

Volume III



study for J. Michael Ruane Judicial Center
Salem Trial Court TRC 9910 ST2

Salem, Massachusetts

April 4, 2007

Volume III



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- A2.6 *Asbestos, Lead Paint and Other Hazardous Materials Survey, Probate and Family Court Complex*, ATC Associates Inc., April 1, 2006
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A2.1 Salem Probate and Family Court Existing Conditions Report

Goody Clancy

Draft–September 26, 2005

Revised–November 11, 2005



SALEM PROBATE & FAMILY COURT BUILDING EXISTING CONDITIONS REPORT

TRC 9910 ST2 J. Michael Ruane Judicial Center/Salem Trial Court
Draft – September 26, 2005

By
Goody Clancy
with
Judith Nitsch Engineering
Lim Consultants
Sei Companies
DMC Engineering

For
Division of Capital Asset Management
Office of Planning, Design and Construction
One Ashburton Place, Fifteenth Floor
Boston, Massachusetts 02108

SALEM PROBATE & FAMILY COURT BUILDING

EXISTING CONDITIONS REPORT

TRC 9910 ST2 J. Michael Ruane Judicial Center/Salem Trial Court

Draft - September 23, 2005
Revised – November 11, 2005

By

Goody Clancy
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1. Existing Condition Site Survey Review



JUDITH NITSCH ENGINEERING, INC.

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Civil Engineering
Land Surveying
Traffic Engineering
Planning
GIS Services

September 7, 2005

Mr. Paul Dudek, AIA, LEED™ AP
Senior Associate
Goody Clancy & Associates, Inc.
334 Boylston St.
Boston, MA 02116

RECEIVED	
GOODY, CLANCY & ASSOCIATES, INC.	
Job No. 6290	File No.
ROUTING SEP 08 2005	
GAIL ROSENBERG	

RE: Utility Research
J. Michael Ruane Judicial Center
Salem, MA

Dear Mr. Dudek:

This letter is a summary of the site and utility information that was collected at the J. Michael Ruane Judicial Center in Salem, Massachusetts. The purpose of this study was to identify changes to the site after the Existing Conditions Plan was completed on June 11, 2003 by Green International Affiliates Inc. I have reviewed the drawings, reports, and information supplied to Judith Nitsch Engineering, Inc. (JNEI), spoken with the facilities department, and conducted a site visit. Attached is a marked-up survey plan identifying the information uncovered along with additional information that should be obtained.

The following information should be updated on the Existing Conditions Plan:

- A four-inch water service and a siamese connection are located on the east side of the County Commissioners Office Building;
- A new 2-inch water service is to be installed in September of 2005 at the south side of the Superior Court House. The service is to be connected to the 6-inch water main located in Federal Street;
- Three, four-inch telecommunication conduits are direct buried between the Superior Court House and the Registry of Deeds. The conduits are a communication link between the two buildings;
- An existing two-inch water service is located at the southeast corner of the Registry of Deeds. The service is connected to the 6-inch water main located in Federal Street;
- A new handicap accessible ramp is under construction at the southwest corner of the Registry of Deeds;
- A utility tunnel at the northeast corner of the Registry of Deeds connects to the underground boiler room located between the Registry of Deeds and the Superior Court House;
- A Dig Safe paint marking indicates a gas service to House #58 from Federal Street;
- Overhead wires from North Street connect to a utility pole located north of House #60 and continues to the First Baptist Church;
- Two monitoring wells were recently installed in the landscaped area between North Street and the access ramp.

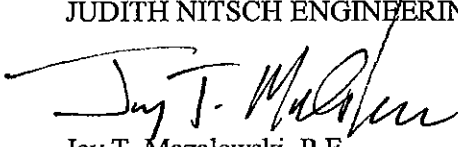
Mr. Paul Dudek, AIA, LEED™
September 7, 2005
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- No information was available regarding the water, sewer, and gas services for the First Baptist Church and Houses #58, #60, and #62 Federal Street. There appears to be an eight-inch sewer main from the east at the intersection of North Street and Federal Street. This may collect the sewer flows from the houses; and
- No information was shown on the drawings regarding traffic control lights.

If you have any questions, please call.

Very truly yours,

JUDITH NITSCH ENGINEERING, INC.

A handwritten signature in black ink, appearing to read "Jay T. Mazalewski", written over the printed name.

Jay T. Mazalewski, P.E.
Project Engineer

2. Structural Existing Condition Survey and Analysis *(Not started
pending scope approval)*

3. Architectural Existing Condition Survey

SALEM PROBATE & FAMILY COURT BUILDING

TRC 9910 ST2

Existing Conditions Survey – Exterior Envelope

Goody Clancy Project Number 6290

September 11, 2005

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INTRODUCTION

Goody Clancy performed an on-site visual evaluation of the Salem Probate Court Building to investigate the building envelope (roof, wall and window assemblies) and document existing conditions and defects. Findings are based upon visits by Goody Clancy personnel to the site and facility between August 9th and August 23rd, 2005. Additionally, the interior of the building was toured to determine the extent and locations of moisture infiltration.

Evaluation of the building exterior revealed defective conditions requiring restoration. The purpose of this report is to provide DCAM with an understanding of these conditions and to provide a basis for establishing a budget for the facility's restoration. Sketches identifying the location of the defects are shown on the attached elevations.

BACKGROUND INFORMATION

The Salem Probate Court Building was reportedly completed in 1912. Copies of the original construction documents obtained by DCAM consist of framing plans for the first floor, second floor and roof; partial window details; partial wall sections; longitudinal building sections; partial courtroom and interior elevations; and partial details of the entry porch, entablature and pediment. Although the extent of the information is valuable, the quality of the record documents and minimal degree of notes, dimensions, and specifications provide only a perfunctory understanding of the facility's construction. Much data is missing with regard to building systems, structural details, foundation design, and original plan layout. DCAM also provided Construction Documents that detail the four-story Administrative Addition constructed in 1979. As-found conditions of the addition's interior layout differ significantly from the original documents and will be reflected in CADD drawings submitted with this project's scope of work. A room by room analysis was not performed within the addition, but it should be noted differential settlement has occurred at the interface of this building with the original work, creating misalignment of floor finishes and racking within door openings adjacent to the interface. Additionally, current work under a separate DCAM contract, *Access/Life Safety & Related Work*, is progressing to upgrade the basement restrooms, provide handicap access for the main entrance, and replace roofing and associated flashing systems. Construction documents by the Stellar Corporation, dated August 15, 2004, illustrate the details of this work.

EXISTING CONDITIONS

The following conditions were noted through Goody Clancy's visual evaluations and discussions with occupants and facilities maintenance staff. Binoculars were used to observe exterior conditions at higher elevations.

General

Existing walls consist of multi-wythe brick, load-bearing masonry with a partial granite veneer. Stone details feature an assemblage of granite columns, pilasters, entablatures, accent bands, quoins, lintels and sills. The existing brick and granite masonry is in fair condition, although weathering and maintenance neglect resulted in localized stone cracking, mortar deterioration, displacement of units, staining and efflorescence. The interior face of exterior wall envelope is furred with thin, spilt-block hollow tile rendered in a 3-coat plaster finish; the majority of the work is in good condition.

The existing window assemblies are in fair condition with selective splitting and rotting of sill components and failure of joint sealants and glazing compounds. Air infiltration through effected components, limited insulating values of single glazed sash, and window air-conditioning units improperly sealed contribute to a substantial degree of heat loss through and around openings.

Roof assemblies are supported by steel trusses sheathed solid with wood decking spanning between supports. Recent roof repairs (within the last few years) to the east and west wing sections of the facility, combined with a reproofing program currently underway for the building's central gable area, have addressed long-standing problems of water penetration on the second floor that resulted in ceiling failures and serious damage to decorative plaster elements.

Roof Assemblies

Recent and current roof maintenance operations discharge the need for a general problem analysis. However, an understanding was developed of where and how water penetration happened to occur. As with most buildings that experience water infiltration from roof assemblies, failures were due to improper roof drain assemblies and flashing. Localized damage to top floor plastered wall and ceiling elements all share adjacency with roof drain locations, with one exception; water penetration resulted from flashing failure of the west wall coping above the Session I Courtroom.

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Exterior Walls

The majority of the work observed is in good condition. The exterior walls are comprised of multi-wythe brick masonry with granite window heads, sills, quoins, plinths, accent bands, coping, cornice and entablature stones, with the exception of the Federal Street façade which is rendered entirely in granite over brick. Granite capitals surmount brick pilasters resting upon a granite base and stringer course. Flat brick masonry arches provide head support at basement wall openings and openings at the inner floor level.

A list of defects includes the following:

- Typically, the soffit associated with flat- arched openings exhibit efflorescence and opened mortar joints due to rain runoff and the lack of a drip edge reveal detail.
- Rust stains were observed at locations where abandoned steel anchors penetrate stone masonry. Holes resulted from removal of steel anchors and supports for fire escapes. In some cases ends of steel supports are embedded and partially exposed. (See photos #3 & 6, appendix iii)
- Carbon staining. (See photo #5, appendix iii)
- Ineffectual plywood caps (bird proofing) have been installed above pilaster and column capitals and above stone shelves associated with cornice and frieze moldings. In some locations plywood joints have opened and provide sanctuary for the birds they were designed to fend off. (See photo #1, appendix iii)
- Improper crack repair: Stainless steel nuts and bolts pinned to a broken cornice are exposed (detailed improperly). Joint poorly sealed, resulting in staining and efflorescence.
- Open mortar joints below projecting courses due to rain run-off. (See photos #1 & 5 appendix iii)
- Copper flashing used as bird proofing has caused minor copper sulfate staining of the granite.
- Cornice stone defects: Section of stone spalled and loose at one location; stone displacement and slippage at a second location; extensive cornice stone crack at a third location (with repairs in process at the time of this survey); horizontal surface joinery at corner and field locations sealed with bitumen is cracked and opened; moss, vegetation and/or mold observed @ open mortar joints, particularly evident above and below the cornice stone (the vegetation growing above the cornice matches invasive tree and weed growth found on site). See photo #2, appendix iii.
- Improperly detailed light fixture with exposed conduit. Staining associated with exposed metal.

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- Heavy guano above main entry porch, resulting in staining of affected materials.

Window Assemblies

Fenestration is defined by pilasters segmenting the façade into symmetrical bays. The exceptions noted in the following paragraphs notwithstanding, existing window assemblies are comprised of single hung wood framed windows with counter weighted sash. It is believed original windows featured a double-hung operation, but the upper sash track has been block by a wood filler strip. Sash is divided in multi-lite configurations by wood muntins. Glazing consists of single layer of plate glass set within muntins and is sealed with glazing compound. Sash weather-stripping is pressure-activated strip copper between the sash and jamb, generally in good condition. All windows are without screens. A fair amount of the wood components, including brick molding, lacks continuous paint coverage. Peeling paint has exposed wood in several locations. Rotting and weather checking (splits) in sills is evident in nearly 40% of the work observed, with the worst cases, nearly 15% of all sills, requiring replacement (See photo #4, appendix iii). With the exception of the defects noted herein, most of the work observed is in good condition. A Window and Frame Analysis Form that catalogs material finishes and conditions is attached to this report.

Sashes generally exhibit good maintenance and are operational in good working order. Repairs to sash and frame will likely be necessary where lower sash abuts window air conditioning units (window operation at these locations, nearly one-third of all openings, could not be confirmed). A few sashes that tested non-operational may have been locked at the checkrail, but due to limited access, their operation could not be confirmed. One sash, the large, central unit with diagonal lites serving the second floor lobby, features an in-swinging hinge design with a makeshift stop and chain.

Glazing compound has incurred adhesive/cohesive failure, mostly on southern and eastern exposures. The same can be said for perimeter sealants at these elevations where joints abut stone or brick masonry. The lack of seals allows for increase air infiltration through the window assembly.

Window parting stops are in fair condition, but replacement will be necessary in locations subjected to the heaviest exposure to the elements (moisture, ultraviolet light, freeze/thaw, etc.) primarily on southern and eastern facades.

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Openings flanking the two largest areas of the building, the Registry of Probate Files and Research Room, and the Registry of Deeds and Files Research Room, had new sash installed approximately 17 years ago. Paired sash, fabricated similar to original, are set in the original frame and feature one-lite, half-inch thermopane glazing. A mullion above the upper sash divides the new work from original fixed sash units of 2 over 2 divided diagonal lites.

Typical Basement windows have no stool, frames only. Windowsills at one entire façade are in contact with grade. Mulch was found over the top of the sill in some locations. One basement window frame has a hose bib penetrating through the unit. Additionally, due to the current ongoing remodeling and construction operations, a few openings had their sash removed from the site. Basement openings also include the only examples of work anachronistic to the original period of construction; a bronzed anodized aluminum storefront window infills one opening, and there are clear anodized aluminum entry doors with sidelites at two locations. Basement windows in some areas have been modified in various ways to accommodate exhaust fans and louvers. Two window openings have plywood blank-out panels fixed to the exterior of the frame.

Miscellaneous Comments

- Stained and dirty wood panels are evident on the coffered ceiling at the main porch. Electrical fixtures have been removed from all but the central bay; canopies remain.
- Painting and minor repairs are required for the cast-iron light standards set on the stone pedestal flanking the porch steps. Corner medallions are missing at some locations. Conduit servicing fixtures is exposed.
- A low granite retaining wall flanking the Federal Street sidewalk exhibits joint openings in the cap and corner stones.
- Open mortar joints were found at the pedestal supporting the cast-iron light standards.
- Open mortar joints exhibited at the porch support walls and edge trim stones.
- The facility is without lightening protection.

SUMMARY & RECOMMENDATIONS

Despite the defects and cosmetic blemishes outlined above and catalogued on the elevation drawings in appendix iii, the exterior envelop of this building, given its age, is in sound condition. New roofing and flashing work being completed at the time of this report will halt water penetration problems that have appeared on the interior ceilings and interior faces of exterior walls. In addition to addressing the miscellaneous items listed above, the following work on the exterior is

recommended subject to the preparation of a hazardous material report on sealants, paints and glazing compounds:

- Reset loose, unaligned, granite stones and stone fragments. Replace exposed stone anchors with concealed stainless steel anchors.
- Remove bituminous sealant and provide new metal cap flashing above cornice stone around entire building.
- Repoint open mortar joints in exterior masonry. Remove vegetation, moss & mold prior to repointing.
- Seal open holes resulting from the removal of steel fire escapes. In holes where steel supports are partially exposed, steel should be cut back before sealing hole. Sealant material shall be a custom mix mortar.
- Replace plywood and sheet metal molding and cornice caps with GFRC cant strip adhesive applied.
- Replace rotted windowsills with new wood sills. Scrape, prime and paint wood window frames and sashes. Replace perimeter sealant.
- Cut out existing glazing putty, clean and reglaze.
- Remove carbon buildup, rust stains, efflorescence and guano and clean all masonry.
- Refurbish cast iron light poles (clean, paint, replace missing medallions, relamp and conceal exposed conduit).
- Provide lightning protection for the building.

See annotated exterior elevations, appendix iii, for locations of items mentioned above.

End of exterior envelope survey.

SALEM PROBATE & FAMILY COURT BUILDING

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Existing Conditions Survey – Interior Fabric

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INTRODUCTION

The interior of the building was toured to determine the extent and locations of visible moisture infiltration and its effect on ornamental plaster, as well the general condition and state of repairs required for marble finishes, decorative oak millwork, and significant historic architectural features. Every public space, corridor, stairway, office, restroom, utility room and storage closet was visited and reviewed with regard to condition of wall, floor and ceiling finishes. Particular attention was given to the facility's main public areas. A Room Inventory & Inspection Form that catalogs material finishes and conditions for the original 1912 structure is attached to this report.

NOTABLE AREAS

The highest attention to detail is exhibited within the facility's main public areas: Court Room Session I (Photo #I-1), the Registry of Probate File Room (Photo #I-2), the Registry of Deeds File Room and the main lobbies (Photo #I-3 & 4) and corridors (Photo #I-5). Marble details and finishes (Photo #I-), decorative iron work (Photo #I-6), decorative oak paneling and moldings (Photo #I-7), brass chandelier and sconces (Photo #I-8), and coffered ceilings rendered in ornamental plaster (Photo #I-9) all combine to achieve the quality of finish indicative of early twentieth century municipal architecture and contribute to the building's distinctiveness when matched against contemporary design features.

EXISTING CONDITIONS

The following conditions were noted through Goody Clancy's visual evaluations and discussions with occupants and facilities maintenance staff. Original construction drawings were referenced and compared with found conditions. Most of the original work of this facility is extant and in fair to good condition, notwithstanding exceptions noted herein.

General

The interior face of exterior masonry walls are furred out with thin, hollow terra cotta tile rendered in a 3-coat plaster finish. Interior walls are typically unbraced, 4" hollow terra cotta block masonry with applied interior finishes. First and second floor corridor walls along the east/west axis of the building are boxed around structural steel columns of built-up plate sections. Hollow block is not used above door openings within these boxed-in corridor walls; at these locations a wall panel above the opening is constructed with one-inch wide steel bars with expanded metal lath attached to each side, rendered in plaster. All walls to be retained, will require new painted finishes over preparatory work; a few minor areas are in need of patching or new finishes.

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Original ceilings are 3-coat plaster over expanded metal lath supported by metal bars and rods spanning between truss supports. Locations of ceiling defects due to water penetration are primarily second floor spaces adjacent to roof drains (Photo #I-10). Ceilings within the Judges Chambers have experienced the most severe damage due to water penetration. The original plaster and metal lath has been left in place and masked over with new drywall construction. Several rooms have ceilings finished in suspended acoustical tile or acoustic tile glued to original work (Photo #I-11). Where this occurs, it is suspected the work was applied over damaged material. Tile glued in place is in various stages of disrepair and should be removed in its entirety after surveying the work for asbestos contaminates. All plaster ceilings will require new painted finishes over preparatory work.

A common detail found in all of the major rooms, lobbies and corridors is the use of decorative plaster in the construction of coffered ceilings, beams and pilasters. Faux ceiling beams are rendered in plaster applied over steel framing wrapped in expanded metal lath. Pilasters and their capitals also exhibit this technique. A shared detail found throughout the public areas is the unique double circle banding on pilaster capitals (Photo #I-12). This detail can also be found on the building's exterior granite. Decorative plaster finishes at beams and pilasters adjacent to areas subjected to failed roof drains have succumbed to the effects of severe water penetration and will require great care in the reproduction of missing detail (Photo #I-13 & 17). All paint finishes on decorative plaster will require new paint applications over preparatory work.

Floors are all constructed with cast-in-place concrete slabs supported by built-up steel plate sections. With the exception of the basement, front vestibule, lobbies, corridors, stairs, and restrooms, carpeting and vinyl tile flooring combine to finish the majority of areas. Most of this material is in fair condition requiring minor repairs, but in a few cases replacement is warranted. (It should be noted: all material has been in service for several years and has reached the outer limits of its utility). Terrazzo tile used at wet locations (bathrooms and janitor closets) was found to be in good condition requiring only minor repairs. A survey of asbestos materials, lead-based paint and Polychlorinated Biphenyls (PCBs) was not performed as part of this analysis. We recommend that a hazardous material survey be performed prior to the commencement of any renovation activities.

At all areas absent of marble wainscoting, a typical base detail employed throughout the facility is an assembly of terrazzo cove tile beneath a running board of oak millwork. The oak in many of the rooms has its original verdigris finish, however much of the original work has been covered under layers of paint. In the building's two largest rooms, the Registry of Probate File Room and the Registry of Deeds File Room, marble replaces terrazzo in this detail. The Session II courtroom has this detail covered with carpet.

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Marble Finishes

Marble is featured prominently throughout the public lobbies and central corridors, used for wainscots, floor tile, railings, pedestals, stair treads, and veneers for pilasters and columns. The majority of the work observed at column, pilaster, and pedestal locations is in good condition, though defects were noted in a few vertical surfaces where mortar joints have opened. (See photos #13 & 14, appendix iii) Also, horizontal cracking has occurred on the marble veneer in the first floor lobby's northeast column, and vertical cracking was observed in some wainscot base and stair riser locations. The majority of tile, wainscot, base, railing, riser and tread materials are in excellent condition.

Millwork

One of the outstanding distinctions this facility presents is the millwork detailed within the main public areas and the excellent condition of nearly all work observed. Oak appears the predominant wood species selected for paneling, ceiling coves, molding, medallions, doors, and historic casework; with lacquered finishes either natural, darkened, or with verdigris staining. The employment of the verdigris finish is typically applied to the surface of millwork within rooms accessed from the central corridors and lobbies of each floor, such as the offices and courtrooms, while the surface of the millwork within the central corridors and lobbies all feature natural finishes. Typically, a dividing door from corridor will feature an example of each application. The one exception to this rule is the finishes within Court Room Session II where a darkened stain was applied to all wood surfaces. Paint finishes have been applied over original millwork in many of the offices and lesser public areas, and in some cases the original chair and picture railing has been replaced with contemporary details. Window components with darkened stain and verdigris finishes subjected to heavy ultraviolet exposure are in need of finish repairs. Most millwork outside the main public areas requires preparatory work combined with finish restoration or new painted finishes. The condition of millwork observed in the most prominent public spaces, courtroom and lobbies is preserved in excellent condition with minor repair needed to details and finishes.

Historic Light Fixtures

The Front entry porch, first floor lobby and corridor, Session I Courtroom, and inner floor restrooms all display historic fixtures in varying degrees of style, quality and condition. Fixtures include wall sconces of polished brass with glass shades, surfaced mounted brass ceiling canopies with and without glass shades, a pendant brass lantern chandelier, and chain suspended school house globes. See photos #1-8 & 15. All work to be reused shall require cleaning and finish restoration, rewiring, relamping, and in some cases, replacement of missing glass shades. The cast-iron light poles at the entry porch are in need of minor repairs to the base and painted finish.

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Glazed Ceiling Panels

The second floor's largest space, the Registry of Probate File Room, exhibits one of the facility's unique features, glazed ceiling panels of clear hammered glass (Photo #16). Originally, borrowed light filtered through this glazing from skylights positioned above on opposite sides of the gable roof. The glazing appears dirty but otherwise in good condition, however the work is likely in nonconformance with current safety performance standards.

Cast and Wrought Iron Staircase and Miscellaneous Trim

The main stair connecting the lobbies of each floor is constructed with cast and wrought-iron components with a verdigris finish. The stairwell's wrought-iron balustrade matches the fretwork detailed at the elevator's surrounding cage (Photo #I-20). Also, the use of cast-iron as a featured detail is found in the structural support and accompanying trim for stair landings. All work is in excellent condition. In addition to the iron work employed in the central lobbies, two staircases delightfully detailed in cast iron with solid oak treads and cap rails lead from both main floors to the inner floor restroom locations. The work is in excellent condition with only a minor concern for the quality of the wood and metal finishes.

Conveyance Systems

The hydraulic elevator and equipment in the facility are less than two years old and are operating sufficiently. A new cab with a brushed bronze finish is positioned inside the building's original cast and wrought-iron cage enclosure, displaying a comfortable juxtaposition of new and old materials (Photos #4 & 6). The cab door is finished in brushed stainless. The interior finishes in the cab are in very good condition; however, the selection of materials within poses a disquieting appearance, having made no attempt to integrate or harmonize with the building's original features. The original cage surround underwent a minor alteration to the fretwork in order to enable the installation of the new elevator's LCD graphic display panel.

Doors

Upon arriving at the building's main entrance one passes through the facility's only door with materials anomalous within the public points of egress. With the exception of the bronzed anodized aluminum storefront front entry, all doors, transoms and frames at original openings are oak and appear to date back to the initial 1912 construction. There are examples, however, of replacement work with regard to door hardware, glazing and finishes. The majority of the work is in good condition, with exceptions noted herein.

At the main entrance a bronzed anodized aluminum storefront entry has been set into the doorway's original oak frame. An aluminum threshold is secured over the top of the building's original granite threshold. Panic hardware is provided at this

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entrance; wood blocks wedged below the bottom rail are used as hold open devices. An aluminum sign panel is positioned above the door head with the inscription, “36 FEDERAL”. Above this opening’s tall transom the original building’s wooden sign panel displays the text, “PROBATE COURT and REGISTRY of DEEDS”. The finishes and text on the original sign have suffered carbon staining and slight defects due to weathering, but are otherwise in good condition.

The doorway separating the entry vestibule from the front lobby segments the opening with symmetrical half-round jamb enclosures. Original polished brass hardware is semi-functional with finishes worn and scratched. Flush bolts are missing. Ornately carved medallions of turkey plumage surmount an entablature of oak millwork above the opening. The entry assembly includes a period arts & crafts transom detailed in a repeating pattern of vertical mullions and muntins, crossed at the top with a double band of muntins. Hammered glass is held in place with wooden stops. This transom design is also found within lobby corridor wall panels (Photo #I-3). Nearly all of the work observed is in good to excellent condition.

The opening design for the vestibule, with its unique circular jambs and millwork entablature repeats itself at the opening separating the entry lobby to central corridor. At this location damage was observed to the right-hand door’s bottom rail. Additionally, foot and head bolt mechanisms have been removed, and an oversized wooden wall stop of recent vintage is fastened to the carved wood pilaster/jamb assembly. Wood wedge blocks are employed to stop the doors in their open position (Photo #I-18).

Courtroom Session I and II entries feature a pair of oak panel doors with oval vision lites, polished brass push pull hardware and double-acting Bommer hinges (Photo #I-19). Raised panels are set above the doors. All work requires cleaning, especially finish hardware, otherwise material conditions are quite good.

The balance of historic door construction is a combination of full-lite, half-lite, and solid raised panels, with the majority of glazing being hammered glass. In some locations work displaying clear glass appears to be of a newer vintage, and at one opening acrylic panels are used within a half-lite style door. All openings feature marble thresholds in good condition, and nearly half of the openings feature transom units with pinch-bar operators functioning adequately. Original locksets are an orbit style, polished brass and mortised. A few openings have lever locksets replacing original work. Most of the doors are not keyed alike and a master key for all openings within the facility is not available. In general, all work is good condition.

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Rest Rooms

The inner-floor bathrooms feature stalls divided by marble partitions and lacquered oak panel doors with verdigris staining. Terrazzo tile flooring and a six-foot high marble wainscot are typical. Ceiling and upper walls are rendered in plaster. All finishes and millwork observed are in good condition. Exposed plumbing lines service many of the fixtures. Ventilation is provided by open windows.

SUMMARY & RECOMMENDATIONS

The entry lobby, public monumental stairway, elevator cage, the east-west central public corridors on the first and second floor and the Session I courtroom on the second floor have original, high quality, period finishes with period fixtures and detail, generally in good condition and worthy of restoration and preservation. It would be desirable to refurbish and continue to use these spaces for their intended use.

The Registry of Deeds file room and the Registry of Probate file room are grand, day lit spaces, with high ceilings featuring coffered beams, column pilasters and capitols clad in plaster with ornamental moldings. It would be highly desirable for the adaptive re-use of these spaces to preserve as much of the spatial quality and finish detail as possible.

The building contains a significant amount of the original period furniture and fixtures worthy of re-use. Lighting fixtures, metal worktables, metal file cabinets, metal storage units and transaction counter casework should be itemized and catalogued for potential re-use.

4. HVAC and Electrical Existing Condition Survey

**Salem Courts
HVAC & Electrical Systems
Existing Conditions Report**

SEI Project No. 205128.00

PREPARED FOR:

Goody Clancy & Associates

334 Boylston Street

Boston, MA 02116

October 17, 2005

PREPARED BY:

SEI COMPANIES

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I. EXECUTIVE SUMMARY

SEI was retained to conduct a review and evaluation of the existing HVAC and electrical systems within the Probate and Family Court Buildings (P & FCB). This review was to evaluate the systems to assess their condition and suitability for potential reuse and to provide sufficient understanding of the systems so to provide for a demolition package for the planned renovation/construction. This report includes a written description of those systems, photographs of various components associated with the mechanical and electrical systems and single-line floor plans outlining the extent of these systems in the building.

We also reviewed the Superior Court and Commissioner's Buildings to determine how they could be re-fed with respect to their major utilities or become standalone buildings separate from the P & FCB. As such, this report provides some insight into their HVAC and electrical systems.

What we found mechanically is that the majority of the existing system in the 1912 portion of the P & FCB is original to the building with regards to heating and ventilating. The fact that a 90-year old heating system still functions at all is a testament to the building's facility personnel who maintain and operate it. There is nothing in the 1912 portion of the P & FCB that should be considered reusable mechanically. The mechanical systems in the 1979 portion of the P & FCB are in fair to good condition and can be reused depending on the final programmed use of the building.

Very little of the electrical system is original to the building. However, some knob and tube distribution does exist in the 1912 portion of the building. Most of the existing electrical gear and distribution is 25 to 35 years old. Some of the equipment is no longer manufactured and replacement parts are not available. A major renovation of this building, both the 1912 and 1979 portions, will require a complete replacement of all the electrical and communication systems to meet the new load and functional requirements of the facility.

The existing heating plant consists of a mixture of old and newer equipment and systems. It will not be adequate to heat the planned addition, is inefficient and would require extensive upgrades for reuse in the existing P & FCB. As such, we recommend that a new heating plant sized for both the planned addition and the P & FCB be considered.

The extent of the planned renovations to the P & FCB require that all systems in the 1912 building be replaced and only selective portions of the mechanical systems be considered for reuse in the 1979 building.

II. HVAC

A. Probate and Family Court Building (P & FCB)

1. This building was originally constructed in 1912 and consists of 2 floors, a full basement and an attic with approximately 52,000 SF of floor space. A five-story addition was built in 1979 with approximately 20,000 SF of floor space. The central boiler plant sits below the addition building. The major mechanical systems in the 1912 portion of the building are for the most part original. The first part of this Existing Conditions Report will focus on the 1912 portion of the Probate and Family Court Building.
2. The primary means for heating this building is by forced hot air which is distributed throughout the building via heavy gauge ductwork. This hot air is supplied from a large single low speed fan located in the basement in the fan room. Air is drawn into the basement from a doorway along the northeast wing which then passes through an abandoned air washer and a prefilter which is still functioning. The air then flows past a four row steam coil which heats the air prior to entering the fan room. (See photos P-M1 through P-M4.)
3. From the main supply fan, air is forced to nearly all areas of the building as indicated on the single line floor plans. The distribution ducts which feed the supply risers to individual spaces on the first and second floors have booster steam heating coils located at the base of the risers in the basement which add heat to the air prior to discharging into the rooms or spaces they serve. It was observed from the condition of the coils, piping and ductwork that approximately half of these local steam coil heaters still function. This forced hot air system is manually operated by the court facilities people with little control of air discharge temperature, and is therefore, turned on and off when needed in cool weather and then left on in very cold weather. (See photos P-M10 through P-M17.)
4. In addition to the forced hot air, there are a few steam radiators scattered about the building to help with the cold spots. All of these heating systems are in poor to fair condition. (See photos P-M24, P-M30, P-M32.)
5. There are two abandoned exhaust fans in the attic with ductwork still connected that extends to at least the first and second floors of the building. It appears that the main courtroom, the Registry of Deeds and Probate file rooms and several other rooms in the east wing could have been exhausted mechanically. The fans and ductwork appear to be original to the building for the most part. While the motors and controls could be somewhat newer, they are at least 50 to 60 years old and in poor condition. Most of the ductwork is in poor to fair condition. It does not appear that this exhaust system has functioned in some time. In fact, the fan discharges to the exterior have been closed off at both fans. (See photos P-M40 through P-M46.)
6. From our review of the building systems, it is very likely that the exhaust fans could have been used during the summer months to help ventilate and cool the building as all the exhaust grilles are at or near the ceiling in the major open rooms. Either operable windows or the supply fan with the steam coils shut off could have supplied the fresh air to the building. Also,

the air washer which the supply air passes through could have been used as a cooling water mist to affect a cooler supply air to the building.

7. Finally, the exhaust system could have been used in the winter to relieve the air from the building allowing the heating supply fan to move more hot air through the building at times when the windows would have been closed tight. This is quite likely as there is no real evidence or means for recirculating air through the building.
8. There are window air conditioners which cool the courts and some offices in the building as indicated on the drawings. The majority of the original building is unconditioned in the summer. (See photo P-M26.)
9. Below the 1979 addition is the boiler plant which existed prior to the addition being built. In 1979 a heat exchanger and circulating pumps were added to provide hot water for heating and reheat to the new addition. The present boilers are perhaps ten years old, and in reasonable condition. There are three equally sized gas-fired low pressure steam boilers. The water treatment system appears in good condition and the condensate return and boiler feedwater systems are in reasonable condition. The boiler plant is adequate to serve the existing buildings. (See photos B-M6 through B-M12.)
10. The 1979 building has perimeter hot water baseboard heating as the primary source of heating. There are three rooftop air handling units which provide ventilation air and air conditioning to the building. The system consists of a low pressure constant volume air distribution with reheat coils controlled by local T-stats for each zone. There are roughly 4 to 8 zones per floor depending on the partition layout. The return air is a partially ducted plenum return back to the rooftop units.

B. Superior Court Building (SCB)

1. The Superior Court Building is constructed of exterior masonry with arch floor support systems, wood joist attics and wood framed roofs. The Superior Court Building was constructed in stages between 1861 and 1891 and consists of approximately 39,500 SF.
2. The primary heating source comes from the central steam plant and the steam is used throughout the building. (See photo S-M12.)
3. The Superior Court building is heated in a similar fashion as the original P & FCB. A single supply fan located in the basement, presently draws recirculated building air through the building corridors and open doors back to the heating room and then into the fan and then back out to the building. The heating room has steam heating coils through which the air passes prior to reaching the fan. The supply air fan is a large slow speed dual discharge fan constructed of heavy gauge metal. (See photos S-M1 through S-M3.)
4. This forced hot air system is the primary heat for the building. Originally this unit provided outdoor air to the building via a fresh air duct supply into the heating room. This has long since been blocked off. Based on our observations, it does not appear that the Superior Court building has any

central outdoor ventilation air from this central unit. (See photos S-M4 and S-M5.)

5. Similar to the P & FCB, this unit is operated manually. It is turned on to heat the building then shut down once the building comes up to temperature.
6. In addition to the central air system, there are ducted gravity ventilator heating units on the south end of the building which provide supplemental heating along the perimeter up to the first floor. These gravity ventilator units have steam heating coils located in the basement ceiling which draw in outside air, heat it, allowing the air to rise in the duct to the space above. It was reported that about half of these at least were still working. (See photos S-M9 through S-M11.)
7. In addition to the above heating sources, there are steam radiators in stairways and other areas of the building which aid in the heating of the building. The heating systems were very likely installed when the P & FCB was constructed as the systems are similar. (See photo S-M46.)
8. Similar to the P & FCB, the Superior Court building has a non-functioning exhaust fan in the attic that at one time would have drawn air up and out of the building. The exhaust ductwork in the attic is mostly in tact but in poor condition. It has not been in use for quite some time. (See photos S-M40, S-M42, S-M44 and S-M45.)
9. With the exception of the Law Library, which has its own dedicated split DX cooling system installed recently, some air conditioning is provided by window air conditioning units for rooms along the perimeter. Interior spaces are unconditioned. The Law Library is served by A/C units located in the attic above. However, only two out of the three are completely installed, ducted and working. The third unit has not been completed. (See photo S-M41.)

C. County Commissioner's Building (CCB)

1. The County Commissioner's Building, similar to the Superior Court Building, is constructed of exterior masonry with arch floor support systems, wood joist attics and wood framed roofs. The County Commissioner's Building was constructed in 1841 and consists of approximately 15,600 SF.
2. The primary heating source comes from the central steam plant.
3. The County Commissioner's Building utilizes a steam-to-hot water heat exchanger located in the basement to provide hot water to perimeter convection heaters below the windows. Heating hot water is circulated by two in-line pumps. There are supplemental radiators and some hot water baseboard units in the building as well. The system is in poor to fair condition. (See photo C-M4.)
4. A small fresh air heating and ventilating unit located in the basement near the heat exchanger room provides the only ventilation to the building (except for operable windows) during the heating and cooling seasons. It appears considerably undersized for the size of the building and the

number of occupants. However, it was observed functioning. (See photos C-M1 through C-M3).

5. Some cooling is provided by the use of window air conditioning units for rooms along the perimeter. Interior spaces are unconditioned.

D. HVAC Conclusion

1. Generally, the HVAC systems in all three buildings are very old, are in poor condition and do not provide proper treatment of the buildings' air circulation and conditioning. There is little to no automatic temperature control of space conditions.
2. When considering a new building along with a renovation of the P & FCB, there is no merit in keeping the existing boiler plant. The plant would not have the capacity to serve the new total complex, and a steam distribution system in a new facility of this type would not be recommended as a modern and efficient heating system.
3. There is no value in reusing any of the existing HVAC systems in any of the three court buildings.
4. The HVAC systems in neither the Superior Court Building nor the County Commissioner's Building are part of this modernization. However, since these buildings are supplied by steam from the central boiler plant, heating of both buildings will need to be addressed if the boiler plant is removed or replaced under the new project.

III. Electrical

A. General

1. Probate/Family Court, Superior Court, and County Commissioners' Buildings are connected by an underground tunnel (basement).
2. Utilities, including steam, electrical and fire alarm, are distributed between the buildings. These utilities will need to be separated so that the SCB and the CCB can become stand-alone buildings.
3. Upon loss of utility power, the building has experienced surges when the utility power has been restored. This has negatively impacted the motor loads within the facility. The details of these incidents were not discussed.

B. Probate and Family Court Building (P & FCB)

1. General

- a. P & FCB is essentially comprised of two major building components, the "old" section constructed in 1912 and the "new" section, which was constructed in 1979. A Fire Alarm Upgrade for the "old" section of the building has been designed and appears to be under construction.

2. Site

a. Utility Service

- 1) The utility service to the P & FCB is provided by Massachusetts Electric Co. and enters the site at the northwest corner of the site. The service is routed underground to a handhole on the site and continues on to the service entrance transformer.

b. Service Entrance Transformer

- 1) The utility service entrance transformer for the P & FCB is an exterior pad-mounted transformer located in the parking lot near the northwest corner of the P & FCB (just outside of the main electrical room). The transformer is owned and maintained by the utility company, Massachusetts Electric Co. The customer metering is mounted to the outside of the transformer enclosure.
- 2) The P & FCB service entrance transformer, manufactured by Howard Industries, has recently been replaced. It was noted that a single-phase on the service has remained energized during an outage. This condition should be further investigated with the facilities department and the utility company. However, it is anticipated that this transformer will be replaced with a larger unit to meet the renovated building electrical loads.

3. Basement - Main Electrical Room

a. Main Service Entrance Switchboard (DPA)

- 1) The name of the switchboard is not identified on the equipment and likely the transformer will need to be replaced. The switchboard is an older style GE switchboard, which is of the same vintage as the SCB, rated at 208Y/120 Volts, 3-Phase, 4-Wire, 2500 Amps with a 2500 Amp shunt-trip main circuit breaker. (See photos P-E1 and P-E2.) The switchboard serves the following loads:

- a) PPA - 600A-3P
- b) Registry - 600A-3P
- c) Boiler Room - 400A-3P
- d) LA 2-4-6-8 Panels - 300A-3P
- e) Access Area Comp. Panel - 100A-3P
- f) LA-16, EXT1 - 70A-3P
- g) ATS, EDP - 225A-3P
- h) Comp Room AC - 125A-3P
- i) LA 1-3-5-7 - 300A-3P

b. Panel ELA

- 1) This panel is a 30-Pole panel rated at 208Y/120 Volts, 225 Amps, 3-Phase, 4-Wire. The panel feeds electrical room lighting and emergency lighting in the overhang of the parking area in the addition, as well as sub-panels ELA-1 and ELA-2.

c. Panel LA-16

- 1) This panel is a 30-Pole panel rated at 208Y/120 Volts, 100 Amps, 3-Phase, 4-Wire. The panel feeds heat trace receptacles, courtside elevator and parking area lighting. The panel contains the following breakers:

- a) (1) 30A-3P
- b) (1) 30A-2P
- c) (1) 20A-2P
- d) (19) 20A-1P
- e) (2) Single-pole Spaces

d. Panel EXT1

- 1) This panel is a 12-Pole panel rated at 208Y/120 Volts, 100 Amps, 3-Phase, 4-Wire. The panel feeds parking area lighting. The panel contains the following breakers:

- a) (1) 20A-2P
- b) (10) 20A-1P

4. Boiler Room

- a. The boiler room is located in a sub-basement at the north end of the building. The temperature in the boiler room at the time of the site visit was approximately 98-Degrees Fahrenheit. The boiler room contains several pieces of electrical distribution equipment of various manufacturers and vintages. It also contains equipment fed from the normal power source as well as emergency power generation and distribution equipment. The boiler room and adjacent corridor contain the following equipment:

1) MCC

- a) The motor control center is fed from an adjacent 240 Volt, 400 Amps, 3-Phase separately enclosed circuit breaker, which is fed from a 400A-3P circuit breaker in the main distribution switchboard DPA. The enclosed circuit breaker does not appear to meet present code with respect to clearances.
- b) The motor control center is an older style GE MCC with five-distribution sections. The MCC is rated at 208Y/120 Volts, 400 Amps, 3-Phase, 4-Wire. The MCC generally serves boiler room loads, generator fuel pumps, compressors, vacuum pumps, and elevators. (See photo B-E30.)

2) Panel BP

- a) The panel is a surface wall mounted panel does not have proper working clearance as it is blocked by a desk. The panel is a 24-Pole, older style GE panel rated at 208Y/120 Volts, 100 Amps, 3-Phase, 4-Wire. The panel feeds boiler room loads including a water heater and sump. The panel contains the following breakers:

- * (1) 50A-3P (Water Heater)
- * (1) 20A-2P (Sump)
- * (1) 20A-1P GFI
- * (18) 20A-1P

3) Emergency Generator

- a) The stand-by, emergency generator is an older style International Diesel Electric Co. (IDE), diesel-fired generator rated at 60kW, 67.5 kVA, 208/120 Volts, 60 Hz., 0.8 pF. The generator feeds the emergency side of a 225 Amp, 208/120 Volts, automatic transfer switch, which is surface wall mounted adjacent to the generator.
- b) The transfer switch feeds distribution panel EDP, which is also wall mounted adjacent to the generator.

4) Emergency Panel EDP

- a) This panel is a 12-Pole, older style GE panel rated at 208Y/120 Volts, 225 Amps, 3-Phase, 4-Wire. The panel feeds emergency power loads for the facility including fire alarm cabinet, boiler room lighting and emergency branch panels. The panel contains the following breakers:

- * (2) 100A-3P
- * (1) 20A-3P (confirm)
- * (1) 20A-2P
- * (1) 20A-1P

5) Emergency Panel EB

- a) This panel is a 18-Pole, older style Federal Pacific panel rated at 208Y/120 Volts, 100 Amps, 3-Phase, 4-Wire. The panel feeds emergency power loads for the facility including fuel pumps. The panel contains the following breakers:

- * (2) 15A-3P (Fuel Pumps)
- * (1) 20A-3P
- * (1) 20A-2P
- * (2) 20A-1P
- * (4) 15A-1P
- * (1) Single-pole Space

- 6) Additional electrical equipment is located near the back stair of the boiler room, which leads to the basement of the adjacent Superior Court Building. The equipment is surface wall mounted, and is mostly located behind the stair, which does not allow for proper working clearances to meet current code requirements. (See photos P-E11 and P-E12.) The equipment in this area is older style Square D equipment and includes the following:

- a) Old service entrance metering equipment and associated CT's
- b) Old main power disconnect rated at 220 Volts, 3-Phase, 400 Amps
- c) SCB disconnect rated at 200 Amps
- d) Reg. Power disconnect rated at 200 Amps
- e) Lighting Main disconnect rated at 600 Amps
- f) SCB Lighting disconnect rated at 600 Amps
- g) P & FCB Lighting disconnect rated at 600 Amps

- h) Lighting Meter
 - i) Elevator disconnect, which is in the "OFF" position
 - j) Boiler Room disconnect
 - k) An enclosed wireway is located below the disconnect switches.
- 7) Some old wiring with cloth insulation and knob and tube distribution is still in used for distribution of power between switches as well as for distribution from this equipment to various branch panels located on floors above. Power from this location feeds the SCB heating fan which will have to be rewired from the SCB power source. (See photos P-E9 through P-E14.)

5. Level 1

a. Court Room – Session I

- 1) Air conditioning - provided through in-window units.
- 2) Lighting - Is incandescent lighting within room. Each wall has two-traditional wall sconces. The ceiling has a ring of incandescent lamps to provide general illumination for the room.
- 3) A clock is mounted above door. Manufacturer: Timex.
- 4) 120-volt receptacles visible included one on each of the north and south walls, one on each column on either side of the Judge's Bench, and two at the Judge's Bench.
- 5) Sound system/recording – Microphones are located at the prosecution and defendant benches, as well as the Judge's Bench. Speakers are wall mounted on the columns at either end of the bench.

b. Court Room – Session III

- 1) Lighting consists of fluorescent pendent lighting.
- 2) There are too few receptacle and telecommunications devices within the room to meet current codes.
- 3) The room is used as an overflow court room.

c. Court Room - Session III

- 1) Lighting consists of fluorescent pendent lights, in rectangular ring configurations. Fixtures consist of single T12 lamping.

- 2) A wall mounted clock is located in the room above the entry door.
- 3) Sound system – Wall mounted speakers are mounted on the east and west walls, toward the front (bench-side) of the room. Microphones are provided at the Judge's Bench, and at the prosecution and defendant benches. The cables to the microphones are routed on the floor with flat walk-over raceways.
- 4) Visible electrical devices include two duplex receptacles on each of the east and west walls, and one service mounted receptacle on the north wall.
- 5) A telecommunications outlet is provided on the west wall, just south of the entry door.
- 6) Power and telecommunications services are also provided at the Judge's Bench, but the quantities could not be confirmed due to the location of a desk and other equipment on and around the bench.

d. Main Corridor

- 1) Lighting consists of traditional style, chain hung, pendants luminaires with incandescent lamping.
- 2) Two electrical panels are located in the corridor to provide power to the floor. The panels are located on the east and west wings of the corridor and are flush mounted. They are 24-Pole, older-style Federal Pacific panels rated at 240 Volts max., 3-Phase, 4-Wire, 225 Amps. Refer to drawings for location. (See photos P-E16 and P-E17.)

e. Main Telephone Room

- 1) The telephone room is excessively warm. There isn't any air conditioning for the space.
- 2) Telephone equipment is mounted to a plywood backboard on three sides of the room. Telephone cabling is terminated to wall mounted punchdown blocks. The main telephone equipment is a Lucent Definity System.
- 3) There is some data equipment located in the room near the entry including some switching equipment.

6. Fire Alarm

- a. Most areas of the original section of P & FCB have little or no fire alarm protection at the present time. Most areas do not have smoke detectors, audible or visual indicating devices, or manual pull stations. However, this system is currently being upgraded under a separate contract.

- b. A manual pull station is located in the lobby near the main entry to the building.
- c. A fire alarm beacon, master box, and knox box are located on the front of the original part of P & FCB (on Federal Street).

C. Superior Court Building (SCB)

1. Site

a. Utility Service

- 1) The utility service to the SCB and the CCB from Massachusetts electric Co. is believed to originate from a utility manhole located at the rotary near the intersection of Washington and Bridges Streets.

b. Service Entrance Transformers

- 1) The utility service entrance transformer serving the SCB and the CCB is an exterior pad-mounted transformer located outside the SCB at the northeast corner of the building. The transformer is an older style transformer, but is owned and maintained by the utility company. The customer metering is mounted to the outside of the transformer enclosure. (See photo S-E1.)

2. Basement (Tunnel) - Electrical Room

a. Main Switchboard DPB

- 1) The switchboard is an older style, 1980 vintage, ITE switchboard with three sections rated at 208/120 Volts, 1600 Amps, 3-Phase, 4-Wire. The switchboard generally serves the electrical loads in the SCB and the CCB. (See photo S-E2.) The switchboard sections serve the following:

a) Section 1

- * Metering
- * SCB Main

b) Section 2

- * CCB Main

c) Section 3

- * Panel LB1
- * Panel LB2
- * Panel LB3
- * Panel LB4
- * Panel LB5 and LB6
- * Spare

b. Storage Area (Archives)

1) Telephone Equipment

- a) Telephone equipment consists of a combination of older and new equipment. The telephone cabling is terminated on wall mounted punchdown blocks. The telephone electronics consists of an AT&T/Lucent Merlin system and Avaya switches. Some older style terminations and equipment are located adjacent to the newer distribution. (See photos S-E7 and S-E8.)
- b) Telephone and other low-voltage cabling is mostly routed as open wiring with J-hooks throughout this space and in the basement corridor.
- c) Equipment should be considered for relocation to protect from damage or physical wear.

c. First Floor

1) Corridor

- a) Panel LB-3 is located in the corridor outside of District Attorney's Office. The panel is an older style, Federal Pacific panel rated at 225 Amps, which service electrical loads in this area.

d. Second Floor

1) Law Library

- a) Lighting – Lighting in the library is provided by stem hung, traditional style luminaires with incandescent lamping.
- b) Power and telecommunications services are provided to computer workstations and the reception desks by floor mounted device boxes, which are fed from flat, metallic raceways routed along the floor.

e. Corridor

- 1) No fire alarm smoke detectors, audio/visual devices, or fire protection exists in the corridor.
- 2) Panel LB-4 is located in the corridor outside of Court Room – Session 1. The panel is an older style, Federal Pacific panel, which service electrical loads on the floor.

f. Attic

- 1) A GE load center is located at the stair heading into the attic space.

D. County Commissioner's Building (CCB)

1. General

- a. The County Commissioner's Building was originally built in 1841. Exposed lightning protection conductors are visible on the exterior of the building.

2. Basement

a. Electrical Room

- 1) The room is not conditioned and is damp. (See photo C-E1.) The room contains telephone equipment and both normal and emergency electrical panels including the following:

- a) Distribution Panel DPC

- b) This panel is a 24-Pole, older style Federal Pacific panel rated at 208Y/120 Volts, 400 Amps, 3-Phase, 4-Wire. The panel provides service to the electrical branch panels and AC units in the CCB. The panel contains the following breakers:

- * (5) 100A-3P (1st and 2nd floor branch panels)
- * (2) 150A-3P (County Clerk Panel)
- * (1) 225A-3P (AC-1 & AC-2)

- 2) Panel LC-B

- a) This panel is a 42-Pole panel rated at 208Y/120 Volts, 100 Amps, 3-Phase, 4-Wire. The panel serves lighting and receptacle loads in the basement of the CCB.

- 3) Emergency Panel ELC-B

- a) This panel is a 18-Pole panel rated at 208Y/120 Volts, 100 Amps, 3-Phase, 4-Wire. The panel serves emergency lighting and telephone loads on the first floor and second floor of the CCB. The panel contains the following circuit breakers:

- * (1) 50A-2P
- * (11) 20A-1P
- * (5) Spares

- b) Telephone equipment serving the CCB is located on the west wall of the room.

3. Corridor

- a. The fire alarm control panel is located in the basement corridor at the southeast end of the building. The panel is a Johnson Control System panel. This panel is believed to serve zones within all three buildings.
- b. There is a fire alarm audio/visual device and pull station also located in the basement corridor. The pull station is manufactured by Kidde. The audio/visual device is an older style device, which does not meet current ADA requirements.

4. First Floor

a. Clerk's Office

- 1) Power for the desks in the County Clerk's Office are is provided by service mounted device boxes and raceway (wiremold).
- 2) Wiring for telecommunications services is routed exposed within the space.

E. Electrical Conclusion

1. Normal Power

- a. With the exception of a few small recently installed panels, the electrical distribution equipment within the "old" and "new" sections of the building has reached or is approaching its rated life expectancy. Some of the branch panels within the "old" section were manufactured by Federal Pacific, which no longer have parts available for replacement.
- b. The major distribution components within the "old" section should be considered for replacement as they are more than 25 years old, and would approach the end of their useful life at the end of any major construction project. (See photos B-E30, P-E1 and P-E2.) Similarly the electrical distribution equipment within the "new" section appears to be in good condition, however, the equipment should be considered for replacement during a major renovation project due to the age of the equipment and to accommodate the new functional requirements of the facility.
- c. Knob and Tube cabling to equipment shall be replaced.

2. Emergency Power

- a. Emergency power branch circuiting is old and should be replaced.

- b. The emergency generator is manufactured by International Diesel Electric Co. It will not be adequate for the renovated building and therefore will need to be replaced.
- c. The distribution system is not in compliance with current codes.
 - 1) Equipment not in two-hour rated room.
 - 2) Feeders not protected by two-hour rated enclosure.
 - 3) Life-Safety and stand-by equipment not supplied by separate transfer switches.
 - 4) The emergency generator serves minimal loads including egress lighting and telephone system in the Superior Court and Commissioner's Buildings.

3. Fire Alarm

- a. Minimal fire alarm devices are located within the building. The buildings fire alarm system is outdated and does not comply with current codes. Adequate coverage for audible and visual devices is not provided.
- b. A fire alarm design has been provided for a new system within the old section of the building. Consideration should be given to whether or not the new fire alarm system will comply or have expansion capabilities to comply with the fire alarm requirements of the occupancy of the anticipated (future) project.
- c. Fire alarm system should be separated from other buildings or be designed to provide operation upon system loss in adjacent buildings.

4. Lighting

- a. Lighting systems shall be evaluated to meet the aesthetic and performance requirements of the renovated areas. Lighting systems will be designed in accordance with current energy code requirements and IES guidelines and recommendations.

5. Telecommunications

- a. Telecommunications systems shall be updated in accordance to current standards and new functional requirements. Abandoned wiring shall be removed in its entirety. (See photos P-E21 and P-E22.)
- b. The new main telecommunications room and distribution rooms shall be conditioned to ensure proper operation and to preserve the life of the equipment.

6. Superior Court and Commissioner's Buildings

- a. The electrical and low voltage systems in these buildings are not part of the modernization program. However, some services in these facilities including normal power to the exhaust fan, emergency power to lighting and telephone systems and fire alarm rely on equipment located in the P & FCB. These systems will need to be addressed as part of the renovation program to allow these facilities to function as a standalone system.

IV. APPENDIX A

A. Photos of Existing Conditions

HVAC Systems

Photos

B-M1 through B-M13

P-M1 through P-M49

S-M1 through S-M46

C-M1 through C-M7

Building

Boiler Room

Probate and Family Court

Superior Court

Commissioner's Building

Electrical Systems

B-E1

P-E1 through P-E22

S-E1 through S-E8

C-E1

Boiler Room

Probate and Family Court

Superior Court

Commissioner's Building

B. Drawings

HVAC Drawings M-1 through M-9

Electrical Drawings E-1 through E-9

-END-

5. Plumbing and Fire Protection Existing Condition Survey

Salem Probate Court
Plumbing and Fire Protection Systems
Existing Conditions Report
August 2005

Purpose

The purpose of this section is to provide a description of the plumbing and fire protection systems presently serving the Salem Probate Court and to investigate possible cross-connections with the Superior Court and the County Commissioners Building. Also included in the investigation will be a discussion of the cross-connections between the Probate Court and Registry of Deeds Building and the 1979 addition to it.

Basis of Report

Field investigations and the review of existing documents provide the basis for this section of the report. Two site visits were conducted (August 9th and August 25th) and findings were compared against two sets of drawings: the "Accessibility, Life Safety & Related Work" project (currently under construction) and the "Additions and Renovations to Salem Court House" project completed in 1979.

Building/System Description

Fire Protection

The original Probate Court and Registry of Deeds Building has no Automatic fire protection systems in place – the only fire protection equipment observed were portable fire extinguishers wall mounted in several locations. A partial automatic fire suppression system and a full standpipe system were, however, installed as part of the 1979 addition, and serve only that addition.

Water is delivered to the systems described above by a 4" service that is tapped off a 6" water main that runs beneath Bridge Street. The 4" line enters the new addition on the East wall and drops down into the existing boiler room. At this location the system delivers water to a standpipe system, and a dry system. There is a 4" fire department connection which feeds these standpipes also located on the East wall of the addition.

Two 4" lines that exit the existing boiler room travel up into the East stairwell of the new addition. One of the systems is dry, as mentioned above, and delivers water via sidewall sprinklers to the windows that separate the existing building from the covered parking area. The remaining 4" line serves standpipes in each stairwell, a deluge system serving the glass portion of the elevator lobby, and hose stations located on each floor.

On each floor level are two standpipes (one in each stairwell) and two hose cabinets located on either end of the floor. The 4" standpipes deliver water to 2-1/2" valves with 1-1/2" adapters. Each hose cabinet is served by a 1-1/2" line. All visible portions of the fire protection system seem to be in good condition and could be reused or modified if necessary.

Systems and components described above serve only the 1979 addition to the Probate Court and Registry of Deeds Building. There are no cross-connections with other buildings at this time nor does there appear to be any incorporated into the design for future use. Additionally, there is no

cross-connection between the Probate Court and Registry of Deeds Building and the 1979 addition.

Domestic Water

The Probate Court and Registry of Deeds Building and the 1979 addition to this building have separate water services. Serving the Probate Court and Registry of Deeds Building is a 2" water service that enters the Southwest corner of the building at the basement level. This line travels south and distributes water to all the fixtures on the basement, first and second floors.

Hot water is provided to the Probate Court and Registry of Deeds Building by two electric hot water heaters. One is located in the basement near the water service entrance and the other is also located in the basement in an electric room in the vicinity of the group toilet rooms.

As mentioned above, a separate water service serves the 1979 addition. This 3" service enters through the East wall and drops down into the existing boiler room. Following a 2" turbine water meter the system distributes water to all the building plumbing fixtures and the electric hot water heater. This system also provides water to the emergency generator and make-up to the boilers.

The domestic water piping, water service, and hot water heater in the 1979 addition are in good condition and could be reused or modified if necessary. Domestic water piping associated with the "Accessibility, Life Safety & Related Work" project in the basement of the Probate Court and Registry of Deeds Building is new and the domestic water heater appears to be in good condition. However, the domestic water piping serving the balance of the building is for the most part original is unlikely to be reusable.

Similar to the automatic fire protection systems, all the systems and components described above serve either the Probate Court and Registry of Deeds Building or the 1979 addition. There are no cross-connections with other buildings at this time nor does there appear to be any incorporated into the design for future use. Additionally, there is no cross-connection between the Probate Court and Registry of Deeds Building and the 1979 addition.

Storm Water

The existing storm system serves a total of 9 roof drains; 4 on the Probate Court and Registry of Deeds Building roof and 5 on the 1979 addition. Rain water leaders serving each roof drain eventually tie together into a 12" storm drain that leaves the North side of the Probate Court and Registry of Deeds Building and runs below grade to a catch basin near Bridge Street.

It is probable that the two roof drains serving the East and West wings of the Probate Court and Registry of Deeds Building tie together near the basement trench that runs from East to West. At this point a 12" storm drain runs North below the basement slab to the rear of the building. The 5 individual rain water leaders serving the 1979 addition group together in the overhead of the parking space and tie into the 12" storm drain.

In this case the storm system does not cross-connect with any other of the building on the site. However, the storm systems from the Probate Court and Registry of Deeds Building and the 1979 addition are connected. If necessary the systems could be easily separated.

Another storm drain is indicated on the site plans and was observed during site investigations. This line is 8" in diameter and is located in the Northwest corner of the boiler room. A sump pump located in the boiler room discharges into this system, but it is not clear what else this line is serving.

As for the condition of the storm systems – the pipe for the 1979 addition and the Probate Court and Registry of Deeds Building was largely concealed. However, it can be assumed that the piping serving the 1979 addition is in good condition and that the piping for the Probate Court and Registry of Deeds Building is original and unlikely to be reusable.

Sanitary & Waste

Similar to the storm system described above, the sanitary system was in place long before the 1979 addition was in built. And similarly, the 1979 addition sanitary system tied into it at the rear of the Probate Court and Registry of Deeds Building. At this point an 8" line runs below grade to a manhole near Bridge Street.

Sanitary stacks in the Probate Court and Registry of Deeds Building group together in the basement trench that runs east to West. Outside of the existing group toilet rooms is access to the trench – at this point an 8" sanitary line runs north to the rear of the Probate Court and Registry of Deeds Building.

Sanitary stacks from the 1979 addition group together in the overhead of the parking area. The Common line ties into the 8" sanitary line from the Probate Court and Registry of Deeds Building. As with the storm system this is the only cross-connection that exists and the Probate Court and Registry of Deeds Building could be easily separated from the 1979 addition if necessary.

As for the condition of the sanitary systems – the vent, waste, and drainage piping for the 1979 addition and the Probate Court and Registry of Deeds Building was largely concealed. However, it can be assumed that the piping serving the 1979 addition is in good condition and that the piping serving the Probate Court and Registry of Deeds Building is original and unlikely to be reusable.

Summary

In the context of plumbing and fire protection systems the Probate Court and Registry of Deeds Building and the 1979 addition to it stand alone and are isolated from plumbing and fire protection system that serve other buildings on the site. And in the case of domestic water and fire protection systems the Probate Court and Registry of Deeds Building and the 1979 addition are isolated from each other.

Only with the sanitary and storm systems is there a cross-connection between the Probate Court and Registry of Deeds Building and the 1979 addition. The cross-connection occurs where the 1979 addition systems tied into the original systems serving the Probate Court and Registry of Deeds Building. In both cases the systems could be easily separated if necessary.

Generally, the systems serving the 1979 addition are in good condition and can most likely be reused. The systems that serve the Probate Court and Registry of Deeds Building, however, are original to building and should be replaced as part of any renovation. Some notable exceptions are the domestic water and sanitary systems associated with the "Accessibility, Life Safety & Related Work" project.

Refer to Appendix V for one-line diagrams indicating the layout of plumbing and fire protection systems.