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A registered architect with over 30 years of experience, Mr. Dickinson is a solution-oriented and versatile "Project Director" skilled at getting the right personnel and resources into the right place at the proper time. He specializes in high-quality design of major data center and hospital projects while consistently reducing construction costs through superior planning and design.

Mr. Dickinson has led the fast-track coordination of a \$160 million corporate headquarters, redesigned a corporate headquarters of 1,150 workstations, and managed relocation of a Wall Street firm's \$80 million headquarters with complete interior work totaling 250,000 SF. Additionally, he has completed four major hospital additions totaling \$60 million as well as a new 150,000 SF hospital totaling \$90 million. He has also provided real estate *I* data center due diligence studies & reports; in addition to 12 residential additions and 2 beachfront homes at the Jersey Shore..

Recent Projects I Details of particular interest:

1) <u>Data Center Project Architect at E2 Optics Denver CO.</u> present employer since July <u>2014.</u>

Full Data Center design for GSA and Social Security Agency

<u>General:</u> 16,000 SF new data center preliminary budget = \$10.5 million. Repurposing of an "existing" warehouse building which will be reinforced for the added requirements of a data center. Consisting of approximately 120 cabinets to be arranged in the "Hot Aisle / Cold Aisle" configuration for Cooling and Power conservation. Basic design documents at 100% have recently been accomplished.

<u>Architectural</u>: Due to limited structure height a data center floor on the existing concrete slab will be used with a 1 hour rated full height perimeter enclosure. A 12'-0" ceiling height is sufficient but configuration will use the ceiling plenum as a return air plenum to the top of the Indirect Evaporative Cooling (IDEC) units.

<u>Structural</u>: Existing structure must be considered during planning to avoid overloading of the existing floor slabs and existing roof bar joists; bus-bars and cable trays as well as Storage Area Networks (SANs) can be very heavy.

<u>Electrical</u>: New full electrical system is being designed with redundant generators in the Tier # 3 configuration as outlined by "Uptime Institute". Cabinet configuration to be coordinated with "Buss Bar" equipment for maximum flexibility conditions.

<u>Mechanical:</u> Indirect Evaporative Cooling (IDEC) units will be used in the "Hot Aisle/ Cold Aisle" configuration to establish maximum flexibility considering the anticipated kW quantities.

<u>Fire Protection</u>: Existing wet pipe sprinkler system will be expanded and coordinated with gaseous fire suppression sprinklers as the first line of defense.

<u>Main Task</u>: Analyze computer cabinets' requirements to ascertain best method to accomplish the "Hot Aisle / Cold Aisle" configuration; including coordination with all disciplines. Challenging task was accomplished working with GSA and keeping SSA requirements in view.

<u>ROLE</u> – Full design / layout of data center infrastructure and coordinating a team of 4 professionals in data center cabinet configuration, Coordinate efforts of all disciplines: Electrical, Mechanical, Fire

Protection, Civil, & Structural engineers.

2) Data Center Architect, USPTO (Commerce Dept.) Alexandria, VA

Data Center Phase 1 started May, 2015 and accomplished October, 2015 As JFD.NCARB - LLC

<u>General:</u> 20,000 SF existing data center preliminary budget – unknown. Third Floor of an "existing" office building which has not been reinforced for the added loads of a data center. Consisting of approximately 375 cabinets to be revised into the "Hot Aisle / Cold Aisle" configuration for Cooling and Power conservation. Current (incorrect) arrangement is counter to good data center practices. Currently awaiting funding. Initial coordination has been accomplished. Ongoing migration function by subordinate staff members when funding is approved.

<u>Architectural</u>: 19" raised floor with 1 hour rated full height perimeter partitions. Current 10'-0" ceiling height is sufficient but new configuration will use the existing ceiling plenum as a return air plenum to the top of the exiting Computer Room Air Conditioning (CRAC) units.

<u>Structural</u>: Existing structure must be considered during planning to avoid overloading of the existing floor slabs. Storage Area Networks (SANs) can be very heavy.

<u>Electrical</u>: Existing PDUs to remain and new cabinet configuration to be coordinated to match the existing conditions.

<u>Mechanical:</u> Existing CRAC units to remain and new Hot Aisle/ Cold Aisle configuration to be established to agree with existing kW quantities.

<u>Fire Protection</u>: Existing wet pipe sprinkler system to be replaced by gaseous fire suppression + "Preaction" sprinklers.

<u>Main Task</u>: Analyze existing computer cabinets to ascertain best method to revise / migrate to the modernized "Hot Aisle / Cold Aisle" configuration; including inventory of existing servers and devices. Challenging task was accomplished to coordinate several existing inventories. Order of tasks to be completed was accomplished using "MSProject" software.

<u>Secondary task</u>: Coordinate with existing consultants to convey USPTO requirements for the ultimate design regarding electric power, air conditioning and fire protection conditions. Existing basic infrastructure is to remain and the new cabinet arrangement shall be appropriate for the existing placements. Drawings were completed to establish adjacencies and priorities. Relocations of PDUs and CRACs are not anticipated.

<u>ROLE</u> – Coordinating a team of 4 professionals in data center cabinet migration, CAD drawings to indicate proper cabinet alignment and assessing / redesigning data center cabinet components. Assessing realignment requirements from the Owner's perspective, controlling quality and schedule. Cost is left to the federal "Task Order Manager" and GSA.

3) Data Center Consultant, NOAA (Commerce Dept.) Suitland, MD; and Disaster Recovery data center at Fairmont, W.V. Employee of "Innovative Construction Management Solutions" of Rockville, MD -- August 2010 through July 2013

Data Center.

<u>General</u>: 12,000 SF existing data center increased to 15,000 SF with a preliminary budget of \$32 million and a total of 450 cabinets. The final cost estimate came in at \$29 million. Coordination required with all sub-contractors and designers. Plus new remote data center of 100 cabinets at \$24 million.

<u>Architectural:</u> (Suitland, MD) – Existing fully concrete building of 2005. The main data center to control satellites and collect data for the National Weather Service. Expanded area needed for future generation of satellites and original cooling capacity was inefficient and undersized.

<u>Architectural:</u> (Fairmont WV) – Existing steel and Concrete "Technology Center" building built for commercial tenants and federal government occupants. Disaster Recovery center was ideal for the distance (not too close – not too far) from the DC area. Coordinated the placements of data center infrastructure & cabinets.

<u>Structural:</u> Both buildings required structural reinforcing to sustain the added loads – OR – monitor / control the loading of the Suitland, MD building.

<u>Electrical:</u> New generators and enclosures required for both buildings. Redundancy required for a Tier 3 facility as determined by the "Uptime Institute" criteria. Main terminology for the "Tier 3" condition is "Concurrently Maintainable".

Mechanical: Redundant CRAC units and "In-Row" cooling employed at both buildings.

<u>Fire Suppression</u>: GSA dictated water only at the Suitland, MD building; but gaseous fire suppression permitted with "Pre-Action" sprinklers at the West Virginia building only. Considerable coordination was required with all designers / sub-contractors.

<u>ROLE –</u> Coordinator from the owner's perspective, controlling quality, cost and schedule; providing data center design expertize.

Senior Project Director, Switch & Data Inc. (Later "EQUINIX") Atlanta, GA

Data Center. Project Director - Total Site Solutions from July 2007 through June 2009

General: 61,000 SF data center with a preliminary budget of \$78 million – Total = 1,450 cabinets. The final cost estimate came in at \$66 million to <u>save \$12M in client leasing</u> <u>costs</u> due to budget constraints. Full design established after assessment of vacant downtown department store with full concrete frame.

First phase (400 cabinets) completed at this time; second phase recently approved for this total project for scheduled completion by 10/2011. (Floor Plan below)

<u>Architectural:</u> 30" raised floor with full height / 1 hour rated drywall partitions & special. Data Center ceilings were employed. Designed complex spaces around existing equipment & neighboring tenants; also, planned entire data center within tight space constraints for maximum value in the least amount of space.

<u>Structural</u>: Due to heavy equipment, structural steel sections were used to span from column to column to support steel plate raised platforms in the second floor (of former "Downtown" department store of total concrete construction) for battery & heavy Electrical & HVAC equipment. Due to tight space / land constraints, coordinated the structural study for possible upgrade of structure for 6 rooftop generators plus cooling towers and platforms for all rooftop items.

<u>Electrical:</u> Minimal original electric power existed. Coordination required for the concurrently maintainable / tier III data center. Extensive designing required for the complex power requirement and increasing the electric power supply to the floor location

by 450%. Additional revision of layout for electrical equipment was required to condense floor plan and conserve valuable space to save lease costs.

<u>Mechanical</u>: Coordinated the design of providing proper requirements for a redundant *I* concurrently maintainable tier III (Uptime Institute Requirements) data center with appropriate chillers, pumps, and associated equipment on the 6th floor with piping in old elevator shafts to 2nd floor.

<u>Fire Protection</u>: Pre-action sprinklers employed along with gaseous fire protection (FM-200) for maximum safety of preserving equipment.

Role: Program Management and coordination of all disciplines / engineers leading to a total of 105 drawings. Responsibilities included regular communication with the client and local engineers. Also created alternate "Phasing Plan" as part of design services.



5) Senior Project Director, State of Montana. Helena, MT

Project Director / Architect at Total Site Solutions from July 2007 through June 2009 General: Two 12,500 SF data centers totaling \$16.5M in construction value. Original Cost estimate at \$19.5M – FULL design was achieved after assessment of the existing Data Center indicated insufficient space and infrastructure to meet the program. Value Engineering required to contend with state budget constraints. Helena, Montana: Consultant to local architect. State of Montana contact: Mike Boyer – 0N 406-444-3279 & Jim Baker (local Architect: 406-248-2633). – progressing with state funding approval received in 09/2008. The project progress is within budget and on schedule

<u>Architectural</u>:24" raised floor with full height *I* 1 hour rated drywall partitions & ceilings. Site is adjacent to a state highway interchange; therefore, a 3 hour concrete & masonry wall is utilized.

designed to protect the data center from any possible auto / truck severe accident / explosion on the highway.

<u>Structural:</u> Economical Masonry / wall bearing construction (value engineering item) with long span bar-joists. 6" slab on grade with 5" concrete slab roof to protect equipment; and 4'-0" deep footings due to climate conditions were required.

<u>Electrical:</u> New construction, full electric service + UPS, switchgear and 3 generators. Included, study to relocate existing generators to new site – due to expense; existing equipment would remain for redundant use by remaining state agencies at original location.

<u>Mechanical:</u> Coordinated the task of providing proper requirements for a tier III (Uptime Institute Requirements) data center with appropriate equipment and associated piping. Coordinated the design of the innovative "Kyoto Cooling Concept" (KCC) to take full advantage of the colder climate of Montana, whereby the cold exterior air is brought into the space with a complex design of dampers /fans / controls; and the hot air produced by the computer equipment is transferred to the outside simultaneously (See Photo below). This process has been proven to achieve a **"Power Utilization Efficiency" (PUE)** of approximately **1.22** to <u>save the state approximately \$2M per year in maintenance</u> <u>costs.</u>

<u>Fire Protection:</u> Pre-action sprinklers employed along with gaseous fire protection (FM-200) for maximum safety of preserving equipment

Role: Program Management and coordination of all disciplines / engineers including regular communication with the client & engineers in a very innovative "Heat Wheel" by "KCC" to save huge cooling costs by using cold climate exterior air to cool data center. Also performed "Floor Plan" design services; and planning for future "heat recovery" for existing separate building.



6) Senior Project Director, University of Oklahoma. Oklahoma City, OK

Project Director / Architect at Total Site Solutions from July 2007 through June 2009

The construction of this 13,000 SF data center in existing building in a tornado zone is awaiting \$34.3 million financing.

Oklahoma City, Oklahoma - contact: David Horton-0N) 405-271-2644. - Currently awaiting state funding.

<u>Architectural:</u> 24" raised floor with full height / 2 hour rated CMU partitions & ceilings. Due to Slab on Grade conditions concrete masonry units (CMU) were the most economical partition method. 2 hour rated CMU was used for the added strength for tornado resistance.

<u>Structural</u>: Existing structure required full analyzing to determine tornado resistance. Data Center was located in the Northeast corner to avoid added exposure to tornado approaching from the southwest.

<u>Electrical:</u> Study of existing electric service required to determine anticipated needs; intricate electrical design + UPS, switchgear and generators required. Conducted study to relocate recently added transformers adjacent to new transformers within tight space constraints of site.

<u>Mechanical</u>: Coordinated the design of providing proper complex routing of new piping from existing campus – wide utility tunnels to the site within the concrete building; plus requirements for a tier III (Uptime Institute Requirements) data center with appropriate chillers, pumps, and associated piping.

Role: Management and coordination of all disciplines including regular communication with the client and advisement on data center placement within existing building to minimize tornado damage threat.

7) Senior Project Architect, Mission Critical Data Center "First Data".

Employee at Bruns-Pak Data Center design Solutions January, 2001 through April, 2007.

The construction of this 50,000 SF data center in masonry building in a tornado zone was constructed for \$66.5 million. Omaha, Nebraska

Architectural: 24" raised floor with full height *I* 2 hour rated CMU partitions. Due to Slab on Grade conditions concrete masonry units (CMU) were the most economical partition method. 2 hour rated CMU was used for the added strength for tornado resistance.

<u>Structural:</u> Existing structure required full analyzing to determine tornado resistance. Data Center site was analyzed to provide berms to "deflect" tornado force winds over the building.

<u>Electrical</u>: Study of existing electric service required to determine anticipated needs; intricate electrical design + UPS, switchgear and generators required. Building designed to minimize roof openings and provide "double" roof for insurance against tornados.

<u>Mechanical</u>: Coordinated the design to provide proper complex routing of piping from infrastructure to data center raised floor area – wide utility tunnels within the concrete building; plus requirements for a tier III (Uptime Institute Requirements) data center with appropriate chillers, pumps, and associated piping.

Role: Management and coordination of all disciplines including regular communication with the client and advisement on data center placement to minimize tornado damage.

8) Senior Project Architect, Mission Critical Data Center "Key Bank".

Employee at Bruns-Pak Data Center Design Solutions January, 2001 through April, 2007.

The construction of this 70,000 SF data center in masonry building in a heavy snow zone was constructed for \$95.5 million. Solon, Ohio

<u>Architectural:</u> 36" raised floor with full height / 2 hour rated CMU partitions. Due to Slab on Grade conditions concrete masonry units (CMU) were the most economical partition method. 2 hour rated CMU was used for the added strength.

<u>Structural:</u> New building structure required optimization of building components. Data Center site was analyzed to provide maximum protection from blizzards & to protect the building.

<u>Electrical</u>: Study of electric service required to determine anticipated needs; intricate electrical design + UPS, switchgear and generators required. Building designed to minimize roof openings and provide "double" roof for insurance against tornados / heavy snow.

<u>Mechanical</u>: Coordinated the design to provide proper complex routing of piping from infrastructure to data center raised floor area – plus requirements for a tier III (Uptime Institute Requirements) data center with appropriate chillers, pumps, and associated piping.

Role: Management and coordination of all disciplines including regular communication with the client and advisement on data center placement to minimize tornado damage.

9) Senior Project Architect, Merck-Medco: Fairlawn, NJ.

Project Director / Architect at JFD, NCARB from July 1996 through June 1999

Expansion of the original 18,000 SF into a 30,000 SF data center completed on schedule and within the budget at \$42 million. Self Employed as JFD, NCARB – July, 1995 through January, 2001.

Owner contact: Alex Krynicki: 201-269-3400

<u>Architectura</u>I: Data Center expansion with 24" raised floor with full height *I* 2 hour rated CMU partitions & ceilings. Due to Slab on Grade conditions concrete masonry units (CMU) were the most economical partition method.

<u>Structural:</u> Existing structure was analyzed to ascertain ability of roof to support new mechanical equipment.

<u>Electrical:</u> Study of existing electric service required to determine anticipated needs; intricate electrical design + UPS, switchgear and generators required. Additional generator designed *I* installed to fully serve the data center with required redundancy power.

<u>Mechanica</u>: Coordinated the design of providing proper complex routing of new piping from existing mechanical equipment room (MER) and provided additional MER; plus requirements for a tier III (Uptime Institute Requirements) data center with appropriate chillers, pumps, and associated piping.

Role: Management and coordination of all disciplines including regular communication with

JAMES F. DICKINSON, NCARB

ARCHITECT -- PROJECT MANAGER

the client. Project also included addition of chillers, UPS and generators *I* switchgear in adjacent mechanical room. Complex phasing plan required to contain construction totally separate from existing data center.

Non-Data Center Experience

1) Senior Project Director, Mendham Public Schools, Mendham, New Jersey

General: 2 additions totaling 31,000 SF with a budget of \$48 million. The final cost estimate came in at \$56 million. Conducted Value Engineering to bring down costs due to budget constraints. Mendham, New Jersey - Public Schools Contact: Kevin Cartotto -- Past Business Administrator(O) 201-387-3070 – completed within budget: 6/2005 through 9/2006... Very large Construction Manager was nearly released – I would have replaced him due to my good relationship with the subcontractors.

<u>Architectural</u>: Masonry additions with full height /1 hour rated drywall partitions & ceilings. Designed two additions consisting of 12 classrooms, 2 gymnasiums and revisions of existing auditorium to various complex spaces. Designed the new roof system – consisting of a complex insulation + roofing over an existing structure to save time and cost.

<u>Structural:</u> Masonry / steel frame construction with 6" slab on grade and 3'-6" deep footings for climate conditions. Intricate truss coordination / design for large clear span required by existing condition and per owner request.

<u>Electrical</u>: Coordinated the design of a power requirement and increasing the electric power supply to the location by 150%. Revised layout of electrical equipment to conserve space and save valuable costs. Coordinated the design of photovoltaic glass in special energy saving conditions and achieved energy credit

<u>Mechanical</u>: Coordinated the design of new mechanical equipment rooms with appropriate chillers, pumps, and associated equipment.

Role: Management and coordination of all disciplines *l* engineers leading to a total of 105 drawings including regular communication with the client.

 Senior Project Architect, Merck-Medco: Fairlawn, NJ. Renovation of the original 78,000 SF corporate Data Center support space into a modern 80,000 SF completed on schedule and within the budget at \$58 million.

Owner contact: Tobias Bisharat: 201-269-3400

<u>Architectural:</u> New workstations and carpeting / ceilings, etc. Totally revised working environment via superior space planning to economize on space for maximum capacity. Due to existing conditions concrete masonry units (CMU) were the most economical partition method.

<u>Structural:</u> Existing structure was revised as required for new (roof mounted) mechanical equipment. Roof structure modified to support new mechanical equipment.

<u>Electrical</u>: Study of existing electric service required to determine anticipated needs; intricate electrical design + UPS, switchgear and generators required. Additional generator designed *I* installed to fully serve the data center with required redundancy power.

<u>Mechanical:</u> Coordinated the design of providing proper complex routing of new piping from existing mechanical equipment room (MER) and provided additional MER; plus requirements for a tier III (Uptime Institute Requirements) data center with appropriate chillers, pumps, and associated piping.

Role: Management and coordination of all disciplines including regular communication with the client. Project also included addition of chillers, UPS and generators / switchgear in adjacent mechanical room. Complex phasing plan required to contain construction totally separate from existing data center.

3) Project Coordinator 1980-1982 -- Beneficial Management Corporation: Peapack, NJ.

Corporate Headquarters complex – Construction Coordinator of 550,000 sq.ft. Headquarters, completed on schedule and within the budget at \$160 million. Coordinated Consultants / contractors in "fast track" format to optimize time of occupancy /schedule. Coordinated with "The Hillier Group" - Princeton, NJ& "Turner Construction" - New York, NY (Photo Below)

Facilities Planning Manager, 1982-1992--Beneficial Management Corporation: Peapack, NJ. Corporate Space Planning professional to service departmental revisions. Owner contact: John Washburne & James Frame: 201-679-3600

<u>Architectural</u>: Space planning to improve existing capacity from 1,200 persons to 1,750 persons, thereby **saving \$2 – 4M in potential added building costs**. Various revisions to complete corporate headquarters interiors and maximize space *I* occupancy.

<u>Structural:</u> Existing structure was analyzed to ascertain ability of floors to support a "high Occupancy" filing equipment.

<u>Electrical</u>: Study of existing electric service required to determine anticipated needs. Additional power source designed *I* installed to fully serve the corporate headquarters as equipment was added with required redundancy power.

<u>Mechanical</u>: Coordinated the relocation of HVAC services as interior spaces are revised. Included design of providing proper complex routing of new piping from existing mechanical equipment room (MER) as required.

Role: Management and coordination of all disciplines including regular communication with the client. Initial project also included UPS and generators in adjacent mechanical room to make headquarters complex self-sufficient. Complex phasing plan required to contain construction totally separate from existing corporate working areas.



Residential Projects

1) Project Architect, Residential Addition, Livingston, NJ

General: 750 Sq, Ft. addition -- \$90,000 budget to create a family room on main level and 3 car garage below. Challenge: Innovative design to cantilever over a sanitary sewer easement to make the best use of the available space. Coordinate with the local officials for approvals and structural engineer to cantilever 4'-0" with "MicroLam" beams.



Livingston, NJ

#2) Project Architect, Residential Addition, Madison, NJ.

General: 900 Sq, Ft. Addition -- \$100,000 budget to create addition with blended area of dining / family rooms; and basement storage. Any addition (be it residential or commercial) should blend in with the existing; and once the materials have weathered should look as though it were original.

Healthcare - Institutional Projects

1) Project Manager, University of Medicine & Dentistry (UMDNJ), Newark, New Jersey

General: 7,000 SF renovations with a budget of \$17 million (Hard & Soft costs). The final cost estimate came in at \$18 million (Hard costs only). Coordinated Value Engineering efforts to bring costs within budget.

Newark, New Jersey - New Emergency Department to increase beds from 38 to 52 quantity. Contact: Dave Shulz – completed within budget -- 9/1999 through 10/2000... Large Construction Manager reviewed preliminary documents and estimated high construction costs based on 7 different phases. Review of the phases indicated a need to reduce the phases from 7 down to 4.

Architectural: Concrete slab additions with full height/ 1 hour rated drywall partitions & ceilings.

Coordinated the design of staff housing needs and revisions (within an active E.R.) and repositioning existing functions to create various complex spaces.

<u>Structural:</u> New Concrete frame construction supported on existing concrete structure. Extensive coordination of design required by existing conditions to bring project in under the budget.

<u>Electrical:</u> Coordinated the power requirements and improved the electric power supply to the required locations. Revised layout of electrical equipment to conserve space and save valuable costs. Coordinated the design of special energy saving conditions.

<u>Mechanical:</u> Coordinated the design of new mechanical equipment rooms with appropriate chillers, pumps, and associated equipment.

Role: Management and coordination of all disciplines *l* engineers leading to a total of105 drawings including regular communication with the client.

2) Project Manager, Bronx Lebanon Hospital, The Bronx, New York

General: Various renovations of several departments: i.e. Radiology /C.T. Scan, Nurse Staffing, Ambulatory Services, ER Staff & Managed Care, Child Study Clinic, Dental Clinic. Large Psychiatric renovation: Initial estimate of \$15M; final cost estimate came in at \$19 million (Hard costs only). Coordinated Value Engineering efforts on several projects to bring costs within budget.

New Psychiatric Department to increase beds from 28 to 40 quantity. Contact: Bob Underwood – completed several projects within budget /time constraints -- 6/1994 through 10/1995.

<u>Architectural</u>: Concrete slab additions /revisions with full height / 1 hour rated drywall partitions & ceilings. Coordinated the design of all projects with various consultants. Repositioned existing functions as required within active hospital and per owners program.

<u>Structural:</u> Various structural considerations – mostly with load limitations on existing concrete slab areas. Extensive coordination with placement of new equipment limited by existing conditions to bring project in under the budget.

<u>Electrical</u>: Coordinated the power requirements and in some cases, improved the electric power supply to the required locations. Revised layout of electrical equipment to conserve space and save valuable costs.

<u>Mechanical:</u> Coordinated the design of new mechanical equipment room with appropriate equipment.

Projects Management and coordination of all disciplines /engineers /contractors leading to successful projects, including regular communication with the client.

3) Project Architect, St. Michael's Medical Center, Newark, New Jersey

General: 9,000 SF Additions / Renovations with a budget of \$9 million (Hard costs). Coordinated Architectural & Engineering requirements during construction to bring project completion within budget. Review contractor requests for information and change orders / additions.

Newark, New Jersey - Various Departmental revisions within an active hospital to increase

efficiency and quality of services. Contact: James Meade – completed within budget -- 9/1992 through 9/1993... Large Construction Manager reviewed 80% documents and negotiated GPM + Fee in semi-fast track project due to time constraints.

<u>Architectural:</u> Additional Elevators and assorted additions *I* renovations with full height/ 1 hour rated drywall or masonry partitions & rated ceilings when required. Coordinated the construction (within an active hospital) and repositioning existing functions to create various quality spaces. Extensive coordination of field conditions within an older building to bring project in under the budget.

<u>Structural:</u> New Concrete frame construction supported on new footings and existing concrete structure. Considerable coordination of placement of equipment due to excessive weight of new equipment and limitations of existing concrete slabs.

<u>Electrical:</u> Coordinated the power requirements and improved the electric power supply to the required locations. Revised layout of electrical equipment to conserve space and save valuable costs.

<u>Mechanical</u>: Coordinated the design of new mechanical equipment rooms with appropriate chillers equipment.

Role: Project Management and coordination of all contractors *I* engineers leading to a successful project including regular communication with the client.

4) Project Manager, West Hudson Hospital, Kearney, New Jersey

General: 10,000 SF renovations with a budget of \$24 million Considerable coordination of placement of equipment due to excessive weight of new equipment and limitations of existing concrete slabs.

Kearny, New Jersey – New Operating Room Department to increase quantity and quality. Completed within budget -- 2/1995 through 4/1996... Contractor negotiations based on review of preliminary documents and estimated high construction costs based on 3 different phases. Review of the phases indicated a need to reduce the phases from 3 down to 2.

<u>Architectural</u>: Concrete slab additions with full height / 1 hour rated drywall partitions & ceilings. Coordinated the design of staff housing needs and revisions (within an active hospital) with repositioning of existing functions to create various required spaces.

<u>Structural</u>: Extensive coordination of intricate design for structural revisions required by existing conditions to bring project in under the budget. Considerable coordination of placement of equipment due to excessive weight of new equipment and limitations of existing concrete slab.

<u>Electrical:</u> Coordinated the power requirements and improved the electric power supply to the required locations. Revised layout of electrical equipment to conserve space and save valuable costs. Coordinated the design of special electrical provisions.

<u>Mechanical:</u> Coordinated the design of new mechanical equipment rooms with appropriate equipment.

Role: Project Management and coordination of all disciplines *I* engineers leading to a total of 65 drawings including regular communication with the client.

5) Project Manager, Welkind Neurological Hospital, Chester, New Jersey

General: 14,000 SF renovations with a budget of \$44 million (Hard & Soft costs).

Chester, New Jersey – New Inpatient addition (40 Beds) to increase quantity and quality. Completed within budget -- 2 / 1994 through 12 / 1995. Negotiations to achieve required agreement based on review of preliminary documents and established program; plus estimated construction costs based on 2 different phases. Review of all required documents for building permit requirements.

<u>Architectural:</u> Concrete slab additions with full height *I* 1 hour rated drywall partitions & ceilings. Coordinated the design of staff housing needs with repositioning of existing functions to create various required spaces.

<u>Structural:</u> Extensive coordination of intricate design for structural revisions required by existing conditions to bring project in under the budget. Coordination of placement of equipment due to excessive weight of new equipment and limitations of existing concrete slabs.

<u>Electrical:</u> Coordinated the power requirements and improved the electric power supply to the required locations. Revised layout of electrical equipment to conserve space and save valuable costs. Coordinated the design of special electrical provisions.

<u>Mechanical</u>: Coordinated the design of new mechanical equipment and rooms with appropriate clearances *I* concrete slab load limits.

Role: Program Management and coordination of all disciplines *I* engineers leading to a total of 70 drawings including regular communication with the client.

6) Project Manager, Riverside Hospital, Boonton, New Jersey

General: 2,500 SF renovations for added Pharmacy / Records departments with skylights. budget of \$4 million (Hard & Soft costs).

Boonton, New Jersey - New staff areas to increase quantity and quality. Contact: Gordon Elliott – completed within budget--10 / 1993 through 12/1994... Full Program establishment *I* negotiations required. Review of the phases indicated a need to reduce to one phase with "Value Engineering" to bring project to completion within budget.

<u>Architectural:</u> Concrete slab additions / alterations with full height / 1 hour rated drywall partitions & ceilings. Coordinated the design of staff housing needs and revisions (within an active hospital) with repositioning of existing functions to create various required spaces.

<u>Structural:</u> Extensive coordination of intricate design for structural revisions required by existing conditions to bring project in under the budget.

<u>Electrical:</u> Coordinated the power requirements and improved the electric power supply to the required locations. Revised layout of electrical equipment to conserve space and save valuable costs. Coordinated the design of special electrical provisions.

Mechanical: Coordinated the design of new mechanical equipment rooms with appropriate equipment.

Role: Management and coordination of all disciplines *l* engineers leading to a total of 65 drawings including regular communication with the client.

7) Project Designer / Architect, St John's Episcopal Hospital, Queens, New York

General: 19,000 SF Additions / Renovations with a budget of \$44 million (Hard & Soft costs).

New York, New York – New Patient Rooms and renovation of existing to increase quantity and quality. Completed within budget -- 2 / 1977 through 4 / 1979... Contractor negotiations based on review of preliminary contract documents and preliminary estimate.

Arch<u>itec</u>tural: Concrete slab additions with full height/ 1 hour rated drywall partitions & ceilings. Coordinated the design of staff housing needs and revisions (within an active hospital) with repositioning of existing functions to create various required spaces.

Structur<u>al</u>: Extensive coordination of intricate design for structural revisions required by existing conditions to bring project in under the budget. Considerable coordination of placement of equipment due to excessive weight of new equipment and limitations of existing concrete slabs.

<u>El</u>ectrical: Coordinated the power requirements and improved the electric power supply to the required locations. Revised layout of electrical equipment to conserve space and save valuable costs. Coordinated the design of special electrical provisions.

Mech<u>an</u>ical: Coordinated the design of new mechanical equipment rooms with appropriate equipment.

Role: Management and coordination of all disciplines *I* engineers leading to a total of 65 drawings including regular communication with the client.

8) Project Designer / Architect, King Abdul Aziz Hospital, Riyadh, Saudi Arabia

General: 150,000 SF New Hospital with a budget of \$90 million (Hard & Soft costs).

Riyadh, Saudi Arabia – New Hospital designed within existing shell from previous "Non-Hospital" building of total concrete structure. – completed within budget -- 5/1978 through 11/1980... Design /Build project with NYC contractor.

<u>Architectural</u>: Concrete slab with full height / 1 hour rated drywall partitions & ceilings. Coordinated the design of patient rooms / Operating and Emergency Room Suites and staff housing needs.

<u>Structural:</u> Extensive coordination of intricate design for structural revisions required by existing conditions to bring project in under the budget. Considerable coordination of placement of equipment due to excessive weight of new equipment and limitations of existing concrete slabs.

<u>Electrical:</u> Coordinated the power requirements and improved the electric power supply to the required locations. Revised layout of electrical equipment to conserve space and save valuable costs. Coordinated the design of special electrical provisions.

<u>Mechanical</u>: Coordinated the design of new mechanical equipment rooms with appropriate equipment.

Role: Management and coordination of all disciplines *l* engineers leading to a total of 65 drawings including regular communication with the client.