council	Clavijo	Y / Northing :	4688471,260
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	698,672

Reseña literal: Estaca de madera con clavo de acero incrustado, situada al oeste de la entrada que da acceso a la cripta.
Description: Stainless steel nail on a wooden stake, at the west of the door that gives access to the crypt.



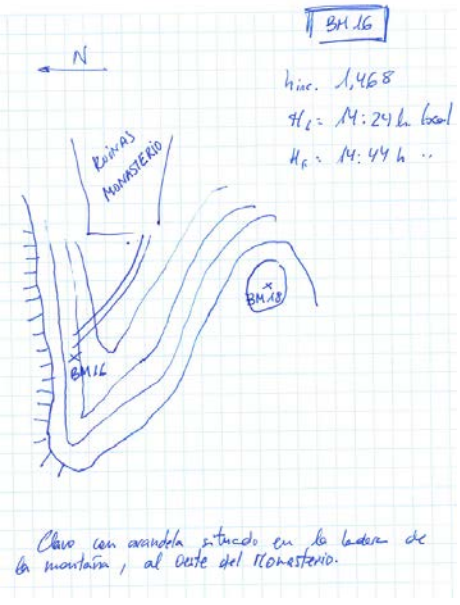
Estación / Benchmark:	**BM15**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548228,997
Municipio / Town Council	Clavijo	Y / Northing :	4688510,740
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	710,975

Reseña literal: Estaca de madera con clavo de acero incrustado, dentro del yacimiento, en el extremo oeste, al norte de la estación BM13.
Description: Stainless steel nail on a wooden stake, inside the site, at the western extreme and northern of benchmark BM13.



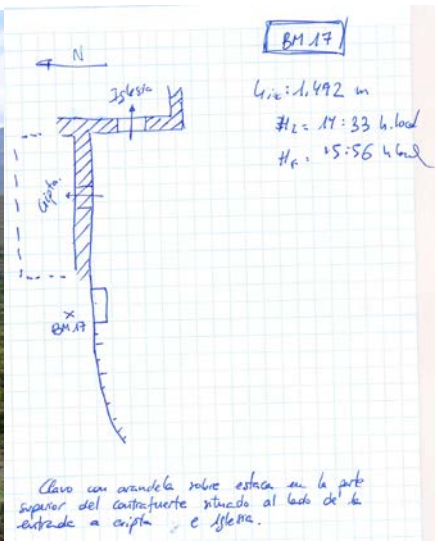
Estación / Benchmark:	**BM16**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548160,659
Municipio / Town Council	Clavijo	Y / Northing :	4688483,330
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	713,532

Reseña literal: Estaca de madera con clavo de acero incrustado, fuera del yacimiento, sobre la ladera de la montaña, en el extremo oeste.
Description: Stainless steel nail on a wooden stake, outside the site, in the middle of the mountainside.



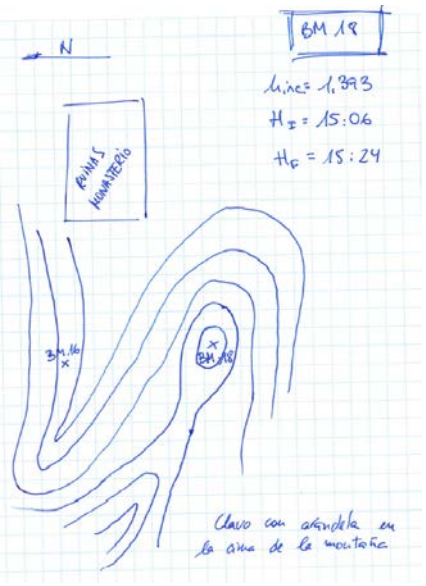
Estación / Benchmark:	**BM17**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548218,579
Municipio / Town Council	Clavijo	Y / Northing :	4688476,220
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	704,872

Reseña literal: Estaca de madera con clavo de acero incrustado, dentro del yacimiento, en el borde del muro situado sobre la estación BM14, al oeste de la entrada que da acceso a la cripta.
Description: Stainless steel nail on a wooden stake, inside the site, on the edge of the wall above benchmark BM14, at the west of the door that access to the crypt.



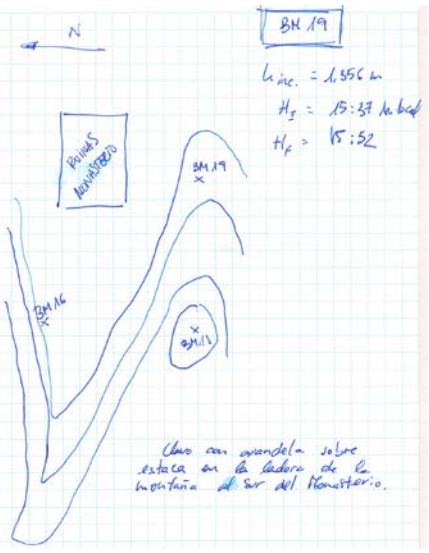
Estación / Benchmark:	**BM18**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548175,205
Municipio / Town Council	Clavijo	Y / Northing :	4688371,480
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	735,406

Reseña literal: Clavo de acero con arandela, fuera del yacimiento, en la colina sur-oeste enfrente del monasterio, sobre una roca desde la que se domina todo el entorno.
Description: Stainless steel nail with ring, outside the site, on the south-west hill opposite the monastery, on the rock there is a view over the whole site from there.



Estación / Benchmark:	**BM19**	Coordenadas / Coordinates: UTM 30 - ETRS89	Anamorfosis / Anamorphosis: 0,999629
Fecha / Date:	2010-05-11	X / Easting :	548223,880
Municipio / Town Council	Clavijo	Y / Northing :	4688415,880
Provincia / Province:	La Rioja	Z (Ortométrica / Mean sea level) :	695,361

Reseña literal: Estaca de madera con clavo de acero incrustado, fuera del yacimiento, en la ladera de la colina sur-oeste, enfrente del monasterio.
Description: Stainless steel nail on a wooden stake, outside the site, on the hillside of south-west hill opposite the monastery.



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