

**Thresholds between Landscape and Architecture**  
**Local Identity and Architecture**

414





# Léonard de Vinci High School

COSA + TANK



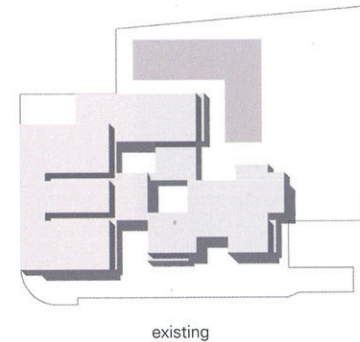


### Robust, rectilinear structure brings green space into a school

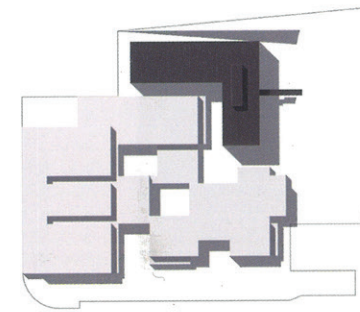
The Léonard de Vinci High School is located on a gently sloping site in an affluent part of the Paris conurbation, 19km from the city center. The architectural collaboration between Lille-based TANK and Paris-based COSA has produced a robust, rectangular three-story volume incorporating landscaped public realm. Its strict rectilinear geometry and black steel and glass echo the minimalist modernism of Mies van der Rohe, but its clear expression of structure and flexibility for changing program resonates with robust high-tech design concepts for industrial halls. The new building doubles the previous surface area of the college and accommodates 1,200 students.

On the first ground floor are areas for technical instruc-

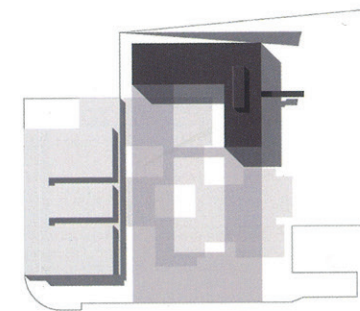
tion with workshops, cloakrooms and stores, forming a U around the courtyard and opening onto the forecourt. Movement is distributed via two interior streets which, as well as providing natural light, facilitate orientation within the complex. This floor is built into the slope, so that above it, the second floor is on the same level as the adjacent parkland that is now extended as landscaped garden into the building. This floor is stepped back at the periphery from the floors above and below, allowing large covered patio passages paved with boardwalk which are indented into the volume, creating a selective dialogue between themselves and the world outside. This mid-level floor is where the student and administrative life takes place. The top (third) floor cantilevers to the edge of the building plot



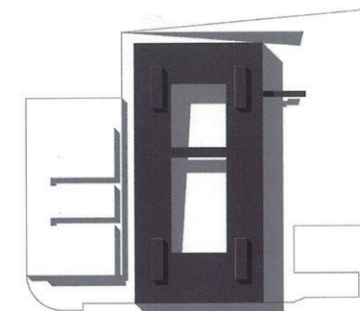
existing



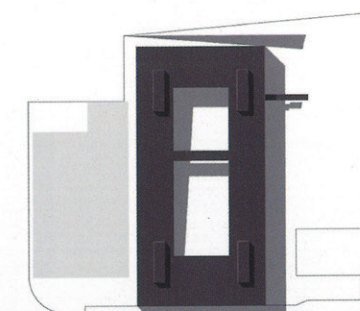
construction part 1



demolition of existing building 1



construction part 2 and  
planning of the interior garden



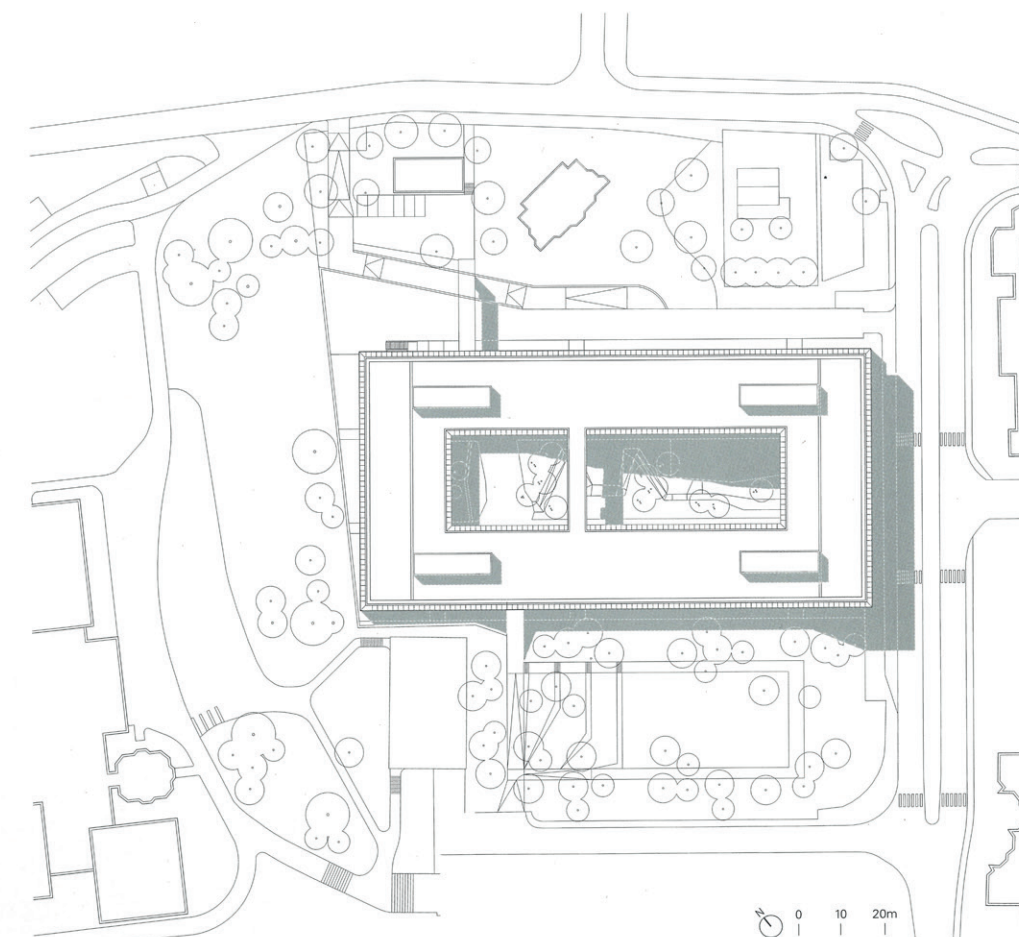
demolition of existing building 2 and  
planning of the park and its sports ground

and has a floor plan that is a rectangular ring with a connecting footbridge over the void. The classrooms it hosts have views of the green spaces within and around the building.

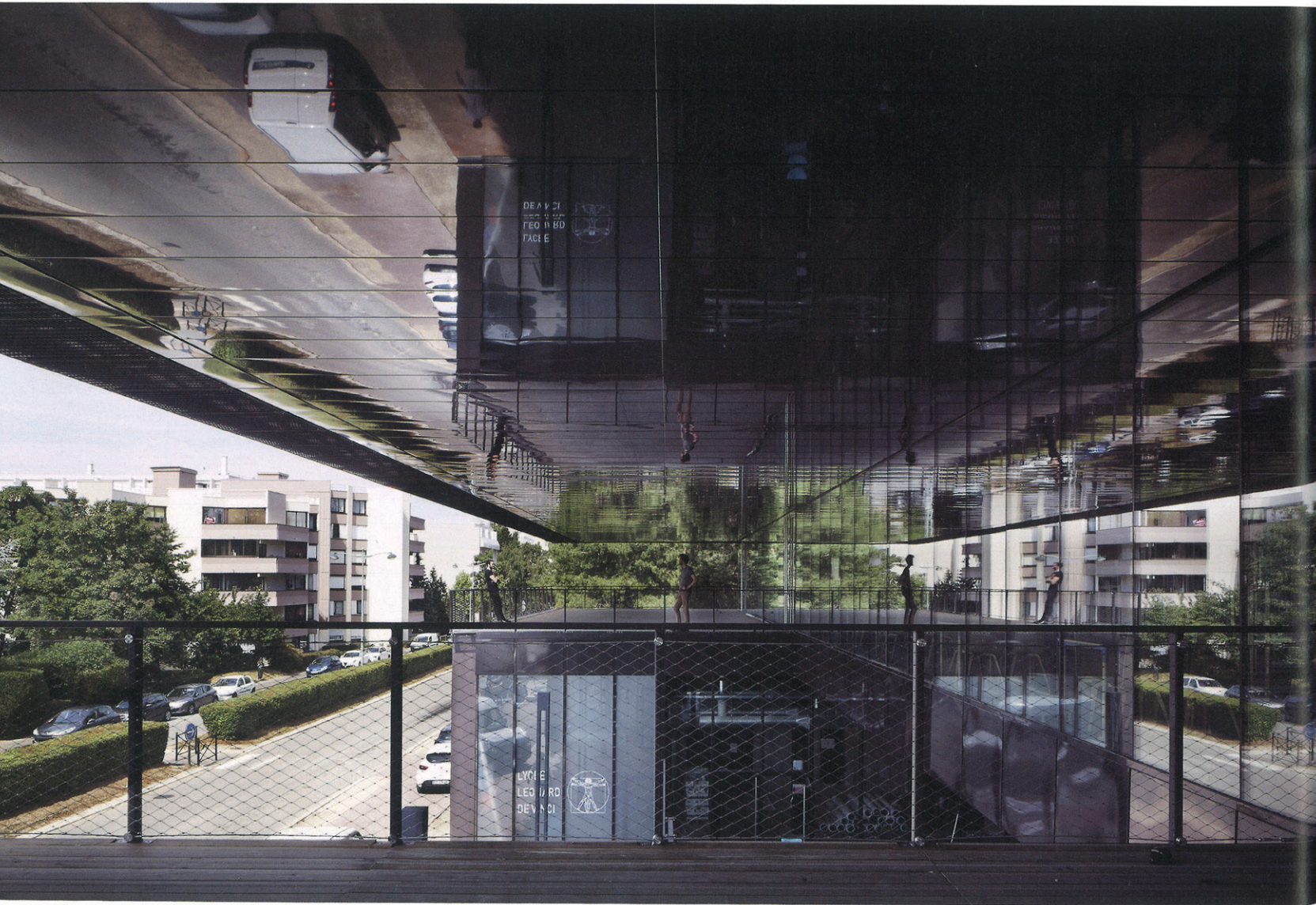
A 3.6 meter load-bearing skeleton divided into 1.2 meter units structures the building. The joinery and facade cladding, lights, radiators and electrical terminals maintain this same regular pattern. The uniform distribution of the utility networks, the repetitive design of the openings and the absence of internal bearing walls make for genuine modular flexibility.

Vertical bris-soleil fins are fixed in such a way as to leave the views open. They are adapted to the orientation of each facade and play a structural role by providing rigidity for the high glass walls on the ground floor and support for the service passage on the top floor.

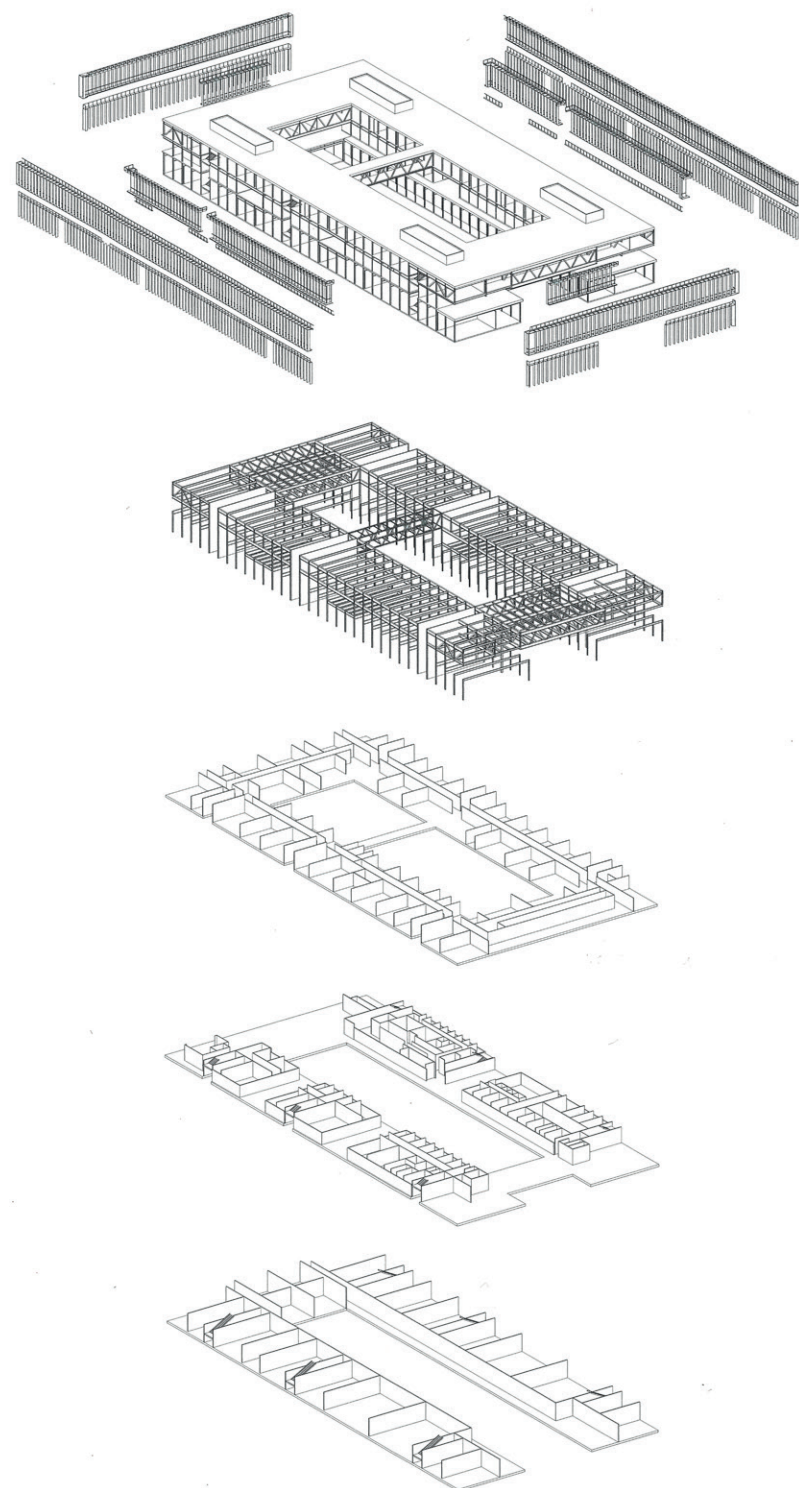
Through this economy of resources and simplicity of construction, through the rejection of arbitrary design of all kinds, the architecture remains free of any formal presumption and is pared down to its simplest constructional truth.



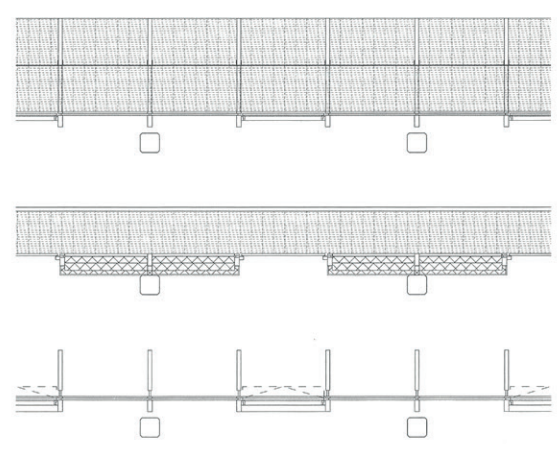
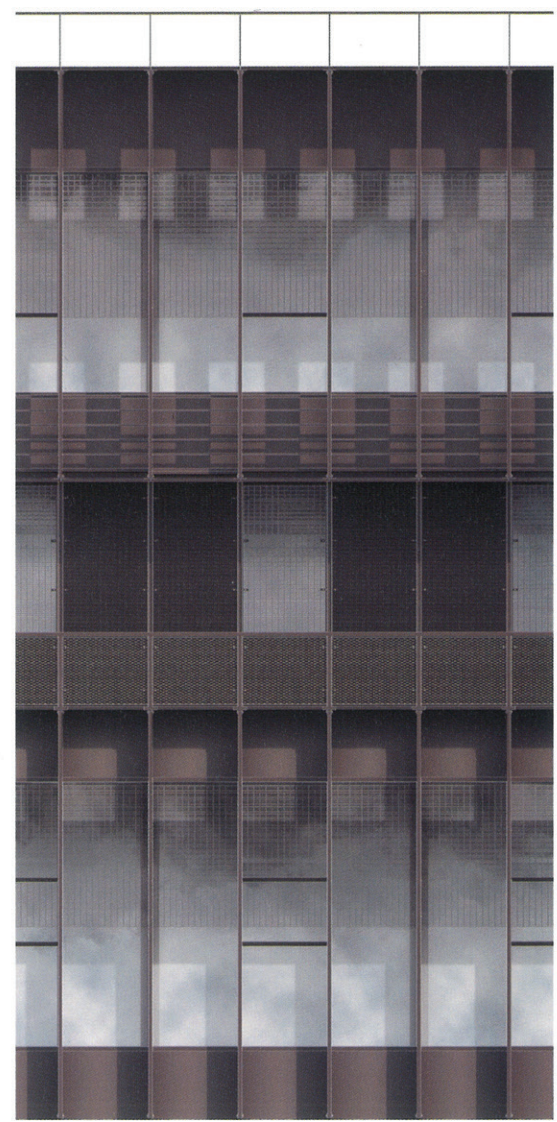




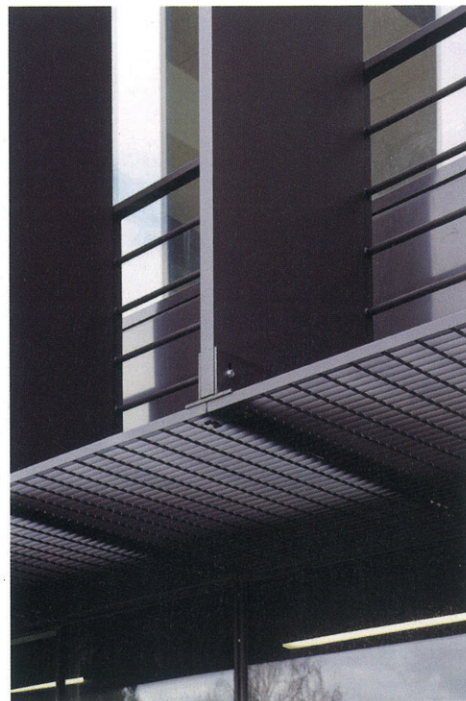




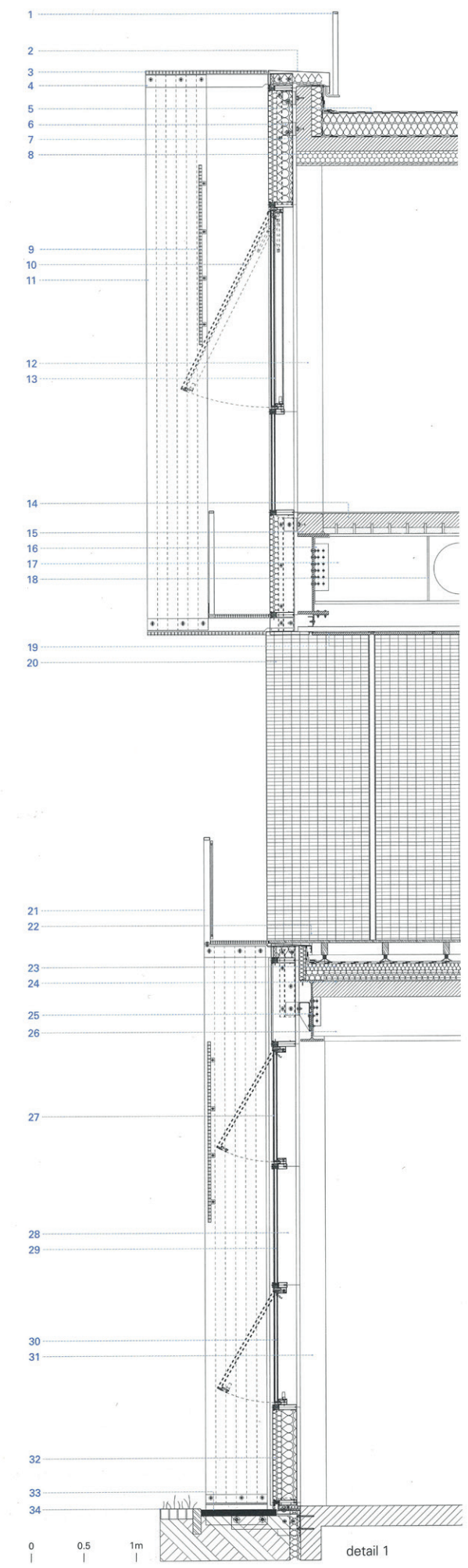
Project: Lycée Léonard de Vinci / Location: Saint Germain-en-Laye, France /  
 Architects: COSA, TANK / Landscape architect: Sébastien Sosson, agence de paysage /  
 Structural engineering: Bollinger + Grohmann ingenieure /  
 Fluids engineering and kitchen: HDM ingénierie SA / Environmental approach: Solener /  
 Acoustics: Jean-Paul Lamoureux / Economics: Cabinet Becquart /  
 General contractor: Colas, with Baudin Châteauneuf /  
 Building envelope: Serru, with Ateliers David and Etanchéité du bocage /  
 Interior surface treatment: Spie Partesia with Sedib, 1001 Couleurs and France sols /  
 HVAC-plumbing: Cofely Axima / Electricity: Eiffage Energie /  
 Elevator: Euro Ascenseurs / Kitchen: Lanef / Client: Région Île-de-France /  
 Contracting authority: Île de France Construction Durable /  
 Area: 9,240m<sup>2</sup> (demolition), 14,880m<sup>2</sup> (construction), 11,600m<sup>2</sup> (outdoor) /  
 Cost: EUR 36M HT / Completion: 2020 /  
 Photograph: ©Camille Gharbi (courtesy of the architect)



facade composition 0 0.5 1m



1. technical guardrail - hot galvanized thermo-lacquered steel
2. protective wall top cover - thermo-lacquered aluminum sheet 20/10e
3. support bracket for sunshade - hot-dip galvanized thermolacquered steel
4. curtain wall support system - metal - HALFEN rail fixing system
5. waterproofing double-sided layer, auto-protected double polyurethane foam
6. insulation 22cm
7. curtain wall support system - metal - HALFEN rail fixing system
8. in-situ concrete slab 14cm
9. wood fibre wall insulation 16cm
10. sunshade mesh grating 30x10-25x2 - hot galvanized thermo-lacquered steel
11. top-hung vent and screening
12. vertical sunshade in aluminium - extruded profile using the spread extrusion dies - thermo-lacquered
13. 25x25 hollow section column - steel - flame-proof coating
14. spandrel glass
15. resilient floor covering precast prestressed concrete slab 6 + 14cm
16. prefabricated concrete elements 20x25 - HALFEN fixing rail system
17. IPE 750 - I-section steel column - flock coating
18. HEA 700 beam - flock coating - metal connectors embedded in the concrete slab
19. reinforced steel beam HEA 100 to the right of the reservation charges
20. powder coated aluminum trays with 80% gloss level
21. vertical mesh grating 35x100 - 25x2 - black felt and mineral-wool insulation
22. stainless steel wire mesh railing
23. douglas fir decking class 4 - curved non-slip strips - laid onto joists
24. two-layer bituminous waterproofing sheeting two layer polyurethane foam
25. Insulation 16cm
26. cast in-place concrete slab 16cm
27. IPE 600 - intumescent paint coating
28. PRS 300x50/570x10 - intumescent paint coating
29. top-hung vent - remote control handling
30. spinal curtain wall - aluminium - steel reinforcement
31. fixed glazing
32. top hung vent
33. hollow utility post 25x25 - concrete infill - intumescent paint coating
34. Insulated curtain wall panels - internal and external aluminium sheet - mineral-wool insulation
35. slate chippings
36. TTE grid - grass filling



0 0.5 1m detail 1

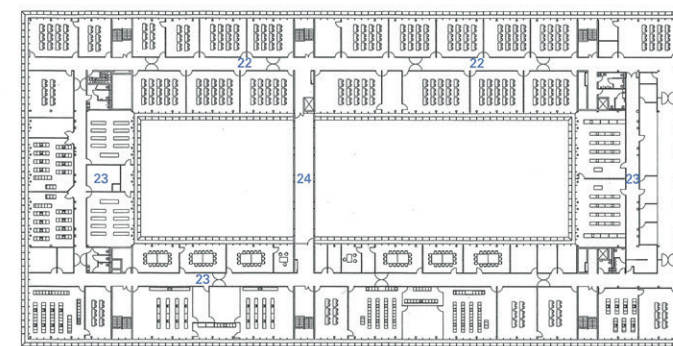
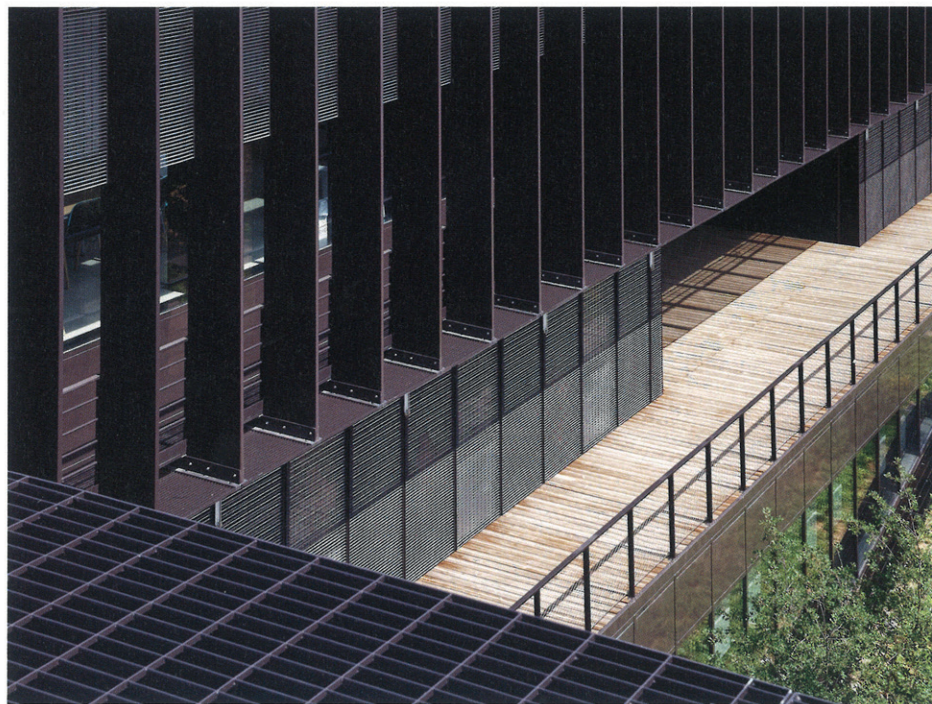




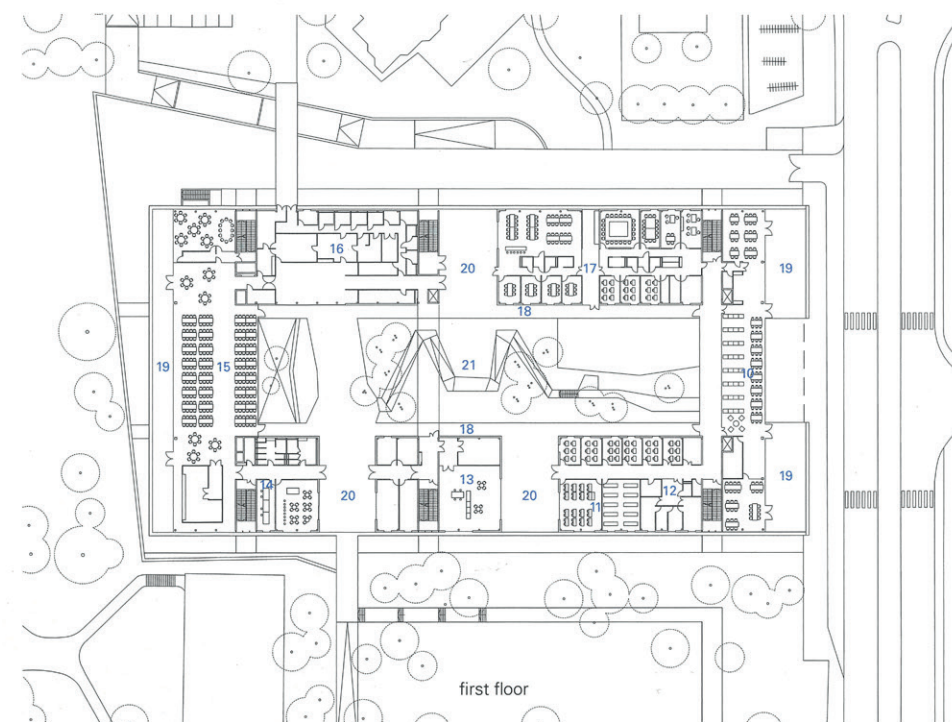




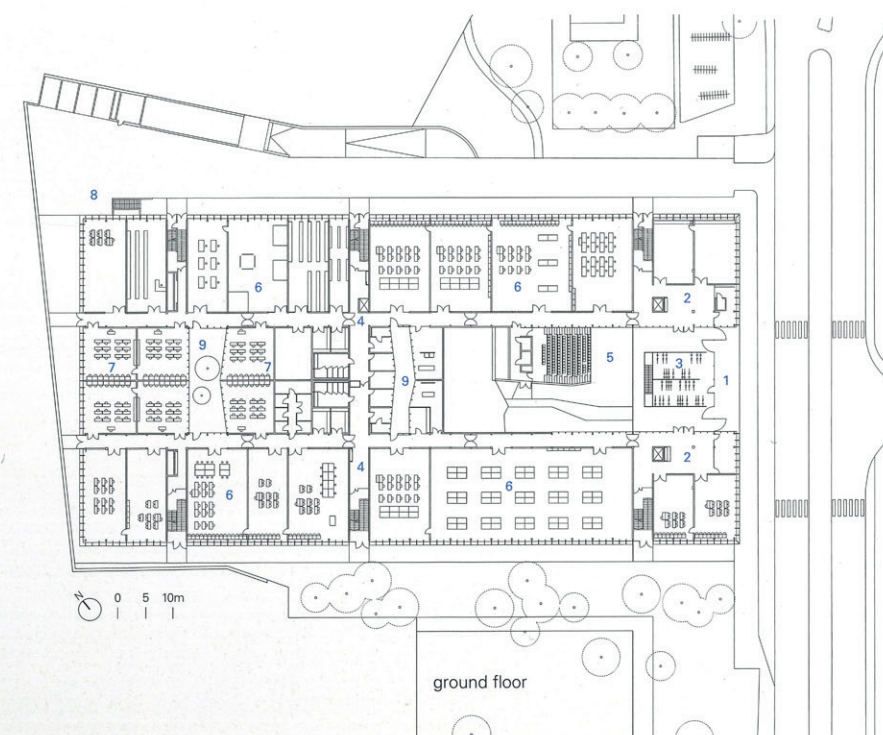




second floor



first floor



ground floor

1. entrance
2. halls
3. bike shed
4. interior corridors
5. auditorium
6. studios
7. construction room
8. service courtyard
9. patios
10. school library
11. study room
12. health center
13. sport hall
14. associations and lunch room
15. canteen
16. kitchen
17. administration & teacher room
18. cloister
19. terraces
20. patios
21. garden
22. classrooms per pole
23. workshops
24. footbridge







알루미늄 수직 구조 안에 녹지 공간을 조화시킨 고등학교

레오나르도 다 빈치 기술고등학교는 파리 도심에서 19km 떨어진 교외 지역의 완만한 언덕 위에 자리한다. 학생뿐만 아니라 대중을 위한 공간을 갖춘 3층짜리 건물로, 엄격한 수직 형태와 유리창으로 이루어진 외관에서 미스 반 데어 로에의 미니멀한 모더니즘이 묻어난다. 구조의 명징함과 다양한 목적에 걸맞은 유연성은 강인한 느낌의 최첨단 디자인 컨셉을 떠올리게도 한다. 기존 건물보다 2배 이상 넓어진 면적으로, 총 1,200명의 학생을 수용할 수 있다.

1층에는 강의실과 작업장, 휴대품 보관소, 상점이 중정을 감싼 채 안뜰을 향해 열린 U자 모양을 이루고 있다. 방향을 찾도록 도와줄 뿐 아니라, 건물 내부에 빛을 드리우는 역할도 하는 두 개의 통로로 동선을 나누어 배치했다. 1층은 경사로와 연결되고, 2층은 인근 공원과 동일 선상을 이루며 조경을 갖춘 정원으로 연장된다. 2층은 위·아래를 이루는 파사드에서 살짝 안으로 들어가 천장이 덮이고 포장이 깔린 파티오 통로를 만들고, 이 파티오 통로는 건물 일부가 되어 바깥 세계와의 접점을 이끌어 낸다. 건물의 가운데

인 2층에는 학생들과 교직원들이 일상적으로 이용하는 공간이, 건물 가장자리를 향해 캔틸레버를 이룬 3층에는 보이드 위로 다리가 지나가는 사각의 순환 통로가 자리한다. 3층의 교실에서는 건물 안쪽에 마련된 녹지 공간의 풍경이 눈에 들어온다.

1.2m 단위로 나뉜 총 3.6m 너비의 지지대가 건물 하중을 떠받치는 구조다. 연결부와 파사드 클래딩, 조명, 라디에이터, 전기 단자에도 같은 패턴이 적용되었다. 이처럼 동일하게 마감된 난방과 조명 시스템, 반복적인 창문 디자인, 내부 지지벽의 부재 덕분에 진정한 모듈 방식의 유연한 운영이 가능했다. 파사드에는 수직으로 차양 루버를 달았는데, 각 파사드의 방향에 맞추어 각도가 조절되어 있어 막힘없이 바깥 풍경을 볼 수 있다. 이 차양은 1층 유리창의 강도를 높이고 3층 통로를 지지하는 역할을 한다.

단순한 공정과 경제적 재료, 규격에 맞춘 디자인을 통해 고정관념에서 자유롭고 본질에 충실한 건축물이 완성되었다.

