Fig. 104: Ground floor plan.
6.1 Steel

Two types of steel construction are used in parts of the building where transparency is required (Fig. 107). The brew house and the area housing the maturing flasks are constructed with an H-section beam and column system. The H-sections are 254 x 254mm in size and positioned on a 7 meter by 6 meter grid. The fermentation flasks adjacent to the activity platform are supported by 488 x 254mm steel columns constructed from 40 x 40mm steel equal leg angles (Fig. 106). The angles are arranged in a space frame made up of triangles.
The largest part of the building consisting of the brewing school and the services block of the brewery uses a reinforced concrete frame construction (Fig.: 109; 110). The columns are sized at 230 x 345mm, and the beams are 340mm deep. The grid spacing alters at different parts of the building with no span exceeding 7 meters.

Conventional reinforced concrete slabs of 255mm are used in those parts of the building supported by a concrete frame construction (Fig: 114). Those areas where a steel frame construction is used, permanent shutter slabs are utilised (Fig:113).
Concrete: Reinforced concrete roof slabs of 255mm are used in part of the building supported by a concrete frame construction. Permanent shutter concrete slabs are used in parts of the building with a steel structure.

Steel: 254 x 254 H-section beams sloped at a 5º are used in parts of the building with a steel frame construction. Trusses constructed from 40x40mm steel equal leg angles support the roof that suspends over the activity platform and are fixed to the same columns that support the fermentation flasks.
The general world view at present is largely
focused towards sustainable development.

In terms of thermal comfort, mechanical
ventilation requires massive amounts of
electricity and are major contributors to
this problem. For this reason the building
uses a passive ventilation system.

The design of the brewery allows cross
ventilation to only be possible in the brew
house. The school is placed flush to an
existing building on the southern façade
making cross ventilation impossible. For
this reason ventilation ducts are ordered
around the columns in a manner that
allows all three levels to be passively
ventilated. The ducts penetrate the first
floor slab which opens to the auditorium,
and draws in air through the floor. In the
classrooms on the first floor, and in the
research laboratory on the second floor,
air is drawn into the room through the
windows on the northern façade and
out through the ventilation shafts on the
southern side of the building.

In

A second smaller service core of 1.4 x 1.7 meters is positioned between the maturing flask room and the services block. It
facilitates the pipes carrying beer between the fermentation flasks and the maturing flasks. It is accessed from the ground level
and is exposed on the first level to the kegging room.

6.5 Ventilation system

Fig. 120: Ventilation shafts

The design of the brewery allows cross
ventilation to only be possible in the brew
house. The school is placed flush to an
existing building on the southern façade
making cross ventilation impossible. For
this reason ventilation ducts are ordered
around the columns in a manner that
allows all three levels to be passively
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floor slab which opens to the auditorium,
and draws in air through the floor. In the
classrooms on the first floor, and in the
research laboratory on the second floor,
air is drawn into the room through the
windows on the northern façade and
out through the ventilation shafts on the
southern side of the building.

In
1. Fire exit  
2. Brew house  
3. Control panels  
4. Store room  
5. Employee ablution  
6. Pump room  
7. Lift  
8. Reception  
9. Entrance  
10. U/C activity platform  
11. Auditorium  
12. Control room  
13. Foyer  
14. Reception office  
15. Entrance  
16. Male ablutions – Auditorium/Restaurant  
17. Paraplegic ablution – Auditorium/Restaurant  
18. Female ablution – Auditorium/Restaurant  
19. Service yard  
20. Cold room  
22. Kitchen wash-up  
23. Locker room  
24. Dry store  
25. Restaurant managers office  
26. Service entrance  
27. Security  
28. Refuse yard  
29. Mass storage  
30. Security office  
31. Holding bay 1  
32. Holding bay 2  
33. Raising platform  
34. Raising platform  
35. Delivery bay 1  
36. Delivery bay 2  
37. Ramp  
38. Bar storage  
39. Ventilation shafts  
40. Bar  
41. Restaurant  
42. Public walkway  
43. On street parking  
44. Struben Street  
45. Existing building
1. Fire exit
2. Balcony
3. Store room for laboratory
4. Research laboratory
5. Chiller room L1
6. Lift
7. Communal office for brewers
8. Fermentation flasks x 16
9. Roof over activity platform
10. Bridge
11. Classroom 1
12. Classroom 1 storage
13. Classroom 2
14. Classroom 2 storage
15. Ventilation shaft
16. Balcony
17. School circulation – notice boards/information/display
18. Open Office
19. Office
20. Service Yard
21. Male ablutions for school
22. Female ablutions for school
23. Male ablutions for brewery
24. Female ablutions for brewery
25. Brew master’s office
26. General storage for brewery
27. Store room for kegging
28. Lounge with lockers
29. Control office for kegging
30. Kegging room
31. Ventilation shafts
32. Maturing flasks x 16
33. Balcony
34. Intermediate storage between phases
35. Raising platform
36. Existing building

Fig. 125: First floor plan.
1. Fire exit
2. Balcony
3. Store room
4. Research laboratory
5. Chiller room L2
6. Lift
7. Communal office for brewers
8. Walking platform to service fermentation flasks
9. Bridge
10. Balcony
11. Ventilation shafts
12. School research laboratory
13. Store room for research laboratory
14. Kitchenette
15. Male ablutions for brewery
16. Female ablutions for brewery
17. Service yard
18. Water filter
19. Tanks holding filtered water
20. Control office for roaster and grinder
21. Balcony
22. Plant room for maturing room
23. Maturing flasks x 16
24. Grinder
25. Roaster
26. Ventilation shaft
27. Raising platform
28. Roof over service yard and holding bays
29. Existing building

Fig. 126: Second floor plan.
1. Struben Street
2. On street parking
3. Sidewalk
4. Fermentation flasks with rotating carbon fiber solar screen
5. Activity platform
6. Public space
7. Restaurant / Brew pub
8. Maturing flasks x 16
9. Ventilation shaft
10. Malt room with grinder and roaster
11. Kegging room
12. Mass storage room
13. Holding bay
14. Pickups / deliveries
15. Service yard

Fig. 127: Section A-A
1. Struben Street
2. On street parking
3. Sidewalk
4. Brew house
5. Research laboratory L1
6. Research laboratory L2
7. Public space
8. Auditorium
9. Classroom
10. School research laboratory
11. Ventilation shaft
12. Existing building

Fig. 128: Section B-B
Fig. 129: North elevation.
Fig. 130: South elevation
Fig. 131: East elevation
torch on water proofing membrane installed as per manufacturers specifications
40 mm min. screed 1:70 fall towards rain water inlet
254 x 254 mm steel H profile beam
240 mm reinforced concrete roof slab cast in permanent shutter as per engineer specification
cast from futuro cast into concrete roof slab and waterproofing to manufacturers specifications
60 mm Ø pvc rain water pipe cast into roof slab
2 mm steel QC flooring @ 2200 mm cc installed as per manufacturer specifications
35 x 35 x 2 mm steel equal legged angle fixed to bottom of steel shutter and concrete roof slab with M6 chemical bolt
254 x 70 x 30 mm steel I beam fixed to bottom steel shutter and concrete roof slab with M6 chemical bolt and spot welded to H profile column
200 x 100 x 8 mm aluminum window structure per manufacturer to steel I beam and vertical aluminum window column
65 x 40 mm custom made aluminum window frame fixed to rectangular aluminum window structure
28 x 28 x 2.5 mm steel equal leg angle spot welded to H beams
6mm clear laminated safety glass connected and sealed with clear silicone seal
30 x 4 mm galvanized steel downpipe clamp bolted to steel H column with M6 galvanized steel bolts
0 mm fibre-cement ceiling board screwed to purpose made steel bracket and steel angles as per manufacturer specifications
65 mm D galvanized steel downpipe fixed to galvanized steel clamp
254 x 254 mm steel H profile column

254 x 166 x 31 mm steel I profile roof beam factory welded to architects specifications
125 x 75 x 3.5 mm steel top hat purlin spot welded to I profile roof beam @ 850 mm cc
0.6 mm bare-rolled roof sheeting @ 675 mm fixed to purlins with patent clips as per manufacturer specifications
6 mm fibre-cement ceiling board screwed to top hat purlins as per manufacturer specifications
75 mm mineral fibre thermal insulation blanket laid over purlins
8 mm steel flat bar factory welded to architects specifications
torch on water proofing membrane installed as per manufacturers specifications
40 mm min. screed 1:70 fall towards rain water inlet
240 mm reinforced concrete roof slab cast in permanent shutter as per engineer specification
2 mm steel QC flooring @ 2200 mm cc installed as per manufacturer specifications
35 x 35 x 2 mm steel equal legged angle fixed to bottom of steel shutter and concrete roof slab with M6 chemical bolt
254 x 70 x 30 mm steel I beam fixed to bottom steel shutter and concrete roof slab with M6 chemical bolt and spot welded to H profile column
200 x 100 x 8 mm aluminum window structure per manufacturer to steel I beam and vertical aluminum window column
65 x 40 mm custom made aluminum window frame fixed to rectangular aluminum window structure
28 x 28 x 2.5 mm steel equal leg angle spot welded to H beams
6mm clear laminated safety glass connected and sealed with clear silicone seal
30 x 4 mm galvanized steel downpipe clamp bolted to steel H column with M6 galvanized steel bolts
0 mm fibre-cement ceiling board screwed to purpose made steel bracket and steel angles as per manufacturer specifications
65 mm D galvanized steel downpipe fixed to galvanized steel clamp
254 x 254 mm steel H profile column
254 x 254 mm steel H profile column