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Construction Logistics & Community Safety (CLOCS)

Good practice for designers

Construction Logistics & Community Safety (CLOCS): Good practice for designers

Prioritising safety on all infrastructure projects should be paramount to the design process, and this document describes the approach that Designers should take when developing their designs to include planning for resource and vehicle movements for a construction site to reduce its impact on the road network and local community.

This document was produced in collaboration with expert input from ICE's Safety, Health & Wellbeing and Walking & Cycling Communities of Practice.

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1. Introduction

In 2018, 5,517 pedestrians, pedal cyclists and motorcyclists were killed or injured in collisions with goods vehicles commonly used in construction on roads across the whole of Great Britain - with only 55% in urban areas.

Half of the fatal or serious injury incidents involving heavy goods vehicles were construction-specific (concrete mixers, skip lorries and tippers). Numbers will inevitably double or worse as the essential growth of Active Travel takes effect, needed to help to reduce population ill-health, emissions and congestion. The trauma of each collision indelibly affects many others too - the family, driver, witnesses and first responders.

Clearly, there is a problem – HGVs are consistently killing and seriously injuring more than 10 pedestrians, cyclists and motorcyclists per week. This is a known and persistent fact in the construction industry, and under CDM 2015, Designers have a duty to reduce foreseeable risk.

There is a pressing need to regulate the impact of construction vehicles on UK roads, and prioritising safety on all infrastructure projects should be paramount to the design process. The national Construction Logistics and Community Safety (CLOCS) Standard, developed in 2013 by the construction industry as a response to this problem, is a set of requirements for all parties involved in procuring, delivering and operating construction vehicles and construction traffic, designed to eliminate collisions with vulnerable road users and mitigate the negative community and environmental impacts of construction traffic. It is reviewed and revised every two years.

Given the current Government targets on infrastructure growth, and the industry-wide initiatives to encourage off-site build and modular construction, it is timely to embed strategies into the design process to mitigate the impacts of construction traffic, in the same way that other health and safety impacts are routinely addressed. Over recent years four times as many people have been killed off-site by construction industry logistics than workers onsite. All CDM duty holders, but specifically Designers and Principal Designers, have a unique opportunity to address this known risk using the CLOCS Standard to achieve the following benefits:

- Safer roads for pedestrians and cyclists, seeking to eliminate the possibility of HGV collisions.
- Reduced congestion caused by HGVs, particularly during rush hour and in local hotspots.
- Improved local air quality following a reduction in volume and duration of HGV journeys.
- Reduced embodied carbon contributing to Net Zero targets.

Implementing CLOCS requires the Designers to use forethought as they develop their designs to include planning for resource and vehicle movements to and from a construction site in order to reduce its impact on the road network and local community. As off-site and modular construction becomes a more popular method of building infrastructure, truck movements and unusually large loads are likely

to increase. Planning for resource and vehicle movements also reduces the environmental cost of the construction project.

2. The UK Design Context

Designers in the UK are required to abide by the Construction (Design and Management) Regulations 2015, (CDM 2015) to manage health and safety in construction. They have a professional obligation to ensure that their designs can be built, used, maintained, and eventually demolished without harm to workers, the community and anyone else affected by their designs. The regulations set out the principles of prevention, which are a hierarchy. At the top of the hierarchy, in decreasing order are:

a) avoid risks.

b) evaluate the risks which cannot be avoided.

c) combat the risks at source.

The CDM Regulations place an onus on Designers to eliminate foreseeable risks to any person liable to be affected by construction work (paraphrasing Regulation 9, part 2a).

Regulation 9 part 2(a) states that:

> *(2) "When preparing or modifying a design the designer must take into account the general principles of prevention and any pre-construction information to eliminate, so far as is reasonably practicable, foreseeable risks to the health or safety of any person—*
>
> *(a) carrying out or liable to be affected by construction work".*

Further on, Regulation 9 Part 3 states:

> *(3) If it is not possible to eliminate these risks, the designer must, so far as is reasonably practicable—*
>
> *(a) take steps to reduce or, if that is not possible, control the risks through the subsequent design process.*
>
> *(b) provide information about those risks to the principal designer…*

The CDM Principal Designer has an additional duty, above and beyond that of the Designers, as detailed in Regulation 11, part 1:

> *"The principal designer must plan, manage and monitor the pre-construction phase and coordinate matters relating to health and safety during the pre-construction phase to ensure that, so far as is reasonably practicable, the project is carried out without risks to health or safety".*

3. The CLOCS Standard

The CLOCS Standard is a framework for the risk management of construction logistics that engages planning authorities, construction clients, contractors, and fleet operators who have decided to take responsibility for the huge risk posed to the public in the movement of goods, materials and people in servicing their projects. The Standard covers a wide range of issues including precise urban routing for deliveries, site access/egress, controlled delivery times, HGV driver field of vision, and vehicle safety features. It was developed in partnership with campaigners, trade organisations and businesses from across the sector, initially funded by Transport for London acknowledging and responding to direct action of campaigners in London.

Many places across the UK have similar numbers of fatal and serious injury collisions in proportion to the population size. The CLOCS Standard is applicable across the UK, and in September 2020 a joint letter from the Presidents of the ICE, RTPI, CIOB, APS and Build UK was sent to every Metro Mayor, Local Authority CEO and MP urging countrywide adoption of the Standard. Any planner, construction client, designer or principal contractor can choose to implement CLOCS on individual projects, and many make a corporate public commitment by becoming a CLOCS Champion. Each sign a 'memorandum of understanding' in which they agree to adhere to the CLOCS Standard, with independent assessments on at least 20 percent of their sites initially, with a clear plan to bring the majority of their sites under it within two years.

The long-term aim is for the CLOCS Standard to be ubiquitous across all major construction sites, and all associated construction traffic. Policy makers, procurers and planners are encouraged to:

- Embed the requirement for CLOCS compliance into policy and procurement documents.
- Ensure the planning process requires submission of a construction logistics plan in line with CLOCS CLP guidance that addresses construction traffic impacts.
- Ensure contractors are responsible for their own monitoring and compliance with CLOCS.

- Have in place effective enforcement mechanisms should a breach of standards occur.

Challenges can arise from designers, contractors and clients who do not fully understand the requirements of CLOCS. Therefore, it is essential that supporting materials on CLOCS is readily available to support Designers to meet the Standard.

4. CLOCS in the Design Process

Designers are required to design out and reduce foreseeable risks to anyone affected by the project. Collisions between construction HGVs and members of the public are a known risk with catastrophic consequences and designers must consider these under Regulation 9 of the CDM 2015 Regulations.

It is important that designers consider the transport logistics associated with their project, particularly the journeys involving the transportation of materials and equipment to and from the site but also within the footprint of the construction site. The sooner logistics is considered in the process the more efficient and feasible it is for alternative mode and mitigating measures to be adopted. Traditionally logistics lacks planning and is last minute. It is the responsibility of the client or developer to draw up a Construction Logistics Plans (CLP) (in accordance with the CLOCS standard) and for the contractor to adopt and implement it during the build. The Designers should therefore be cognisant of these issues when considering, among other things, the viability of site location and choice of components and materials.

Using the principles of prevention, the safest journey with the least impact is the one that does not happen (i.e., the risk is eliminated). To this end, an effective technique for engaging with CLOCS is to take measures to reduce the number of vehicle journeys at source.

Where possible, a proportion of materials can be delivered by rail and water freight, and by requesting the use of transport consolidation centres if they exist near the project.

Designers have the ability to design CLOCS considerations into their concept designs, and Principal Designers have a role to ensure that, so far as is reasonably practicable, the project is carried out without risks to health or safety.

In line with the principles of prevention, the intention is to reduce the number of vehicles, particularly HGV movements, through consideration at the design stage. All projects are different and have different and unique considerations and some of the items below may not apply to every project.

Examples of design considerations that could eliminate or reduce the likelihood of HGV collisions:

- Actively designing in space for deliveries and laydown, together with allowing for the establishment of a one-way system on the site so that delivery vehicles need not reverse out of the site onto the public highway.

- Designer optimising cut and fill to eliminate truck movements off site with the spoil and eliminate truck movements on to site delivering new fill (notwithstanding any particular waste requirements / contamination / soil classification and the limitations that may exist)
- Designer choosing to specify a local product instead of a product made far away, reducing the extent of the vehicle movement.
- Designer choosing to use local canals (where available) for transport instead of the road network.
- Designers choosing modular construction or Design for Manufacture and Assemby (DfMA) to include (in the pre-construction information) notice of restrictions, which direct that delivery to take place at night, or outside known periods of traffic congestion.

As Designers and Principal Designers, we may have some influence over the Client's decisions. We could request the Client becomes a CLOCS Champion and encourage the Client to consider:

- Using the tender process to choose CLOCS compliant contractors and sub-contractors.
- Specifying fleet checks and driver checks and training as part of the construction process.
- Recommending traffic routes away from schools, villages and sensitive receptors – use www.CrashMap.co.uk

5. Design stage transport review checklist

Drivers delivering to construction sites should be reminded to be vigilant at all times and to take extra care in dense areas or around vulnerable people. However, with good design choices at pre-construction, designers can have a positive impact on their ability to transport materials, goods, and equipment in a safe and healthy manner, enhancing the wellbeing of the drivers and all other road users. To make this happen, designers are to consider the following items and use as prompts for themselves, the Client, and the Principal Designer:

	Questions for designers to consider and discuss with client and principal designer
1.	Can you specify CLOCS in the Pre-Construction Information report as a client requirement?
2.	Have you hosted a transport review meeting, identifying expected delivery routes, laydown areas, turnaround areas and all other logistics matters (such as congestion periods, other restriction of road movements, other projects in vicinity etc.)?
3.	Can you involve the Client and Contractor in this with early contractor engagement?
4.	Have the designers considered non-road freight as an alternative?

5	Which materials, goods and equipment need the use of HGVs for moving on and off-site?
6.	Once the project is complete, what transport arrangements will be required for the finished asset/structure? Deliveries to site? How frequently? What type of vehicle?
7.	How many truck movements are anticipated?
8.	What vehicle movements occurred on previous similar projects in each of the key phases?
9.	Are there likely to be any unusual or abnormal loads?
10.	Can the project be timed to enable construction or deliveries for school holiday periods, or outside of school hours?
11.	Is there a safe space for trucks to queue on the site, off the public highway, or even in bus lanes in agreement with local councils?
12.	How many trucks can stack up in that area?
13.	What is the area for laydown of plant and materials?
14.	Is there enough space?
15.	Can you bring forward any areas of construction so they may serve as a laydown area earlier on in the project? i.e., specify creation of hardstanding early to provide a larger area for materials storage?
16.	Consider anticipated truck routes into the site (all the way back to point of origin) – identify locations with the most likely risk of collisions (near schools, care homes, cycle routes) by using local knowledge supported by www.CrashMap.co.uk
17.	Does the access route have to pass by schools?
18.	Is there an alternative route?
19.	What is the inter-connected or collective impact of vehicle journeys associated with this project and or other projects?
20.	How might collaboration work between separate projects to avoid excessive collective vehicle movements?

For the Principal Designer in the construction phase, they should check:

	Questions for the Principal Designer to check at construction phase
1.	A Construction Logistics Plan (CLP) exists, and CLP training has been given to all interested parties

2.	Whether the Designer's anticipated truck movements on and off site are addressed in a construction logistics plan
3.	If this is recorded and evidenced?
4.	If any designer recommendations have been followed?
5	Does the Construction Phase Plan consider the traffic routes both off and on-site and reference the CLP?
6.	Are there any design changes, which can be developed to reduce the number of truck movements or routes?

6. Conclusion

Each construction site is different, with its own individual challenges, risks, and hazards, but as discussed in this paper, implementing CLOCS requires the Designers to use forethought as designs are developed to include planning for resource and vehicle movements for a construction site to reduce its impact on the road network and local community.

Applying this logic to your designs, will go a long way to improving safety, not just for construction workers but for all members of the community.

7. References and resources

A detailed list of supporting CLOCS guides is available from the CLOCS website: www.clocs.org.uk/resources.php

The ICE Guidance for Design Risk Management guide is available from the ICE website:

https://www.ice.org.uk/getattachment/knowledge-and-resources/best-practice/design-risk-management/DRM-Guidance-Version-2-March-2020.pdf.aspx

8. Contributors

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