



Notat

Orientering om rejserapport for Teknik- og Miljøudvalgets studietur om mobilitet, byudvikling og grøn teknologi i Boston 2023

21-01-2024

Sagsnummer i F2
2023 - 8547

Dokumentnummer i F2
117329

Sagsnummer i eDoc
2023-0267469

Resumé

Teknik- og Miljøforvaltningen forelægger hermed rejserapport for udvalgets studietur. Regnskab for studieturen indgår ligeledes.

Sagsfremstilling

Teknik- og Miljøudvalget var den 12.-17. november 2023 på studietur om mobilitet, byudvikling og grøn teknologi i Boston. Forvaltningen har udarbejdet en rejserapport for turen, der beskriver turens forløb og læringsspakter. På studieturen deltog i alt 13 personer, heraf syv medlemmer fra Teknik- og Miljøudvalget og seks embedspersoner fra Teknik- og Miljøforvaltningen.

Forvaltningen har efterspurgt samtlige oplæg fra studieturen, men ikke modtaget dem alle endnu.

Regnskab for studietur

Udvalget godkendte 28. august 2023 program for studieturen, hvor der fremgik et rejsebudget på 510.000 kr. Forvaltningens regnskab viser, at turens omkostninger er 410.667 kr., hvilket er knap 100.000 kr. lavere end budgetteret. Dette skyldes, at forvaltningen mod forventning ikke har haft udgifter til lokaler, oplægsholdere samt yderligere transport med cykler og båd. Desuden er udgifter til bustransport samt forplejning lavere end budgetteret.

Modtager forvaltningen yderligere anmodninger om refusion af mindre udgifter til fx ESTA, opdateres regnskabet administrativt. Ved større ændringer orienteres udvalget.

Politisk handlerum

Udvalget kan beslutte at få forelagt indstilling om, hvordan der kan arbejdes videre med nogle af Bostons indsatser i en Københavnsk kontekst.

Videre proces

Når Teknik- og Miljøudvalget er orienteret, offentliggøres rejserapport, herunder regnskab på kk.dk

Morten Rixen

Sekretariatschef

Rådhussekretariatet

Rådhuspladsen 1
1550 København V

EAN-nummer
5798009809452



Notat

Rejserapport for Teknik- og Miljøudvalgets studietur om mobilitet, byudvikling og grøn teknologi i Boston november 2023

Teknik- og Miljøudvalget var den 12.-17. november 2023 på studietur om mobilitet, byudvikling og grøn teknologi i Boston.

Søndag den 12. november 2023

Afrejse fra København kl. 13.05 og ankomst til Boston kl. 17.45 lokal tid.

21-01-2024

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Mandag den 13. november 2023

Mobilitetsløsninger

Udvalget startede dagen på Boston Rådhus, hvor de fik en introduktion til, hvordan Boston arbejder med mobilitet. Boston er i gang med en omlægning af infrastrukturen, så den matcher de forandrede transportmønstre. Dette gøres med afsæt i Bostons mobilitetsplan "Go Boston 2030", der blev udarbejdet på baggrund af en omfattende borgerinddragelsesproces. Planen indeholder mål om, at indbyggere i alle kvarterer i 2030 har bedre og mere lige adgang til bæredygtig mobilitet end i dag. Centralt for planen er et fokus på fysisk og økonomisk tilgængelighed til mobilitet på tværs af byens kvarterer. Overordnet set, ønsker Boston en udvikling med færre biler og mere kollektiv transport. Præsentationen fremgår af bilag 2.



Boston Rådhus

Udvalget blev desuden præsenteret for nogle af de konkrete projekter, Boston arbejder med. Fx arbejder Boston med decidederede busbaner. Siden 2018 er der anlagt 80 km busbaner og yderligere 100 km er

Rådhussekretariatet
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planlagt eller under anlæg. Desuden startede Boston i marts 2022 en 2-årig forsøgsordning, hvor tre busruter er gratis. På de tre busruter er der samlet set 10.000 passagerer per dag. Det vurderes, at 1 ud af 20 ture erstatter en tur, der ellers ville have være foretaget med bil. Udgifterne til forsøgsordningen estimeres til ca. 50 mio. kr.

Boston forsøger at udbrede cykisme. Boston har traditionelt haft udfordringer med at mangelfuld cykelparkering i de gamle bydele og har derfor indført krav om cykelparkering i de nye bydele. Det betyder, at det er et krav til store udviklere, at de skal stille indendørs og udendørs cykelparkering til rådighed. Boston har desuden lanceret et 1-årigt pilotprojekt med varelevering på elcykler til både indbyggere og lokale virksomheder. Dette bidrager til at reducere forurening og at lette trafikken, der er belastet, bl.a. af den stigende levering af varer.

Af øvrige tiltag på cykelområdet arbejdet Boston med fx at tilbyde gratis reparation af cykler på offentlige steder som bl.a. biblioteker. Boston har desuden en offentligt ejet delecykelordning, hvor man kan leje cykler.

Skybrudssikring og belægninger

Udvalget var rundt i byen og se flere konkrete eksempler på hvordan Boston arbejder med belægninger og beplantninger samt hvordan dette er koblet sammen med skybrudsløsninger og mobilitetsløsninger.



Eksempel på en permeabel belægning

Udvalget så bl.a. forskellige eksempler på permeable belægninger, som er en belægningstype, hvor der kan sive regnvand igennem. Dette sikrer en bedring nedsivning af regnvand og modvirker derfor oversvømmelse ifm. skybrud. Der findes forskellige typer af permeable belægninger, fx både asfalt og fliser.



Regnvandsbed med begrønning

Udvalget blev også præsenteret for forskellige eksempler på regnvandsbede, skybrudsløsninger og et projekt, hvor et tidligere rørlagt vandløb var blevet åbnet.



Tv. typer af jordlag. Th. opsamling af regnvand i en skolegård er integreret som en del af aflæringen.

Green Ribbon Commision: Højvands- og stormfloodssikring

Udvalget sluttede dagen af hos konsulentvirksomheden Arup, hvor de hørte om partnerskabet Green Ribbon Commision. Partnerskab består af forskellige repræsentanter fra private virksomheder, civilsamfund og andre interesser i Boston-området, som alle arbejder med grøn omstilling og klimaforandringer. Partnerskabet har en række arbejdsgrupper, som er opdelt efter sektorer som bl.a. sundhed, kultur, erhvervsudlejning mv. Her samler man ledere for at dele erfaringer og skabe såkalde first-movers indenfor den grønne omstilling.

Udvalget hørte om den arbejdsgruppe, der arbejder med højvands- og stormfloodssikring. Arbejdsgruppen er en vigtig ekstern interessent for Boston kommune, og fungerer som en uafhængig aktør. Gruppen

tilbyder et forum for medlemmer til at levere input, analyser og research til udformningen af Bostons kystsiliensplaner og finansieringsstrategier mv.

Tirsdag den 14. november 2023

Højvands- og stormflodssikring

På Boston Rådhus fik udvalget fik en introduktion til byens kystsikringsstrategi, der tager afsæt i planen Climate Ready Boston samt handleplaner til at imødegå effekterne af klimaforandring som bl.a. højvandsstigninger og stormflod. København og Boston deler den grundlæggende udfordring om havvand, men hvor man i København har valgt at arbejde med en ydre sikring, har man i Boston valgt en indre sikring.

Bostons valg af en indre sikring forstørrer udfordringen med, at kyststrækningerne og havnefronten har mange forskellige ejere fx staten, kommunen, private og universiteterne. Skal sikringen lykkes, er det nødvendigt, at alle ejerne er indstillet herpå, så der ikke opstår uhensigtsmæssige "huller" i kystsikringen. De mange ejere er med til at nødvenniggøre tværgående samarbejde som fx Green Ribbon Commision, som udvalget hørte om dagen forinden.

Boston er på alle parametre mere utsat end København. Dette skyldes, at byen ligger ca. i kote 0 og synker samt de store tidevandsforskelle. I nogle dele af Boston er der derfor flere gange årligt mindre mængder havvand i gaderne. Desuden er der jævnligt storme, orkaner og cykloner på den amerikanske østkyst. Boston blev ramt af ødelæggende stormfloder i 2011 og 2018, som begge var drevet af cykloner.



Bymodel over Boston, hvor udvalget fik en introduktion til byens udvikling herunder The Big Dig og udviklingen af området langs kysten.

Udvalget gik gennem centrum og ned til østkysten ved Long Wharf. Området er åbent og særligt utsat for stormflod. På sigt kan vandet ved stormfloder risikere at stå i flere meters højde over nuværende niveau. Det er en udfordring for de bygninger, der ligger helt ud til vandet. For at imødegå dette er nyere bygninger fx bygget således, at stueetagen kan tåle at bliver oversvømmet. Ældre historiske bygninger, der ønskes bevaret, er der planer for decideret at hæve i niveau.



Området Long Wharf

Uden for selve Boston by, ligger forskellige naturområder, bl.a. marskområder, som Boston bruger som en aktiv naturbaseret løsning, der skal afbøde bølgepåvirkningen.

Udvalget gik herefter sydpå langs havnen mod Fort Point Channel. Her så udvalget eksempler på, hvordan havnen i Boston de senere år har gennemgået en udvikling, hvor den er åbnet og i højere grad bliver brugt aktivt af byens indbyggere.

Kanaler udgør en særlig risiko i forbindelse med stormfloder, da havet presses igennem en smal passage, hvilket kan medføre oversvømmelse og ødelæggelser. Dette er også tilfældet med Fort Point Channel i Boston. Her så udvalget forskellige eksempler på, hvordan Climate Ready Boston-strategien konkret har udmøntet sig i løsninger som fx forhøjede vejanlæg og forhøjede arealer for gående.

Boston har gjort stormflodsikring til en integreret del af deres krav til udviklingen af havneområder. Boston har derfor et særligt fokus på at koble behovet for byudvikling og grønne områder med en sikring af kyststrækningerne i byen.



Fort Point Channel.

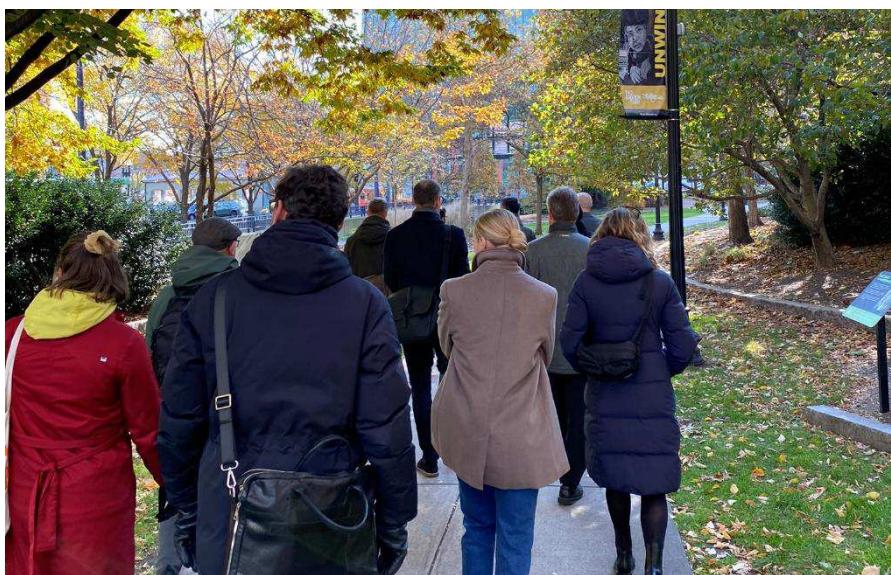
The Big Dig

The Big Dig er et megaprojekt, der har paralleller til arbejdet med Den Grønne Boulevard i København. The Big Dig refererer til nedgravningen af en hævet sekssporet motorvej, der løb gennem centrum af Boston, og som i 1991-2007 blev lagt under jorden i en 8-10 sporet biltunnel (og videreudbygget med en ny forgrening/ tunnelforbindelse til lufthavnen). Projektet var på daværende tidspunkt det største og mest komplikerede motorvejs-anlægsprojekt i USA's historie.



Parken Rose Fitzgerald Kennedy Greenway set fra oven. Kilde: <https://www.roseken-nedygreenway.org/history>

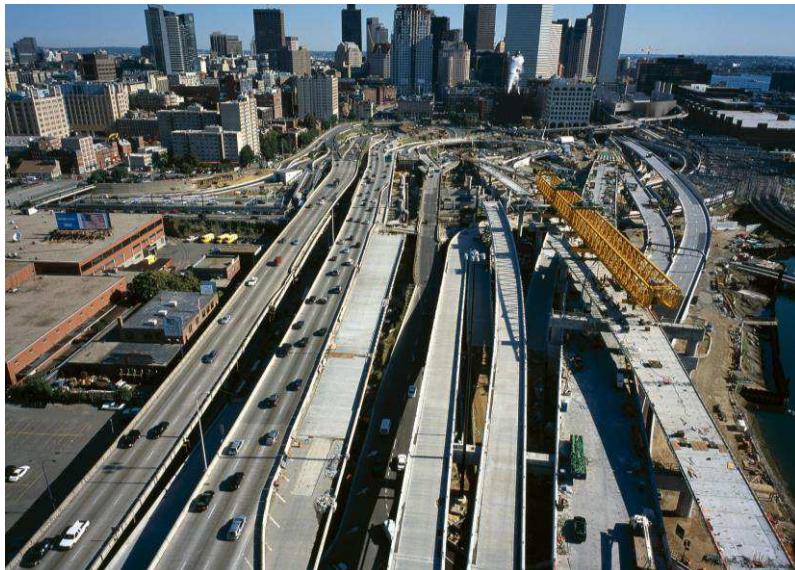
Pladsen på overfladen af den ene motorvejtunnel er blevet omdannet til en 2,4 km lang park "Rose Fitzgerald Kennedy Greenway", der i dag indeholder byrumsløsninger med gangforbindelser og grønne områder. Parken ligger ud til havneområdet og bidrager derfor til at binde byen bedre sammen med havet ligesom projektet også har medvirket til at reducere biltrafikken gennem byen.



Parken Rose Kennedy Greenway

På hver side af parken er der dog stadig 2-3 vejspor med trafik ligesom der flere steder er nedkørselsramper. Dette medfører en del trafikstøj i parken. Det rekreative areal bliver mest brugt til gennemgang og ikke

ophold, hvilket til dels kan skyldes larmen, men også at det ligger op til havnefronten, der også inviterer til rekreativ bug.



Den udbyggede vejinfrastruktur syd for Boston.

Selvom Boston downtown nu har fået tunnellagt motorvejen har det lige syd for Boston været nødvendigt at udbygge vejinfrastrukturen, for bl.a. at sikre de nødvendige nedkørsler mv. til tunnelen.

The Big Dig-projektet har været præget af dårlig projektstyring og var problemfyldt under anlægsarbejdet, der gik ni år over tid og et budget, der blev mere end tredoblet. Projektet blev finansieret af både byen, staten/region og det føderale niveau. En af udfordringerne var, at der på davaærende tidspunkt ikke var indregnet inflation i projektøkonomien. Desuden var projektafgrænsningen uklar, og flere andre projekter, der ikke umiddelbart har relation til selve tunnellægningen, endte med at blive finansieret af Big Dig-projektet, fx et nærliggende Holocaust monument.



Havard-professor Alex Krieger fortæller om The Big Dig.

Overordnet set vurderede Harvard-professor Alex Krieger samt Richard Dimino (der har arbejdet med selve anlægsprojektet), at The Big Dig er endt med at være en succes, selvom det var mange problemer undervejs. Dette da en hævet motorvej tværs gennem byen ikke passer til en moderne by og at - særligt havnetunnelen til lufthavnen - har bidraget til at binde byen bedre sammen. En læring fra projektet er, at det er

vigtigt, at ikke alt er programmeret fra starten, men at der afsættes budget til løbende at justere og tilpasse, når man undervejs for kendskab til nye behov. Harvard-professor Alex Kriegers præsentation fremgår af bilag 2. Af bilag 3 fremgår en artikel om Big Dig, skrevet af Alex.

Tværgående proces og ledelse

Boston har ligesom København et stort antal planer, politikker og strategier. Udvalget sluttede dagen af med at blive præsenteret for hvordan Boston Kommune arbejder med at sikre planlægning på tværs af forskellige kabinetter og budgetter. Dette for at sikre, at handleplaner mv. er koordineret og peger i retningen af fælles mål for til sidst at kunne føre til implementering.



Onsdag den 15. november 2023

Amerikanske kommuner og bystyrer har generelt væsentlig færre ressourcer og færre virkemidler til deres rådighed end danske og europæiske. Derfor er der i USA ofte tradition for at understøtte initiativer som drives af civilsamfundsaktører. Boston-området er hjemsted for universiteter, der er væsentlige aktører i områdets udvikling. Udvalget brugte derfor dagen på at besøge hhv. Boston og Harvard University for at se klimaneutrale nybyggerier og høre om universiteternes arbejde med at understøtte den grønne omstilling.

Boston University - klimaneutral bygning

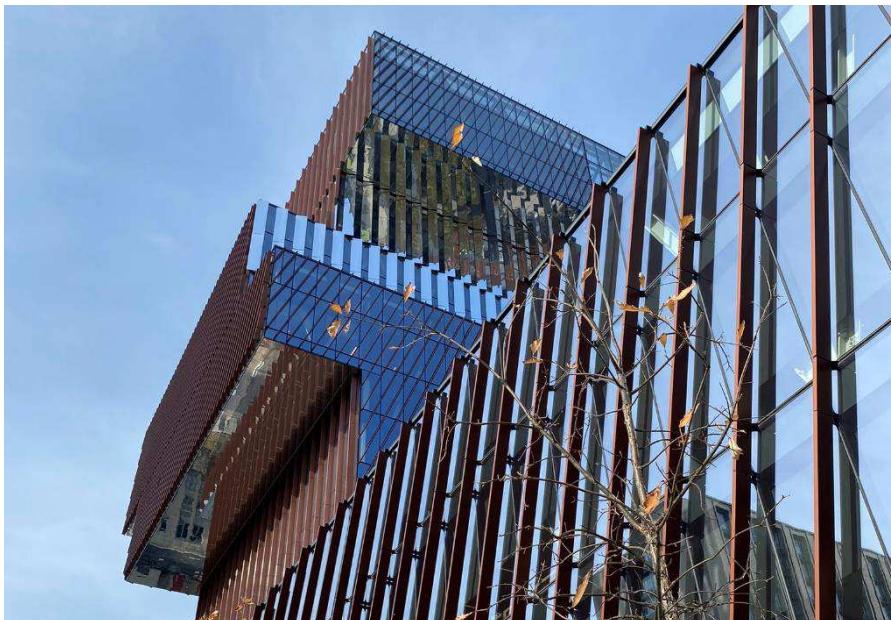
Udvalget besøgte universitetsbygningen, der huser Boston University Center for Computer & Data Science, er den største fossilfrie bygning i Boston. Bygningen er 100 % eldrevet via solceller og bygningen er ikke koblet på byens gasnet. Bygningen er 19 etager høj og på samlet 32.516 kvadratmeter. Bygningen er meget energieffektiv og får dækket 90% af sit varme- og kølingsbehov via geotermi og varmelagring under bygningen. Under selve bygningen er der 31 geotermiske brønde, der er helt ned til ca. 400 meters dybe. I bilag 4 fremgår Boston Universitets præsentation.



Teknikrummet i bygningen.

Bygningen eksemplificerer "passiv" energieffektivitet igennem strategisk brug af skyggeskabende facadeelementer, som også er velkendte i Sydeuropæiske byggetraditioner. I takt med stigende temperaturer i København vil dette fokus blive mere relevant for at undgå stærkt stigende energiforbrug til aircondition i både ny og eksisterende by.

Lige bag universitetsbygningen ligger Charles River, og bygningen ligger derfor utsat for stormflod. Dette er der taget højde for ved at sikre bygningen ligger tilstrækkeligt højt i niveau.



Boston University Center for Computer & Data Science

Harvard University

Udvalget besøgte Harvard University, hvor de hørte om universitetets plan "Sustainability Action Plan: Climate, Equity, Health" der har et mål om CO₂-neutralitet i 2026. Som følge af planen er der på campus fx e-busser og ladestandere, og bygningsmassen og parkområder udvikles og driftes efter bæredygtighedsmål. I planen er et stort fokus på universitetets bygningsmasse. Dette skyldes, at bygningerne er drevet af

lokale, fossildrevne systemer. I Københavns CO2-regnskab er der i dag kun lille CO2-gevinst ved bygningsrenovering, da fjernvarmen regnes for stort set CO2-neutral. Energibesparelser er dog også et vigtigt indsatsområde for København både i den nuværende og kommende klimaplan.



Facaden på universitetsbygning

Udvalget så instituttet for Science and Engineering Complex, der er ny bygning fra 2020 med fokus på bæredygtighed. Bygningen rummer et centralt anlæg, der anvender naturgasdrevet kraftvarmeproduktion til opvarmning og køling. Desuden er der lagt særlig vægt på effektivitet i facadedesign og energiforbrug i laboratorierne i udviklingen af det integrerede klima- og energikoncept.

Instituttet er omgivet af et parkanlæg, der grænser op til nærliggende byområder. Det er planen, at parkanlægget skal udvikles som et åbent miljø, hvor de studerende deler rekreative grønne områder, erhvervsliv og butikker med beboerne omkring. Dette er et nytænkende og åbent koncept, der skal modvirke social ulighed.



Tanke til opsamling af regnvand

Udvalget hørte også om Harvards indsats for at reducere vandforbruget og bruge regnvand aktivt til bl.a. vanding af træer og anden beplantning. Der er etableret forsinkelsesbassiner og lavninger, hvor regnvand opsamles og ledes ned til tanke med plads til knap 300.000 liter.

Innovation Center Denmark

Udvalget mødte en repræsentant fra Innovation Center Denmark, der hører under Udenrigsministeriet. Her blev udvalget præsenteret for, hvilke igangværende samarbejder der er mellem USA og Danmark på fx vindenergiområdet og samarbejdsprojekter mellem Harvard University og Innovation Center Denmark.

Torsdag den 16. november 2023

Varmeøer

Udvalget brugte dagen på at høre om varmeøer, og hvordan der arbejdes med at håndtere de stigende temperaturer. Varmeø-effekten beskriver det forhold, at temperaturen i byområder er højere end temperaturen i omkringliggende landområder. Årsagerne er, den urbane arealanvendelse med stillestående luft og materialevalg med en mindre andel vegetationsdækket areal og større andel af mørke overflader i form af veje og bygninger, der akkumulerer varme. Varme- og hedebølger har en veldokumenteret negativ effekt på byboeres velbefindende og sundhed. Der er også varmeøeffekt internt i bymiljøer, da nogle dele af byerne kan blive varmere end andre. Særligt ældre, sårbare personer, børn og personer, der arbejder udendørs er utsatte for negativ påvirkning af de høje temperaturer.

I Boston er varmeøer et udbredt fænomen om sommeren, og klimaændringer vil i fremtiden føre til endnu større problemer med hedebølger og deraf medfølgende sundhedsproblemer. Det forventes at dage med over 32 grader vil gå fra 10 til 46 frem mod 2070.

Udvalget besøgte både Boston Kommune samt det regionale samarbejdsorgan Metropolitan Area Planning Council for at få forskellige perspektiver på arbejdet med varmeøer.



Oplæg om varmeøer

Boston har udarbejdet The Heat Plan, som er en strategiplan, der sætter rammen for Bostons arbejde med at forberede borgerne på varmere somre. Planen har især fokus på udsatte borgere i deres byområder.

Boston Kommune har et generelt stort fokus på klimaretfærdighed (Climate Justice), og det fylder en del under flere forskellige emner, herunder arbejdet med varmeøer. I Boston handler det især om forskellige behov og muligheder i de etnisk opdelte kvarterer. Bostons tiltag vedr. varmeøer er derfor ikke målrettet de områder i byen der er varmest, men i stedet varme områder i udsatte byområder og etniske kvarterer. Det skyldes, at boligerne i disse kvarterer er dårligere isolerede og i mindre grad har aircondition.

The Heat Plan indeholder både helt lavpraktiske løsninger samt større strategiske tiltag. Af lavpraktiske løsninger anvendes "pop-up" køling i form af telte, hvor man kan køles af med vand-spray og "cool spot" lokaler med air condition, hvor man kan gå hen og blive kølet af.

Af mere strategiske tiltag, arbejdes der bl.a. med udbygning af byens grønne strukturer, der kan give skygge, og hvide tage, der kan reflektere sollys og grønne tage. Særligt hvide tage har medført et betydeligt fald i bygningernes temperatur. I bilag 5 fremgår Boston Kommunes præsentation om varmeøer. Bilag 6 er en teknisk og metodisk rapport om varmeøer. Boston er ret langt med kortlægning og data vedr. varmeøer. Noget af det er offentligt tilgængeligt her: [Boston Heat Map Explorer \(arcgis.com\)](http://Boston Heat Map Explorer (arcgis.com))

Udvalget skulle have afsluttet dagens program med en besigtigelse af The Big Dig, men guiden var nødsaget til at aflyse programpunktet med kort varsel. Udvalget havde dog de foregående dage set og gået langs The Big Dig – særligt i forbindelse med tirsdagens rundvisning langs havneområdet og Fort Point Channel.

Afrejse fra Boston kl. 20.00 lokal tid.

Fredag den 17. november 2023

Ankomst i København kl. 11.45 lokal tid.

Deltagere på studietur

På studieturen deltog i alt 13 personer, heraf syv medlemmer fra Teknik- og Miljøudvalget og seks embedspersoner fra Teknik- og Miljøforvaltningen.

Teknik- og Miljøudvalget

- Astrid Aller, Socialistisk Folkeparti
- Mikkel Skovgaard, Enhedslisten
- Knud Holt Nielsen, Enhedslisten
- Morten Melchior, Det Konservative Folkeparti
- Christopher Røhl, Radikale Venstre
- Lars Weiss, Socialdemokratiet
- Louise Theilade Thomsen, Venstre

Teknik- og Miljøforvaltningen:

- Adm. Direktør Søren Wille
- Direktør Camilla Bjerre
- Vicedirektør Karsten Biering Nielsen
- Vicedirektør Peter Højer
- Sekretariatschef Morten Rixen
- Udvalgssekretær Johan Rasmussen



Deltagere fra Teknik- og Miljøudvalget samt Teknik- og Miljøforvaltningen

Regnskab for Teknik- og Miljøudvalgets studietur om mobilitet, byudvikling og grøn teknologi i Boston 2023

Regnskabet for studieturen fremgår af nedenstående tabel. Turen har kostet i alt 0,4 mio. kr. På de følgende sider er vedlagt bilag for udgifterne.

På studieturen deltog i alt 13 personer, heraf syv medlemmer fra Teknik- og Miljøudvalget og seks embedspersoner fra Teknik- og Miljøforvaltningen.

Tabel. Rejseregnskab for studietur

Udgift	Beløb
Fly inkl. forplejning og hotel inkl. morgenmad	220.533 kr.
Bustransport	39.269 kr.
Forplejning	42.841 kr.
Planlægning af program	103.000 kr.
Diverse (Esta, mundbind, gaver)	5.024 kr.
I alt	410.667 kr.

Bilag

Bilag 1 Oplæg om mobilitet

Bilag 2 Oplæg om The Big Dig

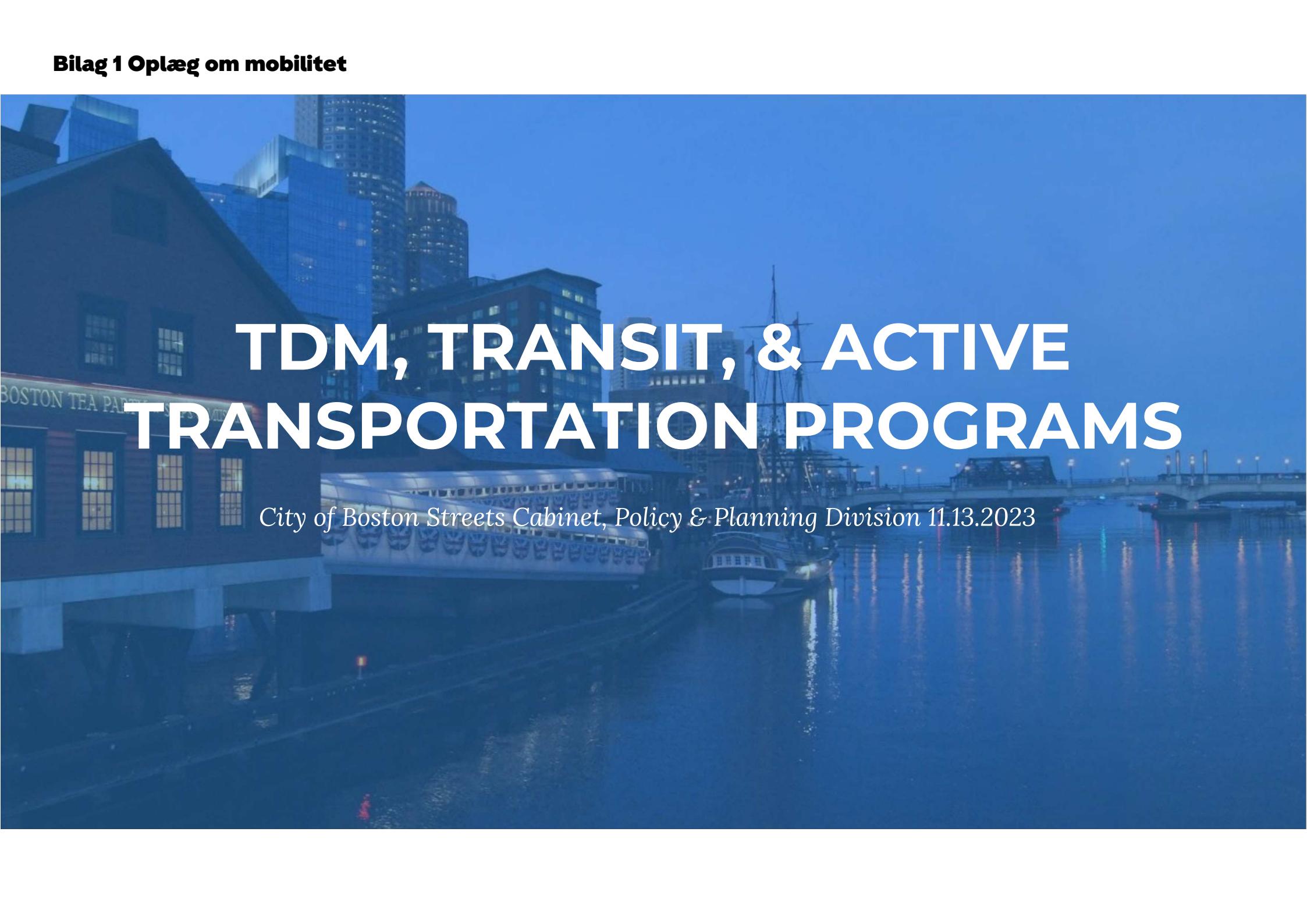
Bilag 3 Artikel om The Big Dig

Bilag 4 Oplæg fra Boston University

Bilag 5 Oplæg om varmeøer

Bilag 6 Yderligere materiale om varmeøer

Bilag 7 Bilag til regnskab



TDM, TRANSIT, & ACTIVE TRANSPORTATION PROGRAMS

City of Boston Streets Cabinet, Policy & Planning Division 11.13.2023

TRANSPORTATION DEMAND MANAGEMENT

- City Employee Programs
 - Free Bluebikes bike share passes (5% of City Employees)
 - Free Transit passes (10% of Employees)
 - Employee shared e-cargo bike program (*new as of 2023*)
 - Employee shared hybrid and electric vehicle program
- Fare Free Bus Lines
 - Three routes, two year pilot that began in March of 2022
 - Costing the City \$8 million over the two year period
 - Serves 10,000 riders per day
 - Estimated each rider will have saved \$500 at pilots end
 - 1 in 20 trips replaces a car trip
- TDM Point System - New Large Developments
 - Point system based on mobility score, proximity to transportation options
 - Reduce the number of parking spaces and vehicle trips
 - Support public transit and shared mobility



BUS, SUBWAY, AND TROLLEY PUBLIC TRANSIT

- Bus Priority Lanes
 - 50 miles since 2018, 60 additional miles planned or under construction
 - Center running bus lane on Columbus Ave
- Transit Signal Priority
 - Gives transit signal priority at some intersections
- Orange Line Shutdown
 - Unprecedented Orange line shutdown for 30 days
 - 100,000 daily riders, series of shuttle buses over the 11 mile stretch
 - Resulted in dramatic, permanent street changes



ACTIVE TRANSPORTATION

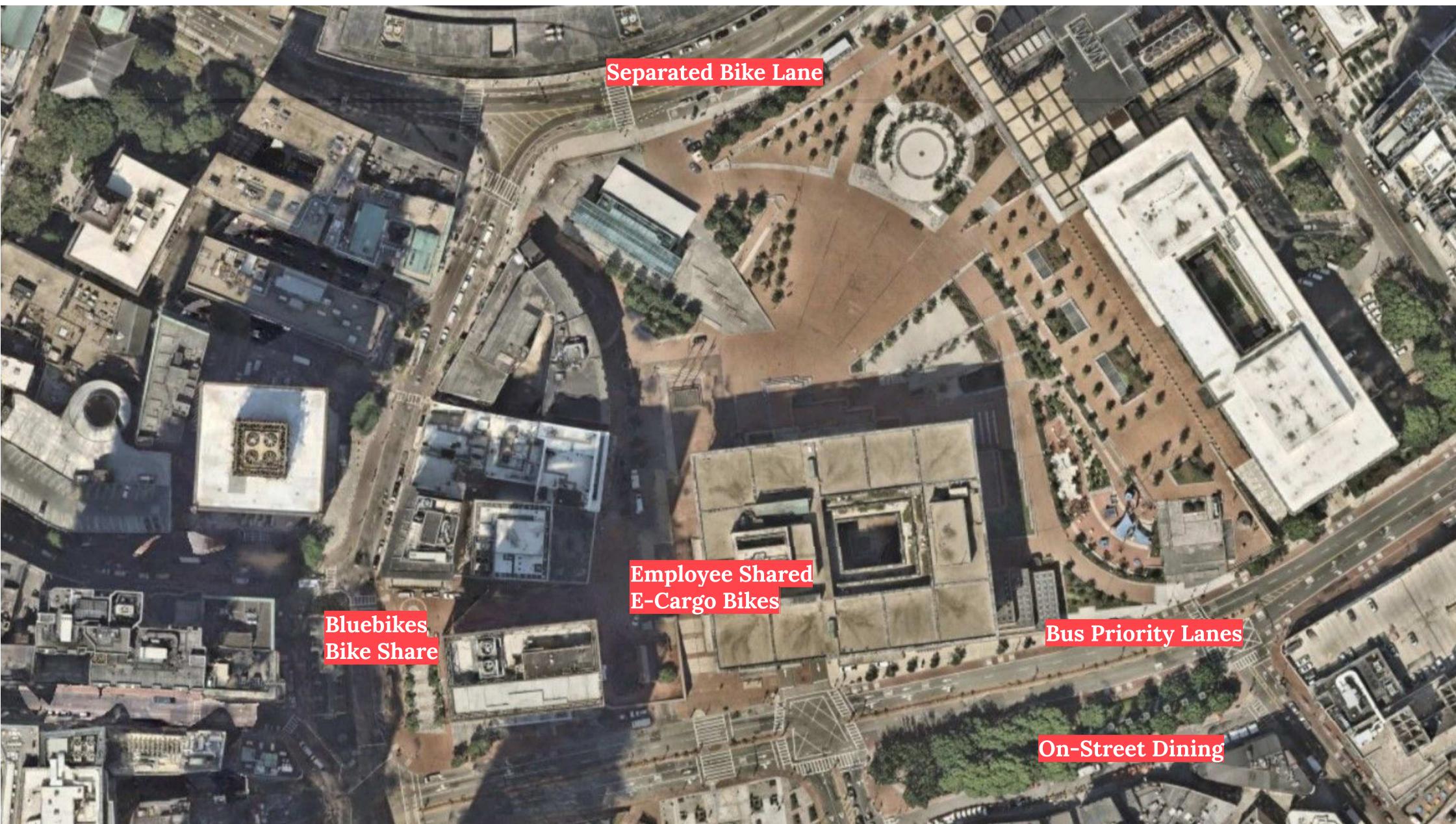
- *Bike Lanes*
 - Dramatic increase in bike lanes over the past few years
 - Additional 10 miles of separated bike lanes in 2023
 - Off-street sidewalk level bike lanes being built
- *Bluebikes Bike Share*
 - 470 stations, 4,000 bikes in region
 - In Boston, 90% of residents live within 10-min walk of Bluebikes
 - In 2022 nearly 4 million trips
 - Adding e-bikes to fleet in 2023
- *Boston Delivers*
 - E-Cargo bike delivery pilot program
 - Subsidy provided to local and minority owned businesses



BOSTON BIKES PROGRAMS

- Women's Learn-to-Ride
 - Annually teach 150 women bicycling & road readiness skills
 - Maintain a fleet of 100 bicycles for teaching & group rides
- Bike Repair clinics
 - Free clinics in the libraries & community centers
 - Collaboration with non-profits & bike advocates
- Youth workshops
 - Youth Cycling Program in schools - *restarting in 2024*
 - Youth Learn-to-Rides in collaboration with libraries
- Boston E-Bikes Incentive Program - *new!*
 - Targeting seniors and adults with disabilities in Phase I
 - Targeting low and moderate income households in Phase II
 - Up to 1,000 residents will receive subsidy

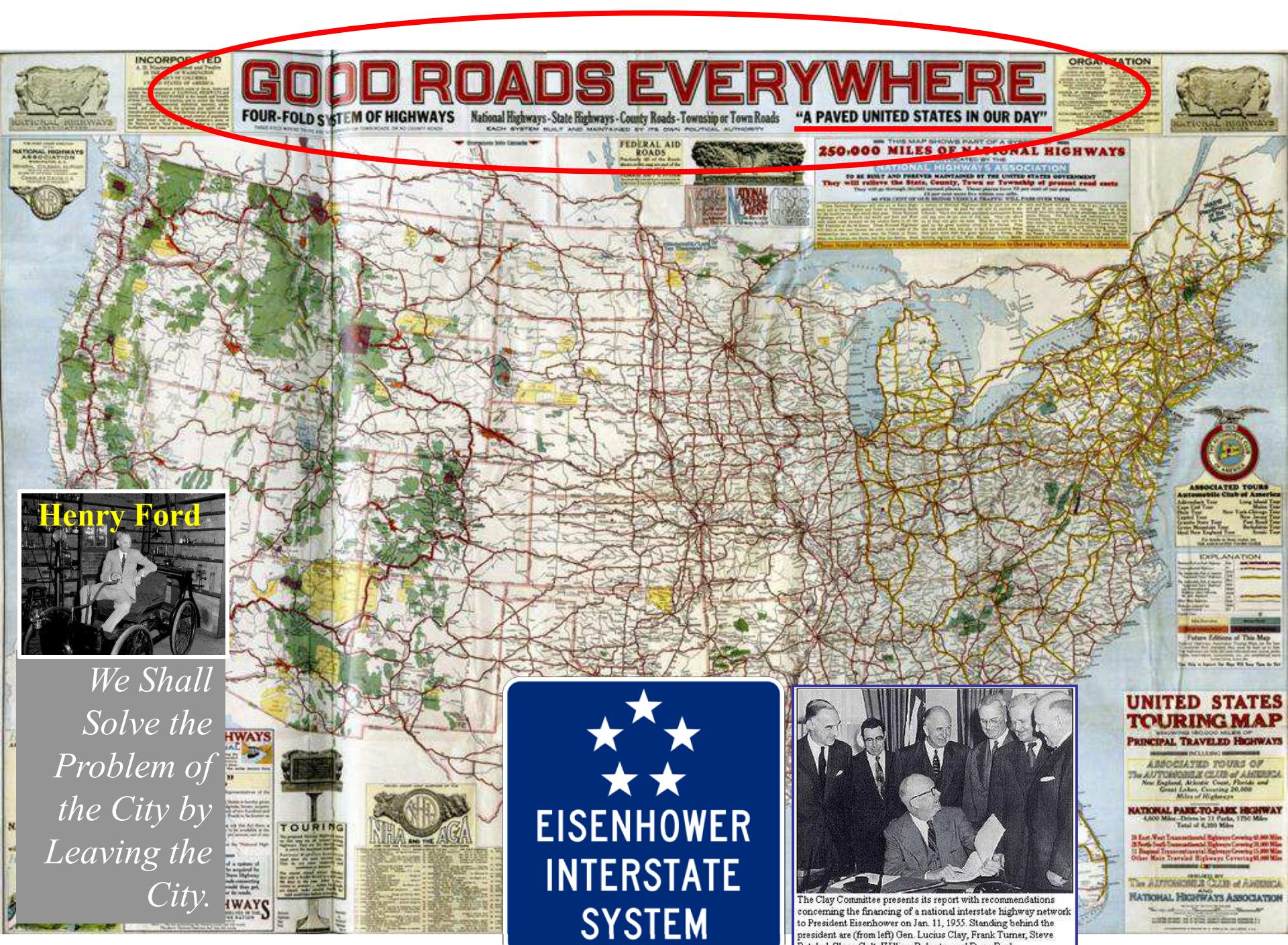




Bilag 2 Oplæg om The Big Dig

Boston's 'Big Dig'





Henry Ford

*We Shall
Solve the
Problem of
the City by
Leaving the
City.*

★ ★ ★
**EISENHOWER
INTERSTATE
SYSTEM**

The Clay Committee presents its report with recommendations concerning the financing of a national interstate highway network to President Eisenhower on Jan. 11, 1955. Standing behind the president are (from left) Gen. Lucius Clay, Frank Turner, Steve Betchel, Sloan Colt, William Roberts, and Dave Beck.

**UNITED STATES
TOURING MAP**

SHOWING 180,000 MILES OF
PRINCIPAL TRAVELED HIGHWAYS

INCLUDING
ASSOCIATED TOURS OF
THE AUTOMOBILE CLUB OF AMERICA
New England, Arctic Coast, Florida and
Great Lakes, Covering 20,000
Miles of Highways

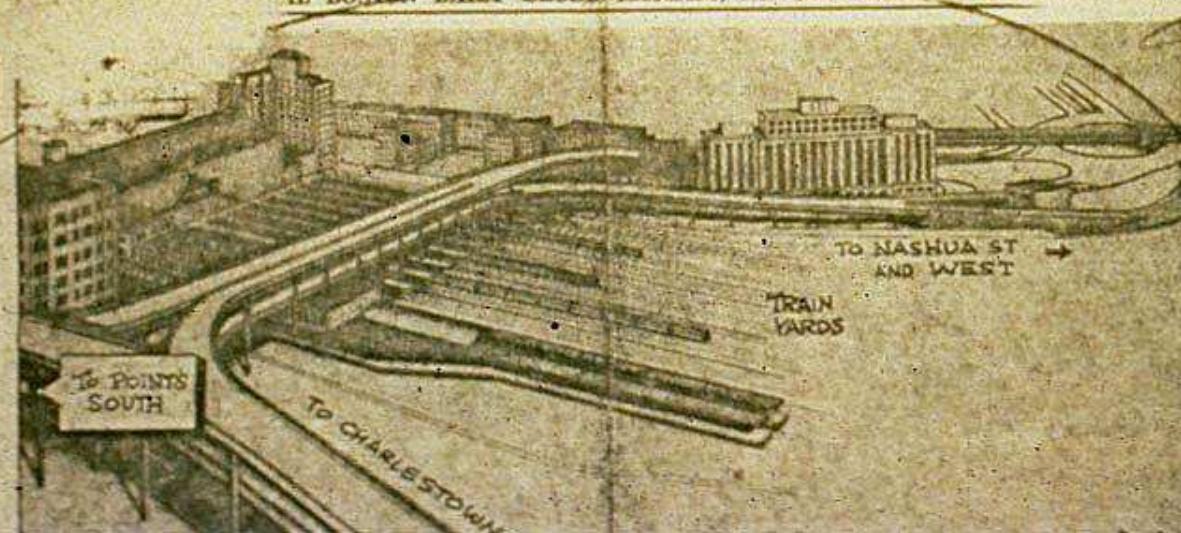
NATIONAL PARK-TO-PARK HIGHWAY
4,000 Miles - Driven in 11 Parks, 1750 Miles
Total of 5,750 Miles

II East-West Transcontinental Highways Covering 10,000 Miles
III North-South Transcontinental Highways Covering 10,000 Miles
IV Regional Transcontinental Highways Covering 15,000 Miles
Other Main Traveled Highways Covering 55,000 Miles

PRINTED BY
THE AUTOMOBILE CLUB OF AMERICA
NATIONAL HIGHWAYS ASSOCIATION

BOSTON GETS SKYROAD SOON

THE BOSTON DAILY GLOBE, MONDAY, JANUARY 29, 1950



Boston Highways
**Construction to Start
on "Belt" Plan in
6 Weeks, Says Deve**

Construction of Boston's long-discussed central artery will begin within the next six weeks, it was announced today.

The first section of the city's "belt-highway" will be built with \$30,000,000 which the Legislature appropriated last session as part of a state-wide \$100,000,000 accelerated highway program.

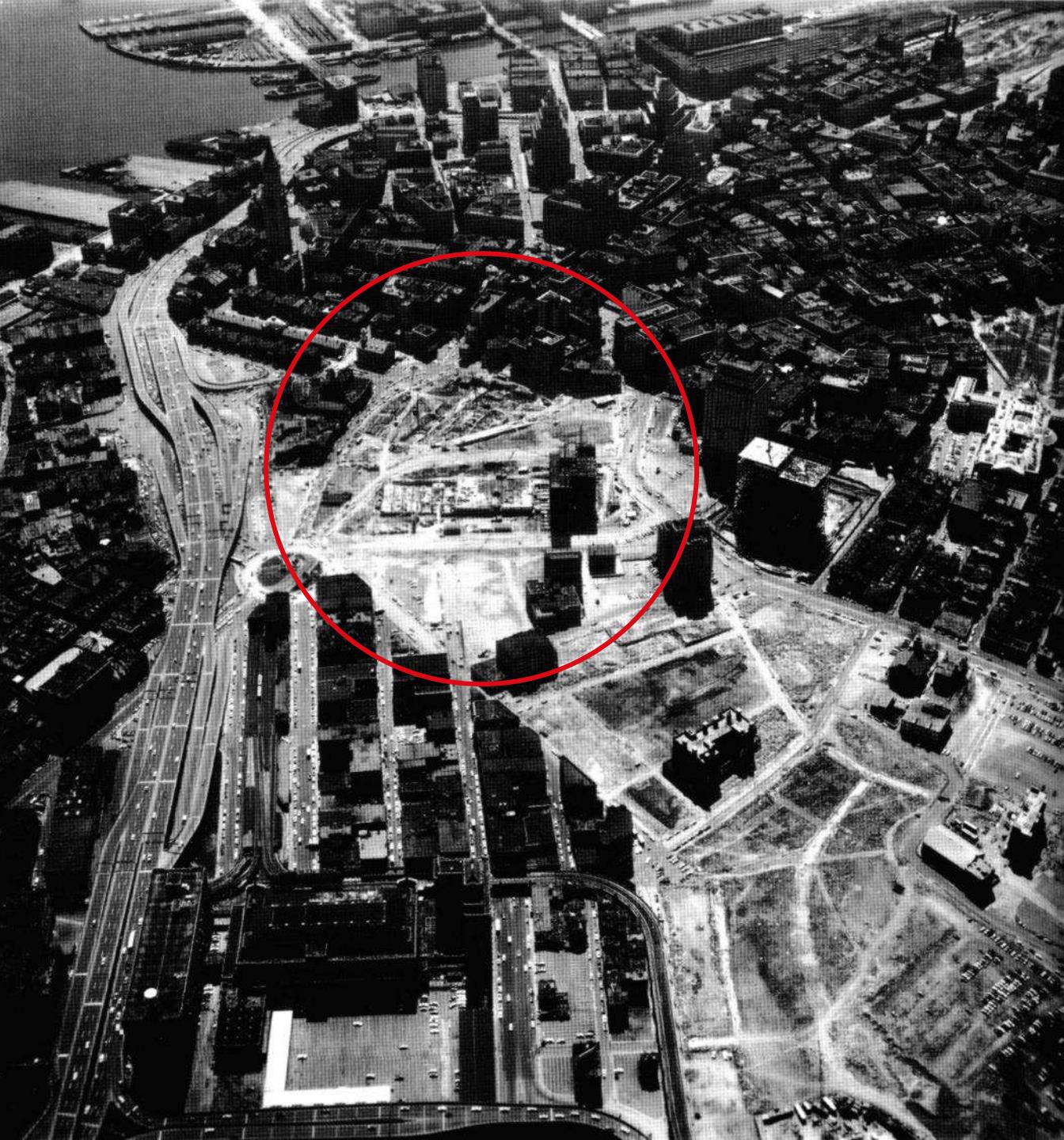
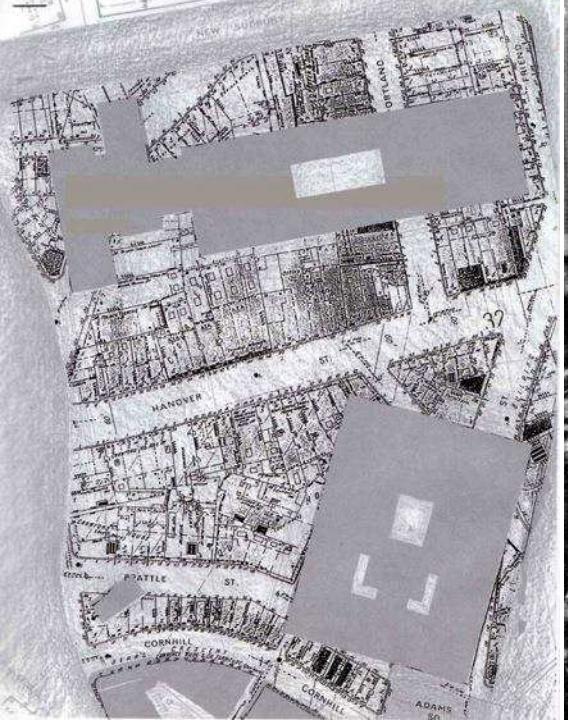
- Constructed 1950-54

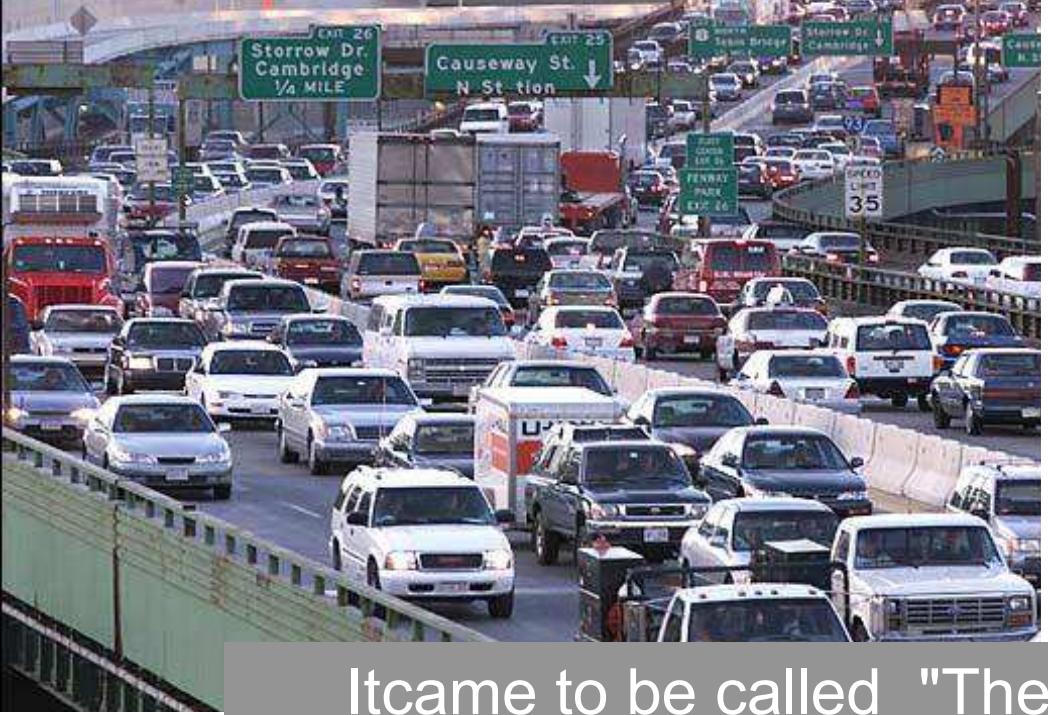
Historical population

Year	Pop.	±%
1680	4,500	—
1690	7,000	+55.6%
1700	6,700	-4.3%
1710	9,000	+34.3%
1722	10,567	+17.4%
1742	16,382	+55.0%
1765	15,520	-5.3%
1790	18,320	+18.0%
1800	24,937	+36.1%
1810	33,787	+35.5%
1820	43,298	+28.1%
1830	61,392	+41.8%
1840	93,383	+52.1%
1850	136,881	+46.6%
1860	177,840	+29.9%
1870	250,526	+40.9%
1880	362,839	+44.8%
1890	448,477	+23.6%
1900	560,892	+25.1%
1910	670,585	+19.6%
1920	748,060	+11.6%
1930	781,188	+4.4%
1940	770,816	-1.3%
1950	801,444	+4.0%
1960	697,197	-13.0%
1970	641,071	-8.1%
1980	562,994	-12.2%
1990	574,283	+2.0%
2000	589,141	+2.6%
2010	617,594	+4.8%
2020	675,647	+9.4%
2021	654,283	-3.2%

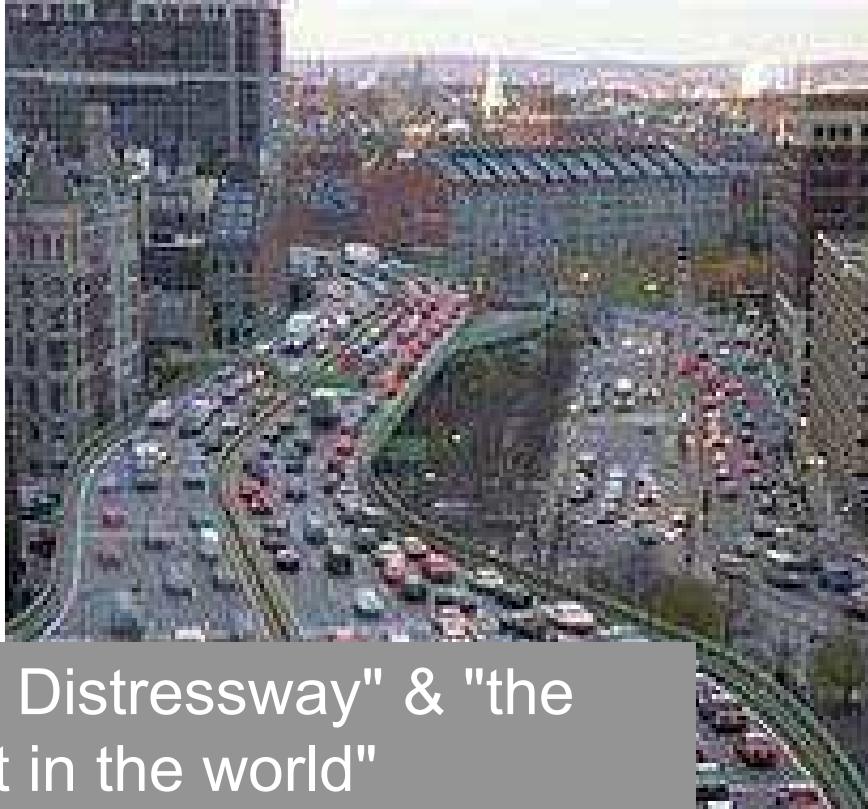
*=population estimate.



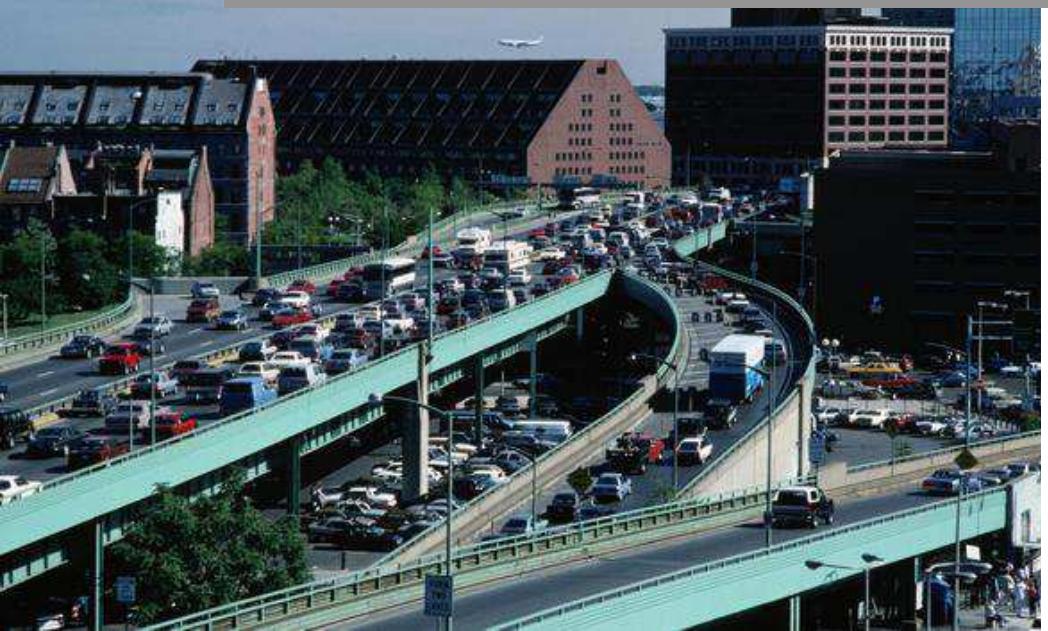




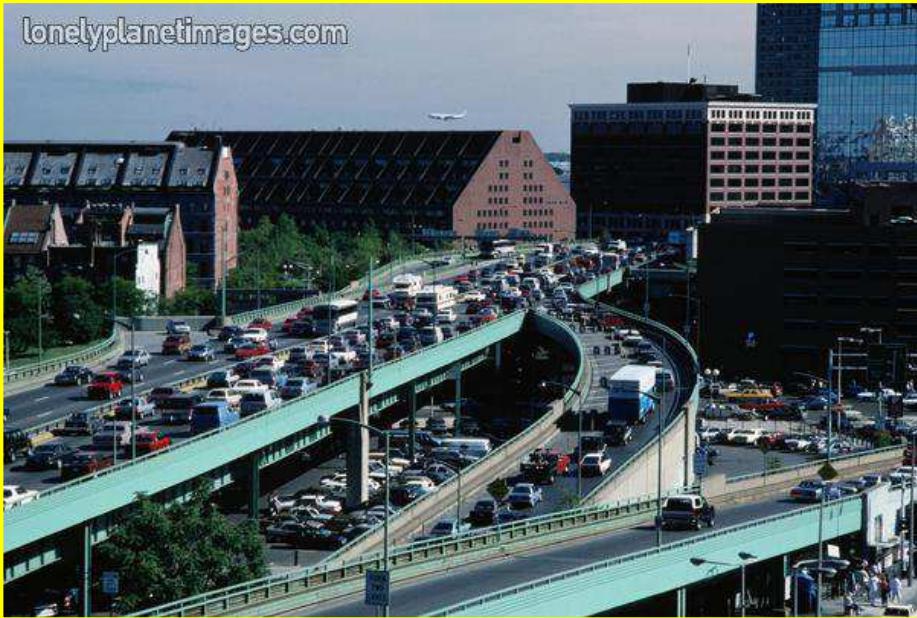
lonelyplanet

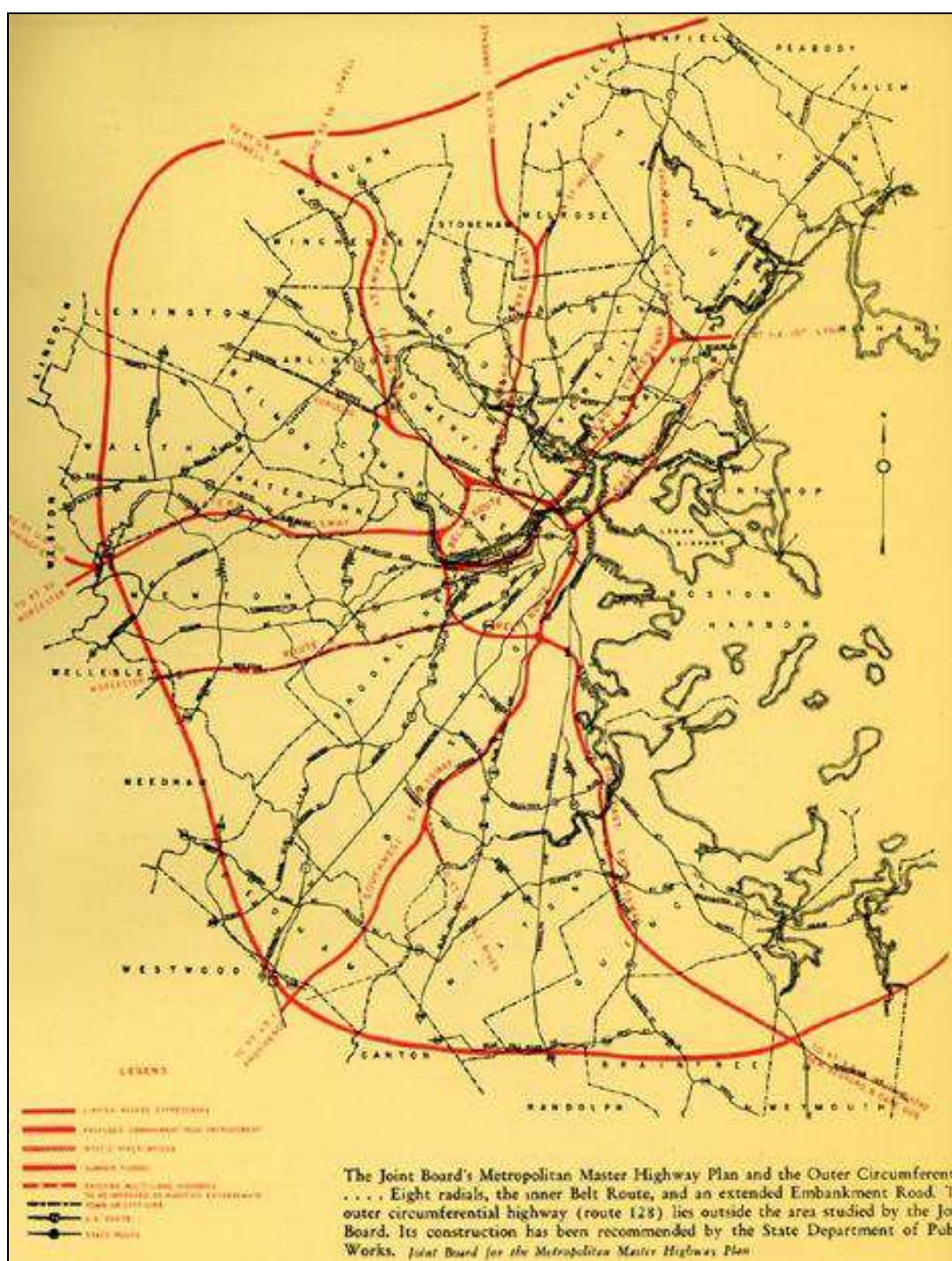
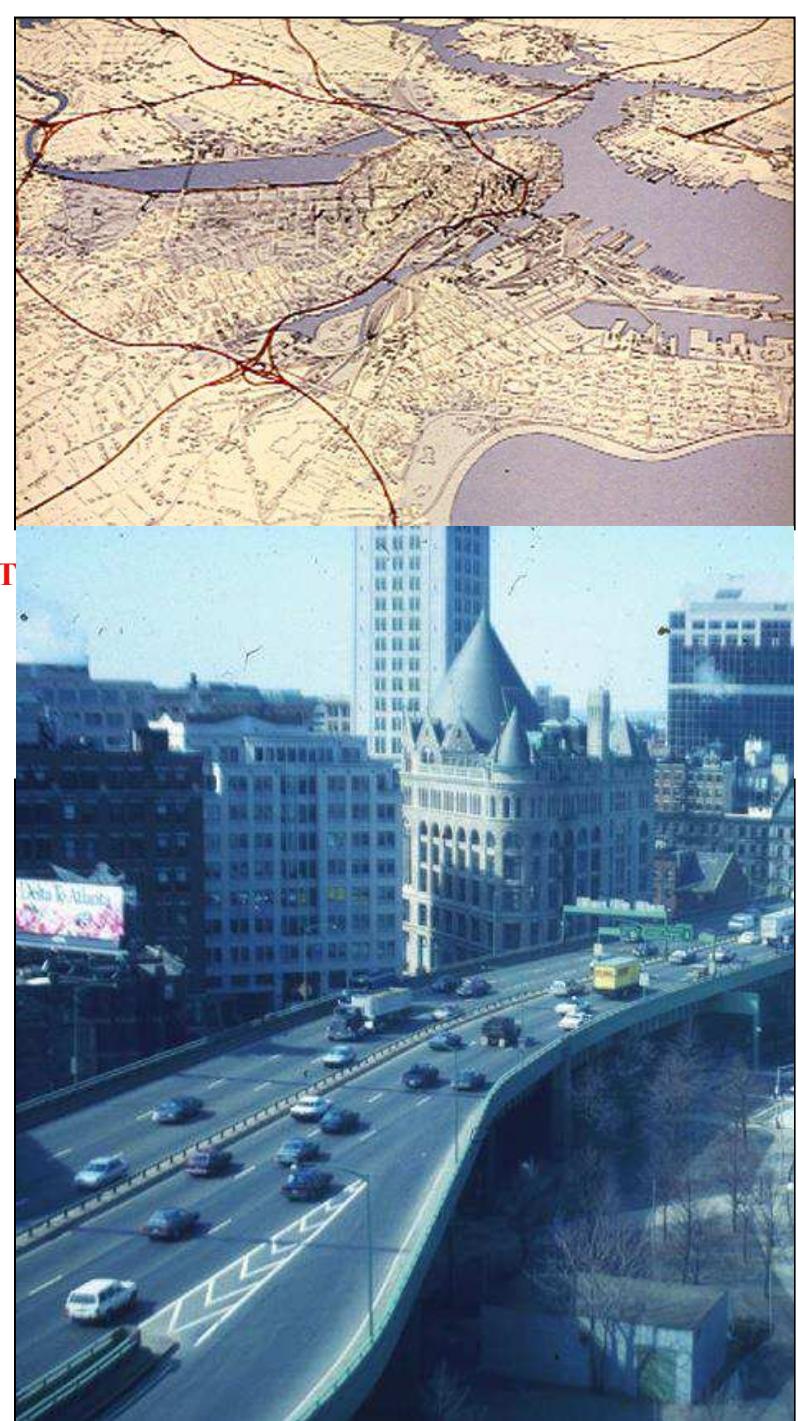


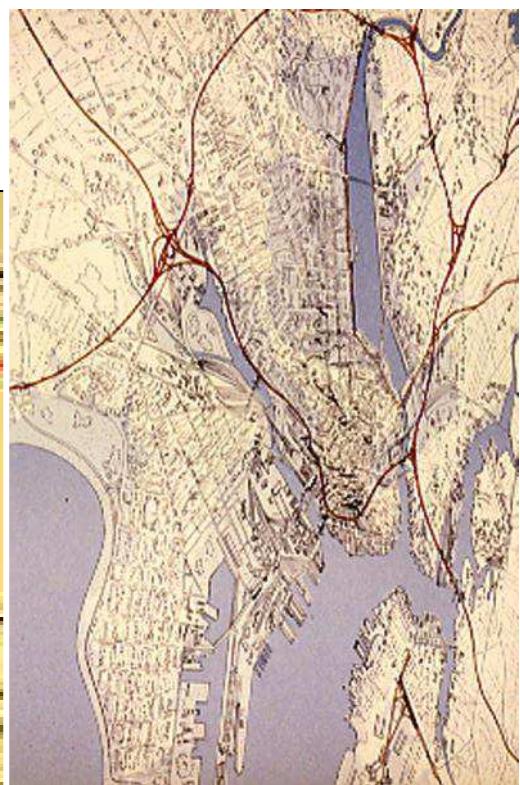
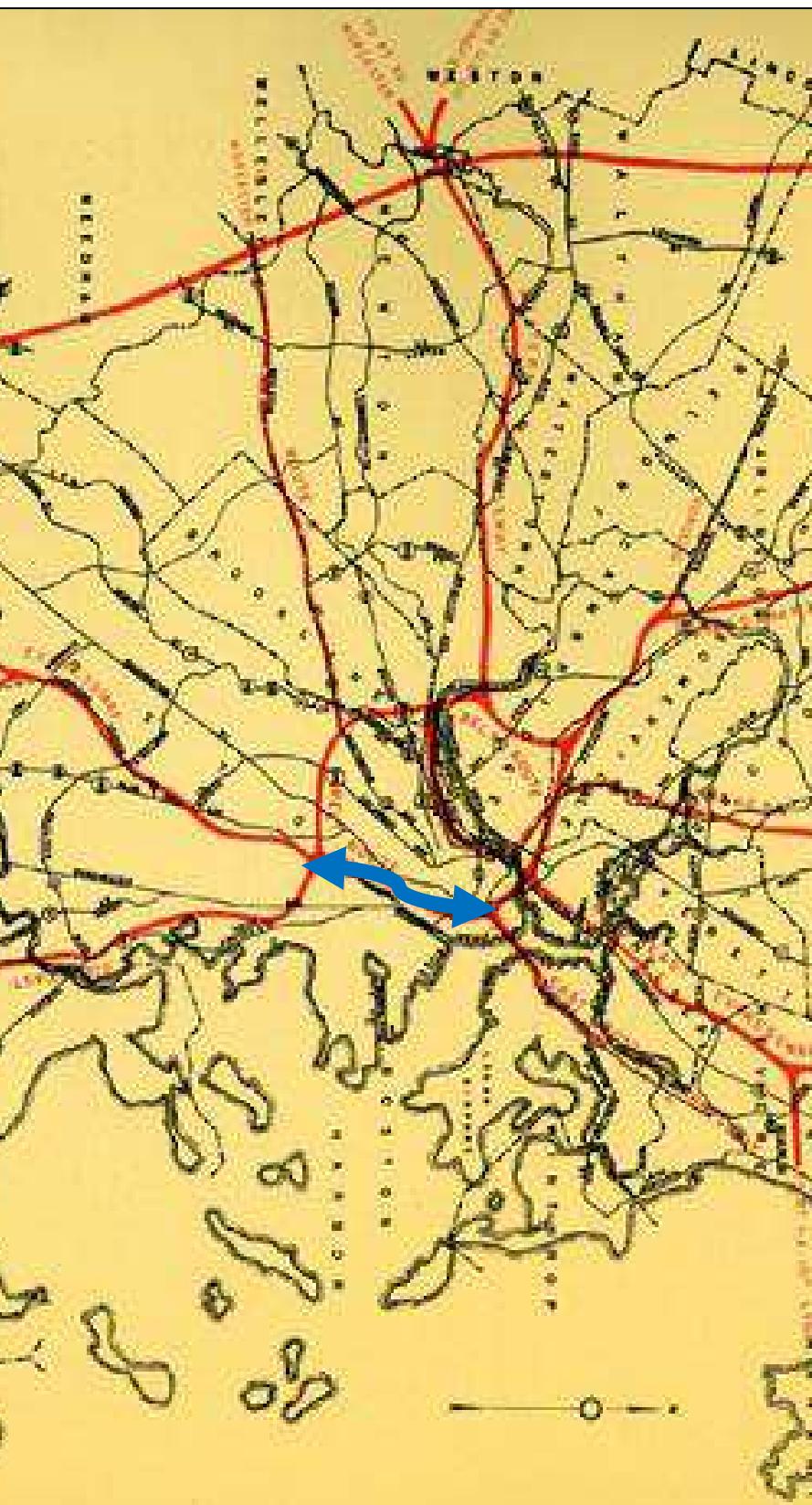
It came to be called "The Distressway" & "the longest parking lot in the world"



Boston's 'Big Dig': The Sinking – ***and Widening*** – of an Elevated Highway & its Replacement with a “Greenway”



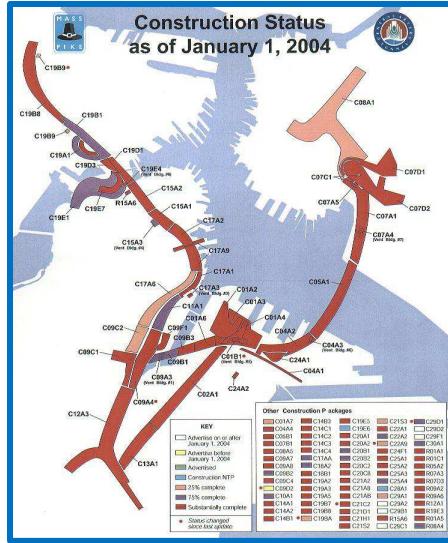




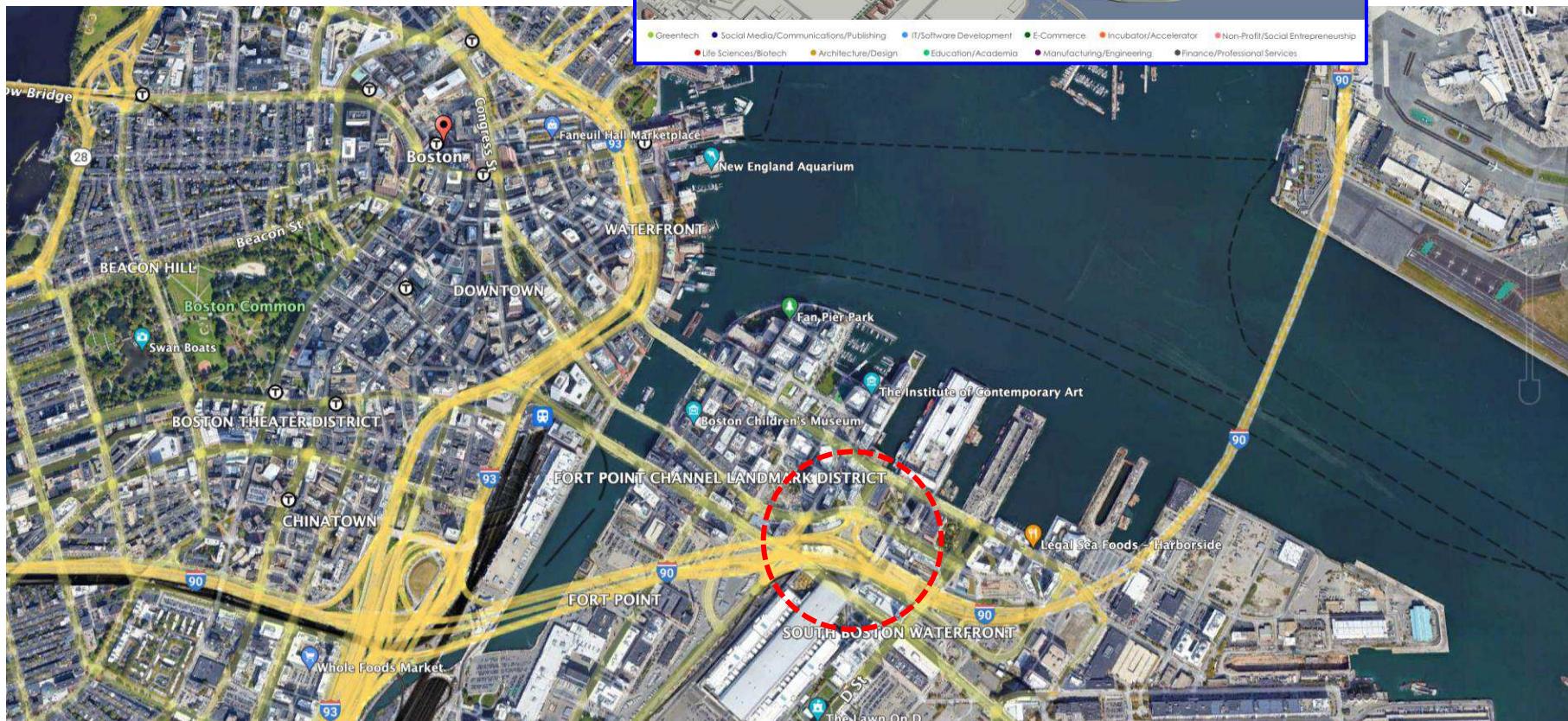


Construction Status as of January 1, 2004

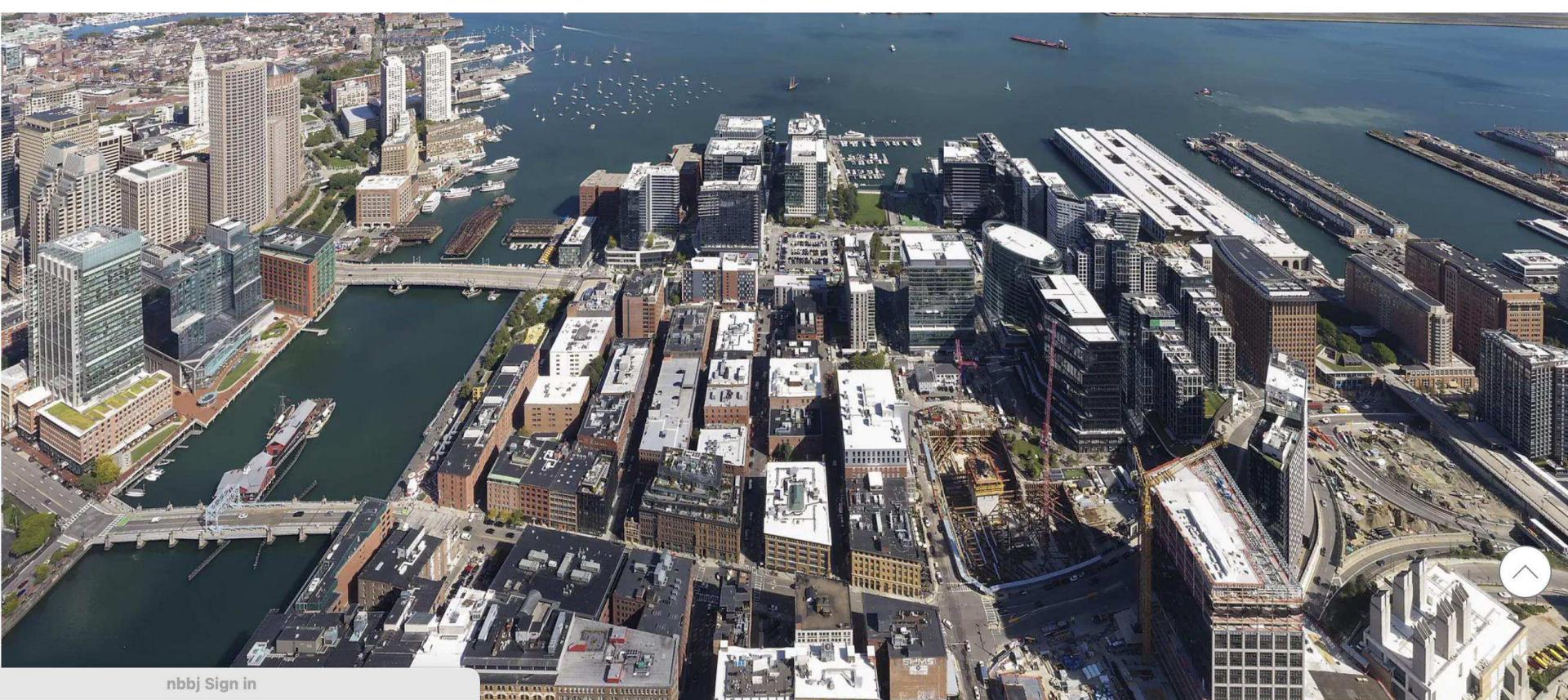




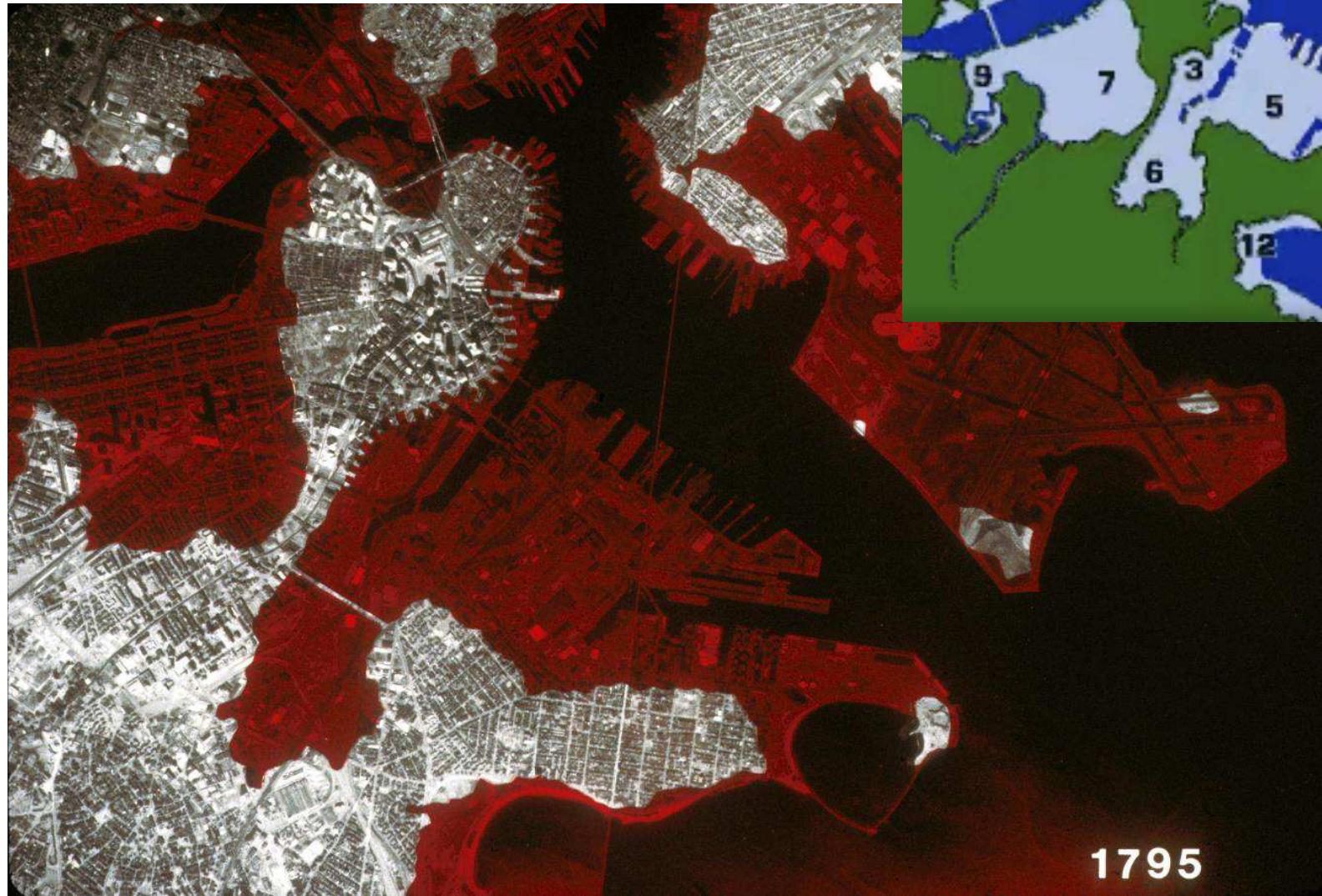
Produced a badly needed second tunnel to the airport and initiated the Seaport Innovation District

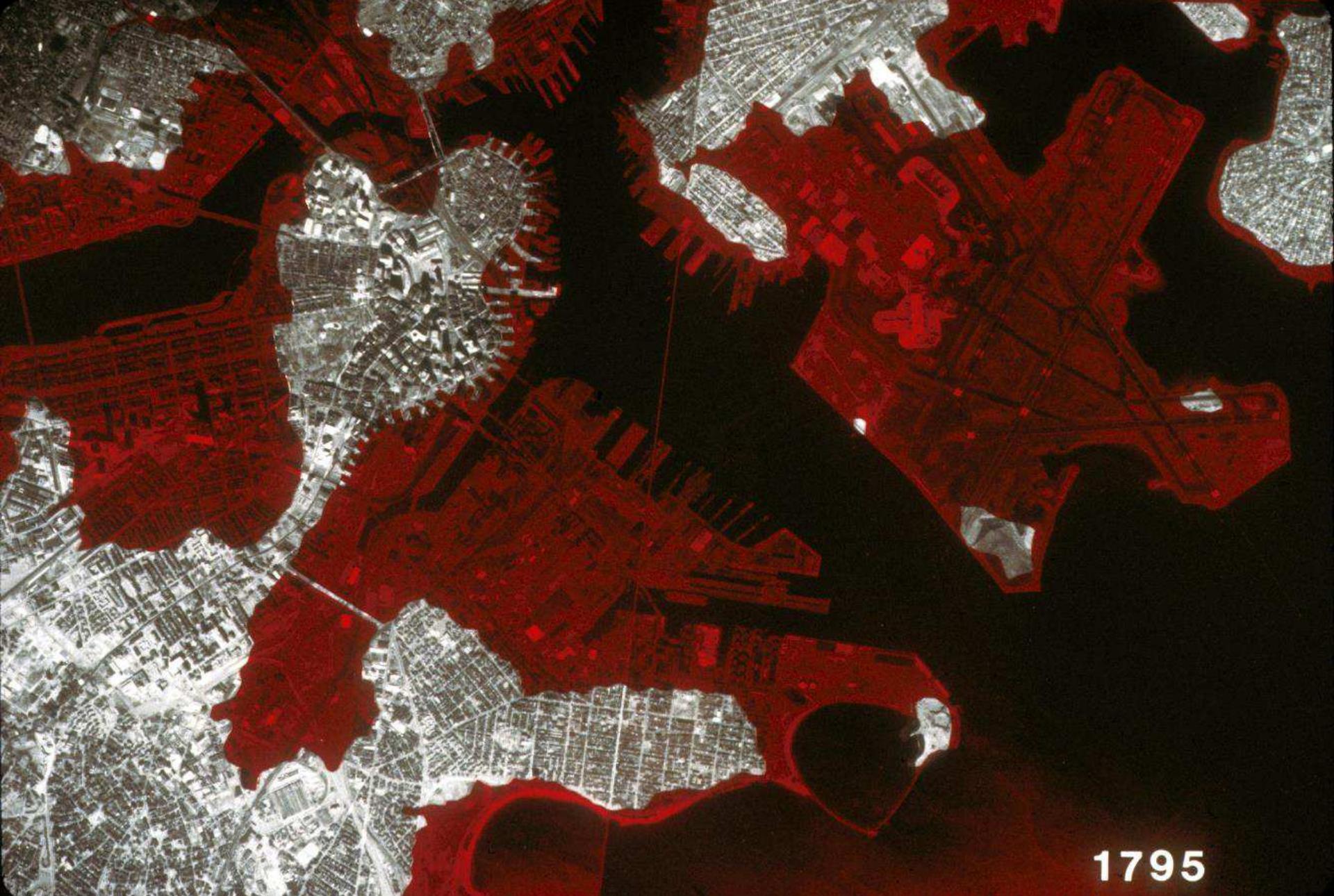


Boston Seaport Innovation District

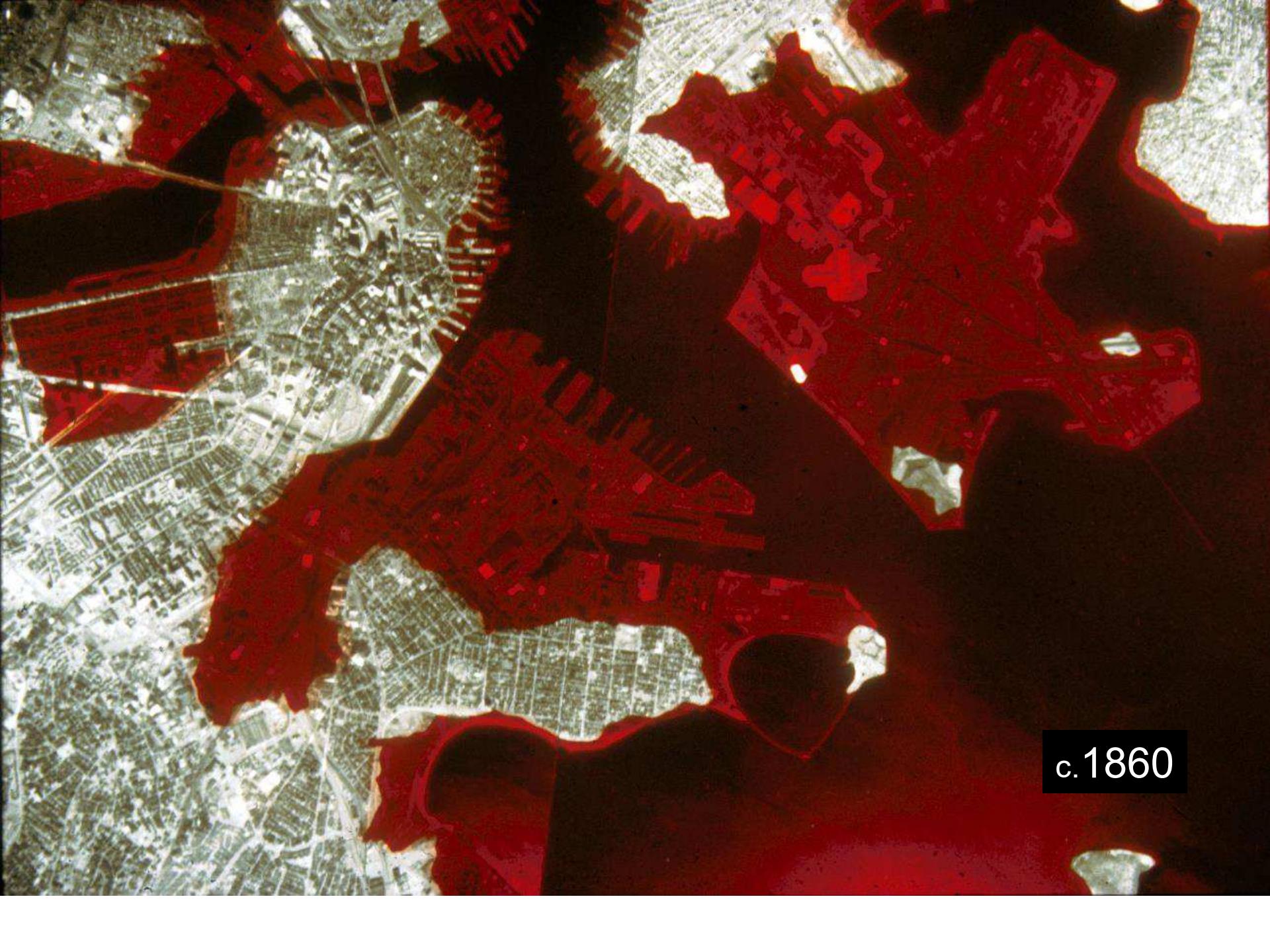


Boston's History of Land Making





1795



c.1860



c. 1880



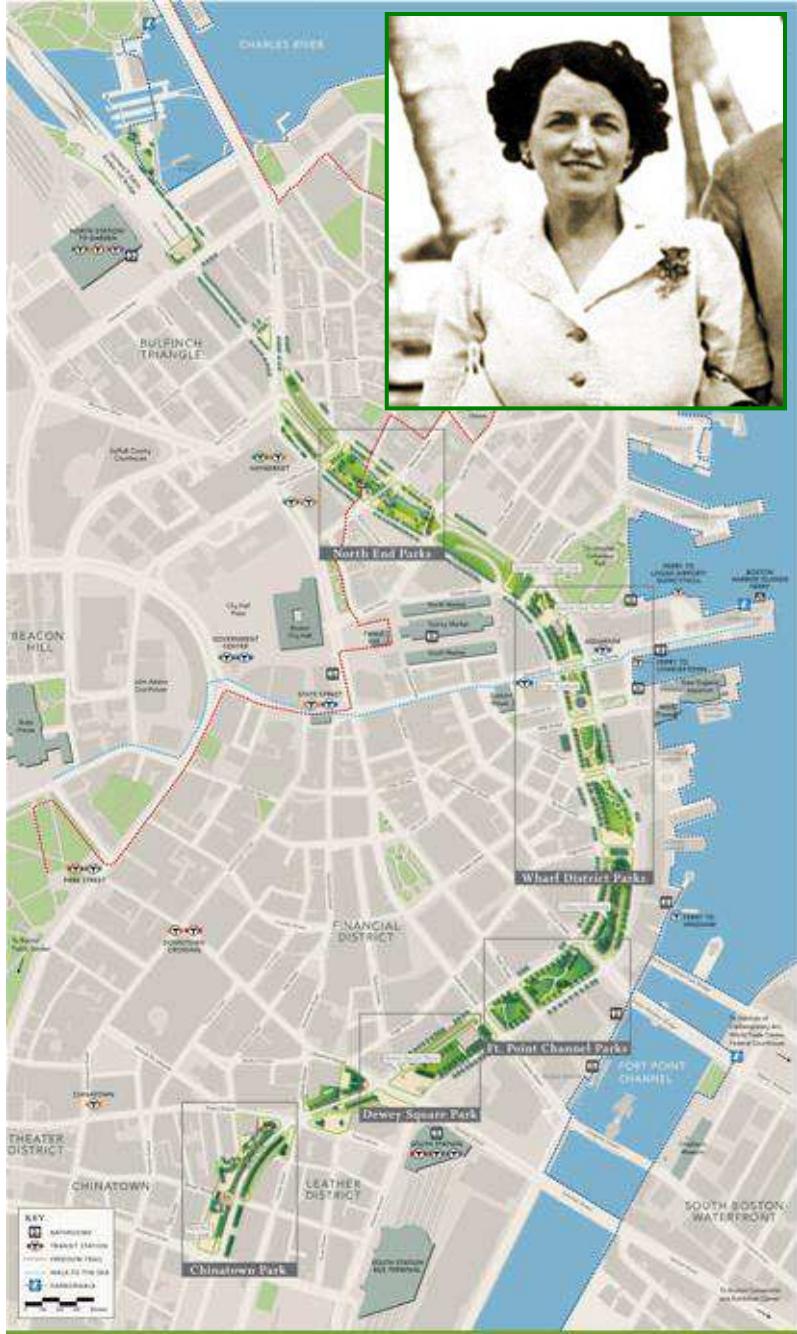
c.1895



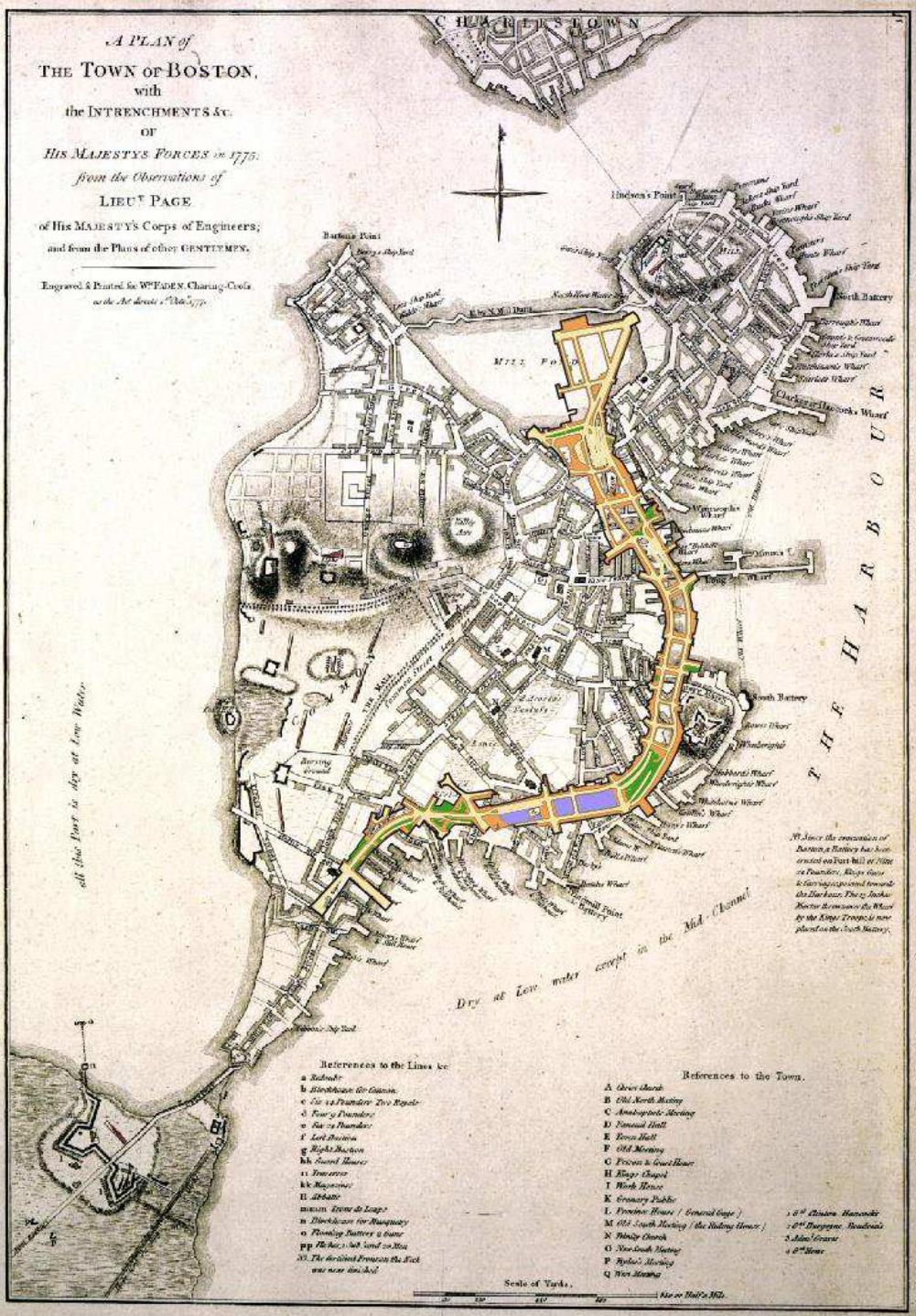
c.1925

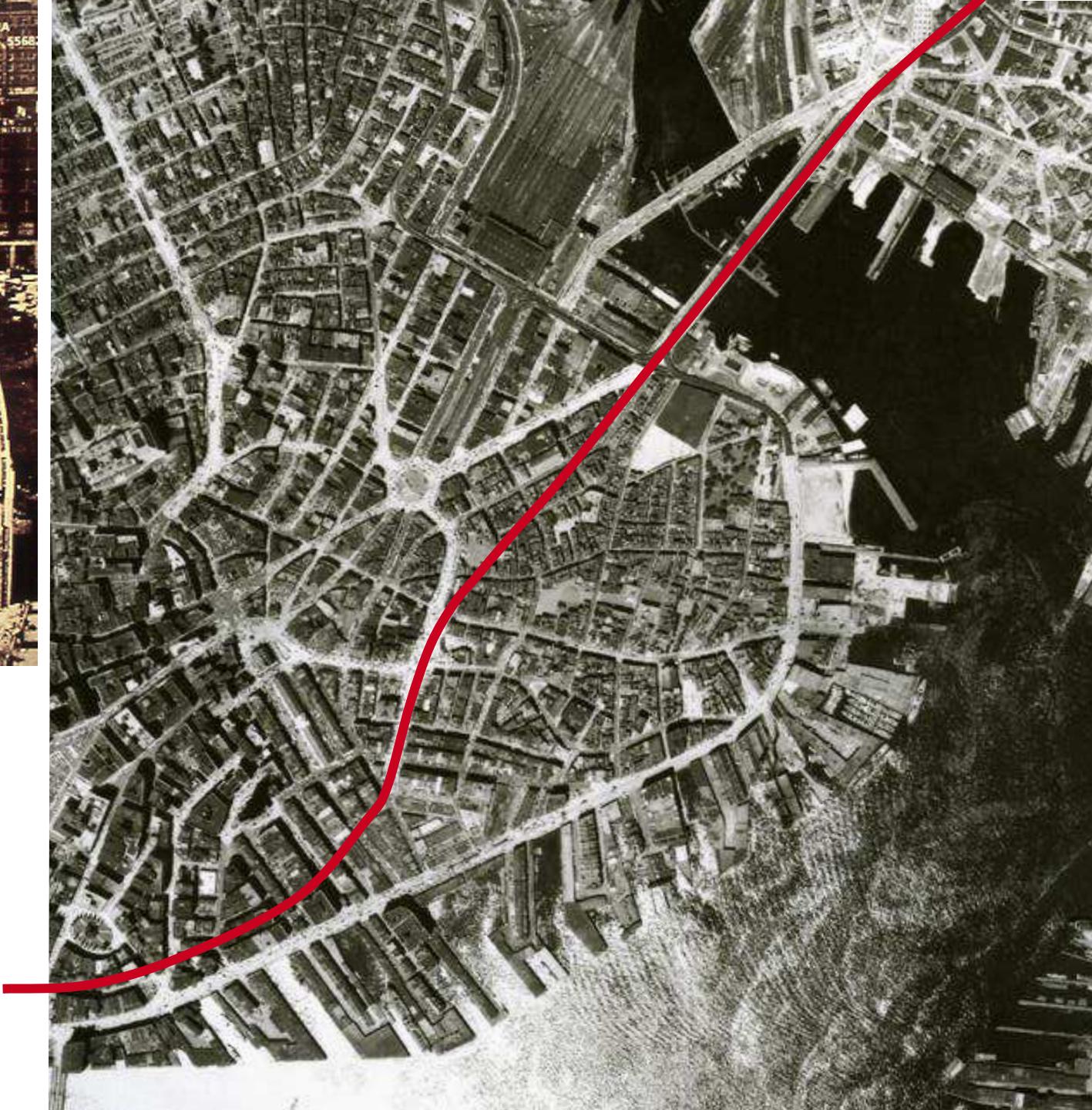
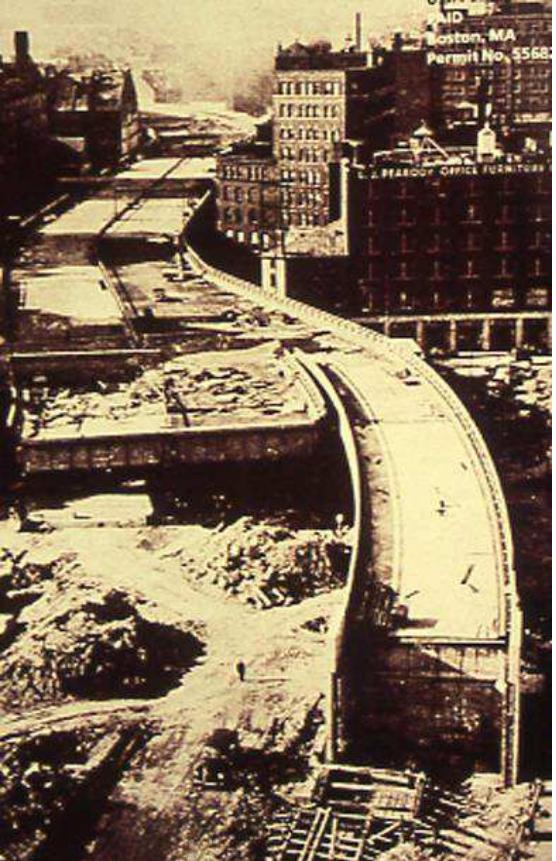


Today

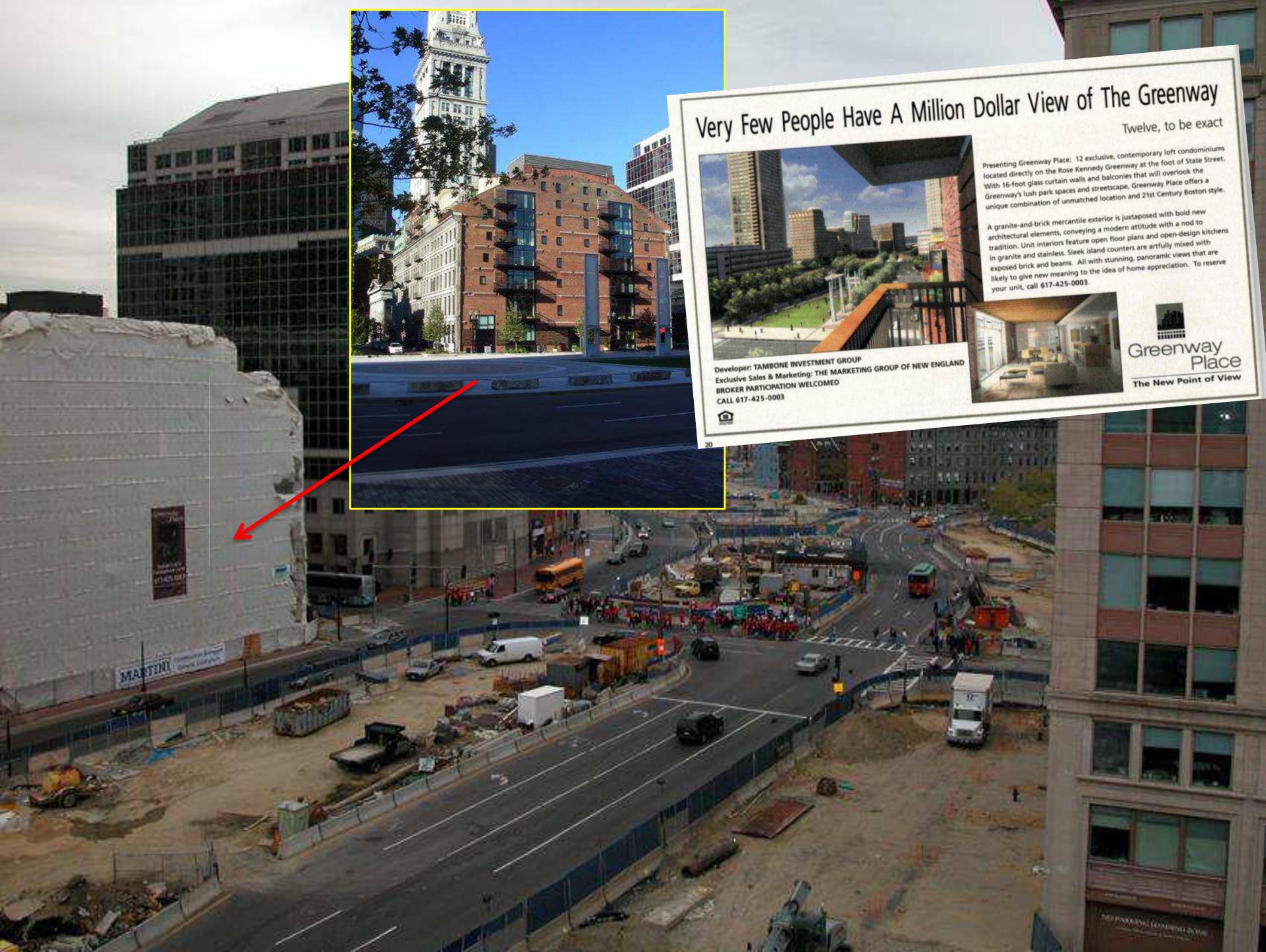


The Rose Fitzgerald Kennedy Greenway









Very Few People Have A Million Dollar View of The Greenway

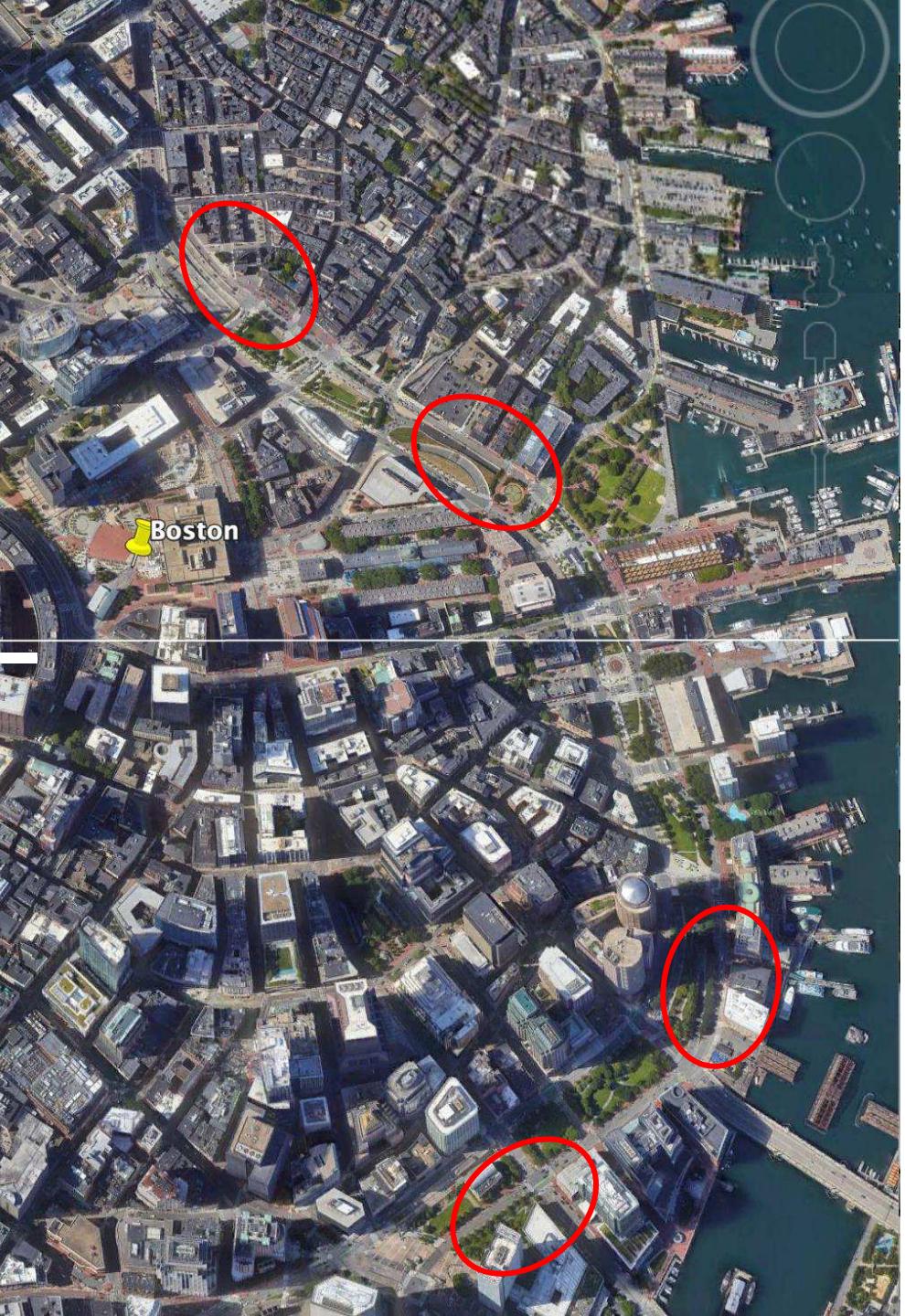
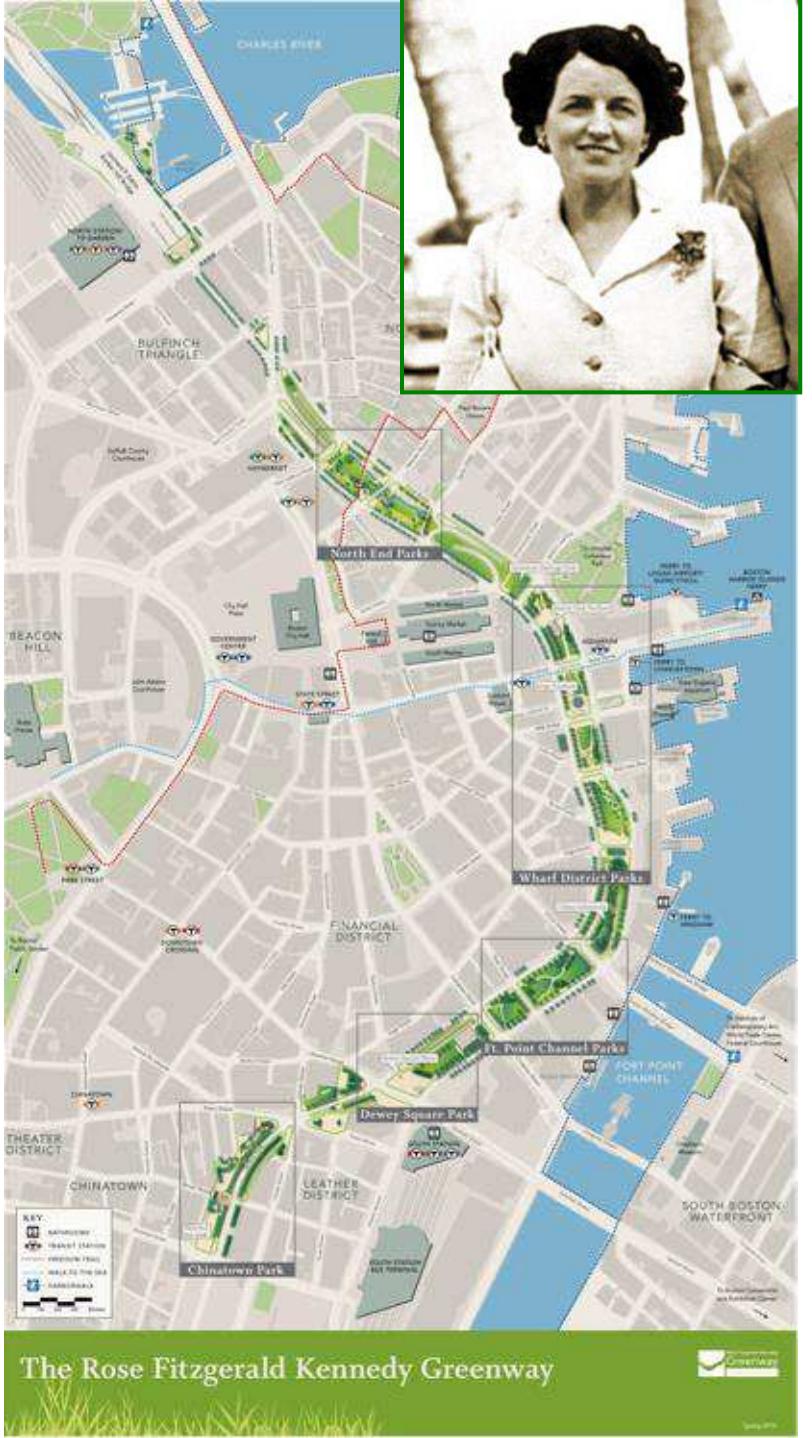
Twelve, to be exact

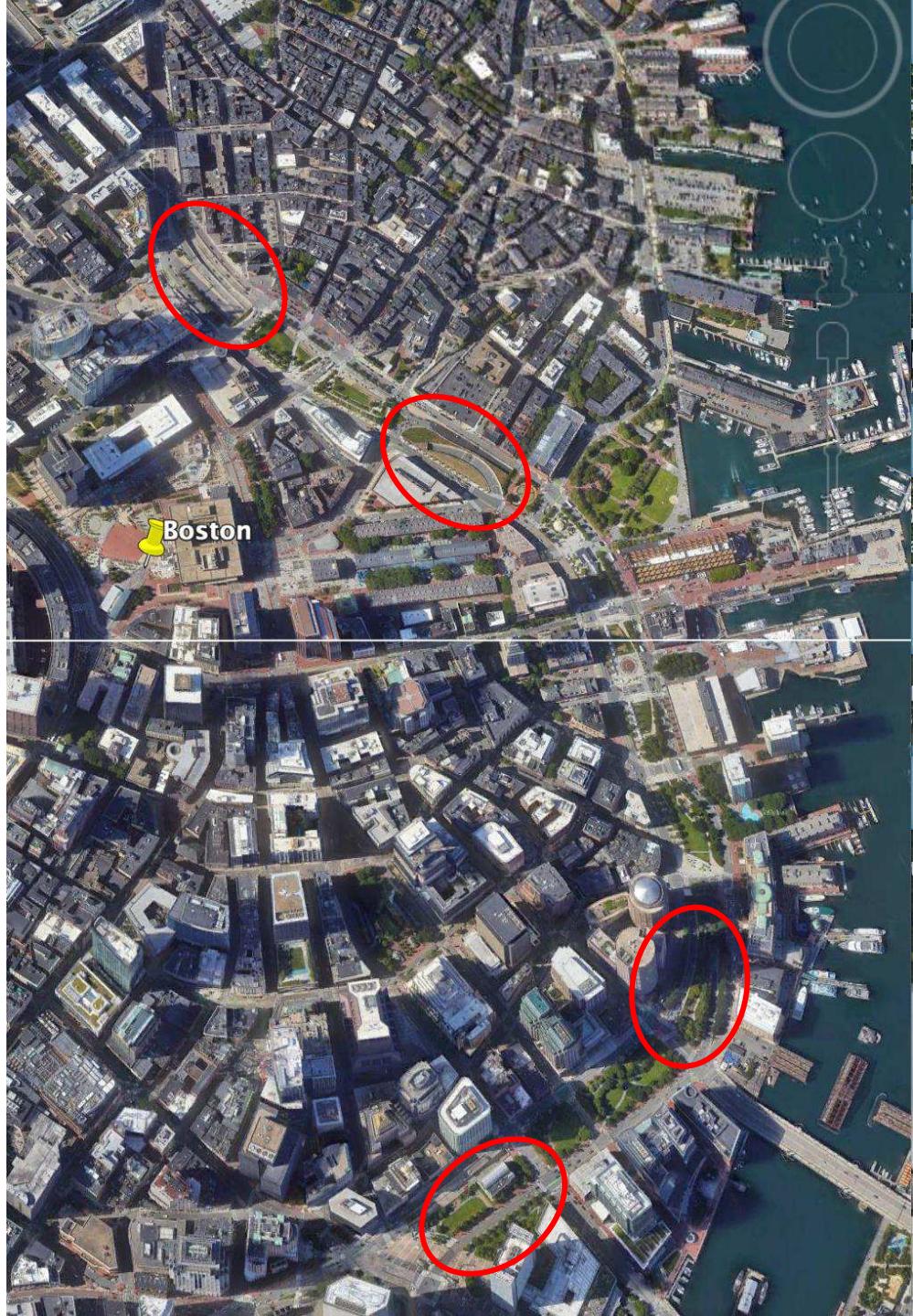
Presenting Greenway Place: 12 exclusive, contemporary loft condominiums located directly on the Rose Kennedy Greenway at the foot of State Street. With 16-foot glass curtain walls and balconies that will overlook the Greenway's lush park spaces and streetscape, Greenway Place offers a unique combination of unmatched location and 21st Century Boston style.

A granite-and-brick mercantile exterior is juxtaposed with bold new architectural elements, conveying a modern attitude with a nod to tradition. Unit interiors feature open floor plans and open-design kitchens in granite and stainless. Sleek island counters are artfully mixed with exposed brick and beams. All with stunning, panoramic views that are likely to give new meaning to the idea of home appreciation. To reserve your unit, call 617-425-0003.

Developer: TAMBONE INVESTMENT GROUP
Exclusive Sales & Marketing: THE MARKETING GROUP OF NEW ENGLAND
Broker Participation Welcome
Call 617-425-0003

Greenway Place
The New Point of View

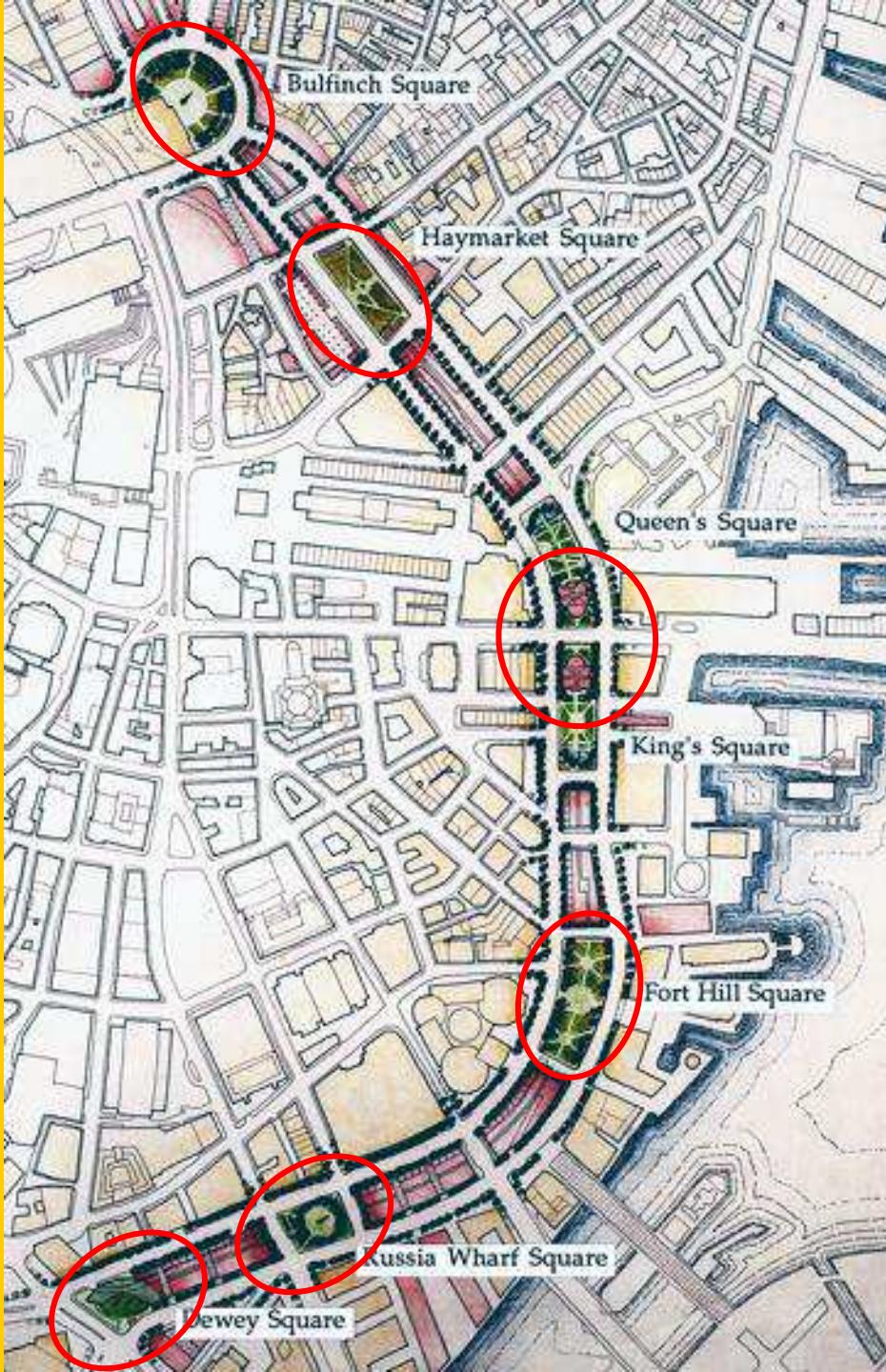
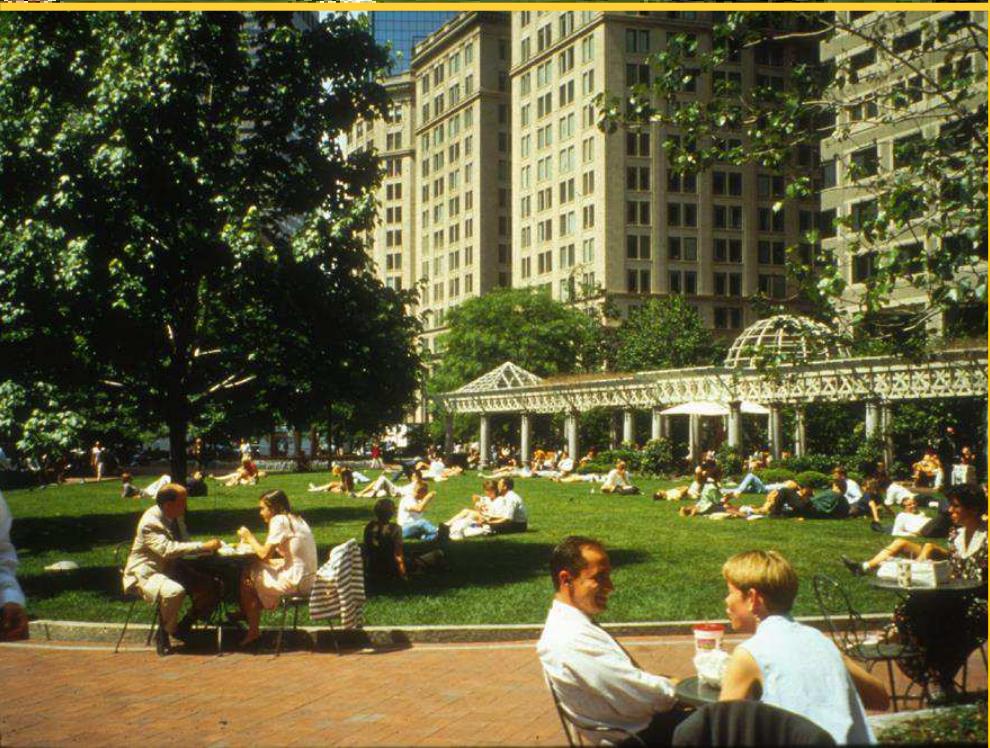








The ‘Six Copley (or Post Office) Squares’ Plan for the Central Artery





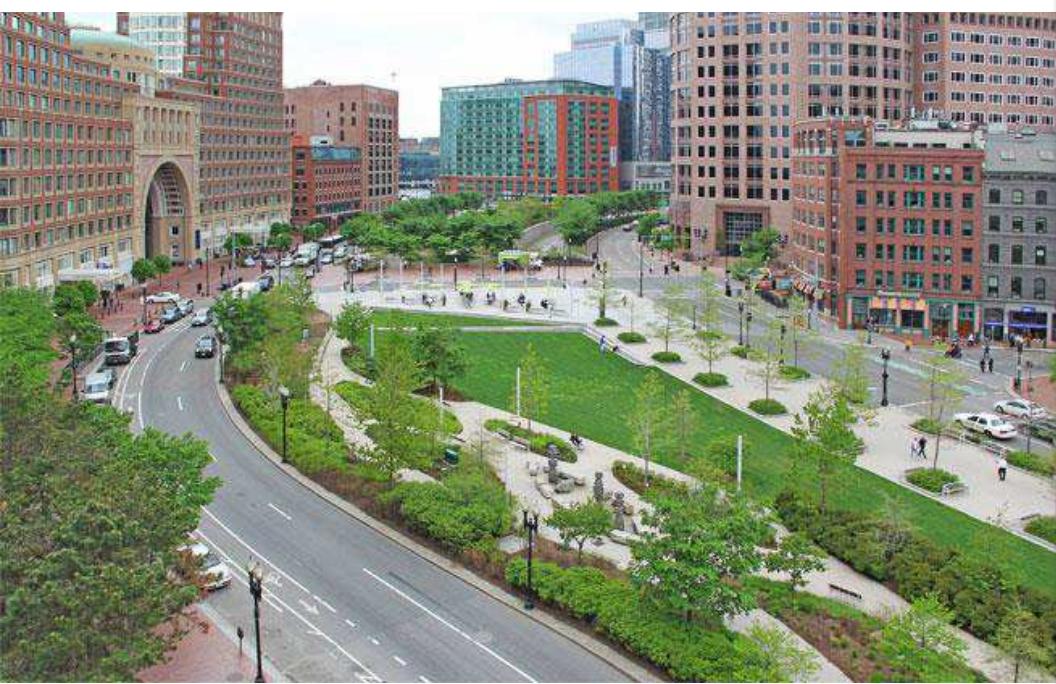


BEFORE



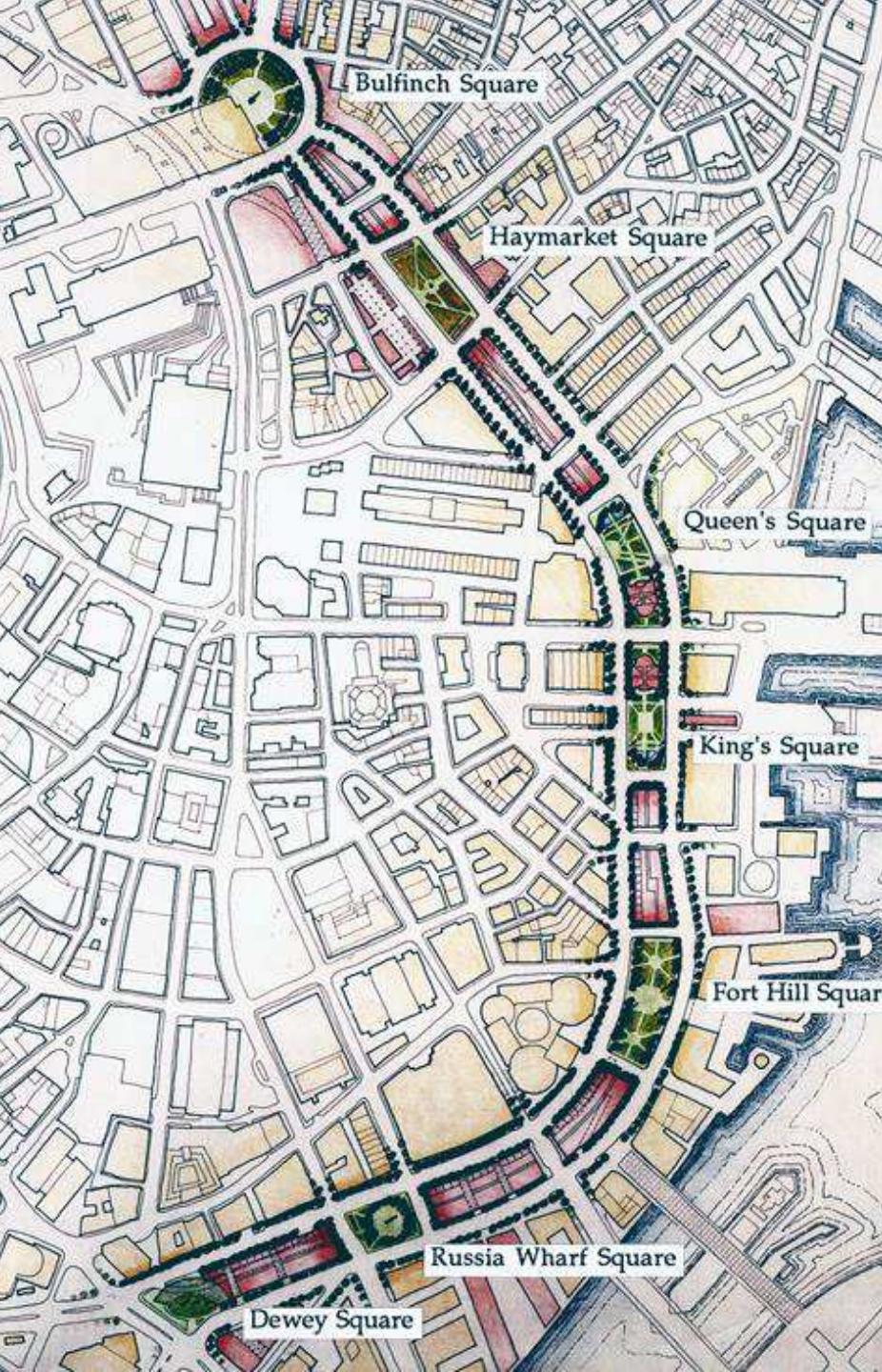
AFTER







Shanghai
Bund



Dewey Square

Russia Wharf Square

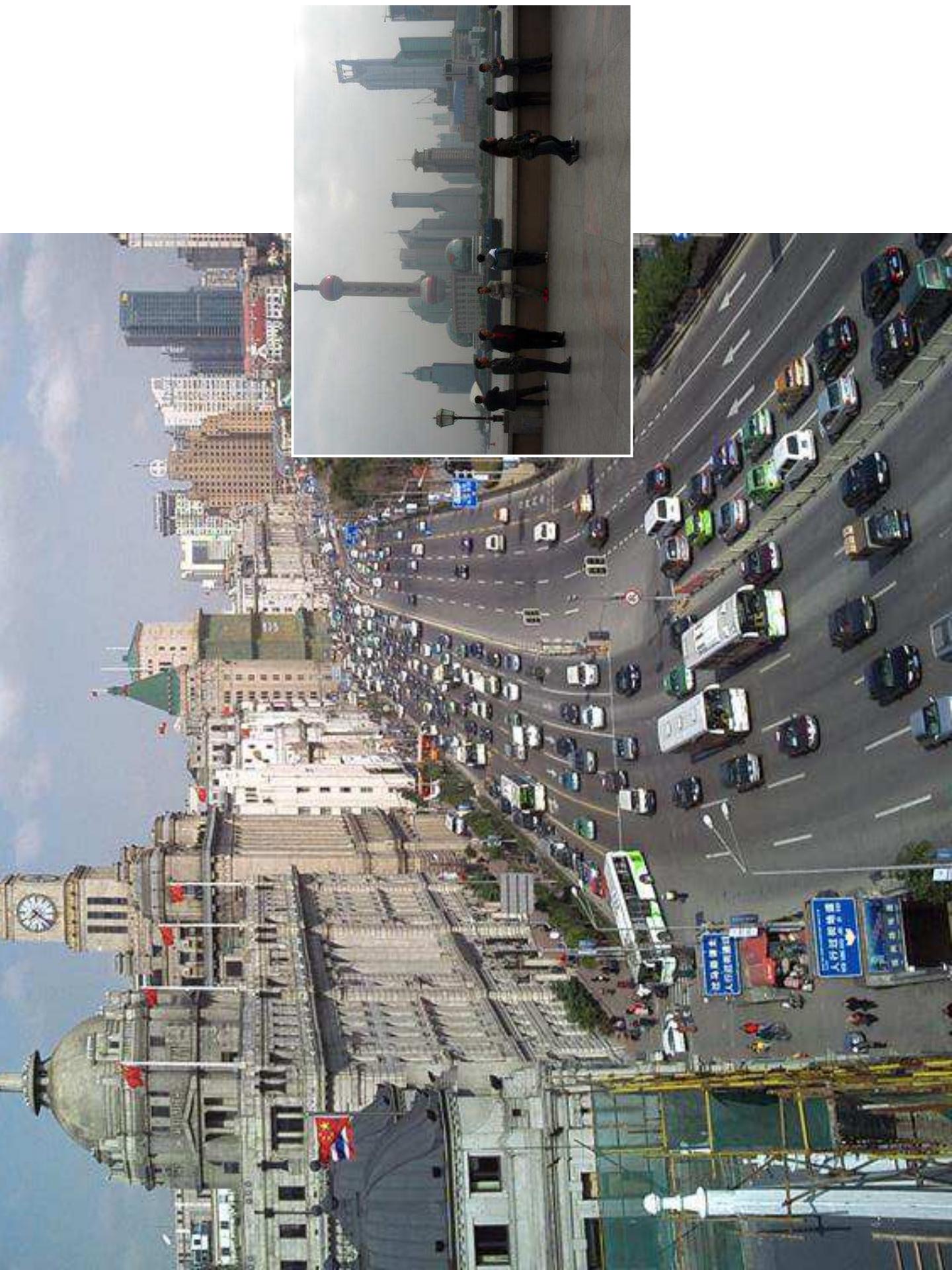
Reconstruction of the Bund, Shanghai

2007-2010

上海市外滩滨水区城市设计

the
外滩
Bund







← Public Space to be → Gained



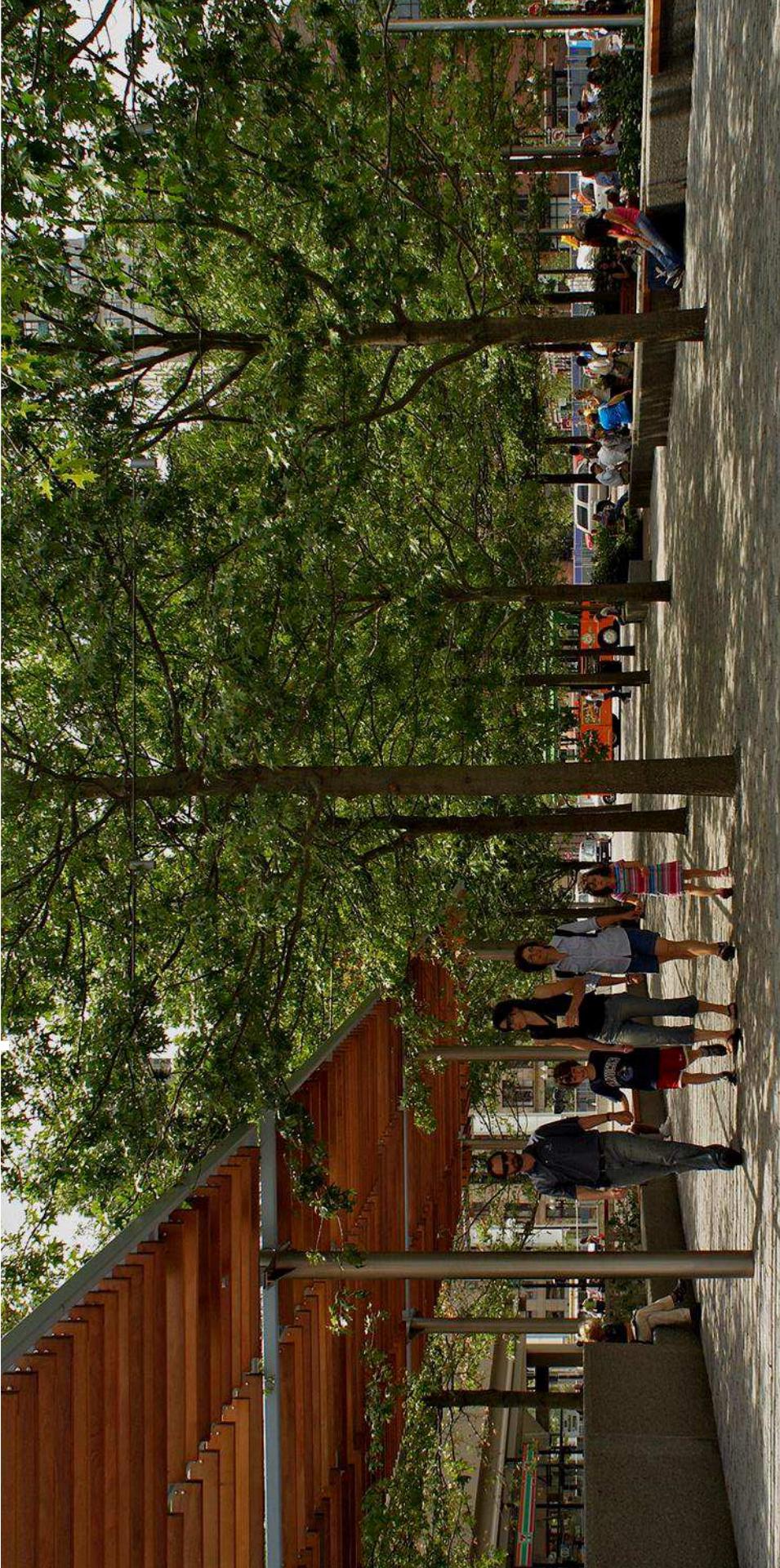
Cheonggyecheon River Restoration, Seoul, Korea

2002-2007

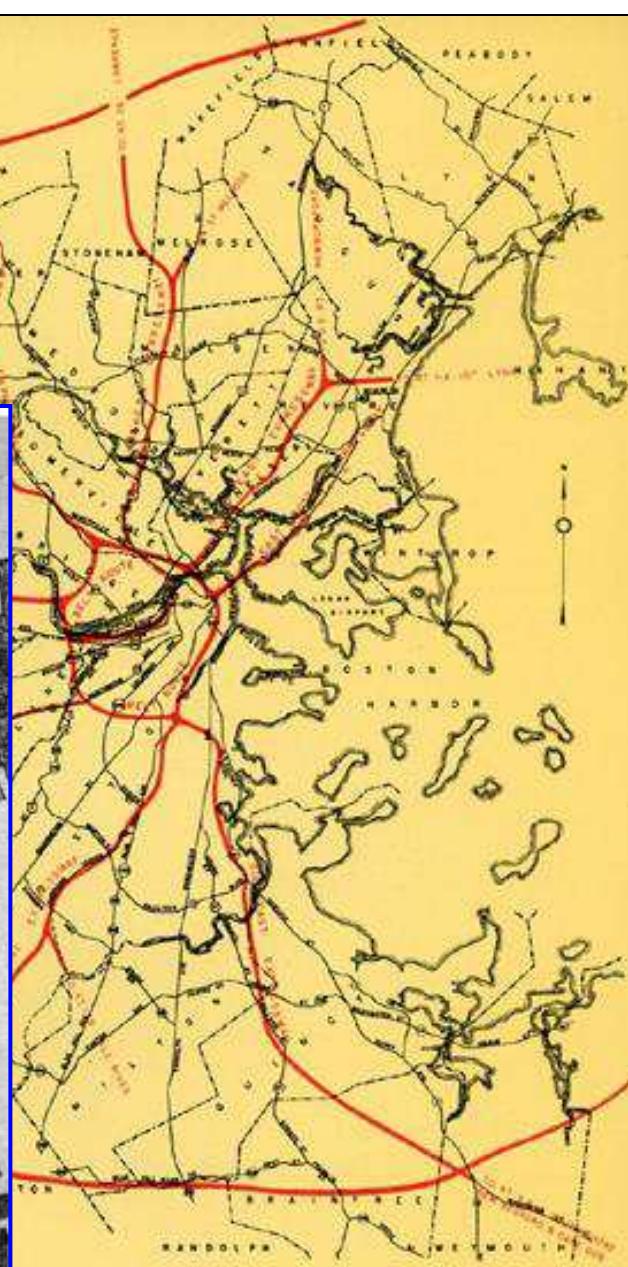
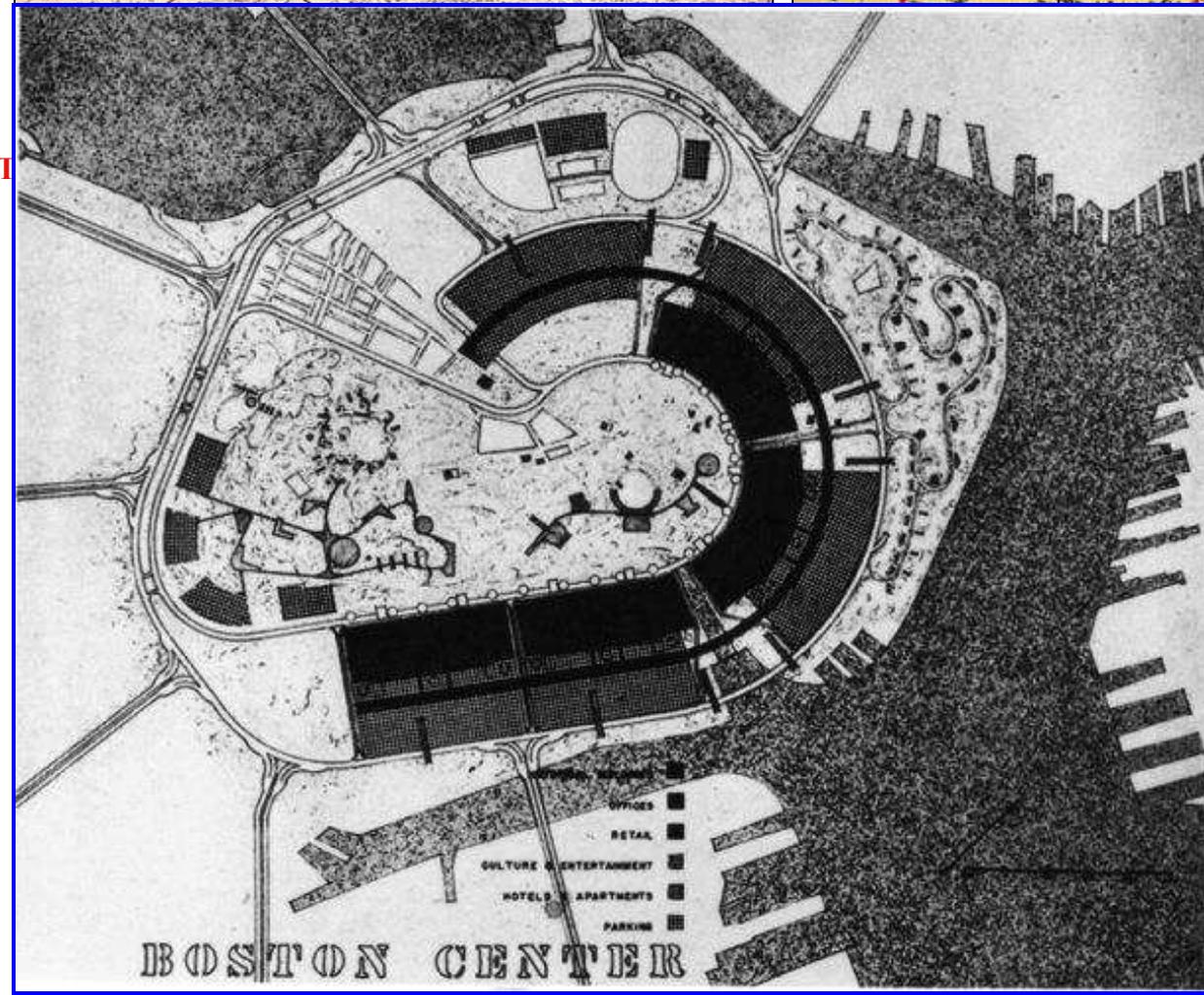
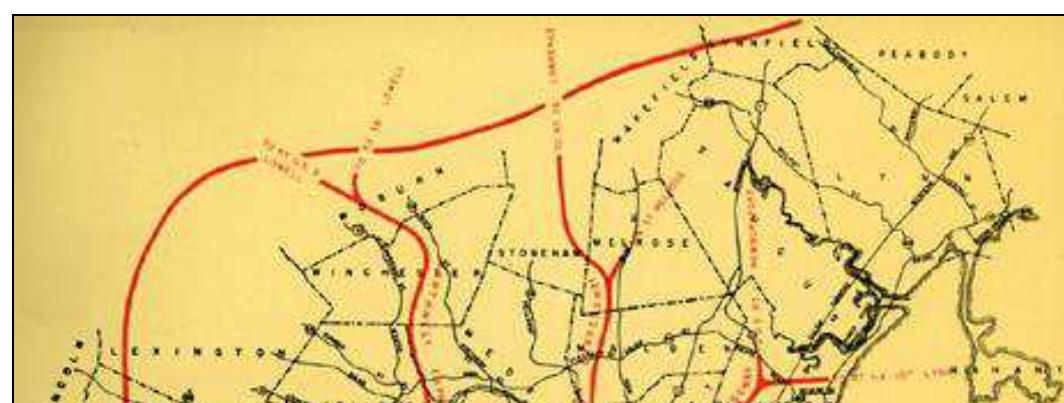
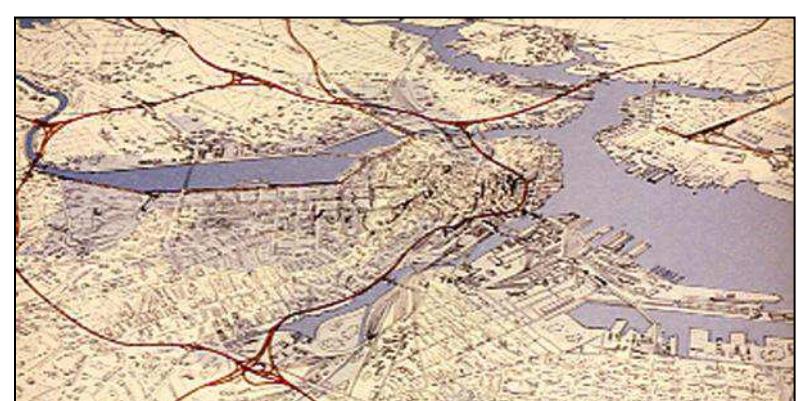






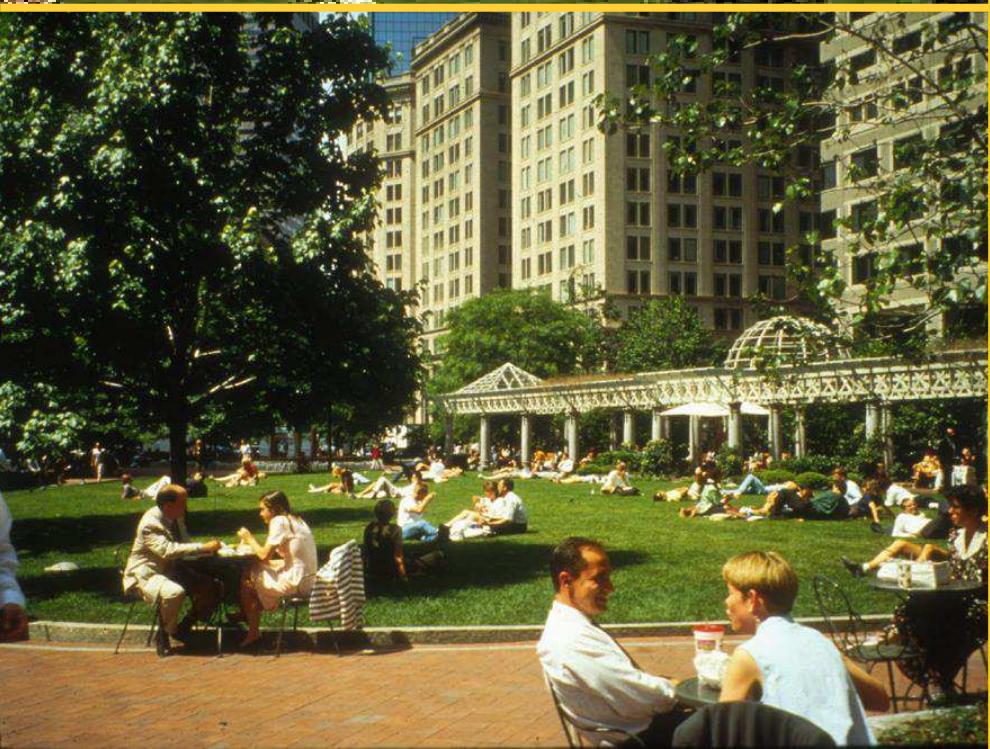






Joint Board's Metropolitan Master Highway Plan and the Outer Circumferential Eight Radials, the inner Belt Route, and an extended Embankment Road. The circumferential highway (route 128) lies outside the area studied by the Joint Board for the Metropolitan Master Highway Plan.



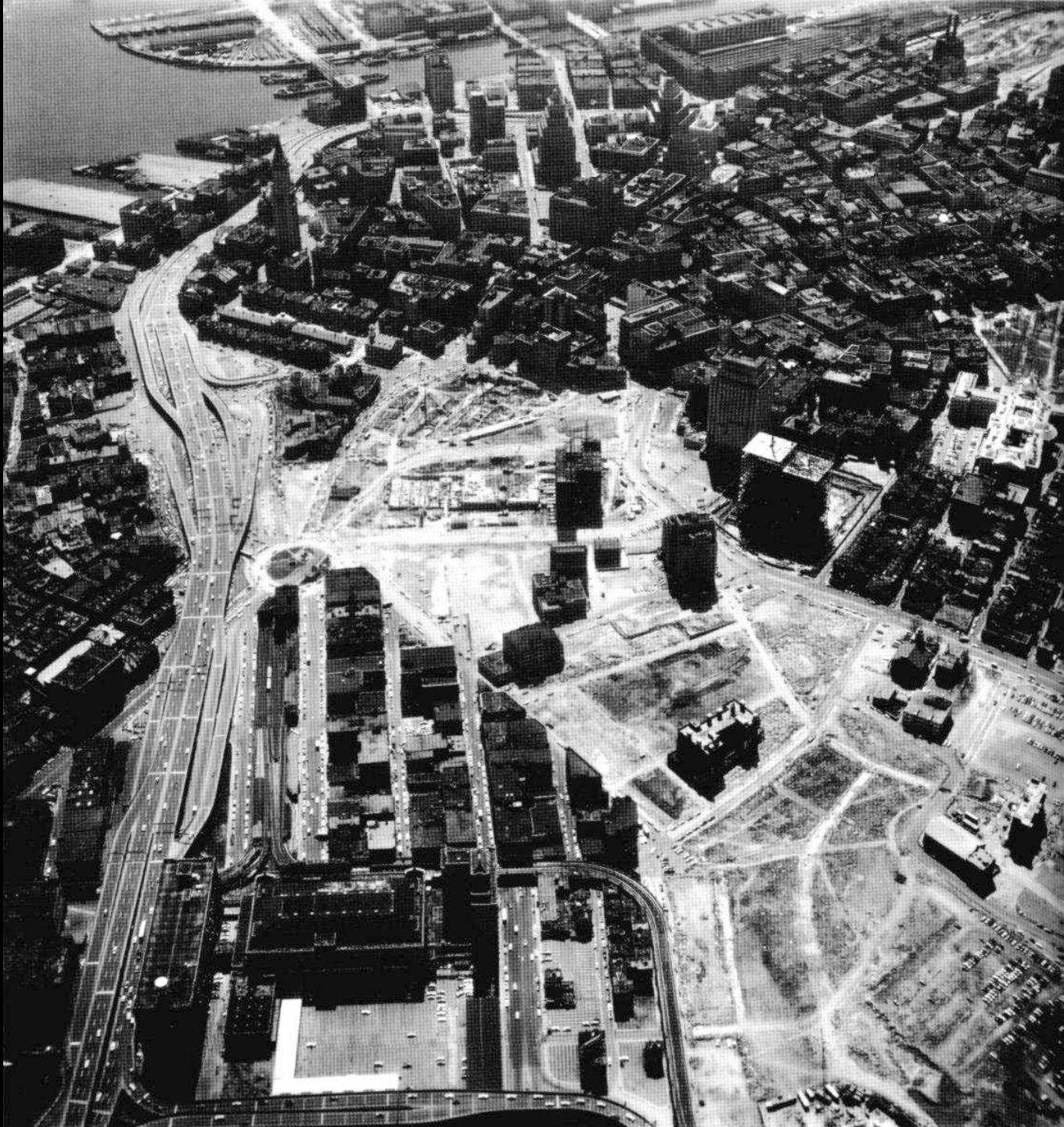


Mid-20th Century Boston

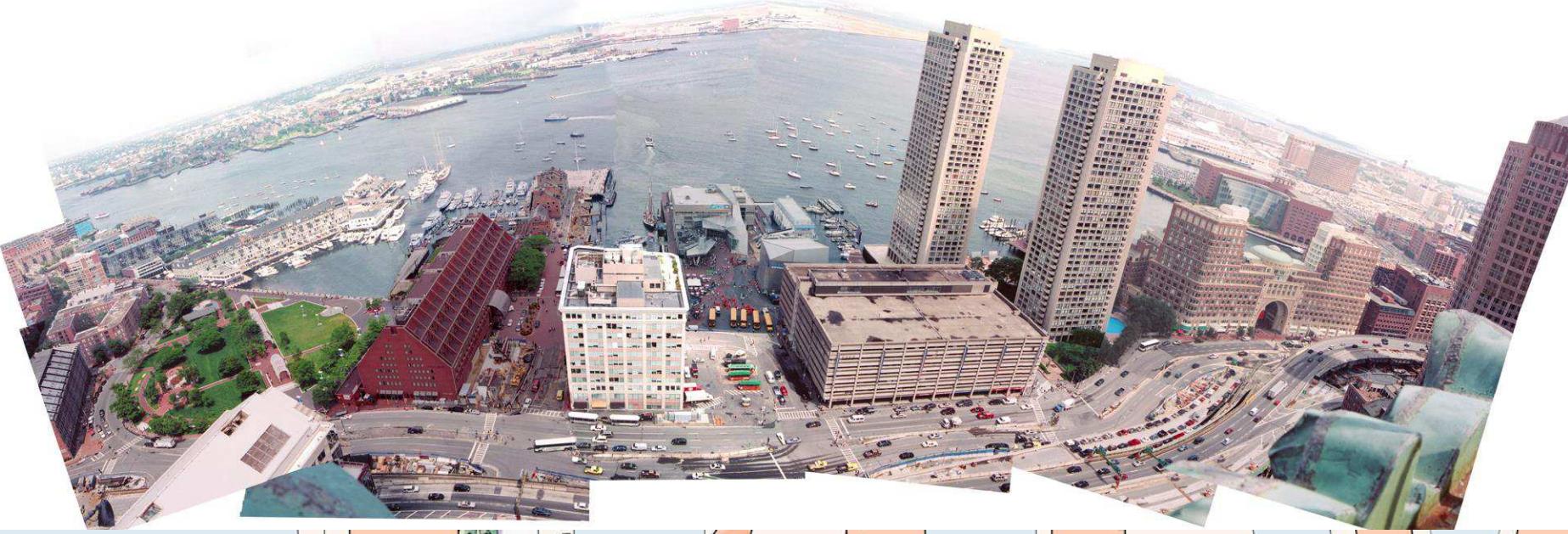
Central Artery

Urban Renewal

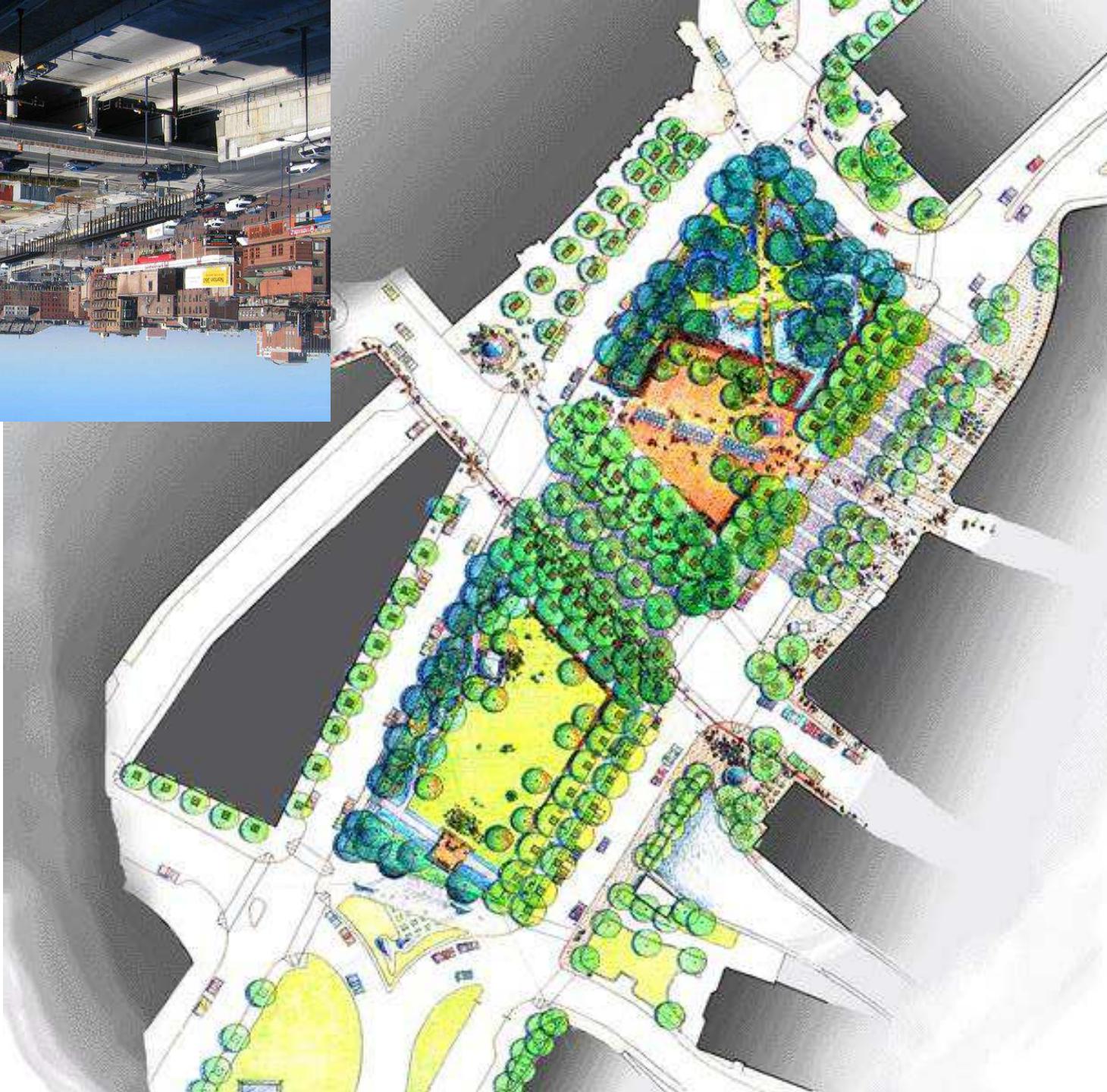
The Big Dig

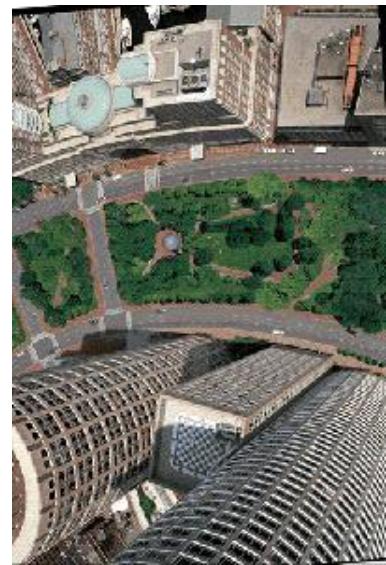


- 1964 image of Boston,
construction in the Government
Center area

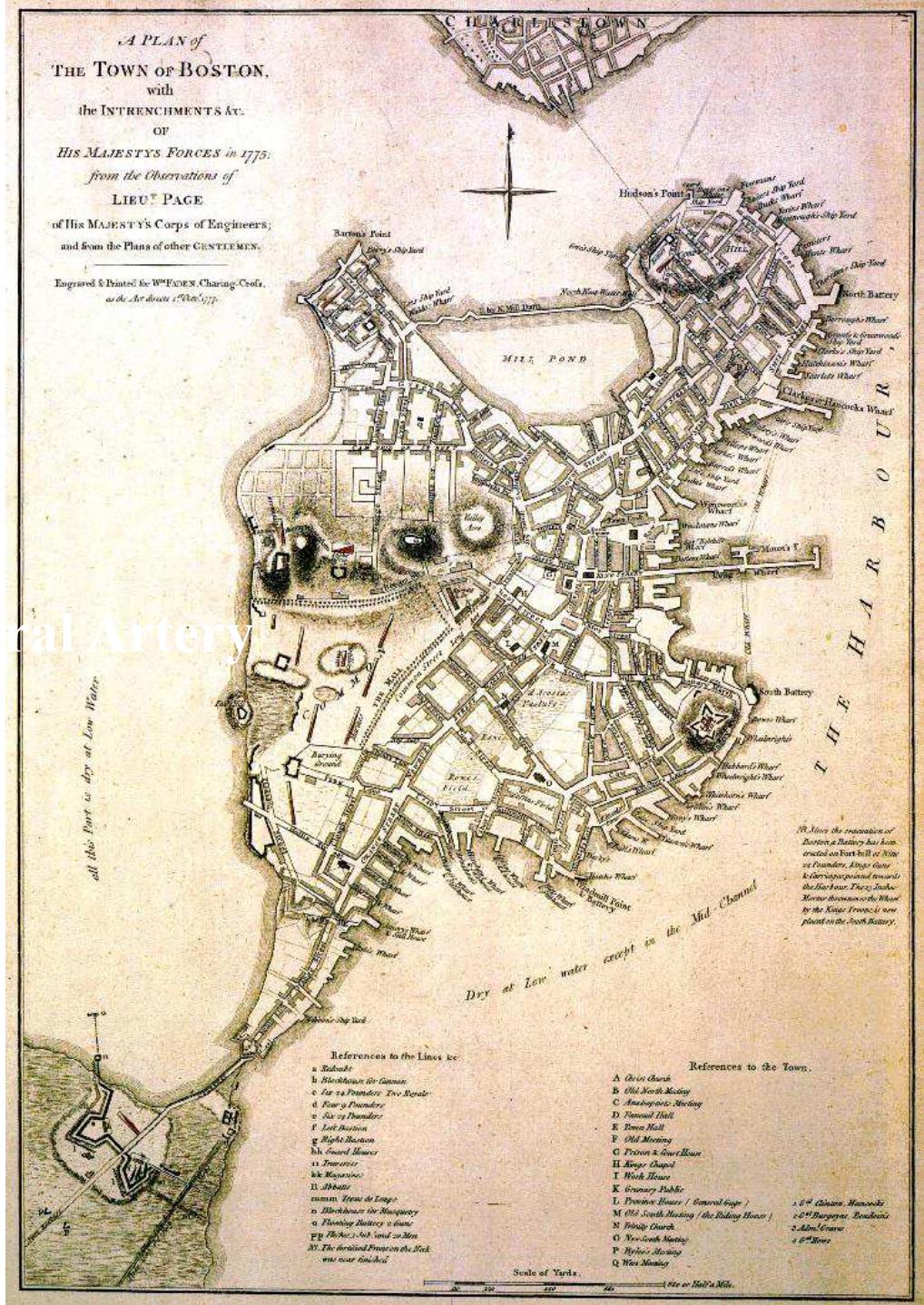
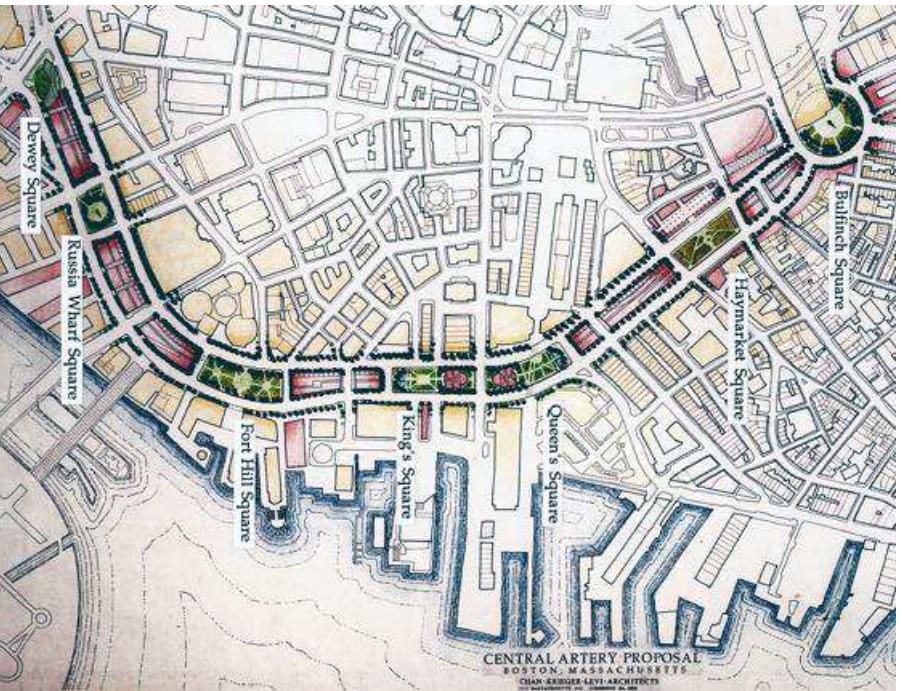
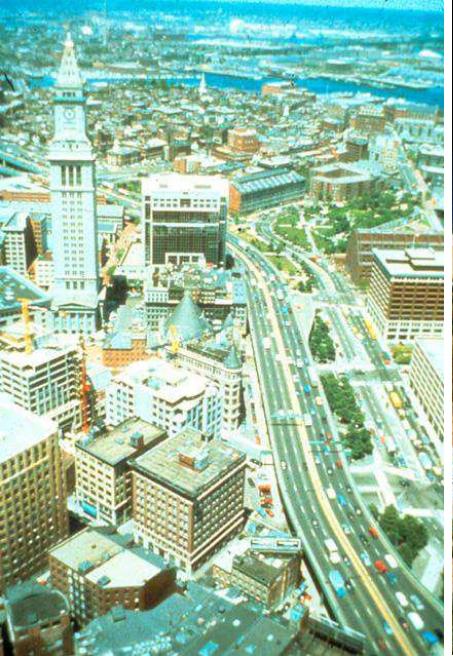


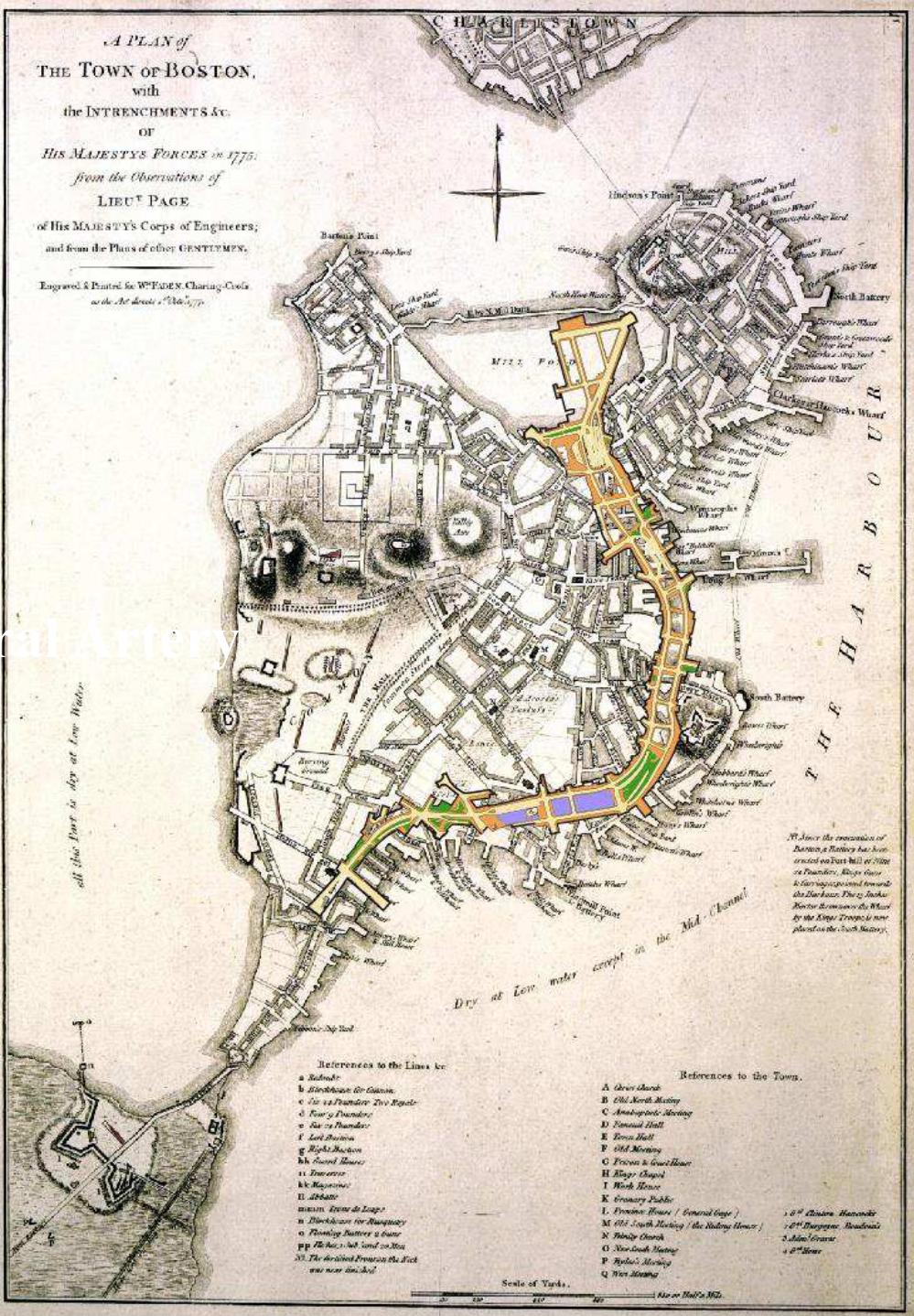
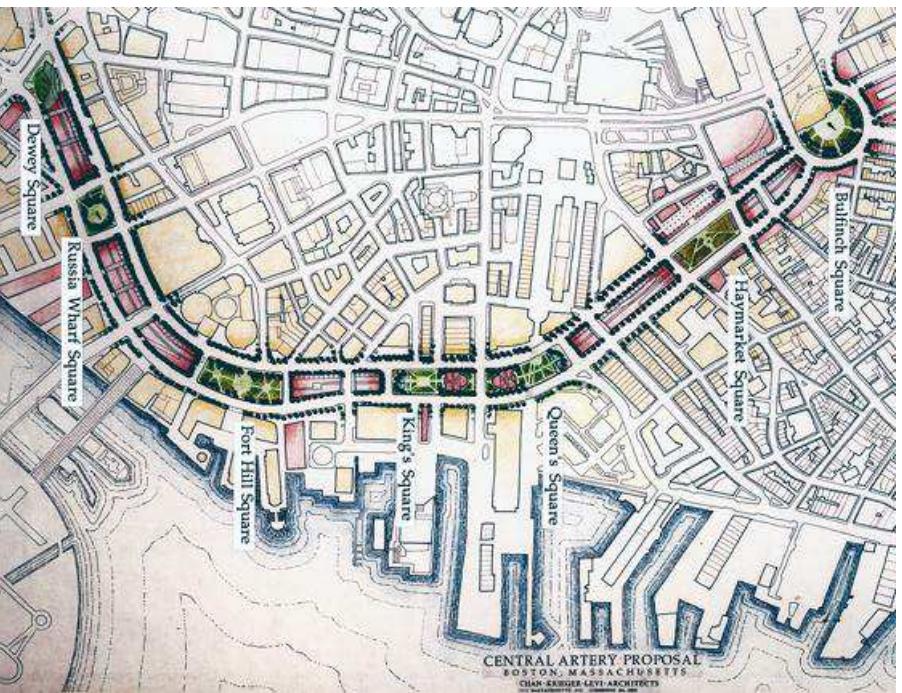


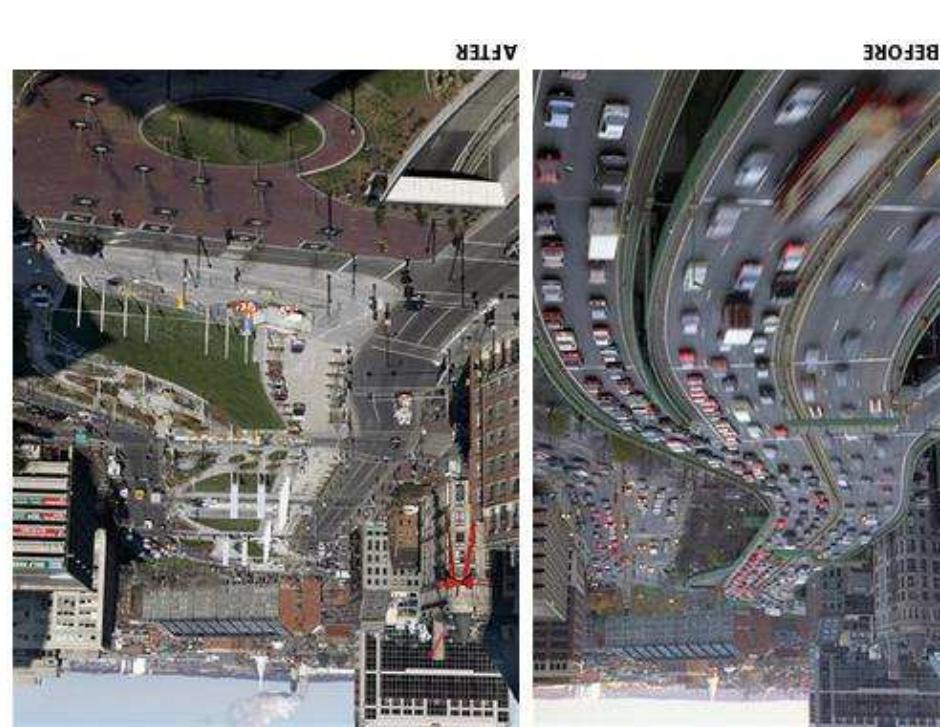
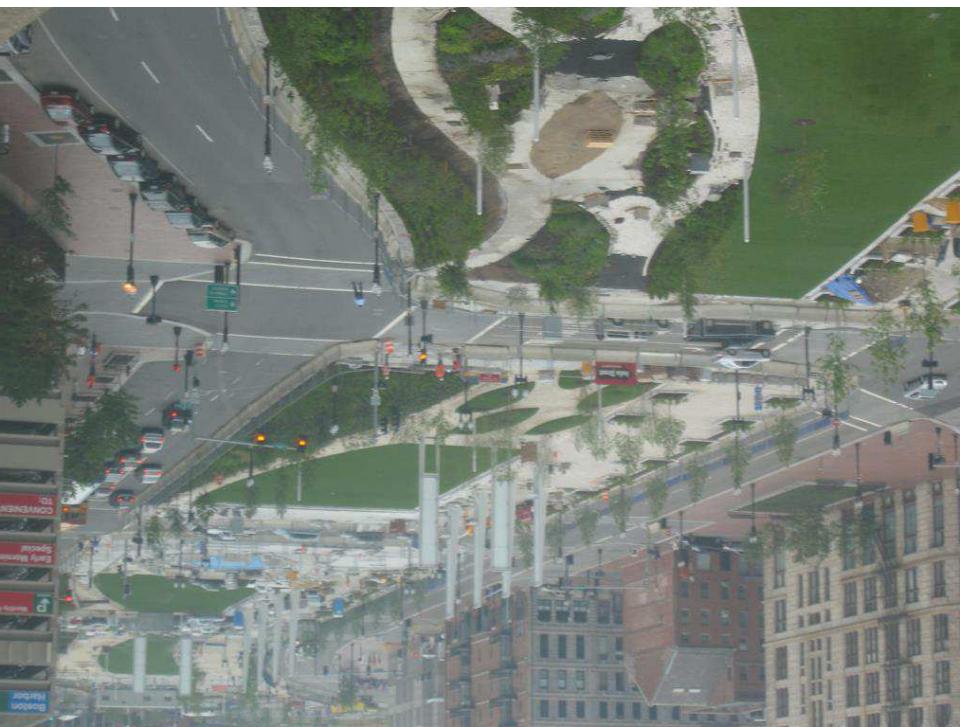
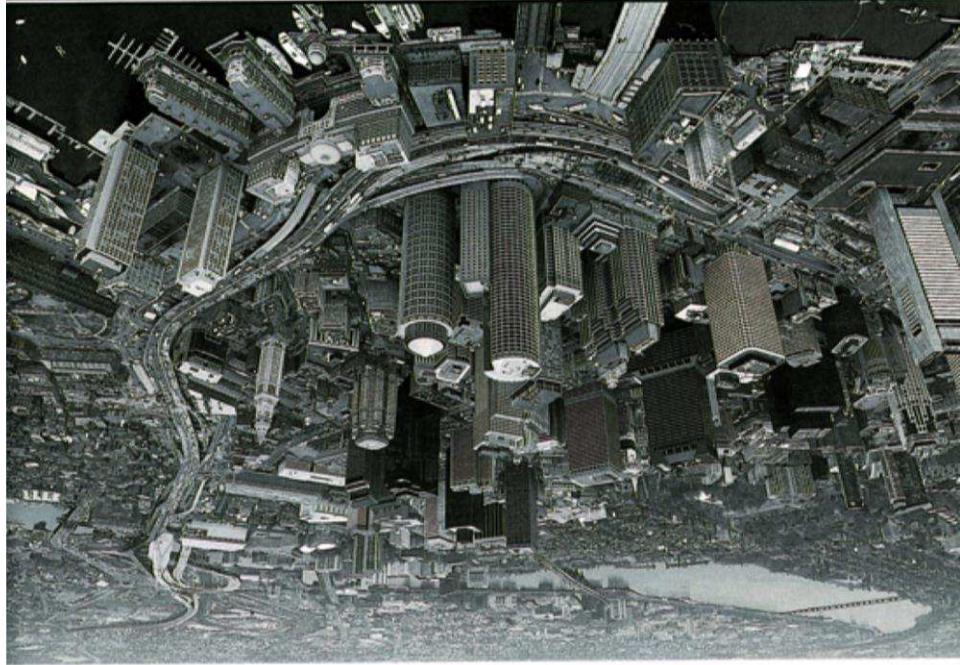


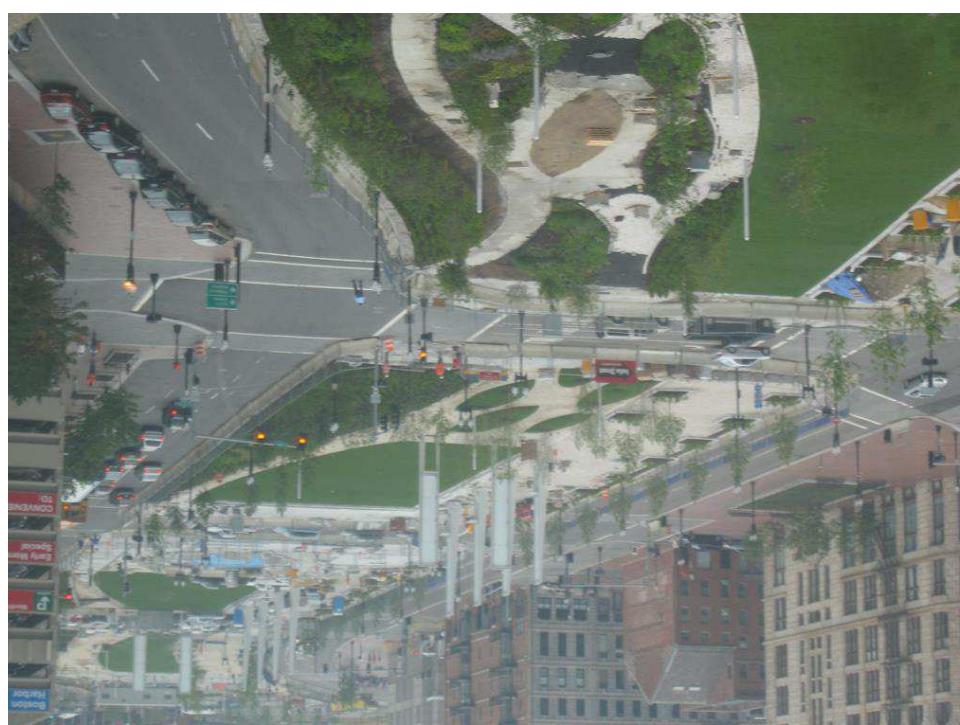


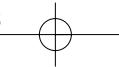




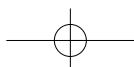
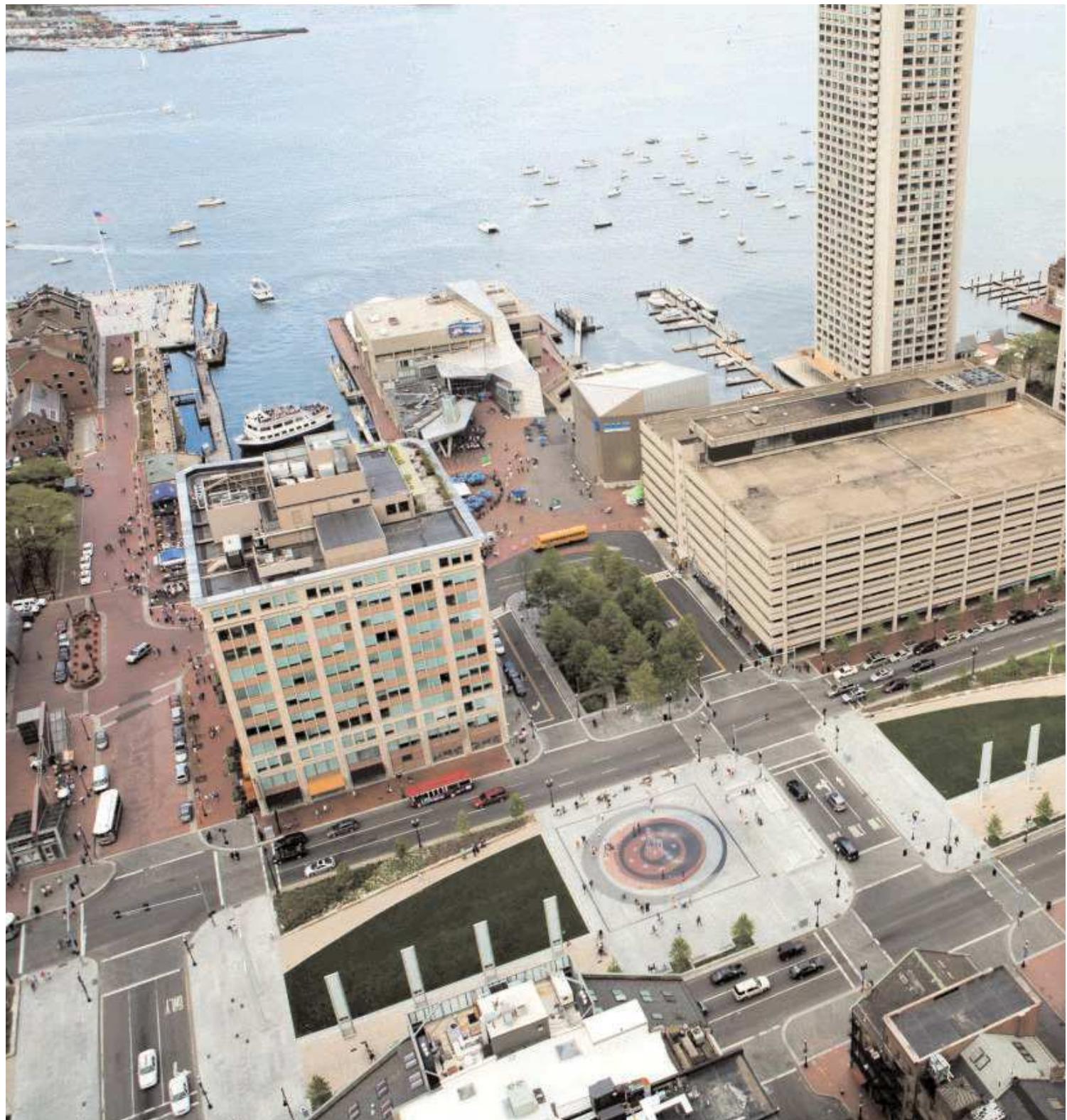


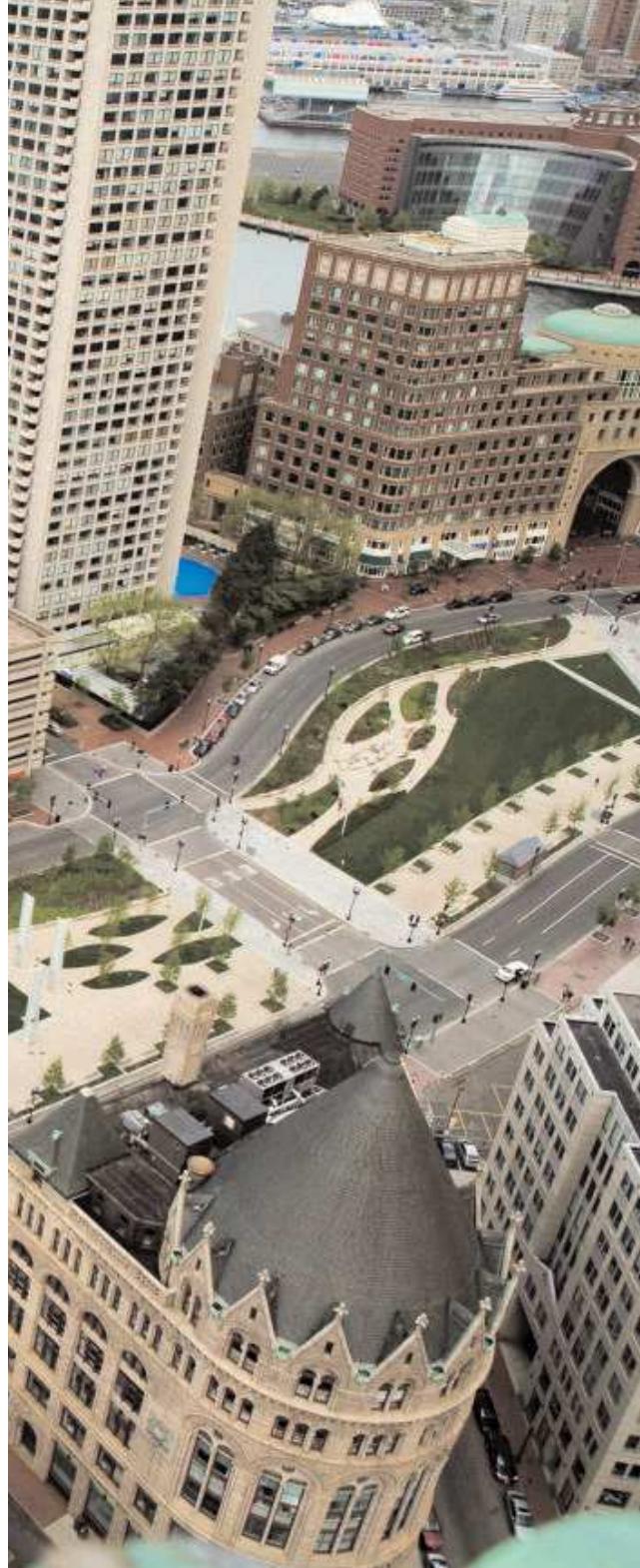
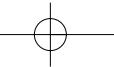






Bilag 3 Artikel om The Big Dig

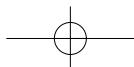


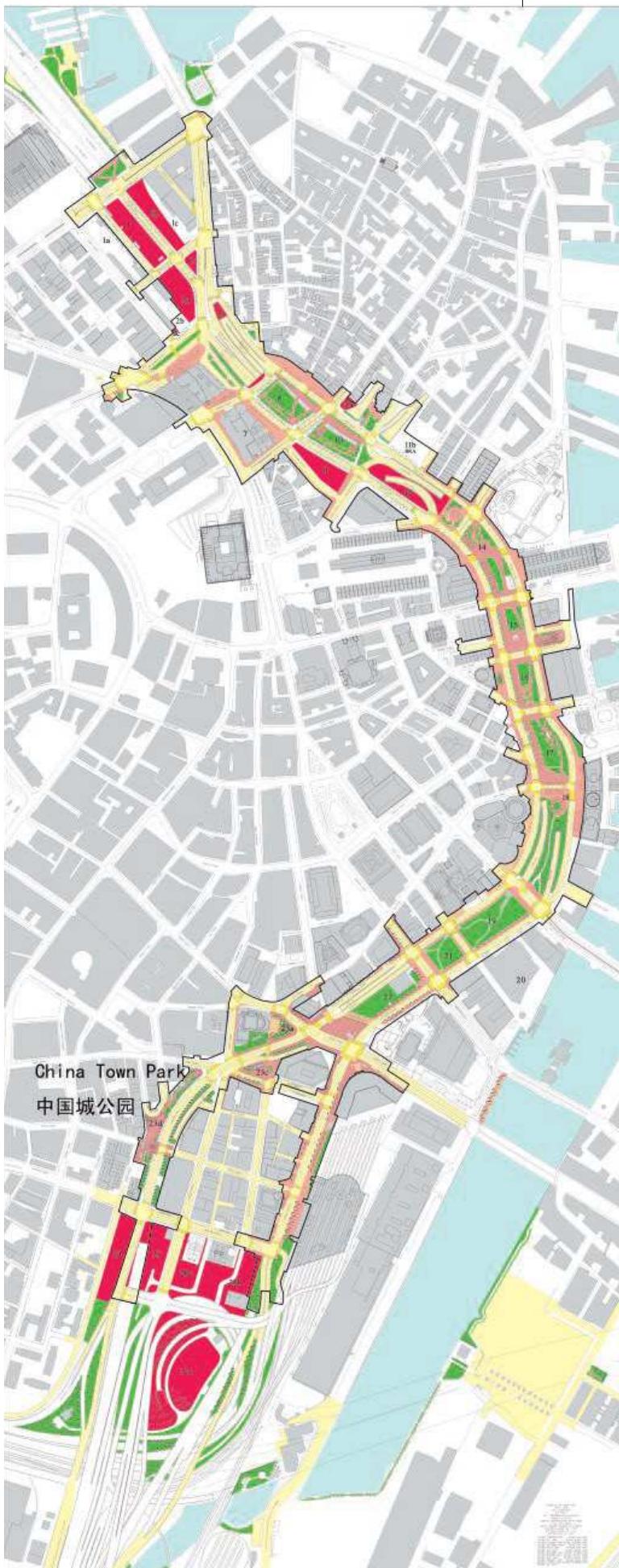


Alex Krieger

BOSTON'S BIG DIG

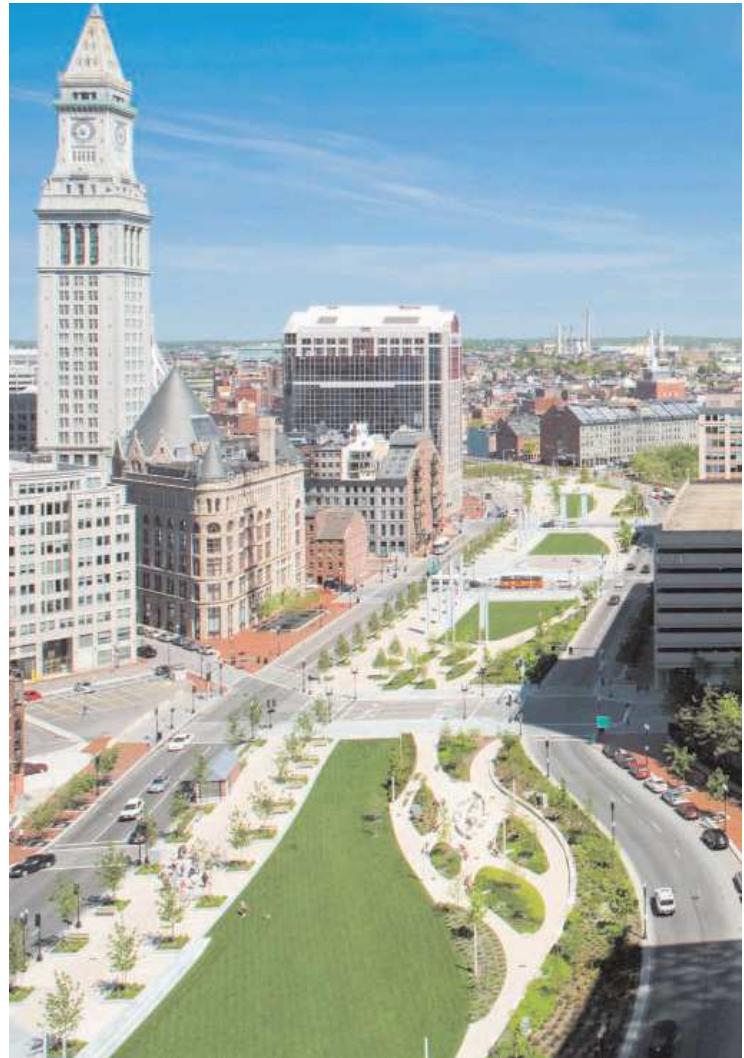
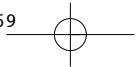
Open Space Time and Arteries: Boston's "Big Dig" and the Rose Kennedy Greenway – a critical appraisal of transforming a major city highway and replacing it with a linear parkland.



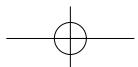


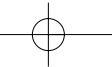
First to dwell on the good news. In one of the truly amazing infrastructure-transforming endeavors of our time, Boston rebuilt one of the monumental mid-20th century transportation projects – its Central Artery. The undertaking and completion of “The Big Dig” – the burying of its downtown-bisecting highway – carries big implications for the Boston of the first half of the 21st century, just as the initial construction of the Central Artery during the 1950s was expected to, and had, a major impact on the Boston of the second half of the 20th century. As we re-consider the enormous impact that our auto-dominated culture has had on the nature of cities, it is illuminating to study how one old city transformed itself; first by responding to the promise of urban highway building, and then courageously seeking to recover from many of the problematic consequences of that earlier decision to construct an elevated highway.

At mid-20th century Boston was in the midst of a severe three-decade long economic and population decline which, it was hoped, could be stemmed, if not actually reversed, by improving access to the struggling downtown. The solution was to add the then most sought after urban transportation improvement, a modern expressway cutting right into and through the heart of the city. The day's media labeled it, with pride, “Boston's Highway in the Sky”. The goals for this sky road were to add substantial new auto traffic capacity, decongest the obsolete and crooked street network, and “prune” (as it was then called) the most dilapidated old fabric so that new investment would follow. The structure's visual prominence as much as its traffic-moving capabilities was a sign of progress. Sigfried Giedion's contemporaneous message, about the need for “bold saber strokes” to modernize the city were being heard loud and clear in Boston. (Also the essay's subtitle is a play on Sigfried Giedion's monumental 1941 book, *Space, Time and Architecture*, in which he championed the



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transformative potential of modern architecture and culture, including the ability to conceive and build projects such as the Central Artery.)

Boston is enjoying a sustained period of renewal and prosperity (apart from today's economy). It is considered among the real success stories of the capacity for revival that America's older central cities have been showing over the prior decade. To enhance its status as one of the nation's most urbane places, it replaced the infrastructure that was a prior generation's hope for renewal, but quickly became functionally obsolete and a visual and environmental nuisance as well. The replacement is a more modern – and wider (this fact is often overlooked) traffic artery – now built out of sight, mostly. Its visible features planned to be not roadways, but parks and similar amenities believed today to be essential for the health of an important American downtown.

Some of the city-building lessons that can be drawn from Boston's metamorphosis since the 1950s include:

1. Transportation is a dominant force in shaping cities, as it has nearly always been, but specific transportation solutions can impede as well as catalyze urbanity. The 1950s hope was that wider, faster highways would slow the rates of urban dis-investment and suburban flight. In most cities better highways accelerated peripheral growth, making it easier to leave not commute to the center.

2. While a powerful force of urbanization, mobility should not be pursued as an independent variable. Writing *The Death and Life of Great American Cities* soon after the completion of the Artery, Jane Jacobs decried massive interventions for so singular a purpose as moving automobiles and referred to "intricate mingling" as the essence of cities. While welcoming, no doubt, the removal of the Artery she would be critical of those who argue that open space alone will provide for her intricate mingling.

3. The original Artery was built with little fear of consequences, including the displacement of some 20,000 Bostonians, the severing of dozens of local streets, and the bisecting of several poor, ethnic neighborhoods. Today's Artery re-builders – and citizens even more – are mindful of the risks of so large an undertaking and insist on mitigation. Beyond minimizing disruption during construction the demanded mitigation included open space and public facilities, transit improvements, pedestrian amenities, adjacent roadways, upgraded utilities, air-quality and other environmental concerns, neighborhood facilities, housing, public art, and many others. These have added billions to the cost of the project, but are the very components that wise long-view planning would recommend as a transportation network is altered.

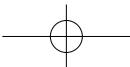
4. Building urban infrastructure is hard. Rebuilding it is much harder. The cost of original Artery construction was a then astronomical 110,000,000 US dollars (over 800,000,000 in today's US dollars). The reconstruction, mitigation included, was costing nearly 100,000,000 US dollars each month for more than a decade! Apart from dollars there are the difficulties of reaching consensus.

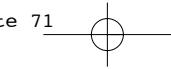
5. City making requires time, patience, and persistence of vision. Yet, over time values change, requiring adjustment to the vision. The earliest musings about a north/south "Business Thoroughfare," essentially a broad city street, occurred around 1910. Serious proposals for a highway began in the 1930s. Final planning took place in the late 1940s. Construction took nearly another decade. The calls to widen/remove/relocate the highway began in the early 1970s, a mere dozen years following its completion. It has taken thirty years to realize that improbable vision of re-construction. Hopefully, today's underground highway and surface Greenway will serve the city longer, but a further corollary to the above is:

6. The impacts of planning decisions are not often felt immediately and then do not always turn out as anticipated. Few would have guessed in the 1950s that a road designed to carry 75,000 cars per day – twice the then needed capacity – would within a generation serve (poorly, of course) more than twice the designed capacity. As many have pointed out, the temporary improvement gained by added road capacity soon evaporates as additional traffic is enticed to use that capacity. But that does not mean that no increased traffic capacity should have been built during the 1950s. We cannot now be sure what the course of Boston's economic recovery would have been had not the Artery, or some other version of it, been built.

7. Cities are more resilient than we sometimes believe, while local optimism and caution are occasionally found in reverse of prevailing economic conditions. The Boston of the 1950s should have been a dispiriting place, well along to shedding one quarter of its population and nearly a third of its taxable economy. While there was opposition to the Artery construction, especially among those whose homes and neighborhoods were sacrificed to the cause, there was a general optimism about the future because projects like the Artery were underway. Newspaper headlines looked forward to better days. Amidst more prosperous times today (then Boston's 1950s) there is a prevailing caution, if not outright pessimism, about diminishing qualities of life, and even about whether we are planning wisely for the post Artery era. Headlines, rarely laudatory in recent years, focus on cost overruns not the seminal achievement of removing the blight of a major urban highway while increasing traffic capacity.

So the big dig has been a great achievement, albeit a lengthy and costly one. Ah, but now for a substantial lament, and a necessary personal disclaimer. The project's most enduring gift to the City of Boston, beyond a better functioning roadway system, was to be an extraordinary series of



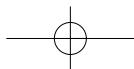


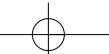
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open spaces and public realm enhancements in place of the elevated highway. That goal has proven to be illusive. Expressed disappointment with the “Rose Kennedy Greenway,” as the surface above the buried highway was named, outnumber outpourings of genuine affection. There are advocates to be sure, but their praise seems less earnest, rather a masking, one suspects, of disappointment. Since Bostonians’ waited for the “good stuff” so long, through much daily disruption and with such grand expectations, they find it difficult to admit to the shortcomings.

Segments of the Greenway are well designed, and contribute substantially to the life of the downtown. By far the best of these are the two North End Parks designed by the Seattle based firm of Gustafson, Guthrie, Nichol LTD with the support of Crosby, Schlesinger, Smallridge LLC of Boston. These parks are sited to either side of a restored Hanover Street, one of the oldest streets in the city having been severed by the original Central Artery, but now once more connecting the lively North End to the Government Center Area. Each of these parks contains a rich array of planted areas of trees and flowerbeds, open lawns, sitting and play areas. These parks have been “adopted” by the nearby North End residents who make good use of them. Thus they function somewhat like traditional neighborhood parks, while also attracting tourists and visitors who populate the Hanover Street corridor. Unfortunately, to the north and south are open ramp parcels that isolate these two parks from other landscaped segments of the Greenway.

Another special environment has been created adjacent to Boston’s “Chinatown” District. Conceptualized by the talented Chinese landscape architect Kongjian Yu and executed by Carl R. Johnson and Associates of Boston, this quite small oasis presents a modern interpretation of a traditional Chinese garden. And like such





gardens, the scale is intimate and intricate, enabling one to experience a beautiful retreat from the expanse and bustle of the adjacent city.

Between these two carefully crafted public places, each benefitting from an adjacent residential area, is a long stretch of less compelling landscapes. The large paved plaza and subway kiosks at Dewey Square, designed by the Boston architecture firm of Machado and Silvetti Associates, are elegant enough, but the area overall appears somehow featureless. The shallow depth of both road and transit tunnels at this location prevented substantial plantings and so exacerbates the sense of openness and shapelessness. A lengthy segment between Dewey Square and Rowes Wharf has yet to be designed, but has been landscaped in a decidedly suburban office park manner as a “temporary measure” by the Massachusetts Horticultural Society. The biggest disappointment are the Wharf District parcels, designed by EDAW with the support of Copley Wolf Design Group of Boston, the latter firm also designed, under a separate contract, the sidewalk streetscapes along the two surface streets which bracket the Greenway. This is at the midpoint of the Greenway most immediately connecting the downtown to the harbor, and yet the landscape treatments here are simpleminded, almost banal, with the exception of the (now near ubiquitous) interactive fountain that kids and their parents of course enjoy. Here, too, difficult below grade constraints may have constrained the designers, but that is no real excuse. Lastly, the four sets of ramp parcels remain uncovered with increasing doubt as to when if ever they will be capped with the cultural facilities that earlier plans recommended. The overall result is hardly a continuous Greenway, regardless its name.

Despite what planners say about how its just a matter of time before the Greenway gets better and we learn to love it and use it more, this plan-

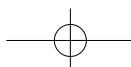
ner believes that it is destined to remain a mediocre public environment, though, of course, a significant improvement over the old Central Artery – that fact, by the way, not being a legitimate excuse for its mediocrity. It was a conceptual error to plan for the entirety of corridor as a linear greenway in the first place.

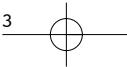
It was actually never clear why Boston needed a linear greensward at this location. There are some remarkable linear open spaces in Boston, including the Charles River Esplanade, Olmsted’s glorious Emerald Necklace, Pleasure Bay in South Boston, along ocean’s edge (a block away) a completed portion of a 47-mile-long Harbor Walk taking shape over three decades, and finally the Southwest Corridor Parks through South End, Roxbury and Jamaica Plain, an open space and transit corridor having substituted for a planned but never built urban highway. The Greenway is not a sibling to these. It is narrow, edged by wide roads and four sets of highway ramps emerging from the tunnels along its path; it has too many other perpendicular interruptions, again mostly roads; it is poorly landscaped, often for technical reasons not only due to poor funding and less than brilliant landscape architecture; it has too few activities along its edges, too few people living near it which is what nourishes urban open spaces more than tourists or office workers; it will be hard to program sufficiently, unlike a smaller space like Post Office Square – more on this later; and difficult and costly to properly maintain. Lastly, the natural pedestrian stream connecting the Boston Common/Freedom Trail/Government Center/Faneuil Hall Marketplace to the city’s waterfront is perpendicular to, not along, the Greenway.

The reason it was conceptualized and sold to the public as a greenway was largely due to the undo but very prevalent rumor two decades ago that the Turnpike Authority was going to offset the cost of the Big Dig by selling massive developer air-rights over the tunnel. There was also

the matter of various pending lawsuits against the Artery Project by a host of environmental groups who saw it as a highway capacity expansion project (which technically it was) and who hoped that a North Station/South Station transit line would be a part of the mitigation for adding more highway capacity. It was much easier for Big Dig managers to offer “75 percent open space” than to seriously address some of the environmental and transit concerns. To paraphrase Marie Antoinette, “let them eat open space” served well as a strategy, with the idea of “a two-mile park” running through the heart of the downtown an irresistible promise. In the late 1980s the Director of the Boston Redevelopment Authority promised 10,000 trees along it and a grand new strand of the Emerald Necklace. Citizens believed the rhetoric, hardly imagining paltry four-inch caliper trees, widely spaced, planted along long stretches of it. Some segments seem more “concrete way” then greenway.

In 1987 the Boston Redevelopment Authority retained my firm to develop the city’s first official plan for the future surface corridor. We dubbed it the “Seven Copley Squares Plan,” projecting seven public parks about the size of venerable Copley Square along the corridor. Between each of these were envisioned modest air-rights developments such as cultural facilities and housing so that, like Post Office Square, each new park would be intimate, better defined and surrounded by the myriad activities of the city – catalyzing we hoped some of Jane Jacob’s intimate minglings. Post Office Square did not yet exist; so today the slogan would have been “Seven Post Office Squares for the City.” Post Office Square is brilliant not only for its extensive and beautiful planting, also on a roof of a substantial underground garage, but because it is perfectly sized for a downtown and its logical users, and very well located. I believe that seven new parks interspersed with reasonable develop-





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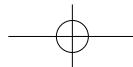
ment the manner of Copley or Post Office Squares would have done substantially more for the city than the non-continuous Greenway.

Some aspects of the earlier idea survive in the identification of several parcels (principally the ramp parcels) for future cultural uses, and the idea of creating clear identifiable places, such as achieved at the North End Park, by far the best-designed portion of the Greenway. But the primary reason for the abandonment of the idea by the city and Turnpike Authority was that it only promised 50 percent open space while the Environmental Secretary in finally approving the Final Environmental Impact Statement for the project demanded that 75 percent open space had to result. This was another maneuver to appease the environmental opponents of the project, and it worked. How can one argue against open space? The 75 percent rule prevailed, and led to the idea of a continuous Greenway. People walking across it may not instantly recognize it as such. Few confuse it with Commonwealth Avenue, the city's premier late 19th century "Parisian" avenue. What Boston got was a "boulevard" instead of a great new boulevard.

Yes, its bound to get better over time as adjoining properties turn windows and doors towards it and as the landscape matures, assuming proper maintenance. But we are also witnessing the limitation of the original idea of a continuous linear space, shapeless and largely "activity-less", winding through our downtown. Had we learned the proper lessons from the successful Post Office Square and the very unsuccessful nearby City Hall Plaza, we might have been less seduced by the clarion call of "just open space no buildings in the corridor" to demand a series of urban parks and squares well defined, well scaled, well located, well spaced, and properly supported by activities and uses at their perimeter. A more vital, varied, enjoyable and more beautiful urban fabric would have better healed the scar of the old highway.



Alex Krieger's firm's complicated involvement with the Artery Project prejudices the assessment of the author, of course. Chan Krieger/NBBJ's planning work on Boston's Central Artery commenced in 1987, and led to the publication in 1990 of the "Urban Design Framework for the Central Artery Corridor" and in 1991 of the "Boston 2000: A Plan for the Central Artery". These two documents, commissioned by The Boston Redevelopment Authority, the first authored and second co authored by Chan Krieger, established the planning parameters and design guidelines for the following two decades of work on the surface restoration. They argued, especially in the first document, for a smaller proportion of open space than was eventually implemented. In 2004 the firm co-authored "Design for the Urban Edges Along the Rose Kennedy Greenway" the document that established planning guidelines for the Greenway's bordering districts. In 2008 Chan Krieger, in collaboration with the landscape firm of Reed Hilderbrand, designed one of the parks adjacent to the former Artery corridor, a space that connects the Greenway to the Boston Aquarium and Boston Harbor. Over the years of involvement with the Central Artery Project the firm oscillated between being advocates and strong critics, expressing substantial reservations about the decision – subsequent to the initial vision – to make the entire corridor a greenway.



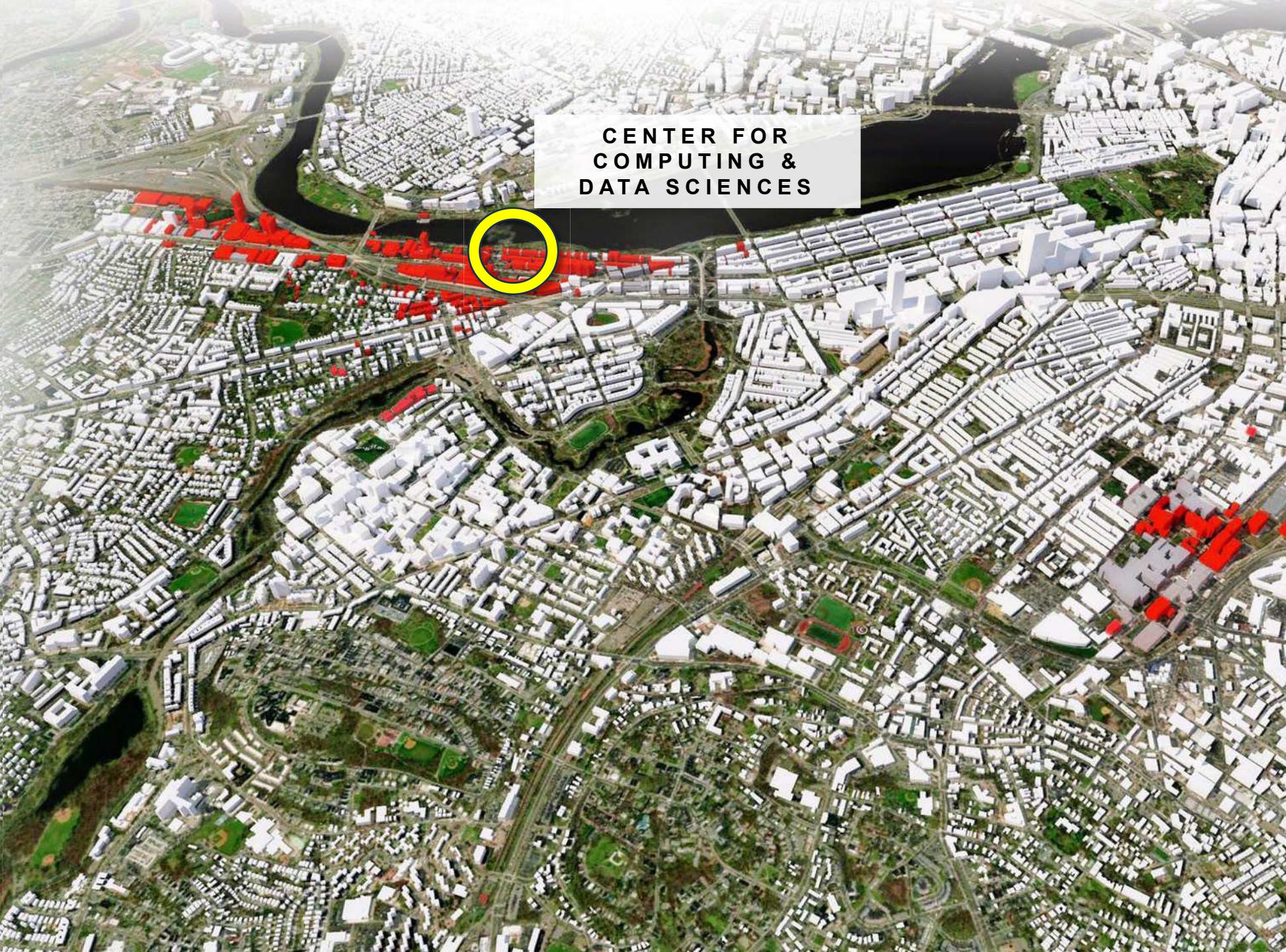
Center for Computing & Data Sciences

Leading the way in the new era of big data in
education, research, and climate mitigation

Copenhagen Delegation

November 15, 2023

Stats



CENTER FOR
COMPUTING &
DATA SCIENCES

Students
36,000

Employees
10,000

Bldg. Area
15.6 million sf

1.45 million m²

Buildings
370

Campus Area
140 acres

57 hectares

Emissions
59,000 MTCO2e
(64% below 2006)

Center for Computing & Data Sciences

- New home for newly created **Faculty of Computing & Data Sciences**, Departments of **Computer Science** and **Mathematics & Statistics**, Hariri Institute for Computing
- 19 stories, 305 feet tall 348,428 GFA
- 167,405 assignable square feet to classrooms, labs, collaboration, departments, dining and operations
- A game changer for BU in the rapidly growing field of data science



Why Boston University Needs It?



World is more interconnected and data-driven than ever before; rapidly increasing demand from students for relevant courses/majors



Emergence of AI and machine learning, as well as the use of data to boost research across all disciplines



Highly competitive landscape among institutions in this field – one where BU is well-positioned to lead



“Data Scientist” ranked hottest job in US four straight years; rise of data science needs expected to create 11.5 million new job openings by 2026

What the New Building Brings to BU



Enhanced capability for interconnected research by bringing together leaders and emerging scholars from multiple fields under one roof

Physical capacity for strategic institutional growth in rapidly expanding fields

Transformative design and sustainability on evolving Charles River Campus cityscape

Project Team – Lead Consultants

University Leadership

Jean Morrison, University Provost

Gary Nicksa, Senior Vice President, Financial Affairs

Project Management

Walt Meissner, Project Executive

Amy Barrett, Program Lead

Paul Rinaldi, Design Lead

David Flynn, Construction Lead

Government & Community Affairs

Stephen Burgay, Senior Vice President, External Relations

Jake Sullivan, Vice President, Gov & Community Relations

Ken Ryan, Director of City Relations

OPM – Owner's Project Manager

Compass Project Management

Construction Manager

Suffolk Construction, Pre-Construction & Construction

Permitting Services

Fort Point Associates

Architecture / Structure / MEP / Landscape

KPMB Architects

Entuitive & LeMessurier, Structural

Bard, Rao + Athanas (BR+A), MEP

Richard Burke Associates, Landscape

Sustainability Engineers

Transsolar Klima Engineering

Civil

Nitsch Engineering

Life Safety and Building Code Services

Jensen Hughes

Geotechnical Services

Haley Aldrich

LEED Consulting

The Green Engineer

Transportation

AECOM

Project Milestone Schedule

- ✓ Programming
- ✓ Architect Selection
- ✓ BRA Intro to KPMB
- ✓ Program & Design
- ✓ Cost Estimate Projections
- ✓ Review of Schematic “light” Design w/Initial Budget

September 2011 to August 2012
November 2012 to July 2013
September 25, 2013
Confirmation March 2014
April 2014
September 2014

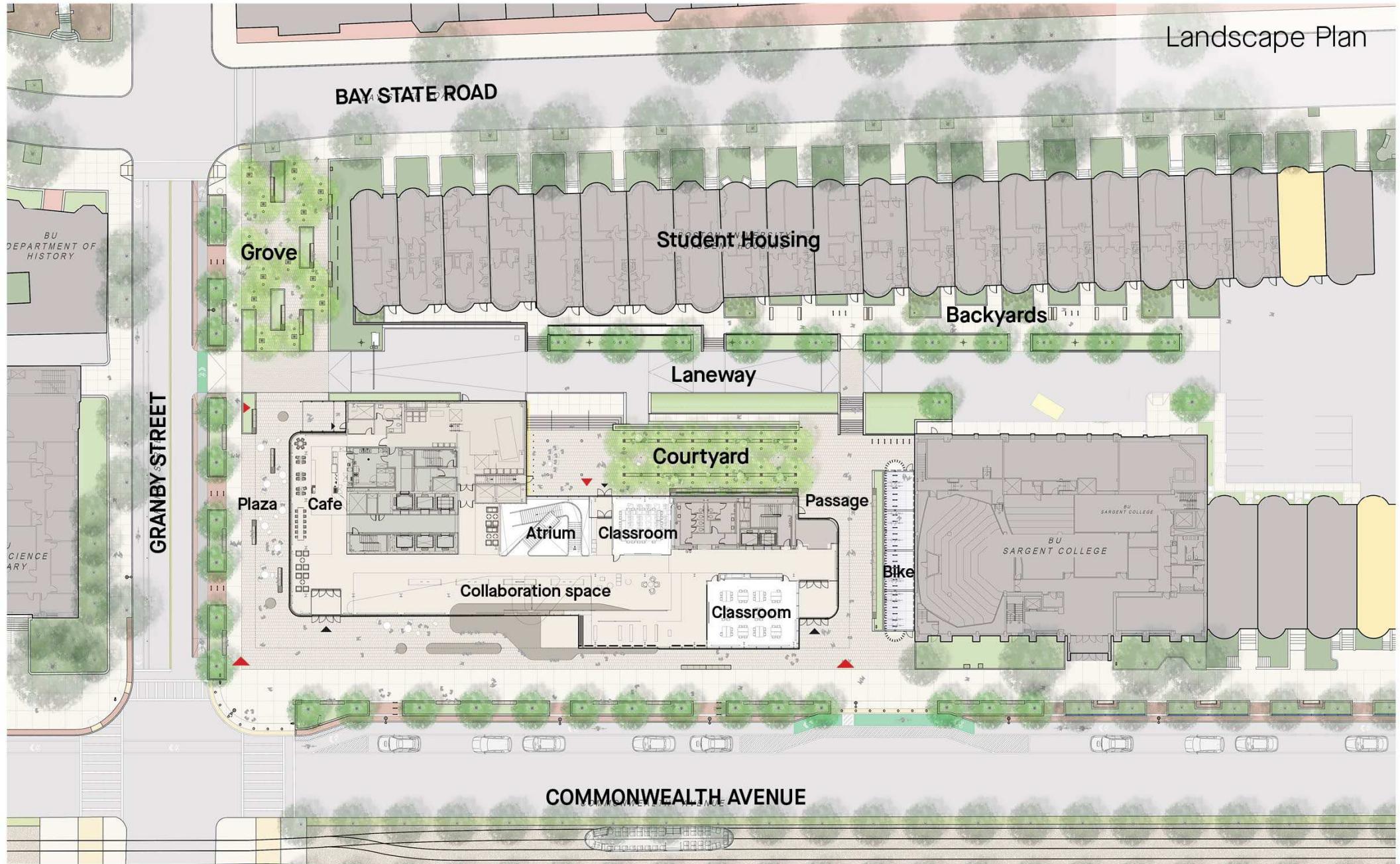
PROJECT HELD PENDING FUNDING & PRIORITY

- ✓ Approval to Reengage in the Project
- ✓ Revised Program & Building Growth Options Studied
- ✓ SPACE Review and Approval to Proceed with Project
- ✓ Revised Schematic Design and Re-Price
- ✓ Design Development, Construction Drawings & Bid
- ✓ Trustee Approval to Construct
- ✓ Permitting September
- ✓ Construction Start Dates
 - Geothermal Wells (at risk)
 - COVID Delay in Project Start
 - Full Building Permit (*received when City lifted the construction moratorium*)
- ✓ Temporary Certificate of Occupancy
- ✓ Initial Substantial Completion
- ✓ Full Certificate of Occupancy

January 2018
February to April 2018
May 1, 2018
May to October 2018
October 2018 to February 2020
September 2019
2018 to June 2020

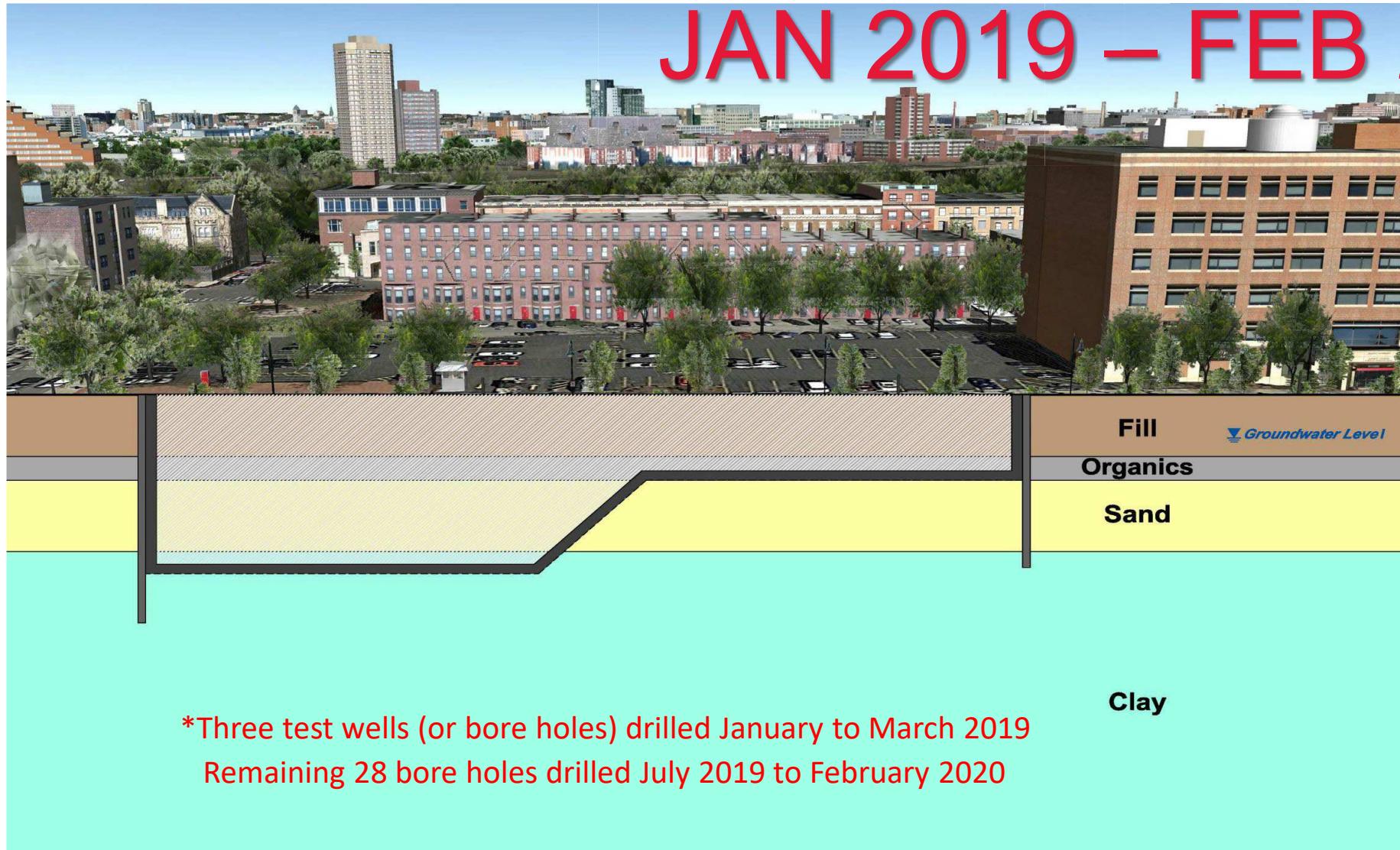
January 2019
March 2020 to May 2020
May 2020
December 2022
January 2023
August 2023

Landscape Plan



Excavate Plan & Geothermal

JAN 2019 – FEB 2020*

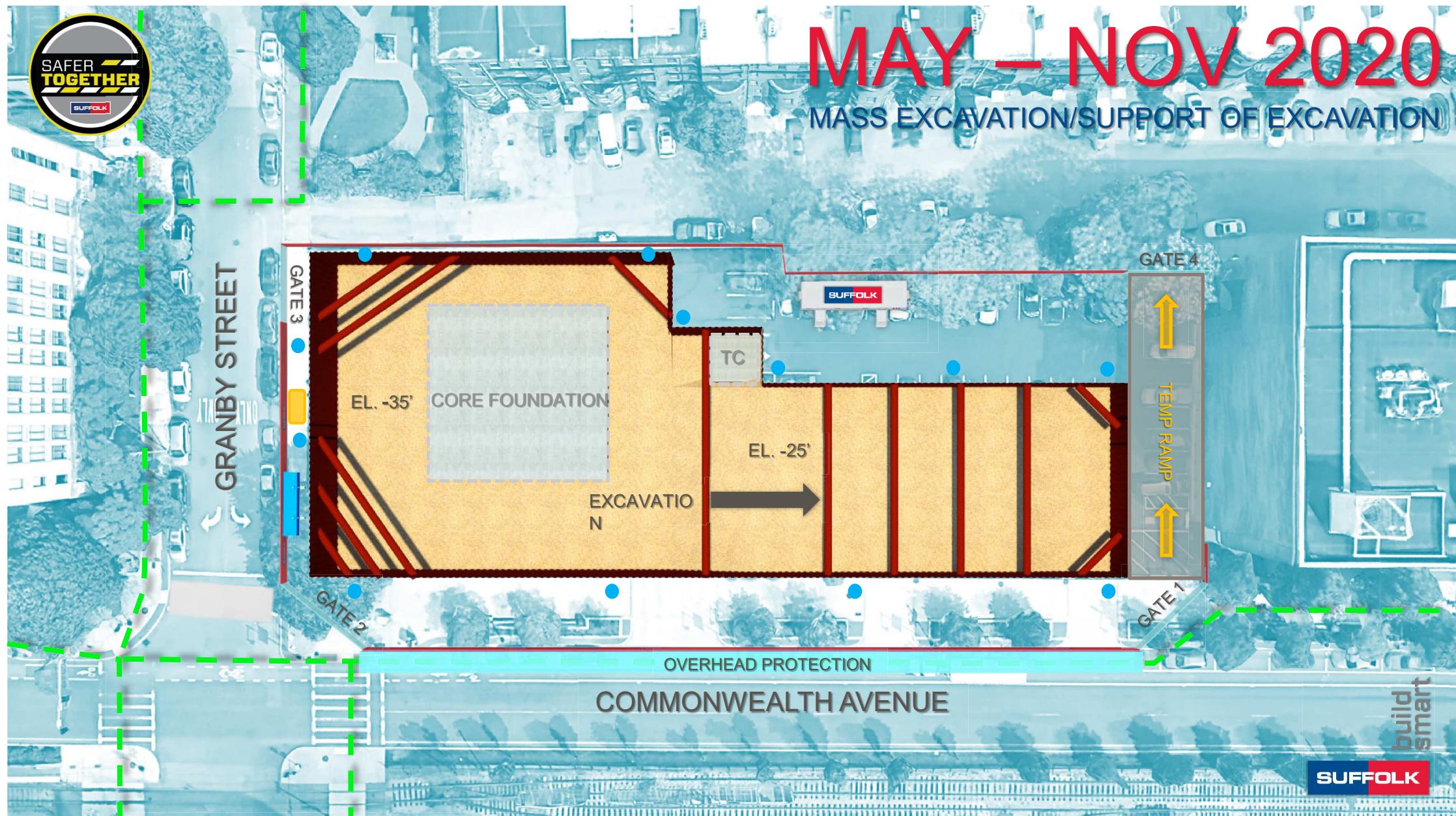


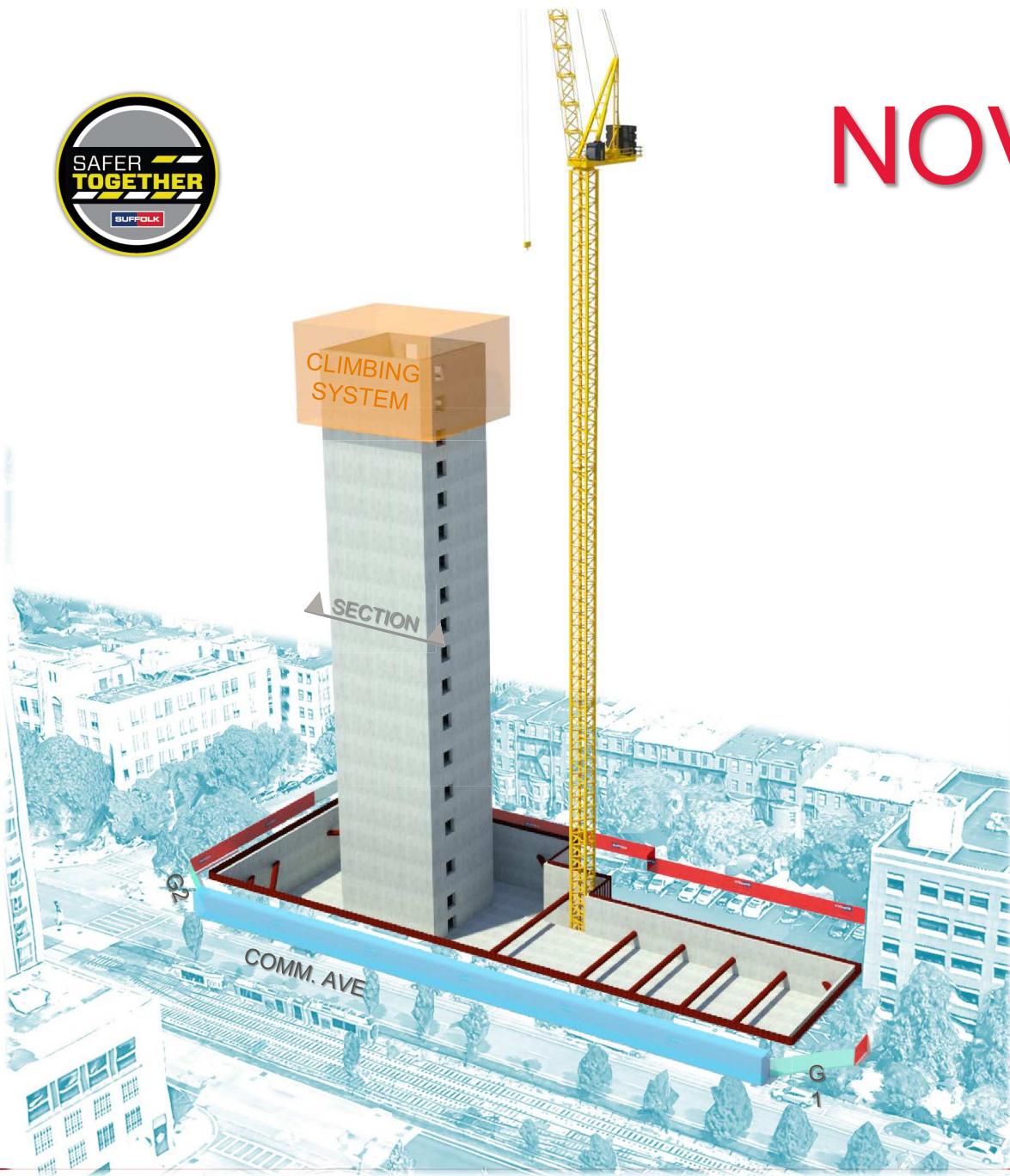
*Three test wells (or bore holes) drilled January to March 2019
Remaining 28 bore holes drilled July 2019 to February 2020



MAY – NOV 2020

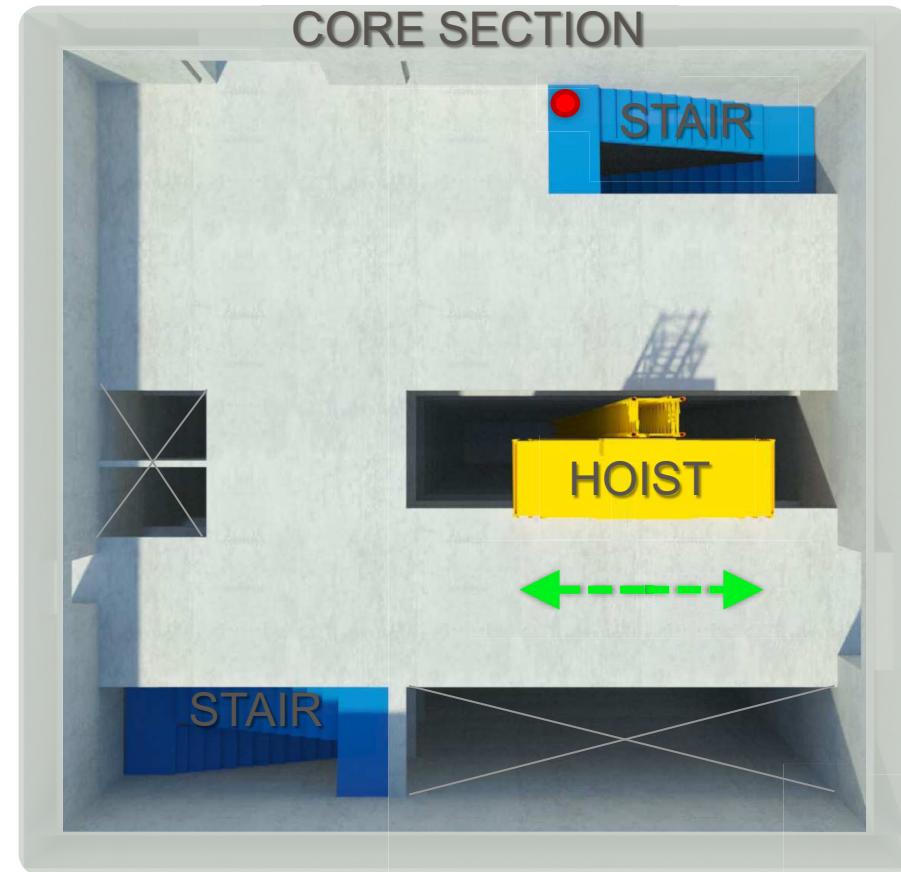
MASS EXCAVATION/SUPPORT OF EXCAVATION





NOV 2020 – APR 2021

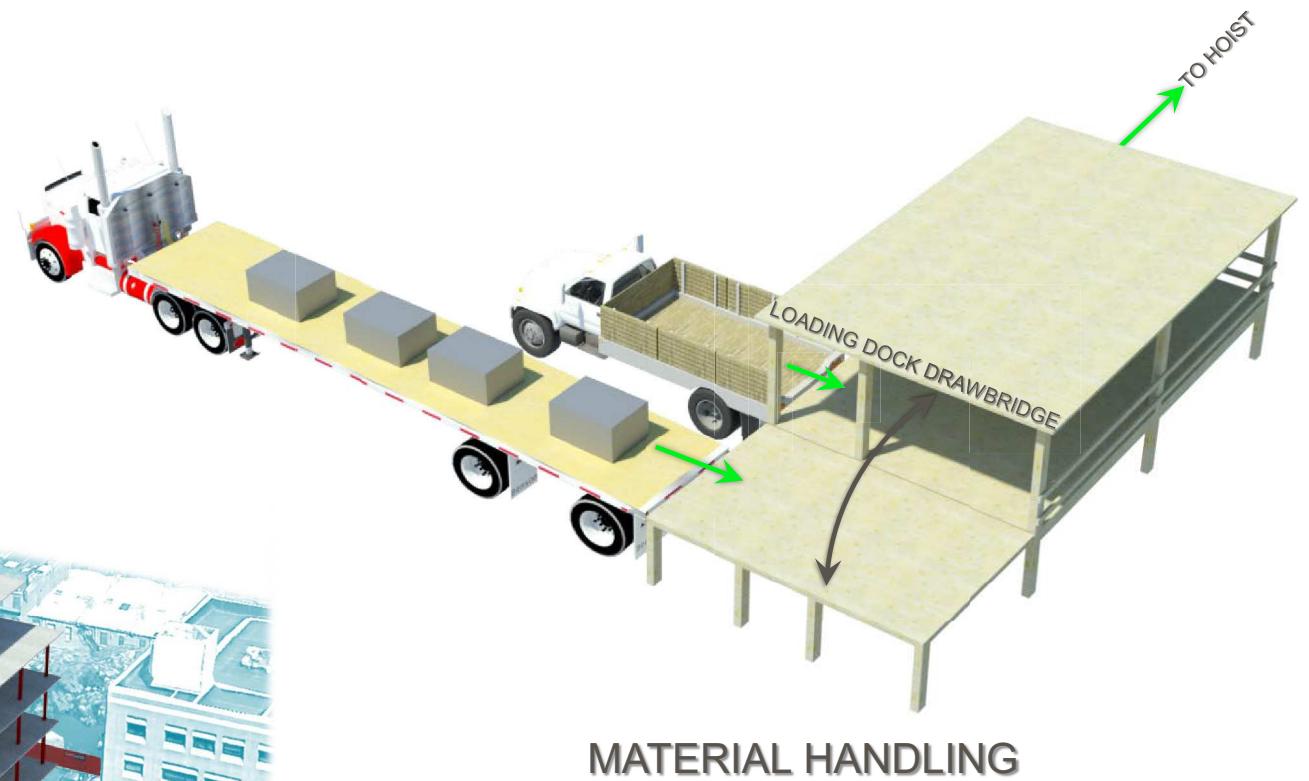
CONCRETE FOUNDATIONS/CORE CONSTRUCTION



SUFFOLK



APR – SEP 2021
CONCRETE AND STEEL SUPERSTRUCTURE



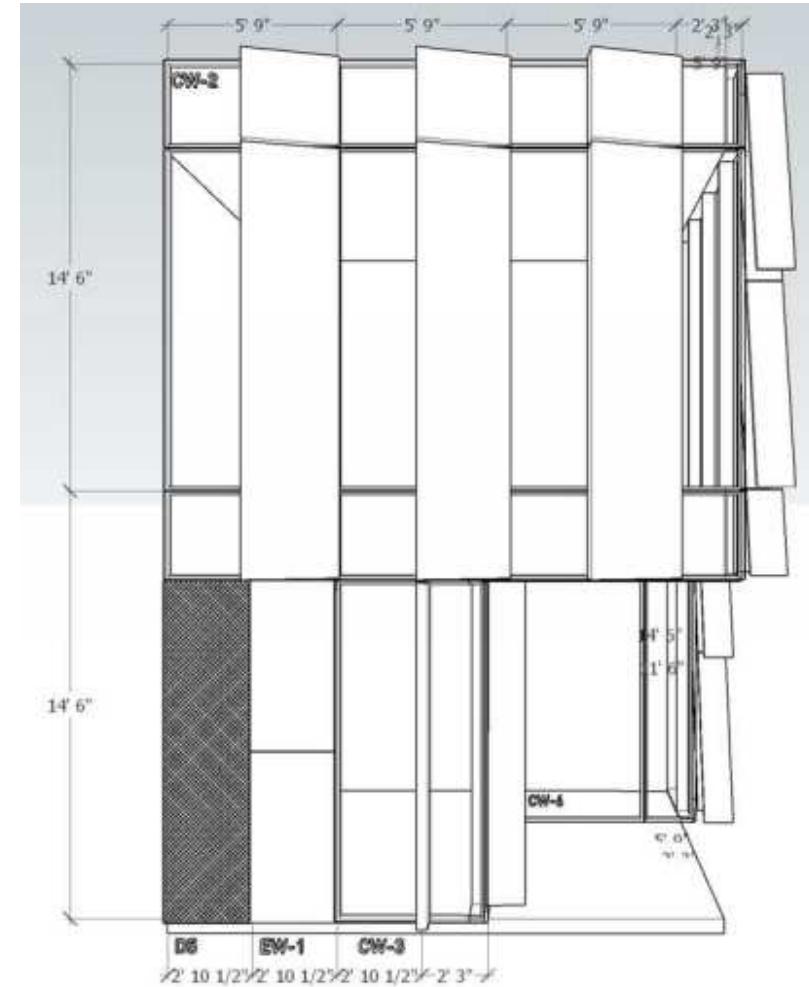
build
smart

SUFFOLK



AUG 2021 – MAY 2022

CURTAINWALL/ROOFING/SOFFITS



build
smart

SUFFOLK



DEC 2021 – JAN 2023

INTERIOR / FINISHES/ HARDSCAPE / LANDSCAPE



build
smart

SUFFOLK

CLIMATE ACTION ~~PLAN~~ IMPACT

Copenhagen Delegation

NOVEMBER 15, 2023

Boston University Sustainability



CENTER FOR COMPUTING & DATA SCIENCES

STATS

BLDG. AREA

32,000 M²

STORIES

19

EMBODIED C

>6% AVOIDED

SITE EUI

42 | 28* KBTU/SF

132 | 88* W/M²

EMISSIONS

0 MT CO₂ E

Project Team

KPMB Architect  Architecture, Interiors

BR+A Consulting Engineers MEP, IT

Entuitive + LeMessurier Consultants Structural

Entuitive Building Envelope

Suffolk Construction Manager

Compass/Vertex Owner's Project Manager

Turner & Townsend Cost

Richard Burck Associates Inc. Landscape

Dot Dash Lighting 

Transsolar Climate Engineering

The Green Engineer LEED

Nitsch Engineering Inc. Civil

Soberman Engineering Elevator

Jensen Hughes Fire and Life Safety, Accessibility

Haley & Aldrich Geotechnical, geothermal

Acentech Acoustics/A.V.

RWDI Inc. Environmental Engineers

Learch Bates Façade access

Robbie McCabe Consulting Hardware

Ricca Design Studios Food services

Entro Communications Signage

Norm Li Renderings/Animations

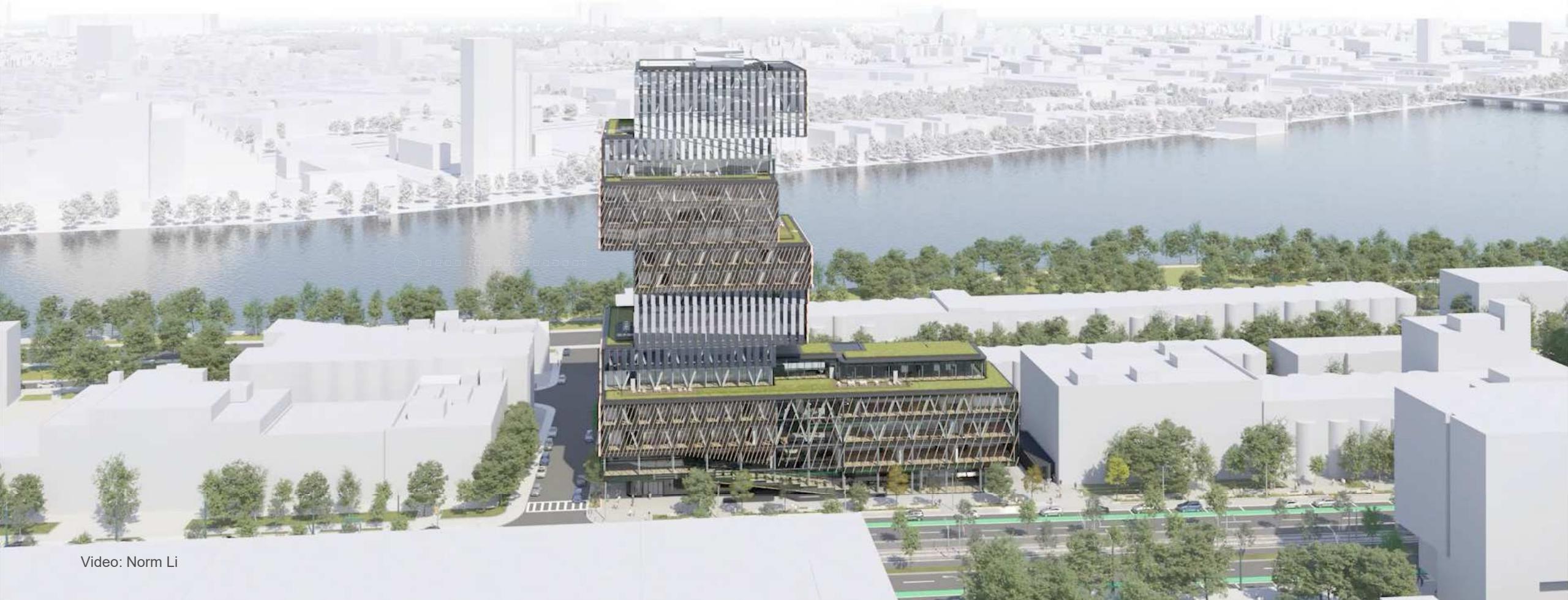
Brian Ballantyne Specifications

Leading the Transformation: Top 5 reasons

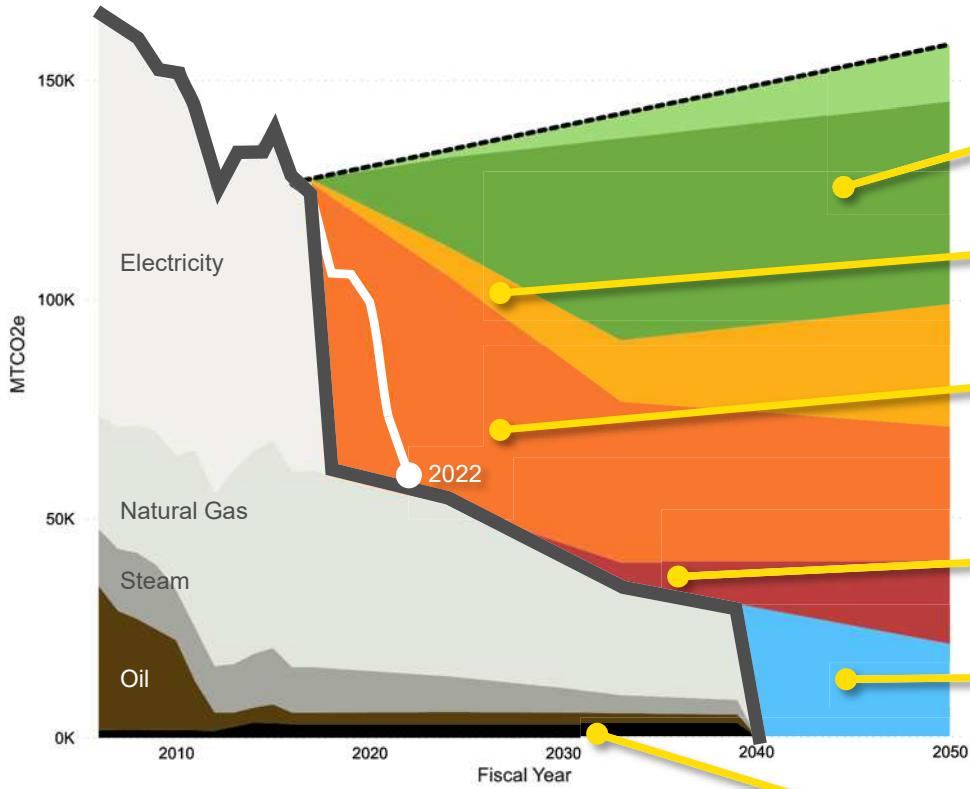


Reason #1 Resilient Design

Prepare for Climate Change



Reason #2 Net-Zero Direct Emissions



Efficiency



Grid Electrification



BU Wind



Geothermal



Certified Carbon Offsets

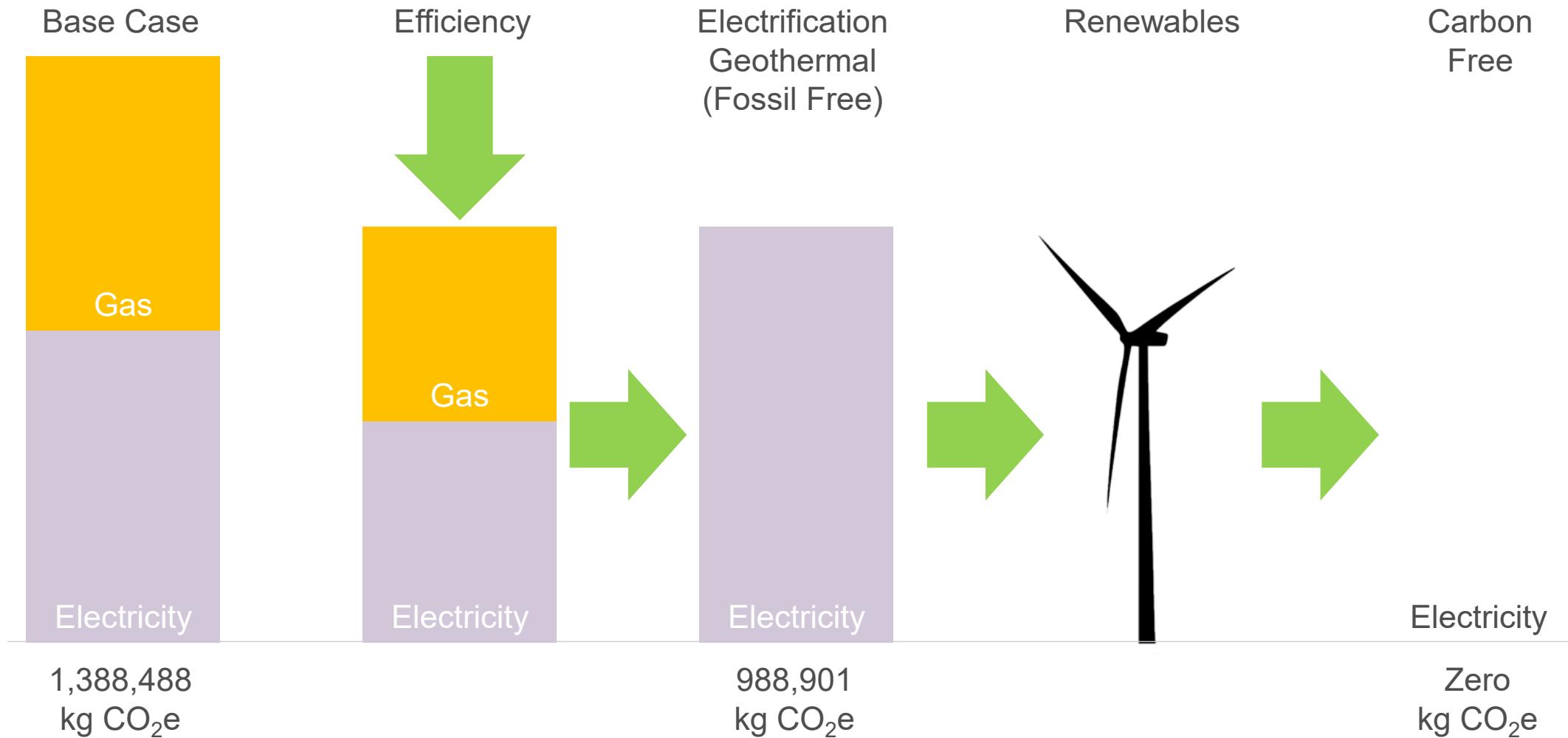


Fleet Electrification

64%

Reason #2 Net-Zero Direct Emissions

Carbon Free Building



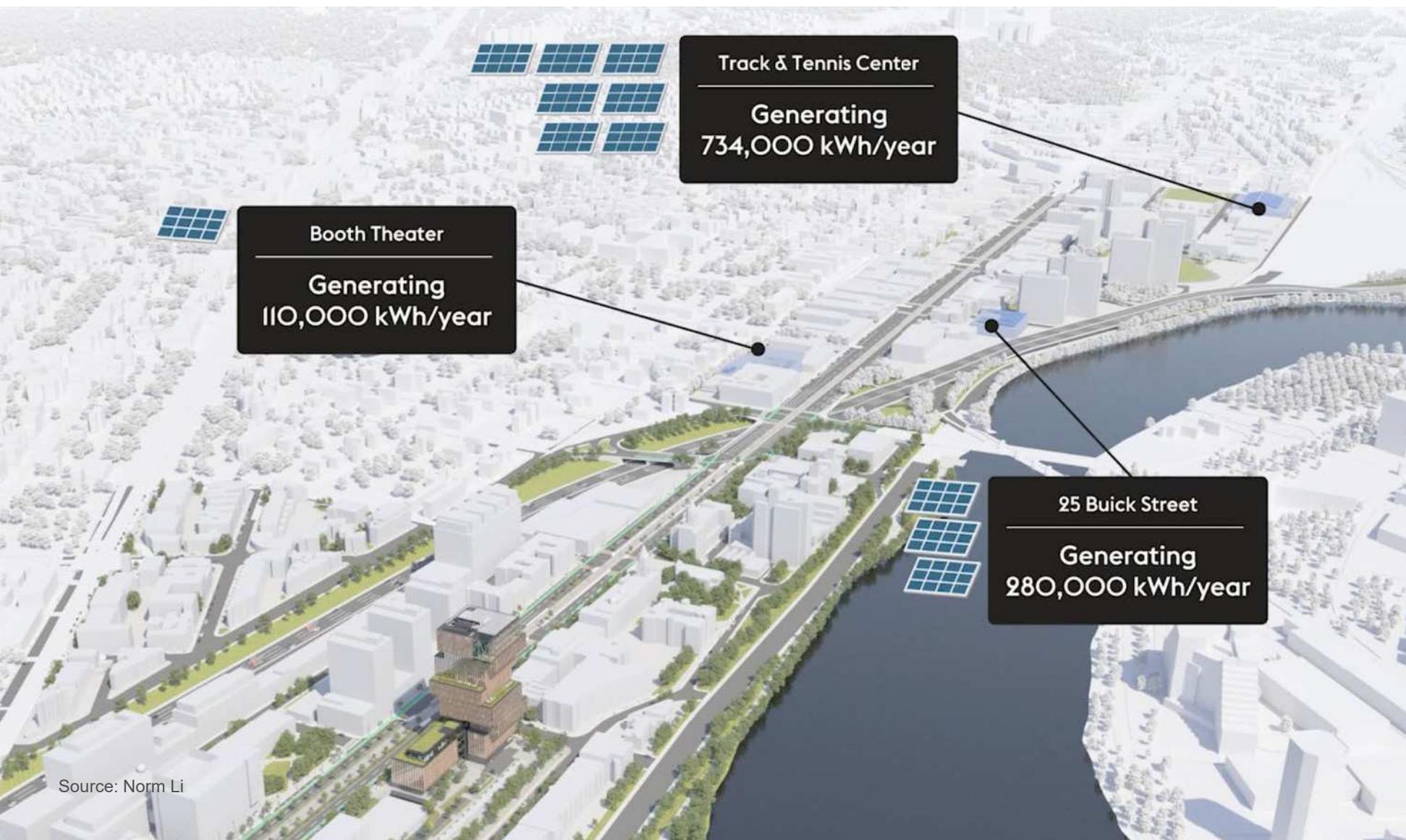
Reason #2 Net-Zero Direct Emissions

Renewable Energy



Reason #2 Net-Zero Direct Emissions

Renewable Energy



BU Solar

- 734,000 kWh/yr
- 280,000 kWh/yr
- 110,000 kWh/yr

Total

- 1,124,000 kWh/yr

Reason #3 Indoor Environmental Quality

Interconnected Spaces



Photo: BU Photography

Reason #4 Outdoor Environmental Quality

Green Roofs



Reason #5 Embodied Carbon

Reducing Embodied Carbon



Photo: Janice Checchio for Boston University Photography.



Construction December 2020

Photo: Janice Checchio for Boston University Photography.

LEADERSHIP

HEAT RESILIENCE SOLUTIONS FOR BOSTON

Preparing for the near-term and long-term impacts of extreme heat

B

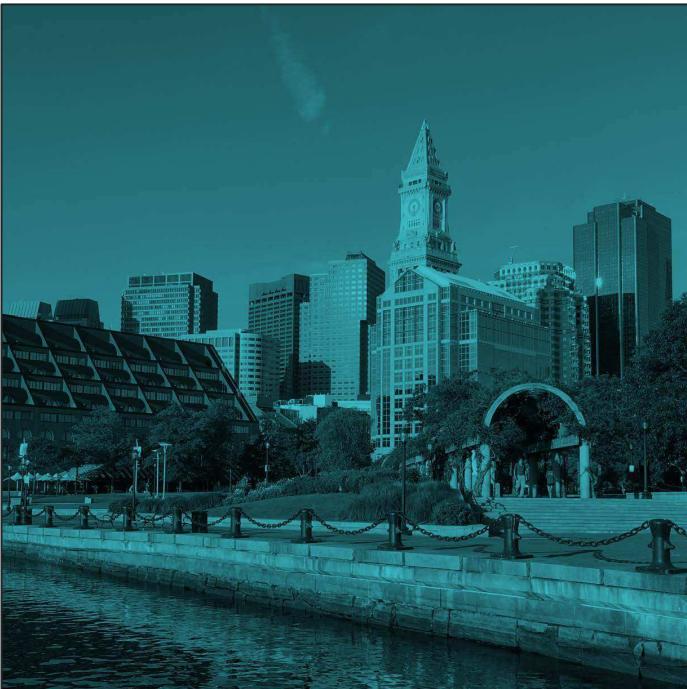


CLIMATE READY BOSTON

Preparing for the impacts of climate change

Climate Ready Boston

Preparing for the impacts of climate change



CLIMATE READY BOSTON EXECUTIVE SUMMARY

MAJOR MARTIN J. WALSH



CITY OF BOSTON



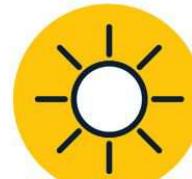
CZM

Green Ribbon Commission

DECEMBER 2016

In 2016, the City of Boston released the *Climate Ready Boston* report, which included a vulnerability assessment of current and potential future risks associated with climate change, updated climate projections, and an implementation roadmap for how to address the impacts of climate change across the City.

EXTREME TEMPERATURES



HEAT WAVES &
DROUGHTS

EXTREME PRECIPITATION



STORMWATER
FLOODING

SEA LEVEL RISE

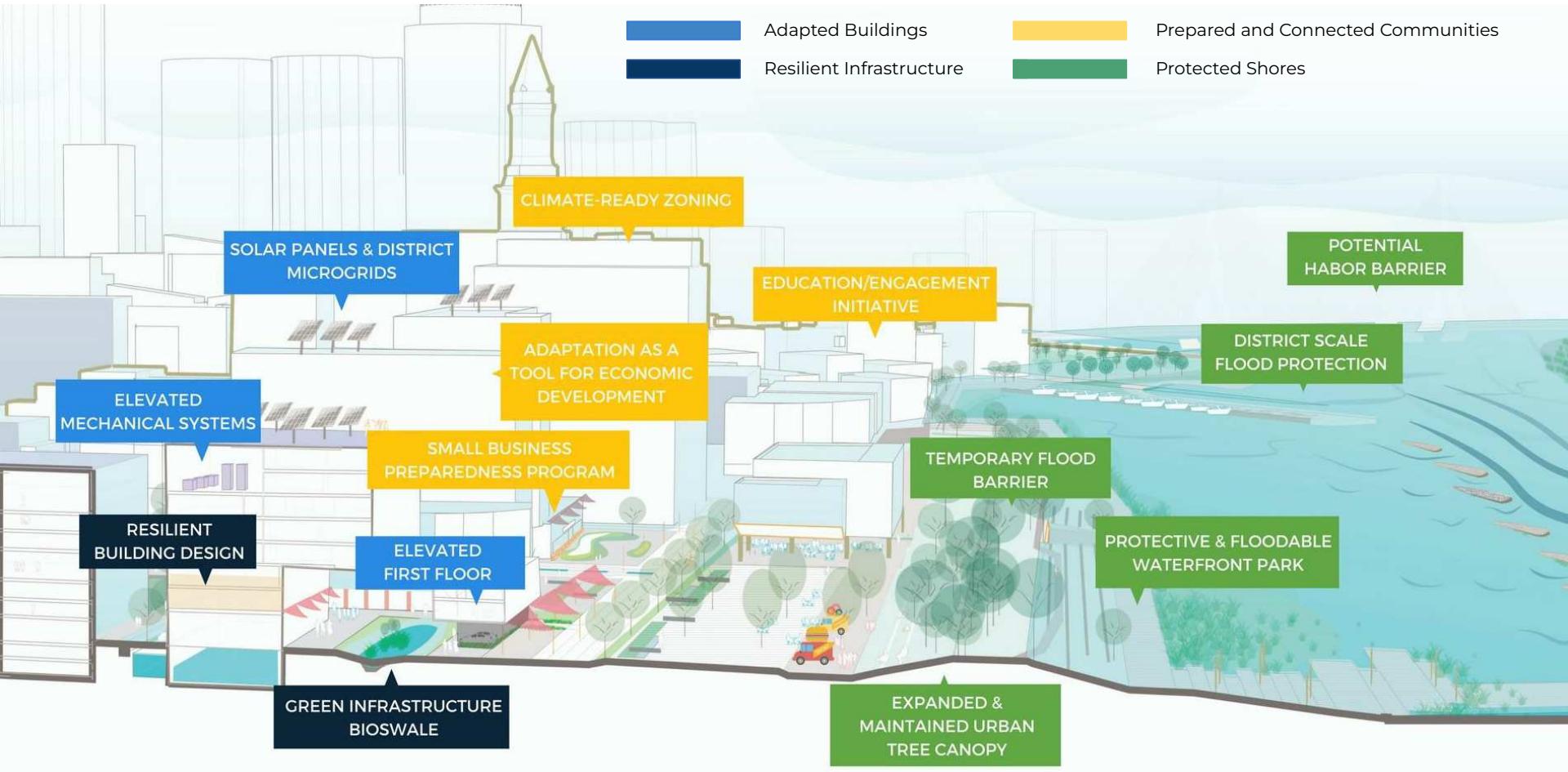


COASTAL & RIVERINE
FLOODING

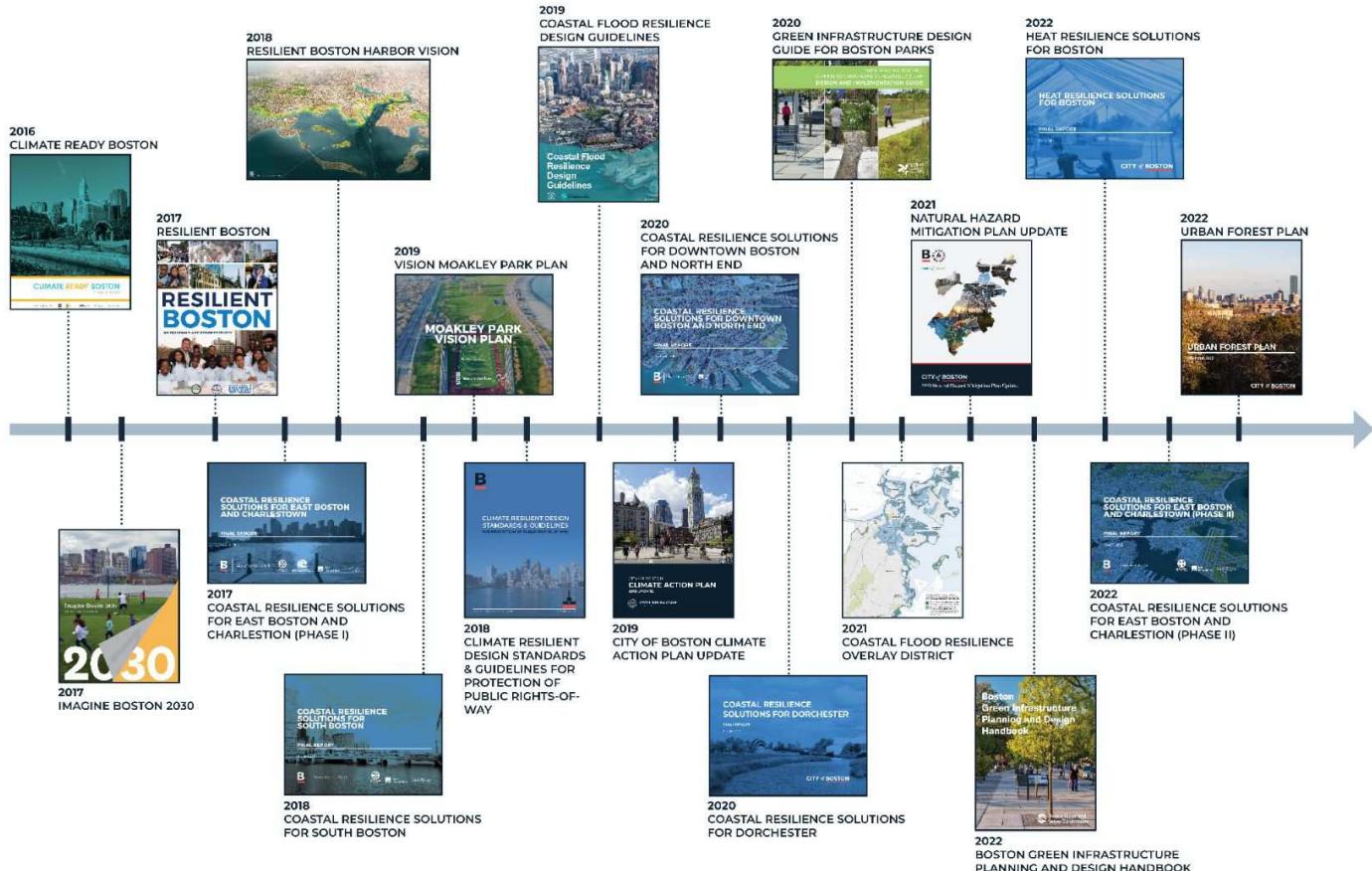
COASTAL STORMS



A layered approach to citywide climate resilience

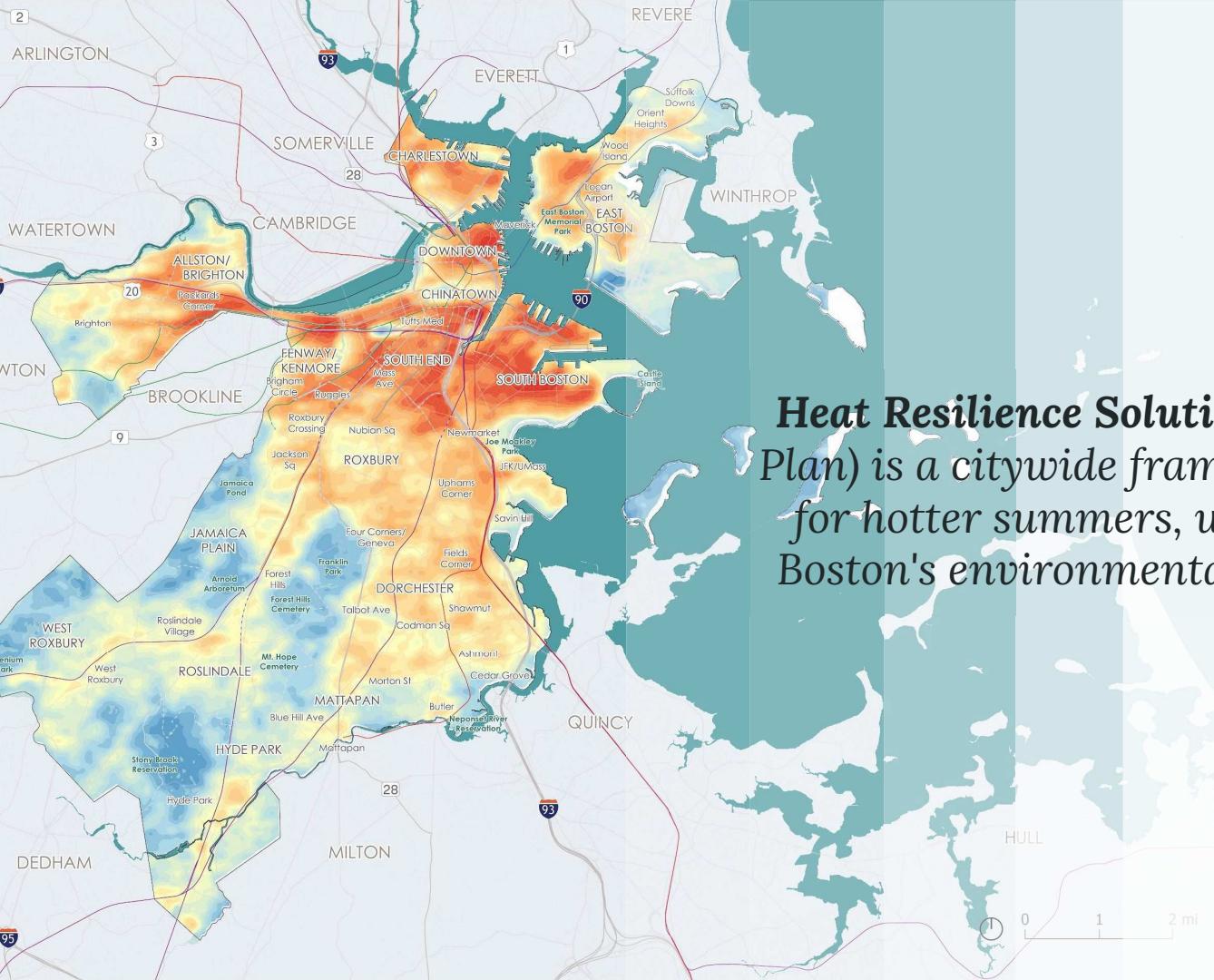


Citywide climate resilience efforts



EQUITABLE HEAT RESILIENCE

How can we protect all of our residents from extreme heat, while addressing inequities in exposure, sensitivity, and adaptive capacity?



Why create a heat resilience plan?



Why is heat risk significant?

- Boston is already experiencing the effects of climate change.
- Extreme heat is the number one cause of weather-related deaths in the US

Historic Trends

- In MA, temperatures have increased by 3.5°F since the beginning of the 20th century.
- In Boston, we typically experience ~ 10 days over 90 degrees.

Future Heat Projections

- By 2070, it's likely Boston will have around 130 days over 80°F each year.
- By 2070, it's likely that Boston will have up to around 60 days over 90°F each year.



The project team and plan stakeholders



CITY DEPARTMENTS, AGENCIES AND COMMISSIONS

- Boston Conservation Commission (BCC)
- Boston Environment Department
- Boston Parks and Recreation Department (BPRD)
- Boston Planning and Development Agency (BPDA)
- Boston Public Works Department (PWD)
- Boston Public Health Commission (BPHC)
- Boston Transportation Department (BTD)
- Office of Emergency Management (OEM)
- Inspectional Services Department (ISD)
- Mayor's Office of New Urban Mechanics (MONUM)
- Mayor's Office of Resilience and Racial Equity (MORRE)
- Age Strong Commission

STATE AGENCIES

- Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA)

COMMUNITY ADVISORY BOARD (CAB)

- Diverse citywide representation (16 residents)

REGIONAL PARTNERS

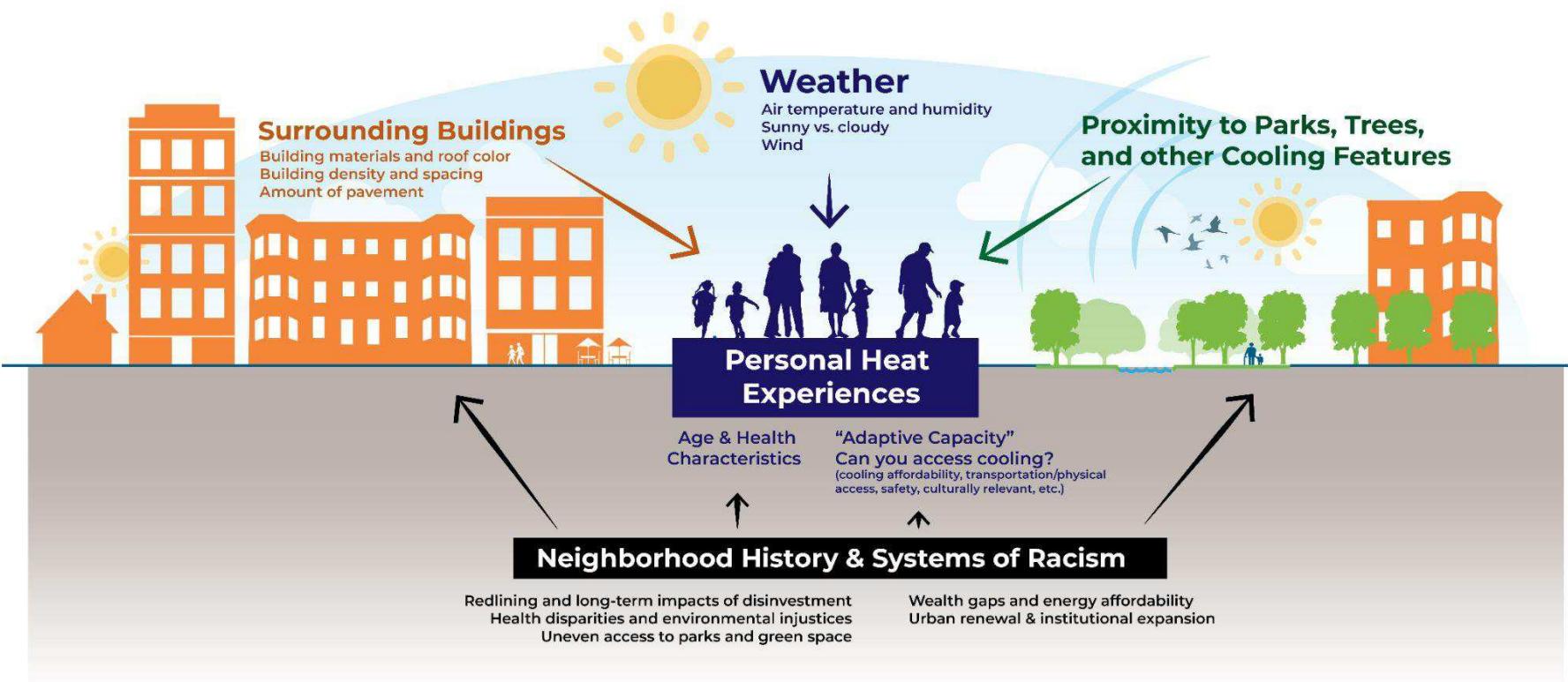
- City of Chelsea
- Metropolitan Area Planning Council (MAPC)
- Resilient Mystic Collaborative (RMC)

CONSULTING TEAM

- Sasaki
- Klimaat
- WSP
- All Aces

CONTEXT OF EXTREME HEAT IN BOSTON

A framework for factors of extreme heat risk



What does heat resilience mean in Boston?



- preparing people, buildings, infrastructure, and the public realm
- ensuring that all residents and other stakeholders have the resources they need to stay cool and safe in hot summer months
- reducing temperatures in hotspots throughout the city



Goals for heat resilient design

Building healthy communities



- Reduce Heat Exposure

Reduce indoor and outdoor urban heat exposure, intensity, and duration by enhancing the capacity of the built environment to recover from daytime heat

- Adapt to Heat

Expand choices for staying cool during heat waves and improve awareness of actions residents can take to stay safe and cool.

- Address Sensitivity

Create healthier, more connected neighborhoods that help reduce underlying social determinants of health that increase heat risk.



VISUALIZING EXTREME HEAT RISK:

Heat Plan Climate Models

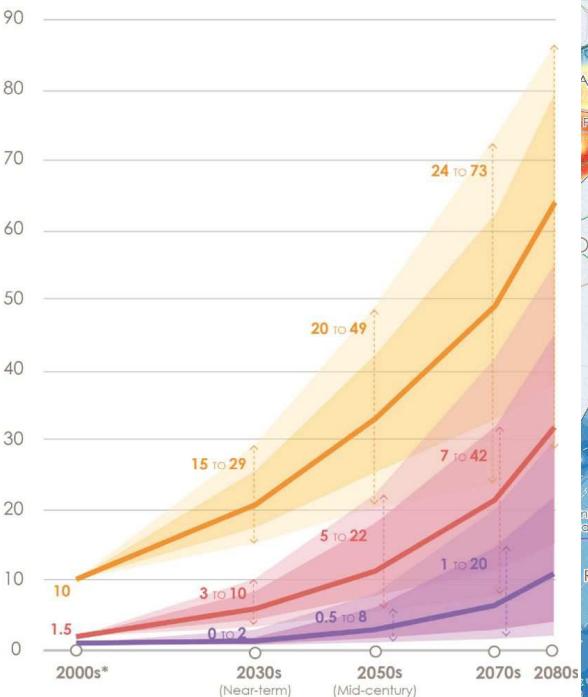
Context Of Extreme Heat In Boston

Climate modeling and heat mapping to inform strategies at multiple scales

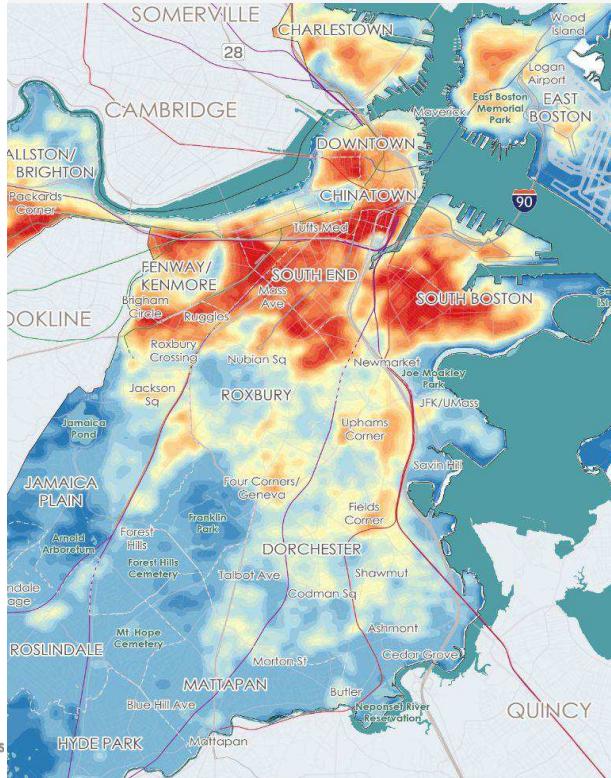


Future Climate Projections

BUSINESS-AS-USUAL EMISSIONS (RCP 8.5)



The Urban Canopy Model



Neighborhood Climate Model

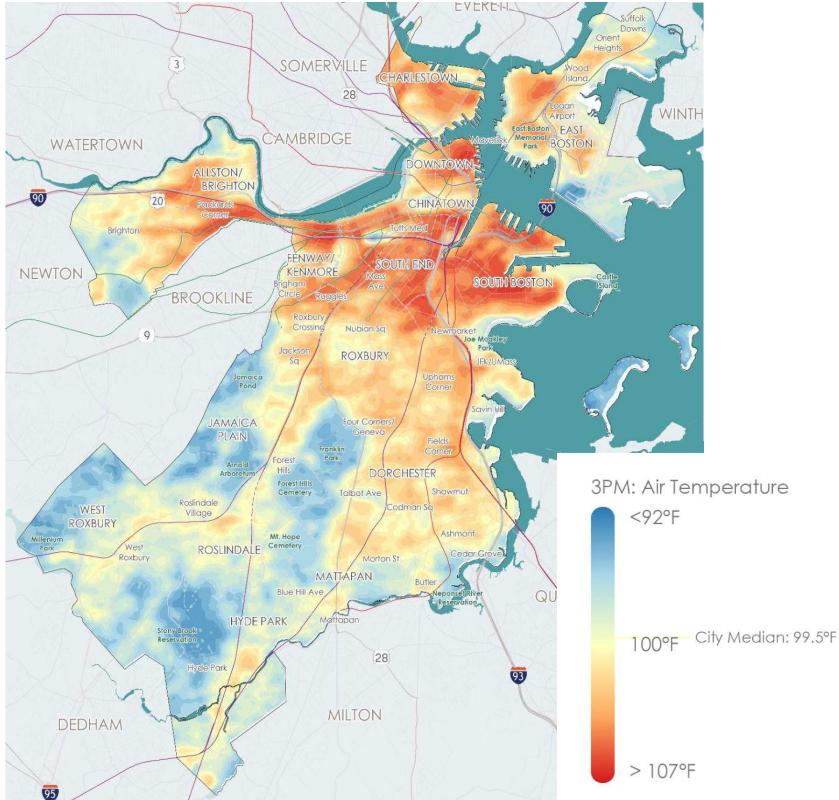


Extreme Temperatures in Boston

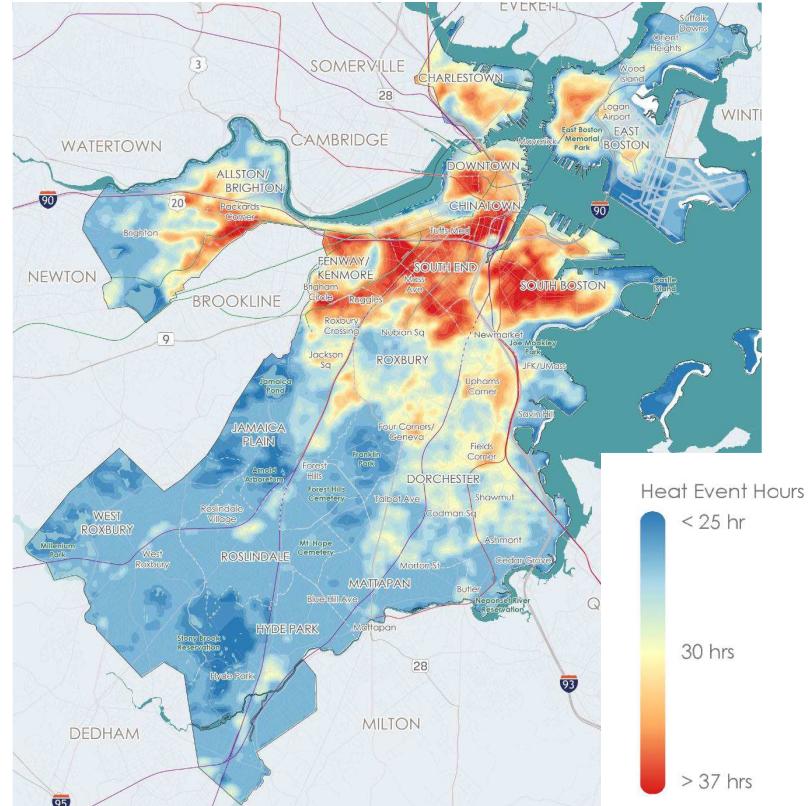
Temperatures can reach over 105 in the day; extreme heat conditions can last over 36 hours.



Daytime Air Temp (3 PM)



Heat Event Duration

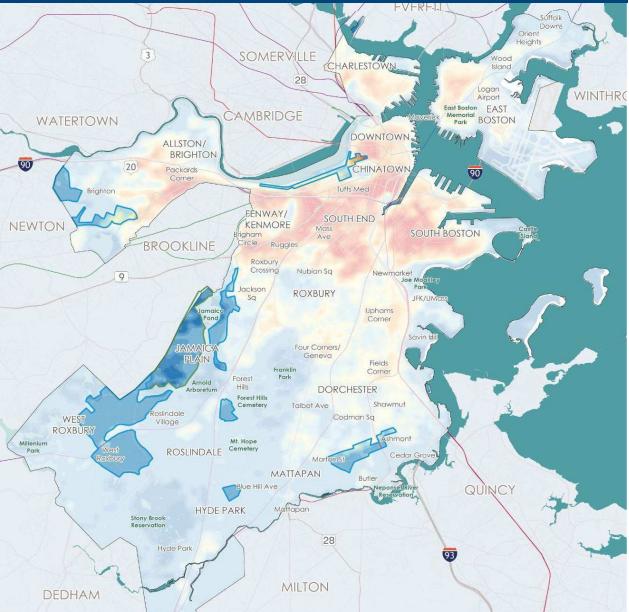


Context Of Extreme Heat In Boston

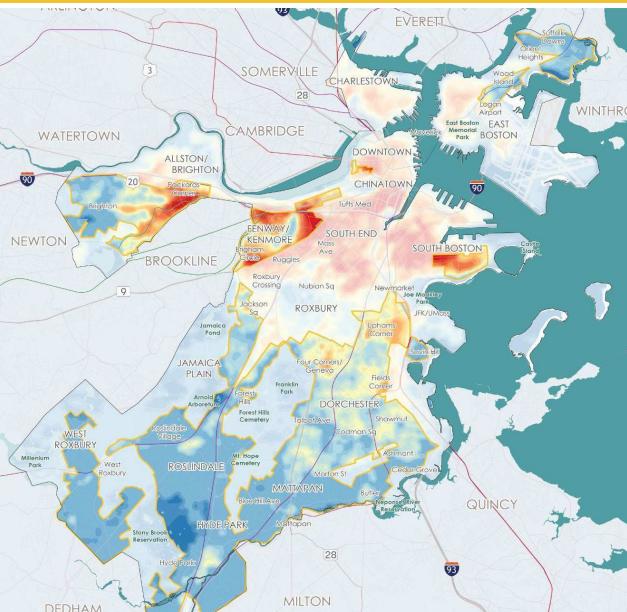
Today, redlined areas face more extreme urban heat



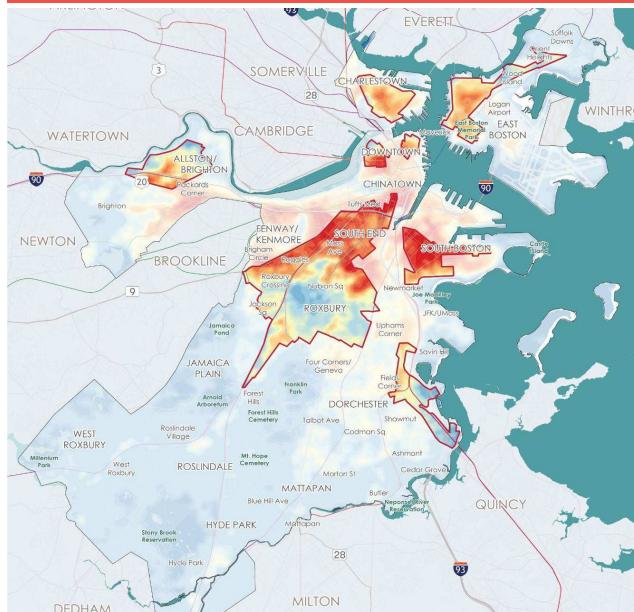
A: "Best" & B: "Still Desirable"



C: "Declining"

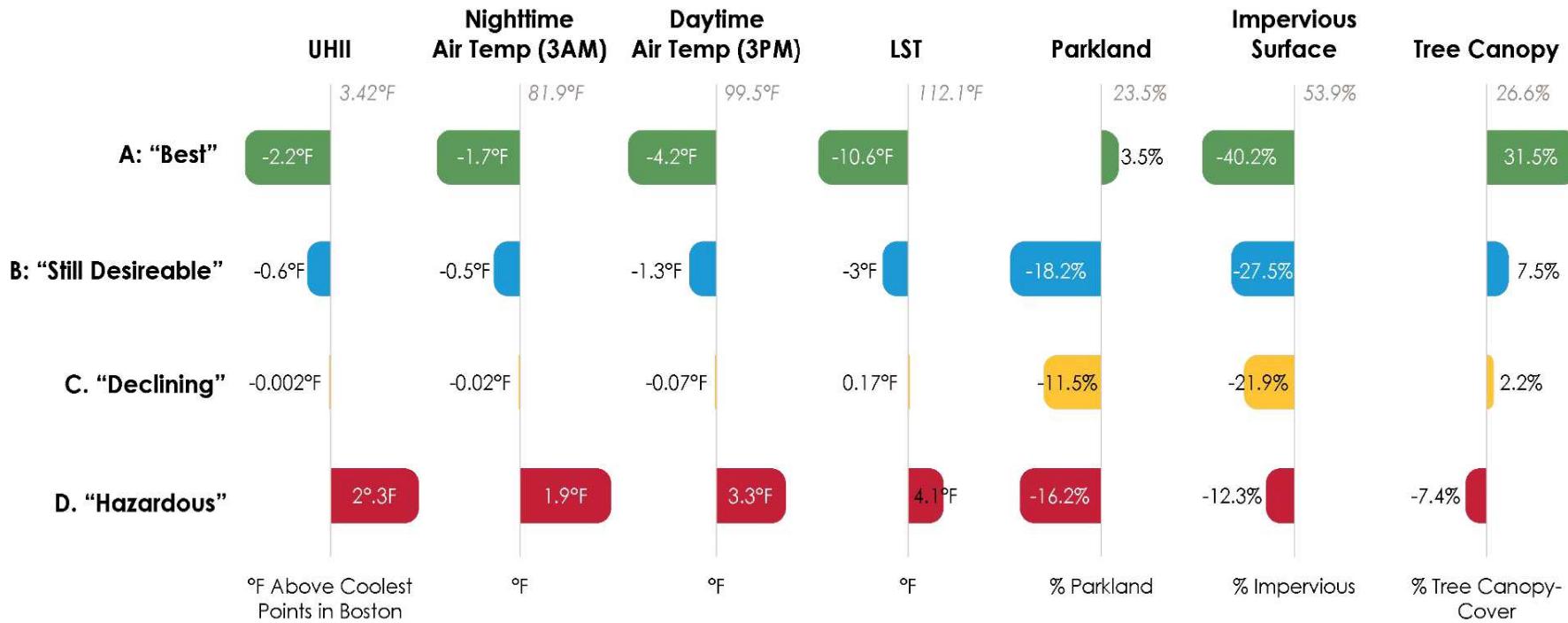


D: "Hazardous"



Comparison of metrics across HOLC grades

Histories shape present day experiences

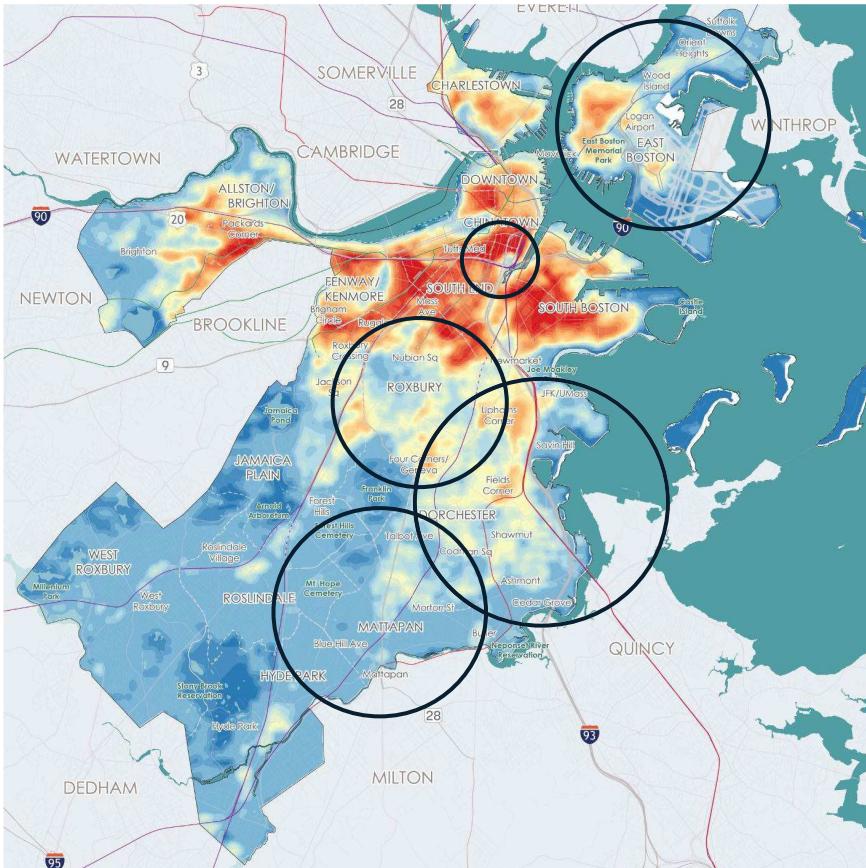


Heat Plan Neighborhood Focus Areas

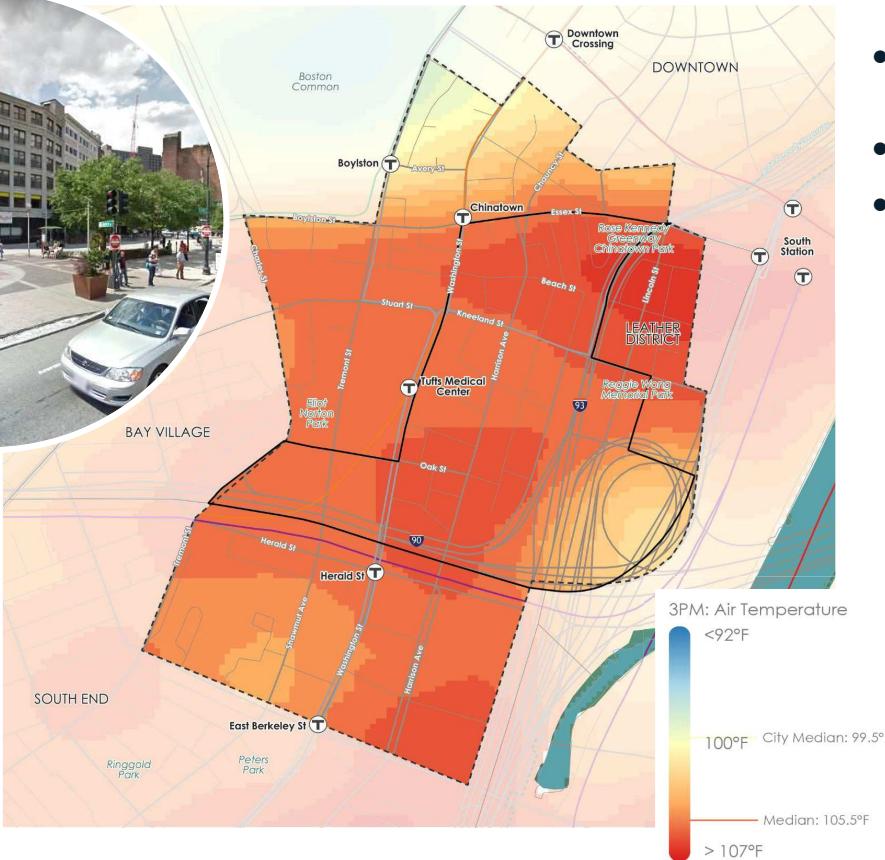
Heat resilience investments designed with justice and equity at the center



- Chinatown
- East Boston
- Dorchester
- Mattapan
- Roxbury



Daytime Temperatures in Chinatown



- Chinatown is extremely hot during the day and is Boston's hottest neighborhood.
- Extended heat duration
- Median neighborhood air temperature at 3 pm is 105.5°F (6 degrees hotter than Boston median)

Chinatown Gate



Franklin Park



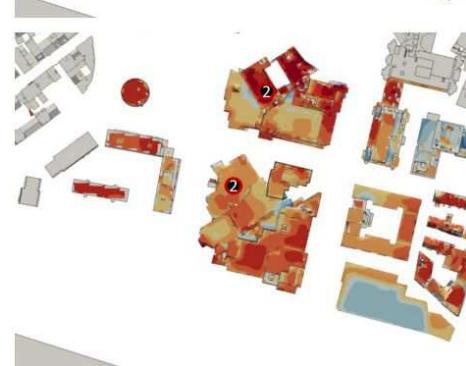
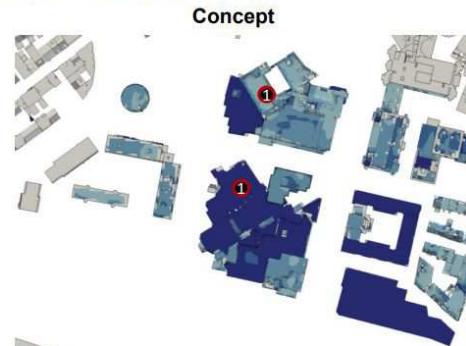
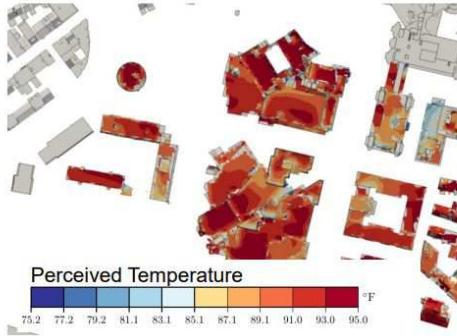
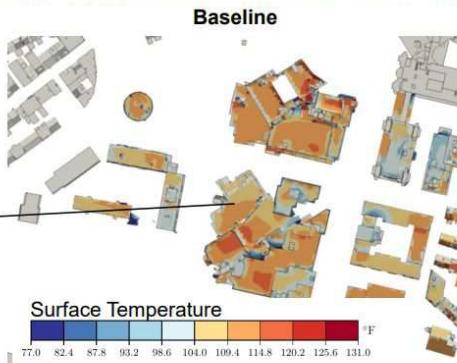
Neighborhood Climate Model key observations

Heat reduction effect of green roofs



Key Observations

- Near **30°F reduction** in surface temperature
- **4°F reduction** in perceived temperature.

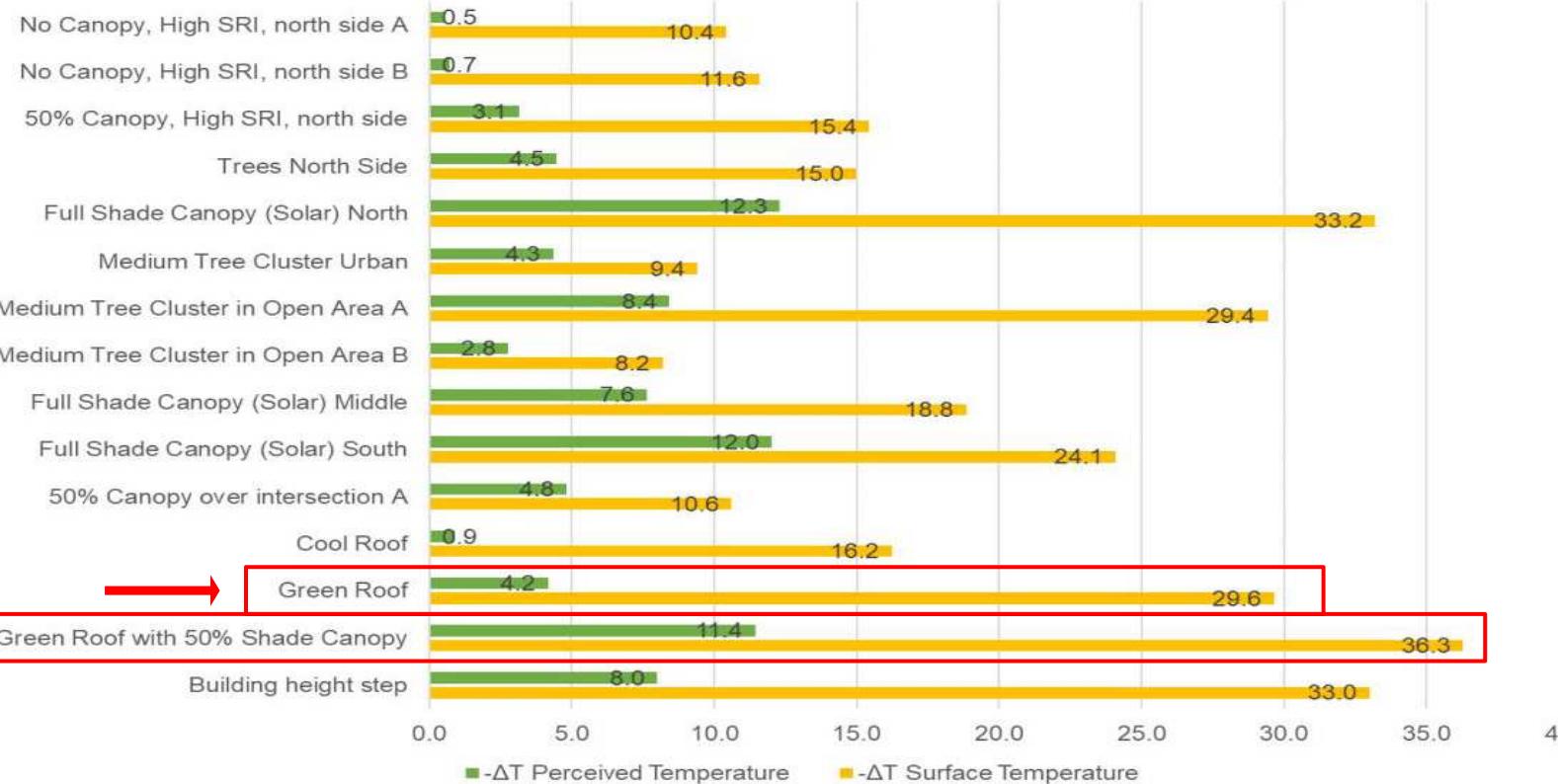


Heat reduction effect of solution typologies

Neighborhood Climate Model results



Temperature Reduction ($\Delta^{\circ}\text{F}$) vs Urban Cooling Strategy



An aerial photograph of Boston, Massachusetts, showing the city's layout and surrounding water bodies. Key neighborhoods are labeled: DORCHESTER, SOUTH BOSTON, DOWNTOWN, and EAST BOSTON. The map includes green areas representing parks and forests.

COMMUNITY ENGAGEMENT

Co-mapping surveys to identify characteristics of high heat area

B

SURVEY RESULTS: WHERE DO YOU FEEL HOT OUTSIDE?

Comments on the online mapping survey allowed people to give context for why a specific location is hot.



- WHERE DO YOU...
• Feel too hot inside
• Feel too hot outside
— Uncomfortably hot routes

Much of South Huntington lacks street trees and is so wide that few trees shade the opposite side.

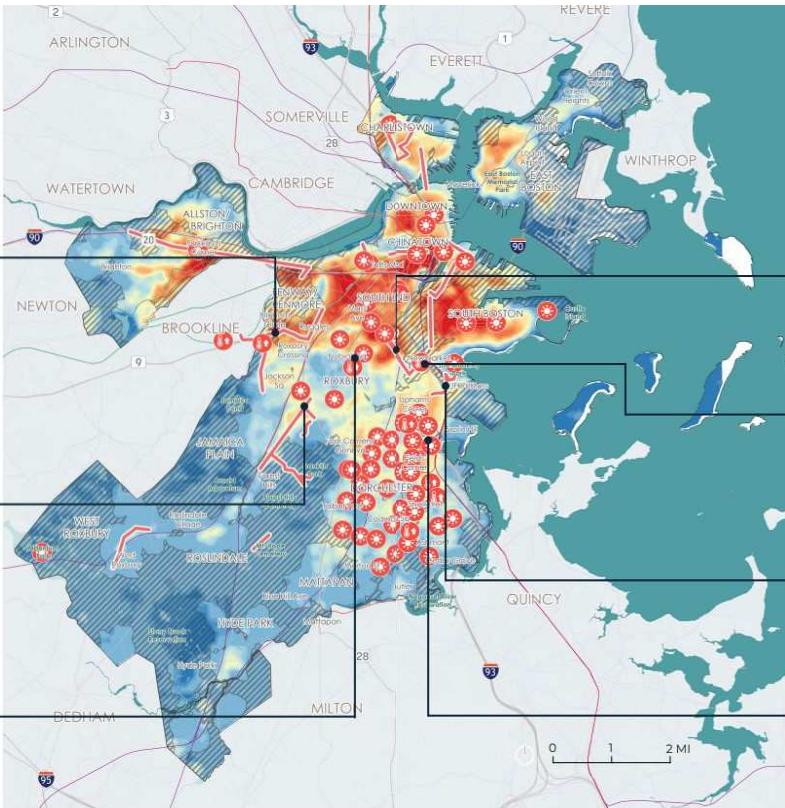
1

The wide streets and high traffic through Egleston Square make it uncomfortable to walk around, though the two small parks along this route are great for gathering.

2

This stretch of Warren Street is unpleasant for walking or waiting for the bus. Very little shade, lots of big vehicles.

3



This route is all concrete, not a single tree. Many of our residents in Boston who are battling homelessness also hang out here, and look sunburned during the summer. There is no shade and riding a bike is very hot.

4

Many people come here because it has free and accessible parking, shopping, and places to eat. There is, however, no place to cool down for free. NO green areas. No trees.

5

It is so hard to get here by public transit and then it is too hot. Too much hard surface.

6

It's so much hotter, dustier, and uncomfortable to walk or bike this stretch of Dorchester Ave. than the section preceding or just after.

7

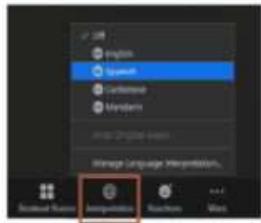
The Heat Stories Comic Builder

Storytelling as a tool for community engagement



Welcome to the Boston Heat Resilience Open House

Spanish, Mandarin, and Cantonese interpretation is available for this meeting. Please select your preferred language option at the bottom of the screen by clicking on the globe symbol.



Join in the fun



<https://experience-comic.web.app>



Hi, I'm Tiffany Rodriguez from Dorchester and this is my Boston Heat Experience

Morning

I wish there was shade to walk my dog in at Southbay in Dorchester.

Dorchester

Afternoon

It's so hot in here!

Dorchester WFH

Night

Finally cooling off but it would be nice to have green space.

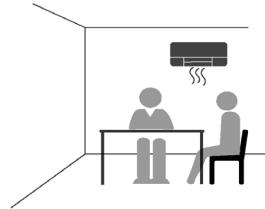
Dorchester

Developing The Heat Resilience Strategies

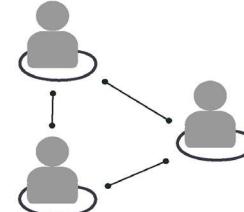
25 heat resilience strategies to increase access to resource and reduce localized extreme temperatures.



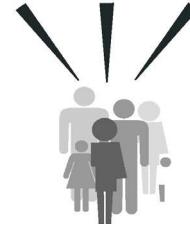
OPERATIONS AND COMMUNICATIONS



COOLING DURING HEAT WAVES



LOOKING OUT FOR NEIGHBORS



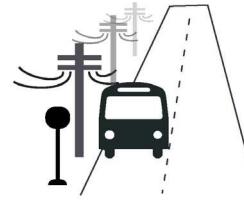
**AWARENESS,
EDUCATION, AND
TRAINING**



BUILDINGS



**PARKS, TREES,
AND OPEN SPACE**



**TRANSPORTATION AND
INFRASTRUCTURE**



**PLANNING,
ZONING, AND
PERMITTING**

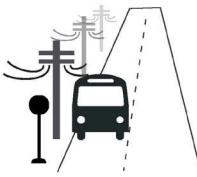
Additional scoping for Heat Plan strategy implementation



THE FRAMEWORK



THE STRATEGY



TRANSPORTATION AND INFRASTRUCTURE

THE PROGRAM

CLIMATE
READY STREETS

THE SITE SPECIFIC PROJECTS

- Reconnecting Communities
- Climate Ready Bus Shelters



IMPLEMENTING HEAT RESILIENCE STRATEGIES

Recent Heat Resilience Programs and Projects

A/C, Fan, and Cooling Towel Distribution Programs



Distribution of A/Cs, fans, and cooling towels.

Coordination with community based organizations, Boston Medical Center, and the Boston Housing Authority (BHA)

Recent Heat Resilience Programs and Projects

Pop-up Cooling Kits Program



The first pop-up cooling kit at Trotter Park with the Garrison Trotter Neighborhood Association.

- Pop-up misting stations to support outdoor community events
- 30 cooling kits
- 33 # community based organizations
- 8 BCYF locations

Recent Heat Resilience Programs and Projects



BPL Cool Spots and Outdoor Spaces



Outdoor Wi-Fi pop-up learning and work spaces at Boston Public Libraries.

Boston Public Library, Mayor's Office of New Urban Mechanics, and the Environment Department.

Additional services:

- free grab-and-go meals through Boston Summer Eats
- Rental Relief Fund office hours

Boston Tree Alliance Program

Planting tree on private land to improve long-term resilience and public health



Reconnecting Chinatown

Reconnecting Chinatown



The primary objective of the Reconnecting Chinatown Study and Design Project is to **envision the future uses and design of parcels 19, 20, 21, and 22**, which will enhance and provide much-needed green, open, community spaces as well as uses beneficial to the Chinatown community by designing attractive urban spaces, without displacing long-time residents in the neighborhood.

- **A Community Vision**
- **Mitigate Urban Heat Island Effect & Improve Climate Resiliency**
- **Improve Mobility & Safety**
- **Connect the Existing Urban Fabric**
- **Place-making & Attractive Spaces**
- **Community Engagement & Consensus Building**
- **Feasibility Study of Air Rights Development**

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Appendix



Boston Heat Resilience Study

Technical overview of the urban heat island modelling methodology

IN PROGRESS REPORT

May 12, 2021

For

The City of Boston and Sasaki Associates

By

Klimaat Consulting & Innovation Inc.

Meiring Beyers, PhD, Director

meiring.beyers@klimaat.ca

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2.2 Canopy urban heat island (UHI) modelling methodology.....	5
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1. Introduction

This report is part of the work covered in the Boston Heat Resilience study initiated by the City of Boston and led by Sasaki Associates. The report aims to provide a high-level overview of the technical methodology used by Klimaat Consulting & Innovation Inc. ("Klimaat") to model the urban heat island characteristics across the Boston Municipality ("Boston"). The modelling work is performed to help the design team and the city stakeholders visualise and evaluate the spatial and temporal distribution of urban heat across the city. This report does not intend to be a complete scientific description of the urban Land Use and Land Cover (LULC) influences on urban climatic characteristics and focusses mainly on the overview of the heat modelling and mapping methodology as applied to the heat resilience study.

The specific purpose of the work performed here was to generate georeferenced data (map) layers that allow for a spatial and temporal evaluation of the distribution of urban heat island characteristics within and around Boston. It aims to compliment and support the work performed earlier by others as part of the Climate Ready Boston initiatives.

2. Urban Heat Islands

Urban heat island effects are typically evaluated or defined as the difference between localised urban climatic conditions and the conditions further away from the urban centres such as within its suburbs and the rural outskirts. Many textbooks are available that describe these urban climatic processes in detail, such as Oke et al (Oke, 2017). In general, a combination of urban land use and land cover (LULC) characteristic may modify the surface and near surface energy exchanges with the urban atmosphere that causes climatic differences between rural and urban landscapes. These influences include, but are not limited to,

- increased hardscape and or limited or different urban vegetation cover that alters the amount of solar radiation intercepted by the urban fabric and modifies the latent heat contribution to the near surface energy exchange,
- increased urban massing that changes the ventilating wind flow characteristics within urban streets and neighbourhoods and affects the sensible heat contributions within the urban setting,
- increased urban massing and its form alters the shading and sky view factors especially within denser city contexts which affects the shortwave and longwave radiation exchange within the city,
- differences in urban land cover thermal specifications, such as reflectance, emissivity, heat capacity, material density and moisture content, that changes the local heat transfer and thermal storage characteristics within the urban fabric, and

- anthropogenic heat sources i.e., the additional energy (heat) released into the urban setting due to human activities such as from heating or cooling of buildings, and from operating transport vehicles, to name a few sources.

When studying urban heat island effects, it is important to distinguish between, at least, surface and canopy heat island characteristics:

- surface urban heat island (SUHI) effects are urban-rural differences of *surface temperatures*, and
- canopy urban heat island (UHI) effects are urban-rural differences of *air temperature* in the near surface urban canopy layer i.e., roughly the layer between the surface and the urban massing height.

This distinction is important. High surface temperatures are often recorded during daytime within urban settings, such as solar exposed areas with low reflectance (albedo). These areas may include dark roof tops, asphalt covered parking lots, or even exposed natural or artificial grass surfaces or bare soil and are often also associated with higher local air temperatures. However, these enhanced daytime surface and air temperature characteristics may exhibit different characteristics at night, as the same exposure can also help it to cool more rapidly and generate cooler air temperatures. Thus, a high daytime surface and air temperature difference (high SUHI & UHI) may often diminish at night. Similarly, areas with dense urban massing may have comparably cooler daytime surface and near-surface air temperatures due to reduced grade level interception of solar radiation and enhanced thermal energy storage in the urban fabric. However, at night the denser urban form may be more effective in trapping the stored thermal energy by limiting re-radiation and sensible heat transfer and thereby heating the near surface atmosphere creating warmer air temperatures at night compared to rural surroundings.

As such there is benefit to evaluate urban heat island characteristics in terms of surface temperature (SUHI) and canopy air temperature (UHI) to identify areas that are hot during daytime, hot during nighttime, or potentially worse for summer heat wave conditions, hot during day and nighttime i.e., prolonged diurnal heat wave conditions. This forms the main purpose of the work; to contribute to the study of the urban heat characteristics in Boston to provide spatial and temporal SUHI and UHI data. In the following section a high-level overview is provided of the urban heat modelling and analysis methodology applied in this work.

2.1 Surface urban heat island (SUHI) analysis

Surface heat island effects are often studied by means of remotely sensed data to generate Land Surface Temperatures (LST) maps from multispectral satellite data such as Landsat 8 (<https://landsat.gsfc.nasa.gov/landsat-8/landsat-8-overview>). The purpose here was not to generate new LST maps for Boston from Landsat multispectral satellite data, as this effort is thoroughly covered in work performed by other groups. Instead, it aims to compliment the existing Boston heat map datasets, as currently used by the city for understanding its spatial heat distribution

characteristics, with additional urban canopy heat island (UHI) information. However, Landsat 8 derived LST datasets were produced in this work but were mainly used to test the performance of the urban canopy urban heat island modelling process (K-UCMv1), described below, as hourly surface temperature data is also one of the resolved and exported variables. This makes it useful for independent comparison between the LST information obtained from Landsat and that derived from the urban canopy modelling.

In the current work a LST map was generated based on a Landsat 8 image data taken on July 13, 2016. The land surface data is derived based on the 30m resolution multispectral bands and the 100m resolution thermal bands. The processing is based on a well-established radiative transfer model approach, as described by Peng et al. (Peng, 2020), to derive the LST. The methodology essentially converts the satellite measured at sensor, top-of-atmosphere radiance (thermal band data) to surface radiance and a land surface temperature. The method employs the local normal difference vegetation index (NDVI), derived from 30m the multi-spectral Landsat 8 bands, to approximate the local surface emissivity, and employs an atmospheric correction for the atmospheric condition at the time that the satellite image was taken (Barsi, 2005) (<https://atmcorr.gsfc.nasa.gov/>) to close the surface radiation energy balance equation and derive the ground level surface black body radiation. This in turn provides the surface temperature according to the Planck formula. More complete details are available in Peng et al. (Peng, 2020). A sample of the resultant LST obtained from the Landsat 8 data is shown in the case study results section below. Alternatively, processed LST data can also be directly obtained from the NOAA Landsat program (<https://www.usgs.gov/core-science-systems/nli/landsat/landsat-surface-temperature>).

Surface heat island effects are also studied using Moderate Resolution Imaging Spectroradiometer (MODIS, <https://modis.gsfc.nasa.gov/about/>) satellite data that can provide daytime and nighttime surface temperature analysis with band resolutions from 250m to 1000m. This was beyond the scope of the current work.

2.2 Canopy urban heat island (UHI) modelling methodology

The main purpose of this work is to derive spatial maps of the near-surface air temperature across the Boston region through modelling of the canopy urban heat island effects. An Urban Canopy Model (UCM) generally refers to a modelling approach that aims to perform spatio-temporal modelling of the climate within the urban canopy layer, the layer between the surface and roughly the height of the urban features. This is usually done by solving a surface and near surface energy balance that describes and parameterises the governing physics within the urban canopy layer, based on urban land use and land cover characteristics and specifications and deliver an approximation of time dependent urban climatic condition.

In the current work, the UCM model developed by Klimaat is used (Klimaat Urban Canopy Model, version 1, "K-UCMv1"). A high-level and simplified overview of the K-UCMv1 modelling approach is given below.

2.3.1 Surface Energy Balance

The UCM model used here solves a local surface energy balance (SEB) based on LULC input and regional meteorological forcing. The modelling approach, its solution process and underlying governing physics generally follows that of other single-layer UCM models (Kusaka, 2001) (Lee, 2008) (Ryu, 2011). The SEB is solved per individual tile (pixel) in the analysis domain with every tile representing a position in a 100m resolution grid array generated from the LULC input. The tile input and its UCM solution therefore approximates an average condition of the urban condition, its form and material specification at a resolution of 100m.

The starting point for the UCM is to determine surface temperatures (ground, walls, roofs) by solving an energy balance at the different surface facets of an approximated urban setting at every grid tile. The surface energy balance includes different energy flux contributions to the overall surface energy balance, i.e.

$$Q^* = Q_H + Q_L + Q_G \quad (1)$$

where Q^* , Q_H , Q_L and Q_G represents the net energy contributions from net all-wave radiation (downwelling and upwelling long and shortwave radiation), sensible, latent and ground heat fluxes, respectively, as shown in Figure 1 below.

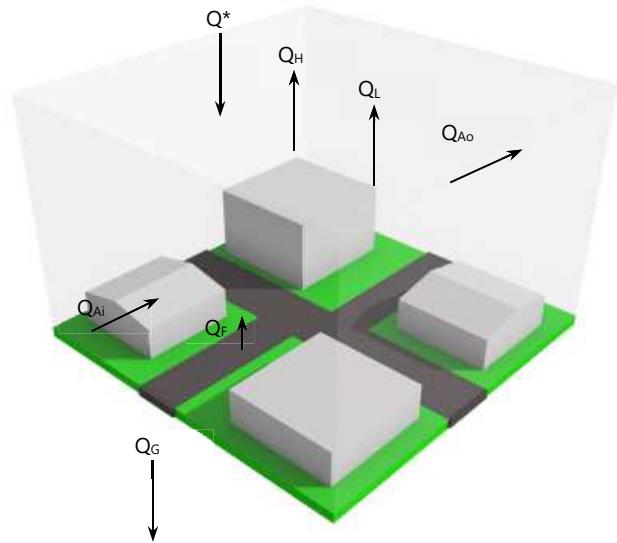
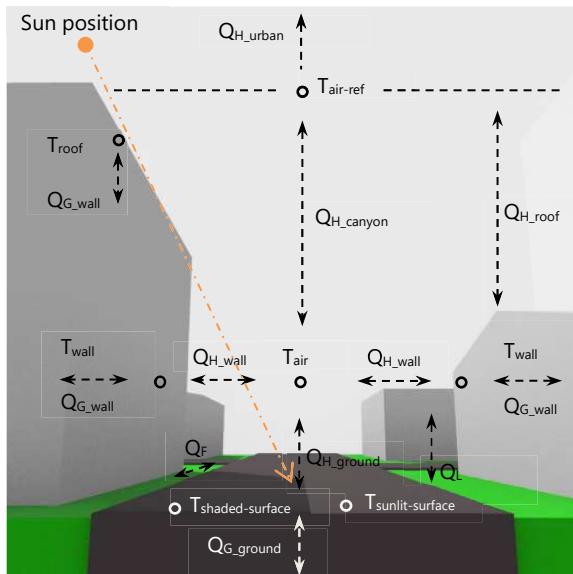


Figure 1: Surface and near surface energy balance components for a single-layer urban canopy model (left) and urban canopy control volume energy balance (right).

An additional energy balance is solved in the air volume that approximates the urban canopy (canyon) that balances the surface fluxes, convective fluxes and local heat sources within the urban canyon to derive the time dependent air properties.

The net all-wave radiation flux, Q^* is the balance of shortwave and long wave radiation components. The shortwave contribution to the surface energy flux is determined by the balance of incoming

shortwave radiation contributions from direct and diffuse solar radiation, as per the meteorological forcing, and the reflected shortwave radiation, influenced largely by the solar reflectance of the surface (albedo), the surface orientation intercepting the incoming flux, the exposure of the surface to direct radiation (hourly shading) and the exposure of the surface to diffuse radiation via the local visibility of the sky hemisphere (sky view factor). The longwave contribution is the balance between the incoming longwave radiation (meteorology forcing) and the upwelling longwave radiation exchange between the urban canyon surfaces and the atmosphere.

The sensible heat flux, Q_H , is the heat flux due to the temperature differences between the urban canopy air and its adjacent surfaces and driven by the turbulent exchange between the surfaces of the urban canopy and the air within and above the urban canopy. For one, the turbulent heat exchange between ground or roof surfaces are parameterised according to Monin-Obukhov similarity theory to derive the near surface heat transfer coefficient, similar to (Ryu, 2011) (Kusaka, 2001) and approximates the near surface canyon wind speed as a function of reference wind speed, the urban aerodynamic roughness and the urban building form (height to width ratio).

The latent heat flux at the surface is the net energy contribution (or sink) due to the evaporation of water at the surface, controlled in the current model through the evapotranspiration moisture source provided by vegetation. The evapotranspiration is determined according to the Penman-Monteith equation (wikipedia, n.d.) modified to employ hourly meteorology data and scaled according to the fraction of vegetation present at the local surface tile.

The ground or surface heat flux contribution, Q_G , is the transport of heat into or from the surface layers through heat conduction, controlled by the properties of the surface facet layer such as its thermal conductivity, thermal heat capacity and density. The surface heat flux contribution requires coupling of the surface energy balance solver with an additional conduction heat transfer model and solver that can approximate the time-dependent temperature profile within the ground or surface facet. This is important so that the thermal energy storage effect of different surface facets (ground, walls, roofs) is properly accounted for when determining the surface temperatures that exchanges its heat and moisture with the urban canopy atmosphere near it.

The surface energy balance therefore constitutes a set of coupled governing equations that control each of these flux contributions, linked with an additional energy balance within an urban canopy layer control volume that describes the exchange of heat (and moisture) between the surfaces and the atmosphere above it. The latter also includes an additional control volume energy balance contribution from anthropogenic heat or moisture sources. The anthropogenic heat flux is the energy contribution due to man-made fluxes such as heat sources (or sinks) from building heat or cooling or operation of vehicles.

The urban canopy control volume energy balance model solves the time dependent evolution of the temperature and humidity of the near surface air layer within an approximation urban canyon form and specification as determined by the tile averaged LULC and the urban massing input. In the current model, the control volume energy balance solution and subsequent derivation of its

average air temperature is mainly influenced by turbulent exchanges of heat or moisture between the air volume within the canyon, the surfaces (ground, walls, roofs) adjacent to it and the atmosphere above it. Precipitation or soil moisture effects are not currently included in the model.

The energy balance at the surface and within the urban canopy volume, and the coupled ground heat conduction model is driven (forced) by an hourly meteorological forcing dataset and solved at 1 minute time intervals for the duration of a weekly analysis period. Urban canopy climate characteristics are exported hourly.

2.3.2 Meteorological forcing

An hourly or sub-hourly meteorological dataset is required to drive or force the urban canopy model solution process, i.e., it drives the time-dependent solution of the surface and urban canopy control volume energy balances. The forcing data should be representative of the regional meteorological conditions. In the current work the historical hourly forcing data is obtained from the ERA5 gridded re-analysis product of the European Centre for Medium-range Weather Forecasts (ERA5, 2017). Klimaat uses in-house data handling and analysis processes to download and extract the historical hourly near surface meteorological dataset into suitable and standard formatting for use with the K-UCMv1. The meteorology dataset contains hourly data of the near surface air temperature, humidity, wind speed, wind direction, downwelling shortwave and long wave solar radiation components, among other variables. For the current work, two ERA5 datasets were compiled for the year 2016 and 2019, as described below for the case study work. The meteorological datasets are also provided as supplementary materials as part of the overall project deliverable.

It is important to note that the present UCM modelling process is one-way coupled to the meteorological forcing data, meaning the forcing data drives the UCM solution, but without feedback to change the regional meteorological condition, as is often done with high-resolution weather forecasting modelling approaches. The current method should therefore be considered more as an urban climate downscaling method, rather than a complete urban weather model with full two-way coupling with a mesoscale atmospheric model.

2.3.3 Land-use and Land-cover (LULC) specification

A number of important LULC characteristics are required as inputs for the UCM as these represent the tile averaged condition of the urban canopy layer. These include, but are not limited to, spatial maps of land cover characteristic including surface vegetation, water bodies, surface reflectance, terrain elevation and urban massing (building heights). The majority of the land cover specifications are derived from the Sentinel-2 (Sentinel-2, n.d.) multispectral satellite imagery which delivers its multispectral data at 10m resolution. Terrain elevation data is obtained from NASA SRTM (SRTM, n.d.) at 30m resolution. All the processed LULC spatial data is resampled and averaged into 100m resolution grids (tiles) as required for the UCM.

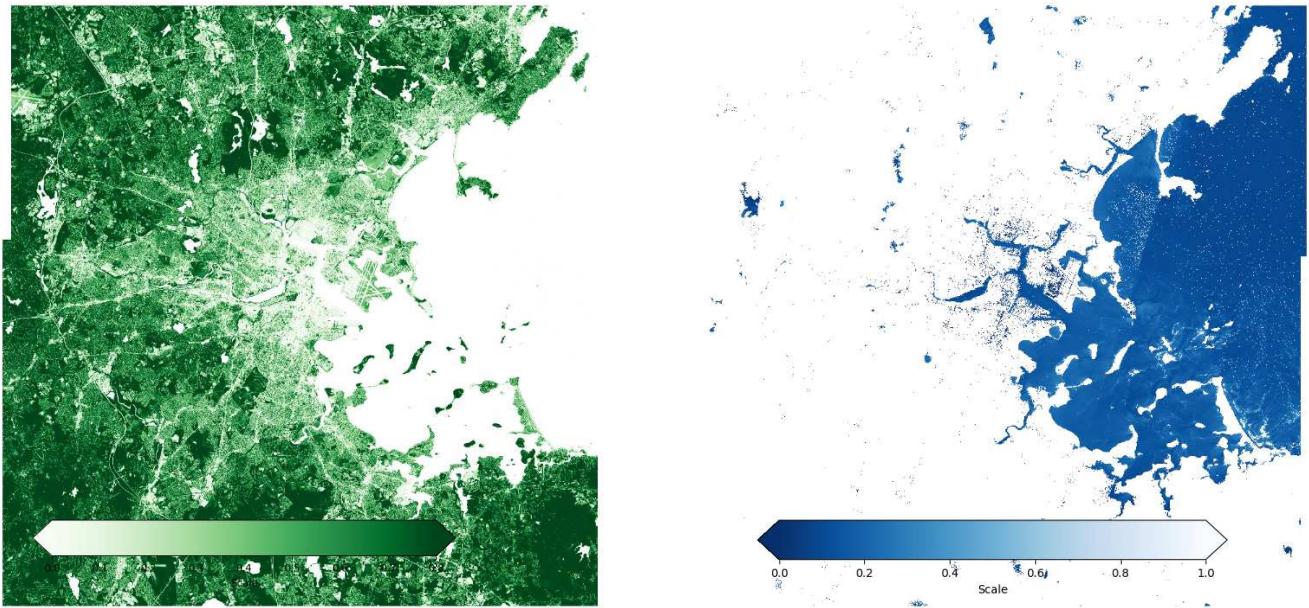


Figure 2: Sample of Sentinel-2 processed data for Normalised Difference Vegetation Index, NDVI (left) and Normalised Difference Water Index, NDWI (right).

The satellite data is processed into different land cover indices used by the UCM through processing of different multispectral band combinations to provide LULC conditions such as Normalised Difference Vegetation Index (NDVI) for vegetation coverage and Normalised Difference Water Index (NDWI) for water bodies i.e.,

$$NDVI = \frac{NIR - RED}{NIR + RED} \quad (2)$$

$$NDWI = \frac{GREEN - NIR}{GREEN + NIR} \quad (3)$$

where NIR, RED and GREEN represent the near infrared, red and green multispectral band data from Sentinel-2. An example of the processed NDVI and NDWI indices for Boston is shown in Figure 2.

For urban massing (building heights) building footprint and elevation data provided by city of Boston (for the Boston Municipality) was combined with older datasets for outlying areas to derive a regional building height map that covers the extents of the model. The building height data is also averaged into a 100m resolution raster tile which is used in the model to mathematically determine the surface sky view factor and hourly shade fractions, among other things that influences the localised surface energy balance solution. Hourly shade fractions at each tile are calculated based on the local hourly solar position, similar to the methodology of (Kusaka, 2001).



Figure 3: Image sample of building footprint and height data for the City of Boston

2.3.4 Additional model thermal specification inputs

Additional modelling inputs and assumptions are required by the model where the information is not provided by the satellite derived LULC tile set, with a selection shown in Table 1.

Table 1: Additional K-UCMv1 land surface specifications

Ground (soil): Specific thermal heat capacity (kJ/m ³ /K), thermal conductivity (W/m/K), emissivity	1900, 0.8, 0.9
Walls: Specific thermal heat capacity (kJ/m ³ /K), thermal conductivity (W/m/K), albedo	1340, 0.8, 0.94, 0.25
Roofs: Specific thermal heat capacity (kJ/m ³ /K), thermal conductivity (W/m/K)	1400, 0.8, 0.94

2.3.5 UCM Modelling Output - Heat indices

The UCM model produces a data array that represents the spatio-temporal climatic variables covered within the model region and for the analysis period. The data array represents the modelled, average hourly urban meteorological condition at 100m spatial resolution. This datasets is further processed into urban heat indices and delivered as georeferenced image layers (geotiff rasters) to the design team (Sasaki) for further processing and integration into the overall study program deliverables. The data layers are resampled to 10m resolution using a bilinear

interpolation. This is done purely for visualisation purposes when overlaying the model data with other datasets. The key data layers that were processed and integrated into the main report include:

- **Air Temperature (Ta):** The near surface air temperature. Four map layers were produced to show the spatial distribution of air temperature across Boston at different time periods on the warmest day of the analysis week. These were air temperatures during the night (3am), morning (10am), afternoon (3pm) and evening (9pm).
- **Urban Heat Island Intensity (UHII):** To better study the temporal effects of the urban heat condition an Urban Heat Island Intensity metric was defined, similar to that described in Taha et al. (Taha, H. and Freed, T., 2015). The UHII uses the entire weeklong hourly dataset and sums the hourly difference between the local and rural air temperature before averaging this by day i.e.,

$$UHII = \frac{24}{N} \sum_{1}^{N} (T_{local} - T_{rural}) \quad (3)$$

The index therefore provides a daily degree hours ($^{\circ}\text{F}\cdot\text{hr}\cdot\text{day}^{-1}$) index as a measure of the overall difference between a local condition and the regional temperature. In effect, the degree hour map helps to highlight areas that remain hot and for longer and is therefore reflective of both the intensity and the duration of localised heat within the city. The design team (Sasaki) have subsequently modified the exported data layer further to show the UHII as an average daily temperature difference above the rural temperature.

- **Land Surface Temperature (LST):** The surface temperature of the ground at 10am of the warmest day during the analysis week. This provides an additional measure of the ground surface temperature condition within the urban context at a similar time stamp when Landsat 8 satellite data is gathered.
- **Heat Event Duration (HED):** The heat event duration is the modelled duration (hours) during which heat conditions exceed heat advisory levels during the analysis week. The Boston heat advisory index determines whether to issue a heat advisory, alert, or emergency based on forecasted weather conditions and uses the heat index, as defined by the National Weather Service (NOAA, n.d.), to determine the heat event level. In this work the HED is calculated as the number of hours during the analysis week that the heat index exceeded a threshold temperature of 95°F (heat alert level) for the days when the daytime low temperatures did not drop below 75°F. This index useful to determine which neighbourhood areas would stay the hottest for the longest during weeks with heat wave events.

3. Urban Heat Modelling Runs

An analysis domain was selected with an extent of approximately 31km by 31km centred over the Boston Municipality. For this domain, two different weeklong historical analysis periods were analysed:

- The first period selected was for a week of July 10-17, 2016. This sample period coincides with a day (July 13, 2016) during which a near cloudless Landsat 8 image was available from which a LST surface map could be generated that is independent of the K-UCMv1 derived land surface temperatures. The purpose here was to compare the Landsat 8 LST map and the K-UCMv1 LST approximation as a measure of the performance of the modelling approach to predict surface temperatures.
- The second period selected was for a week of July 18-24, 2019. This period was chosen in collaboration with the City of Boston to model a period that coincided with a reported strong heat wave event in the recent past. The analysis results and data layers obtained from this modelling period was the main focus and deliverable of the current work. The resultant output data layers were integrated and overlayed with additional datasets by the design team (Sasaki) as shown and discussed in the main report.

A few key output data layers for the analysis periods are provided as samples below. The raw data layers were processed and integrated by the design team (Sasaki) into the main Task 2 report that forms part of the overall Heat Resilience dataset.

3.2 Case Study: July 10-17, 2016

For the current work surface temperature predictions were used to test its performance against Landsat 8 processed data. The modelled land surface temperature obtained from the K-UCMv1 is shown here for comparison to the Landsat 8 derived LST in Figure 4. The K-UCMv1 model land surface temperature map is produced for the same hour during which the Landsat 8 satellite image was taken, between 10am and 11am on the morning of July 13, 2016. As shown in Figure 4, the spatial distribution of the warm and cooler surfaces predicted by K-UCMv1 generally seems to agree with the surface temperature distribution and range found from the Landsat 8 analysis.

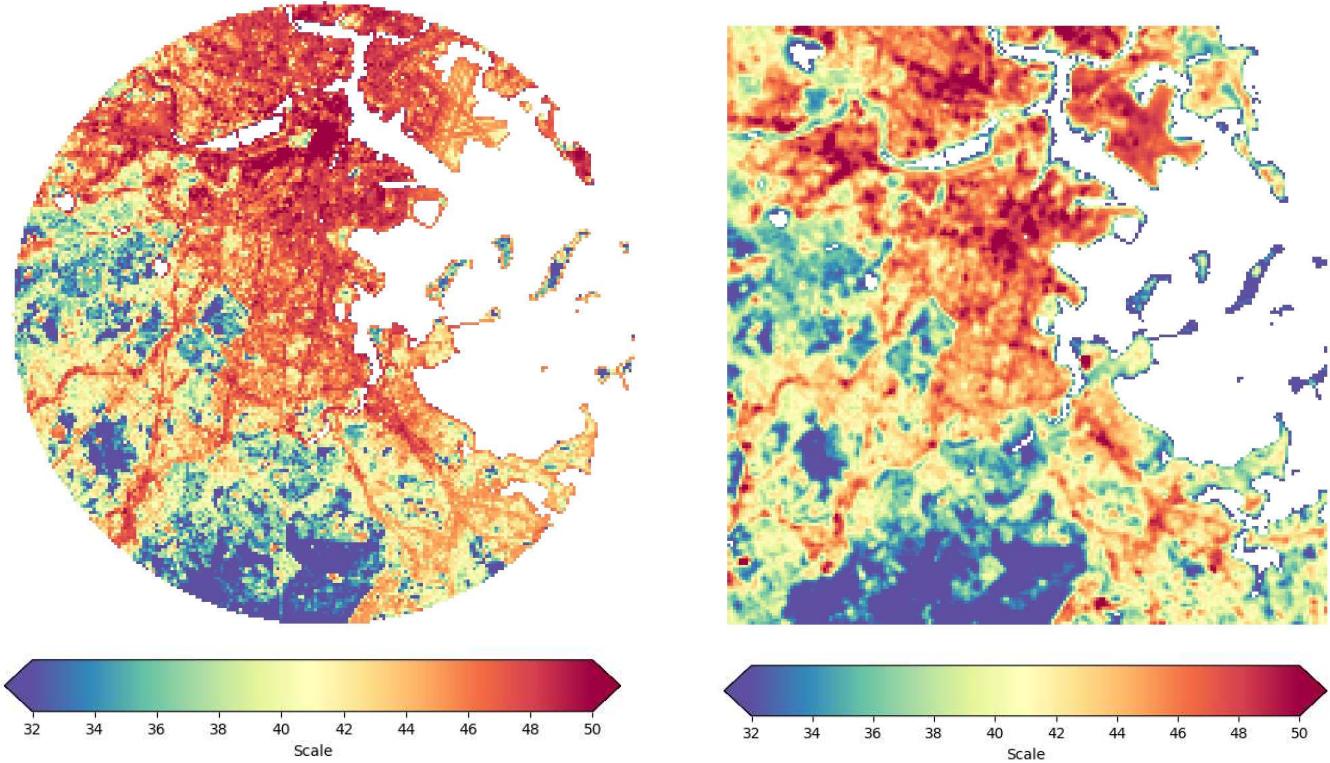


Figure 4: Spatial comparison of the LST as modelled by K-UCMv1 (left) and processed from Landsat 8 data (right) for July 13, 2016, at approximately 10am. Temperature scale is in °C.

Figure 5 shows a pixel-by-pixel comparison between the K-UCMv1 model and the Landsat 8 processed land surface temperature data. This suggests that the K-UCMv1 model is capable of producing similar trends across the analysis region. The correlation between the Normalised Difference Vegetation Index (NDVI) and the surface temperature is also compared in Figure 5. This shows that the K-UCMv1 model generally matches the trend of the Landsat 8 surface temperature variation with NDVI although the Landsat 8 data has more variation across NDVI levels.

The current work and this methodology report do not intend to be a complete validation of the K-UCMv1 method as this is an on-going effort with continuous modelling approach updates and improvements. In particular, the K-UCMv1 model is part of an international comparative study to assess the performance of urban canopy models to predict surface energy fluxes.

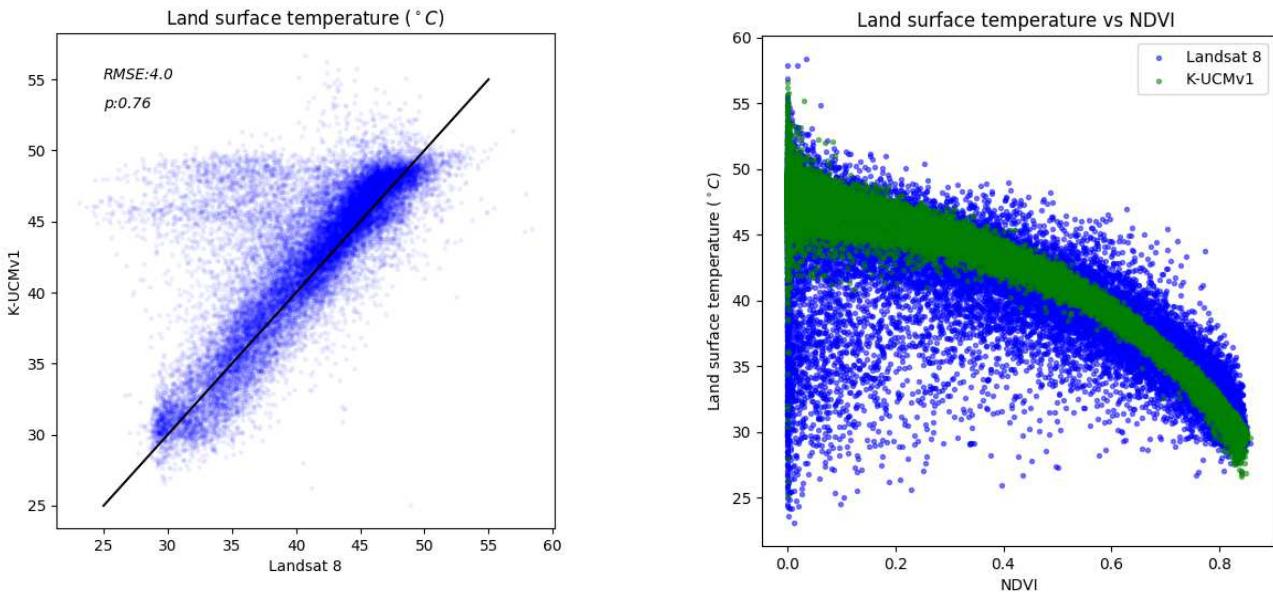


Figure 5: (Left) Correlation between the land surface temperature (°C) modelled by K-UCMv1 and from processed Landsat 8 data for July 13, 2016 10am. (Right) Correlation between the Normalised Difference Vegetation Index (NDVI) and the predicted land surface temperature from K-UCMv1 and Landsat 8.

3.3 Case Study: July 18-25, 2019

Based on discussions with the City of Boston, a weeklong period of July 18 to 24, 2019 was selected to produce the heat characteristics maps for the Boston Heat Resilience Study. This week coincided with a very intense heat wave with peak temperatures of approximately 36°C on July 21 and July 22 measured at the airport. The main output data layer results are discussed in the main report of the Heat Resilience Study as integrated into the design team deliverable by Sasaki. A sample of the set of the data layers provided to the design team is shown below only to highlight the different output data layers with a brief description of the spatial and temporal heat characteristics across the city. The main design report uses the exported data layers to zoom into specific focus areas (neighbourhoods) to examine the urban context that may cause elevated high urban heat island conditions and help identify potential mitigation measures to improve it.

Figure 6 shows a map of the modelled Urban Heat Island Intensity (UHII) index and the Heat Event Duration (HED) index for the week of July 18 to 24, 2019. The UHII index highlights areas that have the hottest and longest departure (difference) from the rural temperature condition. This is also shown in the Heat Event Duration index, which shows that solar exposed neighbourhoods, with extensive hardscape, massing and limited vegetation, stays within heat wave conditions the longest (33 to 36 hours) compared to rural outskirts and forested areas that stay within heat wave conditions the shortest (25 hours) during the analysis week of July 18 to 25, 2019.

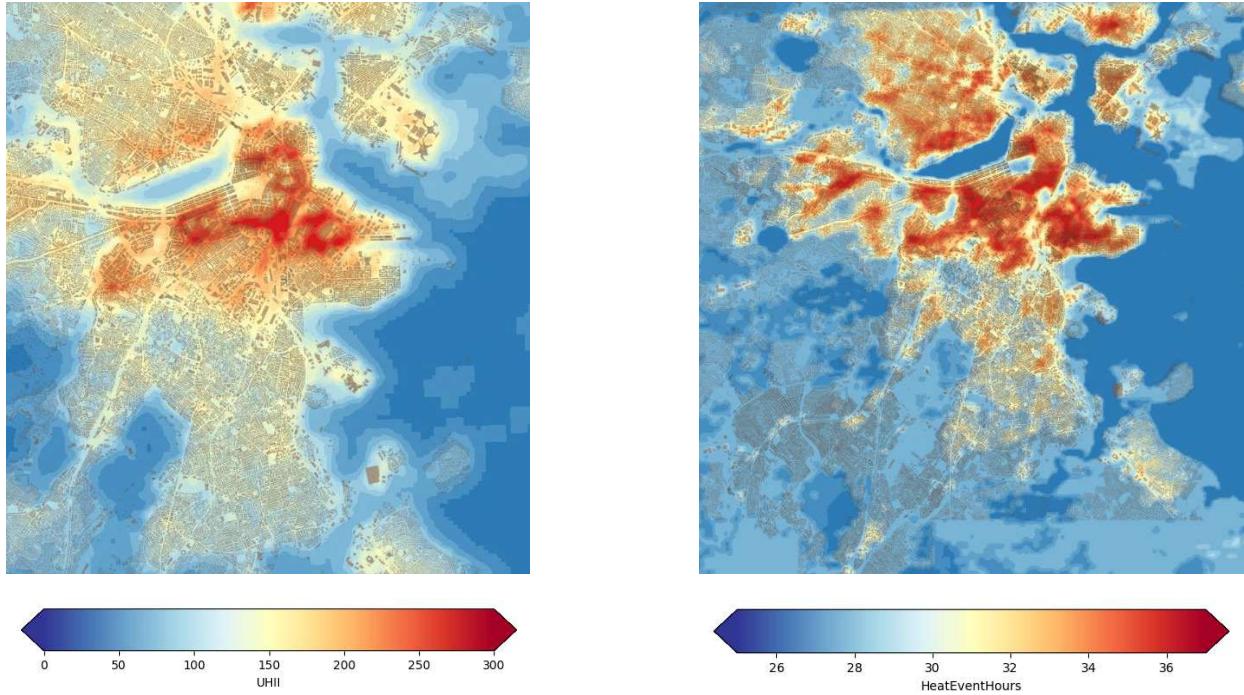


Figure 6: (Left) Urban Heat Island Intensity (°F-hours/day) and (right) Heat Event Duration (Hours/week) for Boston on July 22, 2019.

Figure 7 shows the near surface air-temperature map for July 22, 2019 for four periods during the day namely night (3am), morning (10am), afternoon (3pm) and evening (9pm). This highlights the change of air temperature during the course of one day during the very hot conditions of July 20-22, 2019. Cooler daytime temperatures are modelled for areas within the deeply shaded spaces of the denser urban centre with its tall massing. Daytime temperatures within solar exposed areas with significant hardscape are the highest. During night-time, the suburban outskirts cooled down faster compared to the dense urban core which retains the most heat and becomes the warmest area. One of the main reasons for warmer temperatures occurring within the city core during the night and into the early morning, compared to the cooler outlying suburban and forested areas, is the slower release of heat stored within the urban massing and its land surface. In more exposed areas the heat is released quickly due to the higher night sky exposure and enhanced open area ventilation. The comparably warmer night-time and morning temperatures and cooler afternoon temperatures within the denser urban cores were also found in Portland by Voelkel et al. (Voelkel, 2017).

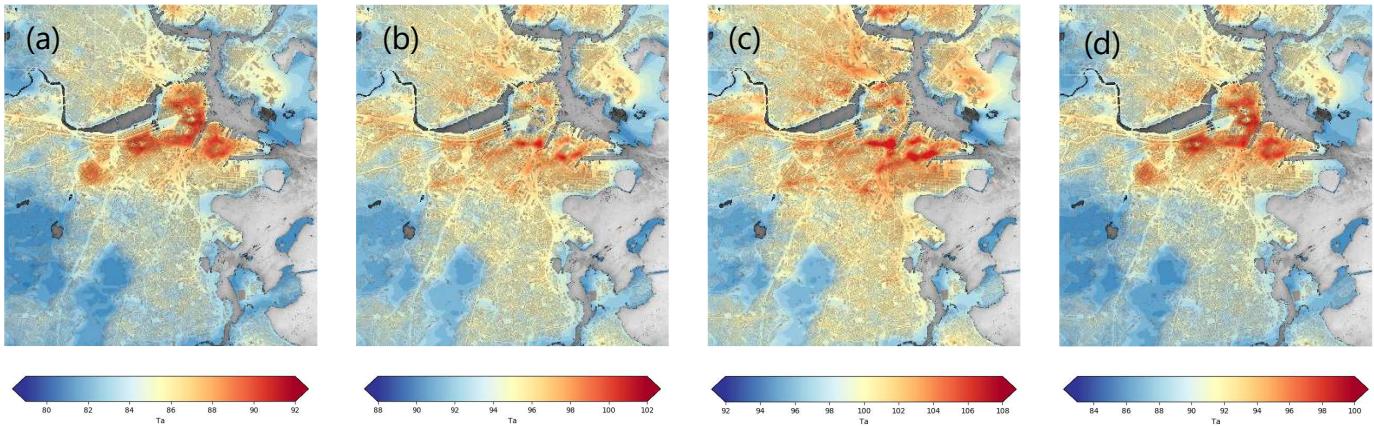


Figure 7: Near surface air temperature ($^{\circ}\text{F}$) on July 22, 2019 for (a) 3am, (b) 10am, (c) 3pm and (d) 9pm

4. Summary

This report highlights the urban canopy modelling methodology used as part of the City of Boston Heat Resilience Study. It describes the main heat characteristic indices, exported as georeferenced data layers, employed to help visualise the urban heat characteristics across the Boston Municipality and in the neighbourhood focus area heat analysis and mitigation work. The final data layer output and visualisations are provided and discussed in more detail for key Boston neighbourhoods in the main report by the design team.

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Bilag 7 Bilag til regnskab

FAKTURA

Nummer: 96
Dato: 2023-09-25
Købers ordrenr: 4050103088
Sælgers ordrenr: 112

Bilag 85112116164

Godeholt 31.10.23
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Levering
Leveringsdag: 2023-09-25

TMU - ~~delelæder~~ nr. 23

Linje	Varenr	Beskrivelse	Antal	Enhed	Enhedspris	Moms	Pris incl
1	1	Udviklingen af det faglige program, herunder aftaler med div. oplægsholdere, planlægning af transport, koordinering af transport, mv., 50 %	1.00	EA	51500.0000 pr. 1 EA	25%	51500.00 DKK
2	2	Aconto beløb til forudbetalinger af bus, cykler, cykelguide, lokaleleje, mv.	1.00	EA	70000.0000 pr. 1 EA	0%	70000.00 DKK

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Momsfri andel	70000.00 DKK
Momsgrundlag	51500.00 DKK
Total momsbeløb (25.00%)	12875.00 DKK
Fakturatotal incl moms	134375.00 DKK

Betalingsmåde

Sidste betalingsdato: 2023-09-25
Indenlandsk kontooverførsel: (DK:BANK)
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Supplerende oplysninger om totaler
Afgift total: 12875.00 DKK

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FAKTURA

Ordre 4050103088

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Øvrig ref.: 4050103088

Nr.	Tekst	Antal	Enhed	Stk. pris	Pris
1	Udviklingen af det faglige program, herunder aftaler med div. oplægsholdere, planlægning af transport, koordinering af transport,mv., 50 %	1		51.500,00	51.500,00
2	Aconto beløb til forudbetaling af bus, cykler, cykelguide, lokaleleje, mv.	1		70.000,00	70.000,00
(Momsfrit beløb: 70.000,00 - Momspligtigt beløb: 51.500,00)				Subtotal :	121.500,00
				25,00% moms :	12.875,00
				Total DKK :	134.375,00

Betalingsbetingelser: Til omgående betaling - forfald **25.09.2023**
Beløbet indbetales til vores bank: **Nykredit** - Regnr.: **5470** / Kontonr.: **0003675452**
Fakturanr. **96** bedes anført ved bankoverførsel

Ved for sen betaling påregnes rente i henhold til gældende lovgivning.

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Nummer: 107
Dato: 2023-11-16
Købers ordrenr: n/a
Sælgers ordrenr: 121

Bilag: 5112258956

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DK43318160 (DK:SE, Moms)

Levering
Leveringsdag: 2023-11-16

Linje	Varenr	Beskrivelse	Antal	Enhed	Enhedspris	Moms	Pris incl
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2	10	A conto beløb på 70.000 kr. er modtaget til bus, honorarer, mv. Forbrugte udgifter er: Bustransport: 39.000 kr. Forplejning på Harvard: 5.030 kr. I alt: 44.030 kr. Overskud til Kbh. Kommune: 25.970 kr. I bedes sende os en faktura på dette. Basis-/ordremængde faktor: 1	1.00	EA	0.0000 pr. 1 EA	0%	0.00 DKK

Linjesum i alt excl moms 51500.00 DKK
Momsfri andel 0.00 DKK
Momsgrundlag 51500.00 DKK
Total momsbeløb (25.00%) 12875.00 DKK
Fakturatotal incl moms 64375.00 DKK

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Reg.nr: 5470 Kontonr: 0003675452

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Afgift total: 12875.00 DKK

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Yderligere reference:
ID: 107

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Ref.: CX31

Ordre nr: 4050103088

Fakturanr.: 107
Fakturadato: 16.11.2023
Kundenr.: 90
Side: 1 af 1

Deres ref.: CX31

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	Restbetaling for udvikling af det faglige program, briefing af oplægsholdere, bustransport, forslag til restauranter, 50 %				
10	A conto beløb på 70.000 kr. er modtaget til bus, honorarer, mv.	1		0,00	0,00
	Forbrugte udgifter er: Bustransport: 39.000 kr. Forplejning på Harvard: 5.030 kr. I alt: 44.030 kr.				
	Overskud til Kbh. Kommune: 25.970 kr. I bedes sende os en faktura på dette.				
(Momsfrit beløb: 0,00 - Momspligtigt beløb: 51.500,00)				Subtotal :	51.500,00
				25,00% moms :	12.875,00
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Betalingsbetingelser: Netto 8 dage - forfald **24.11.2023**

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FAKTURA

Nummer: IN-DK5641322

Dato: 2024-01-08

Bilag 5112441606

Godkendt 121,- 24

Josephine

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Personreference: sharrow@egencia.com
Navn: Global Business Travel ApS
Tlf: 70712751

Levering
Leveringsdag: 2024-01-11

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Momsfri andel

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Fakturatotal incl moms

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Reg.nr: 3001 Kontonr: 3001566458
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Afgift total: 0.00 DKK

Yderligere oplysninger: Egencia Groups & Meetings: Grupperejse til Boston 12. - 16. November 2023 Købers
Ordrenummer:4050097817 Kontaktoplysninger: CX31()

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KØBENHAVN V 1500
Denmark

Kunde nr.: KBHK-DK : 01660001570-GDK
Projekt: 254079 Fly & hotel, 12 - 16 november 2023

Faktura nr.: IN-DK5641322
Faktura dato: 2024-1-8
Forfalds dato: 2024-2-7
Kunden CVR nr.: 64942212
Destination: Boston
Afrejsedato: 2023-11-12

Vores reference: Vilfort Kenn

Deres reference: CX31

EAN: 5798009809452
Købers Ordrenummer: 4050097817

Antal	Artikel	Netto	Moms %	Moms	Beløb
14	Hotel reservation	1680,00	0 %	0,00	1680,00 DKK
1	Fast honorar for udarbejdelse af hotel tilbud (op til 3 alternativer)	2200,00	0 %	0,00	2200,00 DKK
13	Bestilling fly	3640,00	0 %	0,00	3640,00 DKK
1	Bestilling mad Icelandair	1000,00	0 %	0,00	1000,00 DKK
13	Flybillet på økonomiklasse	74490,00	0 %	0,00	74490,00 DKK
52	Enkeltværelse	119080,00	0 %	0,00	119080,00 DKK
52	Morgenmad	8320,00	0 %	0,00	8320,00 DKK
2	Enkeltværelse Line Barfod	4580,00	0 %	0,00	4580,00 DKK
2	Morgenmad Line Barfod	320,00	0 %	0,00	320,00 DKK
1	Mad på fly	4810,00	0 %	0,00	4810,00 DKK
Sum ex. moms DKK					220120,00
Moms DKK					0,00
I alt DKK					220120,00
Faktura I alt DKK					220120,00

Moms %	Netto	Moms	Brutto

Global Business Travel ApS
dba American Express Global Business Travel
Langebrogade 3H, 2nd floor
1411 Copenhagen K
Denmark
Tlf.: +45 7071 2751
Email: accounting.medk@amexgbt.com

CVR: 73489628

Reg nr.3001
Bankkonto: 3001 566 458
Bank: Danske Bank
Swift: DABADKKK
IBAN: DK 8530003001566458

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FAKTURA

Nummer: DKS143231776
 Dato: 2023-09-06
 Købers ordrenr: n/a

Bilag: 5112037810

Godekendt 16/10-83
 Josephine

Fakturamodtager
 KØBENHAVNS KOMMUNE
 Njalsgade 13,
 1505 KØBENHAVN V
 Landekode: DK
 5798009809452 (GLN, EndepunktID)

Kontaktoplysninger
 Personreference: Ms
 Hebo Charlotte

Fakturaafsender
 Egencia Denmark A/S
 Langebrogade 3H, 2nd floor,
 1411 KØBENHAVN K
 Landekode: DK
 DK26524857 (DK:CVR, EndepunktID)
 DK26524857 (DK:CVR, Juridisk)
 DK26524857 (DK:SE, Moms)

Kontaktoplysninger
 Personreference: Egencia
 Denmark A/S
 Tlf: +45 7070 8000

Linje	Varenr	Beskrivelse	Antal	Enhed	Enhedspris	Moms	Pris incl	Pris
1	DKS143231776	HANSEN/MIKKEL SKOVGAARD MR Basis-/ordremængde faktor: 1 Yderligere oplysninger: Fly, København-Reykjavik, Reykjavik-New York (JFK), Boston-Reykjavik, Icelandair, Reykjavik, Arrival: 2023-11-08, Departure: 2023-11-16, PNR: WSJ7VD, Travellers Name: HANSEN/MIKKEL SKOVGAARD MR, Kunde: TMF. STAB 809452, Bruger Ident (Evt.POGR) ELLER Indkøbsordrenummer: 208129870 Varebeskrivelse: Fly, København-Reykjavik, Reykjavik-New York (JFK), Boston-Reykjavik, Icelandair, Reykjavik, Arrival: 2023-11-08, Departure: 2023-11-16, PNR: WSJ7VD, Travellers Name: HANSEN/MIKKEL SKOVGAARD MR, Kunde: TMF. STAB 809452, Bruger Ident (Evt.POGR) ELLER Indkøbsordrenummer: 208129870(da)	1	EA	4909.00 pr. 1 EA	0.00%	4909.00	DKK
2	DKS143231776	HANSEN/MIKKEL SKOVGAARD MR Basis-/ordremængde faktor: 1 Yderligere oplysninger: Fly, Reykjavik-København, Icelandair, København, Arrival: 2023-11-17, Departure: 2023-11-17, PNR: WSJ7VD, Travellers Name: HANSEN/MIKKEL SKOVGAARD MR, Kunde: TMF. STAB 809452, Bruger Ident (Evt.POGR) ELLER Indkøbsordrenummer: 208129870 Varebeskrivelse: Fly, Reykjavik-København, Icelandair, København, Arrival: 2023-11-17, Departure: 2023-11-17, PNR: WSJ7VD, Travellers Name: HANSEN/MIKKEL SKOVGAARD MR, Kunde: TMF. STAB 809452, Bruger Ident (Evt.POGR) ELLER Indkøbsordrenummer: 208129870(da)	1	EA	0.00 pr. 1 EA	0.00%	0.00	DKK
3	DKS143231776	HANSEN/MIKKEL SKOVGAARD MR Basis-/ordremængde faktor: 1 Yderligere oplysninger: Salghonorar fly	1	EA	379.85 pr. 1 EA	0.00%	379.85	DKK

international, Travellers Name:
HANSEN/MIKKEL SKOVGAARD MR,
Kunde: TMF. STAB 809452, Bruger Ident
(Evt.POGR) ELLER Indkøbsordrenummer:
208129870
Varebeskrivelse: Salgshonorar fly
international, Travellers Name:
HANSEN/MIKKEL SKOVGAARD MR,
Kunde: TMF. STAB 809452, Bruger Ident
(Evt.POGR) ELLER Indkøbsordrenummer:
208129870(da)

4 DKS143231776 NULL 1 EA 0.00 pr. 1 EA 0% 0.00 DKK

Basis-/ordremængde faktor: 1

Yderligere oplysninger:

*Udlægsreglement artikel 79c Direktiv
2006/112/EC*Egencia optræder som agent.
Leverandøre kan fakturere inklusiv
indenlandsk moms(1) Artikel 153 Direktiv
2006/112/EC

Varebeskrivelse: *Udlægsreglement artikel
79c Direktiv 2006/112/EC*Egencia optræder
som agent. Leverandøre kan fakturere
inklusiv indenlandsk moms(1) Artikel 153
Direktiv 2006/112/EC (da)

Linjesum i alt excl moms	5288.85 DKK
Momsfri andel	5288.85 DKK
Fakturatotal incl moms	5288.85 DKK

Betalingsmåde

Sidste betalingsdato: 2023-10-06

Indbetalingskort (FIK): > 71 000001432317764 +80739567<

Betalingsbetingelser

Type: 1

Yderligere oplysninger: SPECIFIC

Supplerende oplysninger om totaler

Afgift total: 0.00 DKK

OIOUBL dokumentparametre

CustomizationID:OIOUBL-2.1

Profil ID:urn:www.nesUBL.eu:profiles:profile5:ver2.0

ID:DKS143231776

Dokument valuta:DKK

Mikkel Skovgaard
Forplijning til udrije.

SSP Denmark Aps
La Place CPH T2
Kastrup Airport

4418 Naeem A

Chk 4173 CHK:4104-0084984

08Nov 23 12:17

1 Rye Bread Tuna 69,00

Auth#:121729

Visa 69,00

13,80 VAT TTL 69,00

Net TTL 55,20

Subtotal 69,00

Payment 69,00

CVR: 29536740

Term: 19589145-986265

2023-11-08 12:17

Visa DEBIT

Contactless

*****5425-0

AID: A0000000031010

ATC: 00591

TYR: 0000000000

Sted: 8683807

Ref.: 973378 121729 KF1

Resp.: 00

Periode: 385

K#B

DKK 69,00

GODKENDT

Mikkel Skougaard.
Forplejning til udrije.

MATHÚS

Lagardere Travel Retail ehf

www.ltr.is

Kt. 610814-0690

VSK nr. 119402

Kvitt: 000000FN24000023547
Starfs Notandi Færsla 23544
Dags.: 08.11.23 15:45

Lýsing	Upphæð	
ÖS Iceland Spring sk pcs	399 A	
VF Coke Zero 0.5L pcs	479 A	
MH Salmon wrap pcs	1.399 A	
Samtals	2.277	
Kort	-2.277	
VISA 5425		
VSK% Nettóupphæð	VSK	Upphæð
A 0 2.277	0	2.277

Keflavík Airport Iceland
Þökkum viðskiptin

FÆRSLUHIRDÍR: Rapyd
B000428 S0357883 00060015
VSC 7.7.2.10 8101 99129502
181 1508 FÆRSLUNR: 0002623 HEIMILD: 164536
000000FN24000023547

Cardholder copy

Fra: Britt Grunnet <FW5V@kk.dk>
Sendt: 23. november 2023 10:27
Til: Josephine Christina H Rasmussen <CX31@kk.dk>
Emne: VS: Refusion efter studietur - regning fra Iceland Air

Kære Josephine

Mikkel Skovgaard har heller ikke modtaget bekræftelse fra Iceland Air på forplejning. Som nævnt må regning på 18 GBP (= 154,77 DKK) svare til bestilling af forplejning til Mikkel Skovgaard (pita m. kartoffel-karry-spread og chiagrød) til flyrejse Boston-København den 16. november 2023.

Det koster jf. Iceland Airs hjemmeside i alt 3.150 islandske kr. = ca. 152,78 DKK.

Mvh Britt

A handwritten signature in blue ink, appearing to read "Britt Grunnet".



BOOKING NUMBER

311 327 9696

Sunday, Nov 12, 2023

01:00 PM New York Port Authority

📍 625 8Th Ave, 10018 New York

ⓘ Operated by Greyhound Lines

Bus US0230 Greyhound
Direction Boston S Station Transp Center05:50 PM Boston S Station Transp Center

📍 700 Atlantic Ave, 02111 Boston



The same QR code is used for your entire journey

 Adults Seat
Mikkel Skovgaard Hansen 3B 1 × Carry-on bag(s) 25 lbs · 16.5×12×7 in 1 × Stored bag(s) 50 lbs · 31.5×20×12 in

Additional information

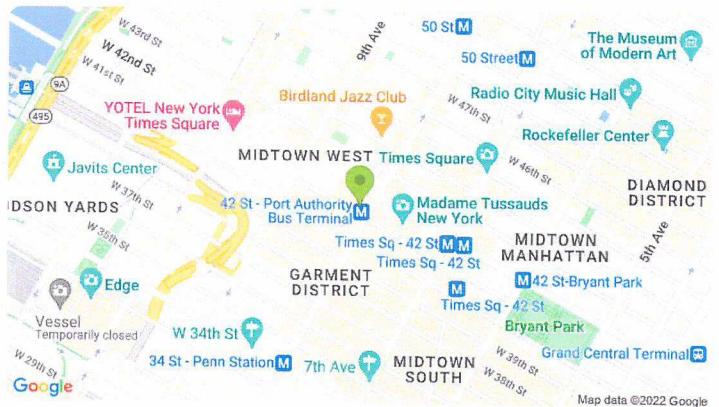
 Total price: USD 38.98 Manage My Booking: shop.greyhound.com/rebooking Real-Time Info: greyhound.com/track/order/3113279696 FAQ: greyhound.com/help-and-info

Your checklist for your trip

- Arrive on time for boarding (usually 15 mins prior to departure)
- Double check dimensions and print baggage tag.
More information at: greyhound.com/travel-info/baggage

Your departure station

New York Port Authority, 625 8Th Ave, 10018 New York



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TMU 9 studiegrup 19/11-23

Frokost:

Søren Wille
Carilla Bjørge
Morten Rixen
Joham Rasmussen
Peter Høffel
Karsten Børresen
Lars Weiß
Christopher Rech
Astorid Alles
Knud Helt Nielsen
Morten Melchiors

LAGKAGEHUSET

CPH 2 Butik

Tel. nummer: 72144786
Bomsregistreringsnr.: 20219094

Dato: 11.11.2023 Tid: 11:48
Rakturnr.: 200645991 Eks. 28039
POS: 273_02

Varenavn	Antal	Pris	Total
Løbsandwich	4,00	74,95	299,80
Fun Sandwich	4,00	69,95	279,80
Ruget i køleskabsse sandwiche	1,00	69,95	69,95
Rumme + alt			162,89
Total			814,45
Kortbetaaling VISADANKORT			814,45

TAK FOR BESØGET & PÅ DENSVN
www.lagkagehuset.dk

De blev betjent af Sofie



2 0 0 6 4 5 9 9 1

134467020

FAKTURA

Nummer: 6144017689
 Dato: 2023-11-08
 Købers ordrenr: 4050043344

Bilag: 5112233813

Fakturamodtager
 Teknik og Miljøforvaltningen
 RÅDHUSPLADSEN 1, 1. V. 42
 1599 København V
 Landekode: DK
 5798009809452 (GLN, EndepunktID)

Kontaktoplysninger
 Personreference: CX31

Godekendt 9/11-23
 Jørgen

Fakturaafsender
 NETTO FIOLSTRÆDE
 FIOLSTRÆDE 5A, ST
 1171 KØBENHAVN K
 Landekode: DK
 DK35954716 (DK:CVR, EndepunktID)
 DK35954716 (DK:CVR, Juridisk)
 DK35954716 (DK:SE, Moms)

TMU

Forpligning til stedet heren

Levering
 Leveringsdag: 2023-11-08

Linje	Varenr	Beskrivelse	Antal	Enhed	Enhedspris	Moms	Pris incl	Pris
000001	5710405089139	LAYS 6-PAK	1.000	EA	22.3600 pr. 1 EA	25.000%		22.36 DKK
Basis-/ordremængde faktor: 1								
000002	5710405089139	LAYS 6-PAK	1.000	EA	22.3600 pr. 1 EA	25.000%		22.36 DKK
Basis-/ordremængde faktor: 1								
000003	5710405089139	LAYS 6-PAK	1.000	EA	22.3600 pr. 1 EA	25.000%		22.36 DKK
Basis-/ordremængde faktor: 1								
000004	4017100407512	PICK UP MINIS	1.000	EA	17.6000 pr. 1 EA	25.000%		17.60 DKK
Basis-/ordremængde faktor: 1								
000005	5774540872704	AB MARIZPANBAR 100G	4.000	EA	19.2000 pr. 1 EA	25.000%		76.80 DKK
Basis-/ordremængde faktor: 1								
000006	5024278003056	CASHEW/KOKOS BAR	1.000	EA	12.2000 pr. 1 EA	25.000%		12.20 DKK
Basis-/ordremængde faktor: 1								
000007	5024278003056	CASHEW/KOKOS BAR	1.000	EA	12.2000 pr. 1 EA	25.000%		12.20 DKK
Basis-/ordremængde faktor: 1								
000008	5710405057749	HARIBO MATADOR MIX	12.000	EA	8.0000 pr. 1 EA	25.000%		96.00 DKK
Basis-/ordremængde faktor: 1								
000009	4017100407512	PICK UP MINIS	1.000	EA	17.6000 pr. 1 EA	25.000%		17.60 DKK
Basis-/ordremængde faktor: 1								
000010	5700417006804	KICK LAKRIDS	12.000	EA	4.8000 pr. 1 EA	25.000%		57.60 DKK

Basis-/ordremængde faktor: 1

000011 5711070802030 XL BAR MØRK
CHOKOLAD 12.000 EA 4.0000 pr. 1 EA 25.000% 48.00 DKK

Basis-/ordremængde faktor: 1

Linjesum i alt excl moms	405.08 DKK
Momsgrundlag	405.08 DKK
Total momsbeløb (25.00%)	101.27 DKK
Fakturatotal incl moms	506.35 DKK

Betalingsmåde

Sidste betalingsdato: 2023-12-08

Indbetalingskort (FIK): > 71 120061440176896 +82924876<

Supplerende oplysninger om totaler
Afgift total: 101.27 DKK

Yderligere oplysninger: Denne faktura vedr. køb på kunde nr. 0060010335 og købekort nr.*****2562. Dette dokument refererer til 1,109,7 fra den 08.11.2023 .()

OIOUBL dokumentparametre

CustomizationID:OIOUBL-2.1

Profil ID:Procurement-BilSim-1.0

ID:6144017689

Dokument valuta:DKK



FJOLSTRÆDE 5A
1198 KØBENHAVN K

LAYS 6-PAK	
3 x 27,95	83,85
PICK UP MINIS	
2 x 22,00	44,00
AB MARIZPANBAR 100G	
4 x 24,00	96,00
CASHEW/KOKOS BAR	
2 x 15,25	30,50
HARIBO MATADOR MTX	
12 x 10,00	120,00
KICK LAKRIDS	
12 x 6,00	72,00
XL BAR MØRK CHOKOLAD	
12 x 5,00	60,00
TOTAL	506,35
KONTO	506,35

BILAG

MOMS UDGØR 101,27

Du blev betjent af:

Lone

7 1 109 08 11 23 10:04
Butik 7793 MOMSNR.35954716

KIG FORBI WWW.NETTO.DK
OG WWW.JOB.NETTO.DK

7-22 ALLE UGENS 7 DAGE

Julegaver byttes indtil
den 31. januar 2024



Netto er en del af Salling Group
- som er 100% dansk og ejet af
Salling Fondene. Og fordi vi er
fondsejet går en del af vores
overskud til gode formål i samfundet.



Gebr. Heinemann Retail A/S
Københavns Lufthavn
Main Shop
2770 Kastrup
www.cph.dk/shop
customerservice@heinemann-retail.dk

Flight: FI205 Dest: KEF CustomID: X

Aquad'or still 0.5L 1247453	kr. 15,00.
Multibuy	-kr. 30,00

Total kr 150,00

Total QTY 12

Dankort kr 150,00

Rec. Date Time Serv. Reg. Shop
419029 12/11/2023 10:58 85123 004 5016

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No Cash return without receipt
Goods for NON EU are not to be
consumed before the plane is airborne
Varer til NON EU må ikke forbruges
før flyet er i luften

TMU Studietur v/Flu
2023

Vanel 4,1% af hest
Søren, bille
**A WORLD OF
INSPIRATION
AND
LOW PRICES.**

Johan Rasmussen
Kirsten Bøføring
Peter Højer



hans Weiss
louise Theilade
Christoffer Røhl
Astrid Alles
**Forgot something?
Go to shop.cph.dk
shop online and pick up your
order when you arrive at
Copenhagen Airport.**

Mosten Melchior
Knut Holt Nielsen



Mosten Røn

**A WORLD OF
INSPIRATION
AND
LOW PRICES.**



FAKTURA

Nummer: 727805848

Dato: 2023-12-01

Bilag: 5112303979

Godkendt 5/12-23

Josephine

Fakturamodtager
 KØBENHAVNS KOMMUNE
 KØBENHAVNS RÅDHUS,
 RÅDHUSPLADS KØBENHAVNS
 RÅDHUS, RÅDHUSPLADS
 DK - 011550 KØBENHAVN V
 5798009809452 (GLN, EndepunktID)
 DK64942212 (DK:CVR, Juridisk)
 DK64942212 (DK:SE, Moms)
 Dimensions konto: Liniespecificeret

Kontaktoplysninger
 Personreference: CX31
 Navn: CX31

Fakturaafsender
 Eurocard
 Bernstorffsgade 50
 DK - 1577 København V
 DK25804759 (DK:CVR, EndepunktID)
 DK25804759 (DK:CVR, Juridisk)
 DK25804759 (DK:SE, Moms)

Kontaktoplysninger
 Personreference: DK25804759
 Navn: Eurocard KundeService
 Tlf: +45 36 73 71 39
 E-mail: eurocard@eurocard.dk

Linje	Varenr	Beskrivelse	Antal	Enhed	Enhedspris	Moms	Pris incl	Pris
1	100123458597961	HJA HOLLU, KEFLAVIK IS	1	EA	393.48 pr. 1 EA	0%		393.48 DKK
		Standard varenr: 5812 Standard udvidetvarenr: Eating Places, Restaurants Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx5748 MORTEN RIXEN. Købssted:HJA HOLLU, KEFLAVIK IS. Købsdato:2023-11-12. Valuta:7980.00 ISK. Kurs:0.049308. Medarbejdernr.:277932. Varebeskrivelse: CardNo=547512xxxxx5748;Name= MORTEN RIXEN;Amount=7980.00;CurrencyCode=ISK; ExchangeRate=0.049308;EmployeeNumber=277932;MerchantName= HJA HOLLU;MerchantCity=KEFLAVIK;MerchantCountry=IS;; TransactionDate= 2023-11-12; Dimensions konto: 277932		Leveringsoplysninger Leveringsdag: 2023-11-12 Leveringssted: Adresse: KEFLAVIK Land: ICELAND Landekode: IS				
2	100123458791850	COURTYARD BY MARRIOTT, 1 BOSTON US	1	EA	3625.98 pr. 1 EA	0%		3625.98 DKK
		Standard varenr: 3690 Standard udvidetvarenr: COURTYARD BY MARRIOTT Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx5748 MORTEN RIXEN. Købssted:COURTYARD BY MARRIOTT, BOSTON US. Købsdato:2023-11-12. Valuta:515.53 USD. Kurs:7.033500. Medarbejdernr.:277932. Varebeskrivelse: CardNo=547512xxxxx5748;Name= MORTEN RIXEN;Amount=515.53;CurrencyCode=USD; ExchangeRate=7.033500;EmployeeNumber=277932;MerchantName=COURTYARD BY MARRIOTT;MerchantCity=BOSTON;MerchantCountry=US;; TransactionDate= 2023-11-12; Dimensions konto: 277932		Leveringsoplysninger Leveringsdag: 2023-11-12 Leveringssted: Adresse: BOSTON Land: UNITED STATES Landekode: US				

3	100123458793934 DUTY FREE STORE, REYKJANESBAER IS	1	EA	236.09 pr. 1 EA	0%	236.09 DKK
	<p>Standard varenr: 5309 Standard udvidetvarenr: Duty Free Stores Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx5748 MORTEN RIXEN. Købssted:DUTY FREE STORE, REYKJANESBAER IS. Købsdato:2023-11-12. Valuta:4788.00 ISK. Kurs:0.049309. Medarbejdernr.:277932. Varebeskrivelse: CardNo=547512xxxxx5748;Name= MORTEN RIXEN;Amount=4788.00;CurrencyCode=ISK;ExchangeRate=0.049309;EmployeeNumber=277932;MerchantName= DUTY FREE STORE;MerchantCity=REYKJANESBAER;MerchantCountry=IS;;TransactionDate= 2023-11-12; Dimensions konto: 277932</p>	<p>Leveringsoplysninger Leveringsdag: 2023-11-12 Leveringssted: Adresse: REYKJANESBAER Land: ICELAND Landekode: IS</p>				
4	100123459089993 TST* SORELLE - ATLANTI, BOSTON US	1	EA	1587.12 pr. 1 EA	0%	1587.12 DKK
	<p>Standard varenr: 5812 Standard udvidetvarenr: Eating Places, Restaurants Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx5748 MORTEN RIXEN. Købssted:TST* SORELLE - ATLANTI, BOSTON US. Købsdato:2023-11-14. Valuta:225.79 USD. Kurs:7.029186. Medarbejdernr.:277932. Varebeskrivelse: CardNo=547512xxxxx5748;Name= MORTEN RIXEN;Amount=225.79;CurrencyCode=USD;ExchangeRate=7.029186;EmployeeNumber=277932;MerchantName= TST* SORELLE - ATLANTI;MerchantCity=BOSTON;MerchantCountry=US;;TransactionDate= 2023-11-14; Dimensions konto: 277932</p>	<p>Leveringsoplysninger Leveringsdag: 2023-11-14 Leveringssted: Adresse: BOSTON Land: UNITED STATES Landekode: US</p>				
5	100123459173774 ROCK BOTTOM 3001, BOSTON US	1	EA	5748.69 pr. 1 EA	0%	5748.69 DKK
	<p>Standard varenr: 5812 Standard udvidetvarenr: Eating Places, Restaurants Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx5748 MORTEN RIXEN. Købssted:ROCK BOTTOM 3001, BOSTON US. Købsdato:2023-11-13. Valuta:817.83 USD. Kurs:7.029199. Medarbejdernr.:277932. Varebeskrivelse: CardNo=547512xxxxx5748;Name= MORTEN RIXEN;Amount=817.83;CurrencyCode=USD;ExchangeRate=7.029199;EmployeeNumber=277932;MerchantName= ROCK BOTTOM 3001;MerchantCity=BOSTON;MerchantCountry=US;;TransactionDate= 2023-11-13; Dimensions konto: 277932</p>	<p>Leveringsoplysninger Leveringsdag: 2023-11-13 Leveringssted: Adresse: BOSTON Land: UNITED STATES Landekode: US</p>				
6	100123459399553 THE ENVOY HOTEL FB, BOSTON US	1	EA	9310.91 pr. 1 EA	0%	9310.91 DKK
	<p>Standard varenr: 5812 Standard udvidetvarenr: Eating Places, Restaurants Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx5748 MORTEN RIXEN. Købssted:THE ENVOY HOTEL FB, BOSTON US. Købsdato:2023-11-15. Valuta:1345.38 USD. Kurs:6.920654. Medarbejdernr.:277932. Varebeskrivelse: CardNo=547512xxxxx5748;Name= MORTEN RIXEN;Amount=1345.38;CurrencyCode=</p>	<p>Leveringsoplysninger Leveringsdag: 2023-11-15 Leveringssted: Adresse: BOSTON Land: UNITED STATES Landekode: US</p>				

		USD;ExchangeRate=6.920654;EmployeeNumber=277932;MerchantName= THE ENVOY HOTEL FB;MerchantCity=BOSTON;MerchantCountry=US;;TransactionDate= 2023-11-15;Dimensions konto: 277932				
7	100123459401406	TST* TATTE BAKERY, CAMBRIDGE US	1	EA	265.20 pr. 1 EA	0% 265.20 DKK
		Standard varenr: 5812 Standard udvidetvarenr: Eating Places, Restaurants Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx5748 MORTEN RIXEN. Købssted:TST* TATTE BAKERY, CAMBRIDGE US. Købsdato:2023-11-16. Valuta:38.32 USD. Kurs:6.920668. Medarbejdernr.:277932. Varebeskrivelse: CardNo=547512xxxxx5748;Name= MORTEN RIXEN;Amount=38.32;CurrencyCode=USD;ExchangeRate=6.920668;EmployeeNumber=277932;MerchantName= TST* TATTE BAKERY;MerchantCity=CAMBRIDGE;MerchantCountry=US;;TransactionDate= 2023-11-16;Dimensions konto: 277932		Leveringsoplysninger Leveringsdag: 2023-11-16 Leveringssted: Adresse: CAMBRIDGE Land: UNITED STATES Landekode: US		
8	100123459434112	LSF LONG WHARF, BOSTON 1 US	1	EA	8325.93 pr. 1 EA	0% 8325.93 DKK
		Standard varenr: 5812 Standard udvidetvarenr: Eating Places, Restaurants Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx5748 MORTEN RIXEN. Købssted:LSF LONG WHARF, BOSTON US. Købsdato:2023-11-14. Valuta:1187.50 USD. Kurs:7.011309. Medarbejdernr.:277932. Varebeskrivelse: CardNo=547512xxxxx5748;Name= MORTEN RIXEN;Amount=1187.50;CurrencyCode=USD;ExchangeRate=7.011309;EmployeeNumber=277932;MerchantName= LSF LONG WHARF;MerchantCity=BOSTON;MerchantCountry=US;;TransactionDate= 2023-11-14;Dimensions konto: 277932		Leveringsoplysninger Leveringsdag: 2023-11-14 Leveringssted: Adresse: BOSTON Land: UNITED STATES Landekode: US		
9	100123459520101	TST* WOW BAO - LOGAN A, 1 EAST BOSTON US	1	EA	964.68 pr. 1 EA	0% 964.68 DKK
		Standard varenr: 5812 Standard udvidetvarenr: Eating Places, Restaurants Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx5748 MORTEN RIXEN. Købssted:TST* WOW BAO - LOGAN A, EAST BOSTON US. Købsdato:2023-11-16. Valuta:139.37 USD. Kurs:6.921719. Medarbejdernr.:277932. Varebeskrivelse: CardNo=547512xxxxx5748;Name= MORTEN RIXEN;Amount=139.37;CurrencyCode=USD;ExchangeRate=6.921719;EmployeeNumber=277932;MerchantName= TST* WOW BAO - LOGAN A;MerchantCity= EAST BOSTON;MerchantCountry=US;;TransactionDate= 2023-11-16;Dimensions konto: 277932		Leveringsoplysninger Leveringsdag: 2023-11-16 Leveringssted: Adresse: EAST BOSTON Land: UNITED STATES Landekode: US		
10	100123459566307	BOS WAHLBURGERS EXPR 1, BOSTON US	1	EA	773.44 pr. 1 EA	0% 773.44 DKK
		Standard varenr: 5812 Standard udvidetvarenr: Eating Places, Restaurants Basis-/ordremængde faktor: 1 Yderligere oplysninger:		Leveringsoplysninger Leveringsdag: 2023-11-16 Leveringssted: Adresse:		

547512xxxxx5748 MORTEN RIXEN.
 Købssted:BOS WAHLBURGERS
 EXPR 1, BOSTON US.
 Købsdato:2023-11-16, Valuta:111.74
 USD, Kurs:6.921783.
 Medarbejdernr.:277932.
Varebeskrivelse: CardNo=
 547512xxxxx5748;Name= MORTEN
 RIXEN;Amount=
 111.74;CurrencyCode=
 USD;ExchangeRate=
 6.921783;EmployeeNumber=
 277932;MerchantName= BOS
 WAHLBURGERS EXPR
 1;MerchantCity=
 BOSTON;MerchantCountry=
 US;;TransactionDate= 2023-11-16;
Dimensions konto: 277932

BOSTON
 Land: UNITED
 STATES
 Landekode: US

11	100123459566559 TST* TATTE BAKERY CHAR, 1 BOSTON US	EA	1661.10 pr. 0% 1 EA	1661.10 DKK
Standard varenr: 5812 Standard udvidetvarenr: Eating Places, Restaurants Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx5748 MORTEN RIXEN. Købssted:TST* TATTE BAKERY CHAR, BOSTON US. Købsdato:2023-11-17. Valuta:240.02 USD. Kurs:6.920673. Medarbejdernr.:277932. Varebeskrivelse: CardNo= 547512xxxxx5748;Name= MORTEN RIXEN;Amount= 240.02;CurrencyCode= USD;ExchangeRate= 6.920673;EmployeeNumber= 277932;MerchantName= TST* TATTE BAKERY CHAR;MerchantCity= BOSTON;MerchantCountry= US;;TransactionDate= 2023-11-17; Dimensions konto: 277932		Leveringsoplysninger Leveringsdag: 2023-11-17 Leveringssted: Adresse: BOSTON Land: UNITED STATES Landekode: US		

Linjesum i alt excl moms	32892.62 DKK
Momsfri andel	32892.62 DKK
Fakturatotal incl moms	32892.62 DKK

Betalingsmåde

Sidste betalingsdato: 2024-01-02
 Indbetalingeskort (FIK): > 71 000000123240632 +81519706<

Betalingsbetingelser

Type: 1

Betalingsmåde

Sidste betalingsdato: 2024-01-02
 Udenlandsk kontooverførsel: (IBAN)
 SWIFT: ESSEDKKK

Konto: DK1952950010009723

Note til betalingsmodtager: Invoice 727805848

OIOUBL dokumentparametre

CustomizationID:OIOUBL-2.02
 Profil ID:urn:www.nesubl.eu:profiles:profile5:ver2.0
 ID:727805848

Dokument valuta:DKK

1)

Hjá Höllu

Hja Höllu Ketlaviðurflugveili

Address Keflavik Airport
Sandgerði, IS
SSN 4801191690
Phone +3547816300
Email kefairport@hjahollu.is

Date: 12.11.2023

Time: 15:43:11

1	Latte	690 ISK
1	Cappuccino	690 ISK
1	Americano	590 ISK
1	Kaffi	590 ISK
1	Kaffi	590 ISK
1	Cappuccino	690 ISK
Total Amount		7,980 ISK
Vat		0 ISK
Paid		7,980 ISK
Balance		0 ISK

Payment #1

Method: Verifone POS 1
Date: 12.11.2023
15:45:33
Amount: 7980 ISK
Card: 547512*****5
748
Type Mastercard
Approval: APPROVED
Authorization: APPROVED
Start: 0005655

694e6d22 c6c4 4ae5 8fcc 4af7f0715106

Reikningar eru þessir að uppruna skrár í rafnsíðu bokhaldskerfi skv. reglugerðar nr. 505/2013.

Device: EYSEDCZI

#103

Thank you!

Powered by SalesCloud

TWU Stadion
12/11 - 23

Sofia Wille
Camilla Björse
Peter Højer
Kæstur Þessing
Morten Rixen
Johan Rasmussen
Hans Weiss
Christopher Roth
Astrid Alles
Louise Thielade
Knud Holt Nielsen
Morten Helchiøs

Stop over i
Reykjavik

Morten Rixen

2)

MARRIOTT COURTYARD
 BOSTON DOWNTOWN/NORTH STATION
 107 BEVERLY STREET
 BOSTON, MA 02114
 (617) 725-0003

240219 Vicki

4

CHK 31579	TBL 5/1
	GST 12
12 Nov '23 8:14 PM	
10 BISTRO BURGER	165.00
FRIES	
2 MEDITERRANEAN GRAIN BOWL	29.00
NO CHICKEN	
DRESS ON SIDE	
1 HUMMUS	10.00
24 LOCAL SHANDY	264.00
2 SAN PELLIGRINO	13.80
SUBTOTAL	\$481.80
TAX	\$33.73
PAYMENT	\$515.53
Change Due	\$0.00
Mastercard	\$515.53
at809634 xxx5748	

----- Check Closed -----
 12 Nov '23 10:14 PM

Mc Studio tour
 Midday 12/16 - 23
 Soren Wille, Camilla
 Bjesse, Karsten Bjesse, Peter
 Thuesen, Maarten Rasmussen,
 Johan Rasmussen, Lars
 Weiss, Maarten Melchior,
 Knud Holdt Nielsen,
 Mikkel Slovgaard
 Astrid Alles
 Louise Heilbrønne
 Christopher Røhl

Morten Røhr

3)

Duty Free Store Schengen
Flugst Leifs Eirikss
235 Reykjavik

Mastercard

ACQUIRER: Rapyd
Date: 12.11.2023
547512*****5748

Time: 16:28

Sale

ISK

4.788

Mastercard
CONTACTLESS

APPROVED

0000614 50358050 00030007
60777 10 8101 76487470
30 1510 TRANSNk:0002881 AUTHNR: 127114
000000041010 134D36B2A2F7A41

Cardholder copy

TMIð gildið 12/11-23
Vand på sky over i Reg-
Kávila
Sóren Wille, Camilla Bjørne,
Peter Høges, Kristoffer Bjerling
Johan Rasmussen, Morten
Rikke, hours Weiss,
Martin Melchiors, Knud
Holt Nielsen, Astrid
Aller, houide Theilade
Christopher Rothl

Master Card

- ísl. vísindaveitinn
Fríhöfnin Duty Free Store
Kt. 611204-2130 VSK nr. 85128
Kvitt: 0000000507000054972
Starts: 280 Færø 79512
Dags: 12.11.23 16:21
Lysing Upphæð
Icelandic Gracial Wa 12 @ 399 4.788 A
Samtals Kr 4.788
Point PCI kont 4.788
Eurocard 5748
A VSK% Net töumpaf 4.788 VSK Upphæð
0 4.788 4.788
Pókkum vloðskiptun
Goda fero
Thank you for shopping in Iceland
Have a nice trip
Útbúðu þínur óskur ista á www.dutyfree.is

4)

TMU Stmeliefex
Frokost 14/11 - 23

Soren Wille, Camilla Bjerre,
Kassten Bessing, Peter Høj,
Johan Rasmussen, Mads Rixen,
Nørth Melchiers,
Lars Leibis, Agtoid Aker,
Louise Reikide,
Mikkel Skovgaard,
Knud Holt Nielsen
Christopher Roth

Mads Rixen



Sorelle
282 Congress St.
Boston, MA 02210

Server: Louisa S
Check #269
Ordered: 11/14/23, 11:16 PM

 2 Smoked Western Chicken \$26.00
 6 Roasted Potatoes - Large \$13.50
 Roasted Salmon \$13.95
 Salmon & Horseradish Salad \$29.00
 4 Sprouts & Sautéed \$11.00
 2 Porcupine Mushrooms \$21.50
 2 Turkey Roll \$21.90
 2 Black Forest Ham & Chinese \$21.50
 Chicken, Prosciutto & Roasted Peppers \$12.25
 GI Kombucha \$5.95
 Prosciutto Parfait \$12.95
 2 Poland Spears Water \$4.50

 Subtotal \$193.00
 Tax \$10.49
 Tip \$19.30
 Total \$225.79

Entered by: E. GEMO (Chris Read)
Master Card 666666665748
Time 11:16 PM

Transacted On	11/14/23	Settle
Authorization	Approved	
Approval Code	297064	
Payment ID	99P1MKYT1PCB	
Application ID	60000600041010	
Merchant ID	666666665748	
Card Reader	BBPOS	
MADS RIXEN		

Paid by Credit

5)

TMU Studiefer

13/11-23

Midday

Søren Wille, Camilla Bjørne, Peter Højer, Karsten Biegling, Morten Rixen, Joachim Rossmann, Morten Melchior, Lars Weiss, Christopher Rehl, Mikkel Skougaard, Knud Holt Nielsen, Asfrið Álfss, Louise Theilekka

Morten Rixen

Rock Bottom Brewery
Boston # 3001
115 Stuart Street
Boston, MA
(617)742-2739

Server: Jose 11/13/2023
TBI 200/2 9:06 PM
Guests: 25

#80048

IPA*PH (6 @6.75)	52.50
(6)IPA*PNT	
Juicy Hazy IPA*PH (6 @6.50)	57.00
(6)Juicy Hazy IPA*PNT	
Amber Lager*PH (7 @7.75)	54.25
(7)Amber Lager*PNT	
Sam Adams Boston Lager Dr	7.25
Sea-Sun-by Caymus ~GRF	13.00
Coke	3.50
Rock Bottom Wings (2 @18.00)	36.00
Spinach & Artichoke Dip (2 @14.00)	28.00
Loaded Brewery Nachos	19.50
Firecracker Shrimp	17.00
Sub Caesar	2.00
Side House Salad (2 @8.00)	16.00
1/2 Loaded Brewery Nachos (2 @14.5)	29.00
Grilled Ribeye	30.00
Cajun Fish Tacos (4 @18.00)	72.00
Cajun Pasta (5 @21.00)	105.00
Cod Fish & Chips	21.00
Habanero Chicken	18.00
Cheeseburger Sliders (3 @17.00)	51.00
Southwest Egg Rolls	15.00
Kolsch 1*PH	7.25
Kolsch 1*PNT	
Complete Subtotal	654.25
Subtotal	654.25
Tax	45.81
Total	700.06
Suggested Tip 18.00%	117.77
Total	817.83

Balance Due 817.83

Download the NEW Rock Rewards App Today



6)

TUU Studieretur

Middag 15/11 - 23

Søren Wille, Camilla Bfgege,
 Peter Höjer, Kristian Bfgege,
 Jøhans Rasmussen, Morten Rixen,
 Lars Weiss, Morten Nechians,
 Astrid Aker, Louise Theilade
 Christopher Røhl,
 Knud Holt Nielsen,
 Mikkel Sørensgaard
 Torben Orla Nielsen fra
 Innovation Center Den-
 mark

Morten Rixen

 CHECK # 857710 DATE 11/15/23
 TABLE # 21 TIME 9:31PM
 ***** DUPLICATE CHECK *****

-- DINING : PARAMARIA --

ITEMS ORDERED	AMOUNT
1 FIRE ROASTED SALSA	9.00
1 CROQUETAS	10.00
2 PADRON PEPPERS	18.00
2 GAMBAS AL AJILLO	34.00
1 PEAS AND CARROTS	15.00
1 TAKIS FRIES	13.00
6 TUNA TARTACO	102.00
1 QUESABIRRIA	16.00
1 SALMON	35.00
1 HALF CHICKEN	28.00
2 PORK TACOS	28.00
5 KOREAN TACOS	75.00
4 NY STRIP	168.00
1 CEVCHIE	17.00
1 CEVICHE	17.00
1 MUSSELS	19.00
1 SEABASS CEIVCHE	17.00
3 SEABASS CEVICHE	51.00
3 BTL-DECODY	192.00
3 BTL LA CREMA	168.00
2 FIDDLEHEAD	26.00
1 HARPOON IPA CAN	9.00
1 MODELO	10.00

SUBTOTAL	1077.00
SERVICE	193.86
Sales Tax	66.53
Local Tax	7.99

TOTAL DUE 1345.38

OF GUESTS 13

Outlook Kitchen
 70 Sleeper St.
 Boston, MA 02210
 617-338-3030

7)

TUU - Studiefors
Kaffe i god. med
besøg på Harvard

Camilla Bjørre, Peter Høye
Johan Rasmussen,
Morten Rixen, Hans Gløss,
Louise Theilade,
Morten Melchior



Tatte

BAKERY & CAFÉ

Order online for pickup and delivery.
tattebakery.com

Server: Laura G
Check #1197
Ordered: 11/15/23 5:24 PM

4 Flat White	8 oz	\$19.00
16 oz Coffee		\$3.75
16 oz Latte		\$5.00
16 oz Chai Latte		\$5.00
Subtotal		\$32.75
Tax		\$2.29
Tip		\$3.28
Total		\$38.32

Input Type C (EMV Chip Read)
Mastercard xxxxxxxx5748

Transaction Type	Sale
Authorization	Approved
Approval Code	422380
Payment ID	pPpwcmqqzpzt
Application ID	A0000000041010
Application Label	Mastercard
Terminal ID	d8a399cf4b4a5cd9
Card Reader	BBPOS

Tatte Bakery & Cafe | Harvard Square
1288 Massachusetts Ave
Cambridge, MA 02138
617.714.4956
Dream Every Day

8)

TUU Stückdurst
Midday 14/11-23

Søren Wille, Camilla Bjørne,
Kasper Bessing, Peter Høges,
Morten Røn, Johan Rasmussen,
Morten Melchior, Astrid Aker,
Lars Weiss, Louise Thielcke,
Mikkel Skovgaard,
Knud Holt Nielsen,
Christopher Røhl

Morten Røn



Legal Sea Foods
255 State Street, Long Wharf
Boston, MA 02109
617.742.5300

295682 RISK-ON

Tbl 302/1 Chk: 4148 Gst 14
Nov 14/23 07:47PM

2 NS Legal Hazy 16	20.00
4 Caillourdin PF	232.00
2 Lobs Bisq Cup ML	21.00
2 Squid RI App	18.00
2 Chwd Clam Cup ML	34.00
1 Grilled Octopus	19.00
2 Chwd Clam Bwl ML	2.00
1 Taco Fried App	17.00
1 S Spicy Salmon	90.00
2 Stfd Lob Tails	88.00
1 Spec Halib & Cav	39.00
1 Swordfish Grill	78.00
2 Nori Tuna	39.00
1 Tuna Grill	86.00
1 Lobst Roll Hot	38.00
1 Scallop Seared	45.00
1 Jasmine Rice*	7.00
1 Shrimp Grill	34.00
1 Sam Seaweed	9.00
18 %	
PreSel Grat%	171.00
Food Total	689.00
Beer Total	29.00
Wine Total	232.00
State-Lcl Tx	66.50
Total Fees	171.00
09:38PM Total Due	1187.50

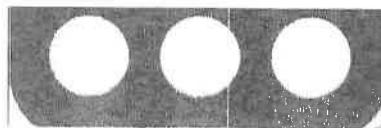
Join us @legalSeafoods on
Facebook Twitter and Instagram.

9)

TMC Studieferus
Mödding 16/11 - 25

Göran Wille, Camilla
Björse, Peter Höglund,
Karsten Björning, John
Rasmussen, Martin
Rixen, Louise Theilade,
Christopher Rehl

Noorden Peten



Wow Bao - Logan Airport
Terminal E
Boston, MA 02120
Jbarcia@newslinkgroup.net

Takeout

B

Server: Brayan T

Check #221

B

Ordered:

11/16/23 5:43 PM

1 Bowl + 3 Dumplings	\$14.99
Spicy Kung Pao Chicken	
Jasmine White Rice	
Ginger Chicken	
1 Bowl + 3 Dumplings	\$14.99
Teriyaki Chicken	
Jasmine White Rice	
Ginger Chicken	
1 Bottled Water	\$3.09
1 Teriyaki Chicken Bowl	\$9.99
Jasmine White Rice	
1 Diet Coke 20 oz	\$3.29
1 Bowl + 3 Dumplings	\$14.99
Orange Chicken	
Jasmine White Rice	
Green Vegetable	
1 Bowl + 2 Bao	\$16.98
Orange Chicken	
Jasmine White Rice	
BBQ Berkshire Pork	
BBQ Berkshire Pork	
1 Bowl + 2 Bao	\$16.98
Teriyaki Chicken	
Jasmine White Rice	
BBQ Berkshire Pork	
Spicy Mongolian Beef	
1 Bowl + 2 Bao	\$16.98
Teriyaki Chicken	
Fried Rice	\$2.99
BBQ Berkshire Pork	
Spicy Mongolian Beef	
1 Bowl + 3 Dumplings	\$14.99
Orange Chicken	
Jasmine White Rice	
Ginger Chicken	

Subtotal	\$130.26
Tax	\$9.11
Total	\$139.37

Input Type	C (EMV Chip Read)
Mastercard	xxxxxxxx5748
Time	5:43 PM

Transaction Type	Sale
Authorization	Approved
Approval Code	004164

10)

BOS Wahlburgers Express

ORDER # MORTEN7239

Location: BOSWAHLB
Device: BOSWAHLEXPKSK2
Origin ID: Kiosk
ORDER ID: 28851
POS Order Id: 4255
DATE: 11/16/2023
TIME: 05:37 PM

1	The Impossible Burger	\$16.39
1	French Fries	\$4.49
1	F Iced Tea	\$2.99
1	The Impossible Burger	\$16.39
2	F Diet Coke	\$5.98
1	The Impossible Burger	\$16.39
*1-Add	Crispy Bacon	\$1.15
1	F Lemonade	\$2.99
1	BBC Bacon Burger	\$12.99
*1-Well		
1	F Coke	\$2.99
1	Double Decker	\$13.69
*1-Medium Well		
1	Cup of Chili	\$7.99
SUB-TOTAL		\$104.43
SALES TAX		\$7.31
TOTAL - PLUS TAX		\$111.74
Customer Name:		
Paid - Card#:		*****5748
MASTERCARD		
Balance		\$111.74
		\$0.00

BOS Terminal E

Telle Stacie for
midday 16/11 - 25
ross Weiss, Noobs Melching,
Brid Alles
Michel Sharganov,
Inud Hoff Nielsen

Morten Røsby

11)

TMU Student

Foto fest 16/11-23

Soren Wille, Camilla Djiese,
Peter Høeg, Kristian Dissing
Morten Rixen,
Johan Rasmussen,
Lars Weiss, Astrid Aker,
Louise Theikade,
Christopher Reihl,
Morten Melchior,
Kunel Holt Nielsen,
Mikkel Slovgaard,

Tatte

BAKERY & CAFE

Order online for pickup and delivery.
tattebakery.com

Server:	natalia p	Johan
Check #	425	11/16/23 1:13 PM
Ordered:		
3 Turkey BLAT	\$38.55	
Tuna Sandwich	\$12.25	
2 Chicken Salad Sandwich	\$24.50	
2 Roasted Squash & Mushroom Sandwich	\$24.50	
Crunchy Halloumi Salad	\$14.50	
Maple, Squash & Chicken Salad	\$14.85	
2 Greens with Feta Avocado Mousse	\$23.00	
Add Tuna Salad	\$8.00	
Roasted Squash & Mushroom Farro Bowl	\$12.50	
13 Bottled Water	\$32.50	
Subtotal	\$205.15	
Tax	\$14.35	
Total	\$219.50	
Credit Card		Keyed
Mastercard		XXXXXX-65748
Time		1:14 PM
Transaction Type		Sale
Authorization		Approved
Approval Code		732951
Payment ID		RJtcnXtstFwC
Amount	\$219.50	
+ Tip:	\$20.52	
= Total:	\$240.02	

Tatte Bakery & Cafe | Beacon Hill
70 Charles Street
Boston MA 02114
617.723.5555

TUU Studentes
Frøkost 13/11

Soren Wille, Camilla Bjerre,
Petres Hafes, Karsten Bjerreby,
Johan Rasmussen, Morten Rixen
Aftabid Alles, Louise Thielke
Morten Melchior,

Lars Weiss, Christoffer Roth,
Klaus Holt Nielsen, Mikkel
Søvgaard

Morten Rixen

Tatte

BAKERY & CAFE

Order online for pickup and delivery.
tattebakery.com

Server:	Meaghan M
Check #	653
Ordered:	11/13/23 1:34 PM
Roasted Squash & Mushroom Sandwich	\$12.25
2 Lamb Kebab Plate	\$27.50
Tuna Sandwich	\$12.28
3 Short Rib Grilled Cheese Sandwich	\$39.00
Tuna Nicoise Salad	\$14.85
Roasted Squash & Mushroom Farro Bowl	\$12.50
2 Roasted Salmon Sandwich	\$32.00
Turkey BLAT	\$12.85
Greens with Feta Avocado Mousse	\$11.50
Add Roasted Salmon	\$6.50
13 Sparkling Water	\$35.75
Subtotal	\$216.95
Tax	\$15.19
Total	\$232.14
Credit	\$232.14
+ Tip: \$21.70	
Amount Due	\$0.00

Tatte Bakery & Cafe | One Boston Place

201 Washington St

Boston, MA 02108

617.904.9030

Dream Every Day

Tatte

BAKERY & CAFÉ

Order online for pickup and delivery.
tattebakery.com

Server: Maryam M

Check #710

Ordered:

Johan
11/13/23 2:09 PM

2 16 oz Americano.	\$7.50
3 16 oz Latte	\$15.00
Cappuccino	\$4.75
4 Flat White - 8 oz	\$19.00
2 Cortado	\$8.50
Subtotal	\$54.75
Tax	\$3.84
Tip	\$5.48
Total	\$64.07

Input Type C (EMV Chip Read)
VisaDankort xxxxxxxx5990

Transaction Type Sale
Authorization Approved
Approval Code 200947
Payment ID wxhqf7gprrTK
Application ID A0000000031010
Application Label VisaDankort
Terminal ID acab54e7ed732612
Card Reader BBPOS

MORTEN RIXEN

Tatte Bakery & Cafe | One Boston Place
201 Washington St
Boston, MA 02108
617.904.9030
Dream Every Day

TMU Studietor
Kaffe 13/11

Søren Wille, Camilla Biege
Peter Høeg, Karsten Bjerreby
Morten Rixen, Johan Rasmussen
Morten Melchers, Hans Weiss
Christopher Røhl, Knud
Holt Nielsen, Mikkel
Giovanni, højre
Theilacke

MORTEN RIXEN

COURTYARD® BY MARRIOTT

Courtyard by Marriott®

107 Beverly Street, Boston, MA 02114 P 617.725.0003

Marriott.com/BOSNE

Morten Melchiors
Langebrogade 3h 2nd Floor
Kobenhavn DK-1411
Denmark

Room: 1120
Room Type: GENR
Number of Guests: 1

Clerk: GMO

Arrive: 12Nov23 Time: 07:35PM Depart: 16Nov23 Time: 08:17AM Folio Number: 59683

DATE	DESCRIPTION	CHARGES	CREDITS
12Nov23	Restaurant Room Charge	26.54	
12Nov23	Restaurant Room Charge	28.54	
12Nov23	Market Beer	17.00	
12Nov23	Sales Tax	1.06	
13Nov23	Restaurant Room Charge	15.85	
14Nov23	Restaurant Room Charge	3.00	
14Nov23	Restaurant Room Charge	2.40	
16Nov23	Restaurant Room Charge	33.00	
16Nov23	Master Card		127.39

Card #: MCXXXXXX2164/XXXX
Card Type: MASTERCARD Card Entry: CHIP Approval Code: 013520
PIN Verified App Label: Mastercard AID: A000000041010

BALANCE: 0.00

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~~Morten Melchior~~

Morten Melchior

dikkab af morgenmad på hotellet.

Basten

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Louise Theilade-thomsen

Langebrogade 3h 2nd Floor

København DK-1411

Denmark

Arrive: 12Nov23

Time: 07:35PM

Depart: 16Nov23

Room: 922

Room Type: GENR

Number of Guests: 1

Clerk: TAM

Folio Number: 59685

DATE	DESCRIPTION	CHARGES	CREDITS
13Nov23	Restaurant Room Charge	13.35	
16Nov23	Restaurant Room Charge	18.67	
16Nov23	Visa		32.02

Card #: V1XXXXXXXXXXXXX1563/XXXX
 Card Type: VISA Card Entry: CHIP Approval Code: 013456 PIN
 Verified App Label: VisaDankort AID: A000000031010

BALANCE: 0.00

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Tilkeb as morgenmad

Oliver

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Astrid Horby-aller
Langebrogade 3h 2nd Floor
København DK-1411
Denmark

Room: 616
Room Type: GENR
Number of Guests: 1

Clerk: TAM

Arrive: 12Nov23

Time: 07:32PM

Depart: 16Nov23

Time: 08:18AM

Folio Number: 59697

DATE	DESCRIPTION	CHARGES	CREDITS
13Nov23	Restaurant Room Charge	8.99	
13Nov23	Restaurant Room Charge	3.16	
14Nov23	Restaurant Room Charge	4.28	
14Nov23	Restaurant Room Charge	3.16	
16Nov23	Restaurant Room Charge	21.88	
16Nov23	Restaurant Room Charge	3.16	
16Nov23	Visa		44.63

Card #: VIXXXXXXXXXXXXXX1536XXXX
Card Type: VISA Card Entry: CHIP Approval Code: 013154 PIN
Verified App Label: Visa Debit AID: A0000000031010

BALANCE: 0.00

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Møgenmad i posbindels med TMU-studiet

Morten Rixen

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Morten Rixen
Langebrogade 3h 2nd Floor
København DK-1411
Denmark

Room: 1126
Room Type: GENR
Number of Guests: 1

Clerk: TAM

Arrive: 12Nov23 Time: 07:41PM Depart: 16Nov23 Time: 08:02AM Folio Number: 59692

DATE	DESCRIPTION	CHARGES	CREDITS
13Nov23	Restaurant Room Charge	5.25	
13Nov23	Restaurant Room Charge	5.60	
14Nov23	Restaurant Room Charge	5.25	
14Nov23	Market Beer	17.00	
14Nov23	Sales Tax	1.06	
15Nov23	Restaurant Room Charge	5.00	
16Nov23	Restaurant Room Charge	26.13	
16Nov23	Visa		65.29

Card #: VIXXXXXXXXXXXXXX0882/XXXX
Card Type: VISA Card Entry: CHIP Approval Code: 014112 PIN
Verified App Label: Visa AID: A0000000031010

BALANCE: 0.00

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Knud Holt-nielsen
 Langebrogade 3h 2nd Floor
 Kobenhavn DK-1411
 Denmark

Room: 1103
 Room Type: GENR
 Number of Guests: 1

Clerk: TAM

Arrive: 12Nov23 Time: 07:37PM Depart: 16Nov23 Time: 08:33AM Folio Number: 59679

DATE	DESCRIPTION	CHARGES	CREDITS
13Nov23	Restaurant Room Charge	5.25	
14Nov23	Restaurant Room Charge	4.45	
16Nov23	Restaurant Room Charge	23.88	
16Nov23	Visa		33.58

Card #: VIXXXXXX0145/XXXX
 Card Type: VISA Card Entry: CHIP Approval Code: 013732 PIN
 Verified App Label: Visa Debit AID: A0000000031010

BALANCE: **0.00**

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Knud Holt Nielsen
urdepotz

Til klokke af morgenmad på hotellet
Boston

FAKTURA

Nummer: 727794646

Dato: 2023-12-01

Bilag: 5112304033

Fakturamodtager

KØBENHAVNS KOMMUNE
RÅDHUSPLADSEN 1
DK - 01550 KØBENHAVN V
5798009809452 (GLN, EndpunktID)
DK64942212 (DK:CVR, Juridisk)
DK64942212 (DK:SE, Moms)
Dimensions konto:Liniesspecifieret

Kontaktoplysninger

Personreference: JOSEPHINE H
RASMUSSEN /CX31
Navn: JOSEPHINE H
RASMUSSEN /CX31

Godkendt

4
12-23**Fakturaafsender**

Eurocard
Bernstorffsgade 50
DK - 1577 København V
DK25804759 (DK:CVR, EndpunktID)
DK25804759 (DK:CVR, Juridisk)
DK25804759 (DK:SE, Moms)

Kontaktoplysninger

Personreference: DK25804759
Navn: Eurocard KundeService
Tlf: +45 36 73 71 39
E-mail: eurocard@eurocard.dk

Linje	Varenr	Beskrivelse	Antal	Enhed	Enhedspris	Moms	Pris incl
1	100123459844846	COURTYARD BY MARRIOTT, BOSTON US	1	EA	284.94 pr. 1 EA	0%	284.94 DKK
		Standard varenr: 3690 Standard udvidetvarenr: COURTYARD BY MARRIOTT Basis-/ordremængde faktor: 1 Yderligere oplysninger: 547512xxxxx4367 CAMILLA BJERRE. Købssted:COURTYARD BY MARRIOTT, BOSTON US. Købsdato:2023-11-12. Valuta:40.71 USD. Kurs:6.999263. Medarbejdernr.:474955. Varebeskrivelse: CardNo= 547512xxxxx4367;Name= CAMILLA BJERRE;Amount= 40.71;CurrencyCode= USD;ExchangeRate= 6.999263;EmployeeNumber= 474955;MerchantName= COURTYARD BY MARRIOTT;MerchantCity= BOSTON;MerchantCountry= US;;TransactionDate= 2023- 11-12; Dimensions konto: 474955		Leveringsoplysninger Leveringsdag: 2023- 11-12 Leveringssted: Adresse: BOSTON Land: UNITED STATES Landekode: US			

Linjesum i alt excl moms	284.94 DKK
Momsfri andel	284.94 DKK
Fakturatotal incl moms	284.94 DKK

Betalingsmåde

Sidste betalingsdato: 2024-01-02

Indbetalingskort (FIK): > 71 000000124192287 +81519706<

Betalingsmåde

Sidste betalingsdato: 2024-01-02

Betalingsbetingelser

Type: 1



Mazumad Boston
Camilla

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Camilla Bjetre
Langebrogade 3h 2nd Floor
København DK-1411
Denmark

Room: 916
Room Type: GENR
Number of Guests: 1

Clerk: GMO

Arrive: 12Nov23

Time: 07:33PM

Depart: 16Nov23

Time: 07:57AM

Folio Number: 59691

DATE	DESCRIPTION	CHARGES	CREDITS
13Nov23	Restaurant Room Charge	8.40	
14Nov23	Restaurant Room Charge	8.40	
16Nov23	Restaurant Room Charge	23.91	
16Nov23	Master Card		40.71

Card #: MCXXXXXXXXXXXX4367/XXXX
Card Type: MASTERCARD Card Entry: CHIP Approval Code: 143519
PIN Verified App Label: Mastercard AID: A0000000041010

BALANCE: 0.00

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NAME	DATE OF BIRTH	APPLICATION NUMBER	PASSPORT NUMBER	STATUS	EXPIRES
MIKKEL SKOVGAARD HANSEN	Jan 18, 1996	139536P9J7405R44	208129870	Authorization Approved	Feb 25, 2025

PAYMENT SUMMARY

Payment Received: US \$21.00

Payment Date: September 6, 2023 10:7:59 AM

Payment Tracking Code: 277LKSPP



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NAME	DATE OF BIRTH	APPLICATION NUMBER	PASSPORT NUMBER	STATUS	EXPIRES
KNUD HOLT NIELSEN	Nov 2, 1969	O195590I5060P266	214120724	Authorization Approved	Oct 30, 2025

PAYMENT SUMMARY

Payment Received: **US \$21.00**

Payment Date: **October 30, 2023 8:44:9 PM**

Payment Tracking Code: **278UPC1Q**



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NAME	DATE OF BIRTH	APPLICATION NUMBER	PASSPORT NUMBER	STATUS	EXPIRES
CHRISTOPHER ROEHL YSKES ANDERSEN	Nov 13, 1990	1227M6Y77S212248	214496641	Authorization Approved	Nov 2, 2025

PAYMENT SUMMARY

Payment Received: **US \$21.00**

Payment Date: Nov 2, 2023, 6:56:02 PM

Payment Tracking Code: 2792LCTN



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NAME	DATE OF BIRTH	APPLICATION NUMBER	PASSPORT NUMBER	STATUS	EXPIRES
MORTEN RIXEN	Mar 24, 1972	9W24S0600H61614O	208909387	Authorization Approved	Nov 2, 2025

PAYMENT SUMMARY

Payment Received: US \$21.00

Payment Date: November 2, 2023 12:28:29 PM

Payment Tracking Code: 27926UIE



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NAME	DATE OF BIRTH	APPLICATION NUMBER	PASSPORT NUMBER	STATUS	EXPIRES
LOUISE THEILADE THOMSEN	Aug 7, 1996	93265601S76057P6	210450109	Authorization Approved	Oct 29, 2025

PAYMENT SUMMARY

Payment Received: US \$21.00

Payment Date: October 29, 2023 4:28:15 PM

Payment Tracking Code: 278TAUNA



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NAME	DATE OF BIRTH	APPLICATION NUMBER	PASSPORT NUMBER	STATUS	EXPIRES
CAMILLA BJERRE SOENDERGAARD	Dec 5, 1973	082S27460990P6F6	207692590	Authorization Approved	Jul 31, 2024

PAYMENT SUMMARY

Payment Received: **US \$21.00**

Payment Date: **October 20, 2023 7:56:40 AM**

Payment Tracking Code: **278M3PHQ**



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NEED HELP?

Name	Date of Birth	Application Number	Passport Number	Status	Expires	 Update	 View
LINE BARFOD	May 24, 1964	H6J1431Y20614M92	215081069	Authorization Approved	Oct 25, 2025		

PAYMENT SUMMARY

Payment Received:	US \$21.00
Payment Date:	October 25, 2023 3:58:59 AM
Payment Tracking Code:	278PVFEM



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PAYMENT RECEIPT

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NAME	DATE OF BIRTH	APPLICATION NUMBER	PASSPORT NUMBER	STATUS	EXPIRES
SOEREN WILLE	May 16, 1973	R42694563Y69Q05I	208969041	Authorization Approved	Oct 23, 2025

PAYMENT SUMMARY

Payment Received: **US \$21.00**

Payment Date: **October 23, 2023 11:29:2 AM**

Payment Tracking Code: **278NSDPA**



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Payment Acceptance - Receipt

Receipt

Date: 10-05-2023

Order Number: 730168945704

Billing Information

Johan Mikkel Rasmussen
Sigerstedgade 3, 2th
Copenhagen
Copenhagen V
1729
Denmark

Payment Details

Card Type

Visa

Card Number

xxxxxxxxxxxx2475

Expiration Date

01-2024

Total amount

1.387,50 kr

Please keep a copy of this receipt for your records

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11.15

4G 97

Detaljer

×



US MRV EMBASSY FEE, BUCURESTI,
Nota nr. 37603

-1.387,50

Fra konto
0400 4025086983
LSBprivat Løn LOB

Kortnummer
457104xxxxxx2475

Butik
US MRV EMBASSY FEE BUCURESTI Rumænien

Oprettet d.
09/10/2023

Bogført d.
09/10/2023

Rentedato
09/10/2023

Dispositiondato
09/10/2023

Bankens reference
0246203713

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Tak for jeres besøg og afhentning af produkter i Rådhusbutikken.

Hermed fremsendes faktura for 30 muleposer og 60 postkort.

Produkt	Antal	Stykpris	Pris
Mulepose	30	64,00 kr.	1920,00 kr.
Postkort	60	6,66 kr.	399,60 kr.
		Subtotal	0,00
		Levering*	0,00
		Moms	0,00
		Total (DKK)	2319,60 kr.
PSP-element	YD1393000589-00010.		
Ordredato	06.11.2023		
Bestilt af	Tina Janet Henriques		

Studietur

Nytov Apotek Strøget
Frederiksberggade 1A
1459 København K
Tlf. 43550714

223210 Apotekets Mundbind Type Iir		
4 X	51,75	207,00
Total		207,00
Betaling Dankort		207,00

CVR nr. 32730566
Beløb inkl. 25% moms
10-11-2023 11:15 Bonnr 630017783
Ekspedient 93 Kassenr 64
pga. medicinsikkerhed,
tages varer ikke retur
Tilskudsgrænser 2023- for voksne
0-1045kr: 0%, 1045-1750 kr: 50%
1750 -3795 kr: 75%, 3795 - 18870 kr: 85%
Over 18870 kr: 100% - kronikertilskud

Morten Rixen

Søren Wille

Camilla Bjørste

Johan Mikkel Rasmussen

Louise Theladee Thomsen

Mikkel Skovgaard

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