

Mid- and high-rise timber buildings in Japan

Institute of Industrial Science, the Univ. of TOKYO
team Timberize

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Timberize
都市木造



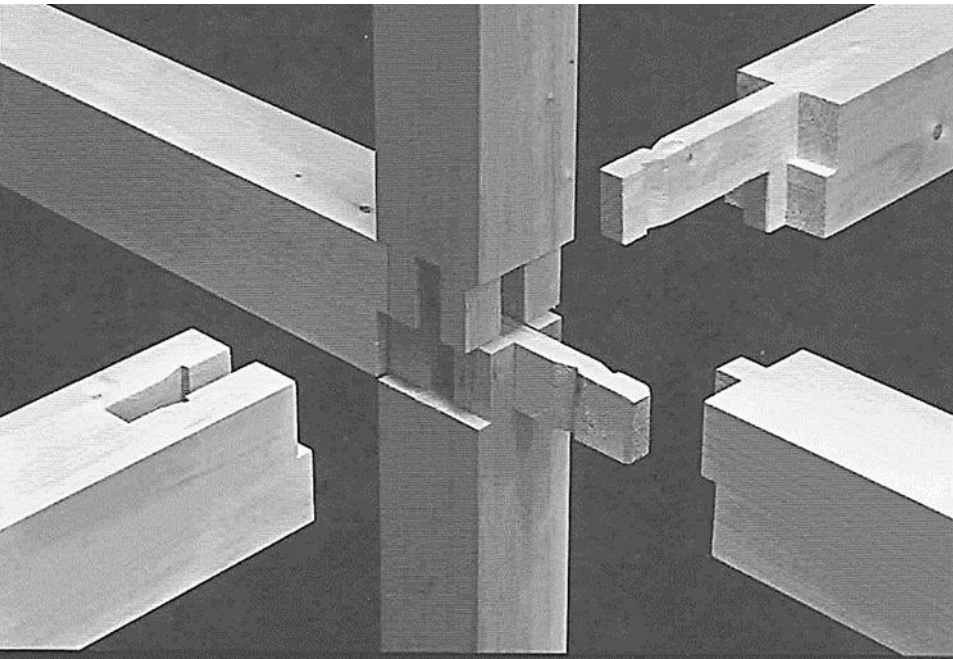
Ise Jingu



Katsura Imperial Villa

「木造」 Mokuzo

**Frame work
(Post and Beam)
Show the structure**



Height **12m**



B.C.3000

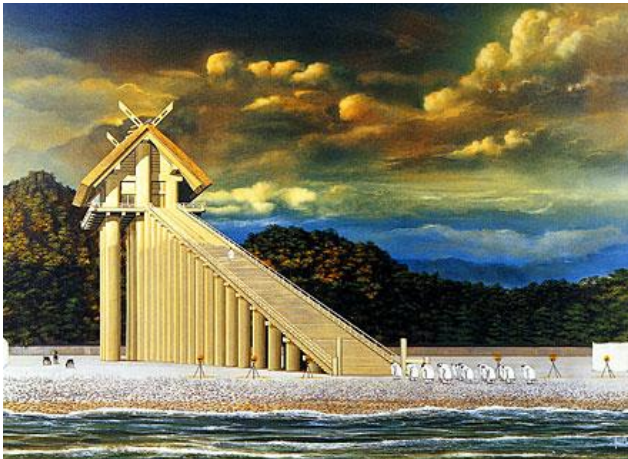
Height **31.5m**



7c.

雲太 UN-Ta

Izumo shrine



<http://www.highlight.jp/izumooyashiro/index.html>

和二 Wa-Ni

Todaoji



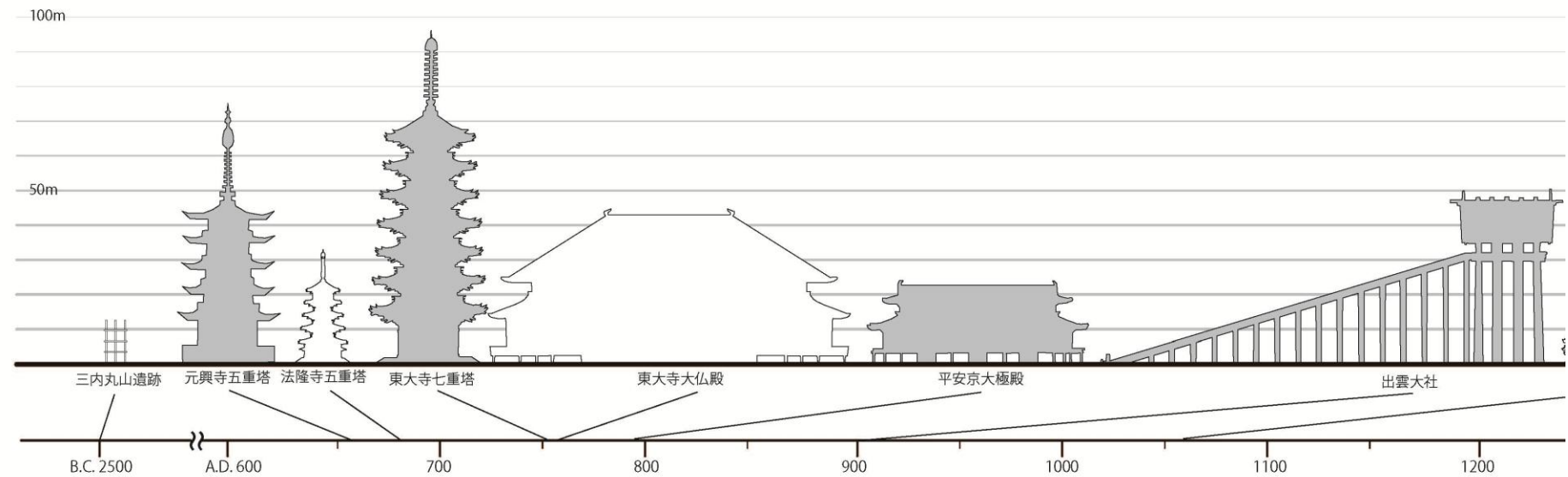
京三 Kyo-san

The Council Hall
in the Heian Palace

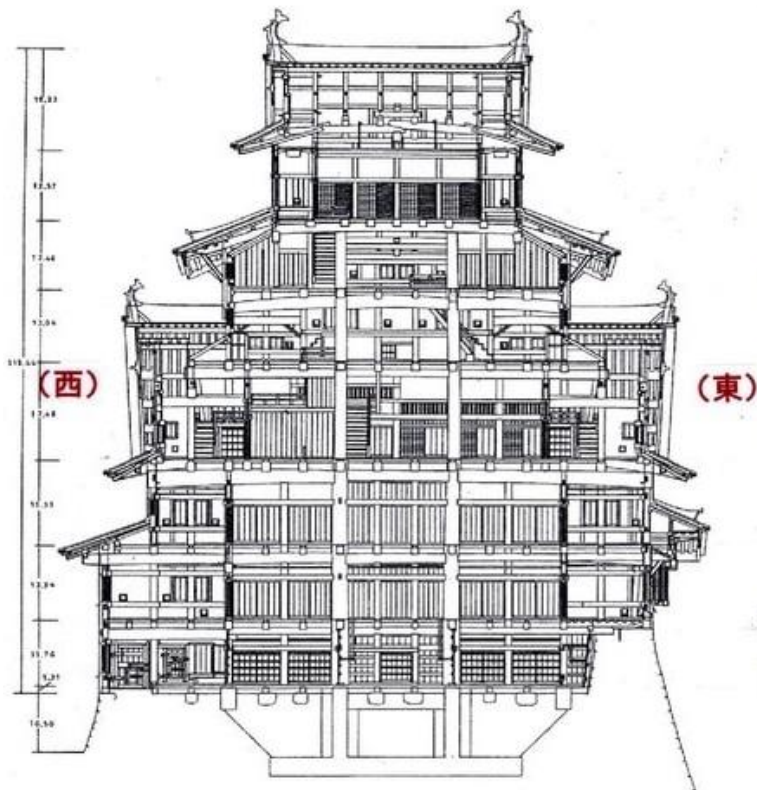


京都市埋蔵文化財センター
http://kamigyo.doshisha.ac.jp/details/2_daigokuden.html

Larger and higher timber buildings

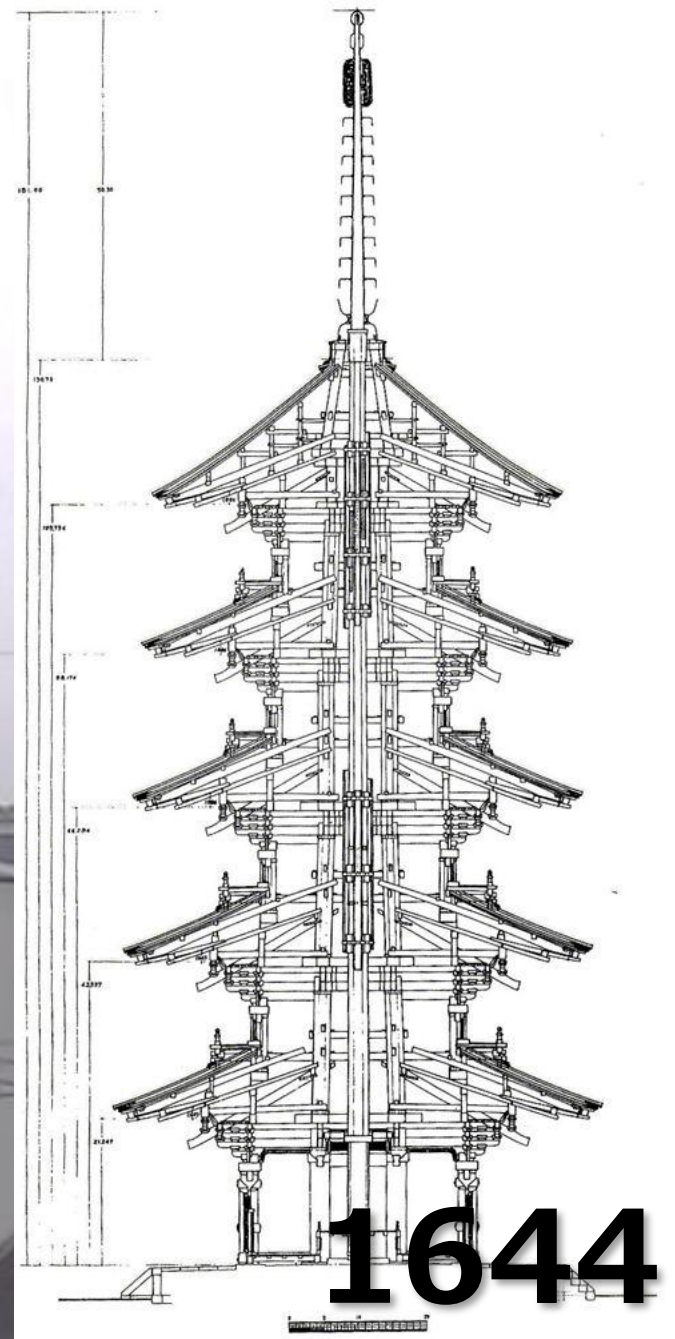


Height **31.5m**
6 story



1609

Height **54.8m**

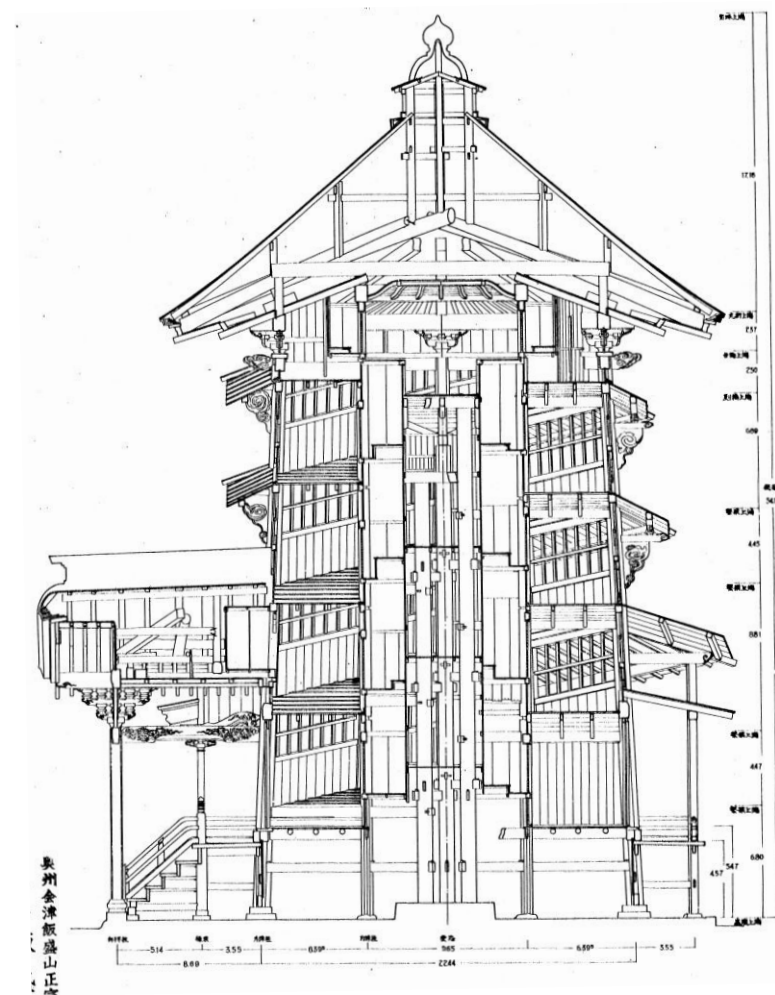


Height 49.1m



1709

Height **19m**
3 story



1796

Modern Timber Building (1900-1950)



Warehouse (Iwate/1916)



Factory(Gunma/1912)

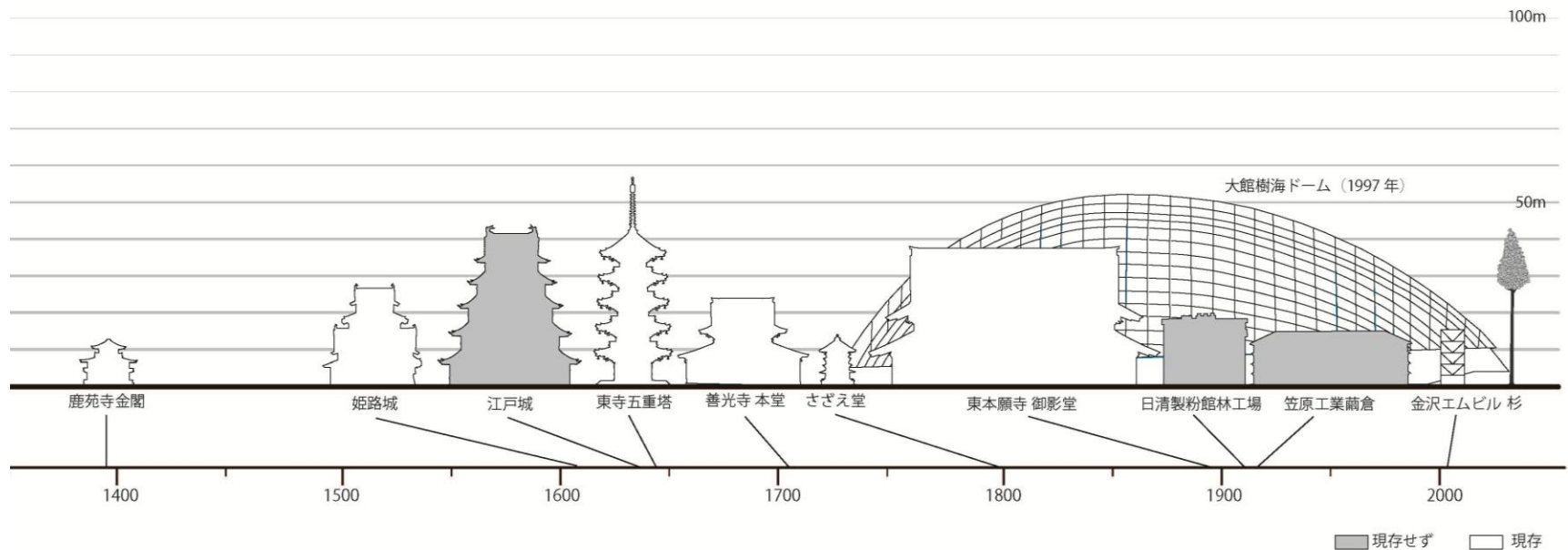
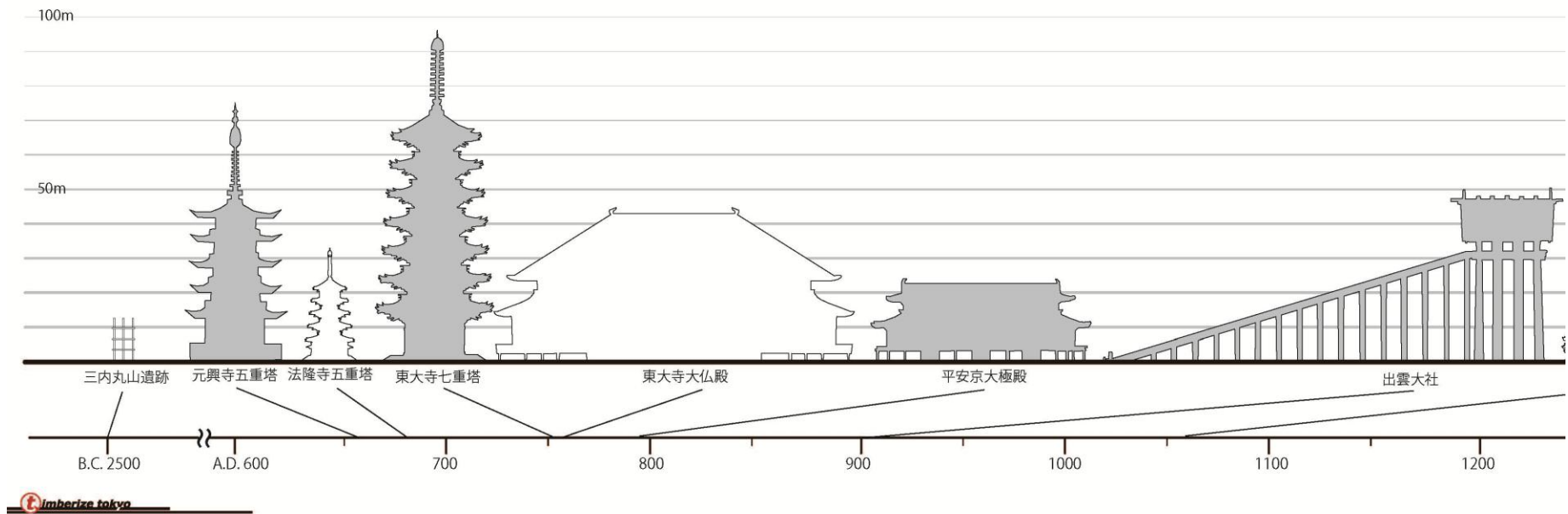


Warehouse (Fukushima/1917)



School(Ehime/1956)

木造建築の規模 Scale of timber buildings



Height **45m**



1994

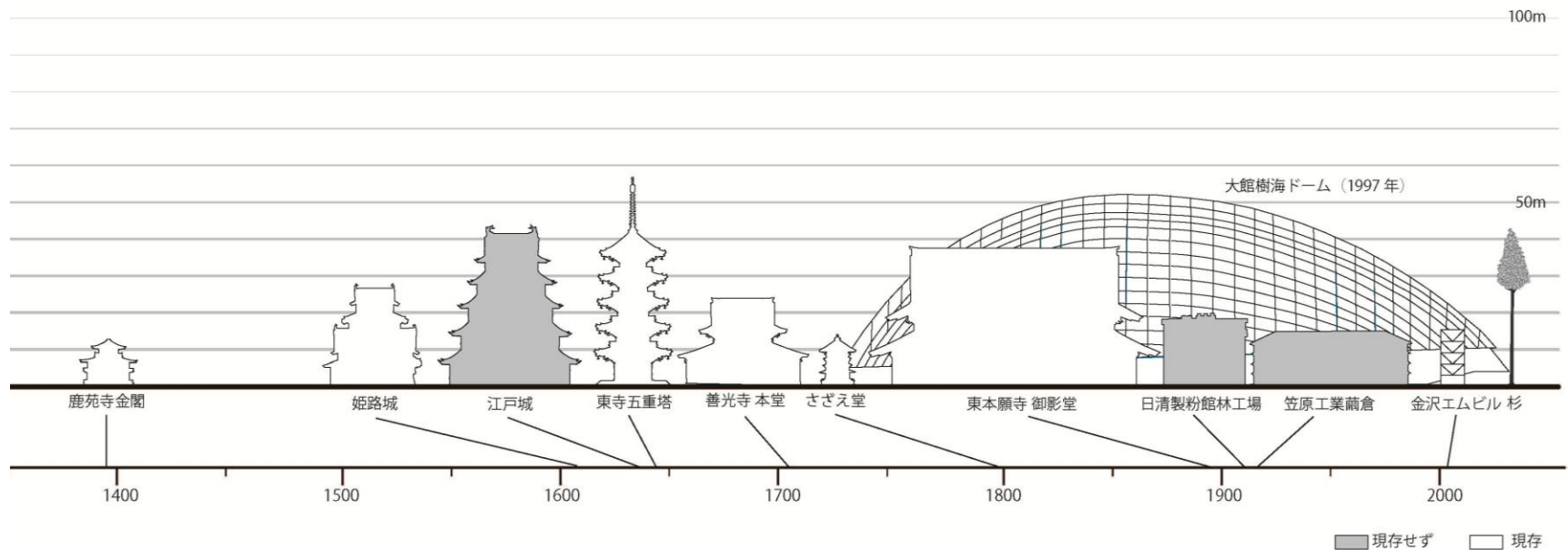
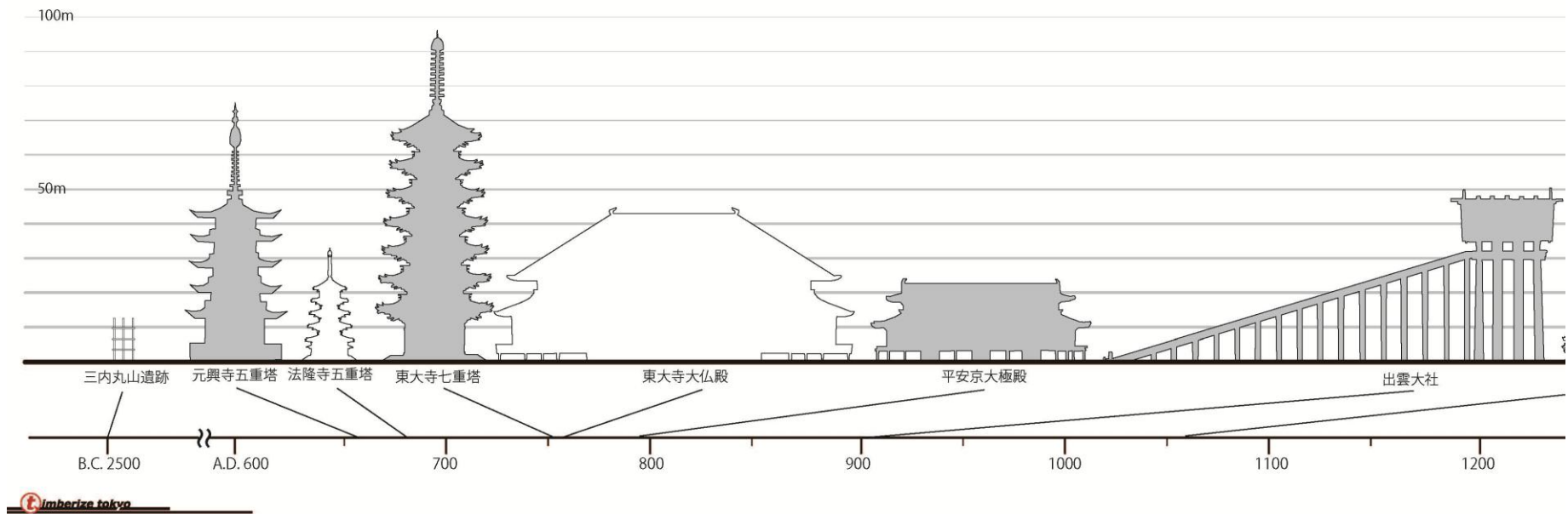
Height **52m**

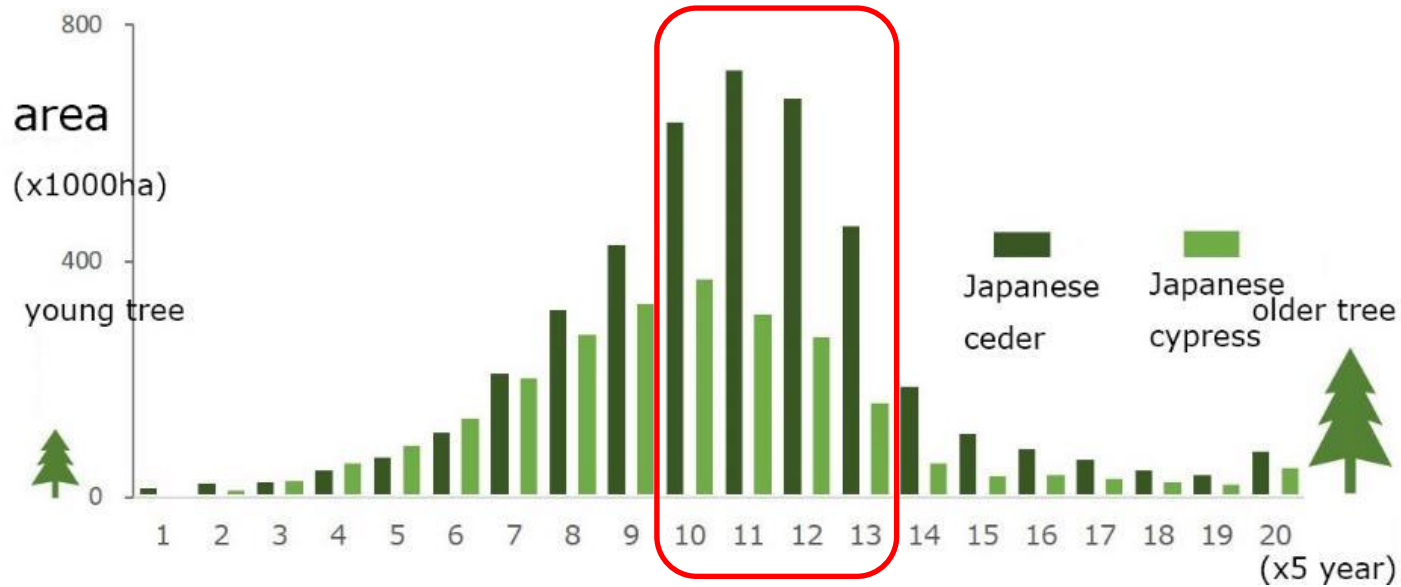


Odate dome (Akita)

1997

木造建築の規模 Scale of timber buildings





Area of cedar and cypress plantation forests by age grade





conventional framework construction



2x4 construction



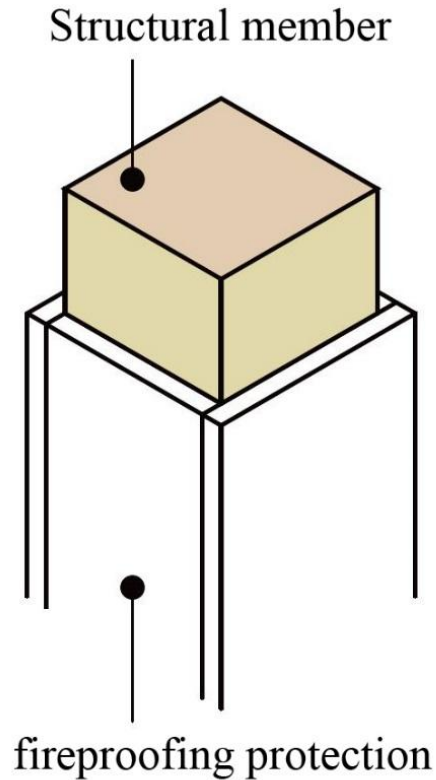
Prefabricated construction



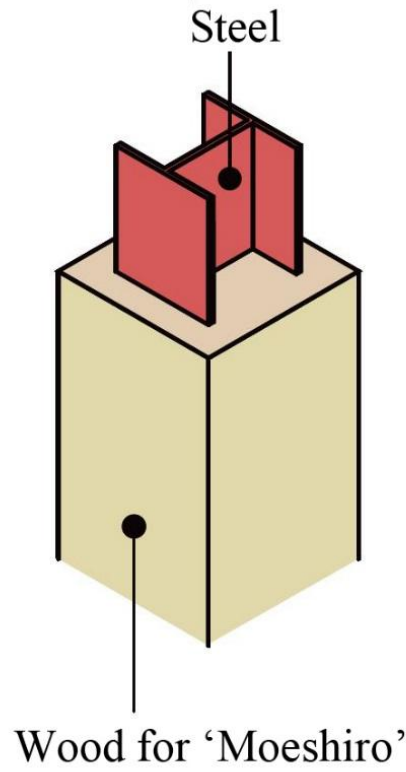
Log construction



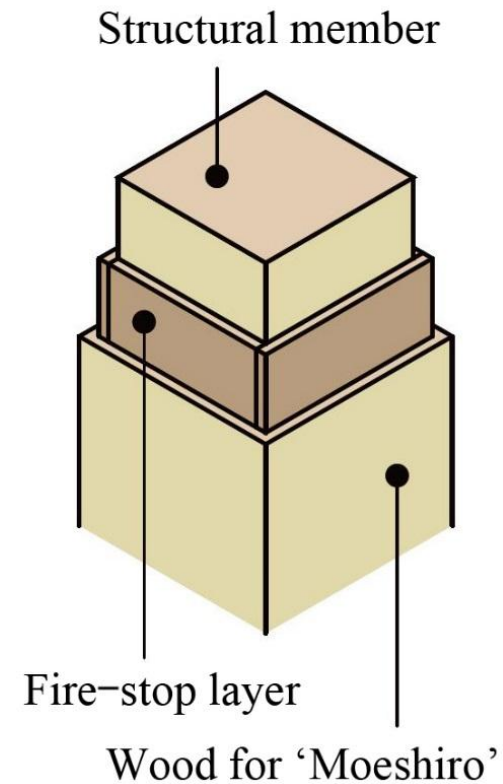
Facade



Membrane



Built-in steel



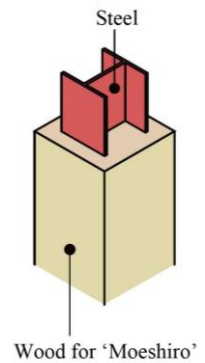
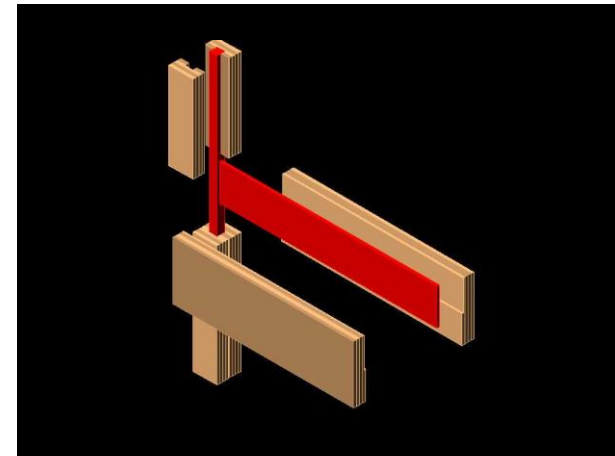
Fire-stop

3 type of fire-proof member have been researched and developed for fire-proof timber buildings.

'Moeshiro' means the controlled burnable timber.

5 story

Height 14.2m



Kanazawa M-Bldg.

Architect : -architect office- Strayt Sheep

Year : 2005

Structure : 5 storied 1F R/C, 2-5F Timber-based Hybrid

Site area : 116.07m²

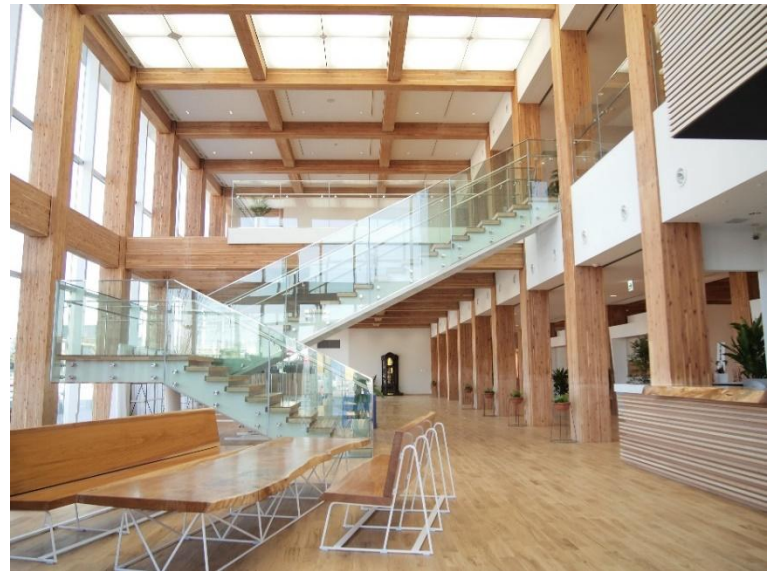
Total floor area : 374.80m²

Height : 14.2m

2005



丸美産業本社ビル (2008/愛知県/高松伸)
Marumi Sangyo office bldg. (2008/Aichi/Takamatsu shin)



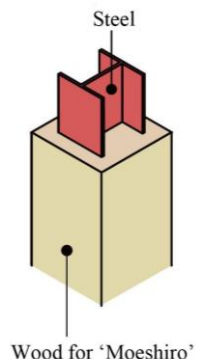
ウッズクエア (2012/埼玉/JR東日本建築設計)
Wood Square (2012/Saitama/JR EAST DESIGN)



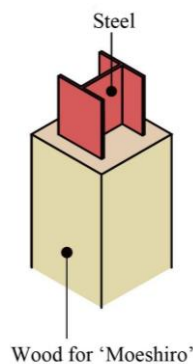
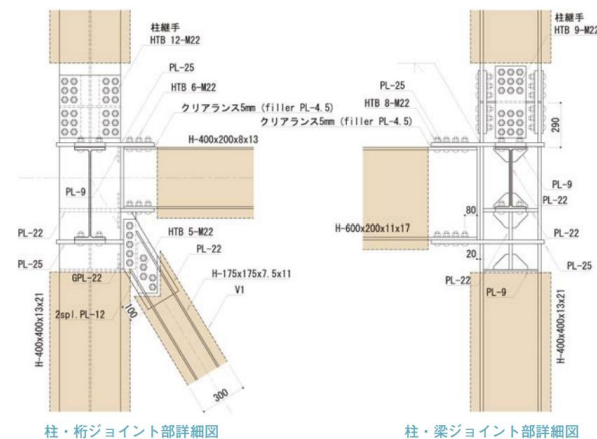
大分県立美術館 (2015/大分/坂茂)
Oita prefectural art museum (2015/Oita/Ban Shigeru)



国見町役場 (2018/福島県/JR東日本建築設計)
Kunimi town hall (2008/Fukushima/JR EAST DESIGN)



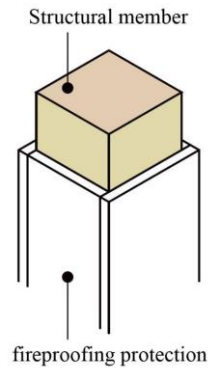
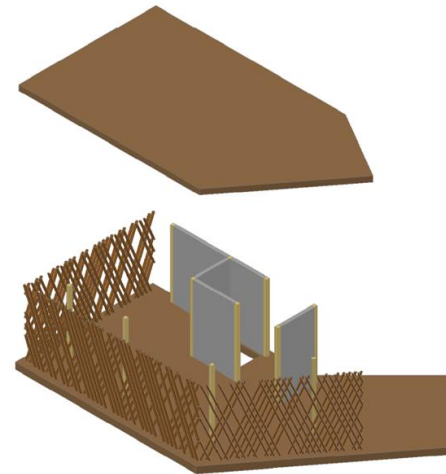
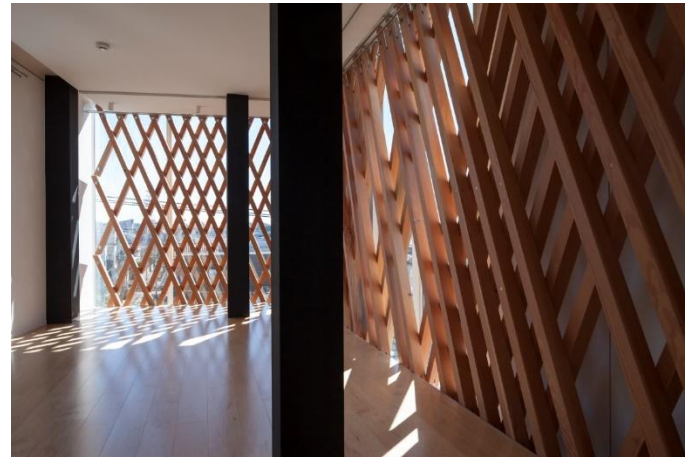
7 story
Height 24.7m
Mix structure



Kokubunji flavor life office Bldg.
 Architect : Studio Kuhara and Yagi
 Structure : 7F
 1-3F Steel, 4-7F timber based hybrid
 Site area : 180.80m²
 Total floor area : 606.31m²
 Height : 24.725m

2017

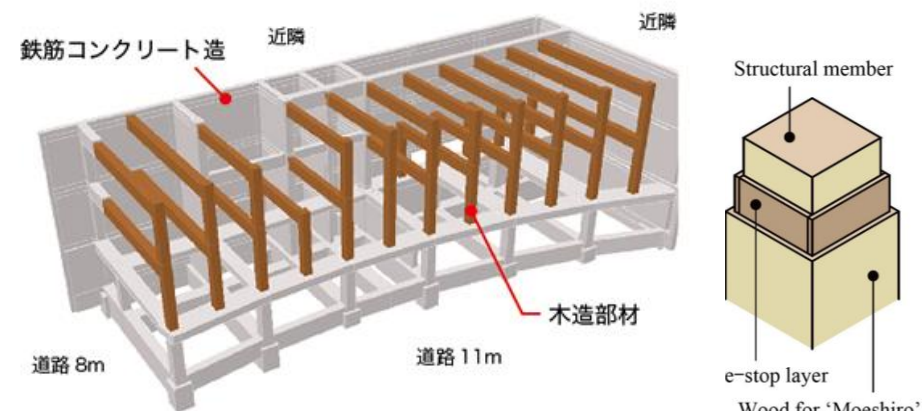
5 story
Height 15.8m



Architect : KUS
Year : 2013
Structure : 5 story 1F R/C, 2-5F timber frame+Massive
holz
Site area : 122.89m²
Total floor area : 372.15m²
Height : 15.8m

2013

Osaka Timber Association Building (2013/Osaka)



Architect : Takenaka Co.
Year : 2013
Structure : 3 story W,RC,S and SRC
Site area : 1,226m²
Total floor area : 1,032m²
Height :

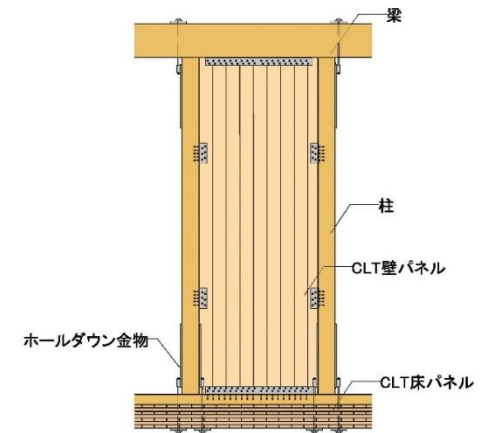
2013

3 story 18m



Domitory of Otoyō Sawmill
Architect : Nihon System Sekkei
Year : 2014
Structure : 3F CLT panel construction
Site area :
Total floor area : 267m²
Height : 18m

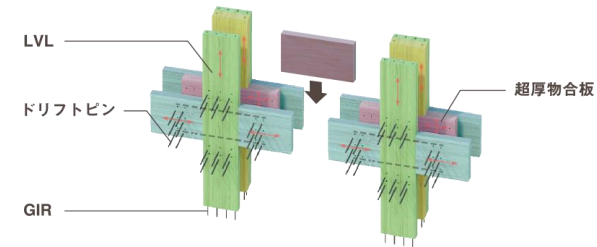
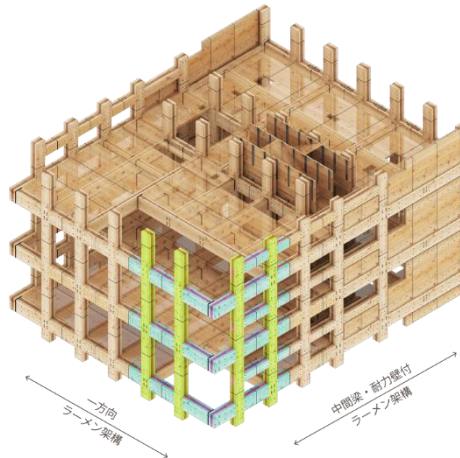
2014



Frame + CLT wall

Kochi timber assoc. bldg.
Architect : FUTSUU GOHAN
Year : 2016
Structure : 2F
Site area : 759.54m²
Total floor area : 1,209.73m²
Height :

11 story
Height **44.1m**



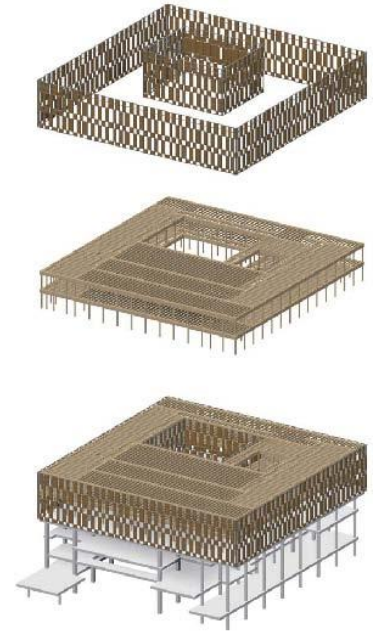
Architect : OBAYASHI CO.
Year : Mar., 2022
Structure : 11 story
Site area : 563.28m²
Total floor area : 3,502.87m²
Height : 44.1m

2022

6 story (5-6F)

Height **27.1m**

Mix structure



Architect : Yamashita sekkei

Year : 2011

Structure : 6F 1-4F:Steel, 5-6F: Timber frame +LVL wall

Site area : 5,212.4m²

Total floor area : 10,529.08m²

Height : 27.1m

2011



The Royal Park Canvas -
Sapporo Odori Park(2021)

Vertical mix



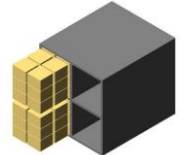
HULIC & New GINZA8
(2021)

Horizntal mix



KITOKI
(2022)

Mega structure



Kasukabe convention hall
(2011)



Osaka Timber Association
Building(2013)



JR Kyusyu Oita branch
(2012)

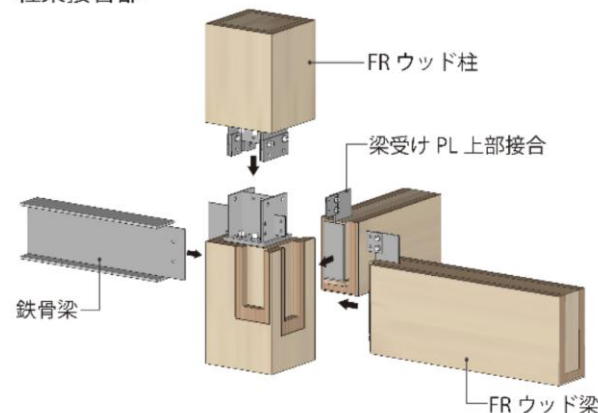
8F story

Height **38.08m**

Mix structure



柱梁接合部



Architect : KAJIMA
Year : Feb., 2023
Structure : B1F, 8F story
Site area : 575.09m²
Total floor area : 4,877.87m²
Height : 38.08m

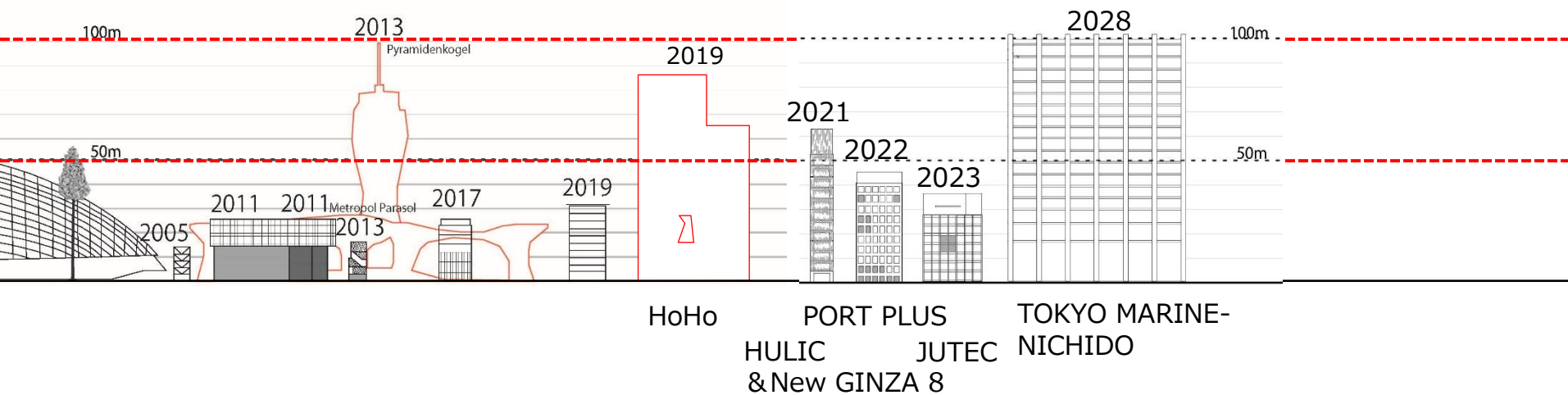
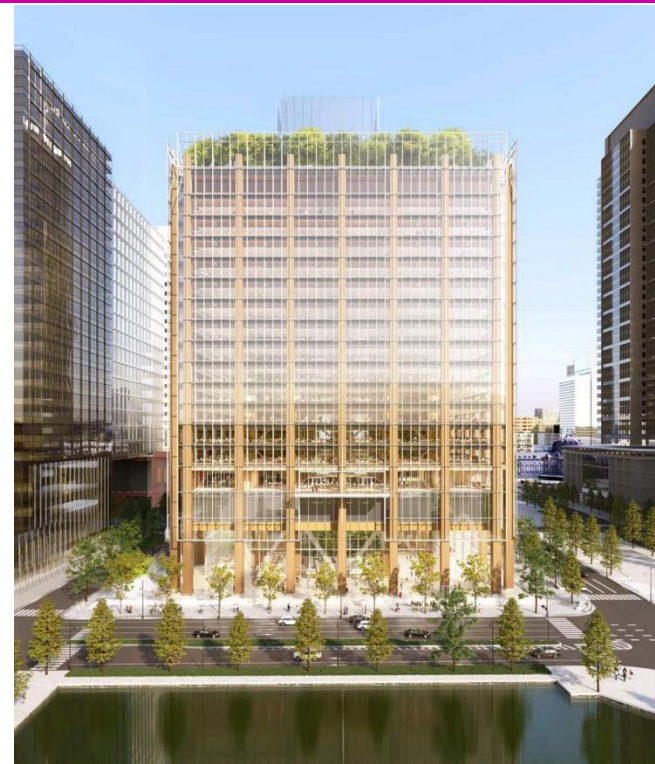
2023

20F story
Height 100m
Mix structure



Structure : 3 BF, 20F, PH2F
Structure : Steel / Timber / SRC
Height : about 100m
Site area : 10,147.61 m²
Total floor area : about 130,000 m²
Architect : Renzo Piano Building Workshop,
Mitsubisshi Jisho design

Larger and higher timber buildings



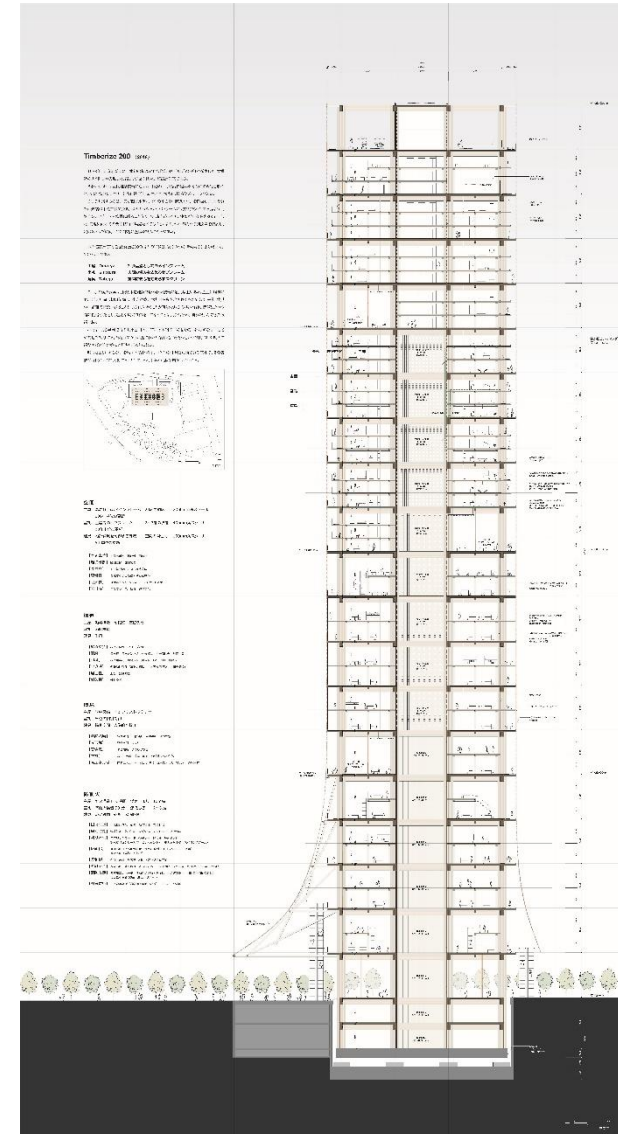
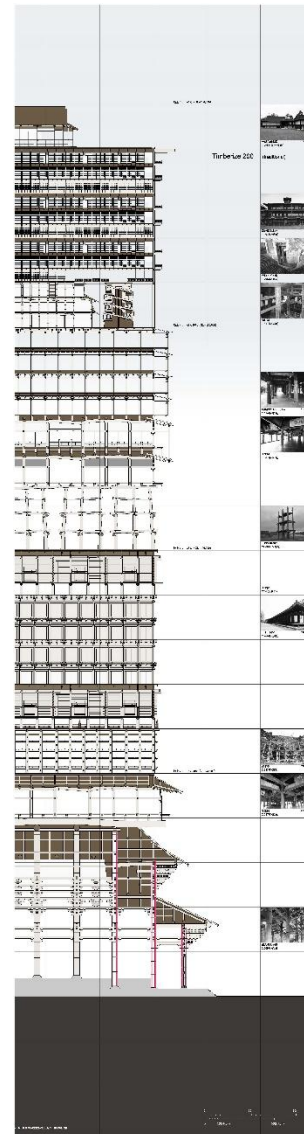
Timberize 200 (2018/Proposal)



In 1968, the first skyscraper in Japan was built at Kasumigaseki, Tokyo. The one named “Kasumigaseki Building”, whose height is 147m was realized based on the thought of flexible structure made of steels.

50 years from then, the structure type of skyscraper is not going to be only steel structure and reinforced-concrete but also “timber” because of the improvement of construction technology.

Now we show the experimental proposal of skyscraper consisted of the latest technology of timber construction, tracing the plan and the span of Kasumigaseki Building. We set the height of it as 200m which can be realized using only timber structure, not depending on the steel or the concrete. Focusing on the elemental technology for the realization makes us possible to see how far to the completion and sort tasks for the next steps.



Timberize 200 (2018/Proposal)



主屋 Omo-ya

the main frame as the social infrastructure

室礼 Shiturai

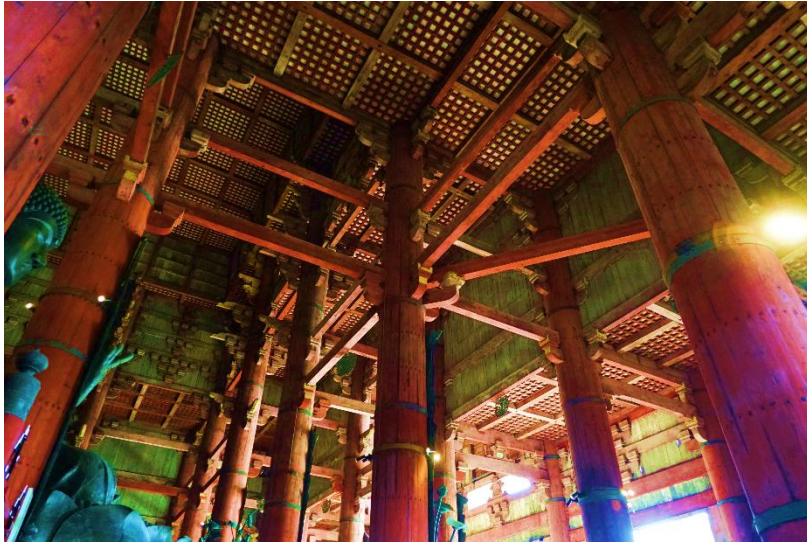
the sub frame supporting human behavior

建具 Tategu

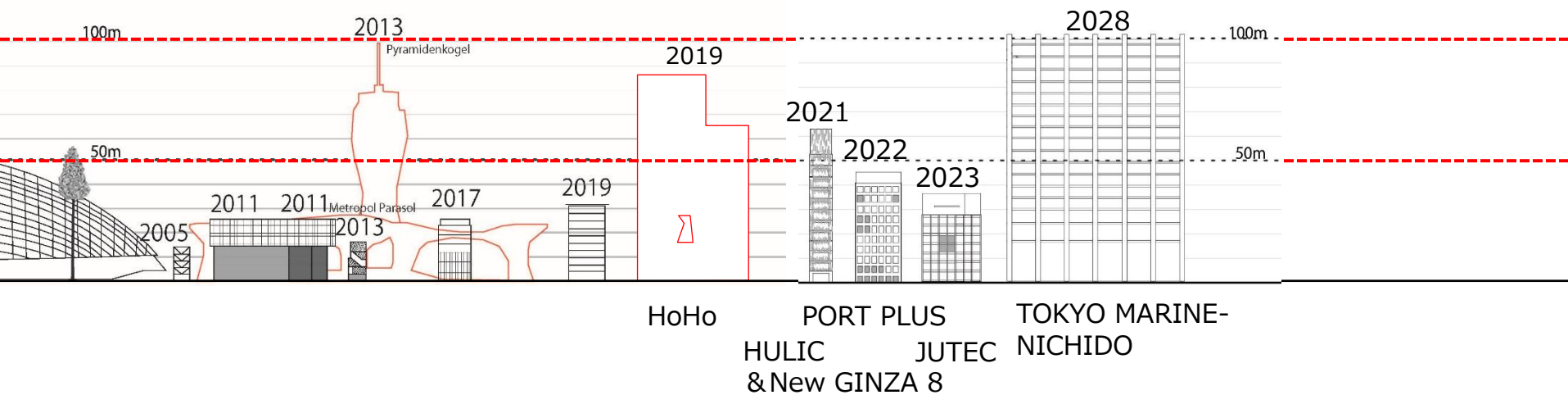
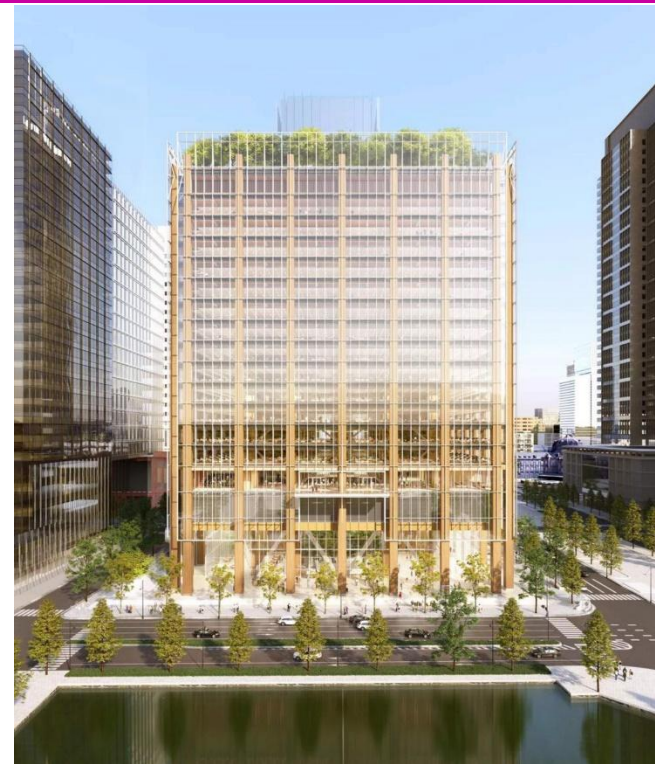
the screen serving the peaceful spaces



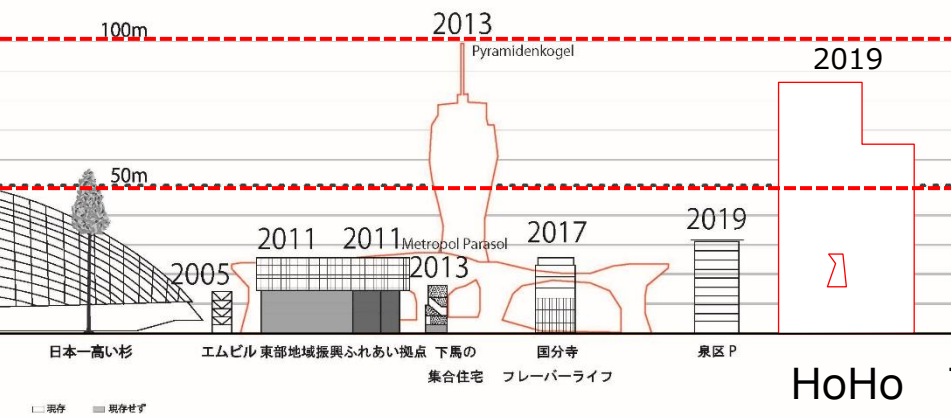
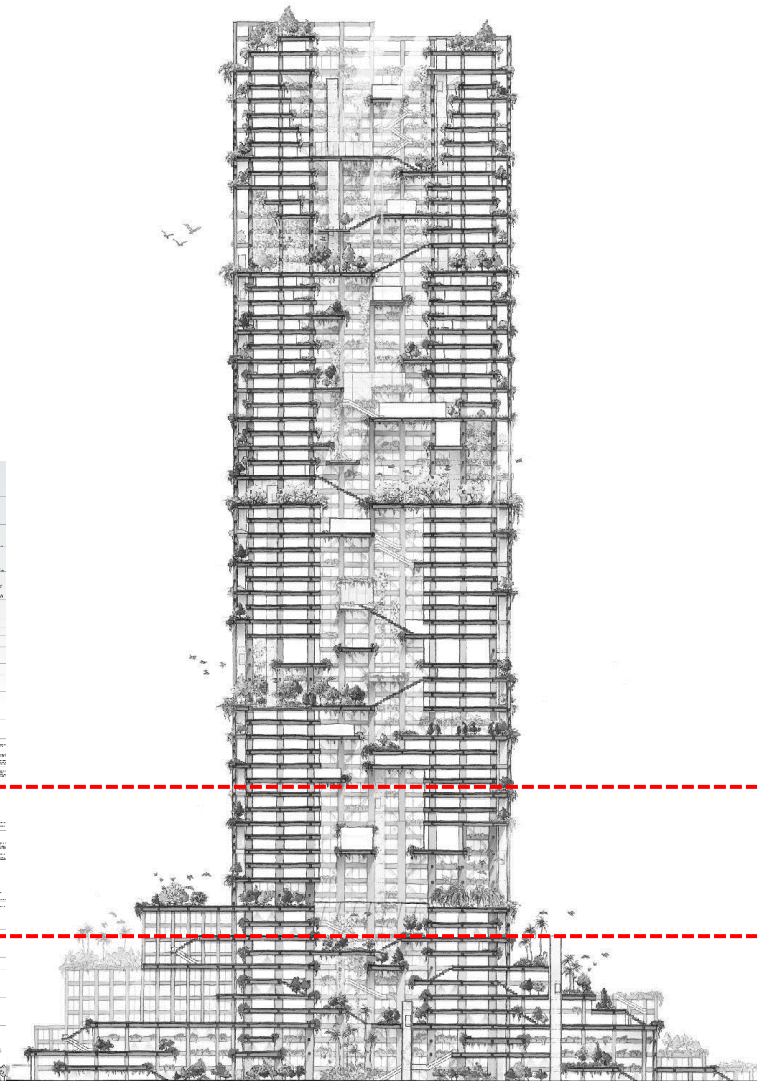
Timberize 200 (2018/Proposal)



Larger and higher timber buildings



Larger and higher timber buildings



HoHo

Timberize 200

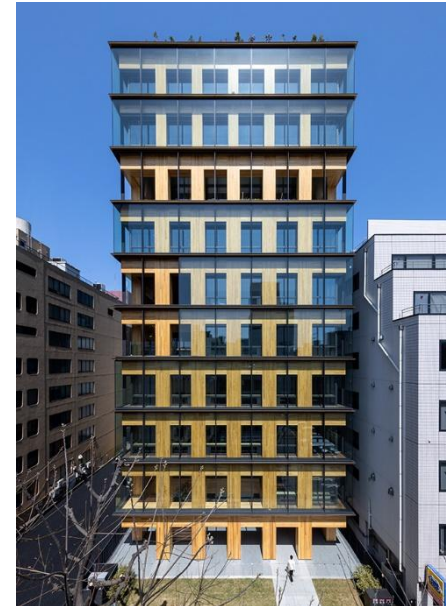
W350



Facade

The Royal Park Canvas - Sapporo Odori Park(2021)	HULIC & New GINZA8 (2021)	KITOKI (2022)
Vertical mix	Horizontal mix	Mega structure
Kasukabe convention hall (2011)	Osaka Timber Association Building(2013)	JR Kyusyu Oita branch (2012)

Mix structure



Pure WOOD



ご清聴ありがとうございました