Design Strategies for the Somerville Case Study

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The Somerville Site and Surroundings

Local Factors
• High Density
• Mix of Uses
• Existing vs. Future Users

The Stop & Shop site is sandwiched between highways I-93 and Rt. 28. In the immediate vicinity is a parking lot, supermarket a neglected pocket park, a neighborhood of 1 to 3 family houses, and large and heavily used Foss Park.
Design Ideas for Stop & Shop Parcel

Existing Development Proposal

Tactics Used:

• Built Barriers - ‘U’ shaped exterior protects interior park space

• Urban Design - structured parking sited on highway side, blocks pollutants

• Filtration - filtered HVAC system protects future residents in development

• Air Inlet Locations - draw air from protected park space and underground duct cools/warms air

• Trees and Plantings - marginally effective at blocking and filtering polluted air

*drawings are meant to illustrate possible implementation of mitigation tactics but do not represent final full solutions

Drawing Credit: Giamportone Design.
Barriers to Near-Highway Pollution
Beyond the Traditional Sound Wall

Integration of Barrier Tactics:

• Combine concrete sound wall with green, living wall, trees and other plantings
• Improves neighborhood aesthetic
• May be more effective than traditional sound wall

New Buildings as Physical Barrier

Functional Barriers:
Structures with uses other than barriers can act as pollution barriers

Recognizing density, site less sensitive buildings (garages, storage spaces, filtered offices) near highways

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Strategies to Protect Foss Park

About Foss:

- Surrounded by most high volume roads in the city
- Largest park in Somerville
- Heavily used for sports and community events

Redesign Ideas:

- Vegetative and Built Wall Barriers - band shell and berms
- Land Use - active use (fields, playgrounds) farther from roads
- Trees and Plantings – small effect as barriers and natural filters

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Drawing Credit: Giamportone Design.
Retrofits for Existing Housing

How do we protect the existing residential neighborhood? Houses are directly adjacent to I-93, no barrier or buffer

• Provide loans for retrofitting HVAC and weatherization
• (A lawsuit settlement in Mira Loma, CA won all households $1700 for filtration systems)
• Weather sealing and filtration/ventilation must be done in concert to prevent infiltration traffic pollution and build-up of indoor pollutants

Neighborhood Retrofits within 200’ from Highway

Neighborhood Estimations:

- 200 foot buffer around freeway
- 35 buildings in the buffer in this neighborhood
- 200 buildings per mile
- 15 Windows per House ($1,000 per unit)
- $15,000 per building to upgrade ventilation and filtering
- $30,000 per building total
- ~$6,000,000 per linear mile of highway

Graphic Credit: Linnean Solutions.

200’ buffer from highway - area of highest pollution