From: Pat Pratt [mailto:ppratt@comcast.net]
Sent: Thursday, February 01, 2018 4:40 PM
To: Strysky, Alexander (EEA)
Subject: Reconstruction of the Mass Pike in Allston

Dear Secretary Beaton:

I am writing you with great hope that you will be instrumental in overseeing and executing a good, beautiful and environmentally appropriate new part of Boston.
I am a lifelong resident of Cambridge (88 years) and have found the Charles River and its banks a tremendous asset to Cambridge, Boston, Allston and all the residents of Massachusetts who travel here. I have seen many changes, but this Mass Pike in Allston change is monumental and could be a tremendous, successful transportation and recreational addition to the entire Boston area.

I will list a few of the points of major interest that will make a necessary and beneficial change to all the nearby communities:

1. West Station: Essential for transportation and for the environment

2. Sorrow Drive and I-90 : Should include parkland, vehicular, bicycle and pedestrian passageways, preferably all on grade. PRP-1

3. Rail lines and Bus routes : Link Brookline, Boston, Brighton, Cambridge for efficient community connections. PRP-2

I know many studies and groups are contacting you, but no plan should proceed or be finalized without these major accomplishments.

Thank you for your arduous work on this vital area.

Sincerely yours,

Patricia R. Pratt
11 Brown Street
Cambridge,
02138 tel: 617 876 3310

From: Pat OReilly [mailto:poreilly@gmail.com]
Sent: Thursday, February 01, 2018 2:40 PM
To: Strysky, Alexander (EEA)
Subject: I-90 Allston, EEA #15278

Public Comments by

Patrick O'Reilly
1 Harris St
Nahant, MA

Hello, The I-90 Allston project is a regionally significant transportation project which can have regional economic implications. I am writing to express support for the at-grade option for the I-90 realignment project. Even though this will result in some modest filling of the Charles River this appears to be the most efficient in the short term and provides future generations with a more maintainable solution to the "throat" area. POR-1

Environmental effects and narrowing of the navigable waterway should be mitigated at relatively low costs and can be done with overall benefits. Alternative takings of narrow sliver portions of Boston University property should be contemplated to mitigate the need for filling in portions of the bank of the Charles River.

In addition it would be good to take the opportunity with further fill to provide a more pleasant walking and biking path along the river with an adequate landscaped buffer.

Also, I suggest rather than postponing the "West Station" as it was envisioned. I suggest at least providing the minimal train platform at a likely cost of between $20 and $40 million (comparable to other platform rather than full station costs) so that this area around Beacon Yards can be planned from the start of its redevelopment as a transit and transportation oriented development without quite as much need for parking garages and reliance on just car transportation. POR-2

And a two track flyover of the Grand Junction connector should be included to provide for existing rail needs and provide for the eventual conversion of that connection to light rail. POR-3

Sincerely, Patrick O'Reilly

From: Pauline Lim [mailto:lim@paulinelim.net]
Sent: Thursday, February 01, 2018 12:04 PM
To: Strysky, Alexander (EEA)
Cc: comments@walkboston.org
Subject: Unchoke the Throat

Dear Mr. Strysky:

I am writing to express my wholehearted agreement that the portion of the Charles River Path near the BU Bridge in Allston needs to be widened and improved. It is the least pleasant and most dangerous-feeling part of the ride. I hope you support the initiative of the Charles River Conservancy and WalkBoston, along with designers at Sasaki, to #UnchokeTheThroat. PL-1

Thank you.

****

Pauline Lim
Brickbottom Artists Building
1 Fitchburg St. C414
Somerville, MA 02143-2128

My art and music website: www.paulinelim.net

From: Peg Senturia [mailto:pegsenturia@gmail.com]
Sent: Thursday, February 01, 2018 4:07 PM
To: Cerbone, James (DOT)
Subject: No to Malvern Street Conduit

Dear Mr. Cerbone:

My husband and I support a redesign of the Allston interchange that improves traffic flow and opens up new land for better use. We look forward to better bus, pedestrian and bicycle connections between Commonwealth Avenue and North Harvard Street.

As long-time residents of North Brookline, however, we fear that making Malvern Street into a conduit for cars would seriously harm our neighborhood. Babcock, Pleasant, and St. Paul Streets are already too busy for their size. The increased traffic you forecast would overwhelm us! PS/SS-1

We urge you to develop a better plan.

Peg and Steve Senturia
98 Crowninshield Rd
Brookline, MA 02446

From: Rebecca Simonson [mailto:rebecca.l.simonson@gmail.com]
Sent: Thursday, February 01, 2018 9:56 AM
To: Strysky, Alexander (EEA)
Cc: comments@walkboston.org
Subject: I-90 Allston, EEA #15278

Hi,

I'm writing in support of Walk Boston's vision to "unchoke the throat." I like to commute by biking, mostly because it's the more sustainable option, but sometimes I can't stomach the Allston throat and opt for less sustainable options so that I don't have to deal with this section of my commute. Biking through this section during rush hour -- with many cyclists and joggers -- can be very scary (there's a section where a pole juts into the path, and so if you encounter anyone -- a walker or cyclist -- coming from the other direction, you have to worry about hitting them while you're next to a highway). Not to mention, it is downright unpleasant to be so close to the loud vehicles. RS-1

Please prioritize the lives of residents and sustainable commuters as much as you're prioritizing environmentally hazardous commuting options.

Here is my contact information:

Rebecca Simonson
140 Pleasant St., Apt. 1
Cambridge, MA 02139

From: Rob Allison [mailto:robdamnit@yahoo.com]
Sent: Thursday, February 01, 2018 3:06 PM
To: Strysky, Alexander (EEA)
Cc: comments@walkboston.org
Subject: EEA No. 15278 - I90 Allston

Dear Secretary Beaton,

I support the proposals submitted by WalkBoston and the Charles River Conservancy in conjunction with Sasaki to expand the Charles River walking and bike paths. I urge MassDOT to consider how this project can "unchoke the throat" for better paths. The current MassDOT proposals do not address this issue and are therefore incomplete. RA2-1

Thank you.

Robert Allison
41 Litchfield St.
Brighton, MA

From: Rosemary Kean [mailto:rosemarykean510@gmail.com]
Sent: Thursday, February 01, 2018 11:22 AM
To: Strysky, Alexander (EEA)
Subject: I-90 Allston, EEA #15278

Dear Mr. Strysky,
I am writing to comment on the need for more green space and more room for walkers and bicycles along the Charles River, especially in the "throat" area which right now provides so little space for walkers that we are inhaling diesel fumes from traffic zooming by. Please use a plan, such as a boardwalk, to provide more and more pleasant space for walkers. RK-1
Thank you!
Rosemary Kean

From: Sean Richmond [mailto:seanrichmond@accboston.org]
Sent: Thursday, February 01, 2018 5:32 PM
To: Strysky, Alexander (EEA)
Cc: comments@walkboston.org
Subject: I-90 Allston, EEA # 15278

To whom it may concern,

I absolutely love the proposals submitted by walk Boston to #unchoakthethroat. As an avid cyclist, I ride that path frequently and have always wondered why it was not updated and safer for pedestrians and cyclist, not to mention easier on the ears and breathing! If we are going to spend a billion dollars on roads let's keep Boston one of the best cities in the world for outdoor enthusiasts and do something great and useful with the paths along the River. I heartily encourage you to invest in the future of Boston by making the paths beautiful and accessible and safe! Thanks.

Sean Richmond
Watertown resident

From: Stephen Kaiser [mailto:skaiser1959@gmail.com]
Sent: Thursday, February 01, 2018 9:50 AM
To: Strysky, Alexander (EEA); Cerbone, James (DOT); Nathaniel Cabral-Curtis
Subject: Re: Comment #1 : Draft EIR for I-90 (EEA #15278) Master Plans : Transit and Development

To : Alex Strysky, MEPA

From : Steve Kaiser

Here is my Comment #2 on transit, a little later than I expected. But at 66 pages it is very long, and the time was spent filling the void in transit initiatives with positive ideas for action, rather than mere complaints. From my experiences here in Cambridge over the Inner Belt, I have always been aware of the deficiencies of master plans, but if ever we need a good master plan for transit and one aimed particularly at Allston, now is the time.

My next comment will be in highways and traffic, the ostensible purpose of the 602-page Draft EIR. I hope it will be considerably shorter, but I am preparing an analysis of peak hour traffic data on the Turnpike which illustrates new limitations in the road system and reinforces the priority for better transit.

Discussions in Cambridgeport are focused on the Henrietta Davis letter, and the likelihood that many citizens will write a few brief comments and attach her comment as support. That may make your task of reviewing comments somewhat easier than might be suggested for a controversial 602-page ledger-sized document.

By this way next week there will be a little quiz on the contents of the 2 gigabyte MassDOT submission. Better study up !

SK

p.s. As long as my comment is, it is only 1/10 of one percent of the size of the MassDOT submission. Everything is relative.
=====

On Fri, Jan 19, 2018 at 12:44 PM, Stephen Kaiser <skaiser1959@gmail.com> wrote:
Alex,

I have attached my first comment on the I-90 DEIR. Comment #2 on Transit to follow next week.

Stephen Kaiser
191 Hamilton Street
Cambridge, Mass. 02139

==========

Stephen H. Kaiser
191 Hamilton St.
Cambridge Mass. 02139

To : Secretary Matthew Beaton, Executive Office of Energy and Environmental Affairs
Attention : Alex Strysky, MEPA Unit

From : Stephen H. Kaiser

Comment #2 on Turnpike Interchange DEIR, EEA #15278
Filling the Need for a Transit Master Plan in Allston

In my Comment #1 of January 19, I suggested that the most suitable strategy to meet the transit needs in Allston would be for MassDOT to file with MEPA its intent to prepare a transit Master Plan. The first objective would be to assemble a collection of possible transit services in the form of a "tool box" -- ideas to be developed in more detail in the formal plan.

This approach responds to evidence that none of the major players -- Harvard, MassDOT, the City of Boston or the City of Cambridge -- has so far assembled such a package. None has taken the next step of selecting and designing the contents of a workable transit Master Plan for Allston. Below is a list of seventy ideas that could be the basis for a transit master plan and can serve as to jump start the transit planning process for Allston.

The first age of transit arrived over a century ago with the tumultuous arrival of the streetcar and the second age of transit was stimulated by the rejection of the superhighway in the 1970s. The first age of transit reached its peak in less than thirty years, and started a decline triggered by the popularity of the automobile. The second age of transit lasted for only two decades, with a neglect of transit and a focus on the Big Dig. Between 1991 and the early 2015, the Boston transit system went through a quarter century of a slow death, with no prevailing philosophy for transit. The only survivor was the Green Line Extension, and in mid-design that project imploded in budgetary and design failure. Boston still has no transit plan, and the only two great ideas of the 1990s -- the North-South Rail Link and the Urban ring -- both expired for lack of commitment and sustainable public interest.

In Allston, the past decade has heard proposals for West Station and DMU commuter rail service via the Grand Junction tracks. In 2014 a ground breaking for the new station was held in the rain, but later in 2014 the Patrick withdrew is commitment. The Draft EIR before us recommends no station before 2040. The Allston community has not been well-treated and has little reason to trust state policies. Despite the potential for massive development on Harvard's extensive land holdings, the state has no transit plan for the next two decades.

A crucial initiative within the past week came from Harvard University. It was triggered by community unrest over the lack of stable commitments to Allston transit, and included two key letters. The first came from five state Legislators writing to Harvard, urging financial support for West Station. The second was sent from Harvard to MassDOT with its commitment of $58 million to jump-start construction of the station and a connecting link to Commonwealth Avenue for shuttle bus use. In the absence of further policy clarifications from MassDOT, the next opportunity to define transit priorities will come in the Secretary's Certificate on the Draft EIR, to be issued on February 16.

Transit mitigation is vital for an area that could bring 10 to 20 million additional square feet of development into the area, with associated new trips by transit and private vehicles. The Turnpike DEIR represents a major consolidation of current thinking on transit initiatives, but we must think of it as only a start. Harvard's announcement moves up the schedule for West Station, in contrast to the Draft EIR target of 2040.

In an age dominated by e-mails, PowerPoint and media events, it is encouraging to see the effect that two old-fashioned letters can achieve. The five Legislators may now consider writing further letters to MassDOT and Boston University.

The EIR Review process has moved into the "old fashioned" MEPA provisions for written comment, communication and issuance of a certificate. Ordinary citizens may not have the financial resources of governments and universities, but they can contribute ideas and options for better transit -- when institutional bureaucracies find themselves unable to act.

In that spirit I have assembled the following collection of seventy ideas that might directly or indirectly improve transit service to Allston and areas outside Allston as well.

In the normal MEPA perspective of EIR review, the ideas could be considered as either mitigation or as extension of the the multi-modal planning process that the Turnpike EIR asserts itself to be. However, such mitigation is not an add-on to the completion of the highway/development project : it should be seen as a vital part of the planning to assure that essential transit services are available before new construction and development comes on-line.

The Draft EIR is primarily focused on MassDOT highway reconstruction, but the MEPA process can be utilized to stimulate discussion of ideas and alternatives for transit that can build on Harvard's initiative. Open public comment periods for both Turnpike and the Harvard Master Plans can serve as initiators of new and traditional transit ideas worthy of further exploration.

The seventy ideas outlined below have been assembled during the two months of public review for the Turnpike project : December and January. The MEPA comment period is both the initiating and limiting time period to produce such a listing. In the months to come other commenters may be able to expand upon it.

The important challenge for MassDOT is to assemble all ideas for a transit master plan by engaging in a brainstorming exercise. These ideas can come from any source. Just as MEPA must judge the adequacy of the Draft EIR, MassDOT should begin a continuous process of judging its own adequacy for meeting the transit needs of Allston, in judicious combination with local universities, businesses, citizen groups and anyone else who wishes to make a contribution.

DIRECT TRANSIT IMPROVEMENTS

In presenting various design concepts, I introduce a distinction between direct influences on transit service to Allston and indirect influences. Direct influences would be applied within the study area of the Turnpike DEIR, and usually would contain those trips that require no more than one trip transfer. Indirect influences are transit services that occur outside the study area yet are supportive and contributory to the direct transit

services : indirect influences would require more than one transfer during a trip. Examples of indirect improvements would be increased capacity on the Red and Orange Lines .... better planning methods at MassDOT .... or improvements to transit operations generally.

WEST STATION AS AN INITIAL FOCUS

West Station has attracted much recent attention : it has been singled out as the most important transit project for Allston that must be completed earlier than 2040. I have yet to meet a single person who thinks that the MassDOT and Draft EIR decision to delay West Station to 2040 is a wise one.

West Station is not the powerhouse heavy rail service that a Red or Orange Line could be. It is served by only one branch of the southern commuter rail system and is not a heavily used transit service by Boston standards. However, the station can be augmented by service from many different directions, and thus West Station can become a transit hub similar to North and South Stations.

Some of these additional services could be : SK2-1

* have all trains on the Worcester line stop at West Station
* increase the frequency of trains on the Worcester line
* provide transit service from Cambridge using the Grand Junction right-of-way
* allow for bus service between university properties and neighborhoods in Allston with connections to Commonwealth Avenue and the Medical Area.
* add entirely new MBTA bus routes
* use West station as a Turnpike stop for MBTA, commuter and intercity buses using the Turnpike

* build additional rail transit service within the Turnpike corridor

* allow easier connections to the Boston College Green Line

* improve bike and pedestrian connections to surrounding neighborhoods

* develop a bus lane system in Allston to allow buses to circulate quickly in and out of West Station

Non-transit sources of access could include : private vehicle drop-offs ... non-Harvard shuttle buses ... bicycle park & riders at West Station ... and pedestrian walk-ins from BU and the surrounding community. With this confluence of transit services, West Station could become a significant transit hub .... far more than the simple joining of one or two transit lines. Use of Grand Junction and Medical Area transit represents an important adaptation of the circumferential transit concept for distributing trips around the central Boston area.

With this image of a potent West Station, the Final EIR should revise its estimate of only 250 daily commuter rail riders. The analysis in Appendix L assumes that about half the trains on the Worcester Line will bypass both Boston Landing and West Stations (page 70 of 84) Clearly, if the service is not there, there will be fewer passengers. Appendix L reflects a variation on common parlance : "If you build it -- but do not offer service -- they will not come." Alternate full service schedules should be considered in an aggressive effort to achieve higher ridership on commuter rail and all other connecting modes at West Station. SK2-2

Designing a transit system can be similar to the way education systems work. If the expectations for the students are low, student performance will be low. If the expectations for a well-designed West Station are high, more riders will be attracted by the service.

KEY DESIGN FEATURES OF WEST STATION

West Station is based on a concept of ground level platforms for Worcester commuter rail trains and service from the Grand Junction corridor. Upper levels would be for bus circulation, layover, transit drop-off, and bicycle/pedestrian circulation. The lower level

should contain moderate maintenance capabilities such as a car wash and a pit track for train access from below.

The MBTA has requested space to layover 20 commuter rail trains. Current plans show storage for only eight trains. There is no pit track and no car wash. Train storage for only eight trains clearly misses the mark. In its present form, the design of West Station is not a concept the MBTA commuter rail forces could support with enthusiasm.

Any construction of West Station should be contingent on the MBTA committing itself to be a Good Neighbor to adjacent residents, businesses and institutions. The new rail area must absolutely not be a source of noise and pollution that disturbs the abutters, as has occurred in the past with the rail storage yard at the Boston Engine Terminal in Somerville. Commitments to good performance and responsiveness are essential. Otherwise the MBTA will be opposed by communities that do not wish to be neighbors to a rail yard.

The timing for West Station is of critical concern today. Harvard's recent announcement of a $58 million contribution should be considered in the context of increased future spending on infrastructure. If funds from business can come from a wide area and help can come from matching Federal funds and state bond issues, the station can be built more quickly. Even if funds are insufficient at future times, sound policy would see to it that design plans are prepared and made available "on the shelf," to be ready for activation when the right economic and political conditions arise.

SEVEN POSSIBLE TYPES OF TRANSIT USERS AT WEST STATION

(a) Passengers who ride the Commuter rail in either direction for access to and from the Harvard properties and might take either the Harvard shuttle bus or walk.

(b). Passengers who ride the Grand Junction service from the Red Line in either direction, or directly from the Kendall Square area, to and from the Harvard properties.

(c). Passengers who travel either way on the Turnpike by MBTA bus or private bus of any sort.

(d). Passengers using a new rail transit service along the turnpike, utilizing space made available from a six-lane rather than the present eight-lane Turnpike.

(e). Passengers who use another transit service, such as the Boston College Line in either direction or Route 57/57A buses, to access the Harvard shuttle, walk, or ride commuter rail or Grand Junction Shuttle.

(f). Passengers who use the West Station hub as a way to get to the Medical Center or other local areas other than Harvard-owned properties.

(g). Passengers who walk or ride bikes from the neighborhood to use commuter rail in either direction .... or a Grand Junction shuttle into Cambridge .... or take the Harvard shuttle bus ... or walk ... or ride a bike. Note that if there is a Hubway site at the station a person could walk in and ride a bike out.

When CTPS makes a new ridership estimate for West Station as a transit hub, analysts should consider all seven sources of transit ridership. SK2-2 con't

PART ONE -- DESIGN OF RAIL YARDS

IDEA #1 -- A DESIGN VARIATION FOR WEST STATION

The current design for West Station, as shown on page 35 of 602, contains two sets of platforms. Three high level platforms will serve Worcester commuter trains and a single center high platform will be used for Grand Junction service. Layover space includes four tracks to hold two commuter rail trains each, for a total of 8 trains. Current plans contain no provisions for a car wash or for a pit track to allow basic train maintenance.

An alternative design is shown in Figure K-1 on the next page. Service from Grand Junction West Station would use light rail vehicles (LRV) similar to Green Line use .... two platforms for commuter rail .... both a car wash and pit track .... and room for layover of 30 commuter trains. Implicit in this option are strict controls on engine idling, especially for F40 locomotives.

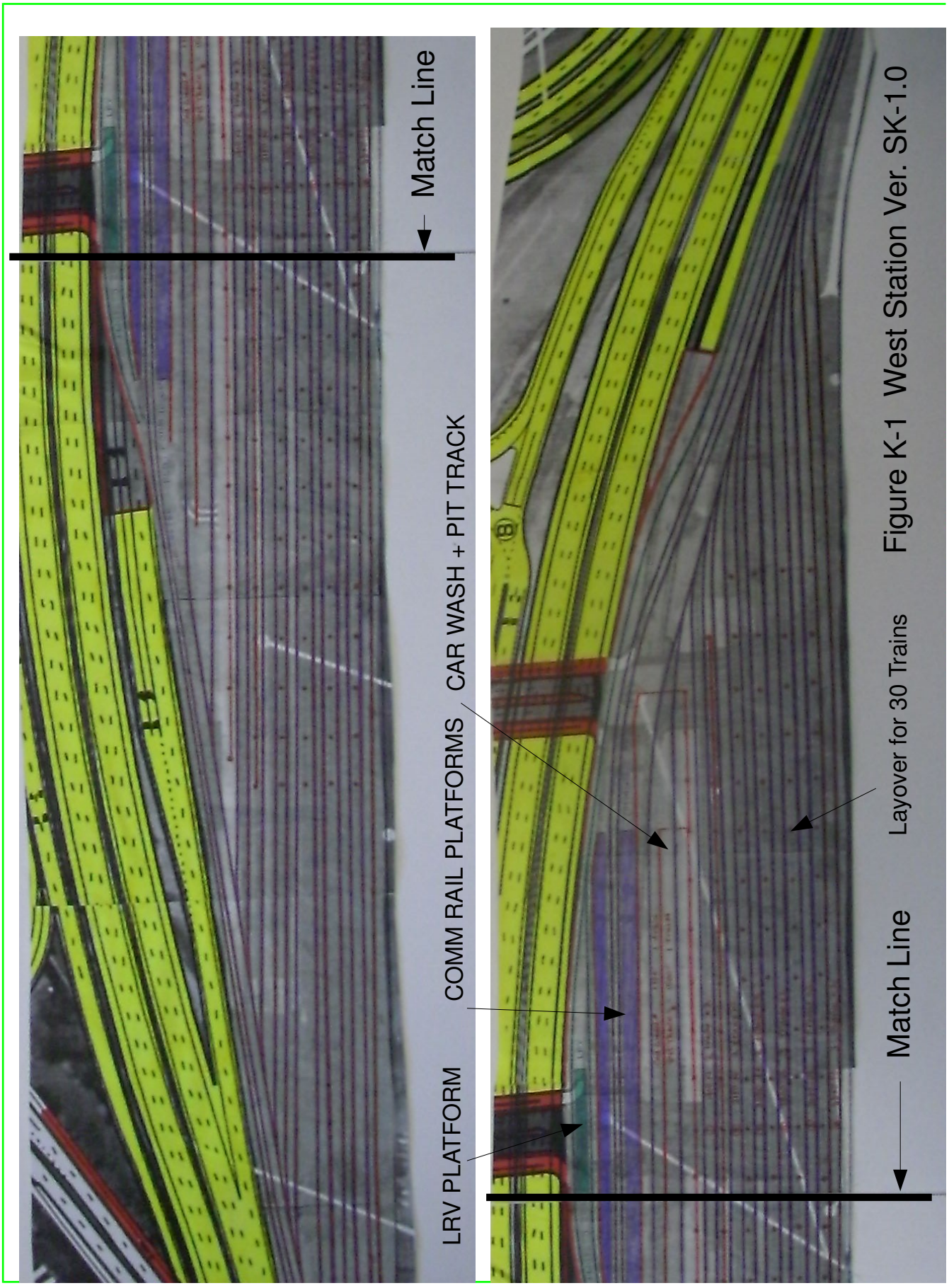
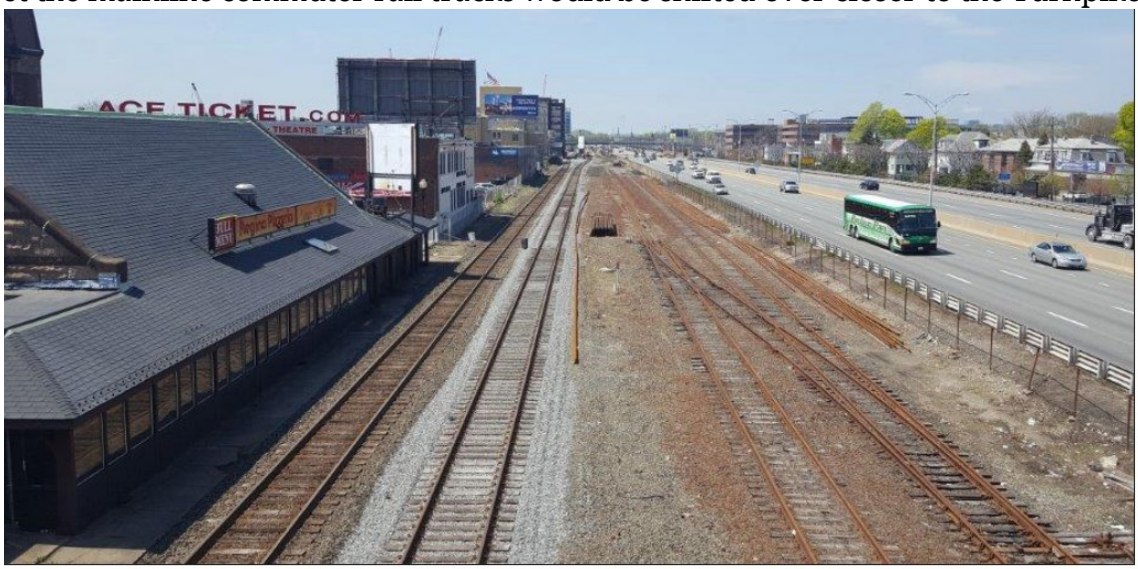


Figure K-1 West Station Ver. SK-1.0

Platforms are shifted north : away from the neighborhood. The result is also a more efficient use of land for train layover. LRV platform and tracks would be located underneath the elevated inbound Turnpike service road to maximize tracks for commuter use.

The LRV service to West Station could allow double-ended service of three LRV units at four-minute headways, with service capacity of 4,500 passengers an hour. The Charles River bridge could be utilized as one railroad track and one two-way LRV track between Memorial Drive and West Station. The track would split into two tracks at West Station with a center platform. .

Vacant railroad land west of Cambridge Street is also available for use as layover space, allowing storage for two to four additional trains. Between Boston Landing and Cambridge Street the mainline commuter rail tracks would be shifted over closer to the Turnpike.



View looking west from Franklin Street Pedestrian Bridge (Worcester Main Line Tracks and former B and A Depot Building, now Pizzeria Regina, on far left)

Figure K-2 Worcester Mainline Tracks

IDEA #2 BOSTON ENGINE TERMINAL

Success with design, construction and acceptance of the West Station rail yard will depend on efficient design and special efforts to reduce problems associated with locomotive idling and pollution, as well as noise. The existing Boston Engine Terminal in the North Area rail yards would serve as a demonstration for designing and maintaining a rail yard that is in harmony with adjacent neighborhoods.

An early action program to demonstrate possible success for West Station would rely on the Boston Engine Terminal in the North Area rail yards between Cambridge, Somerville and Boston to illustrate the MBTA commitment to environmental compatibility. The B.E.T. building and track area has suffered for many years from inadequate storage space for trains close to North Station. Some trains must be stored elsewhere, resulting in considerable deadheading and inefficient use of the trains. Storage is most critical when trains must be transferred from the Southern Sector to the Northern Section and the B.E.T. complex to perform heavy maintenance. The lack of adequate maintenance facilities on the south side requires adding trains to the B.E.T. storage yard. Yard employees must store any excess trains on two dead-end tracks that extend from Sullivan Square to Assembly square.

B.E.T. has storage for ten trains, slightly more than the eight proposed for West Station. In the mid-1990s five tracks were built for storage, along with the central maintenance building. The work was Phase One of the Master Plan for B.E.T. from 1985. Phase Two would have added another five tracks, and relocated the mainline Fitchburg tracks. The necessary land was purchased from the Boston & Maine railroad and exists to this day. The first step would be to complete B.E.T. Phase Two and build the necessary track work to provide full storage.

However, the existing arrangement has a history of complaints from neighbors about diesel odors and noise. In Somerville, the Brickbottom apartments are immediately adjacent to the Fitchburg track, with a "drill track" in the center. The drill track is used to hitch locomotives to trains sets in the yard, and after assembly the trains must stand by, with the diesel motor idling while the yard switches are reset. The drill track is close to the open apartment windows in the summer (no central air conditioning) so that in the early morning hours residents must contend with diesel fumes from idling locomotives. The drill track is also used as a siding for brief layovers by the Amtrak Downeaster, again with noise and idling fumes.

Meanwhile, in East Cambridge some residents have complained of loud noises coming from the B.E.T. yard in early morning. I decided to offer assistance if I could, and visited the site very early one morning. A diesel locomotive was located close to the maintenance building, with its engine continuously running at very high idle -- with the very loud roaring

sound capable from large diesel motors. The noise continued for the entire hour I visited the site. In later discussions with neighbors I found that complaints had initially been handled properly but then the noise was repeated. The problem could be solved, but was not being enforced.

Thus the expansion of the rail yard offers the opportunity for the B.E.T. yard to have twice the storage it now has, but also with the possibility to reconsider the use of the drill track : train idling would no longer occur next to Brickbottom. In addition, an iron-clad agreement would need to be made and enforced to avoid all high-rpm idling by any train in the yard, triggering no more complaints from East Cambridge. That should be the deal.

The work involved in expanding the B.E.T. yard could be done simply by laying track. This task should take just a few months. If the new arrangement works for train storage, noise and air pollution, an invitation can be offered to Allston residents to visit the site and see how noise and air pollution issues have been deal with. The agreements with neighbors should be the same, for B.E.T. and West Station. Work on B.E.T. train storage expansion should begin ASAP.

IDEA #3 SOUTH SIDE TRAIN STORAGE AT WIDETT CIRCLE

In addition to layover and other storage needs for commuter rail trains at West Station, the ground area of Widett Circle near the South End should be acquired. The ground level would be used for storage of Amtrak and commuter rail trains, as well as being the site for a future South Side Maintenance Terminal, similar to B.E.T. Future development of buildings could occur in the air rights above the rail tracks.

Over the years, the vulnerability of the track system at South Station has been recognized by railroad specialists. The focus was on one switch in the yard approach to the platforms, with the nickname "Malfunction Junction." If the switch failed to operate properly, it had the potential to shut down all train operations in the South Station yard. In 2011, a disabled train blocked a key switch in the yard and forced a shutdown of South Station during the afternoon peak period.

PART TWO -- GRAND JUNCTION SERVICE

IDEA #4 -- GRAND JUNCTION SERVICE TO KENDALL SQUARE

The DEIR provides for a form of commuter rail service between West Station and North Station. As described in Attachment B of Appendix A (page 101 of 144) North Station does not have sufficient platform capacity to handle additional peak hour trains, whether regular commuter trains with diesel locomotives or diesel-multiple-units (DMUs) which are modern versions of the old Buddliners. The DEIR option to stop commuter rail service at Binney Street is unable to provide good service to either North Station nor Kendall Square. SK2-3

Figure K-2 LRV Route West Station to Kendall Square

Instead the focus should be on light rail or busway service along the Grand Junction corridor. As outlined in Figure K-2, light rail service with Green Line rolling stock (LRV) could use the Grand Junction ROW between Memorial Drive and Main Street with two stops in Cambridgeport and two more at Mass Avenue and the MIT driveway into the campus. I believe there is room for two tracks.

On Main Street a single two-way track in the street would extend from Grand Junction to Ames Street, proceeding into a one-way loop running curbside from Ames Street to Broadway to Kendall Square and back to Main Street. Storage space will need to be provided for layover buses serving routes 68, 85 and CT2. Design provisions must also be made to prevent narrow bicycle tires from becoming caught in rail tracks.

Three-unit Green Line trains at four-minute headways would allow capacities of 4,500 passengers per hour. The service would allow trips from West Station to Kendall (and the Red Line) and return. Improved service would be available for Cambridgeport residents and to businesses along Albany Street and to the MIT main campus, as well as the Tech Square area. Construction would primarily involve laying of track, plus power, and signals. Crossing the Charles River would be on a single two-way track.

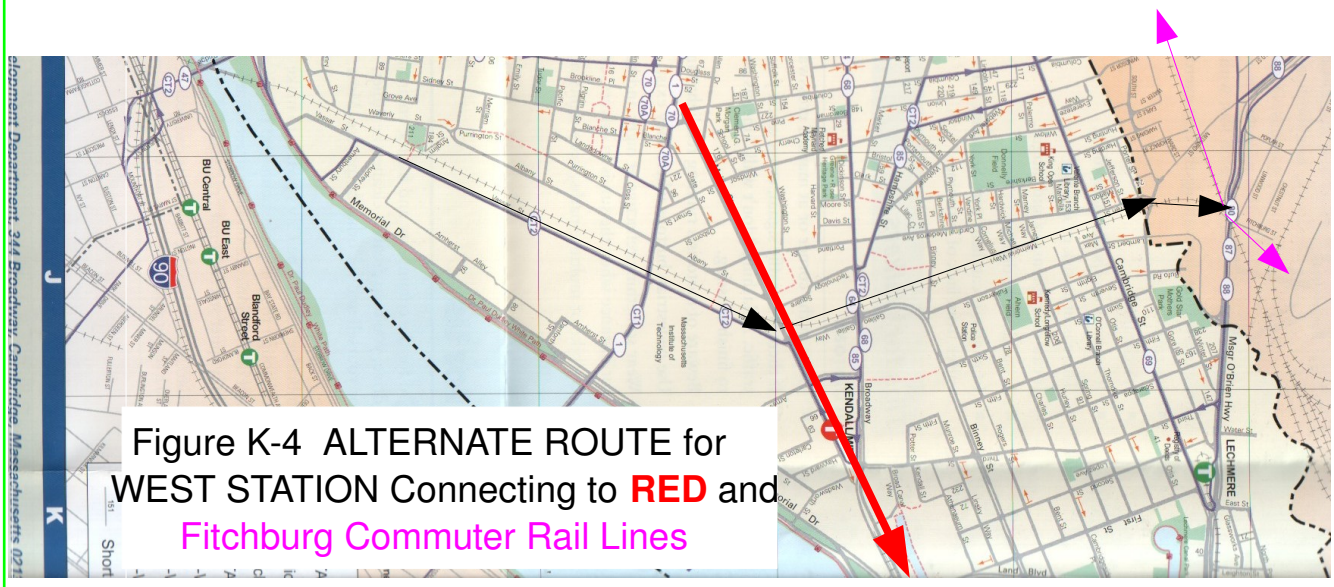
IDEA #5 -- ALTERNATE PATH FOR THE GRAND JUNCTION SERVICE

If a new station is built near Tech Square, there would be less need to extend the LRV tracks to Kendall Square. Shuttle buses could be used to move people around the general Kendall Square area. Instead the Grand Junction LRV tracks could be extended to Binney Street and beyond. Light rail would end just beyond Gore Street in East Cambridge. Transit service could be extended to areas of East Cambridge that are today not well-served.

One variation on the above is to connect the light rail platform at Gore Street with a new stop on the Fitchburg commuter rail line at Fitchburg Street in Somerville, near the Brickbottom apartments. A new pedestrian overpass would be needed to cross over the Fitchburg railroad tracks -- aligned parallel to the west side of the Squires Bridge overpass on McGrath Highway (Route 28). This addition would allow passengers using the Fitchburg line to have access to West Station with one transfer.

IDEA #6 -- USING BUSES IN THE GRAND JUNCTION CORRIDOR

Bus service along the Grand Junction can be seen as the least expensive and least radical of options. The buses would operate in a conventional manner on Main Street and around Kendall Square.



However, the experience with buses on the Silver Line to the Seaport area has been disappointing, with bus service not rising to the needs of the newly developing areas of South Boston. Much attention needs to be given to achieving capacity obligations.

Buses must still be operated individually and cannot be assembled in a train. The possibility of illegal vehicles on bus-only guideways must be prevented. Terminals must allow for U-turns by buses to reverse direction. Unfortunately, designs for West Station allow little room for such a turn. A two-way single lane crossing of the Charles River would limit bus capacity significantly.

PART THREE -- CONNECTIONS TO COMMONWEALTH AVENUE

IDEA #7--RAIL SPUR CONNECTION TO BOSTON COLLEGE GREEN LINE

The closest existing MBTA service to West Station is the Boston College Branch of the Green Line on Commonwealth Avenue. It would be a two-block walk over a new Malvern Street pedestrian ramp up to West Station. Similar access would be provided by the Route

57 and 57A MBTA buses on Commonwealth Avenue, and -- for Boston University students and staff -- by university shuttle buses along Commonwealth Avenue.

A fascinating historical example of a rail spur is offered by the tracks that for many years served the Boston Braves baseball stadium at what now is BU's Nickerson Field. A spur track loop from the median trolley tracks crossed outbound Commonwealth Avenue and went down Babcock and Gaffney Streets with a stop immediately adjacent to the ball park. In the late 1940s, the Boston Elevated Company would line up a squadron of 1919-vintage center-entrance cars on a siding track along Commonwealth Avenue near Kenmore square, ready to serve the crowds leaving the ballpark.

A 1961 MTA trackage map showing the Braves Field Loop, by then called the B.U. Field Loop as the Braves had left for Milwaukee in 1953.

Center-entrance streetcars pictured by Braves Field on the Loop. These high-capacity streetcars, nicknamed "crowd swallowers," were perfect for carrying ballgame crowds!

1946 Boston map showing the streetcar right-of-way between Babcock and Gaffney Streets.

Figure K-4 BC Line Spur to Old Braves Field (now Nickerson Field)

Center-entrance cars waiting for a game to end at Braves Field, the former home of the Boston Braves (see "B Branch" for more information), a frequent destination for center-entrance cars which, with their large capacity, could quickly swallow the large gametime crowd. This view provides an additional look and the significantly low step to enter the cars. Image copyright Joe Testagrose.

These high capacity cars would be dispatched to the stadium spur, pick up the departing crowds from

the ballpark, and carry them into the trolley car system. The Braves left Boston in 1953, but the spur was retained until at least 1961, when it was known as the BU Loop. Prior to 1953, there were two spur tracks on Commonwealth Avenue : In addition the the Boston College mainline, the spurs were the "A" line to Watertown and the spur to Braves field. Today, only the Boston College service survives.

Adding a major new spur service to the Boston College line would mean five branches ABCDE on the Green Line, whereas only four BCDE exist today. The added complexity of service would make MBTA Green Line operations more difficult. However, the degree of complexity would still be less than in the years before 1980 when the "A" service to Watertown used PCC cars operating in the middle of the street.

There are three variations on this spur track from Commonwealth Avenue.

(a) A short, direct track terminating at West Station, with access to shuttle buses and commuter rail.

(b) A longer spur track, passing over the Turnpike and into Harvard-owned land. For years, Harvard planning experimented with rail connections to Harvard Square, but expensive tunneling would have been required. Cambridge officials told Harvard to investigate building a new bridge across the Charles River. A new "A" line into the area around the Business School might provide the previously desired levels of transit service. However, the advanced site planning for Harvard's Allston properties allows no easy corridor for rail transit service. The University appears to place a higher value on the flexibility of shuttle buses using existing and proposed streets. An "A" track over the Turnpike would require expensive viaduct construction and would have impacts on Harvard properties.

(c) A variation on the new "A" line would be to run the service along the northerly boundary of the Turnpike, in a narrow corridor adjacent to Lincoln Street. For many years the strip was used by a single freight track -- since abandoned and torn up.

This alignment might require single track, two-way Green Line operation (unless the tracks were located within Lincoln Street) and thus would be looked upon less favorably by the MBTA. However, it would offer transit service to an area of Allston traditionally poorly served by transit. The arrangement could be that Harvard's shuttle buses would serve the university's Allston interests with access to West Station, while an "A" branch would serve existing community transit needs to the south. A new "A" branch is barely at an early conceptual stage and needs much preliminary design work.

PART FOUR : TRANSIT IN THE TURNPIKE CORRIDOR

IDEA #8 TURNPIKE WITH CONVENTIONAL BUSES

Today the Turnpike is utilized by MBTA routes 500, 501, 502, 504, 505, 553, 554, 556 and 558 primarily from Newton, and by Peter Pan buses from Springfield and Worcester. Current practice of buses from Springfield is to leave the Turnpike and enter Worcester for a stop at the train station. With a new Allston Station, buses could leave the turnpike, enter West Station, depart and return to the Turnpike. The DEIR apparently does not contemplate expanded T bus service. SK2-4

IDEA #9 TURNPIKE TRANSIT -- WITH SIX LANES

The Draft EIR does not discuss bottlenecks and congested flow on the Turnpike. On many days, less than half of the capacity from four lanes of outbound turnpike is utilized because of the peak hour congestion. The EIR cites traffic flow rates of 5,600 vph, which is 40% less than the *Highway Capacity Manual* recognizes for expressways. Bottlenecks in Newton reduce turnpike flow, so that 5,600 vph could easily be handled in three lanes. SK2-5

Thus the number of travel lanes on the turnpike could be reduced from eight to six with no decrease in traffic flow. An interesting option is opened up : could the space previously used by those two lanes instead be used for transit purposes? Could a two-track LRV system be a viable use of this space and could it be made to fit? The primary controlling factors on transit use are bridge crossings, with the location of bridge piers and walls. The transit

function could theoretically be extended into the Seaport District, but not before extensive feasibility studies were done of the entire corridor from West Station into South Boston.

The result would be a crosstown transit line beginning at West Station and possibly connecting with the Green Line, Orange Line, Red Line and the Seaport. This service would be of interest not only to the Allston area, but the Medical Area and underserved Seaport area. Another option is a spur to serve the Widett Circle area which has been identified many times (including Boston 2024 Olympics advocates) as a place for future air-rights development.

A crucial first step would be to obtain detailed base plans for both the existing Turnpike and the former B&A tracks from Worcester, and determining the physical feasibility of added new transit service along the Turnpike corridor. MassDOT planning should take the lead.

PART FIVE : OTHER DESIGN IMPROVEMENTS

IDEA #10 BU BRIDGE LANES AND SIGNAL TIMING

To date the Boston University Bridge has not been included within the study scope of the overall Turnpike project -- and it should be. Traffic congestion and transit delays can occur at both ends of the bridge. MBTA buses using the bridge are also subject to traffic delays, notably Routes 47 and CT2.

The good news is that MBTA Green Line analysts are working with MassDOT traffic engineers and the cities of Boston and Cambridge to revise traffic signal operations to be more responsive to arriving Green Line trains as well as 57/57A buses and BU Shuttle buses.

However, this coming summer the second stage of Commonwealth Avenue bridge deck replacement will occur. The finished plan is to change the current balanced arrangement of lanes on the bridge to one with unbalanced lanes : two lanes would be provided from Boston to Cambridge but only one from Cambridge. A pair of 200-foot short lanes are created at

Commonwealth Avenue for traffic from Cambridge. I advocate leaving the balanced lane allocation the way it is today. Unbalanced lanes will cause more congestion in Cambridge.

Revisions should be made to lane allocation and signal timing/responsiveness so that delays for all transit vehicles -- BC, CT2, 47, 57, 57A, and BU shuttles -- can be reduced. Consideration should be given to bus lanes on the Cambridge side, as well as full signalization of the Reid rotary during peak hours.

The situation is important because in the afternoon peak, traffic can back up and wrap three-quarters of the way around the rotary. At this point, gridlock interferes with traffic coming off the bridge from Boston. The BU Bridge situation calls for immediate attention and decisionmaking.

IDEA #11 PEDESTRIANS IN ALLSTON AND CAMBRIDGE

In addition to pedestrian phases at both ends of the BU bridge, attention should be given to suitable WALK times at all traffic signals along both sides of the Charles River in the study area : River Street, Western Avenue, and the Anderson bridge. In Appendix C the WALK phase at Harvard Avenue between 2015/2040 No Build and 2040 Build has been reduced SK2-6 from 25 seconds to 6 seconds. The MUTCD minimum of seven seconds for WALK display is violated here and at several other locations. WALK times on concurrent crossings should never be reduced to 7 seconds or less.

PART SIX : INDIRECT INFLUENCES FROM THE LARGER MBTA SYSTEM

IDEA #12 CHANGES TO THE RED LINE

Red Line service is important in Allston because passengers from the South Shore would likely take the Red Line to South Station, and then the commuter rail to West Station. If Grand Junction service to Allston is available, the Red Line would be a major feeder service. Red Line service between Central and Kendall remains the crowded peak load link and today it is difficult for more riders to use the Red Line at this point. Any train bunching, especially in the afternoon, causes Kendall Square to become a more highly stressed point with maximum train crowding and slowdowns. Several actions could be taken :

(a). Bunching problems could be reduced by monitoring Red Line service to achieve evenly-spaced trains. MBTA estimates that existing Red Line capacity in each direction is 13,000 passengers per hour but peak load point ridership is only 9,540 passengers an hour. Even-spacing of trains would allow a capacity gain of 3,500 passengers per hour : a 35% increase in usable peak hour capacity. The figure of 3,500 is close to the Grand Junction route capacity of 4,500 passengers per hour.

(b). The replacement of the entire 218-car Red Line fleet also allows for the addition of 34 more cars to the fleet. This single, rather expensive action should increase Red Line capacity by about 30 percent, because there will be more riders in each car and more cars available for peak operations. If new equipment is also more reliable than the existing rolling stock, total Red Line reliability and capacity will be improved. New signals should also be able to improve Red Line reliability. However, the positive effects of all of these investments will be limited -- if actions are not taken first to control train bunching.

(c). Add a new station to the Red Line. With the added development at Kendall Square, ridership demand on the existing station at Kendall Square will increase. Total existing development is about 10 million s.f. with about 7 million s.f. more space planned or available soon with new buildings at the Volpe Center and other locations.

One option is to locate a new Red Line station in the vicinity of Tech Square, separated from the existing Kendall Station by 1,600 feet. This separation compares with 1,800 feet Charles to Park, 1,200 feet from Park to Downtown crossing and 1,500 feet South Station to Downtown Crossing. Trip times would be reduced somewhat, as occurred when the Assembly Square station was added to the Orange Line.

One end of the platform would be close to the Grand Junction LRV stop. There would be an advantage in calling the New Red Line station "Grand Junction" to stress this connection.

(d) Care should be taken to consider the interactions between the Red Line and Grand Junction service to West Station. Coordinated service and transfers should be included in the train scheduling, making controls on bunching and schedule reliability all the more important.

IDEA #13 -- SELECTIVE REUSE OF RED LINE CARS

The current plan for the Red Line is a complete replacement of all cars within five years. All existing 228 cars would be dropped from the fleet, and the new fleet of Shanghai-designed cars would bring the total to 252.

An unexplored question is the disposition of the old cars, dating back to 1969. The 1994 cars seem to be running well but have never been rebuilt. Some of the 1700 series care were rebuilt just a couple of years ago. If there is any useful life in any of the older cars, that investment will be lost if the fleet is sold for salvage. Clearly, some cars are in better shape than others. Oddly, the 1500 cars seem to be running more smoothly than the 1600 and 1700s. The situation is worth a judgment as to which cars still have value and which should be scrapped either immediately or in a few years.

A year ago I was riding a Red Line train, sailing along very smoothly. I knew it was not an 1800-series car, so I went to end of the car to read its number : 1500. It was the first of the vintage cars to be numbered by the MBTA in 1969, and here was that very car -- running superbly 50 years later. The real test will come in investigating the repair sheets for each car and evaluating the comfort and quiet of the ride in each vintage car.

Any cars that are considered worth further use become a free capacity gift. The cars are already paid for and can provide instant service. They come free except for their storage, operations and maintenance costs. Add an operator ... and passengers can be transported.

Assume that 30% of the 228 cars are worth retaining for a decade. That means 70 cars would in effect be added to the fleet after the 252 new cars arrive. The new fleet becomes 322 cars with 81 cars (primarily older ones) held in reserve during peak hours. The gain in capacity is 25 to 30%. Assume the added capacity instantly brings in 12 to 15% additional fare revenue. A few specimens from the scrapped fleet could be kept for spare parts.

IDEA #14 – EVEN HIGHER CAPACITIES FOR THE ORANGE LINE

The saga of the often struggling Orange Line may have a more optimistic ending than is recognized today. The service decline has been most evident in the past decade. The fleet had a mini-overhaul in 1990, but the burden of a quarter century of maintenance neglect landed most heavily on the Orange Line. Beginning in 2010, headways increased from 4.5 minutes to 6 minutes. The fleet size remained constant, with zero cars out of service.

The slipping headways mean that where once 13 trains an hour were in service, there were only ten an hour by 2016. During the period 2012 to 2014 scheduled headways slipped to 5 minutes, and by 2016 headways had dropped further to 6 minutes, where they remain today. Cars available for service dropped by 25%. The only explanation for the slipping headways is that the Wellington shops never gave up on the cars, and refused to push any of them out of service. The published headways that once were 4.5 minutes were the same as the Red Line. With more cars in the fleet, headways should be better than the Red Line.

Within 5 years, 152 new orange line cars will replace the 120 existing cars, running or not. An additional 32 new cars suggests that the fleet has grown by 27%. If we assume that only 90 cars are available for service today, the new fleet represents an increase of 62 usable cars. That is a 70% increase in the number of usable cars and in Orange Line capacity compared to today's depleted fleet.

As a result the headways on the Orange Line will be better than the Red Line is now -- less than four minutes. Orange Line performance should improve more than previous estimates. The next step to even higher capacities would be managing headways, reducing bunching and avoiding severe delays. Average train speeds could also increase, producing an additional capacity bonus from the same enlarged fleet. The combination of all of these factors suggests a larger than expected capacity improvement for the Orange Line.

IDEA #15 BLUE LINE CAPACITY AND OVERLOADING

The Blue Line is the only rapid transit service that terminates in Boston and does not pass through the CBD and travel out the opposite side. It also has the newest fleet of cars

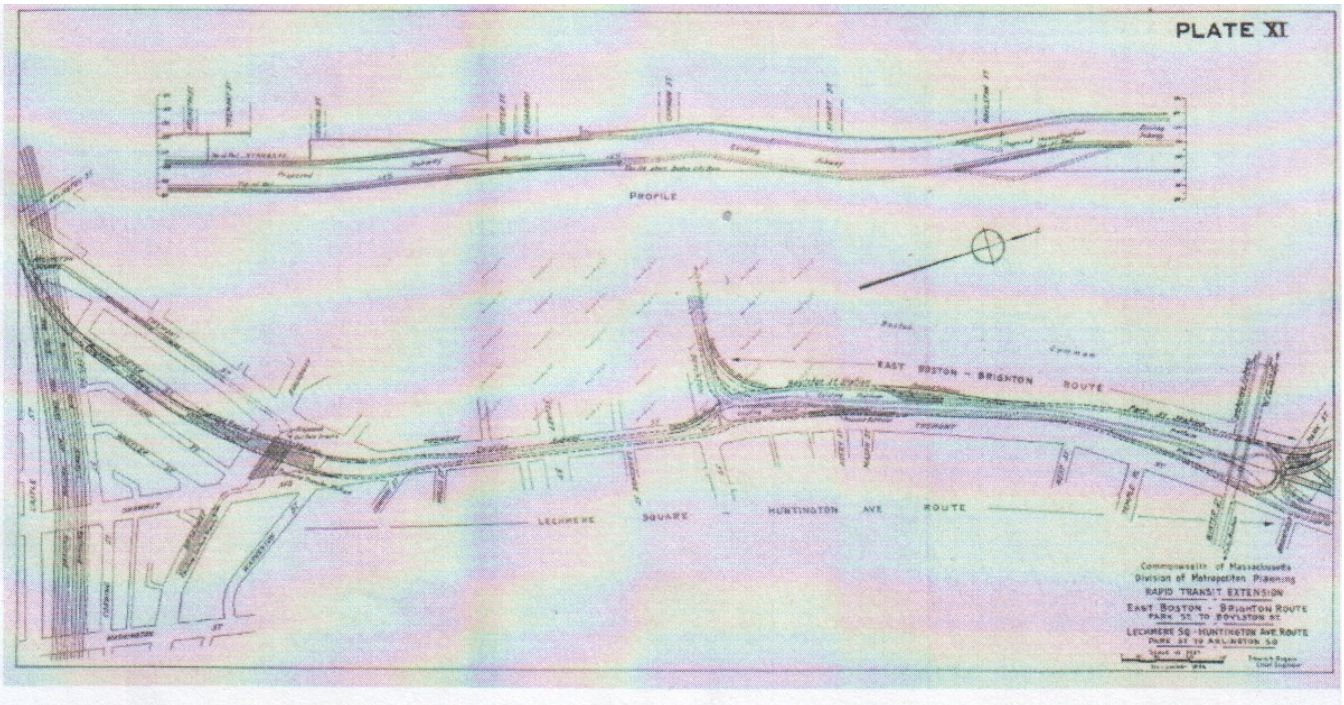
and has capacity for expansion of service. Its history of on-time performance is also better than the other transit lines.

However, the idyllic future of the Blue Line will be challenged by the development of Suffolk Downs by Amazon and an estimated 50,000 employees. The size of the Amazon development is about 20 million s.f. or towards the upper end of total development on Harvard property in Allston. Unlike Allston, the Suffolk Downs site has ready access to the Blue line at two stations, and thus can claim to be transit-oriented in terms of simple accessibility. Whether the development and the Blue line are matched for demand and capacity is a question to be resolved in the EIR process, pursuant to EEA #15783. There is reason to worry that the Blue Line could become the Old Orange Line of the future. Access from the North Shore to Allston could be severely restricted.

IDEA #16 – OPEN UP the TROLLEY TUNNEL FROM BOYLSTON

One of the earliest parts of Boston's transit system was constructed along with the Boylston station on the Green Line. During the construction of the Turnpike in the early 1960s, the trolley tunnel from Boylston to the South End was closed and sealed off. One of the tracks is now used for storage of two historic trolley cars.

Figure K-5 Tremont Street Tunnel to Arlington Street (now sealed off)



The tunnel could be reopened, and new Green Line service (the "F Line") could be added to serve the South End and the Widett Circle area. Since the 1960s, Widett Circle has been considered by Boston officials for more intense development, and in 2014-15, the short-lived Boston 2024 Olympics group sought to highlight potential growth extending between Dorchester Avenue and the Southeast Expressway. The general plan would be to use the ground level of Widett Circle for train storage (commuter rail, Red Line, and Amtrak). Green Line line service and storage could be added to the mix.

IDEA #17 -- SILVER LINE

The origins of the Silver Line to the Seaport District have a strange history, not unlike recent proposals for aerial gondolas to access various properties. The first Silver Line proposals were offered in 1980 by private landowners : the businesses proposed to fund the construction of an elevated monorail from South Station. There would be no cost to the state, except that the state would pay to produce the EIRs for the MEPA process.

Rep. Joe Moakley became involved and sought a more elaborate transit solution. One state transportation official recalled a trip to Europe where he has seen trolley buses used in a tunnel from dense development to become surface bus operations in less dense neighborhoods. This idea became the South Boston transitway, now known as the Silver Line. The concept was hindered by poor planning for traffic signals, and the inability to decide who would be served once the buses reached the surface. With the new arrangement, government funds paid for the new tunnel and stations, and the businesses paid nothing. No one thought of connecting to Logan Airport, resulting in the circuitous path for the buses today.

The Seaport District is informative because the potentials for land development have always exceeded the capacity of the transportation system. Like Alewife, South Boston never had a comprehensive transportation plan. If by special good fortune, Allston is able to achieve an acceptable level of good transportation planning, especially for transit, it will demonstrate itself as decided different from Alewife and the Seaport District.

The future of the Transitway needs to be totally rethought, to design a capable system within the constraints of present structures.

IDEA #18 : DRIVERLESS OPERATION OF TRANSIT VEHICLES

MassDOT should begin a full review of driverless vehicles on roadways and guideways. Any automated operation of highways and rapid transit trains must begin with a full understanding of what went wrong with D.C. Metro transit crash in June 2009, when one WMATA train rear-ended another at 44 mph. Nine people were killed and about 80 injured. A section of track contained a defective detector and could not report a stopped train. Believing the track to be clear, the computer control directed the following train to proceed at 55 mph. The train operator saw the stopped train ahead and manually tried to stop her train. Further safety investigations reported that the track detector, an electronic relay device, has been malfunctioning for 18 months. In addition, the track relays were reportedly designed to last for 75 years, yet were breaking down in 25 years.

In the single most egregious act of design negligence, there was no backup detector in the event of detector failure. NASA took astronauts to the moon using triple redundant circuits : if one circuit element failed, the other two circuit recognized the change and a circuit failure could be detected by the other other two and could "outvote" the failed circuit. What DC Metro needed was an intermediate system with double redundancy : two circuits in disagreement could flash a warning to system operators and warn of the need to switch off computer control.

In the 8 1/2 years since this accident, D.C. Metro trains have been operating under manual control, with the computers turned off. The Metro system is still without a trustworthy automatic control system. Hi-Tech computer systems failed.

The Washington D.C. lesson for the MBTA is that “modern” safety technology remains a primitive art that is not ready for prime time. If considered for any part of Silver Line operations, there should always be a human operator ready to take over, and an independent dual-detector system should control all bus and train spacing.

PART SEVEN -- REGIONAL RAIL SYSTEMS AND ELECTRIFICATION

IDEA #19 THE NORTH-SOUTH RAIL LINK

South Station will be able to handle more trains in the coming years because of an expansion of platforms, but at North Station the capacity limit imposed by the existing platforms means there can be no increase in the number of trains entering North Station. There seem to be feasible ways to improve the capacity of the Red and Orange lines, but if planners are hoping for a regional rail program, they may find a growth limit imposed by commuter rail platforms at the two terminals.

If there is a plan to increase the number of commuter rail trains -- including growth of a regional rail network -- there may be no way to increase the number of trains into Boston, except with a North-South Station Rail Link. The project would be both massively expensive and productive. Trains could pass directly through Boston and out the other side, just as the Red and Orange Lines do today. Shorter headways would be possible. The construction of a large Central Station near Long Wharf would allow seafront and central city areas to be better served -- with commuter rail riders famously capable of long walking distances.

The modern economics of the Boston area suggest that there will be many large development proposals in the future, not just in Allston but in Kendall Square, North Point, Suffolk Downs, Alewife and the Seaport. While the focus of state and city political leaders has been to be supportive of large growth, political support has been more vapid for high capacity transportation improvements. One interesting exception has been the Massachusetts Congressional delegation, where Seth Moulton seems determined to outperform the Governor in transportation initiatives.

The original rail link proposal dates from 1909, when a four-track electrified tunnel plan proposed to connect North and South Stations. Complete construction plans were assembled by 1917, but the program was shelved by World War I. In 1937, design plans for a four-track open trench with steam trains were completed, but the plans were thwarted by the taxi lobby. The last emergence of rail link proponents occurred in 1993, with the establishment of the Rail Link Task Force under Governor Weld. I served on the Task Force and drew up a

plan for a two-track tunnel between North and South Stations. Another section within the Task Force worked with MBTA staff on a four-track option.

A decade later the effort was halted by state officials. The process should be restarted, in the context of a growth situation in Boston which may require the existence of a rail link to provide the necessary transportation capacity to handle the number of trips that economic growth will require.

The intent of any transit master plan should be to avoid the circumstances of rejection that befell the Inner Belt highway plan of fifty years ago. Fortunately the rail link will not take people's houses and it will not be ugly or environmentally damaging. It will be expensive but it will also make the commuter rail system work much better.

An important question remains for resolution : how much additional passenger capacity can be created by the two versions of the rail link? If a modern improvement is needed, two tracks in conjunction with at-grade terminal platforms may be sufficient. If larger growth is expected, then the four-track option may be required. Planning for the future must be done to prepare Boston to grow, and to survive and move about without the terrible destruction associated with the Inner Belt highway or a quarter century of transit neglect. That is the essential challenge of the Transit Master Plan.

IDEA #20 TOTAL FLEET STORAGE PLAN

The MBTA should plan on each line having suitable space for fleet storage, allowing for future fleet expansion, spare parts, and good scheduling. Proximity to the City should be considered with the goal of reduced deadheading. Air rights over storage yards would have the advantage of reduced effects of ice and snow, with all-weather access to the train yard. Noise and pollution must be considered when locations are close to residential communities.

IDEA #21 FULL AND PARTIAL ELECTRIFICATION OF COMMUTER RAIL

Line-by-line electrification of the MBTA Commuter Rail system should be planned in a phased sequence. Electrification would be essential for any trains using a future

North-South Rail Link. MBTA trains with electric locomotives could easily added to the South Station/Back-Bay/Providence service, which has already been electrified by Amtrak.

It is likely that the least cost-effective sections of track for electrification are in the suburban and rural sections of existing commuter rail corridors. Considerations should be given to partial electrification of the route, using battery packs (in tenders behind the locomotive) with recharging during passage through electrified territory. With the future of trucking possibly including battery-powered over-the-road trucks, the potential for battery powered trains should be investigated. Such trains would be the least objectionable by neighbors in terms of visual and air pollution, as well as noise.

PART EIGHT -- BUS TECHNOLOGIES and FEEDER ROUTES

IDEA #22 MASTER PLAN for FEEDER BUSES

Many modern transit systems have been conceived with a stress on radial service about a central terminal. A track map for the MBTA system illustrates its fundamental radial nature. Meanwhile, trolley and bus lines were adjusted to radial transit by becoming more often circumferential in nature, serving wider areas of metropolitan Boston between the primary radial routes. Suburb-to-suburb travel is possible in such a system, but the primary use of circumferential bus service remains as feeders to the radial rail service. Radial transit by itself does an increasingly poor job of providing service the further out it extends into the suburbs. In some cases, a radial terminal in the suburbs is served by its own small galaxy of radial bus service, coming in from many differential directions.

A special feeder bus master plan is warranted to find more modern ways to deal with what is commonly termed "the last mile" of service beyond a rail station stop or terminal. In truth, the problem may actually be the "last ten miles" or further : in an age of Uber and Lyft, the possibility of using private car services to bring people to transit stations is an increasing part of business for Uber. Even in the center city, Uber trips to Harvard Square or South Station can serve riders of the Red Line, Amtrak and commuter rail.

Private bus companies and coastal ferries have well-developed strategies for attracting passengers from various different modes and directions. Concord Trailways buses on the Route 1 coastal route make detours off the main route to Portland and Brunswick (both connections with Amtrak). In Bath, the old alignment of Route 1 is used for a bus stop in combination with a recent roundabout which allows U-turns for buses. In some cases a detour may be seasonal and produce no riders. At other times numerous riders are attracted, and that can make the difference between a bus route making or losing money.

In the Boston area, the radial 350 bus route goes a mile in each direction out of its way to allow access to the Burlington mall. Another such detour occurs for the 430 bus along Route 1 in Saugus. The challenge is to find out when a diversion from a main route is or is not worth the time spent trying to expand the feeder service.

IDEA #23 OTHER FEEDER MODES TO TRANSIT

The Concord Trailways example illustrates how one mode can interact positively with another mode (bus and train), while the MBTA tends to ignore some feeders of a different mode, especially pedestrian and bicycles. The shortage of bike racks along the Red Line at key stations is also puzzling -- at Kendall, Central, and Harvard Square. Only Alewife makes a major effort to serve bike riders, especially those coming from the Minuteman path.

Currently, a regional path network is slowly being established beginning with the traditional Paul Dudley White path along the Charles River. To the northwest, communities such as Bedford, Lexington, Arlington and Belmont can use the Minuteman and Belmont paths to connect to the Alewife station, and the Somerville Community Path continues as a feeder to Davis Square and thence into the Green Line Extension corridor. If the Green Line project can provide a bridge to cross the Fitchburg tracks, the Somerville path can connect with DCR's Charles River path in Cambridge. The nascent Grand Junction Path now begins with small pieces, but could connect the Somerville path to East Cambridge, Kendall Square, MIT, Cambridgeport and -- with a new outrigger bridge across the Charles River -- to West Station in Allston and the surrounding river path system. The path system might serve many bikes making through trips, while there will also be transit trips mixed in, plus people

who walk the path to the station. In general the MBTA tends to neglect this feeder traffic.

A master plan for feeder service should have early planning for bike racks to serve any new Grand Junction transit. Coordination with Hubway is crucial. Commuter rail passengers must be assisted ib making reliable connections. The Worcester line routinely switch trains from one side of the tracks to another : there must be message boards which advise waiting passengers which track to be on. If people miss a train because they were on the wrong side of the tracks, the result is the opposite of feeder traffic. Passengers abused by transit become former riders.

IDEA #24 DESIGNATED BUS LANES IN ALLSTON

The DEIR strangely lacks any evidence of designated bus lanes. Pathways for bikes are shown, but no bus lanes. Such a void could create difficulties if Harvard or the MBTA became energetic in establishing new bus routes as feeders to West Station.

Thought should be given to alternatives that are not all-or-nothing bus lanes. For example, bus lanes might be restricted to buses during peak hours only, and thereafter general traffic is allowed. Another approach is to designate bus lanes that stop short of traffic signals. Detectors would recognize the bus, and flush it through the intersections along with cars in the same lane. In this way auto traffic would be minimally disrupted during peak hours, with little capacity loss.

Care must be taken to avoid the mistakes made by advocates traffic calming, and thus create a backlash from drivers. Where buses and cars can co-exist with each other in reasonable harmony, drivers will have less resentment towards buses that have signal priority and responsiveness. The FEIR for the Turnpike should indicate clearly where the bus lanes are and what the signal priorities would be.

IDEA #25 ROUTE #1 BUS : a LABORATORY for SERVICE IMPROVEMENT

For years, the Route 1 bus from Harvard to Dudley Square was a workhorse for the MBTA. It was the only bus route that made money, and it was probably the highest volume

bus route in the city. For several decades, service on #1 has declined, with slower travel, longer delays, bus bunching and unresponsive traffic management. The first signs of revolt occurred when the Medical Area through its MASCO bus subsidiary decided to run its own buses along Mass Avenue, claiming MBTA bus service was inadequate. Both MIT and Harvard operate bus shuttles that would normally be expected to benefit from coordination with MBTA bus schedules. However, bunched operation of buses makes such coordination almost impossible.

In Cambridge, Route #1 has important interchanges with Central and Harvard Squares. In the future, it could have a stop at the crossing of new transit service in the Grand Junction corridor. People going to MIT and Kendall Square would have more choices for transit travel.

In the future, Route #1 should become a model for even-spacing of bus service without bunching. This goal should apply both to peak hour and off-peak/weekend service. The MBTA should approach this issue as if they were introducing an entirely new service for Massachusetts Avenue.

PART NINE -- BUS TECHNOLOGY AND BOATS

IDEA #26 IMPROVED TECHNOLOGY - Quieter, Hybrid Buses

MBTA's purchase of hybrid buses has produced quieter, smoother riding buses that are also pleasant to drive (like a Cadillac, said one driver). The hybrids also get 20% better fuel mileage. Diesel idling is automatically controlled. If a bus has engine or transmission breakdown, the battery power can carry it another 35 miles -- easily finishing its route.

Almost all recent MBTA buses have four-stroke engines which burn more cleanly with no smoke. More recent purchases have quieter engines and are less obtrusive in the urban environment. Low-floor buses have generally been popular with all users, especially the elderly and people in wheelchairs. The MBTA should continue this pattern of bus purchases.

IDEA #27 INVESTIGATE IMPROVED RIDE FOR ALL BUSES

All MBTA buses have a good ride on smooth surfaces, but a very rough ride on rough road surfaces. This problem has been noticeable with RTS buses as well as more recent low-floor models. The best riding buses are the trolley buses.

Almost all buses seem to have a very hard suspension system that thumps its way over potholes, often shaking everything that can come loose in the bus interior. Seats and fare boxes are very prone to rattling, so that the bad ride is a combination of physical discomfort and noise. Older buses on a washboard road surface can sound as if the whole world is falling apart.

One solution is to tighten up nuts and bolts holding the interior together. A better solution is to find out the cause of the jarringly rough ride that is the cause of the problem. The buses have air springs, which should not be a problem, unless they restrict suspension flexibility. The most likely culprit is the shock absorber, which can restrict even a flexible suspension. MBTA maintenance staff have reportedly experimented with Koni shocks, but there is no evident solution. Tires can be another factor contributing to a very hard ride.

The contrast in ride quality is immediately evident with the private intercity bus companies, such as Peter Pan and Concord Trailways. These high speed over-the-road buses have very good handling and an excellent ride. Some MBTA buses have been retired with cracked frames : did hard-riding suspensions contribute to fatigue fractures?

The best solution for better ride quality would be to go to a large empty parking lot with both types of buses and drivers from each, and have them assess the handling and ride of each bus.

IDEA #28 OPERATING ELECTRIC BATTERY BUSES ON PARKWAYS

Since the arrival of diesel buses on the urban scene, a tradition has arisen that buses shall not be allowed in DCR parkways. This policy may go back to New York City parkway

experience, where most parkways do not allow buses. The old MDC adopted the limitation early, apparently because of the noise, smell and width of buses as being incompatible with the common parkway lane with a ten-foot width.

In the modern age with priorities to support transit services, it is unusual to see an urban transportation roadway legally limited to "pleasure vehicles only" while also banning transit vehicles. A good question is this : what should be the 21st century policy of parks agencies towards transit on park roads?

An important legal distinction must be made between two types of MDC/DCR roadways. One type is a connector road between parklands, such as Revere Beach Parkway and McGrath-O'Brien Highway. These are usually roads built with highway funds on land specifically acquired for highways. The second type is park roads, built by parks agencies on parkland. Such park roads are not legally public ways, by a 1928 court ruling. Thus roads like Memorial Drive, Storrow Drive, Soldiers Field Road and Greenough Boulevard are not public ways. Abutters have no right of access. MDC/DCR has allowed driveways on such roads, but they are not obligated to do so. The Turnpike is a classic example of a road with no right of access for abutters, and with the additional proviso that all private driveways are banned. It is an official "limited access" road.

DCR with its park roads can shut them down at any time -- for marches or running races, because they are not public ways. This provision makes it doubly difficult for transit routes to follow park roads.

With this understanding, would it be possible to consider the use of smaller, narrower electric battery buses to run on parkways? They would be quiet and non-polluting and would fit in ten-foot lanes. Small electric buses are available with a 200-mile range. There would be no trolley poles or other aesthetic limitations or potential for tree damage/trimming. In this manner access to Soldiers Field Road could include small, permitted transit vehicles, and auto traffic would be reduced. SK2-7

Some interesting possibilities could be introduced. Could a road like Mystic Valley Parkway in Medford -- once four lanes, and now two -- have a central computer controlled

single bi-directional bus lane with buses able to maneuver into the vehicle travel lanes to let opposing buses pass, or to stop to pick up passengers. Could a bus lane have a traffic-calming effect on park roads overrun by high speed commuter traffic, like Storrow Drive?

A very radical option would be to install one-direction bus lanes on Memorial Drive or Storrow Drive/Soldiers Field Road. The bus lanes could be in effect for peak hours only or longer. One possible route would be from Newton/Watertown to Nonantum Road to Soldiers Field Road to Storrow Drive. A fleet of electric buses would be dispatched and routed to serve Harvard, MIT, Kendall Square, downtown Boston .... and Harvard's properties in Allston.

Using the concept of a flotilla of electric buses would seek to replicate rail transit capacity capabilities to move many people efficiently, but to do it in cooperation with commuter rail to West Station, light rail service on Grand Junction and Harvard shuttle buses traveling everywhere. Buses would be clean and quiet, and without overhead wires, and would be compatible with nearby trees.

The concept is indeed radical, but if urban transit is to meet the needs of millions of square feet of new development in Allston, Alewife, Kendall Square, North Point, North Station, Back Bay, South Station and the Seaport District .... the radical approach may be justified as long as it is properly adapted to the environmental traditions of parkways.

IDEA #29 TOUR BOATS on the CHARLES RIVER for PEAK HOUR SERVICE

Tour boats on the Charles River have been tried in recent years, but the idea has its limitations compared to the more popular duck boats and bus-based trolley tours. However, a program of using boats to assist peak hour travel and serve tours in the off-peak could be an aquatic version of bus lanes that are in effect only during peak hours. In narrower sections of the river and under bridges, the tour boats could share the same space with yachts and other power boats, normally in the middle of the river. Some conflicts and safety issues will probably still arise.

One option would be to use duck boats in the peak hour, or to develop a modernized duckboat that would be weather protected and heated. If the boats were especially reliable and kept to defined schedules, this value might compensate for a boat's inherent low speeds.

PART TEN -- MANAGEMENT AND ANALYSIS OF TRANSIT

IDEA #30 THE COMING-OUT-OF-THE-WOODWORK EFFECT

Planning for increased transit service with shorter headways is not an easy exercise. "Build it and they will come" may have validity when applied to new roads, but the concept also applies to transit improvements. When London made a major improvement in new trains for existing tunnels and stations, they doubled the number of trains, and cut the headways in half. Track capacity was doubled by running more trains.

Soon London officials found that ridership increased immediately, with almost a 50% jump, leaving only the remaining 50% of capacity available for growth. The London experience tells us if we are planning to increase service on established routes, we should allow for twice the needed capacity increase, so that planned growth can be accommodated. Thus the planner for growth may need to be very ambitious about identifying needed new capacity that engineers must design for.

The unexpected initial jump in ridership, consuming half of the expected capacity benefit, has been called the "Coming-Out-Of-The-Woodwork-Effect." The presumption is that society contains many people who would use transit if it were more convenient, more comfortable, less subject to delays and crowding. A change in trip quality will produce a more positive outlook towards transit. A mind that has been saying "no" to transit may not be willing to say "yes" except for good reason – such as better service. The rider who is coming-out-of-the-woodwork is lurking unseen as an unidentified potential transit rider, waiting to be served.

The opposite of the Coming-Out-Of-The-Woodwork-Effect occurs when growth occurs with no improvement in congested transit service. Growth generates new riders, who

effectively push out existing riders, and the net effect is little gain in total transit riders. Those riders who are pushed out are being driven into the woodwork. They become the potential transit riders waiting for a future improvement in service

IDEA #31 COMPREHENSIVE ANTI-BUNCHING PROGRAMS

By the MBTA's own numbers, the capacity on a single Red Line track is 13,000 passengers per hour, and assumes all trains are evenly-spaced. The peak load point near Kendall square is measured as 9,500 passengers per hour. Why is there this strange drop of 3,500 passengers an hour? The explanation lies in trains not being evenly spaced. Some trains become delayed and become more crowded and travel more slowly. Other trains behind go faster and are less crowded. They catch up to the slow train ahead. This phenomenon is called bunching and can occur in transit systems (including buses) all around the world.

What would happen if the trains were evenly-spaced? The Red Line would work better and another 3,500 passengers an hour could be carried at virtually no increase in cost. When a train falls behind, managers should respond quickly while the error in spacing is still 30 seconds or less. Small adjustments can allow a train to catch up. When a train is ten or fifteen minutes behind, there is little hope beyond getting to the end of the line and letting all the passengers off the delayed train.

Even-spacing of trains can increase train speeds, and faster trains have more capacity. Bus and train bunching is a world-wide problem. It even occurs in Hong Kong for their tramway system. The best solution for the MBTA is to face the problem and solve it.

IDEA #32 SET TARGETS FOR ANNUAL ON-TIME AND SPEED IMPROVEMENTS

A solution to the bunching problem on MBTA buses and trains can best be achieved gradually. Each year targets for incremental improvement should be set, with the goal of steady improvement in future years. Similarly, speed and capacity should be monitored, as well as statistical variations in headways.

Each transit and bus line should have separate or grouped annual targets, and should be evaluated separately. The highest degree of difficulty will be found on Green Line because four separate surface lines with traffic signals and other variables all merge together in a downtown tunnel.

IDEA #33 USE OF RISING FARE REVENUES TO PAY OFF BONDS

When reduced bunching and increased speeds are achieved, more passengers can be carried on buses and trains. Immediate new riders will come from Out-of-the-Woodwork riders. They all pay fares and fare revenues will increase. It is like a company doing more business and gaining income because it serves more customers. .

How much will higher revenue compare with monitoring costs to achieve even spacing? A rough guess would suggest that for every dollar spent to monitor train performance, at least ten or twenty dollars in revenue could be achieved. These added revenues can be used to pay down the MBTA debt, to help fund new capital expenses and to pay salaries.

In cost-benefit terms, no single action management can take will be more productive and efficient that controlling bunching through even-spacing of trains. The ability of good performance to enhance revenues has not been adequately explored by management. Indeed the best way to implement overall improvements in transit performance is for the MBTA to consider costs and benefits in both their operating practices and capital investments.

IDEA #34 – CHANGING POLICIES BY 3% CHANGES

The City of Copenhagen, Denmark provides important lessons to be learned in urban transportation planning. After World War II, the city allowed uncontrolled automobile growth, with cars being parked in the middle of historic city squares and other typical transgressions of good urban practice. By the 1950s planning values shifted towards transit, bicycles and pedestrians, with less emphasis on cars. Incrementally stricter controls on parking had the effect of reducing car ownership within the city, and opened up streets for transit usage.

Citizens previously committed to owning cars might have been inclined to protest a big change. However, City fathers found that small changes in parking every year could be accepted without protest. The increment they found that worked was a 3 percent reduction in allowed parking every year. Gradually the central city of Copenhagen was weaned from dependence on the auto.

During the past two decades, urban planners showed great interest in the concept of traffic calming. The City of Cambridge actively pursued such a program, with speed bumps, speed tables, bollards, bump-outs, bike lanes and other changes that had a major impact on the way a street was seen and used in a community. The sudden and dramatic effect of the changes had the effect of stimulating harsh criticism, particularly from those who used bump-outs and loss of parking as an argument against traffic calming. Today, "traffic calming" is seldom mentioned.

Any program of bus lanes, mode preferences, and parking restrictions should be kept at a relatively minor level through gradual change. The West Station rail yard and Grand Junction corridor should be planned incrementally so that neighbors can adjust.

Agencies building bike paths often feel compelled to build a new path as a sudden, complete project. Critics will come out complaining about privacy, safety and other objections. Usually, after the project is complete and operating, the complaints disappear and even the critics start using the path. Potential complaints about rail yards, train operations, bus lanes or other changes should have a collected set of examples where the changes were made and the visible results are obvious as sensible planning. The common tendency of public agencies is to do what they want, hold a public hearing and ignore all objections. Transit agencies should be more thoughtful about addressing public concerns and responding to them in a thoughtful, courteous manner.

IDEA #35 LIMITS ON AUTOMOBILES IN THE CITY

Since 1970, numerous criticisms have been leveled at cities that have allowed the automobile to dominate the urban fabric. In the end, the auto owner has generally won the

battles, but social attitudes seem to be shifting. Larger number of people, young and old, are abandoning suburbia and their cars in order to live in the city. More would do so if they received higher quality transit service.

European experience in controlling the automobile has been more effective and accepted than in the U.S. Bold initiatives over the past two decades were defeated in New York City, while radical bus-only zones have succeeded in cities in the Northwest, if only for the peak hours. The future looks bright for the electric car, bus and even truck. The internal combustion engine -- gas and diesel -- may be a minority presence on roads of the future. Driverless cars may not come to fruition, but if they do, the popularity of the automobile will continue to decline.

Here again, people who come out of the woodwork to ride transit may have been automobile drivers who decided to quit. Transit allows the auto to be contained in its impact and popularity. We do not know the full extent of transit to deter auto use, because there are few examples of fully functional transit systems in this country with the caliber of Hong Kong or Shanghai. What happens if we create a truly world-class transit system in Boston? The changes in our living and driving habits could be quite dramatic.

IDEA #36 REGIONAL PLANNING FOR TRANSIT ACCESS

The DEIR in Appendix C (pages 1095 to 1134) describes in considerable detail the regional modeling that CTPS performed in order to project traffic volumes onto the street network. Many aspects of the model could be open for praise or criticism, but the EIR demonstrates that while a complex model for highway traffic was prepared, the transit model was much simpler and was largely untested and uncalibrated.

MEPA scoping might need to be extended to specify the forms of transit analysis that should be applied in addition to vehicular traffic. Critical choke points might exist that restrict transit movements : they should be identified. SK2-8

PART ELEVEN -- MASTER PLANNING FAILURES

IDEA #37 LEARNING FROM PAST TRANSPORTATION MASTER PLANS

Master plans have both positive and negative sides. Boston's most famous example of a master plan failure was the state highway plan for the Boston region, first published in 1948 and updated in 1962. In the 1950s and early 1960s the program gained popularity and a funding source for Interstate highways. Fortunes were reversed by the end of the 1960s when public opposition to urban highway construction became so strong that then-Governor Francis Sargent canceled most of the unbuilt sections of the road plan.

The controversy, especially in Cambridge, centered on the Inner Belt expressway through Cambridgeport -- immediately across the Charles River from Harvard's Allston site. Neighborhood opposition was supported by the Archdiocese of Boston, as Cardinal Cushing saw the road causing severe damage to five Catholic parishes. Volunteer professionals helped give technical critiques of the road plans, and citizen organizers built up a political force that persuaded Governor Sargent to speak out -- first for a moratorium on highway construction and a restudy of the proposals, and then a policy to stop almost all highway construction and build transit lines instead. In the 1970s and into the 1980s, the Red Line extension to Alewife and the Orange Line relocation were built, using funds transferred from Federal highway accounts.

The famed BRA master plan of 1965 included a full accommodation of the Inner Belt and associated radial roadways. By 1969, Mayor White came out against further road construction and joined Cambridge and other communities in opposition.

The Inner Belt plan was prepared by the transportation "Best and the Brightest" of their day – yet its master plan collapsed in shambles. In 1970, transportation policy shifted over from the disgraced highways to a revival of an old idea -- good mass transit. Boston's future became founded on transit and in the fifty years since the key political battles, no serious effort was made to bring the old highway plan back.

The government agency that gained the most from this shift was the MBTA. Old plans were dusted off to rebuild or extend many transit lines. Stations were rebuilt and new trains purchased. Commuter rail was restored. Without calling the transit revival a "master plan," government accepted transit priorities for twenty years and funded them. In 1991, a strange period began when there were no master plans for either highways or transit in Boston (other than to build the Big Dig). With the Big Dig complete, it would appear that imagination for Boston transportation planning is virtually moribund.

For most of the time since the 1960s, no government produced a document called a master plan. The failure of the Inner Belt had stained the whole idea of governments producing master plans. It curtained the ability to look at programs that would last a half century or more.

In the resurgence of China to international economic power, parts of that country's master planning have revealed serious defects. For decades millions of Chinese citizens used bicycles for transportation, but in the past two decades modern ideas for an automobile-based society were swiftly introduced. Bicycles were largely abandoned, with new roads and cars taking precedence, even in the cities. Air polluion suffered. In Peking transit growth has lagged while the existing subway system has been overwhelmed by ridership growth (like New York) and angry mobs of people pushing to get on trains. Some cities such as Shanghai have since the early 1990s created vast new transit systems, with total trackage of over 400 miles and 20 new miles in new transit lines coming into service every year. Overall, the Chinese record for good planning is uneven.

In some areas of the United States, faith in highway construction continued even as it faded in Boston. Solutions to congestion in Houston often took the form of widened roads, until one major expressway had grown to twenty-four lanes, and yet road congestion persisted. City fathers pleaded for transit and ride sharing, but Houston's planning failures in transportation mirrored its spread into low lying coastal areas subject to flooding. An otherwise vibrant city was confronted by seemingly unsolvable crises in traffic congestion and flooding.

To be successful, the MBTA will need to develop a transit master plan from both regional and subregional perspectives - including a plan for Allston. The MBTA will need to learn to do things it cannot do today -- which is respond to public ideas and comments. They must build confidence with the riding and voting public. Creating a useful and effective master plan with require a massive change in the traditional bureaucratic culture at the MBTA.

IDEA #38 REJECTED IDEAS FOR TRANSPORTATION ... and SAVED

This listing of seventy transit ideas has been the result of trying to keep an open mind about what novel ideas should go into a transit toolbox. However, there are some ideas new and old which have been so illusory or hobbled by side effects that they should be rejected from the outset. These ideas should be placed on a special reject list of their own : overhead gondolas, flying cars, 700 mile-an-hour trains, rocket launches, elevated people movers and Disney monorails, fleets of Segways and moving sidewalks. Usually the advocates are all enthusiasm and have no specific solutions to problems identified in the past.

One idea I have not rejected is a North-South rail link. Many cities around the world have connected their downtown terminals. The idea has been around for more than a century. The Baker Administration has made it clear that they reject the concept and do not share the Dukakis enthusiasm. A rail link tunnel in Boston would be relatively short, but would cost billions of dollars at a time when memories of the Big Dig are still fresh. Government coffers are not brimming with money for large urban ventures. The Trump infrastructure would have the Federal Government paying for only one-fifth of the total trillion-dollar program.

However, a city believing itself worthy of Amazon or Harvard development in Allston must at some point recognize the need for vast new capacity in its transportation system. Roads are not the answer. What transit programs have the capability of significant capacity increases, of moving tens of thousands of new passengers? Past studies have discovered only one such large benefit for new transit capacity : the rail link. The Baker Administration cannot afford to ignore the potentials of a tunnel between North and South Stations. A new Governor who accepted the challenge to "Fix the T" seems to have lost his taste for the battle.

IDEA #39 – A WARNING from the NORTHWEST CORRIDOR : ALEWIFE DEVELOPMENT

The Alewife area of Cambridge is doubly important as a warning about what could happen to development and transportation in Allston. First of all, Alewife is a focus for both auto and transit trips from communities northwest of Boston. Drivers destined for Allston could continue on Fresh Pond Parkway to the Eliot Bridge and thence to Soldiers Field Road and Harvard's Allston properties. Transit users could travel to Harvard Square, and take the 66 and 86 buses into Allston, or travel to Central and take the 64, 70, and 70A buses to Allston. Hardy pedestrians could also walk from Harvard or Central Squares. There is no bus route from directly Alewife Station to Allston.

Secondly, Alewife can serve as a warning to all parties active in Allston. Alewife development has proceeded with little regard for traffic congestion. Good planning has been replaced by a spirit of rubber stamp government approvals. The MBTA station and garage are brutalist in form. The combination of building and landscape architects have left the area with little aesthetic value and without charm. Pedestrian and bicycle circulation is substandard. Traffic congestion may be the worst in the state.

In the currently on-going Envision Cambridge planning process, Cambridge officials have been unable to bring themselves into a candid discussion of traffic congestion and limits on development. As in Allston, there is no effective program to identify transportation capacity needs and how to meet them. The Red Line is presumed to have infinite capacity, which it does not.

My recommendation to the Cambridge master planners consistently has been to start all over. Allston has everything to learn from Cambridge's bleak experience at Alewife. The best motto for Allston now is "We are not another Alewife" and to engage in the necessary planning to prove the claim.

PART TWELVE - MANAGEMENT FUNCTIONS

IDEA #40 -- ESTABLISH a HISTORY DEPARTMENT at the MBTA

For many years, the accumulation of reports and construction documentation caused the creation of state libraries at the Department of Public roads (highways) and the MBTA. In the 1980s all of the libraries were consolidated in one place at Ten Park Plaza, in the state Transportation Building. The official name was the George Sanborn State Transportation Library, as dedicated in 2011.

The library became a depository for transportation history, from the early days of trolleys and elevated transit lines to railroads and highways. The library contained documents from the Inner Belt era and from the subsequent transit era. Librarians had to become amateur historians, aware of the stories that existed on the library shelves.

Most importantly, the library also contained the desk of George Sanborn, an MBTA employee whose service went back to the 1960s. George had enough job protection so that he could define his own role, as MBTA historian. He protected the Edward Dana Room, named after the long-time transit manager from 1920 to 1959. The room was a separate depository for transit records and other lore from the early 20th century.

The self-assignment of George Sanborn was to make these records accessible to anyone who walked into the library. His unusual greeting was "How can I help you," and he meant it. When the Green Line flooded at Kenmore square during the rains of October 1996, it was George Sanborn who reminded everyone that the same thing happened in October 1962, when floodwaters from the Muddy River spilled over into the tunnel entrance from the Riverside Line. MBTA officials were probably not pleased, but George Sanborn was the link to all of the transit past of Boston : the schedules, passenger counts, special events, and especially the proud performance of the transit system from the 1890s through world War II.

A decade ago George suffered a series of strokes and passed on. His role was allowed to expire. The Transportation Library subsided into a long period of decline, with slow attrition of floor and shelf space, until in 2016 it was formally closed, its materials retired

into archives, and its historical functions terminated. Its space was taken over for meetings of the Fiscal and Management Control Board and other group functions. In most cases those new functions did not contain even a whisper of historic interest.

As will be discussed below, there was a time when Boston transit functioned much better than it has over the past few years. Four hundred trolley cars an hour in each direction passed through Park Street Station at the beginning of the 20th century. Today the Green Line arrival rate is forty an hour. Service frequency is ten percent of what it was over a century ago, when there were no computers …. tunnels were dug with shovels, horses and wagons …. and train schedules were typed out on manual typewriters. Those years were a history of great achievement.

Mass transit in 1900 was a modern phenomenon, seemingly without limits, and was as intellectually vigorous as the computer field is today. By contrast, today's MBTA is a tired old bureaucracy.

Anyone seeking to improve transit service and capacity should begin with this history. The high capacities and short headways achieved years ago were not hypothetical studies. They were the realities of everyday transit operations. The entities in charge of mass transit simply did their job and sought to maximize the services provided. How they did it is something of a mystery, since many records have been discarded. But history tells us that they did get the job done, and with an efficiency and capability which is astonishing to modern observers of the MBTA.

It is not necessary to reinvent the wheel. Early transit planners showed what they could do, in Boston, New York, and Chicago. It was the golden age of transit achievement in this country. Improving the MBTA could be as simple and mindless as copying what transit leaders did decades ago, even if we do not understand why. If the MBTA chose to take no actions that were novel or inventive, they could find no better strategy than simply to copy the way things were done a century ago. Transit history is fact. It is not fake news. It is what actually happened. Take this history and repeat it – and we would reach a standard of transit excellence that Boston has not seen since world War II.

We need to establish a History Department at the MBTA, with enough people to perpetuate itself and not be a one-man band like George Sanborn. To make the point we should name the current MassDOT meeting room after George Sanborn, as it once was. History should be important to all bureaucracies, but it is especially important for the MBTA, which seems to have forgotten its own historical achievements and even seems at times to be resentful of history. The proper response to Boston transit history should be pride and motivation.

IDEA #41 -- SET UP A VIRTUAL STATE TRANSPORTATION LIBRARY

In the Internet age, it is probably unreasonable to attempt to re-establish a state transportation library. Too much damage has already been done, and too much valuable space has been given over to other uses. One thing that is possible is to create a Virtual State Transportation Library, with scanned materials from archives and other sources. The operation would be run by an archivist, not an ordinary librarian.

Twenty years ago, the agency library at the Boston Redevelopment Authority lost its librarian. Ultimately by agency mandate the library physically ceased to exist. Much of the material was transferred to the Boston Public Library, where it survived neglect and floods. In recent decades the library has engaged in extensive scanning exercises, so we can find a 1958 Boston College report which extols the virtues of the Inner Belt, but deplores the fact that transportation plans were narrowly focused only on highways and that there is no comparable transit plan. Such conclusions sixty years ago are vividly relevant to our Allston situation, where transit plans over the coming twenty years are non-existent. Good library resources would tell us that the state retreat from West Station began in 2014, during the Patrick Administration. The Draft EIR is somewhat more precise by saying West Station will not be built before 2040.

The Boston Public library has also scanned the entire 1962 highway master plan, making this document available over the web without restrictions. A similar effort should assemble what survives of the old state Transportation Library, and make what was once a depository into a true "accessory" to both the general public and transportation employees.

And call the new function the George Sanborn Virtual state Transportation Library to extend the designation adopted a decade ago when the then-existing library was renamed in his honor.

IDEA #42 INVESTIGATE THE DECLINE OF U.S. TRANSIT

MassDOT should seek to investigate the reasons for the decline of American transit properties. The problem is widespread, as shown by recent crises with the Washington D.C. Metro system and in the struggles of the New York City Transit Authority. San Francisco and Atlanta represent newer transit systems started with great hopes, yet subject to the realities of disappointment and uneven performance. Retired MBTA employees could volunteer to assist in this nationwide research effort, with funding from foundations, especially to achieve an inside-management perspective on the decline fortunes of mass transit.

London probably represents the best example of a traditional system that invested in a major effort to remake itself. As a practical example of transit officials pulling themselves up by their own bootstraps, the London experience may be unmatched. Boston's contribution to London's success is largely wrapped up in Bob Kiley, former MBTA General Manager and CIA operative. The London organizational structure had Bob Kiley, ex-CIA agent, working for the Trotskyite Mayor of London. And it worked.

Canadian experiences with successes and declines may also be worthy of note.
A vast record of experience with passenger and freight railroads can also be a source of information and inspiration, including the rescue of the Penn Central collapse of 1970 : from that collapse came the successful creation of Conrail as a government entity staffed by experienced railroad old-timers.

Other examples of extant railroad skills is evident in the case of Federal supervision of the reorganization/repair of D.C. Metro : the supervising Federal agency is the Federal Railroad Administration, not the Federal Transit Administration. The agency with superior practical operational smarts was selected over the FTA, which has limited itself to narrowly administrative functions.

IDEA #43 LEARN FROM BOSTON TRANSIT HISTORY

The MBTA and the Sanborn Virtual State Transportation Library should seek to organize the record of Boston Transit history. The information can begin with published schedules, probably most accessible among the membership of the Boston Street Railway Association. The goal should be a year-by-year compilation of train, trolley and bus schedules, to reflect how service has varied over the years. Ridership data should similarly be compiled.

One trend to investigate immediately : how transit service generally increased Boston ridership by 50 percent during World War II, with little investment in capital equipment. Ridership actually continued to rise through 1947, before the post-war boom in driving took over and decimated transit ridership. Wartime schedules of trains to Harvard showed 90-second headways, and such headways were maintained into the early 1950s, even as ridership plummeted. Today's Red Line operates with published headways of 4.5 minutes, three times longer than during the war years.

The historical research should be a springboard into investigations of transit service in the future, when computer controls could provide signal priorities to buses and trains, both in tunnels and on the streets. The modern version of safety signals could go beyond assuring train operations without collisions, but could assure the precise spacing of trains and put an end to bunching.

IDEA #44 TRUE WORLD CLASS STATUS FOR MBTA

The MBTA has stated its goal of becoming a World Class transit system. It has not identified the coterie of cities who have achieved World Class status. The T should include the following : Hong Kong, Shanghai, London and Moscow and determine what changes are needed for Boston to join the top echelon of transit performers and even outperform all of them. Set a transit master plan, set priorities, establish a schedule and funding source and proceed apace.

IDEA #45 -- LEARNING FROM HONG KONG AND MOSCOW

When London had finished making its modern improvements, it still had problems achieving desired high standards for on-time performance. For assistance, the former colonial power called for help from its former colony, Hong Kong. Experts from Hong Kong came to London and in fairly short order made the system adjustments to achieve the desired on-time goals.

When Shanghai decided to build a rapid transit system from scratch, they started in 1993 and built that ideal system by adding 20 miles of new transit lines every year. Shanghai is now building the transit cars that Boston will be using for decades into the future, and is also contracting with other American cities to replace their own transit fleets.

Yet when asked, who was the best, who was the model for an excellent transit system, Shanghai officials cited Hong Kong. MBTA should take it upon itself to learn the history of how a tiny former colony became the world leader in transit excellence. When a train in Hong Kong is 30 seconds late, the event is treated as a major crisis. When an MBTA train is 30 minutes late, the MBTA has trouble trying to decide whether to label the situation as a minor delay or maybe worse.

Informal comparisons of train headways in cities around the world indicate that Moscow is the leader, at 75 seconds. This scheduled time is 15 seconds better than Boston achieved during World War II and is almost 300 seconds better than today's Red Line. Moscow has count-down clocks that limit the dwell time of trains to 25 seconds. Red Line dwell times can be 80 seconds.

During the 1957 Sputnik crisis, American society was shaken by the realization that a backward nation like Russia might have seized the lead in the space race. Major programs were instituted to improve American schools and engineering research programs. Today, where is that sense of challenged pride that should inspire the MBTA and all American transit agencies to improve their performance to match that of Moscow?

IDEA #46 MAKING THE TRANSIT CAPACITY MANUAL USEFUL

The American *Highway Capacity Manual* and related computer software is the basis for the thousand-plus pages of intersection capacity calculations contained in Appendix C of the Draft EIR. The sponsoring agency, the Transportation Research Board, takes pride in the international respect that is accorded to the Manual. Nevertheless the Manual remains controversial as to accuracy.

Yet few people are the aware of the existence of a *Transit Capacity and Quality of Service Manual* since its creation in the 1990s and its current sponsorship by TRB. To my knowledge the Manual has never been mentioned in any of the meetings of the MBTA Control Board over the past two years. I have never seen a reference in MEPA scoping or in any EIR prepared under the auspices of MEPA. The Manual is not mentioned once in the 602-page Draft EIR. Nor can I think of a reason why the Manual should be considered in any serious discussion of transit capacity and improvement.

The lowly *Transit Capacity and Quality of Service Manual* needs an immediate overhaul. The MBTA should take the lead in understanding what went wrong, what are the practical elements of capacity that should be included and how to produce a new Manual that is indeed World Class. The Turnpike DEIR includes levels-of-service for vehicle traffic at intersections, but fails to include and estimates of LOS for other modes -- transit, bike, or pedestrians. How then can the DEIR be called a multi-modal report?

The flaw over LOS may not be in MassDOT but may indeed lie in the fully inadequate definitions contained in both the highway and transit capacity documents. What went wrong? MassDOT and the MBTA should take the lead in finding out what needs to be done to improve both manuals to reflect the proper importance of quality of service for transit and other modes including vehicles. MEPA should ensure that MassDOT pursues this goal, and applies the results to all future EIRs.

IDEA #47 – ADD PLANNING BACK INTO THE MBTA STRUCTURE

It has been at least two decades since top transportation officials decided the solution to unacceptable transit planning at the MBTA was to take the planning office function away from the Authority and create instead a MassDOT planning office with combined highway and transit planning – all in one place. The primary motivation may have been responsiveness and control, but the net effect was to leave the MBTA without formal planning responsibilities and abilities. One cannot complain to the MBTA about any lack of transit planning. That function was taken away from them.

This struggle is not new. In the 1970s when the Central Transportation Planning Staff (CTPS) was created, a dispute arose among agency heads as to who would control CTPS. In bureaucratic terms, the question was "Who does CTPS report to?" When the dust settled the answer was that the Transportation Secretary controlled CTPS. The result is an unavoidable gap between CTPS and both the highway and transit functions it takes responsibility for.

In defense of this arrangement, MassDOT could point to the South Station EIR, which presented a "big picture" analysis of the future needs of South Station. Critics of the arrangement can point to our present situation of having no state transit plan for Allston over the next two decades. Clearly there are times when the arrangement works well and other times when it does not.

MassDOT Highway has demonstrated its ability to lead a process and assemble a 602-page Draft EIR for the Turnpike Interchange reconstruction and related issues. The obvious follow-on question is : why was it not possible for the MBTA (or anyone else) to produce a similar planning document for the transit interests at Allston?

One possible compromise is for a division of authority between the Secretary's Office and both the state highway and transit functions. MassDOT would retain a leadership role as the head of Master Planning and Multi-Modal Coordination. The Highway Administration would retain its assigned responsibility for highway functions, and the MBTA for transit functions. The coordination of both modes into something like the EIR for the Turnpike

interchange would be the responsibility of MassDOT, but the highway and transit staffs would be obligated to exercise their respective technical responsibilities.

IDEA #48 INTRODUCE BIKE AND PEDESTRIAN SECTIONS

The limited status of bikes and pedestrians in the DEIR should not be used as a mandate to create new authorities within MassDOT for bikes and for pedestrians. A healthy recognition should be made that bike and pedestrians issues are inherent in the work that both highway and transit officials do. Thus bike and pedestrian responsibilities belong in both agencies. The planning and design functions of highway and transit should be linked to this multi-modal element to assure that bikes and pedestrians have a part in the planning and daily business of both agencies.

Coordination between agencies should be encouraged. A good example is the assistance that the Traffic section at MassDOT has given to MBTA planners for improvements on the Green Line. This professional liaison resulted in a program to purchase signal control equipment that is more responsive to transit vehicles and to traffic in general. Local traffic departments can obtain upgraded equipment. Transit vehicles have less delay. The whole process works well politically and bureaucratically.

IDEA #49 PROVIDE A BUDGET and STAFF for the CONTROL BOARD

There is a flaw in the original legislation which formed the Fiscal and Management Control Board. No line item budget exists for the Board and they have no paid staff. They are dependent for information and advice from the agency that they are mandated to "control."

If the Board feels that they are not receiving satisfactory information on the status of on-time performance (and the members are not) there should be the option to obtain an independent opinion from staff. The request is not for a huge bureaucracy. I would suggest three or more staff positions, two of whom should be engineers. The Governor can file this legislation at any time.

IDEA #50 Add an ENGINEERING ADVISORY COMMITTEE to the Control Board

In addition to independent staffing, the Board is in need of independent technical advice from an advisory committee composed of engineers. This Committee would be mandated by the new legislation and would be specifically directed to emphasize advice on operational issues affected transit passengers directly in terms of speed and capacity.

IDEA #51 – SET UP A PROCESS FOR PEER REVIEW

Existing legislation does not address how technical reports and other information presented to the Control Board should be handled by peer review or independent opinion. During the review of the Green Line Extension, various consultants were called upon to serve as design and fiscal reviewers of past work on the GLX and also to make counter-proposals of their own. There may be questions beyond the ability of Board members, MBTA staff or Control Board staff to answer. A budgetary allowance should be made for such professional services.

IDEA #52 DEFINE STATE REVIEW RESPONSIBILITIES CLEARLY

In spring 2015, the Governor appointed a special task force to report on the winter difficulties of the MBTA. The result was legislation creating the Control Board with an emphasis on fiscal and management review. The Board was to be the primary entity with oversight and control of MBTA matters. The MassDOT Board played a decidedly secondary role in transit matters.

The new "Commission on the Future of Transportation in the Commonwealth" appears to have an agenda that in some ways overlaps with the Control Board. The Commission does include highways in its purview and its scope is statewide, not just the Boston area. To that extent its scope overlaps with the MassDOT Board. The governor's office will need to define the various roles more clearly so there is no apparent conflict.

IDEA #53 CONTROL BOARD TAKES the LEAD on MASTER PLANNING

The Control Board should assist the Secretary in preparing a transit master plan, especially the public review and information functions. Legislation should specify scheduled periods for MassDOT and the Board to present updates to the Legislature on master plan progress.

IDEA #54 MANAGEMENT FUNCTIONS OF THE CONTROL BOARD

The control Board has tended to emphasize budgets and fiscal oversight, with less frequent mention of words such as "control" or "management." The efficient operation of the Board in the coming years will depend on how it controls PowerPoint presentations by MBTA management, including the number and length of presentations. Information overkill is a serious problem that delays and overloads the Board with unnecessary and useless numbers and verbiage. It is absolutely essential that the Board control the format of the presentations made at its public meetings.

IDEA #55 REBUILD the REVIEW FUNCTION of ADVISORY BOARD

As part of the reform elements of legislation setting up MassDOT, the role of the MBTA Advisory Board was substantially reduced. The original intent of the Advisory Board was to have an entity fiscally responsible to the members of the MBTA district as one of the parties providing funding for the T. At its peak in 1976, the Advisory Board produced an inch-thick analysis of the MBTA budget, and provided information to the public on how the MBTA spends its transit funds while assessing its performance of services. It provided an element of oversight of agency operations that should be a welcome addition to the oversight provided by the Control Board.

IDEA #56 STIMULATE CITIZEN ALLIES in TRANSIT ADVOCACY

Over the past decade, the activities of private groups interested in the future of public transportation have been notably diminished. While a new group called TransitMatters has

been formed, the participatory absence of the Association for Public Transportation has removed the primary public advocacy group from the discussion of the MBTA and its future. The APT had a long history of annual publication of its book, *Car-Free in Boston*, but publication ceased over a decade ago. The organization persists, while members have shifted their focus to Amtrak and the Northeast corridor. The group's attention towards Boston matters is minimal.

The Institute of Transportation Engineers has continued its technical focus when it was called the Institute of Traffic Engineers. About five percent of its members are primarily transit engineers, yet in two years I have seen no participation of ITE in any affairs of the MBTA or the Control Board.

Another source of advice is the informal association of former Secretaries of Transportation, of whom every Secretary is still living except Barry Locke. The opinions and participation of these former Secretaries should have been valuable from an historical perspective, but only Jim Aloisi has been vocal.

Universities and national groups concerned with the health and future of urban transit have been largely absent from the Boston transit dialogue. The MBTA has been almost reclusive in its relation to citizen riders and transit advocates. Improvements in outreach are of vital importance. I would not be writing this lengthy comment if I believed the MBTA capable of outreach.

IDEA #57 REPORTING THE TRUTH TO THE PUBLIC

Many transit agencies are under such stress that there seems to be a pressing need to disseminate only good news. Due primarily to its lengthy anointment as an agency under siege, the MBTA has moved beyond the issuance of fluff and public relations to a highly defensive stance that blames riders and circumstances, rather than its own actions. Bad news is regularly stonewalled. To the extent that apologies are necessary, they are prerecorded and lacking in credibility. The MBTA may be the most unlovable public agency next to the Internal Revenue Service.

One victim of recent winter storms is the traditional exhortation as the storm arrives – urging citizens to leave their cars at home and take public transportation. In February 2015 with the roads clear and Boston transit in breakdown mode it was clear that transit had lost its primary role in times of bad weather. Transit can no longer serve as the crisis refuge of last resort that it used to be.

Eventually success with improved service and reliability should allow the MBTA to engage once more in a relaxed program of reporting on its actual, credible achievements rather than denying its evident incapabilities.

IDEA #56 STIMULATE RESEARCH WORK in TRANSIT at UNIVERSITIES

The new Commission on transportation contains only one representation of academia, and no engineer from a local college. In general, transportation research on campus seems to have lapsed into a low priority after the initial concerns about the crisis of February 2015. Harvard's recent decision to be more pro-active in favor of transportation solutions in Allston could be the start of a trend towards increased activism by MIT, Boston University, and other area universities.

IDEA #59 DEFINITION AND RATING FOR TOD

It has been common in recent years for developers to tout their sites as "transit oriented development" or TOD. At times the media has even described Allston development as TOD when the absence of effective transit initiatives should be the primary message in circulation. Within the development community, transit oriented development has come to mean nothing more than proximity to transit, with no specific reference to adequate transit capacity, to reductions in parking or to other design attributes that show a shift from cars to transit.

Clearly, we need a more useful definition of Transit Oriented Development. The logical source for such a pronouncement is MassDOT, because their influence carries a fair degree

of authority. The old definition of TOD should not serve as a refuge for developers to stress the importance of transit, yet make no reference whether their development is taking any real steps to improve transit service and capacity.

I would go further and suggest a rating system that would allow grades to be assigned to developments. These grades would reflect how much they are compatible with good transit goals. I would suggest the following :

* LOS A excellent access, modal split for transit at least 80% and transit capacity exceeds demand

* LOS B excellent access, modal split for transit is 70% to 80% and transit capacity exceeds demand

* LOS C good access+transit, modal split for transit is 60% to 70% and transit capacity matches demand

* LOS D reasonable access, modal split for transit is 50% to 60% and transit service is at capacity from other expected new development

* LOS E fair access but modal split for transit is 40% to 50% and transit service is already near capacity

* LOS F no access to transit

IDEA #60 – AI CONTROL FOR BUS/TRAIN SPACING

For years proposals have been made to make traffic lights more responsive to transit vehicles. The idea would be to change the light timing so that there would be additional Green time for buses and trolleys, or a reduction in waiting time under Red. Recent initiatives by the MBTA in cooperation with MassDOT traffic, and the Cities of Boston and Cambridge suggest real progress in the installation of signal controllers that provide the desired assistance.

Ideally, signal controllers should be fully actuated with the ability to change cycle lengths, or do split phasing to allow short green phases for individual transit vehicles. On Commonwealth Avenue for example, transit actuation should apply to Green Line trains, the CT2, 47, 57 and 57A MBTA buses, and BU campus shuttle buses.

The use of detection, response and transit incentives suggests a way to increase the average speed of transit vehicles. The detection can also respond to help transit vehicles that have fallen behind schedule and need a boost to keep them from running further behind. If signal response can achieve the goal of helping late trains and buses, they can also serve to hold back transit vehicles that have gotten ahead of schedule. Trains can become early and in danger of getting bunched with lagging transit vehicles ahead.

This approach to incentivized signal timing leads to a further appreciation of the ability of advanced controllers at signalized intersections to serve as control monitors to counteract bus and train bunching. In other words, there is a technological way to limit bunching, with or without driver assistance. Drivers who manually maintain proper spacing can be duly informed of their success. Experiments with Artificial Intelligence programming could prove a very low cost method to gain 30-40% more capacity, with increased ridership and fare revenue when transit vehicles operate with even-spacing. The possibilities are intriguing, and could be combined with academic interests identified in Item #56 above.

IDEA #61 TOTAL REVISION OF ON-TIME STANDARDS

The Control Board has at numerous times expressed its concerns with the record of on-time performance, as presented by MBTA management. Another concern which has not been openly expressed is that the long-term basis for a train or bus being "on-time" is inherently flawed and also serves to distort actual performance by making it appear worse than it really is.

The explanation lies in the long-established concept of rigid schedules that must be complied with. The flaw is in the application of a "ghost train" concept. The ghost train is a sequence of trains that reflects the scheduled times for each train. The actual train arrival

times are compared with the ghost train schedules. If a train is more than one headway behind its ghost train counterpart, it is tagged as "late."

The flawed application of the on-time criterion can take this form. Suppose a line of Red Line trains is exactly on time early in the morning and that shortly after 6:30 AM there is a missed train or a train that is late by more than one headway -- 4 1/2 minutes. Suppose also that every following train arrives with a perfect headway of 4 1/2 minutes. All trains are evenly spaced – except for that one gap at 6:30.

According to the conventional application of this interpretation of "on-time," each numbered train must seek to arrive at the same time as the same numbered ghost train. But according to the interpretation of a late train, when one train is missed or is very late, the penalty of the skipped train for being late is passed on to all following trains. This excessive penalty stays in effect even through all subsequent trains have perfect scheduled headways. I have seen Red Line data where half the trains are late, yet overall train performance is much better than that.

For example, I have seem data on Red Line trains showing more than half the peak hour trips being rated as late, when their headways were being maintained at a fairly steady rate. Usually the problem is cleared up around 10 AM when a continued flurry of short-headway trains catches up and erased the delay that was caused hours earlier. Now all the trains can run on-time. and the trip performance seems much more acceptable. Other strategic devices can be applied to make the actual performance seem better than it is, and the Board can be told that the Red Line is operating at 93% in-time or the New York Times can be told that the MBTA operates 97% in-time. Strategic dsevices such as fudging should be banished.

The irrational control on ghost train compliance must be relaxed so that only individual trains are identified and penalized for lateness. The entire performance standard should be rewritten for logical sense, fairness and clarity. The new criterion should begin with a clean slate based on accuracy and fairness.

The use of passenger delay time is an unnecessary confusion and should be abandoned. Traffic delay was introduced in the 1985 edition of the *Highway Capacity Manual,* and has

caused consideration confusion to traffic engineers over the years. We do not need an average delay criterion as a part of transit analysis, when we already have the accepted concept of trains being on-time.

IDEA #62 SEEK A UNIFORM ON-TIME STANDARD AMONG CITIES

The *New York Times* wrote a long article in December on the decline of New York's subway performance, with reported on-time performance of only 65%. The reporters did a world wide survey of other transit systems, with many Asian subways reporting 95% on-time or better. The one exception was the MBTA, for which a 97% on-time record was claimed. The figure is a preposterous fiction.

Comparative data on transit performance should be uniformly defined and applied, so that fair comparisons can be made. When New York and Chicago measure on-time performance it should be on the same basis as the same calculation in Boston. The New York Times should be informed told that the 97% on-time claim for Boston is in error and will be corrected in the near future.

IDEA #63 CREATE A RELIABILITY UNIT WITHIN THE MBTA

MassDOT, the MBTA and the various Boards have failed to clarify the two definitions of reliability. One considers the degree to which regular non-emergency service varies from schedule times. The other form of unreliability is breakdown-related, usually from the train hardware, switches, signals or power system failures. However, other service interruptions can be created by police actions or health emergencies, which should not be blamed on the MBTA. How we deal with the various types of reliabilities must be made clear and measurements of reliability should reflect this distinction.

IDEA #64 INCENTIVES to SHORTEN TRAFFIC SIGNAL DELAYS

Buses and surface operations of Green Line trains frequently encounter delays at traffic signals along their routes. Without responsiveness to transit vehicles, each signal adds an

element of random delay to transit performance. Conventional traffic signals can be seen as a key impediment to achieving on-time goals.

Recent initiatives by the special MBTA Green Line team will allow modified signal controllers to detect the arrival of transit vehicles and to modify signal timing and displays to shorten or eliminate signal delays. A comprehensive program to shorten signal delays could include several components :

(a). The ability to adjust green phase timing to be in coordination with transit vehicle arrivals

(b). The ability to change cycle length through full actuation of all intersection approaches

(c). The ability to insert short transit-only phases in the regular phasing sequence

(d). The ability to use artificial intelligence methods to retime the signals to maximize capacity, delay or safety, or to balance off the various goals

(e). Recognition that in general shorter signal cycles in non-capacity situations will reduce signal delay for everyone -- buses, trains, cars, pedestrians and bikes.

(f). Recognition that the presence of short lanes on intersection approaches favor the use of shorter signal cycles in order to maximize capacity

IDEA #65 COOPERATE WITH UBER AND LYFT for LAST-MILE TRIPS

Any transit system with a radial orientation will pass through less dense neighborhoods during travel areas distant from the CBD. Larger areas of the metropolitan area will be more distant from transit service the further from the city center they are. This effect can be reduced by planning for feeder bus services at outer rail terminals.

However, feeder buses face the same problem of reduced accessibility in less dense communities. The effectiveness of transit service diminishes with distance. So at some point in the suburbs all city transit routes simply stop.

The difficulty of serving customers in distant areas has been identified as the "last mile" problem -- how to serve people living a mile away from transit end points. In fact, it could also be called a last five-mile problem (or ten-mile). The perennial problem is how to serve people who are one, five or ten miles from transit service.

Both Uber and Lyft have recognized that a significant element of their customer base is trips from home or office to a transit station. Many customers were making independent decisions to use Uber for part of a total trip. These forms of creative trip-making spread by word of mouth before Uber and transit agencies realized what was happening. However, transit agencies continue to view Uber and Lyft as destructive competition which must be opposed.

Private bus operators aware of the value of feeder service have no compunction about cooperating with Amtrak, transit agencies and even other bus lines, if the net result is a gain in ridership. The MBTA should take an ambitious, cooperative approach to "last mile"" feeder services from any source willing to provide them.

IDEA #66 FOLLOW TRANSIT IMPROVEMENTS WITH BUS LANES

When transit capacity is increased, a common expectation is that passengers will shift from cars to transit, thus freeing up congestion on the roads. This goal can be defeated if new auto trips are attracted to local roads to replace those lost to transit. This "regrowth" of auto traffic could be suppressed if transit capacity growth were accompanied by the addition of bus lanes so that traffic diverted to transit is less likely to be replaced by new auto traffic.

IDEA #67 DEALING WITH PROBLEM CULTURES

Many older, established institutions develop individual cultures as they become more mature. Understanding agency work and purpose may benefit by the stability of cultures, but there can also be negative aspects of culture which detract from institutional flexibility.

In times of change, company cultures can be a drag on imagination, innovation and adjustment to societal attitudes. Private sector examples are IBM and General Motors, both of which were headed for collapse until massive reorganization and/or bankruptcy brought about wholesale change. In some situations new management must see company cultures as a enemy that must be extinguished.

It is rare to hear of discussions to change negative cultures at the MBTA. The same silence is often heard for the preservation of good cultures that are so valuable to agency productivity. The MBTA has a long history of labor-management frictions and power struggles, and there have been only a few attempts to alter the balances, such as management-rights legislation or controls on privatization. Often the result is to further entrench the combatants, rather than to solve functional problems within the agency.

The private sector has dealt with these tensions in various ways -- forced reductions in union membership, anti-union legislation, outsourcing, plant closings, and demoralization of union leadership. Public sector unions remain strong, with arbitration commonly resulting in negotiation losses for management. Police, fire, teachers, transit unions and other public employees have been able to protect wages, health benefits, retirement packages and protections against termination, but in the case of well-paid union and management workers at the MBTA the public patience may be wearing thin. Unhappy transit riders are unlikely to lift a finger to defend public unions and their management bosses.

Conditions in post-war Britain have in the past increased the awareness of the "I'm All Right Jack" attitude among both unions and management, whereby personal benefits or profits take precedence over service to the public. The driver who sabotaged the 2015 runaway train was fired from a base $90,000 job. How many more examples are there of employees who do not give a full day of good work to balance their high salaries? When a

case arises such as transportation planning in Allston to deal with growth of Harvard-owned land, how can there be justification for high salaries when the government bureaucracy cannot produce any plans for transit improvements before 2040?

The credibility of transit workers is on the line : can they rise to the occasion and provide the services essential for the growth of the metropolitan Boston region without traffic gridlock or the sardine-can experience of overcrowded mass transit? It is a telling commentary that when Allston residents complained about transit inaction, they did so to their elected legislators. The response was a letter from the legislators to Harvard University, requesting action. The legislators did not write to the the MBTA, MassDOT or the Governor. And Harvard has responded with its own letter as a call to action. The MBTA and MassDOT have remained strangely quiet, seemingly incapable of leadership.

The government's first reaction need not be a response of funding. It should be an agreement between unions and management to end "I'm All Right, Jack" cultural attitudes, and change their mental attitudes towards working harder to provide essential public services which only the transit sector can provide.

IDEA #68 -- POSITIVE RESPONSES TO BAD AGENCY PRACTICES

The first priority for government action consistent with opposing bad cultures outlined above is to end early retirement, and to allow public review of all MBTA retirement fund operations. Base salaries and wages should be exchanged for an across-the-board incentive income increase that is proportional to the increased ridership and service that the MBTA as a whole provides to society. It might be seen as a form of "profit sharing," where the profit is the service to society, and salaries are designed to reflect the extent of that service.

IDEA #69 GOOD AND BAD CULTURES IN SOCIETY

Many aspects of modern transit tend to reflect the strangely dismal service of airlines and the incidents of airlines showing disrespect towards their own passengers. Horror

stories of planes trapped on the tarmac for three hours with clogged toilets remind us of anti-customer attitudes embedded in many institutions. The contrast with regional bus services like Concord Trailways is remarkable : showing greater levels of consideration for passengers can be seen in companies large and small. Complaints in the intercity bus business are less frequent than for urban transit and airlines. The MBTA should take a look at this general problem and try to find out what the solution is.

IDEA #70 CONSIDERATION FOR PASSENGER COMFORT

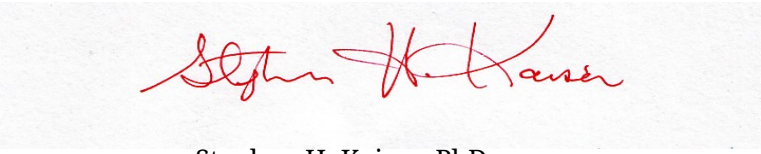
One of the regrettable aspects of the reform of the Green Line Extension project was the level of creature comforts removed initially in order to save money. Instead of looking into savings from unwieldy elevated structures, the institutional response was to remove escalators and platform canopies. The attitude was that when cost reductions were critical it was the transit customer who was expected to undergo and accept the special discomforts of being exposed to rain and snow.

A lack of intermodal convenience has also been evident in the minimalist outreach of MBTA officials to provide for its customers, who often arrive and leave as pedestrians. The definition of T responsibilities has all-too-often been one of dropping its customers on the sidewalk and leaving them to make their way on their own. The Turnpike DEIR as a multi-modal document could have helped in assuring that both highway and transit services in Allston would provide for an increased level of service and comfort to transit customers. The final EIR should seek in one MassDOT document a cogent demonstration of being aware the needs of both society and its transit customers.

==========

The creation of this lengthy list was necessary only because the MBTA and other transportation officials have not generated trust that they can be expected assemble a transit master plan for Boston. Now is the time to go about that task.

Sincerely,



Stephen H. Kaiser, PhD