

Master's Degree in
ENVIRONMENTAL AND LAND ENGINEERING



**Politecnico
di Torino**

Master's Degree Thesis

**Temporary use of environmental reclamation projects for cultural events: Health and
safety aspects**

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NOVEMBER 2025

A mis padres, gracias por haberme convertido en la persona que soy hoy en día, por los valores y educación que me dieron, tanto a nivel académico como a nivel personal. Se perfectamente todo lo que han hecho y las dificultades que se han superado para darme lo mejor y voy a estar eternamente agradecidos con ustedes por eso.

Los amo.

Agradecimientos

After two years in Turin, I can finally say I did it. This experience challenged me both academically and personally. The growth and maturity I have gained here are even more valuable than the master's degree I am completing, and I will always be grateful for it.

I want to thank the Politecnico di Torino for giving me the opportunity to study on its campus.

Over these two years I've developed new strengths and deepened my knowledge, I am now a more well-rounded professional, ready to put this learning into practice in my home country.

I also want to thank my thesis supervisor, Prof. Daniele Martinelli. You have been the best professor I've had in this program. Your human quality and teaching style are truly admirable.

Your course opened a field of my career I had not considered before and now I take very seriously. Thank you for your time and patience in supervising my thesis. You know that you are warmly welcome in Colombia.

Grazie, Italia e Torino, per avermi accolto in questi due anni in una città meravigliosa che molti non hanno affatto in mente, ma la cui storia, cucina, eventi e cultura non hanno nulla da invidiare a nessun'altra città del mondo. In tutto questo tempo non mi sono mai sentito escluso: mi sono sempre sentito accolto e rispettato; in altre parole, ho potuto chiamare Torino la mia seconda casa. Anche se in questi due anni, per motivi personali, non ho imparato la lingua come avrebbe meritato, la capisco molto bene.

Desidero ringraziare anche GAE Engineering S.r.l. per l'opportunità di svolgere con loro il mio tirocinio accademico: è stato un periodo breve, ma ho imparato tantissimo. Un grazie speciale va al mio co-relatore, l'ing. Pasquale Di Cesare, per avermi accolto e guidato sia durante il tirocinio sia nella tesi. Il tema che mi ha suggerito, anche se all'inizio non mi attirava, oggi lo guardo con gratitudine: non mi pento per nulla di averlo scelto; ho imparato moltissimo e spero di poterlo applicare presto nella mia vita professionale.

Infine, nelle mie parole in italiano, voglio ringraziare i miei coinquilini: Agus, Auro, Simo e quello che è stato parte fondamentale della casa, il bastardo (parcerito). Grazie per avermi fatto sentire voluto e speciale in casa: nonostante qualche discussione, com'è normale, siamo riusciti a mantenere una convivenza sana; ci siamo saputi ascoltare e consigliare nei diversi momenti e situazioni che ognuno di noi stava vivendo.

Vi mentirei se dicessi che non mi mancheranno, ogni tanto, il suono del pianoforte di Auro, le urla di Simo la sera mentre gioca a LOL, o la voce di Agus che dice “regina”. Tutti quei suoni (anche se a volte dovevo mettermi le cuffie con la cancellazione del rumore e ascoltare musica) mi facevano sentire accompagnato. So che mancherò anche a voi, soprattutto con il mio piatto forte, riso e pollo: ogni volta che lo vedrete vi ricorderete di me.

Ragazzi, grazie di cuore per la vostra compagnia. Mi porto dietro tutto il bello che abbiamo condiviso. Sapete benissimo che in Colombia avete già un posto sicuro.

Ahora sí, llegó el momento de agradecer a las personas mas especiales de esta experiencia. Primero que todo le doy gracias a Dios. Gracias por haberme dado a los mejores papás, haberme dado mucha salud, haber coincidido con gente tan maravillosa y por haberme dado esta oportunidad tan privilegiada, pues como he dicho, más que la maestría a nivel académico el verdadero crecimiento fue personal, pues la madurez adquirida, el cambio de percepción del mundo y las cosas, y valorar aún más lo afortunado que he sido fue gracias a esta experiencia.

Llega el turno de darle el agradecimiento a las dos personas más especiales e importantes de mi vida, mis padres. Definitivamente no sé quién sería sin ustedes, estoy eternamente agradecido por todo lo que han hecho por mí, pues desde pequeño me han inculcado valores como la justicia, respeto, nobleza entre muchos otros y fuera de eso me han enseñado a ser autosuficiente e independiente. Me han dado la libertad para hacer lo que quiera, pero siempre

con responsabilidad. Me han dado las directrices y sugerencias de lo que ustedes consideran mejor, pero siempre al final con la autonomía de ser yo quien tenga la última palabra.

A veces hemos tenido como toda familia discusiones y problemas, pero el amor y el dialogo han prevalecido, y siendo este último otra cualidad de la que estoy muy agradecido con ustedes. Sé que hemos pasado dificultades, la vida nos ha puesto retos, pero siempre se han superado gracias a sus capacidades de seguir para adelante, resiliencia y perseverancia, unas de las cuantas cualidades que les admiro. Cada uno me ha aportado algo de su carácter, pasando desde la seguridad, liderazgo, diligencia de mi papá hasta la creatividad, manejo del dinero y unión familiar de mi mamá.

Me puedo quedar escribiendo líneas y líneas de cuanto los admiro y lo agradecido que estoy con ustedes, hasta el punto de que esta parte sea más larga que la misma tesis. Solo les puedo reiterar mis agradecimientos eternos por lo que han hecho por mí y agradecerles por todo el amor que me han dado, me siento muy afortunado de tenerlos y disfrutarlos cada día de mi vida, definitivamente yo sí puedo decir que tengo a los mejores padres del mundo. LOS AMO.

También agradezco a todas las personas que han pasado por mi vida estos dos años, se han construido amistades que se que no solo van a quedar como algo temporal, si no por todo lo contrario, para toda la vida. Gente que me han hecho vivir momentos únicos (desde salidas tranquilas hasta chismeadas de horas) pero también me han enseñado lo que es la disciplina, el enfoque y generosidad.

Esta experiencia me ha llevado a conocer personas de diferentes lugares, desde los colombianos y latinos acá en Turín, hasta las personas extranjeras que se conocieron en los viajes realizados, coincidencias muy especiales que se dieron desde hostales o picnics hasta haber coincidido de una manera única gracias a una media maratón, se que las cosas se dan por algo y cada ser humano llega a la vida de uno con un propósito.

Mil gracias a todos, pero muy especialmente a Aleja, Dani, Tatis, Sergio, Rafa y James, me siento muy afortunado de haberlos conocido y de poder llamarlos mis amigos.

Asimismo, dar las gracias a mi familia como mis primos y tíos y a su vez a mis viejos amigos, gracias a todos ustedes que de una u otra manera estuvieron pendientes de este proceso, me escucharon y me abrieron las puertas de sus casas cuando lo necesité. Hicieron mucho más fácil esta experiencia.

Además, agradecer al ICETEX y SAPIENCIA por sus líneas de crédito que me ayudaron a llevar los gastos de mi estadía y haberme dado uno que otro lujito. Gracias a mi alma mater, la UdeA, universidad que a nivel académico no tiene nada que envidiarle a ninguna otra. Una institución que trasciende más allá de lo normal y fuera de formar profesionales forma personas. Gracias por haberme formado a nivel académico y por esta oportunidad de estudio, pero sobre todo gracias por haberme abierto los ojos ante una sociedad tan desigual, me han hecho ser un individuo que se preocupa más por lo social y alguien con un pensamiento mucho más crítico.

Por último, y quizá lo más importante, gracias a mí, a ese Londoño que hace dos años tomó la decisión de viajar. La persona que hoy recibe el título es muy distinta de la que pisó Turín en septiembre de 2023. Hoy eres más maduro por todas las experiencias que viviste y, además, mucho más consciente del potencial que tienes. A pesar de no haber dado tu 100 % y de que la maestría no cumpliera tus expectativas, lograste terminarla en el tiempo establecido.

Aquí se cierra un ciclo que, como todos, tuvo momentos difíciles y también muy felices. Si pudieras volver al pasado quizá harías algunas cosas de otra manera, pero eso no habría cambiado que, en algún momento, vendrías a Europa a hacer la maestría. Las cosas se dieron así y no me arrepiento, al contrario, estoy muy agradecido. Ahora empieza una nueva etapa

(me atrevo a decir, de las más importantes de tu vida). Ya sabes lo que quieres y tienes una idea de cómo lograrlo: solo queda ejecutarlo y sobreponerte a cada situación que se presente hasta alcanzar tu propósito. A dar el 100 %

Abstract

This thesis aims to provide a practical and adaptable guide for companies in Italy planning to organize events within temporary or mobile construction sites (*cantieri temporanei o mobili*), ensuring full compliance with occupational health and safety (OSH) Italian regulations, particularly those outlined in **Legislative Decree 81/2008** and relevant European standards. Using the “*ex Macello*” site in Milan, currently undergoing demolition and environmental remediation, as a case study, and with technical input from GAe Engineering S.r.l., the firm responsible for OSH management at the site, the thesis outlines a structured five-part framework: site contextualization, preparatory steps by the organizing company, safety measures for temporary installations, operational safety during the event, and post-event dismantling procedures, including final risk assessment. The result is a comprehensive tool that demonstrates how legal requirements can be translated into safe, real-world applications, confirming the feasibility of hosting events in such settings when managed responsibly.

Key words: *Temporary construction site, guide, OSH, risk assessment, dismantling, installation, cultural events, personal protective equipment, design, “ex Macello”.*

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Acronyms

(CSC): Contamination limits, legal thresholds for pollutants in soil/groundwater (*Concentrazioni Soglia di Contaminazione*).

(CSP): *Coordinatore per la Progettazione*, safety coordinator for the design phase.

(CSE): *Coordinatore per l'Esecuzione*, safety coordinator for the construction/execution phase.

(DL): *Datore di Lavoro*, employer legally responsible for H&S and organization.

(SPP): *Servizio di Prevenzione e Protezione*, prevention/protection service managing risk assessment and controls.

RSPP/ASPP: Head/Deputy of the SPP; plan and implement H&S measures.

(MC) & health surveillance: *Medico Competente*, occupational physician and periodic medical monitoring of workers.

(RLS): *Rappresentante dei Lavoratori per la Sicurezza*, workers' health and safety representative.

(POS): *Rappresentante dei Lavoratori per la Sicurezza*, contractor's site-specific safety plan.

DUVRI: Single document coordinating interference risks among multiple employers/contractors.

PPE requirements: Mandatory personal protective equipment for the task/site.

(CVLPS): *Commissione di Vigilanza*, public safety commission authorizing/supervising venues/events.

INAIL: National Institute for Insurance against Workplace Accidents (Italy's workers' comp authority).

(PAHs): Polycyclic aromatic hydrocarbons, aromatic organic pollutants; several are carcinogenic.

(PCBs): Polychlorinated biphenyls, persistent, toxic chlorinated compounds; banned but still found in legacy materials.

(TPH): Petroleum hydrocarbons, total measure of petroleum-derived hydrocarbons; contamination indicator.

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INTRODUCTION

The use of temporary construction sites for small or large-scale events is an increasingly common practice in Italy; however, despite the general application of national legislation to the setup and dismantling of temporary structures, there is currently no unified guide that clearly outlines the full scope of actions and occupational safety and health (OSH) considerations required, especially in case of environmental remediation projects. This thesis seeks to address that gap by developing a practical and structured OSH guide for companies and event organizers operating within temporary construction environments where a remediation site is carried out, with a focus on defining safe practices and regulatory boundaries. The “*ex Macello*” and “*ex Avicunicolo*” sites in Milan (Italy), large post-industrial areas undergoing redevelopment and environmental remediation, serve as the case study, offering a complex yet relevant context due to its recent use for temporary events such as concerts and fashion shows. The proposed guide is aligned with current Italian regulations, particularly Legislative Decree 81/2008, and aims to support compliance while enabling the safe and effective organization of public events in temporary construction settings with an undergoing remediation.

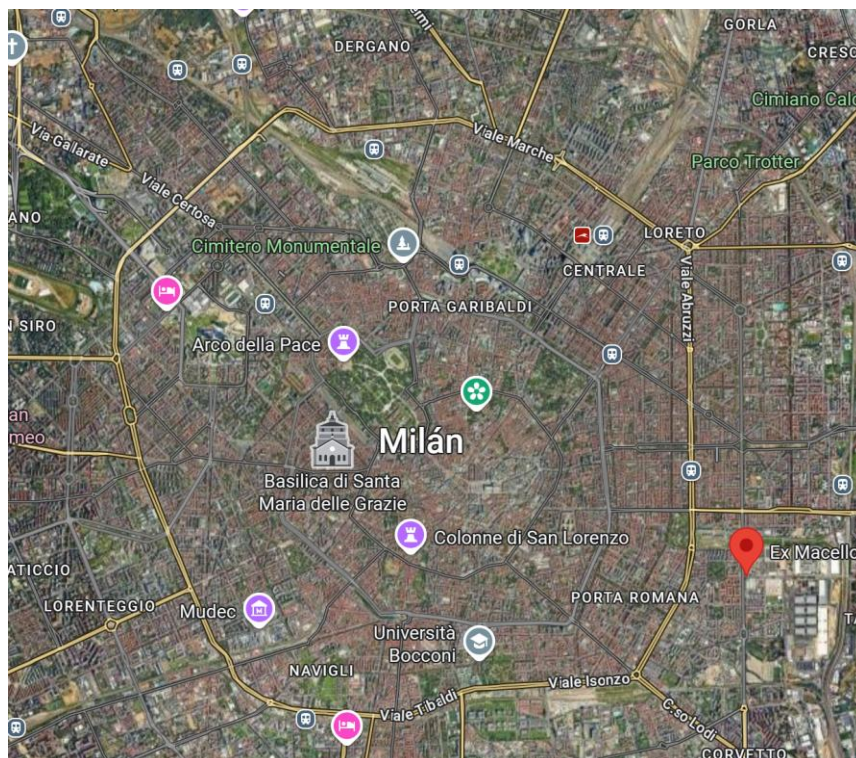
1) STUDY AREA CONTEXT

1.1) Place location

As shown in Figures 1 and 2, the “*ex Macello*” and “*ex Avincunicolo*” sites are located in the *Calvairate* district of Municipality 4, in the south-eastern quadrant of Milan’s metropolitan area in Italy. The area benefits from excellent public transport connections, particularly through the Milano “*Porta Vittoria*” station, which links the suburbs to the city center via the suburban railway network. Originally, the site formed part of a larger complex dedicated to various stages of meat processing and included facilities such as canteens and service areas for workers. These two areas were historically part of the broader general market’s citadel.

Figure 1

“ex Macello” and “ex Avincunicolo” location in Milan city urban area



Source: Taken from google maps

Figure 2

“ex Macello” and “ex Avincunicolo” sites boundaries



Source: taken from [revisione dell'analisi di rischio sito-specifica e progetto operativo di bonifica ai sensi del d.lgs.152/06 e s.m.i.](#)

1.2) Area and complex characteristics

The “ex Macello” covers approximately 120,000 m², an area larger than 15 football fields, while the adjacent “ex Avincunicolo” site covers around 28,000 m². Together, the two sites comprise nearly 150,000 m².

Both were developed in the early 20th century and originally hosted a range of buildings and infrastructure not only dedicated to meat processing and trade, but also to complementary services such as administrative offices, quarantine facilities, medical stations, and canteens.

At the end of 2022, the vast majority of the surface area was paved, with only a few small permeable green spaces remaining. A major urban redevelopment project is currently underway, as most of the existing structures have been abandoned. The buildings that were once part of the site during its full operation are listed in the following two tables. Table 1

corresponds to buildings at “*ex Avicunicolo*” site, while those located within the “*ex Macello*” area are detailed in Table 2.

Table 1

“ex Avicunicolo” designation of buildings

Ex Avicunicolo		
Number	Name	Purpose
1	Building A	Warehouses and laboratories
2	Building B	Offices, management, bar, bank
3	Building C	Warehouses and housing (P1)
4	Building D	Warehouses and housing (P1)
5	Building E	Warehouses and housing (P1)
6	Building F	Warehouses and housing (P1)
7	Building G	Warehouses and housing (P1)
8	Building H	Warehouses and housing (P1)
9	Building I	Warehouses with cold storage rooms and laboratories
10	Building L	Warehouses with cold storage rooms and laboratories
11	Building M	Warehouses with cold storage rooms and laboratories
12	Building N	Warehouses with cold storage rooms and laboratories
13	Building O	Warehouses with cold storage rooms and laboratories
14	Building Q	Warehouses with cold storage rooms and laboratories
15	Building R	Warehouses with cold storage rooms and laboratories
16	Building S	Warehouses with cold storage rooms and laboratories
17	Building T	Warehouses with cold storage rooms and laboratories
18	Building U	Warehouses and garages
19	Building V	Warehouses and garages
20	Building Z	Former wholesale and street market operations

Source: Own elaboration

Table 2

“ex Macello” designation of buildings

Ex Macello		
Number	Name	Purpose
1	Building 8	Former Forensic Market – Parking Area
2	Building 9	Former offices – warehouses – canteen – store
3	Building 10	Former maintenance workshop
4	Building 12	Former meat market
5	Building 13	Cold storage units (former fish market)
6	Building 14	Former tripe and gutting department
7	Building 15	Former meat market (cold rooms/cutting lab)
8	Building 16	cold rooms (-20°) – machine room
9	Building 17	Former slaughter gallery (calves)
10	Building 18	Former cattle slaughter gallery (a)
11	Building 19	Former slaughter department (part)
12	Building 20	Former storage (formerly livestock market)
13	Building 21	Veterinary offices
14	Building 22	Sanitary facilities
15	Building 23	Booking office building
16	Building 24	Tripe emptying
17	Building 25	Former pre-slaughter stables
18	Building 26	Livestock insurance office building
19	Building 27	Former observation department

20	Building 28	Fish product warehouse (formerly slaughter gallery c)
21	Building 29	Former commercial offices (formerly equine slaughter gallery)
22	Building 30	Former garage – meat transport cooperative
23	Building 31	Former garage
24	Building 32	Vehicle washing and building 33: vehicle disinfestation
25	Building 39	Former forage storage
26	Building 50	Central gallery
27	Building 51	Chain conveyor
28	Building 52	Wastewater treatment plant

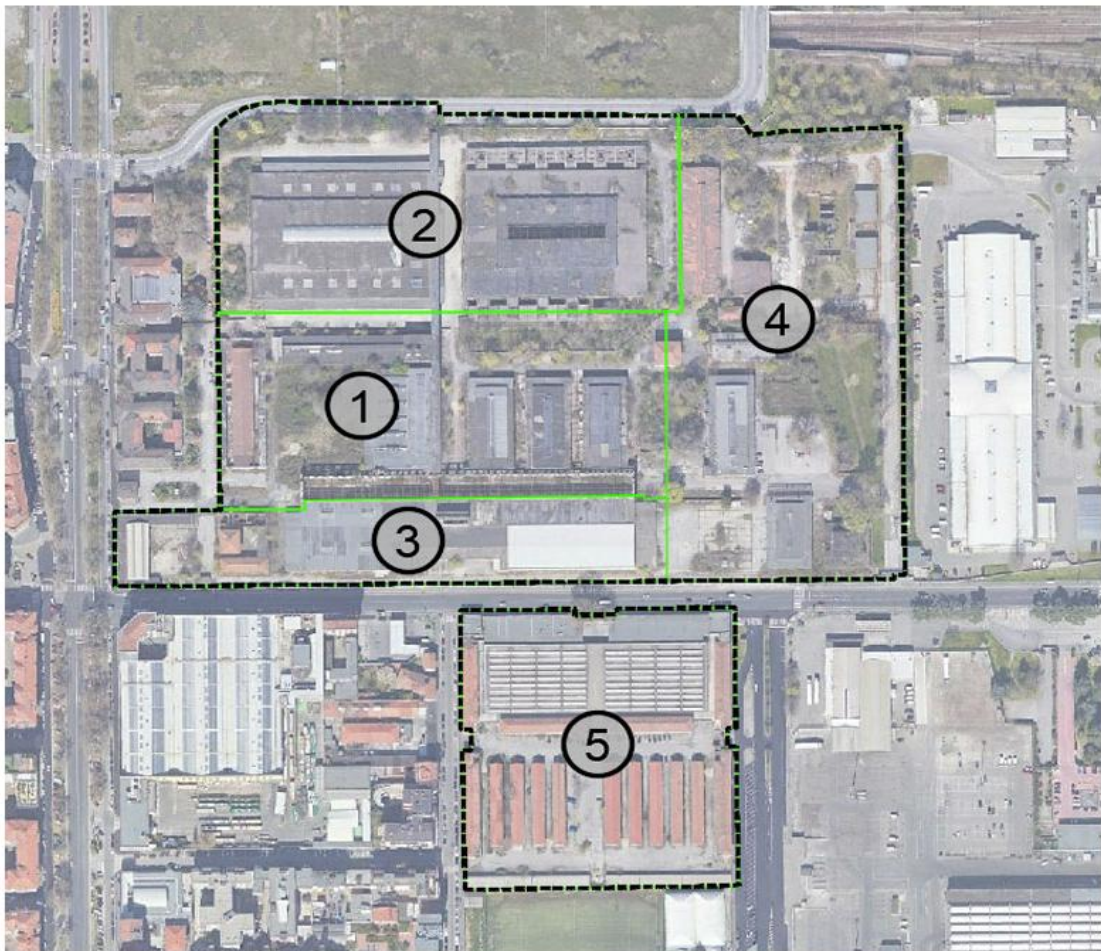
Source: Own elaboration

The area of the “*ex Macello*” and “*ex Avicunicolo*” sites has been divided into six functional lots for the purposes of the environmental reclamation project described in this document.

Lots 1, 2, 3 (A and B), and 4 fall within the “*ex Macello*” area, while Lot 5 corresponds to the “*ex Avicunicolo*” area.

Figure 3

“ex Macello” and “ex Avincunicolo” planimetry



Source: taken from [*revisione dell'analisi di rischio sito-specifica e progetto operativo di bonifica ai sensi del d.lgs.152/06 e s.m.i.*](#)

1.3) Future use of the place

According to the “*Piano di Bonifica*” and official documents published by the local authorities, the “*ex Macello*” area is set to be redeveloped into a multi-functional complex with diverse environments and infrastructures. It is also planned to become the first neighborhood in the city with a negative carbon footprint, thanks to its integrated energy system. This makes

it one of the most ambitious urban projects in Milan, both in terms of surface area, investment, and overall vision.

The redevelopment will include:

1. Residential areas: 926 apartments, including housing for students.
2. Public green spaces.
3. A university campus.
4. Social services and district-level infrastructure: such as a museum, offices, laboratories, food areas, and other public facilities.

The project is expected to be open to the public and residents by 2030, in line with the timeline established by the local government. This date also coincides with Milan's target for achieving climate neutrality. Figure 4 shows a visual rendering of the proposed development.

Figure 4

Representation of the new “ex Macello” and “ex Avincunicolo”



Source: taken from [aria ex macello](#)

1.4) Actual use of the space

While the area is still under redevelopment, some parts of the “ex Macello” site have already been used to host large cultural events, such as concerts and fashion shows (like Milano green week, Fuorisalone, Black Coffee or skate and surf film festival) as shown in Figure 5.

The spaces used for these events mainly correspond to Lots 1, 2 and 3 of the “*ex Macello*” site. These areas, due to the positive results of a specific environmental risk assessment for temporary uses, are suitable for hosting commercial or recreational activities. The use of space is approved by the Municipality of Milan, since it doesn’t represent any environmental or structural risk for people.

Figures 6 and 7 show how the area is divided based on the type of event: Figure 6 includes zones that can be used for commercial purposes, while Figure 7 refers to spaces that can be used for recreational ones.

Figure 5

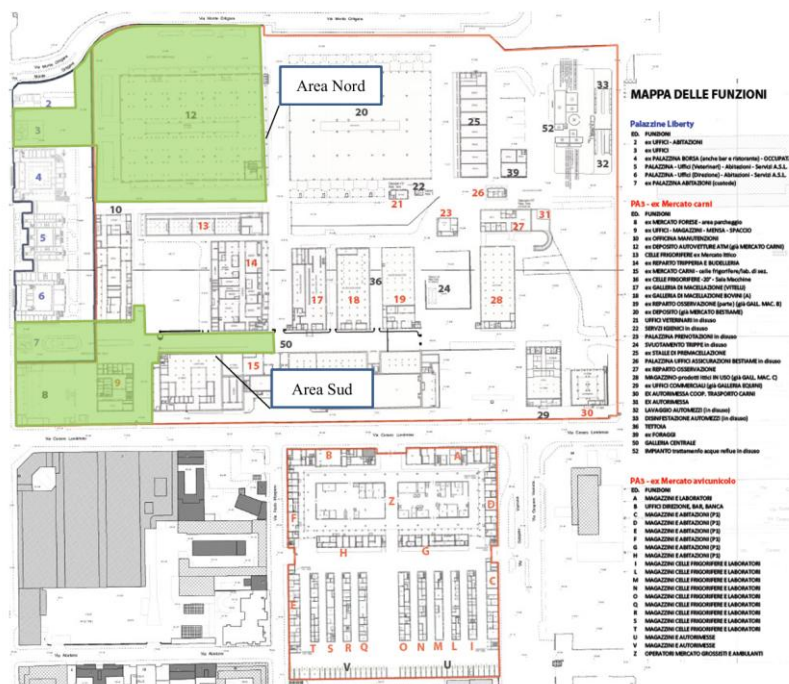
Events at the “ex Macello” area



Source: taken from [aria_ex_macello](#)

Figure 6

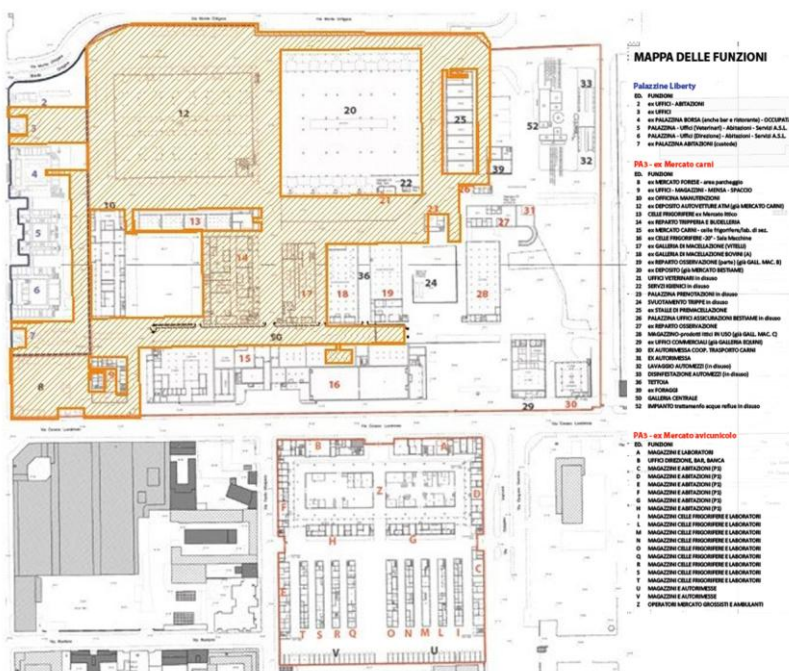
Areas intended for temporal use for commercial events at the “ex Macello”



Source: taken from [Usi temporanei](#)

Figure 7

Areas intended for temporal use for recreational events at the “ex Macello”



Source: taken from [Usi temporanei](#)

2) FIRST PROCEDURES TO EVALUATE

The initial steps required when considering the temporary use of construction sites for large-scale events with undergoing environmental remediation procedures involve conducting a thorough risk analysis and reviewing the environmental remediation plan. If the remediation plan has not yet been developed, it is necessary to request it from the entity responsible. If the plan is already in place, it must be carefully examined.

This process is crucial, as the feasibility of carrying out any planned activities on the site depends directly on the findings of these documents, particularly the identified levels of soil contamination. Should contamination levels fall within the legal limits established by the relevant authorities, the proposed activities may proceed. Conversely, if the levels exceed acceptable thresholds, a remediation strategy must be implemented. In the context of temporary events, this could require the adoption of enhanced safety and protection measures, or in some cases, may lead to the denial of permission to use the site.

In the case of the “*ex Macello*” and “*ex Avicunicolo*” sites, both already have an environmental remediation plan and a comprehensive risk analysis prepared for their long-term redevelopment. However, for temporary use, only the risk analysis is required to verify whether existing conditions remain stable and compliant with safety standards. The key findings of the risk analysis are presented below.

2.1) Environmental Remediation Plan for the Final Purpose

At the “*ex Macello*” site, both the environmental remediation plan and the risk assessment have already been completed. The task, therefore, focused on analyzing these documents in detail to identify which areas could be safely used on a temporary basis for large-scale events, and which areas should remain off-limits due to potential health or environmental risks, and to identify a general procedure that allows the activity to be replicated elsewhere.

The findings of the analysis are summarized as follows to each lot:

- **Lot 1:** This portion of the site is affected by soil contamination from heavy metals, asbestos, and other hazardous substances. Consequently, several zones within Lot 1 have been deemed unsuitable for unrestricted use unless prior remediation is carried out, and a dedicated remediation plan has already been prepared. Furthermore, due to structural concerns, some buildings within this lot have been classified as high-risk and are scheduled for demolition. Partial temporary use of Lot 1 may be permitted, provided that strict occupational safety and health (OSH) measures are implemented. Temporary activities should be limited to surface-level use that avoids excavation or any operations that could cause significant ground vibrations. For example, Building 14, which is not currently slated for demolition, could potentially be used under clearly defined safety conditions, as was carried out during *Fuorisalone* 2024.

- **Lot 2:** In this area, localized soil contamination has been identified, primarily in the upper layers, involving heavy metals, hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs). Some remediation work has already been carried out, including the removal of an underground storage tank and targeted excavation of polluted hotspots. Ongoing mercury vapor monitoring is in place, particularly near Building 12, to mitigate risks associated with possible soil gas accumulation. Several structures within Lot 2, such as Building 9 and Building 12, have been evaluated and

deemed suitable for partial and temporary use. However, any activity involving ground disturbance (such as excavation, anchoring, or mechanical installations) must be individually assessed. Temporary reuse of this lot is currently permitted under strict OSH protocols, which include vapor monitoring, dust control measures, and restricted access to areas that have not been validated. Under these conditions, Lot 2 is already being used from 2022 to host cultural events and artistic installations.

- **Lot 3 (3A and 3B):** This central portion of the “*ex Macello*” site includes some of its most historically and architecturally significant structures. Environmental investigations have identified significant soil contamination in both 3A and 3B, particularly from heavy metals (arsenic, lead, cadmium) and hydrocarbons (PAHs). In some areas, leaching tests suggest that soil disturbance could generate hazardous waste. Additionally, buried fill materials have been found at depths of approximately 2 meters in Lot 3A and 2.6 meters in Lot 3B. While no asbestos was detected in the soil, the potential presence of asbestos-containing materials in older building components (like insulation and roofing) cannot be excluded.

Temporary use of this area is only feasible under highly controlled conditions. Any event would require rigorous occupational health and safety (OSH) measures and prior structural evaluations. Heritage buildings such as 17, 18, 19, and 20 could be considered for future reuse, but only following comprehensive technical inspections and likely structural reinforcement. Given the poor condition of the structures, buildings 18, 19 and 20 are currently unsuitable for any temporary use. Access will remain restricted until all necessary reinforcement and demolition activities are completed.

- **Lot 4:** Situated on the eastern edge of the “*ex Macello*” site, this area includes former support structures such as commercial offices (Building 29), garages

(Buildings 30 and 31), and possibly former stables or warehouses (Buildings 25 and 28). These buildings are all in advanced stages of decay and have been designated for demolition due to their structural instability and the presence of environmental hazards.

Soil analysis has revealed contamination levels exceeding regulatory thresholds (Colonna A) for several heavy metals (lead, zinc, copper, cadmium) and hydrocarbons (PAHs). Additionally, asbestos fragments (chrysotile) were detected in a localized area, and an underground tank, likely used for fuel storage, was found between Buildings 29 and 30.

Given the severity of contamination and the poor condition of the structures, Lot 4 is currently unsuitable for any temporary use. Access will remain restricted until all necessary remediation and demolition activities are completed.

- **Lot 5:** Corresponding to the “*ex Avicunicolo*” area, located in the southeastern portion of the site, Lot 5 is significantly affected by widespread contamination, including total petroleum hydrocarbons (TPH), heavy metals, and deep anthropogenic fill reaching depths of up to 3.8 meters. The remediation plan for this area includes excavation of contaminated soil, removal of underground storage tanks (such as the one near Building B), and backfilling with certified clean materials. Post-remediation plans include ongoing groundwater and vapor monitoring.

The buildings in this sector are designated by letters rather than numbers and include Building B, Building O (former cold storage and laboratory), and Building Z. None of these structures can be used for temporary purposes at this stage, as their structural integrity has not been verified and remediation work is still in progress across the lot.

Lot 5 is therefore not suitable for public or temporary use at this time, and its future availability will depend on successful completion of remediation and

confirmation through structural assessments. Until then, the area remains under environmental and OSH restrictions.

Based on the results of the risk analysis, the site can be considered suitable for hosting temporary events, but only in selected areas. Some parts remain off-limits due to structural concerns or high levels of contamination, while others (where pollution is more limited) could safely accommodate temporary activities, provided that appropriate health and safety measures are in place. At this stage, only specific portions of Lots 1, 2, and 3 may be used. It's important to note that this does not apply to the entire lots, but only to certain buildings or open spaces that meet the necessary safety conditions. Once initial approval is obtained, a more detailed risk assessment focused specifically on temporary use must be carried out.

2.2) Environmental Remediation Plan for the temporal Purpose

Studies carried out on the site showed that surface soils in the zones planned for public use contain pollutants above the legal limits, particularly metals such as mercury, lead, copper, and zinc, as well as hydrocarbons and other persistent organic substances. The underground water system has also revealed traces of chlorinated solvents (common in Milan's shallow aquifers) along with occasional excess levels of certain harmful compounds and metals in some of the monitoring wells.

These findings were established through detailed surveys and then compared against the limits established by Italian law. Even though the site is currently classified as an industrial zone, the stricter values normally applied to residential areas were adopted as the benchmark, since the long-term goal is to redevelop the space for housing. This choice ensured that the evaluation would follow the most protective standards for human health and future use.

The comparisons were carried out following national guidelines that take into account possible measurement uncertainties. In practice, this means that a concentration is considered truly above the limit only when the value clearly falls outside the accepted margin of error. By following such cautious procedures, the assessment created a “*worst-case*” scenario that guarantees any pollutant above the norms is identified and addressed, while confirming that the areas designated for events remain within acceptable safety levels.

Before temporary events could be held at “*ex Macello*”, a specific health risk study was carried out to confirm that activities could take place safely despite the site’s residual contamination. The assessment was requested by the authorities as part of their safety review and focused on possible exposure for two groups: staff members working at the event (such as organizers, installers, and vendors) and the general public attending the activities. The scenarios assumed limited exposure times, reflecting the temporary and non-residential nature of the site’s use.

The health risk study was deliberately designed with conservative assumptions in order to guarantee a margin of safety. This meant that the highest levels of pollutants recorded in site samples or, where relevant, the upper-bound statistical estimates, were taken as the basis for calculating potential exposure. For example, if mercury levels in certain soil samples exceeded legal thresholds, those peak values were used to estimate the possible health risks for anyone coming into contact with soil in those areas.

The analysis also included a precautionary evaluation of vapor inhalation from groundwater, even though the site itself contributes minimally to this form of pollution and some of the detected substances are widely present in the city’s aquifer. In practice, this step ensured that any hypothetical release of volatile compounds into the air would still be accounted for. By contrast, other pollutants found on-site, such as benzo(a)pyrene or

hexavalent chromium, are not volatile, so their possible health effects would only occur through dust, not vapor.

The key metrics for safety in this context were the regulatory contamination limits (“CSC” values) for relevant pollutants in soil and groundwater, which the site needed to meet or fall below in the areas accessible to the public. For the “*ex Macello*” event areas, the applicable CSC thresholds were those for residential/public-green use - stricter than industrial-use limits - as a deliberate safety margin.

The following section presents the results from the risk assessment conducted by the parties involved.

- **Lot 1:** This area still presents significant environmental and structural challenges for any temporary public use. Soil tests have confirmed contamination by heavy metals, hydrocarbons, and PAHs, with concentrations exceeding residential limits set by Legislative Decree 152/2006. In one hotspot, levels of pyrene even go beyond industrial thresholds. In a 740 m² green space between Buildings 10, 13, and 14, asbestos cement debris was found, and two underground tanks near Building 14 must also be removed as part of the remediation process. From a structural point of view, only Building 14 and part of Building 18 are still standing, both require stabilization before any use. Buildings 10 and 13 are scheduled for demolition. Public access will only be possible after full remediation, which includes hazard removal, soil covering, dust suppression, and restricted access measures. As a result of the completion of these interventions, some outdoor areas become suitable for temporary events, provided that strict safety protocols are followed.

- **Lot 2:** While this area shows fewer contamination hotspots compared to Lot 1, restrictions still apply for temporary use. Environmental surveys revealed

isolated instances where heavy metals and PAHs exceed residential limits, meaning that any use would require surface soil covering and active dust control. From a structural standpoint, Building 12 (the historic “*ex Mercato delle Carni*”, protected as a heritage site) could be used for temporary events, on the condition that its structural integrity is verified and necessary safety work is completed, as later carried out. Building 15 is still standing but currently not suitable for public access without major intervention. Meanwhile, Building 9, which is partially shared with Lot 3, is scheduled for demolition due to partial structural instability. As such, temporary activities in Lot 2 would be limited to structurally safe zones like reinforced sections of Building 12 and Building 9 and adjacent outdoor areas, assuming all environmental and safety measures are in place.

- **Lot 3:** Spanning the central part of the “*ex Macello*” site, this lot includes Buildings 9, 15, 17 (“*ex Galleria Vitelli*”), part of 18, 19, 20. Environmental tests revealed contamination in several surface areas, with heavy metals and PAHs surpassing the Colonna A thresholds. To allow any public access, exposed soil must be covered, and strict dust control measures enforced. Most of the gallery buildings (17, 18, 19, 20, 50 and 51) are heritage-listed and are not planned for demolition; however, they will need thorough structural evaluations and safety interventions before they can be safely reopened. In contrast, Buildings 9 and 15 are in poor condition (Building 9 is already marked for demolition) and are therefore unsuitable for any type of use. For now, temporary use in Lot 3 could only take place in the gallery and building 17 that are proven structurally sound and in cleared open spaces, all under controlled conditions and with proper safety oversight.

- **Lot 4:** Located on the eastern side of the “*ex Macello*” site, Lot 4 includes Buildings 28, 29, 30, 32, 33, and 39. The assessment for temporary use

highlights two main environmental risks: an asbestos-in-soil hotspot identified at sampling point TI42, and an underground tank located between Buildings 29 and 30. Both hazards must be fully addressed, removed and certified safe, before any public access is permitted. Structurally, all buildings in this lot are in poor condition and are scheduled for demolition. Once remediation and clearance are complete, the area will mostly consist of open space. Until then, Lot 4 is not suitable for temporary use.

- **Lot 5:** This lot corresponds to the “*ex Avicunicolo*” area and includes a series of buildings labeled A through Z, all of which are scheduled for full demolition down to ground level. Environmental studies revealed an underground tank near Building B, which must also be removed during remediation. After demolition, no above-ground structures will remain, and the area will become open land. Until all these works are completed, Lot 5 cannot be used for temporary public activities.

The risk analysis carried out for the temporary use of the site confirmed the findings of earlier studies focused on its long-term redevelopment. Lots 1, 2, and 3 are available for temporary use during the allowed time frame, but only certain sections and specific buildings meet the necessary conditions. In contrast, Lots 4 and 5 pose greater environmental and structural risks and are not expected to be ready in time.

The key environmental issues identified in Lots 1, 2, and 3 include contaminated soil exceeding Colonna A limits, asbestos hotspots, and the presence of underground tanks. Structurally, some buildings remain unsafe and must stay closed, while others may be reused once they have been properly stabilized and all safety measures are in place.

This updated analysis offers a clearer picture of the site’s current state and makes it possible to define the safety protocols, personnel, and equipment needed to move forward to the next phase: installation, event and dismantling for temporary use.

3) MAIN PROCEDURES (INSTALLATION, USING AND UNINSTALL)

After completing the risk assessments and gathering all the necessary information about the site, the next steps focus on how to safely organize a temporary event. With a clear understanding of the site's specific conditions, the company interested in using the space should concentrate on three main phases to ensure people's safety and protect the existing structures - without making any existing environmental issues worse.

The first phase is the installation of the event structures; the second is the safe management of the event while it's happening; and the third is the dismantling and clean-up once the event is over. By handling each of these phases carefully and in order, the organizers can make sure the event runs smoothly, guests and workers are protected, and the site's condition remains stable, just as outlined in the earlier risk analysis.

3.1) Installation

Setting up temporary stages, stands, service areas, and access routes on a site that's contaminated or only partially remediated requires careful planning and full compliance with safety regulations. Before anything is installed, the area must be thoroughly assessed through a detailed risk analysis. If needed, additional remediation should be carried out. Only the parts of the site confirmed to be safe (such as selected zones within Lots 1, 2, and 3 of the “*ex Macello*”) can be used, and even these may require ongoing monitoring.

According to Italian workplace safety law (Legislative Decree 81/2008), preparing a temporary event qualifies as a *cantiere temporaneo o mobile* (temporary or mobile construction site), which activates all the related safety obligations. The law defines these as any area where building or civil engineering work takes place, including the assembly and dismantling of stages and temporary structures. This means the installation phase must fully comply with Title

IV of Legislative Decree 81/2008, which outlines safety requirements for construction sites. In addition, the *Decreto Palchi* (issued on 22/07/2014) reinforces this framework by confirming that the same rules apply specifically to performances and events, eliminating any uncertainty or loose interpretations.

In practical terms, before any stage or structure is put in place, the event organizer (acting as the *committente* (client)) must ensure that a safety plan has been drawn up and that all contractors are informed about the specific risks on site, such as soil contamination or unstable buildings.

3.1.1) Installation planning

When planning the installation of temporary structures, it's essential to minimize ground disturbance and avoid any actions that could worsen existing contamination or compromise structural stability. For example, in Lot 1 of the “*ex Macello*” site, where both soil pollution and fragile buildings are present, plans should avoid any excavation, ground anchoring, or use of heavy machinery that causes strong ground vibrations. These activities could disturb contaminated soil or damage already weakened structures. A safer alternative would be to use ballast weights or elevated platforms that sit above ground, eliminating the need to dig into polluted areas.

Any underground risks already identified in the remediation plan, such as tanks or asbestos deposits, were removed before the event or clearly marked and restricted as no-access zones. Overall, installation work must be flexible and adapted to the specific conditions of the site. Only the areas confirmed to be clean or safely remediated can be used, and even then, only under strict control.

In addition to adapting the physical setup, all roles, documentation, and training requirements outlined in Legislative Decree 81/2008 must be clearly established from the start. This includes defining responsibilities, assigning key personnel, and putting safety procedures in place. The main roles and related legal references according to Legislative Decree 81/2008 include:

- *Committente (Client)* - Art. 90
- *Coordinatore per la Progettazione (CSP)* - Art. 91 and 100
- *Coordinatore per l'Esecuzione (CSE)* - Art. 92
- *Datore di Lavoro (DL) and Dirigente* - Art. 18
- *Preposto* - Art. 19
- *Servizio di Prevenzione e Protezione (SPP) and RSPP/ASPP* - Art. 32
- *Medico Competente (MC) and health surveillance* - Art. 25
- *Rappresentante dei Lavoratori per la Sicurezza (RLS)* - Art. 47
- *Addetti alla gestione delle emergenze* - Art. 43
- *Impresa affidataria* - Art. 97
- *Piano Operativo di Sicurezza (POS) for each contractor* - Art. 101
- *DUVRI (coordination for overlapping work/contracts)* - Art. 26
- *Mandatory training and PPE requirements* - Art. 37 and Art. 77

Setting these elements in place from the beginning helps create a strong foundation for safe and well-organized event preparation. That said, it's important to remain flexible, as work progresses, there may be a need to update roles, documents, or procedures based on how the installation develops on site.

3.1.2) Personal Protective Equipment (PPE) for workers

Working on a site requires strict use of Personal Protective Equipment (PPE). Under **Article 77 of Legislative Decree 81/2008**, employers are legally required to provide the appropriate PPE and ensure that it is used correctly by all workers. In practice, this means that everyone involved in the installation must wear the basic protective gear used on construction sites, such as hard hats, safety boots, high-visibility vests, and gloves. However, given the specific risks associated with soil contamination, additional PPE is often necessary.

For example, if there's a chance workers could come into contact with contaminated dust or soil, they should wear disposable coveralls and respiratory protection, such as P2 or P3 masks or respirators, to reduce the risk of inhaling hazardous particles. For those working at height, safety harnesses must also be considered. Employers are expected to select PPE based on a risk assessment that takes into account the type of residual contaminants (such as heavy metals or asbestos) and the nature of the work being performed.

The law also requires that all PPE be kept clean, functional, and ready to use, and that workers receive proper training on how to wear and handle it. It's important to remember that PPE is considered a last line of defense; whenever possible, collective safety measures (like barriers, enclosures, or isolation of hazardous areas) should be prioritized. For certain high-risk equipment, the law also requires specialized training (*addestramento*) to ensure workers know how to use it safely and effectively.

3.1.3) Measures for Structurally Unstable Buildings

Many abandoned industrial buildings (such as those found at the “*ex Macello*” site) pose serious structural risks, including the potential for collapse. Before installing any equipment near or inside these structures, it is essential to assess their stability. **Article 150 of Legislative Decree 81/2008** (under Title IV, which refers to demolition work) clearly states that “before demolition begins, the stability and condition of the structures must be verified.” Although this is not a demolition activity, but rather an installation, the same level of precaution and safety measures must be applied. By extension, any building that has been flagged as unstable or is scheduled for demolition must be treated with extreme caution during the setup phase of an event. No scaffolding, lighting systems, or crowd-facing structures should be placed against or rely on buildings whose stability hasn’t been confirmed. **Articles 111 to 115 of D.Lgs. 81/2008** also establish clear rules for working at height and on fragile structures. These include prioritizing collective fall protection systems like guardrails and scaffolding over individual equipment, ensuring all platforms and supports are structurally sound (**Art. 112**), and using proper access tools such as ladders or aerial lifts, rather than allowing workers to climb onto unsafe ruins (**Art. 113**).

If stabilization work is needed (such as installing shoring, safety nets, or debris containment systems) those tasks fall under the category of work at height and must follow the corresponding safety requirements. This includes specific training, appropriate use of harnesses, and securing anchorage points, as required under **Article 115**.

Most importantly, no workers or visitors should enter or pass near buildings that pose a collapse risk. During installation, unsafe structures must be fenced off with a clear safety perimeter. Even if a building isn’t being actively demolished, setting up a

so-called “collapse exclusion zone” is strongly recommended. According to **Article 154**, demolition areas must be cordoned off, and access underneath or near them must be strictly prohibited. A common safety guideline is to keep a distance equal to or greater than the building’s height, unless a structural engineer confirms a shorter safe distance is acceptable.

All actions related to structural safety must follow the recommendations in **Annex XIII of D.Lgs. 81/08**, which outlines general safety logistics on-site. This includes securing any openings, fencing off danger zones, and making sure that only approved and properly installed temporary structures are used for access.

3.1.4) Protection Measures for Polluted Zones

To the parts of the site that still contain hazardous substances such as heavy metals in the soil, hydrocarbons, or asbestos debris, pose risks to workers' health. For this reason, the installation phase must include strong safety measures to prevent exposure to any remaining pollutants. **Title IX of Legislative Decree 81/2008** specifically focuses on protecting workers from chemical risks. According to **Article 223**, employers must conduct an updated risk assessment for chemical agents, taking into account both the properties of hazardous substances present on-site and the potential routes of exposure.

In practical terms, this means revisiting contamination reports to identify any hotspots, such as elevated levels of lead, arsenic, polycyclic aromatic hydrocarbons (PAHs), or asbestos, and evaluating how the planned activities might expose workers to them. Where risks are identified, **Article 225** requires employers to reduce or eliminate those risks by following a hierarchy of controls. The first step is to avoid

disturbing contaminated materials. For example, covering polluted soil with geotextile fabric or protective panels can help prevent direct contact between workers or machinery and the ground.

If particularly dangerous substances (like asbestos or debris containing polychlorinated biphenyls (PCBs)) are present, they should be professionally removed before the event begins. This is a legal requirement: **Articles 249–256** set strict rules for asbestos removal, including the use of licensed contractors and approved work plans. Coordination between the site owner and the event organizers is essential to ensure that any hazardous materials are either removed or safely isolated prior to installation.

When full elimination isn't possible, exposure must be strictly controlled. For example, contaminated soil should be kept damp or sealed to prevent dust from spreading, and a dust suppression plan should be in place anytime the ground is disturbed. Access to high-risk zones must be limited, with clear signage, barriers, and access granted only to properly trained and protected personnel. As **Article 225(c)** explains, personal protective equipment (PPE) should only be used after all reasonable technical and organizational steps have been taken to reduce the risk.

All workers must be clearly informed about the presence of any residual contamination and trained to recognize symptoms of exposure. If carcinogenic or mutagenic substances are known to be present (such as airborne asbestos or benzopyrene in tar-like residues) additional rules apply. **Article 235** requires employers to reduce these substances to the lowest technically possible level, whether by decontaminating affected areas or using materials that contain or bind the contaminants. **Article 242** also mandates medical monitoring for workers exposed to carcinogens, meaning anyone working in these areas must be enrolled in a health surveillance

program, which may include regular medical check-ups. In high-risk areas, special procedures like time-limited access or decontamination showers may also be necessary

Emergency protocols must also reflect the presence of chemical hazards. For example, there should be eyewash stations, chemical first-aid kits, and clear instructions on how to handle accidental spills, especially since old fuel or chemical residues may still exist on site. **Article 225** also requires ongoing monitoring of exposure levels and immediate corrective action if legal limits are exceeded. If unsafe exposure levels are detected, **Article 226** states that work must stop, and workers must evacuate the area until the hazard is under control, whether through ventilation or other safety measures.

By applying the safety measures set out in **Title IX of D.Lgs. 81/2008** with care and consistency, the installation phase can move forward without putting workers' health at risk, even in areas that have not yet been fully remediated.

3.1.5) Normative Framework for Temporary Construction Sites (*Cantieri Mobili*)

Since the setup of a temporary event is legally considered a construction site, it must follow the full safety coordination framework established by **Legislative Decree 81/2008**. According to **Article 89**, roles and responsibilities must be clearly defined (as it was mentioned previously). The **committente** (typically the event organizer or site owner) and, if appointed, the **responsabile dei lavori**, are responsible for initiating and ensuring the implementation of safety measures. As outlined in **Article 90**, the client is required to apply general safety principles during the planning and design phases and to appoint safety coordinators when more than one contractor is involved. In the case of large event installations, this is nearly always the case, with multiple contractors typically handling staging, lighting, sound, catering, and more.

For this reason, the law requires the appointment of two key safety roles: a **Safety Coordinator for the Design Phase (CSP)**, who is responsible for preparing a *Piano di Sicurezza e Coordinamento (PSC)* (a tailored safety and coordination plan) and a **Coordinator for the Execution Phase (CSE)**, who ensures that all safety measures are followed during the work. As described in **Article 100**, the PSC must include a technical report outlining the risks specific to the project, along with clear instructions and procedures to manage or eliminate those risks. For example, a PSC for an event at “*ex Macello*” might include restricted zones (such as contaminated soil areas or structurally unsound buildings), required PPE, emergency evacuation routes, and a detailed timeline of the installation phases to prevent interference between different teams.

The CSE, as defined by **Article 92**, is tasked with making sure that everything outlined in the PSC is respected on site. This includes monitoring compliance, coordinating the work of different contractors, and updating the PSC if necessary as conditions change.

Contractors working on-site also have clear legal duties under **Article 96**. These include following the PSC, maintaining good housekeeping, and preventing risks during their operations. **Annex XIII** and **Article 96** list several practical obligations: fencing off the site and controlling access, keeping materials safely stored to prevent collapse, protecting workers from weather-related hazards (like slip risks in the rain), and cooperating with the client to remove any dangerous materials, such as asbestos. In addition, every contractor must submit their own *Piano Operativo di Sicurezza (POS)* before beginning work. This document outlines how their specific tasks will be carried out safely, what equipment will be used, what PPE is required, and how their activities align with the PSC. For example, the staging company’s POS would explain how they

plan to assemble structures without disturbing contaminated ground or unstable buildings. Work cannot begin unless both the PSC and all relevant POS documents have been approved and shared among the parties, as required by **Articles 26 and 18**.

Another essential legal step is the *Notifica Preliminare* (Preliminary Notification), required under **Article 99**. This document must be submitted to the local health authority (**ASL**) and the Labor Inspectorate before any work starts. It provides key details about the temporary construction site, including its location, scope, contractors involved, the duration of the work, and the names of the appointed safety coordinators. In the context of a large public event, this notification is more than just a legal formality, it helps authorities plan inspections to be prepared for emergencies and stay informed throughout the installation process.

In summary, even though temporary event setups may last only a few days, they are subject to the same safety standards and coordination duties as any construction project. Proper safety planning, clear roles, legally compliant documentation, and coordination with authorities are all required and must be factored into the timeline and resources for organizing the event.

3.1.6) Minimum Safety Distances and Public Safety Considerations

During the installation phase, planners must carefully respect minimum safety distances related to several types of risks, particularly structural hazards, environmental contamination, and crowd safety, including fire prevention. Each of these elements requires clear planning and coordination, and they must be integrated into both the site layout and the broader safety strategy.

Starting with structural risks, any building or structure deemed unstable must have a safe perimeter established around it. As mentioned earlier, this is especially relevant for older or abandoned buildings, like those found on the “*ex Macello*” site. **Annex XIII of Legislative Decree 81/2008** and **Article 154** (which focuses on demolition safety) require that unauthorized personnel and unrelated materials be kept out of potential collapse zones. In practice, this often involves fencing, signage, and hazard tape to clearly mark a safety buffer, typically between 10 and 20 meters from any high-risk wall or structure. If specialized workers need to enter these zones for stabilization or safety work, they must do so under a permit-to-work system, with close supervision and all necessary protections in place. These restricted areas must also be clearly indicated on the site plan to ensure coordination across all teams.

When it comes to pollution-related risks, the goal is to isolate contaminated zones and prevent exposure. For example, if a small area in Lot 4 contains asbestos-contaminated soil, it must be physically sealed off, and only trained workers wearing appropriate protective gear (like respirators) should be allowed to enter. No public access should be allowed under any circumstances until remediation is complete, and the area has been officially cleared. **Article 225** supports this approach by emphasizing the need to limit both the number of exposed workers and the extent of their exposure. Protective strategies may include physical barriers, warning signs, and air quality monitoring. In some cases, contaminated areas can be temporarily covered with tarps or panels to prevent dust release. Equipment such as vehicles and generators should not be placed on these zones unless precautions (like drip trays or protective membranes) are used to prevent further contamination.

In terms of crowd management and fire safety, Italy has specific technical standards that apply to public events. These are outlined in older regulations like **D.M.**

19/08/1996 and newer rules like **D.M. 22/11/2022**, which detail the required safety distances between event structures and any potential ignition sources. For example, large tents, stages, and fuel storage areas must maintain a safety clearance of around 20 meters in open-air settings. If multiple tents or attractions are placed near each other, at least 6 meters of separation is generally required unless otherwise approved. These distances are critical for preventing the rapid spread of fire or other incidents between structures.

Event planning must also include sufficient space for emergency routes. Fire lanes at least 3.5 meters wide should remain unobstructed throughout the installation and the event. Generators, fuel tanks, and similar equipment must be placed at safe distances from tents and structures, and fire extinguishers should be readily available nearby, as specified in fire safety codes. Additionally, the stage itself should be placed a few meters away from the audience area, typically with a protective barrier in place. This prevents injuries in case of equipment failure, pyrotechnic misfires, or unexpected structural shifts.

All these distance requirements are usually laid out in the event's safety and evacuation plan, which is submitted to local authorities alongside the *Piano di Sicurezza e Coordinamento (PSC)*. The installation crew must follow this layout exactly. If the plan specifies, for instance, that a lighting tower must be 5 meters from a public path, that distance cannot be altered for convenience. Adhering to these minimum safety distances isn't just about compliance, it's about creating safe buffer zones that allow time to react and reduce the impact of any potential incident.

3.1.7) Additional Occupational Safety and Health Measures

In addition to site-specific controls, all general occupational health and safety (OSH) measures must be firmly in place during the installation phase. **Article 37 of Legislative Decree 81/2008** requires that every worker receive appropriate and sufficient safety training, including information relevant to the specific risks of the worksite. Before beginning operations, the event contractors should hold on-site safety briefings (often known as toolbox talks), where they explain the unique conditions, in this case at “*ex Macello*” site, for example, the presence of contamination zones, restricted areas, and emergency response procedures.

If workers or subcontractors speak different languages, training materials and safety signs must be adapted to ensure full comprehension. This is clearly stated in **Art. 37**, which emphasizes that safety training must be understandable to all workers. Additionally, all staff must be briefed on the site’s emergency and evacuation plan for the installation period. Under **Article 43**, employers must organize emergency measures and designate workers responsible for first aid, fire response, and evacuation support. At least one person trained in **first aid (Art. 45)** must be present at all times during the installation, equipped with a first aid kit.

Likewise, fire extinguishers appropriate to the potential risks (such as electrical or fuel fires) must be available on-site, and workers must know how to use them. **Art. 43** also requires that all personnel are familiar with emergency signals and protocols, including how to safely shut off equipment and where to gather if an evacuation is necessary. For example, a loud alarm such as a siren or air horn may be used to signal evacuation, and all workers must move quickly to a designated assembly point. Emergency routes and exits (such as gates in the perimeter fencing) must remain unobstructed throughout the installation.

Coordination among multiple contractors is another key responsibility. According to **Article 26**, when multiple employers operate on the same site, they must cooperate and coordinate to manage shared risks, with the primary client (*committente*) ensuring that this coordination happens. While this overlaps with the responsibilities of the Safety Coordinators outlined in **Articles 91 and 92**, the obligation to share information applies even in informal settings. For instance, if one team plans to weld or use cutting equipment, they must notify others so appropriate measures (like assigning fire watchers or clearing flammable materials) can be put in place. This coordination process is formalized through the **DUVRI** (*Documento Unico di Valutazione dei Rischi da Interferenze*), which helps prevent incidents caused by overlapping activities.

Given the variety of tasks involved in an event installation (such as stage assembly, electrical setup, cleaning, and logistics) coordination logs or regular safety meetings are highly recommended. This ensures that teams don't unknowingly interfere with each other's work, such as setting up scaffolding beneath live electrical lines. Here, the Safety Coordinators (CSP and CSE) play a central role in facilitating communication and ensuring that all safety measures are aligned.

Work equipment safety is also a legal and practical necessity. Any machinery or tools used during the installation (such as forklifts, cherry pickers, power tools, or generators) must meet the safety standards laid out in **Article 71**. They must be appropriate for the task, well maintained, and regularly inspected. Operators must be qualified and, in many cases, hold formal certification (*patentino*) in accordance with **Article 73**. For example, only certified personnel should operate forklifts or aerial platforms. **Article 71** explicitly states that equipment posing particular risks must only be used by workers with adequate training.

For equipment that relies on proper assembly (such as scaffolds or rigging systems) **Article 71** requires an inspection before use. This means that once the stage or lighting rigs are installed, a competent professional (often from the staging company or a supervising engineer) must inspect and certify the structure's stability before it can be used by workers or opened to the public. Proof of periodic inspections, especially for lifting systems and hoists, should also be available on site, as required by **Annex VII**.

Lastly, in some cases, health surveillance may be necessary. If workers are exposed to significant health risks an occupational physician (*medico competente*) must be involved, as required by D.Lgs. 81/2008. This doctor is responsible for confirming each worker's fitness for the assigned tasks (like working at height or wearing respiratory protection), and for conducting any necessary health checks. For example, workers exposed to loud equipment may require periodic hearing tests, and those in contact with heavy metals might undergo blood screenings.

Having considered all the key aspects involved in the installation phase, now it is possible to apply all these principles to the specific case of “*ex Macello*” site. Doing so will make the guideline more practical and easier to follow, helping to illustrate how laws, safety measures, and site-specific conditions must be implemented in real-world scenarios. The focus will be on Lots 1, 2, and 3, which have been identified as suitable for temporary event use.

3.1.8) Application to the “*ex Macello*” Case Study (Lots 1–3)

3.1.8.1) Lot 1, High Contamination and Demolition Areas

Lot 1 of “*ex Macello*” site presents some of the most challenging conditions in terms of both environmental contamination and structural safety. According to the official risk analysis,

Lot 1 can only be used temporarily if specific health and safety measures are first implemented, and even then, only in clearly defined sections. In practice, this means that any event structures must be located in open-air spaces that have either been fully remediated or properly sealed. For instance, the ~740 m² green area between Buildings 10, 13, and 14 (where asbestos fragments were previously detected) must be, as done, fully cleaned and then either capped with clean soil or covered with safe decking before it can be used for public activities, such as installing an outdoor stage.

Under **Articles 249 and 256 of D.Lgs. 81/08**, and the provisions of **Ministerial Decree 06/09/1994**, asbestos removal must be carried out by certified contractors, and the area must be officially declared safe before workers or the public are allowed access. Additionally, two underground tanks near Building 14 must be removed as part of the safety preparation, as done. These areas must be properly backfilled or secured to prevent collapse or vapor release during the event.

In short, significant preparatory work is required, all of which should be outlined in a dedicated remediation plan for temporary use, before any installation teams can safely begin work in Lot 1.

The event organizer must ensure that all required remediation measures have been completed before any work begins in Lot 1 - or, if this is not possible, exclude those areas entirely from use.

To further reduce risk, personal dust monitoring may be necessary, particularly in areas with lead or other toxic materials, by regularly measuring workers' exposure levels, as outlined in **Article 225(2) and (3)**. At the same time, **Buildings 10 and 13** must be considered strict exclusion zones. These structures are at high risk of collapse and cannot be used for any purpose. No event infrastructure may be attached to them or placed within their potential fall zone. In line with **Article 154** (relating to demolition safety), a collapse perimeter should be

established and marked, for example, **Building 13 is 8 meters tall**, the safety buffer should be **at least 8 to 10 meters** in all directions to prevent workers or equipment from being positioned in a dangerous area.

If **Building 14** is to remain standing and used for the event, any structural reinforcement (such as shoring or wall bracing) must be completed in advance and overseen by qualified professionals under **Title IV provisions**. In fact, **Article 90** requires the client to ensure that a structural assessment is part of the project planning, this falls under the general design-phase protection principles (*principi di tutela*). Only after a certified engineer has confirmed that Building 14 is structurally sound for limited, temporary use can any installations take place inside it.

Assuming Building 14 is deemed safe, it could potentially serve as an indoor gallery space or a backstage area during events, as done for the *Fuorisalone 2024*. However, the use of this space must still comply with fire safety and capacity regulations: exits must remain clear, and the number of occupants must stay within the limits established by fire codes. Furthermore, since the “*ex Macello*” complex includes heritage-protected elements, any installations within Building 14 must also be sensitive to preservation rules. Equipment like lights or speakers should be mounted using non-invasive methods rather than fastened directly into walls or ceilings, both to avoid damaging historical structures and to minimize structural stress that could compromise safety.

Applicable Regulations: In the case of Lot 1, several key areas of Italian occupational and environmental law are particularly relevant. The contamination of the soil and presence of hazardous substances bring into play **Title IX** of D.Lgs. 81/2008, which addresses chemical and carcinogenic risks in the workplace, while the unstable structures on site fall under **Title IV**, which governs construction site safety, including demolition activities. Specifically, **Articles 223 to 225** require a comprehensive assessment of chemical risks and the

implementation of appropriate controls. Where carcinogenic materials such as asbestos are involved, **Articles 235 and 242** outline additional protection requirements, which may include health surveillance for workers exposed to such substances.

In terms of structural safety, **Articles 150 and 154** provide guidance for verifying building stability and establishing secure perimeters around structures at risk of collapse. In addition, the environmental standards set out in **D.Lgs. 152/2006**, and more precisely, the thresholds under "Colonna A" for residential land use, have also played a crucial role in shaping the remediation strategy. Since contaminant levels in Lot 1 exceed these limits, the site cannot be used freely without specific safety measures in place.

In practical terms, any temporary installation in Lot 1 must be carefully planned and tightly controlled. For example, a small open-air structure or artistic display could only be placed in an area that has been remediated and only after Building 14 has been structurally reinforced. Workers would need to follow strict protocols: no drilling or excavation, and access limited to designated safe zones. The general public could only be allowed into cleared, verified open areas, and would remain fully restricted from entering or approaching the derelict buildings.

Lot 1 serves as a clear example of the principle “safety first”, if the risks cannot be reduced to an acceptable level, event authorization should not be granted. This approach aligns with **Article 48**, which permits the suspension of works where immediate danger exists. In this context, if the necessary remediation or safety measures cannot be implemented, excluding Lot 1 entirely from temporary use may be the most responsible decision.

3.1.8.2) Lot 2, Moderate Contamination and Partially Usable Structures

Lot 2 is relatively less at risk than Lot 1 but still presents caution. Although the soil in Lot 2 does harbor pollutants – localized heavy metals, hydrocarbons, and PAHs just above the

threshold of danger in locations however, remediation has been done and the pollutants largely reside near the surface.

Installation is therefore capable of proceeding in Lot 2 with rigorous environmental controls: that is to say, coverage of whatever in-situ soil exists with clean fill or pavement material, and dust control. To installation crews, it therefore has the consequence that activities such as driving tent stakes or fenceposts into the earth may be restricted or subject to a case-for-case judgment. **Art. 96 (1)** would come into force, involving the removal or reduction of hazardous substances, so in the event that a small polluted spot remains the contractor must work with the client to remediate it or avoid it. By construction, Lot 2 contains Building 12 in it, a large old market hall long abandoned that is a heritage-protected building that possibly could accommodate activity once the structural integrity of the building is secured.

Building 12 is perhaps centrally located in the event. Before it is used, **Art. 90 and Art. 91** require that at the planning stage a technical inspection be conducted in order to ensure that any necessary safety precautions (like bracing of a roof, making a defective floor section complete, etc.) are in force. Installation personnel do not access Building 12 until it is certified structurally suitable for temporary occupation. Even then, they're wise to take care: use portable supports for mobile plant and heavy gear instead of ageing attachment supports and keep loads (no overcrowding with excessive gear or personnel). Since it is a heritage building, alterations (even of a temporary nature) may be the subject of special authority but from a safety viewpoint the thought is the safety of employees and the public within. Hence, where the second level of Building 12 is in a condition of instability, the PSC would refuse employees access to that level and the event would keep patrons on the ground floor only. Building 12 emergency egresses must be tested in installation to D.M. 19/08/1996 provisions of public venues.

Since the contamination is “localized” and a great deal of it is likely already in control (parts of the areas dug up), the level of PPE might be somewhat lower in this situation than in

Lot 1. Dust masks would still be in order when sweeping or where dust is present because inhaling left-over PAH-contaminated dust or mercury vapor is a hazard. Gloves would also be in order where the employees are handling topsoil or old structure debris (which might contain lead-paint or asbestos particles). There has to be a source of washing stations at the site where the employees can clean up their boots and hands prior to breaks a procedure in accordance with the provisions of **Art. 224's** overall hygiene precautions. There is a special mercury vapor monitor device in the area of Building 12 at the site; where such alarms, employees would evacuate and ventilate the zone (the mercury is extremely poisonous), and this eventuality has to be provided for in the emergency procedure under **Art. 43**. Note well that Lot 2 has at the moment different cultural events going on in a controlled environment, and that means the authorities approved certain specific safety precautions - likely the ones that we've listed: topsoil cover, air monitor stations, limited access areas, and the like.

Relevant law sources for Lot 2 are the identical Title IX arts for chemical agents (with the safeguard that other hotspots do not pose threat – perhaps through Art. 225 periodic gas in soil measurements), and Title IV for the construction materials. The “*Decreto Palchi*” would particularly come in useful here because Lot 2 may involve a stage in a building. Fire safety rules (D.M. of 22/11/2022) would also be relevant to the fit-out of Building 12 for the public (like requirement for a minimum amount of exits, fire extinguishers, no combustible materials near warmth sources, etc.) and the installation team is responsible for carrying this through. Overall, Lot 2 is well-suited to accommodate installation of the kind of ground-level art exhibits, small concerts or plays in Building 12 and exterior installments in the yard, but always under continued environmental parameters monitoring and a strict ban against disturbing existing known contamination or structurally unsound construction.

3.1.8.1) Lot 3, Heritage Area with Controlled Access

From a contamination perspective, Lot 3 soils are polluted with heavy metals and PAHs in excess of the safety level (*Colonna A*) in more than one location. When installation is in question, that would mean that exposed soil must be completely capped and dust tightly controlled before public access of any kind. The organizer of the event must consider spreading temporary flooring (such as panels or gravel with a geotextile substrate underlayer) in whatever outdoor area of Lot 3 to mask the soil. Spraywater or dust suppressants will be required in case the earth is turned up. These requirements resonate with **Art. 225's** demand of applying collective protection methods like isolation and enclosure to achieve prevention of spreading contaminants.

Structurally, Lot 3's quaint heritage buildings won't be demolished, they'll be preserved, but they've been in disrepair for years. Visible rust and cracks have been reported. Before doing any installation within them, stringent tests of their strength are to be conducted. Presumably engineers will be needed to inspect Building 17, 18, 19, 20 and possibly install temporary supports.

The PSC should specify the buildings in Lot 3 that are accessible to workers and safety works in advance that are required (like scaffolding with a toe-board in the event of falling plaster or restricting access to a bit of a building). **Art. 92** assigns the Coordinator the task of ensuring that no activity takes place in an environment that is not safe.

PPE for personnel on Lot 3 will be the same kind of equipment as Lot 2: dust mask in the installation of flooring or cleaning of interiors (as the dust may contain lead or other noxious material), helmet especially inside the old internal halls (possibility of something falling from the ceiling), and possibly harnesses if they will be at high gallery structures. Given that it is a heritage building, the heights will be significant, any light rig setup in the "*Galleria Vitelli*" may require a boom lift; operators will be competent (**Art. 73**) and must wear fall-arrest

systems in the event of getting out of the basket (**Art. 116** on ropes/funi work may be relevant for high ceiling rig setup).

Crowd and fire safety are key considerations in the use of Lot 3. If the public is given access to Buildings 17–20, those structures must comply with the operational readiness requirements (stability and safety certification) as well as the fire safety code for temporary events. During installation, this would mean putting in place emergency lighting, exit signs, fire extinguishers, and other necessary measures as required by **D.M. 19/08/1996** and **D.M. 22/11/2022**. For example, if Building 17 is used as a concert hall, temporary EXIT signs and panic-bar hardware might be required, and the maximum capacity would need to be calculated to ensure enough exits for the crowd. Installers would handle these setups, and the Fire Brigade could carry out inspections before opening.

Since Lot 3 includes large enclosed areas, ventilation also becomes important. Any fuel-powered equipment used indoors during installation (such as scissor lifts or generators) should either have emissions controls or the space should be properly vented to prevent carbon monoxide buildup (in line with **Art. 64** on ambient conditions). All these measures are to be carried out by the contractors under the coordinators' supervision.

As for the regulations, Lot 3 falls under a mix of Title IV (construction safety, especially regarding work at height and stability interventions) and heritage building. The main OSH regulations involved are **Art. 223–225**, which deal with managing contaminated materials (covering soil, controlling dust), and **Art. 111–116**, which apply to work at height in the tall structures (emphasizing safe scaffolding and requiring dual lifelines for rope access). On top of these, ministerial fire safety decrees apply to define the required safety measures for public use, such as exits, distances, and load limits.

3.2) Safety Management During the Live Event

After the temporary event structures are installed and the venue is ready to open, the focus moves from construction safety to ensuring safety during the live event itself. Italian law makes a clear distinction between the setup phase, or *cantiere*, and the operational event phase. During setup, Title IV of D.Lgs. 81/2008 (construction site rules) applies. However, once installation is complete, the 2014 *Decreto Palchi* clarified that the site is no longer considered a temporary construction site. At that point, standard workplace safety rules (D.Lgs. 81/2008, Title I) and public safety regulations apply instead of construction laws.

This shift places responsibility on the event organizer, as the employer, to put in place a thorough safety plan with two main goals: first, protecting workers (staff and crew) under regular Occupational Safety and Health (OSH) requirements, and second, ensuring the safety of the public (attendees) through crowd safety and public safety measures. To achieve this, the organizer and all involved parties must follow the general prevention duties (such as risk assessment, training, and emergency planning required by D.Lgs. 81/2008) while also complying with specific event-related laws like fire safety codes and rules for public gatherings.

In short, all OSH obligations continue to apply during the event, but additional protocols for crowd management and emergencies are added. The following sections will outline the key safety management actions during the operational phase, based on legal requirements and OSH principles, and later adapt them to the “*ex Macello*” site.

3.2.1) Safety Personnel and Safety Organization

Safety staff must always be present on-site throughout the event. Large public gatherings need a well-structured safety organization, which includes stewards (for

crowd control), security staff, fire-watch teams, first aid teams, and technical safety coordinators, all positioned across the venue. Each of these people must have a clear role and the right training for emergency situations.

Under D.Lgs. 81/2008, the event organizer (as the employer) is required to appoint, in advance, workers responsible for fire prevention, firefighting, evacuation support, and first aid, and to ensure they are properly trained. Specifically, **Article 18(1)(b)** requires the organizer to designate some *addetti antincendio e primo soccorso* (fire and first aid officers) in numbers appropriate to the size of the event. These designated staff members also need the right qualifications: for instance, fire safety officers must be trained according to **D.M. 10/03/1998 (or its 2021 updates)** for high-risk fire protection, while first aiders must be certified under **Ministerial Decree 15/07/2003 n.388**.

All safety personnel should be easy to recognize, wearing high-visibility vests or badges, and equipped with radios or other communication devices so they can respond quickly. Placing them strategically near stages, exits, and possible risk areas ensures that every part of the event is covered. This setup fulfills the employer's legal duty to provide emergency resources in proportion to the venue's size and specific risks (**D.Lgs. 81/2008 art. 18(1)(t)**).

Coordination and command structure: During the event phase, safety responsibilities shift from the construction safety coordinator to the event safety management team. A senior safety manager or coordinator should be appointed to oversee all Occupational Safety and Health (OSH) aspects throughout the event, in line with best practice. Clear communication protocols must also be in place so that security, medical, fire, and other safety staff can coordinate effectively and, when necessary, work smoothly with external emergency services.

Italian law requires cooperation and coordination between all employers and subcontractors on a site. For events, this means the organizer, vendors, and contractors must share safety information, in compliance with **D.Lgs. 81/2008 art. 26**. In practice, a daily safety briefing before opening helps assign responsibilities clearly (like who calls the fire brigade, who makes crowd announcements). This ensures that everyone understands the chain of command.

The principle of worker participation in safety is also important, cooperation between employers and workers is described as “an essential element of preventing accidents”, and every worker is responsible for their own safety as well as others’ as is mentioned in **D.Lgs. 81/2008 art. 20**. By involving all staff in safety monitoring the organizer creates extra “eyes and ears” to detect problems early.

In short, having a well-trained and coordinated safety team on site, supported by management, is essential for maintaining a safe environment during the event.

3.2.2) Crowd Management and Safe Access Control.

When the public is admitted, the venue becomes a gathering place subject to public safety laws. Managing crowd size and movement is essential to avoid accidents. The organizer must ensure that the number of attendees never goes beyond the maximum occupancy allowed for the venue.

In Italy, this maximum capacity is usually set by the local *Commissione di Vigilanza (CVLPS)* as part of the event license, under **R.D. 773/1931 (TULPS) art. 80**. The *Commissione* checks that the venue has both the structural safety and the exit capacity needed for the expected crowd. Fire safety rules (**D.M. 19/08/1996, updated by D.M. 22/11/2022**) provide occupancy guidelines, for example, indoor halls without fixed seating are generally limited to 0.7 people per square meter, while for open-air

events, the older rules are less specific, but authorities usually apply similar criteria, often ranging between 0.7 and 2 people per square meter depending on the setup and level of risk.

Another key factor is the egress capacity, meaning the total width of emergency exits. Regulations require that crowd numbers are calculated based on exit widths, for instance, as a rough guide, about one person per 1.2 meters of exit width for outdoor events. This means both floor area and exit capacity determine the maximum safe crowd size.

To comply, the organizer must monitor entries in real time, such as through ticket counts or turnstiles, to ensure attendance never exceeds the approved limit, this is a legal requirement tied to the event permit and fire safety certification.

Avoiding overcrowding and keeping safe densities: Inside the venue, crowd movement needs to be managed so that people do not gather too tightly in one area beyond its safe limit. If the event is divided into several zones or “lots,” each one should have its own capacity and enough space for people to move around comfortably. Stewards or security staff should guide the flow between these areas (for example, if one section starts to fill up, directing people toward other viewing areas) to prevent dangerous crowd crush or stampede situations.

International standards and local safety plans often suggest a ratio such as 1 steward for every 200-300 spectators, adjusted depending on the risk level, to actively monitor the crowd. While Italian law (**D.Lgs. 81/2008**) does not set a fixed ratio, it does place a general duty on the employer to control risks. This means having enough trained staff watching the crowd is part of preventing incidents. It’s also essential that the audience always has sufficient space and clear access to exits so that, in an emergency, people can leave quickly without bottlenecks.

Keeping people away from hazards and restricted areas: Temporary event sites often have areas unsafe for the public, such as backstage sections, technical equipment zones, or, in brownfield contexts, areas with contamination or unstable structures. These must be clearly separated from the public. Barriers (fences, railings) and clear signage should block access to any risky zones. Italian OSH law specifically requires that only trained workers may enter areas of serious risk (**D.Lgs. 81/2008, Art. 15 and Art. 18(1)(f)**), which by extension means the public must not enter them at all.

For example, if part of the venue contains unstable old buildings or contaminated ground, these areas should be fenced off with a safe buffer distance, so that even if attendees lean against the barrier, they remain at a safe range. Stages and audience areas should also be placed at safe distances from derelict structures or other hazards. Security stewards should patrol restricted zones to prevent anyone from crossing barriers.

Safe circulation and layout: The event layout should allow people to move freely both in normal conditions and during an emergency. Main pathways must be wide enough for the expected number of attendees and kept free of obstacles like cables or equipment. Dead-ends or narrow choke points should be avoided, as they can create dangerous surges or crushing in crowds.

Where queues form, such as at entrances, food stalls, or toilets, railings or guides should be used to organize lines in an orderly way and prevent them from blocking emergency routes. In front of stages or performance areas, barriers may be needed to control pushing and to keep clear escape corridors.

Temporary structures such as stages, tents, or booths should be arranged with enough space between them, both to reduce fire risks and to ensure open corridors for evacuation. By carefully managing space and zoning, the organizer makes sure that in

case of an emergency, people can disperse quickly and safely without tripping hazards or congestion.

3.2.2) Emergency Preparedness and Evacuation Planning

Even with thorough prevention, emergencies can still happen during an event (such as a fire, a medical incident in the crowd, structural issues, or extreme weather). That's why a comprehensive Emergency Evacuation Plan (*Piano di Emergenza e Evacuazione*) is required for the live event phase. This plan should build upon the safety measures from the setup phase but now focus more on protecting attendees as well as staff.

According to **D.Lgs. 81/2008 Article 43** and fire safety regulations, the event organizer must prepare for emergencies and evacuation procedures, and ensure all staff are trained. For public events, the emergency plan must also meet the requirements set by fire authorities and public safety officials who issue the event permit.

Emergency exits and routes: All designated emergency exits and escape paths must be kept clear, unlocked, and fully functional throughout the event. Both workplace safety laws (**D.Lgs. 81/2008 art. 18(1)(t)**) and fire safety regulations require organizers to ensure enough exits for the crowd and keep them accessible. Exit doors or gates should open outward, in the direction of escape, and if in fences or buildings, they must be fitted with quick-release push bars as per fire code standards.

The flow capacity of exits is crucial: the total width of exit paths must accommodate the maximum number of people. As a general guideline, older regulations allow roughly 500 people per meter of exit width for panic situations. For example, an event expecting around 4,000 people would need approximately 8 meters of exit width, spread across several exits.

In practice, the *Commissione di Vigilanza* will determine the required number of exit doors and the minimum width for each. The organizer must also staff each exit with stewards or security personnel to manage crowd flow and ensure exits aren't blocked or people aren't re-entering during evacuation. Finally, all exit routes should lead to a *luogo sicuro* (a safe area outside the venue, like a street or open field, far from any structures) where people can gather after evacuating.

Signage and lighting: Clear signage is essential for all emergency routes. Every exit must be marked with visible “*Uscita di Sicurezza*” (green EXIT signs), and arrows should guide people toward these exits. For events held in the evening or in dark indoor areas, illuminated exit signs and emergency lighting must be installed along escape routes. This ensures that if the power goes out, backup lights will automatically turn on, helping people find their way out.

These safety measures are required by both **D.Lgs. 81/2008** (Article 64, which mandates well-lit and accessible exit routes) and EU directives on safety signage (like **Dir. 92/58/EEC**) as well as fire codes. Before each event day opens, the organizer should check that all exit signs are in place, clearly visible, and not blocked by decorations or banners. Similarly, any emergency lighting or backup generators should be tested.

Evacuation procedures and communication: The emergency plan should clearly outline how to handle both partial and full evacuations. Key components of the plan include:

Designated roles for staff (such as who calls emergency services, who oversees evacuation, who assists disabled individuals) and a clear chain of command for decision-making, predetermined assembly points in a safe area where people can gather once evacuated.

All staff should be trained in emergency procedures, ensuring they know exactly what to do in an emergency. A public address (PA) system or loudspeakers should be available to communicate with the crowd. At the start of the event, a safety announcement (or signage) should be made to inform attendees about basic safety information, such as the number of exits and what to do in case of an emergency. During an incident, quick and clear instructions are crucial to prevent panic, such as calmly directing people to the nearest exits. The emergency plan should specify who will make these announcements (usually the stage manager or a designated safety officer) and include pre-scripted multilingual messages for international audiences.

Drills and preparedness: While it's usually impractical to do a full evacuation drill with the public present, the event staff should rehearse emergency scenarios ahead of time. Before the event (or before doors open), the safety team should do a walk-through check of all exits and emergency equipment each day. This meets requirements set by modern fire safety regulations (for example, the RTV V.15 fire code requires event organizers to verify all safety measures before opening and maintain oversight during the event).

Staff can also hold tabletop exercises or brief drills. For example, they might practice via radio what to do if a fire breaks out in a specific area or simulate how to guide people in case of evacuation. Any insights from these practice runs can be used to improve the plan.

Close coordination with external emergency services is also key. Organizers should liaise with local fire brigades and medical emergency responders ahead of time. For larger events, firefighters and paramedics are often stationed on standby at or near the venue (as required by local authorities). The plan should integrate their presence and ensure they are familiar with the site layout.

In short, effective emergency preparedness involves having clear routes, signage, and evacuation tools in place, and making sure both staff and external responders are ready to act swiftly. This approach aligns with **D.Lgs. 81/2008** (Article 43 on emergency planning and Article 46 on fire prevention) and public safety laws, all of which ensure that everyone can “get out safely” in case something goes wrong.

3.2.3) Worker Safety: Training, PPE, and Duties During the Event

Even once the show is underway, all workers on site must continue to follow occupational safety protocols just as they did during setup. Many personnel (such as lighting and audio technicians, stagehands making quick adjustments, security and cleaning staff, and concession workers) are actively working in the presence of the public. Under **D.Lgs. 81/2008**, every worker has an ongoing duty to look after their own health and safety as well as that of others, and to use safety equipment properly (**Art. 20**). This means crew members must carry out their tasks safely, without putting attendees at risk. For instance, if a technician needs to use a lift or ladder during the event, the area should be cordoned off so no guests are underneath. Ideally, particularly risky work (like tasks at height or operating machinery) is avoided while the public is present. If an urgent repair is unavoidable, it should be done under controlled conditions, such as temporarily pausing the show in that area and clearing attendees from the vicinity. Supervisors must ensure that no worker carries out high-risk tasks unnecessarily amid the crowd.

Worker training and briefings. All staff must have received proper training for their specific duties and associated risks, as required by **D.Lgs. 81/2008 Art. 37**. Practically, this means that each worker should be familiar with the venue’s safety rules, emergency signals, and their role in both normal operations and emergency situations.

For example, a forklift or telehandler operator must be licensed (**Art. 73**) and only operate in areas safely separated from the public. A rigger adjusting a lighting truss must have up-to-date work-at-height training and use proper fall protection equipment (**Arts. 115–116**).

It's also important to cover site-specific hazards. Holding a short pre-event briefing or “toolbox talk” is good practice, reviewing last-minute instructions like which areas are off-limits or what to do in an emergency. Conditions can change from setup to showtime, so workers need updates on any new precautions for the operational phase. If part of the crew doesn't speak Italian, instructions and signage should be made understandable through common pictograms or multilingual notices.

Use of Personal Protective Equipment (PPE): Even though the event phase might not feel like a construction site, workers still need to use the right PPE whenever a hazard exists. Italian law (**D.Lgs. 81/2008, Articles 18 and 77–78**) makes it clear: the employer must provide protective equipment, and workers are required to use it.

For many crew members, basic PPE such as safety shoes remains necessary, particularly in backstage or technical areas. High-visibility vests are also common for staff moving through crowded zones so they can be easily seen by colleagues. Sometimes backstage personnel wear darker clothing for discretion, but they may still use reflective armbands or other identifiers.

Specific hazards require specific PPE. For instance, if sound levels at a concert exceed safe thresholds, technicians near the stage should wear hearing protection, like earplugs or earmuffs, in line with noise control regulations. Any work involving potential falling objects or overhead activity (such as a lighting technician adjusting a truss) requires a helmet.

During the event, PPE use must sometimes balance safety with public perception. Frontline staff, such as security personnel, usually avoid wearing helmets or respirators in areas visible to attendees to prevent unnecessary alarm. However, these items should be readily available when staff enter technical or hazardous zones.

It's also essential to review the risk assessment from the setup phase to see which hazards persist. If dust, chemical residues, or contaminated soil are still present, workers in affected areas must continue wearing masks, gloves, or coveralls. For example, a crew member handling equipment with soil or dust residue should wear gloves and possibly a dust mask.

The hierarchy of hazard control remains important, engineering and isolation measures should have minimized exposure by the time the event starts, but PPE is the last line of defense and must be used whenever risk remains. Employers are responsible for making sure PPE is available and used correctly, and workers are legally required to wear it properly (**D.Lgs. 81/2008, Arts. 20 and 78**).

Workers' Duties and Vigilance: All personnel at an event must follow the established safety procedures and the event's safety plan, and it is the employer's responsibility to actively enforce this compliance. Italian law (**D.Lgs. 81/2008, Article 18(1)(f)**) explicitly requires that "each worker observe the applicable safety laws and company rules". Practically, this means no worker should, for instance, prop open an emergency exit for convenience, ignore a "no entry" sign, or disable a safety device during the show.

A designated supervisor, or *preposto*, should monitor staff continuously and correct unsafe behavior in real time. The live nature of events (tight schedules, audience presence, and the pressure to maintain the show) can tempt workers to take shortcuts,

so management must remain vigilant and intervene promptly when protocols are breached.

When multiple companies or vendors operate on site, coordination is essential. All parties must share safety information and cooperate, as mandated by **D.Lgs. 81/2008, Article 26**, which addresses risks arising from overlapping activities. A *Documento Unico di Valutazione dei Rischi da Interferenze* (DUVRI) or similar plan should clearly outline how different teams interact safely. For example, a generator operated by one company must be positioned so that its exhaust or noise does not endanger others.

Workers also have the legal right to withdraw from situations of immediate danger. Under **Article 44 of D.Lgs. 81/2008**, no employee can be penalized for stopping work if they perceive a serious and imminent risk. In the context of an event, this could mean halting activity if a stage support seems unstable or a tent is swaying in high winds. In such cases, workers should notify the safety manager and take steps to protect themselves and others.

Additionally, workers must report hazards and unsafe conditions to their supervisor or employer, as required by **Article 20(e)**. For example, if a cable cover in a walkway comes loose or a spill occurs on the floor, the first worker who notices should either address the hazard if possible or immediately alert the appropriate team and warn nearby colleagues. Workers must also avoid performing tasks for which they are untrained or unauthorized, particularly when such actions could create danger (**Art. 20(g)**).

In essence, these individual duties (following safety rules, using PPE correctly, reporting hazards, and staying within one's competence) collectively help maintain a safe environment for everyone, including attendees.

3.2.4) Health Surveillance and First Aid

Worker Health Surveillance: If the tasks involved in running the event expose workers to health risks (such as high noise levels, night work, or chemical exposure) the employer must maintain the necessary occupational health surveillance during the event phase. In accordance with **D.Lgs. 81/2008 Article 18(1)(a)**, a *Medico Competente* (occupational physician) should be appointed where required and must have certified each worker's fitness for their assigned duties.

For instance, technicians operating in high-noise areas should have undergone baseline audiometric testing, and staff performing physically demanding night shifts may require prior medical clearance. While the immediate priority during the event is operational safety, employers cannot neglect these ongoing health obligations. Any illness or injury affecting a worker during the event must be managed according to OSH protocols, including mandatory reporting to INAIL (*Istituto Nazionale Assicurazione contro gli Infortuni sul Lavoro*) if the incident qualifies as a workplace injury. Although many health surveillance activities are conducted outside event hours, the employer's duty to protect workers' health remains fully in force during the live event.

First Aid Provisions for Workers and Attendees: Every live event must provide adequate first aid facilities and trained personnel throughout the show. This is not only a legal requirement but also a fundamental duty of care. According to **D.Lgs. 81/2008 Article 45**, employers must ensure that suitable first aid equipment and trained first-aid personnel are present. Importantly, this obligation explicitly extends to "other persons present in the workplace" (**Art. 45(1)**), which in a public event context includes attendees.

Local regulations and event-specific ordinances often further require a medical plan for large gatherings. At minimum, the organizer should have one or more trained first-aid personnel (*addetti di primo soccorso*, certified according to **D.M. 388/2003**) and properly stocked first aid kits. For significant events, authorities generally mandate professional medical support on-site, such as an ambulance staffed with paramedics or a Red Cross station, as a prerequisite for event approval. A practical guideline is one ambulance or medical team per several thousand attendees (like one per 5,000 people), adjusted based on the size and risk profile of the event.

First Aid Stations and Equipment: The event safety plan should designate one or more first aid posts within the venue, clearly marked and easily accessible. These posts may be tents or rooms staffed by qualified medics or nurses and should include at minimum basic trauma supplies such as bandages and splints, a stretcher, and ideally an AED (defibrillator) and oxygen for serious emergencies.

First aid stations should be located to ensure no part of the venue is too far from immediate care (for example, one near the main stage or central area, and another covering secondary areas if the site is large). Medical posts should be indicated by standard signage: a white cross on a green background, in line with safety signage regulations. In addition, portable first aid kits should accompany roving safety staff or security supervisors, so that initial care can be provided anywhere in the crowd. Trained first-aiders are often identified by a recognizable symbol, such as a green armband with a white cross, allowing attendees and staff to locate help quickly.

In the event of a serious medical incident, procedures for summoning external assistance must be clear. Staff should know how to contact the on-site ambulance via radio or phone if additional medical support is required. The emergency plan should

also specify ambulance access routes, ensuring entry and exit points remain unobstructed (this is closely linked to fire and emergency access planning).

Anticipating Likely Medical Scenarios: The first aid team should be prepared for the types of incidents most likely to occur given the event and venue. Common situations at concerts or large gatherings include dehydration, fainting, cuts, and sprains, while rarer but serious events may involve cardiac arrest or injuries related to crowd pressure. EU occupational safety directives (e.g., **Directive 89/391/EEC**) underline the right of workers to prompt first aid, and for public events, this duty of care extends to attendees.

Environmental conditions and venue-specific hazards must also be considered. For outdoor summer events, heat exhaustion can affect both staff and attendees; organizers often mitigate this with water points, shaded areas, and cooling tents. At unique sites, such as historic or industrial venues, there may be additional risks like dust, allergens, or uneven ground causing trips and falls. In such cases, first aid teams should carry eye-wash solutions for dust exposure, splints, and ice packs for sprains. While some of these measures may exceed strict legal requirements, they are prudent steps in risk management and contribute to a safer event environment overall.

External Emergency Medical Services Coordination: The organizer must establish effective communication and coordination with external emergency medical services, as required by **Art. 45 of D.Lgs. 81/2008**, which calls for necessary links with local health authorities. Well in advance of the event, local EMS and nearby hospitals should be informed of the event's size, schedule, and specific risks.

In Italy, large gatherings often involve the 118/112 emergency system, which may station an ambulance on-site or have one on standby nearby. Submission of a

medical services plan to the competent authorities (ASL/AREU) is typically required to obtain the public event license.

During the event, if a serious medical incident occurs that cannot be managed on-site, staff must promptly contact external assistance for ambulance transport. Clear and unobstructed ambulance access routes are essential to ensure paramedics reach the patient without delay. As part of the planning process, organizers often meet with local emergency responders (including police, fire brigade, and ambulance services) to integrate the event's emergency procedures with public resources. This proactive coordination is particularly important in the wake of past incidents, such as the 2017 Turin crowd disaster, which prompted updated safety guidelines in Italy.

By maintaining well-equipped first aid stations on-site and ensuring seamless integration with external medical services, organizers can respond rapidly to any medical emergencies. This approach not only fulfills legal obligations under **Art. 45 and local health regulations** but also reflects a proactive and responsible safety culture, prioritizing the wellbeing of both staff and attendees.

3.2.5) Fire Prevention and Emergency Access

Fire safety is a critical concern during live events. Temporary stages, electrical systems, and large crowds all increase the risk of fire, so the event organizer must comply with general workplace fire safety laws (**D.Lgs. 81/2008 Art. 46**) as well as the specific technical fire prevention regulations for public entertainment venues (formerly **D.M. 19/08/1996**, updated by **D.M. 22/11/2022**). These rules require a combination of preventive measures and readiness to protect people if a fire occurs.

Fire Risk Management and Monitoring: All temporary structures and installations should have been inspected and certified for fire safety during the setup

phase. This includes ensuring that electrical wiring is correctly installed and that stage materials meet fire-resistance requirements where applicable.

During the event, fire risks must be actively monitored. Key measures include:

1. Enforcing no-smoking and no-open-flame policies in designated areas, particularly near flammable decorations or equipment.
2. Strictly controlling any pyrotechnics or special effects under the appropriate permits.
3. Storing combustible materials (like prop sets, wood, generator fuel) safely and away from ignition sources.
4. Ensuring heat-producing equipment (such as stage lights, generators, or cooking appliances) is adequately ventilated and regularly inspected for overheating.

A fire-watch duty is a common practice where assigned staff patrol the venue at regular intervals, checking for smoke, overheating cables, or other unsafe conditions. Particular attention should be paid to high-risk zones, including backstage areas, power generator sites, and food vendor locations that use gas or fryers.

Firefighting Equipment: The venue must be equipped with adequate firefighting facilities appropriate to the identified risks, including portable fire extinguishers, hose reels, and, where necessary, supplementary water supplies. In accordance with **D.Lgs. 81/2008, Art. 46**, and standard fire safety criteria such as those outlined in **D.M. 10/03/1998**, employers are required to provide a sufficient number of extinguishers of the correct type and to ensure they remain readily accessible throughout the site.

In practical terms, fire extinguishers (commonly 6 kg ABC powder or CO₂ units) should be strategically positioned: adjacent to each stage, near electrical generators or control panels, in fuel storage or cooking areas, and at regular intervals

within audience zones. Ideally, no individual should need to travel more than 20–30 meters to reach an extinguisher. All devices must be clearly marked with standardized signage and must not be obstructed by equipment, structures, or dense crowd formations.

For larger venues, such as those containing expansive tents or multiple stages, additional firefighting infrastructure (such as fire hydrants or on-site water tanks) may be required, as specified in the fire safety permit. Staff assigned as fire responders (*addetti antincendio*) must be trained in the correct use of all firefighting equipment and be prepared to respond immediately upon detection of a fire. They should also be familiar with procedures for activating fire alarms and communicating warnings to the public. In the event of a small, controllable fire, responders should attempt immediate suppression using the available equipment. Should the fire exceed the capacity for prompt control, responders are required to initiate evacuation procedures and contact the fire brigade without delay.

Emergency Vehicle Access: A critical component of both fire safety and medical emergency preparedness is ensuring unimpeded access for emergency vehicles, including fire engines and ambulances. Event layouts must provide at least one clear access route from a public roadway to the core areas of the venue. This typically entails maintaining an unobstructed gate and an internal path approximately 3.5–4 meters wide, sufficient to accommodate the passage of fire trucks.

During the event, these routes must remain entirely free from parked vehicles, temporary structures, or densely packed crowds. Security personnel should be tasked with monitoring access points and guiding emergency services directly to the incident site. Italian fire code provisions mandate that fire brigade vehicles must be able to approach within a defined distance, commonly 60 meters or less, of any stage or

spectator area. Organizers routinely conduct pre-event walkthroughs with fire officials to verify the adequacy of access, ensuring that each segment of a large or segmented venue maintains a viable approach path.

Maintaining open emergency lanes is not optional; it is a legal requirement under national law and aligns with general safety principles, including those articulated in **EU Directive 89/654/EEC** concerning workplace safety. Properly planned and maintained access routes are therefore essential to safeguarding both workers and attendees.

Fire-Related Crowd Safety Measures: The design and layout of the venue should actively mitigate fire risks within areas occupied by the audience. Minimum safe distances must be maintained between any potential ignition sources (like open flames, generators, or fuel storage) and the crowd. Food stalls equipped with cooking appliances, as well as generators with fuel, should ideally be positioned at the periphery of the venue or at a sufficient distance from the main congregation areas to reduce the risk of fire exposure.

Stages, tents, and other temporary structures must comply with spacing regulations to function as effective firebreaks. Typically, stages and tents are required to maintain a few meters of separation from other structures or from the venue perimeter. In cases where multiple large tents or installations are present, fire codes may specify minimum distances between them to prevent rapid fire spread.

The arrangement of audience areas must also preserve clear evacuation corridors. For example, when spectators are concentrated near a stage, open aisles along the sides should be maintained to allow lateral evacuation away from a potential stage fire. Event organizers must plan for worst-case scenarios, such as a fire occurring in an enclosed space. The venue should be equipped with a public alert system or fire alarm

to promptly signal the crowd, ensuring that individuals can evacuate safely. Responsibilities for contacting the fire brigade and the locations from which these calls will be made must be clearly defined in advance.

Italian regulations introduced post-2014 (*Decreto Palchi*) emphasize that the presence of a safety coordinator and strict adherence to the safety plan must continue throughout all event phases, including dismantling. Consequently, many fire safety measures established during setup (such as no-smoking policies, hot-work permits, and controlled access to high-risk areas) should be actively maintained and adapted during the live event in the presence of the public.

By maintaining vigilant fire prevention practices, ensuring unobstructed emergency access, and keeping firefighting equipment operational, organizers fulfill the obligations of **Art. 46 of D.Lgs. 81/08** and comply with specific fire safety decrees.

3.2.6) Protecting Contaminated or Structurally Unsafe Areas

When an event site contains contaminated land or structurally compromised buildings, special precautions are required during the operational phase. The fundamental principle is that any area that cannot be guaranteed safe must remain strictly off-limits to all personnel, except for essential staff equipped with appropriate protective measures.

In practice, the event layout should exclude all known hazardous zones. These areas should be identified during the risk assessment and either remediated or securely fenced long before the public arrives. For instance, an old building at risk of collapse should be enclosed with a robust barrier, such as steel mesh fencing, placed at a safe radius from the structure. Expert guidance typically recommends an 8–10 meter safety distance, depending on the building's condition. Clear signage such as “Danger, No

Entry, Falling Debris” should be posted on all barriers. Event activities, including booths, parking, and gathering areas, must be kept well away from these hazards, ideally maintaining a buffer zone that naturally discourages public access.

If the site contains contaminated soil, for example, areas with asbestos or other pollutants, these zones should be avoided entirely. In cases where avoidance is not feasible, like a pathway traversing a mildly contaminated area, mitigation measures are essential. These may include covering the ground with temporary flooring, mats, or geotextile layers to prevent direct contact with soil or dust. All edges of such coverings should be secured and clearly marked to prevent tripping or tampering.

During the event, restricted areas require active monitoring. Security personnel can act as human barriers, ensuring no unauthorized access to unsafe structures. In complex sites, CCTV surveillance can provide additional oversight, allowing the control room to detect intrusions or emerging hazards promptly. The safety team must be empowered to respond dynamically to new risks. For example, if a previously stable structure shows signs of distress or if a barrier is damaged, the adjacent area should be immediately evacuated, and the safety perimeter expanded.

Italian legislation supports this proactive approach as it is mentioned in **Article 18(1)(h) of D.Lgs. 81/08** requires employers to monitor risk factors and evacuate workers in the presence of serious threats. In the context of live events, this translates to granting the safety team authority to stop performances, clear sections of the venue, or even halt the entire event if serious safety concerns arise related to these legacy hazards.

Environmental Precautions and Management of Legacy Site Hazards:

Environmental safeguards implemented during the event setup phase should be maintained throughout the operational phase, as necessary. For example, if dust

generation was identified as a potential hazard, measures such as spraying water on unpaved ground may continue during dry conditions to prevent airborne dust clouds. Vehicle movements on site should be minimized and confined to designated clean routes to avoid disturbing contaminated soil. Additionally, contingency plans must be in place for any accidental spills or leaks. For instance, in the event of a generator leaking fuel or oil on potentially contaminated ground, staff must have spill kits readily available and be trained to contain and clean the substance immediately, preventing the spread of pollutants in areas occupied by the public.

These precautions ensure that the presence of attendees does not exacerbate existing environmental hazards or expose individuals to contamination. Italian regulations on chemical and asbestos risks (**specifically Articles 249, 250, and 254 of D.Lgs. 81/08, along with Article 225 regarding airborne contaminants**) require that hazardous substances be strictly controlled and exposure prevented. Event-specific adaptations, such as soil covering, dust suppression, and restricted access to sensitive areas, are consistent with these legal obligations.

In summary, legacy hazardous zones must remain effectively quarantined during the event. Public access should be strictly limited to areas that have been verified as safe. Robust physical barriers, clear signage, and active enforcement establish a distinct separation between active public areas and restricted zones. If conditions change or uncertainties regarding safety arise, the event team must be prepared to close off additional areas (even during the event) to protect both workers and attendees.

3.2.7) Additional Safety Protocols and Coordination Measures

Beyond the primary categories of health, first aid, fire, and environmental safety, several supplementary procedures contribute to the effective management of

risks during the operational phase. Although largely procedural, these measures are essential for maintaining a comprehensive safety management system.

Daily Safety Briefings and Communication: At the start of each event day, or prior to the commencement of activities, the safety manager should convene a brief meeting with key personnel, including the security chief, stage manager, and medical team leader. These briefings serve to review updates, assess weather forecasts, and reflect on lessons learned from previous days. For example, staff may be alerted to anticipated high winds that could necessitate additional securing of stage banners or temporary structures.

Continuous, two-way communication throughout the event is critical. All coordination personnel should be equipped with reliable radios and use predefined channels and code words to report incidents discreetly, preventing unnecessary alarm among attendees. This real-time communication and feedback loop reflects the OSH principle of active monitoring, enabling rapid verification of safety measures and prompt adjustments if risks arise.

Weather Monitoring and Contingency Planning: Outdoor events, in particular, demand close monitoring of meteorological conditions. High winds, heavy precipitation, or lightning pose significant risks, such as structural instability, flying debris, slippery surfaces, or contaminated runoff. Organizers should establish clear, predefined thresholds that trigger operational responses, for instance, suspending activities or evacuating tents if wind gusts exceed a designated speed.

Many Italian event permits now require specific “wind safety plans” for stages, highlighting the legal expectation to anticipate and mitigate environmental risks. Event teams should subscribe to reliable weather alert services to enable timely action. In the event of severe conditions, attendees may be directed to pre-identified shelters within

structurally sound buildings that have been inspected and certified safe. If such shelters are unavailable, a full evacuation of the site may be necessary.

These practices align with the general legal requirement to account for all foreseeable emergency scenarios under **D.Lgs. 81/08, Article 15**, which mandates thorough risk assessment and proactive safety management. By incorporating daily briefings, clear communication channels, and robust weather contingency protocols, organizers ensure a dynamic, responsive approach to operational safety, minimizing risks to both workers and the public.

Sanitation and Hygiene: Effective sanitation is a critical component of operational safety at large events, both for public comfort and health protection. Adequate toilet facilities and hand-washing stations must be provided and maintained in a clean, functional state throughout the event. Proper hygiene infrastructure reduces the risk of communicable illnesses and ensures that residual site contaminants do not compromise the health of workers or attendees. Staff and the public should be encouraged to wash hands regularly, particularly before eating, in accordance with general public health guidance.

Waste management is equally important; trash should be collected frequently to prevent accumulation that could serve as fire fuel or create trip hazards. Maintaining a clean and orderly environment is not merely a matter of courtesy, it is a legal obligation. Under **D.Lgs. 81/08, Article 64**, workplaces must be kept hygienic and organized. In the context of a public event, the venue functions as a temporary workplace for staff, extending the responsibility for cleanliness and order to the organizers. Consequently, a well-maintained site benefits both workers and attendees, enhancing safety and comfort simultaneously.

Public Health Measures: Even as the acute phase of the COVID-19 pandemic has subsided, event organizers should continue to observe relevant public health guidelines. This may include installing hand sanitizer stations, offering optional masks, or ensuring adequate ventilation in enclosed spaces. Integrating such measures demonstrates a proactive duty of care toward public health.

If specific directives are issued by local or national authorities (such as limitations on indoor crowd numbers, requirements for health certification, or other infection-control measures) the event plan must incorporate these mandates. By anticipating and adapting to current public health recommendations, organizers can mitigate the risk of communicable diseases, fostering a safer environment for all participants.

Incident Logging and Continuous Improvement: A robust operational safety system requires diligent documentation of all incidents, near-misses, and noteworthy observations throughout the event. Even minor occurrences (like a guest tripping on uneven ground without injury) should be recorded, with temporary corrective measures implemented immediately and permanent remediation planned afterward. These records serve multiple purposes: they facilitate continuous improvement, support organizational learning, and provide evidence of proactive risk management.

Consistent with occupational safety and health (OSH) management standards, such logging enables systematic analysis of patterns or recurring hazards. Following the event, a debriefing session can assess the effectiveness of existing safety measures and identify areas for improvement, for instance, noting congestion at a specific exit to inform adjustments for future events. Moreover, thorough documentation protects the organizers in the event of claims or inquiries, demonstrating that safety was actively monitored and that responses were timely and measured.

Legal Compliance and Permit Conditions: All operational safety measures operate within the framework of legal and administrative authorizations. The event must hold the appropriate permit from local authorities, commonly issued through the City's *Sportello Manifestazioni*, which often requires the submission of detailed safety plans and fire brigade approvals. Regulatory instruments such as the *Decreto Palchi* of 22 July 2014 underscore that designated safety roles, including the Safety Coordinator (*Coordinatore per la Sicurezza in fase di Esecuzione*, CSE), and associated obligations persist through the dismantling phase of the event.

As both the employer (*datore di lavoro*) and client (*committente*) of the event, the organizer retains ultimate responsibility for coordinating all aspects of safety in accordance with **Articles 18 and 26 of D.Lgs. 81/08**. This responsibility always entails the presence of the organizer (or an authorized representative) on site to facilitate prompt, informed decisions in the event of an emergency. Safety management cannot be relegated to routine oversight, active leadership and continuous supervision are essential for ensuring compliance and protecting attendees, staff, and infrastructure.

By integrating these general measures, ranging from personnel management and crowd control to emergency preparedness and hazard mitigation, event organizers establish a comprehensive framework for operational safety. In subsequent sections, this framework is applied to the specific context of the “*ex Macello*” venue in Milan, illustrating how general principles can be tailored to complex, site-specific challenges.

3.2.8) Application to the Ex Macello Case Study (Lots 1–3)

Now with all the information is time to apply all this guidlnes for the case of study, in the next paragraphs will be examples of how its possible to apply the information provided.

3.2.8.1) Safety Personnel at “ex Macello”

Given the scale of “ex Macello” and the unique risks associated with its layout, a robust and well-coordinated safety personnel presence is essential throughout the event. The organizer ensures that a fully trained safety team is deployed across all three lots, with a qualified Safety Coordinator (in accordance with the Italian *Coordinatore per l'Esecuzione* requirements) present on site at all times. This individual is responsible for overseeing occupational safety and health (OSH) compliance and coordinating activities among all safety, security, and technical staff. Under the leadership of the Safety Coordinator, multiple specialized teams operate across the venue:

- Fire watch and first aid teams: These emergency response teams consist of trained personnel as mandated by **Article 18(1)(b) of D.Lgs. 81/08**, including certified *addetti antincendio* and first aid responders. At “ex Macello” venue, the fire safety team may comprise four to five members patrolling the lots with portable extinguishers, while at least one dedicated first aid station is staffed by a qualified medic or nurse supported by volunteer responders. Fire safety personnel hold certifications as high-risk fire wardens (*Addetti Antincendio – rischio elevato, D.M. 10/03/1998*), while **first aiders are trained in accordance with D.M. 388/2003**. These qualifications are typically required for approval of the event’s Safety Plan by the local authorities, with the local fire brigade (*Vigili del Fuoco*) and ambulance service (AREU 118) reviewing the plan to ensure adequate staffing levels for emergencies.
- Security and crowd management stewards: Security personnel, potentially provided by a licensed firm, work alongside volunteer stewards positioned at strategic locations, including all public entrances and exits, in front

of stages, and roaming within audience areas. Their responsibilities include controlling access, verifying tickets or credentials, intervening to prevent unsafe behavior (such as overcrowding or barrier climbing), and monitoring restricted areas. Given the dispersed layout of “*ex Macello*” site, the ratio of safety staff to attendees is higher than in conventional concert venues; for example, instead of a standard 1 steward per 250 people, additional personnel are allocated to ensure coverage across multiple zones and limited sightlines. All security staff receive site-specific safety briefings detailing lot layouts, hazardous zones, and emergency procedures. They are trained to communicate promptly with the Safety Coordinator via radio in case of incidents.

- Technical safety supervisors: Due to the unconventional nature of the venue, additional specialized supervisors are assigned to oversee technical operations. This may include a stage safety manager, responsible for ensuring that on-the-fly stage adjustments are executed safely, and a structural monitor, such as an on-site engineer, capable of assessing the integrity of buildings for signs of structural distress during the event. These roles integrate public event safety with elements typically associated with construction site oversight, reflecting the venue’s hybrid risk profile.

- All safety personnel are easily identifiable through high-visibility vests or colored badges and are equipped with two-way radios operating on a coordinated frequency. A central “safety control room,” established in Lot 2, functions as a command post where the Safety Coordinator can monitor CCTV feeds and dispatch teams efficiently. By saturating the site with trained personnel and maintaining clear communication channels, the

organizers not only comply with legal requirements but also ensure rapid response to any incident

3.2.8.2) Crowd Management in Lots 1–3

“*Ex Macello's*” Lots 1, 2, and 3 are expansive open areas capable of accommodating several thousand attendees, but careful crowd management is essential to maintain safety. To this end, the organizers established a maximum overall attendance of approximately 4,000 people. This limit was determined based on the usable area of each lot and consultation with the *Commissione di Vigilanza*, ensuring compliance with the event permit and safe crowd density standards.

For planning purposes, Lot 1, the largest yard, can safely hold around 2,500 people at a comfortable density of roughly 0.7–1 m² per person. Lot 2, including the interior of Building 12 used for exhibitions, has a capacity of about 1,000 attendees, while Lot 3 can accommodate approximately 500, yielding a total of ~4,000, in line with permit conditions. Ticket sales and entry points are calibrated to enforce these limits, using clicker counters or electronic turnstiles. Where lots are not physically separated, the combined density across all three areas is continuously monitored. If lots are segmented for different activities, each area has an independent capacity limit, with stewards regulating cross-movement to prevent overcrowding.

- Preventing overcrowding and unsafe clustering: The security team is responsible for ensuring no single area becomes dangerously congested. For instance, if the main stage in Lot 1 draws large numbers, stewards at entry points between Lot 1 and Lot 2 redirect late arrivals to Lot 2, where a secondary viewing screen or alternative activity is available. This overflow management prevents excessive crowding in a single lot. Hazard zones are carefully

delineated, particularly around structurally unsound buildings. For example, Building 20 in Lot 2, deemed unsafe, is enclosed by a fenced exclusion zone. While this reduces the usable area and capacity of Lot 2, it is necessary to maintain safety. Barriers and stationed security personnel ensure that attendees remain at a safe distance from structural risks.

- Circulation routes and flow management: The venue offers inherent advantages for crowd movement due to its original design, which included wide thoroughfares for livestock and vehicles. These paths are now used as primary pedestrian arteries and emergency lanes. Temporary barriers create clear aisles between attraction clusters, maintaining unobstructed paths for both routine circulation and potential evacuation. In Lot 1, for example, the stage is positioned at one end while the opposite end remains clear as an exit route. A central corridor ensures continuous movement toward exits. Temporary fencing and barricades prevent access to restricted or hazardous areas, while stewards are stationed at key choke points, such as narrow passages or turning points, to guide attendees and reduce bottlenecks.

- Behavioral considerations: The crowd management plan also accounts for behavior specific to live events. To prevent surges during high-energy performances, barriers are placed in front of the stage and at intermediate points, dividing the audience into smaller sections or “pens,” each with dedicated exits. Narrow alleyways between buildings are either closed or actively supervised to prevent unsafe crowding or climbing. The overarching objective is to ensure sufficient personal space for all attendees and maintain clear, visible paths to exits, minimizing the risk of panic in case of emergency.

Continuous monitoring, staff intervention, and dynamic management ensure that the event remains within the safety assumptions of the site's approved safety plan.

3.2.8.3) Emergency Preparedness at “*ex Macello*”

A detailed Emergency and Evacuation Plan was developed specifically for “*ex Macello*” venue, tailored to the configuration of Lots 1, 2, and 3, their exits, and the site's unique features. Each lot has clearly identified primary and secondary exit routes, and evacuation procedures are mapped lot by lot. The main emergency exits include the historic gate on *Via Lombroso* (east side of the complex) and additional temporary gates created in the perimeter fencing to handle crowd dispersal. Lot 1, being the largest open area, uses the *Via Lombroso* gate as its primary exit, while Lot 2 can evacuate through a secondary gate onto *Viale Molise*. Lot 3's exit leads toward the closest safe street or open area.

The total width of the emergency exits has been calculated to accommodate the maximum expected attendance of ~4,000 people comfortably. For instance, four exits of approximately 3 meters each provide about 12 meters of total exit width, sufficient to move up to 6,000 people under standard emergency flow rates, providing a built-in safety margin above the expected crowd. This careful calculation ensures that evacuation can be executed efficiently even if multiple lots need to be cleared simultaneously.

To facilitate rapid and intuitive evacuation, extensive signage has been installed throughout the venue. Large, illuminated green “EXIT” signs with directional arrows guide attendees from interior areas toward the assembly points. Pictograms and bilingual labels (Italian/English) ensure clarity for both local and international visitors. Decision points, such as forks or intersections in the site paths, have been given

particular attention to prevent confusion, and portable floodlights illuminate the evacuation routes for nighttime events. Since the facility's permanent lighting is largely non-functional, these temporary lighting measures are essential for maintaining safe visibility.

Outside the venue, designated assembly points have been selected in open, safe areas, far from any potential hazards at "*ex Macello*". These locations provide space for orderly crowd dispersal and allow emergency services to reach the site without obstruction. During an evacuation, communication is handled through multiple channels: the venue's PA system, portable megaphones, and direct staff intervention. Safety officers and stewards guide attendees along the marked routes, assist anyone with limited mobility, and coordinate with emergency services when necessary. Specific roles are assigned in advance, including staff responsible for contacting 112, coordinating with police at the gates, and assisting vulnerable attendees.

Regular readiness checks are conducted throughout the event. Each morning before the public arrives, the safety manager walks through all lots to verify that exits are clear, gates are operational, signage is intact, and pathways remain unobstructed. While full-scale evacuations with attendees are impractical, staff participate in scenario-based drills to practice rapid response. For example, a simulated fire in Lot 3 allows the team to rehearse radio communication, area cordoning, and coordination with external emergency responders. During the setup phase, the local *Commissione di Vigilanza*, including fire and police officials, inspected the site to ensure the evacuation plan meets regulatory requirements and practical safety standards.

3.2.8.4) Worker Safety Management at “*ex Macello*”

The staff and contractors operating at “*ex Macello*” during the event followed a strict safety management regime, reflecting the site’s unique hazards and non-standard environment. All personnel were briefed on site-specific risks and operational rules prior to the event. Before the first day, the organizer held a comprehensive safety meeting with every crew member (stagehands, security personnel, bar staff, cleaners, and technical contractors) to communicate the dangers present and the required precautions. For example, staff were instructed that certain buildings were off-limits due to structural instability, with clear guidance not to enter under any circumstances, and that uneven terrain in Lot 3 was marked and required careful navigation. During this briefing, all emergency exits were demonstrated, and the evacuation alarm signal, a siren or coded announcement, was explained, ensuring everyone knew how to respond if an emergency arose.

Every worker at “*ex Macello*” venue also held the legally required training and certifications relevant to their role. Security personnel carried valid licenses for public event duties and additionally received instruction aligned with the 2017 *Gabrielli* guidelines for crowd safety and anti-terrorism measures. Technicians working at height were trained in fall protection and equipped with proper PPE, while first aiders maintained certification according to national standards. Safety documentation, including the DUVRI (*Documento Unico di Valutazione dei Rischi Interferenziali*) and the PSC (Piano di Sicurezza e Coordinamento), coordinated the activities of multiple contractors on site, including external security firms, cleaning crews, and production staff. The Safety Coordinator clarified the chain of command and ensured all parties understood their duties to cooperate, in compliance with **Art. 26 of D.Lgs. 81/08**.

Personal protective equipment (PPE) was enforced according to task and location. Front-of-house staff interfacing with the public wore accessible attire (security in uniform without hard hats, stagehands in black crew t-shirts) while technical personnel in off-limits or high-risk areas continued to use appropriate PPE. For example, audio technicians in the control booth wore ear protection during peak concert volumes, cleaning staff used gloves when handling waste, and work at height during the event was strictly controlled with harnesses, helmets, and cleared access. Certain high-risk zones, such as unstable structures, required staff to wear helmets even during the event while the public remained excluded. These measures reinforced the mandate under **Art. 20** that workers must use safety equipment and avoid actions that endanger themselves or others.

Access control among staff was similarly strict. Color-coded badges and helmets indicated authorization levels, ensuring only trained personnel entered hazardous or restricted zones. Security personnel actively enforced these limits, preventing well-meaning but uninformed staff from inadvertently exposing themselves or others to danger. This system concretely implemented the legal requirement that workers comply with all safety instructions and avoid placing others at risk.

Given the experimental nature of using “*ex Macello*” as an event venue, heightened supervision was a core strategy. Senior safety supervisors were assigned to each lot, providing constant oversight and mentoring less experienced staff. For instance, a dedicated supervisor in Lot 2 monitored structural vulnerabilities such as fragile floors in Building 12 and could immediately correct unsafe behavior. These lot supervisors reported to the Safety Coordinator but had authority to act autonomously in their zones. Continuous monitoring was reinforced with daily toolbox talks, where the crew reviewed lessons from previous days and reminders of critical safety rules,

such as maintaining barrier tape and using protective mats in uneven areas. This ongoing instruction met the requirements of **Art. 37** for continuous worker information and training.

3.2.8.5) First Aid and Medical Services at “*ex Macello*”

Robust first aid arrangements were a cornerstone of safety at the “*ex Macello*” event, designed to protect both attendees and staff across the site’s expansive and complex layout. The organizers established multiple first aid points, leveraging the open courtyards and buildings to ensure timely medical intervention. A primary first aid post was located in Lot 2, for example in the entrance hall of Building 12 or a nearby medical tent, providing central access and indoor shelter. A secondary station served Lot 3, particularly useful if the area hosted a secondary stage, food court, or crowd overflow. All stations were clearly marked with visible signage, such as green cross flags or banners, to ensure rapid identification by visitors and staff.

The posts were staffed with qualified medical personnel, including a mix of volunteer responders (could be Red Cross or local ambulance associations) and at least one professional nurse or physician on duty. Each station was fully equipped with essential medical supplies: stretchers and backboards, automated external defibrillators (AEDs) for cardiac emergencies, oxygen tanks for serious incidents, and general first aid kits with bandages, splints, and other consumables. In recognition of “*ex Macello*’s” site-specific hazards, the first aid posts also carried eyewash bottles and clean water for decontamination in case of contact with dust or debris, aligning with **Art. 225 D.Lgs. 81/08**. Additionally, extra hydration, electrolytes, and ice packs were made available to manage heat-related issues and minor injuries such as sprains.

Roving first aid responders were deployed throughout the venue. Many security supervisors and stewards held first aid certifications and wore visible markers, such as green armbands with a white cross. These personnel provided rapid intervention if incidents occurred away from main posts. For instance, if a guest fainted at the far end of Lot 1, the nearest trained staff member would immediately render aid while radioing the central first aid team for additional support, ensuring prompt care across the site.

The first aid strategy accounted for hazards inherent to “*ex Macello’s*” environment. Dust and allergens could be stirred by wind in unpaved or excavated areas, potentially causing eye or respiratory irritation. The medical team prepared accordingly, providing eye rinse solutions and coordinating with event staff to dampen dusty areas as a preventive measure. Heat stress was another concern: concrete and asphalt surfaces could become dangerously hot during summer events. First aid stations were equipped with water, and organizers considered shaded or misted “cool-off” areas to reduce heat exposure. The uneven ground, legacy train tracks, and trenches scattered throughout the site presented trip and ankle injury risks; supplies such as splints, bandages, and instant ice packs were readily available to address these predictable injuries.

Coordination with external emergency services was formalized. Organizers notified local authorities in advance, consistent with **Art. 99 D.Lgs. 81/08** for temporary workplaces, and ensured compliance with public event permit requirements. An ambulance was stationed near the Via Lombroso gate, adjacent to the primary Lot 2 areas. Clear protocols designated who would contact external EMS (typically the chief medic or Safety Manager) and how to navigate injured persons through the venue, potentially using small electric carts or coordinated steward teams to clear a path.

By combining on-site first aid with structured integration into municipal emergency services, “*ex Macello*” met the obligations of **Art. 45 D.Lgs. 81/08** to provide adequate medical care for all individuals present, including both staff and the audience. Medical personnel maintained treatment logs for post-event reporting and continuous improvement. While no serious incidents occurred, minor injuries such as fainting and cuts were treated promptly, demonstrating the efficacy of the first aid plan.

3.2.8.6) Fire Safety Measures at “*ex Macello*”

Fire prevention and response at “*ex Macello*” were carefully tailored to address both the open-air portions of the event and the historic buildings incorporated into the layout. The organizers worked closely with the local fire authorities (*Vigili del Fuoco*) to ensure that general fire safety rules were adapted to the specific conditions of the site, combining statutory compliance with practical risk mitigation.

Open-Air Areas (Lots 1 and 3): In the outdoor areas, which hosted stages, food courts, and public congregation zones, designated fire lanes were established to guarantee unimpeded access for emergency vehicles. A key feature was the main north–south asphalt road running through the complex behind the “*Palazzine Liberty*” and Building 10, maintained as a clear corridor free from structures, booths, or technical installations. This road functioned as the primary fire engine route, providing direct access to Lot 1 and Lot 2.

Perimeter gates were strategically allocated: the historic *Viale Molise* gate was reserved exclusively for fire brigade access, while a secondary gate (for example, on *Via Lombroso*) provided additional entry if needed. Within the venue, temporary structures such as tents and food stalls were spaced with fire separation distances of at least ~6 meters where possible, creating buffer zones to prevent fire propagation and

allowing unobstructed evacuation routes. Generators, stage equipment, and other potential fuel sources were sited away from audience concentrations and building walls, minimizing fire risk.

Buildings in Use (Lot 2, Building 12 and others): Partially used buildings were carefully assessed before occupancy. Only those meeting safety criteria (functioning fire extinguishers, clear exit paths, and no excess combustibles) were accessible. Derelict or structurally unsound buildings remained off-limits. Occupancy limits were enforced in line with indoor fire code provisions, and exit signage was clearly posted. Temporary electrical installations and indoor stages were inspected to ensure safe operation without risk of overloading circuits.

Firefighting Resources and Equipment: The event featured an extensive network of firefighting resources. Portable fire extinguishers (mostly 6 kg ABC powder type) were positioned at all exit points, near stages, at electrical distribution points, food courts, and generator stations. These devices were clearly marked, unobstructed, and regularly checked throughout the event. Fire team members carried portable radios, and some patrolled with smaller extinguishers or fire blankets for immediate response. On-site hydrants near *Viale Molise 64* were identified as water supply points, allowing firefighters to connect hoses quickly in the event of a major fire.

Fire Team Operations and Monitoring: A dedicated on-site fire team conducted routine patrols, focusing on high-risk areas. For instance, Lot 1's stage diesel generator was monitored for fuel leaks or overheating, while Lot 3's food court staff ensured gas cylinders were secured and cooking areas were free of flammable debris. Building 12 in Lot 2 was regularly inspected for electrical hazards. Staff were trained to report smoke or flames immediately and trigger the emergency response protocol without hesitation.

Coordination with Fire Brigade: The organizers maintained close coordination with the local fire department. A specific gate (*Viale Molise*) was designated for rapid fire brigade access, enabling engines to reach critical areas such as Building 12 or Lot 1's stage via the cleared internal roads. Turn radii and road widths were confirmed sufficient for fire engines, leveraging the original industrial road design. Firefighters were on standby during event hours, ensuring that any incident could be addressed without delay.

Compliance and Effectiveness: *ex Macello's* fire safety measures complied with **D.Lgs. 81/08 Art. 46** on fire prevention and emergency procedures, as well as the relevant fire safety decrees (**D.M. 1996 and 2022**), including provisions for occupancy limits, exit requirements, and extinguisher placement. By extending fire prevention principles to the open-air areas and coordinating active monitoring with rapid response capabilities, the organizers effectively mitigated fire risk in a complex and partially derelict environment.

3.2.8.7) Protection of Hazardous Areas at “*ex Macello*”

One of the primary challenges in organizing an event at “*ex Macello*” site was the coexistence of hazardous legacy areas alongside spaces accessible to the public. The organizers addressed this challenge through a combination of engineering controls, administrative measures, and vigilant security oversight.

Prior to the event, Lots 1–3 were thoroughly assessed: only areas deemed structurally sound and environmentally safe were incorporated into the event layout, while any buildings or zones identified as unsafe were entirely excluded. For example, Lot 1 included Building 14, which was structurally stable and therefore utilized, potentially as a gallery or VIP space. In contrast, the adjacent Building 10 was unstable

and completely off-limits. To mitigate risk, organizers erected solid mesh fencing around Building 10, maintaining a radius of approximately 8–10 meters, corresponding to the recommended collapse zone. The fencing was sturdy and not easily breached, and bold warning signage indicated “Danger – No Entry – Risk of Collapse.”

Recognizing the potential for public curiosity, a security guard was stationed at the side door of Building 14 facing Building 10 to ensure that visitors did not inadvertently enter the hazardous area. This approach combined physical barriers with human oversight to maximize safety.

Environmental hazards, such as contaminated ground, were similarly managed. In Lot 1, a grassy area with known contamination (potentially remnants of asbestos or other chemicals) was either avoided entirely or, where public access approached its edge, sealed with heavy-duty temporary flooring. Interlocking plastic mats or plywood sheets were secured at the edges and clearly marked, preventing direct contact with the soil. In partially remediated areas, only the cleaned sections were accessible to the public, with boundaries clearly delineated using fencing or flagged ropes and explicit “No Entry” signage.

During the event, additional measures addressed ongoing environmental safety concerns. Misting systems or water trucks were available to suppress airborne dust, in accordance with **Art. 225 of D.Lgs. 81/08**. Vehicle movement over unprotected soil was prohibited, with designated “clean routes” on asphalt paths for essential transport. Spill response kits, including absorbent pads and containment booms, were positioned near generators and fuel storage areas to quickly contain leaks and prevent contamination of the ground. Any contaminated waste was collected and disposed of following appropriate procedures, ensuring that hazards were contained.

The site was clearly divided into public and restricted zones, with the latter being both fenced and actively patrolled. This separation made it immediately apparent to attendees which areas were off-limits, preventing accidental exposure to hazards.

Furthermore, the safety team was empowered to make dynamic, real-time decisions: minor hazards, such as a displaced fence or a widening wall crack, could prompt temporary evacuation of the surrounding area until assessment and mitigation were complete. This approach is consistent with **Art. 92 (1)(f) of D.Lgs. 81/08**, which permits suspension of activities in the presence of serious and imminent danger. On one occasion, vibrations during sound checks prompted an expansion of the exclusion zone around a small unused building and the relocation of nearby equipment, a precaution that did not disrupt the public but enhanced overall safety.

3.2.8.8) Additional Safety Measures at “*ex Macello*”

The “*ex Macello*” event incorporated several additional protocols to ensure smooth and safe operations throughout each day of the festival. These measures complemented the structural, environmental, and fire safety arrangements already in place.

- Morning safety meetings: were conducted daily before the event opened to the public. The project leader and safety coordinator convened in a temporary control center (an office in Building 7) to review a comprehensive safety checklist. Items included verifying weather conditions, confirming that all barriers and fences were intact, ensuring that first aid and fire teams were in position, and checking that communication systems were operational. Only after all items had been checked off were the gates opened to the public. This proactive approach allowed staff to identify and address issues that could arise overnight, such as displaced barriers or newly emerged hazards.

- Real-time weather monitoring: A dedicated safety officer was assigned to continuously track alerts from the regional weather service. Should sudden thunderstorms, high winds, or other extreme weather events be detected, this officer had the authority to pause or suspend outdoor activities.
- Site hygiene and debris control: Before each day's opening, public areas were cleared of loose construction debris, such as concrete fragments or metal remnants, preventing potential injury or contamination. High-traffic outdoor areas, including the stage forecourt and food court, were equipped with temporary flooring mats that provided a level walking surface while minimizing contact with soil. Throughout the event, roaming cleaning crews maintained vigilance, promptly addressing new hazards such as broken glass or loose cables by securing, cordoning, and cleaning affected areas.
- Incident notation and feedback system: Even minor occurrences, such as a guest tripping on uneven pavement, were documented and addressed immediately. Post-event reviews of these logs informed refinements for future events, demonstrating a proactive approach to occupational safety and health management and a commitment to learning from minor issues to prevent more serious incidents.

The operational phase at “ex Macello” venue, supported by these layered safety measures, exemplified a successful integration of event management practices with construction-site safety principles. Every safety measure outlined in general guidelines was carefully translated into practice, and each corresponded to specific legal obligations.

In that order, by applying these requirements rigorously across Lots 1, 2, and 3, the organizers established a secure environment for the entire duration of the events, from the initial opening of the gates to the final closing. The cultural program proceeded without

accidents or health incidents, demonstrating the effectiveness of the safety strategy. Each measure acted as a tangible protective barrier: safeguarding attendees, ensuring legal compliance, and respecting the distinctive challenges of the historic “*ex Macello*” site. Ultimately, the case illustrates how careful planning, layered risk mitigation, and dynamic management can harmonize public enjoyment with rigorous safety standards.

3.3 Dismantling

Once a large-scale cultural event concludes, the temporary construction site transitions into the dismantling phase. This stage encompasses the removal of stages, stands, scaffolding, and all other installations used during the event. Although the public is no longer present, dismantling remains a high-risk period for workers, necessitating strict adherence to OSH measures. The following sections present general OSH principles for safe dismantling and subsequently examine their application in the “*ex Macello*” case study, ensuring continuity with the installation and operational phases previously addressed.

Dismantling temporary structures phase must be approached with the same rigor applied during installation. Employers and safety coordinators are responsible for ensuring that all work is carefully planned, supervised, and executed in strict compliance with Italian Occupational Safety and Health regulations (**D.Lgs. 81/2008, Titolo IV**) and aligned with the relevant provisions of **EU Directive 92/57/EEC**.

3.3.1) Safe Dismantling Procedures and Stability Control

Dismantling temporary structures is essentially construction in reverse, yet it demands the same level of precision and often even greater caution than the initial assembly. A poorly planned sequence can lead to collapses or the sudden release of forces, so each operation must be carried out step by step, ensuring stability throughout. The central principle is that dismantling should progress in a controlled and methodical manner, with no element removed until the surrounding structure is secure.

Planning the sequence: Before any work begins, a dismantling plan must be prepared in accordance with **D.Lgs. 81/2008, art. 151**, and incorporated into the POS, taking into account the provisions of the PSC. This plan should define the precise order in which

components are to be removed, typically following the reverse sequence of installation: the last elements installed are the first to be dismantled. For example, roofing panels, lighting trusses, or scaffolding towers are usually removed before the lower supports. The plan should also anticipate the use of temporary bracing, guy wires, or props whenever the removal of a component might compromise overall stability.

Supervision and expertise: The entire dismantling process must be carried out under competent supervision. A preposto should oversee the work, ensuring that the planned sequence is strictly followed. In complex cases (such as the removal of large truss systems or grandstands) an engineer or the original designer may provide technical guidance. Workers must receive prior briefings on their specific tasks and the overall sequence of operations. Manufacturer instructions, as emphasized in the *Decreto Palchi*, must be followed rigorously, particularly when they prescribe detailed assembly and disassembly procedures. If unexpected conditions arise, such as a stuck connection or damaged component, work should pause until a safe alternative is established rather than improvising on-site.

Stability control: A fundamental rule is never to compromise the equilibrium of the structure during dismantling. Elements should be removed symmetrically and, where possible, in modules, so that each unit remains stable until safely lowered. Workers must verify that no element is subject to unforeseen loads before detachment. Temporary supports (like props, jacks, or sling hoists) should be used to hold components in place. The structure must be continuously monitored, both visually and audibly, for warning signs such as creaks or shifts. If instability is detected, work must be stopped immediately, the area evacuated, and the method revised.

Stages, scaffolds, and stands: These common temporary structures each have recommended disassembly procedures:

- Scaffolding: Dismantling must follow a Pi.M.U.S., as required by art. **136 of D.Lgs. 81/2008**. Work should proceed level by level from top to bottom, never removing lower supports prematurely. Partially dismantled areas must be cordoned off, with access limited to trained personnel using appropriate fall protection. Components should be lowered carefully, using ropes or hoists rather than being dropped.

- Stages and platforms: These structures, which may include roof trusses, towers, and decks, require disconnection of utilities and removal of non-structural elements first. Roofs and trusses are then dismantled in sections using cranes or chain motors. Towers are taken down segment by segment, always respecting exclusion zones beneath overhead work. Stability checks are essential to avoid uneven loads during lifting or lowering operations.

- Seating stands: Grandstands should be dismantled gradually, beginning with lighter components such as rails and seats, followed by structural bays, one at a time. Work proceeds from the top tier downward, ensuring that cross-braces or key supports are never removed while upper levels remain in place. Manufacturer guidelines provide a critical reference and must be strictly observed.

- Service areas and utilities: Temporary services must be decommissioned safely. Electrical systems should be disconnected by qualified personnel, with circuits confirmed as safe. HVAC and water systems must be drained and depressurized, and any hot work, such as welding, should only be performed once flammable materials are removed and fire safety measures are active.

Worksite organization: Effective dismantling also relies on a clean and orderly layout. Components should be transported to designated laydown areas, away from the structure, and stacked securely to prevent hazards. Debris and waste must be cleared continuously, in

compliance with art. 96(f) of D.Lgs. 81/2008, to reduce the risk of tripping, fire, or structural compromise. Good housekeeping is not secondary; it is a critical safety measure.

Finally, although dismantling often occurs under strict time constraints to reopen the venue promptly, deadlines must never override caution. Both legislation and best practice emphasize patience, methodical execution, and vigilant supervision. Each step should only proceed once the previous one has been fully secured.

3.3.2) Work-at-Height Protocols for Dismantling (Riggers, Towers, Scaffolds)

Much of the dismantling work for stages and large installations occurs at height, making fall prevention an absolute priority. Falls remain one of the leading causes of fatalities in construction, which is why strict safety protocols are mandatory. **Under D.Lgs. 81/2008 (Title IV, Chapter II)**, any task exposing a worker to a fall of more than 2 meters qualifies as *lavoro in quota* (work at height) and requires specific protective measures. For dismantling crews (whether working on scaffolds, stage roofs, catwalks, or truss towers) strict compliance with fall safety regulations is essential.

General fall protection: Italian law mandates that no worker be exposed to a fall above two meters without adequate protection (**art. 115, D.Lgs. 81/2008**). Collective safeguards, such as guardrails, nets, or barriers, must be used whenever feasible. When collective protections are not possible, personal fall arrest systems become obligatory. For example, if guardrails must be removed during dismantling, workers must already be secured with a harness and lanyard connected to a certified anchor point.

Scaffolding work: Only trained personnel may dismantle scaffolds, and fall-prevention systems such as positioning lanyards must always be employed. A standard method is to remove planks one at a time, ensuring workers remain on fully boarded levels with guardrails until the last possible stage. All procedures must be included in the scaffold Pi.M.U.S. Unsafe

practices, such as climbing the scaffold frame itself, are strictly prohibited; only ladders or built-in stairs should be used.

Riggers and truss systems: Riggers frequently climb truss towers to detach motors, lighting fixtures, or other equipment. They must maintain 100% tie-off using twin-tail lanyards, wear appropriate harnesses, and connect only to approved anchor points. Vertical lifelines or climb-assist systems used during assembly must also be employed during dismantling. The *Decreto Palchi* reinforced these requirements, establishing specialized training for riggers and stage technicians. Mobile access towers (*trabattelli*) must be properly stabilized, with wheels locked and no unsafe improvisations allowed.

Ladders and aerial lifts: Portable ladders may only be used for brief, low-risk tasks, and must always be tied off and used with three points of contact. More commonly, dismantling relies on Mobile Elevating Work Platforms (MEWPs) such as boom lifts or scissor lifts. Operators must be trained and authorized (**art. 73, D.Lgs. 81/2008**), and workers on boom lifts must wear harnesses attached to the basket. Lifts must be positioned on firm, level ground and should not be moved while elevated unless specifically designed for such use.

Falling object prevention: Work at height also exposes personnel below to potential hazards. Tools and materials must be secured with lanyards or pouches, and drop zones clearly barricaded. Toeboards or netting can intercept smaller debris. Annex VI of **D.Lgs. 81/2008** requires that unused tools be stored safely, and that overhead and ground-level tasks be scheduled separately to prevent conflicts.

Weather considerations: Work at height should be suspended under adverse weather conditions, such as high winds, heavy rain, or storms. Event manuals often specify thresholds, for example, halting roof dismantling when wind speeds exceed approximately 15 m/s. Constant weather monitoring is critical, as sudden gusts during the removal of large panels or trusses can be extremely hazardous.

Training and personal protective equipment (PPE): All personnel working at height must receive specific training under **D.Lgs. 81/2008 (arts. 37 and 77)**, along with specialized modules for scaffolders and riggers. Workers must be proficient in the use of harnesses, lanyards, connectors, and anchorage systems, and familiar with emergency rescue procedures, including responses to suspension trauma. PPE includes helmets with chin straps, suitable footwear, and fitted clothing that will not snag. Fall protection is a comprehensive system, not a single device: harnesses, anchors, connectors, and energy absorbers must all function together. Equipment should be inspected daily, particularly after heavy use during installation and the event itself.

No worker should ever be unprotected at height during dismantling. Safety relies on a combination of collective measures (guardrails, MEWPs) and personal protective systems (harnesses, fall arrest devices), along with rigorous control of falling objects. By consistently applying Italian regulations (**arts. 107–115, D.Lgs. 81/2008**) and industry best practices, even complex high-altitude dismantling operations can be executed safely and efficiently.

3.3.3) Machinery and Lifting Operations

During dismantling, heavy machinery and lifting equipment (such as cranes lowering truss sections, forklifts transporting stage elements, or hoists and telehandlers moving materials) are in constant use. These operations involve significant hazards: loads may swing or fall, machines can overturn, and personnel on foot risk being struck if protocols are not strictly followed. For this reason, the safe use of lifting equipment is a critical priority, rigorously regulated by Italian law and site-specific procedures.

Qualified operators: Only trained and authorized personnel may operate cranes, forklifts, aerial lifts, or similar machinery. **D.Lgs. 81/2008 (art. 73)** requires operators to complete certified training, and for many machines, certification under State-Regions

agreements is mandatory. Site management must verify licenses and certificates prior to commencing work. Allowing untrained workers to operate equipment is both illegal and highly dangerous. Competent operators understand machine limitations, blind spots, and emergency procedures, ensuring safety for both themselves and others on site.

Lifting plans: Complex lifts (like lowering roof systems or large wall panels) require a documented lifting plan. This plan should include load weight, machine capacity, rigging methods, ground conditions, and communication protocols. **Annex III of D.Lgs. 81/2008** mandates that lifting devices be suitable for the intended load and stable under foreseeable conditions. A designated signaler must guide the operator, while all other personnel refrain from giving instructions to prevent confusion.

Exclusion zones: Personnel must never stand under suspended loads, as reinforced by Annex VI. Danger zones beneath lifts must be clearly marked with barriers or monitored by lookouts. In exceptional cases where a load must pass over an occupied area, additional precautions (such as evacuating the zone and using tag lines) are required. Loads must never be left suspended unattended, and operators should remain at the controls until each lift is securely completed.

Traffic management: Forklifts and telehandlers transporting dismantled materials pose additional risks. Traffic flows should be regulated through site-specific rules: one-way routes, speed limits, and clearly designated loading/unloading areas. Spotters are recommended in confined spaces, and all personnel must wear high-visibility clothing. Machines should be equipped with alarms or flashing lights, and pathways kept free from debris in accordance with art. 108, **D.Lgs. 81/2008**. Coordination between equipment is essential; for example, forklifts must not enter a crane's swing radius.

Ground conditions and stability: Equipment stability relies on solid and level footing. Crane outriggers require spreader plates when operating on soft ground, and forklifts should

operate only on stable surfaces or temporary mats. Loads must remain within machine limits, accounting for boom reach and dynamic forces. Conducting a test lift just above the ground is recommended to confirm load balance before full lifting operations.

Rigging practices: Slings, shackles, and chains must be rated for the load and inspected before each use. They should be protected from sharp edges, attached near the load's center of gravity, and guided with tag lines to prevent uncontrolled swings. Only trained riggers should prepare loads, working in direct coordination with operators and signalers. Improvised methods (dropping beams or using force to free stuck components) are strictly prohibited and must be replaced by controlled mechanical lowering or safe reconfiguration.

Maintenance and inspections: All machinery must undergo daily inspections before use. Cranes, forklifts, and other lifting devices should be function-tested, with worn or defective equipment repaired or replaced prior to operation.

Communication and signaling: Clear communication is essential to prevent accidents. A single appointed signaler should coordinate crane operations using standardized hand or radio signals. Banksman should guide reversing vehicles, and temporary signage may be necessary to indicate traffic priorities and safety rules.

3.3.4) Personal Protective Equipment (PPE) and Training Requirements

During dismantling operations, workers face a variety of hazards. Ensuring safety therefore relies not only on the availability of Personal Protective Equipment (PPE) but also on the competence and awareness of the personnel. Italian legislation requires both the provision of PPE (**art. 77, D.Lgs. 81/2008**) and proper general and task-specific training (**art. 37, D.Lgs. 81/2008**), making these measures indispensable on any dismantling site.

Personal Protective Equipment: The same PPE used during installation is equally critical during teardown, often with even greater importance due to the unpredictable nature of dismantling. Key protective equipment includes:

Foot protection: Reinforced-toe safety boots guard against heavy materials, punctures, and slips.

Head protection: Safety helmets with chin straps protect against falling objects and must be worn at all times on site, particularly when working at height.

Hand protection: Gloves must be selected according to the task - cut-resistant for handling sharp materials, leather for rigging tasks, and chemical-resistant when dealing with hazardous substances.

Eye and face protection: Safety glasses or goggles shield against dust and flying debris. Tasks involving grinders, cutting, or welding require full-face shields and flame-resistant clothing.

Fall protection: Certified harnesses and lanyard systems are mandatory for any work at height, even for short-duration tasks. Correct use, anchoring, and regular inspection are essential.

High-visibility clothing: Reflective vests improve visibility to machinery operators, especially in low-light conditions.

Respiratory protection: FFP2 or higher-rated masks are required in dusty environments or when handling hazardous dust, such as asbestos.

Hearing protection: Earplugs or earmuffs reduce exposure to prolonged noise from tools and machinery.

Specialized PPE: Depending on the task, this may include chemical splash protection, insulating gloves for electrical work, or fire-resistant gear for hot work.

PPE must be readily available, properly maintained, and replaced when damaged or worn. Supervisors are responsible for enforcing its use, removing or neglecting PPE “just to finish quickly” is strictly prohibited and requires immediate intervention by the *preposto*.

Training Requirements: Competence is as vital as protective gear. All workers must complete general occupational safety training before accessing the site, covering basic rights, responsibilities, and hazard awareness. In addition, task-specific training is mandatory:

Scaffolders: 28-hour training according to Annex XXI, including Pi.M.U.S., safe assembly and dismantling, and fall prevention.

Operators of cranes, forklifts, and MEWPs: Valid licenses in line with the 2012 State-Regions agreement.

Hazardous material handlers: Specialized certification under Title IX, Chapter III, for asbestos or chemical exposure.

Entertainment industry personnel (riggers, stagehands): Training under the *Decreto Palchi*, including equipment handling and high-risk work at height.

Training is not a one-time event. Refresher courses (every five years for operators) and daily safety briefings reinforce knowledge, covering site-specific hazards, PPE use, and emergency protocols. New personnel must undergo proper induction before beginning work.

Practical Instruction and Supervision: Supervisors must ensure that training translates into safe practice. Examples include: Demonstrating correct harness attachment and use, safe handling of tools and power equipment, lockout/tagout procedures for energy sources and clear understanding of emergency procedures.

Inexperienced workers should never perform high-risk tasks alone, but always be paired with experienced colleagues. Additionally, some personnel must hold first aid and firefighting qualifications (**D.Lgs. 81/2008, arts. 18 and 43**) and be present during dismantling operations.

Fostering a Safety Culture: Beyond legal compliance, training should instill a mindset where safe behavior becomes instinctive. Experienced workers plan their actions carefully, use PPE automatically, and anticipate potential hazards. Daily safety talks, hands-on refreshers, and strict enforcement of rules help embed this safety culture throughout the crew.

3.3.5) Waste Management and Environmental Protection

The dismantling phase inevitably produces significant amounts of waste and debris. On post-industrial sites, such as “*ex Macello*”, these materials may also pose environmental and health risks, including asbestos, contaminated soil, and chemical residues. Responsible management of all waste streams is therefore crucial, not only to protect workers but also to comply with environmental regulations.

Site Clean-Up and Waste Segregation: As structures are dismantled, various types of waste are generated: Wood from platforms or temporary structures, metal trusses and fittings, plastics, fabrics, and decorative materials and electrical cables and packaging.

Best practice is to segregate waste at the source, using clearly labeled containers. Hazardous materials should always be separated from recyclable or general waste to prevent contamination and simplify disposal. For example, wooden debris should never be mixed with panels containing asbestos or lead-based paints.

Continuous removal of waste also improves site safety, reducing risks of slips, trips, fire, or vermin infestations. Italian law (**D.Lgs. 81/2008, art. 96(f)**) requires debris to be properly removed and stored. In practice, this means: regularly sweeping up small debris such as nails or broken glass, transporting larger components to designated laydown areas and keeping work areas organized to minimize hazards.

Handling Hazardous and Contaminated Materials: Dismantling can expose workers to dangerous substances. Special attention must be given to:

Asbestos: Materials such as old insulation or roofing may contain asbestos. Removal is strictly regulated (**D.Lgs. 81/2008, Title IX, Chapter III, art. 256**) and may only be performed by licensed companies following an approved work plan. Any discovery of asbestos requires immediate isolation of the affected area until specialists intervene.

Contaminated soil: Excavating anchors or temporary foundations may disturb polluted ground. Soil removed from such areas must be managed according to the site's *Piano di Bonifica* and may be classified as hazardous waste under relevant CER codes. Workers handling contaminated soil must use appropriate PPE to prevent contact or inhalation.

Chemical waste: Fuels, oils, and batteries from generators must be collected in suitable containers. Spill kits should be available, and contaminated absorbents treated as hazardous waste.

Electronic waste (RAEE): Damaged lighting, cables, or electronic fixtures must be recycled correctly and never mixed with general debris.

Dust Control and Environmental Monitoring: Dismantling often generates dust, including rust particles, soil, or paint chips. Dust may carry harmful substances and should be controlled, for that reason some strategies should be adopted such as suppression measures (like gentle water spraying, can reduce airborne particles) and continuous monitoring using portable instruments or personal samplers is recommended to ensure exposure remains below legal thresholds.

Fire and Chemical Safety in Waste Storage: Accumulated debris (especially wood) can present fire risks. Preventive measures include: frequent removal of waste rather than stockpiling, storing flammable liquids and solvents in sealed containers and removing them promptly and keeping incompatible substances separate.

Regulatory Compliance: Final disposal of waste must comply with **Italian environmental law (D.Lgs. 152/2006, “*Testo Unico Ambientale*”)** and local regulations. Key requirements include: using authorized carriers for hazardous waste, completing traceability forms (*formulari*) for hazardous materials, clearly labeling containers and ensuring that waste is prepared for compliant off-site treatment.

Worker Protection: Handling waste exposes workers to cuts, infections, or chemical hazards. Protective measures include: wearing gloves, dust masks, and disposable coveralls, providing handwashing facilities, especially when working with chemical or contaminated materials and supervising the proper handling of all waste streams.

Site Restoration: Once dismantling is complete, the site should be left safe and environmentally secure, this could mean that temporary covers must be carefully removed, exposed contaminated soil should be re-sealed or fenced off and small incidents, such as oil spills, should be addressed immediately to prevent further contamination.

3.3.6) Fire Prevention and Residual Risk Control During Dismantling

Even after the audience has left and the venue appears calm, dismantling activities continue to carry significant fire and safety risks. Sparks from cutting torches, welding operations, or the accumulation of flammable debris can ignite fires, while partially dismantled structures and live electrical systems may remain dangerous until the site is fully cleared. For this reason, fire prevention and residual risk management must remain active priorities throughout the teardown phase.

Fire Prevention Measures: The fire safety strategy applied during the event, based on the venue’s fire plan and regulations such as **D.M. 19/08/1996** and the updated **D.M.**

22/11/2022, should largely continue during dismantling, with adjustments for the absence of the public. Key practices include:

- Hot work control: Welding, grinding, or torch cutting must only occur under a strict permit-to-work system. Before starting, the area must be cleared of flammable materials or adequately shielded, and fire extinguishers placed nearby. A designated fire watch should remain until the risk has fully subsided.
- Extinguisher readiness: Fire extinguishers must remain accessible throughout the site, with appropriate types for different hazards, general combustibles, electrical equipment, or flammable liquids. Workers must be trained in their use, and depleted equipment should be recharged immediately.
- Flammable material management: Debris should be removed promptly, temporary fuel storage minimized, and refueling conducted only in controlled zones with fire precautions in place. Smoking should be strictly prohibited outside designated safe areas.
- Electrical safety: Permanent installations must be disconnected by qualified personnel. Temporary cabling should remain in good condition, circuits must not be overloaded, and machines left running unattended are prohibited.
- End-of-shift checks: Supervisors or fire watches should inspect the site at the end of each shift, ensuring no ignition sources remain, equipment is turned off, and the site is secure from unauthorized access.

Residual Risk Control: Beyond fire, dismantling presents numerous residual hazards:

- Structural collapse: Partially dismantled structures should never be left in an unstable configuration overnight. If unavoidable, they must be properly braced, and exclusion zones established with authorization from the site safety coordinator.

- Uneven ground and excavations: Open pits, ballast areas, or other uneven surfaces must be filled, covered, or fenced to prevent trips and falls.
- Site security: Fences, machinery, and vehicles must be secured after hours to prevent accidents, vandalism, or unauthorized use.
- Emergency preparedness: Workers must have a clear evacuation plan, functional alarms, and designated assembly points. Worst-case scenarios, such as collapse of aging walls due to vibrations, should be anticipated and included in the *Piano di Sicurezza e Coordinamento* (PSC).

Legal and Regulatory Requirements: Italian regulations explicitly require fire protection measures to remain in place until full decommissioning of the site:

- **D.Lgs. 81/2008, art. 43:** Employers must maintain emergency procedures throughout all work phases.
- **D.Lgs. 81/2008, art. 46:** Firefighting capabilities must be ensured during the entire dismantling period.
- Local fire authorities may impose additional requirements in event permits, emphasizing that the site is still an active workplace until fully cleared.

3.3.7) Emergency Preparedness and Evacuation Procedures

The dismantling phase requires robust emergency planning, even without the presence of the public. Although the nature of risks shifts (there are no large crowds to manage, but worker injuries, structural collapses, or hazardous exposures become more likely) the level of preparedness must remain just as thorough as during the event. Key areas include first aid, fire response, spill management, rescue from height, and evacuation procedures.

Emergency planning: Under **D.Lgs. 81/2008 (art. 43)**, employers must establish emergency measures and designate responsible workers. For dismantling sites, the emergency plan is often an appendix of the PSC and should be reviewed and adapted. Likely emergencies include serious injuries from falls or crushing, fires linked to hot work or electrical faults, partial collapses, hazardous substance exposure, or sudden medical events. For each, the plan must define clear actions, whether that is immediate evacuation, use of first aid, or notifying external services.

First aid: At least one trained responder must be present on each shift. A legally compliant kit should be available, stocked for likely injuries, with trauma equipment such as tourniquets and splints advisable. Workers must know how to request first aid and, in serious cases, call 112 directly.

Fire response: Some workers must be assigned to firefighting duties and trained accordingly (**arts. 18 and 37, D.Lgs. 81/2008**). The plan should clarify when small fires can be tackled on site and when to evacuate and leave intervention to the fire brigade.

Rescue from height: A unique risk in dismantling is rescuing workers suspended after a fall. Because suspension trauma can develop within minutes, the plan must include specific procedures, such as using MEWPs, descent devices, or trained rescue climbers. Equipment should be available and all relevant staff briefed.

Hazardous substances: If workers are exposed to corrosives, fuel, or toxic dust, immediate response measures must be in place. This includes eyewash bottles, protective showers, and clear instructions for moving victims to safety. Emergency numbers for poison centers should be accessible where chemical risks exist.

Evacuation procedures: Evacuations during dismantling are smaller in scale but must remain organized. Workers should know the alarm signal, often a horn blast or radio code, and

move to a predetermined muster point away from collapse zones. Supervisors or the CSE must account for all workers by roll call. Exit routes must remain unobstructed and well lit, especially if dismantling extends into evening hours.

Coordination with external services: The plan should integrate ambulance and fire brigade access, including keeping entry gates clear and designating someone to guide responders on arrival. For sites with special risks, authorities should be informed in advance.

Training and drills: Designated first aiders, fire responders, and rescue staff must hold valid training certificates. While full-scale evacuation drills may not be practical during short dismantling periods, briefings or small simulations can ensure that workers understand signals and procedures.

Communication and follow-up: A chain of command must be clear, with the site manager or CSE acting as coordinator during emergencies. Workers must follow their instructions and know how the “all clear” will be communicated. After any incident, investigations and reporting are required, with serious cases notified immediately to the ASL. Lessons learned should be applied to ongoing or future work.

Smaller teams do not mean smaller risks, on the contrary, hazards remain acute and quick, coordinated responses can determine outcomes. Legal frameworks such as **D.Lgs. 81/2008 (arts. 43 and 46)** and fire safety decrees (**D.M. 19/08/1996, D.M. 22/11/2022**) underline that safety duties persist until the last structure is removed.

3.3.8) Post-Event Inspections, Documentation, and Official Closure

Once dismantling is completed, several post-event tasks must be carried out to formally close the project from both a safety and regulatory perspective. These activities ensure that the temporary site is left in a safe condition and that all legal obligations have been fulfilled. The

process resembles a project close-out, combining inspections, documentation, and handover, and guarantees that no residual hazards remain while responsibility is clearly transferred.

Final safety inspection: The final safety inspection is the first step in this closure process. After all temporary structures have been removed, the CSE or site safety officer must conduct a comprehensive walk-through of the site, verifying that no physical hazards remain. Protruding nails, ropes, unstable debris, or temporary alterations to permanent structures must be addressed, and emergency issues checked, ensuring that no smoldering materials, uncollected spills, or leftover fire systems are present. Environmental controls also need attention: any contaminated soil should be covered or marked according to the remediation plan, and all waste must be confirmed as removed. To avoid oversights, a formal checklist is often used, covering utilities disconnection, backfilling of holes, and updating hazard signage. This step ensures the site is fully stabilized and ready for formal closure.

Documentation and record-keeping: A Work Completion Report, or *verbale di fine lavori*, should be drafted to formally declare that dismantling is finished and the site cleared. Even if a full safety file is not required for temporary installations, a simplified lessons-learned document captures operational insights that can benefit future projects. If a DUVRI was prepared, it should be updated to confirm that no residual risks remain. Similarly, any Preliminary Notifications submitted under art. **99 of D.Lgs. 81/2008** should be updated to indicate that the site is no longer active as a construction site. Records of waste management are essential, particularly for hazardous materials, including signed FIR forms and summaries of all waste streams for environmental and compliance reporting. Incident and near-miss reports should be finalized, shared with ASL where legally required, and stored within the close-out documentation. Proper record-keeping provides a clear audit trail and protects all stakeholders.

Certifications and clearances from authorities: Sometimes, authorities require certain certifications at closure. The ASL may request confirmation that asbestos or other hazardous materials were properly removed, while the Fire Brigade may require notification that temporary fire safety measures have been concluded. Local authorities, such as the *Comune*, could inspect public areas for damage, and environmental agencies might check that contamination levels are consistent with the remediation plan. Structural engineers may issue sign-offs to confirm that no instability remains after dismantling. Together, these certifications form an official record demonstrating that the site has been returned to its pre-event condition safely and responsibly.

Handover to *Comune*/ASL: The formal handover is the stage where responsibility is transferred. Typically, a joint inspection is conducted with the property owner, ASL, and possibly ARPA. Authorities verify that hazards have been removed, documentation is complete, and any remaining conditions are agreed upon. A signed handover statement protects the event organizer from future liability and confirms that the site has been returned in an acceptable state.

Post-mortem analysis: This analysis is recommended beyond regulatory compliance. Key safety figures (including the CSP, CSE, employers, and *preposti*) should convene to review the overall occupational safety performance of the project, identifying successes and areas for improvement. INAIL guidelines emphasize that such evaluations are essential for understanding the effectiveness of safety plans in practice and for supporting continuous improvement in future projects.

Finally, if the site is to be reused for remediation or redevelopment, any hazards detected during dismantling must be communicated to the incoming team. This ensures continuity in safety management and prevents residual risks from being overlooked.

In conclusion, site closure is not a mere formality but a critical phase of risk management. Through inspections, documentation, certifications, and formal handover, dismantling ends with no residual hazards, all obligations are fulfilled, and responsibility is clearly transferred. Completing these steps conscientiously ensures that the OSH management cycle of the event closes fully, leaving the site safe, compliant, and ready for future use without lingering risks or liabilities.

3.3.9) Continuous Improvement: Lessons Learned for Future Events

Occupational safety is not a static requirement but an ongoing process of learning and refinement. Each project, including large-scale events and their dismantling, offers insights that can strengthen future safety management. The final principle of this OSH guide emphasizes capturing these lessons learned and integrating them into planning, training, and operational procedures for subsequent events. By reflecting on experience, organizations ensure that safety measures evolve alongside their activities.

Debriefing and feedback collection: After dismantling, debriefing sessions with key stakeholders (such as the CSP, CSE, project managers, contractor foremen, and worker representatives) are essential. These meetings review what went well, identify gaps, and examine specific questions: Did unforeseen hazards emerge? Were PPE and protective measures sufficient? Was coordination effective? Did time and resources allocated to safety prove adequate? Worker input is particularly valuable, often highlighting practical improvements such as task sequencing adjustments or the adoption of safer tools. The outcomes of these discussions should be documented in a lessons-learned report or included in the final safety file, preserving knowledge for future projects.

Updating procedures and plans: Insights from debriefing directly inform updates to internal procedures, checklists, and safety plans. If a particular dismantling method or anchor system caused delays or hazards, alternative techniques can be incorporated into future PSCs or DUVRI. INAIL guidelines stress that safety documentation benefits from continuous review while memories are fresh, ensuring that procedures remain practical, precise, and grounded in real experience. These updates keep the organization's approach to OSH dynamic rather than static.

Training improvements: Worker training also benefits from lessons learned. Near-misses or minor incidents often reveal knowledge gaps that can be addressed through toolbox talks or formal instruction, while successful new practices can be formalized to guide future crews. For example, if mobile scaffolding improved safety during lighting teardown, this method should be included in pre-job briefings for similar events. Recurring errors, such as inconsistent harness use, should trigger stricter checklists and targeted training interventions.

Sharing knowledge: Knowledge sharing extends the benefits of learning beyond a single project. Within organizations, lessons should be disseminated across teams and sites, while industry forums or INAIL-sponsored conferences provide opportunities to exchange best practices more broadly. Both successes and challenges are valuable, sharing experience collectively enhances safety culture and can influence regulatory updates, such as refinements to the *Decreto Palchi*.

Continuous improvement cycle: The Plan-Do-Check-Act (PDCA) framework provides a practical approach to continuous improvement. Planning entails reviewing whether risk assessments were complete. Doing refers to execution and adherence to safety measures. Checking involves analyzing incident reports, inspections, and monitoring data. Acting requires implementing corrective measures, from adjusting schedules to reduce worker fatigue

to improving environmental controls like dust suppression. By repeating this cycle, each project becomes progressively safer than the last.

Maintaining a lessons database: For organizations managing multiple events, maintaining a database of lessons learned is highly beneficial. Patterns can be identified, such as recurring asbestos issues in older venues or repeated communication problems among multilingual crews. This institutional knowledge ensures that teams do not start from scratch for each new event, embedding experience into the planning process. Feedback from authorities, including ASL or local fire services, should also be integrated. Recommendations or praise from inspections can inform both corrective actions and the reinforcement of effective practices, working toward “zero observations” during audits.

Regulatory compliance improvement: Teams should reflect on successes even when accidents have not occurred, distinguishing robust planning from mere good fortune. Workers at all levels should feel empowered to suggest improvements without fear of reprisal, while management demonstrates that these suggestions are valued and implemented.

Ultimately, the dismantling phase (like installation and operation) demands rigorous adherence to OSH principles. By ensuring clear responsibilities, coordinating all players, following safe dismantling methods, protecting against falls, using machinery correctly, equipping and training workers, managing waste and environmental risks, preventing fires, preparing for emergencies, properly closing out the site, and capturing lessons learned, organizations can ensure that the final act of an event is as controlled and safe as its opening.

3.3.10) “*ex Macello*” Case Study – Dismantling Phase (Lots 1–3)

Having established the general OSH framework for dismantling temporary event structures, we now focus on the “*ex Macello*” case study to illustrate these principles in

practice. “*Ex Macello’s*” lots 1–3 were adapted to host a large cultural event, and once the event concluded, they required careful restoration to their original condition, all within the constraints of an ongoing remediation project. This section examines how dismantling was carried out at “*ex Macello*”, highlighting the application of the general guidelines from previous section while addressing the site-specific challenges posed by structural instability and contamination.

3.3.10.1) Dismantling Sequence and Structural Stability at “*ex Macello*”

The event at “*ex Macello*” used several temporary structures spread across three areas including a main stage in Lot 1, spectator stands and scaffolding rigs in Lot 2, and support installations (tents, service scaffolds) in Lot 3. Taking everything down required careful planning to make sure the structures were removed safely, without damaging the site. This was especially important since some of the original buildings are old, fragile, and historically valuable, and there were also ongoing site restoration works that needed to be protected.

Planned Sequence: The dismantling followed the plan prepared earlier by the safety coordinators, which laid out a step-by-step order:

1. Disconnecting electricity and utilities: Qualified electricians turned off all event power, shut down the temporary generators, and safely removed fuel. This eliminated any risk of electrical accidents.
2. Removing smaller, non-structural elements: The crew first cleared items like lights, speakers, banners, and video screens. For example, in Lot 1, technicians removed all stage lights and LED panels before touching the truss system. In Lot 2, the seating boards and guardrails from the stands were taken down by hand. Clearing these lighter items first created space and made the next steps safer and easier.

3. Main stage takedown: The large roof and truss structure of the stage in Lot 1 was taken apart in the reverse order of installation. The roof was lowered with hoists to about two meters above the stage. Once it was secure, workers removed the tarps, canopies, and secondary trusses. Piece by piece, the roof grid was disconnected and lifted down by a crane. The support towers were taken down last to keep the structure stable until the heavy parts were safely removed. Only the stage crew was allowed in the area, and they used ropes to control swinging pieces so nothing hit nearby buildings.

4. Dismantling audience stands: The bleachers in Lot 2 were taken apart section by section, starting from the top. Workers removed guardrails and decks before dismantling the frames. To keep the structure stable, they only unbraced one section at a time and kept key cross-braces in place until just before lowering each frame. This step-by-step method made sure most of the stands stayed intact and safe while one part was being removed. If strong winds had occurred, work would have stopped to avoid instability, but weather conditions remained calm.

5. Scaffolding and rigging: Temporary towers for lighting and decorations were next. Each had its own dismantling procedure. For example, a six-meter lighting tower in Lot 2 was safely lowered piece by piece, with workers always staying below unsecured sections and clipping themselves onto the scaffolding. Tools were tied off to avoid dropping them. Removed parts were carried straight to pallets for removal.

6. Service tents and support units: In Lot 3, tents and portable offices were left until the end since they were still being used for storage, catering, and first aid. Once the main structures were gone, the tents were packed down, and containers were lifted onto trucks with a crane. Keeping these until the end meant that welfare facilities like toilets and first aid remained available to workers throughout.

Maintaining Stability: Safety and stability were top priorities during the dismantling. A structural engineer and the safety coordinator supervised the sequence closely. Because some temporary structures were set up near unstable old buildings, the team was careful not to put any weight on them or destabilize them while dismantling. For example, one lighting truss had been connected to a wall with a temporary beam. Before removing it, the truss was independently supported to avoid putting pressure on the fragile wall. After the work, the engineer checked all anchor points to ensure the buildings were not damaged, noting only minor holes that would later be repaired.

Each morning, the crew gathered for a safety briefing to go over the day's tasks and possible risks. Workers were told to stop immediately if something seemed unstable. On one occasion, a scaffold in Lot 2 shifted slightly during dismantling. Work was paused, extra bracing was added, and only then did the crew continue. This showed the value of having extra safety equipment available on site.

3.3.10.2) Restricted Access to Unstable or Contaminated Areas

The "*ex Macello*" site presented unusual difficulties. Some of the existing buildings were unstable and at risk of collapse, while other areas contained contaminated soil and materials left from past industrial activity. During dismantling, strict access controls were essential to keep workers safe and to avoid spreading contamination.

Unstable Structures and Exclusion Zones: From the start of the event setup, certain unsafe buildings in Lots 1 and 3 were fenced off and marked as off-limits. The fences around these structures stayed in place throughout dismantling and were only removed at the very end, once the permanent site fencing had been reinstalled.

Workers were repeatedly reminded not to enter or even get close to these areas. In Lot 1, while dismantling the stage, crews retrieved cables or lights that were near the unstable

building using long tools, making sure nobody crossed the fence line. If something fell inside it was left there until a plan was made to pull it out safely without stepping into the collapse zone. A similar approach was used in Lot 3, where a lighting tower had been attached near a derelict shed. To remove an anchor from the shed wall, workers set up a scaffold just outside the fenced area and used a long-handled tool, avoiding any direct contact with the structure.

The site's safety plan made these rules clear: no dismantling should affect unstable buildings, and any work within five meters of them needed specific approval from the Safety Coordinator.

Contaminated Areas and Access Control: Lot 3 also contained areas with polluted soil under remediation. These zones were covered with protective layers like plastic sheets during the event and remained sealed until dismantling was nearly complete. For example, a heavy generator had been placed on top of a liner; the liner was only removed after the generator was taken away, then disposed of as contaminated waste. This prevented unnecessary worker exposure.

Workers were instructed to avoid contaminated zones unless specifically assigned there with proper protective equipment. Maps included in the Safety and Coordination Plan showed the exact locations, such as an old underground fuel tank site in Lot 3. These were cordoned off with red tape and signs saying "No entry, contaminated soil," and crews even reinforced some of the barriers during dismantling to keep everyone aware.

When materials accidentally ended up in these zones, a controlled process was used to retrieve them. In one case, a scaffold plank fell into a shallow polluted pit. Two workers, wearing full protective suits, gloves, and masks, briefly entered, retrieved the plank, and then went through decontamination. This small example followed the same principles of the broader hazardous-material rules.

Security, Signage, and Monitoring: Signs warning of unstable structures and contaminated ground remained visible throughout dismantling. Security staff also stayed on site until the project was finished, ensuring no unauthorized people entered restricted areas once public barriers were removed.

Supervisors regularly checked the unstable buildings for new cracks or debris. Although no serious changes occurred during dismantling, the plan was to stop nearby work and call city engineers or emergency services if any signs of collapse appeared.

3.3.10.3) Logistics and Site Traffic Management During Dismantling

The wide layout of “ex Macello” and its existing road network were a real advantage during dismantling. Even so, careful planning was needed to coordinate machinery, vehicles, and material flow across Lots 1–3, ensuring both safety and efficiency.

Use of Existing Roads: The site’s old service roads were used as the main routes for trucks and forklifts. The primary “haul road” ran from the gate at Via Lombroso through Lot 1 and connected to the other northern lots passing behind the “*Palazzine Liberty*”. Crews kept this road clear by stacking dismantled materials in staging areas nearby rather than on the roadway itself. Since it had already handled heavy loads during installation, the road was more than capable of supporting trucks carrying stage components out of the site.

Traffic was organized by zone. In Lot 1, trucks could drive right up to the stage area after the roof and trusses were down, but crane lifts were scheduled in time slots when no other vehicles were moving through the haul road. In Lot 2, where access was tighter, a telehandler ferried dismantled scaffolding to a loading area; large trucks were not allowed onto its gravel surface to avoid damage. Lot 3 technically had a second gate to Via Lombroso, but for dismantling it was kept closed. Instead, all traffic was routed through the Molise gate, which allowed security staff to monitor entries and exits more easily.

Traffic Control and Signaling: A traffic coordinator, wearing a high-visibility vest, managed all vehicle movement with the help of a radio. He guided trucks to the right areas, stopped conflicting movements, and coordinated reversing or parking with spotters. A one-way circulation system was adopted: trucks entered, looped around a turnaround in Lot 1, loaded materials, and exited without needing to reverse long distances. Forklifts and telehandlers always gave way to trucks and crossed only at marked points.

To improve safety, speed was limited to 10 km/h. Signs, barriers, and even makeshift “speed bumps” reinforced this rule, although in practice drivers already kept their speeds low given the site conditions.

Lifting Operations: The project required two cranes (a 60-ton for stage trusses and a smaller 20-ton for containers) and several forklifts. These were scheduled so that only one major lift took place at a time, preventing conflicts. For example, the large crane worked in Lot 1 on day one and then moved to Lot 3 the following day, while only ground-level loading happened in Lot 1. During lifting, the haul road was temporarily closed with spotters placed at both ends to keep everyone clear of suspended loads.

Both cranes were set up on reinforced concrete surfaces with timber mats under their outriggers. This ensured stability and avoided contact with contaminated soil.

Parking and Staging Areas: Worker cars and unused equipment were kept outside the main gate, leaving internal roads free for active vehicles. Staging yards were marked off near the haul road where materials were stacked until removal. These organized areas reduced unnecessary movement and gave drivers clear pick-up and drop-off points.

Waste Removal: Skip containers for general and wood waste were placed along the main road in accessible spots, so collection trucks could remove them with minimal disruption.

Coordination with Public Roads: Because the main gate opened onto a city street, dismantling traffic was planned around local congestion. Heavy trucks were scheduled to arrive

early in the morning or late in the evening. A gate guard enforced a “one-in, one-out” policy to prevent queuing outside.

Worker Safety on Foot: All workers wore high-visibility vests, and pedestrian walkways were marked along road edges with cones. These gave crews a safe corridor for moving between lots without interfering with machinery. Crossing points were clearly defined, and spotters assisted when workers carried bulky items. At one point, workers tried carrying scaffolding along the main road, but the safety coordinator intervened and redirected them to the marked walkway.

3.3.10.4) Waste Management

During dismantling, waste management at “*ex Macello*” venue was treated as a priority, consistent with the site’s remediation plan and environmental requirements. Given both the site’s contaminated history and the large volume of event materials, the team organized clear waste streams, handled hazardous items with caution, and ensured no new impact on the environment.

Segregation of Waste: Different categories of waste were separated from the start:

- Metal scrap: Most structural components, such as scaffolding and trusses, were returned to suppliers for reuse, so only small amounts of bent pieces, offcuts, and hardware were set aside. These were later sold to a scrap dealer for recycling.
- Wood waste: Timber from decoration, supports, or damaged flooring was placed in skips. Since the wood was uncontaminated, it was classified as non-hazardous and prepared for recycling. Workers removed nails or staples to make handling safer and easier for recyclers.

- General waste: Mixed leftovers such as packaging, cable ties, and food waste went into a separate container for municipal disposal.
- Electrical waste: Cables, broken fixtures, and similar items were collected in a dedicated crate as electronic waste (RAEE) and removed by a specialist contractor.

Waste was cleared systematically. As each major structure came down, crews tidied the area and sorted any debris. This avoided clutter, reduced risks of tripping or fire, and kept the site orderly for the following tasks.

3.3.10.5) Safety Coordinator's Oversight until Completion (*Decreto Palchi Compliance*)

Throughout dismantling at “*ex Macello*” venue, the constant presence and supervision of the Safety Coordinator (CSE) were central to maintaining safe operations. This fulfilled the obligations of the ***Decreto Palchi*** (Interministerial Decree, 22 July 2014) and **D.Lgs. 81/2008**, both of which extend safety requirements to the assembly and disassembly of temporary event structures.

Continuous Engagement: The CSE, who had also overseen the assembly, remained formally in charge until dismantling was complete and the site officially closed. He was present daily, and when briefly absent, a qualified deputy covered his role. This ensured that coordination and control never lapsed during the final phase of the project.

Coordination and Planning: Each morning, the CSE held short coordination meetings with team leaders from the stage, scaffolding, logistics, and other crews. They reviewed the day's sequence, risks, and any adjustments. On the second day, for instance, the schedule was reshaped so that scaffolding in Lot 2 was dismantled only after crane work in Lot 1 was finished, reducing overlap and easing supervision. These ongoing adjustments reflected the CSE's duty to keep the Safety Plan up to date as conditions evolved.

Safety Monitoring: The CSE and his team carried out frequent inspections, checking use of protective equipment, respect for exclusion zones, and adherence to planned methods. If something was done out of sequence, such as a scaffolding element being removed too early, the safety officer stopped the work and explained the risk. These moments reinforced discipline and reminded crews why step-by-step methods were in place.

Mediation and Problem-Solving: With multiple contractors sharing the site, conflicts could arise. On one occasion, a stage truck needed to pass through Lot 2 while scaffolding was still being dismantled. The CSE assessed the ground conditions with the remediation engineer, identified a safe route, and instructed the scaffolding crew to pause briefly. His mediation resolved the issue without argument or improvisation, illustrating the importance of a central authority in coordinating shared spaces.

Updating Documentation: When methods had to change (like shifting a crane position in Lot 3) the CSE updated the Safety Plan and the crane company's operating plan, distributed the changes, and supervised their implementation. Even small adjustments were formally recorded, ensuring compliance and leaving a clear trail in the project log.

Authority and Enforcement: Although dismantling proceeded smoothly without serious violations, everyone understood that the CSE had the power to stop unsafe work. This authority, backed by the client, gave weight to his instructions and encouraged immediate correction of minor issues.

Final Verification: At the end of dismantling, the CSE carried out a thorough inspection with the site manager and ASL representatives. They confirmed that no hazards remained, equipment was removed, and the site was safe to hand back. Only then did the CSE close his coordination role in the official record.

The Safety Coordinator's role was more than a legal formality, it was an active presence that guided decisions, solved conflicts, and reinforced safe practices, even as crews grew tired

and eager to finish. Workers themselves appreciated having someone knowledgeable to turn to for guidance.

3.3.10.6) Final Site Clearance and Handover

The dismantling phase at “*ex Macello*” concluded with a systematic clearance of the site and the remediation team responsible for its ongoing management. This step confirmed that all temporary works were removed, the area was safe, and all records were complete, closing the project in an orderly way.

Final Walkthrough: Once dismantling was finished, the Safety Coordinator (CSE) and project manager led a walkthrough of all three lots. Using the inventory checklist, they confirmed that no event structures or materials remained. Temporary warning signs and tape were removed, while permanent safety signs (such as those marking unstable buildings) stayed in place.

Transition to Remediation Control: Immediately after the meeting, the remediation contractor re-established their site security: gates were locked, fences reset, and signage replaced. For a short overlap period, both event and remediation security staff were present to ensure continuity. After that, the site was fully under remediation control.

With this final clearance and handover, every hazard introduced by the event was either removed or made safe, and all stakeholders formally acknowledged the closure. The thoroughness of the process ensured that no residual risks remained such as no open pits, buried cables, or forgotten equipment that could endanger workers or the public.

“*Ex Macello’s*” dismantling ended as it began, with diligence and respect for safety. By formally handing the site back in a secure and orderly state, the project team closed their chapter responsibly, allowing remediation work to continue without interruption.

4) CONCLUSION

This thesis set out to close a critical gap in safety management by creating a practical guide for organizing events within active environmental reclamation projects. In doing so, it makes several key contributions.

First, it develops a structured five-part framework (covering site assessment, preparatory planning, installation, live operation, and dismantling) that translates complex occupational safety regulations into clear, actionable steps. This directly addresses the thesis's original objective: enabling events to be organized in temporary construction environments while remaining fully compliant with occupational safety and health requirements. The framework shows that legal obligations can be met without compromising creativity or public engagement.

Second, the “*ex Macello*” case study in Milan validates the framework in practice. By applying each stage of the guide to a real demolition and remediation site, the study demonstrates that large-scale events can be hosted safely even in challenging conditions, provided strict safety measures are observed. “*Ex Macello's*” unique risks (from unstable structures to contaminated soils) underscore how general safety principles can be adapted to specific local conditions. This case therefore serves as both proof of concept and a detailed example of real-world application.

A further strength of the thesis lies in its integration of Italian and European safety regulations into the event-planning context. The framework is firmly rooted in the provisions of D.Lgs. 81/2008 and relevant EU directives, while also drawing on the Interministerial *Decreto Palchi* (22 July 2014), which extends construction safety rules to temporary stages, fairs, and festivals. Rather than treating these laws as abstract references, the thesis applies them directly to the event scenario, showing, for example, how requirements for risk assessment, fall protection, worker training, and emergency planning translate into event

procedures. The result is a guide that not only ensures compliance but also aligns seamlessly with established legal and technical standards, making it credible to regulators, safety professionals, and event organizers alike.

In sum, the thesis has achieved its goal by producing a realistic safety management blueprint for temporary-site events. It explains what actions are required, demonstrates how they are carried out in practice through the “*ex Macello*” venue example, and distills broad regulatory and engineering knowledge into a focused “instruction manual” for this emerging field. Beyond providing a model for compliance, the research highlights the cultural and urban potential of reusing construction sites for public programming, showing that with careful planning and expert oversight, safety and creativity can coexist.

Ultimately, this work demonstrates that even unconventional venues like construction sites can host safe, successful cultural events when approached with diligence, professionalism, and respect for safety laws. In doing so, it reframes the apparent conflict between construction and public use as a well-managed opportunity a synthesis of regulation, engineering best practice, and real-world pragmatism that can be replicated on other sites.

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