



# Tall Excellence

Seeking the Ideal in Vertical Urbanism

# I LOVE TO GET HIGH:

## A Critique of Observation Space Design

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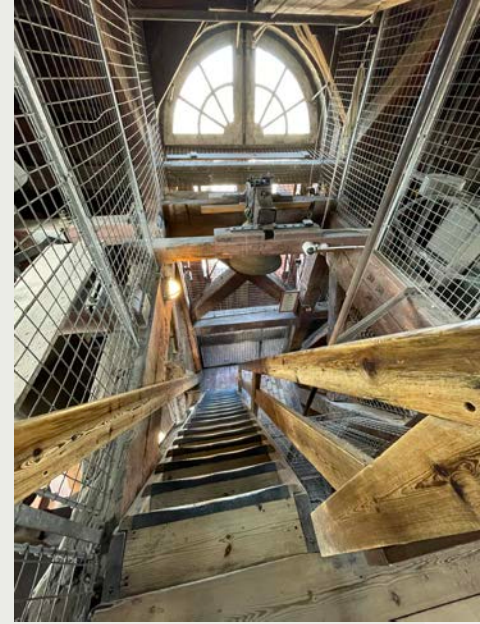
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Leaning Tower of Pisa, Italy





Church of Our Savior, Copenhagen





Arc de Triomphe, Paris



Sagrada Familia, Barcelona



Porto Tower, Portugal



Coit Tower, San Francisco

## HISTORIC VIEWING TOWERS



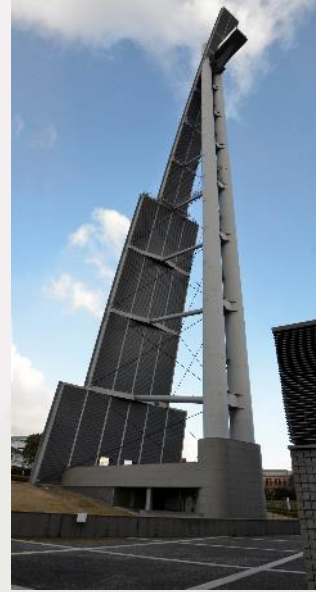
Eiffel Tower, Paris



Tokyo Tower, Japan



Sapporo Tower, Japan



Beppu Tower, Japan



Kobe Tower, Japan



Enoshima Tower, Japan

## STEEL LATTICE VIEWING TOWERS





Seattle



Berlin



Munich



San Antonio



Toronto



Sydney



Fukuoka



Guangzhou



Tokyo

## CONTEMPORARY SIGHTSEEING TOWERS





Top of the Rock, NYC



Umeda Sky, Osaka



DeYoung Museum, San Francisco



Marina Bay Sands, Singapore



Arch, St. Louis

## MORE UNUSUAL VIEWING PLATFORMS



Burj Khalifa, Dubai



KK100, Shenzhen



JR Tower, Sapporo



300, Osaka



Mori Tower, Tokyo



Yokohama Landmark

## OBSERVATION FLOORS WITHIN BUILDINGS





Empire State Building, NYC



One World Trade, NYC



Willis, Chicago



Hancock, Chicago



World Trade, Baltimore



US Bank Tower, Los Angeles

## OBSERVATION FLOORS WITHIN BUILDINGS



Shanghai WFC



Shanghai Tower



Mexico City



The Shard



Eureka Tower, Melbourne

## OBSERVATION FLOORS WITHIN BUILDINGS



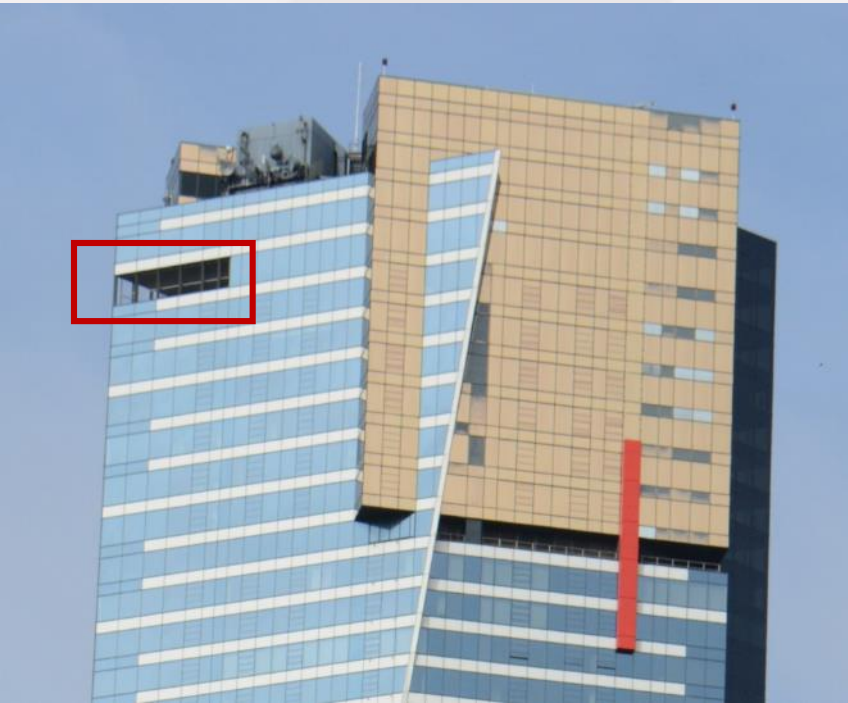
# You had one job....

I had been thinking about this paper for a while, gathering images, ideas and memories throughout my travel.

This particular tower was “the final straw”. The exterior design of the tower and desire for a “fancy top” completely overruled any simple logic that should have dominated the decision making path for the design of an observatory floor.



Eureka Tower  
Melbourne, Australia



To create the fancy top different colours/finishes of glazing were used, all which greatly impacted your ability to see clearly through the glass.



View of pay per use glass floor box as seen from the free for use metal cage where I was frozen and wind blown.



# OVERVIEW OF THE CRITIQUE POINTS:

1. Distance from the Ground
2. Local Climate and Atmospheric Conditions
3. Indoor versus Outdoor Viewing
4. Elevators
5. Interior Space Design at the Observation Level
6. Glazing:
  - Proximity to the Glass
  - Clarity of the Glass
  - Reflections

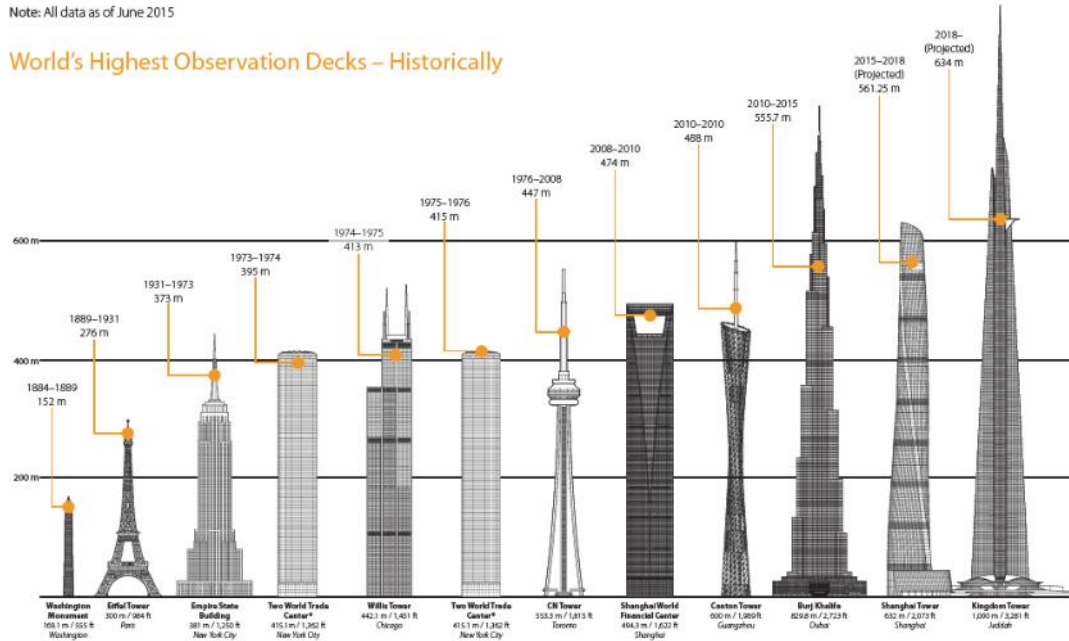
These criteria impact purpose built observation towers differently than dedicated floors in tall buildings.



# 1. Distance from the Ground

Note: All data as of June 2015

## World's Highest Observation Decks – Historically



\*Two World Trade Center, New York City, is featured on this historical skyline twice. After the original observation deck (395 meters), was surpassed by the observation deck at Willis Tower, Chicago (413 meters) in 1974, Two World Trade Center opened a new, higher observation deck on its roof (415 meters), once again making it the tallest observation deck in the world.

- Huge drive to build the tallest, pushing the observation levels higher and higher
- Higher the observation level, the more difficult to perceive objects on the ground



Adjacent to lots of buildings so lots to see



View from Tokyo Tower at 333m tall/250m highest observation level



Taller than all surrounding buildings and not much to see



View from Tokyo Sky Tree at 634m tall/451m highest observation level

## 2. Local Climate and Atmospheric Conditions



- Since the primary purpose of the observation space is the view, how do the local conditions affect the ability to view?
- What is the pollution level like?
- What are the seasons like?
- Open year round?
- Available for night views?

View from Canton Tower,  
Guangzhou, China





Dubai, UAE



The problem of pollution is a reality in terms of view.

It is not able to be solved by the architectural solution.

The higher the tower and the more distant from the ground, the more impacted the view.



Beijing, China

### 3. Indoor vs Outdoor Viewing Areas

- Experientially the outdoor viewing platform is the closest to “being on the top of the mountain”
- Winter, windy and rainy weather prioritize the interior observation space
- Higher platforms can experience higher wind levels
- Outdoor needs to have protection from wind moving loose objects



Outside viewing platform at the Burj Khalifa uses a steel framed glass barrier to prevent falls and offer protection from wind and wind blown sand



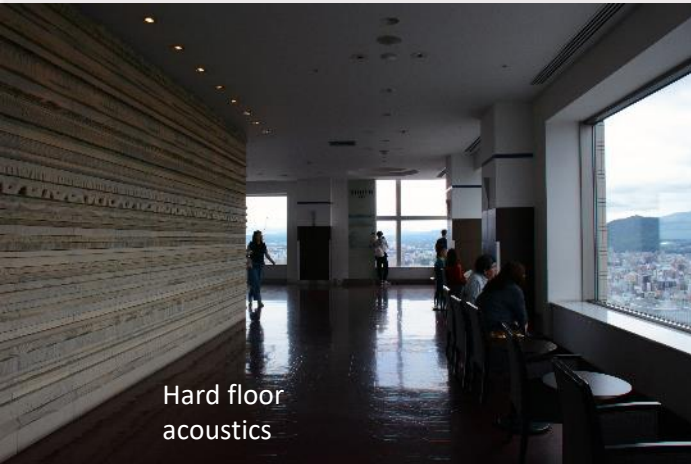


Carpeted  
acoustics

World Trade Tower,  
Baltimore, MD, USA



Top of the Rock,  
New York City



Hard floor  
acoustics

JR Station Tower,  
Sapporo, Japan



Marina Bay Sands, Singapore



The Global Tower in Beppu, Japan, though not a very tall observation tower, provides an unusual viewing experience as you ascend stairs to the cantilevered platform.

As it is very windy, the exterior platform is enclosed on its sides by glass and over the top by fine cables to prevent objects from being uplifted by the wind.





## 4. Fall Protection for Outdoor Viewing Areas

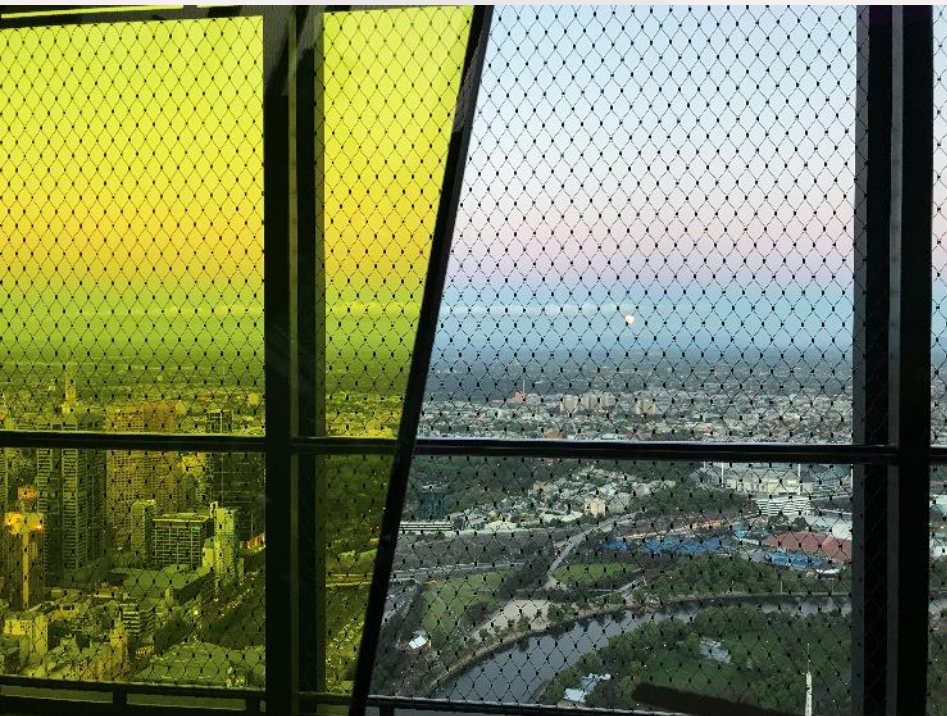


- Due to extreme heights the fall protection can be required to be a full floor height if immediately adjacent to the exterior wall of the building
- Fall protection needs to allow for a good view
- Fall protection needs to shield from wind

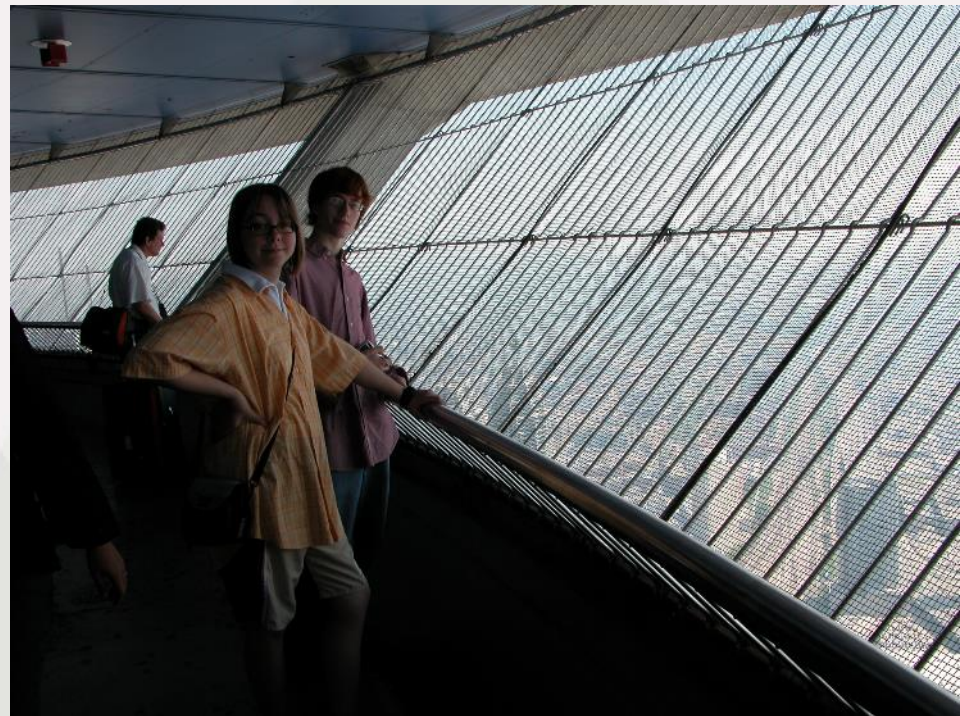
### HOW DOES THE FALL PROTECTION IMPACT:

- The view with my eyes
- The ability to take a photo (cell vs DSLR)

The railing height at the observation tower at Enoshima Island, Japan is slightly taller than a standard guard rail. It allows clear views that on a clear day allow a view to Mount Fuji in the distance. A sun shade makes the platform less exposed.



The small sized mesh combined with the yellow glass makes viewing from the very windy outside area of Eureka Tower in Melbourne fairly unsuccessful.



The very fine mesh at the lower outdoor viewing level of the CN Tower in Toronto, Canada makes for an extremely impeded view to the city, in spite of the downward view provided by the angle.





Torre Latino, Mexico City

Larger sized meshes can provide for a better view, while still giving fall protection, but can still create a visual barrier that can also make photography challenging regardless the type of camera.



Empire State Building, NYC

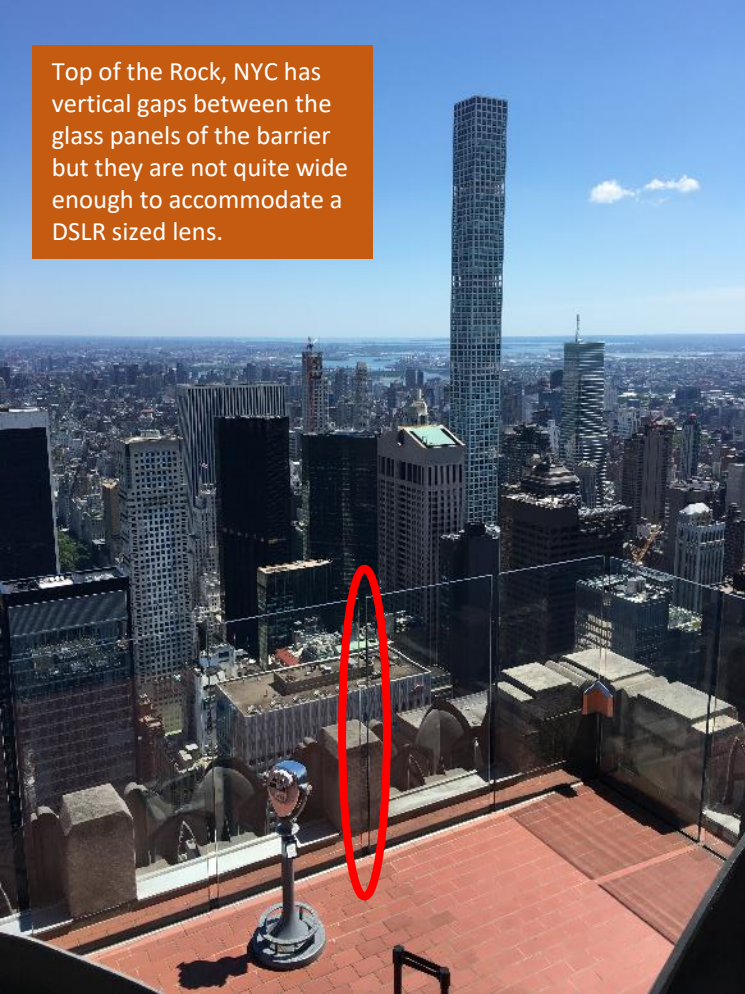
The Space Needle uses a combination of horizontal cables and bars, plus glass in some areas. Given the distance from the occupant these all make obstructed views for photography.



Space Needle, Seattle, WA



Top of the Rock, NYC has vertical gaps between the glass panels of the barrier but they are not quite wide enough to accommodate a DSLR sized lens.



The Burj Khalifa has a full height protective barrier using glass – however there are open slots to permit a view through without glass in the way. Various heights to suit various people.





Although Umeda Sky in Osaka is a very tall observation platform, it can have a relatively low railing allowing unobstructed views because it has a special two level arrangement. The top circular floor sits inside and above the lower square floor. The lower floor would limit the fall.

## 4. Elevator Access, Stairs & Ramps

(This presentation will not address the lobby and security area at the base of the building)

- The elevator experience will vary greatly between observation towers and observation floors at the top of occupied buildings.
- Building type determines the ability of the elevator to be located in a position of view.
- Glass elevators can provide a variety of enhancements to the experience of ascent.



The elevator in Fukuoka Tower is located centrally, is fully glazed and provides spectacular views to the landscape around during ascent.





Umeda Sky uses glazed escalators to provide an interesting final ascent to the observation floors.

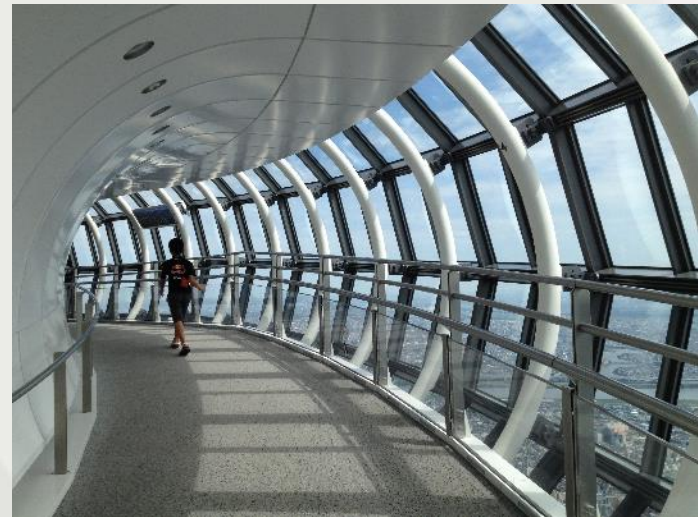
Canton Tower has a central elevator with glass doors providing views out through the steel diagrid skeleton.



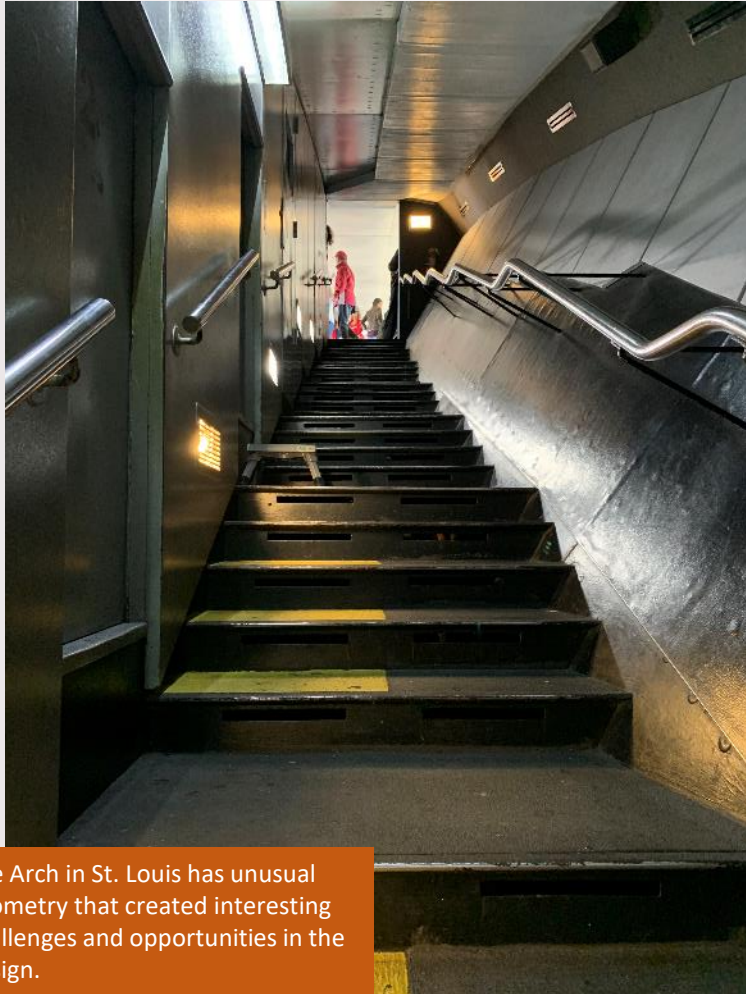
The arrival at One World Trade uses escalators between levels. It can get very congested as people are taken past a place to rent a tablet to assist in viewing.

Kobe Port Tower has an internal and external diagrid type structural system with a spiral staircase providing access between multiple viewing levels.

Tokyo Sky Tree uses a gentle spiral ramp at the upper viewing level to take you from the arrival level, up one floor, to the departure elevator level.







The Arch in St. Louis has unusual geometry that created interesting challenges and opportunities in the design.



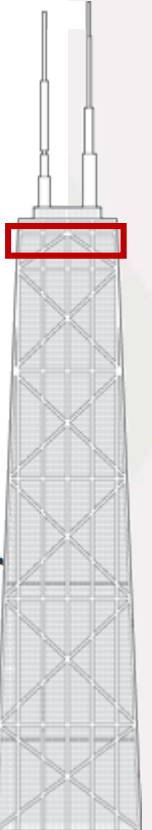
# 5. Interior Space Design

- Dependent on initial orientation and siting
- Differs for purpose built observation towers and tops of office towers
- Highly affected by location of elevator/core
- Distance from exterior boundary to core
- Travel between multiple levels



John Hancock Tower, Chicago (875 North Michigan Avenue) has its observation floor atop an office tower. The space for the guests is quite generous (if not very innovative/interesting) given the large floor plate.

Image: CTBUH

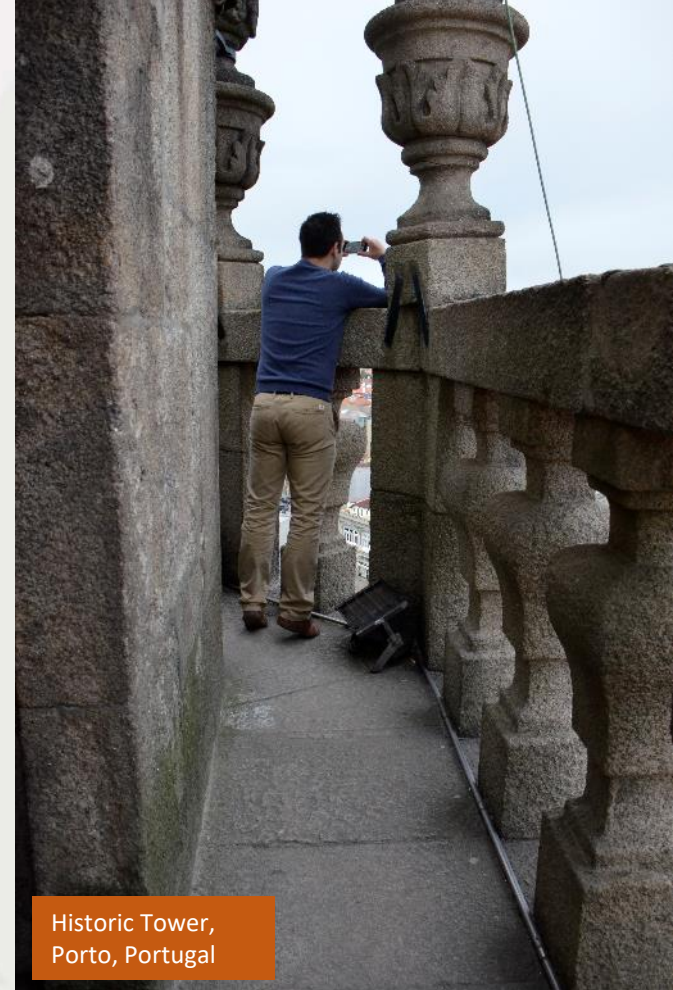






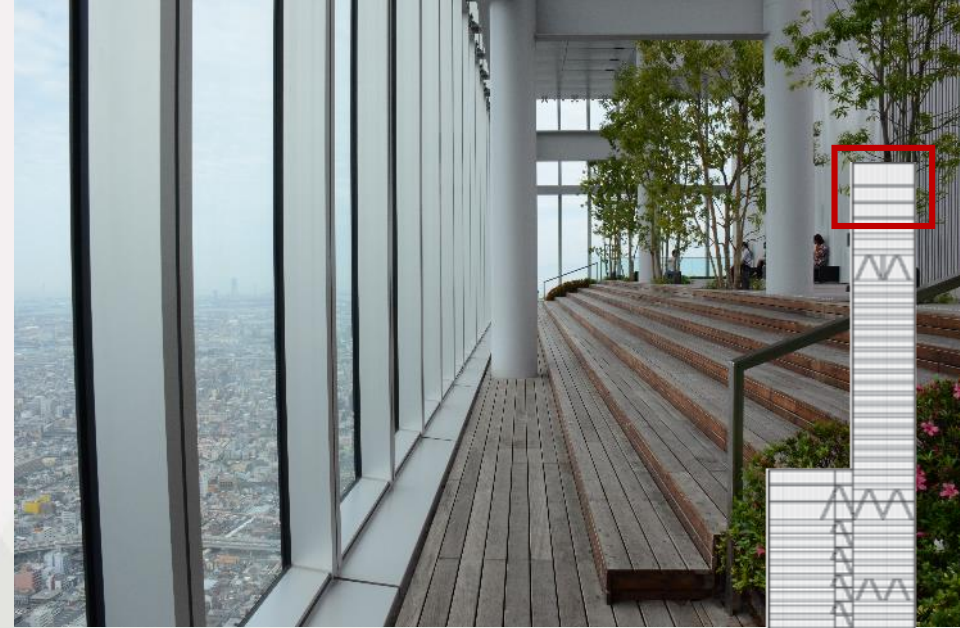
DeYoung Museum,  
San Francisco, CA

Floor area, core area will combine to define approaches to space design.



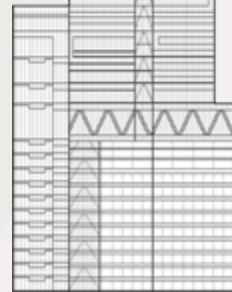
Historic Tower,  
Porto, Portugal





Abeno Harukas, Osaka (300m) has its protected, open air, 3 level viewing area located at the top of an office tower. The core is offset, providing a gracious plan with substantial seating and even great views from the public washrooms!

Image: CTBUH







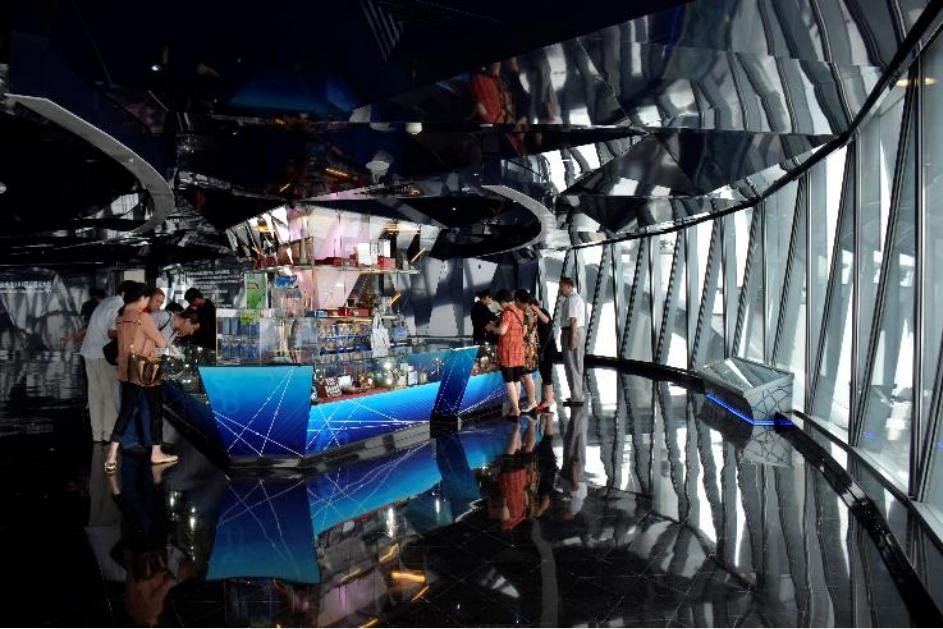
One World Trade, NYC (viewing at 386.5m) has its two storey viewing area atop an office building. The tower starts square at its based and is chamfered towards the top. This results in an uneven octagon shaped plan for the observatory.

The island of Manhattan has important views to the north and south of the tower, and the plan results in the shortest facades facing in these directions. There are displays and sometimes monetization events taking place that block the view from these corners.

Photography is difficult because the view is oblique to the camera lens and it is impossible to shield from reflections.

There is minimal seating (around a fake sky portal) and cutouts have been added in front of the windows to prevent seating.





Canton Tower, Guangzhou, China keeps the interior finishes of this purpose built observation tower dark and reflective. The diagonal pattern on the glazing mullions complements the exposed steel diagrid. The reflective nature of the floor and ceiling acts to enlarge the impact of the view and the lack of daytime lighting also lessens reflections on the glass.

Image: CTBUH



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Shanghai World Financial Center has two observatory levels separated by a large void. The upper level is narrower and slopes the glass to make view down easier.

Image: CTBUH





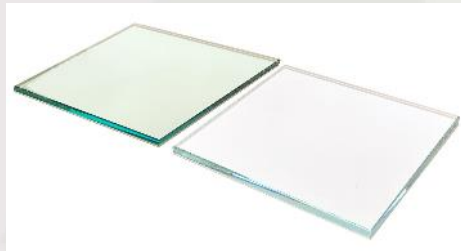
The exterior design and external (gratuitous) façade elements at the top of the China World Tower, Beijing create obstructions to the viewing directions. The deep window insets channel the view.





# 6. Glazing

- The simplest and yet most important material specification is glazing.
- It has the highest impact on the clarity of the view.
- It has the most negative impact on photography.
- Older glass tended to be clearer, with less natural green cast.
- Newer high performance glazing can exhibit an extremely high greenish cast on photographs.
- The thicker the glass (larger panes, more wind to be resisted), the darker the hue.
- Eyes can “manage” to not see the green but cameras are highly affected.



## 6a. Transparency/Hue Cast of the Glass



Image left shot with iPhone through the glass, Right, colour fixed in Photoshop

Your eyes will fix the view for you but your camera isn't that smart.  
Apps like Instagram do not presently have a filter that will do this colour correction.





The greenish hue of the glazing is evident in the Roppongi Hills Mori Tower in Tokyo.

The deep bright aluminum frames cause a reflection on the glass.

A beautiful glass counter provides a place for visitors to stand to take in the view.

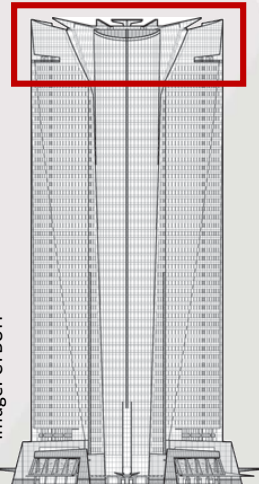


Image: CTBUH

Tokyo office buildings tend to be of large floor plate due to their seismic design.







Tokyo Tower



CN Tower, Toronto



Kobe Port Tower



Shanghai WFC

Glass floors and projecting boxes look for clarity and strength in the glass to make the experience as terrifying as possible.



Willis/Sears Tower



## 6b. Proximity to the Glass

- This impacts the immediacy of the “feel of the space”
- Varies greatly in impact on photography in terms of access to the glass for the lens
- DSLR needs to be able to sit flat to the glass to prevent glare/night reflections
- Cell cameras easier to shield from reflections
- Impacts ability to view down



Berlin TV Tower

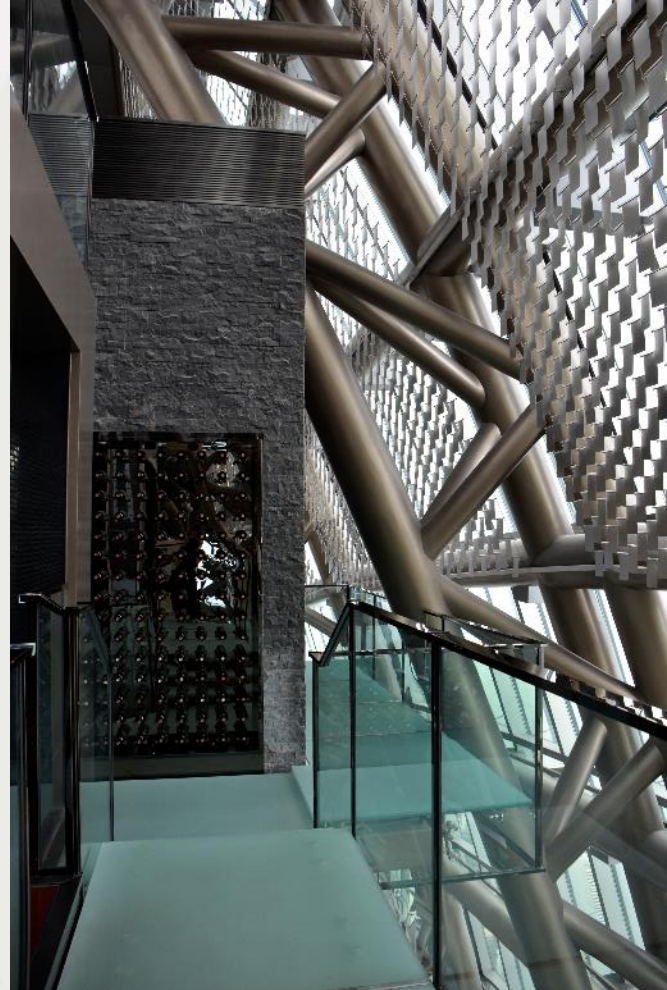


The faceted design of the upper level of Sky Tree in Tokyo allows for more direct views down, but the structure and railing keep you distanced from the glass.



One World Trade, NYC added metal cutouts in the shape of a skyline to prevent people from sitting/standing on the heating grille to get a better view out.

The posh lounge at the top of KK100, Shenzhen has patrons distanced from the glass as well as significant structures and interior finishes acting as obstructions.





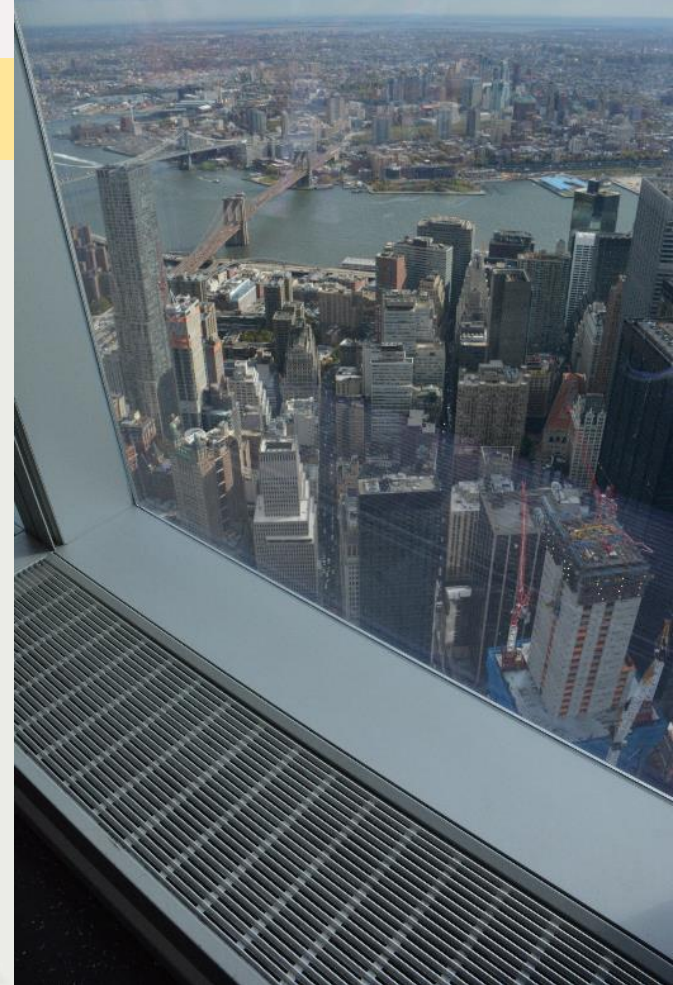


The steel cage around the observation level of Kyoto Tower is designed to provide architectural form but succeeds in marring the view. Impossible to see or take photos without having the bright orange frames in the shot.

## 6c. Reflections

- Reflections arise from different sources day vs night
- Daytime reflections are often due to the nature of the frame around the glass
- Nighttime reflections arise from interior lighting and signage
- Both impede the view
- Both cause issues for photography

Deep light coloured frames and heat grille reflects on the glass at One World Trade







Festive Lights at Tokyo Tower



Reflections from Advertising



Views out of The Shard, London are greatly impacted by the curtain wall projections that create the signature architecture of the top of the tower. These cause reflections and visual obstructions to the view.





In the end, to the user of the space, it is all about the view.

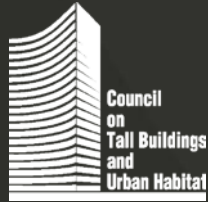
Thank you!

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**Thank you.**

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