

MHC Reconnaissance Survey Town Report

CAMBRIDGE

Report Date: 1980

Associated Regional Report: Boston Area

Reconnaissance Survey Town Reports, produced for MHC's Statewide Reconnaissance Survey between 1979 and 1987, introduce the historical development of each of the Commonwealth's municipalities. Each report begins with an historic overview, a description of topography, and political boundaries. For the purposes of the survey, the historic period has been subdivided into seven periods: Contact (1500–1620), Plantation (1620–1675), Colonial (1675–1775), Federal (1775–1830), Early Industrial (1830–1870), Late Industrial (1870–1915), and Early Modern (1915–1940/55). Each report concludes with survey observations that evaluate the town's existing historic properties inventory and highlight significant historic buildings, settlement patterns, and present threats to these resources. A bibliography lists key secondary resources.

Town reports are designed for use together with a series of town maps that demarcate settlement patterns, transportation corridors and industrial sites for each historic period. These maps are in the form of color-coded, polyester overlays to the USGS topographic base map for each town on file and available for consultation at MHC. For further information on the organization and preparation of town reports, readers should contact MHC.

Users should keep in mind that these reports are now two decades or more old. The information they contain, including assessments of existing knowledge, planning recommendations, understanding of local development, and bibliographic references all date to the time they were written. In some cases, information on certain topics was not completed. No attempt has been made to update this information.

Electronic text was not available for digital capture, and as a result most of the reports have been scanned as PDF files. While all have been processed with optical character recognition, there will inevitably be some character recognition errors.

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MHC RECONNAISSANCE SURVEY REPORT

Date: 1980

Community: Cambridge

I. TOPOGRAPHY

City occupied 6.2 square miles along the Charles River, which winds around the city's south and east sides. Broad salt marshes, now filled in, bordered the main channel of the river, becoming, in the Federal and Early Industrial periods, the principal location of industries. The western portion of the city, cut off by low hills of glacial till, flows into the Mystic River via Alewife Brook, which forms the city's western boundary. The small tidal streams which flowed into the marshland at various intervals provided no useful waterpower, but in North Cambridge the largest kettle hole of Fresh Pond supplied vast quantities of ice during the 19th century, while the adjacent clay deposits supplied over a century of brickmakers.

II. POLITICAL BOUNDARIES

Established as New Towne in 1630 and changed to Cambridge in 1636. Present form is core of once extensive 17th century town area north to Billerica and south to Newton. Original common pales line of 1632 between Charlestown/New Towne survives as Cambridge/Somerville boundary from Inman Square to East Cambridge, perhaps the oldest political boundary within the Boston area. An extension from Inman Square to Alewife Brook survives as 8-Mile Line of 1636 between Cambridge/Somerville with 19th century adjustments at Porter Square. Cambridge/Watertown line originally Sparks Street shifted west in 1754 to Mt. Auburn with 19th century adjustments around Cambridge Cemetery. Belmont/Cambridge line formed originally in 1859 with later adjustments around Fresh Pond for water supply. Cambridge/Arlington boundary at Alewife Brook from 1734 parish line. Charles River originally division between Boston and Cambridge with Brighton separated as town in 1807.

III. HISTORIC OVERVIEW

Historic urban industrial city of national significance on western axis of inner metropolitan Boston. Located along Charles River tidal basin with pre-historic sites documented along river bank between Captains Island and Mt. Auburn and Contact period native sites suspected around Fresh Pond. Early English settlement with Watertown and New Towne (Cambridge) established along Charles River by 1630, including surviving town grid at Harvard Square and First Period burying grounds along Mt. Auburn Street axis. Foundation of Harvard College created intellectual center at Cambridge by mid-17th century with site potential of original buildings in college yard.

Primarily agricultural economy during 18th century with some surviving Late First Period houses. Attraction of college created suburban estate district along Brattle Street by mid-18th century with well-preserved examples of Georgian houses associated with Revolution and preservation of brick college buildings at Harvard. Opening of Charles River bridges from Boston created suburban speculative wave across tidal flats during early 19th century with some remnants of Federal houses around Central Square and East Cambridge, including Middlesex court house. Increasing industrial development of Boston metropolitan economy fosters skilled craft activity along rail lines during mid-19th century with brick and ice industry in North Cambridge, glass, candy, printing, furniture, and meat packing in East and Central Cambridge, although few intact period factories remain. Parallel suburban expansion along primary transit lines from Boston created substantial residential districts on Dana and Avon Hills with advanced Greek Revival, Gothic, Italianate and Mansard houses, while East Cambridge developed as Boston style brick rows. Large districts of worker's cottages emerged around industrial fringe areas at North Cambridge, East Cambridge and Inman Square with early examples of multi-family housing types. Harvard Square retains status activities with expansion of college buildings including noted High Victorian structures at Harvard and Episcopal Seminary while Brattle Street continued as affluent residential district with innovative examples of Stick, Shingle and early Colonial Revival styles. Civic and commercial center shifted to Central Square by late 19th century with well-preserved Late Victorian municipal buildings and early three-decker tenements, while secondary centers developed at Porter and Inman Squares. Industrial activities expanded through early 20th century between East and Central Cambridge with surviving complexes of brick and early concrete factories, including related period structures in North Cambridge. Location of MIT on Charles River Embankment relates Back Bay Boston to Cambridge further stimulated by Harvard subway, resulting in increased residential density with apartment development along Massachusetts Avenue to Porter Square. The remaining areas infilled with variety of single and multiple-family housing in period Revival styles, with affluent examples maintained on Reservoir and Observatory Hills in brick and stucco. Gradually diminished growth by mid-20th century except around Harvard and MIT with development of riverfront complexes, including related examples of Early Modern style buildings. At present, development pressures are most evident along Massachusetts Avenue axis between Charles River and North Cambridge around Harvard Square with increasing urban density threatening suburban residential areas. Related effects are also evident around Fresh Pond and East Cambridge as commercial expansion develops former industrial lands.

Much of Cambridgeport, East Cambridge and Brattle Street retains original residential fabric with evident restoration and stability, while historic period structures at Harvard and MIT appear to be threatened by university expansion in a number of cases. Potential development of Charles River embankment will eventually transform riverfront from East Cambridge to Harvard Square as high-rise corridor, affecting original worker's district with gentrification.

IV. CONTACT PERIOD

A. Transportation Routes:

Important junction of trails from coastal fishing grounds to Mystic Valley around Harvard Square with low tide ford across Charles River at Larz Anderson bridge. Primary E/W trail from Mishawum-Pequosset (Charlestown-Watertown) documented as Connecticut Path following Kirkland-Mason-Brattle-Elmwood-Mt. Auburn Streets across Cambridge Common. Primary N/S trail to Menotomy and Mystic (Arlington and Medford) conjectured as Massachusetts Avenue from Cambridge Common to presumed ford at Alewife Brook fish weir with junction at Beech Street-Porter Square to Mystic River. A system of branching trails from Cambridge Common-Harvard Square to tidal fishing grounds on Charles River "Oyster Banks" (MIT area) is conjectured as Bow-Arrow-Mass. Avenue-Main Street to Kendall Square with south trails as Putnam Avenue, and Pleasant Streets to tide islands. A similar branching network to Fresh Pond-Alewife Brook around North Cambridge swamp appears as Sparks-Vassall-Concord Avenue and Garden-Rindge Avenue in part with circuit around Black Island-Little River as Smith Place. Other possible trail routes include Coolidge Hill Road around Mt. Auburn and Brattle Street to spring in Brattle Square. Connecting trail to East Cambridge island appears as Gore-Medford Streets.

B. Settlement Patterns:

No documented period sites known although several probably existed within town's boundaries. Sites were likely all along Charles and its major tributary streams, like Millers river, as well as along the Fresh Pond/Alewife brook corridor. One possible area of site survival is the Cambridge City Home property on the north side of Fresh Pond.

C. Subsistence Pattern:

An area with major access to both marine (shell fish) and riverine (seasonal fish runs) food resources. Extensive oyster beds known along Cambridgeport section of Charles. Proximity to Boston harbor and Mass. Bay also made this a likely focal point for native-European trade.

D. Observations:

An important focal point of native activities - a confluence of trails and staging area for seasonal food gathering. Identity of period native population is unclear, but probably Massachusetts. Despite the probable density of sites in the town, the survival rate is probably very small due to the intensity of development.

V. FIRST SETTLEMENT PERIOD

A. Transportation Routes:

Native trails remain as highway system for New Towne in 1630s. Ferry established at Charles River ford site 1635 and Massachusetts Avenue laid out as Concord highway from common 1635. Planting lot rangeways survive as Dana, Raymond, Walden and Rindge Aves from 1630's. New Towne street grid at Harvard Square survives intact as portions of Boylston, Mt. Auburn, Winthrop, South, Holyoke, Dunster and Mass. Avenue from 1631 with intended canal to Brattle Square as Eliot-Brattle Streets. Great Bridge across Charles River above ford ferry constructed 1662 at Larz Anderson bridge with portions of original causeway intact as Boylston Street.

B. Population:

Earliest settlement, as New Towne 1631. By 1680, total population of "Cambridge" about 850, of which perhaps 3-400 lived within present bounds of city.

C. Settlement Patterns:

Cambridge founded as New Towne in 1631, capital of Massachusetts Bay Colony. Original street grid survives between Charles River and Harvard Square as oldest English "bastide" plan in North America with palisade ditch around perimeter, (portions of which remained on Ash Street to 19th century). Established as nucleated village with house lots in town and planting fields within one mile radius east on Dana Hill (Dana Street) and west on Avon Hill (Raymond Street) with extensive common below Linnaean Street. Central axis along Dunster Street from ford/ferry at Charles with meeting house and market square on Mt. Auburn Street and Spring at Brattle Square on canalized creek at Eliot Street, now filled. Relocation of government to Boston in 1635 with shift of meeting house and burying ground (still intact) to Harvard Square. Name changed to Cambridge 1636 with foundation of Harvard College, original "yard" on Mass. Avenue at Wadsworth House, with potential remains of early college buildings. Gradual expansion of settlement around town center with refocus to Charles River bridge along Boylston Street in 1660s. Outlying settlement remained sparse with individual farmsteads along Concord highway (Mass. Avenue) in North Cambridge and around Fresh Pond. Present Cambridge

also site of first Watertown settlement of 1630 with meeting house at Elmwood and Mt. Auburn Streets, relocated to west in 1635 with no obvious surviving evidence. Eastern area along Charles River tide flats remained undeveloped through 17th century with isolated farm on East Cambridge island.

D. Economic Base:

Establishment of Harvard College, 1637-38, printing press, 1636, and ferry, 1640. Commercial development limited until construction of Great Bridge, 1660-62. Staple products in fruits, vegetables, and livestock. "This is one of the neatest and best compacted towns in New England, having many fair structures, with many handsome contrived streets. The inhabitants, most of them, are very rich and well stored with cattle of all sorts, having many hundred acres of ground paled in with one general fence which is about a mile and a half long, which secures all the weaker cattle from the wild beasts," (William Wood, New England's Prospect (1634)).

VI. COLONIAL PERIOD

A. Transportation Routes:

Highways and bridge remain from 17th century with minor adjustments for field divisions in North Cambridge as Linnaean and Cedar-Harvey Streets. Improvement of access to tidal flats (Central Square area) as Inman Street.

B. Population:

Total population of Arlington/Cambridge/Brighton in 1750, about 1500, of which 750 probably resided in what is now Cambridge.

C. Settlement Patterns:

Town center remains around Harvard Square with Harvard College yard, meeting house and Middlesex court house along Boylston Street axis. Formation of rural estates by Boston elite along Brattle Street during mid-18th century with river vista and access to Fresh Pond. Local farms expand along North Cambridge plain with tavern-wagon shops at Porter Square, historically important as Revolutionary skirmish site. Fortification system erected by American forces in 1775 on Dana Hill, East Cambridge and on tide marshes around Charles River with authentic surviving battery at Fort Washington.

D. Economic Base:

Still only small commercial center sustained by agricultural production and college activity.

E. Architecture:

Residential: The only intact 17th-century structure in Cambridge is the integral lean-to chimney Cooper-Frost-Austin House (c. 1687) on Linnaean Street; portions of the Hooper-Lee-Nichols House (159 Brattle Street) date c. 1690. Highstyle Georgian houses are found along Brattle Street and around Harvard Yard but only a few vernacular houses, with gambrel roofs and both center chimney and center hall plans, are known to survive.

Institutional:

Several highstyle brick and frame Georgian buildings in Harvard Yard date from the period as does the highstyle (wooden) Georgian Christ Church (1760, Peter Harrison).

Commercial, Industrial:

No known structures extant.

VII. FEDERAL PERIOD:

A. Transportation Routes:

Construction of West Boston (Longfellow Red Line subway) bridge in 1793 from Boston to Cambridge tide flats completely reorients transport pattern to Harvard Square. Fan of turnpike routes set out from bridge-head at Kendall Square by 1810, as Broadway, Hampshire, Harvard and Webster Streets with Main-Massachusetts Avenue improved as stage route to Harvard Square. Connection to East Cambridge from Boston as Craigie (O'Brien Highway-Charles River Dam) bridge 1809 creates links with Harvard Square at Cambridge Street, Cambridgeport at Third Street, and Charlestown at Austin Street (Prison Pt. bridge). From Harvard Square turnpike extended as Concord Avenue to Belmont-Fresh Pond and improvement of Mt. Auburn Street to Elmwood Ave. Bridges constructed across Charles from Brighton to Central Square as River Street and Western Avenue by 1820 over Cambridgeport Street grid. Canals laid out around East Cambridge by 1810 with portions of Broad Canal intact at Kendall Square.

B. Population:

Relatively slow growth until about 1820. In the final decade of the period, population suddenly doubled, reaching 6,072 in 1830.

C. Settlement Patterns:

Construction of West Boston (Longfellow subway) Bridge in 1790s across Charles River created speculative subdivisions across eastern tide marshes during early 1800s. Street grids

laid along axis of Main Street and Mass. Avenue as Cambridgeport with commercial center split between Central and Lafayette Squares with town lot at Sennot Park along Broadway and Harvard Streets. Additional speculative grid laid over East Cambridge island by 1815 with Middlesex Court House as town focus and industrial canal around periphery. Little actual settlement due to economic recession of Jefferson Embargo. Harvard Square remained as civic focus with gradual expansion of college north to Kirkland Street with Divinity School and west to Garden Street with Botanic Gardens. Porter Square continued to develop as tavern highway strip, while Fresh Pond became modest estate area with resort hotels.

D. Economic Base:

Soap and candlemaking one of the earliest widespread industries in Cambridge and one which was carried on here more extensively than anywhere else in New England. By 1832 E.A. & W. Winchester (1818) producing \$130,000 worth of products, second only to New England Glass. By 1855, this industry led all others in Cambridge. Ropemaking and tanneries in Cambridgeport.

Land speculation rampant in East Cambridge. West Boston (now Longfellow) Bridge constructed 1793 to encourage Boston development in East Cambridge, furthered by turnpike and canal construction. Speculation led by Andrew Cragie dampened by Embargo Act of 1807. Earliest glass works introduced by Cragie 1813, followed by New England Glass, early pioneer in glass production and patents. Company, which by 1832 led all others in manufactured products, became known for cut and engraved glassware. Earliest manufacture of pipe organs begun 1809 by William Goodrich, though most of the development of this industry occurred in last quarter of century. Ice business begun by Frederick Tudor at Fresh Pond. Success of Nathaniel Wyeth's ice tools directly responsible for rapid development of 19th century ice industry.

E. Architecture:

Residential: Very few Federal style houses were constructed in Cambridge. A simple but comparatively rare example of the Federal style is the three-story Margaret Fuller House on Cherry Street. Scattered groupings of vernacular cottages in the Federal style were constructed around Central Square and in East Cambridge. With the establishment of the New England Glass Works at East Cambridge, twin rear wall chimney cottages and many modest sidehall Greek Revival houses were constructed. Elsewhere, around Harvard Square, at Dana Hill and in Cambridgeport, more ambitious sidehall temple front Greek Revival houses were built.

Institutional: Charles Bulfinch designed two Federal buildings in Harvard Yard: Stoughton Hall (1804) and University Hall (1813), of granite. He also designed the original Middlesex County Courthouse structures (1814). Several other buildings, including the Greek Revival Divinity Hall, were constructed by Harvard during the period.

An early brick commercial block survives at Central Square (1806); also the Fresh Pond Hotel (1796).

Industrial:

Although several important industries, including the New England Glass works and the ice cutting business at Fresh Pond, were established in the period, no structures survive.

VIII. EARLY INDUSTRIAL

A. Transportation Routes:

Turnpikes, bridges and highways remain from early 19th century with addition of Brookline (BU) bridge to Cambridgeport 1850. Peripheral railroad access through East Cambridge as Boston & Lowell 1835. Railroad to Fresh Pond ice houses through Porter Square 1841 extended as Fitchburg 1843 to Belmont with branches from Alewife Brook to Watertown and Arlington 1846 and to Cambridge Common 1848 from Somerville (abandoned by 1855). Connecting rail link across Charles River from Charlestown to Brighton as Grand Junction 1854 - although not completed until 1870 with route across Cambridgeport-East Cambridge. Omnibus service from Boston-Harvard Square by 1820s with local routes to Mt. Auburn 1840s and early horse street railway system by 1850s on Main-Mass. Ave.-Brattle, Broadway, Cambridge-Third Streets, Mass. Avenue to Arlington, and River Street to Brighton with surviving period carbarns at Harvard Square and E. Cambridge.

B. Population:

Industrialization of East Cambridge and Cambridgeport accompanied by rapid population growth throughout period, increasing over 6 times between 1830 and 1870. Nearly 20 percent of the population in 1865 were Irish-born.

C. Settlement Patterns:

Gradual overlap of various street grids from Cambridgeport to Old Cambridge and East Cambridge during mid-19th century. Central Square develops as major commercial focus with street railroad links to Boston and affluent suburban district on Dana Hill along Harvard Street. East Cambridge remained isolated by peripheral industrial district along canal and railroads with town house row crest of Otis Street and worker's district along Gore Street near glass works. Intermediate area to Cambridgeport mix of modest suburban workers' housing with

local focus at Inman Square. Pine Grove subdivision around Fort Washington and Charles River gradually surrounded by industrial activity as modest suburban neighborhood along Brody Street. Harvard Square continued as the primary civic focus until 1850s with location of city hall at Central Square. Affluent development expands along Brattle Street to Mt. Auburn Cemetery with worker's district along Mt. Auburn Street to Putnam Avenue along river marshes. Harvard University expansion gradually infills original yard and extends to Kirkland Street. Railroad connection at Porter Square stimulates residential subdivision along Mass. Avenue with affluent suburban neighborhood on Avon Hill. Fringe industrial district develops around North Cambridge brickyards during 1850s with worker's district along Rindge Avenue-Sherman Street and almshouse at Alewife Brook. Fresh Pond remained as eccentric area with ice and brick industry around local farms.

D. Economic Base:

Glacial clay deposits in North Cambridge established major brick-making industry as Cambridge led all other towns in state in brick production. Given strong encouragement by rapidly expanding population.

With exception of New England Glass Works -- and its somewhat later Bay State Glass Co. -- most Cambridge industries in this period were family businesses. Carriage manufacturing begun by Kimball & Davenport, who in 1833 built the first omnibus in New England and the following year designed for the Boston & Worcester RR the first modern railway carriage. Food processing and furniture industries given their start in this period as railroad facilities gave access to regional and national markets. Cold-water biscuits introduced from Milton c. 1839 by Artemas Kennedy, laying foundation for Nabisco's Kennedy Bakery (1875). J.P. Squire is said to have originated meat-packing industry in U.S. in 1842 (Conklin, p. 659). By 1860s Cambridge began attracting heavy industry, initiated by Kendall & Davis, boiler makers in 1860. George Rawson, employee of pioneer Charlestown manufacturer of hoisting and handling equipment, established Hittinger and Rawson, producing portable and stationary engines, presses, etc. Dover Stamping Co. established 1866 after prosperous Civil War business in tin cups and army supplies. Good part of success based on Timothy Earle's 1857 egg beater patents.

By 1855 soap making was the leading industrial activity (16 factories), followed by manufacture of bricks and glass.

E. Architecture:

Residential:

A great many structures in a wide range of house types, from simple workers' housing to elaborate highstyle structures were constructed, primarily in variants of the Italianate style, though many late Greek Revival and early mansard-roofed examples are known, as are several instances of the Gothic Revival. Highstyle, architect-designed center entrance Italianate houses are clustered behind Inman Square, in Cambridgeport and northwest of Harvard Square.

More modest Italianate single-family and double houses were built in Cambridgeport and northeast of Central Square, but the Greek Revival style remained popular well into the period: sophisticated variants such as the wide-pilastered Regency Greek Revival developed and several picturesque inspirations combining the Gothic and Greek Revivals are known. The Greek Revival was widely adopted for workers' housing so that much of East Cambridge presents a remarkably consistent Greek Revival character. Another type of workers' housing, the 1½ story, twin rear wall chimney cottage on a high brick basement, developed in North Cambridge. Toward the end of the period, three and four story, mansard-roofed row houses began to appear in older neighborhoods.

Institutional:

Among the many architect-designed and other institutional structures in the period, two are particularly significant: Memorial Hall (High Victorian Gothic; Ware and Van Brunt, 1868) and the Egyptian Revival gates of Mount Auburn Cemetery established 1831: gates-wood, 1831; stone, 1840, Jacob Bigelow). Other important institutional structures include the neo-classical Cambridge Almshouse (1850); additional Greek Revival structures at the Middlesex County Courthouse (Ammi B. Young, 1848); the Romanesque Prospect Congregational Church (A.R. Estey, 1851); Gothic Episcopal Divinity School campus buildings (Ware and Van Brunt, 1868); Greek/Egyptian Revival North Cambridge Baptist Church (Isaac Melvin, 1845; moved to site 1867); the Harvard Observatory (1842) and several other collegiate and ecclesiastical structures.

Commercial:

Brick commercial blocks, primarily in utilitarian designs but with some Italianate and High Victorian Gothic examples, survive at East Cambridge on Msgr. O'Brien Highway (Craigie's Lunch) and along Cambridge Street; at Inman Square, opposite the fire station; in Harvard Square and at Porter Square.

Industrial:

Many industries were established in the period and Cambridge achieved considerable prominence as a manufacturing center; consequently, a good number of mid-19th century industrial structures have survived, among them the Boston Woven Hose complex (1866); the Union Street Railway Stables (1860; The Garage) and Car Barn (1869; 618-621 Cambridge Street) and the Walden Street Cattle Tunnels (1857).

IX. LATE INDUSTRIAL PERIOD

A. Transportation Routes:

Steam and street railways remain from mid-19th century with electric trolleys on primary routes by 1890s with extension to Back Bay-Boston across Charles River as Massachusetts Avenue (MIT)

Bridge 1893. Local improvement of trolley routes to Cambridgeport as Prospect, Brookline-Putnam Ave. and new routes around Brattle Street as Huron-Aberdeen and Mt. Auburn. Subway from Boston to Harvard Square 1912 under Main-Mass. Avenue across rebuilt Charles River (Longfellow) Bridge and viaduct across Charles River Dam 1910 (intact) to Lechmere East Cambridge. Original subway stations survive at Kendall and Central Squares with concrete tunnel to Harvard Square.

B. Population:

Unabated population growth. In the last quarter of the century, Cambridge became one of the fastest growing cities in the state. The greatest rise was between 1885 and 1900 when the city grew on average by 2150 persons per year. After 1910, however, this growth abruptly ceased, dwindling virtually to stagnation during the war years. Foreign immigration climbed slightly -- from 28 percent in 1865 to 33 percent in 1905, though the percentage of Irish within this group declined, made up increasingly toward the end of the period by Canadians, Poles, and Italians. By 1915 population had reached 108,822, a figure nearly three times the 1870 figure.

C. Settlement Patterns:

Continued expansion of residential grid creating interlocking street network from East Cambridge to North Cambridge along trolley lines by early 20th century. Streetcars eliminated from Brattle Street which assured affluent development to crest of Reservoir and Observatory Hills as primary suburban district of Cambridge with extension to Larchwood and Mt. Auburn Cemetery. In related conjunction Harvard University acquired increasing scope of concern between Charles River, Kirkland Street and Observatory Hill with associated growth of Radcliffe College and Episcopal Theological Seminary along Brattle and Mason Streets. Harvard Square assumed urban density with Gold Coast dormitories on Mt. Auburn Street which stimulated apartment construction around Putnam Square along Mass. Avenue and Harvard Streets by late 19th century. A similar scale shift occurred around Central Square with construction of multi-storied brick and wood tenements around Norfolk and Windsor Streets with high density suburban housing on Dana Hill and along Magazine Street to Hastings Square. Working class district expands along Charles marshes between Harvard and Central Squares along Putnam and River Streets with companion area around Inman Square along axis of Beacon-Hampshire Streets toward Kendall Square. East Cambridge development continues around base of hill with multiple-family housing along Cambridge Street to Inman Square with local civic focus on Otis Street Hill. Suburban development continued around Porter Square along Mass. Avenue

axis to North Cambridge and south to Harvard Square with quality housing on Avon Hill and modest suburban neighborhoods on Oxford, Orchard and Pemberton Streets with two and three-family construction. Worker's district also expands along Sherman Street-Rindge Avenue north to Alewife Brook and along back slope of Observatory Hill with related extension to Fresh Pond and Strawberry Hill along Huron Avenue trolley line. Related fringe industrial activities extend from North Cambridge brickyards to

Mt. Auburn Cemetery and along Charles River with Harvard Square subway yards and east to Riverside factories with a secondary belt of fringe activity from Alewife Brook along Fitchburg mainline to Inman Square linking with Miller's River industrial district to East Cambridge canals and Grand Junction axis to Kendall Square and Cambridgeport. Isolated apartment district created at Mass. Avenue Bridge opposite Back Bay along Embankment anchored by MIT relocation by First World War. Primary commercial area emerges at Central Square by early 20th century extending along Mass. Avenue from Lafayette Square to City Hall. Harvard Square remains as important retail center associated with Harvard University expanding towards Putnam Square along Mass. Avenue. Secondary commercial districts expanded around Porter Square along Mass. Avenue axis, and around Inman Square along Cambridge Street axis to East Cambridge. Local trolley routes created neighborhood retail corners along Brookline and Pearl Streets in Cambridgeport and along Mt. Auburn Street and Huron Avenue.

D. Economic Base:

Brick making reached its peak during this period, and several yards specialized in cut and decorative brick. Among potteries, A.J. Hews, founded in Weston in 1765, moved to Cambridge in 1870, and produced large quantities of flower pots and decorative clay products. Alvan Clark, Cambridgeport resident, perfected his work with lenses and with his son began manufacturing some of the largest telescopes in the U.S.

In the 1860s Cambridge became a center of heavy industry, initiated by Kendall and Davis, boiler makers, who shipped boilers and whole steam plants to all parts of the country. The Broadway Iron Foundry (1864) was begun by Henry Bird, born in Easton and later an employee of the Chelmsford Iron Foundry. The Boston Bridge Works (1876) supplied iron and steel bridges all over New England; Rawson and Morrison perfected machinery for coal mining and transportation; Lamb and Ritchie developed the manufacture of galvanized steel pipe; and the George F. Blake factory (1889) produced pumping engines for water works all over the U.S. Blake was the superintendent of a Medford brickyard, and his pump was inspired by the need to drain the clay pits. The Boston Woven Hose and Rubber and American Circular Loom both sprang out of the development in the 1870s of a successful circular loom. Beginning in 1907 the former company constructed some of the earliest reinforced concrete factory buildings in New England. Much of the development in machine works was located along Main Street and Broadway between what is now the Longfellow Bridge and the end of the Broad Canal near Portland Street. Following the lead of Dover Stamping, many sheet metal firms located in Cambridgeport, south of Mass. Avenue, including Lamb and Ritchie, Peter Gray, Lally Column (relocated from Waltham, 1906), and others. Many of the soap manufacturers also operated in the Broadway and Portland Street area. In 1875 soap manufacture ranked third in product value (after sugar and organs) and many small and medium sized concerns still operated both in East Cambridge and Cambridgeport. The largest of the soap manufacturers, Lever Brothers, moved into

Cambridge in 1898 with the acquisition of Curtis Davis. In 1906 Alfred Cleveland, long connected with the soap industry, discovered that the addition of pumice to soap oils made an extremely effective cleaner of oils and grease, and a company was immediately formed to market the product, called "Flash."

Around the lumber yards of East Cambridge numerous furniture makers were established including Irving & Casson and A.H. Davenport Co., nationally known firms. East Cambridge had been a center of casket manufacture since Lockhardt's Bridge St. plant in 1854; in the late 1890s Lockhardt formed National Casket by combining a large number of U.S. firms and built a large plant on First Street. With neighboring Somerville, east Cambridge developed important food-processing plants, the largest of which, John P. Squire's was reputedly the first meat-packing plant to introduce artificial refrigeration. Artificial refrigeration also made possible ice-cream firms, beginning in the 1890s. Candy manufacture, given special impetus by invention of the lozenge cutter by Oliver Chase in 1847, multiplied beginning in the 1870s. In 1901 one of the largest companies in New England was established by the merger of three candy companies into the New England Confectionary Co.

In 1875 the leading product manufactured in Cambridge was sugar. The product of the Revere Sugar Refinery (1871) was valued at \$4 million. Second to sugar was the manufacture of pianos and organs, valued at \$1,036,000. The invention by George Snow in the late 1860s of a machine for uniting cloth and paper brought fame and fortune to the Reversible Collar Co., which moved from its Arrow Street plant to a new one on Putnam Street in 1895. American Net and Twine originated the production of cotton twine for netting in the U.S., and after moving to Cambridge from Canton in the 1870s, became the largest producer of fishing nets and twine in the country. Beginning in the 1880s, linseed oil and petroleum products located in East Cambridge near the Broad Canal. F.J. Warren, with long family background in asphalt and petroleum products, invented bitulithic pavement (asphalt plus aggregate)c. 1900, and his company, on Third Street, built paving machinery to install it.

E. Architecture:

Residential: Many highstyle architect-designed houses in the Shingle, Queen Anne and Colonial Revival styles were built in older neighborhoods along Brattle Street and around Harvard Square, with a number of examples by well-known architects including H.H. Richardson (Stoughton House, 1883), Henry Van Brunt, the firm of Hartwell and Richardson, Ralph Adams Cram, Lois Lilly Howe and others. Immediately around Harvard Square, along Mount Auburn Street and along Mass. Avenue, several early highrise apartment blocks in Revival styles were built in the 1890s. Well-detailed Colonial Revival three-deckers filled in established neighborhoods. In older working class neighborhoods at Cambridgeport and East Cambridge, more simply-detailed Queen Anne and Colonial Revival houses were built, along with numerous three-deckers. The areas along Mass. Avenue to the north of Harvard Square and in northwest Cambridge were rapidly developed after the turn of the century, with solid Queen Anne and Colonial Revival two-family houses predominating.

Institutional:

Important highstyle structures built for Harvard in this period include Sever Hall, Austin Hall (H.H. Richardson, 1880), Widener Library (Horace Trumbauer, 1913) and the Busch-Reisinger Museum, as well as buildings by Peabody and Stearns, McKim, Mead and White (consulting architects for Harvard Stadium, 1903), and Guy Lowell. With its move to Cambridge in 1913, the present Beaux Arts classical campus of MIT (Welles Bosworth) was built. Municipal and private institutional structures completed in this period include several Romanesque fire stations, the Cambridge Public Library (Van Brunt and Howe, 1888) and City Hall (Longfellow, Alden and Harlow, 1889), various club houses at Harvard and many churches, one of the most striking being the polychromed Romanesque St. John's (Maginnis, Walsh and Sullivan, 1904).

Commercial:

Architect-designed Italianate and Georgian Revival commercial blocks, of five and six stories' height, in brick, constructed at Harvard Square, with similar Queen Anne, Romanesque and Colonial Revival examples at Central Square and at least a few High Victorian Gothic examples at Inman and Porter Squares. Other brick and frame commercial structures of lower height and less pretention also constructed in the same areas, along with a number of well-detailed bank buildings in brick and stone.

Many industrial buildings of this period survive, particularly at Cambridgeport, including some early examples using reinforced concrete construction (Carter's Ink Co., 1909, Densmore and Le-Clear). Also surviving are a building of the Cambridge Gas Light Company (1871) on Third Street, The Atheneum Press (1895, Lockwood, Greene and Co.), the neo-Georgian Western Avenue Power Station on Memorial Drive, (1901, Sheaff and Joastad), and the Metropolitan Storage Warehouse (1895, Peabody and Stearns).

X. EARLY MODERN

A. Transportation Routes:

Rail, subway and trolley service remains intact through mid-20th century with conversion to trackless trolleybuses on secondary routes now surviving as Huron Avenue with original wiring (1938). Improvement of Charles River embankment for auto parkway as Memorial Drive with period bridge across Charles at River and Western Avenue. Connecting auto routes by Metropolitan District Commission to Arlington-Belmont as Fresh Pond and Alewife Brook parkways across North Cambridge by 1930 with original truss bridges at railroads and link to Route 2 (1934) at traffic circle. Improvement of Mass. Avenue from Boston to Arlington as Route 2A and O'Brien-McGrath Highway through East Cambridge as Route 28.

B. Population:

Cambridge experienced fluctuating growth pattern with sharp rises, (1920-25; 1930-35), followed by declines (1925-30; 1935-40). By 1940 at 110,879, city showed a net gain of only 2,057 people over 1915 figure. Cambridge's population peaked in 1950 at 120,740 -- only 1,071 above the city's 1925 figure.

C. Settlement Patterns:

Expansion of street network nearly complete across entire area of Cambridge. Little actual subdivision, except around Fresh Pond and Alewife Brook as modest suburban neighborhood. Cambridge subway prompts further shift to apartment construction around Harvard and Central Squares along axis of Mass. Avenue nearly continuously from Lafayette to Porter Squares by mid-20th century. Affluent residential neighborhood remains along Brattle Street with modest expansion on Dana and Avon Hills and around Harvard University along Kirkland and Garden Streets. Central Square continued as primary commercial center with high-rise office blocks expanding along Mass. Avenue axis to Harvard Square. Kendall Square developed as related commercial district along Main Street, with expansion of MIT along Charles River embankment and Mass. Avenue to Central Square. Similarly, Harvard University completed development of riverfront dormitories, with related growth by Radcliffe along Garden Street and Botanic Gardens, creating institutional fringe belt around Harvard Square from Mt. Auburn Hospital to Harvard Observatory, east to Oxford Street museums, south to Cambridge Hospital and Library-High School complex and link along Quincy Street to Harvard Yard. North Cambridge industrial district expanded along Rindge and Concord Avenues while Cambridgeport district gradually infilled along Grand Junction axis with some abandonment of structures. Urban renewal clearance in adjacent tenement district along Windsor Street by World War II and peripheral commercial strip along Memorial Drive and Riverside.

D. Economic Base:

The reclamation of waterfront land by the Charles River Embankment Co. after 1886 had been intended to result in residential blocks, and Memorial Drive was laid out with this in mind. Purchase of most of the land by MIT, however, provided new economic focus to this end of Cambridge after 1916, as institution played important role in bringing electronic, engineering, scientific instrument, and industrial research firms to Cambridge and area. One of the earliest laboratories for industrial research, Arthur D. Little, built its Cambridge laboratory at the northern end of the campus a year after MIT opened.

World War I gave tremendous impetus to industrial development in Cambridge. During the war and post-war years factories poured into

Cambridge. In 1915 capital invested in manufacturing amounted to \$46 million; by 1930 it had risen 152 percent to \$116 million (though the number of firms in the same period rose only 35 percent). The product of these industries, valued at \$50 million in 1915, were valued at \$175 million in 1929, the city's peak year, and Cambridge ranked third in the state (after Boston and Worcester). "No other New England municipality," Stone wrote in 1929, "has grown so fast industrially as has Cambridge in the past decade and a half" (Stone, p. 773). After 1929 this product fell sharply, reaching \$97 million in 1933. By 1940, at \$129 million, product value had partially recovered. Leading industries during the Early Modern Period were in printing (44 firms in 1923), confectionary, bakery products, furniture, soap, rubber goods, electrical machinery, and foundry and machine shop products.

The number of candy factories grew by 45 percent during the 1920s, spending large sums on modern equipment and new designs. Page & Shaw (1917) and Daggett (1925) were typical of the new firms. In 1927 the New England Confectionary Company built what was reputed the world's largest confectionary factory. By 1930 Cambridge was the fifth largest producer of the product in the U.S. During the 1930s many of the smaller firms retired or were absorbed by larger corporations. Allied to confectionary production was ice cream manufacture. In 1930 seven firms employed 240 hands manufacturing \$3.2 million annually. A decade later the depression had eliminated only one firm but cut 62 percent of the employees and 58 percent of the product. The manufacture of furniture experienced the same pattern. One of the largest of these firms was the Doten-Dunton Desk Co., which in 1908 had pioneered in the development of the "sanitary-base desk" (as opposed to pedestal-base construction).

Baking companies led all other industries in terms of the number of concerns, reaching 47 in 1929, when they produced \$13.2 million worth. The industry as a whole had risen only 12 percent during the 20s and remained relatively steady during the 30s. Major components of the industry were Nabisco's Kennedy Bakery and the Ward and Hathaway bakeries.

The manufacture of both electrical machinery and foundry and machine-shop products peaked in the mid 20s. Of these firms, the Blake and Knowles Works was perhaps the most prominent. Its removal to Holyoke in 1927 cost the city over 700 jobs.

E. Architecture:

Residential: Notable architect-designed early modern houses stand at Coolidge Hill and on Buckingham and Fayerweather Streets. The Larchwood section includes many ambitious and well-detailed single family houses in various revival styles. Other carefully reproduced Colonial Revival houses stand in older neighborhoods and along Brattle Street. Most other houses dating from the period are conservative, Colonial Revival single family examples, though

two-families and three-deckers are found in North Cambridge. High-rise brick apartment blocks, primarily in Revival styles but with at least two Art Deco examples (on Forest Street and on Highland Avenue), were built in neighborhoods along Mass. Avenue between Central, Harvard and Porter Squares.

Institutional:

Buildings constructed for MIT and Harvard account for many of the institutional examples of the period; the Alumni Pool at MIT (1940 Anderson and Beckwith) and the Biological Laboratories at Harvard (1930, Coolidge, Shepley, Bulfinch and Abbott), are the most frankly modern; conservative neo-Georgian structures, however, remained standard, at least at Harvard. Ecclesiastical structures built in the period include the Romanesque St. Paul's (E.T.P. Grahm, 1915) and the Conventual of St. Mary and St. John (Cram and Ferguson, 1936).

Commercial:

Several Art Deco commercial and bank buildings were built at major business districts, with several International Style buildings along Memorial Drive, (notably, BB Chemical Co.; 1937; Coolidge, Shepley, Bulfinch & Abbott).

Industrial:

Memorial Drive and Cambridgeport continued to be the focus of industrial activity; some small scale factories and one large plant (Necco; 1926, Lockwood, Greene and Co) were built.

XI. SURVEY OBSERVATIONS

At present, the usefulness of the enormous amounts of data collected is hampered by the fact that the survey forms for the Cambridge survey are repositied at Cambridge; retrieval of data from the survey publications is cumbersome. Further, the publications do not identify individual properties as a rule. Perhaps the survey forms could be microfilmed so that information on all properties would be available in-house.

XII. SOURCES

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