THE PACE OF SPACE

Critical Reading of the Labour Process from the Swiss Construction Site



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THE PACE OF SPACE

theoretical statement, master of architecture 2025

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as english is not our motherthongue, deepl, online cambridge dictionnary and antidote have been used to refine syntax, grammar and spelling.

illustrations - the schemes, diagrams and pictures are original works from the authors.

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The work you are about to read would not have been possible without the precious help of the workers mentioned below.

We have learned about the construction sites thanks to the people who kindly opened their fences. We are also thankful to these construction workers who shared their routine with us, on site, giving us fundamental understanding for our work.

We must thank all others : former interns, architects, insurers, project managers, owners who shared their perspective on the construction industry.

We particularly want to thank Simon Constantin from UNIA, who generously shared his preoccupations and gave us reasons to believe in collective action.

We definitely thank our teaching team, Charlotte Malterre-Barthes and Kathlyn Kao from RIOT as well as Sarah Nichols and Tiffanie Paré from THEMA. These four women helped us sharpen our critical position on the subject.

But also, a tender thanks to Rafael Pichler, who took the time to proofread the text.

Finally, we thank our families who confronted and discussed our stance. They transmitted us the desire to act, react and love.

And a warm thank you to all our friends, with whom we shared our concerns about the construction industry we are supposed to jump in, and our burning living conditions on earth.

FIELD WORK

DATE	WHO	COMPANY/ ORGANISATION	PROFESSION	WHERE	WHAT	MORE INFO
19.07.24	Guillaume de Morsier	Kuník de Morsier	Architect	online	zoom call	initial contacts and ways to approach the subject
12.09.24	Alia Bengana Elsa Cauderay Julien Hosta + participants	Collectif Alentours	Architects architecture students	Lausanne	participatory construction site	off-site construction of straw and earth walls and roofs building parts
29.09.24	Antonios Prokos	OFFICE Kersten Geers David Van Severen	Architect	RTS campus	site visit	
01.10.24	Alia Bengana Elsa Cauderay Julien Hosta	Collectif Alentours	Architects	Grandson	site visit	on-site assembly of the preconstruct building parts
01.10.24	Adrien Comte Adrien Meuwly	Comte/Meuwly	Architects	online	zoom call	reuse on large-scale construction sites
02.10.24	Stéphane Bettex Michel	SUVA	Head of Civil Engineering and Buildings SUVA sector, Civil Engineer Manager, Architect	Lausanne	interview	
07.10.24	Bastien Thorel	Collectif BTP (Bois, Terre, Paille)	Architect	Lausanne, Riponne	interview	bio-sourced materials and participative construction sites
14.10.24	Théo Bellman	labac	Architect	Vevey	interview	"Espace chantier"
25.10.24	Raphael Mudry		EPFL student	EPFL	interview	Orlatti Real Estate
28.10.24	Beatrice	(non-)Swiss Architects	Architect et Phd researcher	online	interview	working condition of architectural workers
01.11.24	Antonios Prokos	OFFICE Kersten Geers David Van Severen	Architect	RTS-campus	site visit	workers traces
08.11.24	Bastien Dubois [redacted]	CCHE	BTP Engineers	Renens	site visit	Q11, Construction site system and organisation
08.11.24	[redacted]	Losinger-Marazzi	[redacted]	Lausanne	site Visit	Biopôle F1
14.11.24	Christophe Haenggeli	Orlatti Real Estate	Maitre d'ouvrage	Orbes	site visit	Gruvatiez Eco-quartier
29.11.24	Constantin Simon	UNIA	union employee, masson sector Génie SIE	Lausanne	interview	Concerns and issues of workers
09.12.2024	[redacted]	[redacted]	Directeur de Travaux senior	Prilly	site visit	[redacted]

FOREWORD

FOR WHOM?

We dedicate this work to architectural workers[1] as bodies taking part in the architecture production chain. It also includes academic architectural workers[2] as we believe it is of pedagogical interest.

This work calls, beyond architectural workers, to all those involved in shaping the built environment. We must recognise all contributor bodies involved in the production of space, from its premise conception to its physical execution, as part of the same operating system. This acknowledgement is a catalyst for change that can only be to our benefit.[3]

We are aware of the accessibility limits of this English text-based research and of our privileged positions. As experienced during our fieldwork, these limits may even be language boundaries. Such gaps can only be bridged by taking the time to build sincere and confident relationships while meeting and interacting with those involved.

Curious minds, this work is also dedicated to you, as we are convinced of its public interest.

1 See labour lexicon
2 See labour lexicon
3 Marisa Cortright, 'Can This Be? Surely This Cannot Be?': Architectural Workers Organizing in Europe, First edition (Prague: VI PER Gallery, 2021), 5.

LABOUR LEXICON

In order to improve accessibility and readability, we hereby define the words and concepts that will be used throughout this work. All notions are either taken from quoted sources or self-interpreted definitions; the latter are marked by a '+'.

NOTIONS AND WORDS

Architectural Object as a Good

> "Within the capitalist regime, all infrastructure or architecture is a commodity like any other, reproduced to generate profit."[1]

Academic architectural workers +

> All workers related within architectural academia through the learning of building, designing or planning. It includes all architecture students, teachers and researchers working within an exploitative academic model, imitating the architectural industrial model.

1 Sergio Ferro, dessin / chantier, Collection école d'architecture de Grenoble (Paris: Editions de la Villette, 2005), 22.

Architectural Workers +

This definition bases upon Marisa Cortright's work.
All workers who identify as architects and workers that are considered outside by its myth, but whose work impacts architecture not only through the design process. This definition aims to redistribute power and acknowledgment to all workers involved with architectural practices.

Bodies +

Individuals dehumanised by the patriarchal, capitalistic system in which they evolve, in order to control them. Here, workers are seen as labour power available for exploitation and further capital accumulation.[2]

Capital

"Buying in order to sell at a higher profit. Capital transforms the simple circulation of commodities. In commodity exchange, one exchanges a commodity for money, which one then exchanges for some other commodity. The circulation of money as capital is an end in itself, for the valorisation of value takes place only within this constantly renewed movement. The movement of capital is therefore limitless. The aim of the capitalist thus becomes 'the unceasing movement of profit-making'.[3]
"The conversion of a sum of money into means of production and labour-power, is the first step taken by the quantum of value that is going to function as capital. [...] The second step, the process of production, is complete so soon as the means of production have been converted into commodities whose value exceeds that of their component parts, and, therefore, contains the capital originally advanced, plus a surplus-value. These commodities must then be thrown into circulation. They must be sold, their value realised in money, this money afresh converted into capital, and so over and over again. This circular movement, in which the same phases are continually gone through in succession, forms the circulation of capital."[4]

Capital composition

"The composition of capital is to be understood in a two-fold sense. On the side of

2 Jackson II Ronald L, 'Bodies', New Discourses, 5 February 2022, https://newdiscourses.com/tftw-bodies/.
3 Dino Franco Felluga, 'General Introduction to Marxism', Introductory Guide to Critical Theory, 31 January 2011, https://cla.purdue.edu/academic/english/theory/marxism/modules/introduction.html.
4 Karl Marx, The Process of Production of Capital, vol. 1, Capital, A Critique of Political Economy (Moscow, USSR: Progress Publisher, 1887), 398,

value, it is determined by the proportion in which it is divided into constant capital or value of the means of production, and variable capital or value of labour power, the sum total of wages. On the side of material, as it functions in the process of production, all capital is divided into means of production and living labour power. [...] I call the former the value-composition, the latter the technical composition of capital."[5]

Capitalism

"An economic and political system in which trade, industry and property are controlled by private owners for profit."[6]

Capital Growth

"It involves growth of its variable constituent or of the part invested in labour power. A part of the surplus-value turned into additional capital must always be re-transformed into variable capital, or additional labour fund."[7]

Capital Accumulation

"The first condition of accumulation is that the capitalist must have contrived to sell his commodities, and to reconvert into capital the greater part of the money so received. [...] The capitalist who produces surplus-value – i.e., who extracts unpaid labour directly from the labourers, and fixes it in commodities, is, indeed, the first appropriator, but by no means the ultimate owner, of this surplus-value."[8]
"As simple reproduction constantly reproduces the capital relation itself, i.e., the relation of capitalists on the one hand, and wage workers on the other, so reproduction on a progressive scale, i.e., accumulation, reproduces the capital relation on a progressive scale [...]. The reproduction of a mass of labour power, which must incessantly reincorporate itself with capital for that capital's self-expansion, which cannot get free from capital, and whose enslavement to capital is only concealed by the variety of individual capitalists to whom it sells itself, this reproduction of labour power forms, in fact, an essential of the reproduction of capital itself. Accumulation of capital is, therefore, increase of the proletariat."[9]

5 Marx, 1:432.
6 Maurice Waite, ed., Paperback Oxford English Dictionary, 7th edition (Oxford: Oxford University press, 2012), 99.
7 Marx, The Process of Production of Capital, 1:432.
8 Marx, 1:398.
9 Marx, 1:433.

Construction workers +

All types of workers related to the construction process. Architects, engineers, apprentices, labourers, and such, i.e. skilled, considered unskilled workers, who are part of the same labour chain.

Fordism

It is a "regime associated with mass production: a focus on unskilled labourers working monotonous tasks on assembly lines."
"Fordism as a firm strategy and shop floor setup, [...] reminds us that assembly lines constitute a very specific way of organising industrial work – one that requires dedicated efforts to mobilise unskilled labourers into the factories and, once there, to keep them working." [10]
"Fordism sees to "train" the unskilled and finds ways to impress on each worker how his or her tiny realm of activity contributed to a formidable collective endeavour." [11]

Heteronormative

"Heteronormativity recognizes heterosexuality as a macro-structural institution, thus, illuminating it as a socially constructed institutional arrangement. Heteronormativity is based on the belief that all persons fall into two opposing but complementary genders (i.e., man and woman). Heteronormative assumptions are widespread and reflected in various aspects of heterosexual privilege, including assumptions that romantic coupling consists of "opposite" sex partners. Chambers (1991: 8) argues that "heteronormativity has a totalizing tendency," citing that power discrepancies become visible when viewed from an anti-homophobic perspective. Heteronormativity assumptions, then, are viewed as socio-political tools that limit persons' ability to pursue non-normative desires and behaviours. Heteronormativity is a power regime."[12]

10 Stefan Link, Forging Global Fordism: Nazi Germany, Soviet Russia, and the Contest over the Industrial Order, Paperback edition, America in the World (Princeton Oxford: Princeton University Press, 2023), 6.
11 Link, 33.
12 Cindy Brooks Dollar, 'Does the Use of Binary Indicators Reify Difference and Inequality?', Women's Studies Inernational Forum 61 (2017): 9–13.

Human capital

"The stock of knowledge embodied in the relevant labour force and the health status of that labour force." [13]

Labour

Since the late 14th century, it is linked with "the exertion of the body: trouble, difficulty, hardship."[14] Practical work, especially when it involves hard physical effort. [15]
"In capitalist society, gold and then paper money become 'the direct incarnation of all human labour'." [16]

Labourer

Since the mid-14th century known as, 'manual worker', or as a 'member of the working class, member of the lowest social rank'. [17]
Sergio Ferro argues that the labourer is technically quartered between the artisan's autonomy and the empty availability of the industrial worker; the labourer seems to be the serf of the production branch. [18]

Labour division or the division of labour

"The way that different tasks are apportioned to different people in a given society. According to Marx and Engels, 'How far the productive forces of a nation are developed is shown most manifestly by the degree to which the division of labour has been carried'. [19] It is hence crucial to have a detailed and clear hierarchy at every step of the process." [20]

13 Linda Clarke, 'Valuing Labour', Building Research & Information 34, no. 3 (May 2006): 2, https://doi.org/10.1080/09613210600635176.
14 Douglas Harper, 'Labour', online dictionary, Online Etymology Dictionary, accessed 8 December 2024, https://www.etymonline.com/search?q=labour+.
15 Cambridge Dictionary, 'Labour', online dictionary, Cambridge Dictionary, accessed 8 December 2024, https://dictionary.cambridge.org/dictionary/english/labour.
16 Felluga, 'General Introduction to Marxism'.
17 Douglas Harper, 'Labourer', online dictionary, Online Etymology Dictionary, September 2017, https://www.etymonline.com/word/labourer.
18 Ferro, dessin / chantier, 29.
19 Felluga, 'General Introduction to Marxism'.
20 Ferro, dessin / chantier, 28.

Labour power

"The abstraction of human labour into something that can be exchanged for money. The relation of labour-power to the actual labour of a private individual is analogous the relation of exchange-value to use-value. The system of labour-power relies on the belief that the labourer chooses freely to enter into a contractual relationship with an employer, who purchases that worker's labour power as a commodity and then owns the goods produced by that worker. However, the worker is exploited insofar as he has no other option: the capitalist owns all the means of production. Also, the capitalist seeks to achieve the highest possible rate of surplus-value, which 'depends, in the first place, on the degree of exploitation of labour-power'. The capitalist seeks to provide the labourer only enough money to subsist and to produce more labourers (through childbearing)." [21]

Labour process

"The labour process is seen more specifically as the process whereby labour is appropriated subsumed and consumed within the production process." [22]

Manufacture

"It is the collective workers, formed by the many individual workers, that constitute the specific mechanism of the manufacturer period." [23]

Money or the Money-form

"The commodity chosen to function as the universal equivalent for all other commodities." [24]

Operation Site +

It is a term differing from the classical construction or building site. It pushes towards constructing less or even not at all. On the operation site, all kinds of interventions to adapt or transform the usages and the space may be done.

21 Felluga, 'General Introduction to Marxism'.
22 Linda Clarke, Building Capitalism: Historical Change and the Labour Process in the Production of Built Environment, Routledge Revivals (London: Routledge, Taylor & Francis Group, 2011), 2.
23 Ferro, dessin / chantier, 29.
24 Felluga, 'General Introduction to Marxism'.

Outsource

"Arrangement for work to be done outside of the company, often in other countries for cheaper costs." [25]

Skill

Refers to the labour process: "a theoretical concept originating from Marx's theory of surplus value, summarised by Linda Clarke", listed above. [26]
"Skill is often an ideological category imposed on certain types of work by virtue of the sex and power of the workers who perform it." [27]
"The common British notion of skill, as the ability, usually physical, to fulfil a particular task or activity in the workplace in order to produce a given output, can be traced from the eighteenth century, from Adam Smith through Ruskin to Braverman. It is a peculiarly Anglo-Saxon notion, used in a similar way to 'know-how' and 'technique', the worker with 'skill' being understood to possess know-how appropriate to the task in hand." [28]
Harry Braverman describes the notion of skill as "a combination of knowledge of materials and processes with the practised manual dexterity required to carry out a specific branch of production." [29]

De-skilling

Braverman argues, that "increased mechanisation would lead to a loss of skill in the workforce due to 'de-skilling' through the fragmentation of tasks, and decreasing knowledge required for their implementation, associated with assembly line production. This again relied on narrow definitions of skill and craft as attributes of individual workers so that skill was regarded as physically rather than socially determined." [30]

25 Waite, Paperback Oxford English Dictionary, 509.
26 Christine Wall, An Architecture of Parts: Architects, Building Workers and Industrialization in Britain, 1940-1970, Routledge Research in Architecture (London New York: Routledge, 2013), 4.
27 Linda Clarke and Christine Wall, 'Skilled Versus Qualified Labour: The Exclusion Of Women From The Construction Industry', in Class and Gender in British Labour History: Renewing the Debate (or Starting It ?), Davis, M. (Pontypool: Merlin Press, 2010), 1.
28 Clarke and Wall, 1.
29 Clarke and Wall, 2.
30 Wall, An Architecture of Parts, 10–11.

Workers

Since the mid-14th century, 'labourer, toiler, performer, doer,' agent noun from work. Since 1848, then used as 'one employed for a wage,' .[31]

TECHNICAL DEFINITIONS

BIM

"Building information modelling is the holistic process of creating and managing information for a built asset. Based on an intelligent model and enabled by a cloud platform, BIM integrates structured, multi-disciplinary data to produce a digital representation of an asset across its lifecycle, from planning and design to construction and operations." [32]

Base-vie

It is a temporary structure used to host and protect all site workers and supervisors during the construction period.[33] Its prefabricated form appeared 70 years ago, for the well-being of workers on site, allowing some heat .[34]

CAD

"Computer-aided design is the use of computers in the design process across a wide range of different industries. It is primarily used to create highly accurate 2D and 3D models, but CAD covers all steps in the design process, from creation and modification to analysis and design." [35]

DT

Direction de Travaux: known in English as Construction Management (CM). It involves the supervision and coordination of all project-related activities, from design

31 Douglas Harper, 'Worker', online dictionary, Online Etymology Dictionary, 28 September 2017, https://www.etymonline.com/word/worker.
32 Autodesk, 'Building Information Modeling', Autodesk, accessed 4 December 2024, https://www.autodesk.com/solutions/aec/bim.
33 Deltamod, 'Qu'est ce qu'une base vie de chantier?', Occamod, accessed 5 December 2024, https://occamod.com/base-vie/.
34 Algeco, 'Plus de 70 ans de leadership - Algeco', Algeco, accessed 6 December 2024, https://www.algeco.fr/plus-de-70-ans-de-leadership.
35 3dsourced, 'What Is CAD? Definition, Advantages and Uses Explained', 3dsourced, 20 February 2024, https://www.3dsourced.com/guides/what-is-cad-guide-modeling/.

to commissioning. The team is responsible for managing the project, planning tasks and ensuring that work is completed on time and within budget .[36]

LAA

Loi sur l'assurance-accidents: federal accident insurance law, constitutional object designed to establish rules about accidents, injuries and reimbursement. [37]

OPA

Ordonnance sur la Prévention des Accidents: a legal document of the Swiss Confederation dictating rules about accident and disease prevention.[38]

SUVA

Schweizerische Unfallversicherungsanstalt or *Caisse Nationale Suisse d'Assurance en cas d'Accidents*: national Swiss insurance fund essential for the Swiss social insurance system. It acts in a preventive fashion, caring for safety and health protection at the workplace.[39]

UNIA

Biggest interprofessional workers union of Switzerland. Represents salaried workers, stands/fights for salary equity and social justice. [40]

SECO

Secrétariat d'État à l'économie: the Swiss Confederation's competence centre for economic policy issues. Its aim is to ensure sustainable economic growth, a high level of employment and fair working conditions.[41]

36 Mathieu Guillbaud, 'L'explication - Direction de travaux', DGPI (blog), 10 July 2024, https://actualite.dgpi.ch/actualite/.
37 Secrétariat d'État à l'économie SECO, 'Prévention des accidents et des maladies professionnelles', accessed 4 December 2024, https://www.seco.admin.ch/seco/fr/home/Arbeit/Arbeitsbedingungen/gesundheitsschutz-am-arbeitsplatz/Verhuetung-Berufsunfaelle-Berufskrankheiten.html.
38 SECO.
39 SUVA, 'Vision, mission et valeurs de la Suva', SUVA, 2024, https://www.suva.ch/fr-ch/autoportrait/la-suva/vision-mission-valeurs-code-de-conduite.
40 UNIA, 'Unia, le plus grand syndicat de Suisse – Unia, le syndicat', UNIA, accessed 4 December 2024, https://unia.ch/fr/.
41 Secrétariat d'État à l'économie SECO, 'Portrait du Secrétariat d'État à l'économie', accessed 16 December 2024, https://www.seco.admin.ch/seco/fr/home/seco/seco_portraet.html.

INTRODUCTION

WHY ? - situating our work

We are two women involved in space production. This work reacts to our position as students and (future) architectural workers. It also answers to our everyday experience of Lausanne's rapid urban development.

We address the omitted question of our learning on how visions and drawings are truly materialised. What do we fear? We witness how we still design for the elite[1] forgetting who carries out those projects. While we recognise the contribution of evolving learning contents on material production processes and how design impacts their (re)use, we lack understanding on the conditions of their implementation. But the way space is designed mingles inevitably with labour and working conditions on operation sites.

> "You are the expert, the designer; the lines you draw upon a plan, the models you spend all night crafting, the clean walls and sleek marble floors are cathedrals of your own imagination constructed by invisible and unrecognised hands. Construction killed that purified imagination." ***- Namita Dharia, The Industrial Ephemeral. -***

These burning questions of labour on operation sites seem not to be architects' responsibilities. Architect Zaha Hadid, speaking about workers' deaths on Qatar's 2022 World Cup construction sites, said: "I have nothing to do with the workers [...]. I'm not taking it lightly but I think it's for the government to look to take care of. It's not my duty as an architect to look at it."[2]. Is it not our responsibility as witnesses and stakeholders of the same industry?

1 Namita Vijay Dharia, The Industrial Ephemeral: Labor and Love in Indian Architecture and Construction, Atelier : Ethnographic Inquiry in the Twenty-First Century 7 (Oakland, California: University of California Press, 2022), 15.

2 Markus Fairs, 'Preventing Migrant Deaths in Qatar "Not My Duty as an Architect" Say Zaha Hadid', Dezeen, 26 February 2014, https://www.dezeen.com/2014/02/26/qatar-zaha-hadid-stadium/.

Architects' profession distances itself from construction realities in part by spreading the vision of a passionate artist-scientist working for the common good, claiming space design as social problem solving. This vision is the so-called myth of the architect. However, it mainly results in accepting bad working conditions. We heard and experienced all these none-paid working hours, overwork and miserable intern policies. These are proofs of "passionate" architects working within an exploitative process under capital's will. We are workers producing surplus value subjected to neoliberal pressure.[3]

What's more, we must situate architecture and architects within the construction industry, as all labour is embedded along its production chain.

> "We can only have a more fulfilling, less passive, and more disruptive role in capitalism if we don't think of construction and labour as conceptual 'others' of architecture, and, I would add, embrace its production chains." ***- Peggy Deamer, Architecture and Labor. -***

Neglecting the production chain erases the knowledge network on which design relies on.[4] This understanding is a primer to a wider dialogue and solidarity between construction industry workers.[5]

> "In what type of space might we imagine a conversation taking place between an architect, construction manager, construction worker and historian? Would the conversation take place in an office, or a school, or an installation, or a construction site? What sorts of questions should we raise? And how could one conversation lead to another conversation that begins to make connections and transform hierarchies to become part of a collaborative process that recognises and protects the dignity of all forms of labour ?" ***- Swarnabh Gosh, Toward a Critique of Labor in Construction. -***

We also respond to our daily experience of Lausanne with its multitude of cranes and trucks, fences and billboards promising highly desired spaces. Cranes pop out every day in front of our balcony to constitute the landscape of Lausanne's suburbs. EPFL campus, as well, is a continuous construction site. We count in Lausanne 2'000 registered construction workers for 600 worksites[6] from all types. Lausanne's agglomeration seems to experience an unprecedented population boom. How many people are expected? How many enterprises and start-ups? Does anyone know? Or are we only speculating to

3 Marisa Cortright, 'Can This Be? Surely This Cannot Be?': Architectural Workers Organizing in Europe, First edition (Prague: VI PER Gallery, 2021), 7.
4 Dharia, The Industrial Ephemeral, 16.
5 Swarnabh Gosh, 'Toward a Critique of Labor in Construction', in Non-Extractive Architecture: On Designing without Depletion, Space Caviar, vol. 1 (Sternberg Press, 2021), 160, https://www.sternberg-press.com/product/non-extractive-architecture-vol-1/.
6 Simon Constantin, UNIA Interview, oral, 25 November 2024.

create need? This construction landscape was once projected and drawn by planners, developers, economists, engineers and architects.

Very recently, on 12th July 2024, 3 workers died, 5 were gravely injured and 6 were slightly injured because of a scaffolding collapse on a construction site in Malley[7]. As a construction worker explains, pace on site seems to be an issue. "There are always so many things to do at the same time, and very tight deadlines, it is impossible to always follow the rules. Even in Switzerland."[8] . This event made the precarity of the construction industry in Switzerland public, showing that the industry relies mainly on body use and only moderately on automation.

Lausanne's agglomeration follows the PALM, Lausanne-Morges Agglomeration Plan, which coordinates the development of urbanisation, infrastructure and energy. At the time of this text's writing, 300'000 individuals are living in the agglomeration, and 75'000 more are expected for 2030[9].

We need to widely understand the social and environmental impact of design, to see further and question beyond.[10] Where to act? How to act? From our situation, we address our direct environment to better position ourselves. During this research, we realised the importance and possibility of joint action. We believe in architectural practices attentive to problematize political situations in order to propose (architects) tools as means of resistance.

For instance, profit is made on from workers labouring under harsh conditions, such as long working days, adverse weather conditions, heavy physical work, precarious contracts, skill erasure and so on. Their improvements are a way to slow down capital's production based on land grabbing from material extraction to the construction plot.[11]

7 État de Vaud, 'Accident mortel sur un chantier à Prilly – dernier point de situation', État de Vaud, 16 July 2024, https://www.vd.ch/actualites/actualite/news/i-accident-mortel-sur-un-chantier-a-prilly-dernier-point-de-situation.
8 Margaux Habert, 'Echafaudage à Malley: «Il aurait pu y avoir plus de morts»', watson.ch/fr, 15 July 2024, https://www.watson.ch/fr/!239974251.
9 palm, 'Ouest lausannois', palm-Agglomération Lausanne-Morges (blog), accessed 15 December 2024, https://lausanne-morges.ch/.
10 Charlotte Malterre-Barthes, ed., On Architecture and Greenwashing, The Political Economy of Space, Vol. 1 (Berlin: Hatje Cantz, 2024).
11 Les Soulèvements de la Terre, ed., Premières secousses (Paris: la Fabrique éditions, 2024).

WHAT IS IT ALL ABOUT ?

This work investigates the labour process applied and carried out in the Swiss construction industry by looking from the construction sites through the lens of production pace. How does pace submit workers to the construction industry? And what form does this time pressure take on the site, is it only a financial one?

The construction sites we investigated aim to represent Switzerland's critical building mass. These observations in a Swiss context aim to address the construction industry as a whole.

As the outcome of this work, we aim to grasp where and how we can act as architectural workers to enhance potential solidarity among construction workers who are part of the same labour chain. We ask ourselves how is the labour process organised to erase solidarity and ensure capital making from site to design?

METHODOLOGY

RESEARCH PROCESS

We met owners, engineers, architects, electricians and so on, and went on 5 different construction sites. We recognise that every worksite, over and above its legal organisation, encompasses relationships between actors defining different ways of the worksite's experience and perception. Behind the fence, we extracted stories from our fieldwork. We asked them to uncover common dynamics and address systemic issues, instead of isolating testimonies and pointing out individuals. These gathered and transmitted narratives call for more. In the meantime, we carried out theoretical research, reviewing existing literature on the subject.

We mainly heard men voices during our fieldwork and only came across 4 women out of the 18 people we met. We mainly saw men while observing construction sites and the few women were part of the construction direction or apprentices. Data shows even lower statistics with only 10% of women in the construction sector[1] and 2% of women construction workers for France[2], as neighbouring country due to the lack of Swiss data.

We highlight the absence of women, or maybe the over-representation of men.

1 Luiza Maria Maniera, 'Une tendance positive ontinue: plus de femmes dans la construction', Société Suisse des Entrepreneurs, 4 October 2023, https://baumeister.swiss/fr/une-tendance-positive-continue-plus-de-femmes-dans-la-construction/.

2 FFB Nationale, 'Le bâtiment se construit aussi au féminin', Fédération Française du Bâtiment, 8 March 2023, https://www.ffbatiment.fr/actualites-batiment/presse/journee-de-la-femme-2023.

OUTPUT STRUCTURE

This research functions as zoom-in content. Beginning by looking globally at the Swiss construction industry, we will then enter the construction site while progressively revealing labour from the worker's body scale.

The understanding of the Swiss construction industry will be done through a set of synthetic diagrams. We will then enter the site by putting on paper hidden narratives and testimonies from the construction sites. These testimonies are extended by a theoretical discussion. Pictures, taken by us, are used as memory depictions.

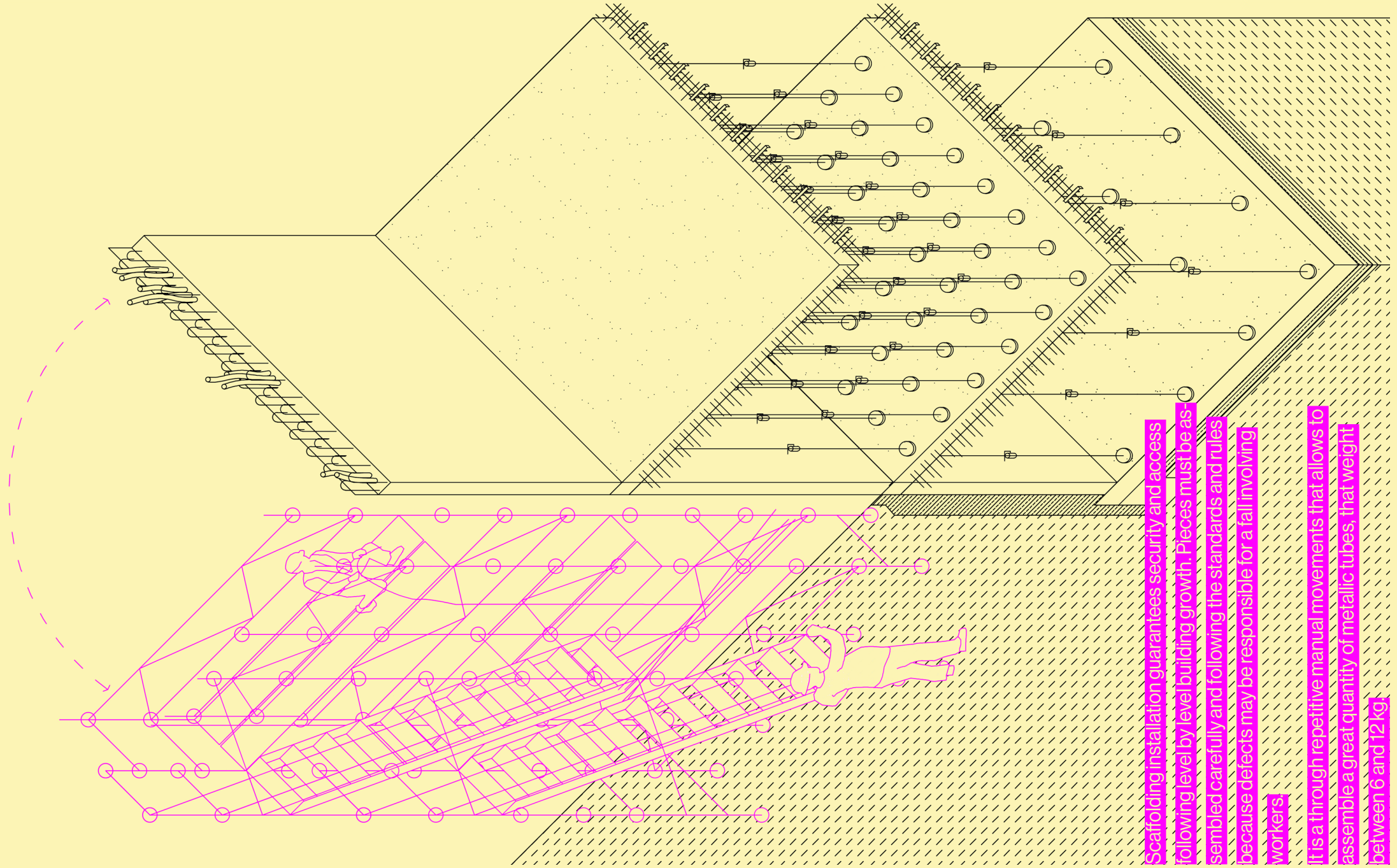
All construction workers we met on site and all pictures from construction sites have been anonymised for confidentiality. All quotes, which you will find intertwined in the text, are translated from their original language, French or Spanish, and are not kept in this final output.

Labour from the worker's body scale will punctuate these stories, through the architectural tool of the drawing, to dig and reveal labour. It describes the execution of the very basic detail of a building, an all-integrated concrete slab. To reach our peers, we use CAD techniques to draw, although we are looking for new representation methods which favour questioning over precision. Nowadays CAD is still the most diffused technique of graphical representation, providing us credibility and clarity to our arguments. It is also the major technique which has been taught to us throughout our curriculum.

1. the scaffolding

This series of axonometric drawings discloses the labour behind a concrete slab integrating the pipe network.
The duration of successive labourers' interventions on a site is fixed in advance by establishing a schedule.

LABOUR ON THE CONCRETE SLAB



Scaffolding installation guarantees security and access following level by level building growth. Pieces must be assembled carefully and following the standards and rules because defects may be responsible for a fall involving workers.

It is a through repetitive manual movements that allows to assemble a great quantity of metallic tubes, that weight between 6 and 12 kg.

SWISS CONSTRUCTION APPARATUS

CONSTRUCTION INDUSTRY SYSTEM

The construction industry generates around 10%[1] of the Swiss GDP, which is equal to the financial sector's contribution[2]. The industry generated nominal sales of 23.4 billion francs in 2023[3], making it one of the biggest capital makers of Switzerland.

It employs 10% of the Swiss working population, with over 325'000 workers[4]. The industry faces a labour shortage since 2000, while the industry's capital keeps growing[5].

Capital is invested on Land with the intention of valuing it. The goal is reached through the project and its production process, and by paying workers and materials. The cheaper they are, the bigger is the plus value.

The graphic works as a timeline divided between on-site and off-site features highlighting the loop effect of capital investments.

1 Luiza Maria Maniera, 'Le secteur de la construction : un moteur important de l'économie et du marché du travail', Société Suisse des Entrepreneurs, 10 January 2022, https://baumeister.swiss/fr/le-secteur-de-la-construction-un-moteur-important-de-leconomie-et-du-marche-du-travail/.

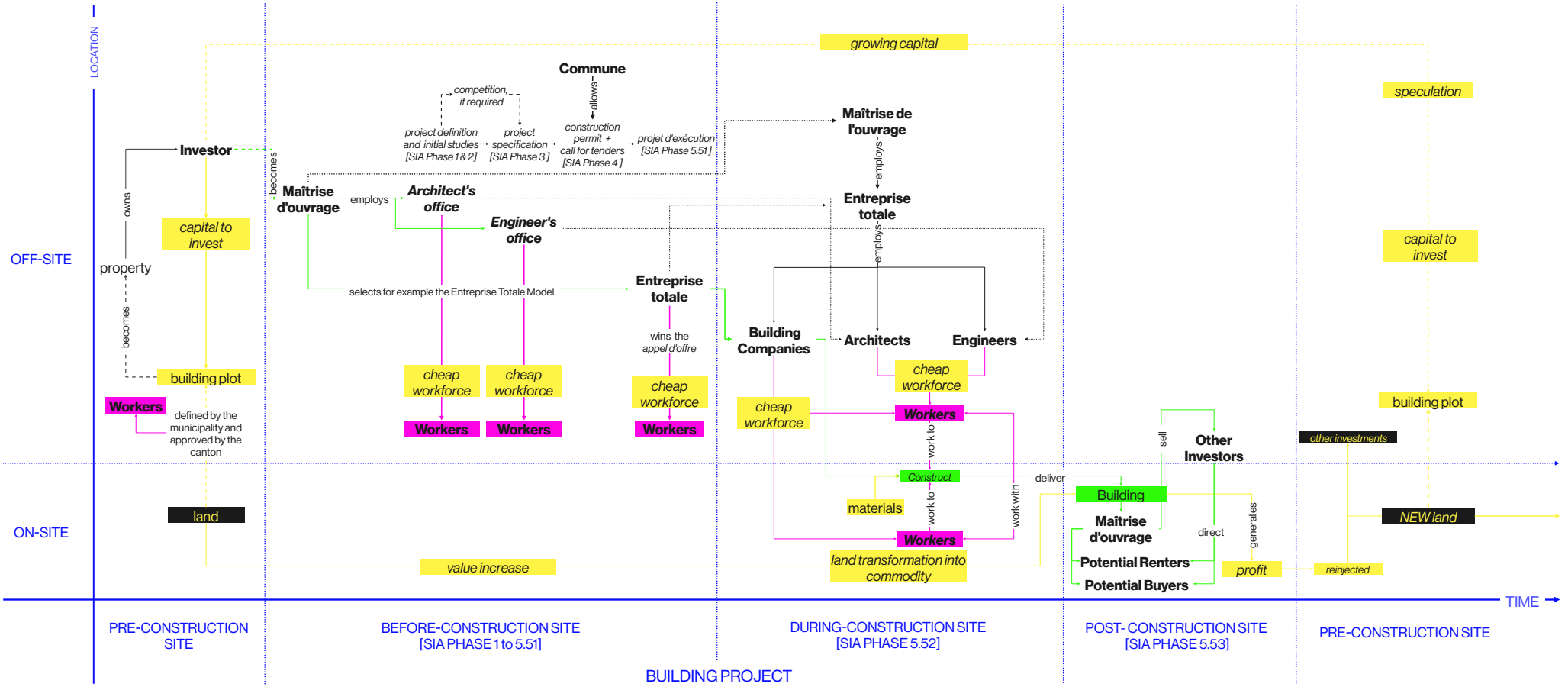
2 Sebastian Schultze, 'Le secteur financier, un pilier de l'économie suisse', La Vie économique, 8 October 2024, https://dievolkswirtschaft.ch/fr/2024/10/le-secteur-financier-un-pilier-de-leconomie-suisse/.

3 Martin Maniera, 'Chiffre d'affaires 2023', Société Suisse des Entrepreneurs, 28 February 2024, https://baumeister.swiss/fr/apres-une-bonne-annee-2023-2024-sannonce-decisive-pour-la-construction-de-logements-et-dinfrastructures/.

4 Luiza Maria Maniera, 'Les évolutions du secteur de la construction', Société Suisse des Entrepreneurs, 19 April 2022, https://baumeister.swiss/fr/il-va-de-lavant-depuis-125-ans-les-evolutions-du-secteur-de-la-construction/.

5 Simon Constantin, UNIA Interview, oral, 25 November 2024.

CONSTRUCTION INDUSTRY SYSTEM



DEFINITIONS

CO

code des obligations

CN

national convention

CTT

convention collective du travail

CSAA

mandat du groupe de coordination des statistiques de l'assurance-accidents

LSA

Suva, assureurs privés assujettis à la loi sur la surveillance des assurances

SSAA

Service de centralisation des statistiques de l'assurance-accidents

Path of capital investment

Worker's importance throughout the system

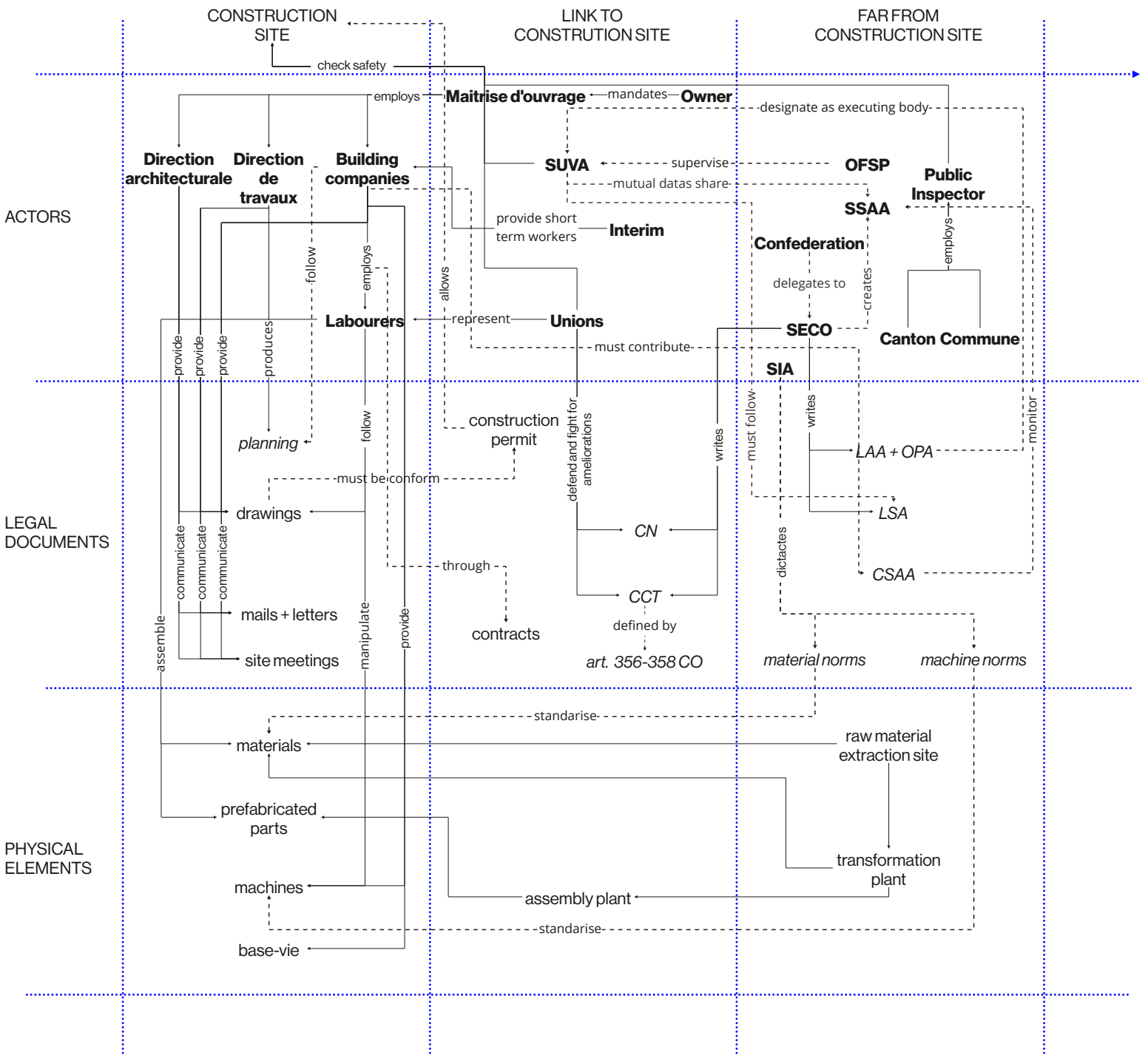
Path of the building project project

CONSTRUCTION SITE WEB

The construction site, tied to its site, highly relies on ephemeral features, such as workers or materials, while being extensively controlled by protocol procedures.

The graphic is working as a double entrance system and is to be read from left to right as a zooming-out of the construction site. This diagram depicts the links between the actors, site, physical elements and documents, highlighting the complexity of a construction site

CONSTRUCTION SITE WEB



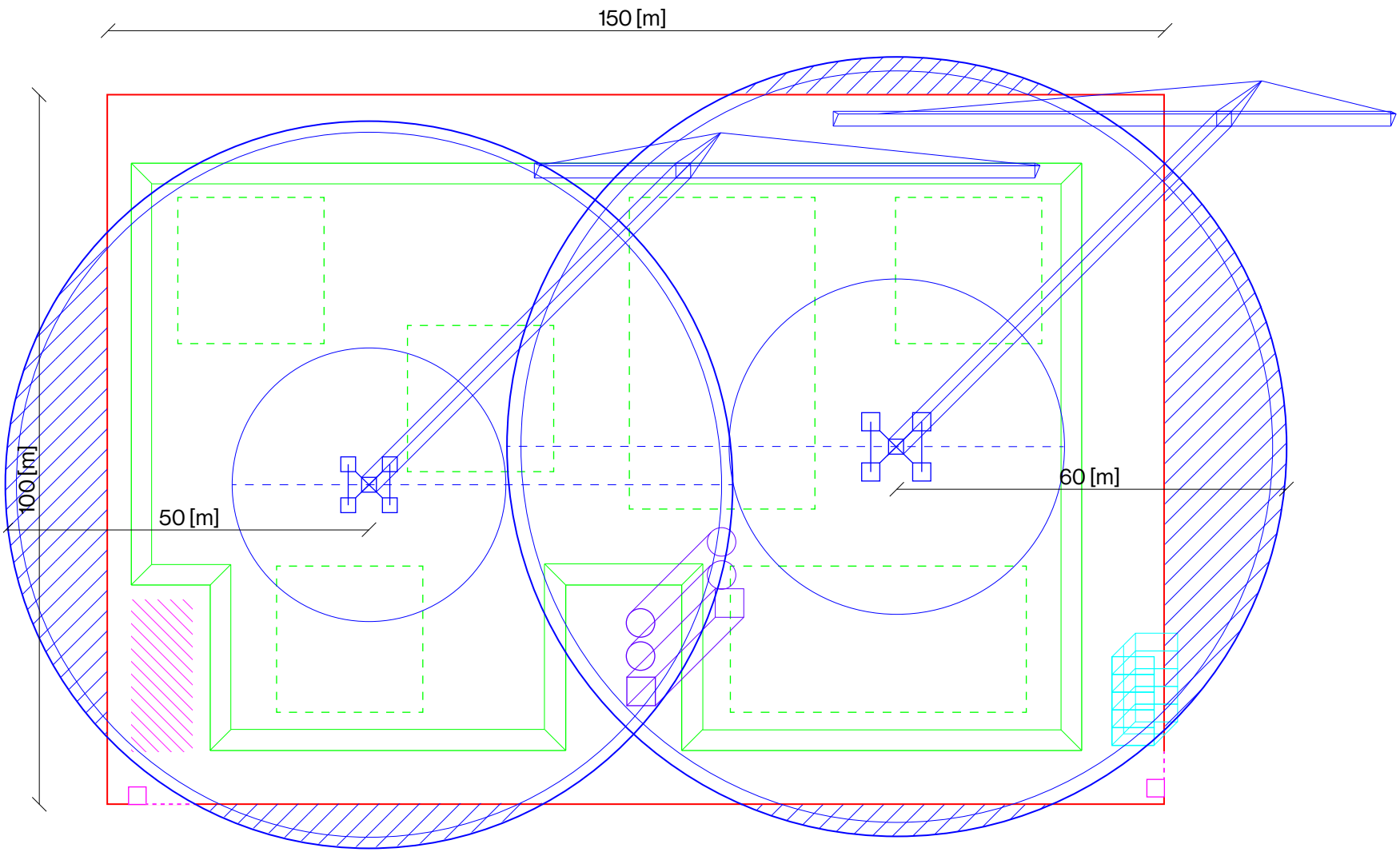
CONSTRUCTION SCALES

The construction sites are enormous working sites losing their relationship with human scale and constituted of one building design then often reproduced with light design changes to adapt uses and plot shapes. Each of these buildings encompasses hundreds of details drawn, calculated, verified, made and assembled by hundreds of hands.

Zones and elements of the construction site are usually gathered and organised through a logistic plan: documents used by construction site management to establish upstream the position of machines such as cranes, concrete plants, *bases-vies*, the arrival area of trucks and materials and the entrance for pedestrians.

The graphic tries to reduce these construction site scales: a 150x100 m fenced plot, often 2–3 cranes, would be used, the base-vie lying next to the entrance gives body dimensions

CONSTRUCTION SITE WEB



fence

crane

prohibited load

concrete plant

underground parking

building

entrance -
security check

delivery zone

x 6 [m]
2,5

base-vie

A PRODUCTION SPACE

Construction sites are anchored within a territory. It means some steps cannot be exported to Global South countries, which is what industries usually do to reduce costs and outsource 'redundant work'. Construction workers are the ones moving through migration dynamics.[1] The constructors will promise higher wages compared to 'countries of origin', but with short-term contracts.[2]

To construct, enormous amounts of materials are needed. Capitalism bases upon what Jason Moore calls 'cheap nature'[3], it allows to displace materials from remote production sites, even though it may involve labour injustices or material exhaustion.[4] As Jane Mah Hutton writes: "Materials [...] are the primary units of landscape construction, specified, acquired, and assembled into new forms. They range [...] from raw to highly processed, from locally handcrafted to industrially produced and shipped around the globe."[5]

The construction site is a place of production, where buildings are raised. Workforce and materials are needed for its completion. In fine materials like workers come from all around the world . Both become commodities necessary for the construction industry.[6]

1 Pedro Fiori Arantes, The Rent of Form: Architecture and Labor in the Digital Age, trans. Adriana Kauffmann, Buell Center Books in the History and Theory of American Architecture (Minneapolis: University of Minnesota Press, 2019), 138.
2 Kadambari Baxi et al., Who Builds Your Architecture?: A Critical Field Guide | Who Builds Your Architecture? (WBYA?), MTWTF (New York, 2017), 5, http://whobuilds.org/who-builds-your-architecture-a-critical-field-guide/.
3 Capitalism in the Web of Life, Jason W Moore, Other Voices, Other Choices, 2016, https://www.youtube.com/watch?v=E92w0WczYUw.
4 Jane Mah Hutton, Reciprocal Landscapes: Stories in Material Movement (London ; New York: Routledge, Taylor & Francis Group, 2020), 211.
5 Hutton, 211.
6 Baxi et al., Who Builds Your Architecture?, 58.

Drawings too are progressively outsourced to optimise pace and reduce costs. If in the Middle Ages drawings were drawn on site , drawings exited it during the Renaissance.[7] With the advent of the internet, CAD drawings can be done around the globe by hiring draughtspersons.[8]

The construction site still aspires to follow an optimised Fordist form of production, where division of labour is seen. This means to divide workers in a chain of production through specific tasks.[9] But also, to coordinate the site, to allow space optimisation, increasing construction productivity.[10] Coordination may take the form of installations or logistic drawings realised before the construction's start and renewed depending on its state to minimise risks.[11] Division of workers is also spatial, for example, through the *base-vie* space allocated to each employer and avoiding any communication within workforces, hence protecting hierarchical order.[12]

However, applying Fordism on a construction site is undoable. A construction site is enormous, always moving, as we heard from a building insurance company: "The industrial entity, the industry, [...] it's much simpler, [...] it has its headquarters, it's fixed, its machines are fixed. [...] Nothing moves. A construction site is like an anthill [...]. It's always changing.[13"14]. A building site is a laboratory of experimentation ; it is complex and diverse. By having many industries overlapping with different services and occupations, control is hard.[15] Construction sites are ephemeral states that shape productivity and social relations. Ephemerality produces economic and spatial precarity for workers that benefits capital.[16] The construction site needs to be a flexible form of production, raising new possibilities of operation sites.[17]

7 Éthique et architecture, Video youtube (Grenoble, 2018), https://www.youtube.com/watch?v=Dc-HQkx-U1tU.
8 Arantes, The Rent of Form, 99.
9 Sergio Ferro, dessin / chantier, Collection école d'architecture de Grenoble (Paris: Editions de la Villette, 2005), 28.
10 Arantes, The Rent of Form, 135.
11 Arantes, 107.
12 Ferro, dessin / chantier, 47.
13 Michel Duinker and Stéphane Bettex, SUVA Interview, oral, 2 October 2024.
14 "L'entité industrielle, l'industrie,[...] c'est beaucoup plus simple,[...], elle a son siège, il est fixe, ses machines sont fixes. [...] Il n'y a rien qui bouge. Un chantier, c'est une fourmilière [...]. Ça évolue tout le temps."
15 Swarnabh Gosh, 'Toward a Critique of Labor in Construction', in Non-Extractive Architecture: On Designing without Depletion, Space Caviar, vol. 1 (Sternberg Press, 2021), 164, https://www.sternberg-press.com/product/non-extractive-architecture-vol-1/.
16 Namita Vijay Dharia, The Industrial Ephemeral: Labor and Love in Indian Architecture and Construction, Atelier : Ethnographic Inquiry in the Twenty-First Century 7 (Oakland, California: University of California Press, 2022), 8–9.
17 Arantes, The Rent of Form, 133.











STORIES FROM SITE

CRITICAL AGENDA

We approach the construction site around 9 a.m. Stepping down from our bikes, we observe cranes moving in the sky, hear the clang of machines and smell earth dust and fresh concrete.

Behind the fence, we observe the workers moving inside the construction site with an energetic pace. Their day already started long before ours. Since seven in the morning, workers are moving, placing, fixing elements and materials. Soon at 10 a.m. a 15-minute break to stop body activity for a moment and to hydrate, smoke a cigarette or go to the bathroom. Bottles of urine seen on the site are direct evidence of break lacks. Yet it is not before twelve that they will have the next pause to eat, chat and maybe take a nap.

Workers are defrayed for their lunches with an average of CHF 16[1]. Depending on the construction site's location, supermarkets or restaurants are not always next by, requiring them to bring their lunch boxes. On sunny days, if the schedule is on time and site managers are flexible, workers will organise a barbecue.

We open the cafeteria doors and ask workers if we can eat with them. The cafeteria is made up of two 15 m^2 *base-vie* adjacent modules. Little lights get through the windows, we eat under white neon lights. Space issues push some workers to eat in their changing rooms. The *DT* offices, often higher than the enterprise modules, are equipped with a spatial and elaborated kitchen. Except from the cafeteria, workers have no other official space to gather. Therefore, workers install informal spaces with what is found on site.

After the food eaten, some workers may take a nap, either on cafeteria benches or for more tranquillity, inside ventilation compartments, as we observed. Workers seem to lack

1 Simon Constantin, UNIA Interview, oral, 25 November 2024.

sleeping rooms, or maybe their bodies are being over pressured. The hour break almost over; at five to one, workers wake up, pack up their lunch boxes, put back their helmets on, and go out again until 5 p.m.

Watching them from the first floor of the *base-vie*, everybody seems to work on their assigned function knowing what task will come next. Tasks are guided by the planning established between enterprises and the *direction des travaux*. Some methods such as the Lean system, developed by Toyota which bases upon Fordism are used. Briefly, it hands over on site as physical tools such as excel spreadsheet covering walls and filled by what the company undertakes to do and reliability percentage associated. A *directeur des travaux* confides " For me, it's the future.".[2] The *direction architecturale*, the *direction des travaux* and companies' representatives meet once a week to discuss the progress of the project. The *direction architecturale* is made up of the architects who have drawn up the execution project and are on site to ensure that it is carried out correctly, as well as taking decisions on visible details and finishing materials.

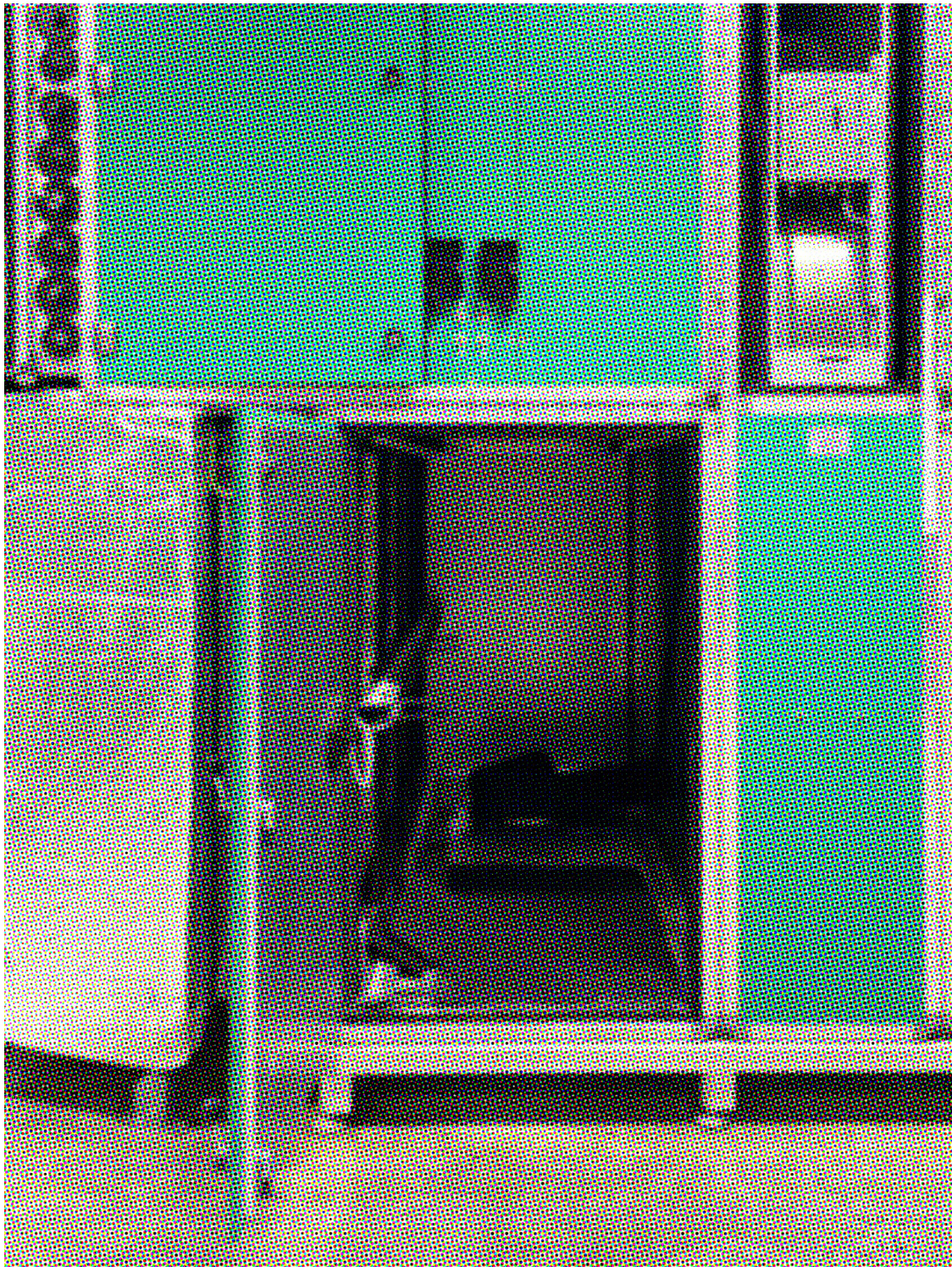
While walking with the *maître d'ouvrage*, the pace seems holdable, and he tells us: "The project owner is no longer putting the pressure on."[3] However, the *contre-maître* is from another opinion: "You [the project owner] want to already deliver when we haven't even finished. "[4] The *DT* who passes on instructions to the enterprises also bears responsibility for construction completion times, and quickly suffers from an overworked culture. Their need for recognition is often reflected in the value they place on their career. Founding a family often becomes the only way to slow it down, as a *directeur de travaux* tells us.[5]

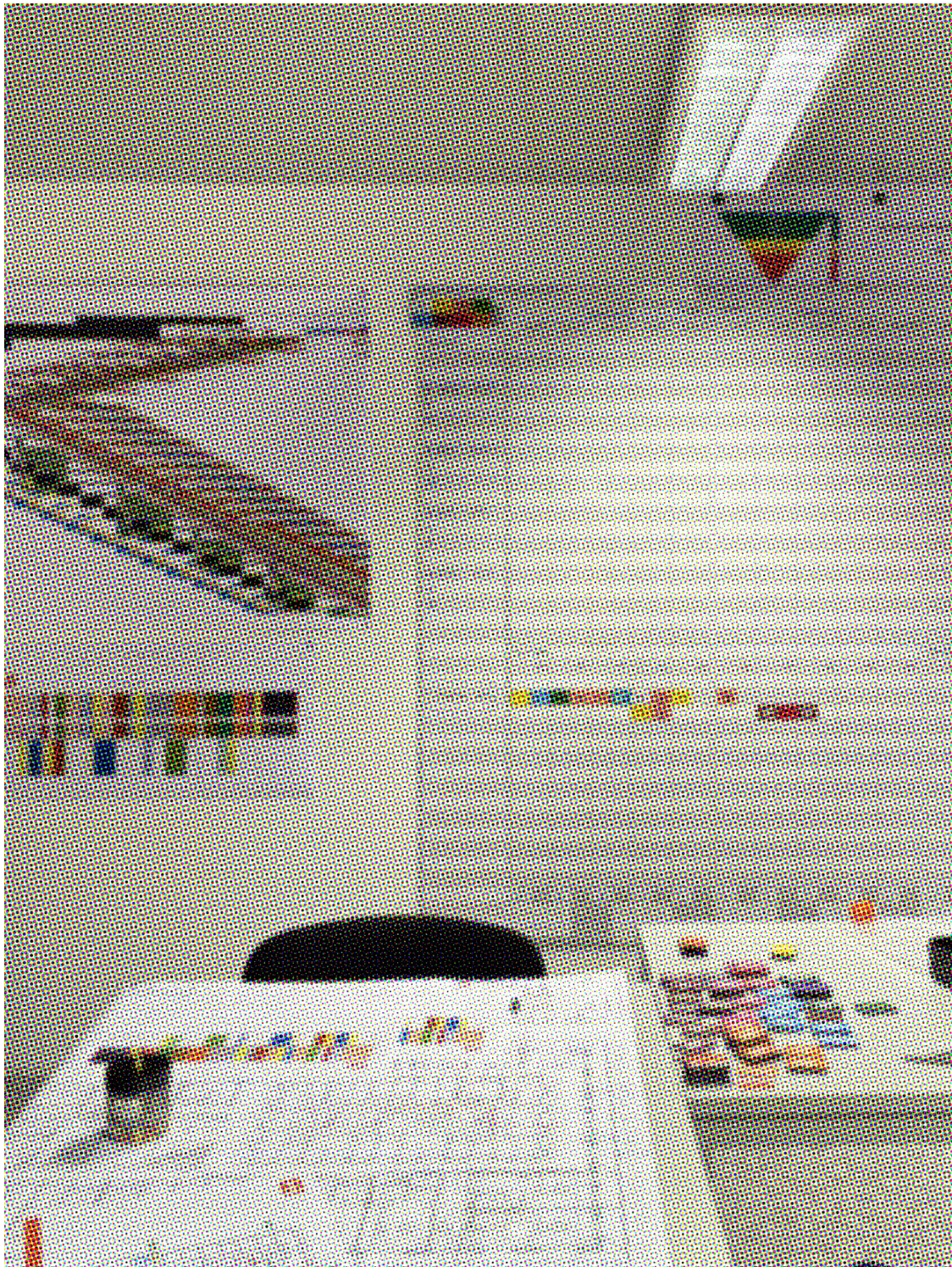
The state of the construction site is managed and controlled by norms and rules where personal imprints are avoided. However, sexist, racist or political inscriptions are red on elevator walls. Country flag found on the floor cries for recognition.

At 5.p.m., the worker packs up their affairs and hangs on their uniform on a scaffolding when changing rooms are missing. They is going home. Almost. The worker must pass by the depot, a one-hour diversion before arriving home.[6] Not written in the contract nor paid, but mandatory to bring back tools or materials because assimilated to the routine. And from that deposit, the worker still has a 30-minute ride. Labourers can work almost 10 hours per day. The working cadence is exhausting. The stay-at-home person, mostly a woman, will have taken care of the invisible work to allow the worker to go back tomorrow morning around 6 a.m.

2 Anonymous Directeur de Travaux, In discussion with the authors, oral, December 2024.
3 Maitre d'ouvrage, Informal discussion about the construction site, oral, 16 November 2024.
4 Anonymous Masonry Contremaître, In discussion with the authors, oral, November 2024.
5 Anonymous Directeur de Travaux, In discussion with the authors, oral, December 2024.
6 Constantin, UNIA Interview.



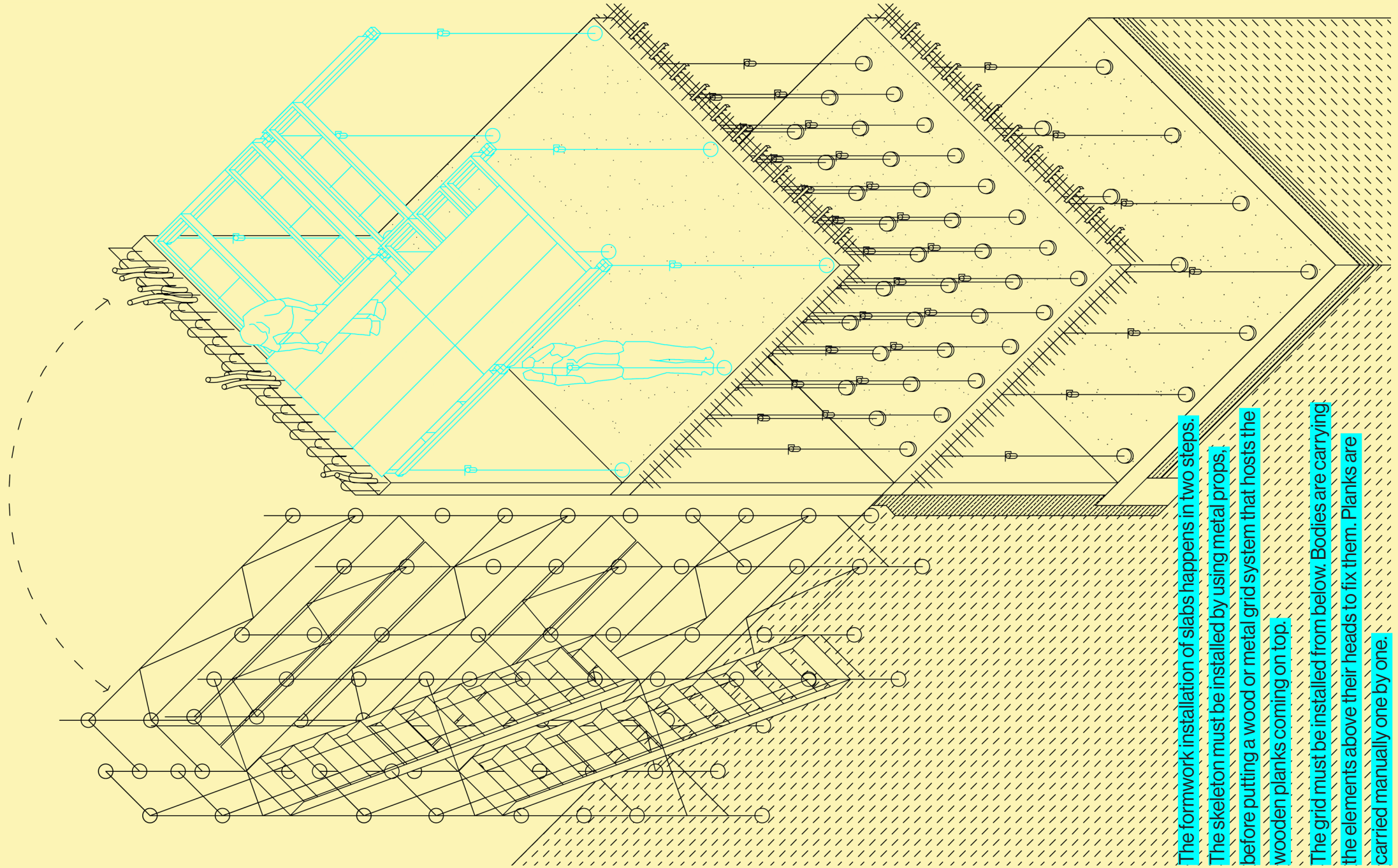






2. the formwork

LABOUR ON THE CONCRETE SLAB



The formwork installation of slabs happens in two steps. The skeleton must be installed by using metal props, before putting a wood or metal grid system that hosts the wooden planks coming on top. The grid must be installed from below. Bodies are carrying the elements above their heads to fix them. Planks are carried manually one by one.

IMPROVING MACHINES ?

Our ears are monopolised by the hum of the concrete mixing plant as fresh concrete is delivered by the 60-meter-high crane. Workers are looking up, waiting to catch the concrete skip, before opening the valve and letting it pour on the cast.

The union worker explains us: “At the beginning of the 2000s [...] the increase in production rates was largely accompanied by the mechanisation of building sites, with cranes, machines and processes being modernised and perfected.[1]”.[2]

By using these machines, you can build faster. A BTP engineer explains that they could have made it with one crane, but delivering it on time would have been impossible.[3] Costs invested on machine uses seems to be lower or safer than a longer construction site period, requiring higher wages costs. The UNIA add on that : “if you have lifting equipment available all the time, you can also afford to build a little differently.[4]”.[5] But machines development reach their limits : “If you have better machines to build that go faster, better. The problem is that since 2010, work rates have continued to increase, but there has been no major changes on the mechanisation of the site. As a result, we've just made people work faster.[6]”.[7] No great evolution happened on machines since, hence pressure is put on

1 « Au début des années 2000 [...] l'augmentation des cadences a été beaucoup accompagnée par la mécanisation des chantiers, avec des grues sur les chantiers, des machines, des processus aussi qui se modernisent, qui se perfectionnent. »
2 Simon Constantin, UNIA Interview, oral, 25 November 2024.
3 Anonymous Directeur de Travaux, In discussion with the authors, oral, November 2024.
4 « Si tu as des engins de levage tout le temps disponibles, tu peux aussi te permettre de construire un peu autrement.
5 Constantin, UNIA Interview.
6 “Si tu as des meilleures machines à construire qui vont plus vite, tant mieux. Le problème, c'est que depuis l'année 2010, les cadences ont continué à augmenter mais il n'y a pas eu de grande modification sur la mécanisation du chantier. Du coup, on a juste fait bosser les gens plus rapidement. »
7 Constantin, UNIA Interview.

workers for capital's production. This is how, quickly machines set up worker's speed and rhythm.[8]

Before the mechanisation boom of the 90's-00's, fewer machines operated on site, so more workforce was needed. However, in the 2000s, workforces dropped but "sales figures have only increased. You can build more and more, always with the same number [...].[9]".[10] If a shortage of workers appeared due to hard-working conditions, it has also been correlated with mechanisation, slowly replacing them.[11]

Turning around, we see workers fixing the formwork to the crane to be transported to the upper level. The rise in site size needs the use of ever-larger machines, as a *DT* tells us: "We brought the biggest self-erecting crane of Switzerland."[12] But it also transforms workers into machine operators.[13] Technology and innovation allow to reduce the hardship on construction sites.[14] However, it also asks for more installation and maintenance, not necessarily reducing labour.[15]

If machines may reduce hardship in construction, the number of serious injuries increased with their use. Workers get harmed not only due to an action such are sawing and drilling, but also by moveable objects (27.9%)[16] such as concrete skips or formwork. And if the dimension of the construction site rises, hence, the size and weight of transported elements grows. So, when an object hits a worker, "It's not the same if it's a wooden slab or a 900-kilo formwork element.[17]".[18]



8 Namita Vijay Dharia, The Industrial Ephemeral: Labor and Love in Indian Architecture and Construction, Atelier : Ethnographic Inquiry in the Twenty-First Century 7 (Oakland, California: University of California Press, 2022), 114.
9 "les chiffres d'affaires n'ont que fait augmenter. On peut construire toujours plus, toujours avec le même nombre[...]."
10 Constantin, UNIA Interview.
11 Dharia, The Industrial Ephemeral, 117.
12 Anonymous Directeur de Travaux, In discussion with the authors, oral, December 2024.
13 Sarah Nichols, 'Opération Béton: Construction Concrete in Switzerland' (Thesis, Zurich, ETHZ, 2021), 368.
14 Pedro Fiori Arantes, The Rent of Form: Architecture and Labor in the Digital Age, trans. Adriana Kauffmann, Buell Center Books in the History and Theory of American Architecture (Minneapolis: University of Minnesota Press, 2019), 193.
15 Nichols, 'Opération Béton', 352.
16 F Frickmann et al., '782 Consecutive Construction Work Accidents: Who Is at Risk? A 10-Year Analysis from a Swiss University Hospital Trauma Unit', Swiss Medical Weekly, 6 September 2012, 3, https://doi.org/10.4414/smw.2012.13674.
17 "Ce n'est pas pareil si c'est une plaque en bois ou un élément de coffrage de 900 kilos."
18 Constantin, UNIA Interview.

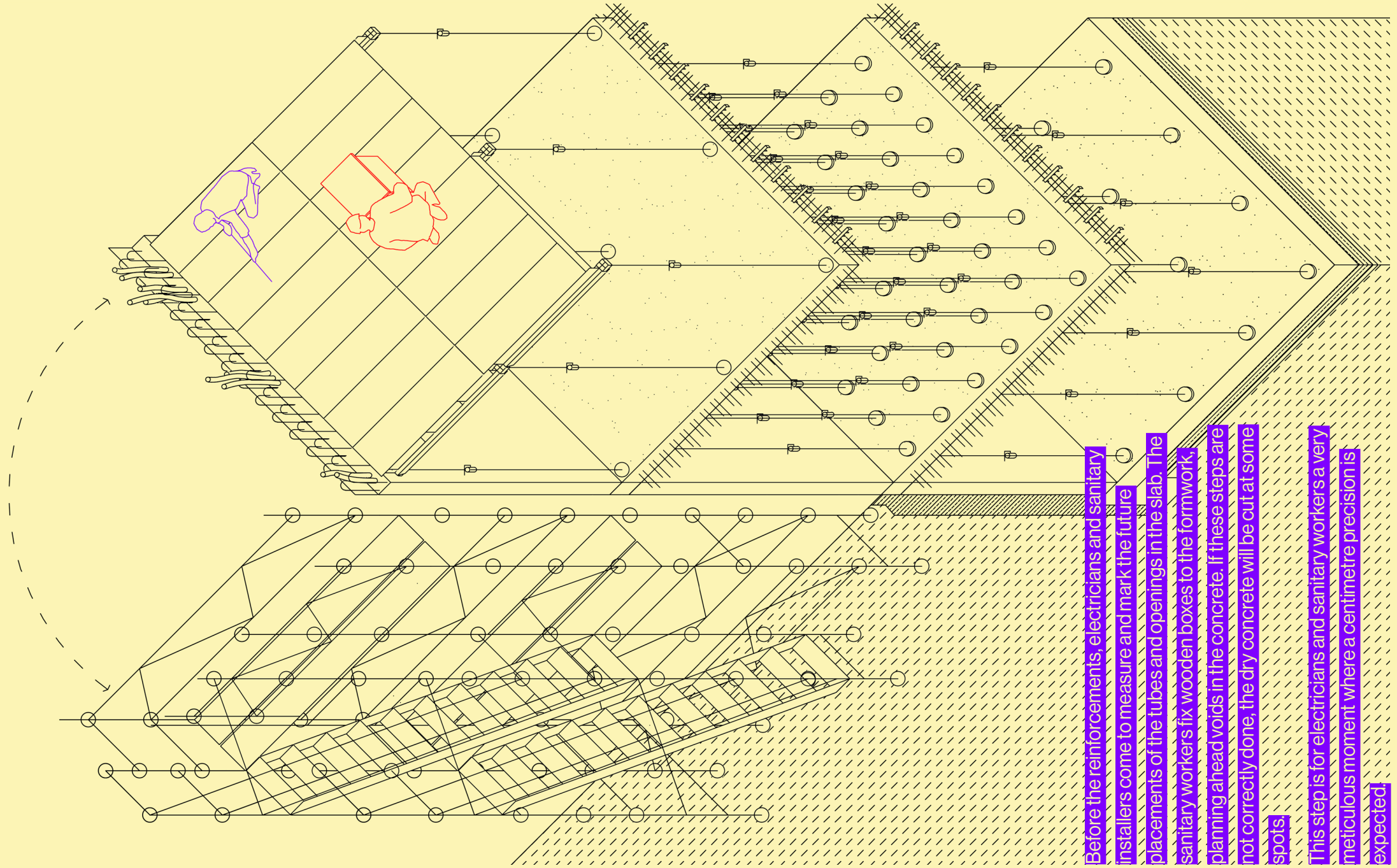




LABOUR ON THE CONCRETE SLAB

3. the electricity + the sanitary

LABOUR ON THE CONCRETE SLAB



Before the reinforcements, electricians and sanitary installers come to measure and mark the future placements of the tubes and openings in the slab. The sanitary workers fix wooden boxes to the formwork, planning ahead voids in the concrete. If these steps are not correctly done, the dry concrete will be cut at some spots.

This step is for electricians and sanitary workers a very meticulous moment where a centimetre precision is expected.

A GLIMPSE INTO THE LABOUR MARKET

Construction workers are essential to their industry to produce and valorise the capital invested on building creation, making them indispensable in the working chain. If workers disappear from the industry chain, the commodity going from land to building or building to building cannot appear. The whole system would collapse. But today's success of the construction sector in creating capital happens at the expense of the workforce.[1] From our few conversations with workers on site, it quickly becomes clear that all of them, whether considered skilled or not, are subject to precarious and uneven employment policies.

Workers suffer from precarious contracts with the uncertainty of being displaced from site to site. Electricians narrate how unstable their contracts are, giving us a glimpse of their imperilment: "We are [engaged] per elements. That means we are engaged to do this wall, engaged to do this other wall, engaged to do this slab, but [...] next Tuesday we will have the final decision on whether we stay until the end or not.".[2] Employers know that immediately after or even simultaneously they will be able to invest the workforce on their next construction site.[3] Meanwhile the workers become mere, disposable, productive bodies. "We are going somewhere else, to another place to cast. They can just move us there one by one or send us in another team as well."[4]

The construction sector appears to be the first entrance toward the labour market. Around 40% of undocumented workers in Europe working on construction sites.[5]

1 Sergio Ferro, dessin / chantier, Collection école d'architecture de Grenoble (Paris: Editions de la Villette, 2005), 28.
2 Anonymous Electricians, In discussion with the authors, oral, 16 November 2024.
3 Ferro, dessin / chantier, 126.
4 Anonymous Formworkers, In discussion with the authors, oral, November 2024.
5 Pedro Fiori Arantes, The Rent of Form: Architecture and Labor in the Digital Age, trans. Adriana Kauffmann, Buell Center Books in the History and Theory of American Architecture (Minneapolis: University of Minnesota Press, 2019), 182–83.

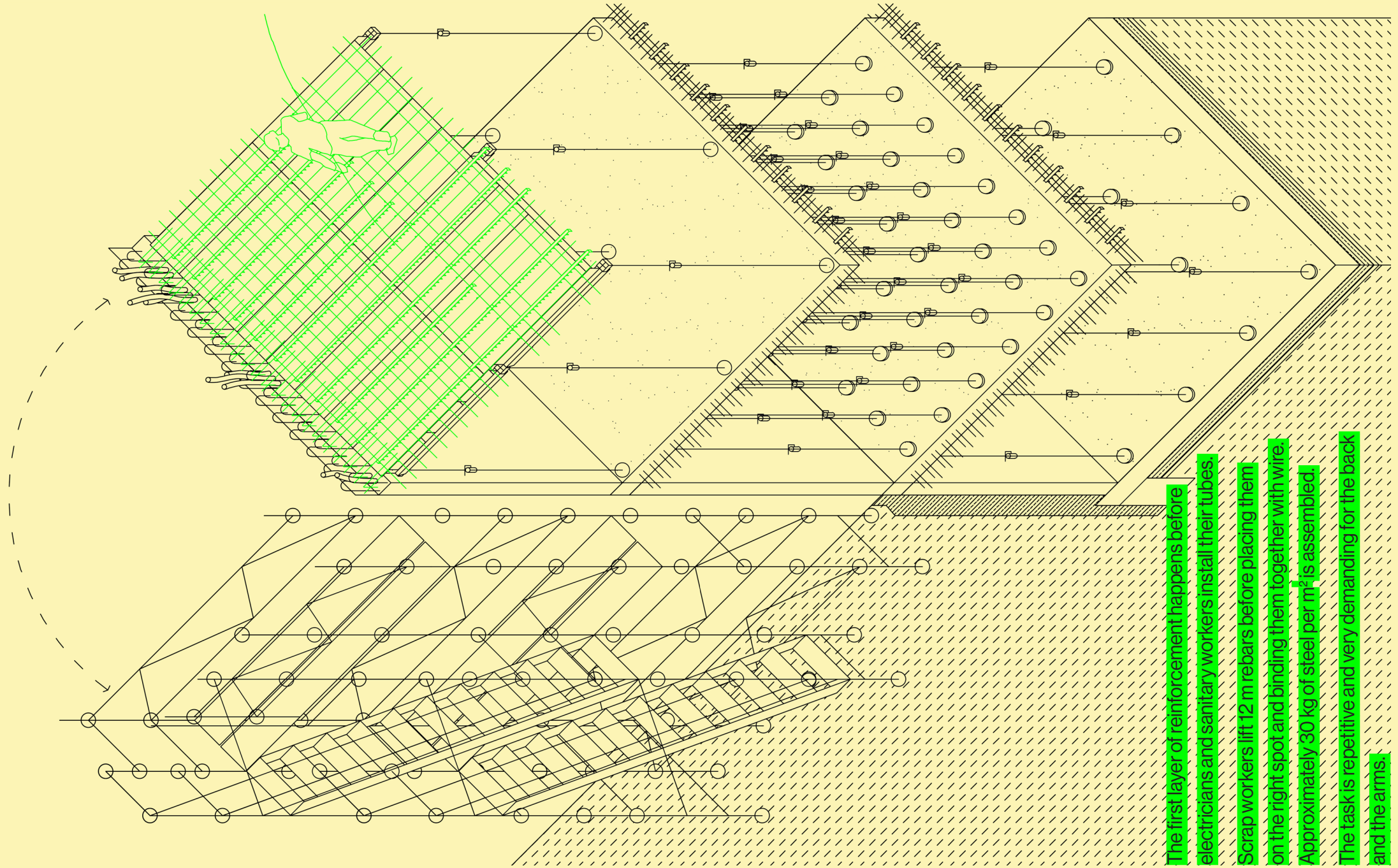
The construction sector can afford to tap into human resources, who often have no considered skills other than the need to find means of subsistence for them and their families, and means of being regularised in their country of arrival.[6] In Switzerland, 36% of construction workers are foreigners, and in the French-speaking cantons 44% of them are cross-border commuters.[7]

If the contracts are precarious, the origin of who is responsible for it is blurred by contractual arrangements. Competition between construction companies means that they have to offer ever lower production costs to win contracts to build, impacting building quality and worker's pace. A *directeur de travaux* confides us, "Often UNIA says that we're slave traders, but it's not us, it's the companies.".[8] He pushes the fault of bad contracts and working conditions to the companies using themselves subcontractors. By confessing these violent words, he also exemplifies how labour exploitation functions. Contracting systems emerge as a way to further divide labour. And this long pyramidal system leads to poor knowledge transmissions.[9]

If in the 20th century, workers could find liberty on construction sites because they were escaping 'factory type' restrictions and they were offered a variety of jobs, today's portrait is very different.[10] Construction sites face a workforce shortage partially due to the precarity the sector established. But the way we build linked to the speed at which we build is also a driving force behind this shortage.

6 Les Soulèvements de la Terre, ed., Premières secousses (Paris: la Fabrique éditions, 2024), 36.
7 Fédération genevoise des métiers du bâtiment, 'Main-d'oeuvre: lutte contre le travail au noir, aspects conjoncturels et libre circulation avec l'Union européenne', constructionromande, accessed 4 January 2025, https://constructionromande.ch/themes/main-doeuvre/.
8 Anonymous Directeur de Travaux, In discussion with the authors, oral, December 2024.
9 Christine Wall, An Architecture of Parts: Architects, Building Workers and Industrialization in Britain, 1940–1970, Routledge Research in Architecture (London New York: Routledge, 2013), 3–4.
10 Wall, 158.

LABOUR ON THE CONCRETE SLAB



The first layer of reinforcement happens before electricians and sanitary workers install their tubes.

Scrap workers lift 12 m rebars before placing them on the right spot and binding them together with wire.

Approximately 30 kg of steel per m^2 is assembled.

The task is repetitive and very demanding for the back and the arms.

FADED SKILLS

We are walking on the formwork panels of the next concrete slab. Around us, 10 reinforcing ironworkers are assembling rebars. It goes fast. Workers are stepping on the plastic tubes for electric installations. The electricians had no time to properly place them as learned during their training. They explain us: “If we'd have time. Imagine, on a building site, we have two and a half days to pipe the slab before they come to put on the second layer. We'd have things lined up, perfectly lined up. And then, in fact, they [other workers] can walk in places where they don't need to walk on a tube. Here, given that we have one day to pipe a slab, and that we'd have to take two, inevitably, there are tubes in every direction.”[1]. They know they will have to come back once the concrete poured and ask masons to pierce the slab to pass their cables through the perforated pipes now filled with concrete. This illustrates the 52% of construction workers observing a decline in the quality of their work[2]. For unions, “This question of how quickly you work is also a question of recognition. The more time you have to do a good job, the more satisfied you can be. And then go home saying you've done a great job. The more pressure you're under and the less time you're allowed to do your job properly, the less meaningful your job becomes.[3]”.[4] Pace’s pressure appears on site as direct skills and labour devaluations.

We gaze at a rising concrete plant, 30 metres of wall per day are poured[5], levels are growing fast. Concrete is the fuel of choice on construction sites. Its use was codified to

1 Anonymous Electricians, In discussion with the authors, oral, 16 November 2024.
2 UNIA and Chris Kelley, ‘Préssion des délais dans la construction: un danger pour la santé, pour la sécurité et la qualité du travail’ (Berne, 25 February 2020).
3 “Cette question de à quel rythme tu travailles, c’est une question de reconnaissance aussi. Plus tu as le temps de faire du bon boulot, plus tu peux être satisfaite toi-même. Et puis rentrer à la maison en disant que tu as fait du bon boulot. Plus tu es sous pression et on ne te laisse pas le temps de faire du boulot correctement, moins ton boulot a du sens.”
4 Simon Constantin, UNIA Interview, oral, 25 November 2024.
5 Anonymous Masonry Contremaître, In discussion with the authors, oral, November 2024.

profit capital making. This can be understood thanks to research carried out in the French context. Its massive development reacts to union resistance against the acceleration of the production process during the 18th century industrialisation onward. In the construction sector, protests came mainly from timber and stone workers. Strikes were impactful, by stopping building sites, it stopped the most abundant source of surplus value. Workers claimed autonomy and ownership of their crafts. For capitalism and the dominant class, these undisciplined workforces were menacing the economy, as construction largely remains on their inherited skills. Concrete gave the opportunity for capital to bypass unions and workers' know-how by adopting industrial management through the centralisation of knowledge with authoritative and meticulous prescriptions. The use of reinforced concrete became a top-down knowledge. "Concrete was a weapon - but for capital"[6] because codified to do so.

Prefabricated building parts are more and more used in the construction sector. They enable to delegate the labour to manufactures driven by machines. Factory assembling gives rest to workers but includes precision unreachable on site and hand's disappearances. The prefabricated elements are then fixed on site thanks to cranes placing, for example, fully completed washrooms on every level of the tower. Prefabrication, of course, increases the division of the workforces and automatisation, but also leads to skill shortages because it slowly transfers labour to the factories.[7]

Mechanisation, prefabrication and automation increase construction's pace as they tell us. "Yes, it's going too fast. In this case, the eight buildings will be erected in two years."[8]. But to build in only two years instead of ten years has a price. It means reducing the materialisation process by shortening as much as possible each worker's interventions and material needs : "We pour concrete [on the walls] and remove the formwork the next day."[9]. The *directeur des travaux* and former mason tells us consciously, "The difficulty is keeping up with quality, because people want to go fast. Concrete is a living thing.".[10] For a masonry *contre-maître*, "You have to give it time, because at some point we are going to pay it." and "The concrete isn't dry, they [*DT*] want the same rate as for precast, it's not possible.".[11] We look around us in the basement, watching the multiplicity of props present to hold the slab. Only 3 days after having been poured, it is unmoulded, allowing the next step to go forward. But it means cracks in the concrete, the use of drying material in the mixture and maybe in 5 years, building renovation. Again labour will be needed.

6 Sérgio Ferro, Architecture from below: An Anthology, First edition (London: MACK, 2024), 193.
7 Christine Wall, An Architecture of Parts: Architects, Building Workers and Industrialization in Britain, 1940-1970, Routledge Research in Architecture (London New York: Routledge, 2013), 5.
8 Anonymous Electricians, In discussion with the authors.
9 Anonymous Directeur de Travaux, In discussion with the authors, oral, December 2024.
10 Anonymous Directeur de Travaux.
11 Anonymous Masonry Contremaître, In discussion with the authors.

"Quite a few apprentices also tell us that at the end it is great to learn how to do things properly but when they arrive on site or in the workshop, whether they're masons or doing finishing work on site or anywhere else, they do shit. They know they're installing vapour barriers that won't hold. But they do it because the next construction site is already this afternoon. And you have to go, go, go. [12"13]

Building quality and worker's recognition fade into the production speed. The construction industry is pushing for its own disease. It serves direct profit, but is no long-lasting solution. When will the speed limit in the production of materials be reached and the quality of a work be so altered that it leads to major disruptions?

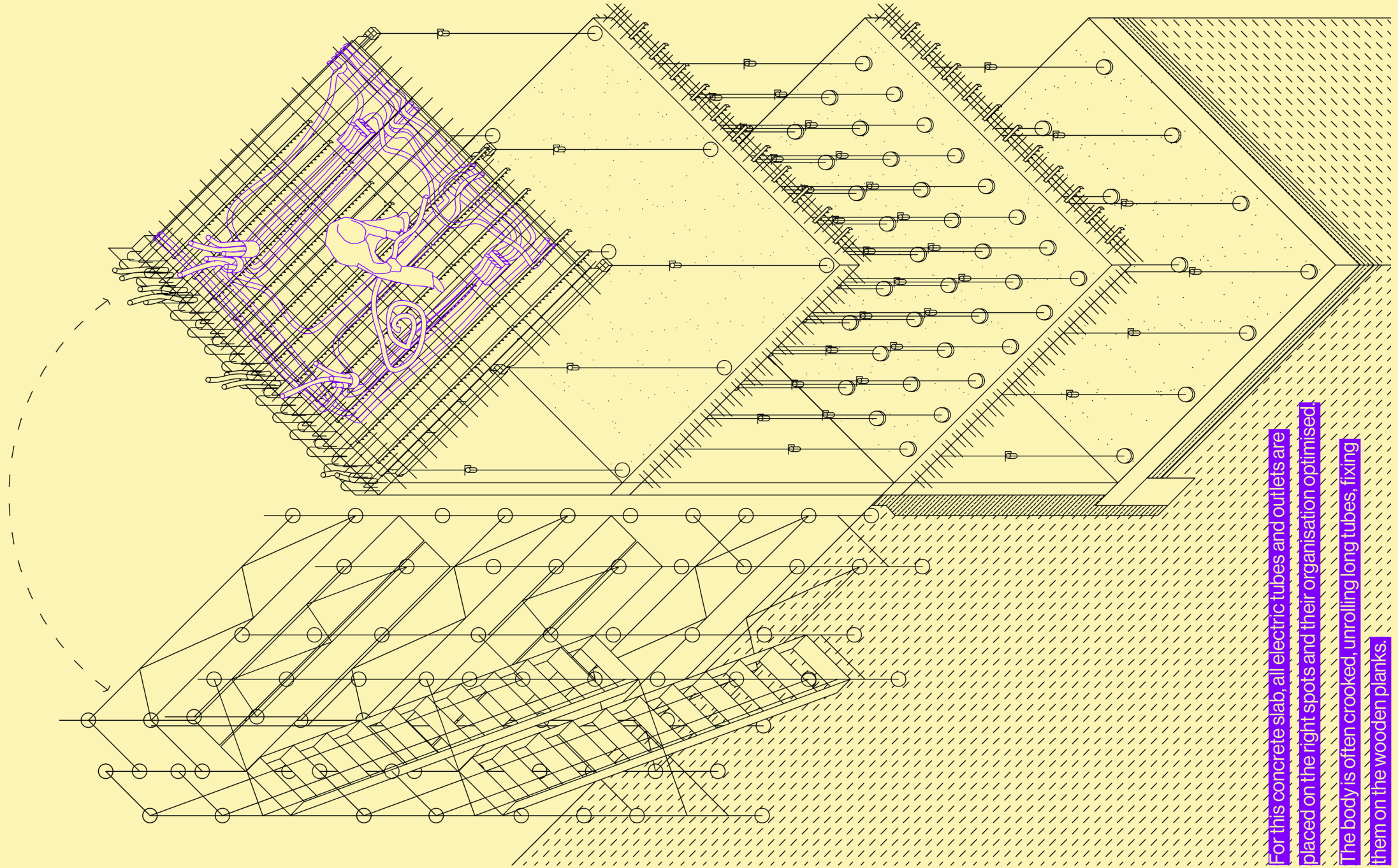
12 "Il y a pas mal d'apprentis aussi qui nous disent qu'à la fin, c'est joli les cours parce qu'ils apprennent comment il faut faire juste mais quand ils arrivent sur le chantier ou à l'atelier, que ce soit des maçons ou bien dans le secondaire ou partout, ils font de la merde. Ils savent qu'ils posent des pare-vapeur qui ne vont pas tenir. Mais ils le font parce que le prochain chantier est déjà cet après-midi. Et puis il faut y aller, y aller, y aller."
13 Constantin, UNIA Interview.



LABOUR ON THE CONCRETE SLAB

5. the electricity

LABOUR ON THE CONCRETE SLAB



For this concrete slab, all electric tubes and outlets are placed on the right spots and their organisation optimised. The body is often crooked, unrolling long tubes, fixing them on the wooden planks.

SECURITY POLITICS

Scaffolding gradually outlines the shape of the building to come, we identify workers with their uniform climbing it level by level. Along with sounds and machines, the presence of scaffolding is the sign of construction activities. However, scaffolding have not always been mandatory in Switzerland; but only through the OTConst art. 47.[1]

After being introduced to the project in the *base-vie*, we ask to enter the site. We are told to put on helmets and high-visibility waistcoats, and they make sure we wear reinforced shoes. The danger is known, the importance of safety no longer seems to be proven. Personal protective equipment (EPI) pictograms forbid access for non-holders of those safety 'accessories'.

Safety is scrutinised through data collect and protocol checks defining risks and responsibilities: "This is the risk matrix on two axes. On the one hand, the risk of loss, the probability, and on the other its severity.[2]".[3] Their analyses influence changes on a legal basis through the evolution of norms. For instance, the State engages in random checks on construction sites through the SUVA, the executive authority designated to apply the *LAA* law and the related *OPA* ordinance.

Despite efforts to systematise safety, the construction sector remains the deadliest for its workers. 20% of worker deaths in Switzerland occur in the construction sector[4], while it

1 Swiss Confederation, 'Echafaudages', in Ordonnance sur les travaux de construction, 2021, 5.
2 "Là, c'est la matrice de risque sur deux axes. D'un côté, le risque sinistre, la probabilité, puis de l'autre, sa gravité."
3 Michel Duinker and Stéphane Bettex, SUVA Interview, oral, 2 October 2024.
4 Julie Marty, 'Plus de 200 décès liés au travail en Suisse chaque année, "une réflexion est à faire"', infoSport, rts, 19 July 2024, https://www.rts.ch/info/suisse/2024/article/plus-de-200-deces-lies-au-travail-en-suisse-chaque-annee-une-reflexion-est-a-faire-28574672.html.

represents only 3%[5] of total workers.[6] 1 out of 5 construction workers has an accident on a worksite every year[7], height falls being, when not deadly, the main cause of the gravest injuries. Construction injuries harm mostly non-Swiss workers showing how safety lacks increase inequalities.[8]

Quickly observing the pit before running after the construction director, we witness a severe security incident. A formworker is on all fours, on the edge of a 4-meter-high basement void holding and manipulating a formwork. We take a picture of the scene, but the construction direction asks us to delete it. The formworker's leader waves, telling us to move. We hear later the direction say to the security supervising the visit, "I don't mind, but even so, he could have died.".[9] We understand the direction silence on security laxness as an informal agreement between enterprises and the construction direction to respect the planning. During this visit, the site direction felt important to point out certain barriers that were missing due to a lack of time. While on another site, the *DT* shows us the new security barrier but in place around the building after Malley 's incident.[10] The Union employee explains to us, "You can't just tell people to put on their helmets and shoes. You have to give people the time to do the job calmly and to go and put up the barriers as soon as there's a chance of them falling down, to take half an hour to install them, secure the holes and do all that work.[11]".[12] Pace seems to take precedence over securing the site. According to a UNIA study, 51% of workers and 60% of *contremaîtres* say they do not have enough time for safety at work because of deadline pressure.[13] But for investors, a worker is easily replaceable, injuries will not interrupt the production speed.[14] The right of withdrawal is not applied, "If you think your boss is asking you to go and do a job and you feel like you're going to die, you should be able to say no and have no consequences.[15]".[16] A formworker reports:"We force ourselves not to do something, but there are situations sometimes where you have to do it.".[17]

Security politics constitute legal responsibilities. Employers are responsible for their employee's safety, to identify risks and take appropriate safety measures. The safety failures observed by SUVA during its checks are penalised by a 20% increase in premiums, i.e. in their SUVA insurance contributions.[18] According to the SIA, the construction direction must provide support in applying safety.[19] In case of major incidents, responsibilities are analysed as a whole, looking at the context of decisions defining their chronologies, digging into written exchanges between actors, "Afterwards, we see that when there are trials, whether criminal or civil, people go looking for them quite far. It's not out of the question that the security specialist won't be called to the stand.[20]".[21] Dispute is often the result of unclear legislation, leaving room for interpretation in the prescriptions to be implemented.[22] According to the Union, when they address tangible issues, they do not seem to fall within anyone's remit. "On the question of heatwaves on site, it's something that causes deaths because you can suffer heatstroke and then not wake up. When we discuss this, the boss passes the quid to the project owner, the project owner passes it on to SUVA, SUVA passes it on to SECO, and, in the end, there's no solution. We're trying to get everyone around the table and say, now you take responsibility.[23]".[24] Diluting awareness increases contradictions and these divisions secure capital. Risk harms those who take it and laws invisible construction site realities.[25]

5 SUVA, 'Séries chronologiques des accidents par classe - 41A Secteur principal de la construction', pdf, 5 April 2024.
6 Office fédéral de la statistique, 'Statut sur le marché du travail, personnes actives occupées', admin, accessed 28 December 2024, https://www.bfs.admin.ch/bfs/fr/home/statistiques/travail-remuneration/activite-professionnelle-temps-travail/population-active/statut-marche-travail.html.
7 Duinker and Bettex, SUVA Interview.
8 Luisa Orlik et al., 'Work-Related Injuries among Insured Construction Workers Presenting to a Swiss Adult Emergency Department: A Retrospective Study (2016-2020).' (MDPI, 2022), https://doi.org/10.3390/ijerph191811294, 10.48350/173243.
9 Anonymous Directeur de Travaux, In discussion with the authors, oral, November 2024.
10 Anonymous Directeur de Travaux, In discussion with the authors, oral, December 2024.
11 "Il ne faut pas que dire de mettre le casque et les chaussures. Il faut donner le temps aux gens de faire le travail calmement et d'aller mettre les barrières dès qu'il y a une possibilité de tomber, de prendre une demi-heure pour les installer, sécuriser les trous, faire tout ce taf."
12 Simon Constantin, UNIA Interview, oral, 25 November 2024.
13 UNIA and Chris Kelley, 'Préssion des délais dans la construction: un danger pour la santé, pour la sécurité et la qualité du travail' (Berne, 25 February 2020), 3.
14 Sergio Ferro, dessin / chantier, Collection école d'architecture de Grenoble (Paris: Editions de la Villette, 2005), 51.
15 "Si tu penses que ton chef te demande d'aller faire un boulot et tu as l'impression que tu vas crever, tu devrais pouvoir dire non et n'avoir aucune conséquence."
16 Constantin, UNIA Interview.
17 Anonymous Formworkers, In discussion with the authors, oral, November 2024.
18 Duinker and Bettex, SUVA Interview.
19 SIA 118 article 104.
20 "Après, on voit maintenant que les accusés, quand il y a des procès, que ce soit pénaux, civils, les gens vont les chercher assez loin. Ce n'est pas exclu que le spécialiste sécurité ne soit pas appelé à la barre."
21 Duinker and Bettex, SUVA Interview.
22 Constantin, UNIA Interview.
23 "Sur la question de la canicule sur le chantier, c'est un truc qui cause des morts parce que tu peux faire des coups de chaleur, et puis ne pas te réveiller. Quand on discute de ça, les patrons envoient la balle au maître d'ouvrage, le maître d'ouvrage lui renvoie à la SUVA, la SUVA lui renvoie au SECO, et puis à la fin, il n'y a pas de solution. Nous on essaie de mettre tout le monde autour de la table et de dire maintenant vous prenez vos responsabilités."v
24 Constantin, UNIA Interview.
25 Namita Vijay Dharia, The Industrial Ephemeral: Labor and Love in Indian Architecture and Construction, Atelier : Ethnographic Inquiry in the Twenty-First Century 7 (Oakland, California: University of California Press, 2022), 137.



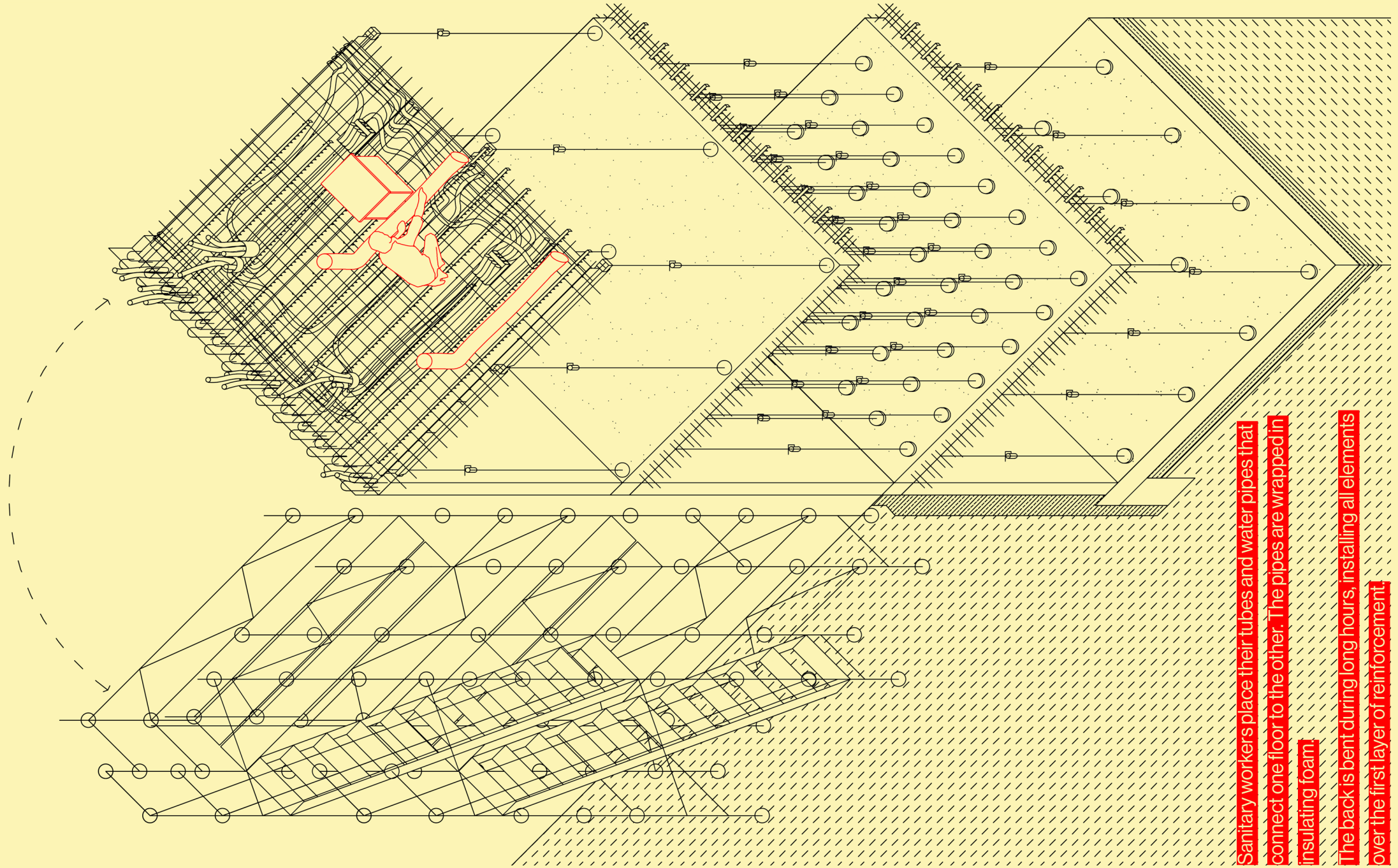




LABOUR ON THE CONCRETE SLAB

6. the sanitary

LABOUR ON THE CONCRETE SLAB



Sanitary workers place their tubes and water pipes that connect one floor to the other. The pipes are wrapped in insulating foam.

The back is bent during long hours, installing all elements over the first layer of reinforcement.

BEHIND SECURITY, BODIES

"Well, in terms of security we always wear what we are asked to wear. For example, we put on our helmets and our work boots and that's it; but the work we have to do is physical first. I don't know what you mean by security."[1] confide to us a formworker answering the question of security norms as an improvement to the working conditions.

Construction work puts bodies into harsh conditions. "Sometimes the body already adapts, but in principle it is hard. The person who is not used to doing it, for example, comes the first time and it doesn't go well.".[2] Harm appears in multisensorial forms; sound, for instance, it saturates the senses, disciplines workers and deteriorates them, introducing a harsh working atmosphere.[3] "The work is hard, really hard. [...] It's tough and challenging work.".[4] Harm is about repetition and accumulation of previous days, years, decades of carrying, mixing, vibrating, drilling, nailing, hammering, force-fitting, dismantling, climbing, picking up, tying, assembling, carrying again, carrying – and breathing chemicals or dust, hearing deafening or repeated noises, enduring heatwaves, enduring stress, winter cold and rain. Catching a worker's gaze while reheating his feet with a burner, we feel harm is difficult to grasp by passing once through the site.

Time pressure is applied on bodies. We ask a formworker directly if he can feel time pressure: "The bosses like you to finish everything well on time. Yes, it's always going to be like that."[5], as they must follow production speed. To do so, labour is highly divided, leading

1 Anonymous Formworkers, In discussion with the authors, oral, November 2024.
2 Anonymous Formworkers.
3 Namita Vijay Dharia, The Industrial Ephemeral: Labor and Love in Indian Architecture and Construction, Atelier: Ethnographic Inquiry in the Twenty-First Century 7 (Oakland, California: University of California Press, 2022), 115.
4 Anonymous Formworkers, In discussion with the authors.
5 Anonymous Formworkers.

to extreme movement repetitions.[6] Construction activities rely on manual labour and will continue to. Its complete mechanisation is too risky; a technical fall can be responsible for economic disaster, as construction is central in capital insurance and growth.[7] To overcome the considered chronic vulnerability of an industry necessarily based on its workers, and to assert the domination of capital, it must weaken them through direct control of their bodies.[8] Hence, profit is based on workers submitting to hard working conditions and an accelerating production. What happens when rhythms accelerate so much that bodies cannot keep pace?[9]

Causes of accidents are muscular, nervous, mental and psychological exhaustion.[10] The most affected body areas are the fingers (20% of cases), followed by the eyes, ankles, knees, shoulders, back and wrists.[11] This is due to excessive handling loads without being able to protect themselves physically, as their bodies are their main working tools. These repetitive movements erode collagen, the connecting structure between tendons and ligaments. The result is deterioration and degeneration of the articular structures. The body is pushed to the extreme, complete healing is impossible if the structure continues to be stressed as much.[12]

"We try to take care of ourselves, of course, because the work is dangerous. But in the end, it's always the same thing. We're told we have to take care of ourselves, but it's up to us to do the work."[13]

"This pressure clearly has repercussions on the body. A lot of people end up having to leave the industry after a few years because they're broken. Because they have a broken back or a health problem. [...]You stay on the site and then you will be in a wheelchair in 10 years' time.[14]".[15] Recently, the retirement age was advanced to 60 for construction workers. By this age, it is estimated that 20% of them have died, 20% were disabled and 40% have left the industry, while 20% will have reached the age of 65 in the construction industry.[16]

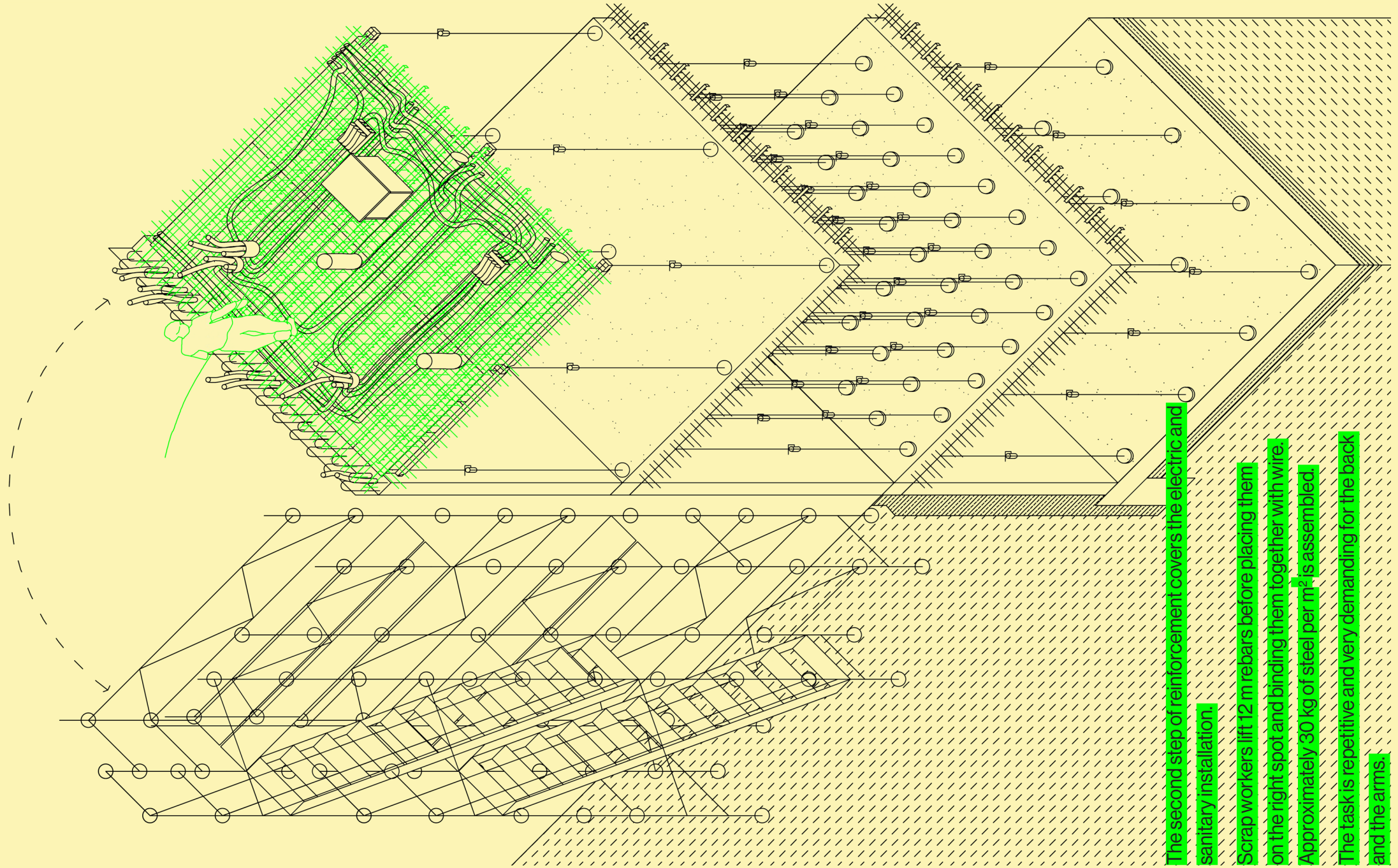
6 Sergio Ferro, dessin / chantier, Collection école d'architecture de Grenoble (Paris: Editions de la Villette, 2005), 28.
7 Sérgio Ferro, Architecture from below: An Anthology, First edition (London: MACK, 2024), 197.
8 Ferro, dessin / chantier, 18.
9 Dharia, The Industrial Ephemeral, 125.
10 Ferro, dessin / chantier, 52.
11 SUVA, 'Séries chronologiques des accidents par classe - 41A Secteur principal de la construction', pdf, 5 April 2024.
12 Physiotherapist Student Porteret Malou, In discussion with the authors, oral, 8 December 2024.
13 Anonymous Formworkers, In discussion with the authors.
14 "Cette pression elle a clairement des répercussions sur le corps. Beaucoup de monde se retrouvent à devoir quitter la branche après quelques années parce qu'ils sont brisés. Parce qu'ils ont le dos cassé ou qu'ils ont un problème de santé. [...] tu restes sur le chantier et puis tu es en chaise roulante dans 10 ans."
15 Simon Constantin, UNIA Interview, oral, 25 November 2024.
16 Constantin.

"He gets paid for the use of his body, to care for it is his private business."[17]

17 Sophia Garner and Leslie Majer, 'Body-Works: Architecture Is Made by Moving Bodies' (n.d.), 3.

7. the reinforcement (again)

LABOUR ON THE CONCRETE SLAB



The second step of reinforcement covers the electric and sanitary installation.

Scrap workers lift 12 m rebars before placing them on the right spot and binding them together with wire.

Approximately 30 kg of steel per m^2 is assembled.

The task is repetitive and very demanding for the back and the arms.

WOMEN OUT OF SIGHT

We repeatedly feel stared at and noticed on site. Although we are often accompanied by someone of authority on site, we wonder why and whether it's the lack of women on the site that makes us feel like outsiders. We encountered 4 women on all construction sites visited, 3 being part of the *DT* and 1 as an apprentice in electricity. The UNIA worker tells us: "There are about less than 1% mason women.[1]".[2] This means a highly men-dominated field. But why has it come to this? We need to look through a feminist lens to understand how kinship and intimacy intertwine on site.[3]

Lacking information about gender and construction history on Swiss construction sites pushed us to understand it mostly through a British perspective.

With the shift from feudalism to early capitalism, women got excluded from craft labour because of a new division of labour. In the 1840's women's access to jobs got harder, while family structures appeared with wage providing husbands. This is what we can call the "patriarchal control of productive resources". In addition, apprenticeships were confined to men and labourer unions were protectionist, further excluding women.[4]

After the First World War, labour shortages threatened male exclusivity, allowing women to get jobs, of course less skilled ones, in subordinated positions and without union support. Their wages were 1/3 of male workers. Women became competent in the building

1 "Il y a environ moins d'un pour cent de femmes maçonnes."
2 Simon Constantin, UNIA Interview, oral, 25 November 2024.
3 Namita Vijay Dharia, The Industrial Ephemeral: Labor and Love in Indian Architecture and Construction, Atelier : Ethnographic Inquiry in the Twenty-First Century 7 (Oakland, California: University of California Press, 2022), 21.
4 Linda Clarke and Christine Wall, 'Skilled Versus Qualified Labour: The Exclusion Of Women From The Construction Industry', in Class and Gender in British Labour History: Renewing the Debate (or Starting It ?), Davis, M. (Pontypool: Merlin Press, 2010), 3.

process, but they were erased again from construction history, with post-war journals deliberately omitting women's participation.[5] But if women's presence was erased from construction history, Marx points out that "despite the common association of women's work with non-productive labour – housework and the reproduction of the (male) worker – women are everywhere in the factories.".[6]

In the 1960s, they were qualified as not fit for the construction site, being physically and mentally inferior.[7] But in 1975 the Sex Discrimination act is signed hoping to eliminate discrimination and promote equality of opportunity, while female advertisement is used to attract women into construction.[8]

The lack of female representation on site makes it hard for women to project themselves. The absence of women occurs all along the architecture production chain. In architecture, for example, women are legally allowed to practise since the '60s but must face social pressure.[9] This is how "the profession and its practices have historically encoded and enforced misogyny and patriarchy".[10]

On Swiss construction sites, we observed and read misogynistic drawings and sentences, hidden inside elevators, where women's bodies are sexualised. Infrastructures for women lack on construction sites: "women arrive on site, there's no changing room for them. There are no toilets for them.[11]".[12] This makes it hard to project a nice and respectful working environment. The construction site is not a safe space, but a sexist one where women try to evolve.[13]

Inherited concepts still block women's access on construction, such as the notion of skill. As Clarke and Wall state, "Far from being an economic fact, skill is often an ideological category imposed on certain types of work by virtue of the sex and power of the workers who perform it.". 19th-century writings from Ruskin depict the skill being attributed to masculine workers with independence, creativity and dexterity. By overlooking women, it associated even more manual skill and dexterity to men.[14] The notion of physical strength

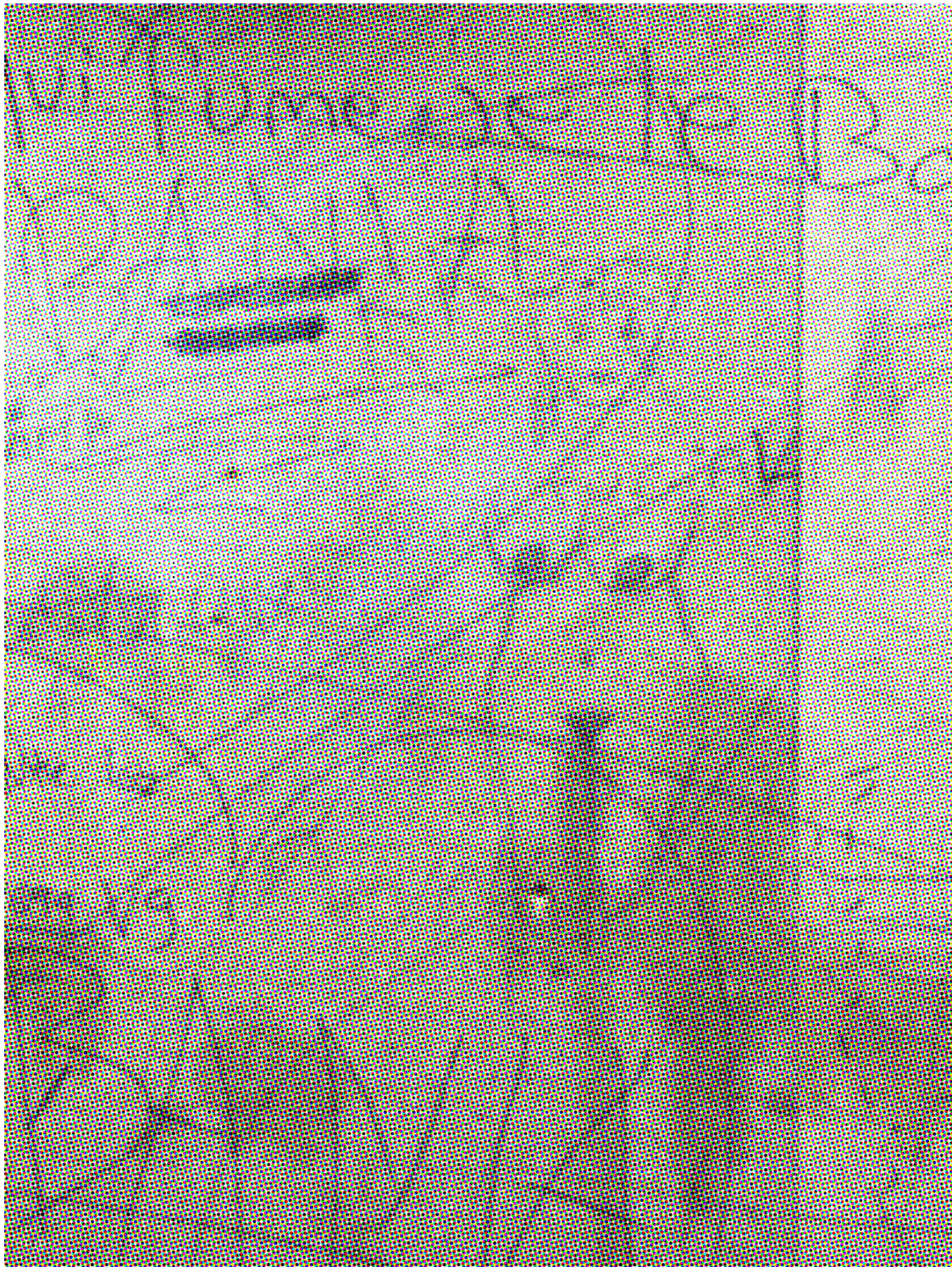
5 Clarke and Wall, 4–6.
6 Katie Lloyd Thomas, "'Zooooooop! Look Quickly or You'LI Miss It!": Pella Rolscreens®, Pilkington Insulight ActivTM and Jennifer Bloomer's Disappearing Matter', The Journal of Architecture 28, no. 6 (18 August 2023): 15, https://doi.org/10.1080/13602365.2023.2264310.
7 Christine Wall, An Architecture of Parts: Architects, Building Workers and Industrialization in Britain, 1940-1970, Routledge Research in Architecture (London New York: Routledge, 2013), 161.
8 Clarke and Wall, 'Skilled Versus Qualified Labour', 8.
9 Wall, An Architecture of Parts, 161.
10 Dharia, The Industrial Ephemeral, 181.
11 "Elles arrivent sur le chantier, il n'y a pas de vestiaire pour elles. Il n'y a pas de chiottes pour elles. "
12 Constantin, UNIA Interview.
13 Swarnabh Gosh, 'Toward a Critique of Labor in Construction', in Non-Extractive Architecture: On Designing without Depletion, Space Caviar, vol. 1 (Sternberg Press, 2021), 158, https://www.sternberg-press.com/product/non-extractive-architecture-vol-1/.
14 Clarke and Wall, 'Skilled Versus Qualified Labour', 1–2.

also relates to manual labour. However, with mechanisation processes, it becomes less pertinent.[15] This change of the nature of labour allows women to enter the industry.[16] This is only possible if "discrimination in recruitment and selection can be overcome and that good employment and working conditions are in place.".[17]

We realise that construction sites are places of social reproduction. It reinforces a heteronormative understanding of family, property and marriage.[18] The construction industry also relies on reproduction work outside the pit. Men "can afford it because there is someone [a woman] taking care of them once at home.[19]".[20] This allows for a "regeneration of workforces, gendered forms of work in the realm of social reproduction based upon unpaid labour".[21] To keep the construction machine going, it must go through the cost of social reproduction.

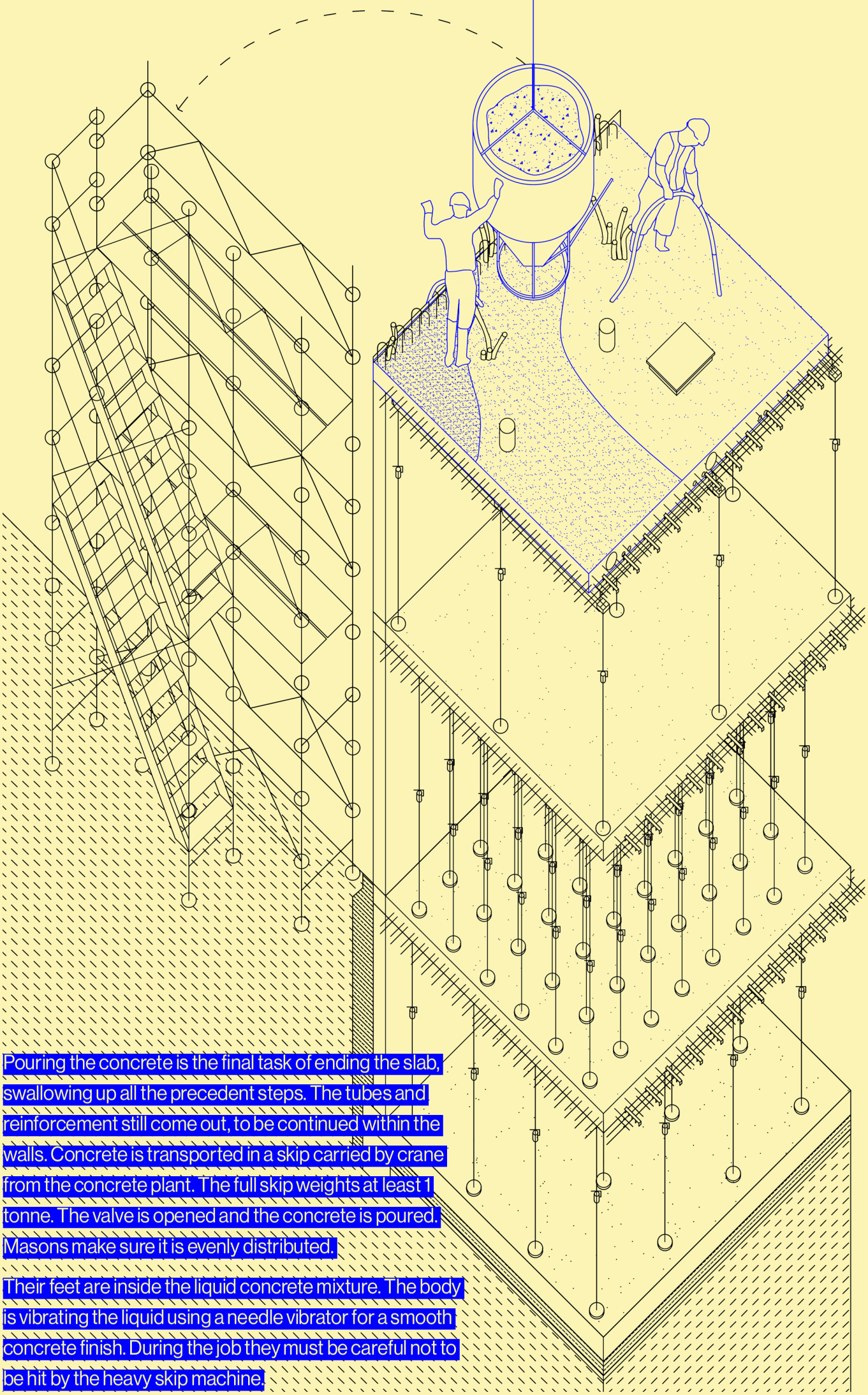
15 Constantin, UNIA Interview.
16 Thomas, "'Zooooooop! Look Quickly or You'LI Miss It!'", 4.
17 Clarke and Wall, 'Skilled Versus Qualified Labour', 9.
18 Dharia, The Industrial Ephemeral, 175.
19 "Ils peuvent faire ça parce qu'il y a quelqu'un à la maison qui s'occupe d'eux."
20 Constantin, UNIA Interview.
21 Gosh, 'Part III. Immaterial Extractivism: Community, Society, Labour', 170.





LABOUR ON THE CONCRETE SLAB

8. the concrete



Pouring the concrete is the final task of ending the slab, swallowing up all the precedent steps. The tubes and reinforcement still come out, to be continued within the walls. Concrete is transported in a skip carried by crane from the concrete plant. The full skip weights at least 1 tonne. The valve is opened and the concrete is poured. Masons make sure it is evenly distributed.

Their feet are inside the liquid concrete mixture. The body is vibrating the liquid using a needle vibrator for a smooth concrete finish. During the job they must be careful not to be hit by the heavy skip machine.

LABOUR ON THE CONCRETE SLAB

CONCLUSION

WHAT WAS IT ALL ABOUT ?

As architectural workers, this work offers you an understanding of what constitutes the Swiss construction industry in which we are embedded. This subject has been wiped out from our image of the architectural practice. We therefore addressed it to reveal its labour forms and its associated labour process.

We defined first the construction industry apparatus by explaining its efficient role within capital creation. We then untangled the norms and regulations web governing its organisation while the site remains on ephemeral features. And lasty, a peek into construction site space enabled to grasp its massive and far from bodies' scale.

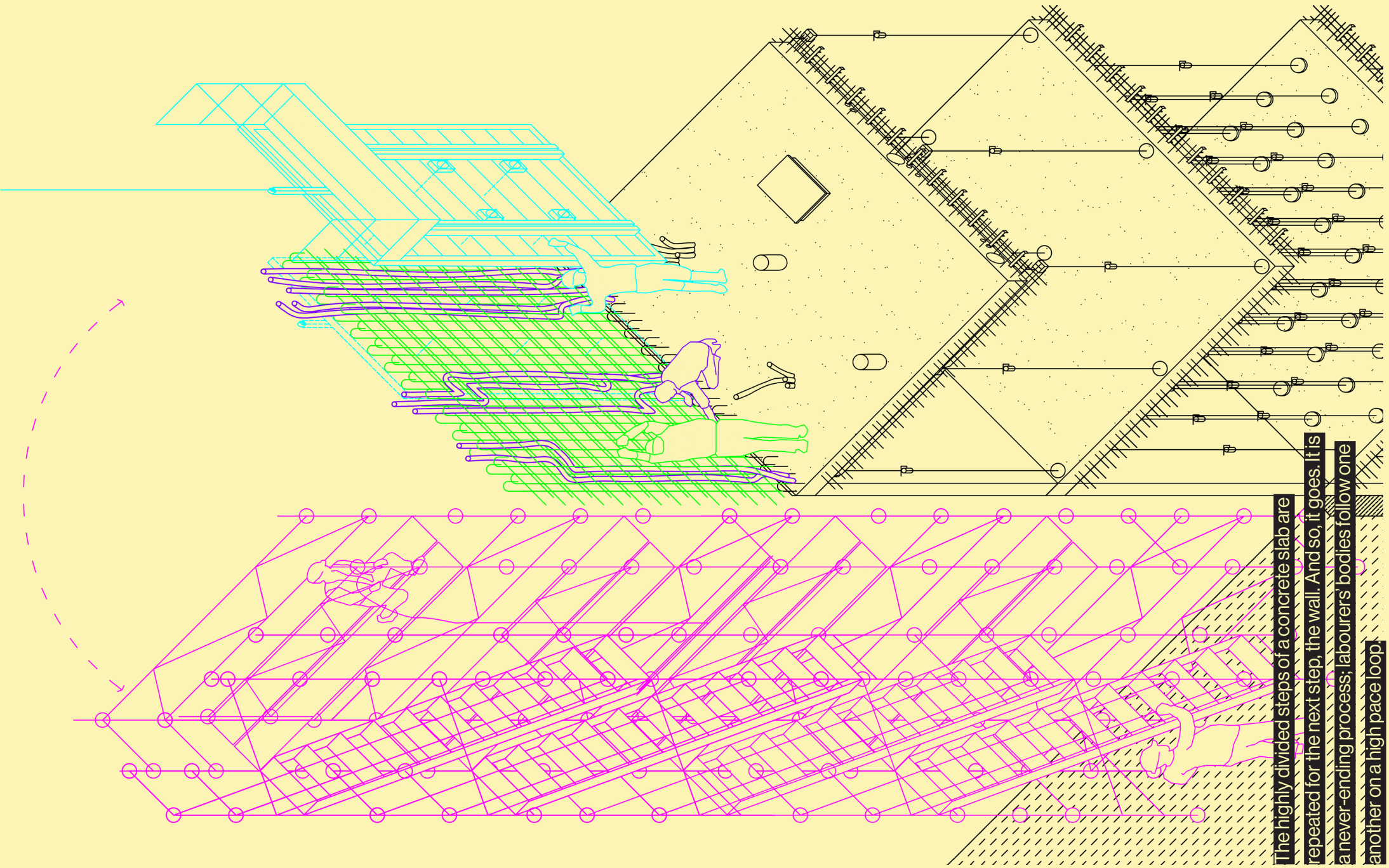
Hidden narratives are transmitted by collecting voices and gathering readings and data. We crossed the fence looking through the lens of 'pace' or 'construction speed' by understanding a worker's everyday schedule on site, before giving a reading of the machines' presence. Next, we provided a glimpse into the labour market and linked it with how construction choices affect the value of workers' know-how. Then, we read security norms on site and what and who lies behind them. Finally, we tried to understand gender exclusion on site.

Without labour, the four walls in which you are reading this text would not exists.

LABOUR ON THE CONCRETE SLAB

9. all again

LABOUR ON THE CONCRETE SLAB



The highly divided steps of a concrete slab are repeated for the next step, the wall. And so, it goes. It is a never-ending process; labourers' bodies follow one another on a high pace loop.

WHERE WE GO FROM HERE
as witnesses and insiders

PREAMBLE

The critical mass of what is being built today does not directly follow population needs, harms workers of the construction chain and perpetuates further extractive dynamics. To stop building new is an action we must inevitably take.

Slowing down all along the construction labour process is acting against current destructive construction methods both socially and environmentally. It also acts for the quality and longevity of what is being buit.

Since the year 2000, construction sites encounter labour shortages because of ever more extreme working conditions. Using shortage as an argument for their improvements is an opportunity to introduce care within the construction process.

ENGAGE IN SOLIDARITY

We must push for dialogue and new representations in order to change narratives.

We need to engage in unionisation. As representatives they can introduce dialogue processes between architectural workers and with other representatives involved in construction. Unionising proved its efficiency in bringing real changes to legislation.

SHOULD WE DESIGN?

> "How would knowledges and practices of architecture and design be transformed if labour, know-how and processes of building production were made central?" ***- TK/TF, 'Transforming Knowledges of Architecture, Design and Labour' -***

We must reverse and reshuffle the design process to encounter labour, beginning from the site. By understanding the needs of workers and their know-how, we can develop mutual and collaborative design and construction processes.

Regarding design, we question drawing's dominance and overprecision. Leaving space for completion and initiatives will allow drawing to deviate from a tool of power, to a collective one.

Technological improvements on design and building methods further divide workers. Industrialised building matters and parts hide labour. Promoting workers' know-how into material choices and assembly is a way to empower them.

> "where matter seems to disappear, so too, often, does labour." ***- Katie Lloyd Thomas, "'Zooooooop! Look Quickly or You'Ll Miss It!": Pella Rolscreens®, Pilkington Insulight ActivTM and Jennifer Bloomer's Disappearing Matter' -***

FROM PEDAGOGY

We believe in learning to shift practices and are convinced of their interconnections. It is from pedagogy that a change can be operated. Learning and doing cannot be detachable anymore.

BIBLIOGRAPHY

DISCUSSION

Anonymous Directeur de Travaux. In discussion with the authors. Oral, November 2024.

Anonymous Directeur de Travaux. In discussion with the authors. Oral, December 2024.

Anonymous Electricians. In discussion with the authors. Oral, 16 November 2024.

Anonymous Formworkers. In discussion with the authors. Oral, November 2024.

Anonymous Masonry Contremaître. In discussion with the authors. Oral, November 2024.

Anonymous Project Owner. In discussion with the authors. Oral, November 2024.

Constantin, Simon. UNIA Interview. Oral, 25 November 2024.

Duinker, Michel, and Stéphane Bettex. SUVA Interview. Oral, 2 October 2024.

Porteret Malou, Physiotherapist Student. In discussion with the authors. Oral, 8 December 2024.

READING

3dsourced. 'What Is CAD? Definition, Advantages and Uses Explained'. 3dsourced, 20 February 2024. https://www.3dsourced.com/guides/what-is-cad-guide-modeling/.

Algeco. 'Plus de 70 ans de leadership - Algeco'. Algeco. Accessed 6 December 2024. https://www.algeco.fr/plus-de-70-ans-de-leadership.

Arantes, Pedro Fiori. The Rent of Form: Architecture and Labor in the Digital Age. Translated by Adriana Kauffmann. Buell Center Books in the History and Theory of American

Architecture. Minneapolis: University of Minnesota Press, 2019.

Autodesk. 'Building Information Modeling'. Autodesk. Accessed 4 December 2024. https://www.autodesk.com/solutions/aec/bim.

Baxi, Kadambari, Jordan H. Carver, Laura Diamond Dixit, Lindsey Wikstrom Lee, Mabel O. Wilson, Tiffany Rattray, and Beth Stryker. Who Builds Your Architecture?: A Critical Field Guide | Who Builds Your Architecture? (WBYA?). MTWTF. New York, 2017. http://whobuilds.org/who-builds-your-architecture-a-critical-field-guide/.

Cambridge Dictionary. 'Labour'. Online dictionary. Cambridge Dictionary. Accessed 8 December 2024. https://dictionary.cambridge.org/dictionary/english/labour.

Capitalism in the Web of Life, Jason W Moore. Other Voices, Other Choices, 2016. https://www.youtube.com/watch?v=E92w0WczYUw.

Clarke, Linda. Building Capitalism: Historical Change and the Labour Process in the Production of Built Environment. Routledge Revivals. London: Routledge, Taylor & Francis Group, 2011.

———. 'Valuing Labour'. Building Research & Information 34, no. 3 (May 2006): 246–56. https://doi.org/10.1080/09613210600635176.

Clarke, Linda, and Christine Wall. 'Skilled Versus Qualified Labour: The Exclusion Of Women From The Construction Industry'. In Class and Gender in British Labour History: Renewing the Debate (or Starting It ?), Davis, M., 14. Pontypool: Merlin Press, 2010.

Confederation, Swiss. 'Echafaudages'. In Ordonnance sur les travaux de construction, 5, 2021.

Cortright, Marisa. 'Can This Be? Surely This Cannot Be?': Architectural Workers Organizing in Europe. First edition. Prague: VI PER Gallery, 2021.

Deamer, Peggy. Architecture and Labor. 1st ed. Oxford: Routledge, 2020. https://doi.org/10.4324/9780429325182.

Deltamod. 'Qu'est ce qu'une base vie de chantier?' Occamod. Accessed 5 December 2024. https://occamod.com/base-vie/.

Dharia, Namita Vijay. The Industrial Ephemeral: Labor and Love in Indian Architecture and Construction. Atelier : Ethnographic Inquiry in the Twenty-First Century 7. Oakland, California: University of California Press, 2022.

Dollar, Cindy Brooks. 'Does the Use of Binary Indicators Reify Difference and Inequality?' Women's Studies Inernational Forum 61 (2017): 9–13.

État de Vaud. 'Accident mortel sur un chantier à Prilly – dernier point de situation'. État de Vaud, 16 July 2024. https://www.vd.ch/actualites/actualite/news/i-accident-mortel-sur-un-chantier-a-prilly-dernier-point-de-situation.

Éthique et architecture. Video youtube. Grenoble, 2018. https://www.youtube.com/watch?v=Dc-HQkxU1tU.

Felluga, Dino Franco. 'General Introduction to Marxism'. Introductory Guide to Critical Theory, 31 January 2011. https://cla.purdue.edu/academic/english/theory/marxism/modules/introduction.html.

Ferro, Sérgio. Architecture from below: An Anthology. First edition. London: MACK, 2024.

Ferro, Sergio. dessin / chantier. Collection école d'architecture de Grenoble. Paris: Editions de la Villette, 2005.

Garner, Sophia, and Leslie Majer. 'Body-Works: Architecture Is Made by Moving Bodies', n.d.

Gosh, Swarnabh. 'Toward a Critique of Labor in Construction'. In Non-Extractive Architecture: On Designing without Depletion, Space Caviar., 1:296. Sternberg Press, 2021. https://www.sternberg-press.com/product/non-extractive-architecture-vol-1/.

Guillbaud, Mathieu. 'L'explication - Direction de travaux'. DGPI (blog), 10 July 2024. https://actualite.dgpi.ch/actualite/.

Habert, Margaux. 'Echafaudage à Malley: «Il aurait pu y avoir plus de morts»'. watson.ch/fr, 15 July 2024. https://www.watson.ch/fr/!239974251.

Harper, Douglas. 'Labour'. Online dictionary. Online Etymology Dictionary. Accessed 8 December 2024. https://www.etymonline.com/search?q=labour+.

———. 'Labourer'. Online dictionary. Online Etymology Dictionary, September 2017. https://www.etymonline.com/word/labourer.

———. 'Worker'. Online dictionary. Online Etymology Dictionary, 28 September 2017. https://www.etymonline.com/word/worker.

Hutton, Jane Mah. Reciprocal Landscapes: Stories in Material Movement. London ; New York: Routledge, Taylor & Francis Group, 2020.

Les Soulèvements de la Terre, ed. Premières secousses. Paris: la Fabrique éditions, 2024.

Link, Stefan. Forging Global Fordism: Nazi Germany, Soviet Russia, and the Contest over the Industrial Order. Paperback edition. America in the World. Princeton Oxford: Princeton University Press, 2023.

Malterre-Barthes, Charlotte, ed. On Architecture and Greenwashing. The Political Economy of Space, Vol. 1. Berlin: Hatje Cantz, 2024.

Marx, Karl. The Process of Production of Capital. Vol. 1. Capital, A Critique of Political Economy. Moscow, USSR: Progress Publisher, 1887. https://www.marxists.org/archive/marx/works/1867-c1/ch25.htm#S4.

Nichols, Sarah. 'Opération Béton: Construction Concrete in Switzerland'. Thesis, ETHZ, 2021.

SECO, Secrétariat d'État à l'économie. 'Portrait du Secrétariat d'État à l'économie'. Accessed 16 December 2024. https://www.seco.admin.ch/seco/fr/home/seco/seco_portraet.html.

———. 'Prévention des accidents et des maladies professionnelles'. Accessed 4 December 2024. https://www.seco.admin.ch/seco/fr/home/Arbeit/Arbeitsbedingungen/gesundheitsschutz-am-arbeitsplatz/Verhuetung-Berufsunfaelle-Berufskrankheiten.html.

SUVA, 'Vision, mission et valeurs de la Suva'. SUVA, 2024. https://www.suva.ch/fr-ch/autoportrait/la-suva/vision-mission-valeurs-code-de-conduite.

Thomas, Katie Lloyd. '"Zooooooop! Look Quickly or You'LI Miss It!": Pella Rolscreens®, Pilkington Insulight ActivTM and Jennifer Bloomer's Disappearing Matter'. The Journal of Architecture 28, no. 6 (18 August 2023): 1033–56. https://doi.org/10.1080/13602365.2023.2264310.

TK/TF. 'Transforming Knowledges of Architecture, Design and Labour'. Production Studies International Conference 2024 - Newcastle University, UK. Building Sites: Architecture, Labour and the Field of Production Studies. Newcastle: Newcastle University/ Instituto de Arquitectura e Urbanismos Sao Paulo, March 2024. https://www.tf-tk.com/psic2024.

UNIA. 'Unia, le plus grand syndicat de Suisse – Unia, le syndicat'. UNIA. Accessed 4 December 2024. https://unia.ch/fr/.

Waite, Maurice, ed. Paperback Oxford English Dictionary. 7th edition. Oxford: Oxford University press, 2012.

Wall, Christine. An Architecture of Parts: Architects, Building Workers and Industrialization in Britain, 1940-1970. Routledge Research in Architecture. London New York: Routledge, 2013.

DATA

EPFL. 'Certifications et crédits'. EPFL, 2023. https://www.epfl.ch/education/continuing-education/fr/faq/.

État de Vaud. 'Accident mortel sur un chantier à Prilly – dernier point de situation'. État de Vaud, 16 July 2024. https://www.vd.ch/actualites/actualite/news/i-accident-mortel-sur-un-chantier-a-prilly-dernier-point-de-situation.

Fairs, Markus. 'Preventing Migrant Deaths in Qatar "Not My Duty as an Architect" Say Zaha Hadid'. Dezeen, 26 February 2014. https://www.dezeen.com/2014/02/26/qatar-zaha-hadid-stadium/.

Fédération genevoise des métiers du bâtiment. 'Main-d'oeuvre: lutte contre le travail au noir, aspects conjoncturels et libre circulation avec l'Union européenne'. constructionromande. Accessed 4 January 2025. https://constructionromande.ch/themes/main-doeuvre/.

FFB Nationale. 'Le bâtiment se construit aussi au féminin'. Fédération Française du Bâtiment, 8 March 2023. https://www.ffbatiment.fr/actualites-batiment/presse/journee-de-la-femme-2023.

Frickmann, F, B Wurm, V Jeger, B Lehmann, H Zimmermann, and Ak Exadaktylos. '782 Consecutive Construction Work Accidents: Who Is at Risk? A 10-Year Analysis from a Swiss University Hospital Trauma Unit'. Swiss Medical Weekly, 6 September 2012. https://doi.org/10.4414/smw.2012.13674.

Maniera, Luiza Maria. 'Le secteur de la construction : un moteur important de l'économie et du marché du travail'. Société Suisse des Entrepreneurs, 10 January 2022. https://baumeister.swiss/fr/le-secteur-de-la-construction-un-moteur-important-de-leconomie-et-du-marche-du-travail/.

———. 'Les évolutions du secteur de la construction'. Société Suisse des Entrepreneurs, 19 April 2022. https://baumeister.swiss/fr/il-va-de-lavant-depuis-125-ans-les-evolutions-du-secteur-de-la-construction/.

———. 'Une tendance positive ontinue: plus de femmes dans la construction'. Société Suisse des Entrepreneurs, 4 October 2023. https://baumeister.swiss/fr/une-tendance-positive-continue-plus-de-femmes-dans-la-construction/.

Maniera, Martin. 'Chiffre d'affaires 2023'. Société Suisse des Entrepreneurs, 28 February 2024. https://baumeister.swiss/fr/apres-une-bonne-annee-2023-2024-sannonce-decisive-pour-la-construction-de-logements-et-dinfrastructures/.

Marty, Julie. 'Plus de 200 décès liés au travail en Suisse chaque année, "une réflexion est à faire"'. infoSport. rts, 19 July 2024. https://www.rts.ch/info/suisse/2024/article/plus-de-200-deces-lies-au-travail-en-suisse-chaque-annee-une-reflexion-est-a-faire-28574672.html.

Office fédéral de la statistique. 'Statut sur le marché du travail, personnes actives occupées'. admin. Accessed 28 December 2024. https://www.bfs.admin.ch/bfs/fr/home/statistiques/travail-remuneration/activite-professionnelle-temps-travail/population-active/statut-marche-travail.html.

Orlik, Luisa, Martin Müller, Aristomenis Exadaktylos, Stefan M. Scholz, Jolanta Klukowska-Rötzler, Mairi Ziaka, and Ralf Dethlefsen. 'Work-Related Injuries among Insured Construction Workers Presenting to a Swiss Adult Emergency Department: A Retro-

spective Study (2016-2020).' MDPI, 2022. https://doi.org/10.3390/ijerph191811294, 10.48350/173243.

palm. 'Ouest lausannois'. palm-Agglomération Lausanne-Morges (blog). Accessed 15 December 2024. https://lausanne-morges.ch/.

Poli, Victor. 'Pénurie de jeunes dans la construction, à qui la faute?' JAM- les productions des étudiant-e-s en journalisme de l'AJM/UNINE (blog), 12 May 2024. https://jam.unine.ch/penurie-de-jeunes-dans-la-construction-a-qui-la-faute/.

Schultze, Sebastian. 'Le secteur financier, un pilier de l'économie suisse'. La Vie économique, 8 October 2024. https://dievolkswirtschaft.ch/fr/2024/10/le-secteur-financier-un-pilier-de-leconomie-suisse/.

SUVA. 'Séries chronologiques des accidents par classe - 41A Secteur principal de la construction'. Pdf, 5 April 2024.

UNIA, and Chris Kelley. 'Préssion des délais dans la construction: un danger pour la santé, pour la sécurité et la qualité du travail'. Berne, 25 February 2020.

