- Methodologies for cataloguing cultural heritage

- Computerised cataloguing and multimedia documentation

Emergency meansures and storage management

Experience gained: 2009, 2012, 2016 earthquakes

Minister of Cultural Heritage and Activities and Tourism Directive 23/04/2015,
published in Official Gazette no.169, 23-7-2015, updating Directive 12/12/2013,
on planning and operational stages for interventions
of safeguard, reconstruction, consolidation and restoration of damaged properties

The Directive provides for:

1. Activation of management structures, operations and communications;
2. Coordination with civil protection agencies;
3. Recording damage to cultural properties;
4. Safeguarding operations for movable and immovable properties;
5. **Management of temporary deposits and laboratories for emergency intervention on mobile properties;**
6. Information management.

The Directive regulates :

1. Sequences of "preventive" actions to be carried out in the affected area, beginning from issue of a ministerial decree;
2. "Emergency" and "full operation" actions;
3. Standardised cataloguing records.

Temporary storage areas

Following the 2009 and 2012 earthquakes, MIBACT agencies set up central collections management and storage areas. These were highly effective, for:

- **Avoiding dispersion of rescued properties;**
- **Optimal use of human and financial resources;**
- **Setting up conservation-restoration laboratories for emergency interventions and safeguard of properties.**

Temporary storage areas

However, in some scenarios the responsible agencies should consider distribution of works in multiple locations, to avoid concentrations at risk from attacks, ransom, etc.

Temporary storage areas: features

Temporary storage areas must meet basic requirements:

1. **Suitability for management and control of properties;**
2. **Structural safety, minimal environmental conditions;**
3. **Sufficient capacities;**
4. **Easy access to the building and interior spaces for all types and sizes of properties;**
5. ***(Ideally* - suitability for environmental monitoring and control*).***

Temporary storage areas: features

Note that some level of EARTHQUAKE

AND HUMAN-INDUCED RISKS WILL ALWAYS REMAIN.

Temporary storage areas: features

•Operations in the first days of the emergency will inevitably be confused.

Fire departments, civil protection forces, and ministry personnel are all in action, resulting in large numbers of properties arriving at the storage area at all hours of day and night.

•The works can **remain in storage for the short, medium or long term**.

Often they cannot return to their original place.

Temporary storage areas: logistics

Temporary storage areas: logistics

Temporary storage areas: *dealing with properties of all kinds*

Operators will be confronted with a vast variety of movable properties arriving from different locations. This requires design of low-cost, easily-constructed modular structures, which can keep collections together in secure conditions, potentially for long periods of time.

Temporary storage areas

2009: Celano (Province of L'Aquila)

2012: Sassuolo (Modena)

Temporary storage areas:
dealing with properties of all kinds

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Temporary storage areas:
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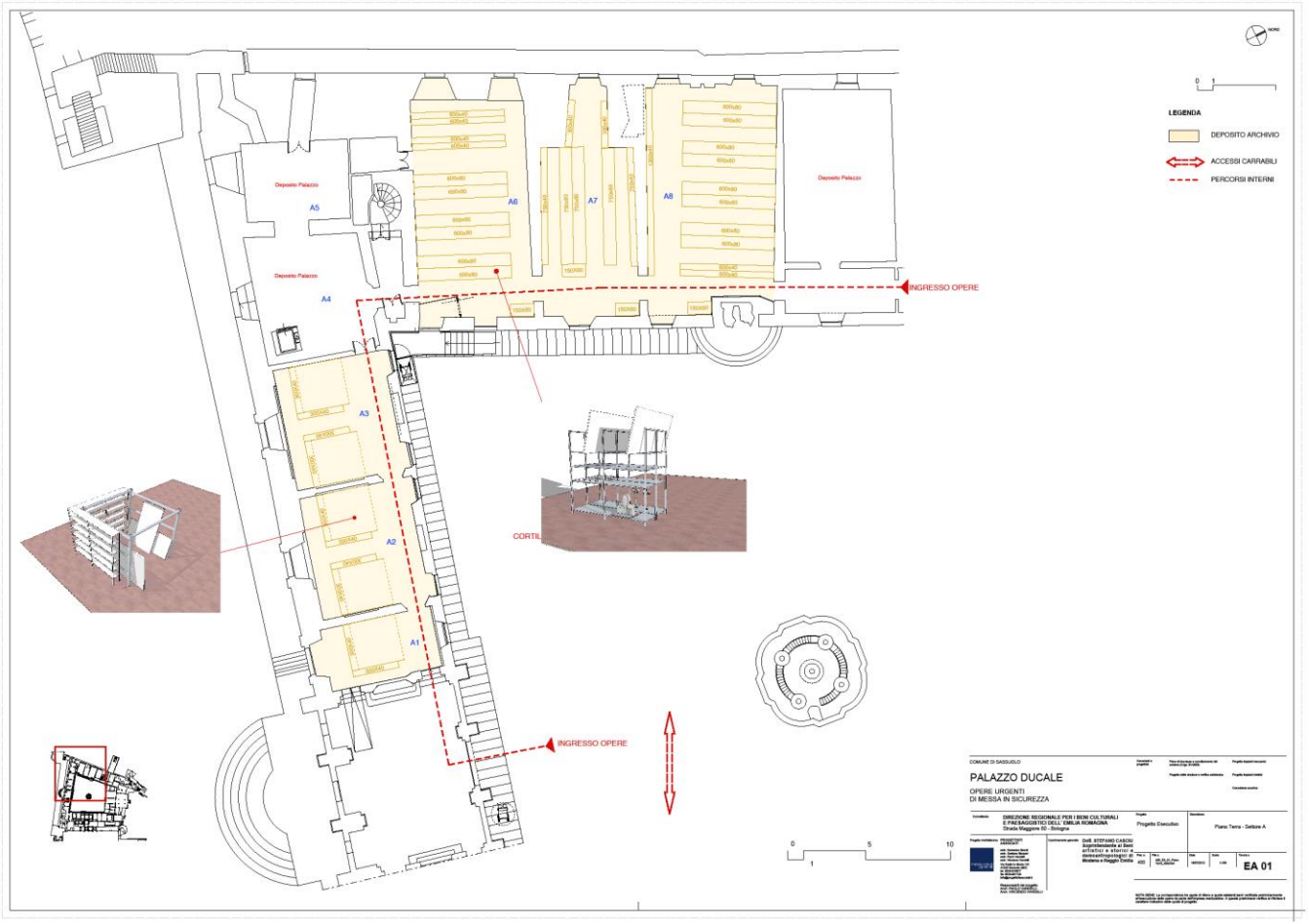
Temporary storage areas

At Celano, MIBACT agencies acted rapidly to build a structure in pipe scaffolding, subdividing the larger storage area into units. The structure was identified and mapped using georeferencing.

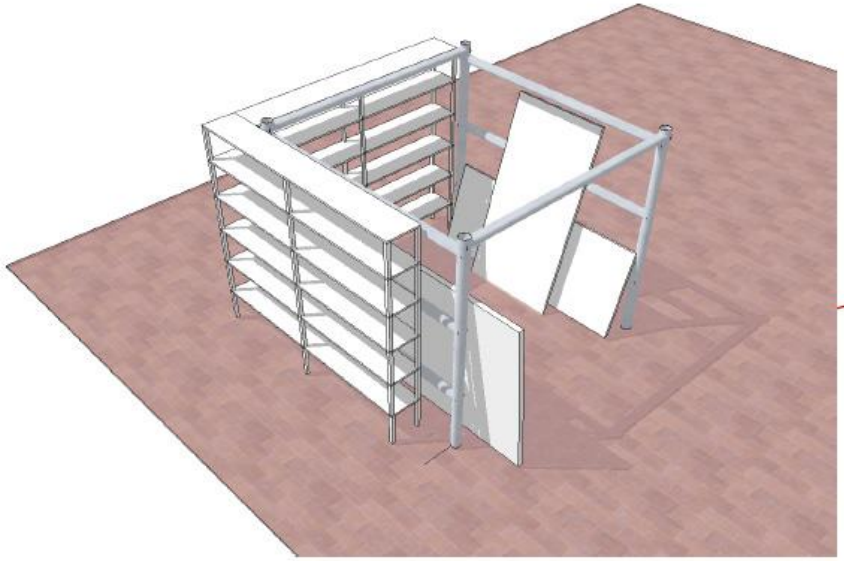
Equipping the storage area

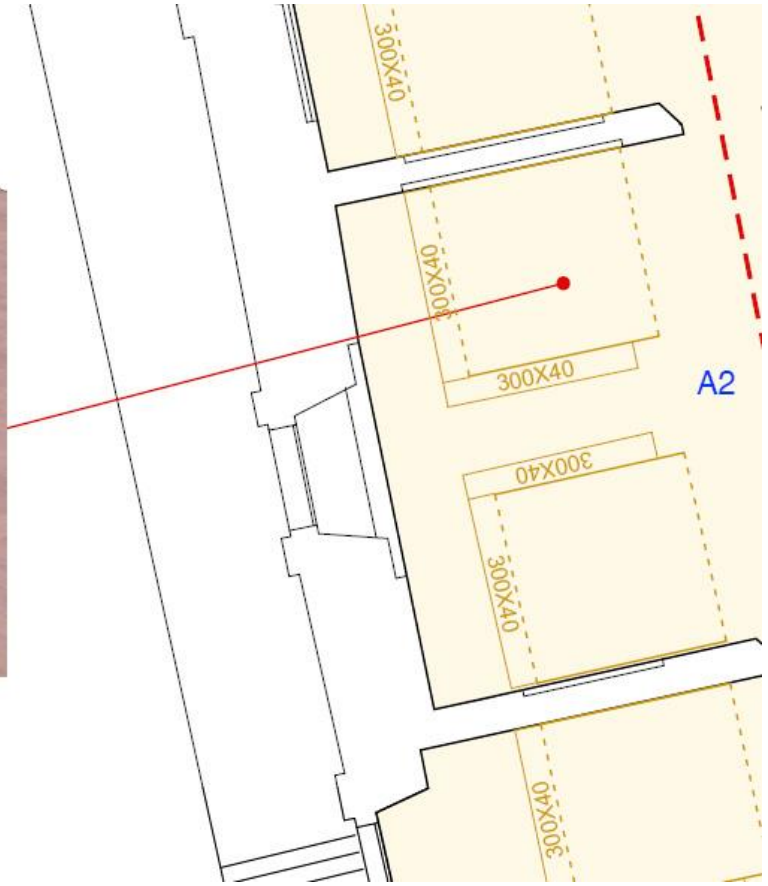
Pipe scaffolding was used again at Sassuolo, but creating smaller, more versatile, independent storage units, with modular, adjustable shelving.



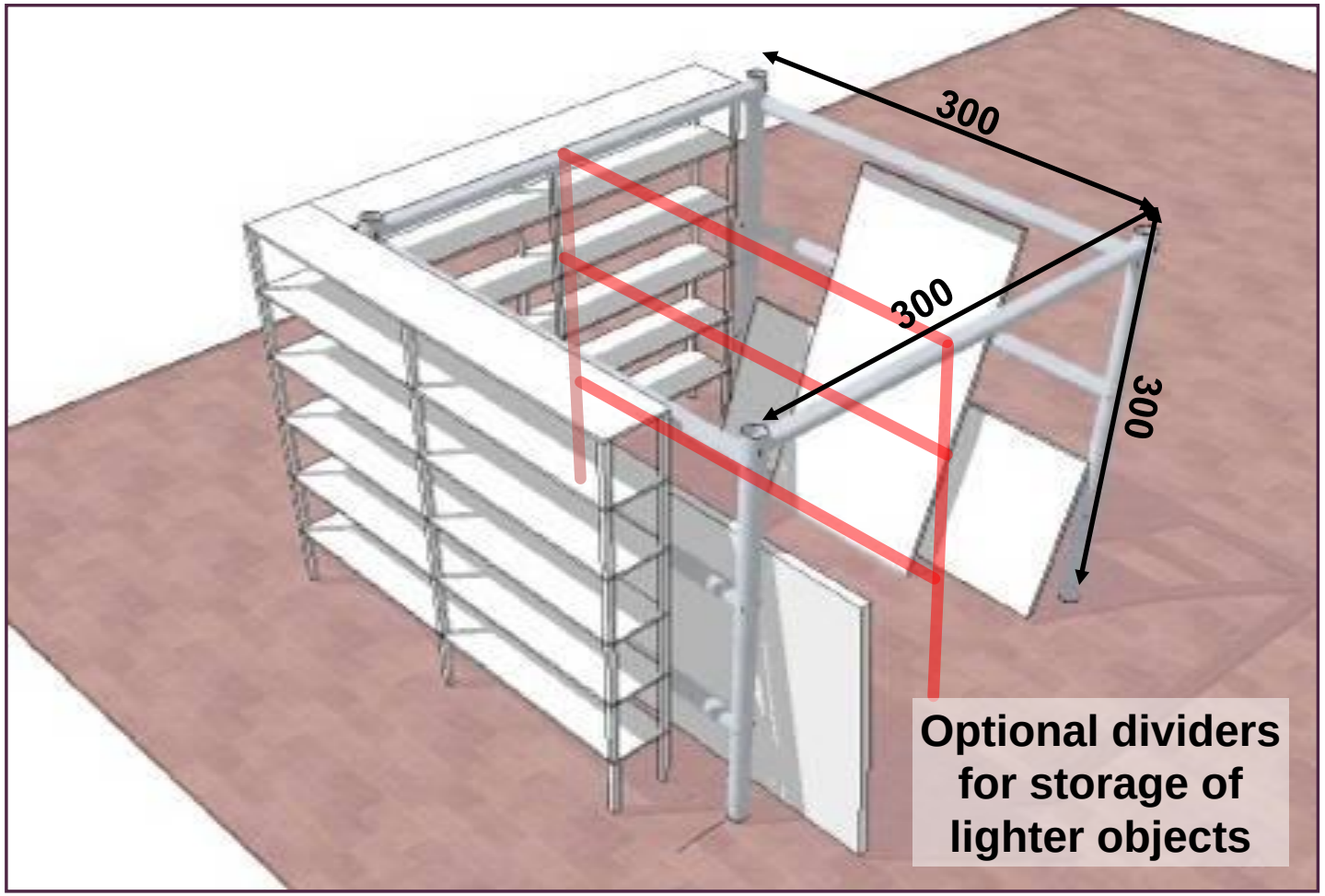
Works for upgrading the Ducal Palace were carried out over June-August 2012.

Outfitting storage areas:
independent storage units





Outfitting storage areas:
independent storage units



Outfitting storage areas:
independent storage units

Each storage unit requires fourteen 3-metre pipes and 20 joints, and can accommodate additional dividers using up to 4 (+1) pipes and 7 (+3) joints.

Outfitting storage areas:
independent storage units

Ease of further adaptations

Equipping the storage area: shelving

Appropriate shelving permits correct storage of large quantities of highly varied objects.

Equipping storage area: shelving

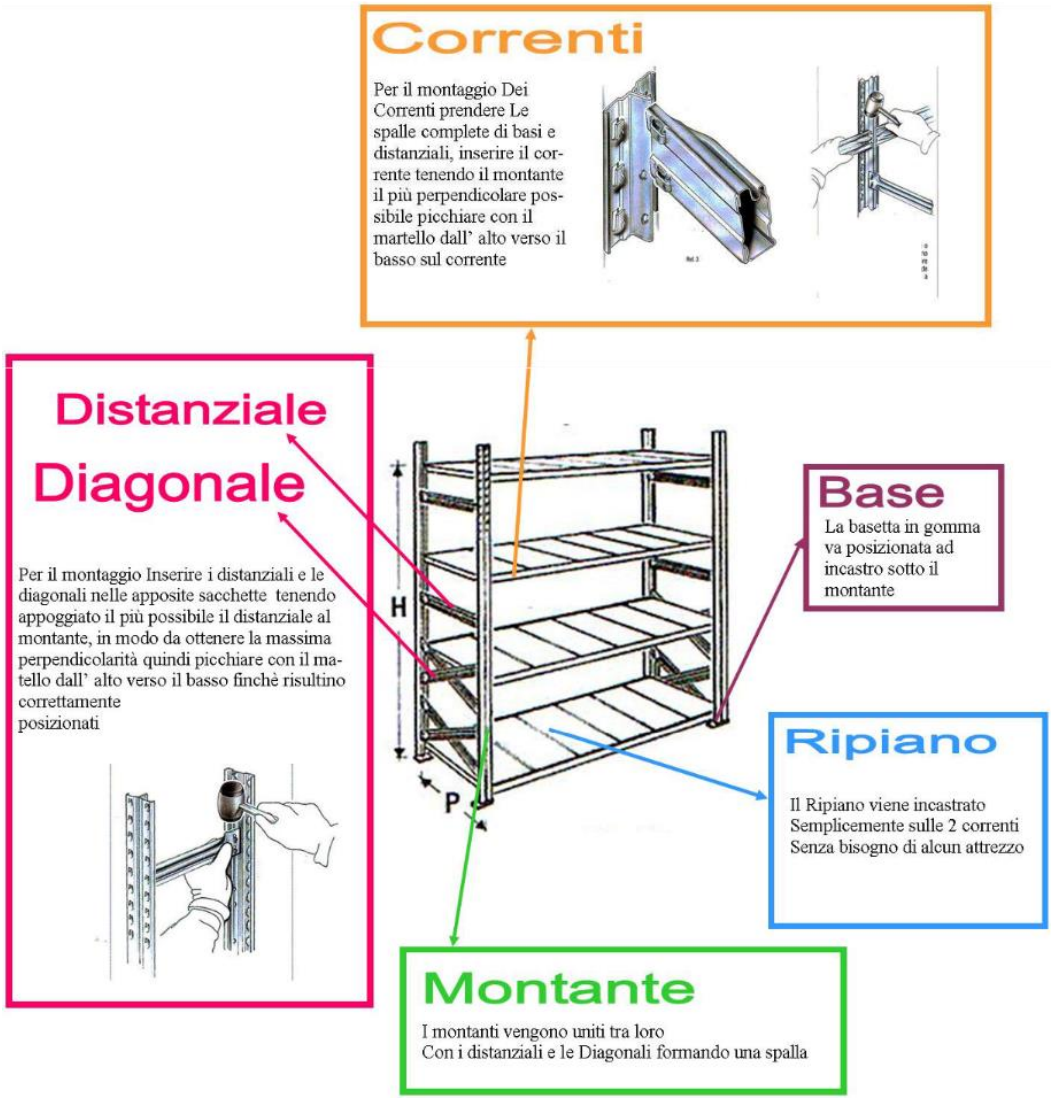
Equipping storage area: shelving

Select shelving that can be mounted using simple tools. The type shown here requires only a rubber mallet.

Suitable specifications are:

- *shelf depth* - 32 to 80 cm;
- *distance between uprights* - 90 to 180 cm;
- *height* - 157 to 500 cm;
- *maximum load per shelf* - 450 daN;
- *maximum load per span* - 3600 daN.

This type has shelves that can be subdivided, in steel or polypropylene.



Equipping the storage area: shelving

Combinations can be infinite.

Narrowing the selection simplifies purchasing and logistics.

A good compromise is: depth - 60 cm depth, spans - 90 to 150 cm, height - 3 metres.

Equipping the storage area

Each storage unit and interior side is assigned an alphanumeric code.

Equipping the storage area: painting “beds”

At both Celano and Sassuolo, paintings on canvas were dismounted from their stretchers, for conservation reasons. We then built temporary structures (called “beds”) for storage. The peg-legs supporting the centre of each bed can be removed, allowing insertion and removal of paintings without disturbing the ones above and below.

Equipping the storage area: painting beds

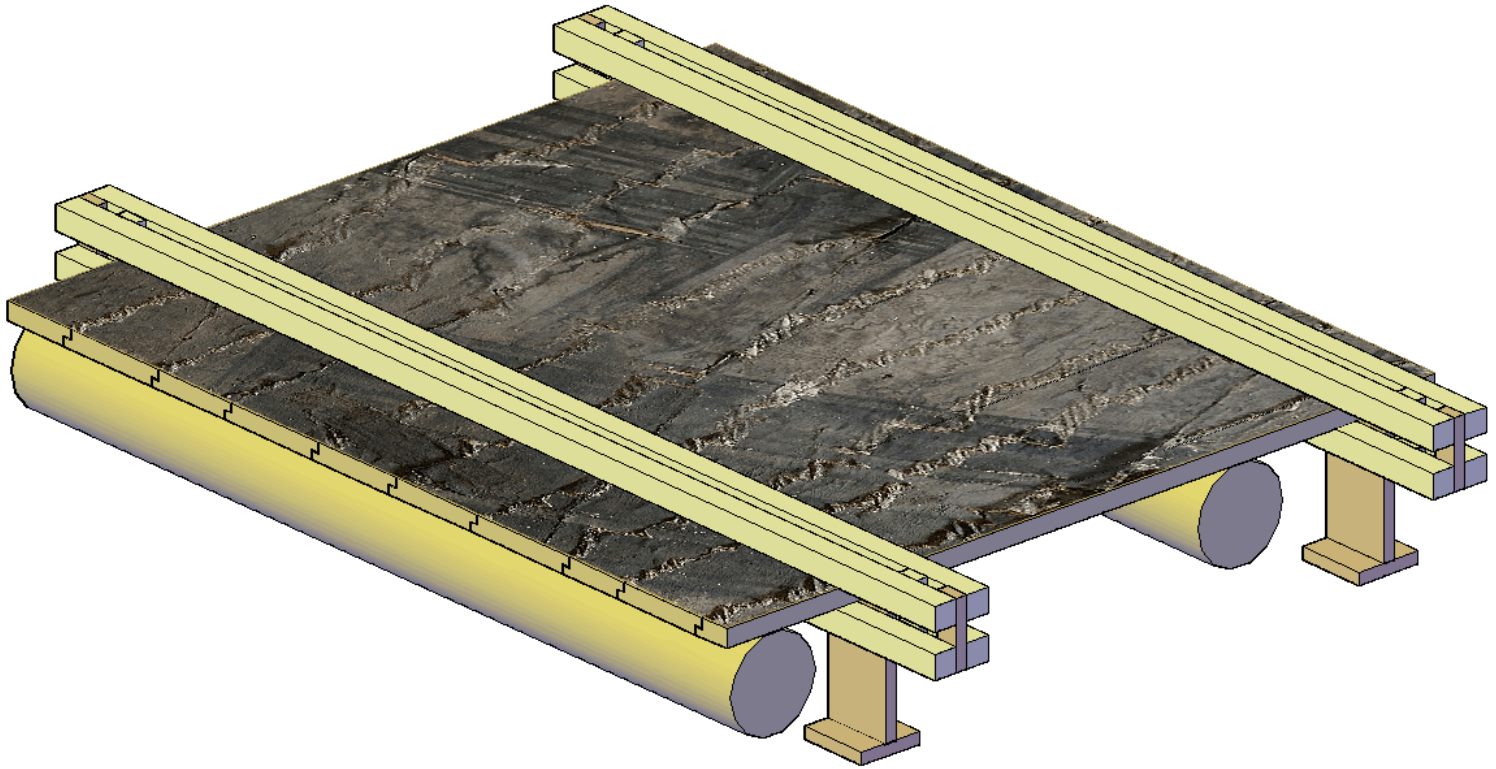
Building the beds using 6 mm particle board, reinforced with a perimeter structure (A) and centre peg-leg was the best option. This solution is lighter and allows better insertion of peg-legs, compared to building the beds in plywood (B).

Equipping the storage area: painting storage beds

Celano: storage beds in use

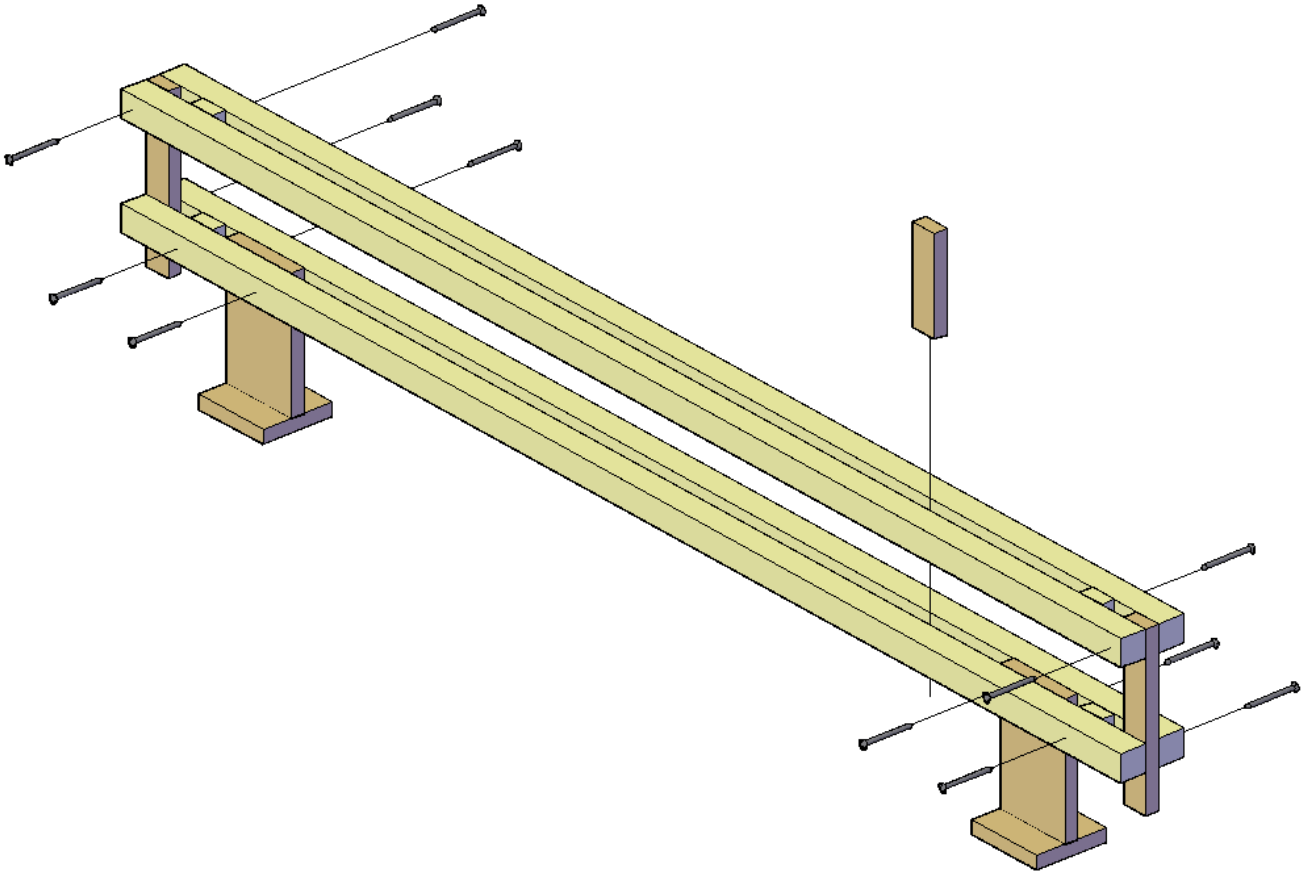
Equipping the storage area: storage beds

L'Aquila: adaptation of storage beds for panel paintings



Equipping the storage area: storage beds

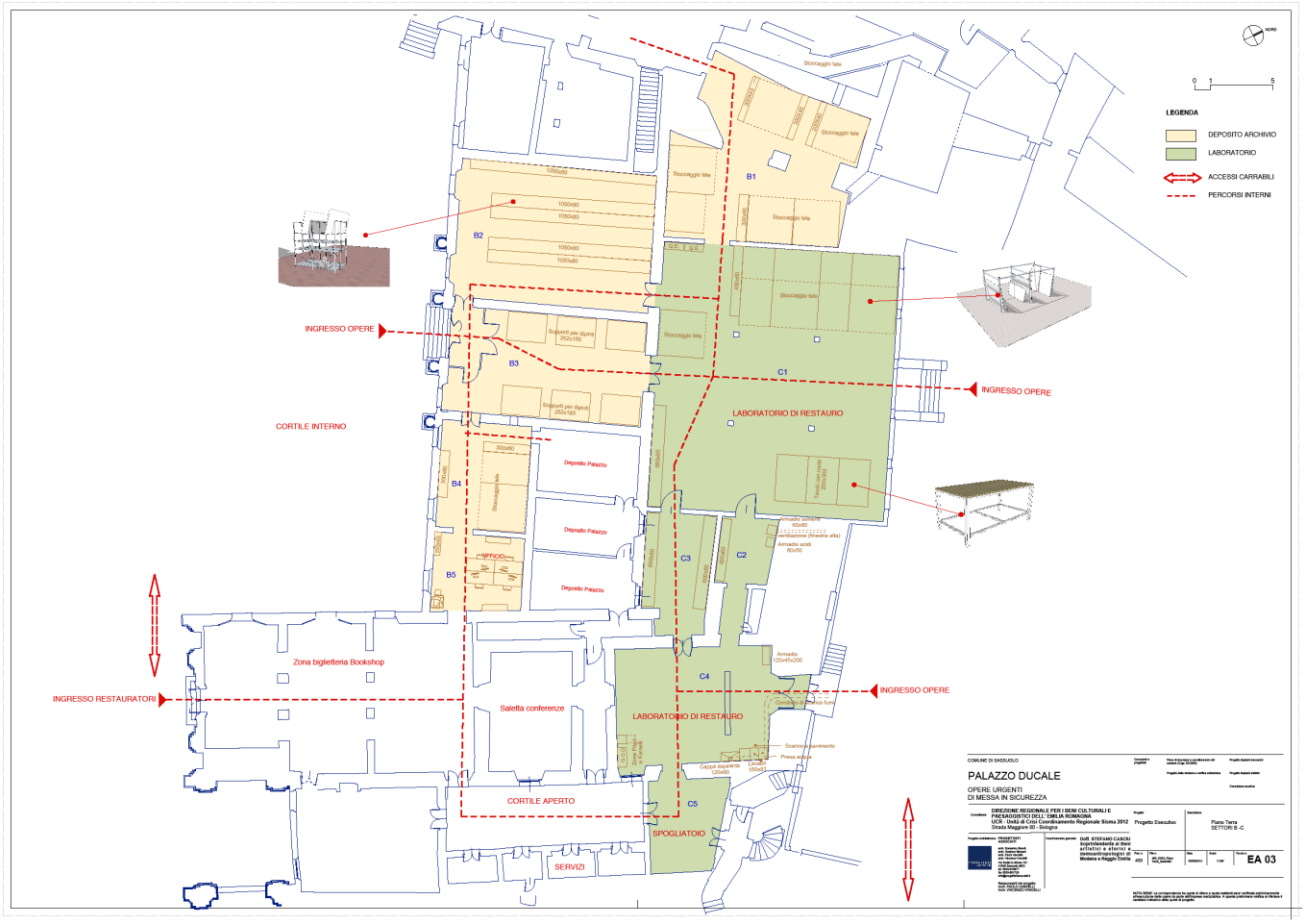
L'Aquila: adaptation for panel paintings



Equipping the storage area: “beds”

2009, L’Aquila: storing canvases from the ceiling of Cathedral of San Massimo

Setting up conservation-restoration laboratories: choosing locations



Setting up the conservation-restoration laboratory

The conservation-restoration laboratory should be in the same building as the storage area, for safe management of works in precarious conditions.

The lab requires basic equipment and supplies for securing and placing the works in storage (not necessarily a “full laboratory”):

1. Ventilation hood and solvents cabinet;
2. Refrigerator;
3. Mobile steel tables ;
4. Vacuum cleaners (different kinds);
5. Lighting systems;
6. Small tools and materials;
7. Other basic equipment;
8. **Packing materials;**
9. Computer and communications setup;
10. Electrical plant sufficient for all equipment and lighting.

Setting up the conservation-restoration lab: design

Setting up the conservation-restoration lab: equipment and materials

Quantity	Description	Image
One (1)	HAZARDOUS MATERIALS CABINET: For storage of up to 80 litres of flammable liquids and solids; meeting EN 14470-1 standard, with "hot and cold fumes protection", rated for 90 minutes fire resistance; with active carbon filters and provision for attachment to external ventilation.	
One (1)	Fume hood with filtered exterior extraction; meeting EN 14175:2003 standard; including touch-screen control panel showing function, hours of operation, alarms (blocked tubes, insufficient ventilation, filters require changing, etc.) Chemical-resistant work surface. Minimum dimensions of work surface: **160x75** cm.	
One (1)	Industrial refrigerator, without freezer: External dimensions ca. cm 55 x 60 x 85h; 3 shelves, interior lighting, semi-automatic defrosting.	

2012: Sassuolo conservation-restoration lab

Sassuolo: large works laboratory

Sassuolo: large works laboratory

Temporary storage areas: *strategic priorities*

Operational objectives for the storage area are:

1. **Open the temporary packing. (Place top priority on** "wet" materials.)
2. **Compile the record sheet.**
3. **Evaluate conservation status.**
4. Provide unavoidable emergency interventions: i.e. secure the object, remove surface soil.
5. **Evaluate priority for further intervention.**
6. **Pack the object** and attach "ID and Triage Sheet"**.**
7. **Place in storage,** with registration of location.

Temporary storage areas: features

•The evaluations of conservation status (point 3) and priority for further intervention (point 5) **serve a "triage" function**.

•Major treatments generally require medium to long-term intervention. Immediate treatment may be impossible, even for badly damaged objects.

Other objects can be in fair to good overall condition, but require urgent treatment to avoid further damage.

•Operators complete a **Conservation Emergency Record** for each object placed in storage. **The ID and Triage Shee**t of the emergency record is attached, in view.

In the last section, the operators indicate the **Conservation status** and **Urgency** for the object.

2012, Sassuolo: Operations - *ID and triage sheet*

Ministero per i Beni e le Attività Culturali

SEGRETARIATO GENERALE
UNITA' DI CRISI – COORDINAMENTO NAZIONALE UCCN-MiBAC

Frontespizio Scheda di Pronto intervento

TELE

Verbale	083
data del verbale	13/08/2012
inventario d'emergenza	1019
NCTN scheda di catalogo	
Collocazione	

Provincia	Modena
Comune	San Felice sul Panaro
Località	San Felice sul Panaro
edificio di provenienza	Oratorio della Santa Croce
Oggetto	Dipinto – San Sebastiano e SS. Girolamo e Felice

STATO DI CONSERVAZIONE		URGENZA INTERVENTO	
Buono (Nessun intervento)		1-Intervento a breve termine	X
Mediocre (Intervento localizzato)		2-Intervento a medio termine	
Cattivo (Intervento generale)		3-Intervento a lungo termine	
Pessimo (Intervento generale urgente)	X	4-Nessun intervento	

Data redazione scheda di pronto intervento: 13/09/2012
Redattore/i: ISCR - sito/VBC come (docenti di riferimento: Francesca Cagnetta, Carla Zacchino, Federica Morretti)
Data revisione scheda di pronto intervento:
Revisore/i:

At this point, the operators have conducted minimal first-aid interventions for securing the work until treatment, to be planned at a later date.
Correct triage is essential to identification of priorities and planning.

STATO DI CONSERVAZIONE		URGENZA INTERVENTO	
Buono (Nessun intervento)		Intervento a breve termine	I
Mediocre (Intervento localizzato)		Intervento a medio termine	
Cattivo (Intervento generale)		Intervento a lungo termine	
Pessimo (Intervento generale urgente)	I	Nessun intervento	

Emergency management of cultural properties:

new and planned developments

- **QR codes** for management of storage units (implemented in 2012, Sassuolo) - the QR code leads to the RFID page.

- RFID (radio-frequency ID) - for ID and tracing movement of properties

- PDF forms compiled on laptops or tablet computers, at disaster site and/or emergency storage area. The data automatically feed the MIBACT databases (Risk Map, Restrictions via Internet, Conservation Worksite Database - SICAR). The computerised formats are identical to the paper versions, so users are already familiar with them.