



# Permanent Way Institution

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9 October 2024



# US railroad station designs - Location, location, location

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Eur Ing John Dolan CEng FICE FCILT FPWI



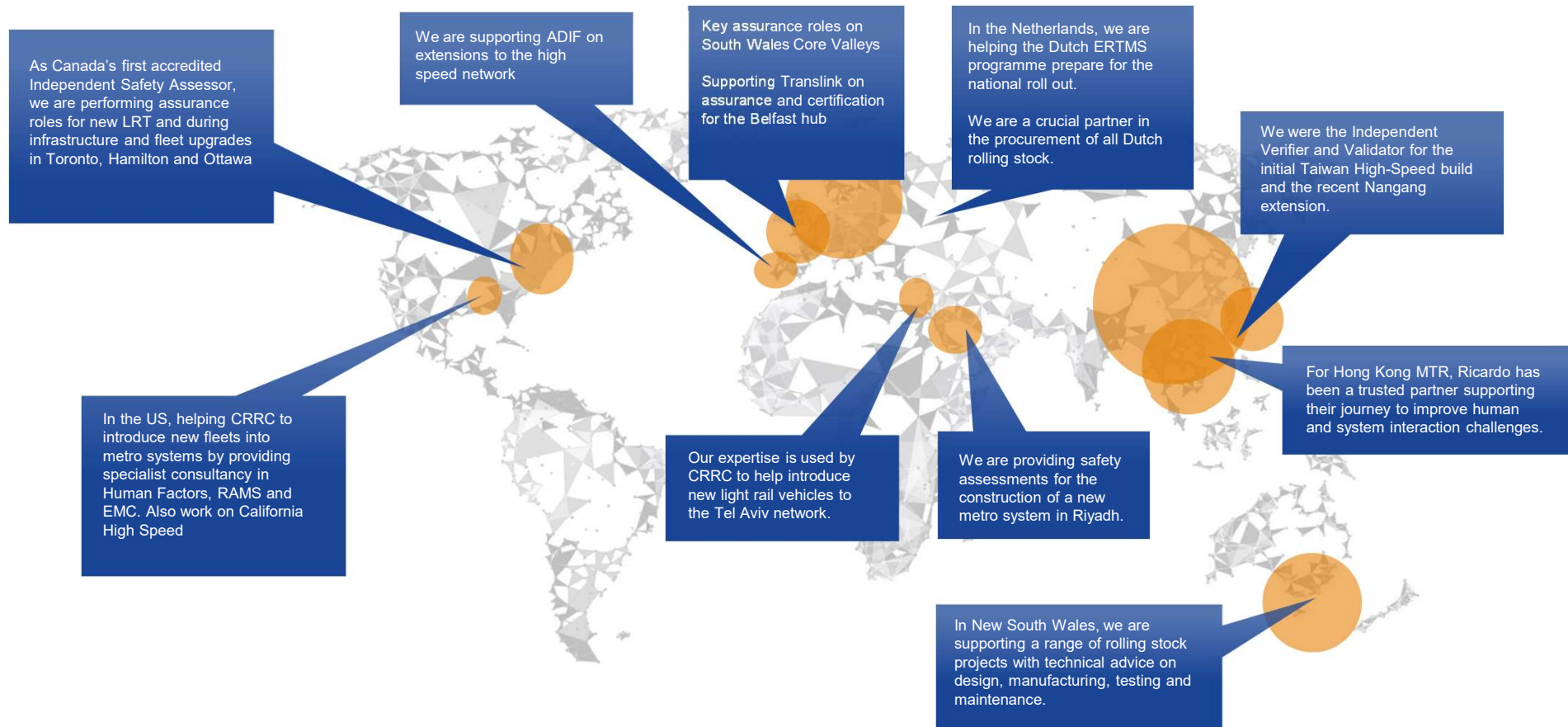
## Ricardo in the rail sector

We are rail industry specialists within the Ricardo group working to ensure that communities around the world are served by safe, resilient, high-performance railways.

Our expertise lies in understanding the complex and critical systems that underpin an efficient rail service, providing clients with all the technical skills and insight necessary to navigate the sector's operational, commercial and regulatory demands.



## Global rail projects





## Two themes

1. *For better or worse?* Changes in the use and location of stations, particularly the abandonment of some large Union stations, **tabled for consideration as to whether in each case, any or all of the travelling public, transport management and transport staff are seeing an improvement, starting with a comparator from this country.**
2. *Good?* Examples of what I think are good modern developments, put forward for debate. **They often include the restoration, at least in part, of original structures.**

Most photographs are mine, but I have supplemented them from Google Earth / Streetview and some, e.g., the track layout drawings, are downloaded from the web.

# For better or worse?

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A relocation in this country



A relocation in this country

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A new eight platform terminal station, used by:

- Commuter trains

A new eight platform terminal station, used by:

- Commuter trains
- Intercity trains

A new eight platform terminal station, used by:

- Commuter trains
- Intercity trains
- International trains



# July 2024

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July 2024

This is part of the unpaid concourse. The bus gates and food court mezzanine are to the left.

The ticket gates are at the far screen with the paid concourse beyond





# August 2024

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## Belfast

Original Great Victoria Street, facing  
Great Victoria Street, 1839 – 1976

Replaced by Belfast Central, 1976,  
also replaced Queen's Quay

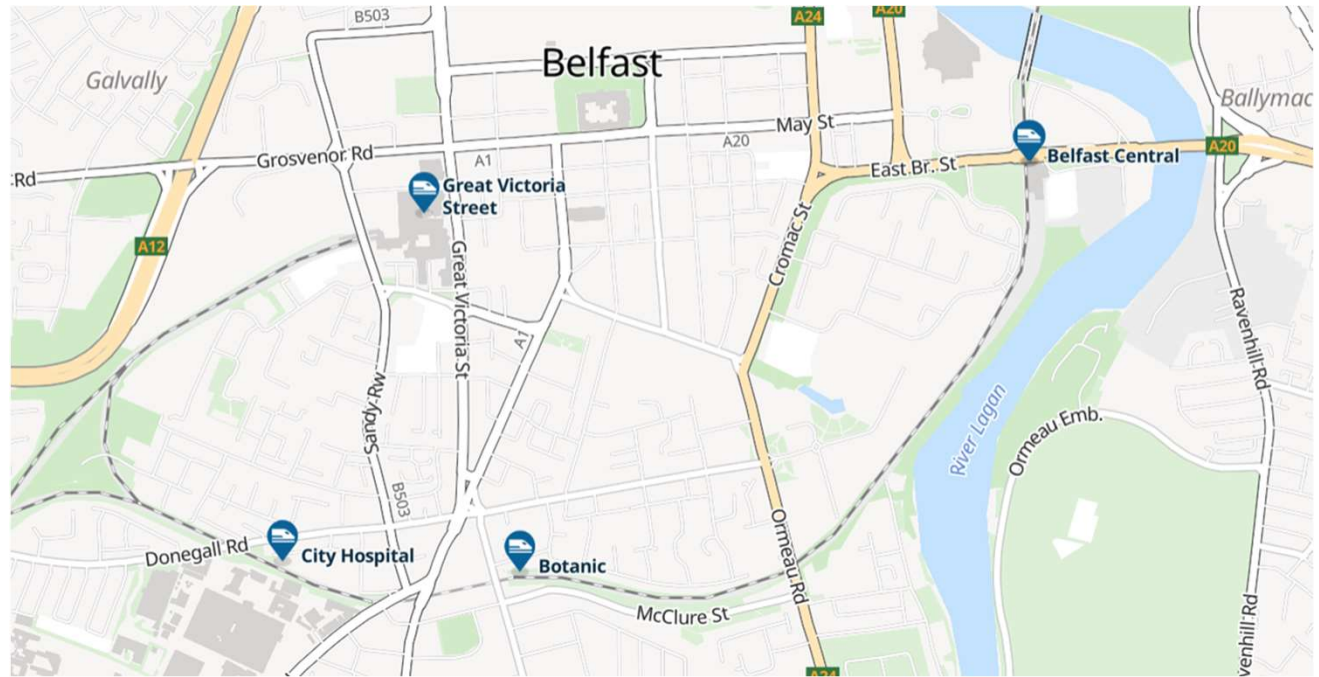
Belfast Central also replaced York  
Road in 1994

New Great Victoria Street 1995  
behind Europa hotel and bus station

Central renamed Lanyon Place

Great Victoria Street closed 2024 to  
facilitate construction of Grand  
Central railway and bus station

Opened for buses September 2024





## Belfast Grand Central





## Belfast Grand Central



## Belfast Grand Central



## Current position

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Rail side opens this Sunday, 13 October 2024

Ricardo Certification provided:-

Railway Interoperability Regs, Northern Ireland Notified Body (NoBo)

CSM RA, Assessment Body

My role:-

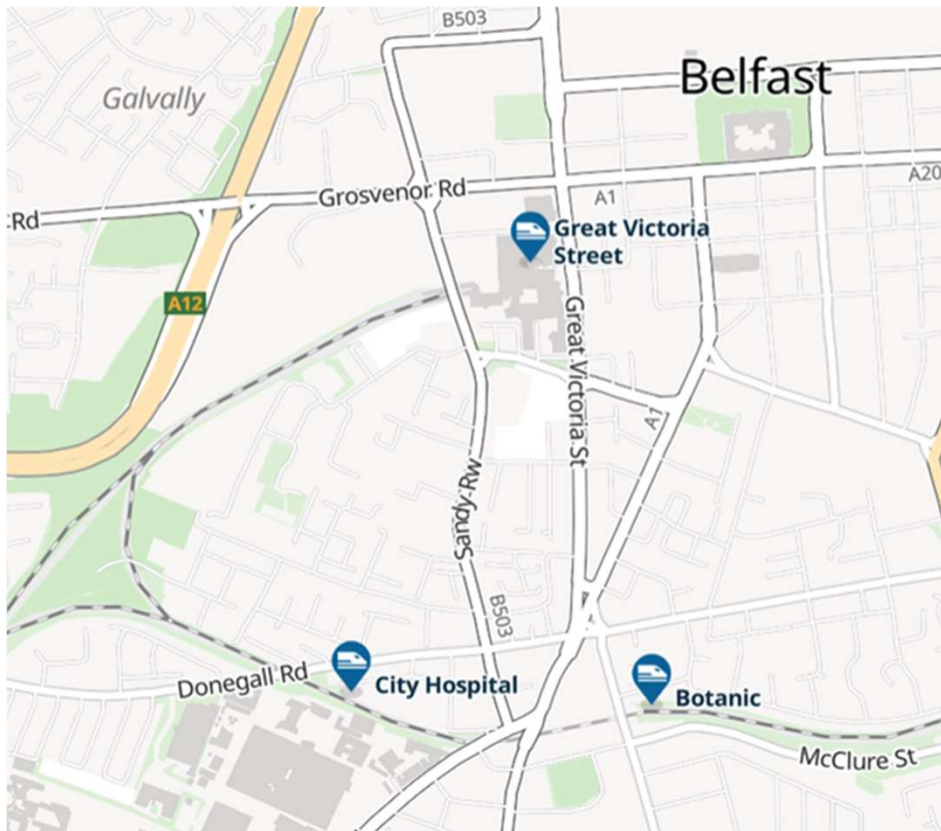
Lead Independent Technical and Safety Assessor

Reviewer of NoBo File and Safety Assessment Report

Reviewer and Approver of NoBo Report and CSM Assessment Records



## Location



Better.  
Connected



## Belfast Grand Central

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- Increased railway capacity
- Increased bus capacity
- Improved passenger facilities
- Improved staff facilities
- Improved bus stabling
- Further from the City Centre
- Less prominent in the Centre
- Within property development
- Risk if that not a success?

# For better ... up to a point!

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New York Moynihan NY

From the street, corner 8<sup>th</sup> and W 31<sup>st</sup>

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Amtrak Moynihan station has taken over the former New York City General Post Office.

It's a two blocks long Beaux Arts structure, conveniently positioned above the west end of the existing platforms, near the exit from the tunnels under the Hudson River





## Inside Amtrak's #1 station



# Penn Station



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No more the horrors of Penn station with its subterranean passageways, confusing exits and disparate platform access?

Unfortunately, no

## But the reality ...

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- Only caters for Amtrak and Long Island Rail Road, New Jersey Transit still uses the labyrinth under Madison Square Garden
- Exits to Moynihan only at the far western ends of platforms, other exits lead into the labyrinth
- Platforms remain low, narrow and with roof columns

## Not just here, issue at a number of other raft-over major US stations

- At least the atmosphere is better than Birmingham New Street as all trains are electric, the result of New York State legislation which came into force in 1908

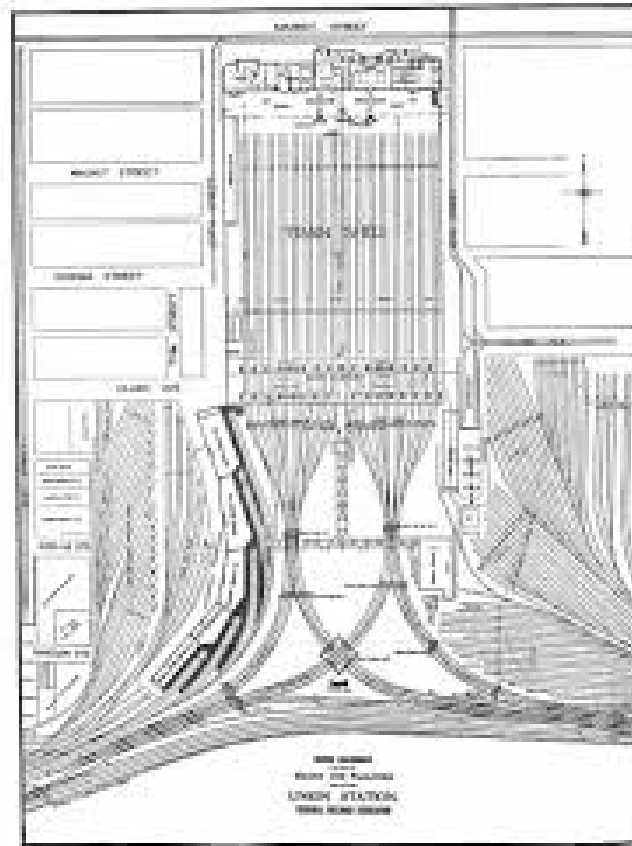


# For better or worse?

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St Louis MO

## St Louis Union Station Layout



## St Louis Union Station

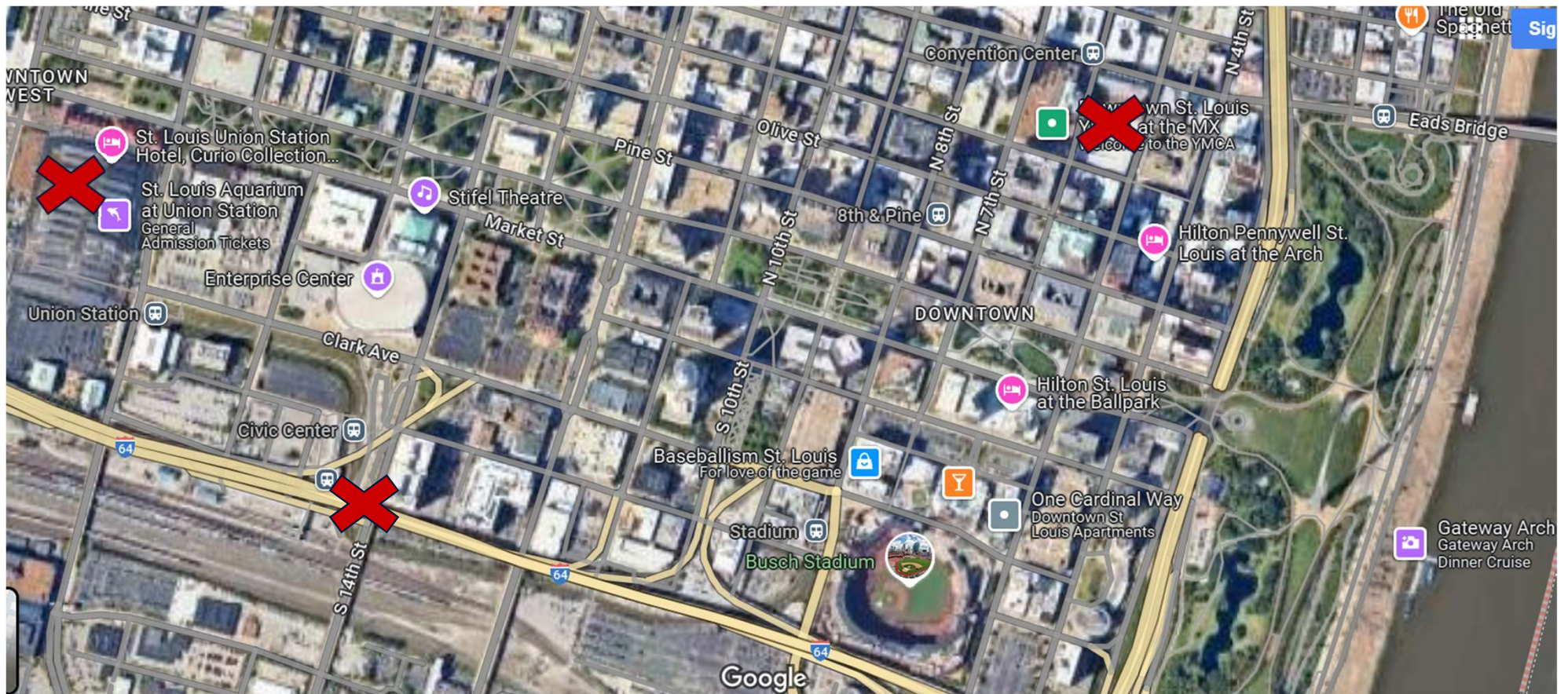
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Now an up-market hotel with an aquarium attraction in the former train shed behind.

One track remains, used for various special operations.



## St Louis – Overhead view

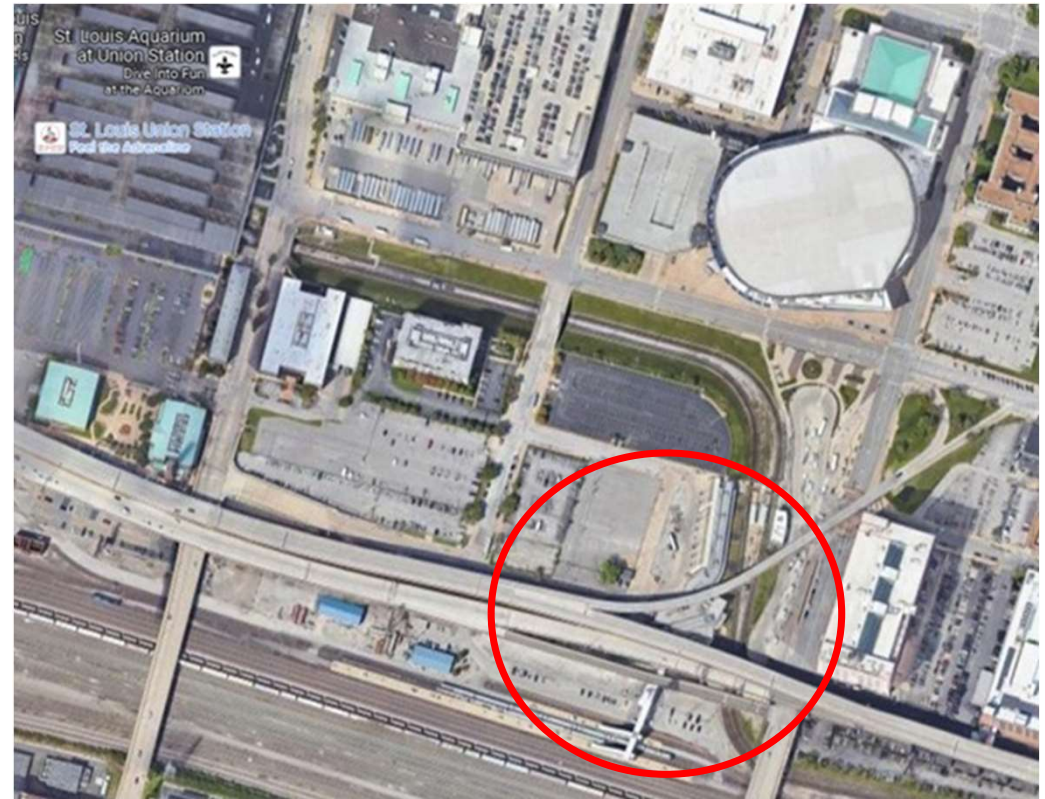




## St Louis Civic Center / Gateway (I)

Civic Center / Gateway provides:-

- Amtrak Gateway station
- Light rail Civic Center station
- Greyhound and similar coach station
- City terminus for all terminating buses, after / before passing through the central district
- Staff accommodation and facilities



## St Louis Civic Center / Gateway (II)



## St Louis Gateway (III)



# For better or worse?

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Salt Lake City UT



## Salt Lake City – Union Pacific (I)

This is South Temple, the main East – West route through the city centre

The Union Pacific logo is prominent at the far end of the street



## Salt Lake City – Union Pacific (II)



## Salt Lake City – Union Pacific (III)





## Salt Lake City – Denver & Rio Grande





## Salt Lake City - overhead



## Salt Lake Central

Central provides:-

- Amtrak station
- Commuter rail station
- Light rail station
- Greyhound and similar coach station
- City terminus for some buses after / before passing through the central district
- Staff accommodation and facilities
- Included in Free Fare Zone



## Salt Lake City



# For better or worse?

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Buffalo NY



## Buffalo Central Terminal (I)



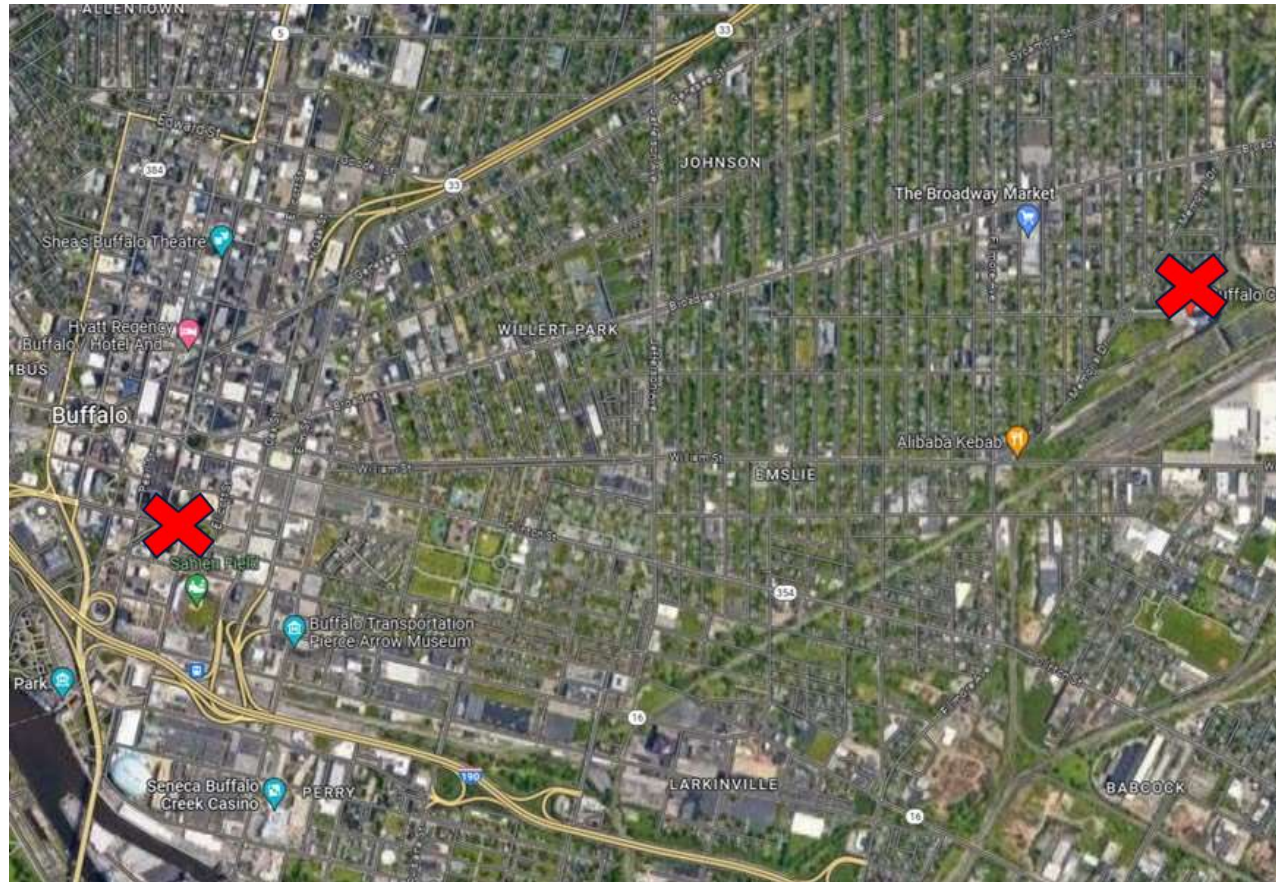
## Buffalo Central Terminal (II)





Buffalo – Overhead view

But Buffalo Downtown grew North, not East



Buffalo – Exchange Street Station  
But on the route to Niagara and Toronto, not Chicago





## Buffalo – Depew

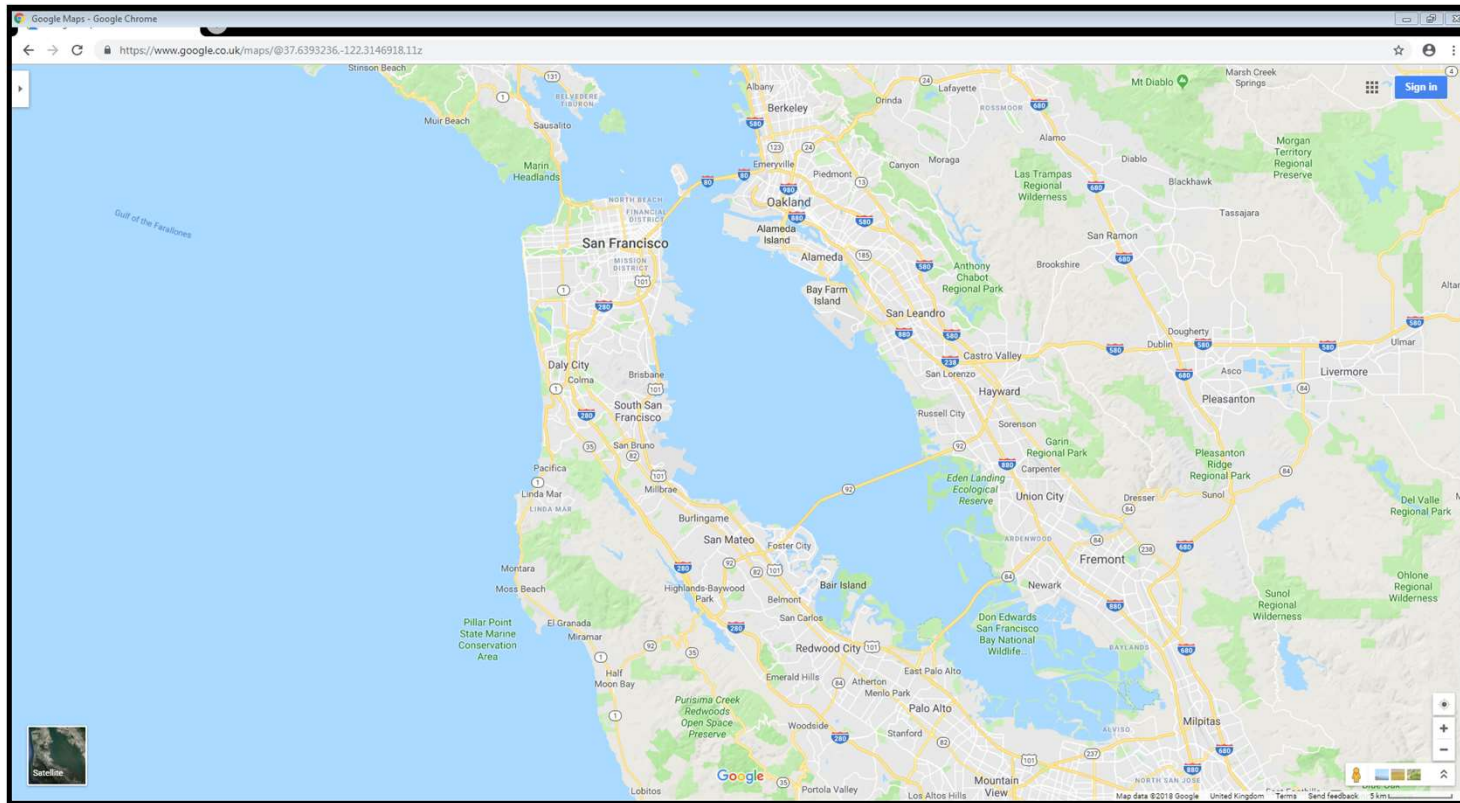


# For better or worse?

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San Francisco CA

# San Francisco Bay



## San Francisco – Amtrak station (I)

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Early – mid 20th Century – train ferries

Early 21st Century – coach shuttle services from Transbay Temporary Terminal

- Centrally located
- Full ticketing from staffed office
- Covered waiting accommodation, wheelchair access
- Full checked baggage service

Now - The permanent Transbay Terminal is open, providing the same facilities...

But Amtrak objects to the charges.



## San Francisco – Amtrak station (II)

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So, how does one start the 2438 mile journey on the “California Zephyr” to Chicago, Amtrak’s premier long-distance service?

## San Francisco – Amtrak station (III)

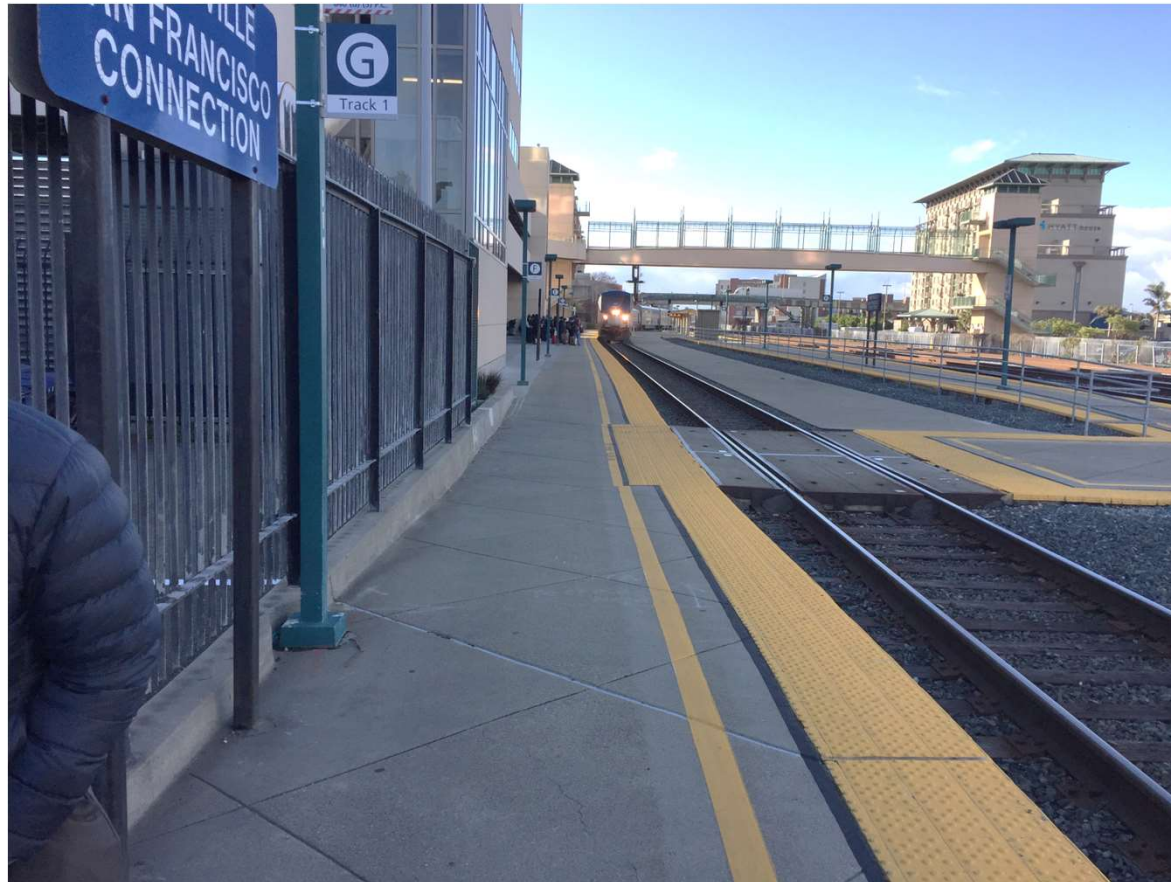


## San Francisco / Emeryville (I)

- Accessible platform and a barrier-free path from the drop-off area outside the station to the train platform.
  - Accessible restrooms
  - Accessible ticket office
  - Accessible waiting room
  - Accessible parking is available
  - No high platform
  - Wheelchair available for passengers who cannot walk far or at all
  - Wheelchair lift available
- but
- No BART connection



## San Francisco / Emeryville (II) – California Zephyr to Chicago approaching





Good?

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Albany NY

## Albany – Rensselaer (NY) Station – Interior

Used six times, but never remembered to take my own photographs

- Accessible platform and a barrier-free path from the drop-off area outside the station to the train platform.
- Accessible restrooms
- Accessible ticket office
- Accessible waiting room
- Accessible parking is available
- High platform
- Wheelchair available for passengers who cannot walk far or at all
- Wheelchair lift available



## Albany – Rensselaer (NY) Station - Platforms



Good?

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Chicago IL



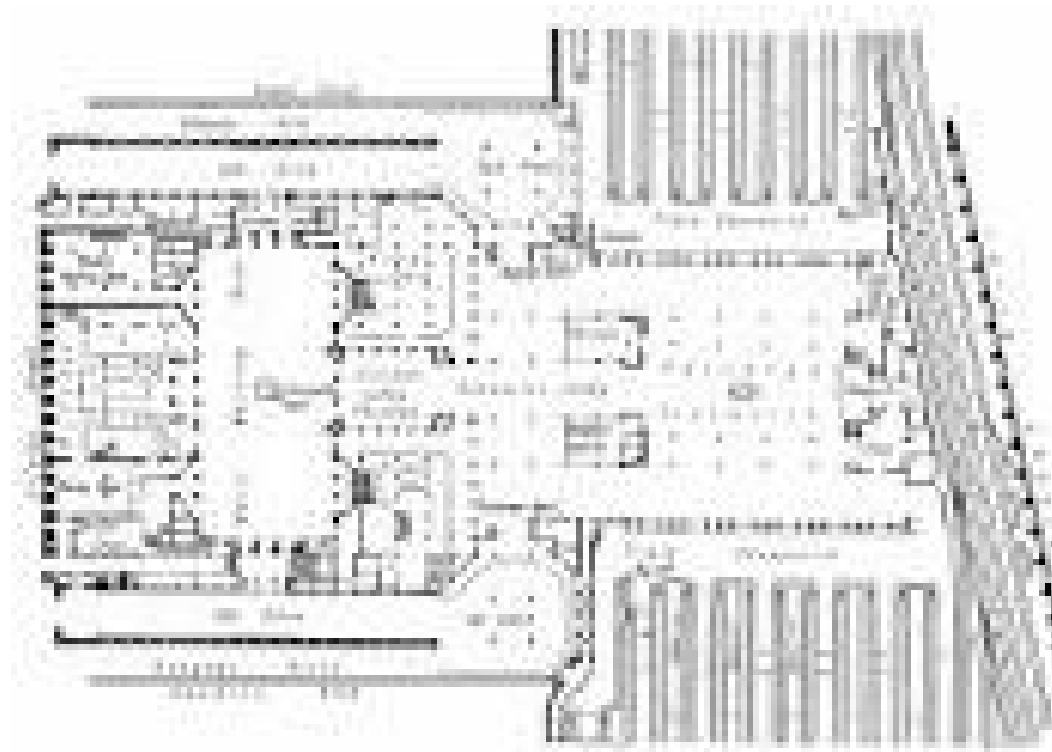
## Chicago Union Station - Great Hall (I)



## Chicago Union Station - Great Hall (II)



## Chicago Union Station Layout





## Chicago Union Station - Untouchables





Good?

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Denver CO

## Denver Union Station – Street view



## Denver Union Station – public realm





## Denver Union Station – interior





## Denver Union Station – Platforms (I)



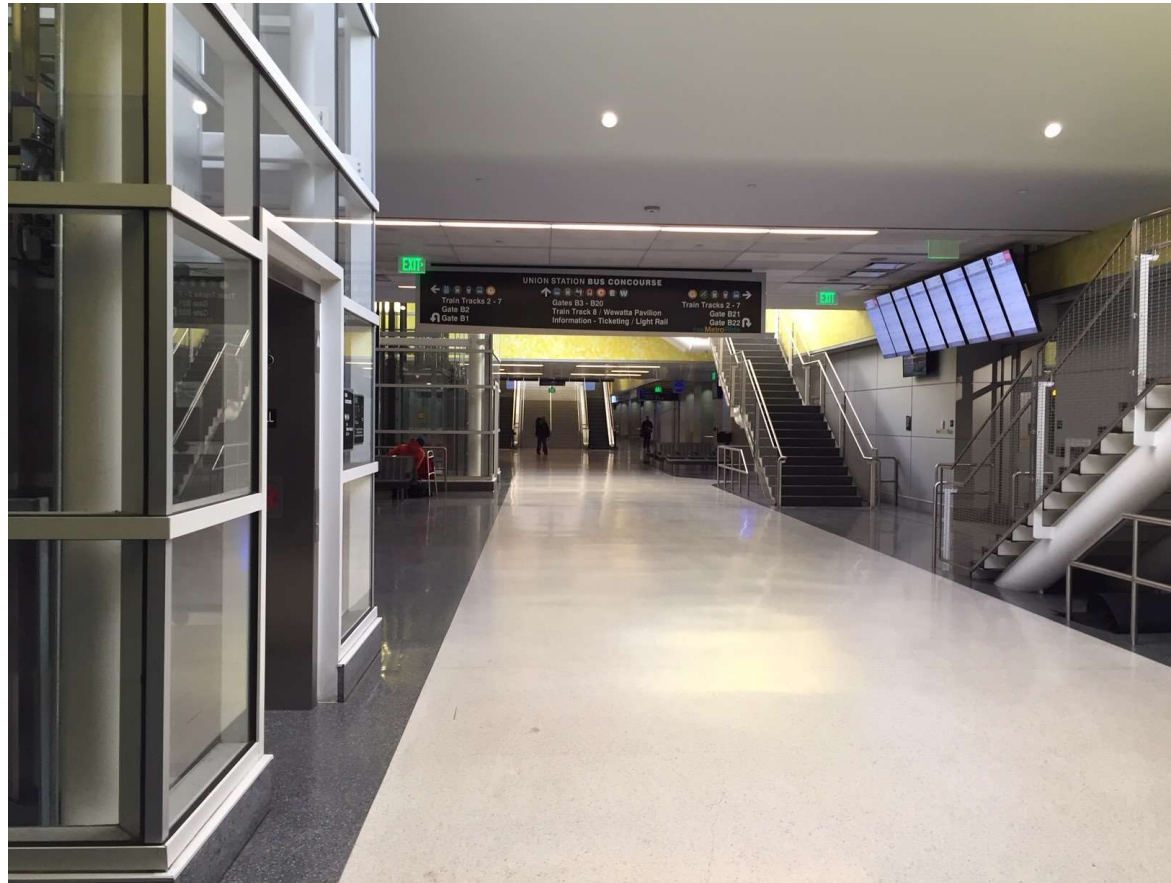
## Denver Union Station – Platforms (II)

Four commuter routes, up to every 15 minutes, eight platforms



## Denver Union Station – Bus station

Under station, access to Light Rail station at far end (alongside avoiding line)



Good?

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New York Grand Central NY Metro North



## Grand Central Station

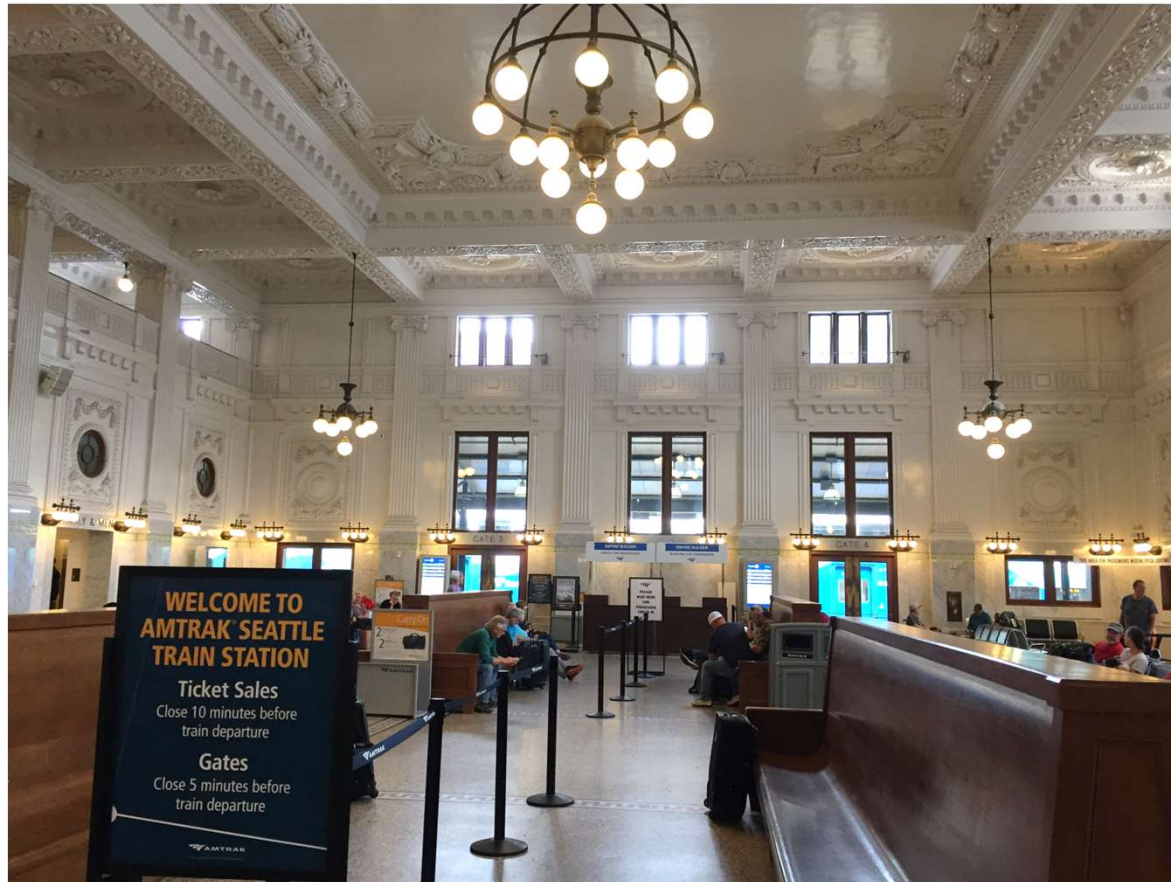


Good?

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Seattle WA

## Seattle King Street (I)



## Seattle King Street (II)





## Seattle King Street (III)



## Seattle King Street (IV)

Commuter service to left, separate accesses from bridge and road, not via main building

Amtrak “Empire Builder” to Chicago central

Amtrak state-sponsored “Cascade” to Portland just visible beyond main building



Good?

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Dallas TX (with a light rail diversion)

## Dallas Union Station – Overhead view

Access to the island platforms is by subway, with lifts to platforms.

LRT tracks and platforms

Commuter rail tracks and platforms

Amtrak track and platform

Freight tracks

(Streetcar top right)





## Dallas Union Station – Street view



Dallas Union Station – Streetcar stop  
OLE for access to Light Rail depot, battery first part of route



## Dallas Streetcar – street configuration

Middle of three lanes!





## Dallas Light Rail – street configuration





## Dallas - other streetcar – stop and street configuration



# Their world is not our world

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Oakland CA

## Oakland (I)





## Oakland (II)





# Further Thoughts?

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