Fairmount Line Corridor Improvements Project

MBTA Contract No.G74PS01 Amendment 8

Service Enhancement Study

Final Report

April 2008

Prepared for:

Massachusetts Bay Transportation Authority

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Fairmount Line Service Improvements: Amendment 8
INTRODUCTION AND EXECUTIVE SUMMARY

As the MBTA continues the program initiated in 2002 to improve facilities, infrastructure and service on its Fairmount commuter rail line, planners and operations management want to analyze options for service improvements that could complement the new facilities when they are complete. The committed program of improvements includes:

- replacement of six substandard bridges,
- signal enhancements necessary to improve service reliability and to allow the bridges to be replaced with a minimum impact on rail traffic,
- upgrade of Upham's Corner and Morton Street stations to provide full length high level platforms, and
- construction of up to four new stations at
    - Newmarket/South Bay Center,
    - Four Corners/Geneva,
    - Talbot/Codman Square and
    - Blue Hill/Cummins Highway.

The MBTA Development and Construction Departments asked Jacobs Edwards and Kelcey (JEK) to explore the feasibility, impacts and cost effectiveness of potential service enhancement options that could be implemented within the operational constraints of equipment availability, South Station capacity, and layover requirements for South Side commuter rail operations. Options for consideration included:

- additional peak service,
- longer service day,
- weekend service,
- additional or improved midday and evening service, and
- refurbished coaches with new door configuration to reduce station dwell times.

The analysis coordinated with a separate study funded by Executive Office of Transportation (EOT). The EOT study focused on how the introduction of self-powered rail cars (commonly called diesel multiple units or DMUs) might enhance service delivery on the upgraded Fairmount Line. This separate study was also conducted by JEK. The findings relative to DMU options are presented in a separate report.

Key assumptions and constraints established at the outset of the study included:

- All ridership and services in the 2025 CRINA forecast are included in the study baseline capacity requirements. Pertinent new services include full Greenbush Service, expanded Rhode Island services, and several additional peak trains on most existing lines to respond to increased ridership demand. The CRINA forecasts do not include any new South Coast Rail services.
- All service would be provided with push-pull train sets.

- JEK should consider the option of refurbishing a fleet of existing single level coaches to decrease station dwell times at high level platforms by providing two end doors and a double middle door with automatic remote operation.
- JEK should assume that all stations are upgraded to allow for high level boarding. (Presently the MBTA has no formal plans to build full length high level platforms at Readville or Fairmount stations.)
- JEK should explore the possibility of relocating Readville Station off the route shared with Franklin trains allowing Franklin trains to pass Fairmount trains turning at Readville Station.
- JEK was instructed to develop options that explored the following features:
  - Longer hours of service including adding two late night trips at 10:40pm and 11:59pm similar to service on other lines.
  - Adding weekend service down to the Route 128 station on the Northeast Corridor (NEC).
  - Adding peak service to reduce headways to 20 minutes and extending peak service to 9:30am.[1]
  - Building stops into existing deadhead[2] and Franklin trains in the midday period to increase frequency from current hourly service.
- JEK was instructed to reiterate and reinforce the need for maintenance and storage capacity if any new units are added to the fleet.

South Station Capacity – Within the constraints of current and planned operations[3] through 2025, South Station has the theoretical capacity to host 15-minute peak headway service on the Fairmount Line, making only minor adjustments to other services. Given other plans and services, South Station clearly does not have the capacity to host 12- or 10-minute peak headways. Recognizing frequent perturbations in service, MBTA Railroad Operations is reluctant to allocate all reserve terminal capacity to the Fairmount line. In deference to this concern, no peak headways shorter than 20-minutes were considered in this study.

Station Dwell Times with High Peak Period Travel Volumes - Forecasts of station dwell times based on 2002 ridership estimates found that peak period trip times would increase due to

[1] Twenty minute peak headways are operated on some of the more heavily traveled segments of the MBTA commuter rail network but have not been offered on the Fairmount Line in recent years. The New Haven railroad's 1926 timetable for the line offered ~15 minute peak headways.

[2] Deadheads are empty train movements, usually to move a train set to or from a storage yard.

[3] Assumed future service levels were those described in the MBTA's "Commuter Rail Infrastructure Needs Assessment" (CRINA), prepared for MBTA Planning by Vanesse Hangen Brustlin and KKO & Associates in April 2004. The 2010 "base case" includes Greenbush service and 11 additional peak trains on the Middleborough/Lakeville, Plymouth/Kingston, Franklin, Attleboro/Stoughton, and Framingham/Worcester services to respond to forecast growth. The 2025 "base case" includes 10 peak trains on the Greenbush service and 24 additional peak trains to respond to forecast growth on the Middleborough/Lakeville, Plymouth/Kingston, Franklin, Attleboro/Stoughton, Framingham/Worcester and Needham lines. Service to Fall River/New Bedford and other services in the planning and evaluation stage were not assumed to be in operation.

long dwell times for large volumes of passengers boarding through manually operated end vestibule doors. For existing Fairmount Line service, peak period dwell times are estimated to total approximately 5 minutes of the 23 minute overall running time. With the addition of the four new stations and increased ridership, total running times would increase to 30 minutes due to increased dwell time. Two measures could be taken to reduce the future dwell times. JEK found that running times could be substantially reduced by increasing the numbers of doors available for boarding and alighting. The introduction of coaches with double-wide, center-point doors in addition to the current end-point doors, and automatic operation of all doors would reduce running times on peak Fairmount trains by two to three minutes per trip.

Equipment Maintenance and Storage Capacity - Capacity to store and maintain commuter rail rollingstock is in acutely short supply for MBTA South Station services. The introduction of additional equipment and train sets to enhance service on the Fairmount line would add to this problem unless new capacity is developed. While it is beyond the scope of this project to solve this capacity problem, it is obvious that introduction of a new fleet, especially a fleet of specialized "Fairmount coaches" would further tax capacity and add complexity to an already severe capacity problem. Consequently, a 15% contingency premium is added to the operating costs of any options that require specialized equipment. A rough estimate of cost to develop a new storage and maintenance capacity near Readville is also included in the capital cost estimates for all options requiring new rollingstock.

Preliminary Options - JEK prepared a baseline and nine preliminary service alternatives for the improved Fairmount line.

- Alternatives P1 through P3 offered improved peak service with the addition of dedicated trainsets.
- Alternatives O1 through O4 offered improved off-peak service by better utilizing existing train movements on the line or by adding a dedicated trainset to the line.
- Options W1 and W2 provided weekend service to the Route 128 station on Saturdays and Sundays using one or two train sets, respectively.

Based on review of the preliminary improvement options, MBTA stakeholders and JEK collaborated to define two service packages for detailed analysis, each including a mix of peak, off-peak and weekend improvement options. Seven service packages were developed for detailed evaluation.

Options for Detailed Evaluation – The seven packages for detailed evaluation included a baseline and two principal improvement packages each with three minor variations that impact ridership and costs.

- The ***Baseline*** reflects existing 2006 service with the addition of Greenbush deadheads and four new stations at Newmarket, Four Corners, Talbot Avenue and Blue Hill.

- ***Package 1*** primarily consists of off-peak service improvements. Key weekday features include: peak headway of approximately 30 minutes combined with off peak service improvements including extended hours of service and an additional, dedicated off-peak

consist (O4). Saturday service would be provided with 90 minute headways. No Sunday or Holiday service is provided.

- ***Package 2*** provides both peak and off-peak service improvements. Weekday service enhancements include: 20 minute peak headways combined with off peak service improvements including extended hours of service and an additional, dedicated off-peak consist. Saturday, Sunday, Holiday service would be provided with 90 minute headways.

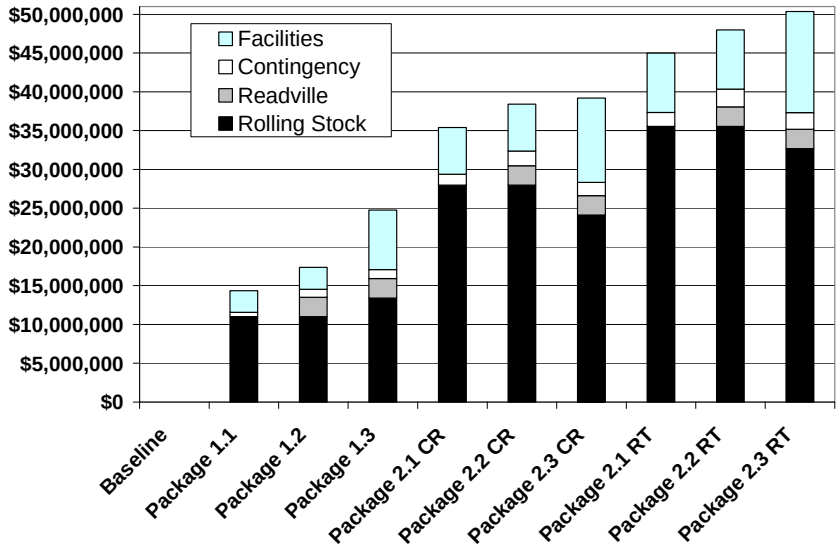
Each improvement package was tested under three sets of operating assumptions:

- Current Readville station configuration and current coach door configuration
- Alternative Readville station configuration and current coach door configuration
- Alternative Readville station configuration and alternative coach door configuration

Ridership and Running Times - Ridership estimates for evaluation purposes were derived from 2007 CTPS forecasts. Running time estimates were derived using earlier 2002 CTPS forecasts.

Capital Costs – Estimated capital costs include retrofitting coaches, purchasing new equipment, reconstructing Readville station and an allowance for maintenance and storage facilities. As discussed in Section 2.3, there is an immediate need for additional Southside storage and maintenance facilities. Planned increases in South Station services will intensify this need regardless of any increase to Fairmount services. While increases to Fairmount services would require additional Southside storage and maintenance facilities, it is beyond the scope of this study to identify a solution to this problem. The capital estimates assume the parcel adjacent to Readville station would be procured and developed for storage and maintenance of Fairmount trains. The estimated capital costs do not include the already planned and funded work on bridges and stations.

Figure X.1: Estimated Capital Cost of Implementation

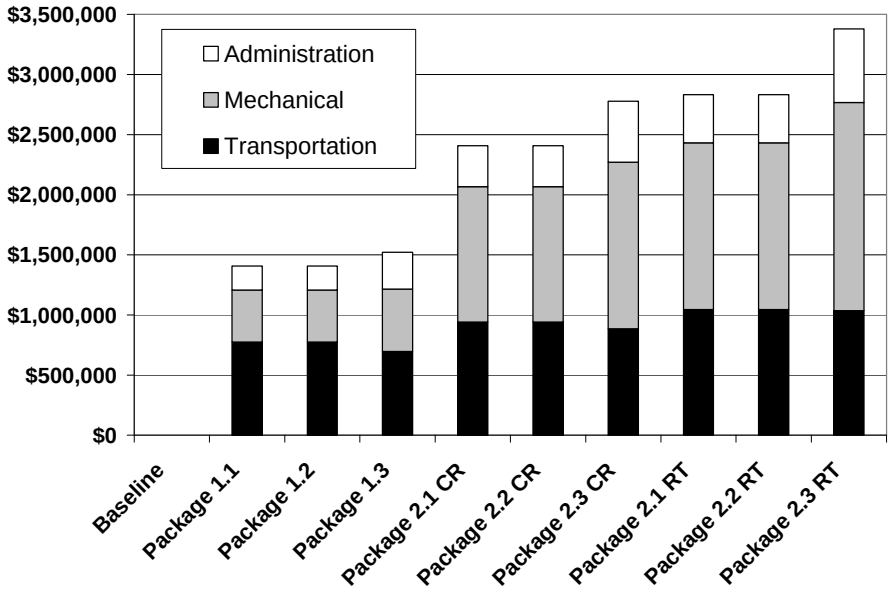


The packages with 20 minute peak headways and conventional coaches would require three new locomotives and seven to ten new bi-level coaches. The 20 minute headway packages with specially equipped coaches would require two new locomotives and 15 to 19 specially outfitted single level coaches. The single level coaches would include 13 rehabilitated 300 series cars modified with three automatically operated doors.

The packages with 30 minute peak headways would require one new locomotive and three new bi-level coaches or ten rehabilitated 300 series cars.

The number of new units in the MBTA fleet required to implement the various options ranged from one units (one locomotive) to 13 units (three locomotives and 10 coaches) Estimated capital costs (including rolling stock and other costs) for the various alternatives ranged between $11 million and $51 million.

Figure X.2:
Estimated Annual Incremental Operating Cost



Operating Costs - Estimates of incremental operating costs were developed for each package. All estimates of incremental cost estimates were estimated relative to the operating costs of the Baseline service. Estimated incremental operating costs for the various services ranged between $1.4 and $3.4 million.

Table X.1
Estimated Capital and Incremental Operating Costs

Package	Description		Estimated Capital Costs (Millions)	Annual Incremental Operating Costs (Millions)
1.1	Baseline with off peak service improvements: Extended hours of service, short midday and evening headways	Current Readville station Current coach doors	$14.4	$1.4
1.2		Alt. Readville station Current coach doors	$17.4	$1.4
1.3		Alt. Readville station Alt. coach doors	$24.7	$1.5
2.1 CR	Package 1 with 20 minute peak headways and commuter rail fares	Current Readville station Current coach doors	$35.4	$2.4
2.2 CR		Alt. Readville station Current coach doors	$38.4	$2.4
2.3 CR		Alt. Readville station Alt. coach doors	$39.2	$2.8
2.1 RT	Package 1 with 20 minute peak headways and rapid transit fares	Current Readville station Current coach doors	$45.0	$2.8
2.2 RT		Alt. Readville station	$48.0	$2.8

Table X.1 Estimated Capital and Incremental Operating Costs				
Package	**Description**		**Estimated Capital Costs** (Millions)	**Annual Incremental Operating Costs** (Millions)
	Package 1 with 20 minute peak headways and rapid transit fares	Current coach doors		
2.3 RT		Alt. Readville station Alt. coach doors	$50.3	$3.4

Evaluation – The nine packages were ranked on two evaluation criteria that integrate information from the passenger and revenue forecasts with estimates of operating and capital costs.

1. Capital Cost/Incremental Passenger Trip
2. Operating Cost/Incremental Rider

Incremental Capital Cost per Incremental Passenger Trip - Capital costs per incremental passenger trip range between $22,000 and $51,000. The alternatives with the most favorable rankings all feature 20-minute headways on the line. Alternatives that use rapid transit fares tend to attract more riders lowering the forecast capital cost per rider.

Table X.2: Incremental Capital Cost per Incremental Rider	
Package 1.1	$29,579
Package 1.2	$35,754
Package 1.3	$50,938
Package 2.1 CR	$24,587
Package 2.2 CR	$26,671
Package 2.3 CR	$27,228
Package 2.1 RT	$22,054
Package 2.2 RT	$23,525
Package 2.3 RT	$24,681

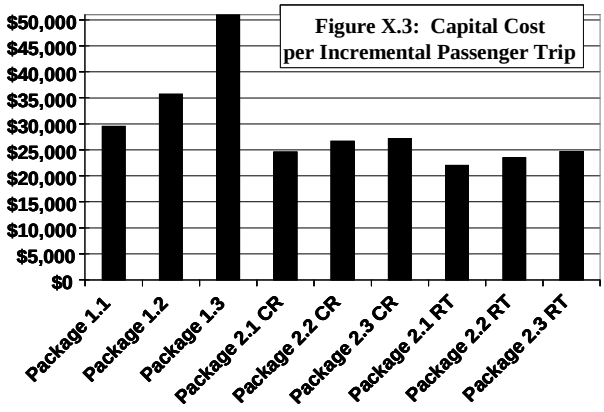
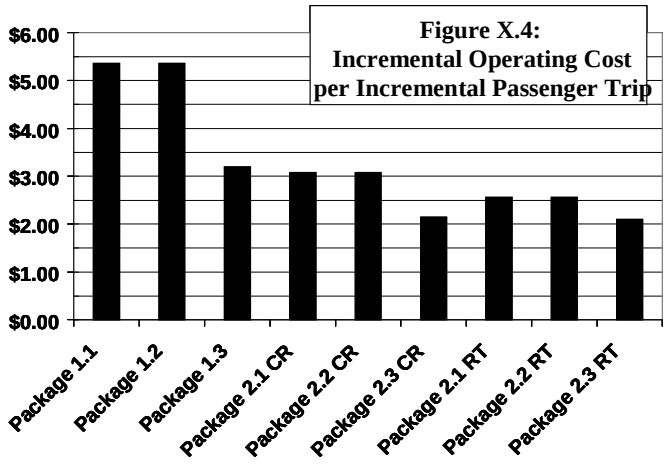


Figure X.3: Capital Cost per Incremental Passenger Trip

Incremental Operating Cost per Incremental Passenger Trip – Incremental Operating Costs per Incremental Passenger Trip range from $2.10 to $5.36. As with the previous evaluation measure, the options that feature 20 minute peak headways attract the most riders and exhibit the most attractive operating cost/passenger ratios. Options featuring rapid transit fares are forecast to be somewhat more attractive than options charging a commuter rail fare due to higher ridership levels.

Table X.3: Incremental Operating Cost per Incremental Passenger Trip	
Package 1.1	$5.36
Package 1.2	$5.36
Package 1.3	$3.20
Package 2.1 CR	$3.08
Package 2.2 CR	$3.08
Package 2.3 CR	$2.15
Package 2.1 RT	$2.56
Package 2.2 RT	$2.56
Package 2.3 RT	$2.10



METHODOLOGY

JEK followed a five step process to conduct the service improvement study.

Step 1: Kick off Meeting - JEK met with MBTA stakeholders to review objectives, discuss methods, collect operating data and review/establish assumptions.

Step 2: Update and Validate Tools - JEK analysts updated and validated baseline stringlines, equipment cycles, crew runs, crew costs, and station platform track occupancy diagrams from the MBTA's 2005 Commuter Rail Infrastruture Need Assessment (CRINA) study and the MBTA's 2002 Fairmount Service Improvement Study.

Step 3: Develop and Screen Preliminary Options – JEK staff used the baseline tools to explore options for development of up to eight initiatives to improve Fairmount Service. JEK presented a summary assessment of the eight options to MBTA officials, who then designated two packages (each with three variations) for more detailed analysis.

Step 4: Detailed Analysis - JEK developed operational feasibility and cost impacts for the six combinations of options and variants. Passenger forecasts developed for the EOT study by CTPS were used to estimate the potential ridership benefits of each option and variant.

Step 5: Final Technical Report – Key findings from each step of the analysis were documented in a final technical report.

This final technical report presents a step-by-step record of the MBTA Fairmount Service Enhancement Study, including pertinent findings. The report begins, in Section 1, with an account of the assumptions established during Step 1. Section 2 describes the existing physical and operational conditions as determined under Step 2. The eight preliminary improvement options designed during Step 3 are presented in Section 3 of this report along with a discussion of the efforts that would be required to provide each service option. Section 4 concludes the report with a quantitative evaluation of the two refined service packages, conducted under Step 4, including estimated ridership revenues and costs.

1. KICK OFF MEETING

JEK conferred with MBTA planners, railroad operations management and construction management to review assumptions and constraints in November 2006.

- All ridership and services in the 2025 CRINA forecast were to be included in the study baseline for capacity at South Station and along the Fairmount Line. Pertinent services included in the CRINA forecasts included full Greenbush Service, expanded Rhode Island services, and several additional peak trains on most existing lines to respond to increased ridership demand. (NOTE: The CRINA forecasts do not include any new South Coast Rail services.)

- All service would be provided with push-pull train sets.

- JEK should consider the option of refurbishing a fleet of existing single level coaches to decrease station dwell times at high level platforms by providing two end doors and a double middle door with automatic remote operation.

- JEK should assume that all stations are upgraded to allow for high level boarding. (Presently the MBTA has no formal plans to build full length high level platforms at Readville or Fairmount stations.)

- JEK should explore the possibility of relocating Readville Station off the route shared with Franklin trains allowing Franklin trains to pass Fairmount trains turning at Readville Station.

- The minimum Fairmount headway to be evaluated in this study is 20 minutes.[4]

- JEK was instructed to develop options that explored the following features:
  - Longer hours of service including adding two late night trips at 10:40pm and 11:59pm similar to service on other lines.
  - Adding weekend service down to the Route 128 station on the Northeast Corridor (NEC).
  - Adding peak service to reduce headways to 20 minutes and extending peak service to 9:30am.
  - Building stops into existing deadhead[5] and Franklin trains in the midday period to increase frequency from current hourly service.

- JEK was instructed to reiterate and reinforce the need for maintenance and storage capacity if any new units are added to the fleet.

2. VALIDATE AND UPDATE TOOLS: KEY FINDINGS

By November 2006, work on the related EOT DMU study had been underway for several weeks. Work to validate and update scheduling tools had been largely completed under the auspices of that contract. The update of the tools in the context of improving peak service on the Fairmount Line yielded two key findings for the MBTA study. The findings from the EOT study are summarized below in Sections 2.1 and 2.2, and were discussed at the Kick Off meeting in November 2006.

[4] JEK should discount analyses prepared for the EOT study that indicate that 15 minute peak headways on the Fairmount Line could be accommodated at South Station with only minimal impacts on the schedules for other services. (MBTA operating officials were concerned with leaving capacity for perturbations in service and a possible South Coast Rail initiative that would require capacity, precluding Fairmount frequency upgrades to 15 minute peak headways.)

[5] Deadheads are empty train movements, usually to move a train set to or from a storage yard.

The discussion of equipment maintenance capacity, presented in Section 2.3, was adapted from the 2004 CRINA report.

2.1. South Station Capacity

Analyses conducted for EOT indicated that 15 minutes headways on the Fairmount Line could be accommodated at South Station with only minor impacts on the schedules of other services. Impacts were forecast for both 2010 and 2025 CRINA schedules. JEK conducted this analysis for periods when South Station is busiest: between 6:00 am and 10:00 am, and between 3:00 pm and 8:00 pm.

For the nine hour analysis period in 2010, 15 minute Fairmount headways produced eight conflicts with other services. These conflicts consist of less than desired train spacings on the Fairmount Line (conflicts with Franklin Line trains and deadheads), conflicts entering and departing from South Station, and insufficient platform space. As summarized in Table 2.1, and described below, these conflicts can be addressed with relatively minor schedule changes.[6] Fairmount trips are designated with a capital D at the beginning of their trip number.

Due to the limited number of crossovers and the density of peak service under consideration, the team's options for the operation of deadhead and express trains were limited. In scheduling deadhead trips, it was assumed that the impacts of leaving a deadhead to follow a local train would be minimal. Express trains were not scheduled to "run around" local trains ahead. Instead, local trains were scheduled to avoid impacts on revenue express operations.

Conflict 1: Fairmount Train D756 would be scheduled to arrive at South Station at 7:45 am when there would not be sufficient platform time available. This conflict could be resolved by moving the departure of Train 803 back by 3 minutes from 6:43 am to 6:40 am, or by moving the arrival of Fairmount Train D756 forward from 7:45 am to 7:48 am. If the arrival of Train D756 were moved forward, then the departure of the following outbound departure of Fairmount Train D757 would also need to be moved forward from 6:55 am to 6:58 am.

Conflict 2: Both Train 033 to Kingston and Train D759 to Fairmount would leave South Station at 7:20 am, and would utilize the same switch departing the station. The conflict could be resolved by shifting the departure of either trip forward or back by one minute.

Conflict 3: The deadhead of Train 804 (from Providence) to Readville is scheduled to depart from South Station at 7:57 am, which would be only 2 minutes after Train D759 to Fairmount, and three minutes less than the desired spacing of 5 minutes. This conflict could be resolved by delaying the deadhead trip by 3 minutes (and operating at less than maximum speed to avoid overtaking Train D759).

[6] There would also be other solutions beyond those presented herein. For example, shifting a Franklin train at the beginning of the morning peak could allow Fairmount service to begin at a more favorable time in terms of the number of conflicts encountered later in the peak. Removing a critical obstacle may allow the schedule to be recreated in a way that reduces the number of conflicts. Therefore, the scenario presented in this document represents an upper bound for the number of conflicts that would need to be resolved.

Conflict 4: The deadhead of Train 908 (from Stoughton) to Readville is scheduled to depart from South Station at 9:13 am, which would be only 3 minutes after Train D775 to Fairmount, and two minutes less than the desired spacing of 5 minutes. This conflict could be resolved by delaying the deadhead trip by 2 minutes (and operating at less than maximum speed to avoid overtaking Train D775).

Conflict 5: Between 4:20 pm and 4:30 pm, there would be no platform space available for the departure of outbound Train D801. An existing Franklin Branch train currently departs South Station at 4:30 pm providing local service on the Fairmount Branch (Train 799). Using this existing trip as the scheduled 4:30 pm departure, D801, eliminates the need to move any trains, but leaves the service short of one inbound trip in the afternoon (D800).

Conflict 6: Inbound Train 794 from Forge Park operates express on the Fairmount Line and is scheduled to arrive at South Station at 5:02 pm and then layover there until 5:40 pm. The 5:02 pm arrival is only three minutes before the arrival of Train D806 from Readville, which is less than the desired 5 minute spacing. Given Train 794's long layover at South Station, the conflict would be resolved by delaying the trip's departure from Forge Park by 8 minutes from 4:01 pm to 4:09 pm, in which case it would be at least 5 minutes behind Train D806. Alternatively, Train D806 could depart from Readville 2 minutes earlier.

Conflict 7: Inbound Train 796 from Norwood Central operates express on the Fairmount Line,and is scheduled to arrive at South Station at 6:04 pm, or only one minute before Train D814 from Readville. This conflict could be resolved by moving the Norwood Central round trip forward by 4 minutes, in which case outbound Train 737 would depart South Station at 4:46 pm instead of 4:50 pm, and inbound Train 796 would depart from Norwood Central at 5:31 pm instead of 5:35 pm. Alternatively, Train D814's departure from Readville could be moved back by 6 minutes or forward by 4 minutes. If moved forward by 4 minutes, then the departure of outbound Train D815 from South Station would also have to be moved forward.

Conflict 8: Similar to conflicts 6 and 7, Inbound Train 798 from Forge Park runs express on the Fairmount Line and is scheduled to arrive at South Station at 6:35 pm, which would place it on the Fairmount Line at the same time as Train D818 from Readville. To provide the desired 5 minutes of spacing, Train 798's departure from Forge Park could be pushed back from 5:27 pm to 5:32 pm. Alternatively, the arrival time of Train D818 at South Station could be moved forward by 5 minutes from 6:35 pm to 6:40 pm.

Table 2.1: 2010 Schedule Conflicts and Potential Resolutions			
Conflict	Issue	Time at South Station	Potential Resolution
1	Unavailability of platform space for inbound Train D756 and Outbound Train D757	6:45 am to 6:48 am	Shift departure of Providence Train 803 earlier by 3 minutes, or shift arrival of Train D756 by 3 minutes later.
2	Train 033 to Kingston and Train D759 to Readville scheduled to depart South Station at same time through same switch.	Both depart at 7:10 am	Shift departure of either train forward or back 1 minute.
3	Insufficient time on Fairmount Line between Train D759 and deadhead of Train 804 to Readville.	Depart 7:55 am & 7:57 am	Delay deadhead train by 3 minutes.
4	Insufficient time on Fairmount Line between Train D775 and deadhead of Train 908 to Readville.	Depart 9:10 am & 9:13 am	Delay deadhead train by 2 minutes.
5	Unavailability of platform space for inbound Train D800 and Outbound Train D801	4:32 pm to 4:35 pm	Use existing Train 799 as Fairmount service D801. Eliminate reverse peak counterpart D800.
6	Insufficient time on Fairmount Line between Train 794 from Forge Park and Train D804 from Readville.	Arrive 5:02 pm & 5:05 pm	Delay departure of Train 794 from Needham by 8 minutes, or move departure of Train D804 2 minutes earlier.
7	Insufficient time on Fairmount Line between Train 796 from Norwood Central and Train D814 from Readville.	Arrive 6:04 pm & 6:05 pm	Move departure of Norwood Central round trip (Trains 737 and 796) forward by 4 minutes, or move departure of Fairmount Train D814 back by 6 minutes or forward by 4 minutes.
8	Insufficient time on Fairmount Line between Train 798 from Forge Park and Train D818 from Readville.	Both arrive at 6:35 pm	Delay departure of Train 798 from Forge Park by 5 minutes, or move departure of Train D812 5 minutes earlier.

Consistent with the overall findings of the CRINA study, the 2025 base case which includes 13 more peak trips is found to be more “fluid” than the 2010 case. Consequently, the additional Fairmount service produced fewer conflicts in 2025 than in 2010. For the nine hour analysis period, fifteen minute Fairmount headways produced seven conflicts with other services. These conflicts consist of less than desired train spacings on the Fairmount Line (conflicts with Franklin Line trains and deadheads), and insufficient platform space. As summarized in Table 2.2, and described below, these conflicts can be addressed by making relatively minor schedule changes.

Conflict 1: Inbound Fairmount Train D762 would be scheduled to arrive at 7:30 am, but at that time, no platform is available with sufficient time to turn the train and then allow 5 minutes of clear time on the platform. However, Amtrak Train 2155 departs from Track 9 at 7:26 am. Fairmount Train D762 could use this track if its arrival time was pushed back by one minute to 7:31 am. This would also push back the departure of outbound Fairmount Train D763 by one minute from 7:40 to 7:41 am.

Conflict 2: The deadhead of Train 804 (from Providence) to Readville is scheduled to depart from South Station at 7:57 am, which would be only 2 minutes after Train D759 to Fairmount, and three minutes less than the desired spacing of 5 minutes. This conflict could be resolved by delaying the deadhead trip by 3 minutes (and operating at less than maximum speed to avoid overtaking Train D759).

Conflict 3: The deadhead of Train 908 (from Stoughton) to Readville is scheduled to depart from South Station at 9:13 am, which would be only 3 minutes after Train D775 to Fairmount, and two minutes less than the desired spacing of 5 minutes. This conflict could be resolved by delaying the deadhead trip by 2 minutes (and operating at less than maximum speed to avoid overtaking Train D775).

Conflict 4: Inbound Fairmount Train D798 would be scheduled to arrive at 4:00 pm, and then depart as Fairmount Train D799 at 4:10 pm. However, there is not available platform space at this time. One reason that this is the case is that two platforms are occupied by two sets that layover at South Station for long periods (Set D, which deadheads from Readville and then occupies Track 4 until Train 815 departs at 4:35 pm, and Set N, which occupies Track 6 from 3:30 pm to 4:30 pm). Platform space could be made available to Fairmount Trains D798 and D799 by delaying the arrival of deadhead Train 815X from Readville until between 4:15 and 4:25 pm. It could also be made available by sending Set N to Southampton Street following its arrival at 3:30 pm and then back to South Station between 4:10 and 4:20 pm.

Conflict 5: Fairmount Train D802 would be scheduled to arrive at South Station at 4:30 pm, when there would not be an available platform. Platform space could be made available by moving up the departure of Train 799 to Franklin by 5 minutes from 4:30 pm to 4:25 pm. Alternatively, the arrival of Fairmount Train D802 could be pushed back by 5 minutes so that it would arrive at 4:35 pm. In this case, the departure of outbound Train 803 would also be pushed back by 5 minutes (from 4:40 to 4:45 pm).

Conflict 6: Inbound Fairmount Train D806 and the deadhead for outbound Train 719 to Franklin would both be scheduled to operate on the Fairmount Line at the same time and arrive at South Station at 5:00 pm. The conflict could be eliminated by operating the deadhead Train 719X into South Station approximately 5 minutes earlier.

Conflict 7: Inbound Fairmount Train D814 and the deadhead for outbound Train 821 to Providence would both be scheduled to operate on the Fairmount Line at the same time and

arrive at South Station at 6:00 pm. The conflict could be eliminated by operating the deadhead Train 821X into South Station approximately 5 minutes earlier.

Table 2.2: 2025 Schedule Conflicts and Potential Resolutions

Conflict	Issue	Time at South Station	Potential Resolution
1	Lack of available platform space for arriving Fairmount Train D762	Arrive at 7:30 am; depart at 7:40 pm	Delay arrival of inbound Train D762 and departure of outbound Train D763 by 1 minute.
2	Insufficient time on Fairmount Line between Train D759 and deadhead of Train 804 to Readville.	Depart 7:55 am & 7:57 am	Delay deadhead train by 3 minutes.
3	Insufficient time on Fairmount Line between Train D775 and deadhead of Train 908 to Readville.	Depart 9:10 am & 9:13 am	Delay deadhead train by 2 minutes.
4	Lack of available platform space for arriving Fairmount Train D798 and subsequent departure of Train D799.	Arrive at 4:00 pm; depart at 4:10 pm	Delay arrival of deadhead Train 815X, or move Set N to Southampton Street to eliminate long layover at South Station.
5	Lack of available platform space for arriving Fairmount Train D802.	Arrive at 4:30 pm; depart at 4:40 pm	Move departure of Franklin Train 799 forward by 5 minutes, or delay arrival and departures of Fairmount Trains D802 and D803 by 5 minutes.
6	Insufficient time on Fairmount Line between Fairmont Train D806 and deadhead Train 719X from Readville.	Both arrive at 5:00 pm	Operate deadhead Train 719X 5 minutes earlier.
7	Insufficient time on Fairmount Line between Fairmount Train D814 and deadhead Train 821X from Readville.	Both arrive at 6:00 pm	Operate deadhead Train 821X 5 minutes earlier.

The analyses also showed that 20 minute headways on the Fairmount Line could be accommodated with even less impact on the schedules of other services than 15 minute headways.

The analyses also clearly indicated that 10 minute peak headways on the Fairmount Line could not be supported at South Station without increasing terminal capacity or restricting services operated on other lines.

2.2. Station Dwell Times with High Peak Period Travel Volumes

Forecasts of station dwell times based on ridership estimates prepared for the 2002 service improvement study found that peak period trip times would increase due to long dwell times for large volumes of passengers boarding through manually operated vestibule doors. Currently, train conductors manually operate the doors and traps. There is typically one conductor for

every two cars that are in service. At each stop, each conductor operates two doors (the end doors of two adjoining cars), or 50% of the total doors. Passengers are only permitted to enter and exit via manned doors.

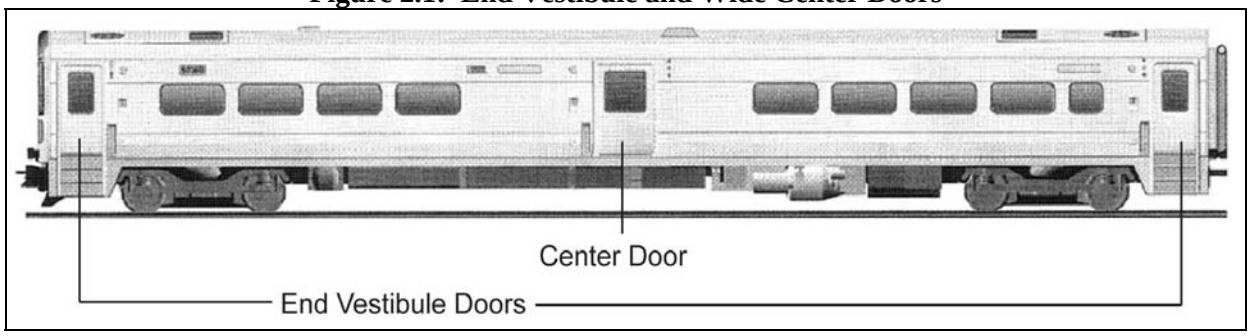
For existing Fairmount Line service, peak period dwell times are estimated to total approximately 5 minutes of the 23 minute overall running time. With the addition of the four new stations and increased ridership, total running times would increase to 30 minutes due to increased dwell time. Two measures could be taken to reduce the future dwell times.

- First, all doors could be used for boarding and alighting. This would require automatic door operation (as on rapid transit and light rail). With the construction of high level platforms at all stations, this could likely be implemented with the MBTA's existing equipment.
- Second, the number of doors could be increased to provide more paths in and out of the vehicles. This could be done through the use of end vestibule and wide center doors (see Figure 2.1). MBTA Railroad Operations reported that wide center doors could be retrofitted into its existing single-level Bombardier coaches.

To determine the potential dwell time savings of these improvements, JEK researched a number of methods to estimate dwell times based on vehicle and platform characteristics. Of those identified, the most applicable to this analysis was considered to be a doorway flow time methodology presented in TCRP Report 13, "Rail Transit Capacity." [7] This methodology was derived from large sample sizes and considered various doorway designs and widths. This method breaks dwell times into four components:

1. The door opening time.
2. Passenger flow time (the time that passengers are boarding and alighting).
3. The time between when all passengers have boarded and alighted and the doors close.
4. The delay between the time the doors close and the train starts moving.

Figure 2.1: End Vestibule and Wide Center Doors



As would be expected, the number and width of doors impact the second component, passenger flow times. Wide center doors typically handle two passenger paths in and out of vehicles, compared to one passenger path for end vestibule doors.

[7] Fisher, I. & Parkinson, T. "Station Dwells" TCRP Report 13: Rail Transit Capacity. Washington, DC: National Academy Press, (1996). 38-50.

Table 2.3: Passenger Flow Rates per Car for High Level Boarding (Seconds per Passenger)

Platform Level:	High Level		
	End Vestibule Doors; One in Use	End Vestibule Doors; Both in Use	End Vestibule & Wide Center Doors; All in Use
AM Peak (boarding)	1.8	0.9	0.4
PM Peak (alighting)	1.8	0.9	0.5
Off Peak (mixed)	2.5	1.3	0.6

Retrofitting coaches for automatic door operation and, consequently the use of all doors, would reduce the boarding and alighting portion of dwell time from 4 minutes per trip to 2 minutes per trip. The addition of wide center doors in conjunction with automatic door operation, would further reduce total boarding and alighting times to approximately 1 minute. Therefore, retrofitting coaches could save 2 to 3 minutes per Fairmount trip.

2.3. Equipment Maintenance and Storage Capacity

Capacity to store and maintain commuter rail rollingstock is in acutely short supply for MBTA South Station services. The introduction of additional equipment and train sets to enhance service on the Fairmount line would add to this problem unless new capacity is developed. It is beyond the scope of this project to solve this capacity problem. Instead, this short section merely describes the challenges that presently face rollingstock maintenance. Obviously the introduction of a new fleet of specialized vehicles for Fairmount service would further tax capacity and add complexity to an already severe capacity problem.

Between this date and 2025, the number of MBTA commuter rail trains serving South Station are expected to increase in response to planned system improvements and forecast growth in ridership on existing services. The table below shows how the need for midday storage facilities are expected to change over the next two decades without any increase in the number of train sets providing service on the Fairmount branch.

Table 2.4: South Side In-Town Layover Deficits (Consists)

	2010	**2015**	**2020**	**2025**
Total Available	24	24	24	24
Total Required	32	34	36	38
Deficit	**8**	**10**	**12**	**14**

Presently the South Side service operates with two service and inspection tracks and one fueling track. There is an immediate need to add to the two service and inspection tracks. By 2025 the system will require two additional service and inspection tracks and an additional fueling track.

2.3.1. South Side Maintenance Facilities - Two equipment maintenance facilities are located on the South Side of the MBTA commuter rail system: the South Side Service and Inspection Facility (Southside S&I) and the Readville Maintenance Repair Facility.

South Side S&I Facility - The South Side S&I facility is located in South Boston, Massachusetts immediately south of the junction of the Old Colony Main Line and the Dorchester Branch at the mouth of Amtrak's Southampton Street Yard. It consists of four buildings measuring approximately 56,650 square feet of indoor space. The two-track running maintenance facility is used to perform daily service and inspection functions to South Side train-sets. Minor periodic inspections and running repairs are also performed at this facility.

The facility accommodates nine coaches and one locomotive on each of the two tracks in the building. The building has provisions for adding essential supplies (fuel, sand, lubricants, and coolant) to the locomotive as well as toilet dumping stations and fresh water for coaches equipped with toilets. Fuel, main engine lube oil, and water are available on Track 3, outside the building.

The South Side S&I facility is also equipped with an overhead crane, single axle drop table, car washer, and ground power stations. Offices, health and welfare facilities, and a lunchroom are all located on the second floor of the building. This facility has a separate storehouse building and a MBTA Engineering Department maintenance building.

Presently all 33 MBTA South Side commuter rail consists are fueled and serviced at the three-track facility. On weekends and holidays consists are fueled but servicing and inspections is limited to focus primarily on correcting reported defects and running repairs. As of the last project team review (March 2004) the productivity of the S&I for inspections and servicing is four to six trainsets per day. At the observed servicing rate, every consist generally visits the S&I no more often than once every two weeks. The MBTA is dissatisfied with the frequency of periodic servicing and inspections on the South Side and would like to provide more capacity for this activity. The facility, as operated, is not providing the capacity necessary to service the current commuter rail fleet serving South Station.

During the course of preparing the 2004 Commuter Rail Infrastructure Needs Assessment, the Railroad Operations Directorate indicated a third and fourth inspection and repair track should be added by 2010 to overcome the current capacity shortfall and to provide capacity for near term ridership growth. It was indicated that a fifth and sixth track would be required by 2025. It is also evident that the fueling track at the South Side S&I is operating near capacity and that a second fueling track would be required to accommodate the increase in South Side consists before 2025.

Readville Maintenance and Repair Facility - The Readville Maintenance and Repair Facility is located in Hyde Park. It is used for modifications, wheel truing, and special projects such as retrofits and Advanced Civil Speed Enforcement System (ACSES) installation. The shop is a Butler style building consisting of three tracks, two of which accommodate two coaches each.

The third track is equipped with a Simmons-Stanray wheel-truing machine. Each of the two coach tracks is equipped with an inspection pit on the Boston end and a flat concrete floor on the outbound end. The facility is equipped with 480-volt AC ground power stations for the two coach tracks. A caged area within the building is utilized as a storehouse for vehicle parts and supplies. Health and welfare facilities, offices, and a lunchroom are located in trailers and modular buildings in the paved parking lot adjacent and in front of the shop building.

In addition to its use as maintenance and repair base, the yard at Readville is used for the midday storage of eight train sets. When the Greenbush service starts operation, the total number of daily trainsets stored and serviced at Readville will increase to 12. No other consists can be added to the Readville facility without overcoming the local political will that would prefer the facility be closed.

2.3.2. Storage Facilities - The current facilities on the South Side available for in-town midday storage include Readville, Southampton Street, Fan Yard, and South Station. Neither the Fan Yard nor Southampton Yard has adequate capacity to allow switching moves to "cut" defective locomotives or cars from MBTA trains. This function is performed at Readville.

Southampton Street **-** The MBTA has rights to use five tracks in Amtrak's Southampton yard (near Andrew Square) for midday storage. The five tracks available to the MBTA have the capacity for storage of ten trains varying in length from six to nine cars*:*

Table 2.5:
Southampton Street Storage Facility

Track	Track Available (ft)	Cars (assuming 2 locomotives)
17	1480	15
16	1440	15
15	1340	14
14	1380	14
13	1440	15

The five tracks provide capacity for the midday storage of approximately 10 trains of the following lengths.

A. Three 8-car trains plus seven 7-car trains, (10)
B. Three 9-car trains plus four 7-car trains plus three 6-car trains, (10)
C. Five 8-car trains plus three 7-car trains plus two 6-car trains (10), or
D. Several other combinations.

Fan (Front) Yard **-** The Fan Yard is a rail yard bounded on the southeast by MBTA's Dorchester Branch, on the west by Frontage Road, and on the north by the "loop" tracks at Widett Circle. Amtrak claims ownership of the Fan Yard and would prefer the MBTA not use this facility. The Fan Yard is limited to three 6-car trains.

South Station - Track lengths at South Station vary considerably; the longest tracks can accommodate trains of up to twelve to thirteen coaches, while the shortest track can hold only a six-car consist. Generally seven of the nine full-length tracks (those accommodating at least a nine-car consist) and three shorter tracks (accommodating six-car consists) are available for use by the MBTA. The remainder of the 13 tracks are generally utilized by Amtrak to operate its extensive schedule of intercity trains along the Northeast Corridor (NEC). Midday and overnight storage at South Station occurs today because there is limited space elsewhere on the South Side to store equipment. It is preferable that consists are stored out of the terminal station.

Future Conditions - The MBTA's 2004 Commuter Rail Infrastructure Needs Assessment forecast that the need for midday layover will increase by 15 consists by 2025. It also forecast that five more consists will require a downtown Boston overnight layover berth. Consequently more in-town layover capacity is clearly required[8]. Storage at Southampton Street facility will be limited to five consists due to increased future year train lengths. Similarly, it was assumed that storage at Fan Yard will remain at three consists, the same as today's situation. Table 2.6 summarizes the change in South Side in-town layover requirements through 2025.

Table 2.6:
South Side In-Town Layover Requirements (Consists)

	2007	2010	2015	2020	2025
Midday[9]	23	32	34	36	38
Overnight	11	13	14	15	16

With no additional storage at Readville, Southampton Street or the Fan Yard, a new facility is required to handle the residual storage requirements as shown in Table 2.7.

Table 2.7:
South Side In-Town Layover Deficits (Consists)

	2010	2015	2020	2025
Southampton Street	9	9	9	9
Fan Yard	3	3	3	3
Readville Layover	12	12	12	12
Total Available	24	24	24	24
Total Required	32	34	36	38
Deficit	**8**	**10**	**12**	**14**

[8] MBTA Commuter Rail Infrastructure Needs Assessment Study completed in April 2004. The study assumed Greenbush service and extended service to TF Green Airport were online by 2010. No other expansions were considered including the Nashua Extension, New Bedford/ Fall River or Fairmount Service.
[9] Midday storage requirements are determined by the number of consists needing to be stored in-town at the peak load point, which generally occurs around 12:30PM. For this study, it was assumed that the additional in-town layover capacity would be provided at a new facility at Widett Circle.

3. DEVELOP AND SCREEN PRELIMINARY OPTIONS: KEY FINDINGS

JEK prepared ten preliminary service alternatives for the improved Fairmount line. These alternatives were presented to the MBTA stakeholders in January 2007. The range of alternatives comprised a Baseline schedule and nine alternatives.

- Alternatives P1 through P3 offer improved peak service with the addition of dedicated trainsets.
- Alternatives O1 through O4 offer improved off-peak service by better utilizing existing train movements on the line or by adding a dedicated trainset to the line.
- Options W1 and W2 provide weekend service to the Route 128 station on Saturdays and Sundays using one or two train sets, respectively.

The alternatives were structured for easy comparison.

3.1. Baseline

The assumed baseline uses the existing 2006 level of service with the addition of Greenbush deadheads and four new stations at Newmarket/South Bay Center, Four Corners, Talbot Avenue and Blue Hill.

Running times on the Fairmount line were calculated to increase from the current 20 minutes to 26 minutes in the off-peak period and 30 minutes during the peak periods due to additional stops and expected increases in ridership.[10] The current schedule takes advantage of 20 minute running times by scheduling one round-trip per hour per train. The current schedule (one hour round trip) would not be feasible with the longer 26-30 minute running times if the number of consists assigned to the service is not increased. Therefore, a new schedule based on expected running times was created for the Baseline providing an equivalent level of service to the current schedule, while employing the same amount of equipment. This Baseline closely mirrors Package One from the 2002 KKO report[11].

In scheduling the Baseline and successive service options, changes to non-Fairmount schedules were avoided wherever possible. However, some minor adjustments were made to Franklin trains operating on the Fairmount line. In order to achieve an equivalent level of service, inbound Franklin trip 706 was scheduled to make stops on the Fairmount line.[12] Train 706 currently operates with excess capacity.[13] This adjustment would increase its current travel time from Readville to South Station by 10 minutes.

[10] These running times take into account the planned improvements at stations (e.g. high level platforms for easier boarding and shorter dwell times) but not improvements to coach door operation and configuration which would reduce peak running times to approximately 28 minutes.
[11] Since the Baseline is founded on Package One from the 2002 KKO report, train consist O's line-up does not perfectly correspond to the current November 2006 line-up. At the end of its Fairmount cycle, consist O turns to operate trip 727 under Package One and the Baseline as opposed to trip 629 in the current line-up.
[12] This train presently operates on the Attleboro Line via Back Bay. At the time of the 2002 KKO study it operated on the Faimount Line.
[13] Train 706 is operated by a seven bi-level car consist with an average ridership of 700 passengers.

Single-track conditions at Readville station proved to be a significant constraint when designing new Fairmount schedules. Assuming ten minute turn times, Fairmount trains turning at Readville are required to arrive at the station at least ten minutes before any Franklin trains expressing through Readville to or from South Station. Since the majority of Franklin trains operating on the Fairmount line do so during peak periods, the number of peak period Fairmount trips as well as the regularity of Fairmount schedules during peak periods is restricted by the Franklin expresses. In order to allow for convenient Fairmount schedules:

- Franklin trains 797 and 795 were shifted two minutes later,
- Franklin train 796 was shifted 3 minutes later,
- four Fairmount stops (stations Uphams Corner, Newmarket, Blue Hill Ave, and Fairmount) were removed from Fairmount reverse peak trip 770,
- the Newmarket stop was removed from Fairmount reverse peak trip 772, and
- Fairmount reverse peak trip 745 was expressed to Readville.[14]

The schedule for the new baseline is found in the appendix to this report.

3.2. Peak Alternatives

Three peak service alternatives were developed.

3.2.1. Option P1 – Baseline *plus* one additional peak set. Offers improved peak service with the addition of one dedicated Fairmount Line trainset. With the additional train set:

- Franklin train 706 was removed from the Fairmount line and restored to its current faster routing via Back Bay,
- one inbound trip was added in the morning peak , and
- three outbound trips were added in the afternoon peak.

Franklin express trips and the abundance of deadhead trips (12 in each direction) on the Fairmount line posed constraints as the level of Fairmount service was increased. Six non-service (deadhead or express) outbound trains are scheduled on the line between 7:45 and 8:15 am. Seven inbound trains (deadhead or express) would operate on the line between 4:45 and 5:15 pm. Assuming the signal system limits trains from traveling closer than five minutes apart, this density of non-revenue trains during the peak periods limits increases in Fairmount service. As Fairmount service is increased, longer turn times at South Station for Readville deadheads may be required.

3.2.2. Option P2 – Baseline *plus* two additional peak sets. Offers improved peak service with the addition of two dedicated Fairmount trainsets. With the two additional dedicated Fairmount train sets:

- Franklin train 706 was removed from the Fairmount line and restored to its current faster routing via Back Bay,
- two inbound trips were added in the morning peak (relative to the Baseline),
- five outbound trips were added in the afternoon peak (relative to the Baseline), and
- more uniform headways were accommodated in both peaks.

In the morning peak, Franklin trains 793, 795, and 797 travel outbound through the single-tracked Readville station between 7:25 and 8:15 am, prohibiting perfectly uniform Fairmount

[14] Where possible, Fairmount stops were reinstituted on expressed trains in successive service options.

headways. In the afternoon peak the constrained capacity between 4:45 and 5:15 pm, as well as Franklin through trains, limit more even headways on Fairmount service. To accommodate fairly uniform headways during the peak periods (under options P2 and P3):

- Franklin trains 795, and 797 were moved back to their current time slots (adjusted from Baseline),
- Franklin train 790 was shifted three minutes earlier, and
- five stops (stations Uphams Corner, Four Corners, Morton Street, Blue Hill Ave, and Fairmount) were removed from reverse-peak, outbound, Fairmount trips 751, 774 and 776.

3.2.3. Option P3 – Baseline *plus* 20 minute peak headways. Offers greatly improved peak service with the addition of three trainsets. Option P3 resulted in three additional morning peak direction trips and five additional afternoon peak trips. To achieve almost perfectly uniform 20 minute headways during the two peak periods the same adjustments necessary for Option P2 were applied.

The one deviation from 20 minute headways during the morning peak was necessitated by the need to schedule around Franklin trains 793, 795 and 797. The one afternoon peak headway deviation was due to the requirement that Fairmount train 773, scheduled to turn at Readville to operate inbound service, arrive either ten minutes before Franklin through train 796 arrives in Readville, or after train 796 departs Readville.[15]

Table 3.1 provides summary information on the three peak alternatives, including cumulative train miles and hours operated under each scenario and the number of Southside train sets. Train hours and miles do not include deadhead trains.[16] Two considerations to keep in mind when comparing daily train hours across alternatives are:

1. Additional trains allow for increased control over scheduling, resulting in shorter turn times.

2. As the number of trains in service increase, the number of deadhead hours not accounted for also increases. Therefore, exclusion of deadhead train hours from the sum of daily train hours has a disproportionate effect on alternatives which employ a larger number of train sets.

[15] New train consist S (see schedules with vehicle assignments in Appendix) is scheduled to operate one outbound trip during the afternoon peak under option P3. In order to maintain 20 minute headways, the consist's single trip is scheduled to arrive in Readville at 4:40 pm, three minutes before Franklin train 794 (traveling inbound) expresses through Readville station. Therefore, consist S would not have adequate time to turn for an inbound trip to South Station or South Hampton Street, but would be available for the remainder of the day to operate services on the Franklin branch or the Attleboro Line.

[16] The train hours summation includes (1) the time consists are in operation on the Fairmount line, (2) ten minutes of platform time assigned to trains to or from storage or maintenance facilities and (3) the turn time between trips for consists already in service. For turns between Fairmount and non-Fairmount service, half of the South Station platform time is assigned to the Fairmount service.

Table 3.1: Peak Alternatives

Option	Inbound Trips Operated				Outbound Trips Operated				Revenue Train Miles	Revenue Train Hours	Train Sets in Southside Line-up
	Before 9 am	9 am – 3 pm	3 pm – 7 pm	after 7 pm	Before 9 am	9 am – 3 pm	3 pm – 7 pm	after 7 pm			
Baseline	6	6	5	4	5	6	6	2	364.0	28:35	37
P1	7	6	7	4	6	6	9	2	427.7	35:15	38
P2	8	5	8	6	6	5	11	3	473.2	36:06	39
P3	9	5	8	6	7	5	12	3	500.5	38:16	40

Figure 3.1 displays the number of trips operated by time period for each peak option and the Baseline. In both directions, the number of total and peak direction trips increases as the number of trainsets available to operate Fairmount service increases.

Figure 3.1: Weekday Revenue Trains by Time Period

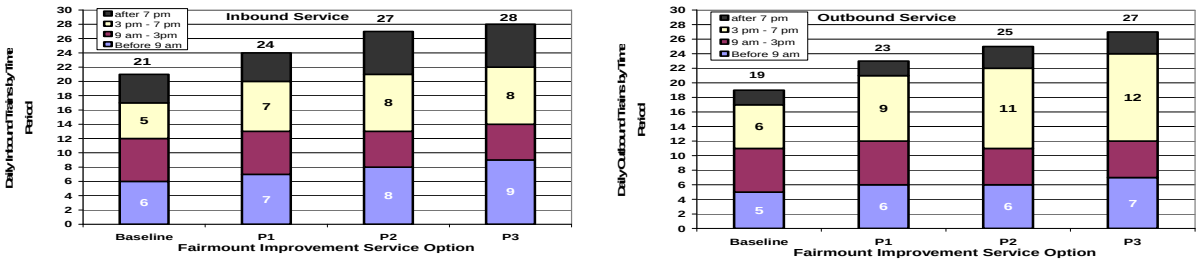
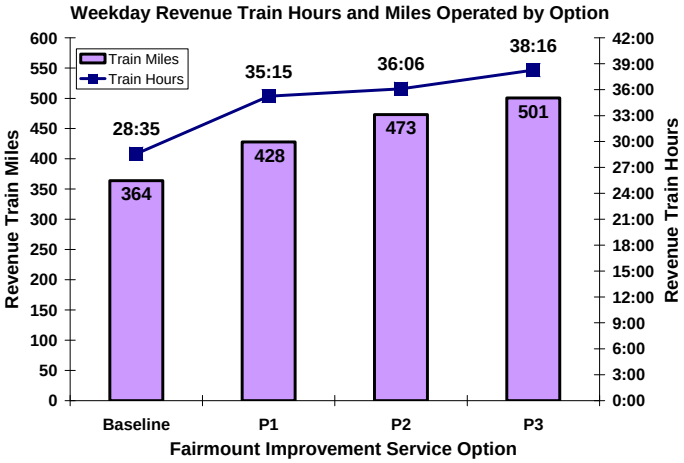


Figure 3.2 depicts the total number of daily train miles and hours for each peak alternative and the Baseline. As expected, the number of train miles increases as the number of peak train sets, and the number of peak trips is increased.

In Figure 3.2, the larger the gap between train miles and train hours, the larger the fraction of train hours spent stationary at stations. Among the peak alternatives, options P2 and P3 spend a smaller fraction of weekday revenue hours in platform time. The increased control over scheduling afforded by additional train sets allows turn times at South Station to be decreased.

Figure 3.2



3.3. Off-Peak Alternatives

Four off-peak alternatives were developed.

3.3.1. Option O1 – Baseline *plus* two additional roundtrips after 10:00 pm at night, resulting in a 10:50 pm and 12:00 am departure from South Station as well as an inbound revenue trip at 11:25 pm. In order to schedule additional trips without increasing the consists used for Fairmount service, non-Fairmount trips were removed from the end of consist S's cycle.[17]

3.3.2. Option O2 – Option O1 *plus* the addition of station stops on selected deadhead and Franklin express trains. Four non-revenue deadhead trips and one Franklin express trip were selected for their potential to provide attractive additional service complementary to the Fairmount Baseline schedule:

- Greenbush inbound deadhead 077 at 12:10 pm,
- Greenbush inbound deadhead 079 at 1:32 pm,
- Franklin express train 724 at 8:22 pm,
- Old Colony outbound deadhead at 11:12 am, and
- Old Colony outbound deadhead at 12:20 pm.

Service provided on deadhead trips would be inbound from Fairmount station and outbound to Fairmount station only, not serving Readville station. In this way, no additional train miles would be required to provide these trips on the Fairmount line.

3.3.3. Option O3 – Option P3 *plus* the addition of station stops on selected deadhead and Franklin trains. The same deadhead trips and Franklin express trip from Option O2 were selected for their potential to provide attractive additional service complementary to the Option P3 off-peak schedule.

3.3.4. Option O4 – Option O1 *plus* the addition of one dedicated trainset in the off-peak period. With the additional dedicated Fairmount train set:

- four inbound trips were added in the midday creating even 40 minute headways,
- four outbound trips were added in the midday creating even 40 minute headways,
- three inbound trips were added at night, and
- three outbound trips were added at night.

Table 3.2 provides summary information on the four off-peak alternatives, including cumulative train miles and hours operated under each scenario and the number of Southside train sets required. The number of train sets required in the Southside Line-up would increase only for Option O3 which offers additional service during the peak periods. Increases in off-peak service would be operated by existing train sets. Deadhead and express trips serving Fairmount stations under Options O2 and O3 do not add any train miles to the revenue train miles figure, since these trips would be operated regardless of Fairmount service. For these selected trips, only increases in their running time (due to dwell time at stations), and not the train hours required for the original deadhead or express trip, are included in the daily train hours summation.

[17] Trips 539 and 540 were removed from train consist S and would be assigned to a different consist and crew.

Table 3.2: Off-peak Alternatives

Option	Inbound Trips Operated				Outbound Trips Operated				Revenue Train Miles	Revenue Train Hours	Train Sets in Southside Line-up
	Before 9 am	9 am – 3 pm	3 pm – 7 pm	after 7 pm	Before 9 am	9 am – 3 pm	3 pm – 7 pm	after 7 pm			
Baseline	6	6	5	4	5	6	6	2	364.0	28:35	37
O1	6	6	5	5	5	6	6	4	391.3	30:06	37
O2	6	8	5	6	5	8	6	4	391.3	31:41	37
O3	9	7	8	7	7	7	12	3	500.5	39:51	40
O4	6	9	6	8	5	10	6	7	518.7	39:44	38

Figure 3.3 displays the number of trips operated by time period for each off-peak option and the Baseline. Option O3, which includes any improvements made to the peak schedules under option P3, achieves the greatest total trips. Overall, Option O4 provides one less trip than Option O3 in the outbound direction and two less inbound trips, through the use of one additional trainset during the off-peak only, whereas Option O3 requires three additional peak trainsets.

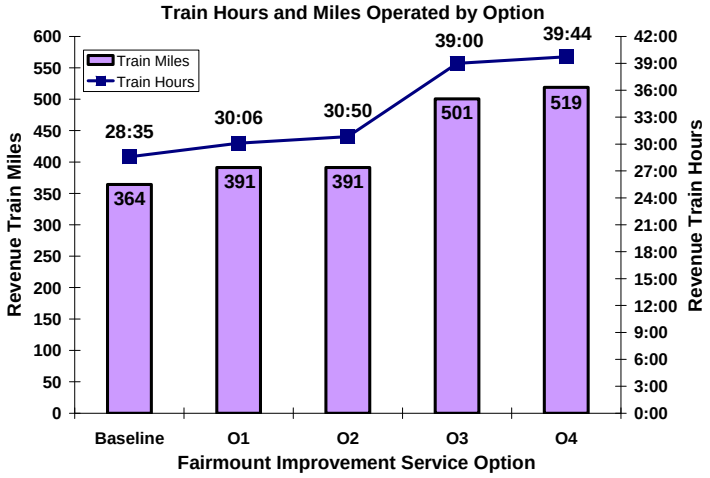


Figure 3.4 depicts the total number of train miles and hours for each off-peak alternative and the Baseline. Options O3 and O4 require similar amounts of train hours and miles as they provide a similar number of Fairmount trips.

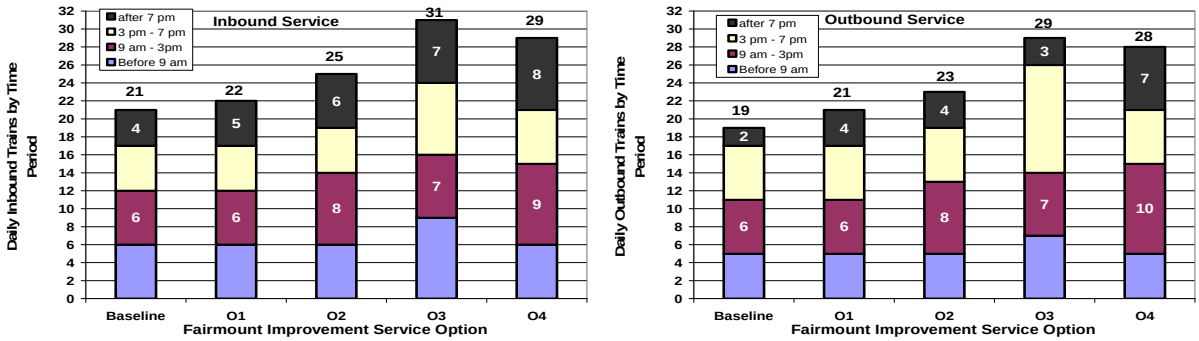


Figure 3.3: Weekday Revenue Trains by Time Period

Unlike Figure 3.2, it is difficult to infer the relative fraction of train hours spent in platform time from Figure 3.4. Since deadhead and express trips now serving Fairmount stations, under Options O2 and O3, are required to operate the same number of train miles whether or not

Figure 3.4

Fairmount stations are served, train miles for these trips are not included in the Revenue Train Miles summation. These five trips operate a total of 41 train miles. Deadhead and express trips re-scheduled to serve Fairmount stations would require an increase in train hours due to the addition of dwell time at Fairmount stations. The train hours on these five trips increases by forty-four minutes over the original one hour and 35 minutes. For deadhead and express trips, only the increase in train hours was accounted for in the Revenue Train Miles summation. In terms of Figure 3.4, including the original train miles (41) and train hours (0:44) for these five trips would reduce the gap between Revenue Train Miles and Revenue Train Hours for Options O2 and O3.

3.4. Weekend Alternatives

Two weekend options were developed and evaluated.

3.4.1. Option W1 – Baseline *plus* the addition of one dedicated weekend trainsets for service to Route 128 station. One dedicated trainset allows service frequencies of 90 minutes in each direction.

3.4.2. Option W2 – Baseline *plus* the addition of two dedicated weekend trainset for service to Route 128 station. Two dedicated trainsets allow service frequencies of 45 minutes in each direction.

Table 3.3 presents summary information on the two weekend alternatives, including cumulative train miles and hours operated under each scenario. Train miles and train hours for deadhead trips are not included. For weekend service, when trains are able to operate continuous roundtrip service and platform times can be minimized, adding a second train approximately doubles the train hours and miles.

Table 3.3: Weekend Alternatives

Option	Inbound Trips Operated				Outbound Trips Operated				Weekend Train Miles	Weekend Train Hours
	Before 9 am	9 am – 3 pm	3 pm – 7 pm	after 7 pm	Before 9 am	9 am – 3 pm	3 pm – 7 pm	after 7 pm		
Baseline	0	0	0	0	0	0	0	0	0	0
W1	1	4	3	4	2	4	3	3	218.4	18:07
W2	3	8	6	7	5	8	5	6	436.8	36:13

4. DETAILED ANALYSIS OF REFINED SERVICE PACKAGES: KEY FINDINGS

In the course of reviewing the preliminary improvement options, MBTA stakeholders and JEK collaborated to define two service packages for detailed analysis, each including a mix of peak, off-peak and weekend improvement options. JEK prepared a Baseline schedule and two alternatives, each with three variants.

4.1. Refined Baseline Service

The assumed baseline uses the existing 2006 level of service with the addition of Greenbush deadheads and four new stations at Newmarket, Four Corners, Talbot Avenue and Blue Hill. The baseline is unchanged from the preliminary options phase.

Table 4.1: Fairmount Improvement Baseline Schedule

Inbound					Outbound				
Train No.	Cycle	Readville	Four Corners	South Station	Train No.	Cycle	South Station	Four Corners	Readville
F790	S	5:50	6:07	6:20	743	Y	5:40	5:50	6:06
744	Y	6:20	6:37	6:50	745	S	6:30		6:44
746	S	6:54	7:11	7:24	F793	Y	7:05		7:25
F706	H	7:12	7:29	7:42	747	X	7:15		7:33
748	X	7:44	8:01	8:14	749	S	7:34	7:44	8:00
750	S	8:10	8:27	8:40	751	H	8:00	8:10	8:26
752	H	8:40	8:57	9:10	753	M	9:20	9:30	9:46
F792	J	9:00	9:17	9:30	755	M	10:40	10:50	11:06
754	M	10:00	10:13	10:26	757	M	12:00	12:10	12:26
756	M	11:20	11:33	11:46	759	M	13:20	13:30	13:46
758	M	12:40	12:53	13:06	763	X	14:20	14:30	14:46
760	M	14:00	14:13	14:26	765	U	15:00	15:12	15:30
764	X	15:00	15:13	15:26	767	O	15:45	15:57	16:15
766	U	15:40	15:53	16:06	F799	P	16:30	16:42	17:00
768	O	16:24	16:37	16:50	769	O	17:05	17:17	17:35
F794	E	16:43		17:02	771	S	17:45	17:57	18:15
770	O	17:45	17:55	18:05	773	O	18:25	18:37	18:55
772	S	18:25	18:38	18:49	775	S	19:00	19:12	19:30
774	O	19:05	19:18	19:31	777	S	20:20	20:30	20:46
776	S	19:40	19:53	20:06	779	S	21:40	21:50	22:06
F724	X	20:22		20:41					
778	S	21:00	21:13	21:26					
780	S	22:20	22:33	22:46					

4.2. Service Improvement Packages

Two refined service improvement packages were developed.

- Package 1 – Peak headway of approximately 30 minutes (P2) combined with off peak service improvements including extended hours of service (O1) and an additional, dedicated off-peak consist (O4). Saturday service would be provided with 90 minute headways (W1). No Sunday or Holiday service is provided in Package 1.

- Package 2 - 20 minute peak headways (P3) combined with off peak service improvements including extended hours of service (O1) and an additional, dedicated off-

peak consist (O4). Saturday, Sunday, Holiday service would be provided with 90 minute headways (W1)

Each package was tested under three sets of operating assumptions:

- Current Readville station configuration and current coach door configuration
- Alternative Readville station configuration and current coach door configuration
- Alternative Readville station configuration and alternative coach door configuration

The first two operating assumptions maintain the status quo of Fairmount operations where no train sets are dedicated to Fairmount service. Fairmount trips are typically performed by vehicles that also operate services on other branches of the MBTA commuter rail network, such as the Franklin and Needham lines. These trains are sized to accommodate their peak load, which generally does not occur on a Fairmount trip.

The third operating assumption, with alternative coach door configurations, would require a shift from the status quo. Because coaches would be specially adapted to operate trips on the Fairmount line, they would be dedicated to operating primarily Fairmount service, and scheduling Fairmount trips on non-Fairmount equipment would be avoided. In this case, the adapted trains could be sized specifically to Fairmount ridership levels.

4.3. Package 1

Peak headway of approximately 30 minutes combined with off peak service improvements including extended hours of service, an additional, dedicated off-peak consist and Saturday service with 90 minute headways. Package 1 requires the MBTA to field one additional train set during peak periods. The results of each of the three scheduling analyses are summarized below:

4.3.1. Package 1.1: Current Readville station configuration and current coach door configuration - Changes from the Baseline schedule included:

- Franklin train 706 removed from the Fairmount line and restored to current faster routing via Back Bay,
- More consistent headways during AM peak,
- All station stops restored on train 747,
- Four Corners and Talbot Avenue station stops restored on train 745,
- Off-peak headways reduced from 80 to 40 minutes,
- Consistent 30 minute headways during PM peak,
- Blue Hill Avenue, Morton Street, Uphams Corner and Newmarket station stops removed from reverse peak trip 772,
- All station stops, except Readville, instituted on inbound deadhead trip 773X,
- More frequent and consistent reverse peak headways,
- Weekday service hours extended to 12:00 AM, and
- Weekend service offered on Saturday to Route 128 Station with 90 minute headways in each direction.

Table 4.2: Package 1.1 Current Readville station configuration and current coach door configuration

Inbound					Outbound				
Train No.	Cycle	Readville	Four Corners	South Station	Train No.	Cycle	South Station	Four Corners	Readville
F790	S	5:50	6:07	6:20	737	Y	5:45	5:55	6:11
740	Y	6:25	6:42	6:55	739	XX	6:20	6:30	6:46
742	XX	7:00	7:17	7:30	741	S	6:45	6:55	7:11
744	S	7:23	7:40	7:53	F793	Y	7:05		7:25
746	X	8:00	8:17	8:30	743	X	7:20	7:30	7:46
748	H	8:30	8:47	9:00	745	H	8:02	8:10	8:20
F792	J	9:00	9:17	9:30	747	Y	8:47	8:57	9:13
750	Y	9:30	9:47	10:00	749	M	9:20	9:30	9:46
752	M	10:00	10:13	10:26	751	S	10:00	10:10	10:26
754	S	10:40	10:53	11:06	753	M	10:40	10:50	11:06
756	M	11:20	11:33	11:46	755	S	11:20	11:30	11:46
758	S	12:00	12:13	12:26	757	M	12:00	12:10	12:26
760	M	12:40	12:53	13:06	759	S	12:40	12:50	13:06
762	S	13:20	13:33	13:46	761	M	13:20	13:30	13:46
764	M	14:00	14:13	14:26	763	S	14:00	14:10	14:26
766	S	14:40	14:53	15:06	765	X	14:40	14:50	15:06
768	X	15:20	15:33	15:46	767	U	15:10	15:22	15:40
770	U	15:50	16:03	16:16	769	XX	15:53	16:05	16:23
772	XX	16:33	16:43	16:50	F799	P	16:30	16:42	17:00
F794	E	16:43		17:02	771	XX	17:00	17:12	17:30
773X	O		17:08	17:20	773	O	17:30	17:42	18:00
774	XX	17:40	17:53	18:06	775	S	18:00	18:12	18:30
776	O	18:10	18:20	18:29	777	XX	18:30	18:42	19:00
778	P	18:21	18:34	18:47	779	P	19:00	19:12	19:30
780	S	18:40	18:53	19:06	781	S	19:30	19:40	19:56
782	XX	19:10	19:23	19:36	783	P	20:16	20:26	20:42
784	P	19:40	19:53	20:06	785	S	20:42	20:52	21:08
786	S	20:06	20:19	20:32	787	P	21:26	21:36	21:52
F724	X	20:22		20:41	789	S	22:00	22:10	22:26
788	P	20:52	21:05	21:16	791	P	22:40	22:50	23:06
790	S	21:20	21:33	21:46	793	P	0:00	0:10	0:26
792	P	22:02	22:15	22:28					
794	S	22:40	22:53	23:06					
796	P	23:20	23:33	23:46					

4.3.2. Package 1.2: Alternative Readville station configuration and current coach door configuration - Same as Package 1.1 except

- Consistent 30 minute headways during AM peak,
- Consistent 30 minute or shorter headways during PM peak,
- Station stops restored on all trips except inbound, reverse-peak trip 745,

- Station stops removed from 773X, and
- More "clockface" night schedules.

Table 4.3: Package 1.2 Alternative Readville station configuration and current coach door configuration

Inbound					Outbound				
Train No.	Cycle	Readville	Four Corners	South Station	Train No.	Cycle	South Station	Four Corners	Readville
F790	S	5:50	6:07	6:20	737	Y	5:45	5:55	6:11
740	Y	6:25	6:42	6:55	739	XX	6:20	6:30	6:46
742	X	7:00	7:17	7:30	741	S	6:50	7:00	7:16
744	S	7:30	7:47	8:00	F793	Y	7:05		7:25
746	X	8:00	8:17	8:30	743	X	7:20	7:30	7:46
748	H	8:30	8:47	9:00	745	H	8:02	8:10	8:20
F792	J	9:00	9:17	9:30	747	Y	8:47	8:57	9:13
750	Y	9:30	9:47	10:00	749	M	9:20	9:30	9:46
752	M	10:00	10:13	10:26	751	S	10:00	10:10	10:26
754	S	10:40	10:53	11:06	753	M	10:40	10:50	11:06
756	M	11:20	11:33	11:46	755	S	11:20	11:30	11:46
758	S	12:00	12:13	12:26	757	M	12:00	12:10	12:26
760	M	12:40	12:53	13:06	759	S	12:40	12:50	13:06
762	S	13:20	13:33	13:46	761	M	13:20	13:30	13:46
764	M	14:00	14:13	14:26	763	S	14:00	14:10	14:26
766	S	14:40	14:53	15:06	765	X	14:40	14:50	15:06
768	X	15:20	15:33	15:46	767	U	15:10	15:22	15:40
770	U	15:50	16:03	16:16	769	S	15:40	15:52	16:10
772	S	16:30	16:43	16:56	771	XX	16:10	16:22	16:40
F794	E	16:43		17:02	F799	P	16:30	16:42	17:00
774	X	17:00	17:13	17:26	773	O	16:40	16:52	17:10
776	O	17:30	17:43	17:56	775	S	17:10	17:22	17:40
778	S	18:00	18:13	18:26	777	XX	17:40	17:52	18:10
780	X	18:20	18:33	18:46	779	O	18:10	18:22	18:40
782	O	18:50	19:03	19:16	781	S	18:40	18:52	19:10
784	S	19:20	19:33	19:46	783	O	19:26	19:36	19:52
786	O	20:02	20:15	20:28	785	S	20:00	20:10	20:26
F724	X	20:22		20:41	787	O	20:40	20:50	21:06
788	S	20:40	20:53	21:04	789	S	21:20	21:30	21:46
790	O	21:20	21:33	21:46	791	O	22:00	22:10	22:26
792	S	22:00	22:13	22:26	793	S	22:40	22:50	23:06
794	O	22:40	22:53	23:06	795	S	0:00	0:10	0:26
796	S	23:20	23:33	23:46					

4.3.3. Package 1.3: Alternative Readville station configuration and alternative coach door configuration - Same as Package 1.2 except

- Peak running times shortened by two minutes, and
- More "clockface" night schedules.

Table 4.4: Package 1.3 Alternative Readville station configuration and alternative coach door configuration

Inbound					Outbound				
Train No.	Cycle	Readville	Four Corners	South Station	Train No.	Cycle	South Station	Four Corners	Readville
F790	S	5:50	6:07	6:20	737	Y	5:45	5:56	6:11
740	Y	6:25	6:40	6:53	739	XX	6:20	6:31	6:46
742	XX	7:00	7:15	7:28	741	S	6:50	7:01	7:16
744	S	7:30	7:45	7:58	F793	Y	7:05		7:25
746	X	8:00	8:15	8:28	743	X	7:20	7:31	7:46
748	XX	8:30	8:45	8:58	745	XX	8:02	8:10	8:20
F792	J	9:00	9:17	9:30	747	Y	8:47	8:58	9:13
750	Y	9:30	9:47	10:00	749	XX	9:20	9:31	9:46
752	XX	10:00	10:14	10:26	751	S	10:00	10:11	10:26
754	S	10:40	10:54	11:06	753	XX	10:40	10:51	11:06
756	XX	11:20	11:34	11:46	755	S	11:20	11:31	11:46
758	S	12:00	12:14	12:26	757	XX	12:00	12:11	12:26
760	XX	12:40	12:54	13:06	759	S	12:40	12:51	13:06
762	S	13:20	13:34	13:46	761	XX	13:20	13:31	13:46
764	XX	14:00	14:14	14:26	763	S	14:00	14:11	14:26
766	S	14:40	14:54	15:06	765	XX	14:40	14:51	15:06
768	XX	15:20	15:34	15:46	767	U	15:10	15:22	15:40
770	U	15:50	16:04	16:16	769	S	15:40	15:51	16:08
772	S	16:30	16:44	16:56	771	XX	16:10	16:21	16:38
F794	E	16:43		17:02	F799	P	16:30	16:42	17:00
774	XX	17:00	17:14	17:26	773	X	16:40	16:51	17:08
776	X	17:30	17:44	17:56	775	S	17:10	17:21	17:38
778	S	18:00	18:14	18:26	777	XX	17:40	17:51	18:08
780	XX	18:20	18:34	18:46	779	X	18:10	18:21	18:38
782	X	18:48	19:02	19:14	781	S	18:40	18:51	19:08
784	S	19:20	19:34	19:46	783	X	19:24	19:35	19:50
786	X	20:00	20:14	20:26	785	S	20:00	20:11	20:26
F724	O	20:22		20:41	787	X	20:40	20:51	21:06
788	S	20:40	20:54	21:05	789	S	21:20	21:31	21:46
790	X	21:20	21:34	21:46	791	X	22:00	22:11	22:26
792	S	22:00	22:14	22:26	793	S	22:40	22:51	23:06
794	X	22:40	22:54	23:06	795	S	0:00	0:11	0:26
796	S	23:20	23:34	23:46					

4.4. Package 2

Peak headway of 20 minutes combined with off peak service improvements including extended hours of service and an additional, dedicated off-peak consist and Saturday service with 90 minute headways. Package 2 requires the MBTA to field three additional train sets during peak periods. The results of each of the three scheduling analyses are summarized below:

4.4.1. Package 2.1: Current Readville station configuration and current coach door configuration - Changes from the Baseline schedule included:

- Franklin train 706 removed from the Fairmount line and restored to current faster routing via Back Bay,
- Approximately 20 minute headways during AM peak,
- All station stops restored on train 747,
- Four Corners and Talbot Avenue station stops restored on Baseline train 745 (train 749 under improved headways),
- Off-peak headways reduced from 80 to 40 minutes,
- Approximately 20 minute headways during PM peak,
- Talbot Avenue, Four Corners, and Newmarket station stops removed from reverse peak trip 780,
- Fairmount, Blue Hill Avenue, Morton Street, Upham's Corner, and Newmarket station stops removed from reverse peak trip 784 and 786,
- More frequent and consistent reverse peak headways,
- Weekday service hours extended to 12:00 AM, and
- Weekend service offered on Saturday and Sunday to Route 128 Station with 90 minute headways in each direction.

Table 4.5: Package 2.1 Current Readville station configuration and current coach door configuration

Inbound					Outbound				
Train No.	Cycle	Readville	Four Corners	South Station	Train No.	Cycle	South Station	Four Corners	Readville
738	YY	5:30	5:43	5:55	737	Y	5:47	5:57	6:13
F790	S	5:50	6:07	6:20	739	YY	6:07	6:17	6:33
740	Y	6:23	6:40	6:53	741	XX	6:24	6:34	6:50
742	YY	6:43	7:00	7:13	743	S	6:47	6:57	7:13
744	XX	7:03	7:20	7:33	F793	Y	7:05		7:25
746	S	7:23	7:40	7:53	745	ZZ	7:09	7:19	7:33
748	ZZ	7:43	8:00	8:13	747	X	7:27	7:37	7:53
750	X	8:03	8:20	8:33	749	H	8:00	8:08	8:18
752	H	8:28	8:45	8:58	751	ZZ	8:40	8:50	9:06
F792	J	9:00	9:17	9:30	753	M	9:20	9:30	9:46
754	ZZ	9:20	9:37	9:50	755	YY	10:00	10:10	10:26
756	M	10:00	10:13	10:26	757	M	10:40	10:50	11:06
758	YY	10:40	10:53	11:06	759	YY	11:20	11:30	11:46
760	M	11:20	11:33	11:46	761	M	12:00	12:10	12:26
762	YY	12:00	12:13	12:26	763	YY	12:40	12:50	13:06
764	M	12:40	12:53	13:06	765	M	13:20	13:30	13:46
766	YY	13:20	13:33	13:46	767	YY	14:00	14:10	14:26
768	M	14:00	14:13	14:26	769	X	14:40	14:50	15:06
770	YY	14:40	14:53	15:06	771	U	15:10	15:22	15:40
772	X	15:20	15:33	15:46	773	O	15:30	15:42	16:00

Table 4.5: Package 2.1 Current Readville station configuration and current coach door configuration

Inbound					Outbound				
Train No.	Cycle	Readville	Four Corners	South Station	Train No.	Cycle	South Station	Four Corners	Readville
774	U	15:50	16:03	16:16	775	ZZ	15:50	16:02	16:20
776	O	16:10	16:23	16:36	777	YY	16:15	16:27	16:45
778	ZZ	16:30	16:43	16:56	F799	P	16:30	16:42	17:00
F794	E	16:43		17:02	779	O	16:50	17:02	17:20
780	YY	16:56		17:16	781	ZZ	17:09	17:21	17:39
782	O	17:30	17:43	17:57	783	YY	17:30	17:42	18:00
784	ZZ	17:49	17:57	18:05	785	S	17:50	18:02	18:20
786	YY	18:10	18:18	18:27	787	O	18:10	18:22	18:40
788	S	18:30	18:43	18:56	789	ZZ	18:30	18:42	19:00
790	O	18:50	19:03	19:16	791	YY	18:50	19:02	19:20
792	ZZ	19:10	19:23	19:36	793	XX	19:20	19:30	19:46
794	YY	19:30	19:43	19:56	795	ZZ	20:00	20:10	20:26
796	XX	20:00	20:13	20:26	797	XX	20:40	20:50	21:06
F724	X	20:22		20:41	799	ZZ	21:20	21:30	21:46
798	ZZ	20:40	20:53	21:04	801	XX	22:00	22:10	22:26
800	XX	21:20	21:33	21:46	803	ZZ	22:40	22:50	23:06
802	ZZ	22:00	22:13	22:24	805	ZZ	0:00	0:10	0:26
804	XX	22:40	22:53	23:06					
806	ZZ	23:20	23:33	23:46					

4.4.2. Package 2.2: Alternative Readville station configuration and current coach door configuration - Same as Package 2.1 except

- Consistent 20 minute headways during PM peak,
- All station stops restored on trip 780, and
- Fairmount, Blue Hill Avenue, Morton Street, and Upham's Corner station stops restored on trip 784.

Table 4.6: Package 2.2 Alternative Readville station configuration and current coach door configuration

Inbound					Outbound				
Train No.	Cycle	Readville	Four Corners	South Station	Train No.	Cycle	South Station	Four Corners	Readville
738	YY	5:30	5:43	5:55	737	Y	5:47	5:57	6:13
F790	S	5:50	6:07	6:20	739	YY	6:07	6:17	6:33
740	Y	6:23	6:40	6:53	741	XX	6:24	6:34	6:50
742	YY	6:43	7:00	7:13	743	S	6:47	6:57	7:13
744	XX	7:03	7:20	7:33	F793	Y	7:05		7:25
746	S	7:23	7:40	7:53	745	ZZ	7:09	7:19	7:33
748	ZZ	7:43	8:00	8:13	747	X	7:27	7:37	7:53
750	X	8:03	8:20	8:33	749	H	8:00	8:08	8:18

Table 4.6: Package 2.2 Alternative Readville station configuration and current coach door configuration

Inbound					Outbound				
Train No.	Cycle	Readville	Four Corners	South Station	Train No.	Cycle	South Station	Four Corners	Readville
752	H	8:28	8:45	8:58	751	ZZ	8:40	8:50	9:06
F792	J	9:00	9:17	9:30	753	M	9:20	9:30	9:46
754	ZZ	9:20	9:37	9:50	755	YY	10:00	10:10	10:26
756	M	10:00	10:13	10:26	757	M	10:40	10:50	11:06
758	YY	10:40	10:53	11:06	759	YY	11:20	11:30	11:46
760	M	11:20	11:33	11:46	761	M	12:00	12:10	12:26
762	YY	12:00	12:13	12:26	763	YY	12:40	12:50	13:06
764	M	12:40	12:53	13:06	765	M	13:20	13:30	13:46
766	YY	13:20	13:33	13:46	767	YY	14:00	14:10	14:26
768	M	14:00	14:13	14:26	769	X	14:40	14:50	15:06
770	YY	14:40	14:53	15:06	771	U	15:10	15:22	15:40
772	X	15:20	15:33	15:46	773	O	15:30	15:42	16:00
774	U	15:50	16:03	16:16	775	ZZ	15:50	16:02	16:20
776	O	16:10	16:23	16:36	777	YY	16:10	16:22	16:40
778	ZZ	16:30	16:43	16:56	F799	P	16:30	16:42	17:00
F794	E	16:43		17:02	779	O	16:50	17:02	17:20
780	YY	16:50	17:03	17:16	781	ZZ	17:10	17:22	17:40
782	O	17:30	17:43	17:57	783	YY	17:30	17:42	18:00
784	ZZ	17:54	18:07	18:16	785	S	17:50	18:02	18:20
786	YY	18:10	18:18	18:27	787	O	18:10	18:22	18:40
788	S	18:30	18:43	18:56	789	ZZ	18:30	18:42	19:00
790	O	18:50	19:03	19:16	791	YY	18:50	19:02	19:20
792	ZZ	19:10	19:23	19:36	793	XX	19:20	19:30	19:46
794	YY	19:30	19:43	19:56	795	ZZ	20:00	20:10	20:26
796	XX	20:00	20:13	20:26	797	XX	20:40	20:50	21:06
F724	X	20:22		20:41	799	ZZ	21:20	21:30	21:46
798	ZZ	20:40	20:53	21:04	801	XX	22:00	22:10	22:26
800	XX	21:20	21:33	21:46	803	ZZ	22:40	22:50	23:06
802	ZZ	22:00	22:13	22:24	805	ZZ	0:00	0:10	0:26
804	XX	22:40	22:53	23:06					
806	ZZ	23:20	23:33	23:46					

4.4.3. Package 2.3: Alternative Readville station configuration and alternative coach door configuration - Same as Package 2.2 except the peak running times are shortened by 2 minutes.

Table 4.7: Package 2.3 Alternative Readville station configuration and alternative coach door configuration

Inbound					Outbound				
Train No.	Cycle	Readville	Four Corners	South Station	Train No.	Cycle	South Station	Four Corners	Readville
738	YY	5:30	5:44	5:56	737	ZZ	5:47	5:58	6:13
F790	S	5:50	6:05	6:20	739	Y	6:07	6:18	6:33
740	ZZ	6:23	6:38	6:51	741	X	6:24	6:35	6:50
742	YY	6:43	6:58	7:11	743	S	6:47	6:58	7:13
744	XX	7:03	7:18	7:31	F793	Y	7:05		7:25
746	S	7:23	7:38	7:51	745	ZZ	7:09	7:20	7:34
748	ZZ	7:43	7:58	8:11	747	Y	7:27	7:38	7:53
750	YY	8:03	8:18	8:31	749	X	8:00	8:08	8:18
752	XX	8:28	8:43	8:56	751	Y	8:40	8:51	9:06
F792	J	9:00	9:15	9:30	753	ZZ	9:20	9:31	9:46
754	YY	9:20	9:35	9:48	755	Y	10:00	10:11	10:26
756	ZZ	10:00	10:14	10:26	757	ZZ	10:40	10:51	11:06
758	YY	10:40	10:54	11:06	759	Y	11:20	11:31	11:46
760	ZZ	11:20	11:34	11:46	761	ZZ	12:00	12:11	12:26
762	YY	12:00	12:14	12:26	763	Y	12:40	12:51	13:06
764	ZZ	12:40	12:54	13:06	765	ZZ	13:20	13:31	13:46
766	YY	13:20	13:34	13:46	767	Y	14:00	14:11	14:26
768	ZZ	14:00	14:14	14:26	769	ZZ	14:40	14:51	15:06
770	YY	14:40	14:54	15:06	771	X	15:10	15:21	15:38
772	ZZ	15:20	15:34	15:46	773	S	15:30	15:41	15:38
774	XX	15:50	16:04	16:16	775	Y	15:50	16:01	16:18
776	S	16:10	16:24	16:36	777	ZZ	16:10	16:21	16:38
778	YY	16:30	16:44	16:56	F799	P	16:30	16:41	17:00
F794	E	16:43		17:02	779	S	16:50	17:01	17:18
780	ZZ	16:50	17:04	17:16	781	Y	17:10	17:21	17:38
782	S	17:30	17:44	17:57	783	ZZ	17:30	17:41	17:58
784	YY	17:54	18:08	18:17	785	X	17:50	18:01	18:18
786	ZZ	18:10	18:18	18:27	787	S	18:10	18:21	18:38
788	XX	18:30	18:44	18:56	789	Y	18:30	18:41	18:58
790	S	18:50	19:04	19:16	791	ZZ	18:50	19:01	19:18
792	YY	19:10	19:24	19:36	793	X	19:20	19:31	19:46
794	ZZ	19:30	19:44	19:56	795	Y	20:00	20:11	20:26
796	XX	20:00	20:14	20:26	797	ZZ	20:40	20:51	21:06
F724	X	20:22		20:41	799	X	21:20	21:31	21:46
798	YY	20:40	20:54	21:05	801	ZZ	22:00	22:11	22:26
800	ZZ	21:20	21:34	21:46	803	X	22:40	22:51	23:06
802	XX	22:00	22:14	22:25	805	X	0:00	0:11	0:26
804	ZZ	22:40	22:54	23:06					
806	XX	23:20	23:34	23:46					

4.5. Ridership Estimates

Under the auspices of the EOT DMU study, the Central Transportation Planning Staff (CTPS) prepared a series of new ridership forecasts for the Fairmount Line. The forecasts were finalized in July 2007. Nine of the eleven forecasts include the four new stations in the year 2030. Nine different combinations of peak and off-peak service frequencies, fare regimes and running times were considered. A summary of these forecasts is presented in Table 4.8.[18]

The scenarios modeled by CTPS differ in peak and off-peak headways, fare type (standard commuter rail (CR) or rapid-transit-like (RT)), and running time (based on rolling stock type and coach door configuration).

Table 4.8: CTPS Fairmount Transportation Study Ridership Modeling Scenarios

	B (2005 Base)	**1** (2030)	**2** (2030)	**3** (2030)	**4** (2030)	**5** (2030)	**6** (2030)	**7** (2030)	**8** (2030)	**9** (2030)
Peak Headway (am, pm)	30, 36	30, 36	30, 36	20	20	20	15	15	15	15
Off-peak Headway	60	80	80	40	40	40	40	40	40	40
Fare Type	CR	CR	CR	CR	CR	RT	CR	CR	CR	RT
Running Time	20	30	25	30	28	28	30	28	25	25
Weekday Inbound Riders	1,260	1,760	2,000	2,760	3,200	3,800	3,340	3,700	4,250	4,650

4.5.1. Ridership Forecasts - Ridership forecasts were derived based on the CTPS forecasts for the EOT DMU study. While the Baseline and Package 2 alternatives were adequately represented by CTPS scenarios, JEK Package 1 did not correspond to any CTPS scenarios as the off-peak and afternoon peak headways would be significantly shorter than those modeled under the most similar CTPS scenario. In order to estimate the ridership for Package 1 the study team applied a factor of 1.38 to the off-peak ridership[19] forecast for CTPS Scenario 3. This factor, based on empirical studies of the effect of increased service frequency on ridership[20], predicts a small increase in overall JEK Package 1 ridership. Table 4.9 shows each improvement package ridership estimate, its corresponding CTPS forecast scenario and the ridership estimate derived for this study.

[18] For more information on the ridership forecasts and improvement packages evaluated for the three recent Fairmount improvement studies see Appendix F of this report.
[19] According to an observed distribution of arrivals into South Station by time of day from the Fairmount Line, the percent of all inbound riders that travel during the off-peak was found to be approximately 20%.
[20] Richard H. Pratt et al. TCRP Web Document 12 (Project B-12): Traveler Response to Transportation System Changes, Interim Handbook. Chapter 9, page 12, "Individual Commuter Rail Elasticities from the Boston Area Demonstration. Quoted from Lago, Mayworm and McEnroe (1981).

Because the addition of four new stations results in an average station spacing of 0.5 miles on the Fairmount Line and because Package 2 would provide service at 20 minute headways, the study team entertained charging rapid-transit-like fares for the potential Package 2 rapid-transit-like service. Since rapid-transit-like fares (RT) would be lower than standard commuter rail fares (CR), it was expected that a Package 2 service with rapid-transit-like fares would attract more passengers than a Package 2 with standard commuter rail fares. In order to evaluate the feasibility of operating Package 2 service with rapid-transit-like fares, ridership estimates specific to the lower cost fare regime were developed for Package 2 in addition to the Package 2 estimates relating to standard commuter rail fares.

Table 4.9: Estimated Improvement Package Ridership

	Baseline	Package 1	Package 2 CR	Package 2 RT
Peak Headway	30	30	20	20
Off-peak Headway	80	40	40	40
Fare Type	CR	CR	CR	RT
Corresp. CTPS Scenario	3	3	6	7
Adjustment	None	1.38xOff-peak ridership	None	None
Total Weekday Inbound	1,760	2,246	3,200	3,800

The ridership forecasts presented in Table 4.9 were used to derive train lengths for each improvement package. Train length information is a key input for estimations of capital and operating costs.

Ridership and Running Times - Ridership forecasts are also used to estimate running times since dwell time is affected by the number of people boarding and alighting at each station. Running time estimates for this study were derived using 2002 ridership forecasts from an earlier study.

4.6. Capital Cost Estimates

Capital cost estimates were derived for the Baseline and nine service alternatives. Retrofitting coaches and reconstructing Readville station would substantially impact the capital cost of implementation. Therefore, three capital cost estimates were prepared for each package to account for changes to coach configuration and to Readville station across package alternatives. Because rapid-transit-like fares would require longer trains and the procurement of additional coaches to accommodate increased ridership relative to standard commuter rail fares, three cost estimates were prepared for Package 2 RT.

As discussed in Section 2.3, there is an immediate need for additional Southside storage and maintenance facilities. Planned increases in South Station services will intensify this need regardless of any increase to Fairmount services. While increases to Fairmount services would require additional Southside storage and maintenance facilities, it is beyond the scope of this study to identify solutions to this problem. However, an allowance for new facilities was estimated for improvement options requiring new or specialized equipment.

The capital costs calculated here do not include the already planned and funded work on bridges and stations.

4.6.1. Rolling Stock - New rolling stock would be required under all alternatives excluding the Baseline. The amount of new rolling stock required would depend on the level of service operated and the expected ridership. MBTA wishes to avoid the purchase of new single level coaches, preferring the capacity and flexibility of bi-level units. For the purposes of this study it was assumed that bi-level coaches would be procured for options that do not require a special door configuration. Where a special door configuration was considered some new single level coaches would be required.
Since wide center doors are not available for bi-level coaches, new coaches requiring a wide center door in addition to end vestibule doors would be single-level. For options requiring center doors, rolling stock expense would also be incurred to retrofit the existing single level coaches that would be used primarily for Fairmount operations.

Rather than purchase new single levels for additional Fairmount Branch capacity, it may be possible to retrofit existing MBTA Bombardier single level coaches that are slated to come out of the fleet. The single level coaches are to be replaced by new bi-level coaches that are expected to arrive around 2011. The MBTA estimates that the rehabilitation of those coaches to include center boarding doors would cost approximately $1 million.[21] JEK research indicates that new single level coaches typically cost $2.1 million.[22] Rolling stock costs estimates are based on procurement of new single levels, when required, as opposed to retrofitted 300 series cars.

Table 4.10: Estimates of Rolling Stock Costs

Description	Cost	Source
New Locomotive	$3.42 M	MBTA Capital Improvements Plan FY07-FY12
New Bi-level coach	$2.53 M	MBTA Capital Improvements Plan FY07-FY12
Coach overhaul (with new doors)	$1.00 M	MBTA Capital Improvements Plan FY07-FY12, JD Ray
New Single-level coach (new doors)	$2.14 M	American Public Transit Association: Rail Statistics[23]

4.6.2. Readville Station Improvements - A new Readville Station platform would be located within walking distance of the current complex of platforms at Readville on Conrail owned track that accesses the Fairmount Branch near "Dana" interlocking. Franklin trains that use the Fairmount Branch would continue to serve the existing platform. The new platform would be reserved for Fairmount trains only, allowing the trains to turn in the station without affecting the

[21] The MBTA estimates that the unmodified used cars would have a resale value of approximately $350,000. This residual value is not included in the estimates.
[22] Costs are for a single-level cab car as reported by the American Public Transit Authority (APTA). Average New Rail Vehicle Costs, 2005-2006. Retrieved July 23, 2007 from http://www.apta.com/research/stats/rail/railcost.cfm.
[23] Costs are for a single-level cab car as reported by the American Public Transit Authority (APTA). Average New Rail Vehicle Costs, 2005-2006. Retrieved July 23, 2007 from http://www.apta.com/research/stats/rail/railcost.cfm.

movement of other trains on the line. The track and signals already exist for this option. Estimates for the new platform are in the range of $1.5 million to $2.5 million. An 800-foot long high level platform would be approximately $2.5 million, and would include the following elements:

- Precast concrete platform panels
- Foundations
- 150-foot long steel canopy
- Access ramps, walkways and stairways
- Railing systems
- Signage
- Lighting & communications systems
- Amenities (benches, trash receptacles, etc.)

4.6.3. Storage and Maintenance Facilities – The estimated cost of constructing new storage and maintenance facilities was based on a JEK survey of related transit agency experience. This survey found costs to be correlated with the number of vehicles that would be stored and maintained at the new facilities. The per vehicle costs of new maintenance facilities (not including property acquisition) was assumed, in this study, to be $538,318.[24]

4.6.4. Capital Cost Estimates - Rolling stock costs vary with ridership and peak service frequency. Packages with an alternative door configuration will require additional costs to retrofit center doors on existing coaches that are required for service (Packages 1.3 and 2.3).

Presently, two trainsets are required to provide peak 30 minute headways on the Fairmount Line. One trainset (S) is dedicated to peak service on the Fairmount Line. Trainset O is dedicated to Fairmount in the afternoon. Trainsets X and Y service Fairmount in the morning peak.

JEK assumes, but has not verified, that equipment cycles could be adjusted such that set O could be dedicated to Fairmount service in both the morning and afternoon peaks. This would entail assigning set O's morning peak trips to sets X, Y or some other sets of equipment in the morning line-up.

Rolling stock requirements were calculated differently depending on whether Fairmount service would be operated with a dedicated fleet (Options 1.3, and 2.3) or not. For options not requiring a dedicated fleet, the study team minimized changes to existing vehicle line-ups and assumed that existing train sets would continue to operate at their current length.

Options requiring a dedicated fleet would be associated with a shift from the status quo of Fairmount operations. In this case, Fairmount trips would no longer be interfiled with other MBTA commuter rail services. For these options, the study team assumed that current line-ups

[24] New Jersey Institute of Technology and KKO and Associates, *Northern Branch Case Study: Strategic Analysis of the Application of Self-Powered Rail Cars in New Jersey.* Prepared for New Jersey Transit Spring 2004. pp. 48

would be reconfigured, consolidating Fairmount trips onto dedicated trains. For dedicated fleets,

Table 4.11: Rolling Stock Requirements[25]

Package	Description		New Locomotives	New Bi-level Coaches	New Single Levels/New Doors	Existing Single Levels/New Doors	Total New Units in Fleet
Base Line	Current service frequencies with four new stations		0	0	0	0	0
1.1	Baseline w/ off peak improvements: Extended hours of service, short midday and evening headways	Current Readville sta. Current coach doors	1	3			4
1.2		Alt. Readville station Current coach doors	1	3			4
1.3		Alt. Readville station Alt. coach doors	1			10	1
2.1 CR	Package 1 with 20 minute peak headways and commuter rail fares	Current Readville sta. Current coach doors	3	7			10
2.2 CR		Alt. Readville station Current coach doors	3	7			10
2.3 CR		Alt. Readville station Alt. coach doors	2		2	13	4
2.1 RT	Package 1 with 20 minute peak headways and rapid transit fares	Current Readville sta. Current coach doors	3	10			13
2.2 RT		Alt. Readville station Current coach doors	3	10			13
2.3 RT		Alt. Readville station Alt. coach doors	2		6	13	8

it was assumed that trains would be sized specific to Fairmount Line ridership.

Because of the difference in operating assumptions, options with dedicated Fairmount fleets required fewer new locomotives and coaches than their status quo counterparts. When changes to vehicle line-ups are minimized (status quo), three new train sets are required for service with 20 minute peak headways. When vehicle line-ups are reconfigured, two train sets (O and S), become available and only two new train sets are required for service with 20 minute headways. Sets O and S are currently longer than required for peak Fairmount ridership. For options with dedicated fleets, the additional coaches on these trains would be reassigned to new Fairmount train sets, reducing the number of new coaches required.

Capital Costs for the rolling stock vary from $11 million in Packages 1.1 and 1.2 to $36 million for Packages 2.1 and 2.2 RT as shown in Table 4.12.

[25] It was assumed that the MBTA maintained at least a 10% spare ratio for existing coaches. Therefore, spare coaches to cover modified existing single-levels were assumed to come from the MBTAs current fleet.

Table 4.12: Rolling Stock Capital Costs (millions)							
Package and Description			**New Locomotives**	**New Bi-levels**	**New Single Levels**	**Converted Single Levels**	**Total**
Base Line	Current service frequencies with four new stations		$0	$0	$0	$0	**$0**
1.1	Baseline w/ off peak improvements: Extended hours of service, short midday and evening headways	Current Readville sta. Current coach doors	$3.42	$7.59	$0	$0	**$11.01**
1.2		Alt. Readville station Current coach doors	$3.42	$7.59	$0	$0	**$11.01**
1.3		Alt. Readville station Alt. coach doors	$3.42	$0	$0	$10.00	**$13.42**
2.1 CR	Package 1 with 20 minute peak headways and commuter rail fares	Current Readville sta. Current coach doors	$10.26	$17.71	$0	$0	**$27.97**
2.2 CR		Alt. Readville station Current coach doors	$10.26	$17.71	$0	$0	**$27.97**
2.3 CR		Alt. Readville station Alt. coach doors	$6.84	$0	$4.28	$13.00	**$24.12**
2.1 RT	Package 1 with 20 minute peak headways and rapid transit fares	Current Readville sta. Current coach doors	$10.26	$25.30	$0	$0	**$35.56**
2.2 RT		Alt. Readville station Current coach doors	$10.26	$25.30	$0	$0	**$35.56**
2.3 RT		Alt. Readville station Alt. coach doors	$6.84	$0	$12.84	$13.00	**$32.68**

Suboptions two and three require a new Readville Station which is estimated to cost $2.5 million for a high platform berth.

Table 4.13: Readville Station Capital Costs			
	Current Configuration	**New Configuration**	**Total (millions)**
Baseline	X		$0
Package 1.1	X		$0
Package 1.2		X	$2.5
Package 1.3		X	$2.5
Package 2.1 CR	X		$0
Package 2.2 CR		X	$2.5
Package 2.3 CR		X	$2.5
Package 2.1 RT	X		$0
Package 2.2 RT		X	$2.5
Package 2.3 RT		X	$2.5

Due to the present shortage of Southside maintenance and storage facilities, an allowance for new facilities was estimated for improvement options requiring additional vehicles. The cost allotted for new facilities was based on estimates of property acquisition and the number of vehicles that would be serviced.

The parcel directly east of Readville yard on Wolcott Court would be a suitable location for these new facilities. The value of this property, as assessed in 2007[26], plus a 30% contingency was assumed as a placeholder for property acquisition costs.

It was assumed that any incremental conventional push-pull sets, and all DMU and modified push-pull sets would be maintained and stored in the new facilities. Table 4.14 lists the number and length of new or modified train sets required for each improvement option. For comparison with DMU options, the locomotive was counted as one vehicle in the train length column of Table 4.14.

Figure 4.1: Potential Site of New Maintenance and Storage Facilities Next To Readville Yard

[26] City of Boston (2007). Assessing On-line. Retrieved August 7, 2007 from www.cityofBoston.gov/assessing/search

Table 4.14 Number and Length of Required New Train Sets		
	Number of New or Modified Train Sets	**Length of New or Modified Train Sets (vehicles[1])**
Baseline	0	0
Package 1.1	1	3
Package 1.2	1	3
Package 1.3	3	4
Package 2.1 CR	3	3
Package 2.2 CR	3	3
Package 2.3 CR	4	4
Package 2.1 RT	3	4
Package 2.2 RT	3	4
	4	

Table 4.15 presents the costs estimated for new maintenance and storage facilities. The estimated cost of new facilities ranges from approximately $3 million for Packages 1.1 and 1.2, which each employ only four new vehicles, to $13 million for Package 2.3, which employs 23 vehicles made up of combination of new and modified equipment.

Table 4.15: Estimated Cost for New Maintenance and Storage Facilities

Package and Description			**Property Cost**	**Vehicles (new or modified)**	**Rail Facilities (millions)**	**Total (millions)**
Base Line	Current service frequencies with four new stations		$0	$0	$0	**$0**
1.1	Baseline w/ off peak improvements:	Current Readville sta. Current coach doors	$654,290	4	$2.15	**$2.81**
1.2	Extended hours of service, short	Alt. Readville station Current coach doors	$654,290	4	$2.15	**$2.81**
1.3	midday and evening headways	Alt. Readville station Alt. coach doors	$654,290	13	$7.00	**$7.65**
2.1 CR	Package 1 with 20 minute peak	Current Readville sta. Current coach doors	$654,290	10	$5.38	**$6.04**
2.2 CR	headways and commuter rail fares	Alt. Readville station Current coach doors	$654,290	10	$5.38	**$6.04**
2.3 CR		Alt. Readville station Alt. coach doors	$654,290	19	$10.23	**$10.88**
2.1 RT	Package 1 with 20 minute peak	Current Readville sta. Current coach doors	$654,290	13	$7.00	**$7.65**
2.2 RT	headways and rapid transit fares	Alt. Readville station Current coach doors	$654,290	13	$7.00	**$7.65**
2.3 RT		Alt. Readville station Alt. coach doors	$654,290	23	$12.38	**$13.04**

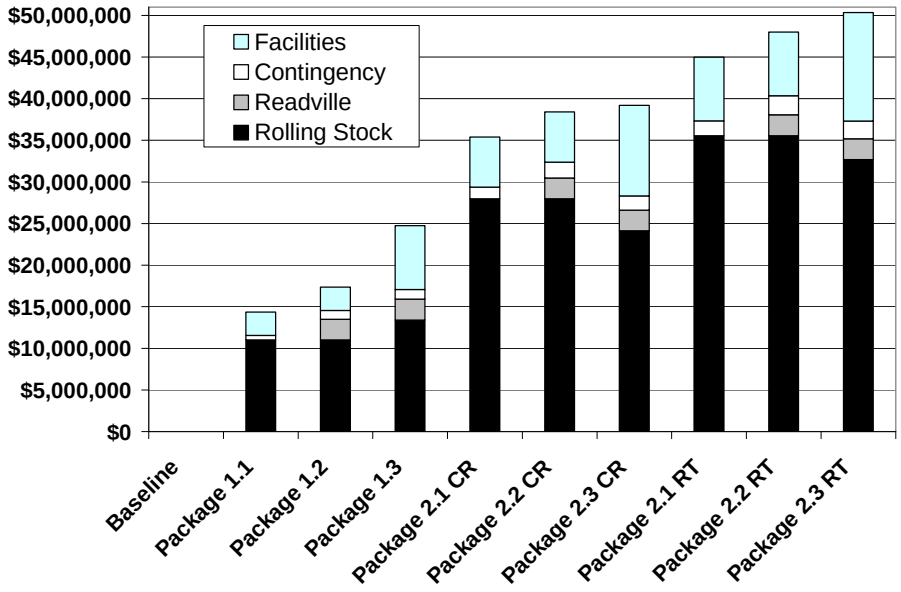
Contingencies of 5% for rolling stock procurement and 20% for the construction of the new Readville Station were applied. The total capital costs range from $14 million for Package 1.1 to

$50 million for Package 2.3 RT which includes a rapid transit fare policy, a new Readville station and a dedicated fleet of modified train sets.

Table 4.16: Forecast Capital Costs (millions)

Package and Description			Rolling Stock	Readville Station	Contingency	Storage and Maintenance Facilities	Total
Base Line	Current service frequencies with four new stations		$0	$0	$0	$0	**$0**
1.1	Baseline w/ off peak improvements: Extended hours of service, short midday and evening headways	Current Readville sta. Current coach doors	$11.01	$0	$0.55	$2.81	**$14.37**
1.2		Alt. Readville station Current coach doors	$11.01	$2.5	$1.05	$2.81	**$17.37**
1.3		Alt. Readville station Alt. coach doors	$13.42	$2.5	$1.17	$7.65	**$24.74**
2.1 CR	Package 1 with 20 minute peak headways and commuter rail fares	Current Readville sta. Current coach doors	$27.97	$0	$1.40	$6.04	**$35.41**
2.2 CR		Alt. Readville station Current coach doors	$27.97	$2.5	$1.90	$6.04	**$38.41**
2.3 CR		Alt. Readville station Alt. coach doors	$24.12	$2.5	$1.71	$10.88	**$39.21**
2.1 RT	Package 1 with 20 minute peak headways and rapid transit fares	Current Readville sta. Current coach doors	$35.56	$0	$1.78	$7.65	**$45.00**
2.2 RT		Alt. Readville station Current coach doors	$35.56	$2.5	$2.28	$7.65	**$48.00**
2.3 RT		Alt. Readville station Alt. coach doors	$32.68	$2.5	$2.13	$13.04	**$50.35**

Figure 4.2: Estimated Capital Cost of Implementation



4.7. Operating Cost Estimation Approach

Estimates of incremental operating costs were developed to assist in discriminating between packages. Five classes of costs are usually considered as shown below. However, for this analysis, only transportation, mechanical and administrative expenses are affected. The methodology employed has been used previously in several studies including the Commuter Rail Infrastructure Needs Assessment (CRINA) completed in 2004 by Vanasse Hangen Brustlin and KKO and Associates.

All costs used to develop the various cost factors are based on MBTA costs (budgeted and actual) since 1996, escalated to 2006 dollars. The estimates of incremental operating costs include the following elements that represent variable costs of additional services.

- **Mechanical Expense**
  - Coach maintenance
  - Locomotive maintenance
- **Transportation Expense**
  - Train and Engine Crew
  - Train Fuel
  - Train Supplies
- **Engineering Expense**
  - Infrastructure maintenance
- **Trackage Charges**
- **Administration**
  - General
  - Maintenance and Storage Capacity

4.7.1. Mechanical Expense - The study team chose to estimate the mechanical costs using budgeted maintenance costs for additional coaches and locomotives.[27] The cost factors to be used in screening planning alternatives are presented in Table 4.17.

Table 4.17: 2007 Estimates of Transportation Variable Cost Factors for MBTA Commuter Rail Service Improvements		
Costs that vary by coach count	Labor Materials Other	$90,720
Costs that vary by locomotive count	Labor Materials Other	$182,438

4.7.2. Transportation Expense[28] **-** Transportation costs generally vary with the amount of service that is offered in each alternative improvement package. Standard measures used to compare the amount of service entailed in various proposed rail schedules are train-miles and coach-miles. The study team researched budgeted historic MBTA costs to determine the range of transportation costs associated with operating the service on a train-mile and coach-mile basis. The recommended cost factors to be used in screening planning alternatives are presented in Table 4.18.

Table 4.18: 2006 Estimates of Transportation Variable Cost Factors for MBTA Commuter Rail Service Improvements		
Costs that vary by train mile	Enginemen Fuel	$6.63
Costs that vary by coach mile	Train Crew (Conductors)	$1.05

In order to determine coach miles, the number of coaches required to serve the peak load was calculated for each package where the peak load was dependant on the service frequency and fare structure assumed. Table 4.19 displays the peak load and number of coaches required for each scenario.

4.7.3. Administration

General Administration **-** In addition to the direct operational expenses estimated, an additive for administration and management is appropriate. For MBTA commuter rail, an additive of

[27] Budgeted costs were inflated by 5% annually to derive 2007 costs.

[28] Estimates for transportation costs (crew and fuel) for the MBTA and EOT service improvement studies were developed with differing methodologies leading to somewhat different findings. The MBTA study uses the methodology employed for the 2004 CRINA project updated to 2006 values. The CRINA average cost model tends to reflect lower escalation in fuel and benefits costs than have actually occurred in the last several years. By contrast the EOT methodology is a unit cost model employing more recent data concerning costs for fuel and benefits. Unit cost models can tend to generate higher estimates of incremental costs than average cost models. The differences in estimates of incremental operating costs between two approaches for similar options are in the range of 40% to 56% more for the EOT study than for the MBTA evaluation.

16.5% for system administration and management was applied to estimates of incremental costs, based on available National Transit Database reports for the MBTA (2003).

Maintenance and Storage Capacity – As noted earlier, MBTA's South Station operations are presently operating at or above the capacity of the storage and maintenance facilities necessary for reliable and economic service. Consequently any option that would add vehicles to the fleet could not be implemented without addressing this systemwide deficiency. Also as stated earlier, it is not the scope of this study to develop and propose new solutions to this known problem. From the perspectives of maintenance and operational flexibility, options that entail a special fleet of Fairmount equipment with a custom door configuration might add complications to South Side fleet management, increasing overall costs for rolling stock management. Consequently, a 15% contingency premium is added to all operating costs of any options that require specialized equipment.

4.8. Incremental Operating Cost Estimates

Using the cost estimation approach described in section 4.6, incremental operating costs were estimated for three service scenarios (Package 1 CR, Package 2 CR and Package 2 RT) and the Baseline. Operating costs estimates were derived for all three variants of each service package.

All incremental cost estimates are reported relative to the incremental costs associated with Baseline service.

4.8.1. Mechanical – No additional coaches are required in the Baseline, while the other packages require additional coaches and new trainsets, as shown in Table 4.19. The totals do not include a spare ratio for locomotives since only one to three units would be added to an already large fleet. A 10% spare ratio was used for coaches. Because the MBTA wishes to avoid the purchase of new single level coaches, it was assumed that bi-level coaches would be procured for options that do not require a special door configuration. Where a special door configuration was considered new or rehabilitated single level coaches would provide additional capacity instead on new bi-levels.[20]

Table 4.19: Number of Seats Required per Peak Trip					
Option	Total Inbound Boardings	Peak Hour Inbound Boardings[29]	Peak Hour Inbound Trains	Average Inbound Peak Trip Ridership	Bi-level Coaches Required per Peak Train[30]
Baseline	1,760	651	2	326	2
Package 1	2,246	831	3	277	2
Package 2 CR	3,200	1,184	4	296	2
Package 2 RT	3,800	1,406	4	352	3

Incremental mechanical costs for the alternatives range from $0.2 to $1.5 million as shown in Table 4.20.

Table 4.20: Estimates of Annual Incremental Mechanical Costs						
Option	New Locomotives	New Bi-level Coaches	New Single Level Coaches	Locomotive Costs	Coach Costs	Total Costs
Baseline	0	0	0	$0	$0	$0
Package 1.1	1	3	0	$182,438	$272,161	$454,599
Package 1.2	1	3	0	$182,438	$272,161	$454,599
Package 1.3	1	0	0	$182,438	$0	$182,438
Package 2.1	3	7	0	$547,313	$635,043	$1,182,356
Package 2.2 CR	3	7	0	$547,313	$635,043	$1,182,356
Package 2.3 CR	2	0	2	$364,875	$181,441	$546,316
Package 2.1	3	10	0	$547,313	$907,204	$1,454,517
Package 2.2 RT	3	10	0	$547,313	$907,204	$1,454,517
Package 2.3 RT	2	0	6	$364,875	$544,323	$909,198

4.8.2 Transportation – Although the same number of trips is operated under each alternative within a package, train lengths, and consequently coach miles, change depending on the operating assumption.

[29] Peak *hour* inbound boardings were assumed to be 37% of all inbound boardings according to observed distribution of arrivals into South Station by time of day from the Fairmount Line.

[30] Packages requiring modified door configurations would be operated by singe level coaches. In this case, three single-levels would be required for Baseline, Package 1 and Package 2 CR peak trips. Four single-level coaches would be required for Package 2 RT peak trips.

Presently the MBTA operates Fairmount service with five and six car trains despite the circumstance that no train's ridership justifies more than three cars of capacity. The MBTA uses this practice to provide some flexibility to substitute Fairmount equipment onto other services in the event of service disruption. Since trains fitted with wide, center doors would be dedicated to the Fairmount service, such substitutions would be unacceptable for options where special equipment would be assigned. Consequently, a dedicated fleet of three train sets would provide the same number of trips with many fewer coach miles. In order to account for the difference in coach miles, seven estimates of incremental transportation cost were prepared:

1.) Baseline
2.) Package 1.1 and 1.2 *(operating the same number of trips with equivalently sized trains)*
3.) Package 1.3 *(operating the same number of trips as 1.1 and 1.2 but with shorter trains)*
4.) Package 2.1 CR and 2.2 CR
5.) Package 2.3 CR
6.) Package 2.1 RT and 2.2 RT *(operating the same number of trips as 2.1 CR and 1.2 CR but with longer trains due to greater ridership)*
7.) Package 2.3 RT

The annual incremental transportation operating costs for the three improvement alternatives range from $500,000 to $1 million over the Baseline cost (the Baseline service offers three fewer daily trips than the current service). Table 4.21 summarizes the forecast transportation costs.

Table 4.21: Estimates of Annual Incremental Transportation Costs Relative to Baseline								
Package and Description			**Train Miles**	**Coach Miles**	**Train Costs**	**Coach Costs**	**Total Costs**
Base Line	Current service frequencies with four new stations		-	-	-	-	-
1.1	Baseline w/ off peak improvements: Extended hours of service, short midday and evening headways	Current Readville sta. Current coach doors	70,522	292,464	$467,232	$307,696	$774,928
1.2		Alt. Readville station Current coach doors	70,522	292,464	$467,232	$307,696	$774,928
1.3		Alt. Readville station Alt. coach doors	70,522	19,719	$467,232	$20,746	$487,977
2.1 CR	Package 1 with 20 minute peak headways and commuter rail fares	Current Readville sta. Current coach doors	108,684	180,433	$720,069	$189,830	$909,899
2.2 CR		Alt. Readville station Current coach doors	108,684	180,433	$720,069	$189,830	$909,899
2.3 CR		Alt. Readville station Alt. coach doors	108,684	85,665	$720,069	$90,127	$810,196
2.1 RT	Package 1 with 20 minute peak headways and rapid transit fares	Current Readville sta. Current coach doors	108,684	277,511	$720,069	$291,965	$1,012,034
2.2 RT		Alt. Readville station Current coach doors	108,684	277,511	$720,069	$291,965	$1,012,034
2.3 RT		Alt. Readville station Alt. coach doors	108,684	252,086	$720,069	$265,215	$985,284

4.8.3. Total Incremental Costs – Incremental operating costs for the alternatives range from $0.9 to $2.9 million more than Baseline costs. Packages 2.1 and 2.2 RT, which offer 20 minute peak headways and weekend service on both Saturday and Sunday are the most expensive options at $2.9 million in incremental annual expense.

Table 4.22: Estimates of Annual Overall Incremental Operating Cost Relative to Baseline						
Package and Description			**Mechanical Costs**	**Transportation Costs**	**Administration Costs**	**Total Annual Costs**
Base Line	Current service frequencies with four new stations		$0	$0	$0	$0
1.1	Baseline w/ off peak improvements: Extended hours of service, short midday and evening headways	Current Readville sta. Current coach doors	$454,599	$774,928	$202,872	$1,432,398
1.2		Alt. Readville station Current coach doors	$454,599	$774,928	$202,872	$1,432,398
1.3		Alt. Readville station Alt. coach doors	$182,438	$487,977	$183,815	$854,230

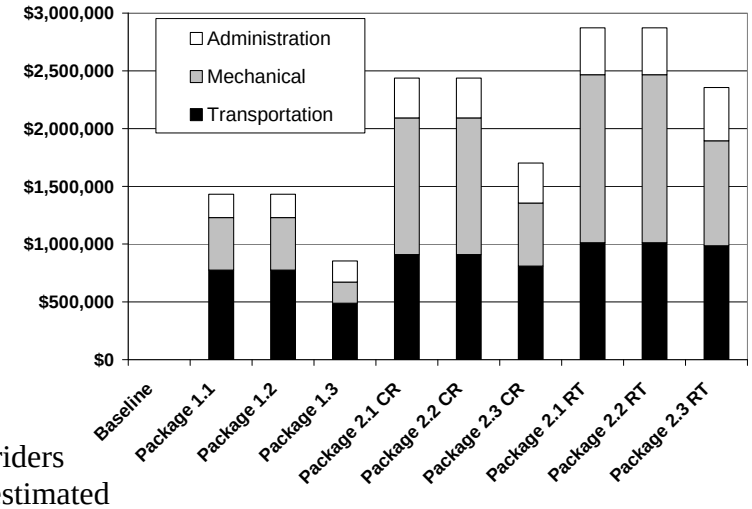
Table 4.22: Estimates of Annual Overall Incremental Operating Cost Relative to Baseline						
Package and Description			Mechanical Costs	Transportation Costs	Administration Costs	Total Annual Costs
2.1 CR	Package 1 with 20 minute peak headways and commuter rail fares	Current Readville sta. Current coach doors	$1,182,356	$909,899	$345,222	$2,437,476
2.2 CR		Alt. Readville station Current coach doors	$1,182,356	$909,899	$345,222	$2,437,476
2.3 CR		Alt. Readville station Alt. coach doors	$546,316	$810,196	$345,354	$1,701,865
2.1 RT	Package 1 with 20 minute peak headways and rapid transit fares	Current Readville sta. Current coach doors	$1,454,517	$1,012,034	$406,981	$2,873,532
2.2 RT		Alt. Readville station Current coach doors	$1,454,517	$1,012,034	$406,981	$2,873,532
2.3 RT		Alt. Readville station Alt. coach doors	$909,198	$985,284	$460,382	$2,354,864

4.9. Evaluation

This portion of the report integrates information from the passenger and revenue forecasts with estimates of operating and capital costs to provide two key measures to rank and evaluate the alternative service regimes.

1. Incremental Capital Cost/Incremental Passenger Trip
2. Incremental Operating Cost/Incremental Rider

Figure 4.3:
Estimated Annual Incremental Operating Cost



4.9.1 Incremental Capital Cost per Incremental Rider - For each alternative, incremental capital costs and incremental riders were calculated relative to the Baseline's estimated capital cost and forecast ridership. The incremental capital costs per incremental rider estimates range between approximately $22,000 and $51,000. The alternative with the highest capital cost per new rider is Package 1.3 which features a newly configured Readville station and a dedicated fleet of trains with improved door operations. Package 2.1 RT, which features 20 minute headways and a rapid-transit like fare policy, is associated with the lowest capital cost per new rider. The alternatives with the most favorable rankings all feature 20-minute headways on the line. Alternatives that use rapid transit fares tend to have attract more riders lowering the forecast capital cost per rider.

Table 4.23: Incremental Capital Cost per Incremental Rider	
Package 1.1	$29,579
Package 1.2	$35,754
Package 1.3	$50,938
Package 2.1 CR	$24,587
Package 2.2 CR	$26,671
Package 2.3 CR	$27,228
Package 2.1 RT	$22,054
Package 2.2 RT	$23,525
Package 2.3 RT	$24,681

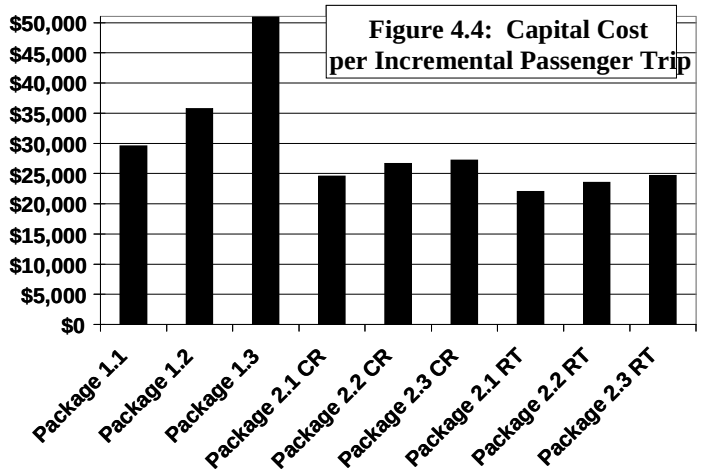


Figure 4.4: Capital Cost per Incremental Passenger Trip

4.9.2. Incremental Operating Cost per Incremental Passenger Trip - For each alternative, incremental operating costs and incremental trips were calculated relative to the Baseline's estimated operating cost and forecast ridership. In order to obtain an annual passenger trip estimate to correspond to annual operating cost figures, daily passenger trip forecasts were multiplied by 275[31].

Table 4.24: Incremental Operating Cost per Incremental Passenger Trip	
Package 1.1	$5.36
Package 1.2	$5.36
Package 1.3	$3.20
Package 2.1 CR	$3.08
Package 2.2 CR	$3.08
Package 2.3 CR	$2.15
Package 2.1 RT	$2.56

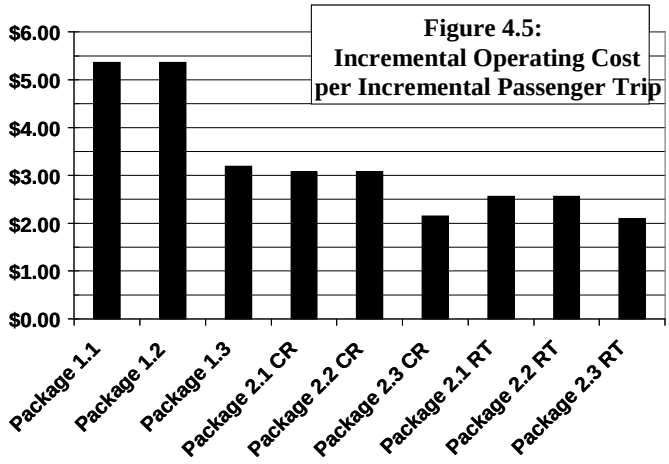


Figure 4.5: Incremental Operating Cost per Incremental Passenger Trip

Incremental Operating Costs per Incremental Passenger Trip range from $2.10 to $5.36. As with the previous evaluation measure, the options that feature 20 minute peak headways attract the most riders and exhibit the most attractive operating cost/passenger ratios. Options featuring rapid transit fares are forecast to be somewhat more attractive than options charging a commuter rail fare due to higher ridership levels. The alternatives with the highest operating cost per new rider are Packages 1.1 and 1.2 which achieve only a modest increase in ridership. Package 2.3 RT which operates with a dedicated fleet under rapid-transit-like fares is associated with the lowest operating cost per new trip.

[31] 275 was specified by CTPS' Scott Peterson as the CTPS standard factor for converting daily figures to annual figures.

APPENDIX

The appendix contains schedules of all preliminary service options and refined service packages evaluated for the MBTA Fairmount Service Enhancement Study.

Key: SH = Southampton Street layover
FR= Franklin layover
RDV = Readville layover
F7-- = Franklin train

Baseline

Inbound Service

STATION	MP	F790	744	746	F706	748	750	752	F792	754	756	758	760	764	767X	766	768	770	772	774	776	778	780
Cycle	MP	s	y	s	h	x	s	h	l	m	m	m	m	x	o	u	o	o	s	o	s	s	s
Readville	9.1	5:50	6:20	6:54	7:12	7:44	8:10	8:40	9:00	10:00	11:20	12:40	14:00	15:00		15:40	16:24	17:45	18:25	19:05	19:40	21:00	22:20
Fairmount	8.2	5:53	6:23	6:57	7:15	7:47	8:13	8:43	9:03	10:02	11:22	12:42	14:02	15:02	15:20	15:42	16:26		18:27	19:07	19:42	21:02	22:22
Blue Hill Avenue	6.3	5:57	6:27	7:01	7:19	7:51	8:17	8:47	9:07	10:06	11:26	12:46	14:06	15:06		15:46	16:30		18:31	19:11	19:46	21:06	22:26
Morton Street	5.7	5:59	6:29	7:03	7:21	7:53	8:19	8:49	9:09	10:08	11:28	12:48	14:08	15:08		15:48	16:32	17:50	18:33	19:13	19:48	21:08	22:28
Talbot Avenue	4.8	6:03	6:33	7:07	7:25	7:57	8:23	8:53	9:13	10:11	11:31	12:51	14:11	15:11		15:51	16:35	17:52	18:36	19:16	19:51	21:11	22:31
Four Corners	4.0	6:07	6:37	7:11	7:29	8:01	8:27	8:57	9:17	10:13	11:33	12:53	14:13	15:13		15:53	16:37	17:55	18:38	19:18	19:53	21:13	22:33
Uphams Corner	2.9	6:10	6:40	7:14	7:32	8:04	8:30	9:00	9:20	10:16	11:36	12:56	14:16	15:16		15:56	16:40		18:41	19:21	19:56	21:16	22:36
Newmarket	2.3	6:12	6:42	7:16	7:34	8:06	8:32	9:02	9:22	10:18	11:38	12:58	14:18	15:18		15:58	16:42			19:23	19:58	21:18	22:38
South Station	0.0	6:20	6:50	7:24	7:42	8:14	8:40	9:10	9:30	10:26	11:46	13:06	14:26	15:26	15:33	16:06	16:50	18:05	18:49	19:31	20:06	21:26	22:46

Previous Train	703	743	745	FR	747	749	751	797	753	755	757	759	763	RDV	765	767	769	771	773	775	777	779
Time In	4:50	6:06	6:44		7:33	8:00	8:26	7:57	9:46	11:06	12:26	13:46	14:46		15:30	16:15	17:35	18:15	18:55	19:30	20:46	22:06
Next Train	745	793	749	751	509	SH	611	SH	755	757	759	SH	619	767	621	769	773	775	727	777	779	539
Time Out	6:30	7:05	7:34	8:00	9:00		10:05		10:40	12:00	13:20		16:05	15:45	16:40	17:05	18:25	19:00	20:50	20:20	21:40	23:25

Outbound Service

STATION	MP	743	745	747	749	751	753	755	757	759	763	765	767	F799	769	771	773	775	777	779
Cycle	MP	y	s	x	s	h	m	m	m	m	x	u	o	p	o	s	o	s	s	s
South Station	0.0	5:40	6:30	7:15	7:34	8:00	9:20	10:40	12:00	13:20	14:20	15:00	15:45	16:30	17:05	17:45	18:25	19:00	20:20	21:40
Newmarket	2.3	5:45			7:39	8:05	9:25	10:45	12:05	13:25	14:25	15:05	15:50	16:35	17:10	17:50	18:30	19:05	20:25	21:45
Uphams Corner	2.9	5:47			7:41	8:07	9:27	10:47	12:07	13:27	14:27	15:08	15:53	16:38	17:13	17:53	18:33	19:08	20:27	21:47
Four Corners	4.0	5:50			7:44	8:10	9:30	10:50	12:10	13:30	14:30	15:12	15:57	16:42	17:17	17:57	18:37	19:12	20:30	21:50
Talbot Avenue	4.8	5:53			7:47	8:13	9:33	10:53	12:13	13:33	14:33	15:16	16:01	16:46	17:21	18:01	18:41	19:16	20:33	21:53
Morton Street	5.7	5:56			7:50	8:16	9:36	10:56	12:16	13:36	14:36	15:19	16:04	16:49	17:24	18:04	18:44	19:19	20:36	21:56
Blue Hill Avenue	6.3	5:58			7:52	8:18	9:38	10:58	12:18	13:38	14:38	15:21	16:06	16:51	17:26	18:06	18:46	19:21	20:38	21:58
Fairmount	8.2	6:01			7:55	8:21	9:41	11:01	12:21	13:41	14:41	15:25	16:10	16:55	17:30	18:10	18:50	19:25	20:41	22:01
Readville	9.1	6:06	6:44	7:33	8:00	8:26	9:46	11:06	12:26	13:46	14:46	15:30	16:15	17:00	17:35	18:15	18:55	19:30	20:46	22:06

Previous Train	SH	F790	902	746	F706	512	754	756	758	SH	916	767X	616	768	SH	770	772	774	778
Time In		6:20	7:04	7:24	7:42	8:58	10:26	11:46	13:06		14:49	15:33	15:30	16:50		18:05	18:49	19:31	21:26
Next Train	744	746	748	750	752	754	756	758	760	764	766	768	FR	770	772	774	776	778	780
Time Out	6:20	6:54	7:44	8:10	8:40	10:00	11:20	12:40	14:00	15:00	15:40	16:24		17:45	18:25	19:05	19:40	21:00	22:20

Option P1

Inbound Service

STATION	MP	742	F790	744	746	748	750	752	754	F792	756	758	760	762	769X	764	766	768	770	772	774	776	779X	778	780	782	784
Cycle	MP	s'	s	y	s'	s	x	s'	h	l	m	m	m	m	o	x	u	o	s	s'	o	s	s'	o	s	s	s
Readville	9.1	5:30	5:50	6:16	6:46	7:16	7:44	8:02	8:40	9:00	10:00	11:20	12:40	14:00		15:00	15:40	16:05	16:25	16:55	17:25	17:43	18:11	18:50	19:15	21:00	22:20
Fairmount	8.2	5:33	5:53	6:19	6:49	7:19	7:47	8:05	8:43	9:03	10:02	11:22	12:42	14:02	14:58	15:02	15:42	16:07	16:27	16:57	17:27	17:45		18:52	19:17	21:02	22:22
Blue Hill Avenue	6.3	5:37	5:57	6:23	6:53	7:23	7:51	8:09	8:47	9:07	10:06	11:26	12:46	14:06		15:06	15:46	16:11	16:31	17:01	17:31			18:56	19:21	21:06	22:26
Morton Street	5.7	5:39	5:59	6:25	6:55	7:25	7:53	8:11	8:49	9:09	10:08	11:28	12:48	14:08		15:08	15:48	16:13	16:33	17:03	17:33	17:49		18:58	19:23	21:08	22:28
Talbot Avenue	4.8	5:43	6:03	6:29	6:59	7:29	7:57	8:15	8:53	9:13	10:11	11:31	12:51	14:11		15:11	15:51	16:16	16:36	17:06	17:36			19:01	19:26	21:11	22:31
Four Corners	4.0	5:47	6:07	6:33	7:03	7:33	8:01	8:19	8:57	9:17	10:13	11:33	12:53	14:13		15:13	15:53	16:18	16:38	17:08	17:38	17:53		19:03	19:28	21:13	22:33
Uphams Corner	2.9	5:50	6:10	6:36	7:06	7:36	8:04	8:22	9:00	9:20	10:16	11:36	12:56	14:16		15:16	15:56	16:21	16:41	17:11	17:41	17:56		19:06	19:31	21:16	22:36
Newmarket	2.3	5:52	6:12	6:38	7:08	7:38	8:06	8:24	9:02	9:22	10:18	11:38	12:58	14:18		15:18	15:58	16:23	16:43	17:13	17:43			19:08	19:33	21:18	22:38
South Station	0.0	6:00	6:20	6:46	7:16	7:46	8:14	8:32	9:10	9:30	10:26	11:46	13:06	14:26	15:12	15:26	16:06	16:31	16:51	17:21	17:52	18:02	18:26	19:16	19:41	21:26	22:46

Previous Train	742X	703	743	745	747	749	751	753	797	755	757	759	761	RDV	763	765	767	769	771	773	775	777	779	781	783	785
Time In	5:19	4:50	6:06	6:36	6:40	7:33	7:52	8:26	7:57	9:46	11:06	12:26	13:46		14:46	15:30	15:55	16:15	16:45	17:15	17:33	18:01	18:32	18:55	20:46	22:06
Next Train	745	747	793	751	SH	509	SH	611	SH	757	759	761	SH	767	619	621	773	775	777	779	781	SH	727	783	785	539
Time Out	6:10	6:40	7:05	7:26		9:00		10:05		10:40	12:00	13:20		15:25	16:05	16:40	16:45	17:03	17:31	18:02	18:25		20:50	20:20	21:40	23:25

Outbound Service

STATION	MP	742X	743	745	747	749	751	753	755	757	759	761	763	765	767	769	771	F799	773	775	777	779	781	783	785
Cycle	MP	s'	y	s'	s	x	s'	h	m	m	m	m	x	u	o	s	s'	p	o	s	s'	o	s	s	s
South Station	0.0	5:05	5:40	6:10	6:40	7:15	7:26	8:00	9:20	10:40	12:00	13:20	14:20	15:00	15:25	15:45	16:15	16:30	16:45	17:03	17:31	18:02	18:25	20:20	21:40
Newmarket	2.3		5:45	6:15	6:45		7:31	8:05	9:25	10:45	12:05	13:25	14:25	15:05	15:30	15:50	16:20	16:35	16:50	17:08	17:36	18:07	18:30	20:25	21:45
Uphams Corner	2.9		5:47	6:17	6:47		7:33	8:07	9:27	10:47	12:07	13:27	14:27	15:08	15:33	15:53	16:23	16:38	16:53	17:11	17:39	18:10	18:33	20:27	21:47
Four Corners	4.0		5:50	6:20	6:50		7:36	8:10	9:30	10:50	12:10	13:30	14:30	15:12	15:37	15:57	16:27	16:42	16:57	17:15	17:43	18:14	18:37	20:30	21:50
Talbot Avenue	4.8		5:53	6:23	6:53		7:39	8:13	9:33	10:53	12:13	13:33	14:33	15:16	15:41	16:01	16:31	16:46	17:01	17:19	17:47	18:18	18:41	20:33	21:53
Morton Street	5.7		5:56	6:26	6:56		7:42	8:16	9:36	10:56	12:16	13:36	14:36	15:19	15:44	16:04	16:34	16:49	17:04	17:22	17:50	18:21	18:44	20:36	21:56
Blue Hill Avenue	6.3		5:58	6:28	6:58		7:44	8:18	9:38	10:58	12:18	13:38	14:38	15:21	15:46	16:06	16:36	16:51	17:06	17:24	17:52	18:23	18:46	20:38	21:58
Fairmount	8.2		6:01	6:31	7:01		7:47	8:21	9:41	11:01	12:21	13:41	14:41	15:25	15:50	16:10	16:40	16:55	17:10	17:28	17:56	18:27	18:50	20:41	22:01
Readville	9.1	5:19	6:06	6:36	7:06	7:33	7:52	8:26	9:46	11:06	12:26	13:46	14:46	15:30	15:55	16:15	16:45	17:00	17:15	17:33	18:01	18:32	18:55	20:46	22:06

Previous Train	SH	SH	742	F790	902	746	F706	512	756	758	760	SH	916	769X	SH	SH	616	768	770	772	774	776	780	782
Time In			6:00	6:20	7:04	7:16	7:41	8:58	10:26	11:46	13:06		14:49	15:12			15:30	16:31	16:51	17:21	17:52	18:02	19:41	21:26
Next Train	742	744	746	748	750	752	754	756	758	760	762	764	766	768	770	772	FR	774	776	779X	778	780	782	784
Time Out	5:30	6:16	6:46	7:16	7:44	8:02	8:40	10:00	11:20	12:40	14:00	15:00	15:40	16:05	16:25	16:55		17:25	17:43	18:11	18:50	19:15	21:00	22:20

Option P2

Inbound Service

STATION	MP	740	F790	742	744	748	750	752	754	F792	756	758	760	762	767X	764	766	768	770	772	774	776	778	780	782	784	786	788	790
Cycle	MP	s'	s	y	s'	s	s"	x	h	l	m	m	m	m	o	x	u	o	s"	o	s"	s'	s	o	s"	s'	s	s	s
Readville	9.1	5:30	5:50	6:25	6:50	7:23	7:48	8:08	8:28	9:00	10:00	11:20	12:40	14:00		15:29	15:50	16:10	16:30	17:30	17:47	18:10	18:30	18:50	19:10	19:30	19:46	21:00	22:20
Fairmount	8.2	5:32	5:53	6:28	6:53	7:26	7:51	8:11	8:31	9:03	10:02	11:22	12:42	14:02	15:00	15:31	15:52	16:12	16:32	17:32			18:32	18:52	19:12	19:30	19:48	21:02	22:22
Blue Hill Avenue	6.3	5:36	5:57	6:32	6:57	7:30	7:55	8:15	8:35	9:07	10:06	11:26	12:46	14:06		15:35	15:56	16:16	16:36	17:36			18:36	18:56	19:16	19:30	19:52	21:06	22:26
Morton Street	5.7	5:38	5:59	6:34	6:59	7:32	7:57	8:17	8:37	9:09	10:08	11:28	12:48	14:08		15:37	15:58	16:18	16:38	17:38			18:38	18:58	19:18	19:30	19:54	21:08	22:28
Talbot Avenue	4.8	5:40	6:03	6:38	7:03	7:36	8:01	8:21	8:41	9:13	10:11	11:31	12:51	14:11		15:40	16:01	16:21	16:41	17:41	17:53	18:16	18:41	19:01	19:21	19:30	19:57	21:11	22:31
Four Corners	4.0	5:43	6:07	6:42	7:07	7:40	8:05	8:25	8:45	9:17	10:13	11:33	12:53	14:13		15:42	16:03	16:23	16:43	17:43	17:55	18:18	18:43	19:03	19:23	19:30	19:59	21:13	22:33
Uphams Corner	2.9	5:46	6:10	6:45	7:10	7:43	8:08	8:28	8:48	9:20	10:16	11:36	12:56	14:16		15:45	16:06	16:26	16:46	17:46			18:46	19:06	19:26	19:30	20:02	21:16	22:36
Newmarket	2.3	5:48	6:12	6:47	7:12	7:45	8:10	8:30	8:50	9:22	10:18	11:38	12:58	14:18		15:47	16:08	16:28	16:48	17:48			18:48	19:08	19:28	19:30	20:04	21:18	22:38
South Station	0.0	5:55	6:20	6:55	7:20	7:53	8:18	8:38	8:58	9:30	10:26	11:46	13:06	14:26	15:14	15:55	16:16	16:36	16:56	17:57	18:03	18:27	18:56	19:16	19:36	19:30	20:12	21:26	22:46

Previous Train	740X	703	739	741	745	747	749	751	797	753	755	757	759	RDV	761	761	765	767	771	773	775	777	779	781	783	785	787	789
Time In	5:19	4:50	5:47	6:36	7:01	7:38	7:58	8:18	7:57	9:46	11:06	12:26	13:46		15:19	14:53	16:00	16:20	17:20	17:37	18:00	18:20	18:40	19:00	19:20	19:36	20:48	22:06
Next Train	**741**	**745**	**793**	**SH**	**SH**	**SH**	**509**	**611**	**SH**	**755**	**757**	**759**	**SH**	**767**	**619**	**621**	**771**	**773**	**779**	**781**	**783**	**785**	**727**	**SH**	**SH**	**787**	**789**	**539**
Time Out	6:10	6:35	7:05				9:00	10:05		10:40	12:00	13:20		15:50	16:05	16:40	16:50	17:07	18:10	18:30	18:50	19:10	20:50			20:22	21:40	23:25

Outbound Service

STATION	MP	740X	739	741	745	747	749	751	753	755	757	759	761	763	765	767	F799	771	773	775	777	779	781	783	785	787	789
Cycle	MP	s'	y	s'	s	s"	x	h	m	m	m	m	m	x	u	o	s"	p	o	s"	s'	s	o	s"	s'	s	s	s
South Station	0.0	5:05	5:47	6:10	6:35	7:12	7:32	8:00	9:20	10:40	12:00	13:20	14:53	15:10	15:30	15:50	16:30	16:50	17:07	17:30	17:50	18:10	18:30	18:50	19:10	20:22	21:40	
Newmarket	2.3		5:52	6:15	6:40	7:17	7:37		9:25	10:45	12:05	13:25	14:58	15:15	15:35	15:55	16:35	16:55	17:12	17:35	17:55	18:15	18:35	18:55	19:15	20:27	21:45	
Uphams Corner	2.9		5:54	6:17	6:42	7:19	7:39		9:27	10:47	12:07	13:27	15:00	15:18	15:38	15:58	16:38	16:58	17:15	17:38	17:58	18:18	18:38	18:58	19:17	20:29	21:47	
Four Corners	4.0		5:57	6:20	6:45	7:22	7:42	8:08	9:30	10:50	12:10	13:30	15:03	15:22	15:42	16:02	16:42	17:02	17:19	17:42	18:02	18:22	18:42	19:02	19:20	20:32	21:50	
Talbot Avenue	4.8		6:00	6:23	6:48	7:25	7:45	8:11	9:33	10:53	12:13	13:33	15:06	15:26	15:46	16:06	16:46	17:06	17:23	17:46	18:06	18:26	18:46	19:06	19:23	20:35	21:53	
Morton Street	5.7		6:03	6:26	6:51	7:28	7:48		9:36	10:56	12:16	13:36	15:09	15:29	15:49	16:09	16:49	17:09	17:26	17:49	18:09	18:29	18:49	19:09	19:26	20:38	21:56	
Blue Hill Avenue	6.3		6:05	6:28	6:53	7:30	7:50		9:38	10:58	12:18	13:38	15:11	15:31	15:51	16:11	16:51	17:11	17:28	17:51	18:11	18:31	18:51	19:11	19:28	20:40	21:58	
Fairmount	8.2		6:08	6:31	6:56	7:33	7:53		9:41	11:01	12:21	13:41	15:14	15:35	15:55	16:15	16:55	17:15	17:32	17:55	18:15	18:35	18:55	19:15	19:31	20:43	22:01	
Readville	9.1	5:19	6:13	6:36	7:01	7:38	7:58	8:18	9:46	11:06	12:26	13:46	15:19	15:40	16:00	16:20	17:00	17:20	17:37	18:00	18:20	18:40	19:00	19:20	19:36	20:48	22:06	

Previous Train	SH	SH	740	F790	SH	902	F706	512	756	758	760	SH	916	SH	SH	616	768	770	SH	SH	772	774	776	778	786	788
Time In			5:55	6:20		7:14	7:42	8:58	10:26	11:46	13:06		14:49			15:30	16:36	16:56			17:57	18:03	18:27	18:56	20:12	21:26
Next Train	**740**	**742**	**744**	**748**	**750**	**752**	**754**	**756**	**758**	**760**	**762**	**764**	**766**	**768**	**770**	**FR**	**772**	**774**	**776**	**778**	**780**	**782**	**784**	**786**	**788**	**790**
Time Out	5:30	6:25	6:50	7:23	7:48	8:08	8:28	10:00	11:20	12:40	14:00	15:29	15:50	16:10	16:30		17:30	17:47	18:10	18:30	18:50	19:10	19:30	19:46	21:00	22:20

Option P3

Inbound Service

STATION	MP	740	F790	742	744	746	748	750	752	754	F792	756	758	760	762	765X	764	766	768	770	772	774	776	778	780	782	784	786	788	790
Cycle	MP	s"	s	y	s"	s'	s	s"'	x	h	l	m	m	m	m	o	x	u	o	s"'	o	s"'	s"	s	o	s"'	s"	s	s	s
Readville	9.1	5:30	5:50	6:23	6:43	7:03	7:23	7:48	8:08	8:28	9:00	10:00	11:20	12:40	14:00		15:29	15:50	16:10	16:30	17:30	17:47	18:10	18:30	18:50	19:10	19:30	19:46	21:00	22:20
Fairmount	8.2	5:32	5:53	6:26	6:46	7:06	7:26	7:51	8:11	8:31	9:03	10:02	11:22	12:42	14:02	15:00	15:31	15:52	16:12	16:32	17:32			18:32	18:52	19:12	19:32	19:48	21:02	22:22
Blue Hill Avenue	6.3	5:36	5:57	6:30	6:50	7:10	7:30	7:55	8:15	8:35	9:07	10:06	11:26	12:46	14:06		15:35	15:56	16:16	16:36	17:36			18:36	18:56	19:16	19:36	19:52	21:06	22:26
Morton Street	5.7	5:38	5:59	6:32	6:52	7:12	7:32	7:57	8:17	8:37	9:09	10:08	11:28	12:48	14:08		15:37	15:58	16:18	16:38	17:38			18:38	18:58	19:18	19:38	19:54	21:08	22:28
Talbot Avenue	4.8	5:40	6:03	6:36	6:56	7:16	7:36	8:01	8:21	8:41	9:13	10:11	11:31	12:51	14:11		15:40	16:01	16:21	16:41	17:41	17:53	18:16	18:41	19:01	19:21	19:41	19:57	21:11	22:31
Four Corners	4.0	5:43	6:07	6:40	7:00	7:20	7:40	8:05	8:25	8:45	9:17	10:13	11:33	12:53	14:13		15:42	16:03	16:23	16:43	17:43	17:55	18:18	18:43	19:03	19:23	19:43	19:59	21:13	22:33
Uphams Corner	2.9	5:46	6:10	6:43	7:03	7:23	7:43	8:08	8:28	8:48	9:20	10:16	11:36	12:56	14:16		15:45	16:06	16:26	16:46	17:46			18:46	19:06	19:26	19:46	20:02	21:16	22:36
Newmarket	2.3	5:48	6:12	6:45	7:05	7:25	7:45	8:10	8:30	8:50	9:22	10:18	11:38	12:58	14:18		15:47	16:08	16:28	16:48	17:48			18:48	19:08	19:28	19:48	20:04	21:18	22:38
South Station	0.0	5:55	6:20	6:53	7:13	7:33	7:53	8:18	8:38	8:58	9:30	10:26	11:46	13:06	14:26	15:14	15:55	16:16	16:36	16:56	17:57	18:03	18:27	18:56	19:16	19:36	19:56	20:12	21:26	22:46

Previous Train	740X	703	739	741	743	745	747	749	751	797	753	755	757	759	RDV	761	761	765	767	771	773	775	777	779	781	783	785	787	789
Time In	5:19	4:50	5:47	6:33	6:50	7:13	7:38	7:58	8:18	7:57	9:46	11:06	12:26	13:46		15:19	14:53	16:00	16:20	17:20	17:37	18:00	18:20	18:40	19:00	19:20	19:36	20:48	22:06	
Next Train	**741**	**745**	**793**	**SH**	**SH**	**SH**	**SH**	**509**	**611**	**SH**	**755**	**757**	**759**	**SH**	**765**	**619**	**621**	**771**	**773**	**779**	**781**	**783**	**785**	**727**	**SH**	**SH**	**787**	**789**	**539**	
Time Out	6:07	6:47	7:05					9:00	10:05		10:40	12:00	13:20		15:30	16:05	15:40	16:50	17:07	18:10	18:30	18:50	19:10	20:50			20:22	21:40	23:25	

Outbound Service

STATION	MP	740X	739	741	743	745	747	749	751	753	755	757	759	761	763	765	767	769	F799	771	773	775	777	779	781	783	785	787	789
Cycle	MP	s"	y	s"	s'	s	s"'	x	h	m	m	m	m	x	u	o	s"'	s'	p	o	s"'	s"	s	o	s"'	s"	s	s	s
South Station	0.0	5:05	5:47	6:07	6:24	6:47	7:12	7:32	8:00	9:20	10:40	12:00	13:20	14:53	15:10	15:30	15:50	16:10	16:30	16:50	17:07	17:30	17:50	18:10	18:30	18:50	19:10	20:22	21:40	
Newmarket	2.3		5:52	6:12	6:29	6:52	7:17	7:37		9:25	10:45	12:05	13:25	14:58	15:15	15:35	15:55	16:15	16:35	16:55	17:12	17:35	17:55	18:15	18:35	18:55	19:15	20:27	21:45	
Uphams Corner	2.9		5:54	6:14	6:31	6:54	7:19	7:39		9:27	10:47	12:07	13:27	15:00	15:18	15:38	15:58	16:18	16:38	16:58	17:15	17:38	17:58	18:18	18:38	18:58	19:17	20:29	21:47	
Four Corners	4.0		5:57	6:17	6:34	6:57	7:22	7:42	8:08	9:30	10:50	12:10	13:30	15:03	15:22	15:42	16:02	16:22	16:42	17:02	17:19	17:42	18:02	18:22	18:42	19:02	19:20	20:32	21:50	
Talbot Avenue	4.8		6:00	6:20	6:37	7:00	7:25	7:45	8:11	9:33	10:53	12:13	13:33	15:06	15:26	15:46	16:06	16:26	16:46	17:06	17:23	17:46	18:06	18:26	18:46	19:06	19:23	20:35	21:53	
Morton Street	5.7		6:03	6:23	6:40	7:03	7:28	7:48		9:36	10:56	12:16	13:36	15:09	15:29	15:49	16:09	16:29	16:49	17:09	17:26	17:49	18:09	18:29	18:49	19:09	19:26	20:38	21:56	
Blue Hill Avenue	6.3		6:05	6:25	6:42	7:05	7:30	7:50		9:38	10:58	12:18	13:38	15:11	15:31	15:51	16:11	16:31	16:51	17:11	17:28	17:51	18:11	18:31	18:51	19:11	19:28	20:40	21:58	
Fairmount	8.2		6:08	6:28	6:45	7:08	7:33	7:53		9:41	11:01	12:21	13:41	15:14	15:35	15:55	16:15	16:35	16:55	17:15	17:32	17:55	18:15	18:35	18:55	19:15	19:31	20:43	22:01	
Readville	9.1	5:19	6:13	6:33	6:50	7:13	7:38	7:58	8:18	9:46	11:06	12:26	13:46	15:19	15:40	16:00	16:20	16:40	17:00	17:20	17:37	18:00	18:20	18:40	19:00	19:20	19:36	20:48	22:06	

Previous Train	SH	SH	740	SH	F790	SH	902	F706	512	756	758	760	SH	918	765X	SH	SH	616	768	770	SH	SH	772	774	776	778	786	788
Time In			5:55		6:20		7:14	7:42	8:58	10:26	11:46	13:06		14:38	15:14			16:50	16:36	16:56			17:57	18:03	18:27	18:56	20:12	21:26
Next Train	**740**	**742**	**744**	**746**	**748**	**750**	**752**	**754**	**756**	**758**	**760**	**762**	**764**	**768**	**768**	**770**	**FR**	**FR**	**772**	**774**	**776**	**778**	**780**	**782**	**784**	**786**	**788**	**790**
Time Out	5:30	6:23	6:43	7:03	7:23	7:48	8:08	8:28	10:00	11:20	12:40	14:00	15:29	16:10	16:10	16:30			17:30	17:47	18:10	18:30	18:50	19:10	19:30	19:46	21:00	22:20

Option O1

STATION	MP	F790	744	746	F706	748	750	752	F792	754	756	758	760	764	767X	766	768	770	772	774	776	778	780	782
Cycle	MP	s	y	s	h	x	s	h	l	m	m	m	m	x	o	u	o	o	s	o	s	s	s	s
Readville	9.1	5:50	6:20	6:54	7:12	7:44	8:10	8:40	9:00	10:00	11:20	12:40	14:00	15:00		15:40	16:24	17:45	18:25	19:05	19:40	21:00	22:15	23:25
Fairmount	8.2	5:53	6:23	6:57	7:15	7:47	8:13	8:43	9:03	10:02	11:22	12:42	14:02	15:02	15:20	15:42	16:26		18:27	19:07	19:42	21:02	22:17	23:27
Blue Hill Avenue	6.3	5:57	6:27	7:01	7:19	7:51	8:17	8:47	9:07	10:06	11:26	12:46	14:06	15:06		15:46	16:30		18:31	19:11	19:46	21:06	22:21	23:31
Morton Street	5.7	5:59	6:29	7:03	7:21	7:53	8:19	8:49	9:09	10:08	11:28	12:48	14:08	15:08		15:48	16:32		18:33	19:13	19:48	21:08	22:23	23:33
Talbot Avenue	4.8	6:03	6:33	7:07	7:25	7:57	8:23	8:53	9:13	10:11	11:31	12:51	14:11	15:11		15:51	16:35		18:36	19:16	19:51	21:11	22:26	23:36
Four Corners	4.0	6:07	6:37	7:11	7:29	8:01	8:27	8:57	9:17	10:13	11:33	12:53	14:13	15:13		15:53	16:37		18:38	19:18	19:53	21:13	22:28	23:38
Uphams Corner	2.9	6:10	6:40	7:14	7:32	8:04	8:30	9:00	9:20	10:16	11:36	12:56	14:16	15:16		15:56	16:40		18:41	19:21	19:56	21:16	22:31	23:41
Newmarket	2.3	6:12	6:42	7:16	7:34	8:06	8:32	9:02	9:22	10:18	11:38	12:58	14:18	15:18		15:58	16:42			19:23	19:58	21:18	22:33	23:43
South Station	0.0	6:20	6:50	7:24	7:42	8:14	8:40	9:10	9:30	10:26	11:46	13:06	14:26	15:26	15:34	16:06	16:50	18:00	18:49	19:31	20:06	21:26	22:39	23:49

Previous Train	703	743	745	FR	747	749	751	797	753	755	757	759	763	RDV	765	767	769	771	773	775	777	779	781
Time In	4:50	6:06	6:44		7:33	8:00	8:26	7:57	9:46	11:06	12:26	13:46	14:46		15:30	16:15	17:35	18:15	18:55	19:30	20:46	22:04	23:14
Next Train	**745**	**793**	**749**	**751**	**509**	**SH**	**611**	**SH**	**755**	**757**	**759**	**SH**	**619**	**767**	**621**	**769**	**773**	**775**	**727**	**777**	**779**	**781**	**783**
Time Out	6:30	7:05	7:34	8:00	9:00		10:05		10:40	12:00	13:20		16:05	15:45	16:40	17:05	18:25	19:00	20:50	20:20	21:40	22:50	0:00

Outbound Service

STATION	MP	743	745	747	749	751	753	755	757	759	763	765	767	F799	769	771	773	775	777	779	781	783
Cycle	MP	y	s	x	s	h	m	m	m	m	x	u	o	p	o	s	o	s	s	s	s	s
South Station	0.0	5:40	6:30	7:15	7:34	8:00	9:20	10:40	12:00	13:20	14:20	15:00	15:45	16:30	17:05	17:45	18:25	19:00	20:20	21:40	22:50	0:00
Newmarket	2.3	5:45			7:39	8:05	9:25	10:45	12:05	13:25	14:25	15:05	15:50	16:35	17:10	17:50	18:30	19:05	20:25	21:45	22:55	0:05
Uphams Corner	2.9	5:47			7:41	8:07	9:27	10:47	12:07	13:27	14:27	15:08	15:53	16:38	17:13	17:53	18:33	19:08	20:27	21:47	22:57	0:07
Four Corners	4.0	5:50			7:44	8:10	9:30	10:50	12:10	13:30	14:30	15:12	15:57	16:42	17:17	17:57	18:37	19:12	20:30	21:50	23:00	0:10
Talbot Avenue	4.8	5:53			7:47	8:13	9:33	10:53	12:13	13:33	14:33	15:16	16:01	16:46	17:21	18:01	18:41	19:16	20:33	21:53	23:03	0:13
Morton Street	5.7	5:56			7:50	8:16	9:36	10:56	12:16	13:36	14:36	15:19	16:04	16:49	17:24	18:04	18:44	19:19	20:36	21:56	23:06	0:16
Blue Hill Avenue	6.3	5:58			7:52	8:18	9:38	10:58	12:18	13:38	14:38	15:21	16:06	16:51	17:26	18:06	18:46	19:21	20:38	21:58	23:08	0:18
Fairmount	8.2	6:01			7:55	8:21	9:41	11:01	12:21	13:41	14:41	15:25	16:10	16:55	17:30	18:10	18:50	19:25	20:41	22:01	23:11	0:21
Readville	9.1	6:06	6:44	7:33	8:00	8:26	9:46	11:06	12:26	13:46	14:46	15:30	16:15	17:00	17:35	18:15	18:55	19:30	20:46	22:04	23:14	0:26

Previous Train	SH	F790	902	746	F706	512	754	756	758	SH	916	SH	616	768	SH	770	772	776	778	780	782
Time In		6:20	7:04	7:24	7:42	8:58	10:26	11:46	13:06		14:49		15:30	16:50		18:00	18:49	20:06	21:26	22:39	23:49
Next Train	**744**	**746**	**748**	**750**	**752**	**754**	**756**	**758**	**760**	**764**	**766**	**768**	**FR**	**770**	**772**	**774**	**776**	**778**	**780**	**782**	**SH**
Time Out	6:20	6:54	7:44	8:10	8:40	10:00	11:20	12:40	14:00	15:00	15:40	16:24		17:45	18:25	19:05	19:40	21:00	22:15	23:25	

Option O2

Inbound Service

STATION	MP	F790	744	746	F706	748	750	752	F792	754	756	G077X	758	G079X	760	764	767X	766	768	770	772	774	776	724	778	780	782
Cycle	MP	s	y	s	h	x	s	h	l	m	m	kk	m	jj	m	x	o	u	o	o	s	o	s	x	s	s	s
Readville	9.1	5:50	6:20	6:54	7:12	7:44	8:10	8:40	9:00	10:00	11:20		12:40		14:00	15:00		15:40	16:24	17:45	18:25	19:05	19:40	20:22	21:00	22:15	23:25
Fairmount	8.2	5:53	6:23	6:57	7:15	7:47	8:13	8:43	9:03	10:02	11:22	12:10	12:42	13:32	14:02	15:02	15:20	15:42	16:26		18:27	19:07	19:42	20:24	21:02	22:17	23:27
Blue Hill Avenue	6.3	5:57	6:27	7:01	7:19	7:51	8:17	8:47	9:07	10:06	11:26	12:13	12:46	13:35	14:06	15:06		15:46	16:30		18:31	19:11	19:46	20:28	21:06	22:21	23:31
Morton Street	5.7	5:59	6:29	7:03	7:21	7:53	8:19	8:49	9:09	10:08	11:28	12:15	12:48	13:37	14:08	15:08		15:48	16:32		18:33	19:13	19:48	20:30	21:08	22:23	23:33
Talbot Avenue	4.8	6:03	6:33	7:07	7:25	7:57	8:23	8:53	9:13	10:11	11:31	12:18	12:51	13:40	14:11	15:11		15:51	16:35		18:36	19:16	19:51	20:33	21:11	22:26	23:36
Four Corners	4.0	6:07	6:37	7:11	7:29	8:01	8:27	8:57	9:17	10:13	11:33	12:21	12:53	13:43	14:13	15:13		15:53	16:37		18:38	19:18	19:53	20:35	21:13	22:28	23:38
Uphams Corner	2.9	6:10	6:40	7:14	7:32	8:04	8:30	9:00	9:20	10:16	11:36	12:24	12:56	13:46	14:16	15:16		15:56	16:40		18:41	19:21	19:56	20:38	21:16	22:31	23:41
Newmarket	2.3	6:12	6:42	7:16	7:34	8:06	8:32	9:02	9:22	10:18	11:38	12:26	12:58	13:48	14:18	15:18		15:58	16:42			19:23	19:58	20:40	21:18	22:33	23:43
South Station	0.0	6:20	6:50	7:24	7:42	8:14	8:40	9:10	9:30	10:26	11:46	12:33	13:06	13:55	14:26	15:26	15:34	16:06	16:50	18:00	18:49	19:31	20:06	20:48	21:26	22:39	23:49

Previous Train	FR	743	745	FR	747	749	751	797	753	755	RDV	757	RDV	759	763	RDV	765	767	769	771	773	775	724	777	779	781
Time In		6:06	6:44		7:33	8:00	8:26	7:57	9:46	11:06		12:26		13:46	14:46		15:30	16:15	17:35	18:15	18:55	19:30	20:22	20:46	22:04	23:14
Next Train	**745**	**793**	**749**	**751**	**509**	**SH**	**611**	**SH**	**755**	**757**		**759**		**SH**	**619**	**767**	**621**	**769**	**773**	**775**	**727**	**777**	**SH**	**779**	**781**	**783**
Time Out	6:30	7:05	7:34	8:00	9:00		10:05		10:40	12:00		13:20			16:05	15:45	16:40	17:05	18:25	19:00	20:50	20:20		21:40	22:50	0:00

Outbound Service

STATION	MP	743	745	747	749	751	753	755	060X	757	014X	759	763	765	767	F799	769	771	773	775	777	779	781	783
Cycle	MP	y	s	x	s	h	m	m	hh	m	ee	m	x	u	o	p	o	s	o	s	s	s	s	s
South Station	0.0	5:40	6:30	7:15	7:34	8:00	9:20	10:40	11:12	12:00	12:20	13:20	14:20	15:00	15:45	16:30	17:05	17:45	18:25	19:00	20:20	21:40	22:50	0:00
Newmarket	2.3	5:45			7:39	8:05	9:25	10:45	11:17	12:05	12:25	13:25	14:25	15:05	15:50	16:35	17:10	17:50	18:30	19:05	20:25	21:45	22:55	0:05
Uphams Corner	2.9	5:47			7:41	8:07	9:27	10:47	11:19	12:07	12:27	13:27	14:27	15:08	15:53	16:38	17:13	17:53	18:33	19:08	20:27	21:47	22:57	0:07
Four Corners	4.0	5:50			7:44	8:10	9:30	10:50	11:22	12:10	12:30	13:30	14:30	15:12	15:57	16:42	17:17	17:57	18:37	19:12	20:30	21:50	23:00	0:10
Talbot Avenue	4.8	5:53			7:47	8:13	9:33	10:53	11:25	12:13	12:33	13:33	14:33	15:16	16:01	16:46	17:21	18:01	18:41	19:16	20:33	21:53	23:03	0:13
Morton Street	5.7	5:56			7:50	8:16	9:36	10:56	11:28	12:16	12:36	13:36	14:36	15:19	16:04	16:49	17:24	18:04	18:44	19:19	20:36	21:56	23:06	0:16
Blue Hill Avenue	6.3	5:58			7:52	8:18	9:38	10:58	11:30	12:18	12:38	13:38	14:38	15:21	16:06	16:51	17:26	18:06	18:46	19:21	20:38	21:58	23:08	0:18
Fairmount	8.2	6:01			7:55	8:21	9:41	11:01	11:33	12:21	12:41	13:41	14:41	15:25	16:10	16:55	17:30	18:10	18:50	19:25	20:41	22:01	23:11	0:21
Readville	9.1	6:06	6:44	7:33	8:00	8:26	9:46	11:06		12:26		13:46	14:46	15:30	16:15	17:00	17:35	18:15	18:55	19:30	20:46	22:04	23:14	0:26

Previous Train	SH	F790	902	746	F706	512	754	060	756	014	758	SH	916	SH	616	768	SH	770	772	776	778	780	782
Time In		6:20	7:04	7:24	7:42	8:58	10:26	11:01	11:46	12:04	13:06		14:49		15:30	16:50		18:00	18:49	20:06	21:26	22:39	23:49
Next Train	**744**	**746**	**748**	**750**	**752**	**754**	**756**	**RDV**	**758**	**RDV**	**760**	**764**	**766**	**768**	**FR**	**770**	**772**	**774**	**776**	**778**	**780**	**782**	**SH**
Time Out	6:20	6:54	7:44	8:10	8:40	10:00	11:20		12:40		14:00	15:00	15:40	16:24		17:45	18:25	19:05	19:40	21:00	22:15	23:25	

Option O3

Inbound Service

STATION	MP	740	F790	742	744	746	748	750	752	754	F792	756	758	G077X	760	G079X	762	765X	764	766	768	770	772	774	776	778	780	782	784	786	724	788	790
Cycle	MP	s''	s	y	s''	s'	s	s'''	x	h	l	m	m	kk	m	jj	m	o	x	u	o	s''	o	s'''	s''	s	o	s'''	s''	s	x	s	s
Readville	9.1	5:30	5:50	6:23	6:43	7:03	7:23	7:48	8:08	8:28	9:00	10:00	11:20		12:40		14:00		15:29	15:50	16:10	16:30	17:30	17:47	18:10	18:30	18:50	19:10	19:30	19:46	20:22	21:00	22:20
Fairmount	8.2	5:32	5:53	6:26	6:46	7:06	7:26	7:51	8:11	8:31	9:03	10:02	11:22	12:10	12:42	13:32	14:02	15:00	15:31	15:52	16:12	16:32	17:32			18:32	18:52	19:12	19:32	19:48	20:24	21:02	22:22
Blue Hill Avenue	6.3	5:36	5:57	6:30	6:50	7:10	7:30	7:55	8:15	8:35	9:07	10:06	11:26	12:13	12:46	13:35	14:06		15:35	15:56	16:16	16:36	17:36			18:36	18:56	19:16	19:36	19:52	20:28	21:06	22:26
Morton Street	5.7	5:38	5:59	6:32	6:52	7:12	7:32	7:57	8:17	8:37	9:09	10:08	11:28	12:15	12:48	13:37	14:08		15:37	15:58	16:18	16:38	17:38			18:38	18:58	19:18	19:38	19:54	20:30	21:08	22:28
Talbot Avenue	4.8	5:40	6:03	6:36	6:56	7:16	7:36	8:01	8:21	8:41	9:13	10:11	11:31	12:18	12:51	13:40	14:11		15:40	16:01	16:21	16:41	17:41	17:53	18:16	18:41	19:01	19:21	19:41	19:57	20:33	21:11	22:31
Four Corners	4.0	5:43	6:07	6:40	7:00	7:20	7:40	8:05	8:25	8:45	9:17	10:13	11:33	12:21	12:53	13:43	14:13		15:42	16:03	16:23	16:43	17:43	17:55	18:18	18:43	19:03	19:23	19:43	19:59	20:35	21:13	22:33
Uphams Corner	2.9	5:46	6:10	6:43	7:03	7:23	7:43	8:08	8:28	8:48	9:20	10:16	11:36	12:24	12:56	13:46	14:16		15:45	16:06	16:26	16:46	17:46			18:46	19:06	19:26	19:46	20:02	20:38	21:16	22:36
Newmarket	2.3	5:48	6:12	6:45	7:05	7:25	7:45	8:10	8:30	8:50	9:22	10:18	11:38	12:26	12:58	13:48	14:18		15:47	16:08	16:28	16:48	17:48			18:48	19:08	19:28	19:48	20:04	20:40	21:18	22:38
South Station	0.0	5:55	6:20	6:53	7:13	7:33	7:53	8:18	8:38	8:58	9:30	10:26	11:46	12:33	13:06	13:55	14:26	15:14	15:55	16:16	16:36	16:56	17:57	18:03	18:27	18:56	19:16	19:36	19:56	20:12	20:48	21:26	22:46

Previous Train	740X	703	739	741	743	745	747	749	751	797	753	755	RDV	757	RDV	759	RDV	761	761	765	767	771	773	775	777	779	781	783	785	724	787	789
Time In	5:19	4:50	5:47	6:33	6:50	7:13	7:38	7:58	8:18	7:57	9:46	11:06		12:26		13:46		15:19	14:53	16:00	16:20	17:20	17:37	18:00	18:20	18:40	19:00	19:20	19:36	20:22	20:48	22:06
Next Train	**741**	**745**	**793**	**SH**	**SH**	**SH**	**SH**	**509**	**611**	**SH**	**755**	**757**	**G077**	**759**	**G079**	**SH**	**765**	**619**	**621**	**771**	**773**	**779**	**781**	**783**	**785**	**727**	**SH**	**SH**	**787**	**SH**	**789**	**SH**
Time Out	6:07	6:47	7:05					9:00	10:05		10:40	12:00	12:45	13:20	14:05		15:30	16:05	15:40	16:50	17:07	18:10	18:30	18:50	19:10	20:50			20:22		21:40	

Outbound Service

STATION	MP	740X	739	741	743	745	747	749	751	753	755	060X	757	014X	759	761	763	765	767	769	F799	771	773	775	777	779	781	783	785	787	789
Cycle	MP	s''	y	s''	s'	s	s'''	x	h	m	m	hh	m	ee	m	x	u	o	s'''	s'	p	o	s'''	s''	s	o	s'''	s''	s	s	s
South Station	0.0	5:05	5:47	6:07	6:24	6:47	7:12	7:32	8:00	9:20	10:40	11:12	12:00	12:20	13:20	14:53	15:10	15:30	15:50	16:10	16:30	16:50	17:07	17:30	17:50	18:10	18:30	18:50	19:10	20:22	21:40
Newmarket	2.3		5:52	6:12	6:29	6:52	7:17	7:37		9:25	10:45	11:17	12:05	12:25	13:25	14:58	15:15	15:35	15:55	16:15	16:35	16:55	17:12	17:35	17:55	18:15	18:35	18:55	19:15	20:27	21:45
Uphams Corner	2.9		5:54	6:14	6:31	6:54	7:19	7:39		9:27	10:47	11:19	12:07	12:27	13:27	15:00	15:18	15:38	15:58	16:18	16:38	16:58	17:15	17:38	17:58	18:18	18:38	18:58	19:17	20:29	21:47
Four Corners	4.0		5:57	6:17	6:34	6:57	7:22	7:42	8:08	9:30	10:50	11:22	12:10	12:30	13:30	15:03	15:22	15:42	16:02	16:22	16:42	17:02	17:19	17:42	18:02	18:22	18:42	19:02	19:20	20:32	21:50
Talbot Avenue	4.8		6:00	6:20	6:37	7:00	7:25	7:45	8:11	9:33	10:53	11:25	12:13	12:33	13:33	15:06	15:26	15:46	16:06	16:26	16:46	17:06	17:23	17:46	18:06	18:26	18:46	19:06	19:23	20:35	21:53
Morton Street	5.7		6:03	6:23	6:40	7:03	7:28	7:48		9:36	10:56	11:28	12:16	12:36	13:36	15:09	15:29	15:49	16:09	16:29	16:49	17:09	17:26	17:49	18:09	18:29	18:49	19:09	19:26	20:38	21:56
Blue Hill Avenue	6.3		6:05	6:25	6:42	7:05	7:30	7:50		9:38	10:58	11:30	12:18	12:38	13:38	15:11	15:31	15:51	16:11	16:31	16:51	17:11	17:28	17:51	18:11	18:31	18:51	19:11	19:28	20:40	21:58
Fairmount	8.2		6:08	6:28	6:45	7:08	7:33	7:53		9:41	11:01	11:33	12:21	12:41	13:41	15:14	15:35	15:55	16:15	16:35	16:55	17:15	17:32	17:55	18:15	18:35	18:55	19:15	19:31	20:43	22:01
Readville	9.1	5:19	6:13	6:33	6:50	7:13	7:38	7:58	8:18	9:46	11:06		12:26		13:46	15:19	15:40	16:00	16:20	16:40	17:00	17:20	17:37	18:00	18:20	18:40	19:00	19:20	19:36	20:48	22:06

Previous Train	SH	SH	740	SH	F790	SH	902	F706	512	756	060	758	014	760	SH	918	765X	SH	SH	616	768	770	SH	SH	772	774	776	778	786	788
Time In			5:55		6:20		7:14	7:42	8:58	10:26	11:01	11:46	12:04	13:06		14:38	15:14			16:50	16:36	16:56			17:57	18:03	18:27	18:56	20:12	21:26
Next Train	**740**	**742**	**744**	**746**	**748**	**750**	**752**	**754**	**756**	**758**	**RDV**	**760**	**RDV**	**762**	**764**	**768**	**768**	**770**	**FR**	**FR**	**772**	**774**	**776**	**778**	**780**	**782**	**784**	**786**	**788**	**790**
Time Out	5:30	6:23	6:43	7:03	7:23	7:48	8:08	8:28	10:00	11:20		12:40		14:00	15:29	16:10	16:10	16:30			17:30	17:47	18:10	18:30	18:50	19:10	19:30	19:46	21:00	22:20

JACOBS
Edwards and Kelcey

Option O4

Inbound Service

STATION	MP	790	744	746	706	748	750	752	792	754	756	758	760	762	764	766	768	770	767X	772	774	776	778	780	782	784	786	788	790	792	794
Cycle	MP	w	y	w	h	x	w	h	l	m	w'	m	w'	m	w'	m	w'	x	o	u	o	o	w	o	w	w'	w	w'	w	w'	w
Readville	9.1	5:50	6:20	6:54	7:12	7:44	8:10	8:40	9:00	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:00		15:40	16:24	17:45	18:25	19:05	19:40	20:10	21:00	21:40	22:15	23:00	23:25
Fairmount	8.2	5:53	6:23	6:57	7:15	7:47	8:13	8:43	9:03	10:02	10:42	11:22	12:02	12:42	13:22	14:02	14:42	15:02	15:20	15:42	16:26		18:27	19:07	19:42	20:12	21:02	21:42	22:17	23:02	23:27
Blue Hill Avenue	6.3	5:57	6:27	7:01	7:19	7:51	8:17	8:47	9:07	10:06	10:46	11:26	12:06	12:46	13:26	14:06	14:46	15:06		15:46	16:30		18:31	19:11	19:46	20:16	21:06	21:46	22:21	23:06	23:31
Morton Street	5.7	5:59	6:29	7:03	7:21	7:53	8:19	8:49	9:09	10:08	10:48	11:28	12:08	12:48	13:28	14:08	14:48	15:08		15:48	16:32		18:33	19:13	19:48	20:18	21:08	21:48	22:23	23:08	23:33
Talbot Avenue	4.8	6:03	6:33	7:07	7:25	7:57	8:23	8:53	9:13	10:11	10:51	11:31	12:11	12:51	13:31	14:11	14:51	15:11		15:51	16:35		18:36	19:16	19:51	20:21	21:11	21:51	22:26	23:11	23:36
Four Corners	4.0	6:07	6:37	7:11	7:29	8:01	8:27	8:57	9:17	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:13		15:53	16:37		18:38	19:18	19:53	20:23	21:13	21:53	22:28	23:13	23:38
Uphams Corner	2.9	6:10	6:40	7:14	7:32	8:04	8:30	9:00	9:20	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:16		15:56	16:40		18:41	19:21	19:56	20:26	21:16	21:56	22:31	23:16	23:41
Newmarket	2.3	6:12	6:42	7:16	7:34	8:06	8:32	9:02	9:22	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:18		15:58	16:42			19:23	19:58	20:28	21:18	21:58	22:33	23:18	23:43
South Station	0.0	6:20	6:50	7:24	7:42	8:14	8:40	9:10	9:30	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:26	15:34	16:06	16:50	18:00	18:49	19:31	20:06	20:36	21:26	22:06	22:39	23:26	23:49

Previous Train	703	743	745	FR	747	749	751	797	753	SH	757	759	761	763	765	767	SH	SH	769	RDV	771	773	775	777	779	781	783	785	787	789	791	793
Time In	4:50	6:06	6:44		7:33	8:00	8:26	7:57	9:46		11:06	11:46	12:26	13:06	13:46	14:26	14:46		14:46		15:30	16:15	17:35	18:15	18:55	19:30	20:00	20:46	21:26	22:04	22:46	23:14
Next Train	745	793	749	751	509	SH	611	SH	757	759	761	763	765	767	SH	SH	619	773	621	775	779	781	727	785	787	789	791	793	SH	795		
Time Out	6:30	7:05	7:34	8:00	9:00		10:05		10:40	11:20	12:00	12:40	13:20	14:00			16:05	15:45	16:40	17:05	18:25	19:00	20:50	20:20	21:00	21:40	22:20	22:50		0:00		

Outbound Service

STATION	MP	743	745	747	749	751	753	755	757	759	761	763	765	767	769	771	773	799	775	777	779	781	783	785	787	789	791	793	795
Cycle	MP	y	w	x	w	h	m	w'	m	w'	m	w'	m	w'	x	u	o	p	o	w	o	w	w'	w	w'	w'	w	w'	w
South Station	0.0	5:40	6:30	7:15	7:34	8:00	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:20	15:00	15:45	16:30	17:05	17:45	18:25	19:00	19:34	20:20	21:00	21:40	22:20	22:50	0:00
Newmarket	2.3	5:45			7:39	8:05	9:25	10:05	10:45	11:25	12:05	12:45	13:25	14:05	14:25	15:05	15:50	16:35	17:10	17:50	18:30	19:05	19:39	20:25	21:05	21:45	22:25	22:55	0:05
Uphams Corner	2.9	5:47			7:41	8:07	9:27	10:07	10:47	11:27	12:07	12:47	13:27	14:07	14:27	15:08	15:53	16:38	17:13	17:53	18:33	19:08	19:41	20:27	21:07	21:47	22:27	22:57	0:07
Four Corners	4.0	5:50			7:44	8:10	9:30	10:10	10:50	11:30	12:10	12:50	13:30	14:10	14:30	15:12	15:57	16:42	17:17	17:57	18:37	19:12	19:44	20:30	21:10	21:50	22:30	23:00	0:10
Talbot Avenue	4.8	5:53			7:47	8:13	9:33	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:33	15:16	16:01	16:46	17:21	18:01	18:41	19:16	19:47	20:33	21:13	21:53	22:33	23:03	0:13
Morton Street	5.7	5:56			7:50	8:16	9:36	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:36	15:19	16:04	16:49	17:24	18:04	18:44	19:19	19:50	20:36	21:16	21:56	22:36	23:06	0:16
Blue Hill Avenue	6.3	5:58			7:52	8:18	9:38	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:38	15:21	16:06	16:51	17:26	18:06	18:46	19:21	19:52	20:38	21:18	21:58	22:38	23:08	0:18
Fairmount	8.2	6:01			7:55	8:21	9:41	10:21	11:01	11:41	12:21	13:01	13:41	14:21	14:41	15:25	16:10	16:55	17:30	18:10	18:50	19:25	19:55	20:41	21:21	22:01	22:41	23:11	0:21
Readville	9.1	6:06	6:44	7:33	8:00	8:26	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	14:46	15:30	16:15	17:00	17:35	18:15	18:55	19:30	20:00	20:46	21:26	22:04	22:46	23:14	0:26

Previous Train	SH	790	902	746	706	512		754	756	758	760	762	764	SH	916	SH	616	774	SH	776	778	SH	782	784	786	788	790	794
Time In		6:20	7:04	7:24	7:42	8:58		10:26	11:06	11:46	12:26	13:06	13:46		14:49		15:30	16:50		18:00	18:49		20:06	20:36	21:26	22:06	22:39	23:49
Next Train	744	746	748	750	752	754		758	760	762	764	766	768	770	772	774	FR	776	778	780	782	784	786	788	790	792	794	SH	
Time Out	6:20	6:54	7:44	8:10	8:40	10:00		11:20	12:00	12:40	13:20	14:00	14:40	15:00	15:40	16:24		17:45	18:25	19:05	19:40	20:10	21:00	21:40	22:15	23:00	23:25		

Option W1

Inbound Service

STATION	MP	1902	1802	1904	1804	1906	1908	1806	1910	1808	1912	1810	1914	1812	1916	1918	1814	1920	1816	1922	1818	1924
Cycle	MP	c	d	c	d	c	c	d	c	d	c	d	c	d	c	c	d	c	d	c	d	c
Route 128	11.4	7:15	7:20	8:45	9:20	10:15	11:45	12:05	13:15	13:40	14:45	15:30	16:15	17:30	17:45	19:15	19:50	20:45	21:30	22:15	22:45	23:46
Readville	9.1	7:20		8:50		10:20	11:50		13:20		14:50		16:20		17:50	19:20		20:50		22:20		23:51
Fairmount	8.2	7:23		8:53		10:23	11:53		13:23		14:53		16:23		17:53	19:23		20:53		22:23		23:54
Blue Hill Avenue	6.3	7:26		8:56		10:26	11:56		13:26		14:56		16:26		17:56	19:26		20:56		22:26		23:57
Morton Street	5.7	7:28		8:58		10:28	11:58		13:28		14:58		16:28		17:58	19:28		20:58		22:28		23:59
Talbot Avenue	4.8	7:31		9:01		10:31	12:01		13:31		15:01		16:31		18:01	19:31		21:01		22:31		0:02
Four Corners	4.0	7:34		9:04		10:34	12:04		13:34		15:04		16:34		18:03	19:33		21:04		22:34		0:05
Uphams Corner	2.9	7:36		9:06		10:37	12:07		13:37		15:07		16:37		18:05	19:35		21:07		22:37		0:08
Newmarket	2.3	7:38		9:08		10:39	12:09		13:39		15:09		16:39		18:07	19:37		21:09		22:39		0:10
South Station	0.0	7:45	7:43	9:15	9:43	10:46	12:16	12:30	13:46	14:05	15:16	15:53	16:46	17:53	18:15	19:45	20:13	21:16	21:53	22:46	23:08	0:17

Previous Train	1901		1903		1905	1907		1909		1911		1913		1915	1917		1919		1921		1923
Time In	7:01		8:31		10:01	11:35		13:01		14:31		16:00		17:30	19:00		20:31		22:01		23:36
Next Train	1903		1905		1907	1909		1911		1913		1915		1917	1919		1921		1923		SH
Time Out	8:00		9:30		11:04	12:30		14:00		15:30		17:00		18:30	20:00		21:30		23:05		

Outbound Service

STATION	MP	1901	1801	1903	1905	1803	1907	1805	1909	1807	1911	1809	1913	1811	1915	1917	1813	1919	1815	1921	1923	1817
Cycle	MP	c	b	c	c	b	c	b	c	b	c	b	c	b	c	c	b	c	b	c	c	b
South Station	4.8	6:30	6:45	8:00	9:30	10:05	11:04	11:05	12:30	13:05	14:00	14:25	15:30	16:45	17:00	18:30	18:45	20:00	20:45	21:30	23:05	23:10
Newmarket	5.7	6:35		8:05	9:35		11:09		12:35		14:05		15:35		17:05	18:35		20:05		21:35	23:10	
Uphams Corner	6.3	6:37		8:07	9:37		11:11		12:37		14:07		15:37		17:07	18:37		20:07		21:37	23:12	
Four Corners	8.2	6:40		8:10	9:40		11:14		12:40		14:10		15:40		17:10	18:40		20:10		21:40	23:15	
Talbot Avenue	9.1	6:43		8:13	9:43		11:17		12:43		14:13		15:43		17:13	18:43		20:13		21:43	23:18	
Morton Street	0.0	6:46		8:16	9:46		11:20		12:46		14:16		15:45		17:15	18:45		20:16		21:46	23:21	
Blue Hill Avenue	9.1	6:48		8:18	9:48		11:22		12:48		14:18		15:47		17:17	18:47		20:18		21:48	23:23	
Fairmount	11.0	6:51		8:21	9:51		11:25		12:51		14:21		15:51		17:21	18:51		20:21		21:51	23:26	
Readville	11.0	6:56		8:26	9:56		11:30		12:56		14:26		15:55		17:25	18:55		20:26		21:56	23:31	
Route 128	11.9	7:01	7:06	8:31	10:01	10:26	11:35	11:28	13:01	13:28	14:31	14:46	16:00	17:06	17:30	19:00	19:06	20:31	21:06	22:01	23:36	23:31

Previous Train	SH		1902	1904		1906		1908		1910		1912		1914	1916		1918		1920		1922	1924	
Time In			7:45	9:15		10:46		12:16		13:46		15:16		16:46	18:15		19:45		21:16	22:46			
Next Train	1902		1904	1906		1908		1910		1912		1914		1916	1918		1920		1922	1924			
Time Out	7:15		8:45	10:15		11:45		13:15		14:45		16:15		17:45	19:15		20:45		22:15	23:46			

Option W2

Inbound Service

STATION	MP	1902	1904	1802	1906	1908	1804	1910	1912	1914	1916	1806	1918	1920	1808	1922	1924	1810	1926	1928	1930	1812	1932	1934	1936	1814	1938	1940	1816	1942	1944	1818	1946	1948
Cycle	MP	a	c		a	c		a	c	a	c		a	c		a	c		a	c	a		c	a	c		a	c		a	c		a	c
Route 128	11.4	6:30	7:15	7:20	8:00	8:45	9:20	9:30	10:15	11:00	11:45	12:05	12:30	13:15	13:40	14:00	14:45	15:30	15:35	16:15	17:00	17:30	17:45	18:30	19:15	19:50	20:00	20:45	21:30	21:35	22:15	22:45	23:00	23:51
Readville	9.1	6:35	7:20		8:05	8:50		9:35	10:20	11:05	11:50		12:35	13:20		14:05	14:50		15:40	16:20	17:05		17:50	18:35	19:20		20:05	20:50		21:40	22:20		23:05	23:56
Fairmount	8.2	6:38	7:23		8:08	8:53		9:38	10:23	11:08	11:53		12:38	13:23		14:08	14:53		15:43	16:23	17:08		17:53	18:38	19:23		20:08	20:53		21:43	22:23		23:08	23:59
Blue Hill Avenue	6.3	6:41	7:26		8:11	8:56		9:41	10:26	11:11	11:56		12:41	13:26		14:11	14:56		15:46	16:26	17:11		17:56	18:41	19:26		20:11	20:56		21:46	22:26		23:11	0:03
Morton Street	5.7	6:43	7:28		8:13	8:58		9:43	10:28	11:13	11:58		12:43	13:28		14:13	14:58		15:48	16:28	17:13		17:58	18:43	19:28		20:13	20:58		21:48	22:28		23:13	0:05
Talbot Avenue	4.8	6:46	7:31		8:16	9:01		9:46	10:31	11:16	12:01		12:46	13:31		14:16	15:01		15:51	16:31	17:16		18:01	18:46	19:31		20:16	21:01		21:51	22:31		23:16	0:08
Four Corners	4.0	6:49	7:34		8:19	9:04		9:49	10:34	11:19	12:04		12:49	13:34		14:19	15:04		15:54	16:34	17:19		18:03	18:49	19:33		20:19	21:04		21:54	22:34		23:19	0:10
Uphams Corner	2.9	6:51	7:36		8:21	9:06		9:52	10:37	11:22	12:07		12:52	13:37		14:22	15:07		15:57	16:37	17:22		18:05	18:52	19:35		20:22	21:07		21:57	22:37		23:22	0:13
Newmarket	2.3	6:53	7:38		8:23	9:08		9:54	10:39	11:24	12:09		12:54	13:39		14:24	15:09		15:59	16:39	17:24		18:07	18:54	19:37		20:24	21:09		21:59	22:39		23:24	0:15
South Station	0.0	7:00	7:45	7:43	8:30	9:15	21:43	10:01	10:46	11:31	12:16	12:30	13:01	13:46	14:03	14:31	15:16	15:53	16:06	16:46	17:31	17:53	18:15	19:01	19:45	20:13	20:31	21:16	21:53	22:06	22:46	23:08	23:31	0:22

Previous Train	1901	1903		1905	1907		1909	1911	1913	1915		1917	1919		1921	1923		1925	1927	1929		1931	1933	1935		1937	1939		1941	1943		1945	1947
Time In	5:45	7:01		7:15	8:31		9:16	10:01	10:46	11:35		12:16	13:01		13:46	14:31		14:45	16:00	16:16		17:30	17:45	19:00		19:15	20:31		21:16	22:01		22:47	23:36
Next Train	1905	1907		1909	1911		1913	1915	1917	1919		1921	1923		1925	1927		1929	1931	1933		1935	1937	1939		1941	1943		1945	1947		SH	SH
Time Out	7:15	8:00		8:45	9:30		10:15	11:04	11:45	12:30		13:15	14:00		14:45	15:30		16:16	17:00	17:45		18:30	19:15	20:00		20:45	21:30		22:16	23:05			

Outbound Service

STATION	MP	1901	1903	1801	1905	1907	1909	1911	1913	1803	1915	1805	1917	1919	1921	1807	1923	1809	1925	1927	1929	1931	1811	1933	1935	1813	1937	1939	1941	1815	1943	1945	1947	1817
Cycle	MP	a	c		a	c	a	c	a		c		a	c	a		c		a	c	a	c		a	c		a	c	a		c	a	c	
South Station	4.8	5:45	6:30	6:45	7:15	8:00	8:45	9:30	10:15	10:05	11:04	11:05	11:45	12:30	13:15	13:05	14:00	14:25	14:45	15:30	16:16	17:00	16:45	17:45	18:30	18:45	19:15	20:00	20:45	20:45	21:30	22:16	23:05	23:10
Newmarket	5.7	5:50	6:35		7:20	8:05	8:50	9:35	10:20		11:09		11:50	12:35	13:20		14:05		14:50	15:35	16:21	17:05		17:50	18:35		19:20	20:05	20:50		21:35	22:21	23:10	
Uphams Corner	6.3	5:52	6:37		7:22	8:07	8:52	9:37	10:22		11:11		11:52	12:37	13:22		14:07		14:52	15:37	16:23	17:07		17:52	18:37		19:22	20:07	20:52		21:37	22:23	23:12	
Four Corners	8.2	5:55	6:40		7:25	8:10	8:55	9:40	10:25		11:14		11:55	12:40	13:25		14:10		14:55	15:40	16:26	17:10		17:55	18:40		19:25	20:10	20:55		21:40	22:26	23:15	
Talbot Avenue	9.1	5:58	6:43		7:28	8:13	8:58	9:43	10:28		11:17		11:58	12:43	13:28		14:13		14:58	15:43	16:29	17:13		17:58	18:43		19:28	20:13	20:58		21:43	22:29	23:18	
Morton Street	0.0	6:01	6:46		7:31	8:16	9:01	9:46	10:31		11:20		12:01	12:46	13:31		14:16		15:01	15:45	16:31	17:15		18:00	18:45		19:31	20:16	21:01		21:46	22:32	23:21	
Blue Hill Avenue	9.1	6:03	6:48		7:33	8:18	9:03	9:48	10:33		11:22		12:03	12:48	13:33		14:18		15:03	15:47	16:33	17:17		18:02	18:47		19:33	20:18	21:03		21:48	22:34	23:23	
Fairmount	11.0	6:06	6:51		7:36	8:21	9:06	9:51	10:36		11:25		12:06	12:51	13:36		14:21		15:06	15:51	16:37	17:21		18:06	18:51		19:36	20:21	21:06		21:51	22:37	23:26	
Readville	11.0	6:11	6:56		7:41	8:26	9:11	9:56	10:41		11:30		12:11	12:56	13:41		14:26		15:11	15:55	16:41	17:25		18:10	18:55		19:41	20:26	21:11		21:56	22:42	23:31	
Route 128	11.9	6:16	7:01	7:06	7:46	8:31	9:16	10:01	10:46	10:26	11:35	11:28	12:16	13:01	13:46	13:28	14:31	14:26	15:16	16:00	16:46	17:30	17:06	18:15	19:00	19:06	19:46	20:31	21:16	21:06	22:01	22:47	23:36	23:31

Previous Train	SH	SH		1902	1904	1906	1908	1910		1912		1914	1916	1918		1920		1922	1924	1926	1928		1930	1932		1934	1936	1938		1940	1942	1944	
Time In				7:00	7:45	8:00	9:15	10:01		10:46		11:31	12:16	13:01		13:46		14:31	15:16	15:35	16:46		17:31	18:15		18:30	19:45	20:31		21:16	22:06	22:46	
Next Train	1902	1904		1906	1908	1910	1912	1914		1916		1918	1920	1922		1924		1926	1928	1930	1932		1934	1936		1938	1940	1942		1944	1946	1948	
Time Out	6:30	7:15		8:00	8:45	9:30	10:15	11:00		11:45		12:30	13:15	14:00		14:45		15:35	16:15	17:00	17:45		18:30	19:15		20:00	20:45	21:35		22:15	23:00	23:51	

JACOBS
Edwards and Kelcey

Package 1.1 (weekday)

Inbound Service

STATION	MP	F790	740	742	744	746	748	F792	750	752	754	756	758	760	762	764	766	768	770	772	F794	773X	774	776	778	780	782	784	786	F724	788	790	792	794	796
Cycle		S	Y	XX	S	X	H	J	Y	M	S	M	S	M	S	M	S	X	U	XX	E	O	XX	O	P	S	XX	P	S	X	P	S	P	S	P
Readville	9.1	5:50	6:25	7:00	7:23	8:00	8:30	9:00	9:30	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:20	15:50	16:33	16:43		17:40	18:10	18:21	18:40	19:10	19:40	20:06	20:22	20:52	21:20	22:02	22:40	23:20
Fairmount	8.2	5:53	6:28	7:03	7:26	8:03	8:33	9:03	9:33	10:02	10:42	11:22	12:02	12:42	13:22	14:02	14:42	15:22	15:52	16:35		16:57	17:42		18:23	18:42	19:12	19:42	20:08		20:54	21:22	22:04	22:42	23:22
Blue Hill Avenue	6.3	5:57	6:32	7:07	7:30	8:07	8:37	9:07	9:37	10:06	10:46	11:26	12:06	12:46	13:26	14:06	14:46	15:26	15:56			17:00	17:46		18:27	18:46	19:16	19:46	20:12		20:58	21:26	22:08	22:46	23:26
Morton Street	5.7	5:59	6:34	7:09	7:32	8:09	8:39	9:09	9:39	10:08	10:48	11:28	12:08	12:48	13:28	14:08	14:48	15:28	15:58			17:02	17:48	18:15	18:29	18:48	19:18	19:48	20:14		21:00	21:28	22:10	22:48	23:28
Talbot Avenue	4.8	6:03	6:38	7:13	7:36	8:13	8:43	9:13	9:43	10:11	10:51	11:31	12:11	12:51	13:31	14:11	14:51	15:31	16:01	16:40		17:05	17:51	18:17	18:32	18:51	19:21	19:51	20:17		21:03	21:31	22:13	22:51	23:31
Four Corners	4.0	6:07	6:42	7:17	7:40	8:17	8:47	9:17	9:47	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:33	16:03	16:43		17:08	17:53	18:20	18:34	18:53	19:23	19:53	20:19		21:05	21:33	22:15	22:53	23:33
Uphams Corner	2.9	6:10	6:45	7:20	7:43	8:20	8:50	9:20	9:50	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:36	16:06			17:11	17:56		18:37	18:56	19:26	19:56	20:22		21:08	21:36	22:18	22:56	23:36
Newmarket	2.3	6:12	6:47	7:22	7:45	8:22	8:52	9:22	9:52	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:38	16:08			17:13	17:58		18:39	18:58	19:28	19:58	20:24		21:10	21:38	22:20	22:58	23:38
South Station	0.0	6:20	6:55	7:30	7:53	8:30	9:00	9:30	10:00	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:46	16:16	16:50	17:02	17:20	18:06	18:29	18:47	19:06	19:36	20:06	20:32	20:40	21:16	21:46	22:28	23:06	23:46

Previous Train		703	737	739	741	743	745	797	747	749	751	753	755	757	759	761	763	765	767	769	FR	RDV	771	773	F799	775	777	779	781	FR	783	785	787	789	791
Time In		4:50	5:45	6:46	7:11	7:46	8:20	8:26	9:13	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:40	16:23			17:30	18:00	17:00	18:30	19:00	19:30	19:56		20:42	21:08	21:52	22:26	23:06
Next Train		741	793	SH	SH	509	611	SH	SH	753	755	757	759	761	763	SH	SH	619	621	771	817	773	777	629	779	781	SH	783	785	SH	787	789	791	SH	793
Time Out		6:45	7:05			9:00	10:05			10:40	11:20	12:00	12:40	13:20	14:00			16:05	16:40	17:00	17:40	17:30	18:30	19:10	19:00	19:30		20:16	20:42		21:26	22:00	22:40		0:00

Outbound Service

STATION	MP	737	739	741	F793	743	745	747	749	751	753	755	757	759	761	763	765	767	769	F799	771	773	775	777	779	781	783	785	787	789	791	793
Cycle		Y	XX	S	Y	X	H	Y	M	S	M	S	M	S	M	S	X	U	XX	P	XX	O	S	XX	P	S	P	S	P	S	P	P
South Station	0.0	5:45	6:20	6:45	7:05	7:20	8:02	8:47	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:10	15:53	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:16	20:42	21:26	22:00	22:40	0:00
Newmarket	2.3	5:50	6:25	6:50		7:25		8:52	9:25	10:05	10:45	11:25	12:05	12:45	13:25	14:05	14:45	15:15	15:58	16:35	17:05	17:35	18:05	18:35	19:05	19:35	20:21	20:47	21:31	22:05	22:45	0:05
Uphams Corner	2.9	5:52	6:27	6:52		7:27		8:54	9:27	10:07	10:47	11:27	12:07	12:47	13:27	14:07	14:47	15:18	16:01	16:38	17:08	17:38	18:08	18:38	19:08	19:37	20:23	20:49	21:33	22:07	22:47	0:07
Four Corners	4.0	5:55	6:30	6:55		7:30	8:10	8:57	9:30	10:10	10:50	11:30	12:10	12:50	13:30	14:10	14:50	15:22	16:05	16:42	17:12	17:42	18:12	18:42	19:12	19:40	20:26	20:52	21:36	22:10	22:50	0:10
Talbot Avenue	4.8	5:58	6:33	6:58		7:33	8:13	9:00	9:33	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:26	16:09	16:46	17:16	17:46	18:16	18:46	19:16	19:43	20:29	20:55	21:39	22:13	22:53	0:13
Morton Street	5.7	6:01	6:36	7:01		7:36		9:03	9:36	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:29	16:12	16:49	17:19	17:49	18:19	18:49	19:19	19:46	20:32	20:58	21:42	22:16	22:56	0:16
Blue Hill Avenue	6.3	6:03	6:38	7:03		7:38		9:05	9:38	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:31	16:14	16:51	17:21	17:51	18:21	18:51	19:21	19:48	20:34	21:00	21:44	22:18	22:58	0:18
Fairmount	8.2	6:06	6:41	7:06		7:41		9:08	9:41	10:21	11:01	11:41	12:21	13:01	13:41	14:21	15:01	15:35	16:18	16:55	17:25	17:55	18:25	18:55	19:25	19:51	20:37	21:03	21:47	22:21	23:01	0:21
Readville	9.1	6:11	6:46	7:11	7:25	7:46	8:20	9:13	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:40	16:23	17:00	17:30	18:00	18:30	19:00	19:30	19:56	20:42	21:08	21:52	22:26	23:06	0:26

Previous Train		SH	SH	F790	744	902	706	F738	512	SH	752	754	756	758	760	762	SH	916	SH	616	772	773X	SH	774	778	780	784	786	788	790	792	796
Time In				6:20	6:55	7:04	7:41	8:37	8:59		10:26	11:06	11:46	12:26	13:06	13:46		14:49		15:35	16:50	17:20		18:06	18:47	19:06	20:06	20:32	21:16	21:46	22:28	23:46
Next Train		740	742	744	FR	746	748	750	752	754	756	758	760	762	764	766	768	770	772	778	774	776	780	782	784	786	788	790	792	794	796	0
Time Out		6:25	7:00	7:23		8:00	8:30	9:30	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:20	15:50	16:33	18:21	17:40	18:10	18:40	19:10	19:40	20:06	20:52	21:20	22:02	22:40	23:20	0:00

Package 1.2 (weekday)

Inbound Service

STATION	MP	F790	740	742	744	746	748	F792	750	752	754	756	758	760	762	764	766	768	770	772	F794	774	776	778	780	782	784	786	F724	788	790	792	794	796
Cycle		S	Y	XX	S	X	H	J	Y	M	S	M	S	M	S	M	S	X	U	S	E	XX	O	S	XX	O	S	O	X	S	O	S	O	S
Readville	9.1	5:50	6:25	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:20	15:50	16:30	16:43	17:00	17:30	18:00	18:20	18:50	19:20	20:02	20:22	20:40	21:20	22:00	22:40	23:20
Fairmount	8.2	5:53	6:28	7:03	7:33	8:03	8:33	9:03	9:33	10:02	10:42	11:22	12:02	12:42	13:22	14:02	14:42	15:22	15:52	16:32		17:02	17:32	18:02	18:22	18:52	19:22	20:04		20:42	21:22	22:02	22:42	23:22
Blue Hill Avenue	6.3	5:57	6:32	7:07	7:37	8:07	8:37	9:07	9:37	10:06	10:46	11:26	12:06	12:46	13:26	14:06	14:46	15:26	15:56	16:36		17:06	17:36	18:06	18:26	18:56	19:26	20:08		20:46	21:26	22:06	22:46	23:26
Morton Street	5.7	5:59	6:34	7:09	7:39	8:09	8:39	9:09	9:39	10:08	10:48	11:28	12:08	12:48	13:28	14:08	14:48	15:28	15:58	16:38		17:08	17:38	18:08	18:28	18:58	19:28	20:10		20:48	21:28	22:08	22:48	23:28
Talbot Avenue	4.8	6:03	6:38	7:13	7:43	8:13	8:43	9:13	9:43	10:11	10:51	11:31	12:11	12:51	13:31	14:11	14:51	15:31	16:01	16:41		17:11	17:41	18:11	18:31	19:01	19:31	20:13		20:51	21:31	22:11	22:51	23:31
Four Corners	4.0	6:07	6:42	7:17	7:47	8:17	8:47	9:17	9:47	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:33	16:03	16:43		17:13	17:43	18:13	18:33	19:03	19:33	20:15		20:53	21:33	22:13	22:53	23:33
Uphams Corner	2.9	6:10	6:45	7:20	7:50	8:20	8:50	9:20	9:50	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:36	16:06	16:46		17:16	17:46	18:16	18:36	19:06	19:36	20:18		20:56	21:36	22:16	22:56	23:36
Newmarket	2.3	6:12	6:47	7:22	7:52	8:22	8:52	9:22	9:52	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:38	16:08	16:48		17:18	17:48	18:18	18:38	19:08	19:38	20:20		20:58	21:38	22:18	22:58	23:38
South Station	0.0	6:20	6:55	7:30	8:00	8:30	9:00	9:30	10:00	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:46	16:16	16:56	17:02	17:26	17:56	18:26	18:46	19:16	19:46	20:28	20:40	21:04	21:46	22:26	23:06	23:46

Previous Train		703	737	739	741	743	745	797	747	749	751	753	755	757	759	761	763	765	767	769	FR	771	773	775	777	779	781	783	FR	785	787	789	791	793
Time In		4:50	5:45	6:46	7:16	7:46	8:20	8:26	9:13	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:40	16:10		16:40	17:10	17:40	18:10	18:40	19:10	19:52		20:26	21:06	21:46	22:26	23:06
Next Train		741	793	SH	SH	509	611	SH	SH	753	755	757	759	761	763	SH	769	619	621	775	817	777	779	781	629	783	785	787	SH	789	791	793	SH	795
Time Out		6:50	7:05			9:00	10:05			10:40	11:20	12:00	12:40	13:20	14:00		15:40	16:05	16:40	17:10	17:40	17:40	18:10	18:40	19:10	19:26	20:00	20:40		21:20	22:00	22:40		0:00

Outbound Service

STATION	MP	737	739	741	F793	743	745	747	749	751	753	755	757	759	761	763	765	767	769	771	F799	773	775	777	779	781	783	785	787	789	791	793	795
Cycle		Y	XX	S	Y	X	H	Y	M	S	M	S	M	S	M	S	X	U	S	XX	P	O	S	XX	O	S	O	S	O	S	O	S	S
South Station	0.0	5:45	6:20	6:50	7:05	7:20	8:02	8:47	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:10	15:40	16:10	16:30	16:40	17:10	17:40	18:10	18:40	19:26	20:00	20:40	21:20	22:00	22:40	0:00
Newmarket	2.3	5:50	6:25	6:55		7:25		8:52	9:25	10:05	10:45	11:25	12:05	12:45	13:25	14:05	14:45	15:15	15:45	16:15	16:35	16:45	17:15	17:45	18:15	18:45	19:31	20:05	20:45	21:25	22:05	22:45	0:05
Uphams Corner	2.9	5:52	6:27	6:57		7:27		8:54	9:27	10:07	10:47	11:27	12:07	12:47	13:27	14:07	14:47	15:18	15:48	16:18	16:38	16:48	17:18	17:48	18:18	18:48	19:33	20:07	20:47	21:27	22:07	22:47	0:07
Four Corners	4.0	5:55	6:30	7:00		7:30	8:10	8:57	9:30	10:10	10:50	11:30	12:10	12:50	13:30	14:10	14:50	15:22	15:52	16:22	16:42	16:52	17:22	17:52	18:22	18:52	19:36	20:10	20:50	21:30	22:10	22:50	0:10
Talbot Avenue	4.8	5:58	6:33	7:03		7:33	8:13	9:00	9:33	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:26	15:56	16:26	16:46	16:56	17:26	17:56	18:26	18:56	19:39	20:13	20:53	21:33	22:13	22:53	0:13
Morton Street	5.7	6:01	6:36	7:06		7:36		9:03	9:36	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:29	15:59	16:29	16:49	16:59	17:29	17:59	18:29	18:59	19:42	20:16	20:56	21:36	22:16	22:56	0:16
Blue Hill Avenue	6.3	6:03	6:38	7:08		7:38		9:05	9:38	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:31	16:01	16:31	16:51	17:01	17:31	18:01	18:31	19:01	19:44	20:18	20:58	21:38	22:18	22:58	0:18
Fairmount	8.2	6:06	6:41	7:11		7:41		9:08	9:41	10:21	11:01	11:41	12:21	13:01	13:41	14:21	15:01	15:35	16:05	16:35	16:55	17:05	17:35	18:05	18:35	19:05	19:47	20:21	21:01	21:41	22:21	23:01	0:21
Readville	9.1	6:11	6:46	7:16	7:25	7:46	8:20	9:13	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:40	16:10	16:40	17:00	17:10	17:40	18:10	18:40	19:10	19:52	20:26	21:06	21:46	22:26	23:06	0:26

Previous Train		SH	SH	F790	744	902	706	F738	512	SH	752	754	756	758	760	762	SH	916	766	SH	616	773X	772	774	776	778	782	784	786	788	790	792	796
Time In				6:20	6:55	7:04	7:41	8:37	8:59		10:26	11:06	11:46	12:26	13:06	13:46		14:49	15:06		15:35	16:27	16:56	17:26	17:56	18:26	19:16	19:46	20:28	21:04	21:46	22:26	23:46
Next Train		740	742	744	FR	746	748	750	752	754	756	758	760	762	764	766	768	770	772	774	FR	776	778	780	782	784	786	788	790	792	794	796	795X
Time Out		6:25	7:00	7:30		8:00	8:30	9:30	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:20	15:50	16:30	17:00		17:30	18:00	18:20	18:50	19:20	20:02	20:40	21:20	22:00	22:40	23:20	0:36

Package 1.3 (weekday)

Inbound Service

STATION	MP	F790	740	742	744	746	748	F792	750	752	754	756	758	760	762	764	766	768	770	772	F794	774	776	778	780	782	784	786	F724	788	790	792	794	796
Cycle		S	Y	XX	S	X	XX	J	Y	XX	S	XX	S	XX	S	XX	S	XX	U	S	E	XX	X	S	XX	X	S	X	O	S	X	S	X	S
Readville	9.1	5:50	6:25	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:20	15:50	16:30	16:43	17:00	17:30	18:00	18:20	18:48	19:20	20:00	20:22	20:40	21:20	22:00	22:40	23:20
Fairmount	8.2	5:54	6:27	7:02	7:32	8:02	8:32	9:04	9:34	10:02	10:42	11:22	12:02	12:42	13:22	14:02	14:42	15:22	15:52	16:32		17:02	17:32	18:02	18:22	18:50	19:22	20:02		20:42	21:22	22:02	22:42	23:22
Blue Hill Avenue	6.3	5:58	6:31	7:06	7:36	8:06	8:36	9:08	9:38	10:06	10:46	11:26	12:06	12:46	13:26	14:06	14:46	15:26	15:56	16:36		17:06	17:36	18:06	18:26	18:54	19:26	20:06		20:46	21:26	22:06	22:46	23:26
Morton Street	5.7	6:00	6:34	7:09	7:39	8:09	8:39	9:10	9:40	10:08	10:48	11:28	12:08	12:48	13:28	14:08	14:48	15:28	15:58	16:38		17:08	17:38	18:08	18:28	18:56	19:28	20:08		20:48	21:28	22:08	22:48	23:28
Talbot Avenue	4.8	6:03	6:37	7:12	7:42	8:12	8:42	9:13	9:43	10:11	10:51	11:31	12:11	12:51	13:31	14:11	14:51	15:31	16:01	16:41		17:11	17:41	18:11	18:31	18:59	19:31	20:11		20:51	21:31	22:11	22:51	23:31
Four Corners	4.0	6:07	6:40	7:15	7:45	8:15	8:45	9:17	9:47	10:14	10:54	11:34	12:14	12:54	13:34	14:14	14:54	15:34	16:04	16:44		17:14	17:44	18:14	18:34	19:02	19:34	20:14		20:54	21:34	22:14	22:54	23:34
Uphams Corner	2.9	6:10	6:43	7:18	7:48	8:18	8:48	9:20	9:50	10:17	10:57	11:37	12:17	12:57	13:37	14:17	14:57	15:37	16:07	16:47		17:17	17:47	18:17	18:37	19:05	19:37	20:17		20:57	21:37	22:17	22:57	23:37
Newmarket	2.3	6:13	6:45	7:20	7:50	8:20	8:50	9:23	9:53	10:19	10:59	11:39	12:19	12:59	13:39	14:19	14:59	15:39	16:09	16:49		17:19	17:49	18:19	18:39	19:07	19:39	20:19		20:59	21:39	22:19	22:59	23:39
South Station	0.0	6:20	6:53	7:28	7:58	8:28	8:58	9:30	10:00	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:46	16:16	16:56	17:02	17:26	17:56	18:26	18:46	19:14	19:46	20:26	20:40	21:05	21:46	22:26	23:06	23:46

Previous Train		703	737	739	741	743	745	797	747	749	751	753	755	757	759	761	763	765	767	769	FR	771	773	775	777	779	781	783	FR	785	787	789	791	793
Time In		4:50	5:45	6:46	7:16	7:46	8:20	8:26	9:13	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:40	16:08		16:38	17:08	17:38	18:08	18:38	19:08	19:50		20:26	21:06	21:46	22:26	23:06
Next Train		741	793	SH	SH	509	611	SH	SH	753	755	757	759	761	763	SH	769	619	621	775	817	777	779	781	629	783	785	787	SH	789	791	793	SH	795
Time Out		6:50	7:05			9:00	10:05			10:40	11:20	12:00	12:40	13:20	14:00		15:40	16:05	16:40	17:10	17:40	17:40	18:10	18:40	19:10	19:24	20:00	20:40		21:20	22:00	22:40		0:00

Outbound Service

STATION	MP	737	739	741	F793	743	745	747	749	751	753	755	757	759	761	763	765	767	769	771	F799	773	775	777	779	781	783	785	787	789	791	793	795
Cycle		Y	XX	S	Y	X	XX	Y	XX	S	XX	S	XX	S	XX	S	XX	U	S	XX	P	X	S	XX	X	S	X	S	X	S	X	S	S
South Station	0.0	5:45	6:20	6:50	7:05	7:20	8:02	8:47	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:10	15:40	16:10	16:30	16:40	17:10	17:40	18:10	18:40	19:24	20:00	20:40	21:20	22:00	22:40	0:00
Newmarket	2.3	5:50	6:25	6:55		7:25		8:52	9:25	10:05	10:45	11:25	12:05	12:45	13:25	14:05	14:45	15:15	15:45	16:15	16:35	16:45	17:15	17:45	18:15	18:45	19:29	20:05	20:45	21:25	22:05	22:45	0:05
Uphams Corner	2.9	5:53	6:28	6:58		7:28		8:55	9:28	10:08	10:48	11:28	12:08	12:48	13:28	14:08	14:48	15:18	15:48	16:18	16:38	16:48	17:18	17:48	18:18	18:48	19:32	20:08	20:48	21:28	22:08	22:48	0:08
Four Corners	4.0	5:56	6:31	7:01		7:31	8:10	8:58	9:31	10:11	10:51	11:31	12:11	12:51	13:31	14:11	14:51	15:22	15:51	16:21	16:42	16:51	17:21	17:51	18:21	18:51	19:35	20:11	20:51	21:31	22:11	22:51	0:11
Talbot Avenue	4.8	5:58	6:33	7:03		7:33	8:12	9:00	9:33	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:25	15:54	16:24	16:45	16:54	17:24	17:54	18:24	18:54	19:37	20:13	20:53	21:33	22:13	22:53	0:13
Morton Street	5.7	6:01	6:36	7:06		7:36		9:03	9:36	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:29	15:57	16:27	16:49	16:57	17:27	17:57	18:27	18:57	19:40	20:16	20:56	21:36	22:16	22:56	0:16
Blue Hill Avenue	6.3	6:03	6:38	7:08		7:38		9:05	9:38	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:32	15:59	16:29	16:52	16:59	17:29	17:59	18:29	18:59	19:42	20:18	20:58	21:38	22:18	22:58	0:18
Fairmount	8.2	6:07	6:42	7:12		7:42		9:09	9:42	10:22	11:02	11:42	12:22	13:02	13:42	14:22	15:02	15:36	16:04	16:34	16:56	17:04	17:34	18:04	18:34	19:04	19:46	20:22	21:02	21:42	22:22	23:02	0:22
Readville	9.1	6:11	6:46	7:16	7:25	7:46	8:20	9:13	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:40	16:08	16:38	17:00	17:08	17:38	18:08	18:38	19:08	19:50	20:26	21:06	21:46	22:26	23:06	0:26

Previous Train		SH	SH	F790	744	902	706	F738	512	SH	752	754	756	758	760	762	SH	916	766	SH	616	773X	772	774	776	778	782	784	786	788	790	792	796
Time In				6:20	6:53	7:04	7:41	8:37	8:59		10:26	11:06	11:46	12:26	13:06	13:46		14:49	15:06		15:35	16:27	16:56	17:26	17:56	18:26	19:14	19:46	20:26	21:05	21:46	22:26	23:46
Next Train		740	742	744	FR	746	748	750	752	754	756	758	760	762	764	766	768	770	772	774	FR	776	778	780	782	784	786	788	790	792	794	796	795X
Time Out		6:25	7:00	7:30		8:00	8:30	9:30	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:20	15:50	16:30	17:00		17:30	18:00	18:20	18:48	19:20	20:00	20:40	21:20	22:00	22:40	23:20	0:36

Package 2.1

Inbound Service

STATION	MP	738	F790	740	742	744	746	748	750	752	F792	754	756	758	760	762	764	766	768	770	772	774	776	778	F794	780	782	784	786	788	790	792	794	796	F724	798	800	802	804	806
Cycle		YY	S	Y	YY	XX	S	ZZ	X	H	J	ZZ	M	YY	M	YY	M	YY	M	YY	X	U	O	ZZ	E	YY	O	ZZ	YY	S	O	ZZ	YY	XX	X	ZZ	XX	ZZ	XX	ZZ
Readville	9.1	5:30	5:50	6:23	6:43	7:03	7:23	7:43	8:03	8:28	9:00	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:20	15:50	16:10	16:30	16:43	16:56	17:30	17:49	18:10	18:30	18:50	19:10	19:30	20:00	20:22	20:40	21:20	22:00	22:40	23:20
Fairmount	8.2	5:32	5:53	6:26	6:46	7:06	7:26	7:46	8:06	8:31	9:03	9:23	10:02	10:42	11:22	12:02	12:42	13:22	14:02	14:42	15:22	15:52	16:12	16:32		16:58	17:32			18:32	18:52	19:12	19:32	20:02		20:42	21:22	22:02	22:42	23:22
Blue Hill Avenue	6.3	5:36	5:57	6:30	6:50	7:10	7:30	7:50	8:10	8:35	9:07	9:27	10:06	10:46	11:26	12:06	12:46	13:26	14:06	14:46	15:26	15:56	16:16	16:36		17:02	17:36			18:36	18:56	19:16	19:36	20:06		20:46	21:26	22:06	22:46	23:26
Morton Street	5.7	5:38	5:59	6:32	6:52	7:12	7:32	7:52	8:12	8:37	9:09	9:29	10:08	10:48	11:28	12:08	12:48	13:28	14:08	14:48	15:28	15:58	16:18	16:38		17:04	17:38			18:38	18:58	19:18	19:38	20:08		20:48	21:28	22:08	22:48	23:28
Talbot Avenue	4.8	5:40	6:03	6:36	6:56	7:16	7:36	7:56	8:16	8:41	9:13	9:33	10:11	10:51	11:31	12:11	12:51	13:31	14:11	14:51	15:31	16:01	16:21	16:41			17:41	17:55	18:16	18:41	19:01	19:21	19:41	20:11		20:51	21:31	22:11	22:51	23:31
Four Corners	4.0	5:43	6:07	6:40	7:00	7:20	7:40	8:00	8:20	8:45	9:17	9:37	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:33	16:03	16:23	16:43			17:43	17:57	18:18	18:43	19:03	19:23	19:43	20:13		20:53	21:33	22:13	22:53	23:33
Uphams Corner	2.9	5:46	6:10	6:43	7:03	7:23	7:43	8:03	8:23	8:48	9:20	9:40	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:36	16:06	16:26	16:46		17:08	17:46			18:46	19:06	19:26	19:46	20:16		20:56	21:36	22:16	22:56	23:36
Newmarket	2.3	5:48	6:12	6:45	7:05	7:25	7:45	8:05	8:25	8:50	9:22	9:42	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:38	16:08	16:28	16:48			17:48			18:48	19:08	19:28	19:48	20:18		20:58	21:38	22:18	22:58	23:38
South Station	0.0	5:55	6:20	6:53	7:13	7:33	7:53	8:13	8:33	8:58	9:30	9:50	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:46	16:16	16:36	16:56	17:02	17:16	17:57	18:05	18:27	18:56	19:16	19:36	19:56	20:26	20:40	21:04	21:46	22:24	23:06	23:46

Previous Train		738X	703	737	739	741	743	745	747	749	797	751	753	755	757	759	761	763	765	767	769	771	773	775	FR	777	779	781	783	785	787	789	791	793	FR	795	797	799	801	803
Time In		5:19	4:50	6:13	6:33	6:50	7:13	7:33	7:53	8:18	7:57	9:06	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:19	15:40	16:00	16:20		16:45	17:20	17:39	18:00	18:20	18:40	19:00	19:20	19:46		20:26	21:06	21:46	22:26	23:06
Next Train		739	743	793	SH	SH	SH	751	509	611	SH	SH	757	759	761	763	765	767	SH	777	619	621	779	781	817	783	787	789	791	629	SH	795	SH	797	SH	799	801	803	SH	805
Time Out		6:07	6:47	7:05				8:40	9:00	10:05			10:40	11:20	12:00	12:40	13:20	14:00		16:15	16:05	15:40	16:50	17:09	17:40	17:30	18:10	18:30	18:50	19:20		20:00		20:40		21:20	22:00	22:40		0:00

Outbound Service

STATION	MP	737	739	741	743	F793	745	747	749	751	753	755	757	759	761	763	765	767	769	771	773	775	777	F799	779	781	783	785	787	789	791	793	795	797	799	801	803	805
Cycle		Y	YY	XX	S	Y	ZZ	X	H	ZZ	M	YY	M	YY	M	YY	M	YY	X	U	O	ZZ	YY	P	O	ZZ	YY	S	O	ZZ	YY	XX	ZZ	XX	ZZ	XX	ZZ	ZZ
South Station	0.0	5:47	6:07	6:24	6:47	7:05	7:09	7:27	8:00	8:40	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:10	15:30	15:50	16:15	16:30	16:50	17:09	17:30	17:50	18:10	18:30	18:50	19:20	20:00	20:40	21:20	22:00	22:40	0:00
Newmarket	2.3	5:52	6:12	6:29	6:52		7:14	7:32		8:45	9:25	10:05	10:45	11:25	12:05	12:45	13:25	14:05	14:45	15:15	15:35	15:55	16:20	16:35	16:55	17:14	17:35	17:55	18:15	18:35	18:55	19:25	20:05	20:45	21:25	22:05	22:45	0:05
Uphams Corner	2.9	5:54	6:14	6:31	6:54		7:16	7:34		8:47	9:27	10:07	10:47	11:27	12:07	12:47	13:27	14:07	14:47	15:18	15:38	15:58	16:23	16:38	16:58	17:17	17:38	17:58	18:18	18:38	18:58	19:27	20:07	20:47	21:27	22:07	22:47	0:07
Four Corners	4.0	5:57	6:17	6:34	6:57		7:19	7:37	8:08	8:50	9:30	10:10	10:50	11:30	12:10	12:50	13:30	14:10	14:50	15:22	15:42	16:02	16:27	16:42	17:02	17:21	17:42	18:02	18:22	18:42	19:02	19:30	20:10	20:50	21:30	22:10	22:50	0:10
Talbot Avenue	4.8	6:00	6:20	6:37	7:00		7:22	7:40	8:11	8:53	9:33	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:26	15:46	16:06	16:31	16:46	17:06	17:25	17:46	18:06	18:26	18:46	19:06	19:33	20:13	20:53	21:33	22:13	22:53	0:13
Morton Street	5.7	6:03	6:23	6:40	7:03		7:25	7:43		8:56	9:36	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:29	15:49	16:09	16:34	16:49	17:09	17:28	17:49	18:09	18:29	18:49	19:09	19:36	20:16	20:56	21:36	22:16	22:56	0:16
Blue Hill Avenue	6.3	6:05	6:25	6:42	7:05		7:27	7:45		8:58	9:38	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:31	15:51	16:11	16:36	16:51	17:11	17:30	17:51	18:11	18:31	18:51	19:11	19:38	20:18	20:58	21:38	22:18	22:58	0:18
Fairmount	8.2	6:08	6:28	6:45	7:08		7:30	7:48		9:01	9:41	10:21	11:01	11:41	12:21	13:01	13:41	14:21	15:01	15:35	15:55	16:15	16:40	16:55	17:15	17:34	17:55	18:15	18:35	18:55	19:15	19:41	20:21	21:01	21:41	22:21	23:01	0:21
Readville	9.1	6:13	6:33	6:50	7:13	7:25	7:33	7:53	8:18	9:06	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:40	16:00	16:20	16:45	17:00	17:20	17:39	18:00	18:20	18:40	19:00	19:20	19:46	20:26	21:06	21:46	22:26	23:06	0:26

Previous Train		SH	740	SH	790	740	SH	902	706	748	512	SH	756	758	760	762	764	766	SH	916	773X	SH	770	616	776	778	780	SH	782	784	786	SH	792	796	798	800	802	806
Time In			5:55		6:20	6:53		7:04	7:41	8:13	8:58		10:26	11:06	11:46	12:26	13:06	13:46		14:39	15:14		15:06	15:35	16:36	16:56	17:16		17:57	18:05	18:27		19:36	20:26	21:04	21:46	22:24	23:46
Next Train		740	742	744	746	FR	748	750	752	754	756	758	760	762	764	766	768	770	772	774	776	778	780	FR	782	784	786	788	790	792	794	796	798	800	802	804	806	805X
Time Out		6:23	6:43	7:03	7:23		7:43	8:03	8:28	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:29	15:50	16:10	16:30	16:56		17:30	17:49	18:10	18:30	18:50	19:10	19:30	20:00	20:40	21:20	22:00	22:40	23:20	0:36

Package 2.2

Inbound Service

STATION	MP	738	F790	740	742	744	746	748	750	752	F792	754	756	758	760	762	764	766	768	770	772	774	776	778	F794	780	782	784	786	788	790	792	794	796	F724	798	800	802	804	806
Cycle		YY	S	Y	YY	XX	S	ZZ	X	H	J	ZZ	M	YY	M	YY	M	YY	M	YY	X	U	O	ZZ	E	YY	O	ZZ	YY	S	O	ZZ	YY	XX	X	ZZ	XX	ZZ	XX	ZZ
Readville	9.1	5:30	5:50	6:23	6:43	7:03	7:23	7:43	8:03	8:28	9:00	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:20	15:50	16:10	16:30	16:43	16:50	17:30	17:54	18:10	18:30	18:50	19:10	19:30	20:00	20:22	20:40	21:20	22:00	22:40	23:20
Fairmount	8.2	5:32	5:53	6:26	6:46	7:06	7:26	7:46	8:06	8:31	9:03	9:23	10:02	10:42	11:22	12:02	12:42	13:22	14:02	14:42	15:22	15:52	16:12	16:32		16:52	17:32	17:56		18:32	18:52	19:12	19:32	20:02		20:42	21:22	22:02	22:42	23:22
Blue Hill Avenue	6.3	5:36	5:57	6:30	6:50	7:10	7:30	7:50	8:10	8:35	9:07	9:27	10:06	10:46	11:26	12:06	12:46	13:26	14:06	14:46	15:26	15:56	16:16	16:36		16:56	17:36	18:00		18:36	18:56	19:16	19:36	20:06		20:46	21:26	22:06	22:46	23:26
Morton Street	5.7	5:38	5:59	6:32	6:52	7:12	7:32	7:52	8:12	8:37	9:09	9:29	10:08	10:48	11:28	12:08	12:48	13:28	14:08	14:48	15:28	15:58	16:18	16:38		16:58	17:38	18:02		18:38	18:58	19:18	19:38	20:08		20:48	21:28	22:08	22:48	23:28
Talbot Avenue	4.8	5:40	6:03	6:36	6:56	7:16	7:36	7:56	8:16	8:41	9:13	9:33	10:11	10:51	11:31	12:11	12:51	13:31	14:11	14:51	15:31	16:01	16:21	16:41		17:01	17:41	18:05	18:16	18:41	19:01	19:21	19:41	20:11		20:51	21:31	22:11	22:51	23:31
Four Corners	4.0	5:43	6:07	6:40	7:00	7:20	7:40	8:00	8:20	8:45	9:17	9:37	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:33	16:03	16:23	16:43		17:03	17:43	18:07	18:18	18:43	19:03	19:23	19:43	20:13		20:53	21:33	22:13	22:53	23:33
Uphams Corner	2.9	5:46	6:10	6:43	7:03	7:23	7:43	8:03	8:23	8:48	9:20	9:40	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:36	16:06	16:26	16:46		17:06	17:46	18:10		18:46	19:06	19:26	19:46	20:16		20:56	21:36	22:16	22:56	23:36
Newmarket	2.3	5:48	6:12	6:45	7:05	7:25	7:45	8:05	8:25	8:50	9:22	9:42	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:38	16:08	16:28	16:48		17:08	17:48			18:48	19:08	19:28	19:48	20:18		20:58	21:38	22:18	22:58	23:38
South Station	0.0	5:55	6:20	6:53	7:13	7:33	7:53	8:13	8:33	8:58	9:30	9:50	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:46	16:16	16:36	16:56	17:02	17:16	17:57	18:16	18:27	18:56	19:16	19:36	19:56	20:26	20:40	21:04	21:46	22:24	23:06	23:46

Previous Train		738X	703	737	739	741	743	745	747	749	F797	751	753	755	757	759	761	763	765	767	769	771	773	775	FR	777	779	781	783	785	787	789	791	793	FR	795	797	799	801	803
Time In		5:19	4:50	6:13	6:33	6:50	7:13	7:33	7:53	8:18	7:57	9:06	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:19	15:40	16:00	16:20		16:45	17:20	17:39	18:00	18:20	18:40	19:00	19:20	19:46		20:26	21:06	21:46	22:26	23:06
Next Train		739	743	F793	SH	SH	SH	751	509	611	SH	SH	757	759	761	763	765	767	SH	777	619	621	779	781	817	783	787	789	791	629	SH	795	SH	797	SH	799	801	803	SH	805
Time Out		6:07	6:47	7:05				8:40	9:00	10:05			10:40	11:20	12:00	12:40	13:20	14:00		16:15	16:05	15:40	16:50	17:09	17:40	17:30	18:10	18:30	18:50	19:20		20:00		20:40		21:20	22:00	22:40		0:00

Outbound Service

STATION	MP	737	739	741	743	F793	745	747	749	751	753	755	757	759	761	763	765	767	769	771	773	775	777	F799	779	781	783	785	787	789	791	793	795	797	799	801	803	805
Cycle		Y	YY	XX	S	Y	ZZ	X	H	ZZ	M	YY	M	YY	M	YY	M	YY	X	U	O	ZZ	YY	P	O	ZZ	YY	S	O	ZZ	YY	XX	ZZ	XX	ZZ	XX	ZZ	ZZ
South Station	0.0	5:47	6:07	6:24	6:47	7:05	7:09	7:27	8:00	8:40	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:10	15:30	15:50	16:10	16:30	16:50	17:10	17:30	17:50	18:10	18:30	18:50	19:20	20:00	20:40	21:20	22:00	22:40	0:00
Newmarket	2.3	5:52	6:12	6:29	6:52		7:14	7:32		8:45	9:25	10:05	10:45	11:25	12:05	12:45	13:25	14:05	14:45	15:15	15:35	15:55	16:15	16:35	16:55	17:15	17:35	17:55	18:15	18:35	18:55	19:25	20:05	20:45	21:25	22:05	22:45	0:05
Uphams Corner	2.9	5:54	6:14	6:31	6:54		7:16	7:34		8:47	9:27	10:07	10:47	11:27	12:07	12:47	13:27	14:07	14:47	15:18	15:38	15:58	16:18	16:38	16:58	17:18	17:38	17:58	18:18	18:38	18:58	19:27	20:07	20:47	21:27	22:07	22:47	0:07
Four Corners	4.0	5:57	6:17	6:34	6:57		7:19	7:37	8:08	8:50	9:30	10:10	10:50	11:30	12:10	12:50	13:30	14:10	14:50	15:22	15:42	16:02	16:22	16:42	17:02	17:22	17:42	18:02	18:22	18:42	19:02	19:30	20:10	20:50	21:30	22:10	22:50	0:10
Talbot Avenue	4.8	6:00	6:20	6:37	7:00		7:22	7:40	8:11	8:53	9:33	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:26	15:46	16:06	16:26	16:46	17:06	17:26	17:46	18:06	18:26	18:46	19:06	19:33	20:13	20:53	21:33	22:13	22:53	0:13
Morton Street	5.7	6:03	6:23	6:40	7:03		7:25	7:43		8:56	9:36	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:29	15:49	16:09	16:29	16:49	17:09	17:29	17:49	18:09	18:29	18:49	19:09	19:36	20:16	20:56	21:36	22:16	22:56	0:16
Blue Hill Avenue	6.3	6:05	6:25	6:42	7:05		7:27	7:45		8:58	9:38	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:31	15:51	16:11	16:31	16:51	17:11	17:31	17:51	18:11	18:31	18:51	19:11	19:38	20:18	20:58	21:38	22:18	22:58	0:18
Fairmount	8.2	6:08	6:28	6:45	7:08		7:30	7:48		9:01	9:41	10:21	11:01	11:41	12:21	13:01	13:41	14:21	15:01	15:35	15:55	16:15	16:35	16:55	17:15	17:35	17:55	18:15	18:35	18:55	19:15	19:41	20:21	21:01	21:41	22:21	23:01	0:21
Readville	9.1	6:13	6:33	6:50	7:13	7:25	7:33	7:53	8:18	9:06	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:40	16:00	16:20	16:40	17:00	17:20	17:40	18:00	18:20	18:40	19:00	19:20	19:46	20:26	21:06	21:46	22:26	23:06	0:26

Previous Train		SH	738	SH	F790	740	SH	902	706	748	512	SH	756	758	760	762	764	766	SH	916	773X	SH	770	616	776	778	780	SH	782	784	786	SH	792	796	798	800	802	806
Time In			5:55		6:20	6:53		7:04	7:41	8:13	8:58		10:26	11:06	11:46	12:26	13:06	13:46		14:39	15:14		15:06	15:35	16:36	16:56	17:16		17:57	18:05	18:27		19:36	20:26	21:04	21:46	22:24	23:46
Next Train		740	742	744	746	FR	748	750	752	754	756	758	760	762	764	766	768	770	772	774	776	778	780	FR	782	784	786	788	790	792	794	796	798	800	802	804	806	805X
Time Out		6:23	6:43	7:03	7:23		7:43	8:03	8:28	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:29	15:50	16:10	16:30	16:56		17:30	17:49	18:10	18:30	18:50	19:10	19:30	20:00	20:40	21:20	22:00	22:40	23:20	0:36

Package 2.3

Inbound Service

STATION	MP	738	F790	740	742	744	746	748	750	752	F792	754	756	758	760	762	764	766	768	770	772	774	776	778	F794	780	782	784	786	788	790	792	794	796	F724	798	800	802	804	806
Cycle		YY	S	ZZ	YY	XX	S	ZZ	YY	XX	J	YY	ZZ	YY	ZZ	YY	ZZ	YY	ZZ	YY	ZZ	XX	S	YY	E	ZZ	S	YY	ZZ	XX	S	YY	ZZ	XX	X	YY	ZZ	XX	ZZ	XX
Readville	9.1	5:30	5:50	6:23	6:43	7:03	7:23	7:43	8:03	8:28	9:00	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:20	15:50	16:10	16:30	16:43	16:50	17:30	17:54	18:10	18:30	18:50	19:10	19:30	20:00	20:22	20:40	21:20	22:00	22:40	23:20
Fairmount	8.2	5:32	5:52	6:25	6:45	7:05	7:25	7:45	8:05	8:30	9:04	9:22	10:02	10:42	11:22	12:02	12:42	13:22	14:02	14:42	15:22	15:52	16:12	16:32		16:52	17:32	17:56		18:32	18:52	19:12	19:32	20:02		20:42	21:22	22:02	22:42	23:22
Blue Hill Avenue	6.3	5:36	5:56	6:29	6:49	7:09	7:29	7:49	8:09	8:34	9:08	9:26	10:06	10:46	11:26	12:06	12:46	13:26	14:06	14:46	15:26	15:56	16:16	16:36		16:56	17:36	18:00		18:36	18:56	19:16	19:36	20:06		20:46	21:26	22:06	22:46	23:26
Morton Street	5.7	5:38	6:00	6:32	6:52	7:12	7:32	7:52	8:12	8:37	9:10	9:29	10:08	10:48	11:28	12:08	12:48	13:28	14:08	14:48	15:28	15:58	16:18	16:38		16:58	17:38	18:02		18:38	18:58	19:18	19:38	20:08		20:48	21:28	22:08	22:48	23:28
Talbot Avenue	4.8	5:41	6:03	6:35	6:55	7:15	7:35	7:55	8:15	8:40	9:13	9:32	10:11	10:51	11:31	12:11	12:51	13:31	14:11	14:51	15:31	16:01	16:21	16:41		17:01	17:41	18:05	18:16	18:41	19:01	19:21	19:41	20:11		20:51	21:31	22:11	22:51	23:31
Four Corners	4.0	5:44	6:07	6:38	6:58	7:18	7:38	7:58	8:18	8:43	9:17	9:35	10:14	10:54	11:34	12:14	12:54	13:34	14:14	14:54	15:34	16:04	16:24	16:44		17:04	17:44	18:08	18:18	18:44	19:04	19:24	19:44	20:14		20:54	21:34	22:14	22:54	23:34
Uphams Corner	2.9	5:47	6:10	6:41	7:01	7:21	7:41	8:01	8:21	8:46	9:20	9:38	10:17	10:57	11:37	12:17	12:57	13:37	14:17	14:57	15:37	16:07	16:27	16:47		17:07	17:47	18:11		18:47	19:07	19:27	19:47	20:17		20:57	21:37	22:17	22:57	23:37
Newmarket	2.3	5:49	6:13	6:43	7:03	7:23	7:43	8:03	8:23	8:48	9:23	9:40	10:19	10:59	11:39	12:19	12:59	13:39	14:19	14:59	15:39	16:09	16:29	16:49		17:09	17:49			18:49	19:09	19:29	19:49	20:19		20:59	21:39	22:19	22:59	23:39
South Station	0.0	5:56	6:20	6:51	7:11	7:31	7:51	8:11	8:31	8:56	9:30	9:48	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:46	16:16	16:36	16:56	17:02	17:16	17:57	18:17	18:27	18:56	19:16	19:36	19:56	20:26	20:40	21:05	21:46	22:25	23:06	23:46

Previous Train		738X	703	737	739	741	743	745	747	749	F797	751	753	755	757	759	761	763	765	767	769	771	773	775	FR	777	779	781	783	785	787	789	791	793	FR	795	797	799	801	803
Time In		5:19	4:50	6:13	6:33	6:50	7:13	7:34	7:53	8:18	7:57	9:06	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:38	15:58	16:18		16:38	17:18	17:38	17:58	18:18	18:38	18:58	19:18	19:46		20:26	21:06	21:46	22:26	23:06
Next Train		739	743	F793	SH	SH	SH	751	509	611	SH	SH	757	759	761	763	765	767	SH	777	619	621	779	781	817	783	787	789	791	629	SH	795	SH	797	SH	799	801	803	SH	805
Time Out		6:07	6:47	7:05				8:40	9:00	10:05			10:40	11:20	12:00	12:40	13:20	14:00		16:15	16:05	15:40	16:50	17:09	17:40	17:30	18:10	18:30	18:50	19:20		20:00		20:40		21:20	22:00	22:40		0:00

Outbound Service

STATION	MP	737	739	741	743	F793	745	747	749	751	753	755	757	759	761	763	765	767	769	771	773	775	777	F799	779	781	783	785	787	789	791	793	795	797	799	801	803	805
Cycle		ZZ	YY	XX	S	Y	ZZ	YY	XX	YY	ZZ	YY	ZZ	YY	ZZ	YY	ZZ	YY	ZZ	XX	S	YY	ZZ	P	S	YY	ZZ	XX	S	YY	ZZ	XX	YY	ZZ	XX	ZZ	XX	XX
South Station	0.0	5:47	6:07	6:24	6:47	7:05	7:09	7:27	8:00	8:40	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:10	15:30	15:50	16:10	16:30	16:50	17:10	17:30	17:50	18:10	18:30	18:50	19:20	20:00	20:40	21:20	22:00	22:40	0:00
Newmarket	2.3	5:52	6:12	6:29	6:52		7:14	7:32		8:45	9:25	10:05	10:45	11:25	12:05	12:45	13:25	14:05	14:45	15:15	15:35	15:55	16:15	16:35	16:55	17:15	17:35	17:55	18:15	18:35	18:55	19:25	20:05	20:45	21:25	22:05	22:45	0:05
Uphams Corner	2.9	5:55	6:15	6:32	6:55		7:17	7:35		8:48	9:28	10:08	10:48	11:28	12:08	12:48	13:28	14:08	14:48	15:18	15:38	15:58	16:18	16:38	16:58	17:18	17:38	17:58	18:18	18:38	18:58	19:28	20:08	20:48	21:28	22:08	22:48	0:08
Four Corners	4.0	5:58	6:18	6:35	6:58		7:20	7:38	8:08	8:51	9:31	10:11	10:51	11:31	12:11	12:51	13:31	14:11	14:51	15:21	15:41	16:01	16:21	16:42	17:01	17:21	17:41	18:01	18:21	18:41	19:01	19:31	20:11	20:51	21:31	22:11	22:51	0:11
Talbot Avenue	4.8	6:00	6:20	6:37	7:00		7:22	7:40	8:10	8:53	9:33	10:13	10:53	11:33	12:13	12:53	13:33	14:13	14:53	15:24	15:44	16:04	16:24	16:45	17:04	17:24	17:44	18:04	18:24	18:44	19:04	19:33	20:13	20:53	21:33	22:13	22:53	0:13
Morton Street	5.7	6:03	6:23	6:40	7:03		7:25	7:43		8:56	9:36	10:16	10:56	11:36	12:16	12:56	13:36	14:16	14:56	15:27	15:47	16:07	16:27	16:49	17:07	17:27	17:47	18:07	18:27	18:47	19:07	19:36	20:16	20:56	21:36	22:16	22:56	0:16
Blue Hill Avenue	6.3	6:05	6:25	6:42	7:05		7:27	7:45		8:58	9:38	10:18	10:58	11:38	12:18	12:58	13:38	14:18	14:58	15:29	15:49	16:09	16:29	16:52	17:09	17:29	17:49	18:09	18:29	18:49	19:09	19:38	20:18	20:58	21:38	22:18	22:58	0:18
Fairmount	8.2	6:09	6:29	6:46	7:09		7:31	7:49		9:02	9:42	10:22	11:02	11:42	12:22	13:02	13:42	14:22	15:02	15:34	15:54	16:14	16:34	16:56	17:14	17:34	17:54	18:14	18:34	18:54	19:14	19:42	20:22	21:02	21:42	22:22	23:02	0:22
Readville	9.1	6:13	6:33	6:50	7:13	7:25	7:34	7:53	8:18	9:06	9:46	10:26	11:06	11:46	12:26	13:06	13:46	14:26	15:06	15:38	15:58	16:18	16:38	17:00	17:18	17:38	17:58	18:18	18:38	18:58	19:18	19:46	20:26	21:06	21:46	22:26	23:06	0:26

Previous Train		SH	738	SH	F790	740	SH	902	706	748	512	SH	756	758	760	762	764	766	SH	916	SH	SH	770	616	776	778	780	SH	782	784	786	SH	792	796	798	800	802	806
Time In			5:56		6:18	6:53		7:04	7:41	8:11	8:58		10:26	11:06	11:46	12:26	13:06	13:46		14:39			15:06	15:35	16:36	16:56	17:16		17:57	18:05	18:27		19:36	20:26	21:04	21:46	22:24	23:46
Next Train		740	742	744	746	FR	748	750	752	754	756	758	760	762	764	766	768	770	772	774	776	778	780	FR	782	784	786	788	790	792	794	796	798	800	802	804	806	805X
Time Out		6:23	6:43	7:03	7:23		7:43	8:03	8:28	9:20	10:00	10:40	11:20	12:00	12:40	13:20	14:00	14:40	15:29	15:50	16:10	16:30	16:56		17:30	17:49	18:10	18:30	18:50	19:10	19:30	20:00	20:40	21:20	22:00	22:40	23:20	0:36