Stockholm Central Station: A Steel-Timber Transit-Oriented Development

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Stockholm Central Station
30+ Years in Rail Infrastructure

1990
- King's Cross Masterplan
  London, England
  1997

Metro System
Bitos, Spain
1985 - 1998

Canary Wharf
Underground Station
London, England
1991 - 1999

HACTL Superterminal,
Chak Lap Kok
Hong Kong
1993 - 1998

Ground Transportation Centre,
Chak Lap Kok
Hong Kong
1992 - 1998

Kowloon-Canton Railway Terminal
Hong Kong
1997 - 1998

2000

Pireaus High-Speed Railway Station
Italy 2003 -

Dresden Station
Dresden, Germany
1997 - 2005

Metro System
Bitos, Spain
1997 - 2004

Expo Station
Singapore
1997 - 2001

St Pancras International Station
London, England
1996 - 1998

North Greenwich Transport Interchange
London, England
1998 - 1999

2010

Crossrail Park and Retail,
Canary Wharf

Holston Masterplan
Stockholm, Sweden 2009 -

Haramain High-Speed Rail
Saudia Arabia
2009 - 2010

York University Station
Canada 2000 - 2018

Kowloon-Canton Railway Terminal
Hong Kong 2010 - 2013

Jeddah Metro
Jeddah, Saudia Arabia 2011 - 2015

2015

Stockholm Central Station
Stockholm, Sweden 2016 -

JP Morgan Headquarters
New York, USA
2016 - 2019

Continental Yards
Atlanta, USA
2020 -

BART Silicon Valley
Saudia Arabia
2019 - 2029

Principal Place
United Kingdom
2013 - 2019

Sydney Metro
Australia 2016 -
Urban Design
The Historical Urban Fabric
Urban Design
The Station Fractured the Urban Fabric
Urban Design: The opportunity to repair and stitch the city back together
A Gateway to Stockholm
Urban Design
Analysis of the Existing Building Functions + Streets

Lack of meeting places and diversity of activities

Central Station gives an opportunity to balance diversity of activities

Food and beverage is primarily in central Station

Retail dominated area

Residential high streets
Urban Design
Analysis of the Existing Transportation Network

Stockholm Central Station

Existing major traffic roads connecting the Central Station

Accessible by bus, 3 metro interchanges and national rail. Lack of connection through tram

Primary roads
Secondary roads
Tertiary roads
Residential (local) streets

Subway lines
Subway stops
Railways
Bus lines
Tram line

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Urban Design
Analysis of the Existing Public Realm + Parks

Lack of pedestrian and cycle routes to get to Central Station

Lack of meeting places or arrival experience in central station
Urban Interventions
The Current Klarabergsgaten Viaducten

30m Viaduct
Urban Interventions
Proposed Klarabergs Viaducten

15m Viaduct
Station Interventions
Extended Station Hall
Station Interventions
Extended Station Hall
Urban Interventions
Station Hall Extension from Vasagatan
Tools Examples | From 3D to 4D and Full Interactivity
Cross Rail Station – London
Hudson Yards – New York
TOD – Development Over Rail
Feasibility & the Way Forward
Structural System Composition

1. Orthotropic Steel Deck
2. Arched Steel Trusses
3. Hybrid Steel-CLT Superstructure

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Feasibility & the Way Forward
Orthotropic Deck in Real Life
Feasibility & the Way Forward
Substructure Installation
Feasibility & the Way Forward
Deck Installation - Logistics
Feasibility & the Way Forward
Deck Installation – Panels
Feasibility & the Way Forward
Deck Installation – Panels
Feasibility & the Way Forward
Deck Installation – Form Deck
Feasibility & the Way Forward
Deck Installation – Monolithic Concrete Topping
Feasibility & the Way Forward
Arched Platform Installation – Primary Trusses
Feasibility & the Way Forward
Arched Platform Installation – Secondary Trusses
Feasibility & the Way Forward
Arched Platform Installation – Redundancy
Feasibility & the Way Forward
Orthotropic Deck Blast Resistance
Feasibility & the Way Forward
Blast Pressures on Composite Slab

Localized increase in blast pressures require hardening of Level 2 structure in vicinity of deck openings below.

Our team proposes a composite steel and concrete structure at level 2 to facilitate localized hardening.

Level 2 (Truss Level)
Level 1 (Deck Level)
Level 0 (Track Level)

Threat at track level between platforms
Openings at deck level for vertical transportation
Feasibility & the Way Forward
Arched Platform Installation – Composite Slab
Feasibility & the Way Forward
Hybrid Steel-CLT Superstructure
Feasibility & the Way Forward
Superstructure Installation
Feasibility & the Way Forward
Façade Installation & Fit-out
Feasibility & the Way Forward
Hybrid Steel-CLT Superstructure

500mm more
floor-to-structure

400mm less
floor-to-floor

1 additional
floor per block
Feasibility & the Way Forward
Hybrid Steel-CLT Superstructure
Feasibility & the Way Forward
Hybrid Steel-CLT – Resiliency
Proposal
The Southern Entrance