

2019: 100 Jahre Gründung Bauhaus 1919
2019: 150 Jahre Geburtstag Albert Kahn 1869



Form Follows Performance und Stahlbau

Innovationen in Tragwerk, Tageslicht und Thermik

- **Funktion, Zweckdienlichkeit, Sachlichkeit:**
Grundfeste einer neuen Architektur 19./ 20. Jh
Wurzeln des Bauhauses: Funktion, Licht, Luft

Albert Kahn:

- **Pionierleistungen in Stahlbeton, Stahl und Glas**
Weitgespannte Konstruktionen, Curtain Wall
- **Licht, Ventilation, Behaglichkeit**
Architektur als Leistungsform
- **Wandlungsfähigkeit, Nachhaltigkeit**
Eignung für zukünftige Nutzungen
- **Effizienz in Planung und Ausführung**
Ganzheitliche Methodik, Teamansatz
- **Fazit**
Anregungen für die Gegenwart

Grüß aus Rhaunen



Geboren

21. März 1869

Rhaunen, Hunsrück

Gestorben

08. Dezember 1942

Detroit, USA

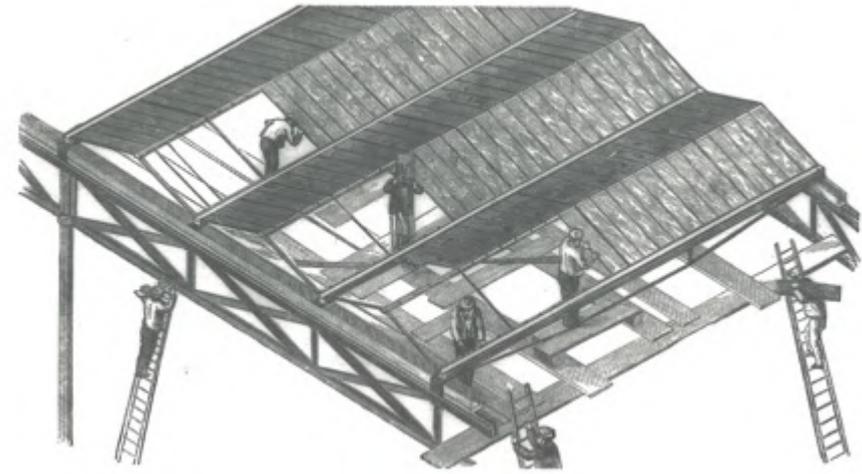
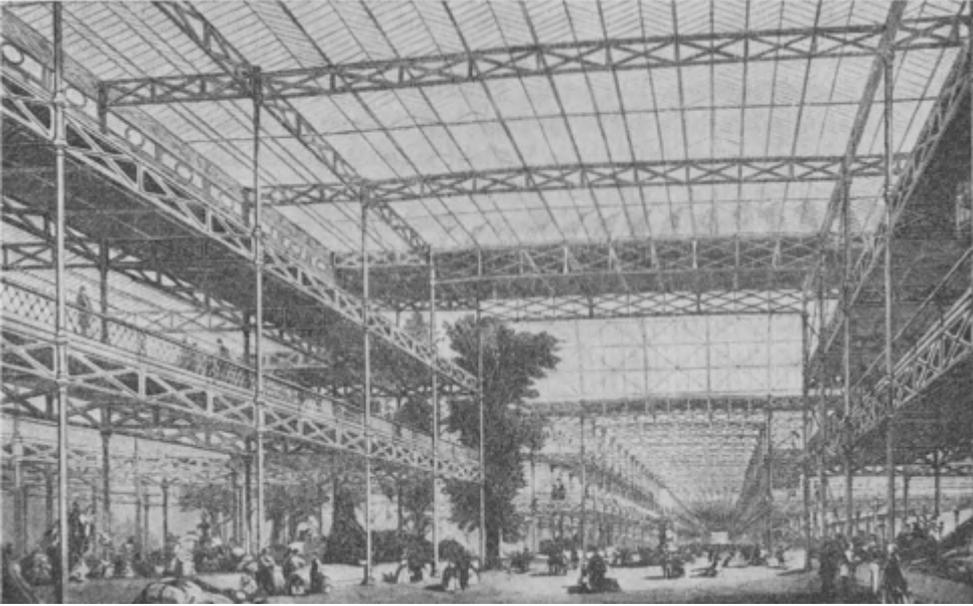
Buchprojekt Birkhäuser 2019

Th. Bürklin, J. Reichardt

Form Follows Performance/

Albert Kahns Industriearchitektur

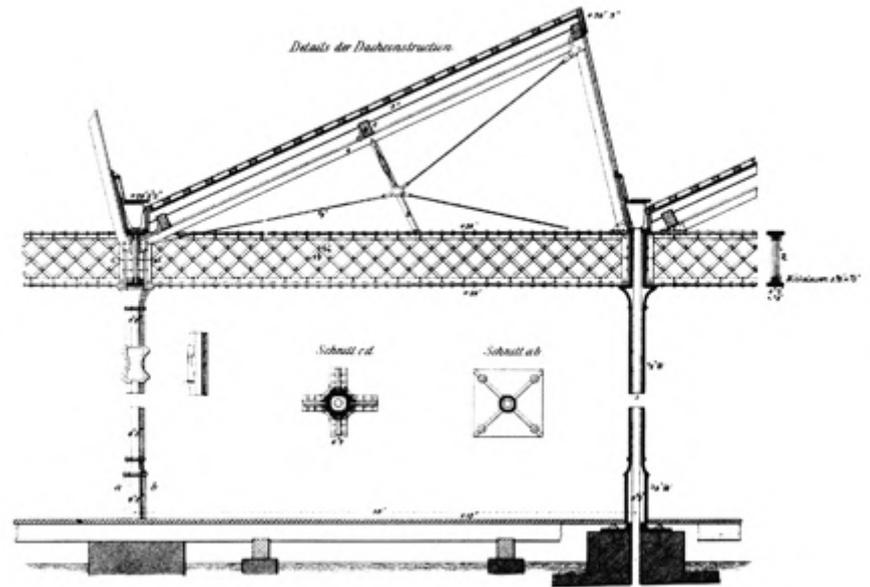




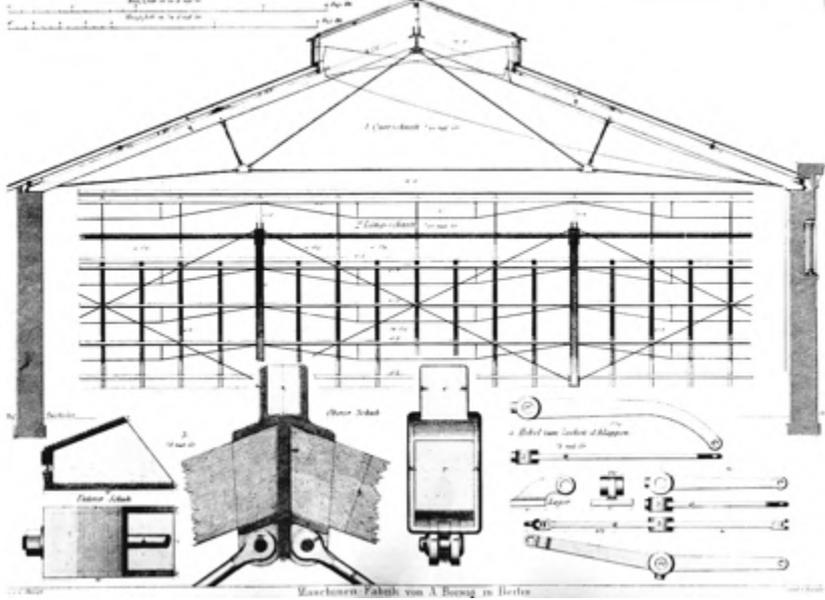
Positionen Mitte des 19.Jh.: Kristallpalast Paxton , London, 1851
Industrielle Elementierung, Eisen, Glas, Spannweite



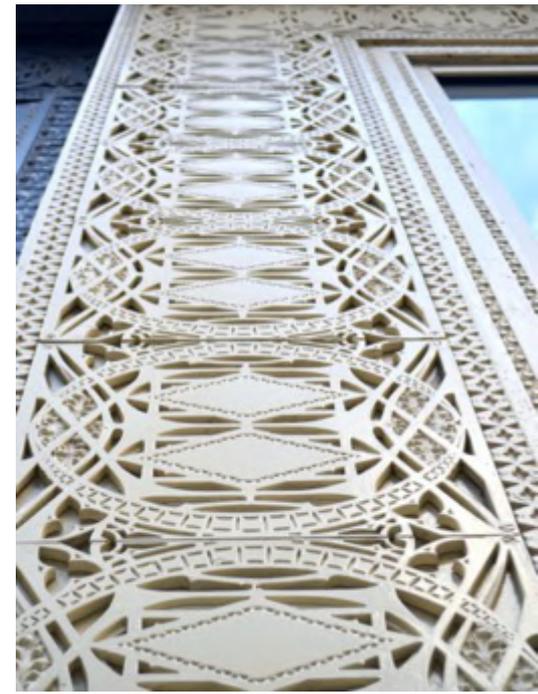
Historisches Archiv Krupp



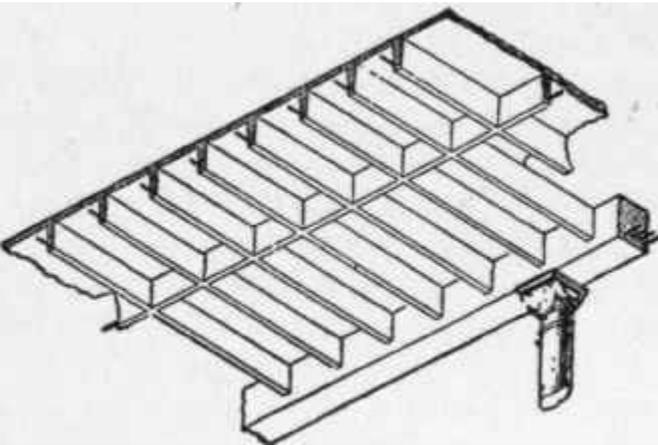
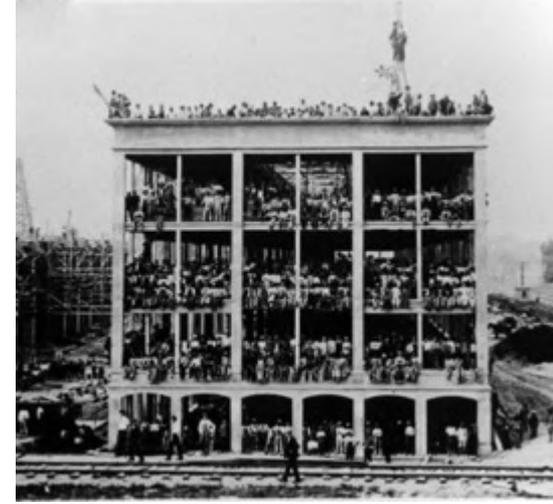
Dach über der Trassen Werkstätte der Maschinenbauanstalt von A. Borsig in Berlin



Positionen Ende des 19.Jh.: Kanonenfabrik Essen Krupp um 1870, Borsig in Berlin um 1880
 Stahlgashallen, unterspannte Hybridtragwerke, schwere Kranbahnen, Spannweite



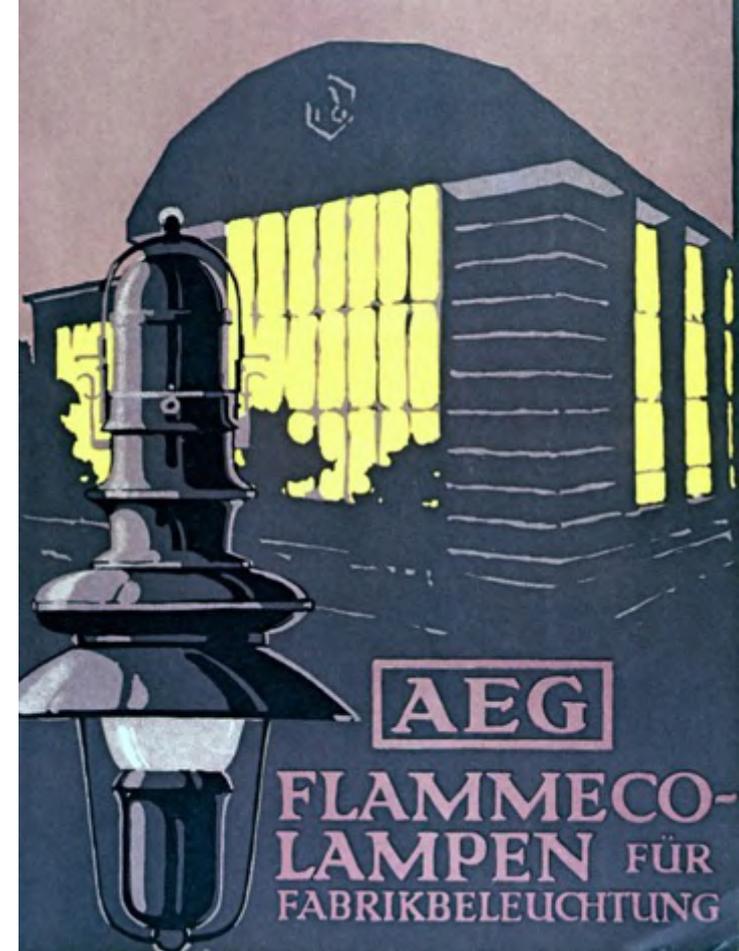
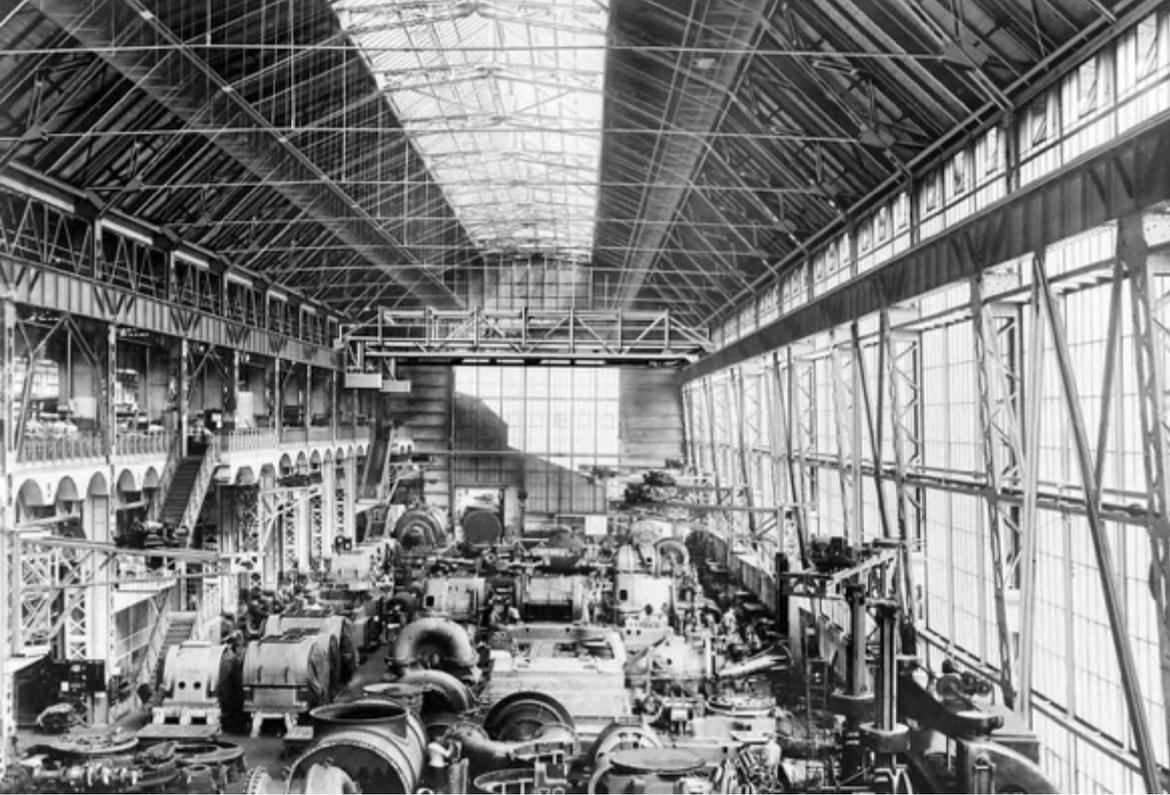
Positionen Ende des 19.Jh: Hochhäuser Louis Sullivan, St. Louis, Chicago um 1880
Vielgeschossiges Eisen/ Stahlskelett, Terra Kotta Brandschutz, „Form Follows Function“



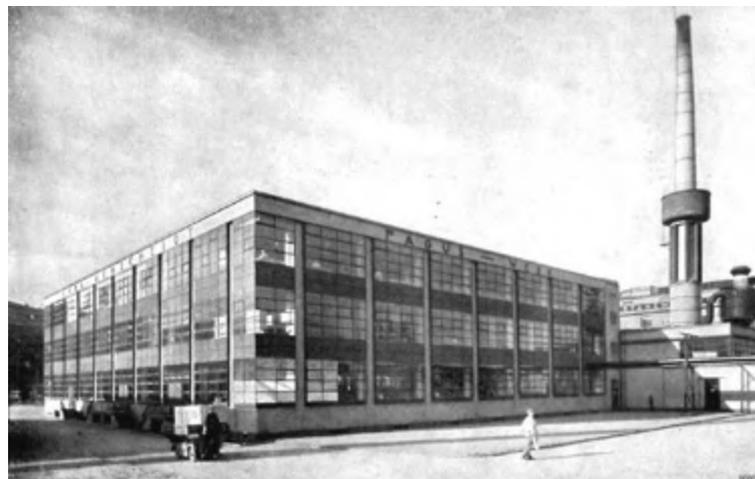
Ernest Ransome, United Shoe Machinery Factory, Beverley, 1902
elementiertes Stahlbetonskelett, Minimierung Außenwände, Tageslichtfabrik



Positionen Anfang des 20.Jh.: Otto Wagner, Postsparkasse Wien, 1906, Adolf Loos, Haus am Michaeler Platz, Wien 1909
Zweckdienlichkeit, Sachlichkeit, „Ornament und Verbrechen“



Positionen Anfang des 20. Jh.: Peter Behrens, Titus Bernhardt, AEG Turbinenfabrik, Berlin, 1909
Wilhelminischer Pathos, neue Arbeitswelt



Positionen Anfang des 20.Jh.: Walter Gropius, Erweiterung Schuhleistenfabrik Fagus, Alfeld/ Leine 1911
Klarheit Gebäudekubus, Betonskelett, Glasfassade

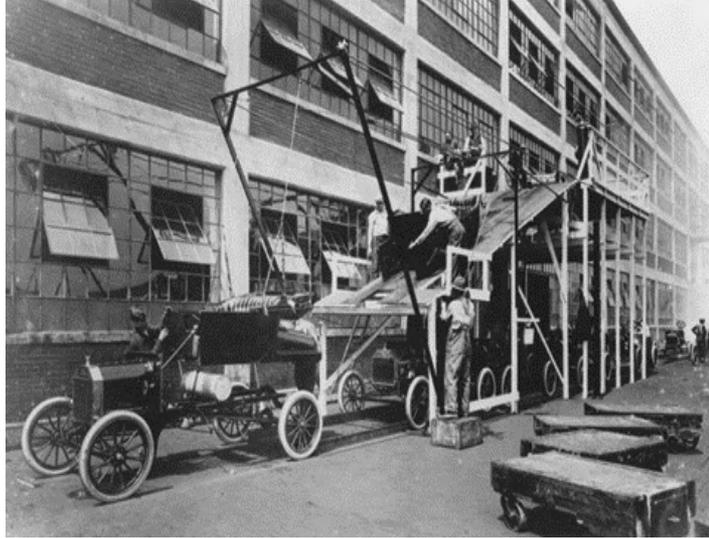


Albert Kahn Packard No. 10, Detroit ,1903

Minimale „Haut und Knochen“ Architektur, Stahlbetonskelett, Kahnträger, Hohe Deckenlasten, Brandschutz

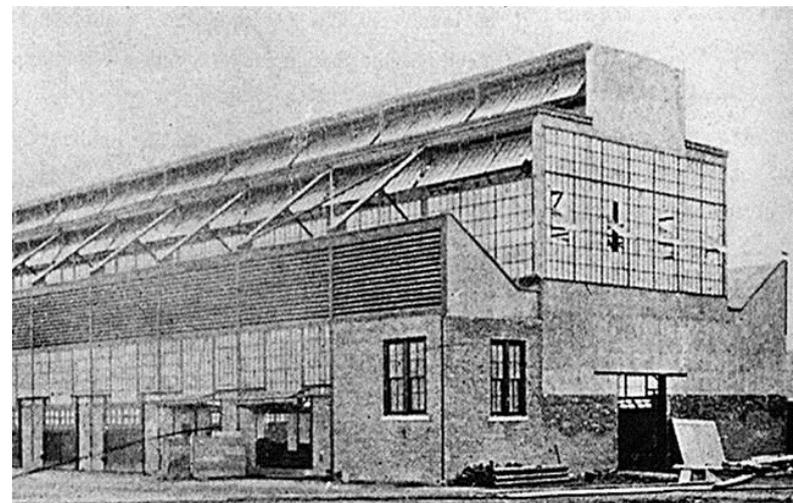
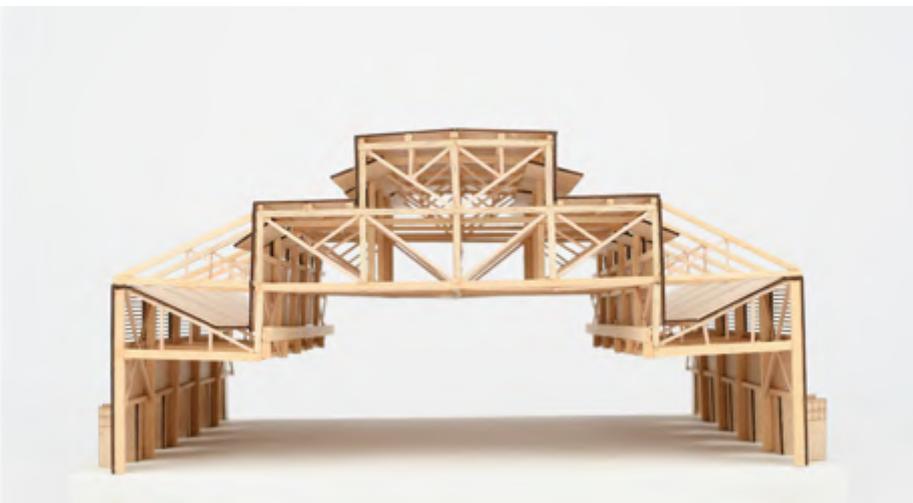
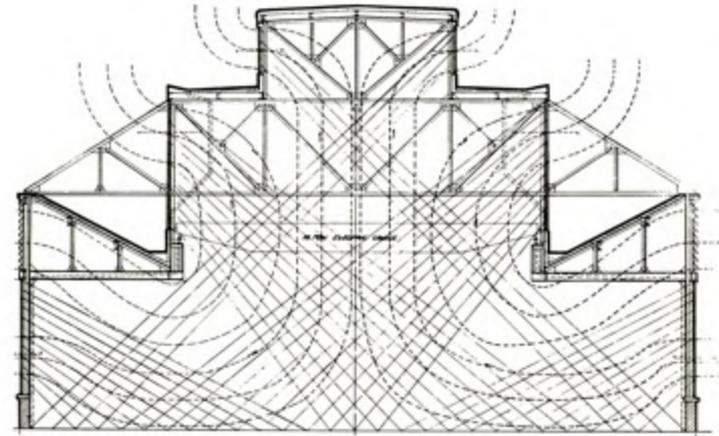


Frank Lloyd Wright, Imperial Hotel, Tokio, 1921
Verwendung Kahnträger, Erdbebensicherheit

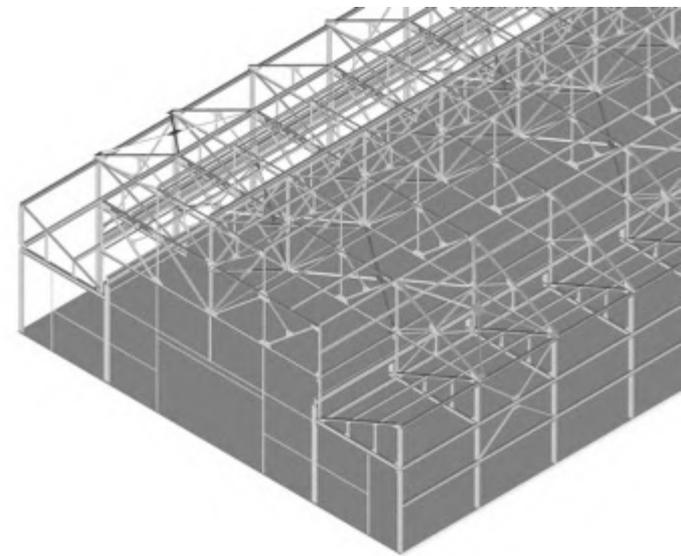
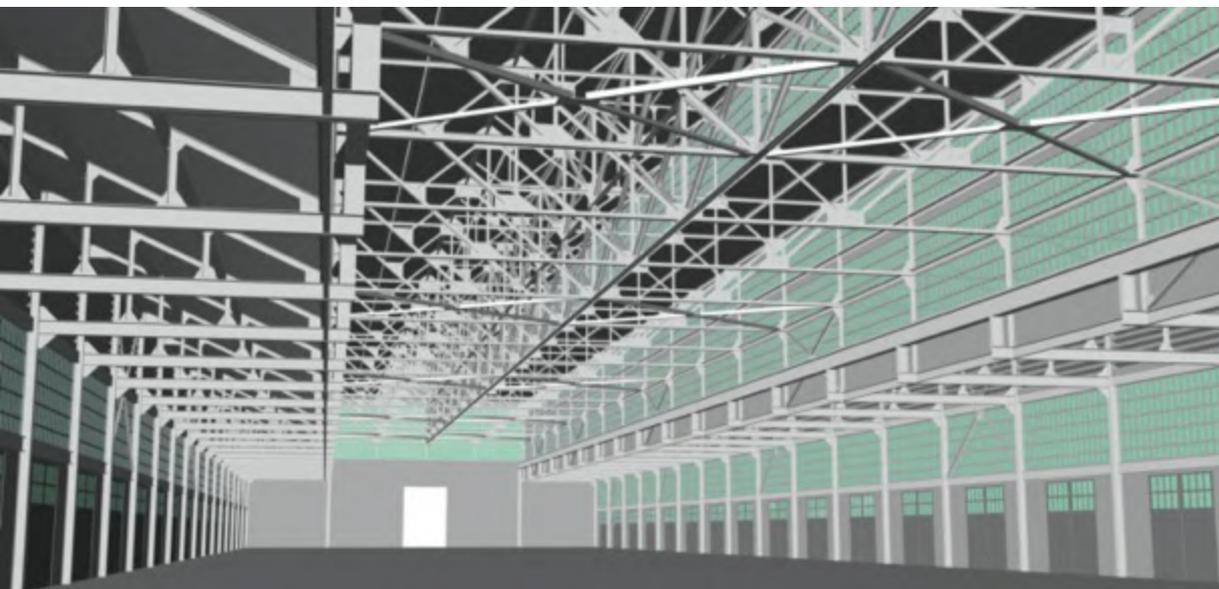
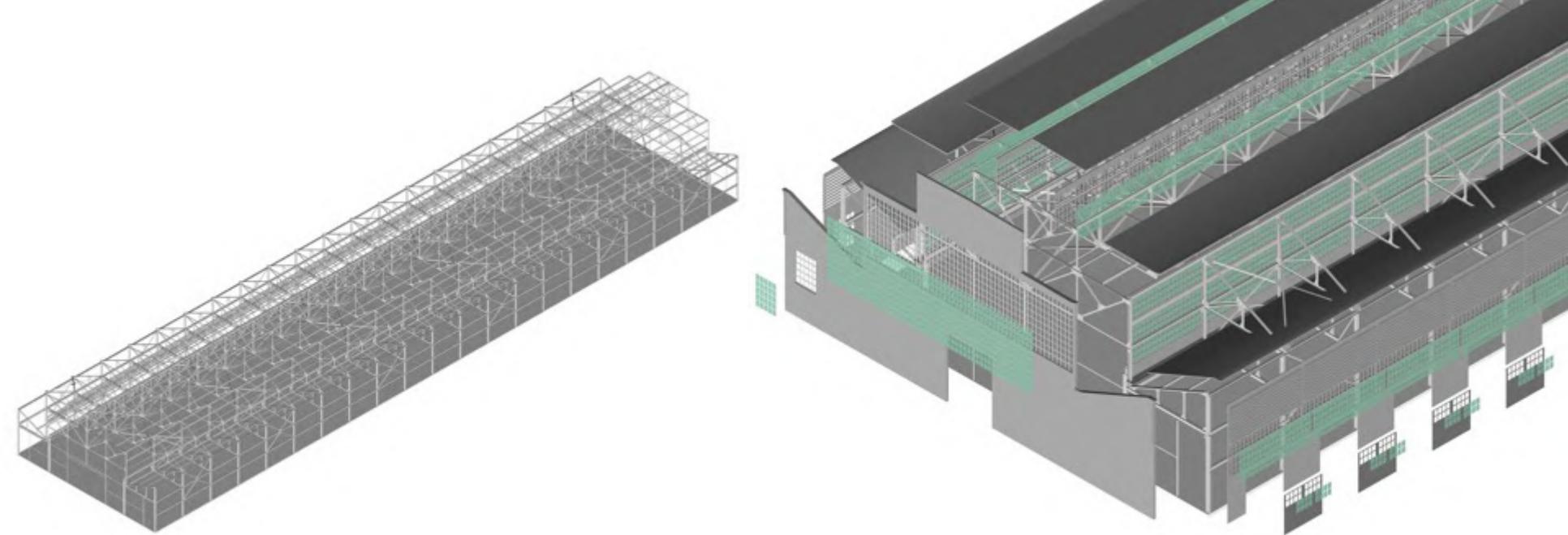


Erste Fabrik Ford, Ford Highland Park, 1909, Detroit, 1909

Stahlverbundkonstruktion, Tageslichtfabrik, Flexible Geschosse durch externe Treppen und Aufzüge



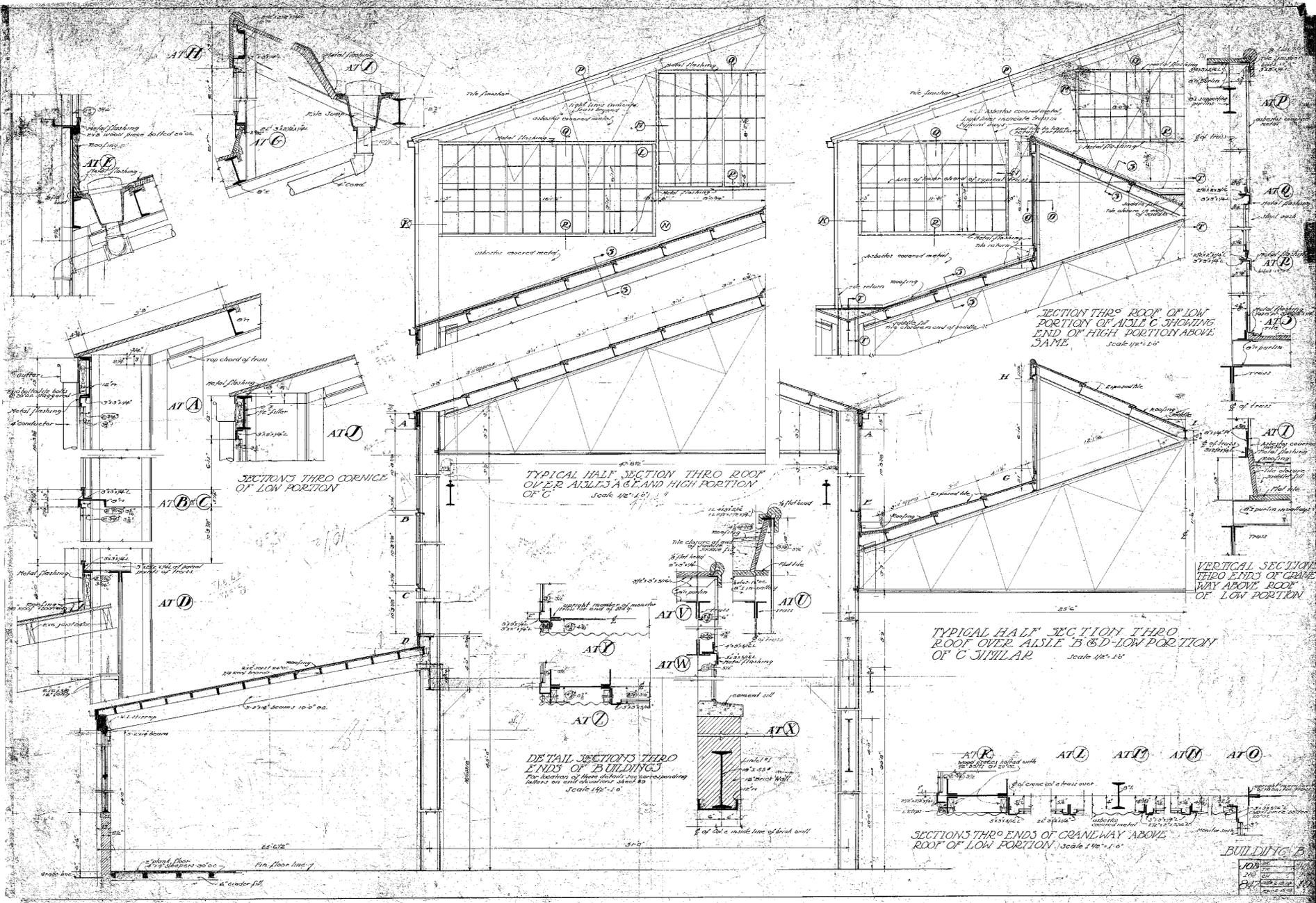
Packard Forge Shop, Detroit, 1910
Architektur als Leistungsform, Stahlskelett, Kranhängebahn, Tageslicht, Thermik



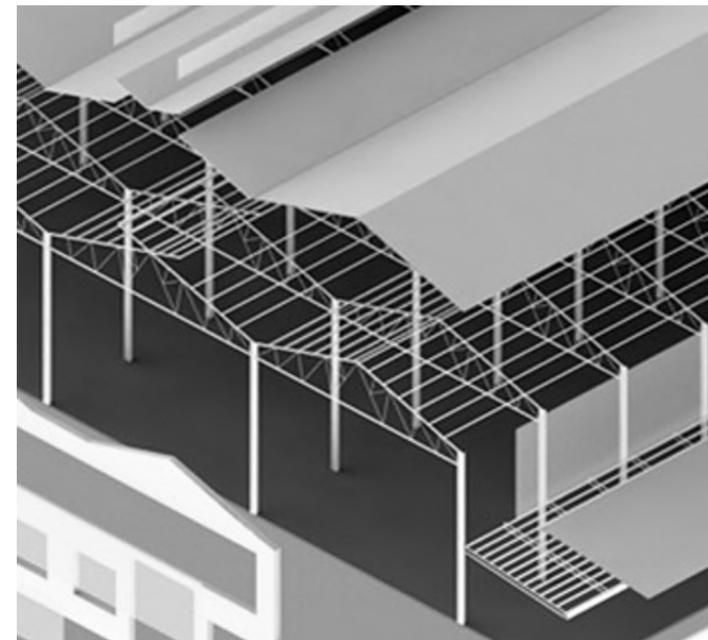
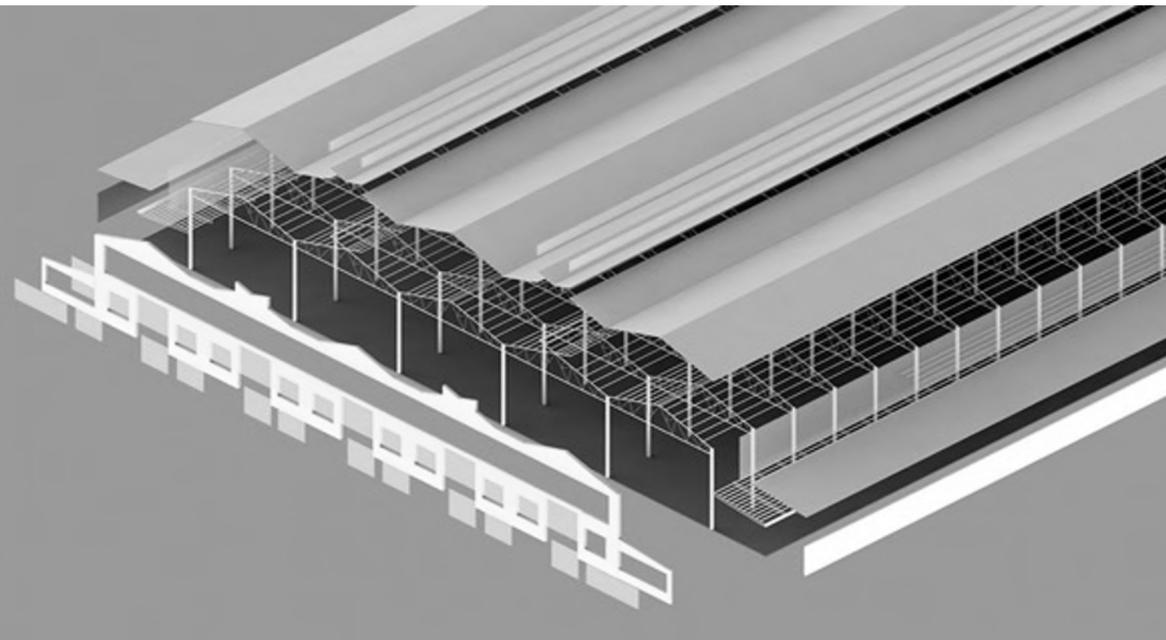
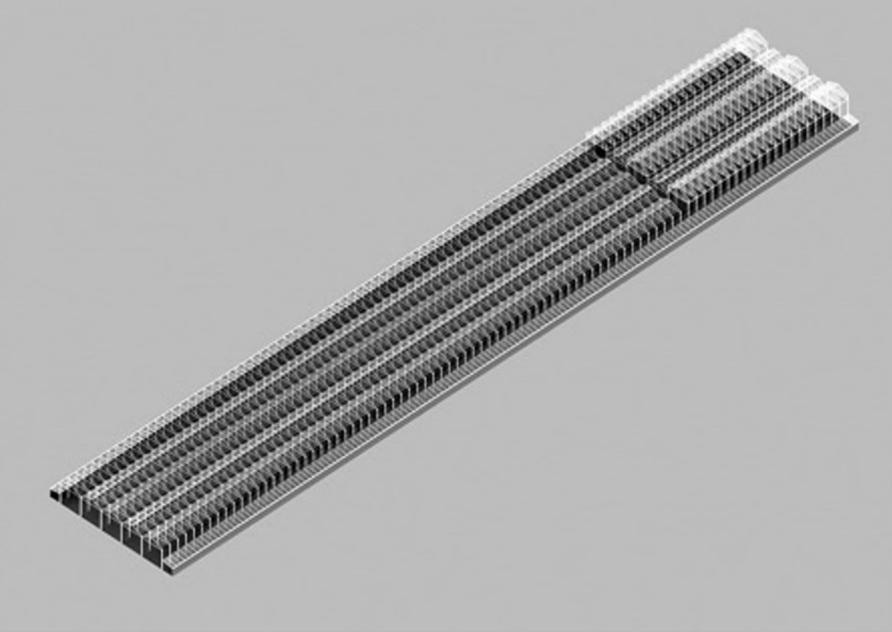
Packard Forge Shop, Detroit, 1910
3-D Konstruktion, b.arch. P. Brandt, MSA



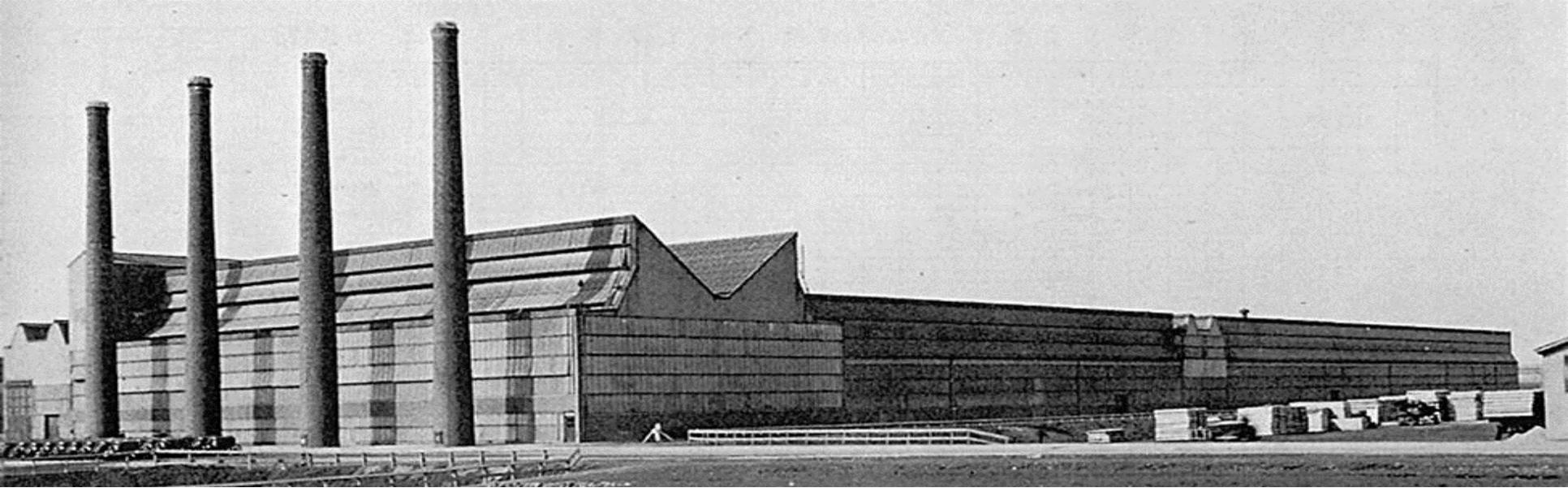
Ford Eagle Plant, River Rouge, Dearborn, 1917, 3D- Konstruktion b.arch. S. Middendorf, MSA
Fließbandfertigung U-Boot Jäger, Monitorbelichtung



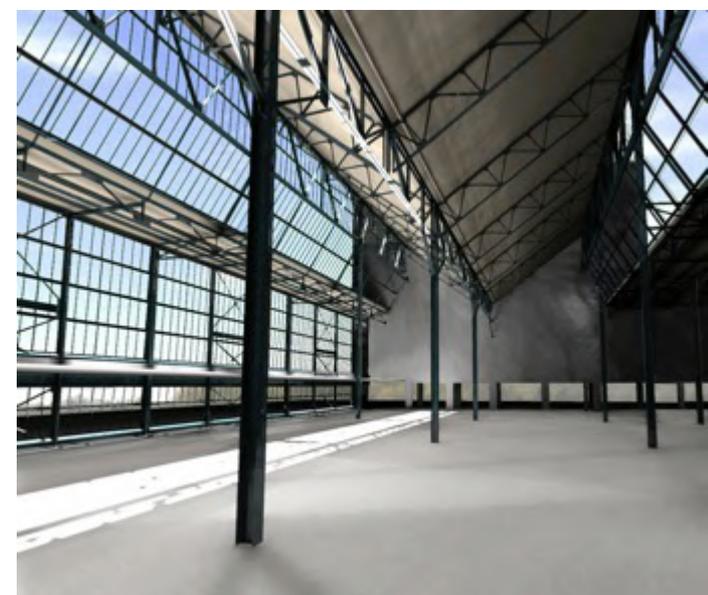
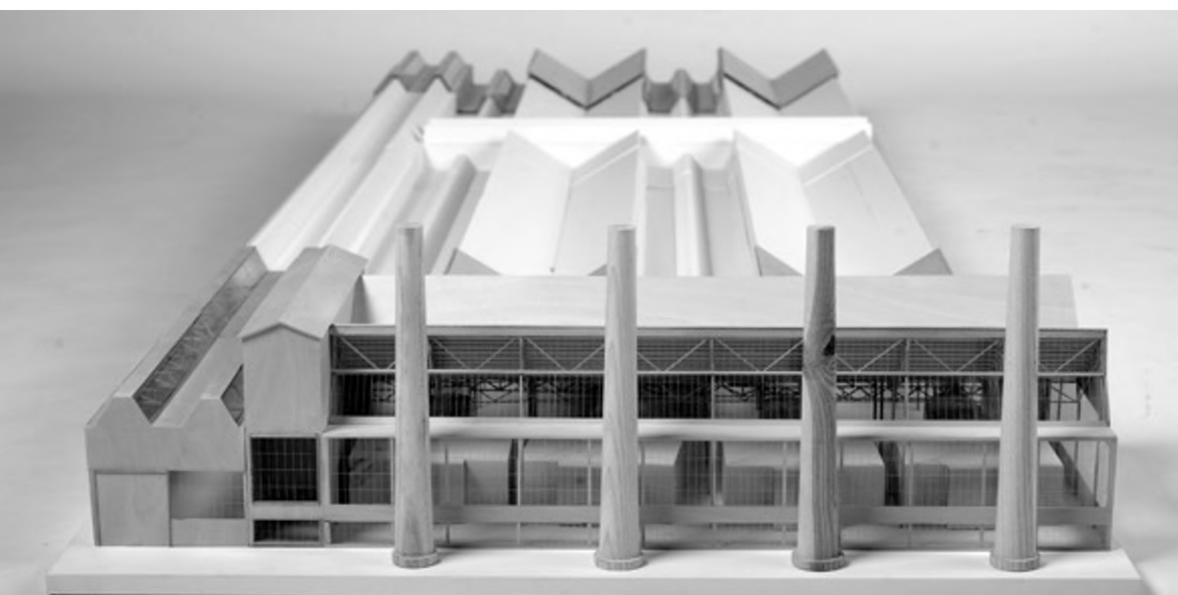
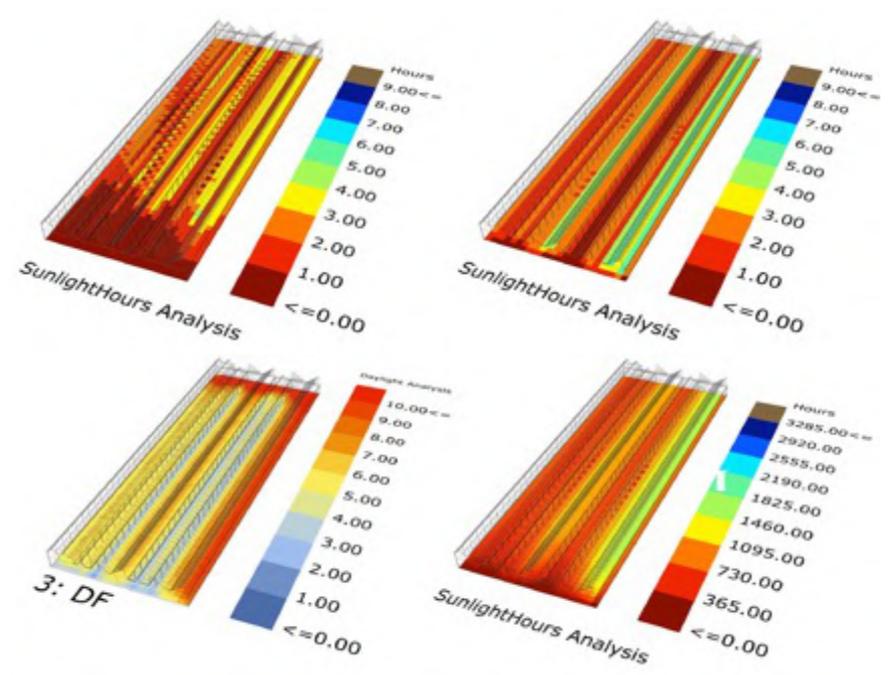
Ford Eagle Plant, River Rouge, Dearborn, 1917, Detailplan Stahlbau Archiv Kahn Ass.



Ford Eagle Plant, River Rouge, Dearborn, 1917
3D- Konstruktion b.arch. S. Middendorf, MSA



Ford Glass Plant, River Rouge, Dearborn, 1922
Glashülle, thermische Abzüge über den Glasöfen



Ford Glass Plant, River Rouge, Dearborn, 1922

Montage Stahlbau, Modelle MSA Münster J. Hoffschlag, A. Berianidze, P. Borger, K. Wysakowski, B. Pogoda,

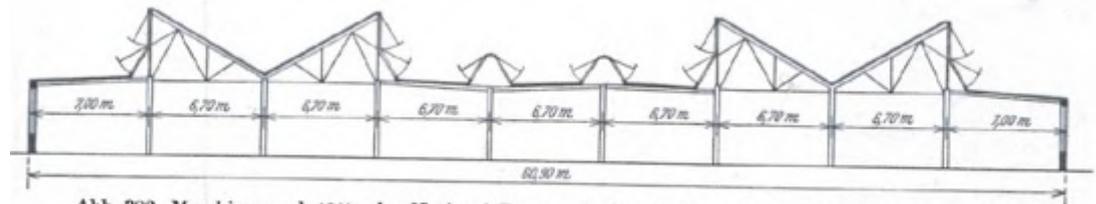


Abb. 382. Maschinenwerkstätte der National Pneumatic Co., Rahway N. J. Entwurf: Conrad Neff.

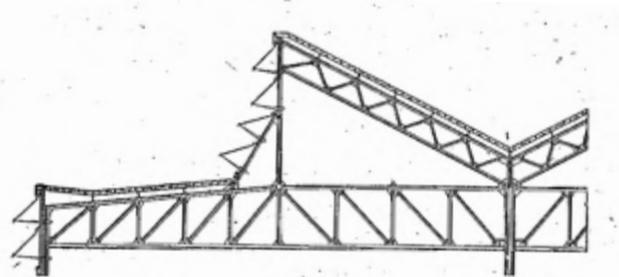


Fig. 102.

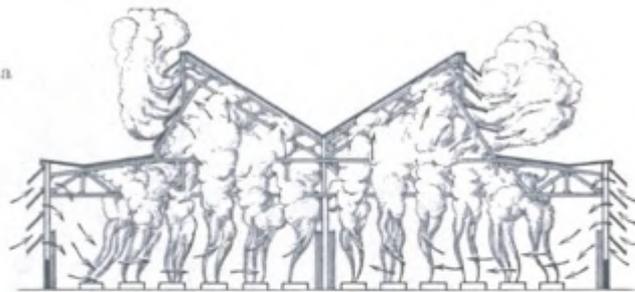
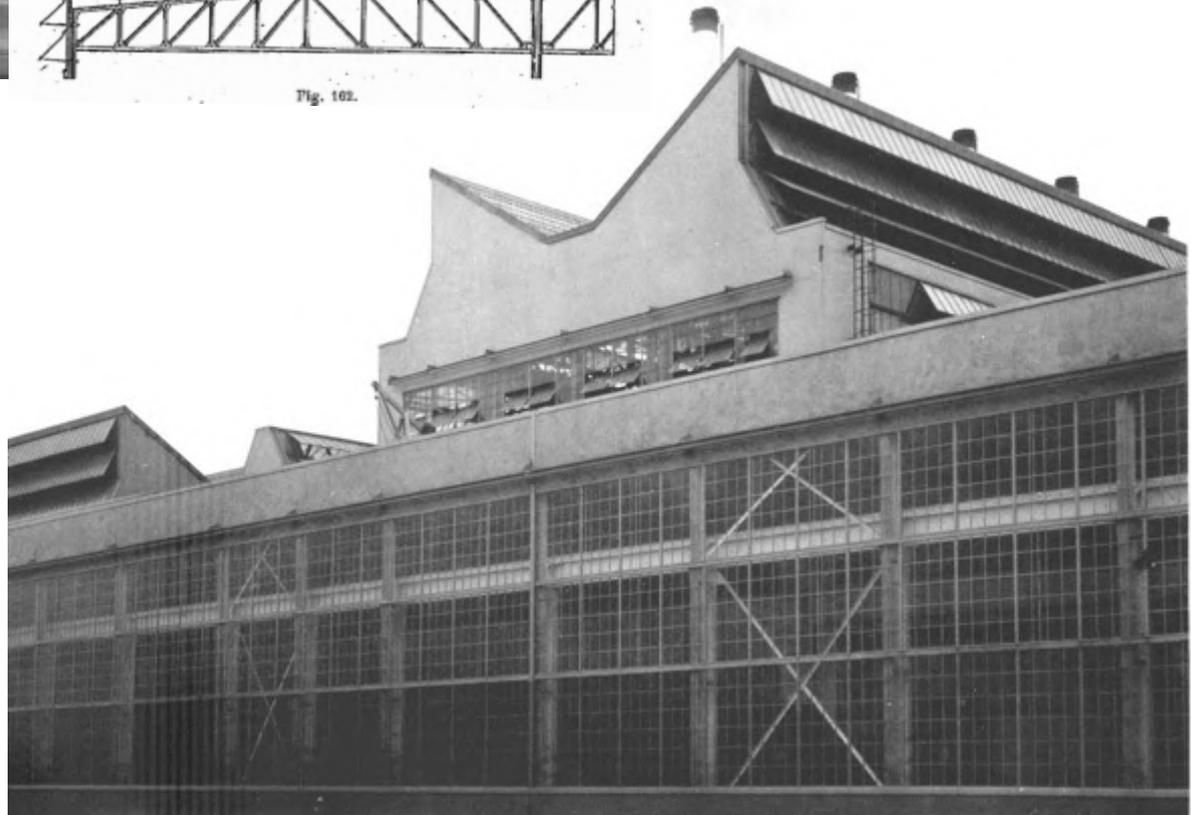
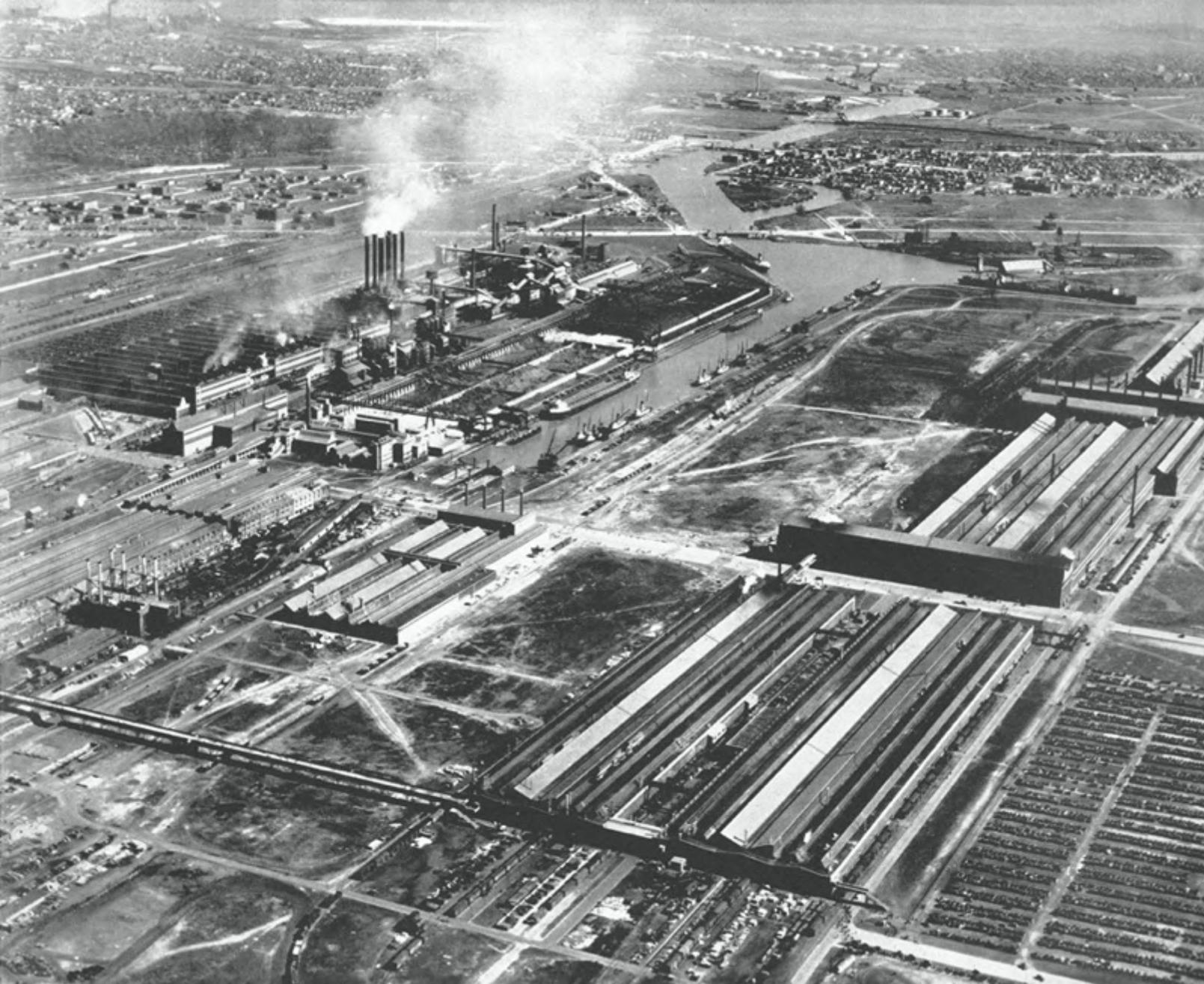


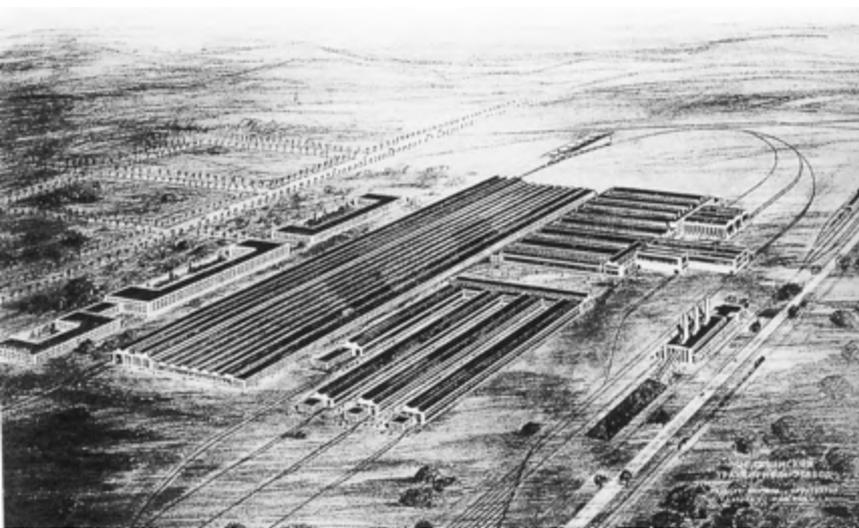
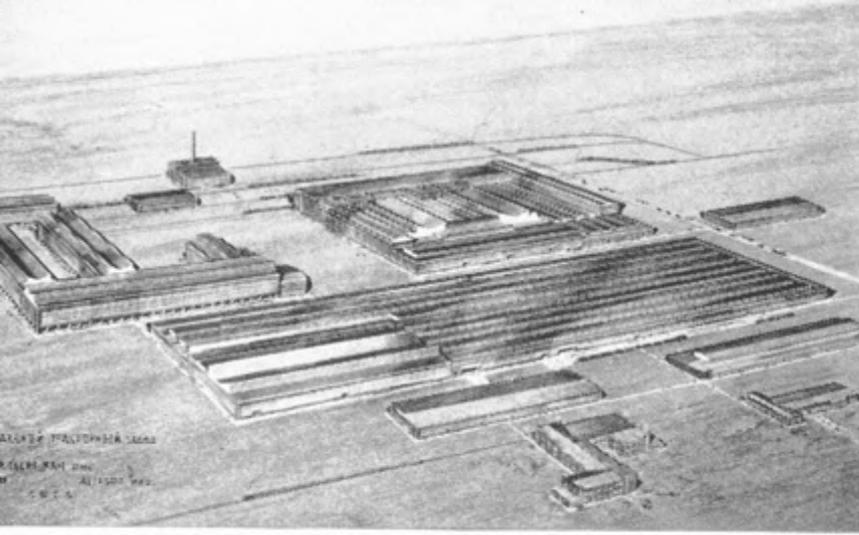
Abb. 129a und b.



Ford Open Hearth Steel Mills, Detroit, 1924, Wärmeabzug nach Pond Truss System, n. Maier- Leibniz 1932, Griveaud 1936
 Bandschutz Stahlbau, Behaglichkeit am Arbeitsplatz



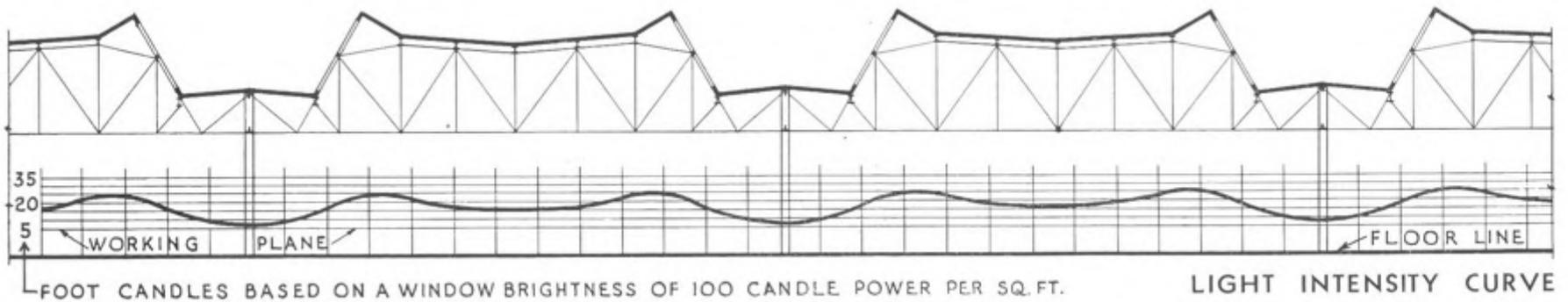
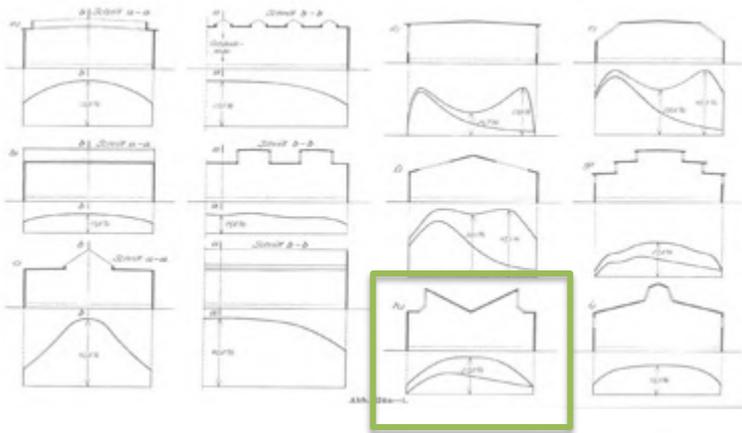
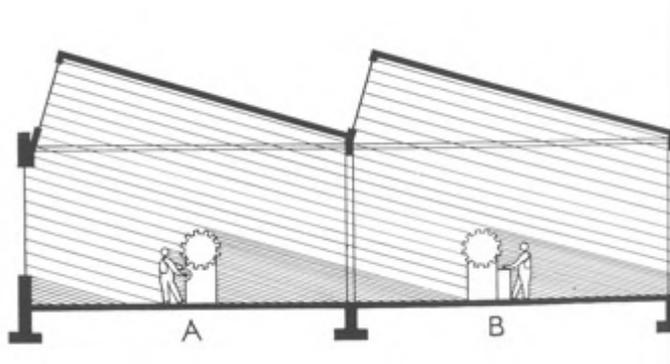
Ford River Rouge Plant, Dearborn, 1915- 1930, 1930 bis zu 100.000 Werker
Effizienz in Planung und Ausführung



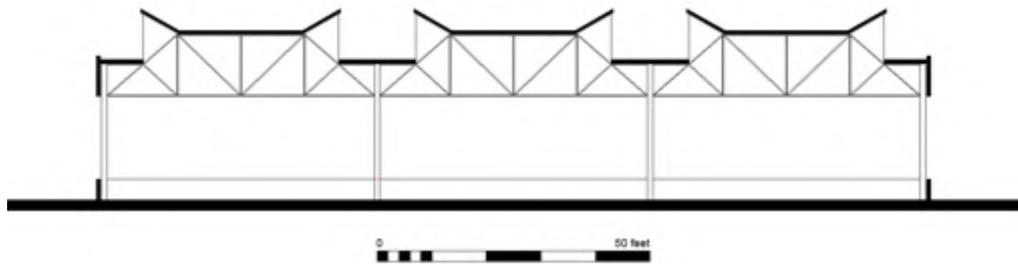
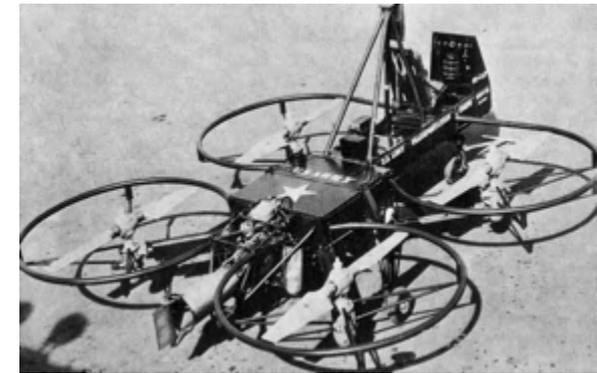
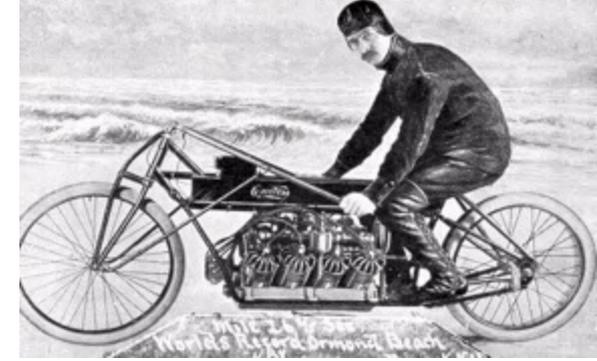
550 Werke in U.S.S.R, 1930/ 1932, Stalingrad, Traktorenwerk Cheliabinsk: Zivile Fertigung, Militärfertigung
Wandlungsfähigkeit



Chevrolet Body Plant, Indiana, 1935
Karosseriewerk unter einem Dach, keine tragenden Innenwände, flexibler Innenausbau



Vergleich Shed/ Monitorbelichtung, Hamilton Propeller, Hartford, 1936, / TQL Ermittlung Tageslicht n. Maier- Leibniz, 1932
 Licht, Ventilation, Behaglichkeit



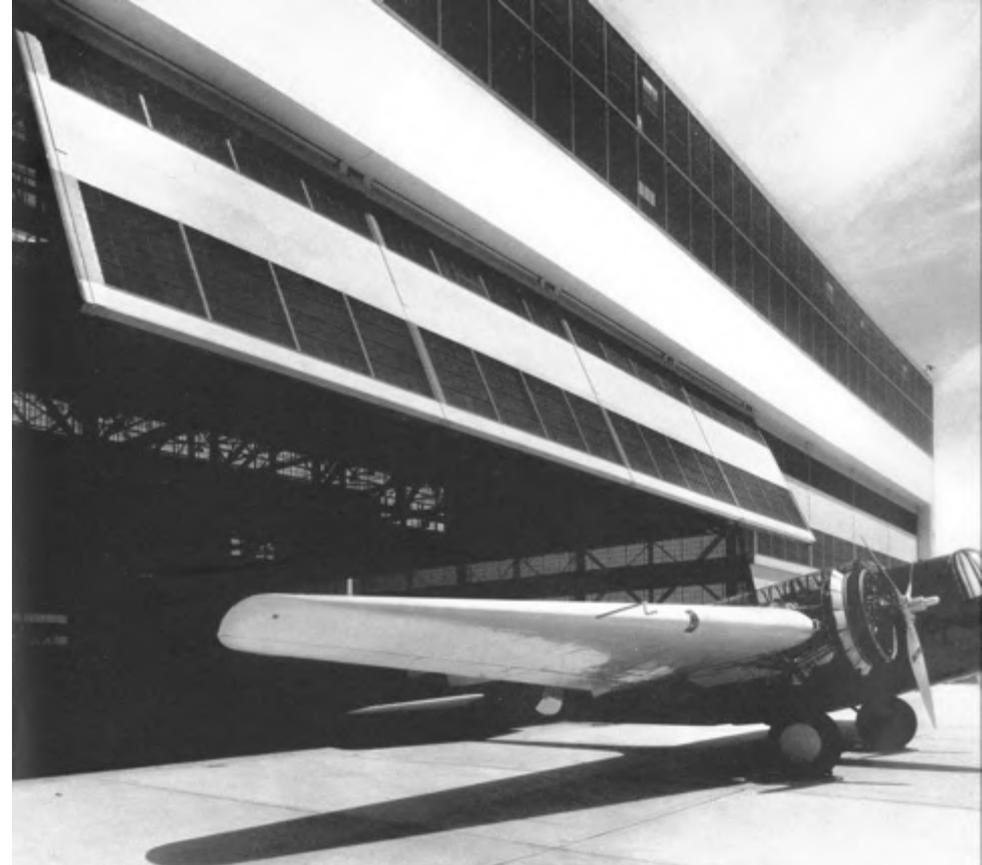
Curtiss Airplane, Buffalo, 1935, Motorradweltrekord Curtiss 1922, Flugcopter Curtiss 1941
Integration Monitorbelichtung, Optimierung Stahlfachwerk



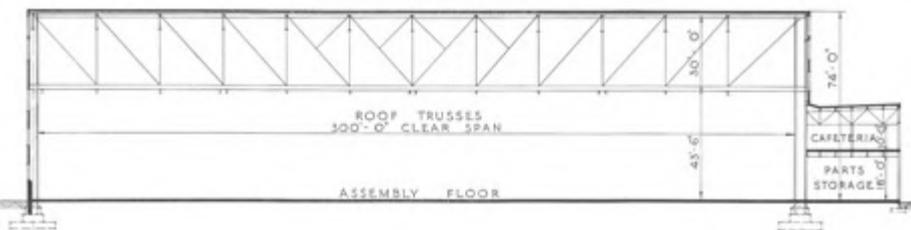
Glenn Martin Bomber Assembly, Baltimore, 1937
300 x 450 Fuss stützenfrei, Stahlbrückenträger



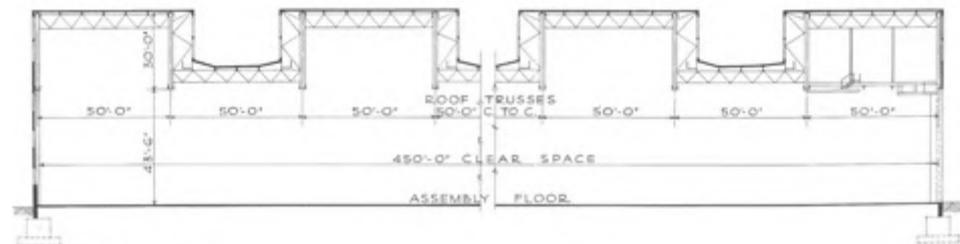
Robert M. Demore, Photo



ASSEMBLY BUILDING, GLENN L. MARTIN CO., BALTIMORE, MARYLAND

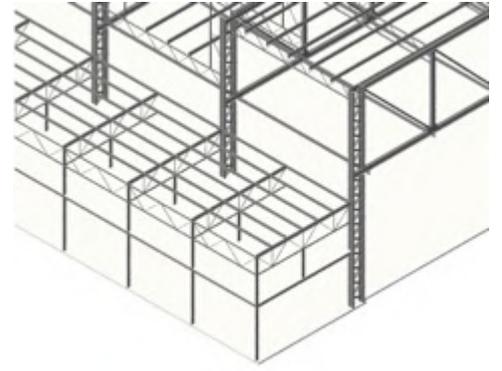
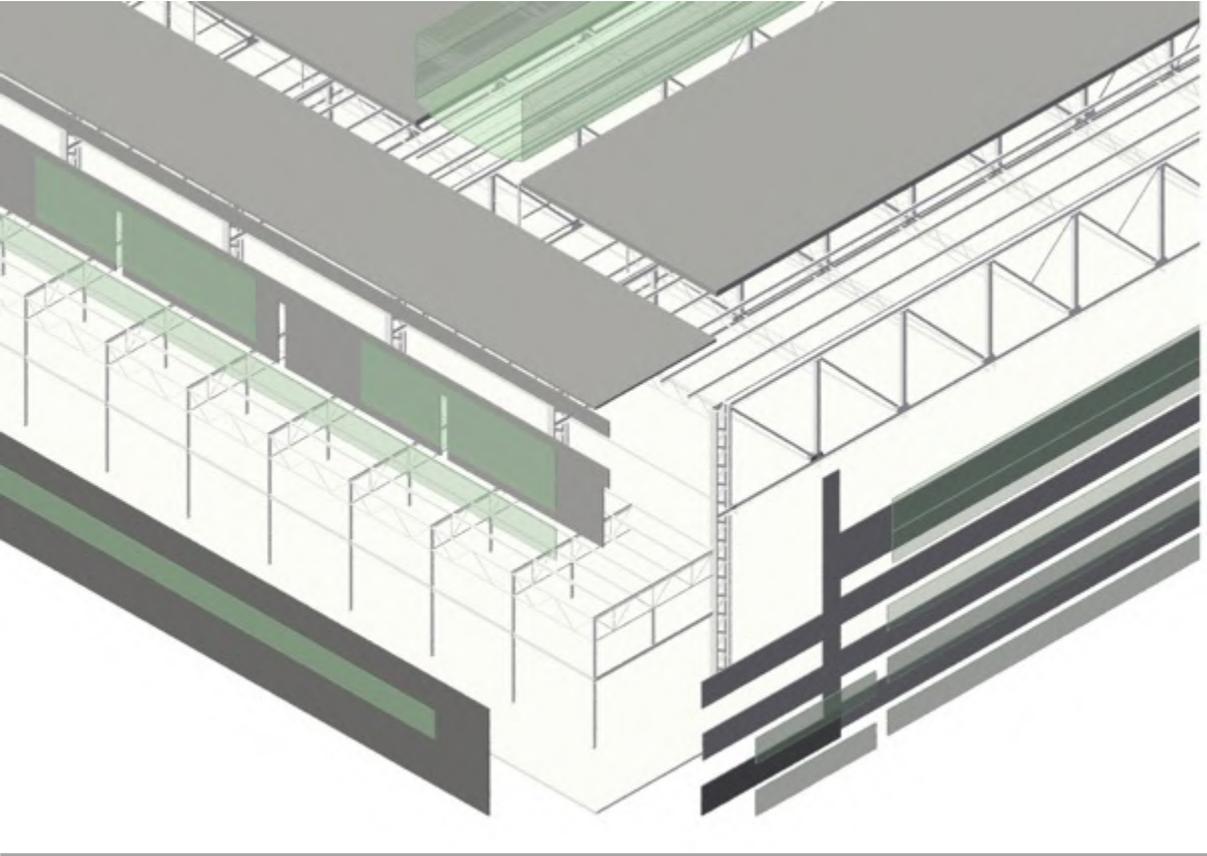
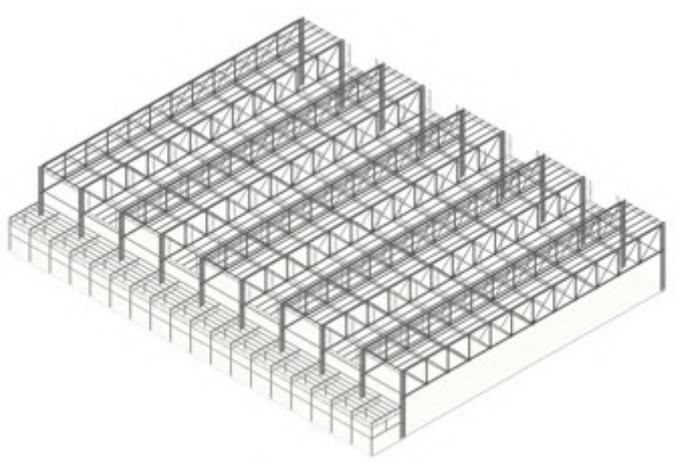
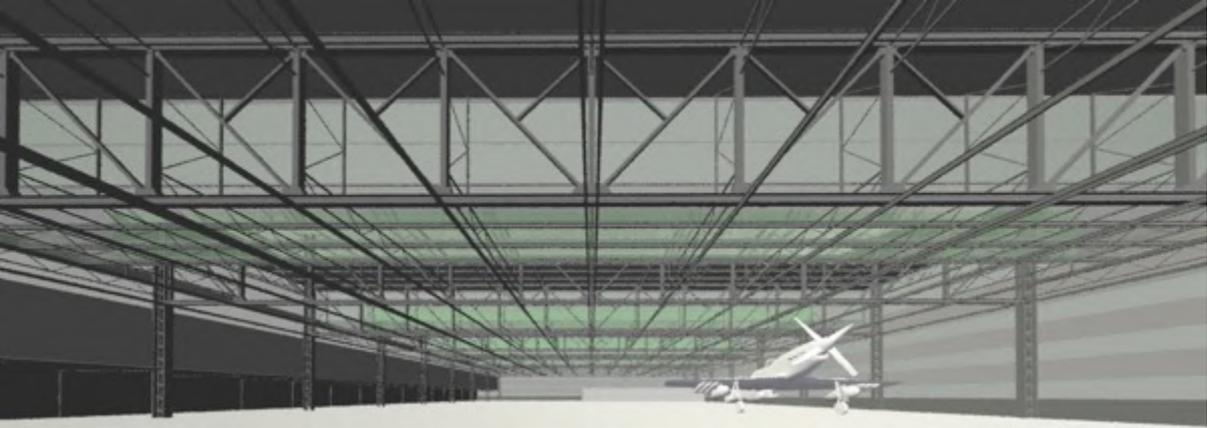


CROSS SECTION

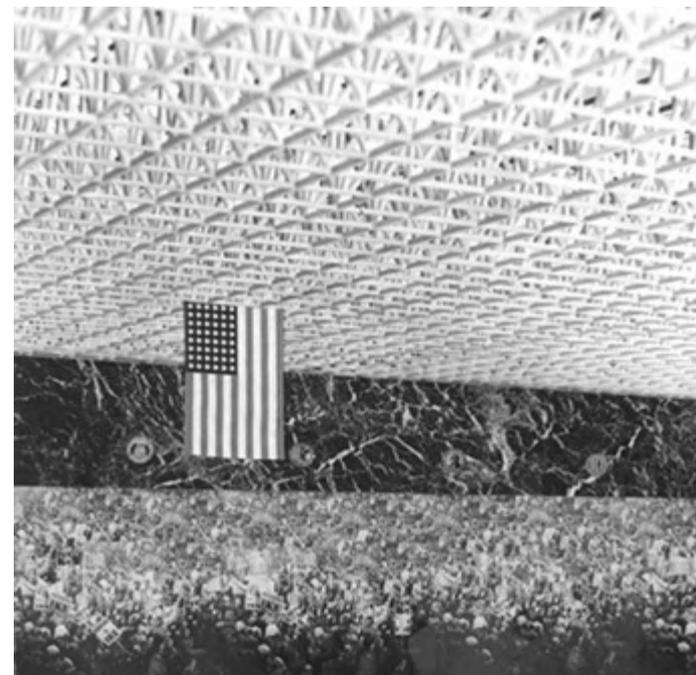
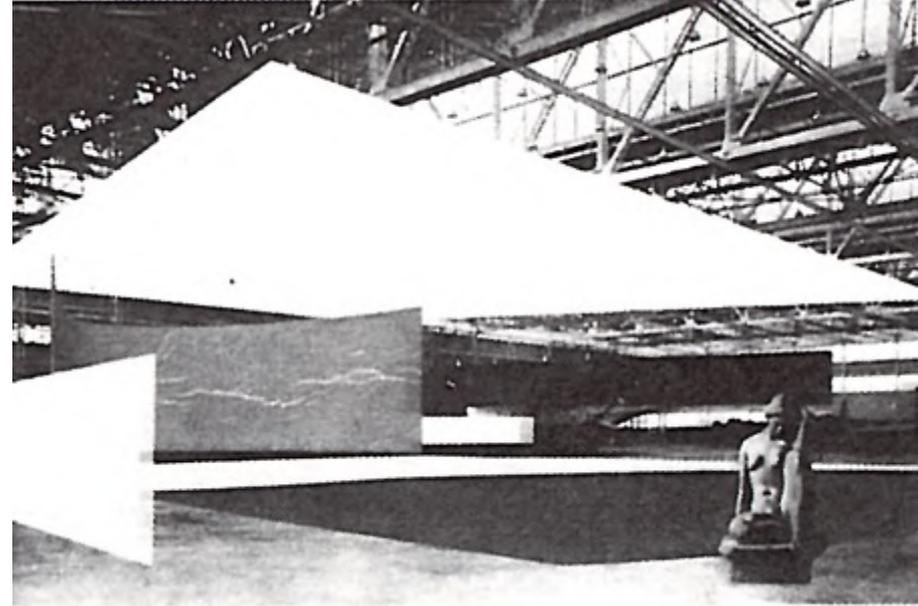


LONGITUDINAL SECTION

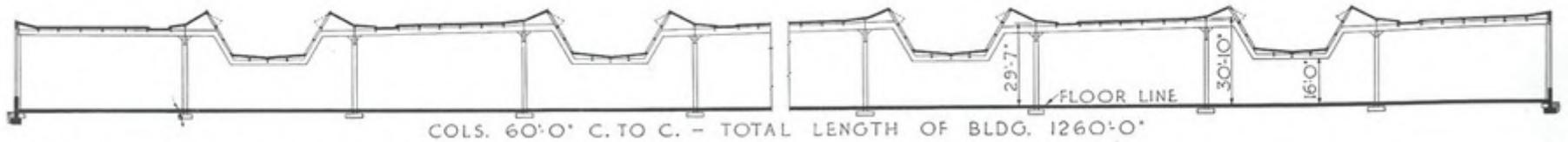
Glenn Martin Bomber Assembly, Baltimore, 1937
 300 x 450 Fuss stützenfrei, Freies Tor über 90 m



Glenn Martin Bomber Assembly, Baltimore, 1937
3-D Konstruktion, b.arch. S. Moser, B. Willimowski, MSA



Glenn Martin Bomber Assembly, Baltimore, 1937
Mies v. d. Rohe, Wettbewerb Konzerthalle 1942, Projekt Convention Hall 1949

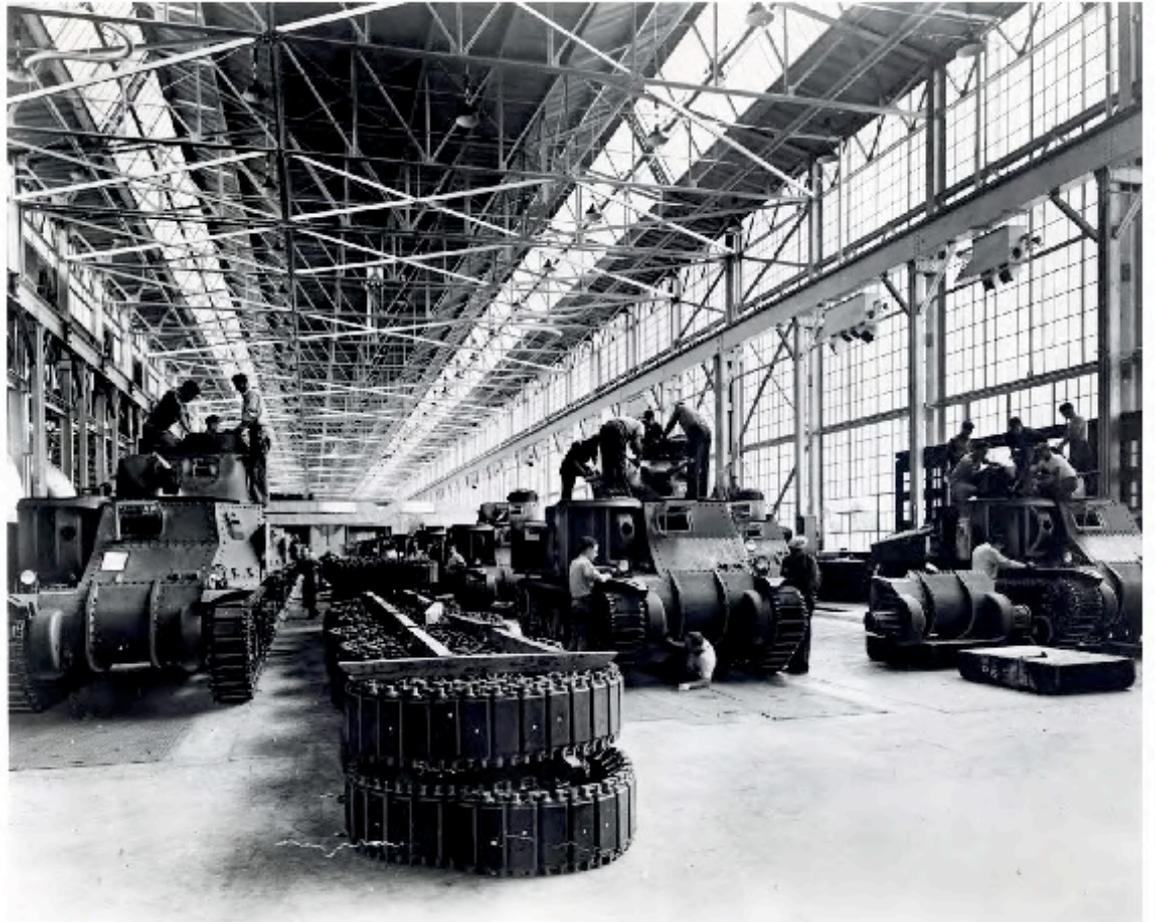


PART LONGITUDINAL SECTION

Manufacturing Building, Chrysler Half Ton Truck, Detroit, 1938
Monitorbelichtung, Galerieeinbauten für Sozial- und Technikflächen



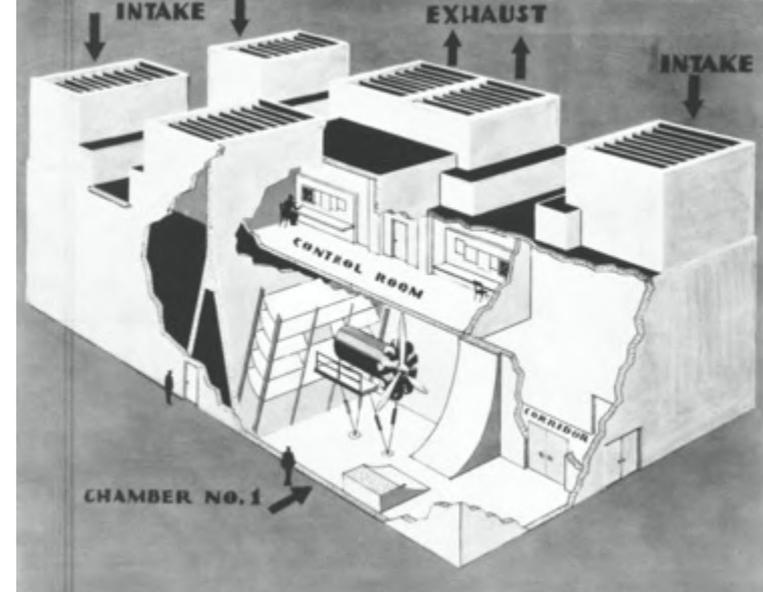
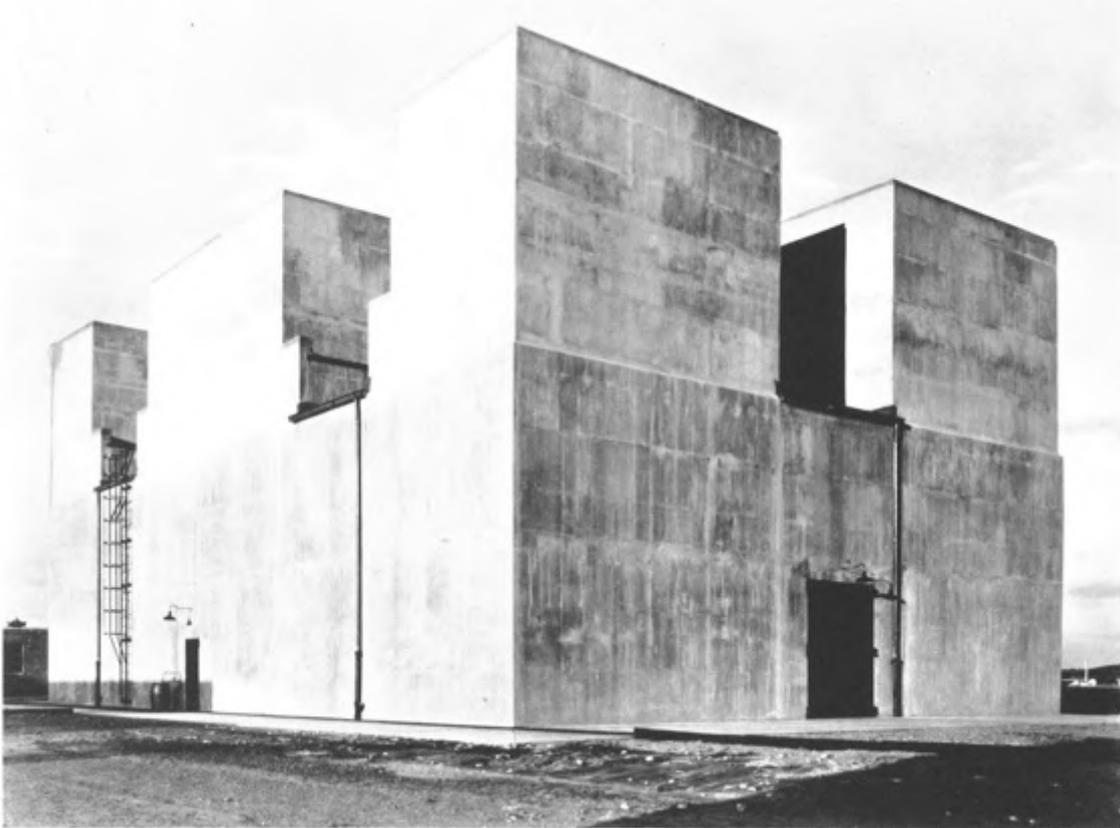
Export Building, Chrysler Half Ton Truck, Detroit, 1938
Fahrzeugendkontrolle, Showcase



(82)

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Chrysler Tank Arsenal, xxx, xxx
Curtain Wall

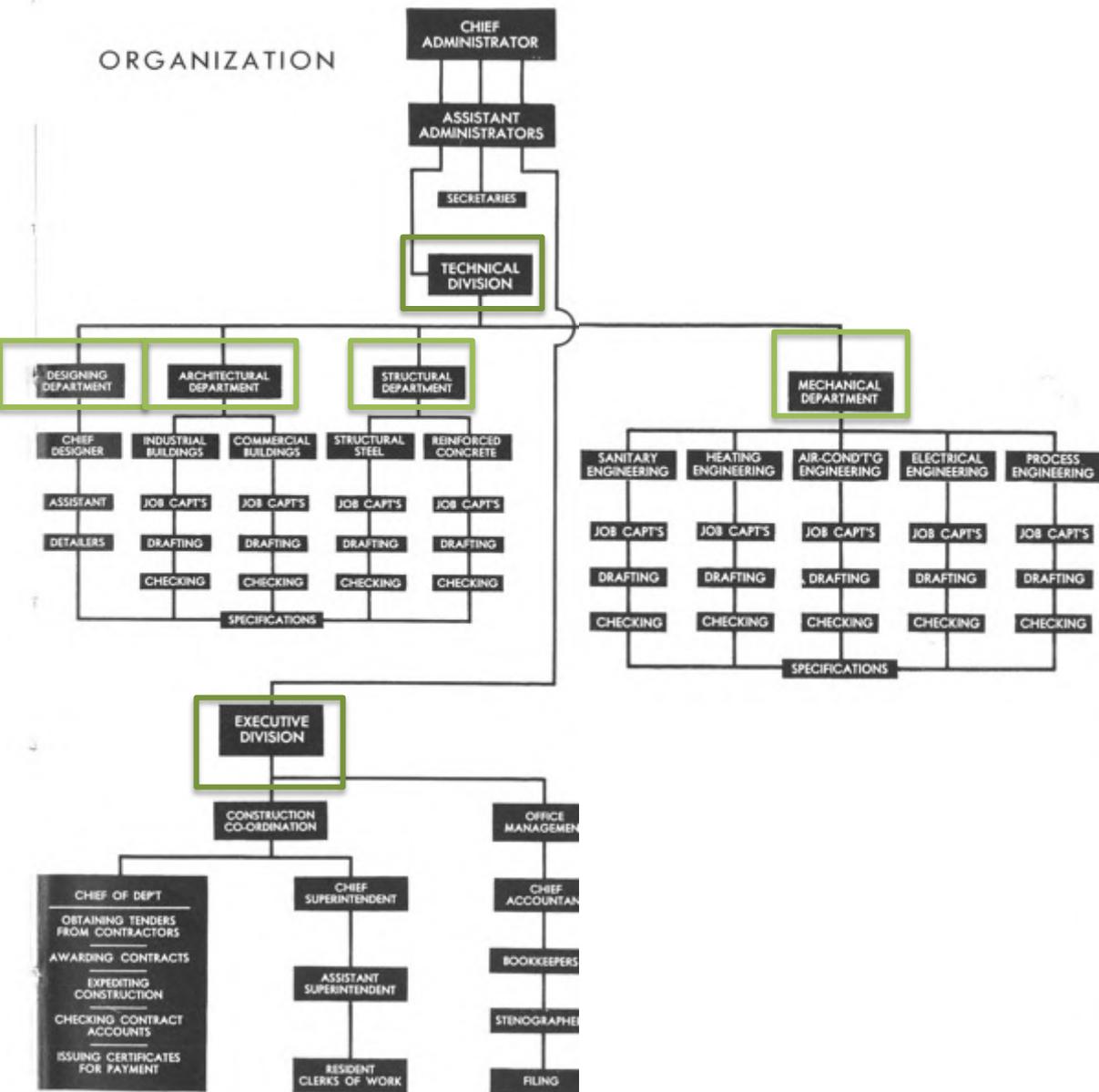


Pratt Whitney Propellerprüfstand, Hartford, 1937/ Louis Kahn Unitarian Church, Rochester, 1969
Licht, Ventilation, Behaglichkeit



Bomberplant B24 Liberator, Ypsilanti, 1942
350.000 m², Bauzeit 15 Monate inkl. Rollfeld

ORGANIZATION



Administrators ALBERT, MORITZ, and LOUIS KAHN



LOUIS KAHN, chief executive, conducts weekly conference of department heads

Büroorganisation Kahn Ass.
 Teamansatz, Effizienz in Planung und Ausführung

1. FUNCTIONAL DESIGN. The purpose of a factory building is to facilitate production. It should house the manufacturing equipment in such a manner as to enable that equipment to function efficiently. To this end the general scheme is all important, and should provide:

STRAIGHT-LINE PRODUCTION Various departments for successive operations located to effect a simple and direct production-flow, so that transportation and handling of materials will be cut to a minimum. There should be no crossing or retracing of the production line with consequent congestion.

FLEXIBILITY

A departmental layout sufficiently elastic to permit rearrangement in accordance with changes in production methods, or expansion of departments as production expands, without disorganizing the existing scheme.

GENEROUS COLUMN SPACING

Interior columns spaced as far apart as economically possible, to allow for free location of machines and cause the least interference with the transportation of materials.

SUITABLE FLOORS AND CEILINGS

Clear ceiling heights adequate for the work performed, and floors strong enough to meet all loading requirements.

PROPERLY LOCATED UTILITIES

Elevators, stairs, locker and toilet rooms located where they best serve the purpose and do not interfere with the flow of production.

GOOD LIGHTING

Adequate natural and artificial illumination, properly distributed and of sufficient intensity for the tasks performed. Absence of disturbing glare.

ADEQUATE VENTILATION

Air movement sufficient for human needs, and special equipment to meet any problems created by the manufacturing process.

LOW FIRST- AND UPKEEP-COSTS

Economies resulting from skillful design and the efficient use of materials, reducing both initial cost and maintenance expense to the minimum.

2. BUSINESS-LIKE EXECUTION. Just as important as good design is the provision of adequate service. Especially important are the following service items:

ACCURATE PRELIMINARY ESTIMATES

Before the work is begun, a preliminary cost estimate sufficiently accurate that there will be no over-running of the manufacturer's budget.

SPEED

Because no manufacturer decides to build until the need for new production facilities is apparent and pressing, the work in its entirety—from preliminary design to final completion—must be carried out with utmost dispatch.

COMPLETE AND ACCURATE DRAWINGS

Construction drawings and specifications prepared in such detail and with sufficient care to provide a proper basis for competitive bidding by responsible contractors and to eliminate or minimize extras.

A GOOD CONTRACTOR

The Architect must furnish helpful and qualified advice on the selection of a contractor able to do the work expeditiously and well.

ADEQUATE SUPERVISION

All branches of the work must be carefully supervised, during construction, in such a way as to expedite the work as much as possible.

WHAT THE MANUFACTURER WANTS FROM HIS ARCHITECT

Manufacturers about to build too often approach the architect with the mistaken notion that his only function is the preparation of construction drawings. Actually, of course, the service rendered by the architect should be much more comprehensive. Albert Kahn, Inc. believes that the proper functions of the industrial architect fall under two main headings, lists their more important subdivisions as in the outline below.

Thus factory design imposes a severe responsibility on the architect. The successful completion of the project depends upon his ability to analyze the problem, to plan the structure properly and practically, to effect every economy, and to give the building external and internal distinction without extravagance.

STANDARD STEEL TRUSSES

STEEL INSERTS

CASEMENTS AND BASEMENT WINDOWS

STANDARD LINTELS

STANDARD STEEL WINDOWS

CONTINUOUS SASH

MECHANICAL OPERATORS FOR STEEL WINDOWS

STEELDECK ROOFS

STANDARD BUILDINGS

TRUSCON PRODUCTS

INCLUDE:

Standard Buildings: Panel-Frame Buildings, Metal and Nonmetal Frame, "Shedlike" Buildings, Structural Steel Trusses, Standard Steel Windows, Cover Panels, Standard Access Truss, Corrugated Metal Roofing, Continuous Steel Sash, Mechanical Operators for Windows, Metal Lath and Hy-Rib, Standard Lath, Corrugated Lath, Standard Laths, Standard Steel Doors, Standard Concrete, 8 in. Sp. Slabs, Formwork, Cast-in-Place Concrete, Reinforced Concrete, Steel Columns, Girders and Partials, Reinforced Concrete Pavements, 7 in. Thick Concrete Joists, Cast Iron and Steel Protection, Steel Poles, Booms and Platforms, Foundry Floors, Pressed Steel Parts, Waterproofing, Floor Hardware, Technical Papers, Contact Us.

TRUSCON STEEL COMPANY
TOLSONVILLE, OHIO
Wholesaler and fabricator in all Principal Cities

STANDARD STEEL TRUSSES

STEELDECK ROOFS

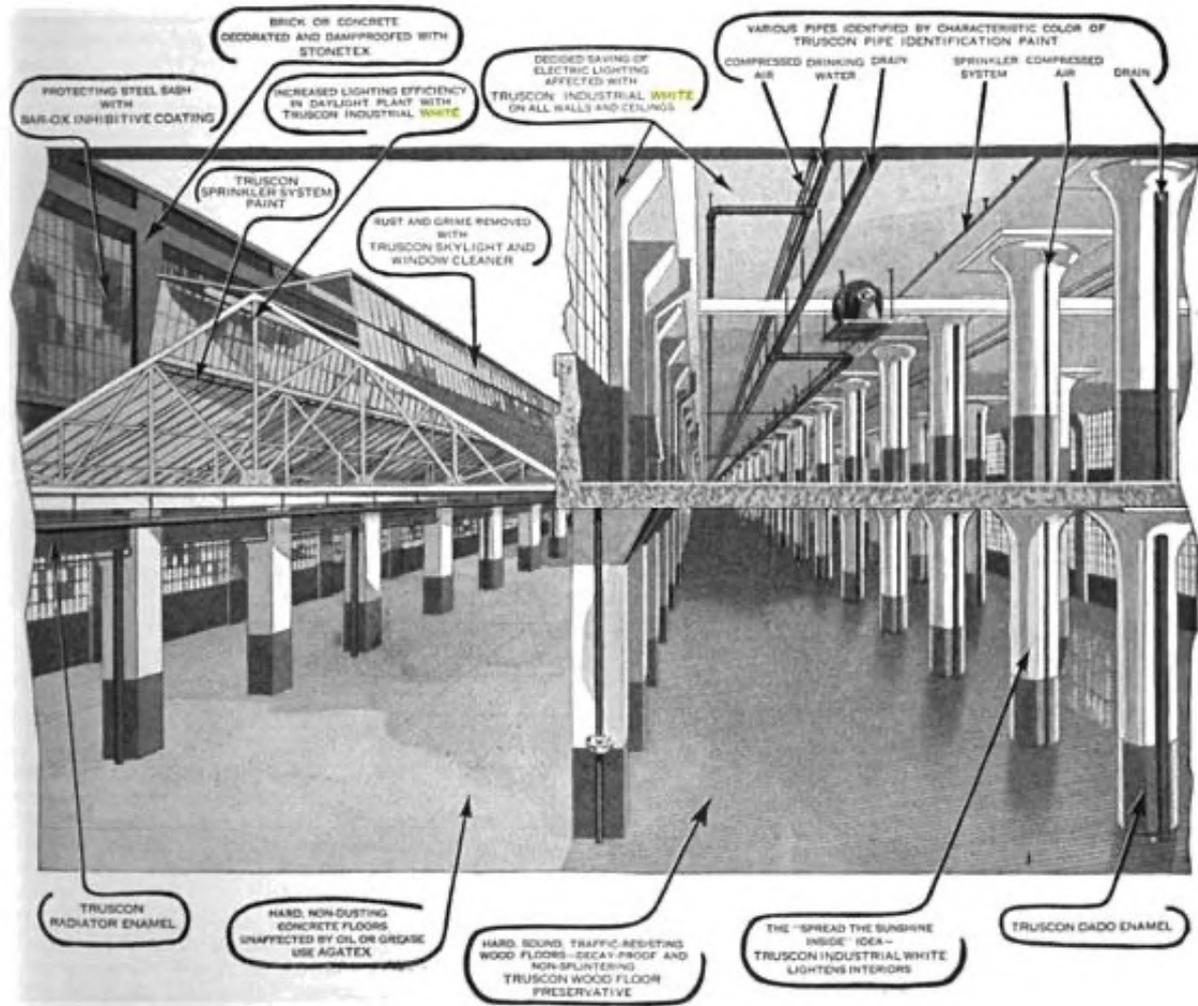
STANDARD BUILDINGS

TRUSCON PRODUCTS

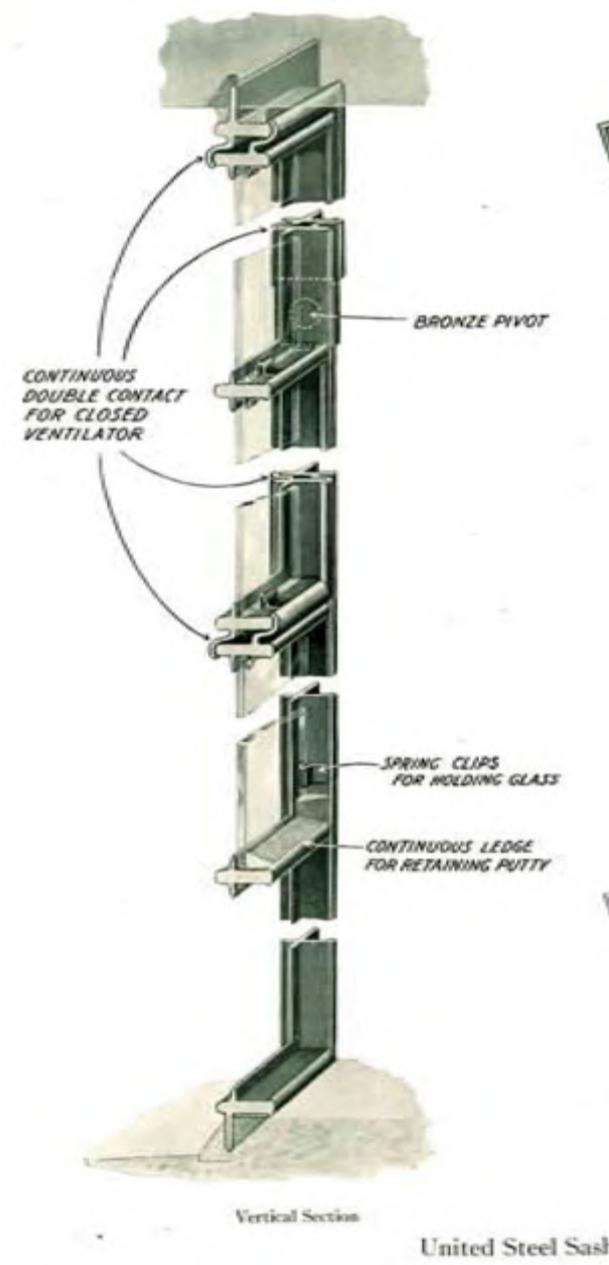
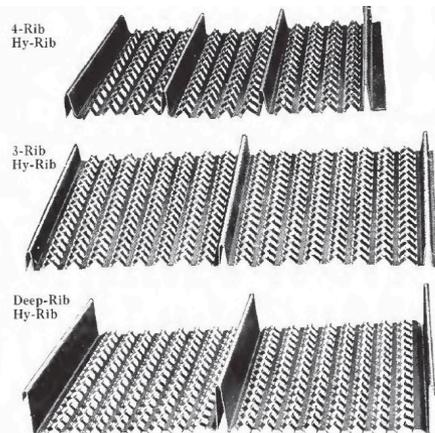
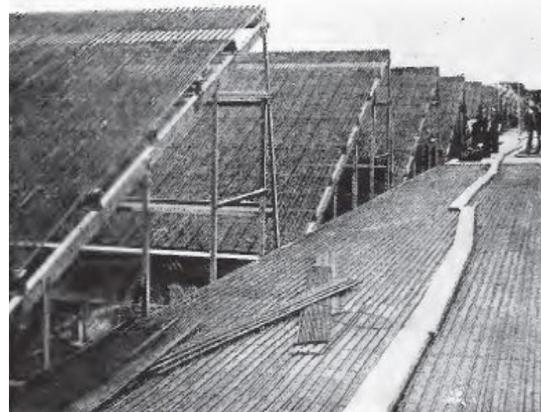
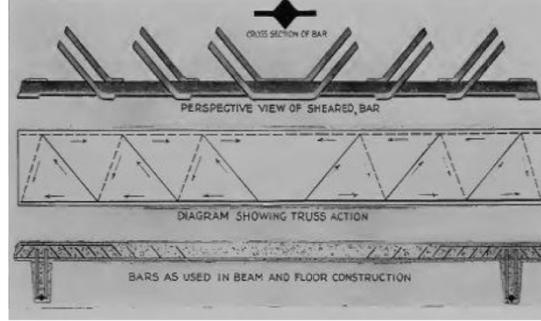
INCLUDE:

Standard Buildings: Panel-Frame Buildings, Metal and Nonmetal Frame, "Shedlike" Buildings, Structural Steel Trusses, Standard Steel Windows, Cover Panels, Standard Access Truss, Corrugated Metal Roofing, Continuous Steel Sash, Mechanical Operators for Windows, Metal Lath and Hy-Rib, Standard Lath, Corrugated Lath, Standard Laths, Standard Steel Doors, Standard Concrete, 8 in. Sp. Slabs, Formwork, Cast-in-Place Concrete, Reinforced Concrete, Steel Columns, Girders and Partials, Reinforced Concrete Pavements, 7 in. Thick Concrete Joists, Cast Iron and Steel Protection, Steel Poles, Booms and Platforms, Foundry Floors, Pressed Steel Parts, Waterproofing, Floor Hardware, Technical Papers, Contact Us.

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Wholesaler and fabricator in all Principal Cities



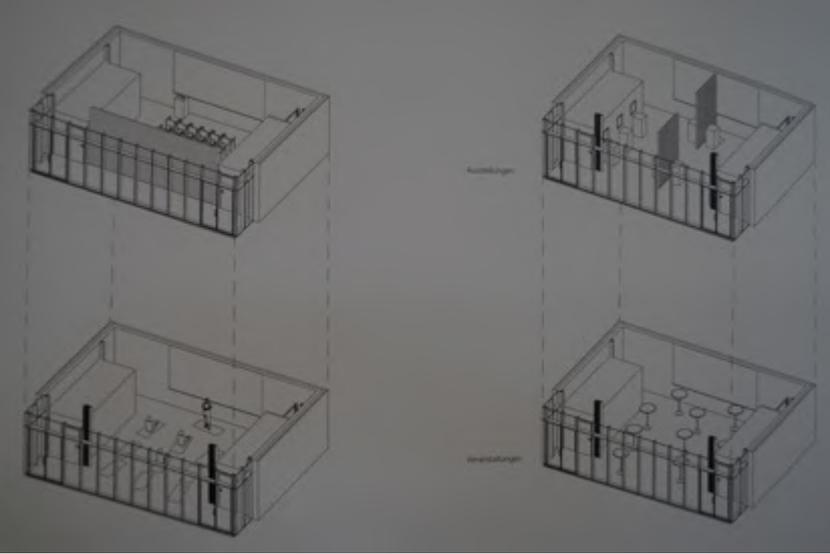
Eigene Fertigung von Bausystemen: Truscon: Kahnträger, Hy-Rib, Hollow File, United Steel Sash, Farben, Versiegelung
Effizienz in Planung und Ausführung



United Steel Sash



In Gründung: Aufbau einer Stiftung/ Rhaunen, Kreis Birkenfeld, Rheinland Pfalz
Wanderausstellung, Idee Konversion des Geburtshauses Albert Kahns zu einem Kulturforum in Rhaunen



Idee Konversion des Geburtshauses Albert Kahns zu einem Kulturforum in Rhaunen, Studentenwettbewerb 2018, Bauvoranfrage 2019

