Back Bay Station
COMMUNITY PRESENTATION - VENTILATION & CONCOURSE IMPROVEMENTS
SEPTEMBER 26, 2016, 6PM
TRANSPORTATION BUILDING
10 PARK PLAZA
AGENDA
- BACK BAY STATION YESTERDAY AND TODAY
- BACK BAY STATION FUTURE
- VENTILATION PROJECT
- CONCOURSE IMPROVEMENTS
- Q & A
BACK BAY STATION TODAY

- Station lacks capital maintenance / budget
- Concourse cluttered, difficult wayfinding
- Track Level ventilation
  - Track level ventilation issues
  - Currently diesel fumes at concourse level
BACK BAY STATION FUTURE

**Public Private Partnership**

- BP Management & Renovation of Concourse
- BP New 99-yr lease and future development options
- BP contributes $37 Million---(pre-paying rent on adj. garage)
  ($32M concourse improve + $5M vent)
  ventilation $5M BP +$5M MBTA = $10M
- BP receives no management fee
  - Tenant coord., Clean, maintenance, supplemental security
  - Station retail revenue goes into management of Station
Project objective

Improve air quality at station concourse and platforms 1, 2 and 3, through the rehabilitation of the existing ventilation system and the provision of supplemental mechanical ventilation
Project vicinity

- BACK BAY STATION
- EAST 'PORTAL' COLUMBUS AVENUE
- SOUTHWEST CORRIDOR TUNNEL TRACKS 1, 2 & 3
- WEST PORTAL MASS. AVE.

*image courtesy of Google Maps*
The problem

- Diesel trains operating ‘within a building’
- Existing ventilation system largely non-functional
- Original ventilation design inadequate for today’s train volume
- Piecemeal attempts to fix problem over the years unsuccessful
The problem

- Tracks 1, 2 and 3 are source of poor air quality at concourse
- Tunnel captures and concentrates emissions
- Train piston effect, atmospheric conditions and buoyancy forces push diesel exhaust up stairs
Existing Ventilation
Current ventilation system

- Exhaust system
- 3 fan structures
- 2 air-intake structures

Original Ventilation System Operation

![Image of ventilation system map]

- **West Newton Street Fans**
- **Holyoke Street Air Intake**
- **Yarmouth Street Fans**
- **Dartmouth Street Air Intake**
- **Back Bay Station Fans**

Image courtesy of Google Maps
Ventilation Structures

- West Newton Street Fans
- Yarmouth Street Fans
- Back Bay Station Fans
- Dartmouth Street Intake
- Holyoke Street Intake

Image courtesy of Google Maps
Back Bay Station Fans

- 2 exhaust fans located in stacks connected to ductwork above platforms
- Fans are not run due to concerns over condition of ductwork
### Dartmouth Street Intake

- 3 at-grade intakes each controlled by a pair of roller shutters
- Shutter drives do not work and must be replaced
- Shutters currently set in open position
Yarmouth Street Fans

- 2 exhaust fans located in underground fan room
- Discharge through shaft disguised as end unit townhouse
- Fans are not run – reason(s) to be investigated
Holyoke Street Intake

- Large elevated intake controlled by 3 roller shutters below grade
- Shutter drives do not work and must be replaced
- 2 shutters currently set in open position
West Newton Street Fans

- 2 exhaust fans located in underground fan room
- Discharge through shaft disguised as end unit townhouse
- Fans are run by Station Inspector ‘as-needed’
- Only fans currently run on regular basis
Ventilation Improvements
The solution

- Rehabilitate existing system and return to service
- Pressurize stairs to prevent migration of diesel exhaust to concourse
- Install jet fans in tunnel to flush platforms with fresh air
Existing system rehab

- Test and rehab fans
- Rehab roller shutters and replace drives
- Remove corroded platform ductwork
- Investigate Yarmouth Street fan operation
Stair pressurization

- Install doors at concourse to enclose stairs to platform
- Positively pressurize enclosures so airflow is from stair to platform
Pressurization concept

- Variable speed control to maintain constant enclosure pressure
- Air supplied to enclosure heated in winter for comfort
Tunnel jet fans

- Install jet fans in Southwest Corridor Tunnel
- Ventilate from east to west to draw fresh air through platform
- Remove or relocate Back Bay Station fans
Jet fans

- Unducted axial-flow fans
- Approx. 3’ dia.
- Up to 18 total
- Reversible operation
- High temperature rated for smoke control

Installation concept
Construction packages

- Package 1 – Stair pressurization
  Schedule:
  - Design started July 2016
  - Design complete spring 2017
  - Construction begins mid-2017
  - Construction complete mid-2018

- Package 2 – Rehabilitation and jet fan ventilation
  Preliminary schedule:
  - Design starts late 2016
  - Design complete end 2017
  - Construction begins spring 2018
  - Construction complete spring 2019
Back Bay Station Ventilation Improvements

Public Briefing

Massachusetts Bay Transportation Authority
STATION RENOVATION GOALS

1. CREATE A FIRST-CLASS TRANSIT HUB OF “AIRPORT QUALITY”
2. IMPROVE CUSTOMER EXPERIENCE AND ACCESS
3. GENERATE REVENUE TO SUPPORT STATION OPERATIONS
4. ALLOW MBTA TO FOCUS ON TRAIN OPERATIONS; BOSTON PROPERTIES TO FOCUS ON PROPERTY MANAGEMENT
BACK BAY STATION NOW
ENTRY AND CIRCULATION THROUGH LOW, DARK ARCades
OVERSIZED ORANGE LINE AREA LIMITS CIRCULATION THROUGH STATION
ISOLATED AND CRAMPED WAITING AREAS
POOR VENTILATION

EXISTING PLAN
NEW ENTRIES INTO CENTRAL HALL
IMPROVE CIRCULATION, EGRESS, AND TAKE ADVANTAGE OF GREAT CIVIC SPACE

INCREASED AND BETTER DISTRIBUTED ORANGE LINE FARE GATES IMPROVE TRACK ACCESS

IMPROVED WAITING AREAS AND DISTRIBUTED BENCHES

AMTRAK AND KEOLIS TICKETING CENTRALLY LOCATED TO BE MORE VISIBLE

IMPROVED MBTA FUNCTIONS AND OFFICES

NEW EXPANDED AND DISTRIBUTED RETAIL TO ACTIVATE CENTRAL HALL AND IMPROVE STREETSCAPE ENVIRONMENT

NEW PUBLIC ART STRATEGY
EXISTING - 5,700 SF

PROPOSED - 2,500 SF
(56% DECREASE)

ORANGE LINE ENCLOSURE
PRIMARY CIRCULATION SPACE

EXISTING - 12,100 SF

PROPOSED - 12,900 SF
(7% INCREASE)
EXISTING - 3,050 SF

PROPOSED - 5,150 SF
(69% INCREASE)

DEDICATED WAITING SPACE
EXISTING - 165 LF

PROPOSED - 250 LF + 160 INDIVIDUAL SEATS
(52% INCREASE IN LF; PLUS 160 SEATS)
EXISTING - 1,950 SF

PROPOSED - 7,550 SF
(287% INCREASE)

HEATED/COOLED SPACE
<table>
<thead>
<tr>
<th>AREA COMPARISON SUMMARY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MBTA USES</strong></td>
</tr>
<tr>
<td>AUTOMATED FARE COLLECTION</td>
</tr>
<tr>
<td>TICKETING MACHINES</td>
</tr>
<tr>
<td>ORANGE LINE ENCLOSURE</td>
</tr>
<tr>
<td>PEDAL AND PARK BIKE PARKING</td>
</tr>
<tr>
<td><strong>PUBLIC USES</strong></td>
</tr>
<tr>
<td>PRIMARY CIRCULATION SPACE</td>
</tr>
<tr>
<td>DEDICATED WAITING SPACE</td>
</tr>
<tr>
<td>FIXED SEATING SPACE</td>
</tr>
<tr>
<td>HEATED/COOLED SPACE</td>
</tr>
<tr>
<td><strong>RETAIL USES</strong></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
EXISTING STATION ENTRY (WEST)

» EXTERIOR CONCRETE HAS BEEN CLEANED
» EXTERIOR ARCHES TO BE RESTORED SHORTLY
» MORE WELCOMING DARTMOUTH STREET ENTRANCE
» DOUBLE NUMBER OF ENTRY DOORS
» ENTRIES RELOCATED TO CENTER
» IMPROVED STREETScape AND PEDESTRIAN ENVIRONMENT
ARRIVAL FROM DARTMOUTH STREET IS VISUALLY CUT OFF FROM TRAINS AND ORANGE LINE
POOR WAYFINDING AND LIGHTING

EXISTING STATION HALL
» NEW FLOOR FINISHES AND LIGHTING
» EASIER WAYFINDING
» IMPROVED CUSTOMER COMFORT IN CENTRALLY LOCATED WAITING AREA
» IMPROVED AMENITIES

PROPOSED STATION HALL
VISUALLY CLUTTERED
DIFFICULT WAYFINDING
DETERIORATED GLASS
BLOCK WINDOWS, GLULAM
ARCHES, AND CONCRETE
SURFACES

EXISTING STATION HALL
» Appropriately sized fare enclosure
» Increased number of fare gates
» Visible notification boards and clear wayfinding
» Glass block windows, glulam arches, and concrete surfaces cleaned and repaired

Proposed Station Hall: Arrowstreet
» Unused and wasted space
» Visual and circulation obstructions
» Uninviting appearance

Existing station hall
» TICKETING IN A PROMINENT AND CENTRAL LOCATION
» IMPROVED CIRCULATION
» RETAIL AND TRANSIT FUNCTIONS ACTIVATE CENTRAL HALL
STATION RETAIL PRECEDENTS

CONCOURSE RETAIL

MARKETPLACE RETAIL
“NEONS FOR BACK BAY / SOUTH END STATION” THE ORANGE LINE
ARTIST: STEPHEN ANTONAKOS / 1990
Asa Philip Randolph (1889-1979) was a union organizer and early civil rights leader. In 1925 he organized the Brotherhood of Sleeping Car Porters, a union that gained better pay and working conditions for its members from the Pullman Company, operator of the then common railway sleeping cars. During World War II Randolph led a movement that achieved the ban on racial discrimination in war industries. Randolph also led the wartime movement to end racial segregation in the armed forces, an aim that was finally achieved in 1948. The bronze portrait of a seated Randolph is nine feet high. It is by the sculptor, Tina Allen (1949-2008). It was dedicated in 1986.

A. PHILIP RANDOLPH SCULPTURE
ARTIST: TINA ALLEN / 1986
INSIDE/OUT PROJECT
ARTIST: JR / OCTOBER 2015

Inspired by JR’s large-format street “pastings”, INSIDE OUT gives everyone the opportunity to share their portrait and make a statement for what they stand for. It is a global platform for people to share their untold stories and transform messages of personal identity into works of public art. Each INSIDE OUT group action around the world is documented, archived and exhibited online. Over 260,000 people have participated in 129 countries. The INSIDE OUT project has traveled from Ecuador to Nepal, from Mexico to Palestine, inspiring group actions on varied themes such as hope, diversity, gender-based violence, climate change.
INSIDE/OUT PROJECT
ARTIST: JR / OCTOBER 2015

PUBLIC ART PROGRAM
ADVERTISING PROGRAM - EXISTING
PROPOSED RESTROOM ENTRY

START: FALL / WINTER 2016
PROPOSED RESTROOMS
START: FALL / WINTER 2016
THANK YOU!