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Qualifications

BOSTON REDEVELOPMENT AUTHORITY

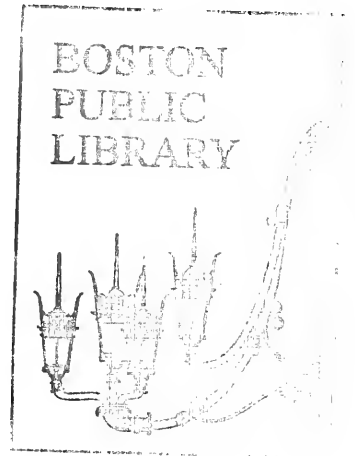
Street and Sidewalk Improvements

St. Botolph Street

and

Harcourt Street

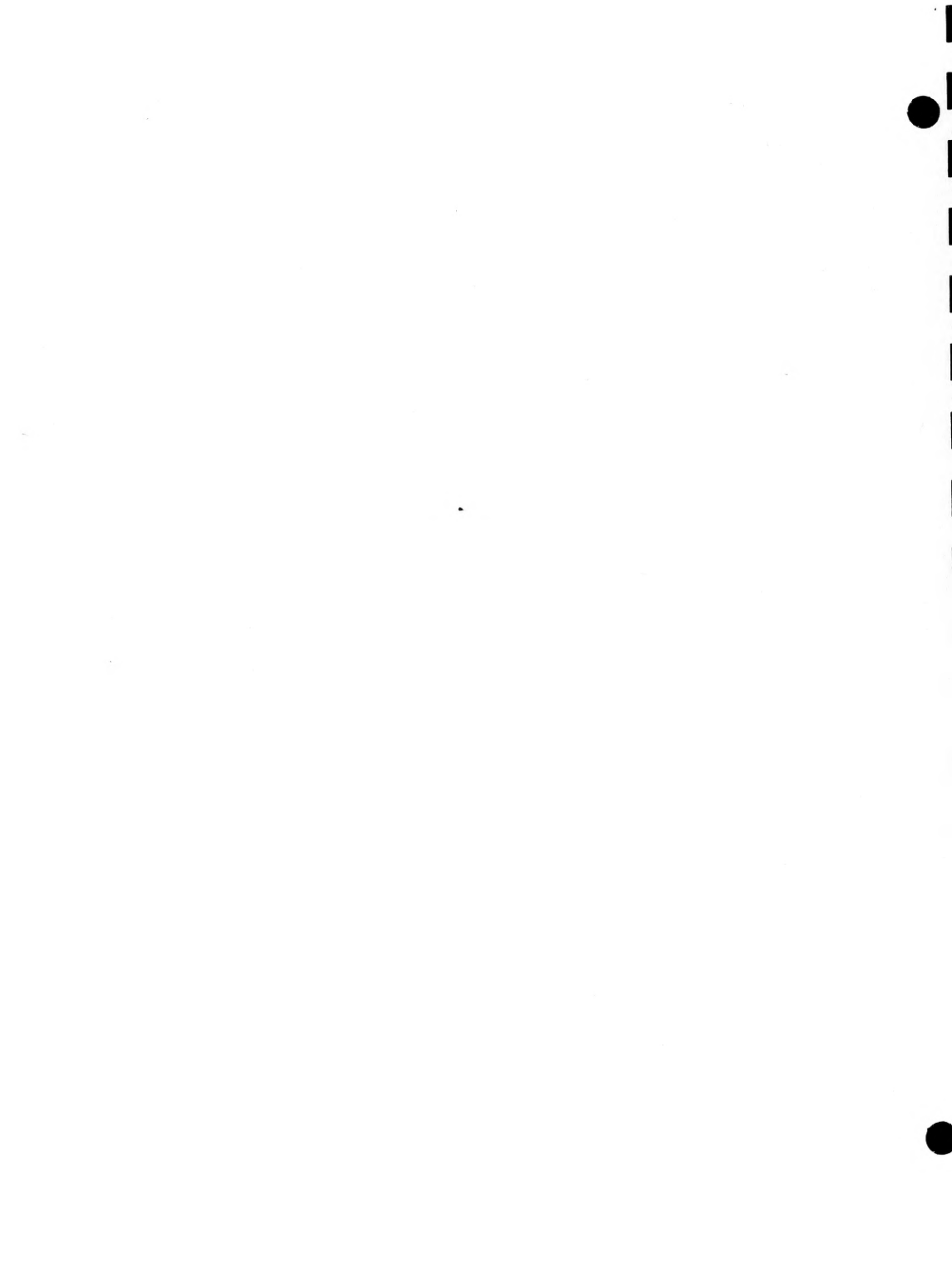
March 25, 1988



KEYES

Keyes Associates
Architects
Engineers
Planners
Interior Designers

Providence, RI • Waltham, MA • Wethersfield, CT • Nashua, NH





Keyes Associates
Architects
Engineers
Planners
Interior Designers

March 24, 1988
"Our Thirty-Seventh Year"

Mr. Paul Reavis
Assistant Director, Engineering Services
Boston Redevelopment Authority
Room 943, City Hall
City Hall Plaza
Boston, MA 02201

RE: STREET AND SIDEWALK IMPROVEMENTS
ST. BOTOLPH STREET

Dear Mr. Reavis:

Keyes Associates takes pleasure in submitting our Letter of Interest and related experience for the above referenced project.

Keyes Associates submits this Letter of Interest with the confidence that we have the full managerial and technical capability to perform the required services for this project and have assembled a team of highly qualified engineers who are well experienced in the various disciplines which will be needed to complete the project objectives successfully.

We appreciate your consideration of our firm and look forward to the opportunity to discuss our qualifications in greater detail with you.

Very truly yours,

Walter I. Keyes, PE
Managing Partner

WIK/jfg

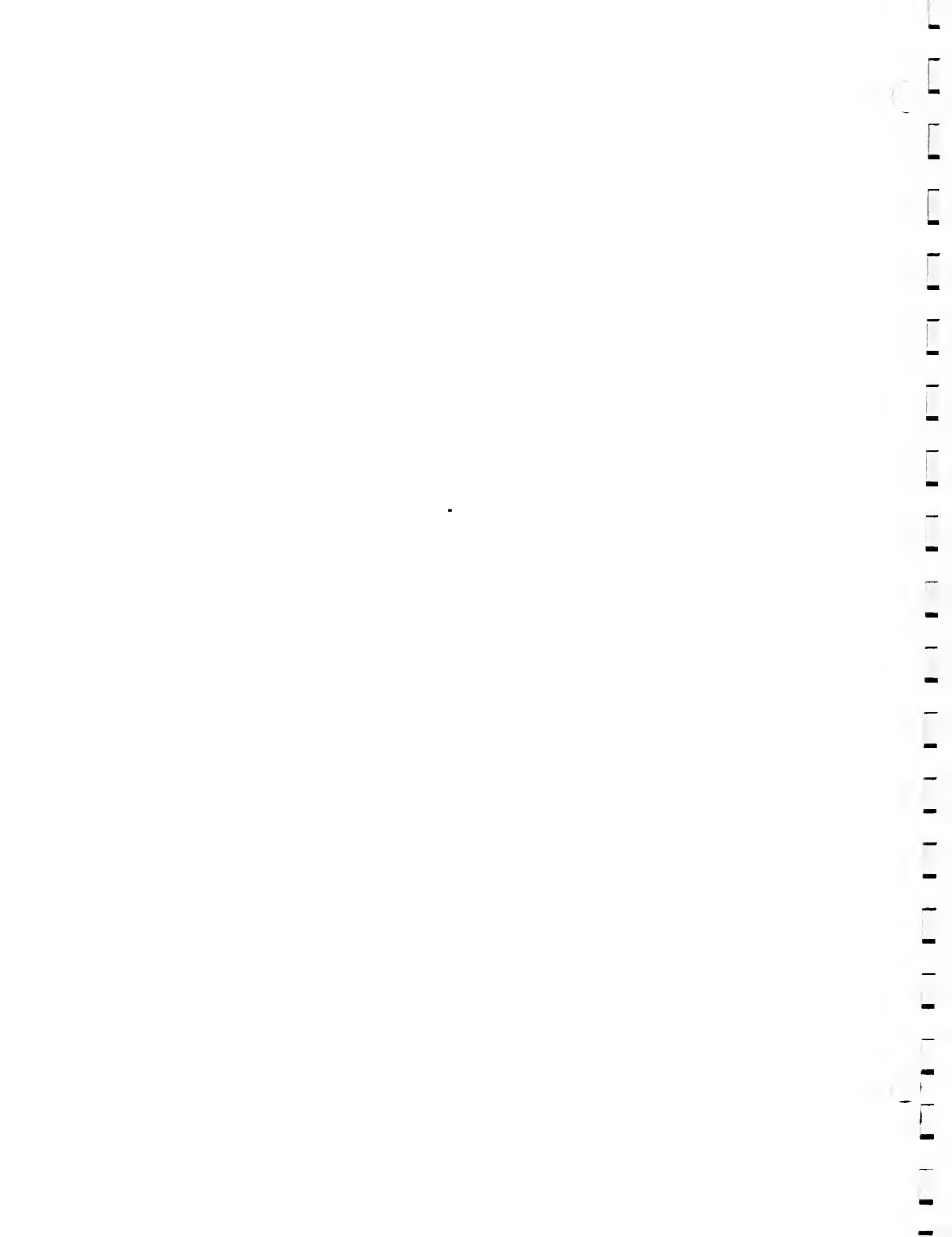
An Equal Opportunity Employer M/F

321 South Main Street
Providence
Rhode Island 02903
Telephone 401-861-2900
TELEX 6817016

One Moody Street
Waltham
Massachusetts 02154
Telephone 617-893-2110

55 Town Line Road
Wethersfield
Connecticut 06109
Telephone 203-563-2341

120 Main Street
Meshue
New Hampshire 03060
Telephone 603-889-1262



1. Project Name / Location for which Firm is Filing:

Street and Sidewalk Improvements
St. Botolph Street

2a. Commerce Business
Daily Announcement
Date, if any:

Not Applicable

2b. Agency Identification
Number, if any:

3. Firm (or Joint-Venture) Name & Address

Keyes Associates
One Moody Street
Waltham, MA 02154

3a. Name, Title & Telephone Number of Principal to Contact

Walter I. Keyes, Partner - (617) 893-2110
Ernest E. Kirwan, Partner - (617) 893-2110

3b. Address of office to perform work, if different from Item 3

4. Personnel by Discipline: (List each person only once, by primary function.)

17_ Administrative
15_ Architects
0_ Chemical Engineers
10_ Civil Engineers
9_ Construction Inspectors
24_ Draftsmen
0_ Ecologists
0_ Economists
6_ Electrical Engineers
0_ Estimators
0_ Geologists
2_ Hydrologists
4_ Interior Designers
4_ Landscape Architects
10_ Mechanical Engineers
0_ Mining Engineers

0_ Oceanographers
1_ Planners: Urban/Regional
11_ Sanitary Engineers
0_ Soils Engineers
2_ Specification Writers
16_ Structural Engineers
1_ Surveyors
2_ Transportation Engineers

3_ Computer Personnel
1_ Librarians
4_ Marketing Personnel
142_ Total Personnel

5. If submittal is by JOINT-VENTURE list participating firms and outline specific areas of responsibility (including administrative, technical and financial) for each firm: (Attach SF 254 for each if not on file with Procuring Office.)

5a. Has this Joint-Venture previously worked together? yes no



7. Brief Summary of Key Persons, Specialists, and Individual Consultants Anticipated for this Project

GENERAL INFORMATION

Having joined Keyes Associates in 1981, Mr. Finger's responsibilities entail landscape planning and design, environmental planning and analysis, and urban design. Areas of expertise cover commercial, industrial, and educational planning and design; downtown restoration; recreation and transportation planning and design; site engineering and specifications; interior and exterior planning design; and environmental impact analysis. Typical project experience includes:

- Winchester Hospital, Winchester, MA - A multi-phase project including a 104,000 SF addition and a 3-level parking garage. Responsible for site design and engineering incorporating phased construction documentation. The topographical features and high-density development constraints required innovative uses of pedestrian bridges, terracing to provide for patient accessibility, employee recreation and parking and servicing activities.
- Northeastern University, Engineering Building, Boston, MA - A 5-story, 80,000 SF educational facility set in an urban university campus. Responsible for site design and engineering. This structure features architectural-textured concrete stairs, planters and ramps to create a pleasant entry to this building. Landscape elements were designed to separate pedestrians from vehicular uses, and pavement materials were varied to soften the urban setting.
- Westbrook Trust, Westfield Executive Park, Westfield, MA - Master plan for five buildings, 256,000 SF office/R & D space. Preparation of documents for regulatory reviews, including connections, curbside permits and MEPA. Site design and construction documentation for Building 1.
- Adams Realty Trust, Adams Place, Quincy, MA - Master plan for two (2) 5-story, 125,000 SF office buildings on an 11-acre site, and site design and construction documentation for Building One and Two. Site involved extensive regulatory reviews and permits, and variances for zoning uses since site was a former auto salvage yard.

<p>a. Name & Title: Paul J. Finger, ASLA - Landscape Architect</p>
<p>b. Project Assignment: Landscape Architecture and Planning</p>
<p>c. Name of Firm with which associated: Keyes Associates</p>
<p>d. Years experience: With This Firm <u>5</u> with Other Firms <u>5</u></p>
<p>e. Education: Degree(s)/Year/Specialization B.S. - Landscape Architecture (1978) Grad. Courses - Cornell University - Landscape Arch./Environmental Analysis</p>
<p>f. Active Registration: Year First Registered / Discipline</p>

g. Other Experience and Qualifications relevant to the proposed project:



a. Name & Title:

Walter I. Keyes, PE - Managing Partner

b. Project Assignment:

Principal with Project Responsibility

c. Name of Firm with which associated:

Keyes Associates

d. Years experience: With This Firm 33 with Other Firms 4

e. Education: Degree(s)/Year/Specialization

M.S.C.E. - Northeastern University (1957)
 B.S.C.E. - Northeastern University (1951)

f. Active Registration: Year First Registered / Discipline

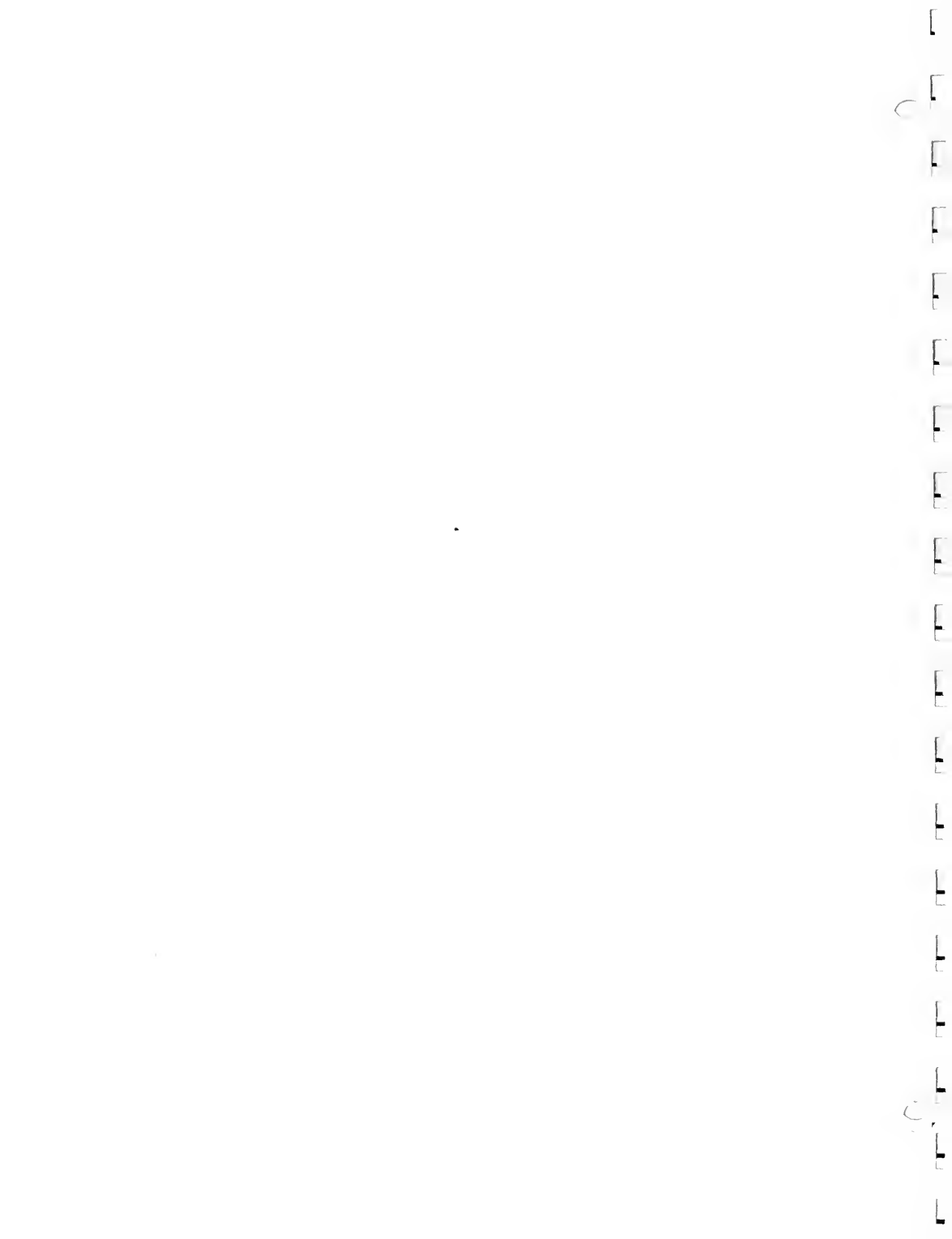
Massachusetts, Rhode Island, Connecticut, New Hampshire, Vermont, Maine and New York

g. Other Experience and Qualifications relevant to the proposed project:

GENERAL INFORMATION

Walter Keyes became a partner in 1953 acting as General Manager of the firm's Waltham Office, and in 1983, he became partner-in-charge of all Keyes Associates offices. Mr. Keyes' accomplishments in the fields of architectural and engineering management include a broad spectrum of projects involving management, R & D, industrial, commercial, recreational, housing, educational and health care buildings; highway; bridges; and sewer and water treatment plants and systems. Mr. Keyes has had in-depth experience in both public and private sector work throughout New England. A representation of clients and projects is as follows:

- Industrial Facilities for Raytheon Company; Polaroid Corporation; Instrumentation Laboratory, Inc.; Kingston-Warren Corporation; and R. H. Bird.
- Many School Projects for the cities/towns of Waltham, MA; Merrimack, NH; Foxboro, MA; Coventry, RI; Northern Berkshire Vocational District; and Nashua, NH.
- Banking Facilities for Shawmut Community Bank and Waltham Savings Bank.
- Research and Development Facilities for Hines Industrial, Spaulding & Slye, D. T. Marini, and The Newport Group.
- Health Care Facilities for WalthamWeston Hospital, Winchester Hospital, Woonsocket Hospital, and South County, Rhode Island Hospital.
- Transportation Projects - Design experience on the Central Artery, Massachusetts Turnpike; and Providence Freeway projects. Current work includes highway and bridge contracts with the Massachusetts, Connecticut and Rhode Island Departments of Transportation.



a. Name & Title:

Charles H. Flavin, PE

b. Project Assignment:

Project Highway Engineer

c. Name of Firm with which associated:

Keyes Associates

d. Years experience: With This Firm. 2 with Other Firms 31

e. Education: Degree(s)/Year/Specialization

Northeastern University
 BS - Civil Engineering (1954)
 MS - Civil Engineering (1961)

f. Active Registration: Year First Registered / Discipline

1961 - Massachusetts and Maine
 1964 - New Hampshire

g. Other Experience and Qualifications relevant to the proposed project:

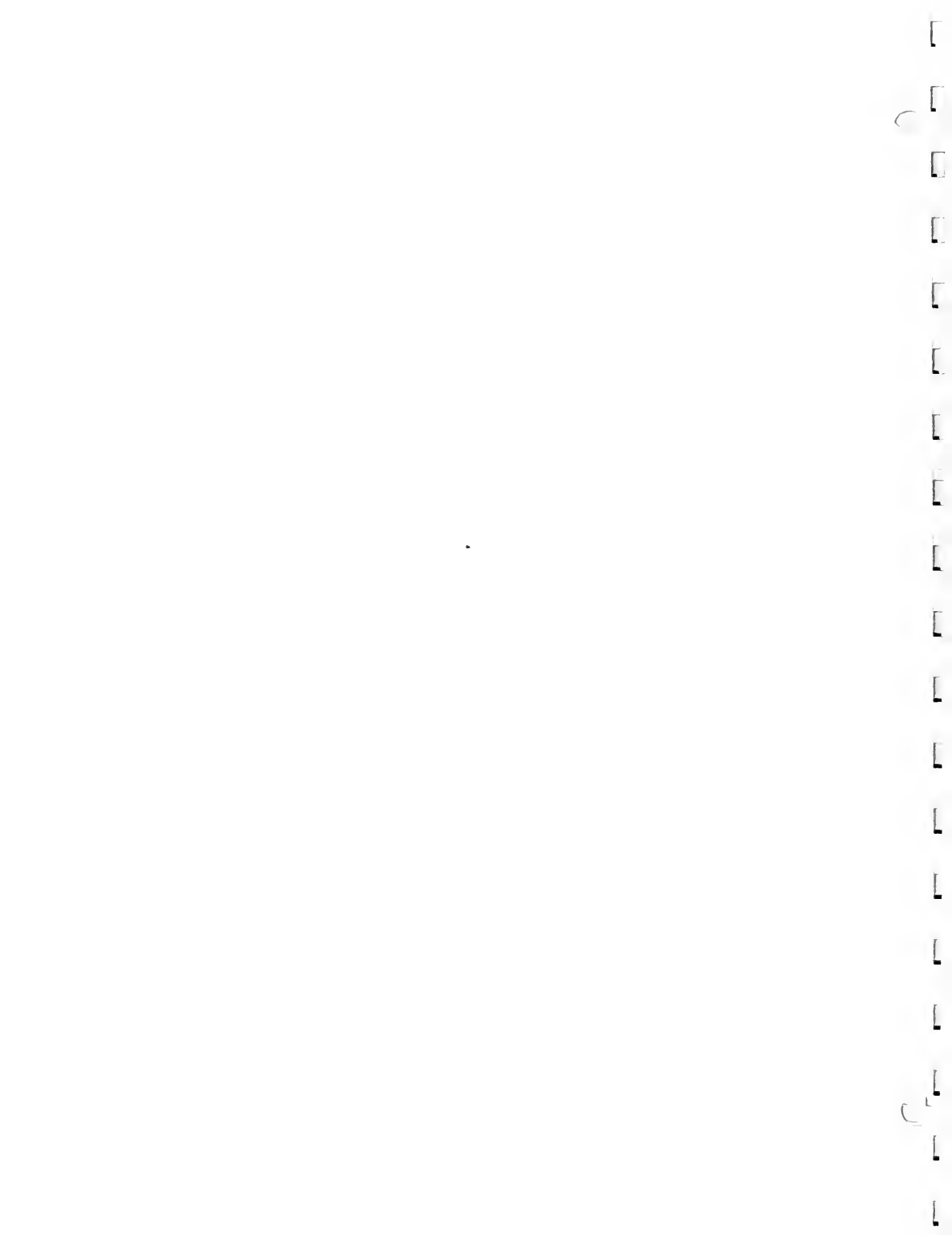
Mr. Flavin joined Keyes Associates in July of 1986, bringing 31 years of experience in the field of civil engineering, specializing in transportation-related projects. He has managed projects from the planning and conceptual stages through final design. His responsibilities have included project management of over two dozen environmental impact studies covering all elements of the man-made and natural environments - resulting in the preparation of Federal Environmental Impact Statements and State Environmental Impact Reports.

Prior to joining Keyes Associates, Mr. Flavin held administrative/management positions with a nationally-known consulting firm. He has managed projects in the states of Massachusetts, New Hampshire, Maine, New York, Connecticut, Rhode Island and Puerto Rico.

Since joining Keyes Associates, Mr. Flavin has been responsible for management/design assignments on a number of bridge and highway projects, including the relocation of Butters Row over the B&M Railroad in Wilmington, MA; the widening of Route 119 over the B&M Railroad in Littleton, MA; and the Phineas Street reconstruction (which involved a new bridge over Beaver Brook) in Dracut, MA.

Mr. Flavin has additional experience in the following areas:

- Location study, preliminary and final design, and Environmental Impact Report for roadway, multi-span bridge over salt marsh, and parking areas for Marshfield, MA Town Pier.
- Traffic studies and roadway designs in several municipalities.
- Hydraulic (including tidal) sizing of waterway openings for numerous bridges for the Massachusetts Department of Public Works.



7. Brief Resume of Key Persons, Specialists, and Individual Consultants Anticipated for this Project

a. Name & Title:

James F. Kelley, PE, PLS

b. Project Assignment:

Road and Highway Engineer

c. Name of Firm with which associated:

Keyes Associates

d. Years experience: With This Firm 1 with Other Firms 36

e. Education: Degrees/Year/Specialization

A.S.C.E. - Northeastern University - 1950
Civil/Structural Engineering

f. Active Registration: Year First Registered /Discipline

1959 - Massachusetts

g. Other Experience and Qualifications relevant to the proposed project:

PROFESSIONAL BACKGROUND

During his long career, Mr. Kelley has been responsible for many field investigations to determine the need for roadway rehabilitation, maintenance and betterments as well as the development of the plans, specifications and estimates for such projects. He was also responsible for development of all maintenance programs on all state highways and bridges which involved pavement maintenance from cracks and potholes to resurfacing.

He pioneered performance type of contracts to apply pavement markings as well as many other forms of contract maintenance. This form of maintenance was developed as a result of the lack of personnel combined with the increase in lane miles of highway constructed for the Interstate System, contract maintenance is also a useful management tool for experimental projects utilizing new products or specialized equipment.

Mr. Kelley was responsible for all pavement maintenance operations on all state highways for the Massachusetts Department of Public Works for thirteen years which included engineering, budget control and construction documents.

Mr. Kelley was selected to develop a synthesis on "Formulating And Justifying State Highway Maintenance Budgets" for the Transportation Research Board of the National Academy of Sciences.

Mr. Kelley is recognized nationally in the professional field of maintenance of highways and has chaired many meetings and authored numerous papers.

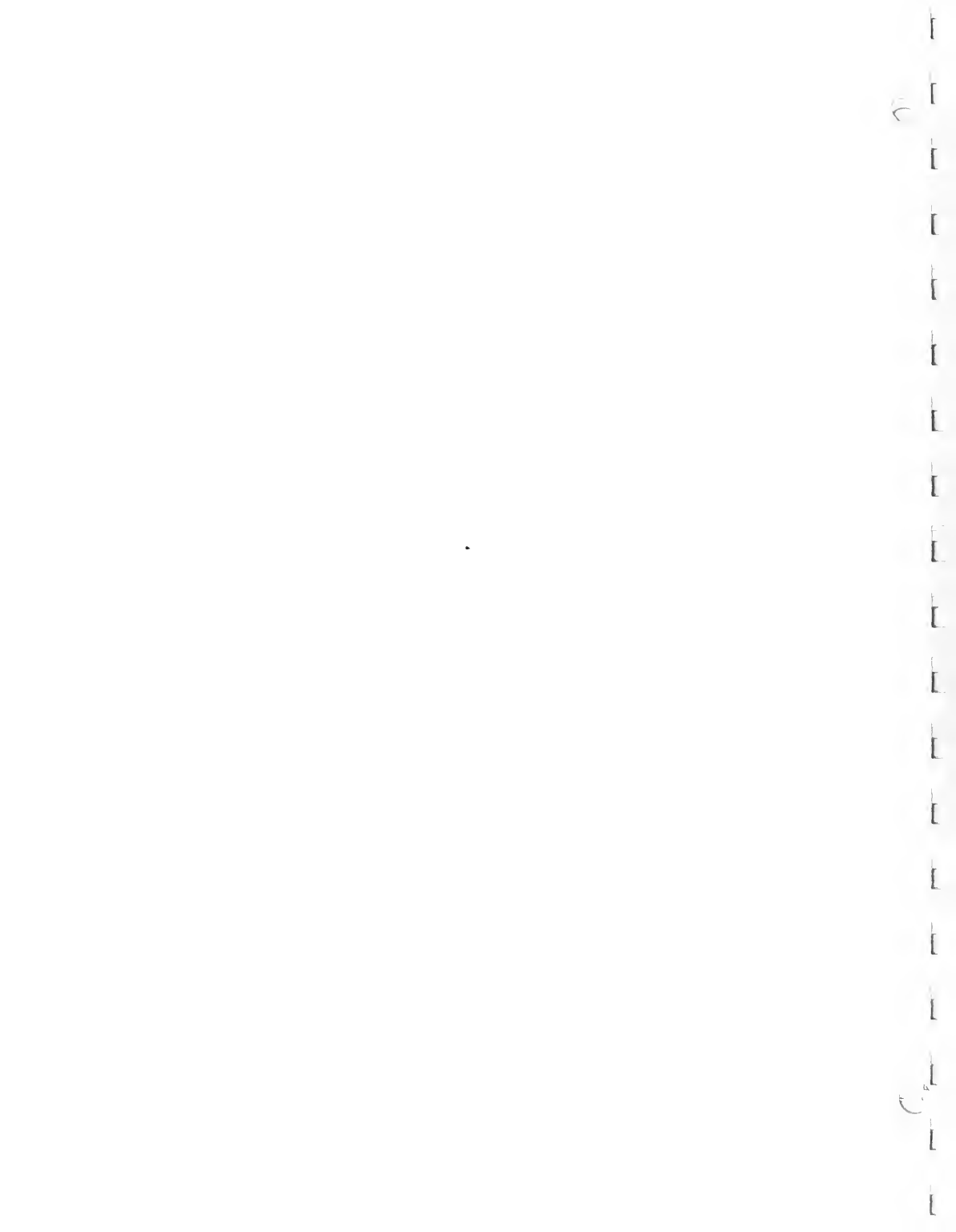
Included among Mr. Kelley's publications are the following:

"How Massachusetts Handles Maintenance of Interstate Highways" (Better Roads Magazine - May, 1962)

"Contract Maintenance" (Transportation Research Board - January 23, 1973)

"State Highway Maintenance" (AROWA - December, 1973)

"Anti-Ice Pavement Additive For Bituminous Concrete Pavements" (APWA - October 27, 1982)



10. Use space to provide any additional information or description of resources supporting your firm's qualifications for the proposed project

Our full range of consulting services, from planning, preliminary study and design, environmental assessment and reports, final design and construction administration, have been provided to a broad spectrum of private, municipal, governmental and military clients throughout the New England area.

The Civil Engineering Department is responsible for all the firm's commissions in a broad range of civil and transportation engineering functions. Our Structural Engineering Department is responsible for all bridge and structural design elements of our civil engineering services. Our commissions include all services associated with new and reconstruction designs for interstate, primary and secondary highways and local roads and streets as well as inspection, evaluation, rating and design of bridge structures.

Engineers within the Civil and Structural Departments have specific academic training and professional experience in the areas of geometry, pavement design, structural analysis, hydraulics, stormwater management, highway safety, signing, signal design and project management. In the performance of various projects, they utilize current state-of-the-art techniques and computer application programs with in-house computer facilities and software to produce innovative and cost effective designs. In addition, as a result of the firm's multi-disciplined organization, we have the immediate capability to draw on the talents of our mechanical, electrical and environmental engineers, architects and landscape architects within the firm. Our project teams are specifically tailored to bring the best managerial and technical staff together to provide a balanced team to meet our client's goals and objectives within the established project schedule.

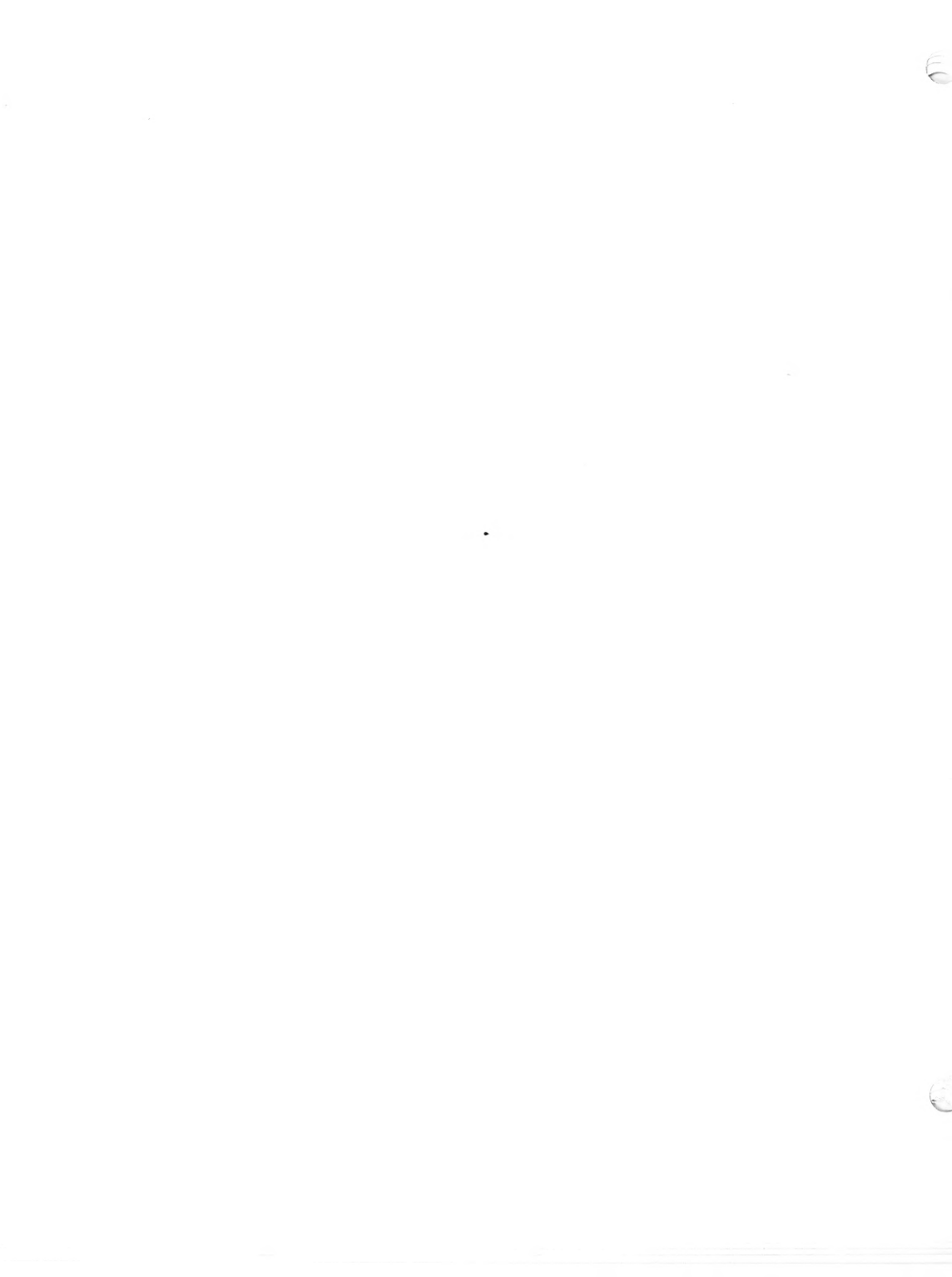
It is the policy of the firm to assure that no person is discriminated against in any activity or program undertaken by the firm on the grounds of race, color, creed, religious belief, sex, national origin, ancestors, marital status, physical disability or blindness, criminal record, mental disorder, status as disabled or Vietnam Vet and/or age.

11. The foregoing is a statement of facts.

Signature: Walter I. Keyes Typed Name and Title: Walter I. Keyes, PE Managing Partner

Date:

March 25, 1988





United States Government Architect/Engineer Questionnaire

Standard Form 254



STANDARD FORM (SF)

254

Architect-Engineer and Related Services Questionnaire

1. Firm Name / Business Address:

Keyes Associates
One Moody Street
Waltham, MA 02154

2. Year Present Firm Established:

1974

3. Date Prepared:

January, 1988

4. Specify type of ownership and check below, if applicable.
Wholly-Owned Partnership
04-897-3044

- A. Small Business
B. Small Disadvantaged Business
C. Woman-owned Business

1a. Submittal is for Parent Company Branch or Subsidiary Office

5. Name of Parent Company, if any:

Fenton G. Keyes Associates - 1951

5a. Former Parent Company Name(s), if any, and Year(s) Established:

6. Names of not more than Two Principals to Contact: Title / Telephone

- 1) Walter I. Keyes, Partner (617) 893-2110
2) Ernest E. Kirvan, Partner (617) 893-2110

7. Present Offices: City / State / Telephone / No. Personnel Each Office

Providence, RI (401) 861-2900 68
Waltham, MA (617) 893-2110 44
Wethersfield, CT (203) 563-2341 30

7a. Total Personnel 142

8. Personnel by Discipline: (List each person only once, by primary function.)

17	Administrative	0	Oceanographers	0
15	Architects	1	Planners: Urban/Regional	1
0	Chemical Engineers	11	Sanitary Engineers	0
10	Civil Engineers	0	Soils Engineers	2
9	Construction Inspectors	4	Specification Writers	16
24	Draftsmen	4	Structural Engineers	1
0	Ecologists	10	Mechanical Engineers	2
0	Economists	0	Mining Engineers	0

3. Computer Personnel
1. Librarians
4. Marketing Personnel

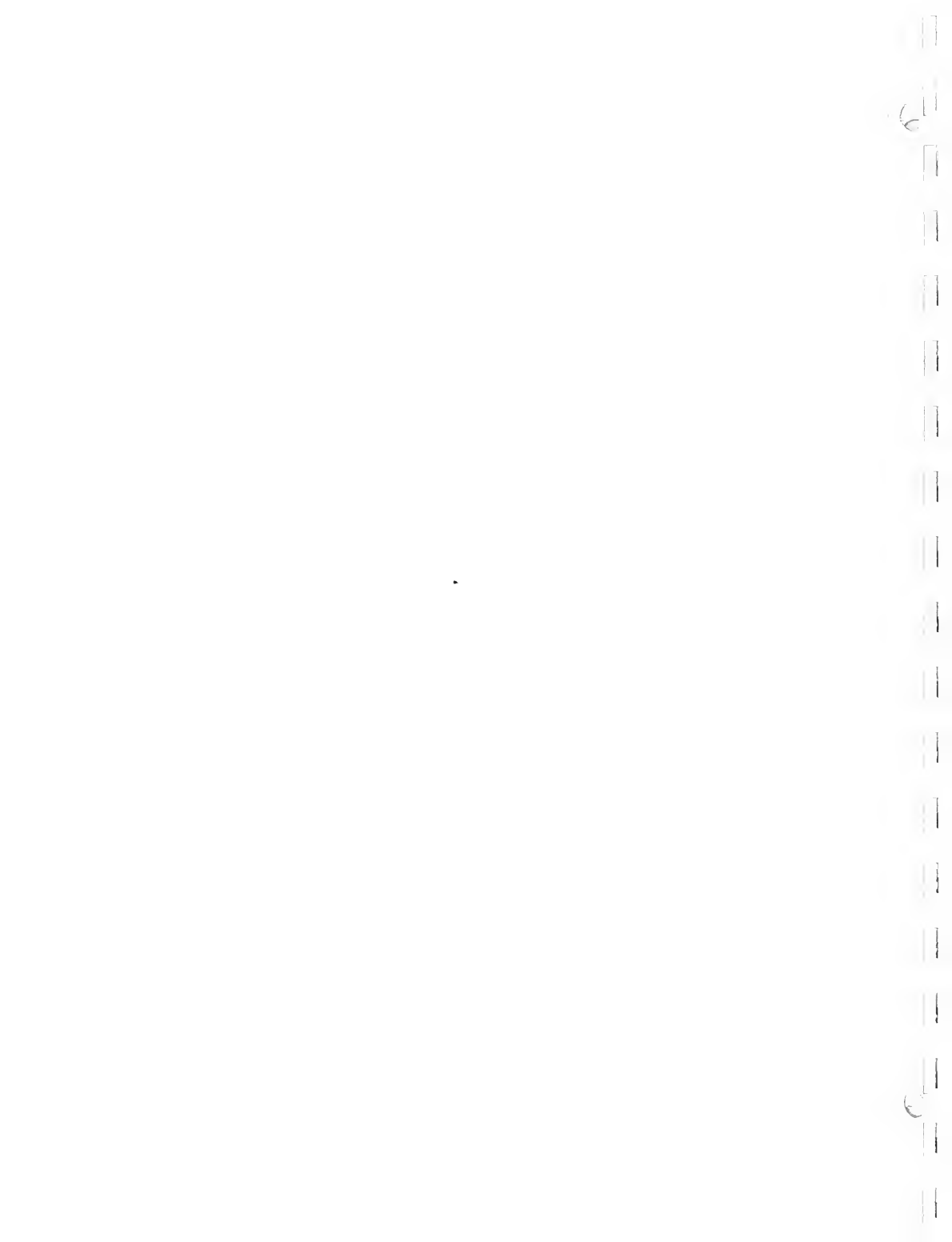
9. Summary of Professional Services Fees Received: (Insert index number)

Direct Federal contract work, including overseas	19.87	19.86	19.85	19.84	19.83
All other domestic work	3	4	4	1	3
All other foreign work*	7	7	7	7	7
	NA	NA	NA	NA	NA

Ranges of Professional Services Fees

- INDEX
- Less than \$100,000
 - \$100,000 to \$250,000
 - \$250,000 to \$500,000
 - \$500,000 to \$1 million
 - \$1 million to \$2 million
 - \$2 million to \$5 million
 - \$5 million to \$10 million
 - \$10 million or greater

*Firms interested in foreign work, but without such experience, check here:



10. Profile of Firm's Project Experience, Last 5 Years

Profile Code	Number of Projects	Total Gross Fees (in thousands)	Profile Code	Number of Projects	Total Gross Fees (in thousands)	Profile Code	Number of Projects	Total Gross Fees (in thousands)
1) 005	1	125	11) 048	19	2,950	21) 087	2	1,510
2) 017	4	650	12) 050	18	880	22) 088	3	390
3) 011	52	4,100	13) 052	32	3,200	23) 089	10	1,600
4) 025	10	750	14) 053	4	300	24) 092	3	140
5) 029	35	5,000	15) 055	98	2,100	25) 096	18	6,250
6) 033	6	590	16) 059	52	875	26) 100	3	750
7) 039	8	715	17) 072	65	13,000	27) 104	10	840
8) 043	72	2,600	18) 079	12	600	28) 107	12	280
9) 049	1	73	19) 082	15	300	29) 114	7	360
10) 046	36	6,300	20) 084	6	960	30) 115	17	680

11. Project Examples, Last 5 Years

Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in thousands)	Completion Date (Actual or Estimated)
115 079	P	1 Water Distribution System Improvements and Storage Tank - 3 Municipalities Stoneham, Wakefield, Woburn, MA	Massachusetts Water Resources Auth. Waterworks Division Boston, MA	9,000	1988
096 101 111	P	2 Wastewater Treatment Plant Expansion and Sewerage System Improvements West Warwick, RI	Town of West Warwick Sewer Authority West Warwick, RI	35,000	1991
096 023	P	3 Wastewater Treatment Plant and Sewerage System Improvements Bristol, CT	City of Bristol Bristol, CT	25,000	1988
046 107	P	4 Urban Systems Projects Signalization, roadway reconstruction, environmental assessment-5 locations, Agawam, MA	Department of Public Works Agawam, MA	3,800	1985
011 087 046	P	5 Elimination of At-Grade Crossings: 1 Bridge, 1 RR Overpass Structure & Highway Improvements East Greenwich, RI	State of Rhode Island Department of Transportation Providence, RI	2,100	1988
048 039	P	6 Winchester Hospital Renovations and Additions to Hospital Winchester, MA	Winchester Hospital Highland Avenue Winchester, MA	9,000	1985
020 025 012 046	P	7 Big River Water Supply Project Dam, Reservoir, Water Transmission Tunnel, Roadway Relocations West Greenwich, RI	Rhode Island Water Resources Board Providence, RI	150,000	1990

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046		Reconstruction of Winter Street Waltham, MA	City of Waltham Dept. of Public Works, Waltham, MA	\$ 770	1985
046	P	9 Rehabilitation of Two Bridges Plus Approach Roadways PS & E	Town of Athol Athol, MA	\$ 260	1988
046	P	10 Six Miles of New Highway and Eight Bridges Including Four Multi-Span River Crossing PS & E (I-84)	State of Connecticut Connecticut Dept. of Transportation	\$66,000	1983
046	P	11 Central Business District Loop Roadway Design, Environmental, Drainage and Signalization PS & E	City of Middletown Middletown, CT	\$ 500	1981
046	P	12 Highway and Bridge, Rte 119 over B&M Railroad, Littleton, MA	Commonwealth of Massachusetts Massachusetts Department of Public Works	\$ 700	1988
046	P	13 Railroad Bridge, Conrail over Route 66 PS & E, Middletown, CT	State of Connecticut Connecticut Department of Transportation	\$ 1,500	1980
046	P	14 Roadway and Bridge PS & E, Phineas Street	Town of Dracut Dracut, MA	\$ 900	1988
046	P	15 Arterial and Local Road Reconstruction 3.0 Miles - Signalization, Drainage PS & E Silver Street & Suffield Street	Town of Agawam Agawam, MA	\$ 4,000	1988
046	P	16 Neighborhood Street Improvement Program	City of Quincy Quincy, MA	\$ 434	1989
046	P	17 Reconstruction of Water Street	City of Quincy Quincy, MA	\$ 470	1989
046	P	18 Rehabilitation of Two Bridges Plus Approach Roadways, Old Shepard Road and Main Street	City of Northampton Northampton, MA	\$ 300	1988
046	P	19 Historical Waterfront, Urban Arterial Roadway Extension PS&E Newport, RI	State of Rhode Island Rhode Island Dept. of Transportation	\$ 2,000	1980



052 043 083	P	20 A New Ring Plant Additions and Renovations 50,000 SF Attleboro, MA	Balfour Attleboro, MA	2,000	1986
052 043 083	P	21 A New Manufacturing Facility Additions and Renovations 140,000 SF Smithfield, RI	Corham Manufacturing Division of Textron Smithfield, RI	2,500	1986
029	P	22 Duxbury Alterations to (5) schools Phase I and II Duxbury, MA	Duxbury Public Schools Duxbury, MA	3,526	1988
029 060 089	P	23 Facility Audit for Capital Expenditure over the next five years Wellesley, MA	Wellesley College Wellesley, MA	(Report) 46	1984
048 018	P	24 Combined Medical Training Security, Telecom & APP Facility 18,000 SF Westfield, MA	Barnes Air National Guard Base Westfield, MA	1,978	1987
039	P	25 Off Street Parking Garage - Single level, 163 car garage Leominster, MA	City of Leominster Leominster, MA	1,050	1986
011	P	26 Emergency Bridge Rehabilitation Program State of Connecticut 10 Bridges Statewide	State of Connecticut Department of Transportation	5,000	1987
104	P	27 Lake Restoration of Gorton Pond Warwick, RI	City of Warwick Planning Department City of Warwick	1,000	1988
029	P	28 New Facility - P173 Advanced Engineering Training Facility New London, CT	U.S. Department of the Navy Philadelphia, PA	8,200	1988
114	P	29 Municipal Well and Groundwater Contamination Study and Benzene Removal Plant East Lyme, CT	East Lyme Water and Sewer Commission Town Hall East Lyme, CT	225	1986
029 072	P	30 New Facility - Adv. Submarine Training Bldg. P174 New London, CT	U.S. Department of the Navy Philadelphia, PA	7,300	1990

12. The foregoing is a statement of facts

Signature: Leonard N. Buckler

Typed Name and Title: Leonard N. Buckler, Partner

Date:

January, 1988



PROJECT EXPERIENCE

ROADWAY IMPROVEMENT AND TRAFFIC ENGINEERING

Keyes Associates Civil Engineering Division has been responsible for the planning, permit application and design of over 100 signalized intersections and related road improvements throughout New England. Engineering has included the incorporation of traffic counting, projection and distribution analyses, hotspot evaluations, and optically-programmed system design.

Commissions have been completed for the MassDPW, ConnDOT, RIDOT, as well as numerous private concerns. A partial listing of traffic engineering and roadway improvement projects include:

WATER STREET RECONSTRUCTION Quincy, MA

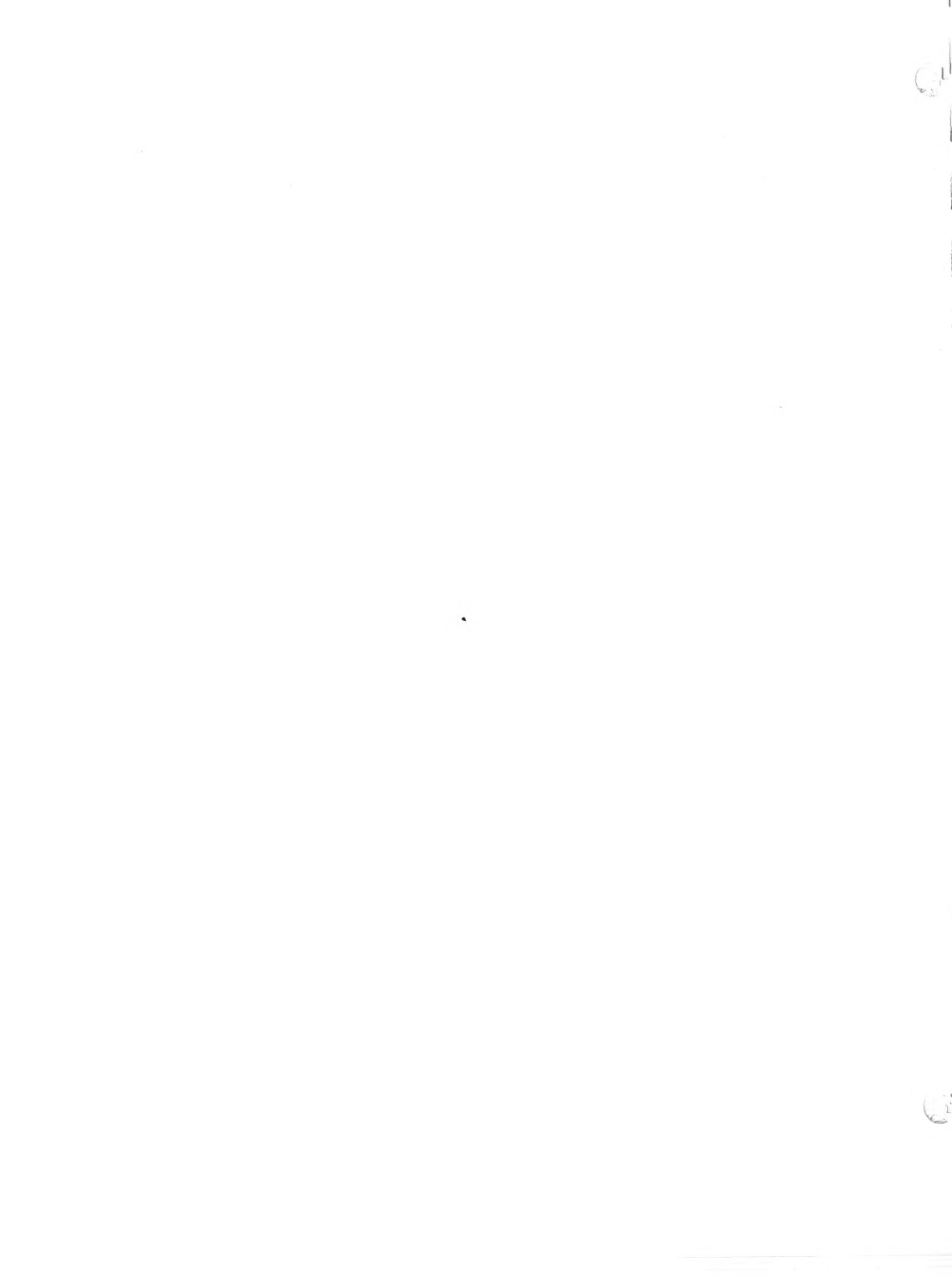
Keyes Associates was responsible for the plans and specifications for the complex design of 3500 feet of urban collector located between Franklin Street and Quincy Avenue. Preliminary design efforts included pavement structure analysis, traffic counts, accident studies and traffic signal warrant analysis. Improvements included total pavement reconstruction, complete replacement of a collapsed storm drainage collection system, new curb installation, curb alignment, access and egress controls to abutting property, sidewalk reconstruction and handicapped access provisions at several intersections. Several new traffic signals were designed and coordinated to provide the Opticom pre-emption system to facilitate the movement of emergency vehicles from the Quincy Avenue Fire Headquarters. A third existing signal location was upgraded and enhanced.

The project design incorporated a detour route as well as special traffic control measures to facilitate traffic movement during construction and to maintain access to local businesses and residences. Heavy traffic volumes and the narrow width of Water Street were also considered. To minimize inconvenience to the city and its residents, extensive effort was devoted to maintaining the construction schedule.

Neighborhood residents reviewed project alternatives as part of an extensive public participation program. As a result of this program, Faxon Lane, part of the Water Street/Quincy Avenue intersection, would become one-way and the signal system would serve the abutting office building and local supermarket.

NEIGHBORHOOD PUBLIC WORKS IMPROVEMENT PROGRAM Quincy, MA

The Neighborhood Public Works Improvement Program involved resurfacing, reconstruction, curb realignment or new installations, sidewalk repair and reconstruction on twenty-four streets or street segments located throughout the city. It also included minor drainage improvements, development of handicapped access provisions, streetscape and landscape enhancements.



PROJECT EXPERIENCE

NEIGHBORHOOD PUBLIC WORKS IMPROVEMENT PROGRAM (continued) Quincy, MA

The work effort included on initial assessment, recommendations and prioritization of needed improvements. Project concept was to minimize expenditure of effort on detail engineering plans to maximize the use of available funds for construction.

MIDDLETOWN ROAD IMPROVEMENT PROJECT Middletown, CT

Keyes Associates performed hydraulic and roadway design services associated with the reconstruction of six primary or secondary city arterials totaling 3.6 miles in length. Major project engineering tasks included the design of precast box culverts at several locations to reduce time and costs, pavement milling and recycling, hydraulic evaluations, utility coordination, rights of way mapping and public participation. Keyes Associates was responsible for meeting a stringent municipal schedule and submitted PS&E documents for Phase I construction within 90 days of authorization to proceed. Construction observation services were also provided, with the administration of three simultaneous projects and resultant project costs of three percent below initial bid.

URBAN SYSTEMS PROJECT - FOUR LOCATIONS Agawam, MA

In conjunction with established MassDPW and FHWA guidelines, comprehensive design documents were prepared by Keyes Associates for the reconstruction of four primary route intersection locations.

The engineering of new signalization, pavement markings, signing, utilities and roadway realignment to promote safer operations was undertaken encompassing short and long range transportation network improvements including the planned extension of a parallel expressway.

RECONSTRUCTION OF SILVER AND SUFFIELD STREETS Agawam, MA

As part of continuing transportation system improvements under the Federal Urban Systems Program, the Town contracted Keyes Associates for the planning, design and contract plan development of three miles of arterial highways to serve future adjacent commercial and industrial development while fostering safety and access of the traveling public. Estimated at \$3.2 million dollars, the project involved pavement resource recovery, signalization, major drainage, roadway reconstruction, environmental permitting and a comprehensive study of long range land use and traffic projections.

PROJECT EXPERIENCE

DEKOVEN DRIVE IMPROVEMENT PROJECT

Middletown, CT

Comprehensive planning and design services were provided by Keyes Associates for the development of a new central business district loop route. The Urban Systems project included signalization design including one of Connecticut's most highly congested intersections and reconstruction improvements to adjacent roadways. A comprehensive environmental evaluation was undertaken to identify and mitigate impacts which encompassed a 4(f) assessment of a park relocation and a historical home.

RAILROAD GRADE CROSSING ELIMINATION PROJECT

East Greenwich, RI

Study and design of approximately one mile of local roads resulting from increased traffic volumes diverted by elimination of at-grade railroad crossings for Northeast Corridor improvements in a historic waterfront district. Railroad overpass design, underpass analysis and profile improvements were made to accommodate marina bound trucks hauling large boats. Storm drainage collection systems, utility adjustments and relocations, aesthetic street lighting were also provided. Services included right-of-way plans, permits, plans, specifications and estimates.

RECONSTRUCTION OF WINTER STREET

Waltham, MA

This reconstruction project addressed impacts from the existing and proposed commercial, office and industrial development in the area and presented recommendations to accommodate future traffic growth. The project involved relocation, new signalization and an Environmental Impact Report.

ROCKY HILL INDUSTRIAL PARK

Rocky Hill, CT

Performed under municipal financing, the planning, design and construction administration services for the project encompassed the parcelization, roadway, utility and drainage engineering of a 120 acre site to include industrial, high density residential, commercial and recreation/open space land uses. The design development and subdivision plan included approximately 6000 linear feet of new roadway, water and sewer facilities, and an additional 1000 feet of reconstructed arterial was developed ahead of the municipality's tight schedule. The project included area-wide traffic impact studies and the design of comprehensive stormwater detention facilities. Additionally, an alternative pavement design was proposed and adopted, thereby realizing a savings of 15% of the project cost, or \$100,000.

PROJECT EXPERIENCE

RECONSTRUCTION OF MAIN STREET

Gardner, MA

A one mile segment of Main Street was designed to accommodate long range demands through development of contract documents for signalization, storm drainage, sidewalks, pavement recycling, and a 1200' retaining wall. Planning studies encompassed an environmental assessment, downtown parking demand evaluation, traffic analysis and stormwater routing system strategy. Additionally, alternative traffic circulation concepts for the municipal downtown approach and nearby municipal center roadway network were formulated.

The construction cost of both phases of the project which was estimated at \$860,000, was reduced significantly through the specialized pavement milling and overlay operations with resultant savings of approximately \$120,000.

HARTFORD AVENUE RENEWAL PROJECT

Providence, RI

Construction plans and specifications were prepared for site improvements and roadway intersection realignment at Glenbridge, Petteys, and Hartford Avenue for the Providence Redevelopment Agency. Site improvements included new cement concrete sidewalks along Hartford Avenue from Ophelia Street to Alverson Avenue. Other site amenities included deciduous trees encircled with tree grates, handicap curb cuts at all street crossings, rustic colored pavers at street crosswalks, and additional street lighting to brighten the area at night. Four sitting areas were developed at the Glenbridge, Petteys, and Hartford Avenue roadway intersection that will greatly enhance the neighborhood community. Decorative paving patterns in these sitting areas were created using red brick, gray granite blocks and cement concrete paving. Wood benches with shade trees were added to provide an inviting meeting place for people of this local community. The newly aligned intersection will contain new traffic control lights and signalization equipment.

MEMORIAL BOULEVARD

Newport, RI

The Memorial Boulevard project included the design of 0.3 miles of divided 4-lane urban arterial in a historic waterfront tourist area including storm drainage, utility adjustments, a coordinated signalization system for 3 intersections, right-of-way plans, condemnation plats, and descriptions.

MEMORIAL BRIDGE EXTENSION

Newport, RI

The extension included the design of 0.5 miles of urban arterial in a historic waterfront tourist area. Phased provisions were made for future expansion and joint use of area with a railroad facility. Storm drainage, utility adjustments and relocations, four signalization intersections, right-of-way plans, condemnation plats, were also designed.

PROJECT EXPERIENCE

RICHARDS BROOK INDUSTRIAL AREA

Middletown, CT

In conjunction with the master plan and preliminary engineering study for this industrial area, Keyes Associates prepared circulation studies and signal planning encompassing two intersections.

WESTERN GATEWAY HERITAGE STATE PARK

North Adams, MA

A tourist and parkway study was prepared for this regional railroad museum and tourist center.

CENTURY EXECUTIVE PARK TRAFFIC IMPACT STUDY

Rocky Hill, CT

The Keyes master plan for office development at the interchange with I-91 and West Street required the assessment of traffic at this major generator including an area bordered by Route 160, Route 3, Route 649 (West Street and the interchange with I-91) for the State Traffic Commission. Final design included signalization and roadway improvements.

SPRINGFIELD COLLEGE

Springfield, MA

Transportation studies were conducted to ascertain alternative routing and parking in conjunction with major sporting events at the campus. Tasks included a traffic counting program, origin/destination survey and capacity evaluation of several adjacent arterial streets. An update of the College master plan was also developed detailing resources and development options.

WALNUT SHOPPING CENTER

Agawam, MA

Alterations to an existing interconnected signal system and associated lane assignments were proposed in the first phase of improvements modernizing this 48-store retail center. Keyes Associates' traffic study also included optimizing parking for the two anchor stores, circulation studies and access/roadway designs. The program was initiated jointly by the Town's Planning and Public Works Departments who commissioned the team of Keyes and TPA services for the Center's modernization plan.

FORT LEE APARTMENT COMPLEX TRAFFIC ANALYSIS

Fort Lee, NJ

Traffic planning services included evaluation of high density, residential trip generation and impacts to a major state arterial, distribution analysis and signal design.

PROJECT EXPERIENCE

INTERSTATE 284 ENVIRONMENTAL IMPACT STATEMENT

East Hartford - South Windsor, CT

Under a comprehensive assessment of impacts associated with the development of 3.3 miles of interstate highway, Keyes prepared signal studies, transit options, circulation programming and capacity analysis for the Hartford north corridor.

ROUTE 34 ENVIRONMENTAL IMPACT STATEMENT

New Haven - West Haven, CT

Traffic planning services included development of capacity analysis, alternative development, air quality and queuing scoping, and transit studies for the New Haven CBD west corridor.

AGAWAM INDUSTRIAL AREA LONG RANGE PLAN

Agawam, MA

The planned development of a 900-acre industrial tract necessitated the analysis of infrastructure capacity, trip generation and distribution studies, and impact assessment under several phased program scenarios and adjacent expressway ramp locations.

QUAKER LANE SAFETY IMPROVEMENTS

West Warwick - Warwick - East Greenwich, RI

Reconstruction design of 1.8 miles of 4-lane urban arterial highway with a design ADT of 26,800, extensive left turn lanes, shoulders, major storm drainage collection systems, retention basins, wetland restorations, utility adjustments, five signalized intersections, permits, right-of-way plans, condemnation plats and descriptions.

INTERSTATE ROUTE I-91 (SOUTH)

Connecticut

Four miles of six-lane divided highway with 13 bridges, five miles of turning roadways and tri-level directional interchanges in Cromwell and Rocky Hill were designed for the Connecticut Department of Transportation. This project was part of the Interstate program cited under the Highway Beautification Awards Program.

INTERSTATE ROUTE I-84

Connecticut

Designs for this proposed six-mile Interstate link in Eastern Connecticut included the design development of a major structure over the Little River.

PROJECT EXPERIENCE

INTERSTATE I-86 AND I-291 Manchester, CT

Traffic planning services included three and one-half miles of six-lane divided highways, 3.4 miles of arterial and local roadways; six and one-half miles of ramps and turning roadways; 13 bridges, two viaducts and one railroad bridge, and the signalization of seven intersections in Manchester designed for the Connecticut Department of Transportation.

BRIDGEPORT DEVELOPMENT CORPORATION Bridgeport, CT

This environmental impact and traffic assessment addressed concerns associated with the major expansion of a regional shopping mall.

INTERSTATE ROUTE I-495 Massachusetts

Four bridges in Marlborough, four in Bolton, and three in Harvard were designed for the Massachusetts Department of Transportation.

INTERSTATE ROUTE I-89 Warner, NH

Nearly three miles of four lane-divided highway and 11 bridges in Warner were designed for the New Hampshire Department of Transportation.

CENTRAL NEW HAMPSHIRE TURNPIKE Nashua, NH

Three miles of four-lane divided highway and three bridges in Nashua were designed for the New Hampshire Department of Transportation.

INTERSTATE ROUTE I-91 (NORTH) Connecticut

The design of this major interstate segment was undertaken for the Connecticut Department of Transportation encompassing 3.4 miles of expressway, five miles of ramps and turning roadways, seven bridges and two miles of local roads. The design also entailed a portion of the proposed I-91/I-291 interchange.

BRISTOL TOPICS Bristol, RI

Complete design documents were prepared incorporating signalization design at two of the project's four intersections as well as roadway drainage and utility reconstruction.

PROJECT EXPERIENCE

ROADWAY IMPROVEMENTS TO WILLIAMS STREET, BLISS COURT AND BLISS ROAD Longmeadow, MA

Keyes designed 665 feet of roadway improvements to Williams Street in Longmeadow, Massachusetts involving reconstruction, storm drainage improvements and new signalization. The project also included improvements to the Bliss Court and Bliss Road intersection resulting in an improved traffic turning radius.

Engineering services provided by Keyes included design, specifications and contract documents.

Other projects indicative of Keyes extensive experience and broad range of transportation and related engineering capacity are identified below:

- Reconstruction of Main Street
Winsted, CT
- North Walker Street
Taunton, MA
- Higginson Road
Lincoln, RI
- Sneece Pond Road
Cumberland, RI
- Bridgeport Development Corporation Traffic Impact and Signalization Study
- Winsted Traffic, Circulation and Parking Study
Winsted, CT
- Gabb Road - Roadway and Drainage Improvements
Bloomfield, CT
- Quonset Point Reuse Study
- Airport on I-91 Industrial Park Study
Warwick, RI
- Jai-Alai Fronton
Hartford, CT
- Polaroid Corporation
New Bedford, MA
- East Hartford Accident Study
- T.F. Green State Airport
Warwick, RI

CURRENT MASSACHUSETTS HIGHWAY PROJECTS

COMMONWEALTH OF MASSACHUSETTS

The following is a current listing of Keyes Associates highway projects for state agencies or municipalities of the Commonwealth of Massachusetts.

<u>Project Name and Location</u>	<u>Project Cost</u>	<u>Year</u>	<u>Reference</u>
Intersection) Signal Improvements Agawam, MA	\$ 527,000	1985	Mr. John Stone Superintendent of Public Works (413) 786-0400
Winter Street Reconstruction Waltham, MA	\$ 770,000	1985	Mr. Edward F. Delaney, P.E. Director of Public Works (617) 893-4040
Reconstruction of Water Street Quincy, MA	\$ 430,000	1986	Mr. Richard Meade Director of Planning (617) 773-1380
Agawam Industrial Park Phase I Agawam, MA	\$ 677,000	1985	Mr. John Stone
Phase II	\$ 977,000	1986	Superintendent of Public Works (413) 786-0400
Main Street Reconstruction Gardner, MA	\$ 650,000	1985	Mr. Arthur Young Town Engineer (617) 632-0252
Silver Street Reconstruction Agawam, MA	\$3,500,000	1986	Mr. John Stone Superintendent of Public Works (413) 786-0400
William Street Reconstruction Longmeadow, MA	\$ 108,000	1986	Mr. Joseph Cote Director of Public Works (413) 567-1281
Walnut Street Reconstruction Agawam, MA	\$ 20,000	1986	Mr. John Stone Superintendent of Public Works (413) 786-0400
ENF Draft EIR Westfield Executive Park Massachusetts Turnpike Authority Westfield, MA	Study	1985	Mr. David R. Nagle Director of Real Estate (617) 973-7234

PROJECT REFERENCES

ROADWAY IMPROVEMENTS

MIDDLETOWN ROAD IMPROVEMENT PROJECT

Middletown, CT

Mr. Salvatore C. Fazzino

Director of Public Works

Telephone: 203/344-3407

URBAN SYSTEMS PROJECT - FOUR LOCATIONS

RECONSTRUCTION OF SILVER AND SUFFIELD STREETS

Agawam, MA

Mr. John Stone

Superintendent of Public Works

Telephone: 413/786-0400

ROCKY HILL INDUSTRIAL PARK

Rocky Hill, CT

Mr. Peter Lozis

Town Engineer

Telephone: 203/563-1451

RECONSTRUCTION OF MAIN STREET

Gardner, MA

Mr. Mark Goldstein

City Planner

Telephone: 617/632-3412

HARTFORD AVENUE RENEWAL PROJECT

Providence, RI

Mr. Robert Yeremian

Project Supervisor

Telephone: 401/831-6550

DEKOVEN DRIVE IMPROVEMENT PROJECT

Middletown, CT

Mr. William Kuehn

Community Development Coordinator

Telephone: 203/344-3400

EAST GREENWICH RAILROAD GRADE CROSSING

East Greenwich, RI

Mr. James R. Capaldi, P.E.

Chief Design Engineer

Telephone: 401/277-2023

AFFIRMATIVE ACTION POLICY STATEMENT

KEYES ASSOCIATES accepts, as their operating affirmative action policy, the following statement in its entirety and in accordance with the below-listed applicable laws:

"It is the policy of the firm to assure that no person is discriminated against in any activity or program undertaken by the firm on the grounds of race, color, creed, religious belief, sex, national origin, ancestry, marital status, physical disability or blindness, criminal record, mental disorder, status as a disabled or Vietnam veteran and/or age. These include the following protected classes: Blacks, Spanish-surnamed Americans, Asian Americans, American Indians, Women, and the Handicapped."

1. Title VII of the Civil Rights Act of 1964 as amended by the Equal Employment Opportunity Act of 1972.
2. Executive Order 11246 as amended by Executive Order 11375.
3. The Equal Pay Act of 1963.
4. The Age Discrimination in Employment Act of 1967.
5. Title 41 Public Contracts and Property Management Chapter 60 Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.
6. Section 503, Rehabilitation Act of 1973.
7. Section 402, Vietnam Era Veterans' Readjustment Act of 1974.
8. Fair Employment Practices Act.
9. Applicable State & Local Laws.

In addition, this firm is committed to affirmative action to the extent that the guidelines set out below will be fully executed and implemented in a good faith manner to effectively attempt to provide equal opportunity for all.

- I. Objectives. Affirmative action requires positive, aggressive and effective steps to attract job applications from minority groups and women; to hire those who are qualified or who are trainable; to train employees for future advancement; and to advance those who are qualified without regard to the areas listed above. Affirmative action also requires the training and counseling of supervisory and management personnel in the effective supervision and management of all employees with emphasis on the particular problems of minority, handicapped and female employees.

AFFIRMATIVE ACTION

Keyes Associates is dedicated to the principles of equal employment opportunity and continues to improve its accepted Affirmative Action Policy. Keyes Associates has had a written, in-depth Affirmative Action Plan in force since 1975. This plan exceeds the requirements of, and is approved by, the United States Equal Employment Opportunity Commission. Keyes' program is administered by our E.E.O. Officer, implemented by our personnel manager and fully supported by management and supervisory personnel. We are committed to, and have succeeded in, complying with all aspects of Affirmative Action and Equal Employment Opportunity. Our written statement addresses specific E.E.O. policies to ensure that no person is discriminated against in any recruitment, hiring, promotion, or other personnel activity undertaken by the firm.

In addition, Keyes Associates subscribes to, and complies with, the provisions of the Environmental Protection Agency's minority business policy (40 CFR, Part 33) for the use of qualified minority and women-owned business enterprises, as well as small and labor surplus area businesses. Keyes has and does employ these firms, by subagreement, to the maximum extent possible for all funded projects. Current projects in which these firms are employed have representative participation of up to 11% and 4% for MBE and WBE firms, respectively.

Copies of our complete Affirmative Action Policy Statement are available on request.

Walter I. Keyes, Partner and General Manager of Keyes Associates, reiterates the Company's policy in the following statement: "I am personally committed to effective implementation of the Company's affirmative action policy and program. Further, I direct all supervisory personnel to carry out their affirmative action responsibilities with the same dispatch and expertise normally applied to their regular job duties."

Carole E. Summely
EEO Officer

Walter I. Keyes
Partner

3-24-88
Date



