

# University Link Systems Design for Accommodating more Than One Train in One Ventilation Zone

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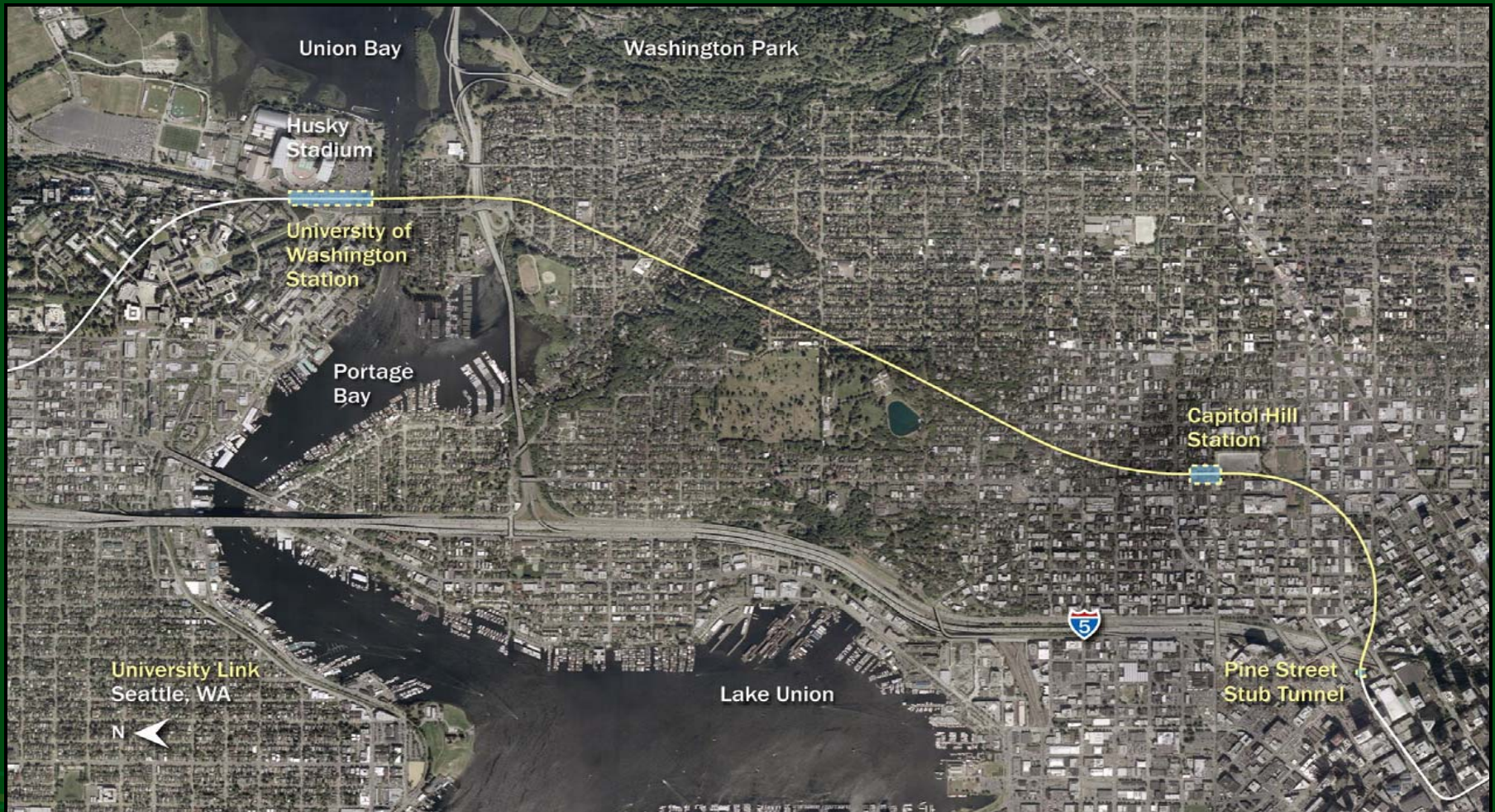
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## Overhead View of the University Link Alignment



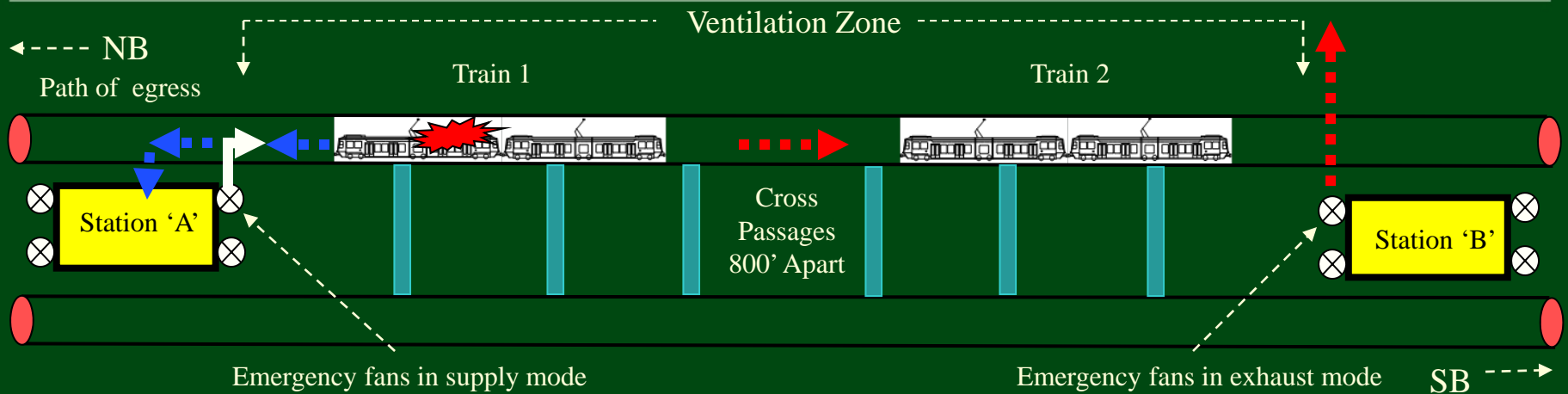
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- Restricting one train to a ventilation block at a given time means that the travel time through that ventilation block dictates the maximum headway that can be operated on that line
- Headways required on this segment are 3 minutes
- Capitol Hill to University of Washington is 2.34 miles with a travel time of 3 minutes 16 seconds plus an added 30 second cushion brings it to almost 4 minutes. Therefore the best headway that can be achieved on this line would be 4 minutes
- Result; The Agency needs the ability to operate multiple trains in a ventilation zone

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- Above all ensure the safety of our passengers and employees
- Use the latest technologies for system design and construction
- Obtain concurrence from the Authority Having Jurisdiction (2/3/2010)
- Result; The midline vent shaft (Montlake) has been removed from our current project design. The total savings from design, construction, property purchase, relocation, etc. is some \$ 19 Million (2010\$)

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## Scenario:

1. Train 1 has departed Station 'B' and comes to a stop a short distance from Station 'A' in a single track tunnel bore due to a fire/smoke on board the train.
2. Train 1 reports to the Operations Control Center that there is a fire/smoke scenario on the train and is unable to move.
3. Operations Control Center instructs the train operator to evacuate passengers to Station 'A' as it is the closest.
4. Emergency response units are called and advised of the incident and location.
5. Operations Control Center issues a general alert to all train operators to proceed to the next station, stop, and report their position.
6. Ventilation scenario at Station 'A' will be activated with fans in supply mode and fans at Station 'B' in exhaust mode. Complies with NFPA 7.2.1. (1) which requires ".....a tenable environment be provided along the path of egress ....."
7. Train 2 has entered the same ventilation zone.
8. Operations Control Center will instruct Train 2 to reverse the train back to Station 'B' and evacuate all passengers.
9. Train 2 will reverse back to Station B in one of the following scenarios:
  - i) Train operator will leave north end cab and proceed to the south end cab using the walk way, or
  - ii) Train operator will continue to stay in the north end cab and operate the train in reverse from this position using the forward facing camera mounted on the opposite end of the train.
10. No further train movements in the area will be permitted until the Incident Commander has assessed and/or cleared the situation.

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Operators Cab View from the Rear Facing Camera



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Thank You

Paul Denison  
Sound Transit

◀ NB

### NFPA 130 Chapter 7.2.1 Emergency Ventilation System For Passengers Evacuating A Train With Fire/Smoke & In A Tunnel Environment

