



Proposal for
Full Comprehensive MEP Engineering Services for
Forest City Tech Place Associates
New York, New York

May 6, 1992

Architecture, Engineering, Interior Design and Consulting Services
2301 Chestnut St., Philadelphia, Pennsylvania 19103-3035
215 569 2900

Table of Contents



Proposal –

I. Project Understanding	I-1
II. Firm Background	III-1
III. Similar and Current Projects	IV-1
IV. Project Staffing and Organization	V-1
V. Scope of Services / Approach	II-1
VI. Project Schedule	VI-1
VII. Compensation and Reimbursable Expenses	VII-1
VIII. Special Considerations	VIII-1

Appendix –

A. Resumes – Partners	A-1
B. Resumes – Project Team	B-1



I. Project Understanding

I. Project Understanding

The logo for TKLP, consisting of the letters 'TKLP' in white, bold, sans-serif font, centered within a black rectangular box.

Forest City Tech Place Associates (FCTPA) intends to construct a building at 11 MetroTech Center. New York City's Computer and Data Communications Services Agency (CDCSA), which operates the City's technological infrastructure, will be the major tenant. CDCSA operates the Computer Service Center (CSC) and the CITYNET data communications network. CDCSA's lease is expiring in 1994 and they are seeking space for their data center and administrative offices.

We understand the building will be a structure of 188,000 GSF. CDCSA will occupy 50,000 USF of multi-floor data center and 62,000 USF of office space. The balance of space will be retail/office space, mechanical/electrical space, parking and grossing factors.

The mechanical/electrical/plumbing (MEP) engineering will integrate both the base building systems and the tenant fitout design for a comprehensive design capable of meeting CDCSA's needs. The integrated engineering approach will permit a unified design to create the highest degree of reliability.



II. Firm Background

II. Firm Background



TKLP is pleased to provide the following information about the firm.

The Kling-Lindquist Partnership, Inc., (TKLP) is an integrated, full-service, 300-person planning and design firm. Our professional expertise is concentrated into specialty groups, each drawing upon our combined architectural, engineering, and interior design resources. These specialty groups undertake specific facility types, such as office and mixed-use projects, institutional facilities, research and development, computer operations, and "high-tech" manufacturing. Other groups provide consulting services in interior design; energy systems; and construction planning, scheduling, and cost control.

Since our founding in 1946, we have completed more than 3,000 projects totaling over ten billion dollars in constructed value. Our work has been honored for architectural and engineering excellence by more than 90 awards from professional societies and industry associations.

With the retirement of Vincent G. Kling, Sr., in 1985, the firm, previously composed of The Kling Partnership and Kling-Lindquist Engineers, was consolidated into a single organization providing architectural, engineering, interior design, and consulting services.

TKLP has developed a general architectural/engineering practice designing a wide range of corporate, institutional, and developer facilities, and has established a significant reputation for the design of high technology, computer, and research facilities.

HEADQUARTERS LOCATION

TKLP is located at 2301 Chestnut Street, Philadelphia, PA 19103

ADDITIONAL LOCATIONS

There are no other locations.

NUMBER OF EMPLOYEES

See TKLP's Personnel by Discipline chart on following page.

II. Firm Background



PERSONNEL BY DISCIPLINE

Professional Staff	99
Architecture, Space Planning, & Interior Design	92
Landscape Architecture	4
Lighting Design	2
Life Safety	1
Professional Staff	106
Mechanical Services/Engineering	31
Structural/Civil	19
Instrumentation	10
Electrical	11
Design/Drafting	35
Professional Staff	40
Computer/CADD Operations	13
Estimating/Scheduling	7
Specifications Writers	4
Field Services	5
Technical Support Staff (Office Services)	11
PROFESSIONAL & TECHNICAL STAFF	245
ADMINISTRATIVE STAFF	56
TOTAL FULL-TIME STAFF	301

There are 129 Registered Professionals on the TKLP staff. TKLP Principals and Project Managers are included in the architectural and engineering staff figures.

II. Firm Background

TKLP

FORM OF OWNERSHIP

TKLP is an independent, Chapter S corporation wholly owned by its shareholders.

PARTNERS AND SENIOR MANAGEMENT, AND CORRESPONDING PROFESSIONAL BIOGRAPHIES

M.J. Sotnick, PE	Chairman and Chief Executive Officer
C. Nicholas Reveliotty, PE	Director of Professional Resources
Charles E. Bailey, AIA	Design Principal
Terry L. Bush	Director of Administration & Finance
* J. Patrick Carpenter, PE	Senior Engineering Principal
Richard F. Rowe, AIA, PE	Department Head – Structural/Civil Engineering
Eric A. Chung, FAIA	Senior Design Principal
Michael R. Lorenz, PE	Director of Mechanical Services
Carl T. Clark, AIA	Project Management
* Jeffrey Cosiol, PE	Project Director, Engineering Consulting Services
Florinda D. Doelp, IBD	Project Director, Manager of Interior Design Resources
Bradford White Fiske, AIA	Design Principal
* A.H. Ralston, PE	Director of Special Projects
William R. Brader, PE	Project Director, R&D, Manufacturing
James V. Ricigliano, PE	Project Director, R&D, Manufacturing
Robert G. Thompson, AIA	Project Director, R&D, Manufacturing
Binh Vinh, AIA	Design Principal
Warren J. Mathison, AIA	Project Director, Commercial and Computer Facilities

With the exception of those individuals who are members of the project team (noted with an asterisk) resumes for these individuals can be found in Appendix A. Project team members resumes are in Appendix B.

ANNUAL REVENUE FOR PAST THREE YEARS

TKLP's average annual revenue is \$36 million for the past three years.

II. Firm Background



YEAR ESTABLISHED

The TKLP organization was first established in 1946.

AREAS OF SPECIALIZATION

The Kling-Lindquist Partnership, Inc., (TKLP) is an integrated, full-service planning and design firm. Our professional expertise is concentrated into specialty groups, each drawing upon our combined architectural, engineering, and interior design resources. These specialty groups undertake specific facility types, such as computer operations, office and mixed-use projects, institutional facilities, research and development, and "high-tech" manufacturing. Other groups provide consulting services in interior design, energy systems, and construction planning, scheduling and cost control.

Since our founding, we have completed more than 3,000 projects totaling over ten billion dollars in constructed value. Our work has been honored for architectural and engineering excellence by more than 90 awards from professional societies and industry associations.

We offer a comprehensive planning and design service from which our clients select the components that best satisfy their specific requirements. Our services include:

- | | |
|---------------------------------|---|
| • Strategic Facilities Planning | • Civil Engineering |
| • Site Analysis and Evaluation | • Life Safety Engineering |
| • Master Planning | • Security and CCTV System Design; IDS Design |
| • Programming | • Data Processing & Telecommunications |
| • Space Planning | • Wiring Systems Design |
| • Architectural Design | • Energy Conservation Studies |
| • Landscape Architecture | • Estimating and Scheduling |
| • Interior Design | • Lighting Design |
| • Structural Engineering | • Specification of Furniture and Furnishings |
| • HVAC Engineering | • Coordination of Interior Installations |
| • Electrical Engineering | • Operation and Maintenance Manuals |
| • Instrumentation Engineering | • Commissioning Supporting Validation |
| • Process/Plumbing Engineering | • Systems Training of Facilities Operators |
| • Fire Alarm Design | • Reliability Studies |
| • Fire Protection Engineering | |

II. Firm Background



OPERATING PHILOSOPHY

The following is TKLP's *Vision Statement*:

TKLP will be recognized by our clients and the professional community as being distinguished for the quality of our architectural and interior design, engineering, and project management.

We will provide a quality of service that is innovative, consistently exceeds client expectations, and strives for continuous improvement.

We will create a work environment that is mutually supportive, that recognizes achievement, and promotes productive interaction.

NAMES OF PROPOSED CONSULTANTS

Building Department Expediter

Cole-Gillman Associates, PC, 40 Worth Street, New York, New York 10013

Jerry Gillman will lead their efforts.

TKLP has included security, telecommunications and cabling from their own resources. We have not included special lighting consultants or acoustics.



II. Firm Background

Has TKLP undergone any significant organization changes recently?

TKLP has not undergone, and does not foresee significant organization changes.

Succinctly describe the data center design capability that exists inside your firm.

TKLP's integrated, full-service planning and design services are provided by specialty groups. The Data Processing Center group includes architects and engineers with specialized experience in data center design, communications, security and reliability. We have designed non-mission-critical centers through hardened, highly reliable, command centers for the Department of Defense. We have designed centers with raised floors of 5,000 SF through 120,000 SF. We have performed complete reliability programs, including modeling operations and maintenance, construction testing, user interface, and system design. We have given seminars, are published, and have consulted internationally on data center design. TKLP has prepared a design guideline manual on data center design starting from strategic planning through commissioning and operations.

Explain why your firm's experience is applicable to this particular project.

TKLP has provided the A/E design for the Merrill Lynch data center in New York City as well as the MEP design for the Shearson Lehman Brothers data center in New York City. We know how to work in New York City. TKLP has a much greater depth of services in data centers than most MEP consultants. Some of these items include, cabling, security, reliability, strategic planning, testing of building systems to commission them, assistance in the management of the testing process, training of the data center's operations personnel, preparation of system operating manuals for the operating personnel's reference. This experience allows TKLP the understanding of what is needed in a design to operate, maintain, and run a reliable data center.

II. Firm Background

The logo for TKLP, consisting of the letters "TKLP" in white, bold, sans-serif font, centered within a black square.

Succinctly, state and explain why your firm should get this job.

TKLP has the experience. TKLP is proposing the same design team that has worked together before on similar projects. We have worked on CDCSA projects and understand their needs. We have interfaced with the user and understand their needs. We have interfaced with General Services and understand their needs. TKLP has the capability, the enthusiasm, the delivery system, the experience, and the proven track record to make this project successful. In addition to this, we have the corporate commitment through the CEO to this project.



III. Similar and Current Projects

III. Similar and Current Projects

The logo for TKLP, consisting of the letters "TKLP" in white, bold, sans-serif font, centered within a black square.

- 1. Completed projects that were similar in scope utilizing the same team as proposed for this project (i.e., data center and telecommunication intensive), size and industry similar to that of CDCSA.**
- 2. Detail all major relevant data center projects from 1982 to present.**

In response to questions #1 and 2 above, TKLP is pleased to provide project information regarding similar and current projects on the following pages.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	Technology Center, Philadelphia, Pennsylvania
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	Conrail Corporation 6 Penn Center Philadelphia, PA 19103 215/596-3500
<i>Architect Contact (Name, Address, Phone)</i>	TKLP is the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Gilbane Building Co. George Cavallo 202/408-5570
<i>Completion Date</i>	1993
<i>Gross Square Footage</i>	121,000
<i>Net Square Footage</i>	108,000
<i>Net Square Footage of Data Center</i>	40,000
<i>Construction Budget</i>	\$30,000,000
<i>Actual Construction Cost</i>	\$29,080,000
<i>Owner Name and Phone Number</i>	William Schoen, Assistant Chief Engineer Conrail 15 North 32nd Street Philadelphia, PA 19104 215/596-3500

Description

A 121,000 SF facility with 40,000 SF of raised-floor computer space and 30,000 SF of raised-floor office space. It is "hardened" against man-made and natural disasters that could disrupt its on-line status. Safeguard features include: structural ability to deal with flying objects, falling debris and explosives; and stand-alone mechanical, electrical, and information systems and services. A command theater is featured and office functions are in a distinct stand-alone box. Building systems include UPS, emergency power generators, preaction/halon fire suppression and electronic site/building security.

III. Similar and Current Projects

TKLP

<i>Name of Facility and Location</i>	Information Systems Facility, Fort Belvoir, Virginia
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	U.S. Army Corps of Engineers, Baltimore Division Thomas Rowe, Project Manager 31 Hopkins Plaza, Baltimore, MD 21201 401/962-4370
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Not Yet Selected
<i>Completion Date</i>	1993
<i>Gross Square Footage</i>	92,500
<i>Net Square Footage</i>	81,400
<i>Net Square Footage of Data Center</i>	20,000
<i>Construction Budget</i>	\$13,000,000
<i>Actual Construction Cost</i>	In Design
<i>Owner Name and Phone Number</i>	See client contact above.

Description

This 92,500 SF computer facility is designed to accommodate 24-hour service for telecommunications, automation systems, visual information, records management, printing, and publication. The facility is meant to accommodate an anticipated growth of more than 230 percent in the Fort's requirements.



III. Similar and Current Projects

<i>Name of Facility and Location</i>	Reservations Center, Denver, Colorado
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	United Airlines/COVIA Mr. Dean Sanderson 5350 South Valentia Way Englewood, CO 80111 303/779-2110
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	CRS Sirmine Constructors, Inc. 216 Sixteenth Street Mall, Ste. 1500 Denver, CO 80202 303/820-5220
<i>Completion Date</i>	1989
<i>Gross Square Footage</i>	115,000
<i>Net Square Footage</i>	106,000
<i>Net Square Footage of Data Center</i>	57,000
<i>Construction Budget</i>	\$22,500,000
<i>Actual Construction Cost</i>	\$20,500,000
<i>Owner Name and Phone Number</i>	See client contact above.

Description

A 115,000 SF centralized computer center to support UAL's Apollo Airline reservation system, which is in operation 24 hours a day, seven days a week. The entire space is raised-floor: 57,000 SF houses computer hardware; 17,000 SF accommodates office functions attached to the computer operations; 11,000 SF is allotted for miscellaneous support functions; and the remaining 30,000 SF houses mechanical and electrical support. The facility is designed with 100% backup for the mechanical and electrical systems, including a UPS system and emergency power generators.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	Intelligence & Security Command Headquarters (INSCOM), Fort Belvoir, Virginia
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	U.S. Army Corps of Engineers, Baltimore Division John Armistead, Project Manager INSCOM 202/692-9309
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	See client contact above.
<i>Completion Date</i>	1988
<i>Gross Square Footage</i>	230,000
<i>Net Square Footage</i>	170,000
<i>Net Square Footage of Data Center</i>	40,000
<i>Construction Budget</i>	\$27,000,000
<i>Actual Construction Cost</i>	\$27,500,000
<i>Owner Name and Phone Number</i>	See client contact above.

Description

A secure administrative facility of 230,000 SF designed for extensive use of computers. Raised floors throughout provide convenient access and great flexibility in electronic/communications distribution. The 40,000 SF computer center and other critical systems are supported by a UPS system and emergency power generation.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	Disaster Recovery Center, Staten Island, New York
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	Merrill Lynch and Company Tim Cavanaugh, Vice President [Project Manager] 800 Scudders Mill Road Plainsboro, NJ 08536 609/282-2531
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Huber, Hunt & Nichols Bob Jeter 2450 South Tibbs Ave. Indianapolis, IN 46206 317/241-6301
<i>Completion Date</i>	1989
<i>Gross Square Footage</i>	200,000
<i>Net Square Footage</i>	150,000
<i>Net Square Footage of Data Center</i>	120,000
<i>Construction Budget</i>	\$37,000,000
<i>Actual Construction Cost</i>	\$36,000,000
<i>Owner Name and Phone Number</i>	See client contact above.
<i>Description</i>	Design of a 200,000 SF high-reliability and high-security computer center and teleport to back up Merrill Lynch's computer operations world-wide. The 100,000 SF computer operations area has raised access floors throughout and is supported by a UPS system and emergency power generators.



III. Similar and Current Projects

<i>Name of Facility and Location</i>	Corporate Training Center, Princeton, NJ
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	Merrill Lynch & Company Harry J. Ferguson, Vice President 800 Scudders Mill Road Plainsboro, NJ 08536 609/282-2531
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Huber, Hunt & Nichols Jerry Kerr, Vice President 2450 South Tibbs Ave. Indianapolis, IN 46206 317/241-6301
<i>Completion Date</i>	1985 — Phase I; 1989 — Phase IIA
<i>Gross Square Footage</i>	1,000,000 — Phase I; 385,000 — Phase IIA
<i>Net Square Footage</i>	824,000 — Phase I; 206,000 — Phase IIA
<i>Net Square Footage of Data Center</i>	15,000
<i>Construction Budget</i>	\$100,000,000 — Phase I \$35,000,000–\$40,000,000 —Phase IIA
<i>Actual Construction Cost</i>	Same.
<i>Owner Name and Phone Number</i>	See client contact above.
<i>Description</i>	Planning and design of a green-field 1,000,000 SF corporate training center and office complex that included a 15,000 SF computer operations center. Flexibility for growth is essential to the design. Raised access flooring and task-ambient lighting are used throughout the office complex and communications systems.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	White Clay Center, Buildings #500 and 700, Newark, Delaware
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	Bank of New York Mr. Sandy L. Ciancio, Assistant Vice President 400 Mamaroneck Avenue Harrison, NY 10523 914/899-6138
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	See client contact above.
<i>Completion Date</i>	1988
<i>Gross Square Footage</i>	60,000
<i>Net Square Footage</i>	45,000
<i>Net Square Footage of Data Center</i>	5,000
<i>Construction Budget</i>	\$4,500,000
<i>Actual Construction Cost</i>	\$4,500,000
<i>Owner Name and Phone Number</i>	See client contact above.

Description

The upgrade and fit out of the credit card operations areas in two buildings included design and construction services fast-tracked and completed in six months. The project covered approximately 60,000 SF of space in functioning buildings with 5,000 SF of raised-floor computer area and included interconnections between buildings, as well as halon, power conditioning, and UPS/battery systems. Phased relocation and expansion of existing groups within working areas was accomplished without interrupting production.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	White Clay Center, Building #200, Newark, Delaware
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	Bank of New York Mr. Sandy L. Ciancio, Assistant Vice President 400 Mamaronic Avenue Harrison, NY 10523 914/899-6138
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Joe Fox Emory Hill 413 White Clay Center Dr. Newark, De 19711 302/366-8855
<i>Completion Date</i>	1988
<i>Gross Square Footage</i>	90,000
<i>Net Square Footage</i>	70,000
<i>Net Square Footage of Data Center</i>	15,000
<i>Construction Budget</i>	\$7,000,000
<i>Actual Construction Cost</i>	\$7,000,000
<i>Owner Name and Phone Number</i>	See client contact above.
<i>Description</i>	This fast-tracked fit-out of a 90,000 SF credit card operations with support area included 15,000 SF of computer area with raised floor and under-floor halon fire protection and UPS/battery systems.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	White Clay Center, Building #100, Newark, Delaware
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	Bank of New York Mr. Sandy L. Ciancio, Assistant Vice President 400 Mamaronic Avenue Harrison, NY 10523 914/899-6138
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Joe Fox Emory Hill 413 White Clay Center Dr. Newark, De 19711 302/366-8855
<i>Completion Date</i>	1987/1988
<i>Gross Square Footage</i>	51,000
<i>Net Square Footage</i>	40,000
<i>Net Square Footage of Data Center</i>	10,000
<i>Construction Budget</i>	\$4,700,000
<i>Actual Construction Cost</i>	\$4,700,000
<i>Owner Name and Phone Number</i>	See client contact above.
<i>Description</i>	A series of fast-track fitout projects designed and built in three months for the upgrade and fitout of a credit card operations area totalling 60,000 SF with 10,000 SF of raised floor computer area. The project required phased shifting of existing functioning groups from one area to another with minimum impact on operations.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	Operations Center, Stanton, Delaware
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	J. P. Morgan Services Inc. Robert J. Hitchens, Jr., Vice President 500 Stanton Christiana Road Newark, DE 19713-2107 302/992-1233
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Mr. Ted Dwyer EDIS 302/421-5700
<i>Completion Date</i>	1986
<i>Gross Square Footage</i>	330,000
<i>Net Square Footage</i>	240,000
<i>Net Square Footage of Data Center</i>	85,000
<i>Construction Budget</i>	\$50,000,000
<i>Actual Construction Cost</i>	\$44,000,000
<i>Owner Name and Phone Number</i>	See client contact above.

Description

The primary elements of this 300,000 SF facility are the data center, which provides data processing and communications network services; the operations center, which accommodates large clerical operations using desktop computers; the Commons, which contains shared facilities such as dining areas and administration; and the central plant, which houses utility and support services. The Commons links the three-story data and operations centers, which have raised access flooring throughout. The central plant is a separate structure connected to the main building by a utility tunnel. Two utility feeds, a UPS system, and emergency power generation provide backup for the critical electrical systems. Preaction sprinklers and dry halon 1301 provide fire protection.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	Information Service Center, New York, New York
<i>Your role (MEP, consultant, etc.)</i>	Mechanical and Electrical Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	Shearson Lehman Brothers Mr. Dennis Cronin 388 Greenwich Street New York, NY 10013 212/464-3924
<i>Architect Contact (Name, Address, Phone)</i>	Skidmore, Owings & Merrill 220 East 42nd Street New York, NY 10022 212/309-9500
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Joel Silverman, Vice President HRH Construction Co. 909 3rd Ave. New York, NY 10022 212/751-3100
<i>Completion Date</i>	1986
<i>Gross Square Footage</i>	750,000
<i>Net Square Footage</i>	690,000
<i>Net Square Footage of Data Center</i>	120,000
<i>Construction Budget</i>	\$210,000,000
<i>Actual Construction Cost</i>	\$195,000,000
<i>Owner Name and Phone Number</i>	Shearson Lehman Brothers / American Express 388 Greenwich Street New York, NY 10013

Description

M/E design and construction administration for a 750,000 SF operations center with 120,000 SF of computer area and 260,000 SF of raised floor area for convenient access and

III. Similar and Current Projects

The logo for TKLP, consisting of the letters "TKLP" in white, bold, sans-serif font, centered within a black square.

flexibility in electronic/communications distribution. The telecommunications and data communications systems use fiber optics with high redundancy and flexibility at local switching levels. Backup for the electrical systems is provided by six separate power feeds, a UPS system, and 12 MW auxiliary power available from on-site emergency generators.

Water storage tanks with a 200,000 gallon capacity are available to supply the cooling towers in the event of water failure. Chiller capacity is 4,000 tons. Rejected heat from the computers and support machinery heat the almost 600,000 SF of administrative office spaces. Preaction sprinklers and a dry-halon 1301 full-flooding system provide fire protection.



III. Similar and Current Projects

<i>Name of Facility and Location</i>	Ships Parts Control Center, Mechanicsburg, Pennsylvania
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	Naval Facilities (NAVFAC) Engineering Command, Northern Division (NORDIV) David Burford, Engineer in Charge Philadelphia, PA 215/755-4555
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	See client contact above.
<i>Completion Date</i>	1985
<i>Gross Square Footage</i>	100,000
<i>Net Square Footage</i>	85,000
<i>Net Square Footage of Data Center</i>	61,000
<i>Construction Budget</i>	Client Confidential
<i>Actual Construction Cost</i>	\$22,000,000
<i>Owner Name and Phone Number</i>	See client contact above.

Description

A 100,000 SF data processing facility with more than 61,000 SF of space for computer hardware, supported by an uninterruptible power supply system and emergency power generators. This high-security complex contains tape libraries and a communications vault with power shielding. Support facilities include a printing plant, utility space, and locker rooms. Fire protection is provided by a preaction sprinkler and halon 1301 systems.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	Financial Operations Center, Philadelphia, Pennsylvania
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	Philadelphia Savings Fund Society (PSFS) Subsidiary of Meritor Savings Bank Mr. Craig Thigpen Meritor Financial Group 12 South 12th Street, Philadelphia, PA 19107 215/636-6000
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Dick Anderson Daniel J. Keating & Co. 812 Lancaster Ave. Villanova, PA 19085 215/527-4100
<i>Completion Date</i>	1985
<i>Gross Square Footage</i>	400,000
<i>Net Square Footage</i>	311,000
<i>Net Square Footage of Data Center</i>	36,000
<i>Construction Budget</i>	\$22,400,000
<i>Actual Construction Cost</i>	N/A
<i>Owner Name and Phone Number</i>	See client contact above.

Description

Architectural/engineering design, documentation, and construction administration for the renovation of a 400,000 SF former newspaper publication building for use as a corporate data center requiring a highly-sophisticated communications and computer network and flexibility in the specialized office areas. The facility contains 36,000 SF of computer area supported by a UPS system and emergency power supply; it has raised floors throughout for complete flexibility in relocating utilities.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	Computer Center, Wilmington, Delaware
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	E. I. du Pont de Nemours & Co., Inc. John Sergeant, Project Manager Process Engineering Louviers Building Wilmington, DE 19898 302/366-3739
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Du Pont Construction See client contact above.
<i>Completion Date</i>	1984
<i>Gross Square Footage</i>	180,000
<i>Net Square Footage</i>	140,000
<i>Net Square Footage of Data Center</i>	90,000
<i>Construction Budget</i>	\$24,000,000
<i>Actual Construction Cost</i>	\$24,000,000
<i>Owner Name and Phone Number</i>	See client contact above.

Description

A 180,000 SF corporate computer center that contains 90,000 SF of computer operations area with a UPS system and emergency generator. The facility also contains offices, a technical support area, and a tape/record storage area. Since the computer center was in a rather secluded area, consideration was given to physical security of the building perimeter and external support areas including the cooling tower, loading dock, underground utilities, roof and wall areas, etc.

III. Similar and Current Projects

<i>Name of Facility and Location</i>	Computer Center, Florham Park, New Jersey
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	Exxon Communications and Computer Sciences Co. D.P. Davis, Manager of Real Estate & Facilities Administrative Services Department 200 Park Avenue Florham Park, NJ 07932 201/765-5226
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	Gilbane Building Co. Paul Choquette, Sr. Vice President 7 Jackson Walkway, Providence, RI 02946 401/456-5800
<i>Completion Date</i>	1983
<i>Gross Square Footage</i>	265,000
<i>Net Square Footage</i>	N/A
<i>Net Square Footage of Data Center</i>	30,000
<i>Construction Budget</i>	Client Confidential
<i>Actual Construction Cost</i>	\$39,500,00
<i>Owner Name and Phone Number</i>	See client contact above.
<i>Description</i>	A 265,000 SF computer center containing 235,000 SF of office space and a 28,000 SF [30,000 SF] computer operations area with raised floors throughout. Also included are a cafeteria, reference library and training and conference facilities. Two utility feeds, 60 HZ and 415 HZ UPS systems, and three 1070 KW emergency generators provide backup for the critical electrical systems.

III. Similar and Current Projects

The logo for TKLP, consisting of the letters 'TKLP' in white, bold, sans-serif font, centered within a black rectangular box.

The philosophy and strategy of the design process was based on energy conservation which included the development of a passive, energy-efficient facade, sloped and oriented for the optimum in energy performance, while maintaining traditional construction techniques. The entrance to the facility is enhanced by a sky-lit atrium that is landscaped with trees and includes built-in seating.



III. Similar and Current Projects

<i>Name of Facility and Location</i>	Information Systems Computer Centers, Brook Park, Ohio
<i>Your role (MEP, consultant, etc.)</i>	Full Architectural and MEP Engineering Services
<i>Client Contact (Name, Address, Phone)</i>	General Electric Company Wayne Rice 5347 W. 161st St. Cleveland, OH 44142 301/340-4617
<i>Architect Contact (Name, Address, Phone)</i>	TKLP was the Architect of Record for this project.
<i>Contractor or Construction Manager Contact: (Name, Address, Phone)</i>	The Lathrop Company Dave Petrillo P.O. Box 772 Toledo, OH 43695 419/535-7000
<i>Completion Date</i>	1982
<i>Gross Square Footage</i>	42,000
<i>Net Square Footage</i>	N/A
<i>Net Square Footage of Data Center</i>	36,000
<i>Construction Budget</i>	\$11,900,000
<i>Actual Construction Cost</i>	\$10,200,000
<i>Owner Name and Phone Number</i>	General Electric Services Co. (GEISCO) 401 N. Washington St. Rockville, MD 20850 301/340-4617

Description

A 42,000 SF facility containing 36,000 SF of computer operations area with raised floors for convenient access and flexibility. The design includes environmental systems for computers and support systems, three 1,100 KW diesel-powered emergency generators, and a UPS system.

III. Similar and Current Projects



- 3. Representatives of our project team may wish to visit one or two recent relevant examples of your work.**

Select the one most relevant example to visit and state why we should visit this building.

Within three days of receipt of the RFP, submit the information necessary for us to arrange the visit.

Do not list buildings of your sub-consultants.

Information for the Merrill Lynch data center, Staten Island, New York, and Shearson Lehman Brothers, Manhattan, New York, was forwarded to Forest City Tech Place Associates on April 27, 1992.

- 4. Identify those data center projects that have been commissioned.**

- General Electric Information Services Company's super center, Rockville, Maryland
- Shearson Lehman Brothers—Manhattan
- Union Carbide's Lindy Division—Danbury, Connecticut
- J.P. Morgan Services Inc., Christiana, Delaware
- Morgan Stanley Company—Pierpont Circle, Brooklyn, New York
- United Airlines (COVIA) Apollo Reservation System—Denver, Colorado
- International Monetary Fund—Washington, DC

- 5. Have any of your data center projects (or those of your team members) in the past 10 years resulted in arbitration, litigation, or threat of litigation with an owner or contractor. Briefly explain each instance.**

None of the data centers where TKLP has provided the A/E services has been threatened or has gone to litigation/arbitration.



IV. Project Staffing and Organization



IV. Project Staffing and Organization

Please identify who at your firm will be the principal business (not marketing) contact for this project.

Alexander H. Ralston, Jr., PE

If there is to be a different technical contact, please identify this individual as well.

N/A

Describe how the principals of your firm will be personally involved during each phase of this project.

Principals of our firm are hands on actively working members of the team and will take the leadership role for our area of responsibility of the project.

By providing the information listed below, please explain briefly how you would staff and organize the FCTPA project.

- *Key project team members and corresponding professional resumes that will be assigned more than 20% of the time to this project.*

✓ A.H. Ralston, PE	Director of Special Projects
✓ Gerald W. Fink, PE	Project Manager
✓ Thomas E. Reed, PE	Associate, Chief Instrumentation/Controls Engineer
✓ E. Mitchell Swann, PE	Mechanical Services Engineer [HVAC]
✓ Barry L. Hutchinson	Design Supervisor, Instrumentation, Life Safety & Security Systems [Security/Fire Alarm]
✓ John Forcina, EIT	Plumbing/Fire Protection Engineer
✓ Jeffrey Cosiol, PE	Project Director, Engineering Consulting Services [Communications]
h. f. 1 Tom Sarakestrin, PE	Electrical Engineer

Resumes for the project team members can be found in Appendix B.

IV. Project Staffing and Organization



- *Any third party consultants required to fulfill the project objective.*

We have no third-party consultants. Second-party consultants would be Cole-Gillman for codes.

- *Relationship among project team members.*

All but those noted as second-party consultants work for TKLP and will work together on this project.

Describe your team's current and projected work load for the next 12 months. Identify competing projects that would limit your ability (and that of your consultants) to assign key personnel to this project. Identify where key personnel will be working on more than one major project. Please be specific.

We have prepared histograms for each of the key personnel indicating their current and projected workload.

IV. Project Staffing and Organization

TKLP

- *Any third party consultants required to fulfill the project objective.*

We have no third-party consultants. Second-party consultants would be Cole-Gilman for codes.

- *Relationship among project team members.*

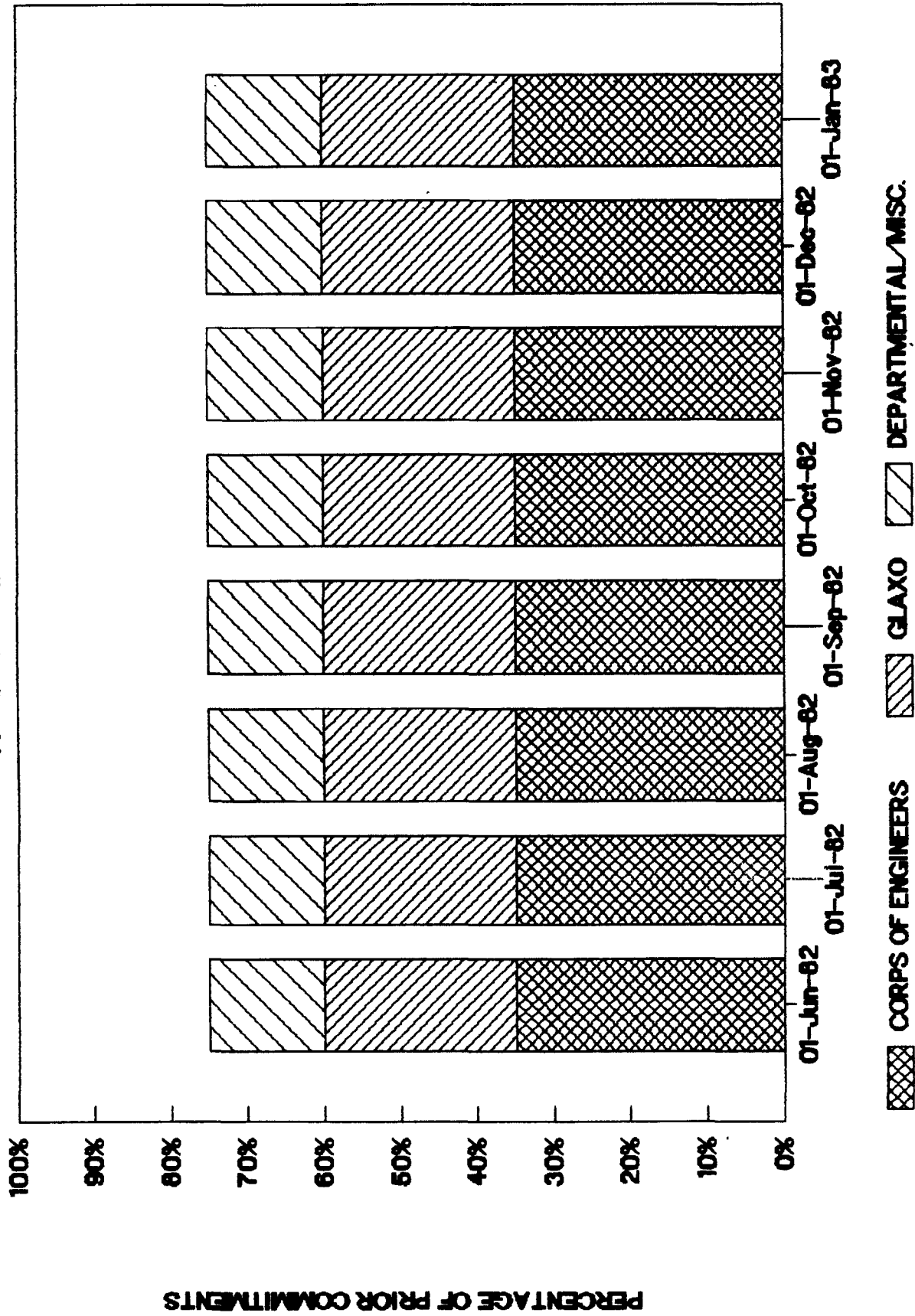
All but those noted as second-party consultants work for TKLP and will work together on this project.

Describe your team's current and projected work load for the next 12 months. Identify competing projects that would limit your ability (and that of your consultants) to assign key personnel to this project. Identify where key personnel will be working on more than one major project. Please be specific.

We have prepared histograms for each of the key personnel indicating their current and projected workload.

JEFFREY COSIOL - COMMUNICATIONS DESIGN

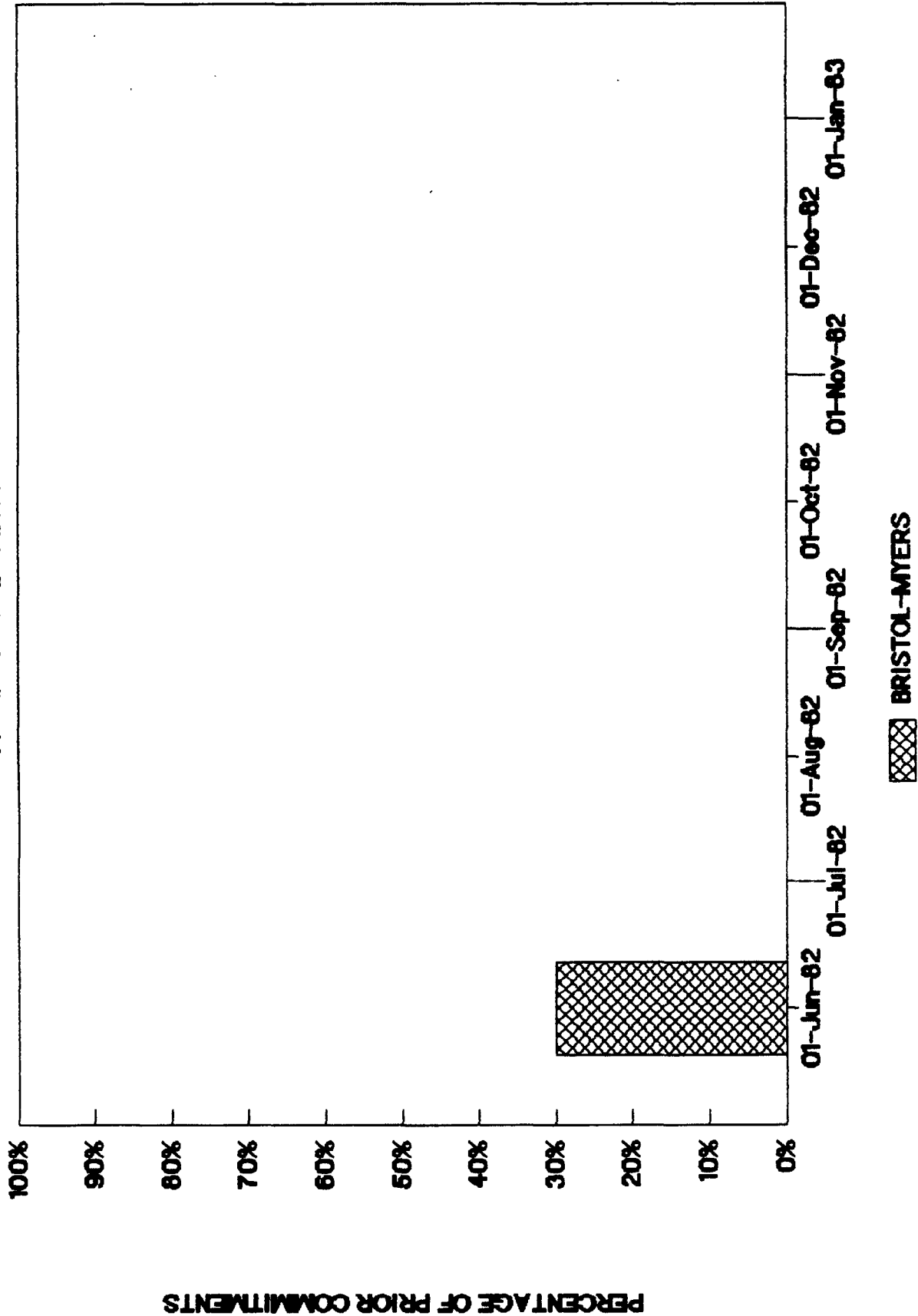
PROJECT AVAILABILITY



TKLP

GERALD W. FINK - PROJECT MANAGER

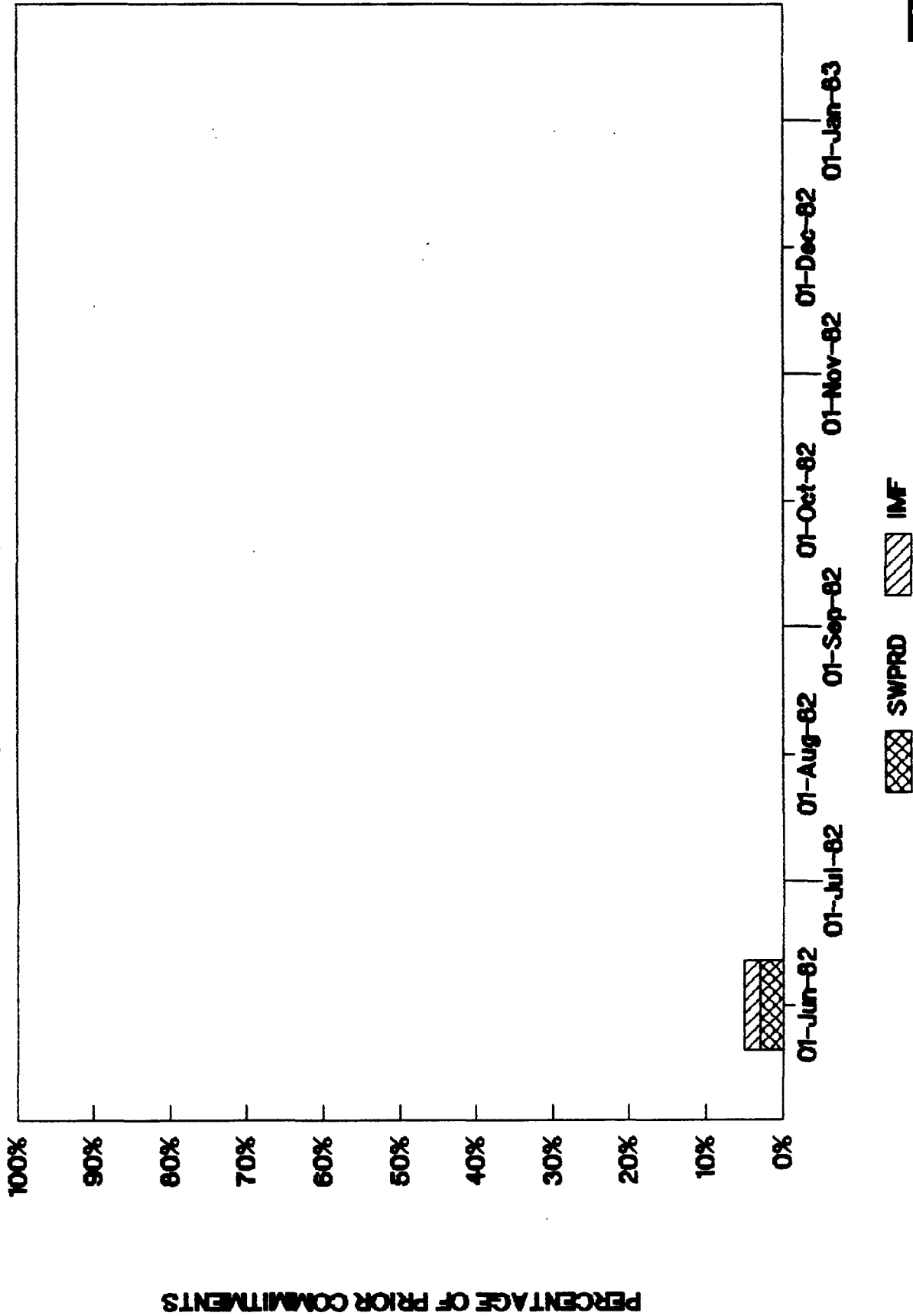
PROJECT AVAILABILITY



TKLP

BARRY L. HUTCHINSON - SECURITY / F.A.

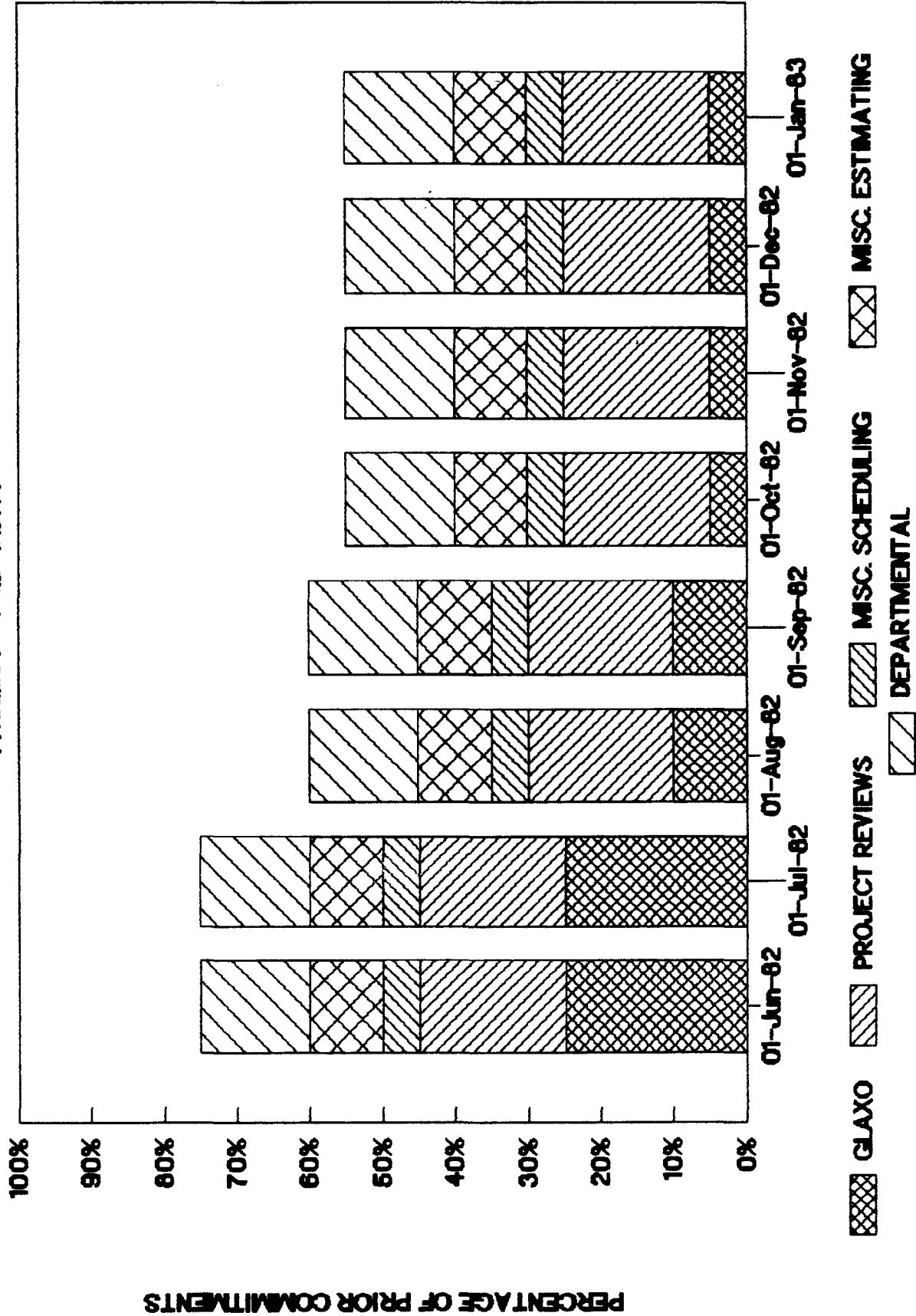
PROJECT AVAILABILITY



TKLP

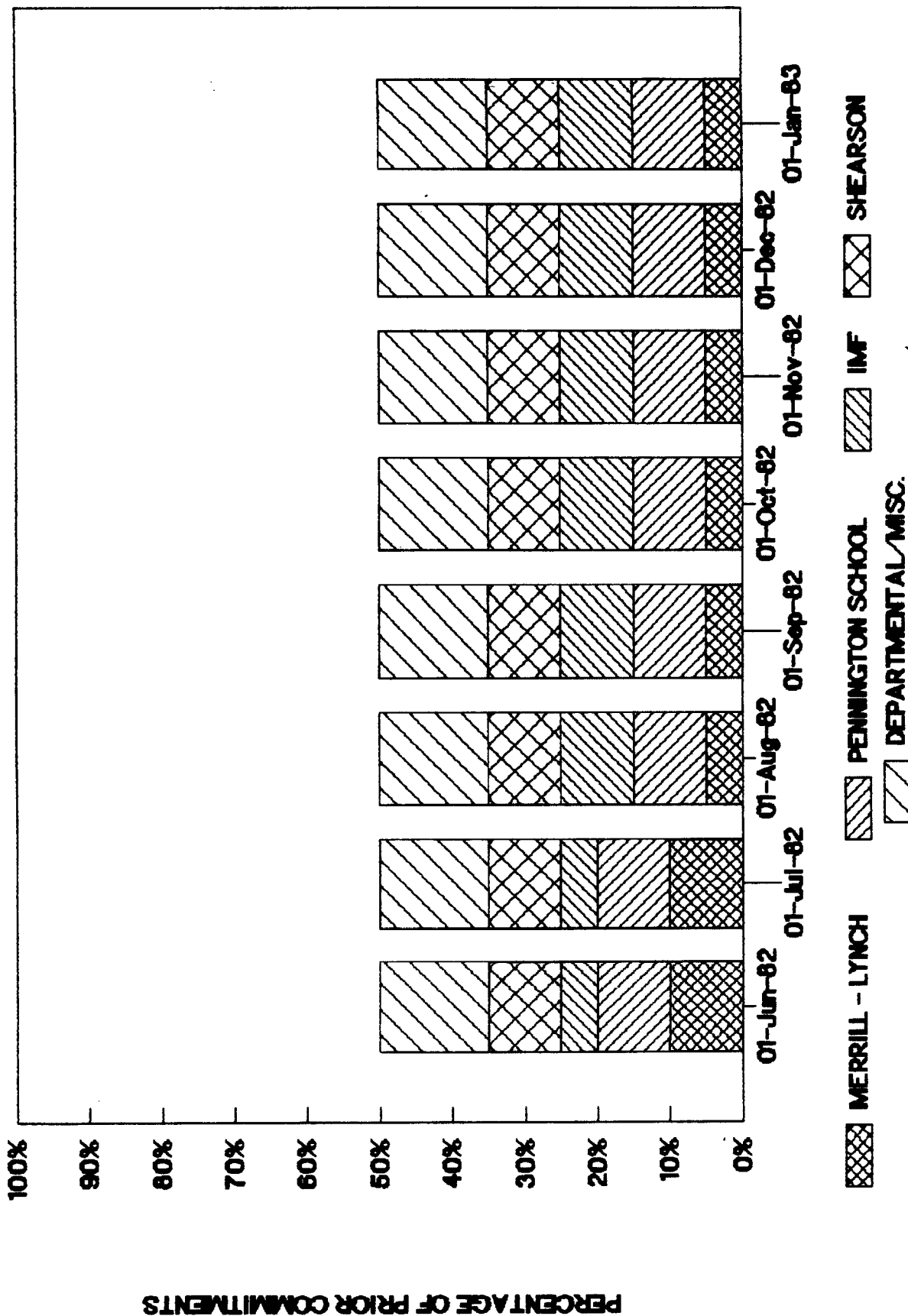
ROBERT N. KENNEDY - PROJECT CONTROLS

PROJECT AVAILABILITY



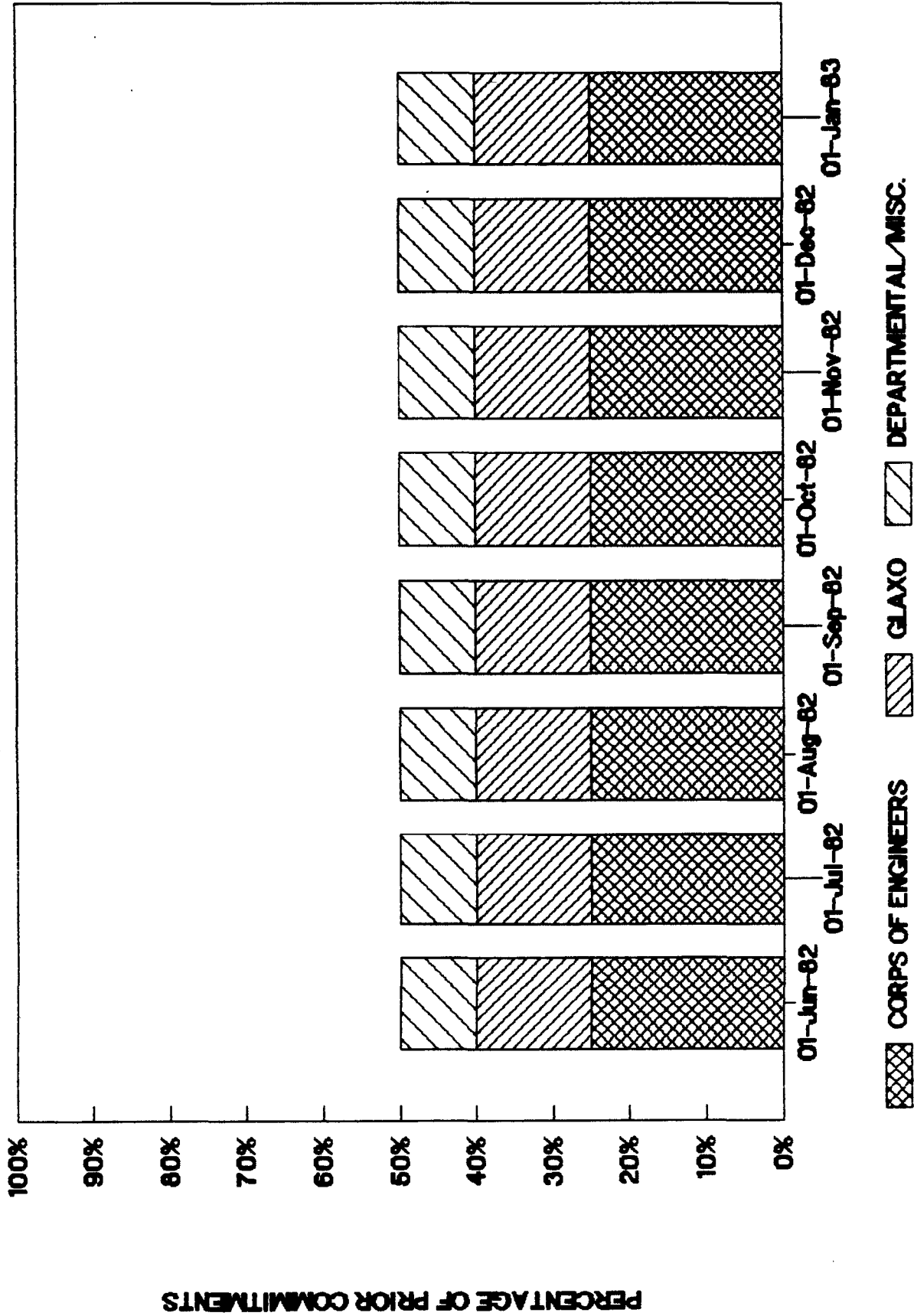
TKLP

ALEXANDER H. RALSTON - PROJECT DIRECTOR



THOMAS E. REED - INSTRUMENTATION

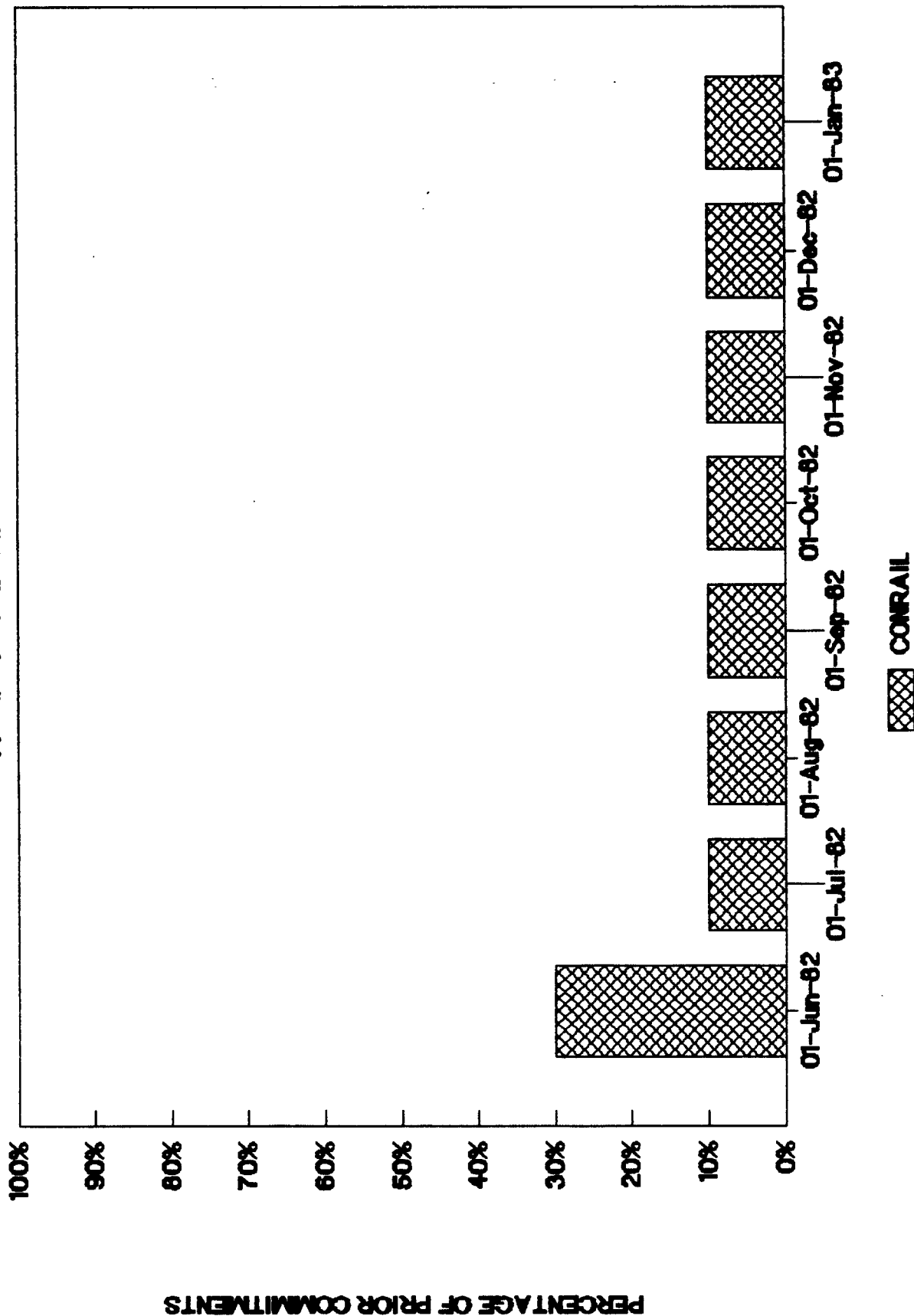
PROJECT AVAILABILITY



TKLP

TOM SARAASETRIN - ELECTRICAL

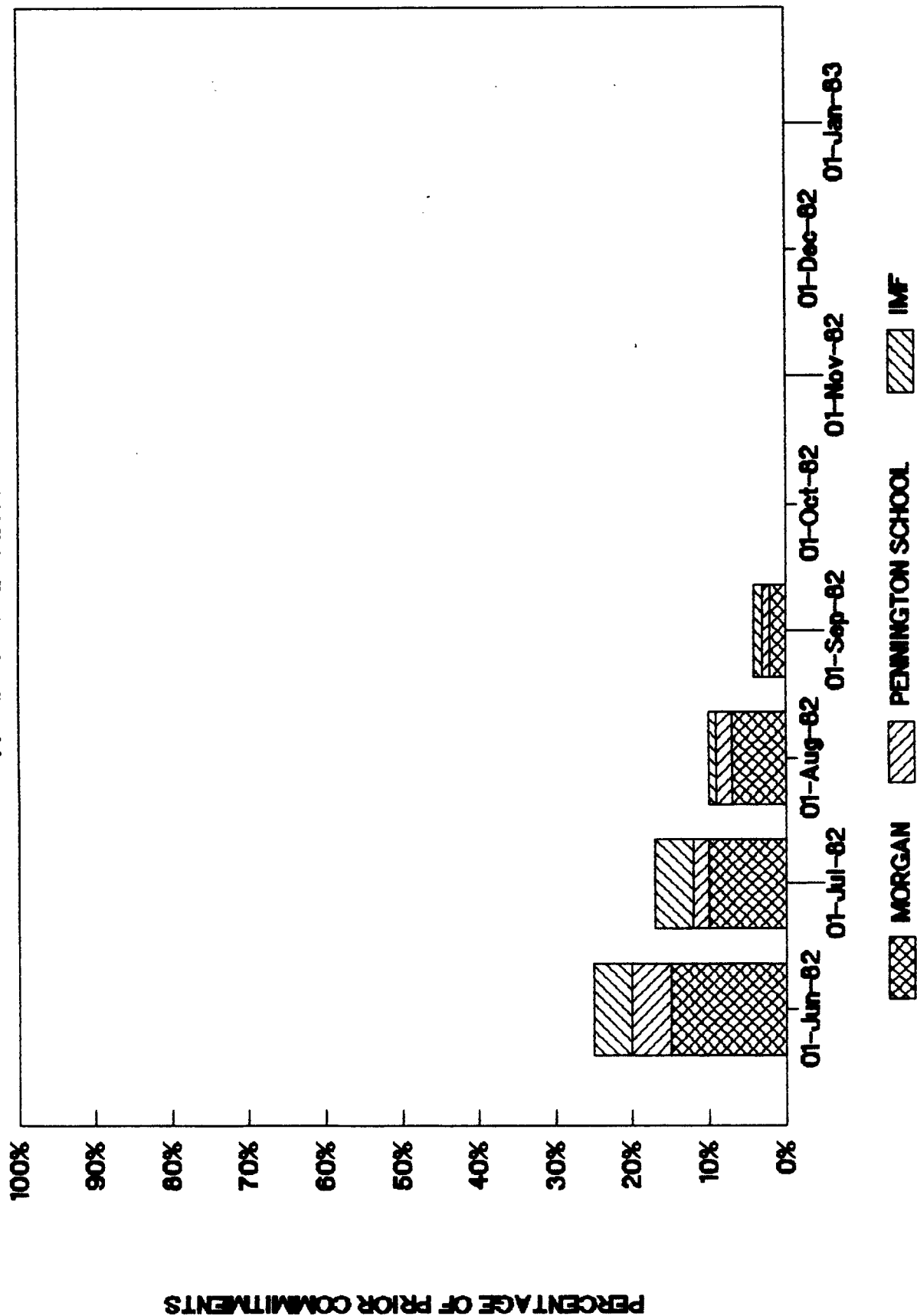
PROJECT AVAILABILITY



TKLP

E. MITCHELL SWANN - HVAC

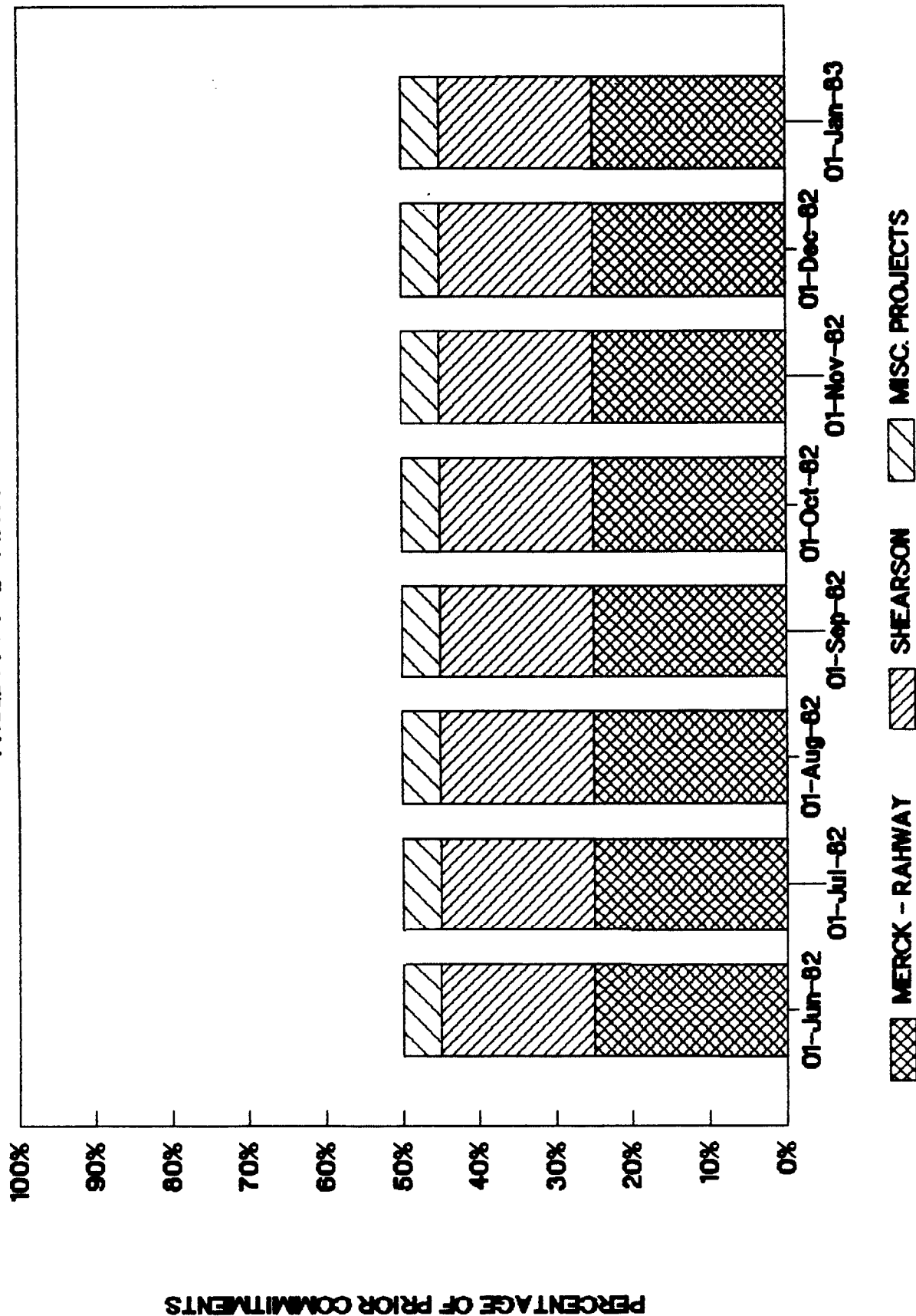
PROJECT AVAILABILITY



TKLP

MICHAEL J. TIMMONS -RELIABILITY MANAGER

PROJECT AVAILABILITY



TKLP

IV. Project Staffing and Organization

TKLP

Typically, do you assign one project team for the duration of the project?

TKLP is a matrixed organization. We assign one project team for the duration of the project.

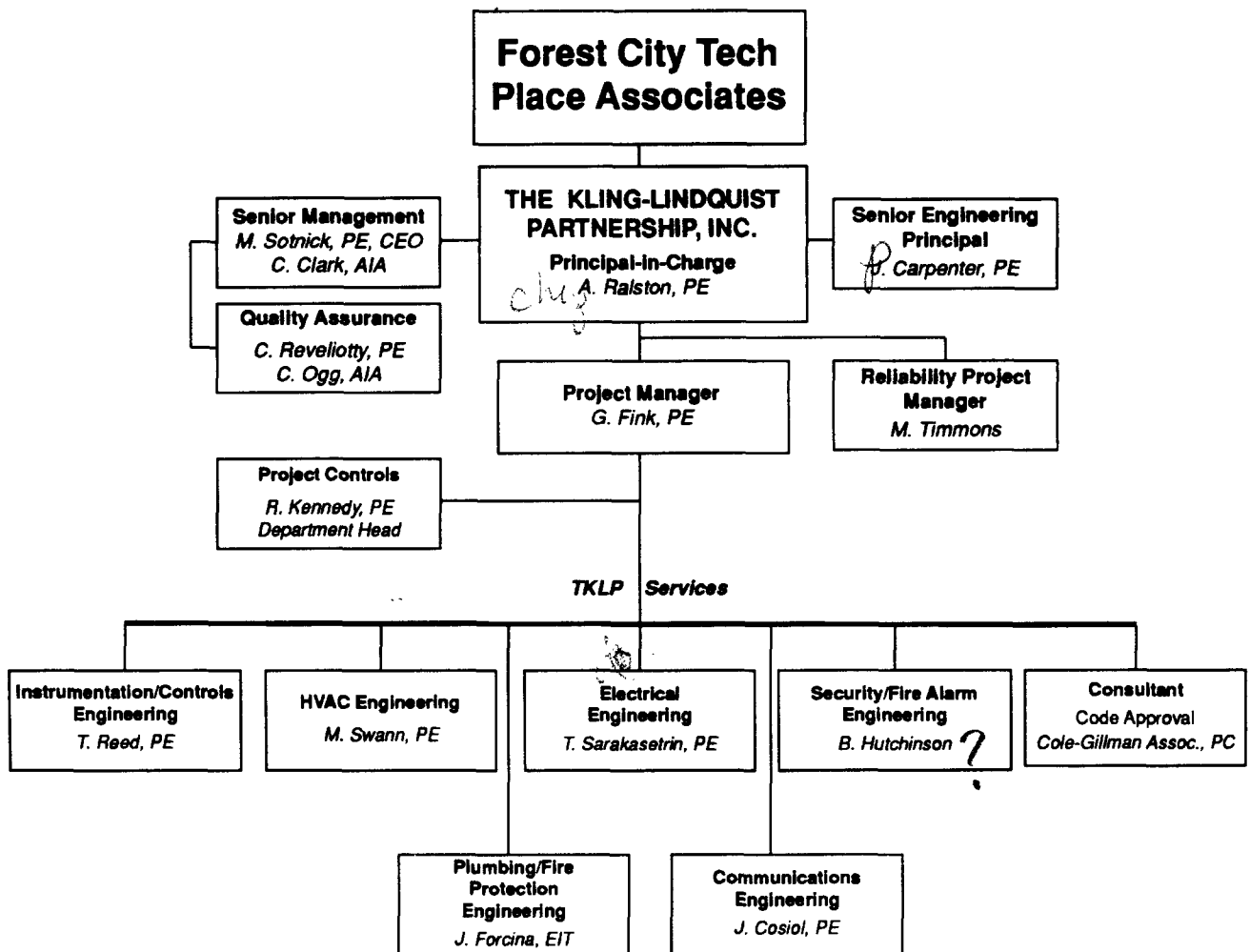
Present a simple diagram showing how you will organize for this project. Give names and percentage of time for all key staff assigned to the project by project period (schematics, design development, construction documents, construction administration, and post-construction).

See charts on the following two pages.

IV. Project Staffing and Organization

TKLP

PROJECT TEAM ORGANIZATION FOR FULL ENGINEERING SERVICES



IV. Project Staffing and Organization



Percentage of Time by Project Period for Key Staff

	<i>Schematics</i>	<i>Design Development</i>	<i>Construction Documents</i>	<i>Construction Administration</i>	<i>Post- Construction</i>
A. Ralston, PE	60	50	40	15	5
G. Fink, PE	100	100	100	30	10
T. Reed, PE	40	25	25	10	5
M. Swann, PE	80	80	80	25	10
B. Hutchinson	40	40	20	5	2
J. Forcina, EIT	60	40	40	10	2
T. Saraksetrin, PE	80	80	80	30	10
J. Cosiol, PE	20	20	20	15	5
R. Kennedy, PE	10	10	10	5	—



V. Scope of Services/Approach

V. Scope of Services / Approach



Please describe the services you would provide and process you would follow to complete FCTPA's project.

The project orientation meeting scheduled for Tuesday, May 26, 1992, is TKLP's first opportunity to ensure a successful project for FCTPA and CDCSA. We suggest the following agenda which will allow TKLP to quickly and efficiently:

- establish clear communication within the project team;
- confirm the project objectives and the means to carry them out;
- analyze the project and present a program for its orderly execution in conformance to budgets and schedules; and
- document agreement concerning standardized procedures as an aid to project execution and monitoring.

Suggested Agenda:

Project Orientation Meeting (Proposed Agenda):

- Scope of Services
- Project Scope
- Key Personnel (TKLP, Client, & Tenant)
- Communications Procedure & Distribution
- Meeting & Conferences with Base Building Architect (Schedule)
- List of Utility & Service Companies Serving Site
- Approving Agencies
- Project Schedules
- Project Budgets
- Methods of Bidding & Procurement
- Estimating Procedures
- Drawing Format (CADD Requirements)
- Specifications
- Submittals
- CDCSA Input
 - Data Center Program Info
 - Office Space Program Input
 - City Office Space Standards

Having documented the "rules of the road" for our project, TKLP will incorporate (Data Center Program Information, Office Space Program Input, and City Space Standards) into our first project deliverable, the *Project Procedures Manual*. It is intended that the procedures manual serve as a working tool throughout the life of the project to ensure coordination and uniform procedures among TKLP, the MEP engineers and the base building architect.

V. Scope of Services / Approach

The logo for TKLP, consisting of the letters "TKLP" in white, bold, sans-serif font, centered within a black square.

SCHEMATIC DESIGN

1. Project orientation meeting will be attended by TKLP's project director and project manager. Project schedule will be prepared by TKLP in concert with other consultants and will include staffing tie-lines, constraints, coordination points, and approval requirements.
2. Physical security requirements will be achieved through an interview process with one individual from the City responsible for the operations. For data voice communication cabling requirements, TKLP will take the point program provided by the City and will develop closet space, cable tray routing, and dedicated pathways under the raised floor.
3. **Space Studies** — TKLP will prepare a statement of the criteria for the mechanical, electrical, and plumbing systems. Through an iterative process, they will select the systems that will meet the criteria. These systems will be identified in a basis of design and will be demonstrated with flow diagrams or single-line diagrams. Within this basis of design, TKLP will also define the reliability criteria which will be done in concert with the City of New York. The basis of design will be approved by the City. The basis of design will be the basis for TKLP's blocked layouts of the mechanical and electrical areas to establish space requirements. TKLP will also determine the basic distribution systems for these agreed-upon systems and determine the spaces needed within the ceiling to underfloor of slab cavities and vertical distribution through chases and closets. We will develop the system phasing strategies to serve the operating loads required for the move-in year, plus five years and plus ten years.

TKLP will also work with the data center people to establish avenues of routing for the MEP services in relation to the user group's equipment cabling power.

4. **Preliminary Budgets** — TKLP will prepare budgets based on the system selections and equipment sizing done in this phase for the construction costs.
5. **CADD** — TKLP will present the base building single-lines and the flow sheets developed in the basis of design documents on CADD documentation.
6. **Project Meetings** — TKLP anticipates attending four project meetings during this phase of the work. All meetings will be attended by TKLP's project manager. One meeting will be attended by TKLP's project director.
7. **Single Presentation** — TKLP's project director, project manager, mechanical services engineer, electrical engineer, and fire alarm/security engineer will attend this presentation and present the systems included in the basis of design document.

V. Scope of Services / Approach



8. **Submission of Documents** — TKLP will submit progressively the following documents for approval before significant work is done on the next document:
 - a. Procedures Manual
 - b. *Statement of Criteria*
 - c. Space Study Drawings
 - d. *Basis of Design*
 - e. Opinion of Cost

DESIGN DEVELOPMENT

1. TKLP will review and comment on CDCSA's comments on TKLP's previous delivery.
2. **Revise *Basis of Design*** — TKLP will adjust the previously prepared the *BOD* based on CDCSA's submission. TKLP will then layout the major distribution of the basis of design's systems on the architectural floor plans. TKLP has assumed that the architect has gone through a reliability analysis of their floor plan documents addressing compartmentation of critical systems, avoidance of water damage, and hierarchy for security. TKLP will develop space layouts for major equipment rooms. Establish system distribution: prepare details to determine shaft, ceiling space and general service areas for MEP systems.
3. **Participation in Reliability Analysis** — TKLP will make their project manager, mechanical services engineer, electrical engineer, and security/fire alarm engineer available for two days to attend this meeting.
4. **Project Budget** — TKLP will prepare a construction cost budget based upon their design development documents. This budget will be based upon historical square foot costs and parameter costs, i.e. cost per ton or per KW. The construction cost budget will be broken down by major disciplines following the CSI code of accounts and by function as provided by CDCSA. This budget will be just an update, not a new one.
5. **Value Engineering Study** — TKLP's project director, project manager, mechanical services engineer, electrical chief engineer, and fire alarm/security engineer will meet together to evaluate the design criteria, basis of design, and distribution documentation as a value engineering study. Minutes will be taken of this meeting and each item identified will include impact statements on operating costs, capital costs, risk of outage and repair time.
6. TKLP will revise the design criteria document, the basis of design document and the system distribution documents based upon a single design presentation with the client/tenant/associated agency that will be attended by TKLP's project director, project manager, mechanical services engineer, electrical engineer, and security/fire alarm engineer.

V. Scope of Services / Approach

TKLP

These documents will be submitted to CDCSA for sign off and approval as will the updated budget.

7. TKLP will coordinate their work with all of the other consultants, they will also submit all of their documents to the client and the tenant for their review and approval.

Upon receiving approval, TKLP will proceed into the next phase of work.

CONTRACT DOCUMENTS

1. TKLP will prepare drawings and specifications for use as construction documents, including mechanical, electrical, telecommunications, and local area network systems and security.
2. TKLP will monitor the other consultants' work and coordinate their work with them. TKLP will submit all plans and specifications to FCTPA and tenants for review and approval. TKLP will prepare the final budgets, which will be their opinion of costs based upon their square foot cost histories and parameter costs. TKLP will use their code consultant, Cole-Gillman Associates, for code reviews and building department meetings. TKLP staff will support.
3. **Presentation** — TKLP's project director, project manager, mechanical services engineer, electrical engineer, and security/fire alarm engineer will present their documents to the client/tenant and associated agency in a single presentation.
4. **Reliability Session** — TKLP will make available their project manager, mechanical services engineer, electrical engineer, and security/fire alarm engineer for two days to attend a reliability analysis. Since this analysis will be done at the completion of the bid documents, any changes that result from this analysis will be evaluated as to their impact on the already completed documents. If the impact is minor, they will be immediately integrated into the documents. If the impact is major in terms of engineering design costs and budget impacts, TKLP will develop the scope, schedule impact, engineering cost impact, and construction cost impact, and submit this in the form of a change order to the City.
5. During the preparation of the construction documents, TKLP will prepare prepurchase specifications for the listed systems. Each of the prepurchased specifications will include a stated requirement that the vendor must provide performance testing for those items that they can test in the factory. The test criteria will be the scheduled performance criteria. The schedule for testing will be in coordination with the project schedule. The tolerances for performance will be gauged against an acceptable criteria from an industry standard. TKLP will have the appropriate engineer attend a single factory test for each of

V. Scope of Services / Approach



the * equipment items identified in the RFP. The vendors will be required to submit the results of their tests and the referenced documentation establishing industry standard for tolerances. TKLP cannot, at this point, anticipate whether these factory tests will be successful at the first test or not. TKLP will specify that the vendor will be responsible for all costs, including engineering attendance costs, if his system or equipment must be tested the second time. Since TKLP does not work for the vendor, nor does TKLP want to be dependent upon reimbursement from the vendor. These costs will be reimbursed to CDCSA. TKLP will bill CDCSA for attendance for more than one test as a change order and be reimbursed on that basis.

CONSTRUCTION ADMINISTRATION

1. **Bid Support** — TKLP's project manager will attend a pre-bid meeting with their client. TKLP's project manager will work with his team to respond to any questions during the bidding period submitted to him by his client. TKLP will prepare addendum to the bid documents where necessary. TKLP has anticipated that CDCSA will have a scoping meeting with the successful bidders. We anticipate the following disciplines will attend each of these meetings: HVAC engineer; instrumentation and controls engineer; plumbing and fire protection engineer; electrical engineer; communication and data cabling engineer with our project manager.
2. **Schedules** — TKLP's specifications for equipment will request schedules from each vendor to be submitted when bids are received. TKLP will check these schedules to see that they coordinate with the contractor's overall schedule. TKLP will require, by specification, that the contractor provide a schedule for shop drawings. TKLP will review this schedule in light of the overall construction schedule and comment if they believe the submitted schedules are inappropriate. TKLP will specify that the contractors provide detailed schedules for their work and the need for delivered equipment. TKLP will attend weekly construction meetings where the contractor, by specification, should review his schedule, work completed, and work to be done. TKLP will comment where they believe delivery and installation of the contractor's work is falling behind schedule.
3. **Construction Meetings** — TKLP will attend those construction meetings when the MEP work is being installed. TKLP's attendance at this meetings will consist of two people—a project manager and a selected discipline engineer. We anticipate that the MEP work will begin being installed February 1, 1993, and extend to March 1, 1994, which includes the site commissioning. This includes 13 months or 56 construction meetings.
4. **Site Visits and Field Reports** — TKLP will visit the site to review the work done. Site visits will be performed by the appropriate engineer for that disciplines. The site visits will be performed by individuals from the following disciplines: HVAC; plumbing/fire

V. Scope of Services / Approach



protection; fire alarm/security; communication; instrumentation and controls; electrical. The frequency of these visits will be based upon the amount of work being done at any time during the schedule. For the purposes of this proposal, TKLP has assumed the following:

- *HVAC* — starting the month of March 1993 until the month of July 1993, and then twice a month through the month of February 1994.
- *Fire protection/plumbing* — starting the month of March 1993, once a month through the duration of the construction until the end of February 1994.
- *Instrumentation and controls* — once a month, starting July 1993 and concluding the end of February 1994.
- *Electrical* — starting the month of March 1993 until the month of July, and then twice a month through the month of February 1994.
- *Security/fire alarm* — once every two months, starting the month of July 1993 through the end of February 1994.
- *Communications/cabling* — starting September 1993, once every two months through the end of February 1994.

TKLP will prepare field reports for each of those site visits.

5. **Factory Testing** — TKLP will attend the factory tests as noted previously and provide a report based upon that visit.
6. **Site Testing** — Will be performed by individuals from the following disciplines: HVAC; plumbing/fire protection; fire alarm/security; communication; instrumentation and controls; electrical. They will each attend four days on site to witness site testing.
7. **Shop Drawings** — TKLP will review the shop drawings, product data and samples that are specified for the contractor to submit.
8. **Certificates of Payment** — TKLP will review the contractor's submittal of their certificate of payment in terms of what they have observed in their site visits or during the construction meetings and provide their determination of the amount owed to the contractor and supplier on a monthly basis.

V. Scope of Services / Approach

TKLP

9. **Change Orders** — TKLP will prepare the necessary clarification, notifications, and change orders required during the normal construction process. They will review the MEP contractor's submittals and evaluate the scope of work.
10. TKLP will specify that the contractor notifies CDCSA when they are substantially complete and request that the MEP design professional provide a punchlist. When requested by CDCSA, TKLP will prepare a punchlist for the installed items that need correction because they are not installed in accordance with the design professional's documents. TKLP has not intended to prepare a "things-to-do list" for the completion of the construction project.
11. **Agency Approvals** — TKLP will submit those necessary documents to the agencies for the architect's permits.
12. **As-Built Drawings** — TKLP will specify that the MEP contractors maintain a record set of documents, both plans and specifications, on the construction site. These documents will be specified to be marked to show where the various systems were installed as an as-built condition. At the completion of the project, TKLP will incorporate these markings on these record drawings into their construction documents as a final revision, entitled "As-Built Changes."
13. TKLP will specify that the contractor will be required to inform CDCSA when they have completed the punchlist items. CDCSA will request TKLP to visit the job to verify the completion of the final checklist. TKLP will do so and report on their findings.

V. Scope of Services / Approach



Please specifically describe how your firm will handle computer hardware planning and telecommunications for the office space.

TKLP has anticipated that the architect will locate the communication spaces and the City will locate the computer hardware. TKLP will locate air conditioning, cabling, and power distribution.

For what disciplines do you typically use consultants?

We normally use consultants for sound and acoustics which is part of the fitout architectural proposal and in New York City for code agency/permits and expediting.

Please address your participation in the successful design of this project.

TKLP and our experience with the team that has been assigned will bring success to this design. A. Ralston has considerable experience in both data center design planning and reliability issues and will be directing in addition to being a technical resource for this team. TKLP's team will lead the project participants through the selections, refinements, and approvals of the design phases, and prepare contract documents with an experienced, highly-coordinated delivery system. TKLP's unusually broad range of specialty services support TKLP's project team through a formal, organized construction administration process designed to support the client's dynamic needs.

Why would communication and the team approach be better if we chose your firm?

We have worked with FCTPA before. Their engineering representative, Abe Pitsirilos, is aware of what we can do and we know what he wants. We have worked with the City's technical division's consultant before in the MEP design of his data center. We understand his standards and what he is seeking. Commissioner Giannotti has attended A. Ralston's seminars on computer design and has shown us his planning. His plan conforms to work we have done. Our management system uses a formalized communication system through the establishment of design criteria, basis of design, and within the City's reliability program. In 1982, we designed and developed the reliability program, portions of which are included in the RFP. The planning and communications concepts included within the system were developed by us. It is these communications elements and our knowledge of our client and the user that will give us a tremendous advantage in communications.

V. Scope of Services / Approach

This project is being designed against a fixed project budget. The mechanical and electrical systems of this building will be one of the largest cost elements in the construction budget. We want both high quality systems that require minimal maintenance with maximum lifetime and reasonable low capital costs that do not become "budget busters" or require changes, and compromises in later value engineering sessions. How do you propose to "get it right" the first time?

Where there is a fixed budget, an agreement must exist between user, client, and engineer as to what commodities they want to buy for that budget. These commodities are made up of equipment cost, costs of systems, automation of systems, and quality of systems as well as redundancy and alternate paths within the system. TKLP has developed a matrix of costs from the most simple data center to the most sophisticated data center. As the matrix is organized to the right, the data center becomes more and more reliable with redundancy, on-line maintenance, etc. One of the first issues that we would deal with with the user group is to balance the levels of reliability, the sophistication of systems, the amount of automation, etc., with our client and user with the budget. We would then develop project guidelines in terms of systems that are mutually agreed to and historically would fall within the project budget. We would then monitor the design in terms of this base documentation to control the cost of the budget. This is how we would get it right the first time.

The Kling-Lindquist Partnership, Inc., (TKLP) has a fully-staffed project controls department. This department is made up of estimators with construction experience who perform all construction cost estimates provided by this firm.

Opinion of Cost

TKLP maintains a computerized record of the historical construction costs of our past projects. These costs can be sorted by discipline, by project type, and by system used. The geographical area, bid date, and pertinent subject area breakdowns are stored with each project. This information is used when preparing an opinion of costs and is adjusted for escalation and geographical area correction based on the *Engineering News Record*, *Richardson's Estimating Service*, *Mean's*, and *Marshall and Swift Valuation Services*.

The estimate is then adjusted to accommodate a predominance or minimal proportion of expensive or less expensive functional areas. The absence or addition of any known system or item with a major cost impact is estimated and used to adjust the overall estimate.

TKLP's BOD is their cost control document and is reconciled with the budget. Budget "busters" will not conform to the BOD and are brought to management's attention to deal with them.

V. Scope of Services / Approach

Describe the quality control policy of your firm. Please enclose a copy of it with your proposal for our review.

TKLP has distinguished between quality control and quality assurance and has established procedures for both.

Quality Control

The responsibility for quality control remains with the project team under the direction of the Project Manager throughout a project.

- a. A *technical check* is performed in each discipline and is the responsibility of the discipline project engineers and the project architect. It includes the review of methods and systems, calculations, and dimensional checking.
- b. A *coordination check* is performed by the discipline project engineers and the project architect working in cooperation, and is under the close direction of the Project Manager. The primary purpose of the coordination check is to ensure that all elements of the design fit together and can be built.

The second purpose, of equal importance, is to verify that the designs are complete, without gaps or overlaps, and that the work contained within each bid package (drawings and specifications) is precisely defined.

Quality Assurance

While the responsibility for quality control remains with the project team throughout the entire project, quality assurance is provided through the following independent procedures:

- a. *Design Reviews:* TKLP's Design Review Committee, composed of senior design staff, reviews projects throughout their development each Monday. Emphasis is placed on the review of projects in the formative, pre-design, and conceptual stages to assure a sound basis for future design development. All formal project drawings and reports are reviewed prior to presentation to the client.
- b. *Review by the Discipline Leaders:* The documentation accomplished by the project team is reviewed by the Discipline Leaders to maintain a high professional standard of quality. The Architectural Leader and Engineering Leader are not committed to specific project team assignments to avoid compromising their flexibility to maintain an overview of all work accomplished in their areas of specialization and to allow them to direct their attention where and when required.
- c. *Coordination of Documentation:* Before issuance of construction bid packages, the documents are reviewed by TKLP's Construction Services Department. This formal review ensures

V. Scope of Services / Approach



the completeness and coordination of the documents as well as serving as a final check for constructability of the work.

- d. *Review of Work Product:* An independent review of all work products and deliverables is undertaken by two principals of TKLP, a senior architect and engineer, whose principal responsibility in the firm is quality assurance, i.e., they have no direct client commitments which could potentially detract from their quality assurance functions. A written report is submitted to the CEO, President, and project team, and a written response is required before work products are given to our clients.

*What experience have you had in working with multiple designers utilizing a team approach?
What were the success and problem areas?*

TKLP did the MEP design, both core and shell and fitout, with SOM on the Shearson Lehman Brothers project. The project proved to be a very successful project. A great deal of the success is attributed to two very professional consultants. A good deal of the success, however, was a result of a very structured reliability program that TKLP ran that brought to light the needs of the architecture and the engineering systems to provide the data center with reliable building services. This created a reliability plan that the two companies could work to. In addition, the client's management was familiar with both architectural and engineering design and actively participated.

How will you assure constructability of your design?

TKLP's estimating department is made up of individuals who came from the construction business. They review our documentation as it is being developed and at the conclusion of the deliverables for constructability. A. Ralston's background and family came from the construction industry. He will be reviewing all deliverables before they come to you for constructability and maintainability. Mike Timmons, our reliability engineer, spent 15 years in construction prior to coming to TKLP. His last project was the MEP for a large nuclear power station. He will be reviewing the documentation for constructability, reliability, and maintainability.

TKLP's internal quality control and quality assurance process includes constructability reviews. Our field department, made up of individuals with construction industry backgrounds, review constructability.

V. Scope of Services / Approach

The logo for TKLP, consisting of the letters "TKLP" in a bold, sans-serif font, enclosed within a black rectangular border.

Describe your method for processing change orders. How do you assure the Owner that proper additions or deductions to the contract price are made?

Construction Change Orders

We specify that when a contractor submits a change order, he must explain not only the work that must be done for the change order, but why is the change order necessary and what original work was installed that must now be removed. We also specify in our general condition section that the contractor will at bid time tell us what overhead and profit multiples he will use on his change orders, so this becomes part of the negotiations prior to signing the contract. Our estimating department will review the cost of change orders in terms of their historical knowledge of the work to be done, and they will factor it based on the work that has to be redone due to the timing of the change. They will advise FCTPA as to their opinion as to the construction cost for the change order.

Describe how you administer and control document submittal and approval (shop drawings and product literature).

TKLP's shop drawing review procedures reinforce a high priority for the processing of shop drawings and submittals. TKLP's specifications require that the contractor provide a "submittal schedule" so that agreement can be reached concerning turnaround time and adequate manpower can be planned at TKLP. The project manager is responsible to ensure each drawing or submittal is quickly assessed for content, acceptability and action; that each submission is received, logged, distributed, monitored, processed and returned to the contractor in a timely, systematic manner. TKLP has an internal weekly monitoring system that advises senior management on the status of each shop drawing and submittal review. It is our practise to try, by phone or in person, to resolve shop drawings the first time through and not have them caught up in the mail with re-submittals asking for additional information.



VI. Project Schedule

VI. Project Schedule



Time frame for document preparation, review and approval is critical, therefore we have attached our overall schedule requirements (see attached Supplement E). Please provide a detailed schedule for the project phases to meet our requirements. Include the schedule for pre-purchase items.

See the Project Schedule on the following six pages

Since this project schedule is aggressive, how do you propose to "get it right" the first time? (A solution is not required, just a brief explanation of your intended approach to this challenge.)

It is our practice to develop a project production schedule that identifies tasks, drawings, and all deliverables. We also develop histograms for the staffing for the project. The schedule includes points where approvals must be reached, coordination must take place, where information is required, and any other restraint. TKLP monitors progress based on this plan. We adjust the plan when changes take place and then run the project against the adjusted plan. Our project manager performs independent reviews of the disciplines' documents to back check their reporting on degree of completion. We issue status letters to our client monthly that indicate what has been accomplished that month against the plan, a look ahead against the plan, our present schedule status and our plan schedule status, and outstanding coordination and approval or other restraint items that could impact our schedule performance.

Scheduled internal quality control and quality assurance reviews by TKLP senior management, and structured, timely review and approval procedures throughout the design and documentation process assures FCTPA and CDCSA that talent, energy, enthusiasm and experience will be applied efficiently and their work product checked against approved criteria.

Describe where and how your firm has solved this situation before. Be specific.

All our major projects are done against a schedule plan and our record of schedule performance is excellent. Relevant projects include: Shearson Lehman Brothers, Merrill Lynch at the Teleport site, and the United Airlines Apollo Reservation System.

Forest City Tech Place Associates
New York City Computer and Data Communications Services Agency
11 Metrotech Center

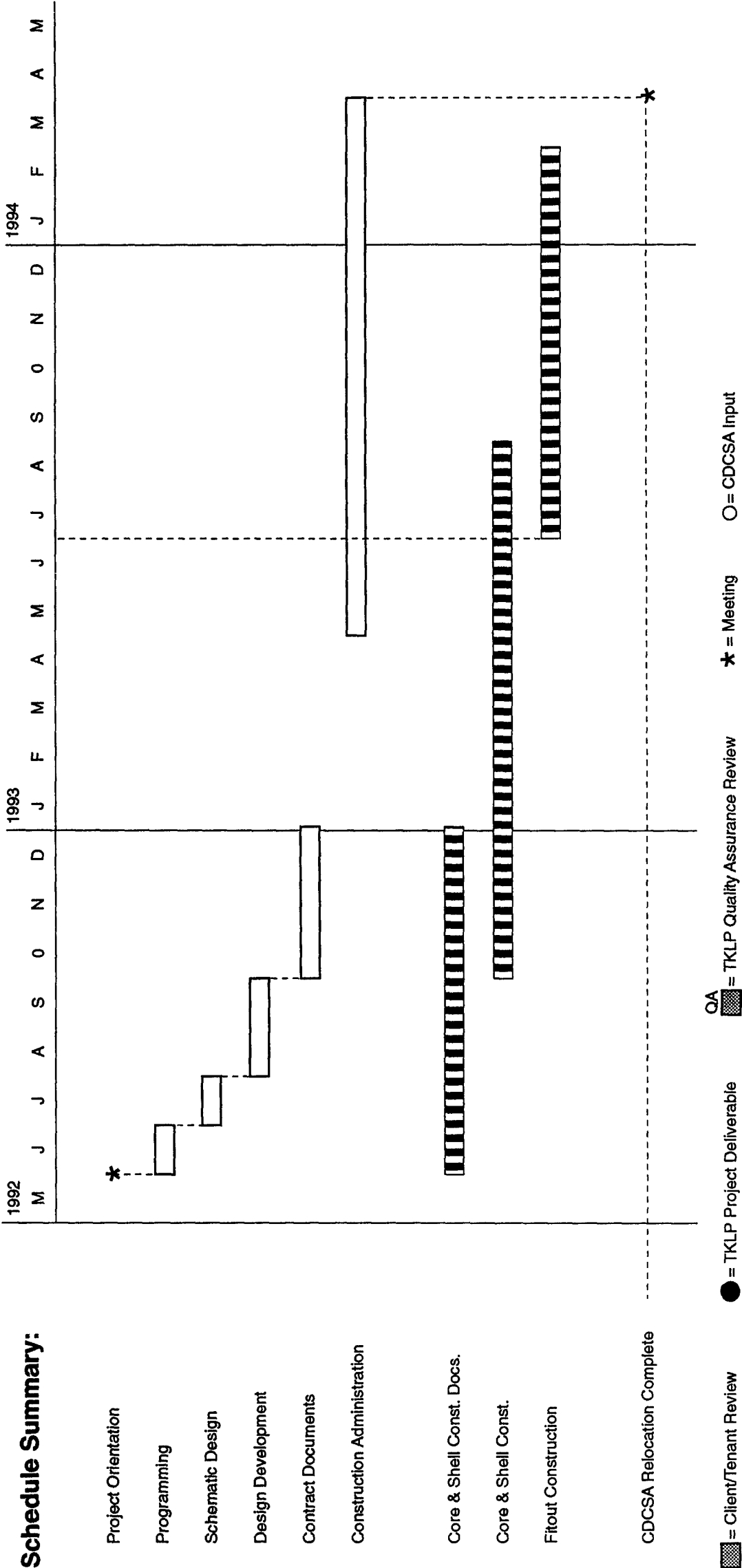
Architectural Engineering
Interior Design and Consulting Services

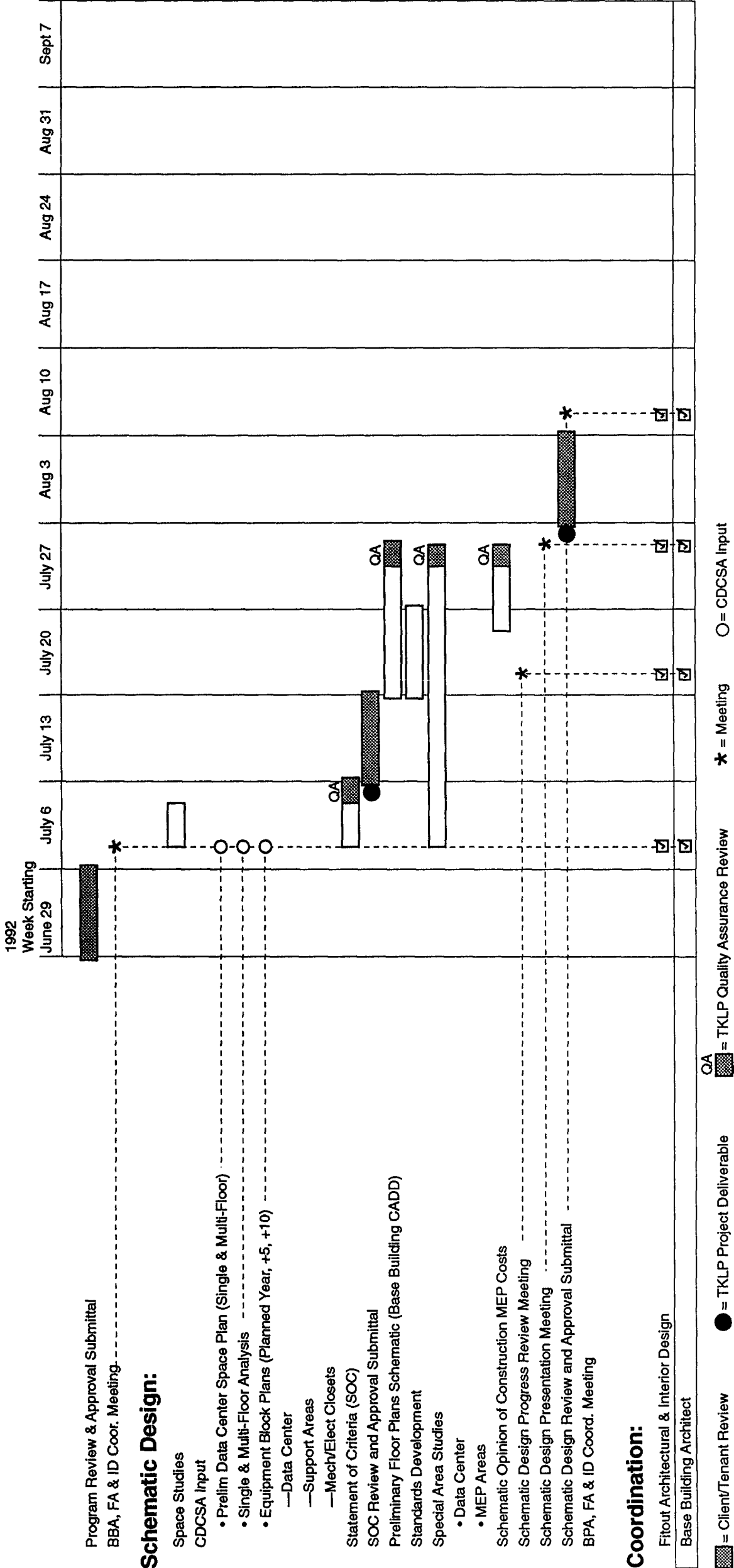
TKLP

The Kling-Lindquist Partnership, Inc.

2301 Chestnut Street, Philadelphia, Pennsylvania 19103/215 569 2900

Schedule Summary:



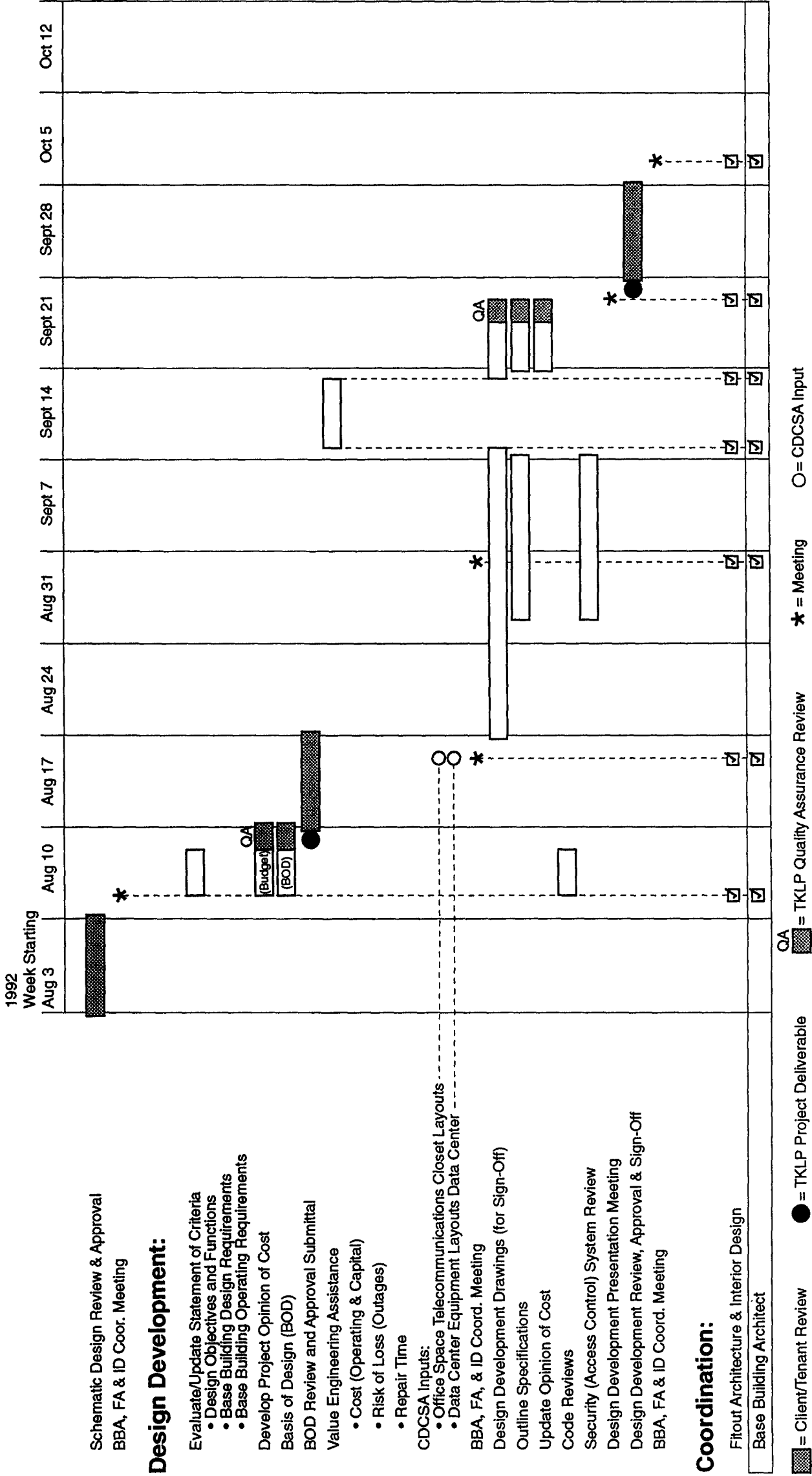


Forest City Tech Place Associates
New York City Computer and Data Communications Services Agency
11 Metrotech Center

Architecture, Engineering,
Interior Design and Consulting Services

TKLP The Kling-Lindquist Partnership, Inc.

2301 Chestnut Street, Philadelphia, Pennsylvania 19103/ 215 569 2900



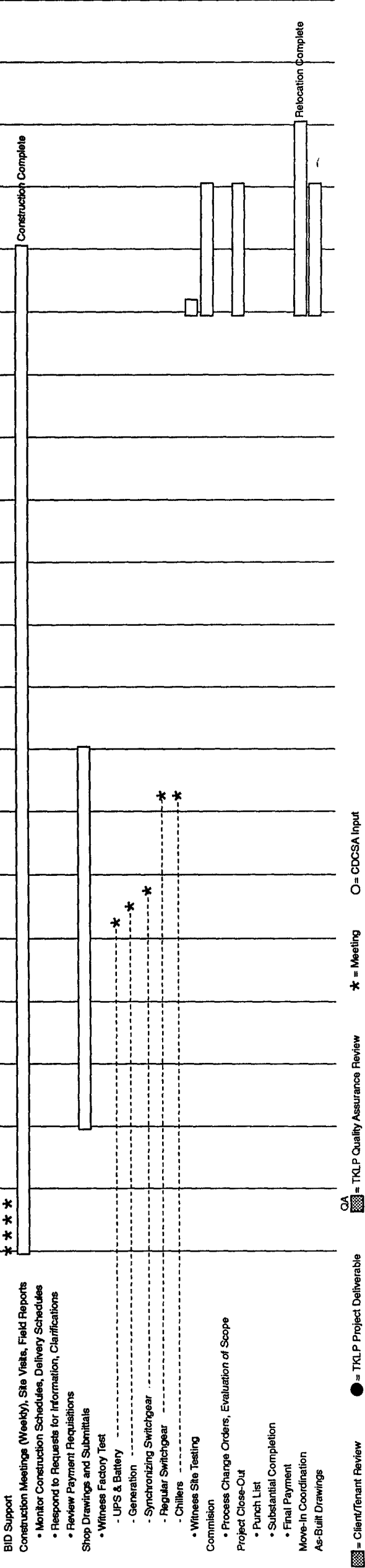
Forest City Tech Place Associates
New York City Computer and Data Communications Services Agency
11 Metrotech Center

Architecture, Engineering
Interior Design and Consulting Services

TKLP

The Kling-Lindquist Partnership, Inc.
2301 Chestnut Street, Philadelphia, Pennsylvania 19103/ 215 569 2900

Construction Administration:



VI. Project Schedule

The logo for TKLP, consisting of the letters "TKLP" in white, bold, sans-serif font, centered within a black rectangular box.

What do you see as potential conflicts or problems with this approach? What solutions do you offer?

There are times when a plan is done and staffing is planned, that the production system becomes rigid and changes are difficult to be handled. We recognize this and have adopted an estimated deviation notice (EDN) system where when changes are introduced from whatever platform, we define the impacts on the schedule, engineering cost, and construction cost. We immediately bring this to the senior management's attention to see whether this is something that must be included in the project or not, or if we want to substitute or remove something else in order to accommodate it. Forcing it to upper management provides a clear line of direction and a proper line of direction if a project is to be under control and allows TKLP to remain flexible by replanning, with your approval, to achieve what is necessary. The other problem that can happen is a slowness in receiving approvals or a lack of compliance to schedule and information flow or poorly conceived information that changes. This well- thought-out plan provides a platform to know where these problems are occurring so they can be dealt with by the management team and, in fact, enhances our ability to manage success.

Describe your design schedule control during all relevant project phases. How often is the schedule reviewed and updated?

The above explains the schedule control. The schedule is updated based on need. We integrate change dynamically as things take place. We keep a schedule on the computer; and as an EDN is approved, we immediately integrate the change. So, in essence, the schedule is reviewed and updated dynamically. It is only on major changes that we would do a total update and replanning of the project.



VII. Compensation and Reimbursable Expenses

VII. Compensation and Reimbursable Expenses

The Cost Proposal shall be submitted on the Cost Proposal Form.

FCTPA intends to pay for services and documents completed and approved as a lump sum fee apportioned for payment purposes between the five service phases, A, B, C, D, and E. You will be asked to invoice the client separately based on an agreed upon formula for tenant and base building MEP engineering services. For the purpose of this RFP, you are asked to complete the engineering cost proposals based on the services which are required to achieve the criteria set forth in this proposal and the scope detailed in Supplement A, (tenants data requirements) and in Supplement B, (base building requirement). Supplement B is preliminary and will be revised during the project to reflect an integrated system. Again assume a fully integrated MEP design.

Please state your fees per phase, including all consultants, required for the engineering services defined in this Request for Proposal and a current schedule of hourly rates. Reimbursable expenses, if any, must also be described and estimated. The competitive nature of this project should be considered strongly. Please see the attached standard form of contract for reimbursable expenses. Indicate the portion of the total service fee to be completed by sub-consultants, if any.

This proposal is a firm offer for the defined services for a period of 120 days from date of proposal. The contact for fee and contract negotiation is:

Alexander Ralston, PE
Project Director
2301 Chestnut Street
Philadelphia, PA 19103
Phone: 215/569-5913
Fax: 215/569-5271

VII. Compensation and Reimbursable Expenses

11 MetroTech Cent – Base Building Design Request for Proposal for MEP Engineering Services COST PROPOSAL

Service Phase	Service Fee
A. Programming	\$ 5,400
B. Schematic Design	\$ 12,600
C. Design Development	\$ 35,800
D. Contract Documents	\$101,700
E. Construction Administration	<u>\$ 41,200</u>
F. Service Fee Total A + B + C + D + E	\$196,700
G. Allowance for Reimbursable Expenses	\$ 43,500
H. Portion of Service Fee (F) to be completed by sub-consultants	\$ 5,000 *

* Cole-Gilman Associates, Code Consultant

VII. Compensation and Reimbursable Expenses

**11 MetroTech Cent – Tenant Design
Request for Proposal
for
MEP Engineering Services
COST PROPOSAL**

Service Phase	Service Fee
A. Programming	\$ 6,500
B. Schematic Design	\$ 39,000
C. Design Development	\$ 149,900
D. Contract Documents	\$ 335,800
E. Construction Administration	<u>\$ 164,000</u>
F. Service Fee Total A + B + C + D + E	\$ 695,200
G. Allowance for Reimbursable Expenses	\$ 56,700
H. Portion of Service Fee (F) to be completed by sub-consultants	\$ 15,000 *

* Cole-Gillman Associates, Code Consultant

VII. Compensation and Reimbursable Expenses

TKLP

COST PROPOSAL NOTES

1. We have allowed for 30 meetings during all the MEP design phases for base building and fitout. There are seven meetings for base building and 23 for fitout.
2. We have valued for four presentations during MEP design. These will be attended by two TKLP representatives each. We have split the cost into one presentation for base building, three for fitout.
3. We have allowed for four TKLP representatives to attend the two reliability analyses. Each will last two days; one will occur during the design development phase and the other during the contract document phase. This effort is assigned to fitout.
4. We have allowed for five trips to witness factory tests. This is assigned to fitout.
5. During the construction administration phase, we have allowed for two representatives to attend each of four pre-bid meetings. We apportioned the meetings as follows: one for base building and three for fitout.
6. We have valued for two representatives to attend weekly construction meetings during the construction administration phase. These are apportioned as follows: 25% to base building, 75% to fitout.
7. We have allowed for four TKLP representatives to witness site testing for four days. This is included in the fitout portion.
8. We have allowed for four TKLP representatives to perform punchlisting and verify completion of punchlisting. This is apportioned as follows: 25% to base building, 75% to fitout.
9. Reproduction includes two sets each of copies and prints for tenant, owner, BBA and FA&ID review, plus one set of reproducibles at completion of each phase.
10. We have not valued for printing and copying for bidding.
11. We suggest that the first two-day reliability session be done at the conclusion of the schematic phase and that the second two-day reliability session be held at the conclusion of the design development phase, thereby shifting both forward by one phase. By doing this, the results of the reliability sessions could be included in the bid packages for the early purchased equipment and to the bid documents. The way they are presently organized, the bid documents will be completed prior to the reliability; and anything developed in the reliability will result in changes and delays to the project. Any changes that are developed in relation to the early purchased equipment may in fact not be able to be achieved without considerable extra cost. This is because by the time this is run, the equipment could be in production.

VII. Compensation and Reimbursable Expenses

The logo for TKLP, consisting of the letters "TKLP" in white, bold, sans-serif font, centered within a black square.

12. CADD Capabilities

TKLP has extensive computer-aided design and drafting (CADD) resources for use on our clients' projects as appropriate for all stages of design development and documentation. TKLP has over 40 workstations, a digitizer and several plotters currently run on a single-shift basis. We have fully trained staff in the creative and effective application of CADD techniques is an ongoing policy supported by an in-house programming staff.

TKLP has used its CADD system in varying capacities ranging from 100% CADD documentation of the new Glaxo Scale-up project to 80% CADD documentation for the 900,000 SF Sterling Winthrop, Inc., Research and Development Center. TKLP has used CADD files from clients in order to show new work in proximity to old work for renovation and additions projects, such as Bristol-Myers in Morrisville, NC.

The benefit to the project of using CADD systems is that all disciplines reference the base architectural drawings, so that any changes or modifications to the plans are immediately available for coordination and checking purposes, thereby maintaining constant production quality control. TKLP engineers and architects use CADD in an interactive manner. We have professionals in all disciplines with hands-on CADD experience as well as designers and drafters with CADD capability.

Current CADD applications at TKLP include land planning and mapping, facility programming, space planning and building design, architectural and engineering construction document preparation, cost estimating, and facilities management.

TKLP uses discipline-specific CADD software such as Intergraph Micro Architect, MRC CAD HVAC, UIGRDS, AutoCAD, LANDCADD and CAPS. TKLP can run Intergraph Microstation version 3.3/4.0 or AutoCAD version 10 and 11 on all of the firm's workstations. TKLP owns software which allows us to communicate with most major CADD-vendor systems using the Drawing Exchange Format (DXF) or other appropriate format. TKLP has demonstrated the compatibility of our CADD software systems both internally and through translation to consultant and owner CADD systems.

TKLP can provide tapes of all documentation for use by the owner on their own CADD system. TKLP can provide facilities management-level drawings upon completion of project documentation, and can also provide record drawings using construction as-built records as an additional service.

VII. Compensation and Reimbursable Expenses

TKLP

FEE SUMMARY FOR OPTIONAL SERVICES DESCRIBED IN SECTION VIII — SPECIAL CONSIDERATIONS

1. Facilitate and Run the Reliability Sessions	\$ 40,000
2. Detailed Factory and Field Testing	\$ 40,000
3. Agency Management Assistance	\$ 70,000
4. Detailed Construction Cost Estimating:	
Schematics	\$ 15,000
Design Development	\$ 30,000
Pre-Purchase Equipment	\$ 10,000
Bid Documents	\$ 45,000
5. Operating Manual	\$ 65,000
6. Systems Operation Training	\$ 12,000

VII. Compensation and Reimbursable Expenses

TKLP

SCHEDULE OF BILLING RATES

*Effective through December 31, 1992**

Professional Staff

Hourly

Department Heads, Project Managers, Senior Architects,
Senior Engineers, Senior Interior Designers

\$50.23 to \$121.79

Architects, Engineers, Estimators, Specifications Writers,
Field Representatives, Interior Designers

\$40.13 to \$ 90.79

Technical Staff

Senior Architectural Draftsmen, Engineering Designers,
Design Supervisors, CADD Supervisors, Project Coordinators

\$38.59 to \$ 88.43

Draftsmen, Design Draftsmen, Interior Design Staff,
CADD Operators

\$19.60 to \$ 58.75

Nontechnical Staff

Secretarial/Clerical, Computer Terminal Operators

\$16.85 to \$ 72.12

Senior Principals

\$180.00/Hour

Principals

\$135.00/Hour

* Subject to yearly change.

1/92

VII. Compensation and Reimbursable Expenses

SCHEDULE OF REIMBURSABLE EXPENSES

*Effective Through December 31, 1992**

Communications

Telephone, Fax, etc.	– at Bell of PA rates
Bulk Postage, Courier, Messenger	– at cost

Transportation

Public Carrier and Rental Car	– at cost
Personal Car at IRS Permissible Level	– \$ 0.28/mile (at 1/1/92)
Food and Lodging	– at cost

Printing, Reproduction, and Related Materials

In-House Production:

Dry-Copy Reproducibles	\$0.09 each
Sepia Reproducibles (Vellum)	\$0.17/sq. ft.
Black and White Prints (Bond Paper)	\$0.25/sq. ft.
Mylar Prints	\$0.52/sq. ft.

Contract Production:

Mylar Prints	– at cost
Mylar, Photographs, and Kroy Material	– at cost
Dry-Copy Reproducibles	-- at cost

CADD Equipment: – \$21.50 per machine hour

Consultants

Cost of consultants' services multiplied by a factor of one and one tenth, or 1.10.

Taxes

State-legislated sales/use tax.

* Subject to yearly change.

1/92



VIII. Special Considerations

VIII. Special Considerations [Optional Services]



Please explain any special considerations not addressed in this Request for Proposal.

1. **Facilitate and Run the Reliability Sessions:** TKLP has considerable experience at managing and running reliability sessions. We have included in this proposal only the time to attend the session. There will be preliminary work, such as the preparation of the system documentation for display on overheads to the attendees as well as preparation of the event and fault- trees with notation as to what would normally be received in the bid specifications. It is these documents that will be used for the evaluation of the systems and its components in these sessions. At the conclusion of the study, notes would be kept and the reliability plan would be documented. This plan would create a basic guideline, scope, and criteria for the four major elements that can affect reliability, the first being the operations of the facility, the second being the construction, the third being the design, and the fourth being the maintenance and exercising of the systems and the operating people. If TKLP is to document the results of the two reliability sessions and at the conclusion of the second session prepare the reliability plan, our fee would be \$40,000.
2. **Detailed Factory and Field Testing:** TKLP has included traditional testing requirements for their specifications. If FCTPA would like TKLP to develop detailed factory testing and field testing, the field testing, including checkout system equipment tests, system tests, and then system integration tests, the construction completion prerequisites would be defined so that the test could be scheduled into the normal construction schedule. The instrumentation and false loading devices would be defined so that the cost for it could be included as a requirement in the contractor's specifications. TKLP's fee for developing these detailed tests would be \$40,000.
3. **Agency Management:** We have found that a very successful way to drive the completion of a data center project is to use the final commissioning tests of construction to complete the work rather than the traditional way, "space occupancy." This often forces a depth of understanding of mechanical and electrical construction that exceeds that of the contract or construction manager. TKLP has operated as an extension of their client or in an agency agreement to work with the contractor or construction manager to reorganize their construction schedule toward the accomplishment of the final commissioning tests and the activities that precede the tests in order to complete the systems. TKLP has then performed the schedule reviews in the meetings, helped each one of the subcontractors organize their work and crews to achieve the work necessary to accomplish the schedules, and then managed the setup of the auxiliary loads and instrumentation and managed the testing. To do this, TKLP's fee would be \$70,000.
4. **Construction Cost Estimating:** As part of this proposal, TKLP has proposed their estimating within the framework of the AIA Owner/Architect Agreement B141, where the engineer would provide an opinion of cost. TKLP has individuals in their estimating department who have considerable experience in the MEP construction field as estimators. We can provide detailed estimates; and, in fact, our estimates have been used on an item-by-item basis to negotiate labor and materials as a basis for negotiated contracts that were managed

VIII. Special Considerations [Optional Services]

TKLP

in a open-book fashion against our estimate's reconciliations with the contractor's estimates. We could provide these detailed estimates at the various phases for the following sums:

Schematics —	\$ 15,000
Design Development —	\$ 30,000
Pre-purchased equipment —	\$ 10,000
Bid Documents (including value engineering) —	\$ 45,000

5. **Operating Manuals:** TKLP offers, as an additional service, preparation of system operating manuals. This involves describing system by system, the requirements that prompted the systems designed, actual equipment data, equipment locations within the building, and simplified flow diagrams for each system. It also describes how the system is to be operated. It has proven invaluable for the maintenance personnel of our client's and simplifies and speeds the diagnosis and repair of system-related problems. TKLP's fee would be \$65,000.
6. **Systems Operation Training:** TKLP would provide instruction to the client's operations staff for complete understanding of the systems operating procedures and parameters. We find it important for the operations people to learn from the engineer how the system should be run. TKLP's fee for this service is \$12,000.
7. **Post Construction Services**

TKLP is very experienced at designing tests, assisting our clients in managing the testing, assessing the test results and working with vendors to identify and correct the problems. TKLP's experience is with building elements and building services. The tests are used to assess the performance of existing equipment and systems, as well as to determine if the installed new equipment and systems achieve specified requirements.

TKLP has also developed step-by-step commissioning procedures for building service systems. The procedures include acceptable performance tolerances, procedures to follow to create extreme test conditions, construction completion requirements prior to testing, acceptable test instruments and calibration requirements.

In highly technical buildings, we have found that the building service system commissioning generally is the critical path to construction completion. It is often overlooked by construction managers who will generally focus on temporary occupancy permits. TKLP has provided scheduling and schedule control services to focus on system commissioning and testing with the supporting construction completion tasks.

VIII. Special Considerations [Optional Services]

The logo for TKLP, consisting of the letters "TKLP" in a bold, sans-serif font, with the "T" and "K" in black and the "L" and "P" in white.

TKLP maintains several experienced technical editors and writers on staff to produce a full range of technical documentation to support its design efforts. This includes the following:

- Technical Manuals (operator and maintenance)
- Guide Specifications
- Training Courses
- Systems Surveys
- Test Reports
- Technical Bulletins and Reports
- Construction Documents

TKLP has provided operating and maintenance information for several government agencies and private corporations.

8. Computer Systems and CADD Documentation

TKLP intends to utilize its CADD systems abilities as appropriate for the base building design development and documentation of the FCTPA's project. TKLP maintains extensive, state-of-the-art computer hardware and software systems and an experienced staff to use those systems for optimum quality and efficiency on every project our firm accomplishes. These systems allow us to provide all project services within each client's required time frame. The library of software available to the TKLP team is extensive. It includes programs for graphics, database management, engineering analysis, accounting, and word processing applications. Scheduling software includes Timeline and Primavera. These programs are often combined for particular applications and are in addition to the Fortran, Basic, Cobol and Pascal compilers that are also available.

VIII. Special Considerations

The logo for TKLP, consisting of the letters "TKLP" in a bold, sans-serif font, enclosed within a black rectangular border.

CADD Capabilities

TKLP has extensive computer-aided design and drafting (CADD) resources for use on our clients' projects as appropriate for all stages of design development and documentation. TKLP has over 40 workstations, a digitizer and several plotters currently run on a single-shift basis. We have fully trained staff in the creative and effective application of CADD techniques is an ongoing policy supported by an in-house programming staff.

TKLP has used its CADD system in varying capacities ranging from 100% CADD documentation of the new Glaxo Scale-up project to 80% CADD documentation for the 900,000 SF Sterling Winthrop, Inc., Research and Development Center. TKLP has used CADD files from clients in order to show new work in proximity to old work for renovation and additions projects, such as Bristol-Myers in Morrisville, NC.

The benefit to the project of using CADD systems is that all disciplines reference the base architectural drawings, so that any changes or modifications to the plans are immediately available for coordination and checking purposes, thereby maintaining constant production quality control. TKLP engineers and architects use CADD in an interactive manner. We have professionals in all disciplines with hands-on CADD experience as well as designers and drafters with CADD capability.

Current CADD applications at TKLP include land planning and mapping, facility programming, space planning and building design, architectural and engineering construction document preparation, cost estimating, and facilities management.

TKLP uses discipline-specific CADD software such as Intergraph Micro Architect, MRC CAD HVAC, UGRDS, AutoCAD, LANDCADD and CAPS. TKLP can run Intergraph Microstation version 3.3/4.0 or AutoCAD version 10 and 11 on all of the firm's workstations. TKLP owns software which allows us to communicate with most major CADD-vendor systems using the Drawing Exchange Format (DXF) or other appropriate format. TKLP has demonstrated the compatibility of our CADD software systems both internally and through translation to consultant and owner CADD systems.

TKLP can provide tapes of all documentation for use by the owner on their own CADD system. TKLP can provide facilities management-level drawings upon completion of project documentation, and can also provide record drawings using construction as-built records as an additional service.



Appendix

A. Resumes – Partners

B. Resumes – Project Team



Appendix A: Resumes – Partners

Melvin J. Sotnick, PE

Chairman / Chief Executive Officer



Education	Graduate School, University of Pennsylvania, 1956 Bachelor of Science, Chemical Engineering, City University of New York
Registration	1960, Professional Engineer: Pennsylvania, New York, New Jersey, Tennessee, Florida, Ohio, Illinois, Maryland, Colorado, North Carolina, California, North Dakota
Years Experience	With TKLP: 16 With Other Firms: 20
Responsibilities	As Chairman and Chief Executive Officer, Mr. Sotnick is responsible for all of The Kling-Lindquist Partnership, Inc.'s architectural, engineering and facilities planning, design, engineering and client relation services. Under his direction is a full staff of project directors, project managers, designers, and architects, engineers, interior designers and related professionals working on client projects. Since joining TKLP in 1976, Mr. Sotnick has held general management and principal-in-charge responsibilities for many diverse clients and project types.
Societies	Member, American Institute of Chemical Engineers International Society of Pharmaceutical Engineering Parenteral Drug Association Professional Services Management Association

C. Nicholas Reveliotty, PE

Director of Professional Resources

TKLP

Education	Bachelor of Science in Mechanical Engineering, Northeastern University, 1963 Engineering Officer Course, U.S. Army, Ft. Belvoir, VA Management Training Course, General Electric Company Management Development Program, Northeastern University		
Registration	1977, Professional Engineer: Pennsylvania, New Jersey, New York, Maryland, Delaware, Arkansas, California, Florida, Georgia, Indiana, Louisiana, Massachusetts, Michigan, North Carolina, South Carolina, Texas, Virginia, Washington, Wisconsin, and District of Columbia		
Certification	National Council of Engineering Examiners and National Society of Professional Engineers		
Years Experience	With TKLP: 10	With Other Firms:	19
Responsibilities	As Director of Professional Resources, Mr. Reveliotty is responsible for all architectural, engineering, design, and drafting activities by TKLP's architects, engineers, and designers. Under his direction is a full staff of architects, interior designers, landscape architects, and HVAC, instrumentation, plumbing, fire safety, mechanical, electrical, civil, and structural engineers, who provide technical services for the design of buildings, research and development laboratories, high-tech industrial, and process facilities. Mr. Reveliotty is responsible for the technical standards and specifications for each discipline, and directs the operation of all the computers and computer-aided design at TKLP. Independent of the project team and reporting directly to the president and CEO, Mr. Reveliotty, together with the Manager of Architectural Resources and in collaboration with the architectural staff and chief engineers of all disciplines, is responsible for the quality assurance review of work. This effort includes review of fundamental criteria, analysis of alternative systems and, prior to formal submission to the client, review of all deliverable documentation on every project for conformance with TKLP's criteria and standards.		
Societies	American Society of Mechanical Engineers Institute of Environmental Sciences (Senior Member) Association of Energy Engineers National Society of Professional Engineers Society of American Military Engineers Certified Construction Inspector		
Publications	"Free Cooling by Cooling Tower Water," <i>ASHRAE Journal</i> , January 1987. "VAV Fan Control by Means of DDC," <i>Heating/Piping & Air-Conditioning Journal</i> , 1986.		

Charles E. Bailey, AIA

Design Principal

TKLP

Education	Master of Architecture, University of Pennsylvania, 1961 Bachelor of Architecture in Engineering, Pennsylvania State University, 1957 Graduate Study in Regional and City Planning, Athens Technological Institute, Graduate School of Ekistics, Athens, Greece
Registration	1965, Architect: Pennsylvania, New Jersey, New York, and NCARB
Years Experience	With TKLP: 29 With Other Firms: 0
Responsibilities	As Project Design Principal, Mr. Bailey's responsibilities include developing the master plan and global architecture design issues; providing hands-on leadership of the programming and design effort; creating design solutions that satisfy aesthetic, environmental, and humanistic issues within budgetary requirements; and working with the project manager and discipline leaders to coordinate the design effort.
Reason Selected for this Project	Mr. Bailey has an extensive background for the government and private sectors. He has worked on a wide variety of projects, including new construction, additions and renovations. Having spent his entire career with The Kling-Lindquist Partnership, Inc., Mr. Bailey has, as Designer, Project Manager, Project Director, and Principal-In-Charge, had major responsibility for many significant projects.
Societies	American Institute of Architects Philadelphia Chapter AIA – Member Professional Practice Committee Pennsylvania Society of Architects Society of College University Planners
Awards	Scholarship, Graduate School of Fine Arts, University of Pennsylvania Fulbright Scholar – Regional and City Planning, Athens, Greece
Civic Activities	Drexel University, guest lecturer for the departments of Architecture and Architectural Engineering and the School of Civil Engineering Hahnemann University, Laboratory Animal Science Program

T.L. Bush

Director of Administration and Finance

TKLP

Education Bachelor of Science in Business and Accounting, Ulbright College

With TKLP: 24 With Other Firms: 5

Responsibilities In addition to being Director of Finance and Administration, Mr. Bush is Secretary/Treasurer of the TKLP Corporation. He is responsible for all financial and administrative aspects of the firm including benefits and general management.

Richard F. Rowe, PE, AIA Department Head – Structural / Civil Engineering

TKLP

Education	Master of Science, University of Illinois, 1972 Bachelor of Architectural Engineering, University of Illinois, 1970
Registration	1976, Structural Engineer: Illinois 1983, Professional Engineer: New York, Pennsylvania, New Jersey, Massachusetts, Ohio, North Carolina, Colorado, Delaware, Indiana, and Minnesota 1978, Architect: New York, New Jersey, Illinois, and Massachusetts; plus NCARB
Years Experience	With TKLP: 3 With Other Firms: 17
Responsibilities	At TKLP, Mr. Rowe is the senior structural member responsible for in-process quality control, planning, and development for all structural systems designed by the firm. As a member of the design team, he will help develop structural design issues, provide hands on leadership for the design effort; create design solutions that satisfy the functional, aesthetic and budgetary requirements; and work with the project managers and discipline leaders. Mr. Rowe has worked on a wide variety of projects and has addressed several building types, including major high-rise buildings, that require unique structural considerations, such as security, vibration sensitive areas, and damage assessment of high-rise structures.
Societies	American Society of Civil Engineers (ASCE) American Institute of Architects (AIA) American Concrete Institute (ACI) American Institute of Steel Construction Engineers (ASCE) Concrete Reinforcing Steel Institute (CRSI) Building Stone Institute (BSI) American Society for Testing and Materials (ASTM)
Professional Activities	New York C.I.B. – Secretary, Board of Directors, 1989 - 1992 New York C.I.B. – High Strength Concrete Committee, Co-Chairman 1988-1990 AISC Education Committee, 1981 - 82 ACI Committee 120 on Concrete Quality 1988-Present ASTM Committee C-18 on Natural Building Stone 1988-Present Building Stone Institute, Engineering Standards Committee 1988-Present
Publications/ Presentations	"The Structural Engineers Role in Selecting Building Stone and It's Anchorage", BSI Convention, 1990 "The Use of High-Strength Concrete in Building Structures; CIB High- Strength Seminar, New York, 1989 "Structural Steel vs. Concrete: Comparable Systems Selection," <i>Build Boston</i> , 1985 "Engineering for Architectural Structures," Princeton University, 1984 "Optimization of Concrete Structural Systems," PCA Seminar, Philadelphia, Boston, New York, 1984 "Madison Plaza Project: Analyses, Design, Construction," AISC Luncheon Seminar, 1982

Eric A. Chung, FAIA

Senior Design Principal

TKLP

Education	Master of Architecture, Yale School of Architecture, 1962 Diploma of Architecture, Birmingham School of Architecture, England
Registration	1971, Architect: Pennsylvania, Connecticut, Delaware, Florida, Illinois, Indiana, Kentucky, Maryland, North Carolina, New Jersey, New York, Ohio, South Carolina, Virginia, and NCARB
Years Experience	With TKLP: 34 With Other Firms: 0
Responsibilities	As a design principal, Mr. Chung performs his responsibilities through all phases of a project including planning, design and construction. This includes: developing the master plan and global architecture design issues; providing hands-on leadership of the programming and design effort; creating design solutions that satisfy aesthetic, environmental, and humanistic issues within budget requirements; and working with project managers and discipline leaders to coordinate the entire design effort. As Senior Design Principal, Mr. Chung recommends assignment of design principals to specific job opportunities. Further, as administrative head of the design principal category, he provides a home base, and is available to the design principals for providing the best design process and product. It is intended that Mr. Chung's administrative role be limited to enable him to concentrate on creative design activities. Mr. Chung joined TKLP in 1958 as a project architect, taking leave to obtain his master's degree in architecture at Yale under Paul Rudolph and Serge Chermayeff, and returned to TKLP in 1964. He has served as a design instructor at Drexel University School of Architecture since 1966, and as adjunct professor of architecture at the same university from 1970 to 1975. He also teaches in the Laboratory Animal Science Program at Hahnemann University.
Societies	Fellow of American Institute of Architects National Design Committee, American Institute of Architects Chairman of Design Competition Committee, Philadelphia Chapter, American Institute of Architects Member of the Board, Philadelphia Chapter, American Institute of Architects (1984-1987) American Association for Accreditation of Laboratory Animal Care Philadelphia Chinatown Development Corporation, Advisory Board Member Member of Yale Club, Philadelphia National Guard, Anti-Aircraft Missile Battalion (1957-1961) National Guard, Engineer Battalion (1961-1963) RHO PSI Fraternity, Chinese-American Fraternity
Publications	"Flexible Space Design is a Must for R&D Labs." <i>Buildings Design Journal</i> , nd.
Civic Activities	Widener University, Board of Trustees

Michael Lorenz, PE

Principal / Director of Mechanical Services

TKLP

Education	Master of Science in Engineering, Pennsylvania State University, 1977 Bachelor of Science in Agricultural Engineering, Pennsylvania State University, 1975
Registration	1984, Professional Engineer: New Jersey, California, Florida, and North Carolina
Years Experience	With TKLP: 8 With Other Firms: 9
Responsibilities	Mr. Lorenz has the responsibility for the supervision, quality control, quality assurance, and technical and administrative leadership of the following disciplines: HVAC, mechanical, plumbing/fire protection, and instrumentation/controls. He is responsible for making engineering design decisions, interfacing with the client and user groups, and providing technical assistance to the project engineers. His focus is on comparing various options concerned with initial and long-term costs, maintainability, cost of construction, flexibility and future expansion. Mr. Lorenz has a successful record coordinating and designing the various mechanical services required for a wide variety of facilities. He has a proven ability to work side-by-side with the client to address their special engineering requirements. Mr. Lorenz is actively involved in all TKLP projects.
Societies	American Society of Heating, Refrigerating and Air Conditioning Engineers International Society of Pharmaceutical Engineers

Carl T. Clark, AIA

Director of Project Management

TKLP

Education	Drexel University, Division of Architecture GSA-AIA Value Engineering Program
Registration	1966, Architect: Pennsylvania, New Jersey, Massachusetts, Colorado, California, Tennessee, Minnesota, and NCARB
Years Experience	With TKLP: 28 With Other Firms: 7
Responsibilities	Mr. Clark joined The Kling-Lindquist Partnership, Inc. (TKLP) in 1964 and has a broad background in the practice of architecture having participated in various capacities on a wide spectrum of project types. In his present assignment, Mr. Clark is responsible for the Project Management Group — the staffing, training, development and guidance of their day-to-day responsibilities. He served five years as TKLP's Manager of Architectural Resources and was responsible for the quality assurance review of all architectural work.
Societies	The American Institute of Architects, Philadelphia Chapter Pennsylvania Society of Architects The Athenaeum

Florinda D. Doelp, IBD Project Director, Manager of Interior Design Resources

TKLP

Education	Pennsylvania State College, School of Architecture and Engineering BAA, Interior Architecture, Summa Cum Laude, University of Pennsylvania Universita Di Firenze, School of Architecture, Florence, Italy Centro Di Cultura Per Gli Stranieri, Florence, Italy
Years Experience	With TKLP: 19 With Other Firms: 10
Responsibilities	As the Manager of Interior Design Resources, Mrs. Doelp's responsibilities include the direction of an experienced staff of design professionals who provide services in pre-architectural programming, space planning, and interior design. In response to the need for specialization, she directs a group of programming specialists who have done extensive work in the areas of project facilities costs and financial analysis of proposed approaches to design. Mrs. Doelp's experience includes computer, operations, electronics, and materials facilities.
Publications	<i>Focus Magazine</i>, "Office of the Future" <i>Building Operating Management</i>, "Open Planning" <i>Philadelphia Inquirer</i>, "Open Planning" <i>Philadelphia Business Journal</i>, "Tax Credits" <i>Philadelphia Business Journal</i>, "Employee Orientation" <i>Buildings Design Journal</i>, "Programming" <i>Building Operating Management</i>, "Choosing Furnishings and Finishes with an Eye to the Future" <i>Pennsylvania Architect</i>, "Treasure Trove of Architectural Features Uncovered While Restoring Lukens Headquarters"
Societies	Institute of Business Designers, Professional Member American Institute of Architects, Affiliate Member International Facilities Management Association Interior Design Council, Corporate and Former Executive Board Member Forum of Executive Women, Board of Directors and Treasurer FIDER Development Task Force, 1982 - 1984 Interior Design Professional Advisory Committee, Moore College of Art National Commercial Buildings Exposition and Conference, Advisory Board, 1987 Board of Managers YMCA, Central Branch Steelcase Context Advisory Council

Bradford White Fiske, AIA**Design Principal****TKLP**

Education	Master of Architecture, Yale University School of Architecture, 1979 Bachelor of Art, Goddard College, 1972 Additional Study: Harvard University, University of California, and University of Massachusetts		
Registration	1984, Architect: Connecticut, Pennsylvania, New York, New Jersey, and Delaware; plus NCARB		
Years Experience	With TKLP: 7	With Other Firms:	6
Responsibilities	Mr. Fiske's responsibilities as Design Principal include: developing the master plan and global architecture design issues, providing hands-on leadership of the programming and design effort, creating design solutions that satisfy the aesthetic, environmental and humanistic issues within budgetary requirements, and working with the project director, project manager and team discipline leaders to coordinate their design effort. Mr. Fiske is a nationally recognized and award winning designer for high profile urban high-rises. In a recent poll conducted by <i>The Philadelphia Inquirer</i>, the Bell Atlantic Tower, for which Mr. Fiske was principal designer, was voted the best building in Philadelphia by nearly a 2:1 margin. His experience also includes R&D, computer, commercial and institutional projects.		
Societies	American Institute of Architects Philadelphia Chapter, American Institute of Architects Pennsylvania Society of Architect		
Awards	Tucker Award of Design Excellence, 1992 Tri-State Building Excellence Award for Bell Atlantic Tower, 1991 Internazionale Marmi E Macchine, Bell Atlantic Tower exterior, 1991 Internazionale Marmi E Macchine, Bell Atlantic Tower interior, 1991 Finalist, Tri-State Building Excellence Award for Delaware Corporate Center, 1991 Design Award (Senior Position), AIA, Philadelphia Chapter, Exxon Corporation R&D Complex, 1986		
Publications	"Bell Atlantic Tower," <i>A&U, Architecture and Urbanism</i> , April 1992 "Bell Atlantic Tower," <i>Architecture</i> (AIA Journal), March 1991 "Bell Atlantic Tower," <i>Building Design and Construction</i> , June 1991 "Bell Atlantic Tower," <i>Stone World</i> , October 1990		
Speaking Engagements	"Imperfect Reality," Temple University School of Architecture, 1991 "Bell Atlantic Tower," Italian National Council of Architects C.N.A., 1991 "Bell Atlantic Tower," Internazionale Marmi E Macchine, 1991 "High Rise Design," Taipei, Taijung, Kaoshung, Republic of China, 1989		
Professional Activities	Visiting Critic, Columbia, Temple, and Yale University Schools of Architecture, periodic.		

William R. Brader, PE

Project Director, R&D and Manufacturing

TKLP

Education	Master of Science in Environmental Engineering, Drexel University, 1974 Bachelor of Science in Mechanical Engineering, Drexel University, 1970
Registration	1976, Professional Engineer: Pennsylvania and New Jersey
Years Experience	With TKLP: 9 With Other Firms: 13
Responsibilities	As Project Director, Mr. Brader's responsibilities include: "hands on" project direction; quality of management; design, engineering and deliverables; project execution within budget and schedule; development of project procedures; maintaining performance of project teams; and producing monthly project financial reports and status letters to the client. To ensure full understanding of project requirements, he participates in all critical client meetings and presentations. Mr. Brader has more than 22 years experience on a variety of technically complex facilities and has a proven ability to direct large renovation and new construction projects of R&D facilities for the private and government sectors. He was recipient of the ISPE Engineer of the Year award in 1988 and has had his work published in numerous technology periodicals.
Societies	International Society of Pharmaceutical Engineers (ISPE); National Board of Directors Institute of Environmental Sciences (IES); Member of RP-50 Committee which created Federal Standard 209D for Clean Rooms Parenteral Drug Association (PDA) American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
Awards	ISPE "Engineer of the Year" award, 1988.
Publications	"Implications of New Regulatory Guidelines and Emerging Standards on Animal Facility Design," Pharmaceutical Manufacturers Association Engineering Symposium, April 1991 "Planning an R&D Lab in the '90s," <i>Research and Development</i>, September 1989 "Availability Analysis of HVAC Systems in Cleanrooms and Other Critical Applications," <i>Journal of Environmental Sciences</i>, May-June, 1989 "Contamination Control in Biological Safety Assessment Facilities," Ninth International Symposium on Contamination Control (September 1988), IES "Clean Animal Room HVAC Systems," <i>Pharmaceutical Engineering</i>, July - August, 1988 "Digital Controls for Effective Contamination Control," <i>Pharmaceutical Engineering</i>, November - December, 1984

James V. Ricigliano, PE

Project Director, R&D and Manufacturing



Education	Bachelor of Science in Computer Sciences, LaSalle College, 1985
Registration	1978, Professional Engineer: Pennsylvania, Delaware, Maryland, District of Columbia, North Carolina, Connecticut
Years Experience	With TKLP: 15 With Other Firms: 20
Responsibilities	As project director, Mr. Ricigliano establishes overall policy for techniques and standards of performance for the project team. He is involved in the project from inception to completion, with responsibilities that include: quality of management; design, engineering and deliverables; project execution within budget and schedule; development of project procedures; ensuring performance of project managers; and producing monthly project financial reports and status letters to the client. To ensure full understanding of project requirements he participates in all client meetings and presentations.
Societies	American Society of Heating, Refrigerating, and Air-Conditioning Engineers International Society of Pharmaceutical Engineers President, Delaware Valley Chapter of ISPE National Society of Architectural Engineers
Publications	"Future Design Trends for Labs of the 1990s," <i>Pharmaceutical Engineering</i> , May/June 1990 "Flexible Space Design is a Must for R&D Labs," <i>Buildings Design Journal</i> "Planning for Commissioning and Validation of Pharmaceutical Building Systems," <i>Pharmaceutical Engineering</i> , July/August 1988

Binh Vinh, AIA

Design Principal

TKLP

Education	Master of Architecture, University of Pennsylvania, 1977 Master of Architecture, Saigon University, 1974 Ecole Supérieur des Beaux Arts de Paris
Registration	1979, Architect: Pennsylvania, North Carolina; plus NCARB Certification
Years Experience	With TKLP: 15 With Other Firms: 3
Responsibilities	As design principal, Mr. Vinh serves as the senior designer for the entire team. Responsibilities include: participating and confirming program information; developing the master plan and global architectural design issues; providing "hands-on" leadership of the design effort; creating appropriate design solutions that satisfy the functional, aesthetic, environmental, and humanistic issues within the budgetary requirements. Mr. Vinh is internationally recognized for designing many successful and complex research facilities worldwide. In the last ten years, he has designed over a dozen research facilities totalling over 6,500,000 SF, and many public and institutional facilities totalling over 2,000,000 SF. He has master planned and designed many significant facilities including the largest R&D facilities in the U.S. and U.K. The two complexes total over 4,500,000 SF. Mr. Vinh has received numerous recognitions and two major awards for his projects. He is known for his humanistic approach and for striving to achieve a timeless quality for the built environment. Prior to joining The Kling-Lindquist Partnership, Inc., (TKLP) in 1977, Mr. Vinh headed a private practice in Harrisburg, Pennsylvania, where he designed several projects for the Hershey Hotel, AT&T, the U.S. Army, and for the Saudi Arabian government. Since coming to TKLP, he has worked on a wide variety of projects as project architect and project designer. In 1989 he was elected partner and design principal and has lead the design and master planning of many major and significant projects
Societies	American Institute of Architects, Regional Liaison and Design Committee member L'Ordre Des Architectes D'Ile De France, France Union International of Architects Federation Pan American Association of Architects Pennsylvania Society of Architects Philadelphia Solar Energy Association Philadelphia Fellowship Commission American Red Cross, Harrisburg Chapter, Member of the Board ARVN, First Lieutenant, Company Commander
Award	Mr. Vinh has designed several award-winning projects and helped win several national design competitions.
Professional Activities	Mr. Vinh's work has been featured in several local, national and international papers and magazines. He also has been a speaker at Philadelphia's Tradeline "Lab of the Future" presentation.

Warren J. Mathison, AIA Project Director, Commercial & Computer Facilities

TKLP

Education	Bachelor of Architecture, Pratt Institute, 1967		
Registration	1973, Architect: New York		
Years Experience	With TKLP:	1	With Other Firms: 25
Responsibilities	Mr. Mathison has considerable experience in a wide range of architectural and interior design projects. His responsibility for projects includes programming, planning, design and construction phase services, and as the firm's liaison with the client, he ensures that all services are accomplished by qualified professional team members within the established schedule and budget. In his prior employment, Mr. Mathison was a partner of another major A/E firm. His responsibilities as director in charge of project administration included the coordination and management of all the professional disciplines involved in an individual project. He supervised the execution of complex projects and worked closely with the client's representatives, the construction manager or general contractor and special consultants who contributed to the project's successful completion.		
Societies	Member, American Institute of Architects Member, New York State Association of Architects Member, Architectural League of New York		



Appendix B: Resumes – Project Team

Alexander H. Ralston, Jr., PE**Director of Special Projects****TKLP**

Education	Bachelor of Science in Mechanical Engineering, Drexel University, 1963 Graduate course work in Management, The Wharton School of the University of Pennsylvania
Registration	1967, Professional Engineer: Pennsylvania and Ohio
Years Experience	With TKLP: 11 With Other Firms: 18
Responsibilities	As a principal of The Kling-Lindquist Partnership, Inc. (TKLP), Mr. Ralston directs large, sophisticated projects that generally require master planning, intensive mechanical and electrical efforts, sophisticated construction requirements or extensive construction turnover needs. Mr. Ralston's responsibilities include: selection of TKLP's team, direction of the team's work, client reporting, project direction interface, and quality control on the project. In addition, he brings significant experience as a contractor, in energy engineering, in sophisticated system testing, and commissioning programs, and reliability programs.
Reason Selected for this Project	This key position is assigned to Mr. Ralston for his proven ability to direct large corporate headquarters projects, and complex operations center projects, including R&D facilities of more than 1,000,000 SF.
Relevant Experience/Qualifications	Merrill Lynch & Company, Disaster Recovery Center, Staten Island, NY Mr. Ralston was responsible for design and construction phase services and consulting services for a 200,000 SF high-reliability and high-security computer center to back up Merrill Lynch's computer operations worldwide. Included was testing and start-up of integrated mechanical and electrical systems. The 100,000 SF computer operations area has raised access floors throughout and is supported by a UPS system, emergency power generators, and protected by sprinkler and halon systems. United Airlines (Covia) - Apollo Reservations Center, Denver, CO A 115,000 SF secure centralized computer center to support a reservations system that is in operation 24 hours a day, seven days a week. Mr. Ralston directed full A/E services and a separately staffed reliability program. Most of the space is raised-floor: 57,000 SF houses computer hardware, 17,000 SF houses office functions attached to computer operations, 11,000 SF is miscellaneous support functions, and the remaining 30,000 SF is mechanical and electrical support. There is 100 percent backup for M/E systems, including a UPS system, emergency power generators, and a halon fire suppression system. Shearson Lehman Brothers, New York, NY Mr. Ralston directed the project that included a sophisticated reliability program for a 750,000 SF computer operations center with 120,000 SF computer raised floors, and support facilities with uninterruptible and auxiliary power supply systems. The ten-story building is designed to utilize rejected heat from the computer area to heat the remaining 630,000 SF of office space. In addition to conventional service, the reliability program included risk analysis, system acceptance testing, training operators, and audits of critical O&M. Mr. Ralston managed and scheduled the mechanical subcontractors in completing construction and testing. He also directed evaluation, including budgeting and prioritization, of Shearson's space in the World Financial Center that supports its trading floors. Mr. Ralston directed A/E design, and construction during the corrective work. J. P. Morgan Services Inc., Stanton, DE Mr. Ralston managed a full reliability program for this 300,000 SF facility that included a 110,000 SF data center, operations center, and commons building. Fast-tracked in ten bid packages, bought out in separate contracts for each trade by the construction manager, the project was completed within 30 months.

Alexander H. Ralston, Jr., PE

Director of Special Projects

TKLP

**Relevant
Experience/
Qualifications
(cont'd)**

Bank of New York, New York City, NY

Mr. Ralston directed A/E services for numerous design/build projects including locations in Wilmington, DE; Secaucus, NJ; Harrington, NY; and New York, NY. The Wilmington study involved determining feasibility of fitting out leased space for 10,000 SF of computer facilities.

Philadelphia Savings Fund Society Philadelphia, PA

Mr. Ralston directed the strategic facilities study that resulted in purchase of a 30-year-old former newspaper publication building for use as a corporate data center. He directed five mechanical contractors in testing the existing building systems to identify deficiencies needing corrections, and assisted in managing construction close-out, testing, and owner occupancy. TKLP provided A/E design, documentation, and construction administration services for the renovation of the 400,000 SF space. Requiring a highly-sophisticated communications and computer network, and flexibility in specialized office areas, the facility contains 36,000 SF of computer area supported by a UPS system and emergency generator power supply; and raised floors throughout for complete flexibility in relocating utilities.

International Monetary Fund, Permanent Data Center, Washington, DC

Expansion and refit-out of 11,000 SF data center for Burroughs A15 mainframe, IBM 3081 mainframe and two new 9370 mainframes. Mr. Ralston conducted a risk analysis of the building systems and the impact of phasing of construction with ongoing computer operations to double the computer floor area. A reliability plan was developed and followed during design and construction that kept the computers operational.

General Electric Information Systems Company, Brook Park, OH

Mr. Ralston directed a reliability program, including risk analysis, reliability plan, system testing, and system operating manuals, for a 42,000 SF facility to house 36,000 SF of electronic data processing operations. Design includes environmental systems for computers and support systems, three 1,100 KW diesel generators, and a UPS system.

Union Carbide, Linde Division, Danbury, CT

Mr. Ralston managed the design and performed construction project management for a 40,000 SF computer operations center for the Linde Division at the Danbury site. The relocation required suitable renovation of warehouse/manufacturing facilities to house 8,000 SF of computer area. His team commissioned and tested the reliability of the facility.

Viacom International, Inc., New York, NY

To relocate and expand Viacom's 11,000 SF data operations center, Mr. Ralston provided building evaluations of six sites, and performed design and project construction management services for the chosen location. The facility used a 3090-200 series system and included a UPS system with battery backup and auxiliary power generation.

Society Corporation, Cleveland, OH

Mr. Ralston evaluated the interrelationship of Society Corporation's power distribution system with that of Cleveland Electric Illuminating's switching yard distribution system to avoid shutdowns at the 100,000 SF operations center.

Morgan Stanley, Brooklyn Heights, NY

Mr. Ralston directed the reliability program and building evaluation for Morgan Stanley's new Brooklyn and existing Manhattan computer centers. Risk analysis, reliability plan, testing of base building and tenant fit-out, established the operating criteria for the landlord, O&M manuals, training, and audits.

Alexander H. Ralston, Jr., PE

Director of Special Projects

TKLP

Societies	American Society of Heating, Refrigerating and Air Conditioning Engineers National Society of Professional Engineers, Pennsylvania Chapter International Society of Pharmaceutical Engineers, Chairman of 1990 conference International Association of Corporate Real Estate Executives Uninterruptible Uptime Users Group, Board Member
Publications	Author of several papers published in ISPE and BOMA publications including: "Planning for Commissioning and Validation of Pharmaceutical Building Systems," <i>Pharmaceutical Engineering</i> , ISPE Journal, July/August 1988. "Construction Pre-planning in the Age of Automation," <i>Building Operating Management Magazine</i> , September 1985. Interviews in <i>Computerworld</i> and other international technical newspapers
Speaking Engagements	Invited speaker, Merck & Co. Technical Symposium, 1991; and many ISPE and other symposia Invited speaker at RAMS Convention for Reliability and Operations
Civic Activities	Sixteenth through 34th Community Association, Ocean City, NJ Alumni career night speaker, Drexel University

J. Patrick Carpenter, PE

Senior Engineering Principal

TKLP

Education	Bachelor of Science in Mechanical Engineering, University of Pennsylvania, 1976
Registration	1976, Professional Engineer: Pennsylvania and New Jersey
Years Experience	With TKLP: 23 With Other Firms: 0
Responsibilities	Mr. Carpenter joined TKLP in 1969 as a project engineer and has functioned as Project Manager, Chief HVAC Engineer, and Director of Mechanical Services. As Senior Engineering Principal, his role is particularly significant during conceptual phases of engineering for analysis and development of mechanical-system configurations and arrangements. During this phase, design solutions can be developed most effectively when balanced with considerations for function, operation, safety, cost, and flexibility.
Reason Selected for this Project	Mr. Carpenter will be the senior engineering designer for the project team. He will help in developing master plan and programming engineering issues; provide hands-on leadership of the design effort; create design solutions that appropriately address aesthetic, environmental solutions within budget requirements. Mr. Carpenter is a part of the team because of his expertise on computer and other high-technology and energy-intensive facilities. His work on projects and with professional organizations has entailed environmental optimization, and operational effectiveness as they impact both energy use in buildings and effective owner start-up and commissioning. Mr. Carpenter has developed many mechanical systems concepts for computer/office facilities and has performed extensive analysis of central mechanical plant configurations including building and site distribution of heating, cooling, water, drainage; and fire safety utilities required for master planning multi-building facilities. He has also performed detailed energy analyses for both site development and system optimization.
Relevant Experience/Qualifications	Much of Mr. Carpenter's valuable expertise derives from his exposure to the complexity and variety of projects designed by TKLP, each with unique opportunities and constraints. His project experience includes the following: Conrail Corporation, Philadelphia, PA Full A/E design, documentation, security, and interior design services for a 121,000 SF facility hardened against man-made and natural disasters. Included are a 40,000 SF raised floor computer room and 20,000 SF raised-floor office space. U.S. Army Corps of Engineers, Information Systems Facility, Fort Belvoir, VA This 92,500 SF computer facility is designed to accommodate 24-hour service for telecommunications, automation systems, visual information, records management, and printing and publication. The facility is meant to accommodate an anticipated growth of more than 230 percent in the Fort's requirements. United Airlines, Denver, CO A 115,000 SF centralized computer center to support UAL's Apollo Airline reservation system, which is in operation 24 hours a day, seven days a week. All of this space is raised-floor space: 57,000 SF for computer hardware; 17,000 SF for office functions attached to the computer operations; 11,000 SF for miscellaneous support functions; and the remaining 30,000 SF for mechanical and electrical support. The facility is designed with 100% backup for the mechanical and electrical systems, including a UPS system and emergency power generators.

J. Patrick Carpenter, PE**Senior Engineering Principal****TKLP****Relevant
Experience/
Qualifications
(cont'd.)****Glaxo Inc., Research Triangle Park, NC**

Mechanical and electrical design of a 91,000 SF, three-story building housing centralized data processing operations that support pharmaceutical research operations as well as general administrative functions; 43,000 SF are computer rooms, and the remaining space accommodates computer-support functions. The entire facility has raised floors throughout for convenient access and flexibility in accommodating growth and change. The UPS system and emergency power generators are sized to provide 15 minutes of backup power for 100% of the equipment.

**U.S. Army Corps of Engineers, Intelligence and Security Command (INSCOM)
Fort Belvoir, VA**

This secure administrative headquarters facility consists of 230,000 SF designed for extensive use of computers. Raised floors throughout the facility provide convenient access and great flexibility for electrical/electronic/communications distribution systems. The 40,000 SF computer center and other critical operations areas are supported by a UPS system and emergency power generation. The design incorporates extensive measures to guard against physical and electronic intrusion, including fencing, road bends, vehicle barriers, TEMPEST shielding, "white sound" barriers, and interior-door access control.

Merrill Lynch & Company, Staten Island, NY

Design of 200,000 SF high-reliability and high-security computer disaster recovery center and Teleport to back up Merrill Lynch's computer operations worldwide. The 100,000 SF computer operations area has raised-access floors throughout and is supported by a UPS system and emergency power generators.

**US Army Corps of Engineers, Forces Command and Control Center (FORSCOM)
Fort McPherson, GA**

A/E design, documentation and construction administration for a 356,400 SF secure facility which contains a 15,000 SF computer operations area. Raised floors are provided throughout the facility for maximum flexibility in the configuration of computers and the electrical/electronic/communications system. Operational reliability of the computers and utility support systems is provided by a UPS system and emergency power generation. Fire protection is provided by sprinklers and a dry halon 1301 full-flooding system. There are extensive measures to maximize security against physical and electronic intrusion, including vehicle barriers, fencing, TEMPEST shielding, "white sound" barriers, vaults, and interior access control.

Merrill Lynch & Company, Princeton, NJ

Master plan for a 1,800,000 SF corporate campus located on a 276-acre tract. Design for Phase I - A 1,000,000 SF administration and conference-training center facility containing 15,000 SF of raised floor area for a computer/telecommunications center, conference/seminar rooms, dining facilities, sleeping accommodations, and recreational facilities. The central plant includes 3,350 tons of refrigeration, 22.9 MMBH of steam and hot water boilers, and 1.6 MW of emergency power.

J.P. Morgan Services Inc., Stanton, DE

A 300,000 SF facility containing a data center, operations center, and commons building. The 100,000 SF data center computer room is provided with central air-conditioning systems, air humidification, smoke removal, and halon purge. Complete design and construction phase services for intrusion detection, access control, and closed-circuit television systems included a supervisory computer system for coordinated operator interaction with all security and life safety systems from either of two security consoles. The facility is served by a UPS system and emergency generators.

J. Patrick Carpenter, PE

Senior Engineering Principal

TKLP

**Relevant
Experience/
Qualifications
(cont'd.)**

Shearson Lehman Brothers, New York, NY

Mechanical and electrical design and construction administration for a 720,000 SF information service facility with 120,000 SF of computer area and 260,000 SF of raised floor area for convenient access and flexibility in electronic/communications distribution. The telecommunications and data communications systems use fiber optics with high redundancy and flexibility at local switching levels. Backup for the electrical systems is provided by six separate power feeds, a UPS system, and 12 MW auxiliary power available from on-site emergency generators. Water storage tanks with a 200,000 gallon capacity are available to supply the cooling towers in the event of water failure. Chiller capacity is 4,000 tons. Rejected heat from the computers and support machinery heat the almost 600,000 SF of administrative office spaces. Pre-action sprinklers and a dry-halon 1301 full-flooding system provide fire protection.

Philadelphia Savings Fund Society, Philadelphia, PA

A/E design, documentation, and construction administration for renovation of 400,000 SF of a 600,000 SF former newspaper publication building for use as a corporate administrative and computer operations center. The center required a highly-sophisticated communications and computer network and flexibility in the specialized office areas. The facility contains 36,000 SF of computer area supported by a UPS system and emergency power supply. It has raised floors throughout for complete flexibility in relocating utilities.

Union Carbide, Linde Computer Operations Center, Danbury, CT

Retrofit of a 40,000 SF existing industrial facility to an electronic office with 8,000 SF computer floor with dual electric service, and UPS/battery.

Automatic Data Processing, Inc., Roseland, NJ

Built in two phases, this 320,000 SF office building serves as the administrative headquarters. The structure, containing four stories with two atriums, features large open-plan office space for maximum flexibility. An 8,000 SF computer room on raised floor serves as an R&D-type computer facility and supports the headquarters-related functions. On the first floor, a cafeteria and kitchen accommodates 1,100 employees. Mr. Carpenter was involved with the Phase I activities for this project.

IBM, Franklin Lakes, NJ

Addition of 300,000 SF of general office space to an existing building, including 20,000 SF of computer facilities.

Prudential Insurance Company, Roseland, NJ

This 424,000 SF satellite office building contains, in addition to administrative offices, a conference and training center, cafeteria, and a 5,000 SF computer center. This is the fourth such facility designed by TKLP for Prudential.

International Monetary Fund, Headquarters Office Building, Washington, DC

The 1,066,000 SF Phase I building consists of offices, executive suites, business and legal libraries, board rooms, lounges, conference rooms, and eating areas. A concourse beneath the building houses several service functions, the joint computer center, and a four-story parking garage. Phase II added 265,000 SF in a 17-story reinforced concrete office structure with 4-stories of parking below grade. The building contains two large conference rooms which are connected by means of a telecommunications system linking it to a second "overflow" meeting room, a library and additions to the computer room. Phase III will add 410,000 SF, consisting of 250,000 GSF located in 13 stories plus penthouse above grade, and 160,000 GSF distributed on six levels below grade.

J. Patrick Carpenter, PE**Senior Engineering Principal****TKLP****Relevant
Experience/
Qualifications
(cont'd.)****Exxon Corporation, Florham Park, NJ**

A 265,000 SF computer center containing 28,000 SF of computer operations area with raised floors throughout. Two utility feeds, 60-HZ and 415-HZ UPS systems, and three 1070- KW emergency generators provide backup for the critical electrical systems.

Cargill, Inc., Minnetonka, MN

A 560,000 SF office building, which serves as the administrative headquarters. The four-story building contains a computer center and dining facilities. Phase II of the project added 160,000 SF to the original building and provides offices and a 300-seat expansion of the cafeteria.

Alco Standard Corporation, Valley Forge, PA

Master plan and design of new corporate headquarters planned for development in three phases: Phase I contains 110,000 SF, Phase II contains 50,000 SF, and Phase III contains 100,000 SF. There is also a 30,000 SF data processing center as part of the facility.

National Security Agency, Ft. George Meade, MD

Energy management services for a 2.5 million SF multi-building energy-intensive governmental complex which included many computer and laboratory facilities. Mr. Carpenter's responsibilities as project engineer included coordination and management of field survey, computer simulation, engineering evaluation and retrofit recommendations (based upon life-cycle cost analysis) to reduce energy consumption.

Drexel University, Philadelphia, PA

This two-phased project included the following components:

- **The Bennett S. LeBow Engineering Center** — A/E design, documentation, and construction administration for this five-story, 68,000 SF engineering laboratory building which includes CADD and other computer facilities, instructional and office spaces, and various support systems.
- **Center for Automation Technology** — A/E design, documentation, and construction administration for a five-story, 58,000 SF facility. Its integrated automation laboratory suite includes a manufacturing test cell; biochemical engineering, semiconductor engineering, and catalysis and reaction engineering laboratories; classrooms; and offices.

Societies

International Society of Pharmaceutical Engineers (ISPE)

Institute of Environmental Science (IES)

American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE, member since 1983), with active participation on many Technical and Standard Project Committees including the following :

TC-1.5	Computer Applications
TC-2.5	Air Flow Around Buildings
TC-4.1	Load Calculations
TC-4.7	Energy Calculations
TC-9.BC	Building Commissioning

**Speaking
Engagements**

Mechanical Design in High-Reliability Computer Spaces, Uninterruptible Uptime Users' Group (UUUG) Conference, 1991

Tradelines, regarding facility renovation, 1987 and 1988.

Gerald W. Fink, PE

Project Manager

TKLP

Education	Undergraduate work at Widener University and Drexel University, 1973, 1980 Certificate in Management Program, Villanova University, 1990 Total Quality Management Courses, The Pennsylvania State University, 1990
Registration	1988, Professional Engineer: Pennsylvania
Years Experience	With TKLP: 2 With Other Firms: 14
Responsibilities	Mr. Fink's project responsibilities include all facets of project engineering and management for a diverse cross-section of facility-related projects, including data centers, pharmaceutical, industrial, research and development facilities, and premium office space. He has managed multi-disciplined project teams including architects, interior designers, and HVAC, plumbing, mechanical, instrumentation, life safety, electrical, structural, civil, and estimating engineers, as well as outside consultants.
Reason Selected for this Project	Mr. Fink has management skills and expertise on research facilities and renovation projects through the programming, master planning, design and construction phases. His track record includes significantly relevant projects for major private sector corporations. His lab experience focuses on pharmaceutical research and development as well as high-tech electronics research.
Relevant Experience/Qualifications	TKLP projects for which he served as project manager include: Cornell University, Ithaca, NY A conceptual study of a 250,000 SF historically-recognized laboratory for hood exhaust upgrades, correction of fume reingestion and supply air handler replacement. The study includes: conceptual design of recommendation and a cost estimate to establish capital funding. The wind tunnel testing of the building and adjacent site conditions provided quantitative data on effectiveness of proposed solutions. Bristol-Myers Products, A Division of Bristol-Myers Squibb Company, Morrisville, NC Mr. Fink was project manager for the programming, planning, design and construction phases of this production facility project consisted of the following components: • 8,000 SF renovation for manufacture of solid dosage (tablet) product including tableting and blow moulding for bottles. • Expansion of 145,000 SF and renovation to 40,000 SF of existing facility. The project moves production of the "over the counter" product line (deodorant and cough syrup) from a plant being closed. This project includes construction of five process centers, five packaging lines, central pharmacy, tank farm, moulding and decorating, renovation and expansion of quality assurance laboratory, warehouse, office, and administration function. While employed as a project manager for another firm, Mr. Fink was involved the following client projects: Shared Medical Systems Inc., Great Valley, PA A MEP reliability study for 35,000 SF IBM beta site computer center and the related 40,000 SF of operations center. Financial Automation Corporation of Philadelphia, Philadelphia, PA A computer center systems analysis for M/E of data center. Analysis addresses condition, capacity and reliability.

Gerald W. Fink, PE

Project Manager

TKLP

**Relevant
Experience/
Qualifications
(cont'd.)**

E.I. du Pont de Nemours & Co., Inc., Wilmington, DE

The retrofit of centralized laboratories in a 54,000 SF chemical R&D building, this project included design of variable air volume controls for primary and standby exhaust fans, a hood exhaust system for 150 hoods, installation of 25-foot-high exhaust stacks and room pressurization controls. The project included the installation of a 60,000 CFM air-handling system serving 18,000 SF of chemical R&D laboratories, as well as construction of a new penthouse and the routing of utilities up through the building. It also involved the design of a dedicated low-temperature chiller and air-handling system serving 1,000 SF, 500 MHz NMR room and NMR/mass spectrometer instrumentation laboratories.

Merck & Co., Inc., Merck, Sharp & Dohme Research Laboratories, West Point, PA

This project involved the design of the HVAC system for a 6,000 SF animal laboratory and coccidiosis pilot plant including special air-filtration and room-pressurization criteria, and structural and electrical support. It also involved the replacement of a HVAC unit serving 14,000 SF of medical chemistry research laboratories and upgrades of the controls, ductwork distribution, and exhaust systems. Mr. Fink also performed a study evaluating condition, capacities, and shortcomings of the HVAC system serving a 50,000 SF multi-story office building. The recommendations are currently being implemented in a full design. Further work involved the installation of an 80-ton air-cooled, low-temperature process cooling packaged chiller and related glycol holding tanks and pumps. The building remained operational during the construction. Finally, Mr. Fink was involved in the design of the HVAC system, lighting and electrical power distribution, and fire protection for a 6,000 SF automated material handling test facility.

GE Astrospace, Princeton, NJ

Analysis of the HVAC systems supporting satellite assembly areas and bench acceptance testing laboratory. The analysis determined the causes for environmental shortcomings which placed the rooms outside of NASA specifications. Potential single point failures were also identified. Subsequent projects included appropriation grade cost estimates for the addition of 1,200 tons of chiller plant, design of remedial modification to the chiller plant, and design of the environmental systems for a 2,000 SF computer center serving satellite testing and validation.

In his experience prior to TKLP, Mr. Fink was also project engineer and assistant project manager for the following client projects:

Pepper, Hamilton and Scheetz, Philadelphia, PA

Tenant fit-up of 170,000 SF of law space in Two Logan Square. Included were the addition of a state-of-the-art telecommunications system and supplemental air-conditioning equipment for the 3,000 SF computer center.

Reed, Smith, Shaw & McCay, Philadelphia, PA

Tenant fit-up of 75,000 SF in One Liberty Place. The project included after-hours cooling of the computer room, conference rooms, and word processing and printing/production areas. Structural design was provided for monumental stair and reinforcement of floors as needed.

General Accident Insurance Company, Philadelphia, PA

Design of environmental systems for 11,5000 SF of computer center relocation, including a 300-ton chiller plant. The project also involved renovation of existing vacated computer rooms to accommodate the addition of laser printers and paper storage.

Societies

International Society of Pharmaceutical Engineers (ISPE)

Michael J. Timmons**Reliability Project Manager****TKLP**

Education	Bachelor of Science in Mechanical Engineering, Drexel University, 1977 Business Administration Studies, Temple University Industrial Ventilation Seminar, Michigan State University		
Years Experience	With TKLP: 7	With Other Firms: ??	
Responsibilities	As a project manager, Mr. Timmons is responsible for A/E design, system commissioning, construction project management, and building turn-over. Working in cooperation with the project design principal, he coordinates all disciplines through all stages of the project. As the client's primary contact, Mr. Timmons participates in all client meetings and presentations to ensure continued understanding of the client's needs. In particular, he organizes and conducts strategy sessions with facility engineering and user groups to ascertain the philosophy and real needs of the site utility systems such as reliability, availability, flexibility; and operating and construction costs. He also organizes and schedules mechanical and electrical closeouts of construction to ensure that the finished work is in accordance with the contract documents. This may entail witnessing equipment and system tests and training.		
Reason Selected for this Project	Mr. Timmons' twenty years of construction contracting experience has given him invaluable experience in dealing with design and constructability issues. He was project manager for the following projects:		
Relevant Experience/Qualifications	Shearson Lehman Brothers, New York, NY Prepared reliability program for a 750,000 SF computer center which includes 120,000 SF of computer equipment and machine space. Mr. Timmons managed a program to implement risk analysis and a reliability plan, produced systems O&M manuals, tested building critical systems and design, and implemented tenant fit-out of critical systems. He also managed eight M&E contractors to change the completion focus of the construction from peak occupancy to system completion including testing. Computer support facilities include an uninterruptable power supply (UPS) system and an auxiliary power supply system. Rejected heat from the computers and support equipment is available to heat the additional 600,000 SF of administrative office space in the building. Morgan Stanley, Brooklyn Heights, NY Mr. Timmons was project manager for the TKLP Reliability Program for a 90,000 SF computer center. The program included risk analysis, reliability plan, testing of base building and tenant fit-out critical systems, O&M manuals, training and periodic audits. United Airlines, Denver, CO Mr. Timmons prepared a reliability program for a 115,000 SF highly sophisticated, secure computer operations center with raised floors, a UPS system, emergency power generation, and a halon fire suppression system and a 2,250 ton mechanical refrigeration chilled water plant. International Monetary Fund, Washington, DC Expansion and refit-out of an 11,000 SF data center for Burroughs A15 mainframe, IBM 3081 mainframe, and two new 9370 mainframes. The program included an analysis of building systems, and development of a strategy for design and construction of the building systems critical to the impact of phasing of construction on ongoing operations. Viacom International, New York, NY Site selection, design, and project construction management to relocate and expand Viacom's 10,000 SF data operations center. The facility utilized a 3090-200 series system and included a UPS system with battery backup and auxiliary power generation.		

Michael J. Timmons

Reliability Project Manager



**Relevant
Experience/
Qualifications
(cont'd.)**

Philadelphia Savings Fund Society, Philadelphia, PA

Commissioning and construction closeout for the renovation of 400,000 SF of an existing building to serve as a computer operations center. The facility contains 36,000 SF of computer operations area supplied with UPS system and emergency generator, a technical support area, and a tape library.

As project manager for a previous employer, a major Philadelphia-based mechanical contractor, Mr. Timmons was responsible for managing the construction and contractor engineering responsibilities for the construction of the HVAC systems for the Hope Creek Nuclear Power Plant project. This HVAC contract, worth approximately \$60 million over a five year period, involved the management of over 300 craftsmen and 50 engineering, planning, quality control and administrative personnel plus the coordination of field and shop fabrication activities.

Robert N. Kennedy, PE **Associate / Manager of Project Controls & Chief Cost Estimator**



Education	Master of Science in Civil Engineering, Drexel University, 1979 Bachelor of Science in Civil Engineering, Drexel University, 1974
Registration	1979, Professional Engineer: Pennsylvania
Years Experience	With TKLP: 10 With Other Firms: 7
Responsibilities	Mr. Kennedy is responsible for the development and coordination of project-related cost control including estimating, scheduling, planning, and cost reporting. This includes assistance to consultants and engineering project management in cost and schedule planning for cash flow projections and strategic facility analyses. His work has included cost evaluations and comparisons of alternative options including new construction, upgrade of existing facilities, and retro-fit of existing properties. The Critical Path Method of scheduling is used for design and engineering activities which are monitored and reported on to ensure timely completion of the project. Three milestone cost estimates are prepared to guide each successive step of design and documentation.
Reason Selected for this Project	Mr. Kennedy's relevant project controls experience include data centers, office complexes, R&D, and government agencies. TKLP projects on which Mr. Kennedy has provided these services include:
Relevant Experience/Qualifications	J.P. Morgan Services Inc., Operations Center I & II, Stanton, DE Complete interior design services for a 300,000 SF facility including the data center, which provides data processing and communications network services; the operations center, which accommodates large clerical operations using desktop computers; the commons, which contains shared facilities such as dining areas and administration; and the central plant, which houses utility and support services. TKLP is currently working on Phase II, a 105,000 SF computer and operations facility. Shearson Lehman Brothers, New York, NY A 720,000 SF operations center with 120,000 SF of computer area and 260,000 SF of raised floor area for convenient access and flexibility in electronic/communications distribution. The telecommunications and data communications systems use fiber optics with high redundancy and flexibility at local switching levels. United Airlines, Reservations Center, Denver, CO A 115,000 SF centralized computer center to support UAL's Apollo Airline reservation system, which is in operation 24 hours a day, seven days a week. The entire space is raised-floor: 57,000 SF houses computer hardware; 17,000 SF accommodates office functions attached to the computer operations; 11,000 SF is allotted for miscellaneous support functions; and the remaining 30,000 SF houses mechanical and electrical support. International Monetary Fund, Headquarters Office Building, Washington, DC The 1,066,000 SF Phase I building consists of offices, executive suites, business and legal libraries, board rooms, lounges, conference rooms, and eating areas. A concourse beneath the building houses several service functions, the joint computer center, and a four-story parking garage. Phase II added 265,000 SF in a 17-story reinforced concrete office structure with 4-stories of parking below grade. The building contains two large conference rooms which are connected by means of a telecommunications system. Phase III will add 410,000 SF, consisting of 250,000 GSF located in 13 stories plus penthouse above grade, and 160,000 GSF distributed on six levels below grade.

Robert N. Kennedy, PE

Associate / Manager of Project Controls & Chief Cost Estimator

TKLP

**Relevant
Experience/
Qualifications
(cont'd.)**

Glaxo Inc., Pharmaceutical R&D Complex, Research Triangle Park, NC

This 1,500,000 SF facility includes the 326,000 GSF administration building. A state-of-the-art facility with raised access flooring and prewired electrical bases for power, data, and communications devices, the building contains executive suites, a 400-seat auditorium/conference center, a library, and a cafeteria, and features a four-story atrium at its hub.

Pittsburgh National Bank, Computer Center, Pittsburgh, PA

A 110,000 SF facility with 44,000 SF of raised floor area for computer operations.

Guardian Life Insurance Company, Appleton, WI

A three-story regional office building which encompasses the phased construction of 200,000 SF of open office space, a cafeteria, and a computer room.

Merrill Lynch & Company, Princeton, NJ

A master plan study for a 1,800,000 SF corporate campus located on a 276-acre tract. Phase I was the design of a 1,000,000 SF administration/conference training center facility which contains 15,000 SF of raised-floor area for a computer/telecommunications center, conference/seminar rooms, dining facilities, sleeping accommodations, and recreational facilities. The Phase II addition includes 350,000 SF of office space.

Guardian Life Insurance Company, Spokane, WA

A three-story regional office building which encompasses the phased construction of 200,000 SF of open office space, a cafeteria, and a computer room.

Viacom International, Rutherford, NJ

Fit-out of 11,000 SF of existing computer facilities. Existing raised floor and mechanical and electrical services were used whenever possible.

U.S. Army Corps of Engineers, Fort McPherson, GA

A 356,420 SF secure facility for the Forces Command and Control Center (FORSCOM). It contains: 15,000 SF of computer operations area; raised floors throughout for maximum flexibility in the extensive use of computers; an uninterruptible power supply system; and emergency power generation. The building will serve as administrative headquarters for all army posts worldwide.

Union Carbide, Danbury, CT

Strategic facility study for selecting Tarrytown site and moving major locations to headquarters. Retrofit of a 40,000 SF existing industrial facility to electronic offices featuring 8,000 SF of computer floor with dual electric service and UPS/battery. TKLP managed the construction, integrating the move of computer equipment and start-up, and delivered the project on schedule and under budget.

Philadelphia Savings Fund Society, Philadelphia, PA

Strategic facility study which resulted in the purchase and renovation of a 400,000 SF former newspaper production building for use as a corporate data center requiring a highly-sophisticated communications and computer network and flexibility in the specialized office areas. The facility contains 36,000 SF of computer area supported by a UPS system and emergency power supply; it has raised floors throughout for complete flexibility in relocating utilities.

U.S. Naval Facilities (NAVFAC) Engineering Command, Northern Division (NORDIV), Ships Parts Control Center, Mechanicsburg, PA

A 100,000 SF data processing facility with more than 61,000 SF of space for computer hardware, supported by an uninterruptible power supply system and emergency power generators. This high-security complex contains tape libraries and a communications vault

Robert N. Kennedy, PE

Associate / Manager of Project Controls & Chief Cost Estimator

TKLP

**Relevant
Experience/
Qualifications
(cont'd.)**

with power shielding. Support facilities include a printing plant, utility space, and locker rooms.

Guardian Life Insurance Co., Bethlehem, PA

This 100,000 SF regional office building accommodates about 600 employees. Each workstation has its own terminal and the raised floor system used throughout for electronic/communications distribution to provide convenient access and maximum flexibility and efficiency in accommodating future changes. The ground floor consists of 10,000 SF of computer space.

Automatic Data Processing, Inc., Roseland, NJ

Architectural, engineering, and interior design of a 340,000 SF office building to serve as the administrative headquarters for this large computer services corporation. Built in two phases, the four-story structure contains two atriums and features large, open-plan office space for maximum flexibility. A 12,000 SF computer room on raised flooring supports headquarters-related functions and research and development. The 191,000 SF Phase I included a 300-seat cafeteria and kitchen to accommodate 1,400 employees and surface parking for 1,300 vehicles. During Phase II, 149,000 SF of additional office space was constructed on a fast-track schedule.

E.I. du Pont de Nemours & Co., Inc., Wilmington, DE

A 180,000 SF corporate computer center that contains 90,000 SF of computer operations area with a UPS system and emergency generator. The facility also contains offices, a technical support area, and a tape/record storage area.

Exxon Corporation, Florham Park, NJ

A 265,000 SF computer center containing 28,000 SF of computer operations area with raised floors throughout.

General Electric Company, Brook Park, OH

A 42,000 SF facility containing 36,000 SF of computer operations area with raised floors for convenient access and flexibility. The design includes environmental systems for computers and support systems, three 1100-KW diesel-powered emergency generators, and a UPS system.

General Electric Company, Rockville, MD

A 565,000 SF office complex for the Computer Operations Division. The complex contains a 200,000 SF computer center supported by a battery-powered UPS system (both 60-HZ and 415-HZ) and four 900-KW diesel-powered emergency generators.

Alco Standard Corporation, Valley Forge, PA

A corporate headquarters planned for development in three phases: Phase I contains 110,000 SF, including 10,000 SF of computer operations area. Phase II will contain 50,000 SF; and Phase III, 100,000 SF.

Thomas E. Reed, PE

Associate / Chief Instrumentation Engineer

TKLP

Education	Bachelor of Science in Electrical Engineering, Pennsylvania State University, 1981
Registration	1986, Professional Engineer: Pennsylvania, Maryland, Connecticut, and New Jersey
Years Experience	With TKLP: 11 With Other Firms: 0
Responsibilities	As Chief Instrumentation Engineer, Mr. Reed is responsible for the supervision of all engineering and design of the instrumentation systems for a project. He is involved with early conceptual engineering, analysis and development of the following systems: control and automation; data acquisition; facilities management; security; fire alarm; and voice and data communications. Throughout all phases of design and documentation, Mr. Reed is responsible for concept engineering, design, and in-process quality control for all instrumentation projects.
Reason Selected for this Project	He is proposed for the team for his proven ability to oversee all high-tech automation and special systems aspects of a project simultaneously to achieve appropriate design decisions and coordination. Projects on which he has worked include:
Relevant Experience/Qualifications	Conrail Corporation, Philadelphia, PA Full A/E design, documentation, high-security, and interior design services for a 121,000 SF hardened facility against man-made and natural disasters. Included are a 40,000 SF raised floor computer room and 20,000 SF raised-floor office space. U.S. Army Corps of Engineers, Information Systems Facility, Fort Belvoir, VA This 92,500 SF computer facility is designed to accommodate 24-hour service for telecommunications, automation systems, visual information, records management, and printing and publication. The facility is meant to accommodate an anticipated growth of more than 230 percent in the Fort's requirements. Johnson & Johnson, Management Information Center, Raritan, NJ Expansion and renovation of a 74,500 GSF computer facility located on a 33-acre wooded site. Included are A/E design and documentation of a two-story office building addition to house a 52,500 SF cafeteria and renovation of 29,250 SF in the existing MIC for expansion of the raised floor computer area and Live For Life fitness facility. Shearson Lehman Brothers, New York, NY M/E design and construction administration for a 720,000 SF operations center with 120,000 SF of computer area and 260,000 SF of raised floor area for convenient access and flexibility in electronic/communications distribution. The telecommunications and data communications systems use fiber optics with high redundancy and flexibility at local switching levels. Backup for the electrical systems is provided by six separate power feeds, a UPS system, and 12 MW auxiliary power available from on-site emergency generators. Water storage tanks with a 200,000 gallon capacity are available to supply the cooling towers in the event of water failure. Chiller capacity is 4,000 tons. Rejected heat from the computers and support machinery heat the almost 600,000 SF of administrative office spaces. Preaction sprinklers and a dry-halon 1301 full-flooding system provide fire protection. Sterling Winthrop Inc., Pharmaceuticals Research Division, Upper Providence Township, PA Master plan, A/E design and construction administration for a 1,500,000 SF pharmaceutical R&D facility that includes 1,000,000 SF of space for administration. The facility design solution for instrumentation systems included a complete Industrial Process Control (DCS) System combining data acquisition, control, FDA compliance monitoring, and facilities management functions. Integration of data with corporate MIS systems allowed for integration of

Thomas E. Reed, PE

Associate / Chief Instrumentation Engineer

TKLP

**Relevant
Experience/
Qualifications
(cont'd.)**

process and facility data with management information. The DCS system provided all control and monitoring of CGMP spaces and support utility equipment. A complete communications cabling system was designed using copper and fiber-optic-based media, connecting each workstation to a corporate communications backbone and public networks. A site-wide security and life safety system was designed, utilizing site and interior CCTV, access control, intrusion detection system, fire monitoring and alarming and emergency voice communications systems.

International Monetary Fund, Headquarters Office Building, Washington, DC

Architectural, engineering, and interior design and construction administration for this 1,066,000 SF headquarters which houses eating areas, offices, executive suites, business and legal libraries, board rooms, lounges, and conference rooms. Beneath the building is a concourse level housing several service functions and a four-story parking garage accommodating 800 cars. The Joint Computer Center servicing the needs of the Fund is also located in the concourse. The 265,000 SF Phase II addition was completed in 1983. Complete fire alarm system renovation currently underway (800 zones). TKLP is now completing master site and space planning for a proposed 100,000 SF computer facility and the Phase III addition of 450,000 SF which completes the full block complex. Oriented around a second atrium, the member nation offices are supported by dining and meeting facilities. Extensive landscaping and an enlarged visitor's center provide amenities to the Washington public as well as the Fund's Associates.

U.S. Army Corps of Engineers, Fort Belvoir, VA

This secure administrative facility for the Intelligence and Security Command (INSCOM) headquarters consists of 230,000 SF designed for extensive use of computers. Raised floors throughout the facility provide convenient access and great flexibility for electrical/electronic/communications distribution systems. The 40,000 SF computer center and other critical operations areas are supported by a UPS system and emergency power generation. The design incorporates extensive measures to guard against physical and electronic intrusion, including fencing, road bends, vehicle barriers, TEMPEST shielding, white sound barriers, and interior door access control.

Department of the Army, Office of Chief Engineers; and Department of the Navy, Naval Civil Engineering Laboratory

Developed EMCS Guide Specification for use by Department of Defense in the design and procurement of Energy Monitoring and Control Systems (EMCS) for both continental and outside the continental U.S.

Societies

Instrumentation Society of America (ISA); Senior Member
Education Committee Chairman (1990-1992)
Served on Board of Directors for Philadelphia Section – Treasurer (1991-92); Secretary (1990-91)
American Society of Heating Refrigerating & Air-conditioning Engineers

**Teaching
Experience**

Mr. Reed has personally assisted in the development and the ongoing instruction of EMCS inspection guidelines developed for the Army Corps of Engineers and participated in various other university graduate-level courses on instrumentation systems, such as "Automated Intelligence in Facilities" for Drexel University.

Publications

"Issues in Automation," ISA/ISPE Joint Conference, June 1991
"Communications Systems for Enhanced Business Services," *Commercial Renovation*, June 1991

E. Mitchell Swann, PE

Associate / Mechanical Services Engineer

TKLP

Education	Bachelor of Science in Mechanical Engineering, Drexel University, 1983
Registration	1981, Professional Engineer: Pennsylvania
Years Experience	With TKLP: 10 With Other Firms: 3
Responsibilities	As project engineer, Mr. Swann has served in the capacity of mechanical services engineer, acting as a technical guide to the HVAC, plumbing, fire protection and instrumentation project engineers. He is also responsible for analysis, development and selection of HVAC equipment and systems, and the overall coordination of mechanical and electrical disciplines, including technical specifications.
Reason Selected for this Project	Mr. Swann is assigned to the team because of his expertise on a wide variety of R&D facilities. He has designed mechanical systems for high-tech laboratories, animal facilities, pharmaceutical laboratories, computer areas, and office spaces.
Relevant Experience/Qualifications	Projects on which he has worked include the following: J.P. Morgan Services Inc., Stanton, DE Engineering and design of a 300,000 SF corporate operations center. The primary elements are the data center which provides data processing and communications network services; the operations center, which accommodates large clerical operations using desktop computers; the commons, which contains shared facilities such as dining areas, administrative offices, and lounges; and the central plant which houses utility and support services. The commons links the three-story data and operations centers, which have raised-access flooring throughout. The central plant, a separate structure connected to the main building by a utility tunnel, included on-site chilled water systems, cooling towers and emergency electrical power generation. Office areas were served with central station VAV air systems and the computer areas were handled by in-room chilled water data processing air conditioning units. Two utility feeds, a UPS system, and emergency power generation provide backup for the critical electrical systems. Pre-action sprinklers and dry halon 1301 provide fire protection. Mr. Swann was responsible for development of HVAC drawings and specifications, heating and cooling load calculations and review of relevant shop drawings. In addition, he served as the liaison to the mechanical disciplines in the field during the construction phase and did weekly inspection visits and reports. He was also involved in the final testing and certification of critical mechanical systems, as well as instructing the owner's personnel on system operation. Mr. Swann continued to provide engineering services to Morgan during renovation and upgrade projects on the site, including the addition of three water-cooled IBM processors and the conversion of 18,000 SF of equipment storage space into a training and conference center. Pittsburgh National Bank, Pittsburgh, PA Schematic design for a 110,000 SF central computer facility with 44,000 SF of raised floor area for mainframe and ancillary systems. Systems include a 1,000-ton chilled water plant, UPS system, on-site emergency power generation and halon fire suppression. The facility also includes 40,000 SF of office and support functions. IBM, Valley Forge, PA 70,000 SF renovation project of an existing office building with the addition of 15,000 SF of raised floor computer space. The mainframe computer space requires approximately 180

E. Mitchell Swann, PE

Associate / Mechanical Services Engineer

TKLP

**Relevant
Experience/
Qualifications
(cont'd.)**

tons of refrigeration including water-cooled central processing units.

Guardian Life Insurance Co., Phase II, Bethlehem, PA

The project scope called for the A/E design of a second 100,000 SF administrative office facility with 10,000 SF of computer operations area to the site. The building used a water-source heat pump loop with an electric boiler for supplemental heat and an existing cooling tower plant for a condensing medium. Mr. Swann supervised the mechanical system selection, design, and documentation, as well as construction phase field observations. In addition, during the construction phase of the project, Mr. Swann acted as the principal engineer for a renovation project in the kitchen/cafeteria portion of the Phase I Guardian building.

Merrill Lynch & Co., Princeton, NJ

Master plan for a 1,800,000 SF corporate campus located on a 276 acre tract. Design for Phase I - 1,000,000 SF administration/conference-training center facility contains 15,000 SF of raised floor area for a computer/telecommunications network services; the Operations Center, which accommodates large clerical operations using desktop computers; and the Commons, which contains shared facilities such as dining areas, administrative offices, lounges, etc. Mr. Swann's responsibilities included heating and cooling load analysis, equipment selection and system design. In addition, he developed energy models of the facility to determine annual energy consumption. The complex included an on-site central plant for both chilled and hot water, and emergency electrical power via diesel generators.

Societies

American Society of Heating Refrigerating, and Air Conditioning Engineers (ASHRE)
ASHRE, Vice-Chairman of Research Fund Committee (Philadelphia Chapter)
International Society of Pharmaceutical Engineers
Association of Energy Engineers

Tom Sarakasetrin, PE

Senior Electrical Engineer

TKLP

Education	Master of Science, Electrical Engineering, Lamar University, Beaumont, Texas, 1978 Bachelor of Science, Electrical Engineering, Chulalongkorn University, Bangkok, Thailand. 1974 Protective Relay Coordination and Power System Applications Seminar, General Electric Co., 1981
Registration	1985, Professional Engineer: Pennsylvania
Years Experience	With TKLP: 8 With Other Firms: 10
Responsibilities	Mr. Sarakasetrin is responsible for the engineering and design of electrical power and lighting distribution systems for various commercial buildings, computer centers, and industrial facilities. This includes designing of emergency power systems, UPS/battery systems and a data cabling system. He is also responsible for the development of material specifications and preparation of engineering calculations, and construction phase services.
Relevant Experience/Qualifications	Prior to joining The Kling-Lindquist Partnership, Inc., Mr. Sarakasetrin was a senior engineer for Bechtel Power Corp., Bechtel Petroleum, Inc., Fluor Engineers and Constructors, Inc., and Livingston Shipbuilding Co., during which time he was responsible for engineering, design, and construction of electrical power and lighting distribution, instrumentation, and control systems for refinery and chemical plants, pipeline pump stations, marine facilities, and nuclear power plants. The following lists representative projects on which he has worked: Merrill Lynch Teleport Data Center, Staten Island, NY This 200,000 SF facility is Merrill Lynch's largest and most sophisticated data center. It's ultimately 12 MVA network substation supports the computer processing and world-wide telecommunication. UPS systems and emergency generator plant are provided to assure a 24-hour uninterrupted operation. United Airlines/Apollo Center, Denver, CO Involved in field testing and operation manual write-up on the generator paralleling switchgears, the main switchboards and the UPS systems of the 150,000 SF new MIS computer center. Morgan Stanley - Pierrepont Building, Brooklyn, NY Involved in field testing on the major electrical equipment and the system reliability study for the 120,000 SF data processing facility. The Bank of New York, Newark, DE This office complex contains 125,000 SF which includes administrative, office area, cafeteria, computer facility, and a communications center. Southwestern States Bankcard Association, Newark, DE This office building contains 60,000 SF which includes administrative, office area, production facility, and a computer center. General Electric Co., Pittsfield, MA This executive office building contains 20,000 SF which includes administrative, executive office, board room, and AV equipment.

Tom Sarakasetrin, PE

Senior Electrical Engineer

TKLP

**Relevant
Experience/
Qualifications
(cont'd)**

Merrill-Lynch & Co., Somerset, NJ

This office complex contains 500,000 SF which includes administrative, office area, computer center, kitchen/cafeteria facility, and a communications center.

Armstrong Cork Co., Lancaster, PA

Production styling and design technical center which includes administrative, research, laboratory, styling and model, and computer center.

Barry L. Hutchinson Design Supervisor / Instrumentation, LifeSafety, &Security Systems**TKLP**

Education	Bachelor of Science in Electrical Engineering, Elysiion College, 1987 Burlington County College, Advanced Electronics Courses		
Years Experience	With TKLP: 12	With Other Firms:	20
Responsibilities	As security and fire systems specialist, Mr. Hutchinson is responsible for concepts, engineering and design supervision for instrumentation, information/communications/life safety and security systems.		
Reason Selected for this Project	Mr. Hutchinson has over 30 years of experience in the research, engineering and design of security, closed circuit television (CCTV), communications and fire alarm systems in addition to equipment used for the instrumentation and control of building comfort and process-related systems. Mr. Hutchinson also has extensive experience in systems concept and scope development of large facilities including program development, operational procedures review, threat analysis, security force operations and construction supervision. Mr. Hutchinson regularly conducts employee training seminars, and has for the past three years been an instructor for fire alarm and security systems design and application for an evening graduate class at Hahnemann University.		
Relevant Experience/Qualifications	The following is a partial list of major projects for which Mr. Hutchinson had responsibility for scope development, system engineering, design supervision and preparation of related specifications: J.P. Morgan Services Inc., Stanton, DE A 300,000 SF facility containing computer operations and computer support functions. Direct engineering and design responsibility included a 700-point direct digital, distributed processing control energy management system used to control facility chillers, air-handling equipment and pumping systems, a 620-zone life safety system using voice communication, a card access system consisting of 125 card readers and an extensive microprocessor-based CCTV system with 30 cameras and 26 system monitors. Merrill Lynch & Co., Princeton, NJ Master plan and design of a 1,800,000 SF corporate campus located on a 276-acre tract. The architectural concept of this project is that of a working village of conference rooms, offices, computer facilities, housing for 365 persons at a time, recreational areas, parking, and open spaces. The main thoroughfare, an enclosed pedestrian walkway, connects to smaller avenues that lead to major buildings. This rural-suburban setting suites the client's wishes for a corporate image that complements and respects the environment. Access flooring and task lighting, used throughout the office complex, lend maximum flexibility for relocating personnel and power and communications systems. The Phase I 1,000,000 SF conference/training facility includes 15,000 SF of raised-floor area for computers and telecommunications. The state-of-the-art conference/seminar rooms and 316-seat auditorium incorporate presentation capability for large and small groups. The facility offers a full-scale indoor fitness center, various types of dining facilities, and sleeping accommodations. The Phase II addition consists of 350,000 SF of office space and is now under construction. Exxon Corporation, Communications and Computer Sciences Center, Florham Park, NJ A 265,000 SF computer center containing 28,000 SF of computer operations area with raised floors throughout. Two utility feeds, 60-HZ and 415-HZ UPS systems, and three 1070-KW emergency generators provide backup for the critical electrical systems.		

Barry L. Hutchinson Design Supervisor / Instrumentation, Life Safety, & Security Systems



**Relevant
Experience/
Qualifications
(cont'd.)**

International Monetary Fund, Headquarters Office Building, Washington, DC

Architectural, engineering, and interior design and construction administration for this 1,066,000 SF headquarters which houses eating areas, offices, executive suites, business and legal libraries, board rooms, lounges, and conference rooms. Beneath the building is a concourse level housing several service functions and a four-story parking garage accommodating 800 cars. The Joint Computer Center servicing the needs of the Fund is also located in the concourse. The 265,000 SF Phase II addition was completed in 1983. Complete fire alarm system renovation currently underway (800 zones). TKLP is now completing master site and space planning for a proposed 100,000 SF computer facility and the Phase III addition of 410,000 SF.

Sterling Winthrop Inc., Pharmaceuticals Research Division, Upper Providence Township, PA

A complete security analysis and design for this 1,500,000 SF pharmaceutical R&D complex. The project included threat analysis and thorough technical review of security alarm, CCTV, and manufacturers' card access equipment to determine what was best suited to the project. Magnetic stripe, proximity, and Weigand card access technologies were considered. In addition to a complete security communications center, system equipment included 71 CCTV cameras with fiber optic video transmission, 100 card readers, and remote control of exterior gates.

Guardian Life Insurance Company, Regional Headquarters, Spokane, WA

A/E design, documentation, and construction administration for a three-story 200,000 SF office building to be built in two phases of 100,000 SF each. The design, which includes open office space, a cafeteria, and a computer room, provides for optimum flexibility in office planning by including access flooring with modular office partitions and furniture throughout the facilities.

Guardian Life Insurance Company, Regional Headquarters, Appleton, WI

A/E design, documentation, and construction administration for a three-story 200,000 SF office building to be built in two phases of 100,000 SF each. The design, which includes open office space, a cafeteria, and a computer room, provides for optimum flexibility in office planning by including access flooring with modular office partitions and furniture throughout the facilities.

Exxon Production Research Company, Houston, TX

A 1,100,000 SF complex containing research and development laboratories, administrative office and training and computer facilities. Responsibilities included engineering a design of multiplex life safety equipment, card access system, a large multi-camera CCTV system and an exterior perimeter site microwave system. Data communications for the above systems were engineered using state-of-the-art fiber optic technology due to complex size and losses normally involved with multiplex and RF transmission using coaxial cable. As with other projects, Mr. Hutchinson was responsible for original scope development, and for leading all interdisciplinary coordination for HVAC, electrical fire protection and mechanical design as related to sprinkler, halon and air-handling systems that are interfaced with the life safety system.

IBM Office Products Division Headquarters, Franklin Lakes, NJ

This project involved a 300,000 SF (Phase II) addition designed for energy conservation. It is situated so that indirect sunlight reduces artificial light requirements and reduces the amount of energy needed to maintain the addition. The Phase I building contained a large computer facility which required an unusually large cooling system. This system was engineered so that the recovery of the large volume of 105° water could be used to heat the new addition.

Societies American Society for Industrial Security

John Forcina, EIT

Mechanical Engineer

TKLP

Education	Bachelor of Science, Commerce and Engineering, Drexel University, 1987
Registration	EIT, Plumbing / Process Piping Engineer: Pennsylvania
Years Experience	With TKLP: 4 With Other Firms: 0
Responsibilities	As project engineer, Mr. Forcina will be responsible for all plumbing and fire protection issues for specific buildings. A part of his responsibilities will include coordinating his work with the other engineering disciplines, and to make sure the designs adhere to all applicable codes and regulations.
Reason Selected for this Project	Mr. Forcina has experience in the design of plumbing and fire protection systems on a variety of projects for the public and private sector. These include:
Relevant Experience/Qualifications	Merrill Lynch & Co., Staten Island, NY A/E design and documentation of 130,000 SF, high-reliability and high security computer center at Teleport to back up Merrill-Lynch's computer operations worldwide. Preaction sprinklers, wet pipe sprinklers and Halon 1301 provide fire protection for the facility. Drexel University, Philadelphia, PA A/E design and documentation of a 66,800 SF, five-story engineering laboratory building. Involved in the design, synthesis and testing of composite materials in metallurgy, polymer science and ceramics. Also included are CADD and other computer facilities. Wet pipe sprinklers and dry pipe sprinklers, aided by a centrifugal fire pump, protect the facility. Thomas Jefferson University, Philadelphia, PA Architectural/engineering design, documentation, and construction administration for the Lewis W. Bluemle, Jr. Life Sciences Building, a 289,000 SF medical laboratory building dedicated to research and teaching in the fields of biochemistry and microbiology. Design included total flooding carbon dioxide along with preaction, wet pipe and dry pipe sprinkler systems aided by a centrifugal fire pump to protect the facility. Mr. Forcina has participated on risk analysis sessions and was the fire protection and plumbing engineer for Reliability Programs for the following projects: Morgan Stanley & Co., Inc., Brooklyn, NY 90,000 SF of computer equipment and machine space. Fire protection included Halon systems and Preaction sprinkler system. Morgan Stanley & Co., Inc., New York, NY 25,000 SF data center converted to a disaster recovery site with Halon as primary fire protection.

Jeffrey Cosiol, PE

Project Director, Engineering Consulting Services

TKLP

Education	Master of Science in Electrical Engineering, Drexel University, 1970 Bachelor of Science in Electrical Engineering, Lowell Technological Institute, 1967
Registration	1973, Professional Engineering: Pennsylvania
Years Experience	With TKLP: 14 With Other Firms: 7
Responsibilities	Mr. Cosiol is a managing principal and project manager for electronic systems, including voice and data communication systems, computer-based security and energy management systems (EMCS), and automation systems for commercial, industrial, and institutional facilities. His responsibilities pertaining to security and communications include direction of site investigations, threat analysis, development of security goals and objectives, preparation of detailed designs, and identification and evaluation of system alternatives. He also supervises drawing documentation, system punch-out, and testing.
Reason Selected for this Project	Mr. Cosiol is assigned to the project because of his significant experience working on security and communication systems with both the private sector and the government.
Relevant Experience/Qualifications	J. P. Morgan Services Inc., New York, NY Mr. Cosiol prepared a security evaluation study for this large bank headquarters. The final product included the criteria necessary for establishing a complete security design as well as a series of typical security scenarios for various floor arrangements. Sterling Winthrop Inc., Pharmaceuticals Research Division, Upper Providence Township, PA Design and documentation of complete security and communications cabling system for a 1,500,000 SF pharmaceutical R&D complex. The design includes over 12 miles of fiber optic cable as a campus backbone for voice and data; a distributed PBX; and unshielded twisted pair and fiber optic cable to approximately 2,000 workstations. Mr. Cosiol was Project Director for complete security analysis and design for this 1,500,000 SF pharmaceutical R&D complex. The project included threat analysis and thorough technical review of security alarm, CCTV, and manufacturers' card access equipment to determine what was best suited to the project. Magnetic stripe, proximity, and Weigand card access technologies were considered. In addition to a complete security communications center, system equipment included 71 CCTV cameras with fiber optic video transmission, 100 card readers, and remote control of exterior gates. Mr. Cosiol also developed bid-ready technical package and design for renovating and upgrading an existing security and card access system. Based on a detailed technology study, a completely new central processing system was specified and provided. U.S. Army Corps of Engineers, Huntsville Division, Huntsville, AL Site investigation and preliminary design for computer controlled intrusion detection system at five classified sites. Glaxo, Inc., Research Triangle Park, NC Design of intrusion detection, access control, and a closed-circuit television system requiring 20 miles of fiber optic cable, for this 1,500,000 SF R&D complex. A full exterior/interior security system for the Sales Training Center and Scale-up Facility for this leading drug manufacturer. The design was taken from the conceptual to a complete construction-ready package and installation observation services. The design included multiple security and access levels ranging from administrative offices to highly secure file, drug testing, and hazardous materials areas. CCTH, electronic and manual security measures were integrated into an overall campus distributed processing system with both central and satellite monitoring and display stations. Current work involves a large scale facility expansion including two new high-rise laboratory and administrative buildings.

Jeffrey Cosiol, PE**Project Director, Engineering Consulting Services****TKLP****Relevant
Experience/
Qualifications
(cont'd.)****U.S. Army Corps of Engineers, Huntsville Division, Huntsville, AL**

Open end EMCS consultation contract for computer-based energy and central system design, site investigations, trouble shooting, feasibility reports, and related issues. Prepared revised COE Guide Specification for large-, medium-, small-, and micro-energy monitoring and control systems. The specifications are used by all Federal agencies and have become a defacto standard used by private industry.

U.S. Army Corps of Engineers, Huntsville Division, Huntsville, AL

Preparation of an EMCS design manual and course of instruction to train design engineers in the use of the design manual and EMCS guide specifications. The design manual, which was prepared by TKLP, is used by the Army, Navy, and Air Force in the application of EMCS to their installations.

U.S. Army Corps of Engineers, Huntsville Division, Huntsville, AL

Ten years of assistance to the Training Division in the teaching of EMCS design courses and EMCS inspectors' courses.

U.S. Army Corps of Engineers, HQ USAREUR, Heidelberg, Germany

Preparation and presentation of UEMCS design and inspection courses in Europe.

Xerox Corporation, International Center for Training and Management Development, Leesburg, VA

Feasibility study and design of modular computerized energy management system and building automation systems, using telephone lines and carrier current systems, for 1,050,000 SF corporate training facility.

Social Security Payment Centers, Philadelphia, PA; Chicago, IL; and Richmond, CA

Mr. Cosiol was project manager for the design of computer-based energy monitoring systems for three separate facilities totaling 2,000,000 SF using coaxial cables for data transmission. Buildings included office areas, computer areas, cafeteria, and kitchen areas.

Andrews Air Force Base, Camp Springs, MD

Feasibility study for 60 buildings and design of modular computerized energy management system for 40 buildings using telephone lines for data transmission throughout the base. Included were computer facilities, maintenance areas, administration areas, barracks, warehouses, and dining facilities.

Prudential Insurance Company, MidAtlantic Home Office, Upper Dublin, PA

Design of energy monitoring system for office building complex totaling 600,000 SF using multi-conductor cable for data transmission.

Prior to joining TKLP, Mr. Cosiol spent seven years as an engineer and project manager with Robert G. Worden Associates.

Societies

Society of Military Engineers
American Society for Industrial Security
Association of Energy Engineers
Association of Physical Plant Administrators

Awards

Certificate of Appreciation for Patriotic Civilian Service for Outstanding Service to the United States for work at U.S. Army Corps of Engineers, Huntsville Division, Huntsville, AL

Publications

"Direct Digital Control Systems," *The Military Engineer*, May/June 1986.