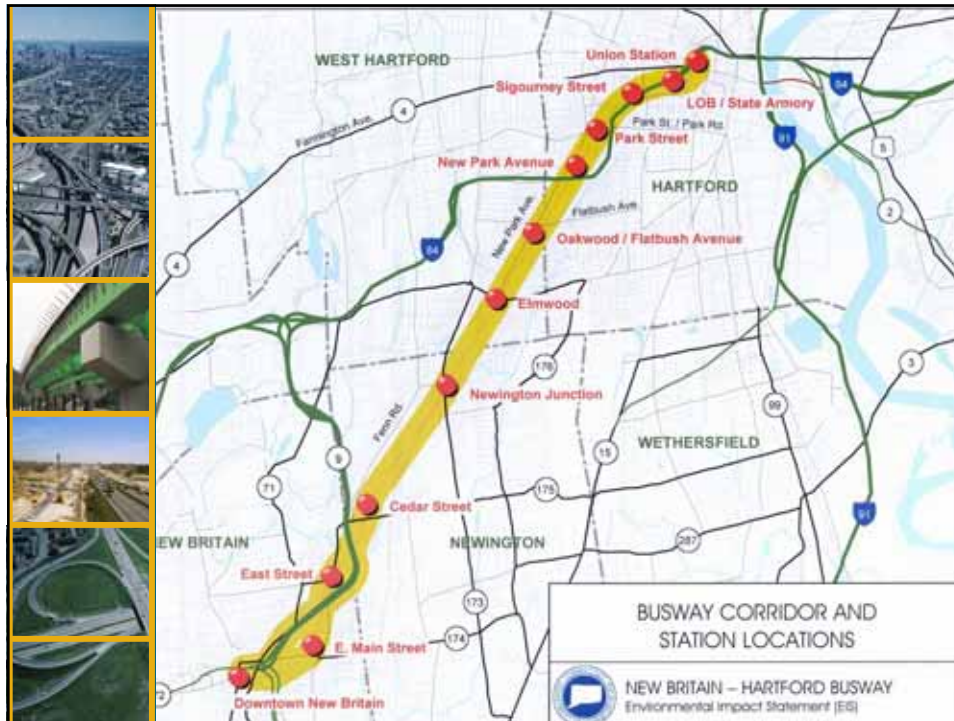


### **BRT Design Elements:**

- Dedicated bus corridors- physical separation from other traffic lanes.
- Modern bus stations ( pre-board ticketing /comfortable waiting areas).
- Multi-door buses that "dock" with stations ( rapid boarding/alighting)
- Large, high capacity, comfortable buses, preferably low-emission.
- Differentiated services such as local and express buses.
- Bus prioritization at intersections (signal priority/ grade-separated).
- Co-ordination with operators of smaller buses and paratransit vehicles to create new feeder services to the bus stations.
- Integrated ticketing that allows free transfers, if possible across transit companies and modes (bus, tram, metro).
- Real-time information displays on expected bus arrival times.
- Station access for taxis, pedestrians and cyclists ( storage facilities for bikes)..
- Park and ride lots for stations outside the urban core. Land-use reform to encourage higher densities close to BRT stations (TOD)





## Project Description

- Project Cost= \$335 million
- Project Length 10 miles
- Busway R.O.W.:
  - South: Abandoned Railroad line
  - North-Shared ROW with AMTRAK.
- Service Levels- 18 hours (6 am to 12:00 am)/  
Peak headway @ 2 to 5 minutes
- Travel Time: Free flow @ 50 mph except @  
at-grade x-ings (35 mph), approximately 14  
minutes on the busway




## Project Description

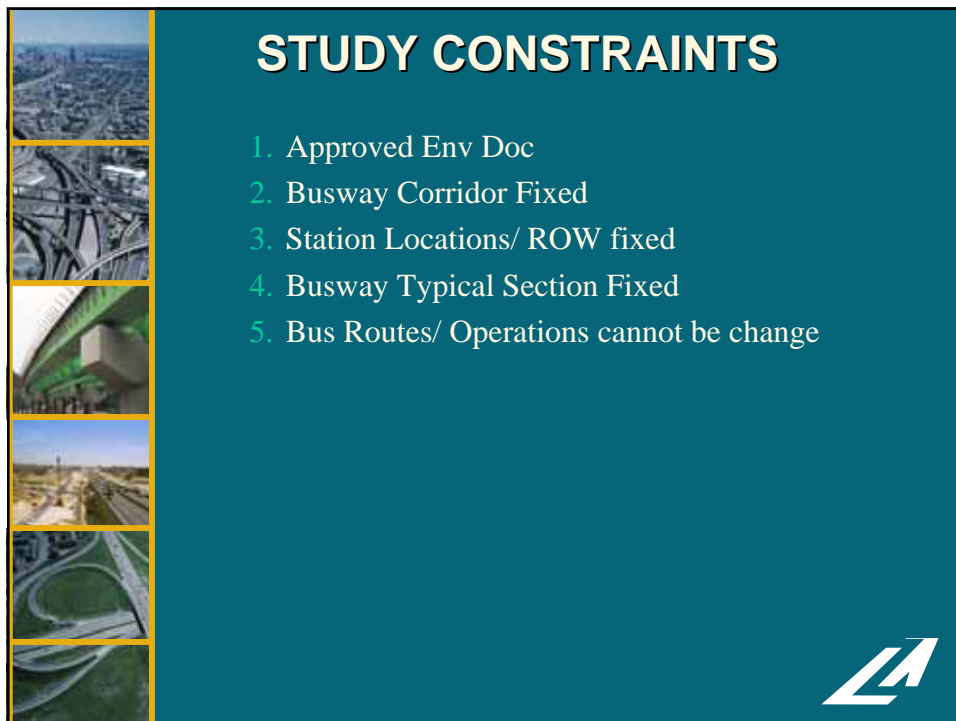
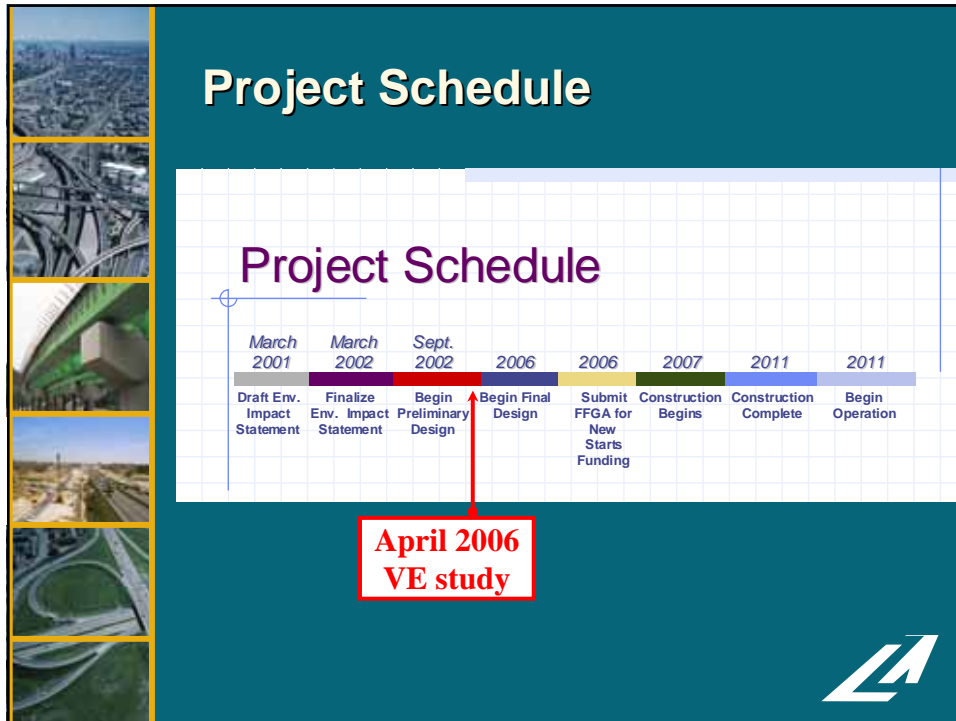
- 1 of 10 Federal BRT Demonstration Project
- Project Objectives:
  - Relieve I-84 Corridor Congestion
  - Increase Transit Use
  - Provide TOD opportunities along busway and particularly @ New Britain, Flatbush, Sigourney Stations
- Busway Operations
  - Express Bus Operations
  - Shuttle Bus Operations
  - Neighborhood Collectors
  - Feeder Bus Service




## Project Description

- Ridership Forecast (2030):
  - 18,000 Average Weekday Boardings
- 3 Full Stations (N.B, Flatbush, Sigourney) & 9 Platforms with Shelters)
- 4 communities (New Britain/ Newington/ Wethersfield/ Hartford)










## Analysis


- Performance Criteria:
  - Transit Operations (26%)
  - Access (22%)
  - Facility Security (20%)
  - Environmental Impacts (9%)
  - Maintenance (8%)
  - ROW Impacts (6%)



## Analysis



- High Cost Items:
  - Structures (grade separations)- 24%
  - Retaining Walls- 21%
  - Busway Roadbed- 14%
  - Stations- 13%
- Risk Analysis:
  - Cost Escalation/No Additional Funding Sources



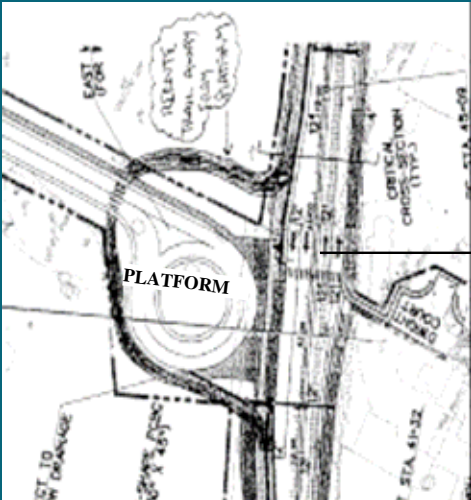


## STUDY FOCUS


1. Review Station Designs
2. Safety of At-grade crossings
3. Structures (High Cost Item)
4. Concerned with Escalation and Fixed Budget
5. Flatbush Station (traffic and MOT)




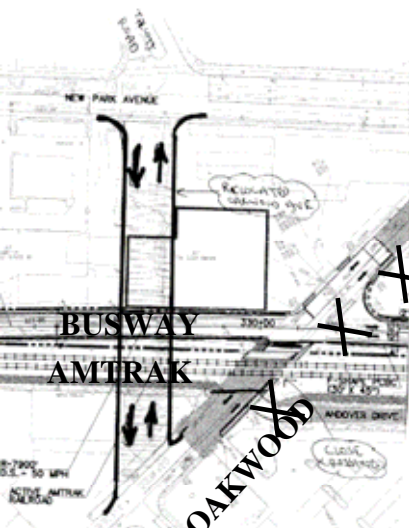
## BUSWAY SAFETY IMPROVEMENTS



**Relocate  
Biker/Hiker  
Trail away  
from Platform**




## Busway Safety Improvements






- Busway crosses Oakwood @ 2 to 5 minute intervals
- Eliminates skewed X-ing @ both New Park and Buway
- Provides continuity for the "through movement" of Tallcot/Oakwood

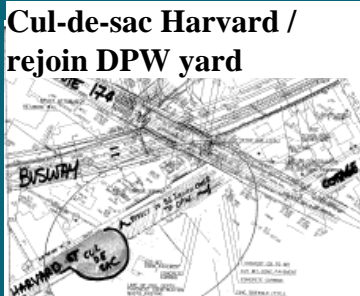
**Relocate Talcott-Oakwood Crossing**




## AT-GRADE HARVARD STREET IMPROVEMENTS

**Cottage- Harvard intx.**




**Cul-de-sac Harvard / rejoin DPW yard**



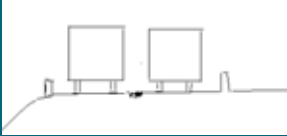
**Harvard/ Rte 174/ Cottage Peanabout**

**ISSUES:**


- Route 174 – major arterial (commute time)
- Harvard- Cottage Offset
- DPW Yard on both sides of Harvard West of DPW is quiet neighborhood
- Harvard Blocked when busway in operation



## BUSWAY SAFETY IMPROVEMENTS

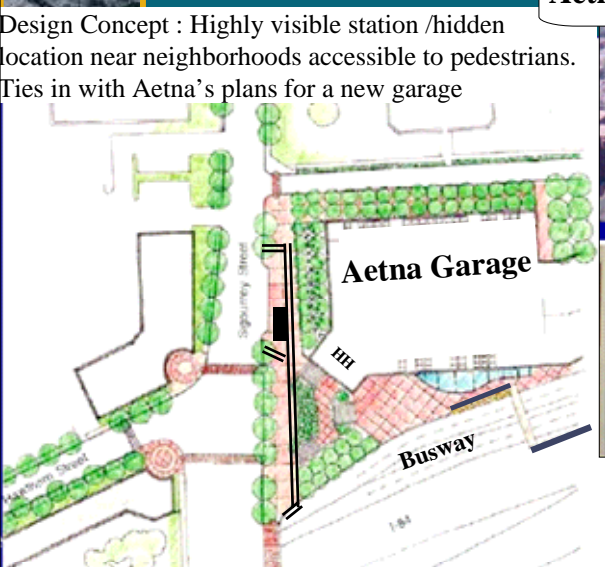


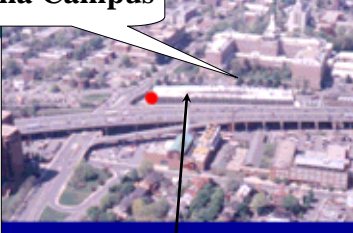
- Centerline Rumble Strip along Busway
- At-grade Busway / Local Street Safety and Access Control:
  1. Raise intx at x-ings (busway continous)
  2. Paving treatment at crossing/ raised reflectors
  3. Increased illumination
  4. Green "arrow" signal head ILO "ball"/ Audible Signal
  5. Street lanel ine continous through crossing
  6. Bulb-out curb returns
  7. Limit pedestrians x-ings to one side/ add ped gates
  8. Where room available provide turn-lane for buses to exit busway



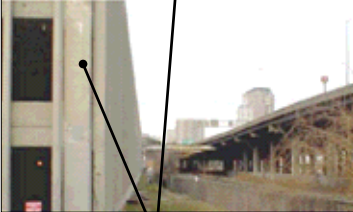
## Sigourney Station

Design Concept : Highly visible station /hidden location near neighborhoods accessible to pedestrians. Ties in with Aetna's plans for a new garage




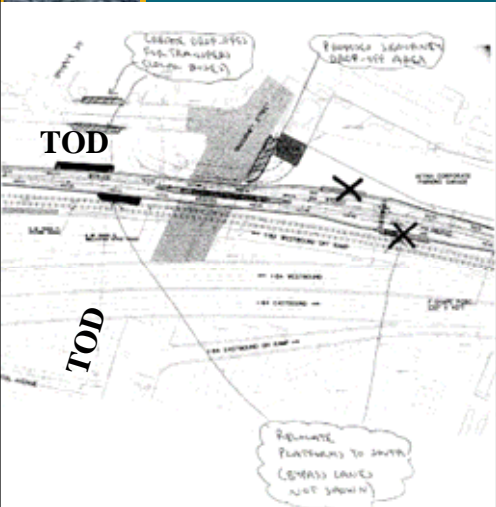



**Aetna Campus**




**Aetna Garage**







## Sigourney Station


- Relocate Platforms to the west
- Recognizes the pedestrians will walk under the Sigourney Bridge to Station
- Frees up green space around headhouse
- Adds more drop off location on nearby road
- Add viability of TOD development near platforms
- Tie in “dead space under freeway with TOD




## Study Findings

| <b>STRUCTURES</b>  |
|--|
| Improve Subgrade & Use Spread Footings I.L.O. Drilled Shafts Or H-Piles For Deep Foundations (Various Locations)     |
| Consider Using MSE Walls in lieu of CIP Concrete Anchor, Pile Supported Walls beneath Route 9                        |
| Use Geofoam With EIFs I.L.O. Panelized Facing System On Deep Foundations At Flatbush Avenue Fill                     |
| Use Lightweight Fill And Spread Footings I.L.O. Deep Foundations (Various Locations)                                 |
| <b>PAVEMENT</b>  |
| Low Noise Pavement in Residential: Open-Graded Friction Course AC/ Rubberized AC/ Open Diamond Grinding for Concrete |
| Use Concrete Pavement at the Platforms   |





## Study Findings



### **PROCUREMENT**

Flatbush station D-B contract (Contractor Innovation)

- **CONTRACTOR EFFICIENCY**
- Include dual use of station sites by the stations contractor and line contractor (\$)


### **CONTRACTOR PACKAGING**


- Early Award of Demolition Contracts/ Other small packaging (Local contractors)
- Provide for Owner Controlled Insurance Plan (OCIP)++ for RR Protective Insurance (\$)
- Use Contract Alternatives (Adds and Deducts) for Budget Control (\$)
- Advertise all station (3) and line (3) contracts all at once and allow for combined packages (Time & Money)
- Carryout risk assessment of suggested contract packaging and viability of contracts to local contractors



## Study Highlights

- ❖ **Safety Improvements:**
  - ❖ Harvard Street,
  - ❖ Talcott/Oakwood relocation,
  - ❖ relocate ped/bicycle trail away from platform,
  - ❖ rumble strip ilo center lane line
  - ❖ Improvements to the at-grade crossings (improvements)
- ❖ **TOD enhancements at Sigourney Street (also East/Allen)**
- ❖ **In lieu of cost savings from scope modification- attention to procurement.**





# THANK YOU!

## QUESTIONS?

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