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# SCP VS. SOP: MANAGING H&S ON A CONSTRUCTION SITE

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The main objective of the paper is to suggest proposals likely to facilitate the relationship between the Client and the Contractor/Subcontractors, in order to improve the management of the construction phases with regard to Health & Safety (H&S). It is based on field research in the context of Italian construction. The paper analyzes and compares the content of two documents: The Safety and Coordination Plan (SCP) and the Safety Operational Plan (SOP), with the intent of implementing them in an integrated system managing H&S on construction sites. The comparative analysis recommends several improvements and the optimization of relationships between Client and Contractor, fostering a climate of cooperation and an optimum management of H&S within the construction site.

*Keywords:* Regulations, Health, Safety, Role of client, Role of contractor, Role of subcontractor, Site management.

## 1 INTRODUCTION

Starting from Italian legal requirements regarding the obligations of the Client and the Contractor/Subcontractors, and based on research on case studies and subsequent analysis in the Italian context (Gottfried et al., 2011), this paper reports some considerations designed to facilitate relationships (formal and informal) between the main actors: the Client and the Contractor. Its purpose is not so much to analyze in detail the scenarios found in sites, but rather to provide advice and proposals to raise the culture of safety, especially for Subcontractors, and to reduce the dispute rate among operators of the processes of design, construction, and management (Ciribini et al. 2011).

In the 1990s, Italy acknowledged European directives—in particular, Legislative Decree 494/96 dealing with H&S at the construction site. Its two main obligations are: appointing a Safety Coordinator, and drawing up a Safety and Coordination Plan (SCP), both directed towards the Client. Three years later, Legislative Decree 528/99 established a new obligation, this time directed towards the Contractor/Executor, to draw up a Safety Operational Plan (SOP). This plan, defined as complementary to the SCP, must contain, according to the conditions of the site environment, the following points: Risk assessment, planning of prevention measures, elimination of risks or at least reducing them to a minimum, and compliance with ergonomic principles in work organization and in the choice of tools and machines. In 2008, the whole legislation corpus in the field of H&S was unified in one consolidated act, Legislative Decree 81/2008.

The Italian legislation provides for the appointment of two coordinators, one in the design phase (Design Safety Coordinator – DSC) and the other in the execution phase (Execution Safety Coordinator – ESC) (Legislative Decree 494/96). The first prepares the Safety Coordination Plan (SCP) and the second coordinates the Contractor and Subcontractors in the execution phase, enforcing standards in the field of H&S and the requirements of the SCP. In 1999, the obligation to prepare Operational Safety Plans was introduced, one for each process and made by the Executors. From this obligation arises a kind of dialectic between the above requirements contained in the SCP, elaborated before the achievement without even knowing the nature and capacity of future executors. In fact, this is intrinsic to the real operational procedures with specific choices including the machinery, tools and human resources involved. In short, it is a matter of harmonizing the various SOP with the requirements of the SCP, while transferring everything from the “paper” (static system) into a dynamic scenario as close as possible to the real construction events. Statistics indicate that about 70% of injuries in the construction field are caused by inadequate design, organizational and planning choices; the remaining 30% are due to unexpected events that may occur during the construction phase (INAIL 2013).

Moving into this environment means basically trying to define the “boundaries” within which the “building process” has to move, while taking into account the ontological uniqueness that characterizes the sector (Gottfried et al. 2011). However, this aspect of uniqueness, of understanding the design and construction of building product as a prototype, never equal to itself, is often misunderstood (not always in good faith) as cloaking the sector and indispensability of some uncertainty with respect to error or accident. This underlines the importance of creating a unified process, from design to programming to execution, that can more easily manage the various phases of execution synergistically between Client, Contractor, and Subcontractors.

## **2 SAFETY COORDINATION PLAN (SCP) vs. SAFETY OPERATIONAL PLAN (SOP)**

Table 1 shows a comparative analysis between the instances of the Client and those of the Executors (Contractor/Subcontractors) with regards to the most important aspects (some of our suggestions for improvement are highlighted in bold):

- design and organizational choices
- prevention and protective measures
- operational requirements
- work scheduling
- safety costs
- analysis and risk assessment
- coordination

Table 1. Comparative analysis between the Client and Executors.

CLIENT (SCP)	CONTRACTOR (SOP)
<b>Design and Organizational Choices</b>	
<ul style="list-style-type: none"> <li>Eliminating at least minimizing risks in the site.</li> <li>Prefiguring the plausible scenarios in technical, organizational, and managerial terms.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor: Hypothetical laying out of site organization taking into account the trends of the work coordinating the subcontractors.</li> <li>Executor: Adapting actions to the requirements of the DSC and the Contractor.</li> </ul>
<b>Preventive and Protective Measures</b>	
<ul style="list-style-type: none"> <li>Choosing suitable temporary structural support (i.e., scaffolding, formwork, etc.), machinery and equipment.</li> <li>Choosing collective protection devices and personal protective equipments (PPEs).</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate using of resources (human and material) in function of the real conditions of the context.</li> <li>Coordinating with other Subcontractors involved in the project.</li> </ul>
<b>Operational Requirements</b>	
<ul style="list-style-type: none"> <li>Identifying and describing the chosen operational procedures.</li> <li>Identifying hazards and risks arising as a result of the choices made.</li> </ul>	<ul style="list-style-type: none"> <li><b>Prescribing non-generic instructions (standard), but specific for the site in question.</b></li> <li><b>Always choosing the safest manner of execution even if it incurs higher costs.</b></li> </ul>
<b>Work Scheduling</b>	
<ul style="list-style-type: none"> <li>Scheduling the combination of rhythms of work and protection of workers.</li> <li>Eliminating temporal and spatial interferences between several work projects.</li> <li>Meeting deadlines without compromising safety on site.</li> </ul>	<ul style="list-style-type: none"> <li>Putting their own working cycle in the correct way within the general scheduling.</li> <li>Respecting the interface with the other executors in temporal and spatial terms.</li> </ul>
<b>Safety Costs</b>	
<ul style="list-style-type: none"> <li>Evaluating the safety costs, not subject to downward pressures in the tendering phase.</li> </ul>	<ul style="list-style-type: none"> <li>Taking into account the real needs and conditions of the site in the assessment of safety.</li> <li><b>Not handling the costs at the expense of safety.</b></li> </ul>
<b>Analysis and Risk Assessment (RA)</b>	
<ul style="list-style-type: none"> <li>Analyzing the risks associated with the various processes.</li> <li><b>Assessing risk not only in relation to individual processes (<i>static system</i>), but with reference to all working functions in the contextual conditions in temporal and spatial terms (<i>dynamic system</i>).</b></li> </ul>	<ul style="list-style-type: none"> <li>Analyzing and assessing the risks of their work taking into account the actual conditions (i.e., physical, environmental, circulation, access, etc.).</li> <li>Taking into account the interface with other operators in the site.</li> </ul>
<b>Coordination</b>	
<ul style="list-style-type: none"> <li>Directing relations between the ESC and the Contractor.</li> <li><b>Choosing the Coordinator in the Execution phase (ESC) based on specific skills depending on the nature of the intervention.</b></li> </ul>	<ul style="list-style-type: none"> <li>Coordinating the operational teams of the Executors or Subcontractors.</li> </ul>

### 3 PROPOSALS FOR IMPROVEMENT

At the end of the analysis and research, carried out on documents and management of sites of private and public works, it is possible to make proposals/suggestions for improvements, both in terms of individual items of the SCP and SOP, and in terms of the relationship between the Client (represented by the Coordinator) and the Contractor with his Subcontractors (Gottfried et al. 2011). The proposals are:

- The preparation of the SCP must prefigure plausible operating scenarios and not the generic case, with regards to both the manner of execution and the instruments and means used.
- The risk assessment is useful if it is made with reference to all of the activities planned in the site in the same time period and in spatial terms, and not for individual processes analyzed in their own right.
- In the SOP it is not enough, on the part of the Executor, to describe their routine operating procedures. The coordinator in the Execution phase (SCE) should require an effective coordination with the other Executors within the site.
- The work scheduling to eliminate interference between the various processes should be finalized.
- The Coordinator in the Execution phase (SCE) shall require the updating of the program of work on site, in order to perform a possible new risk assessment in dynamic regime.
- For better management of the site, the various Subcontractors must be informed of the contents of the Safety Coordination Plan in sufficient time to prepare its Safety Operational Plan for the best.
- A proper procedure of daily induction for the operators present in the site should be marked.

### 4 CONCLUSIONS

Some final considerations can be made. Safety management cannot and must not be reduced to a mere application of laws and regulations. In the sites, persistent problems are difficult to solve not only due technical and economic reasons, but mostly due to cultural gaps. In a scenario of globalization of labor, the presence of on-site workers from several countries makes it even more difficult to communicate, and therefore creates the need for enhanced education and training of workers. Certain laws and regulations make it more difficult to manage safety on site because they have obligations that are bureaucratic and not protective for the workers.

Our research findings recommend the facilitation of relationships between the various operators for better protection of workers and significant social impact. In addition to the obvious direct benefit for companies (e.g., fewer deaths or debilitations), reducing accidents in the workplace results in economic benefits in terms of compensation and social costs. It also reduces disputes between the client, the contractor and subcontractors.

If it is not safe, do not do it!

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