

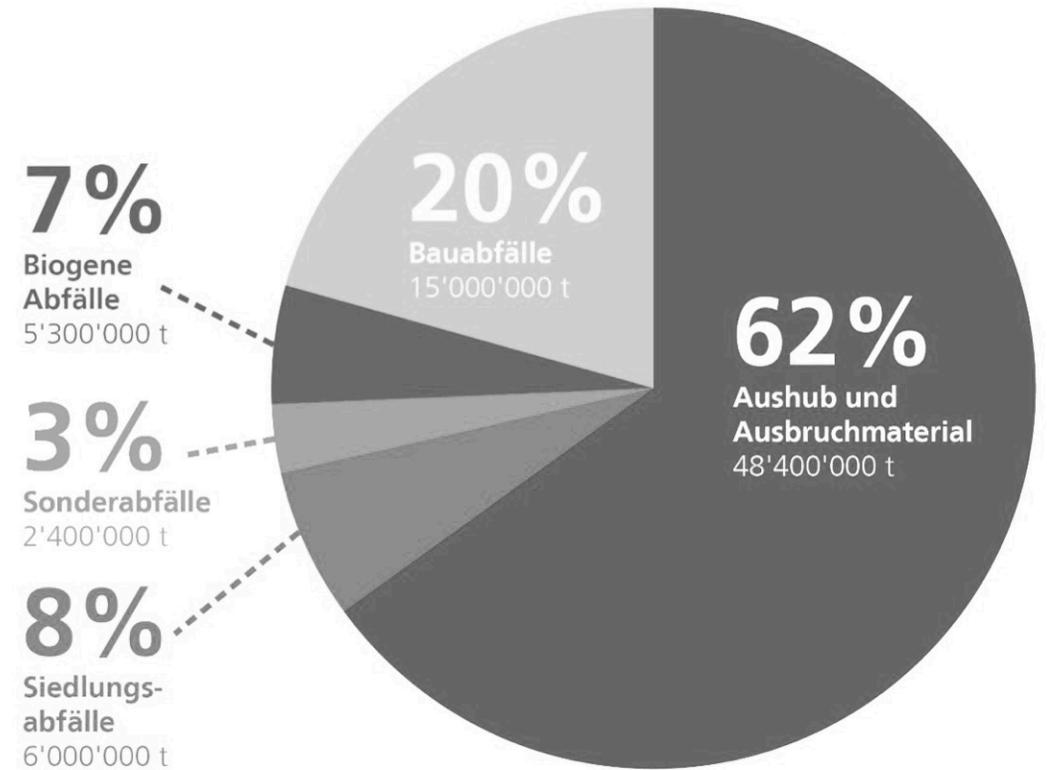
20  
BETON  
30

## Re-Use Concrete!

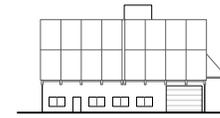
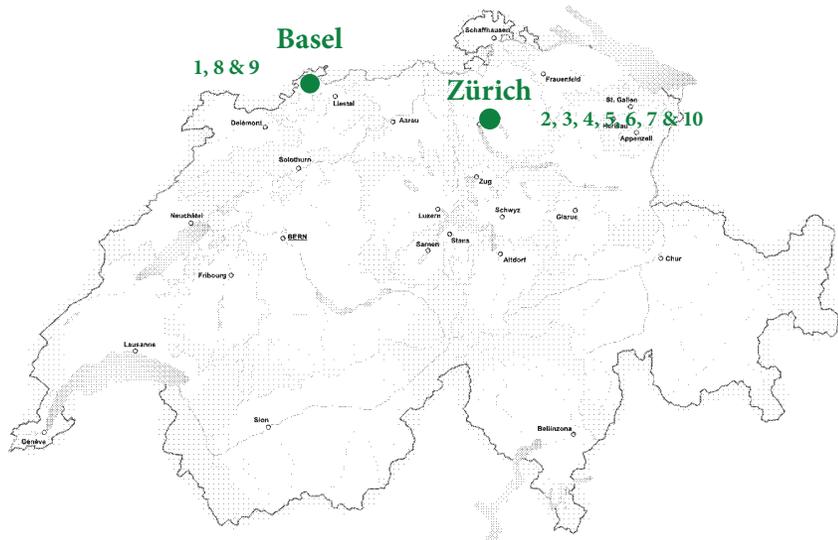
Neue Kreisläufe für bestehende Betonstrukturen

*New circular strategies for reusing in-situ cast concrete structures*

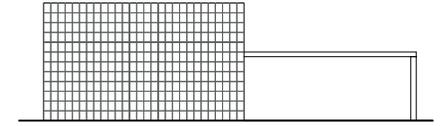
Adrian Kiesel



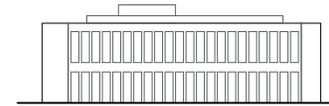
Stand: Januar 2017  
Quelle: BAFU 2017



Gewerbegebäude Erlenmatt Ost  
Basel 1



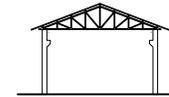
Maag Hallen  
Zürich 2



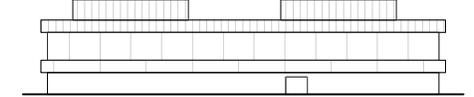
Zürich Versicherung Binz  
Zürich 3



Gewerbehalle Manegg  
Zürich 4



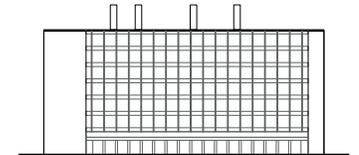
Lagerhalle Kochareal,  
Zürich 5



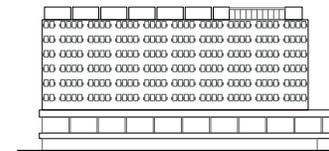
Schwimmbad Oerlikon,  
Zürich 6



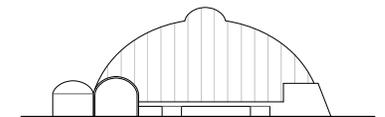
Gewerbehallen Wallisellen,  
Zürich 7



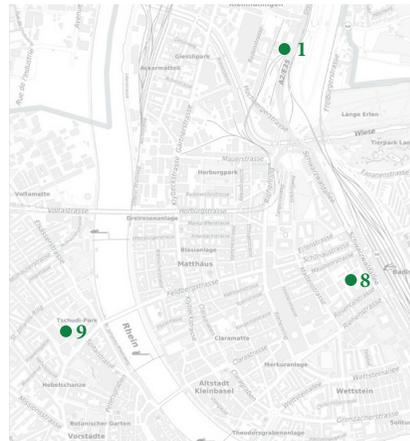
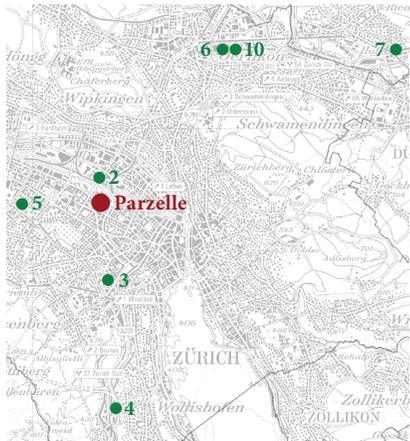
Laborgebäude Haus 6 Rosental,  
Basel 8

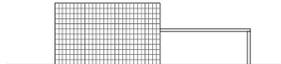
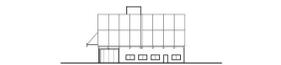
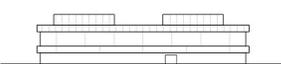
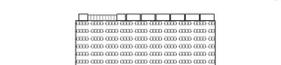


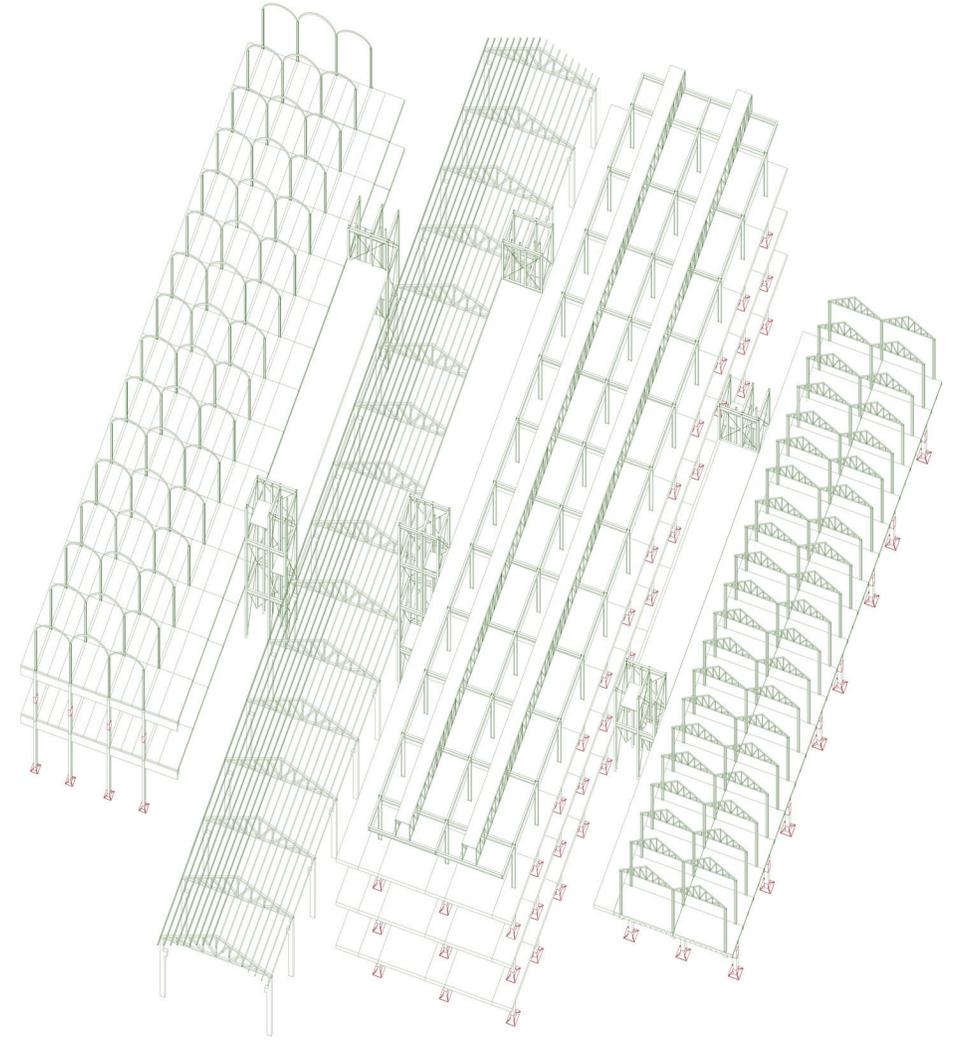
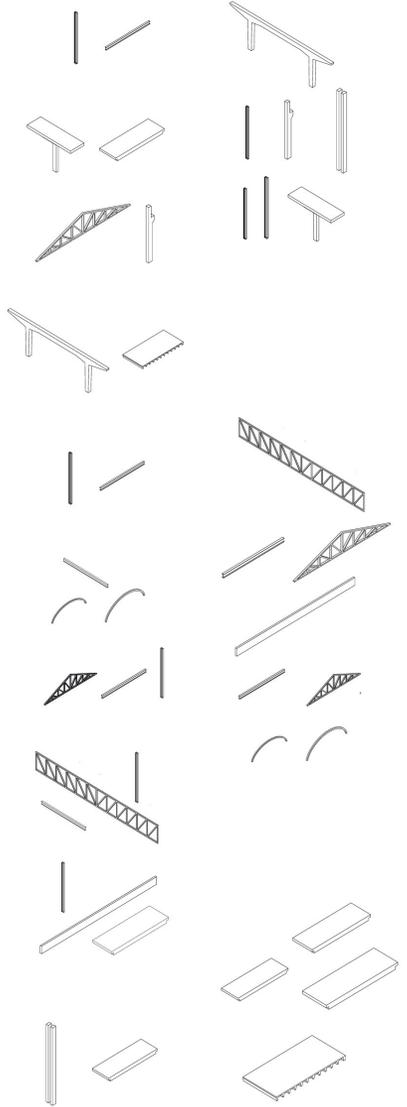
Laborgebäude Universität Basel,  
Basel 9

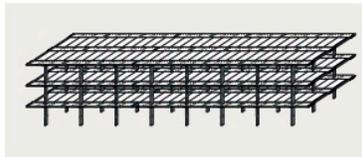
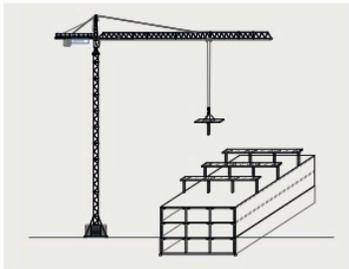
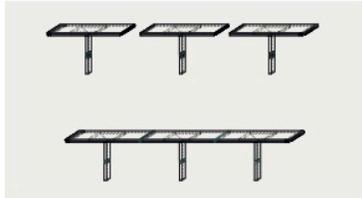
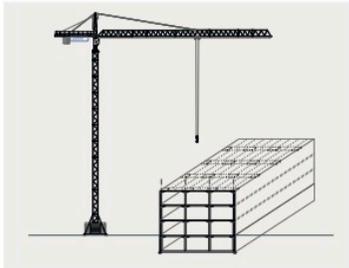
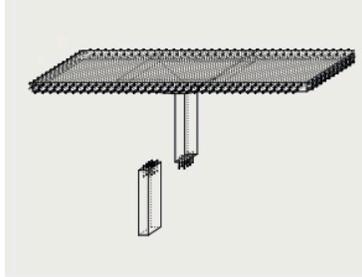
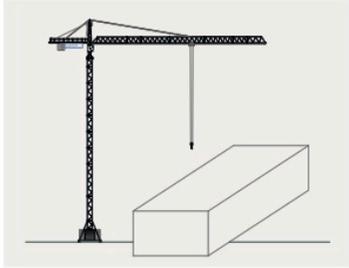


Kunstseilbahn Oerlikon  
Zürich 10

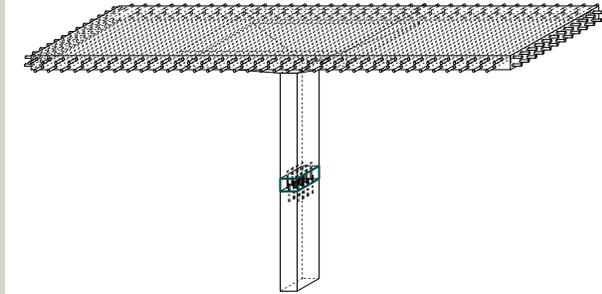


-  **1**  
Maag Hallen, Zürich
-  **2**  
Gewerbegebäude Erlenmatt Ost, Basel
-  **3**  
Lagerhalle Kochareal, Zürich
-  **4**  
Gewerbehalle Manegg, Zürich
-  **5**  
Zürich Versicherung Binz, Zürich
-  **6**  
Kunstseilbahn Oerlikon, Zürich
-  **7**  
Gewerbehallen Wallisellen, Zürich
-  **8**  
Schwimmbad Oerlikon, Zürich
-  **9**  
Laborgebäude Haus 6 Rosental Mitte, Basel
-  **10**  
Laborgebäude Universität, Basel





### Betontragwerk Erlenmatt Ost, Basel

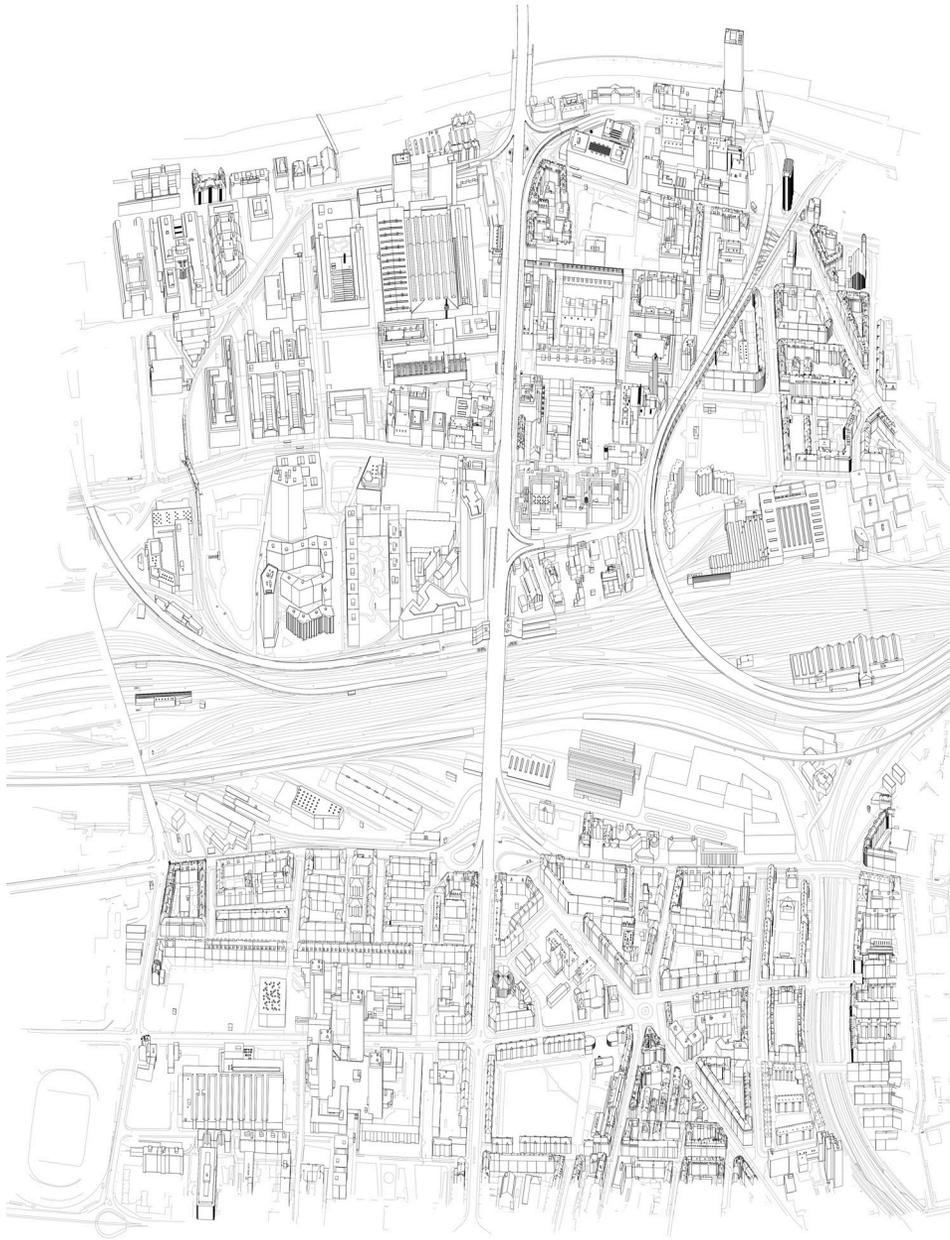


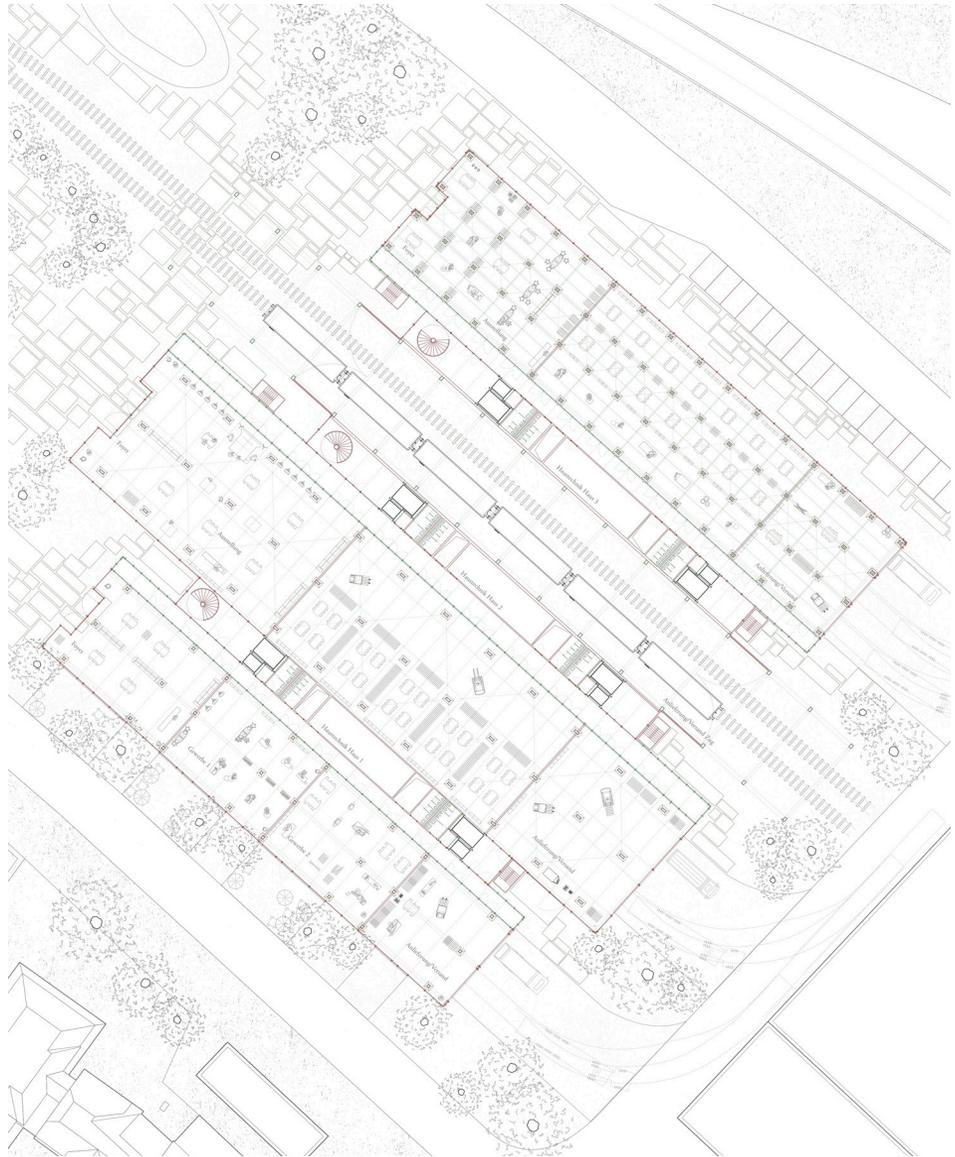
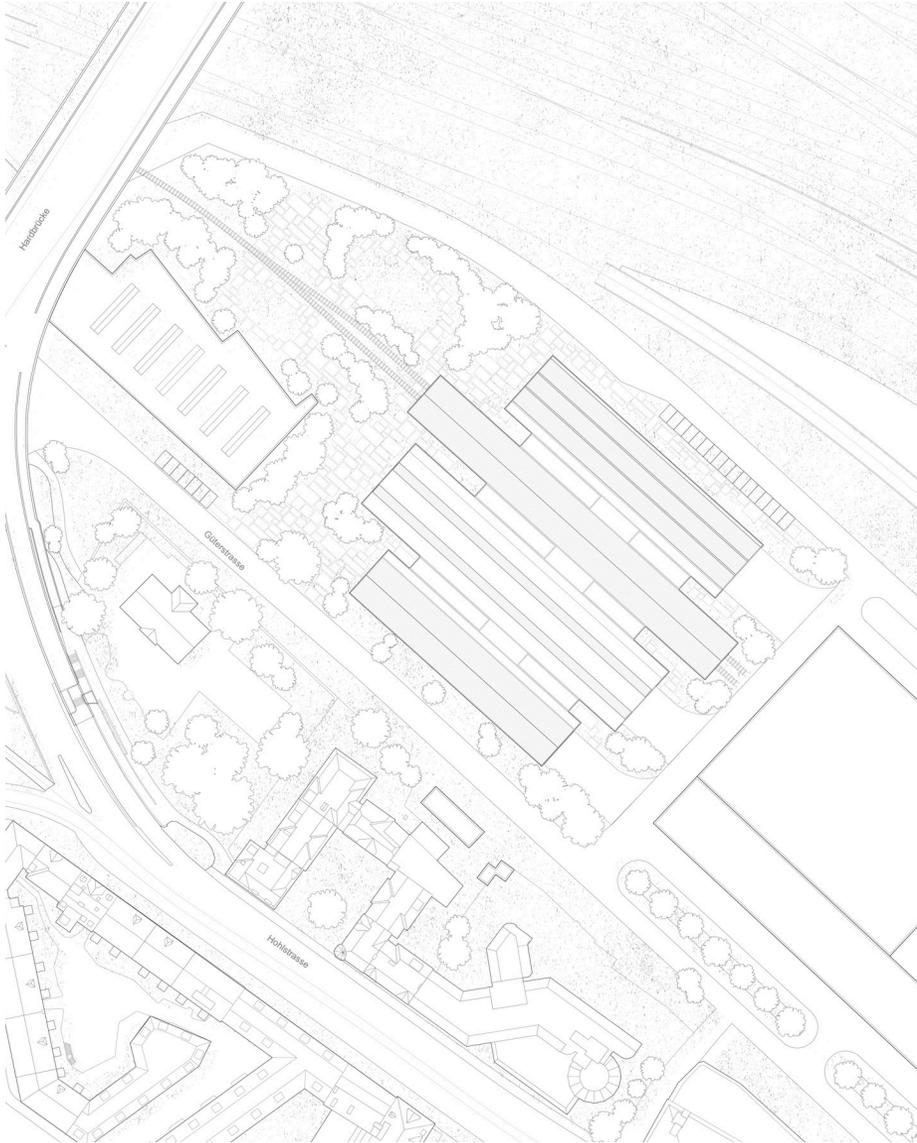
Stahlbetondecke: 9,86 m<sup>2</sup>    Stahlbetonstütze: 2,1 m<sup>3</sup>    Volumen ges.: 11,96 m<sup>3</sup>    Stahlbeton: 350 kgCO<sub>2</sub>eq./m<sup>3</sup>  
Bauteil\_Neu: 4186 kgCO<sub>2</sub>eq./Stk.    Bauteil\_ReUse: 204,71 kgCO<sub>2</sub>eq./Stk.    Ersparnis: 3981,29 kgCO<sub>2</sub>eq./Stk.

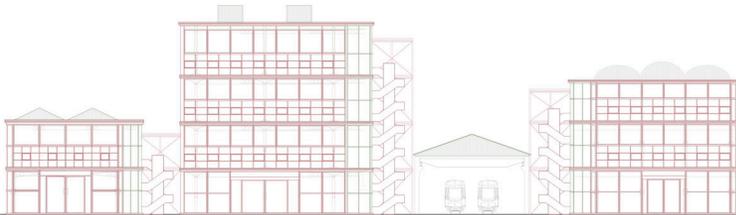
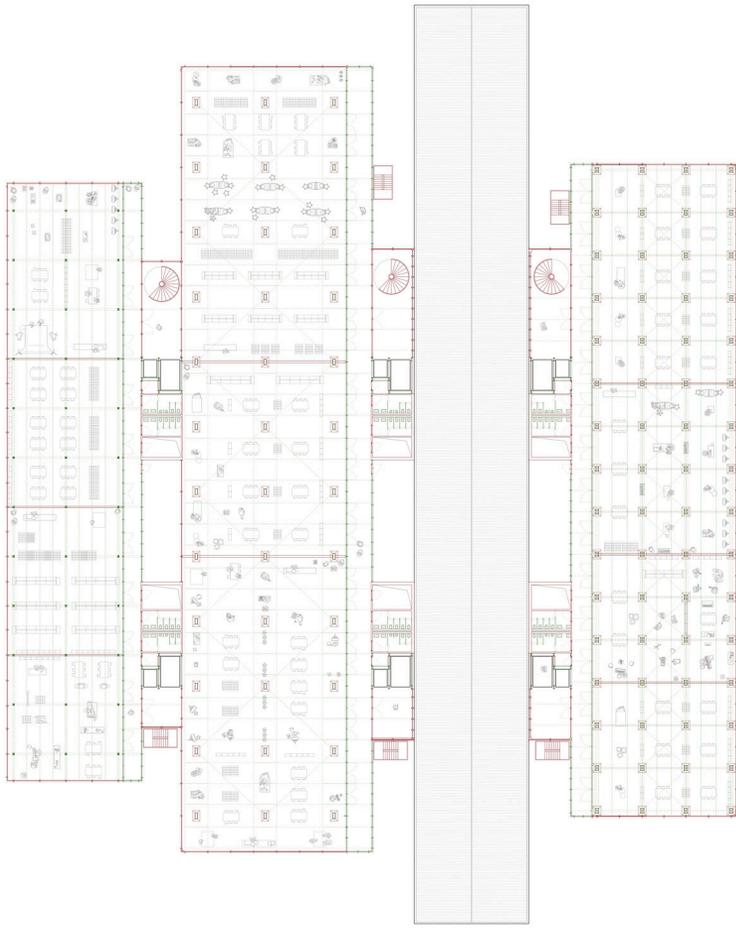
### Treibhausgasemissionen

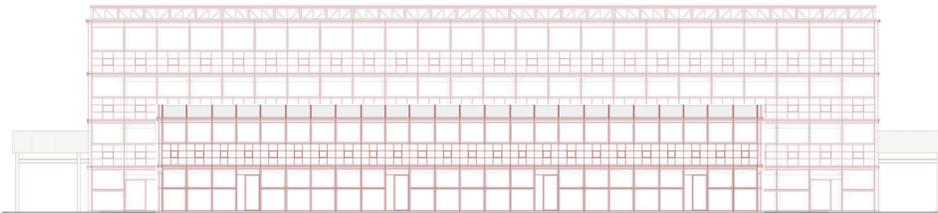
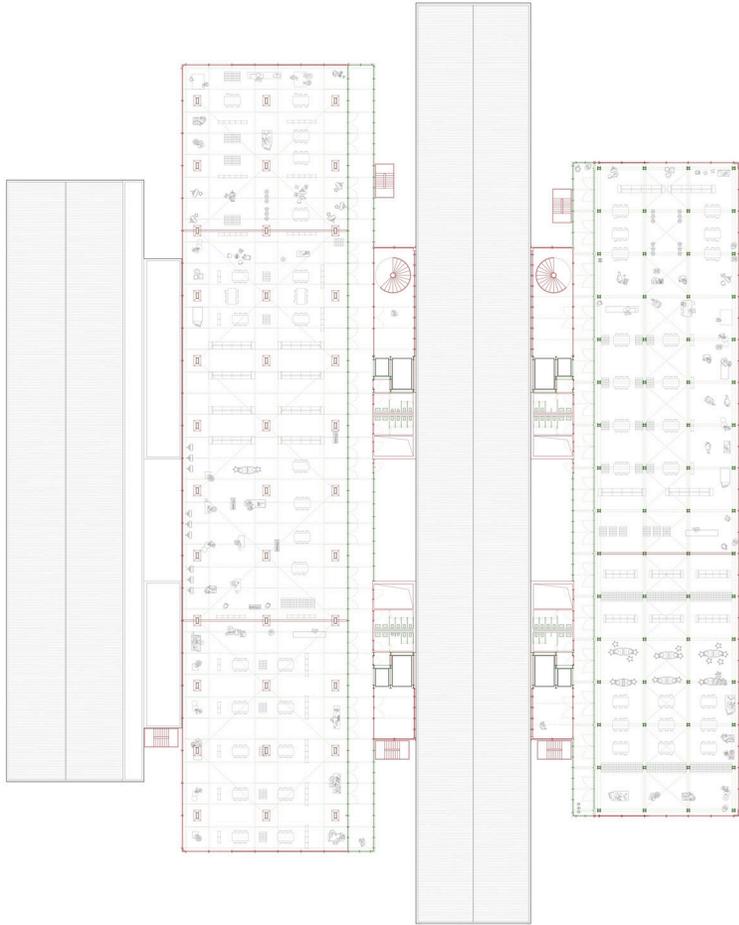
Hydroschneider	Transport	Wasser
Fläche: 10 m <sup>2</sup>	Strecke: 120 km	Verbrauch: 8-22 l/min
Tiefe: 0,05 m	Kraftstoff: Diesel	1 l Wasser: 0,35g CO <sub>2</sub> eq/dStk.
Dauer: 1 h	Verbrauch: 25 l/100 km	
Verbrauch: 160 kWh	1 kWh Diesel: 0,31 kgCO <sub>2</sub> -eq	Dauer: 28,56 h
1 m <sup>3</sup> - 20h Laufzeit	1 Liter Diesel: 6,50 kWh	Verbrauch ges: 25704 l Wasser
Betonplatte: 1,27 m <sup>3</sup>		
Betonstütze: 0,06 m <sup>3</sup> 1,43 m <sup>3</sup>		
1 kWh: 0,0296 kgCO <sub>2</sub> eq.		
Schneiden: 28,56 h	30l * 6,50kWh * 0,31kgCO <sub>2</sub> eq.	25704l * 0,00035kgCO <sub>2</sub> eq.
	135,26 kg CO <sub>2</sub> eq./Stk.	60,45 kg CO <sub>2</sub> eq/dStk.
		9,00 kg CO <sub>2</sub> eq/dStk.

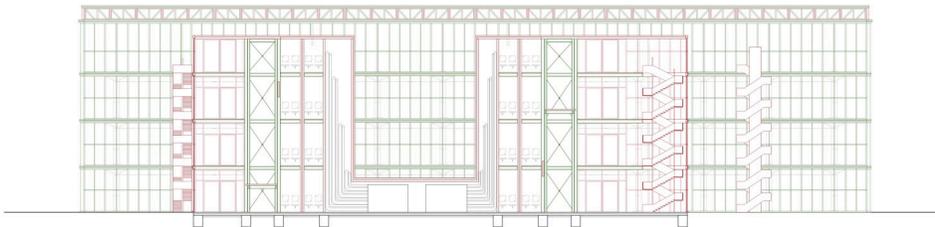
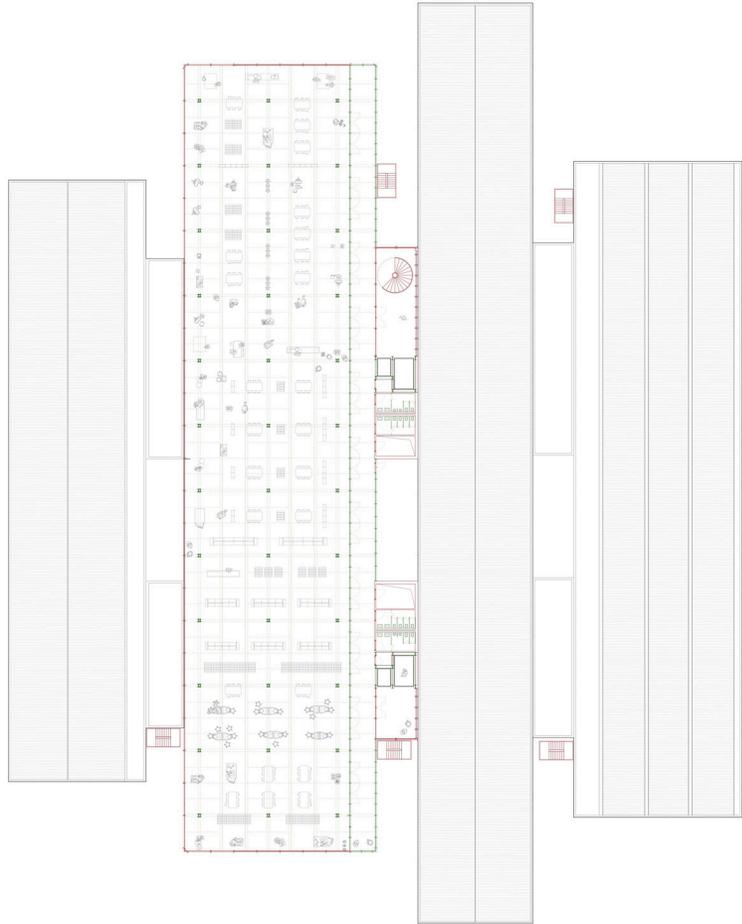
204,71 kg CO<sub>2</sub>eq./Stk.

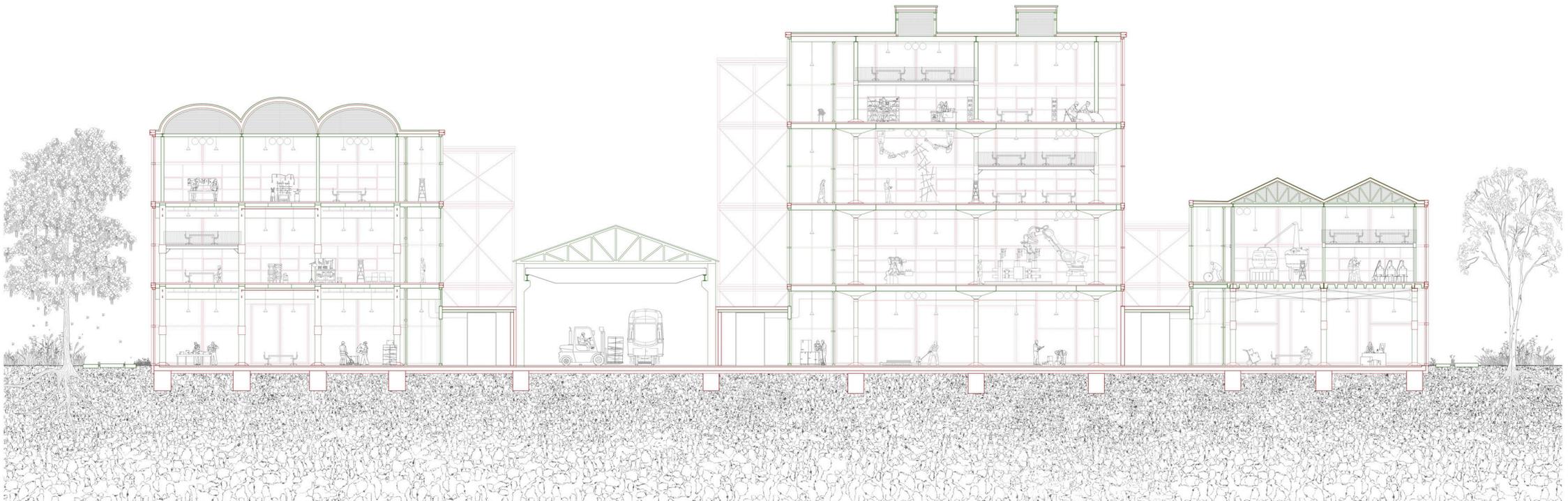


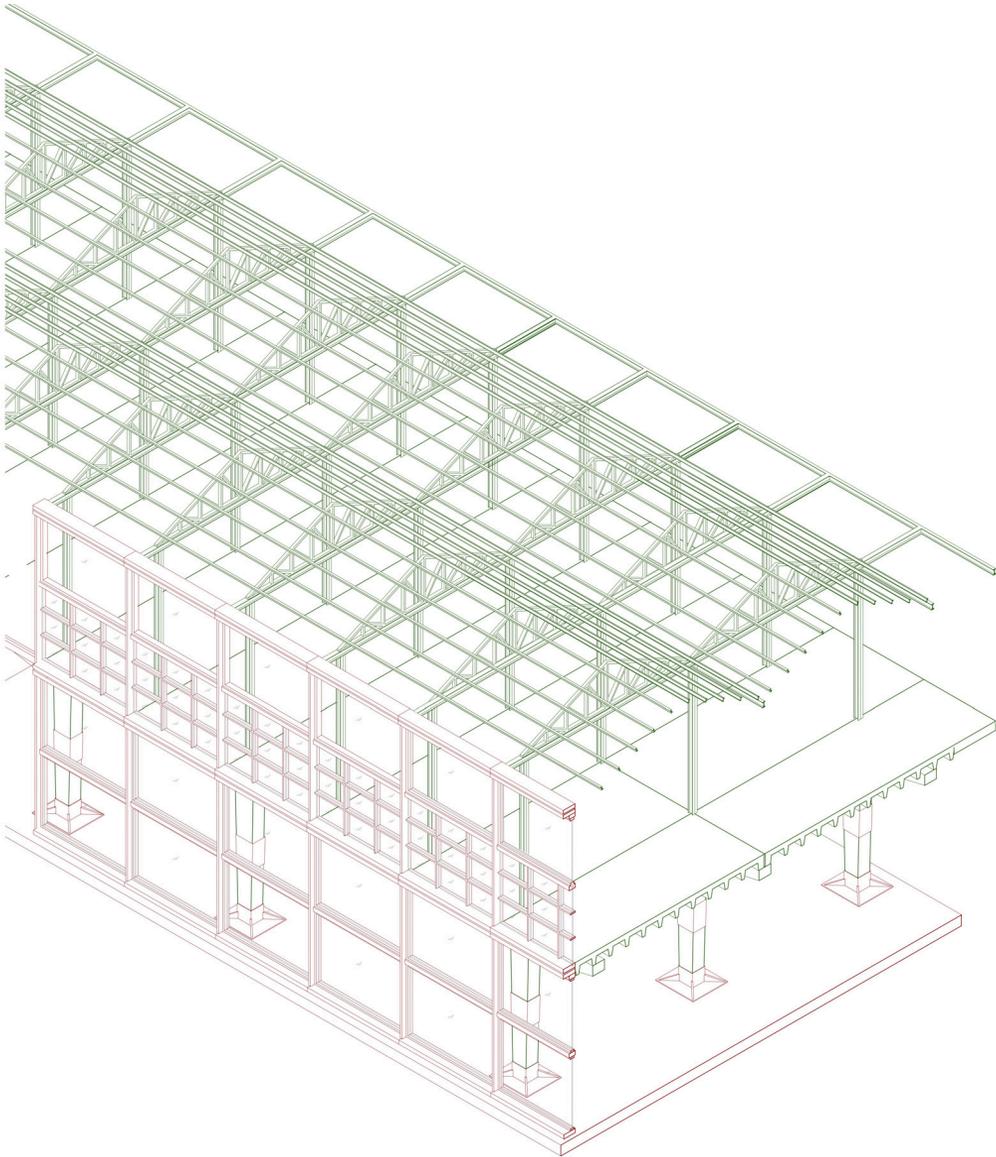


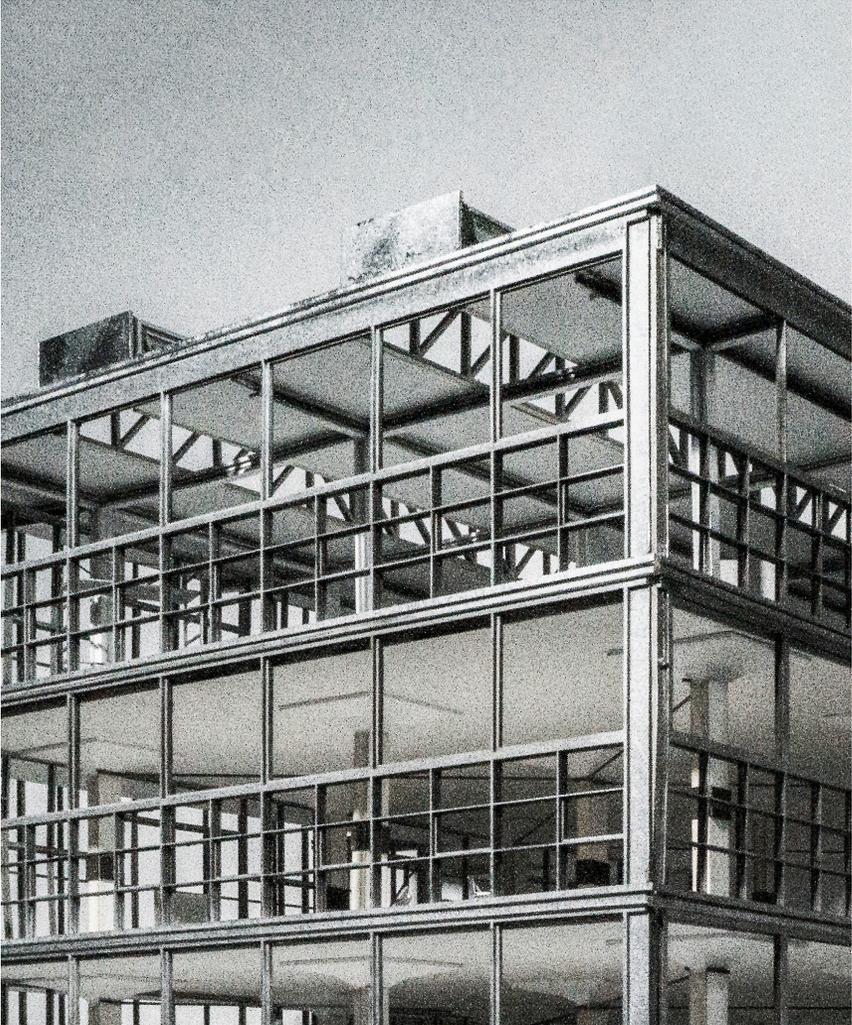
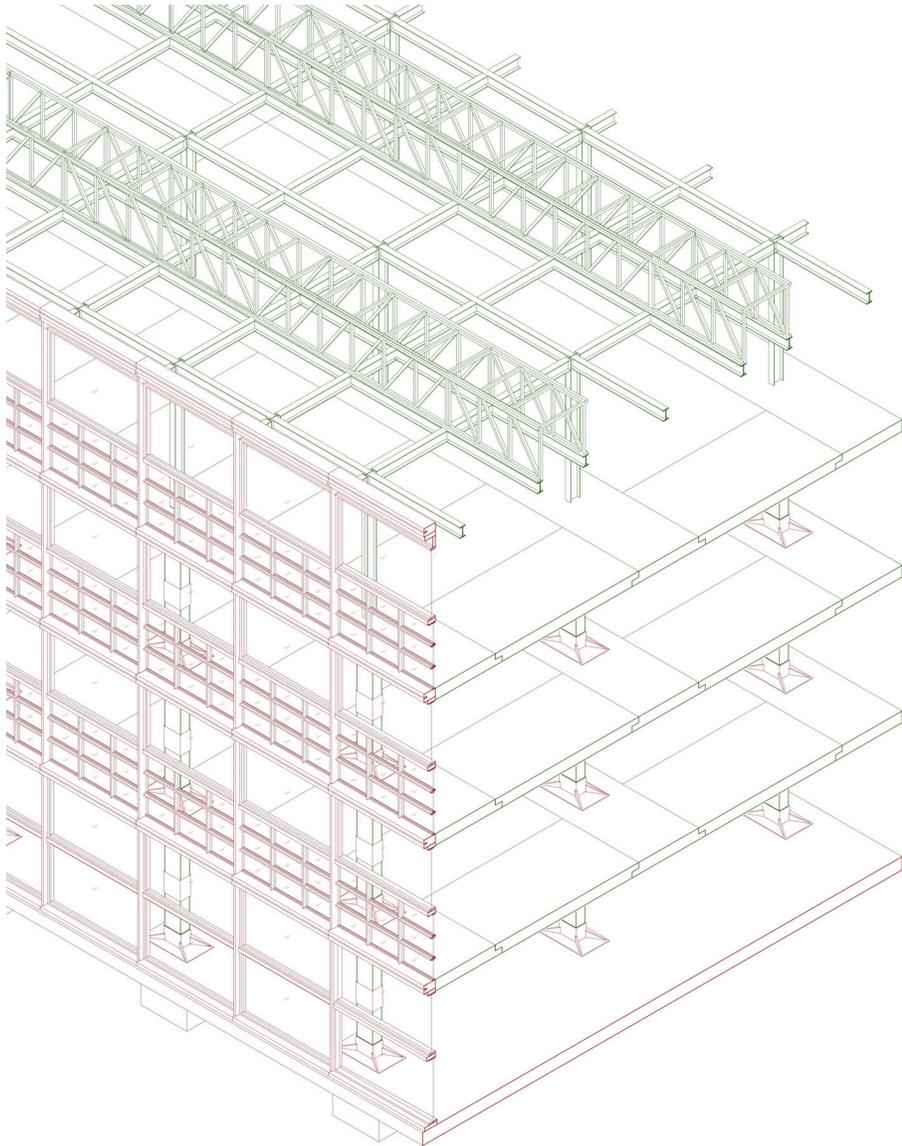


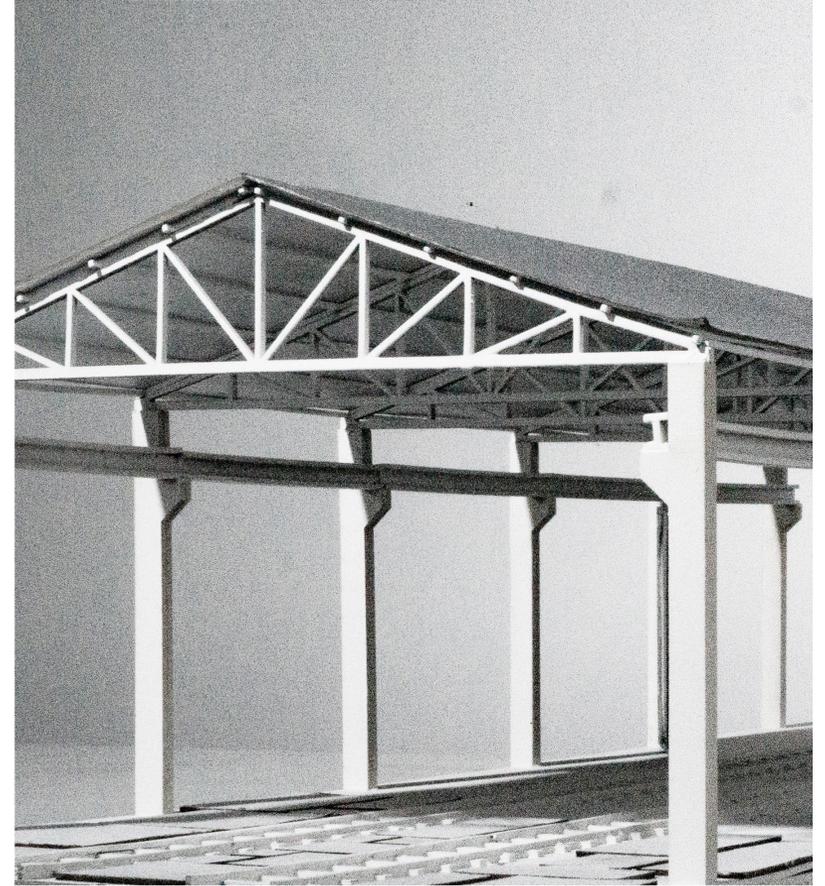
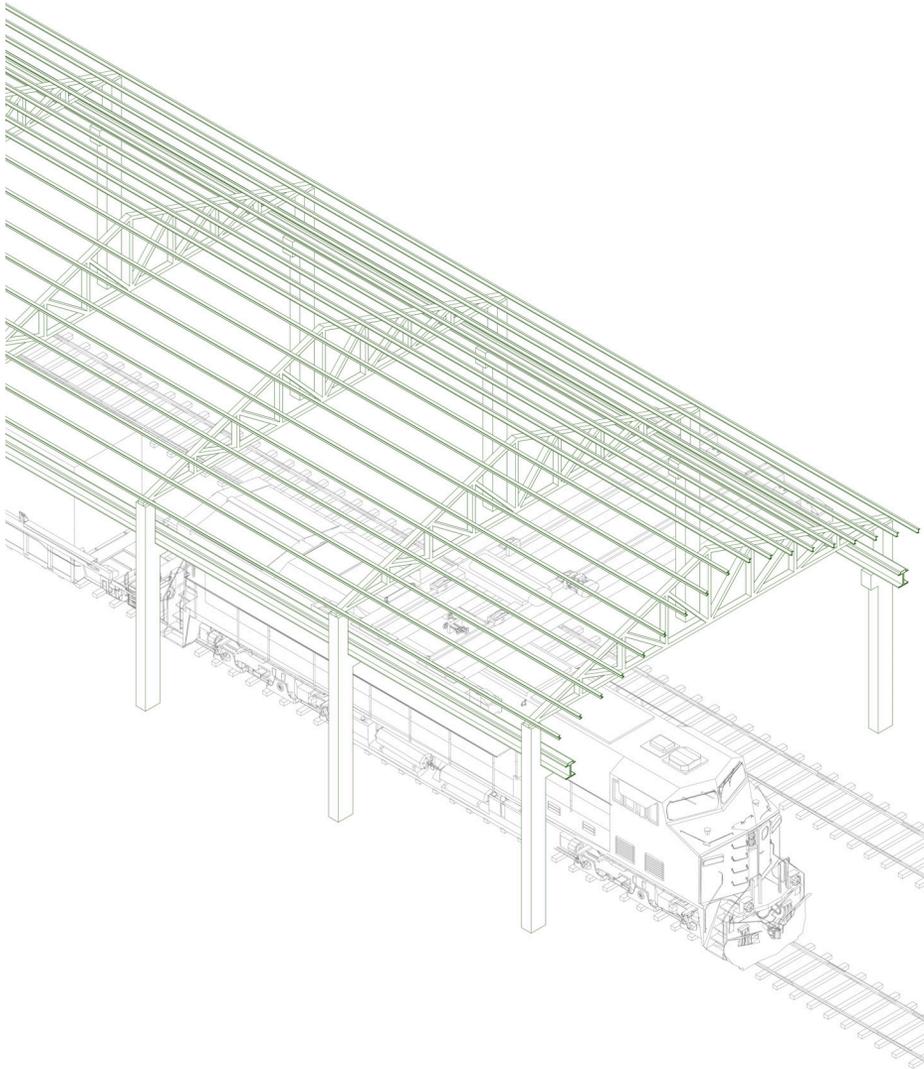


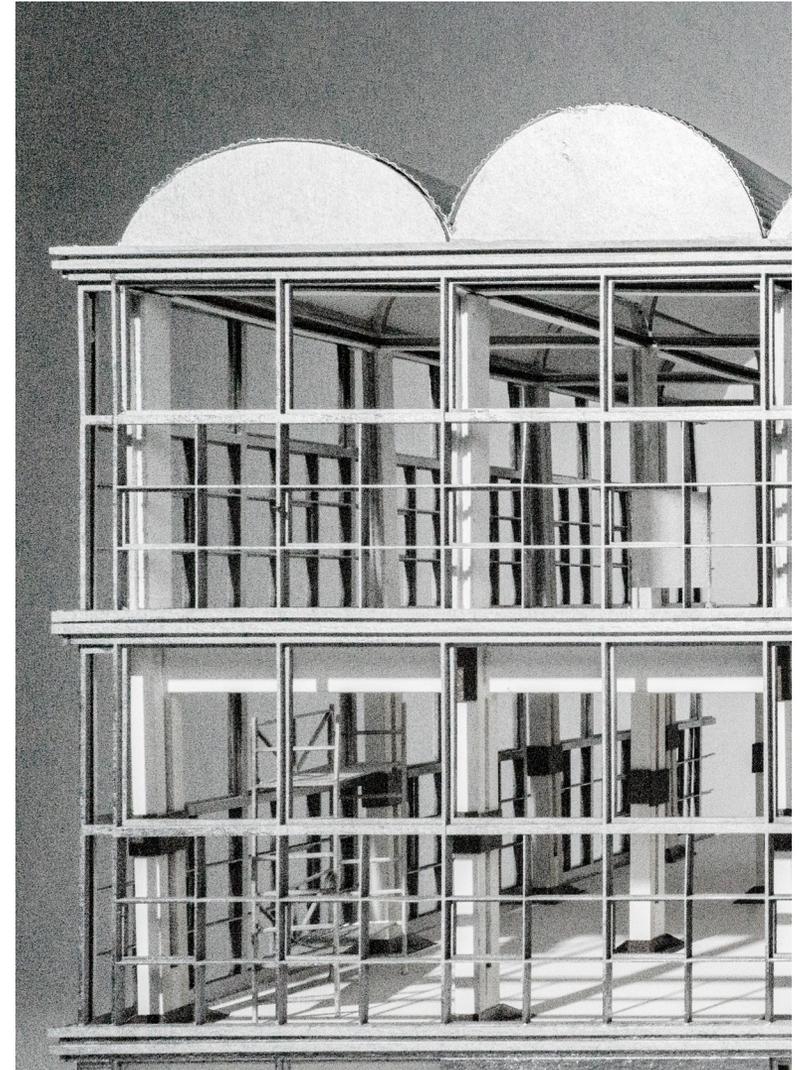
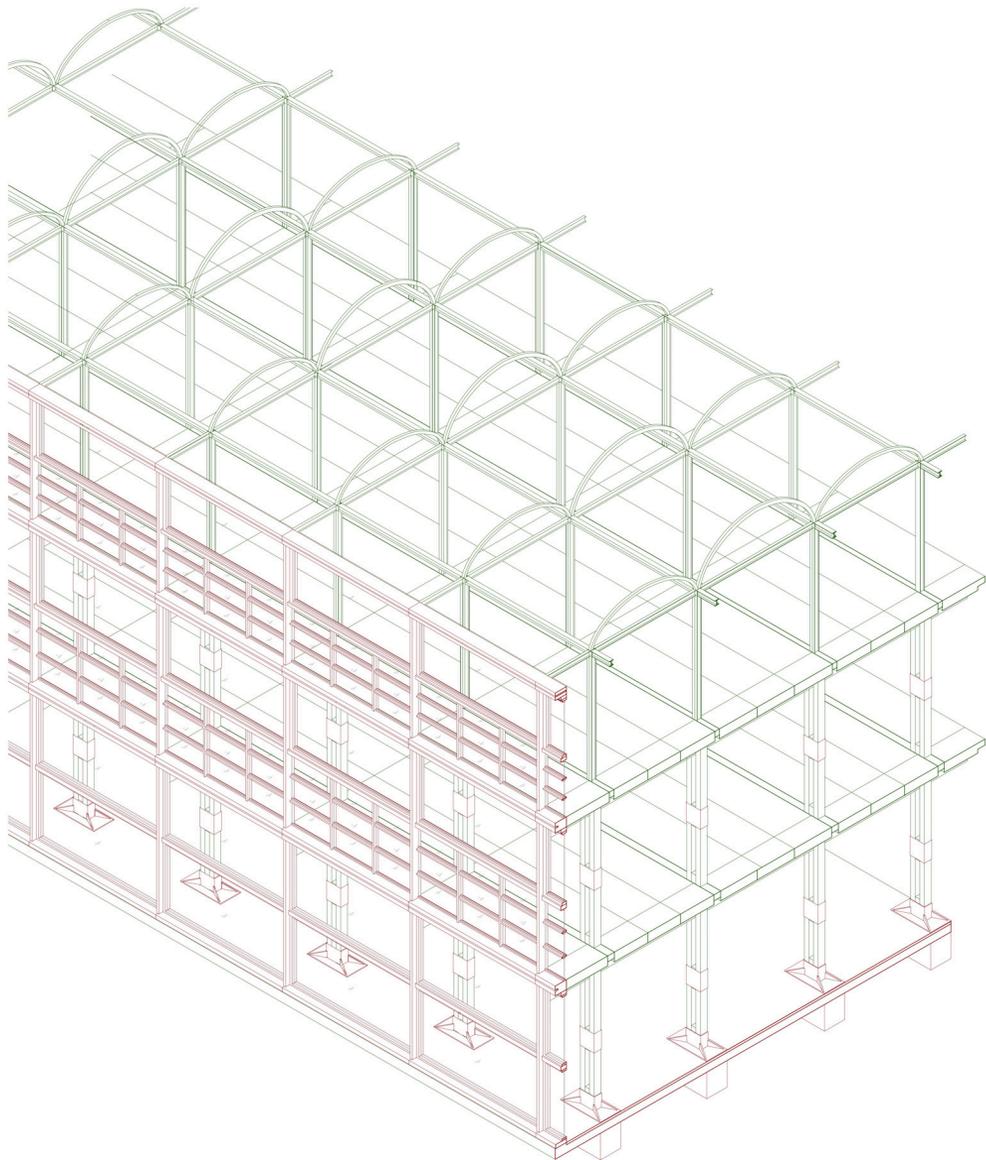


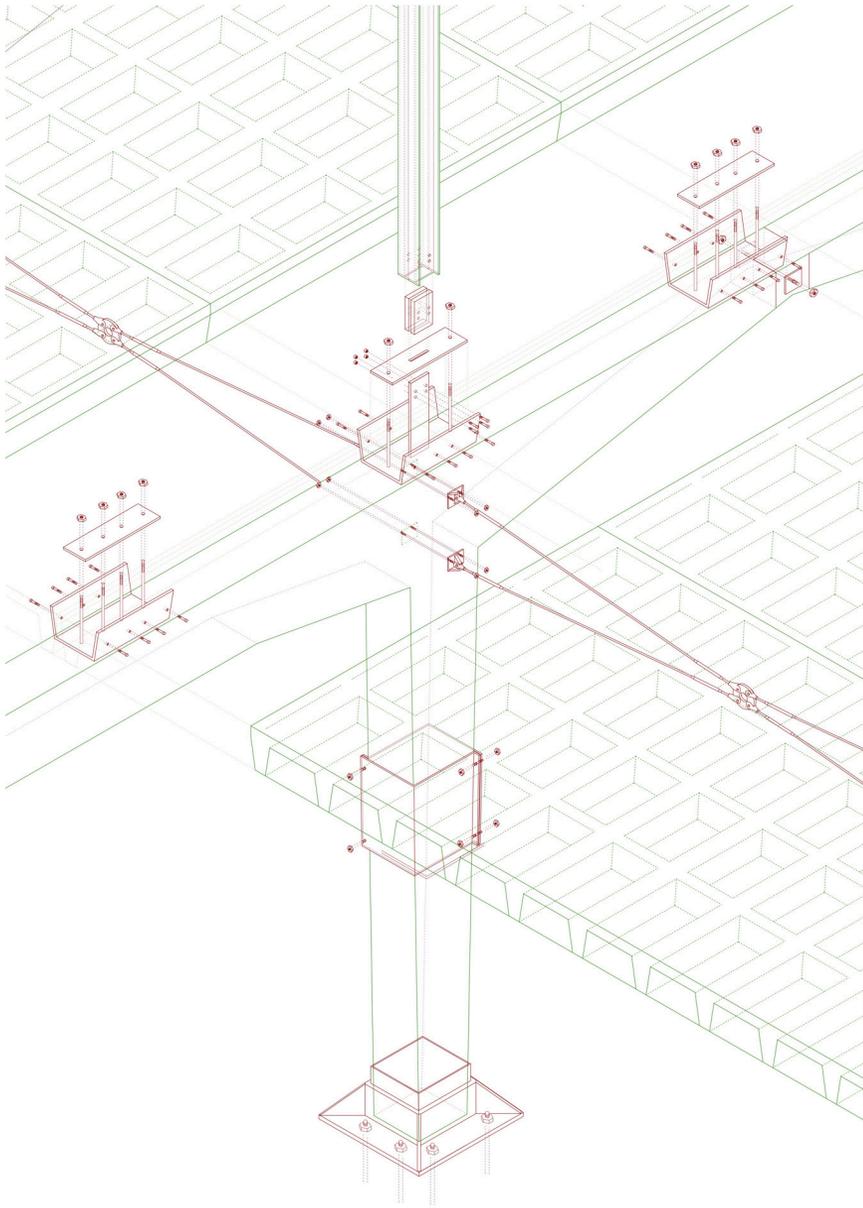


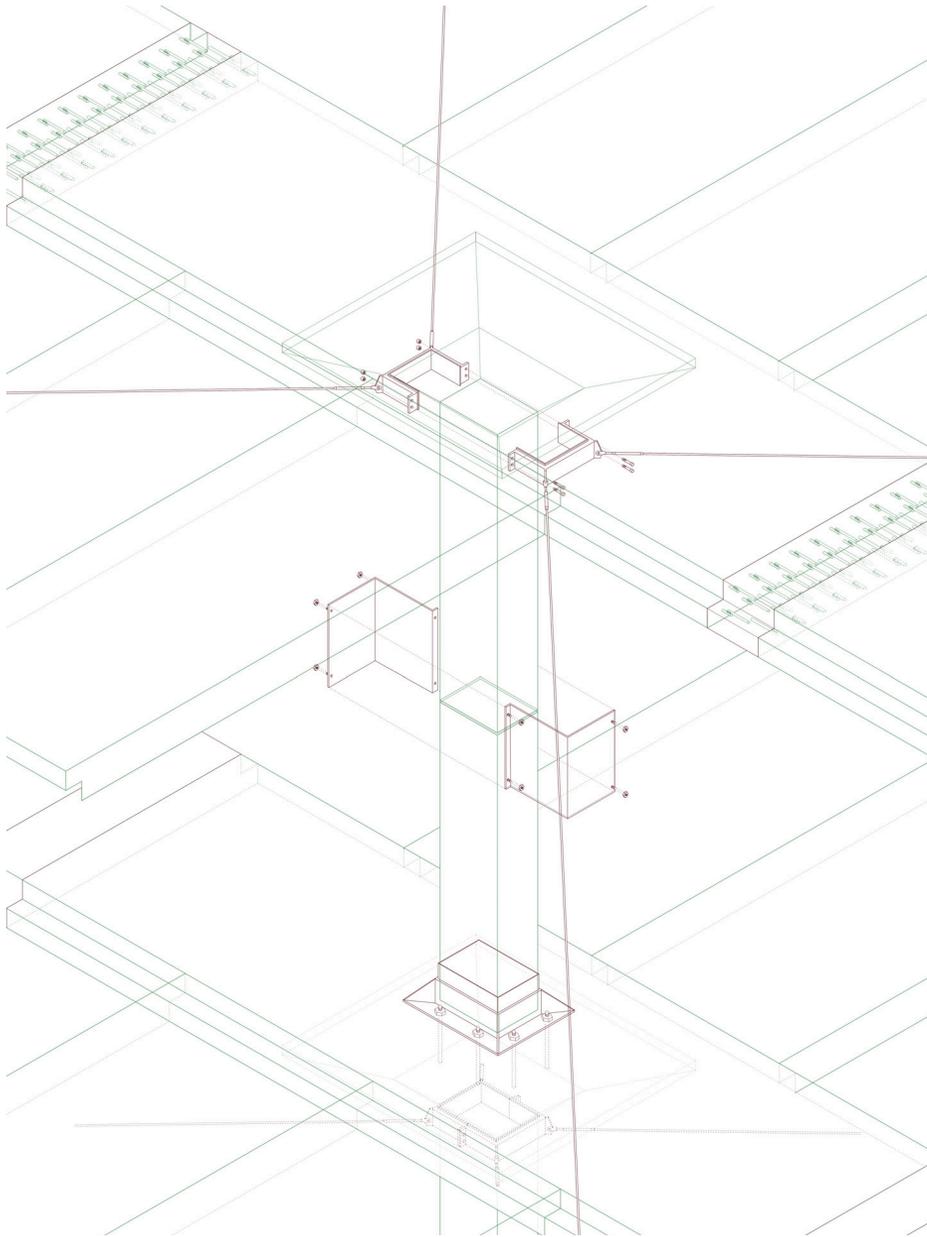


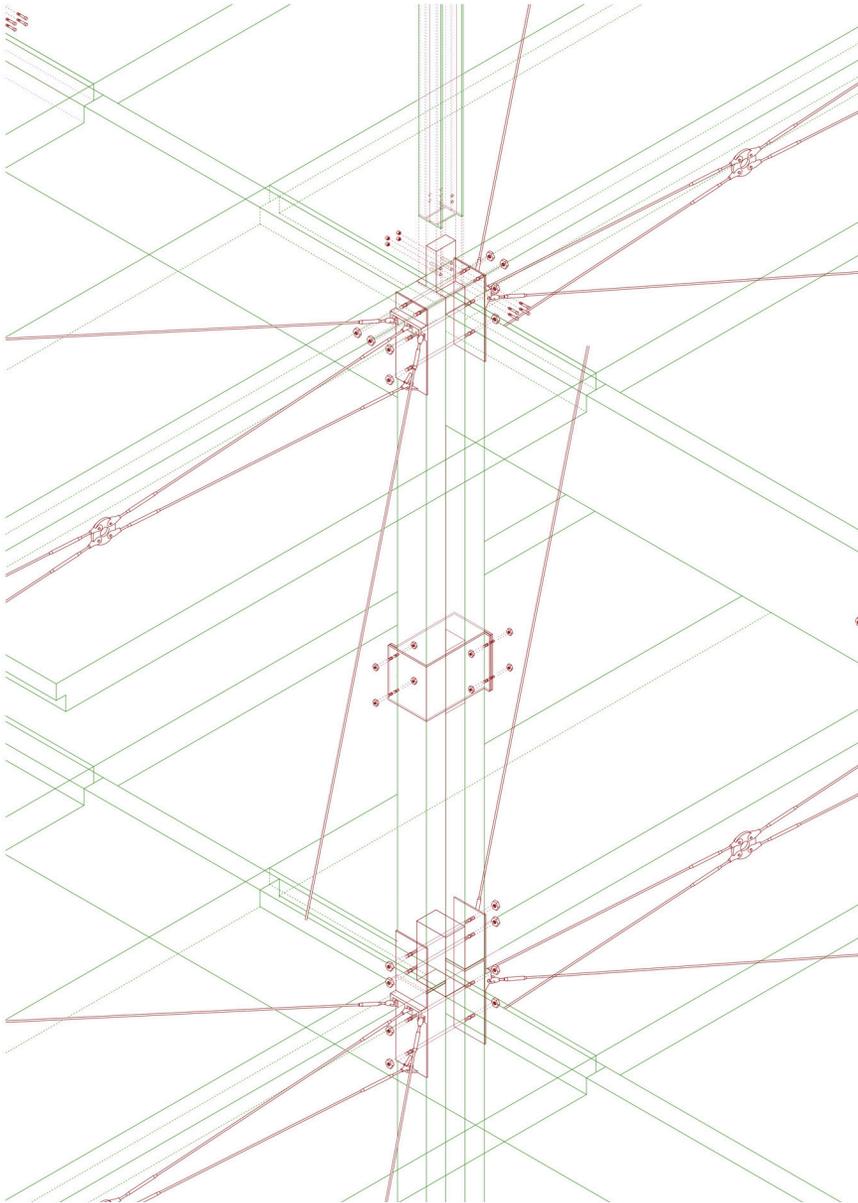


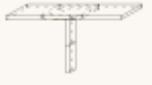




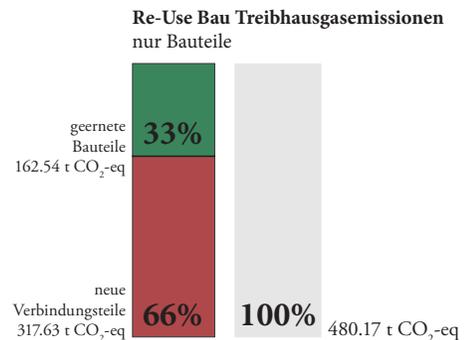
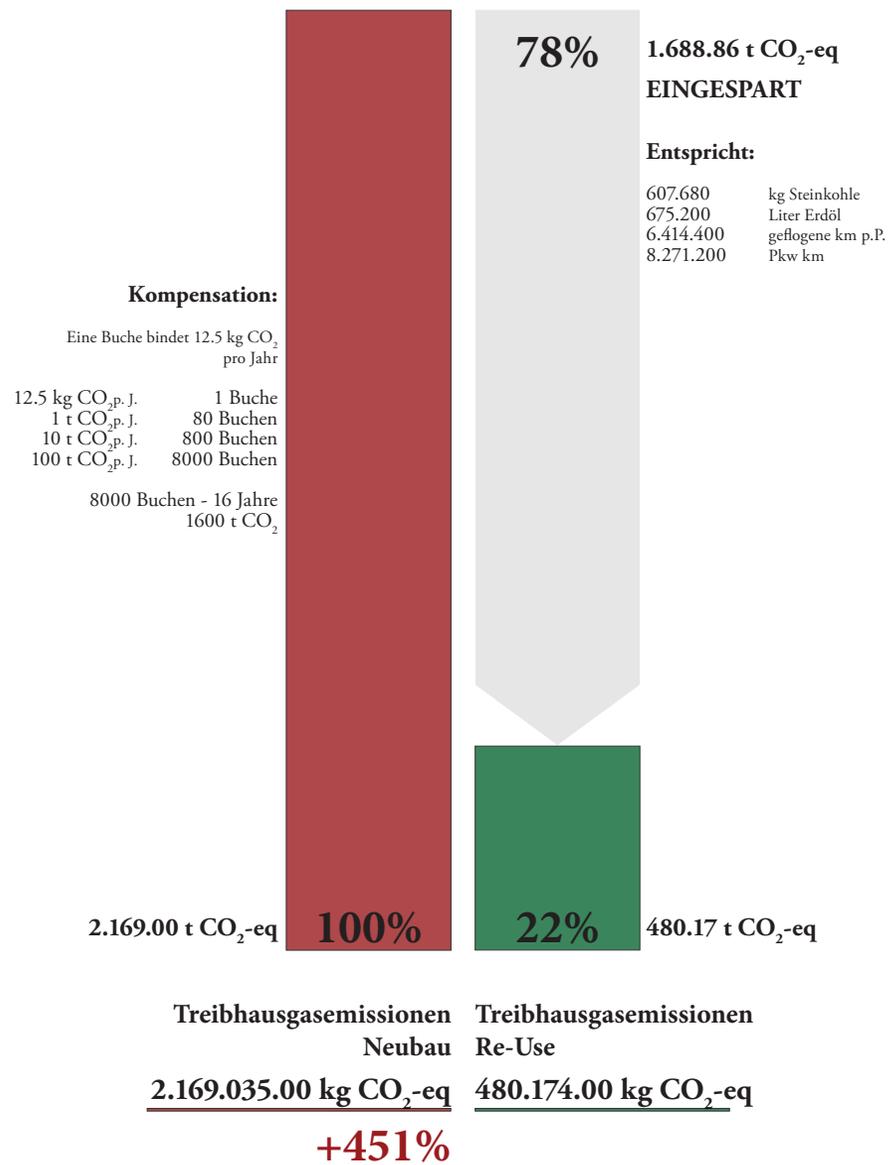


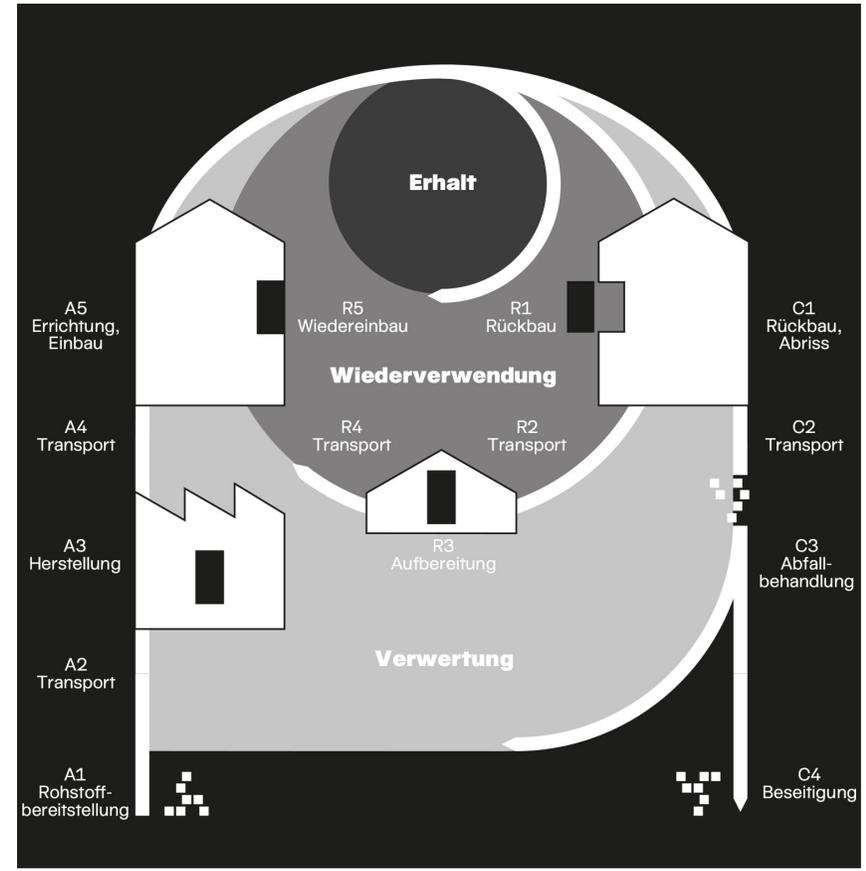
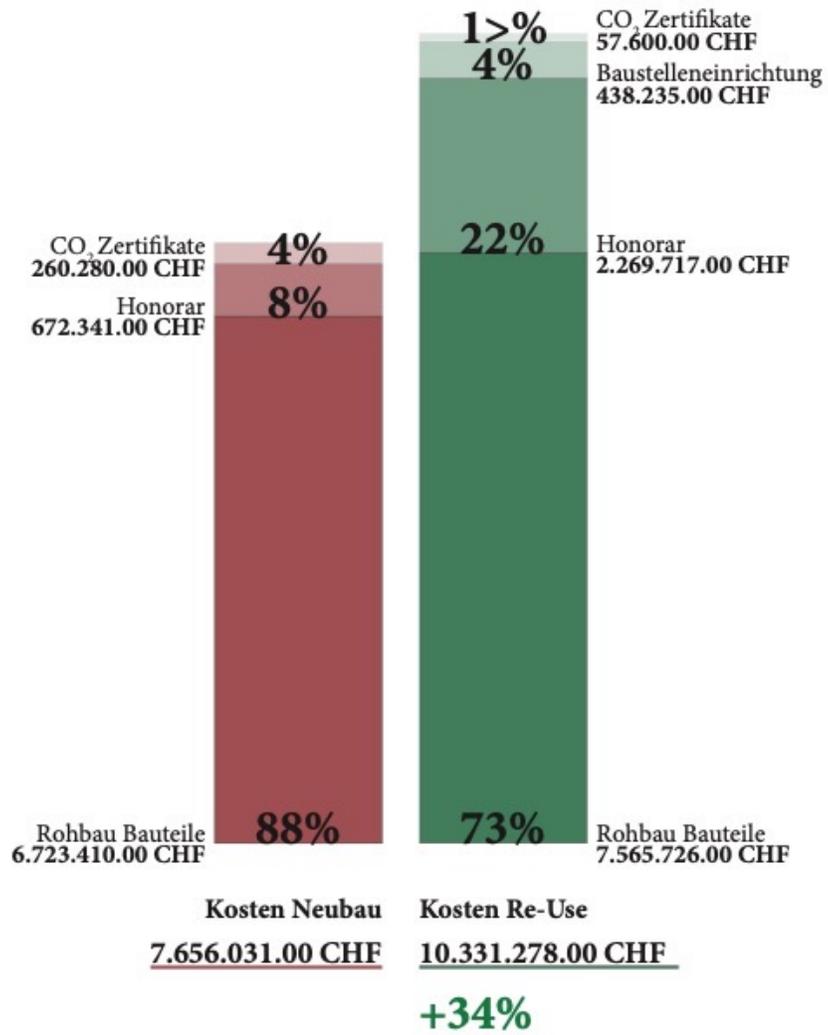




	Pilzstütze	Deckenelement	Deckenelement	Stahlstütze	Stahlstütze
					
Emissionen <small>in kg CO<sub>2</sub>-eq</small>	<b>37 T CO<sub>2</sub> - eq</b>	<b>19 T CO<sub>2</sub> - eq</b>	<b>37 T CO<sub>2</sub> - eq</b>	<b>1.2 T CO<sub>2</sub> - eq</b>	<b>1.3 T CO<sub>2</sub> - eq</b>
Kosten <small>in CHF</small>	<b>852.720.00 CHF</b>	<b>831.600.00 CHF</b>	<b>1.566.000.00 CHF</b>	<b>49.900.00 CHF</b>	<b>52.250.00 CHF</b>
Gebäude					
Herkunft	Gewerbegebäude Erlenmatt Ost Basel	Gewerbegebäude Erlenmatt Ost Basel	Gewerbegebäude Erlenmatt Ost Basel	Zürich Versicherung Binz Zürich	Zürich Versicherung Binz Zürich
Transport <small>in km</small>	82	82	82	87	87
Material	Stahlbeton	Stahlbeton	Stahlbeton	Stahl	Stahl
Menge	108 Stk.	108 Stk.	216 Stk.	72 Stk.	72 Stk.
Abmessungen <small>in m</small>	8.5 x 2.9 x 0.4	6.0 x 3.0 x 0.4	6.0 x 2.75 x 0.4	0.2 x 0.1 x 5.5	0.25 x 0.15 x 5.5
Volumen <small>in m<sup>3</sup></small>	11.51	7.20	6.60	126 kg	135 kg
Reuse Emissionen <small>in kg CO<sub>2</sub>-eq</small>	336	176	175	17	18
Neubauanteil Emissionen <small>in kg CO<sub>2</sub>-eq</small>	4025	2520	2310	189	198
Reuse Kosten <small>in CHF</small>	9.895.00	7.700.00	7.250.00	693.00	726
Neubauanteil Kosten <small>in CHF</small>	10.835.50	4.500.00	4.125.00	630.00	660

	Stahlträger	Stahlträger	Fachwerkträger	Betonstütze	Betonrahmen
					
Emissionen <small>in kg CO<sub>2</sub>-eq</small>	<b>0.7 T CO<sub>2</sub> - eq</b>	<b>3.0 T CO<sub>2</sub> - eq</b>	<b>5.9 T CO<sub>2</sub> - eq</b>	<b>0.2 T CO<sub>2</sub> - eq</b>	<b>0.2 T CO<sub>2</sub> - eq</b>
Kosten <small>in CHF</small>	<b>30.250.00 CHF</b>	<b>123.550.00 CHF</b>	<b>240.127.50 CHF</b>	<b>13.500.00 CHF</b>	<b>26.400.00 CHF</b>
Gebäude					
Herkunft	Zürich Versicherung Binz Zürich	Maag Hallen Industriequartier Zürich	Lagerhalle Koch Areal Altstetten Zürich	Lagerhalle Koch Areal Altstetten Zürich	Gewerbehalle Manegg Zürich
Transport <small>in km</small>	2	2	3	3	6
Material	Stahl	Stahl	Stahl	Stahlbeton	Stahlbeton
Menge	24 Stk.	96 Stk.	17 Stk.	34 Stk.	12 Stk.
Abmessungen <small>in m</small>	5.4 x 0.15 x 0.3	5.4 x 0.09 x 0.18	13 x 0.1 x 2.8	0.6 x 0.4 x 7.5	25 x 0.4 x 6.0
Volumen <small>in m<sup>3</sup></small>	234 kg	234 kg	2575 kg	1.8	9.90
Reuse Emissionen <small>in kg CO<sub>2</sub>-eq</small>	32	32	350	7.2	35
Neubauanteil Emissionen <small>in kg CO<sub>2</sub>-eq</small>	351	351	3861	630	3465
Reuse Kosten <small>in CHF</small>	1287	1287	14157	397	2200
Neubauanteil Kosten <small>in CHF</small>	1170	1170	12870	6375	4675





Die Zuordnung der Phasen der zum Lebenszyklusmodell nach SN EN 15804+A1 / SIA 490. Wiederverwendung052+A1

