

The Safety and Health Construction Coordinators Role in Sustainability

Paper produced by the International Safety and Health Construction Coordinators Organisation (ISHCCO)

Introduction

The Climate Crisis is the biggest threat to the planet and the design, construction, use, reuse and dismantling can have a significant impact on the carbon equation and historically this has often been negative. Whilst what is built, at a macro level is dictated by politicians the details of how buildings and structures are actually design and built is the role of the construction industry.

Whilst carbon and sustainability are not the key focus of the safety and health construction coordinator they should be aware of how design and construction choices can affect the environment and be willing to take part in informed discussions about the environmental impact of the choices that the teams that they work in make. The SHCC also needs to be aware of there are many other pressures on projects.

“Unfortunately, it’s down to cost at the end of the day, but we will always propose different methods and approaches to carbon saving, taking into account whole life cost as well as carbon. It’s not always simple.” Dibaj, S.

ISHCCO believes that the Safety and Health Construction Coordinator (SHCC) as a key professional in the design and construction process can make a significant positive impact on the environmental impact of the project by helping other members of the professional teams to make informed choices. The roles that the SHCC Preparation Phase and SHCC Execution Phase can take are different and are examined below.

As the SHCC is not a discipline specialist the seven Vision Zero Golden Rules can be used as a framework to direct and structure the actions of coordinators.

Vision Zero 7 Golden Rules

Vision Zero has developed seven golden rules that are applicable to any industry and any discipline.

1. Take leadership – demonstrate commitment
2. Identify hazards – control risks
3. Define targets – develop programmes
4. Ensure a safe and healthy system – be well-organized
5. Ensure safety and health in machines, equipment and workplaces
6. Improve qualifications – develop competence
7. Invest in people – motivate by participation

How these might be used by the SHCC to support consideration of the climate impact of construction projects and works.

1. Take leadership

This is the area where the SHCC can bring the most climate benefit. By showing leadership with design teams and site teams the SHCC can steer design and construction decisions to ensure that they are the most sustainable decisions given the other constraints on the project.

2. Identify hazards

Whilst maybe not the best placed to identify 'hazards' to the planet, some simple questions from the SHCC can ensure that climate impact is considered by the design and site teams. The detailed solutions to the challenges will come from the designers supported by the sustainability specialists but the SHCC needs to be willing to ask relevant questions. Asking relevant questions is at the heart of the SHCC role allowing others, with appropriate support to decide the best solutions given the other, albeit less important, factors that have to be considered.

3. Define targets

The informed and knowledgeable SHCC will be able to work with others to ensure that as well as safety and health coordination sustainability is considered when targets are being set.

4. Ensure a safe and healthy system

Ensuring good safety and health construction coordination has a positive impact on the climate as it reduces waste due to errors brought about by poorly organized design or site activities.

5. Ensure safety and health in machines, equipment and workplaces

The SHCC, particularly the preparation stage SHCC, can work with the design team to ensure that sustainability is considered in the design and that structures have the least possible negative climate impact in their construction, use and ultimate demolition.

6. Improve qualifications

The SHCC needs to ensure that they are appropriately qualified or knowledgeable to take part in conversations with clients, designers and contractors about sustainability issues and to help to drive the agenda. As well as ensuring their own capability they need to work to encourage and help others develop their sustainability competence

7. Invest in people

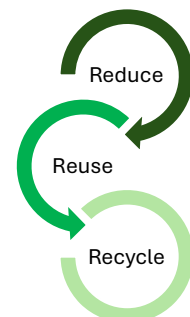
By taking part in conversations about sustainability issues the SHCC gives them credence and allows them to encourage and support others in developing their own understanding of sustainability issues so that they can participate and make fully informed decisions which reflect the climate impact of those decisions.

The SHCC Role

To be able to contribute to these activities associated with the Vision Zero Seven Golden Rules the SHCC will need to be informed. The SHCC is not the sustainability advisor and their role is to consider how good coordination contributes to reducing the impact of design and construction on the climate.

The fundamental principle that should be followed is reduce, reuse, recycle. There is a range of resources discussed at the end of this paper that the SHCC can access to ensure that they are adequately knowledgeable to be an effective part of the team when sustainability is being discussed. A few key points that the SHCC needs to consider and questions that might be asked are expanded below.

A basic fact is that making and correcting errors in design and construction due to poor coordination or other causes has a significant impact on the climate as materials will have to be disposed of or replaced and energy is required to replace them with



new materials. Good coordination in both design and construction will reduce the errors being made and the negative impact on the climate of correcting them.

Disasters, whether man made or natural, can have a significant impact on the built environment and the materials that are damaged and need to be disposed of and their replacement, again, has a significant impact on the carbon that is created and therefore an impact on the climate. Good coordination can ensure that man made disasters do not occur and that structures are not damaged by natural disasters. Consideration of recent disasters: Grenfell Tower fire; Francis Scott Key Bridge strike Baltimore; Californian wild fires; earthquakes in Japan, Taiwan and Chile demonstrates that alongside the human tragedy of these disasters there is a significant impact on the climate

Harming construction workers and other people, whether with occupational diseases or safety related injuries, is not sustainable to the planet. Directly protecting workers from harm is occupational safety and health management, not necessarily the role of the SHCC. Ensuring the members of the public are not harmed by construction work is more closely related to planning and coordinating works

1. What construction processes have a negative effect on the climate

Carbon and embedded carbon – IStructE and other UK work

Poorly planned and coordinated work and poor design can lead to errors which can result in the need to undertake rework – GIRI

“The research and time needed to consider all the different options can delay design processes at times.” Dibaj, S.

2. What construction processes have a positive effect on the climate

Reuse structures or demolish and build new – what does the research say

Recovery of materials – steel

Health and safety implications of hand demolition for recovery as opposed to machine demolition for reuse – falls from height, manual handling, proximity to dusts and their controllability

Cost implications of recovery for reuse v recycle – needs client leadership – client needs to be informed

Reuse of materials – reinforced concrete elements

Reuse of materials – crushed concrete

Recovery/reuse of glass from curtain walling and also windows

Proper consideration of the design loading to reflect the real life loading profile rather than some ‘desired’ loading so that the quantities of materials used in the construction are kept to the lowest level necessary

Night time cooling of buildings

Solar shading

How does the solar gain reduction of modified glasses compare with the impact on the planet of procuring the films/creating the modified glass

“Another area with scope for change is the fact that construction sites are “notoriously bad for running off generators”. “A bugbear of mine is not getting mains connections to site – the cost savings and carbon savings are phenomenal.” Dibaj, S.

The cost issue poses challenges for teams on a regular basis. “You can suggest stuff, but if a client doesn’t want to pay for it, it’s difficult,” he says. “A lot of sustainable and environmental practices are client-driven. “With certain aspects of the design, I might say to the client, ‘It will cost x more but it will save carbon overall’. I’m fortunate to work with a client who is receptive to that.”
Dibaj, S.

3. What substances have a negative effect on the climate

PFAS

Emissions from flammable materials

Fire fighting chemicals – foamers – effect of this consideration on the selection of materials and run off of these and general (contaminated) fire fighting water to the environment and watercourses and any implications of these on the environment (climate)

4. What substances have a positive effect on the climate

PFA/GGBFS as a replacement for OPC but also consider the whole system view related to supply constraints and using the material where it has most benefit – IStructE Paper Consider the selection of materials – switching to timber reduces the resource impact on the environment but what are the implications of the reduction in thermal mass and increase in overall flammability

External wall insulation (EWI) – v – Internal wall insulation (IWI) for improving the energy usage in existing buildings – EWI is supposed to be better as it mobilises the thermal mass of the building and therefore tempers the heating cycle

5. Documenting sustainability choices

Ensure that the Initial Safety and Health Plan records the design decisions that have been made for sustainability reasons so that they are not reversed later in the design process without understanding the consequences

Ensuring that the Initial Safety and Health Plan records sustainability challenges that have not been able to be removed by design so that later design can focus further on trying to remove them

6. Documenting the management of sustainability issues in the Safety and Health Plan

Ensure that the Safety and Health Plan is clear about the choices that have been made to reduce climate impact so that it can be ensured that these are fully implemented and maintained through the construction process

7. Documenting the legacy sustainability issues in the Safety and Health File

Ensure that the Health and Safety File clearly records the design decisions that were made for sustainability so that these are not negated by designers during subsequent construction projects

Where it has not been possible to omit sustainability issues that will affect future projects, ensuring that the Health and Safety File addresses the correct points and is available to others for subsequent SHCC on the structure

8. Climate impact during use

There should not be any sustainability issues in operation as the design of the building should minimise climate change as this is where the most significant benefit or detriment can occur as the building life is in excess of 50 years

9. Ensure effective communication of sustainability issues

Using Level 8 BIM or similar tools to communicate ensures that information is widely available

10. Awareness of ‘greenwashing’

Greenwashing, making environmental claims that can be misinterpreted is something that the SHCC should be aware of when assisting designers or contractors when coordinating the works in each of the phases. The usual situation is that organisations make very particular claims that are then misinterpreted by the users because they do not ‘read the small print’

Resources

UN Sustainable Development Goals
GreenComp and the ISHCCO standard
EC publications from Jose Blanco related to the circular economy and demolition
Franz Weiss ISHCCO research
RO presentation slides on the subject
Vision Zero Guide for the Environment
Consider Institution of Structural Engineers work on the building types and issues – work done to support BSA
UK Carbon calculator
Green Deal
Level 8 BIM (sustainability)
Archaeology??
AI in health and safety supporting identifying processes and products
[AI: 68 ways to sustainable construction - BIM+ \(bimplus.co.uk\)](#)
[Sustainably intelligent: Ai for a greener built world — Pi Labs](#)
Balfour recycling aggregates around M25 – 10 year plan
encord – <https://www.encord.org/> - collective of research organisations in construction
[Interview: Promoting a climate-conscious culture in construction - CIOB People](#)
IStructE
GIRI