TABLE II - COST ESTIMATES

Asbestos-Containing Material	Estimated Quantity	Cost ($)
12"x12" Floor Tile and Associated Mastic	21,570 SF	$97,065.00
12"x12" Floor Tile	9,900 SF	$29,700.00
Yellow/Black Carpet/Residual Mastic	4,800 SF	$12,000.00
Interior Unit Door Caulking	2,470 LF	$5,350.00
Perimeter Unit Window Caulking	4,200 LF	$10,000.00
Pink Sink Coating	20 SF	$200.00
Red Duct Sealant*	Unknown	$10/LF Duct
Grey (Black) Duct Sealant*	Unknown	$10/LF Duct
Caulking Along Granite Façade	240 LF	$3,600.00
0"-6" Pipe Fitting Insulation	55 EA	$1,375.00
0"-6" Pipe Insulation	260 LF	$6,500.00
6"-12" Pipe Fitting Insulation	40 EA	$1,500.00
6"-12" Pipe Insulation	410 LF	$12,300.00
>12" Pipe Fitting Insulation	10 EA	$300.00
>12" Pipe Insulation	155 LF	$4,650.00
Electrical Wire Insulation**	750 LF	$3,750.00
Flange Gasket Material***	80 EA	$1,000.00
Glue Daub Associated with Ceiling Tile****	500 SF	$3,000.00
Exterior Window Caulking	3,125 LF	$18,750.00
HVAC Vibration Cloth*****	5 EA	$1,000.00
Base Coat Plaster	72,000 SF	$576,000.00
	Total*	**$788,040.00**

*Due to limited access above ceiling, quantities of Red and Grey (Black) Duct Sealant could not be determined. ATC has provided a unit cost for these materials. Please note that additional cost for the removal of these materials is not reflected in the total.

**For the purpose of this report, ATC is assuming Electrical Wire Insulation to be asbestos containing, due to the danger associated with live electrical wires.

***For the purpose of this report, ATC is assuming Flange Gasket material to be asbestos containing, due to lack of sufficient tools to demo flanges.

**** For the purpose of this report, ATC is assuming Glue Daub Associated with Ceiling Tile to be asbestos containing, due to ceiling height.

***** For the purposes of this report, ATC is assuming that HVAC Vibration Cloth to be asbestos containing. ATC did not want to compromise the integrity of the HVAC system, by sampling the HVAC Vibration Cloth.

2.5 Specific Recommendations

Although the asbestos abatement contractor is required to follow the requirements outlined in Massachusetts State and Federal regulations regarding asbestos during any abatement project, ATC recommends the development of a project specification and the use of project oversight to ensure compliance with all applicable regulations as well as protect the interest of DCAM for all abatement work performed at the Court Buildings. The project specification shall reference the regulations pertinent to each project, including those work procedures that shall be followed by all asbestos abatement personnel.

As part of each abatement contractor bidding process, a unit price schedule for the abatement of asbestos-containing materials, not identified within this report and uncovered during renovation/demolition activities, should also be established. Included should be unit prices for the removal of asbestos-containing materials (i.e., , floor tile, floor tile mastic, window caulking and window glazing, e.g.), as well as those non-asbestos-containing materials which may be asbestos contaminated (i.e., paper, plywood, carpet, etc.)

Project oversight will provide DCAM with on-site technical expertise during all phases of the abatement work. Project oversight provides a constant management of each abatement project to ensure that all asbestos-containing materials are removed in accordance with all applicable regulations and to prevent an asbestos fiber release. Tasks performed during project oversight should include periodic work inspections to ensure that all procedures employed by the abatement contractor are acceptable, and air monitoring around each work area to detect elevated asbestos fiber levels.

2.6 Additional Sampling Recommendations

ATC recommends that assumed ACM materials be sampled prior to the demolition/renovation project in order to determine if these materials contain asbestos. ATC recommends that other suspect materials that were either not accessible (e.g., interior boiler components, or electrical hardware, or valve gaskets) or hidden materials that may possibly be uncovered by exploratory demolition, should be sampled prior to any renovation work. These suspect materials should be assumed asbestos-containing until future sampling proves otherwise.

It is also the recommendation of ATC that if any accessible suspect material has not been positively identified or inadvertently missed by ATC, but is similar in mode of occurrence or physical properties as other identified asbestos-containing materials, it should be considered asbestos-containing. Only through further sampling and analysis should a suspect material be identified as non-asbestos.

3.0 Lead-Based Paint Inspection

ATC performed a lead-based paint (LBP) determination survey of representative surfaces of the Probate and Family Court Building and Administrative Addition located at 36 Federal Street in Salem, Massachusetts on December 6 & 7, 2005. Mr. Frank Bifano, a Massachusetts Lead Inspector (Lic. #I 3240), of ATC, performed the survey. The primary method of determining the lead content in the painted surfaces throughout the buildings was the X-ray Fluorescence (XRF) Analysis method. ATC utilized the LPA-1 Spectrum Analyzer manufactured by Radiation Monitoring Devices, Inc. for this survey.

ATC followed the manufacturer's testing methodology and utilized the threshold recognized by the United States Department of Housing and Urban Development (HUD) and the Environmental Protection Agency (EPA). According to these standards, an XRF reading of above 1.0 milligram's per square centimeter (mg/cm^2) is considered a LBP.

The Occupational Safety and Health Administrative (OSHA) does not acknowledge any quantitative threshold for a lead-based paint. Paint with a detectable amount of lead, regardless of the level, is recognized as a lead-containing paint. The possible exposure hazard to workers impacting these coated surfaces should be assessed and contractors and their employees must adhere to the OSHA Lead in Construction standard found at 29 CFR 1926.62. Although OSHA does not recognize negative XRF results as proof that paint does not contain lead, the use of XRF is an efficient real time screening technique for identifying lead-containing paints. To comply with OSHA requirements, a negative XRF result would have to be confirmed by other approved methods. Positive XRF results do not need to be confirmed. Regardless of analytical results, OSHA still requires that personal exposure monitoring be conducted when appropriate to determine lead exposure, even for zero results as determined by any method. To fully comply with EPA regulations, sampling of demolition debris waste streams may be required, depending on the requirements of the receiving facility.

3.1 Testing Procedures - RMD LPA-1 XRF Analyzer

The LPA-1 Lead Paint Analyzer is a complete lead paint analysis system, which quickly, accurately, and non-destructively measures the concentration of LBP on surfaces. The LPA-1 relies on the measurement of the K-shell X-rays to determine the amount of lead present in the painted surface. K-shell X-rays can penetrate many layers of paint and allow a good measurement of the lead content of paint to be made without being significantly affected by the thickness or number of layers of paint on the surface of the sample.

The LPA-1 has the ability to analyze and compute corrections for the differences in the energy spectrums relating to different substrates. This analysis of the energy spectrum means that the lead paint reading displayed on the instrument already accounts for any substrate effects and no correction is required by the operator for each substrate. The LPA-1's field of view is limited to a depth of 3/8", deep enough to handle virtually all painted surfaces, but not prone to detect lead objects located behind the surface.

There are two measurement modes of operation in the LPA-1 analyzer, namely the "Standard Mode" and the "Quick Mode". In the "Standard" mode, the operator selects a fixed measurement time, which remains constant irrespective of the lead signal. In the "Quick" mode, the analyzer automatically adjusts the measurement time to be the least time that is needed to make a definitive measurement with a 95% confidence level (2 sigma). The LPA-1 analyzer will finish a measurement once the 2 sigma confidence level is achieved and the data is statistically meaningful. This time period for conclusive measurements is typically between 1 to 5 seconds, but can extend to a measurement of 60 seconds depending on the action level for abatement. ATC utilized the LPA-1 in the "Quick mode" for the testing performed.

Upon arrival at the job site, a "validation test" was performed to assure that the instrument was operating properly. All validation readings were recorded in a logbook that accompanies the instrument. If for any reason the XRF does not pass the calibration procedures, it is ATC's policy to replace that instrument with an XRF that passes the above criteria for calibration.

3.2 Summary of Findings

Lead-based paint (readings of 1.0 mg/cm^2 or greater) and lead-containing paint (readings of greater than 0.0 mg/cm^2) were detected on many of the coated surfaces tested. Readings with negative results indicate that lead was not detected at that location. The following table is a listing of surfaces tested throughout specified work areas, along with the XRF results in milligrams per square centimeter (mg/cm^2):

Table III - COMPONENTS TESTED VIA XRF

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
BOILER ROOM LEVEL				
Top Level:	Floor	Wood	White	0.1
	Floor	Wood	Gray	0.2
	Round Handrail	Metal	Gray	0.5
	Square Railing Cap	Metal	Gray	0.7
	Newel Post	Metal	Gray	0.2
	Support Beam	Metal	Gray	1.3
	Ceiling	Concrete	White	0.4
Bathroom	Wall	Concrete	Gray	>9.9
	Wall Casing	Wood	Gray	-0.1
	Wall	Cork Board	White	-0.1
	Door	Wood	White	0.2
	Door Frame	Wood	White	0.2
	Baseboard	Wood	Gray	0.3
	Floor	Wood	Gray	-0.0
	Partition	Wood Slat	White	>9.9
Lower Level:	Stair Tread	Metal	Gray	5.3
	Stair Tread	Metal	Yellow	3.4
	Newel Post	Metal	Yellow	>9.9

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
	Railing Cap	Metal	Gray	>9.9
	Stringer	Metal	Gray	>9.9
	Wall	Concrete	White	5.2
	Support Beam	Metal	White	1.4
	Support Beam	Metal	Gray	2.0
	Support Beam	Metal	Black	0.6
	Support Column	Concrete	White	0.2
	Floor	Concrete	Light Gray	0.2
	Floor Platform	Concrete	Light Gray	1.4
Stairs & Hall from Boiler Room to 1st Floor	Wall	Concrete	White	0.6
	Wall	Concrete Block	White	0.6
	Stairs	Concrete	Gray	1.0
	Handrail	Metal	Yellow	0.8
	Ceiling	Concrete	White	0.5
	Ceiling Band	Concrete	Yellow	1.8
	Pipe	Cast Iron	Yellow	1.8
	Pipe	Cast Iron	Red	0.5
	Door	Metal	White	8.0
	Door Frame	Metal	White	3.0
	Door Jamb	Wood	White	0.2
BASEMENT LEVEL				
Room G104	Wall	Gypsum	White	0.0
	Wall	Concrete Block	White	0.9
	Wall	Brick	White	0.9
	Window Sash	Wood	Brown	0.3
	Window Casing	Wood	Brown	8.3
	Door	Wood	White	0.1
	Door Jamb	Wood	White	0.2
Room G107	Wall	Brick	White	0.7
	Radiator	Metal	White	1.2
	Wall Column	Terra Cotta	White	1.0
	Floor	Concrete	Gray	0.6
	Floor Beam	Concrete	Gray	0.6
	Ceiling	Concrete	White	0.5
Room G118	Door	Metal	Brown	0.6
	Door Frame	Metal	Brown	0.1
	Wall	Plaster	White	-0.1
	Wall	Brick	Yellow	2.5
	Wall Support Lintel	Metal	Yellow	2.9
	Ladder	Metal	Gray	0.4
Room G118A	Ceiling	Concrete	White	0.8
	Ceiling Beam	Concrete	White	1.0

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
	Wall	Gypsum	White	0.0
	Closet Shelf	Wood	White	0.0
	Closet Shelf Support	Wood	White	0.4
	Closet Wall	Terra Cotta	White	0.5
	Window Sash	Wood	Brown	0.0
	Window Casing	Wood	Brown	7.9
	Window Exterior Sash	Wood	Gray	>9.9
	Door	Wood	Stain	0.2
	Door Jamb	Wood	White	0.2
	Door Casing	Wood	White	>9.9
Room G120	Support Column	Plaster	White	0.8
	Wall	Cinder Block	White	0.2
	Wall	Concrete	White	0.4
	Wall	Brick	White	0.5
	Threshold	Wood	White	-0.1
	Floor	Concrete	Gray	1.2
Room G124	Wall	Brick	Green	1.0
	Wall	Cinder Block	Green	0.1
	Wall Column	Concrete	Green	0.4
	Lower Wall	Concrete	Gray	0.1
	Lower Wall	Brick	Gray	0.7
	Window Sash	Wood	Brown	0.1
	Window Casing	Wood	Brown	>9.9
	Window Exterior Sill	Wood	Gray	1.0
Room G126B	Wall	Brick	White	0.2
	Wall	Cinder Block	White	0.5
	Wall	Concrete	White	0.8
	Wall	Gypsum	White	0.3
	Radiator	Metal	White	1.9
	Window Sash	Wood	Brown	-0.0
	Window Casing	Wood	Brown	9.2
Room GC 126	Wall	Gypsum	White	-0.0
	Wall Column	Cinder Block	White	0.3
	Interior Window Sash	Wood	White	0.2
	Interior Window Sill	Wood	White	0.0
	Interior Window Casing	Wood	White	0.0
	Door	Metal	Brown	0.1
	Door Frame	Wood	Brown	0/2
	Floor	Concrete	Gray	0.2
GC 119 Hallway	Lower Wall	Concrete	White	0.7
	Wall	Brick	White	1.0
	Wall	Gypsum	White	-0.0

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
Stairs	Window Sash	Wood	Brown	0.1
	Window Casing	Wood	Brown	8.2
	Stairs	Concrete	Gray	0.4
	Handrail	Metal	Yellow	0.5
	Wall Column	Concrete	White	0.4
	Dutch Door	Wood	Red	1.0
	Dutch Door Frame	Wood	White	0.6
	Door	Wood	Red	0.6
	Door Frame	Wood	White	0.8
	Wall	Wood Slat	White	0.3
	Door	Wood Slat	Red	-0.0
	Door Jamb	Wood	White	0.2
	Baseboard	Wood	White	0.8
	Newel Post	Metal	Black	>9.9
	Railing Cap	Metal	Black	>9.9
	Stairs	Metal	Black	>9.9
	Handrail	Metal	Black	1.0
	Door	Metal	Red	>9.9
	Door Frame	Metal	Red	>9.9
Hall G122	Wall	Terra Cotta	White	0.2
	Wall Column	Concrete	White	0.5
	Duct	Metal	Gray	0.6
	Floor	Concrete	Gray	0.5
Stairs-Basement to 1st Floor	Elevator Casing	Metal	Black	9.6
	Elevator Grate	Metal	Black	4.7
	Upper Wall	Concrete	White	4.6
	Stair Components	Metal	Light Gray	0.4
	Ceiling Beam	Metal	Black	4.6
	Ceiling	Plaster	White	0.0
FIRST FLOOR LEVEL				
Room 105	Support Column	Concrete	White	>9.9
	Support Column Base	Wood	Black	0.6
	Heating Grate	Metal	White	8.2
	Wall	Plaster	White	5.9
	Window Sash	Wood	Brown Stain	0.1
	Window Casing	Wood	Brown Stain	0.5
	Window Sill	Wood	Brown Stain	0.1
	Window Apron	Wood	Brown Stain	0.8
Room 107	Upper Wall	Plaster	White	4.6
	Lower Wall	Plaster	Tan	5.0
	Chair Rail	Wood	Brown Stain	1.0
	Baseboard	Wood	Brown Stain	0.5

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
	Door	Wood	Olive Green Stain	0.4
	Door Frame	Wood	Brown Stain	0.5
	Radiator	Metal	Gray	0.0
	Window Sash	Wood	Brown Stain	0.1
	Window Sill	Wood	Brown Stain	0.8
	Window Casing	Wood	Brown Stain	0.1
	Window Apron	Wood	Brown Stain	0.9
Rooms 107A, 108 & 108A	Upper Wall	Plaster	White	7.4
	Lower Wall	Plaster	Tan	8.4
	Chair Rail	Wood	Tan	0.9
	Baseboard	Wood	Tan	0.7
	Radiator	Metal	Gray	1.2
	Window Sash	Wood	Brown	0.1
	Window Sill	Wood	White	0.6
	Window Casing	Wood	Brown	0.7
	Window Apron	Wood	White	0.5
Room 109	Upper Wall	Plaster	White	4.6
	Lower Wall	Plaster	Tan	5.0
	Chair Rail	Wood	Brown Stain	1.0
	Baseboard	Wood	Brown Stain	0.5
	Door	Wood	Olive Green	0.4
	Door Frame	Wood	Brown Stain	0.1
	Radiator	Metal	Gray	0.0
	Window Sash	Wood	Brown Stain	0.1
	Window Sill	Wood	Brown Stain	0.8
	Window Casing	Wood	Brown Stain	0.1
	Window Apron	Wood	Brown Stain	0.9
Hallway C110 & 120	Upper Wall	Plaster	White	7.0
	Door	Wood	Tan Stain	0.0
	Door Frame	Wood	Tan Stain	-0.0
Janitor's Closet	Upper Wall	Plaster	White	8.1
	Lower Wall	Plaster	Tan	8.5
	Cabinet Door	Wood	Tan	0.1
	Cabinet Frame	Wood	Tan	0.0
Front Lobby 114	Wall	Plaster	Salmon	>9.9
	Wall Support	Plaster	White	8.9
	Entry Trim	Wood	Brown Stain	0.2
	Door	Wood	Brown Stain	-0.1
Lobby C114	Upper Wall	Plaster	White	6.3
	Radiator	Metal	Gray	0.2
Room 116	Upper Wall	Plaster	White	6.2
	Lower Wall	Plaster	Tan	6.5
	Chair Rail	Wood	Brown Stain	0.6

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
	Door	Wood	Brown Stain	0.5
	Door Frame	Wood	Brown Stain	0.6
	Radiator	Metal	Gray	2.4
	Window Sash	Wood	Brown	0.0
	Window Sill	Wood	Brown	0.1
	Window Casing	Wood	Brown	0.6
	Electrical Panel Door	Wood	Brown Stain	1.0
	Electrical Panel Door Casing	Wood	Brown Stain	1.1
	Wall Casing	Wood	White	0.1
	Baseboard	Wood	Brown Stain	0.8
Rooms 117 & 118	Upper Wall	Plaster	White	>9.9
	Lower Wall	Plaster	White	7.1
	Chair Rail	Wood	White	1.4
	Baseboard	Wood	White	1.0
	Window Sill	Wood	Brown Stain	0.1
	Window Sill	Wood	White	0.2
	Window Casing	Wood	Brown Stain	0.9
	Lower Wall	Plaster	Tan	6.3
	Baseboard	Wood	Tan	0.7
	Chair Rail	Wood	Tan	0.2
	Door	Wood	Olive Green Stain	0.7
	Door Frame	Wood	Olive Green Stain	0.8
Room 119	Radiator	Metal	Gray	0.7
	Radiator Cover	Metal	White	0.6
	Window Sash	Wood	Brown Stain	0.2
	Window Casing	Wood	Brown Stain	1.1
	Window Sill	Wood	Brown Stain	0.3
	Window Apron	Wood	White	1.1
Rooms 123 & 123A	Upper Wall	Plaster	White	7.1
	Lower Wall	Plaster	Tan	6.4
	Wall Shelf	Wood	Tan	0.2
	Chair Rail	Wood	Tan	0.6
	Baseboard	Wood	Tan	0.2
	Radiator	Metal	Brown	0.0
	Window Sash	Wood	Brown Stain	0.1
	Window Sill	Wood	Brown Stain	0.2
	Window Casing	Wood	Brown Stain	0.7
	Window Apron	Wood	White	0.4
	Door	Wood	Olive Stain	0.2
	Door Frame	Wood	Olive Stain	0.8
Middle Stairs to 2nd Floor	Wall	Plaster	White	8.3

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
	Handrail	Wood	Light Stain	-0.0
	Newel Post	Metal	Black	5.7
	Stringer	Metal;	Black	3.2
Right Side Stairs –1st to 2nd Floor	Newel Post	Metal	Black	0.4
	Tread	Wood	Light Stain	0.1
	Riser	Metal	Black	7.7
	Stringer	Metal	Black	6.3
	Wall	Plaster	White	8.9
	Window Sash	Wood	Light Stain	0.0
	Window Sill	Wood	Light Stain	-0.0
	Window Apron	Wood	Light Stain	0.0
	Ceiling	Plaster	White	0.3
SECOND FLOOR LEVEL				
Right Side Stairs – Ladies Bathroom	Upper Wall	Plaster	White	7.8
	Ceiling Beam	Plaster	White	5.9
	Ceiling	Plaster	White	0.5
	Radiator Cover	Wood	White	-0.0
	Partition Door	Wood	Brown Stain	0.3
	Window Sash	Wood	Brown Stain	0.0
	Window Casing	Wood	Brown Stain	0.6
Room 207	Wall	Plaster	White	8.3
	Support Column	Plaster	White	8.2
	Window Sash	Wood	Brown	-0.1
	Window Sill	Wood	Olive Green Stain	0.4
	Window Casing	Wood	Olive Green Stain	0.7
	Window Apron	Wood	Olive Green Stain	0.4
	Radiator	Metal	Gray	0.5
	Radiator Cover	Metal	White	0.5
	Wall Vent	Metal	White	6.9
Room 208	Wall	Plaster	White	>9.9
	Chair Rail	Wood	White	0.7
	Baseboard	Wood	White	0.5
	Door	Wood	White	0.5
	Door Frame	Wood	White	0.9
	Radiator	Metal	Gray	0.9
Room 209	Wall	Plaster	White	>9.9
	Chair Rail	Wood	Olive Green Stain	1.0
	Baseboard	Wood	Olive Green Stain	0.4

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
Wall Hutch	Door	Wood	Olive Green Stain	0.4
	Door Frame	Wood	Olive Green Stain	0.9
	Wall	Wood Slat	Olive Green Stain	0.9
	Ceiling	Wood	Olive Green Stain	0.8
	Cabinet	Wood	Olive Green Stain	0.2
	Door	Wood	Olive Green Stain	0.5
Court Room 211	Wall	Plaster	White	>9.9
	Chair Rail	Wood	Brown Stain	0.2
	Radiator	Metal	White	-0.0
	Radiator Cover	Metal	White	0.4
	Window Sash	Wood	Brown Stain	0.2
	Window Sill	Wood	Brown Stain	-0.1
	Window Casing	Wood	Brown Stain	0.1
	Window Apron	Wood	Brown Stain	-0.0
	Baseboard	Wood	Brown Stain	-0.0
	Double Door	Wood	Brown Stain	0.0
	Double Door Frame	Wood	Brown Stain	0.2
	Wall Vent	Metal	White	>9.9
Court Room – 212	Wall	Plaster	White	>9.9
	Chair Rail	Wood	Olive Green Stain	0.6
	Door	Wood	Olive Green Stain	0.3
	Door Frame	Wood	Olive Green Stain	0.6
	Radiator	Metal	Gray	1.1
	Window Sash	Wood	Brown Stain	0.2
	Window Sill	Wood	Brown Stain	0.0
	Window Casing	Wood	Brown Stain	0.8
	Window Apron	Wood	Brown Stain	0.8
Lobby Area – 214	Wall	Gypsum	Off-White	-0.0
	Baseboard	Wood	Off-White	0.2
	Interior Window Casing	Wood	Off-White	0.3
	Door	Wood	Off-White	0.3
	Door Frame	Wood	Off-White	0.2
	Door	Wood	Light Stain	0.0
	Door Frame	Wood	Light Stain	-0.0
	Wall Panel	Wood	Light Stain	0.0

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
	Window Sash	Wood	Brown Stain	0.0
	Window Sill	Wood	Brown Stain	-0.0
	Window Casing	Wood	Brown Stain	-0.0
	Radiator	Metal	Gray	0.0
	Radiator Cover	Metal	Light Gray	0.2
Room - 216 / 217	Upper Wall	Plaster	White	6.2
	Lower Wall	Plaster	Off-White	8.2
	Chair Rail	Wood	Off-White	0.3
	Baseboard	Wood	Off-White	0.1
	Air Duct Cover	Wood	White	0.3
	Door	Wood	White	0.1
	Door Frame	Wood	White	0.1
	Window Sash	Wood	White	0.2
	Window Sill	Wood	White	0.6
	Window Casing	Wood	White	0.8
Bathroom	Wall	Plaster	White	>9.9
	Stall Door	Wood	White	0.3
	Radiator	Metal	White	0.5
	Window Sash	Wood	Brown	-0.1`
	Window Sill	Wood	White	0.4
	Window Casing	Wood	White	0.5
	Window Apron	Wood	White	0.5
	Door	Wood	White	-0.0
	Door Frame	Wood	White	0.4
Court Room – 218	Wall	Wood	Brown Stain	0.7
	Window Sash	Wood	Brown Stain	0.3
	Window Sill	Wood	Brown Stain	0.2
	Window Casing	Wood	Brown Stain	0.1
	Support Column	Wood	Brown Stain	0.5
	Fluted Column	Wood	Brown Stain	1.1
	Double Door	Wood	Brown Stain	0.1
	Double Door Frame	Wood	Brown Stain	0.5
ADMINISTRATIVE ADDITION				
FIRST FLOOR LEVEL				
Hallway – AA125	Wall	Gypsum	White	0.3
	Support Column	Concrete	White	0.2
	Radiator Cover	Metal	White	0.3
Offices –AA128, AA129, AA130, AA101A & AAC 121	Dividing Wall	Gypsum	White	0.0
	Support Column	Concrete	White	0.6
	Door Frame	Metal	Brown	0.4
	Outside Wall	Gypsum	White	-0.1
Offices – AA101 & AA104	Wall	Gypsum	Green	0.2

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
	Electrical Wall Panel	Metal	Gray	-0.0
	Electrical Wall Plate	Metal	Green	-0.0
	Door Frame	Metal	Brown	0.1
Hallway - AA103	Wall	Concrete	White	0.4
	Wall	Gypsum	White	-0.0
	Door Frame	Metal	Brown	0.3
	Elevator Door	Metal	Brown	0.2
	Elevator Door Frame	Metal	Brown	0.4
	Stack Pipe	Metal	Red	0.7
Bathroom – AAC120	Wall	Ceramic Tile	Light Yellow	-0.2
	Floor	Ceramic Tile	Tan	0.4
	Ceiling	Gypsum	White	0.0
	Door Frame	Metal	Brown	0.2
Bathroom – AAC119	Wall	Ceramic Tile	Dark Tan	-0.2
	Floor	Ceramic Tile	Brown	0.5
SECOND FLOOR LEVEL				
Hallway – AA107M	Interior Window Casing	Metal	Brown	0.4
	Wall	Gypsum	White	-0.0
Offices – AA110M & AA111M	Wall	Gypsum	White	0.0
	Support Column	Concrete	White	0.3
	Door Frame	Metal	Brown	0.1
	Outside Wall	Gypsum	White	-0.0
THIRD FLOOR LEVEL				
Offices – AA201 to AA223	Wall	Gypsum	White	-0.2
	Door Frame	Metal	Brown	0.2
	Outside Wall	Gypsum	White	0.1
Bathroom – AA224	Wall	Ceramic Tile	Tan	-0.1
	Floor	Ceramic Tile	Dark Tan	0.1
Bathroom – AA225	Wall	Ceramic Tile	Dark Tan	0.1
	Floor	Ceramic Tile	Brown	0.1
	Ceiling	Gypsum	White	0.0
FOURTH FLOOR LEVEL				
Hallway – AAC204M	Interior Lower Wall	Gypsum	White	-0.0
	Interior Window Casing	Metal	Brown	0.1
	Support Column	Concrete	White	0.4
Custodian's Closet	Wall	Gypsum	White	0.0
	Ceiling	Gypsum	White	-0.0
	Ceiling Panel	Metal	White	0.2
Office – AA210M	Radiator Cover	Metal	Brown	0.2
	Large Electrical Panel	Metal	Gray	-0.0

Location	Surface	Substrate	Color	XRF Result (mg/cm2)
STAIRWELLS				
Parking Lot to 4th Floor – AAC116	Wall	Gypsum	White	-0.0
	Wall	Concrete	White	0.2
	Floor	Concrete	Gray	0.1
	Window Ledge	Concrete	Gray	0.2
	Radiator Cover	Metal	White	0.1
	Stairs	Concrete	Gray	0.0
	Handrails	Metal	Yellow	-0.0
	Stack Pipe	Metal	Red	0.1
1st to 4th Floor – AA103	Wall	Concrete	White	0.4
	Wall	Gypsum	White	0.0
	Wall	Cinder Block	White	0.3
	Stairs	Concrete	Gray	0.1
	Handrail	Metal	Yellow	-0.1
	Floor	Concrete	Gray	o.1
	Ceiling	Concrete	White	0.1
EXTERIOR				
Front Side	Window Sash	Wood	Gray	0.3
	Window Sill	Wood	Gray	0.3
	Window Casing	Wood	Gray	1.4
	Round Handrail	Metal	Black	0.3
	Middle Handrail	Metal	Black	0.9
	Lamp Post	Metal	Green	1.4
	Fence	Metal	Black	4.7
	Fence Post	Mental	Black	5.3
Left Side	Lower Window Sill	Wood	Gray	>9.9
	Lower Window Casing	Wood	Gray	9.1
	Upper Window Sash	Wood	Gray	>9.9
	Upper Window Sill	Wood	Gray	>9.9
	Upper Window Casing	Wood	Gray	>9.9
Rear Side	Upper Window Sash	Wood	Gray	>9.9
	Lower Window Sash	Wood	Gray	>9.9
	Lower Window Sill	Wood	Gray	9.2
	Lower Window Casing	Wood	Gray	.9.9
	Double Door	Wood Slat	Gray	4.7
	Double Door frame	Wood	Gray	>9.9
	Hand Rail	Metal	Black	0.4
Right Side	Window Upper Sash	Wood	Gray	0.3
	Window Lower Sash	Wood	Gray	0.2
	Window Sill	Wood	Gray	0.3
	Window Casing	Wood	Gray	>9.9

3.3 Regulatory Implications and Regulations

Worker Protection

The implications of LBP existing in a non-residential building are related to the future use of the facility and the need to impact these painted surfaces during the renovation and demolition process.

OSHA recognizes that construction type work on surfaces coated with lead-containing paint has a **potential** to expose workers to hazardous levels of lead and requires that appropriate safety and health measures be followed as stated in 29 CFR 1926.62. OSHA states that until the employer performs an exposure assessment and documents that employees are not exposed above the permissible exposure limit (PEL) of greater than 50 micrograms per cubic meter ($\mu g/m^3$) of air, the employer must treat employees as if they were exposed above the PEL for the following operations:

- Manual renovation and demolition of structures, manual scraping, manual sanding, and use of heat gun where lead-containing coatings or paints are present;
- Abrasive blasting;
- Power tool cleaning;
- Lead burning;
- Using lead-containing mortar or spray painting with lead-containing paint;
- Abrasive blasting, rivet busting, or welding, cutting, or burning on any structure where lead-containing coatings or paint are present;
- Cleanup activities where dry expendable abrasives are used; and
- Any other task the employer believes may cause exposure in excess of the PEL.

Work precautions include providing respiratory protection, protective work clothing and equipment, change areas, hand washing facilities, biological monitoring, and training until an exposure assessment has determined that the work activity will result in a exposure below the PEL. Additional requirements under this standard include a written compliance program as well as record keeping.

3.4 Recommendations

ATC recommends the development of a project specification to ensure compliance with all applicable regulations as well as protect the interest of the client. The project specification shall reference the regulations pertinent to this project, including those work procedures that shall be followed to comply with State and OSHA requirements and waste disposal.

ATC recommends removal and recycling of any metal leaded components prior to demolition. These metal components are exempt from the requirements of the Resource Conservation and Recovery Act (RCRA) since it is not considered a waste. ATC recommends that DCAM receive a receipt or bill of lading from the recycling facility stating that the metal was accepted and purchased by the facility.

3.5 Cost Estimates

Based upon ATC's knowledge of the scheduled renovation and demolition of the two buildings, the estimated increment in cost for the demolition/renovation of building components coated with lead-containing paints is approximately **10 - 15%** above the cost for general demolition. This cost includes contractor record-keeping requirements, personal protection of workers, and possible isolation of the work area to comply with the OSHA Lead Standard (29CFR 1926.62) and DLWD 454 CMR 22.11. Additional costs may include disposal of some of the debris as hazardous waste depending on the results of TCLP testing.

4.0 HAZARDOUS MATERIALS SURVEY

A hazardous materials survey was conducted on November 14, 16, and 18, and December 1, 2005 by Daniel White of ATC, Woburn, Massachusetts. The survey consisted of an inspection of accessible portions of the building (both the Probate and Family Court Building and the Administrative Addition) located at 36 Federal Street in Salem, Massachusetts.

4.1 Objective

The objective of the limited hazardous materials survey was to evaluate the presence of PCB-containing ballasts and electrical equipment, mercury-containing electrical and building components, and other potential hazardous materials including chemicals, refrigerants, diesel fuel in aboveground storage tank(s) or unlabeled containers that may require disposal as part of the demolition/renovation of the surveyed areas.

4.2 Scope of Work

Mr. Bill Donovan, a DCAM Resident Engineer involved in the renovations in the basement, provided access to Mr. White for the survey. Mr. White was unaccompanied during the survey.

During the survey inspection, each accessible room/area was inspected for the presence of hazardous materials that will need to be properly disposed prior to demolition/renovation. Inaccessible areas are noted in Section 4.4. The survey included containers of hazardous materials (for instance, paint cans, cleaning supplies, gasoline in plastic containers) and building fixtures/appliances that could contain hazardous materials (such as refrigerant-containing air conditioners, PCB-containing transformers, mercury-containing fluorescent light bulbs).

Any hazardous materials in containers or potential hazardous materials in building fixtures/appliances found during the survey were inspected and the contents, volume, condition, quantity, and area location were noted.

The survey did not include hazardous materials associated with underground structures, underground tanks, oil/water separators, or materials behind finished walls/ceilings/floors of the surveyed areas. In addition, it was assumed that certain electronic white goods, such as computers, printers, and televisions, will be removed by occupants prior to renovations/demolition, and were not tabulated.

4.3 Results

A comprehensive list of all potentially hazardous materials or items suspected to contain hazardous materials, as observed during the survey, is included in the attached Appendix I and Appendix J. A summary of the estimated costs associated with disposal of containers of hazardous materials or items suspected to contain hazardous materials is also included in the Appendices.

Certain white goods observed during the survey are not suspected to contain hazardous materials, such as fluorescent light fixtures (without ballasts) and microwave ovens. In addition, certain electrical components such as resistors, capacitors, small dry-type transformers, and computer circuit boards do not contain large quantities of liquid hazardous materials but their recycling is encouraged by government agencies. These types of electrical components are present in some rooms in the building, but were too numerous to inventory in detail. Larger white goods and electrical components should be recycled per applicable local, state, and federal regulations.

In some instances, ATC may not have been able to determine whether certain building components contained hazardous materials. In situations such as these, ATC has taken a conservative approach and assumed that the items do contain hazardous materials.

A summary of several main categories of items containing hazardous materials is included in the following subsections.

4.3.1 Fluorescent Light Ballasts

Fluorescent light fixture ballasts manufactured prior to 1979 may contain small quantities of PCBs. Recently manufactured fluorescent light ballasts do not contain PCBs and are required to have "No PCBs" labels. Light ballasts that do not have "No PCBs" labels should be treated as PCB-containing and handled/disposed of accordingly. Alternatively for light ballasts that do not have "No PCBs" labels, the manufacturer may sometimes be contacted to ascertain the presence of PCBs.

ATC visually inventoried fluorescent light fixtures at the Site. The ballasts of representative fluorescent light fixtures within the surveyed areas were inspected, when accessible. "Representative" light fixtures were identified based on their similarity in shape, size, construction, and appearance to other fixtures within the same area.

The results of the fluorescent light ballast inspections are included in Appendix I and Appendix J. The majority of the inspected light ballasts were determined to have "No PCBs" labels.

4.3.2 Fluorescent Light Bulbs

Fluorescent light bulbs contain small amounts of mercury, and therefore must be handled/disposed of properly. An inventory of fluorescent light bulbs in the surveyed buildings was conducted. The bulbs were observed in-use in light fixtures as well as in storage boxes or loose. The results of the fluorescent light bulb inventory are included in Appendix I and Appendix J.

4.3.3 Other Potential PCB-Containing Equipment

In some cases, "wet-type" transformers contain a transformer oil (also known as dielectric fluid) that may contain PCBs. "Dry-type" transformers, on the other hand, contain no transformer oil. Several transformers observed during the inspections were of the "dry-type"; none were the "wet-type".

Note that electrical cabinets containing electrical switches, breakers, and other electrical equipment were located in various closets and areas in the inspected areas. Due to safety and logistical reasons, the cabinets were not opened during the hazardous material survey. However, there are typically no hazardous materials or components containing hazardous materials located within electrical cabinets.

The results of the other PCB-containing equipment inspections are included in Appendix I and Appendix J.

4.3.4 Mercury-Containing Electrical Equipment

Thermostats, thermometers, and pressure gauges sometimes contain mercury. In addition, mercury-containing switches were sometimes used on older heating boilers. Due to the non-destructive nature of ATC's inspection, thermostats/switches were not always dismantled during the survey. The covers of certain thermostats/switches that could be removed without significant effort were removed and the thermostat/switch inspected for the presence of mercury.

The results of the mercury-containing electrical equipment survey are included in Appendix I and Appendix J.

4.3.5 Storage Tanks

Storage tanks observed at the Site included one hydraulic oil reservoir (approximately 50-gallon) in the elevator equipment room in the Probate and Family Court that is associated with the building elevator, and a small diesel fuel storage tank mounted on the wall in the boiler room. All storage tanks observed during the survey appeared to contain the chemicals for which they were designed.

The results of the storage tanks survey are included in Appendix I and Appendix J.

4.3.6 Other Hazardous Materials

Various containers of hazardous materials (such as paint, cleaners, etc.), along with pieces of equipment or building components that could potentially contain hazardous materials, were observed during the survey. Because it is assumed that containers of hazardous materials will be moved by occupants prior to renovation/demolition activities, individual containers of hazardous materials were not counted. Instead, the appendices indicate whether containers of hazardous materials were observed in each room, and an estimated total cost for disposal of the approximate quantity of containers observed in each portion of the building is provided for contingency purposes.

All air conditioners and refrigerators/freezers observed during the survey are assumed to contain refrigerants such as freon or halon that need to be recycled or properly disposed. All cathode ray tubes (televisions and computer monitors) are banned from solid waste disposal facilities since they are known to contain lead and will need to be recycled or properly disposed. However, individual televisions/computer monitors were not counted because it is assumed that these items will be moved by occupants prior to renovation/demolition activities.

The inventory of other hazardous materials is provided in Appendix I and Appendix J.

4.4 Access Limitations

Areas that were inaccessible (locked) or were otherwise not inspected during the survey included the following rooms:

Room	Portion of Building	Level	Reason Not Surveyed
Small Security room constructed in front lobby	Probate and Family Court	2nd Floor	Locked
122A	Probate and Family Court	1st Floor	Locked
AA206	Administrative Addition	2nd Floor	Locked
New Restrooms	Probate and Family Court	Basement	Under Renovation
G110 and Adjoining Rooms	Probate and Family Court	Basement	Under Renovation
Roof	Both	Roof	Inaccessible

ATC cannot attest to conditions and/or components/fixtures located within the inaccessible areas.

It is the recommendation of ATC that prior to demolition/renovation activities, all areas that were not accessed at the time of the survey be inspected to determine the presence of containers or building materials containing hazardous materials.

4.5 Conclusions

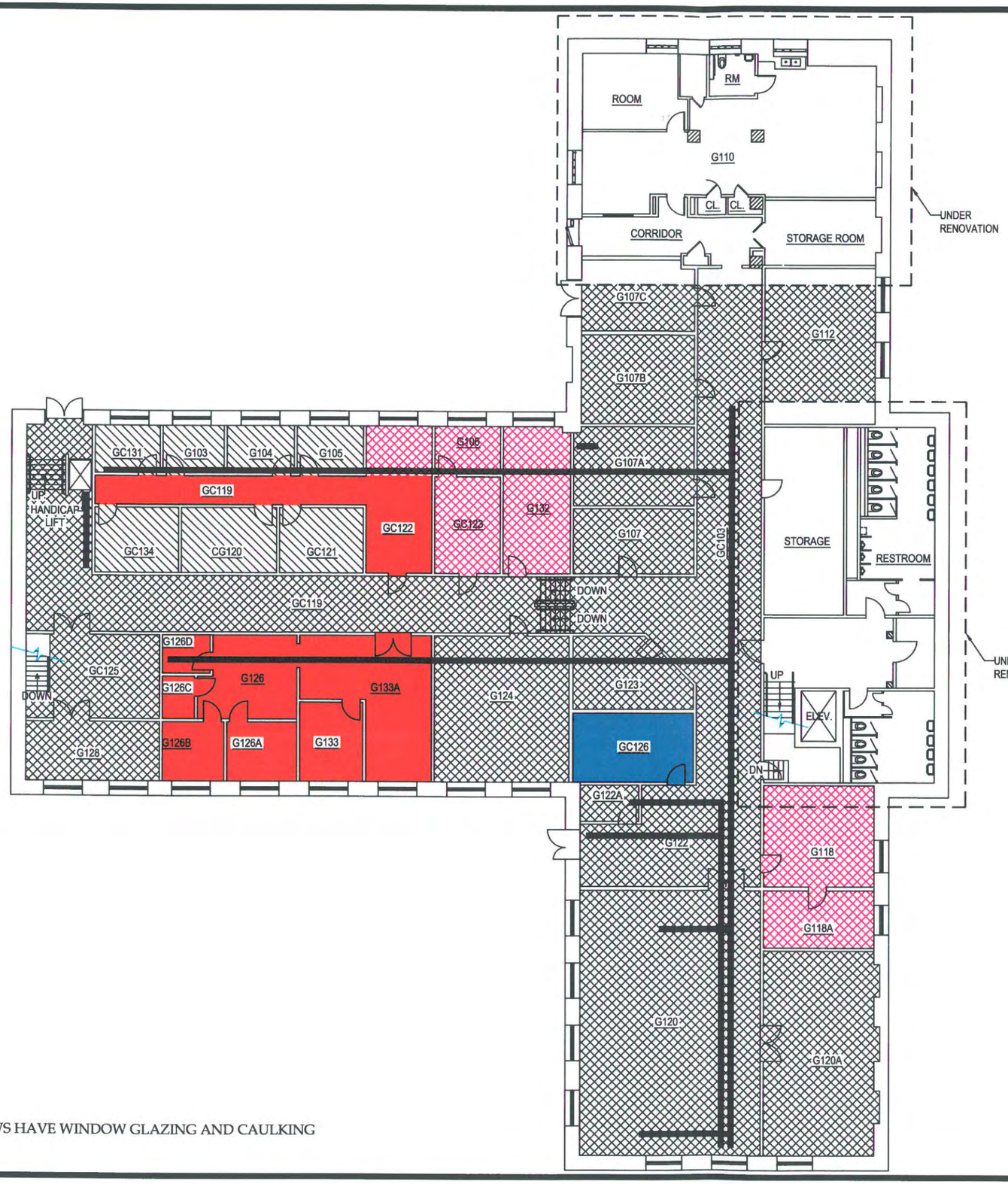
Various fluorescent light ballasts, fluorescent light bulbs, high intensity light bulbs, mercury switch thermostats, mercury switches, air conditioners containing refrigerant, refrigerators/freezers/vending machines, motors/pumps/blowers containing lubricating oils, fire extinguishers, televisions/monitors, computers, diesel above-ground storage tanks, hydraulic oil reservoirs, fuel storage containers, rechargeable batteries, paint, and cleaning/maintenance products were observed within the surveyed buildings/areas.

Some materials, such as loose fluorescent light bulbs, wall/window-mounted air conditions, refrigerators/freezers/vending machines, fire extinguishers, televisions/monitors, computers, paint, and cleaning/maintenance products in containers, may have been moved since the survey took place or may be moved in the future from the locations where they were observed. This survey is representative only of items present as of the dates of the survey.

Care should be taken when handling the inventoried materials. The materials should be disposed of according to applicable local, state, and federal regulations. The total estimated cost for transport and disposal of the identified items is $18,138, as detailed in Appendix I and Appendix J. The costs provided are estimates only and a specific waste characterization may need to be completed for each item containing hazardous materials before final waste disposal costs can be determined.

APPENDIX B

BUILDING MATERIAL LOCATION DRAWINGS



NOTE:
ALL EXTERIOR WINDOWS HAVE WINDOW GLAZING AND CAULKING

LEGEND

- PLASTER WALLS CEILINGS
  MARBLE/TERRAZZO PANELS
  MARBLE/TERRAZZO FLOOR
- PLASTER CEILING
  PLASTER WALLS
  FLOOR TILE AND MASTIC
- PLASTER CEILING
  PLASTER WALLS
  CARPET MASTIC
  FLOOR TILE AND MASTIC
- PLASTER CEILING
  PLASTER WALLS
  CARPET MASTIC
  LINOLEUM FLOORING AND MASTIC
- 1X1 SPLINE CEILING TILE
  PLASTER/SHEET ROCK WALLS
  CARPET MASTIC
- PLASTER CEILING
  PLASTER WALLS
  CARPET MASTIC
- 2'X4' CEILING TILE/PLASTER CEILING
  PLASTER WALLS
  MARBLE/TERRAZZO FLOOR
- CONCRETE FLOOR/CEILING
- 2'X2' CEILING TILE
  PLASTER/SHEET ROCK WALL
  CARPET MASTIC
- 2'X4' CEILING TILE
  PLASTER/SHEET ROCK WALL
  CONCRETE FLOOR
- NON INVESTIGATED AREA
- APPROXIMATE LOCATION OF PIPE INSULATION

Basement Floor - Probate and Family Court

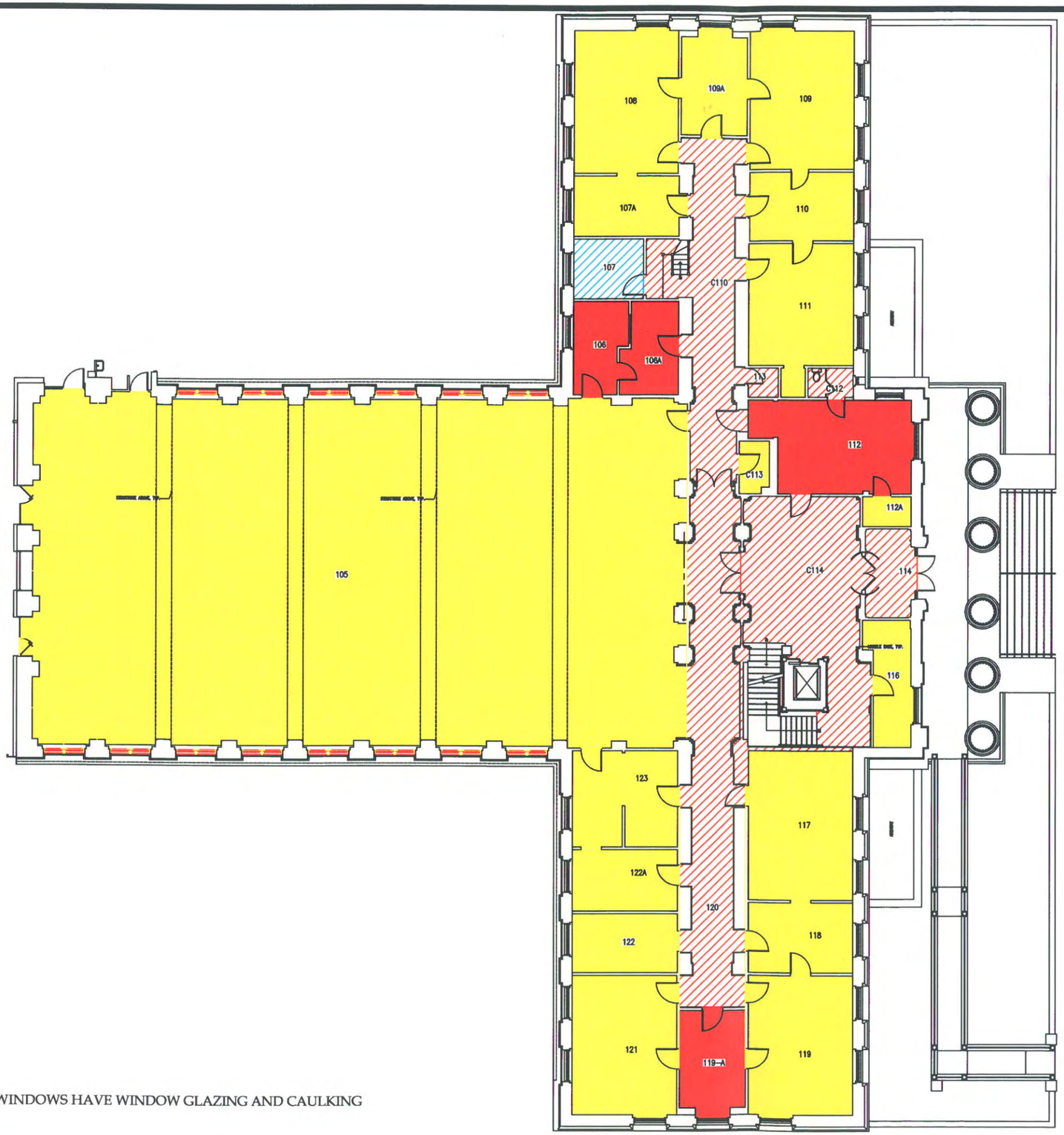
VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	OC-B

BUILDING MATERIALS
SURVEY

CLIENT:	Division of Capital Asset Management	PM: DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	RAV	60.22267.0023	MOC-B



NOTE:
ALL EXTERIOR WINDOWS HAVE WINDOW GLAZING AND CAULKING

LEGEND

- PLASTER WALLS CEILINGS
  MARBLE/TERRAZZO PANELS
  MARBLE/TERRAZZO FLOOR
- PLASTER CEILING
  PLASTER WALLS
  FLOOR TILE AND MASTIC
- PLASTER CEILING
  PLASTER WALLS
  CARPET MASTIC
  FLOOR TILE AND MASTIC
- PLASTER CEILING
  PLASTER WALLS
  CARPET MASTIC
  LINOLEUM FLOORING AND MASTIC
- 1X1 SPLINE CEILING TILE
  PLASTER/SHEET ROCK WALLS
  CARPET MASTIC
- PLASTER CEILING
  PLASTER WALLS
  CARPET MASTIC
- 2'X4' CEILING TILE/PLASTER CEILING
  PLASTER WALLS
  MARBLE/TERRAZZO FLOOR
- CONCRETE FLOOR/CEILING
- 2'X2' CEILING TILE
  PLASTER/SHEET ROCK WALL
  CARPET MASTIC
- 2'X4' CEILING TILE
  PLASTER/SHEET ROCK WALL
  CONCRETE FLOOR
- NON INVESTIGATED AREA

First Floor - Probate and Family Court

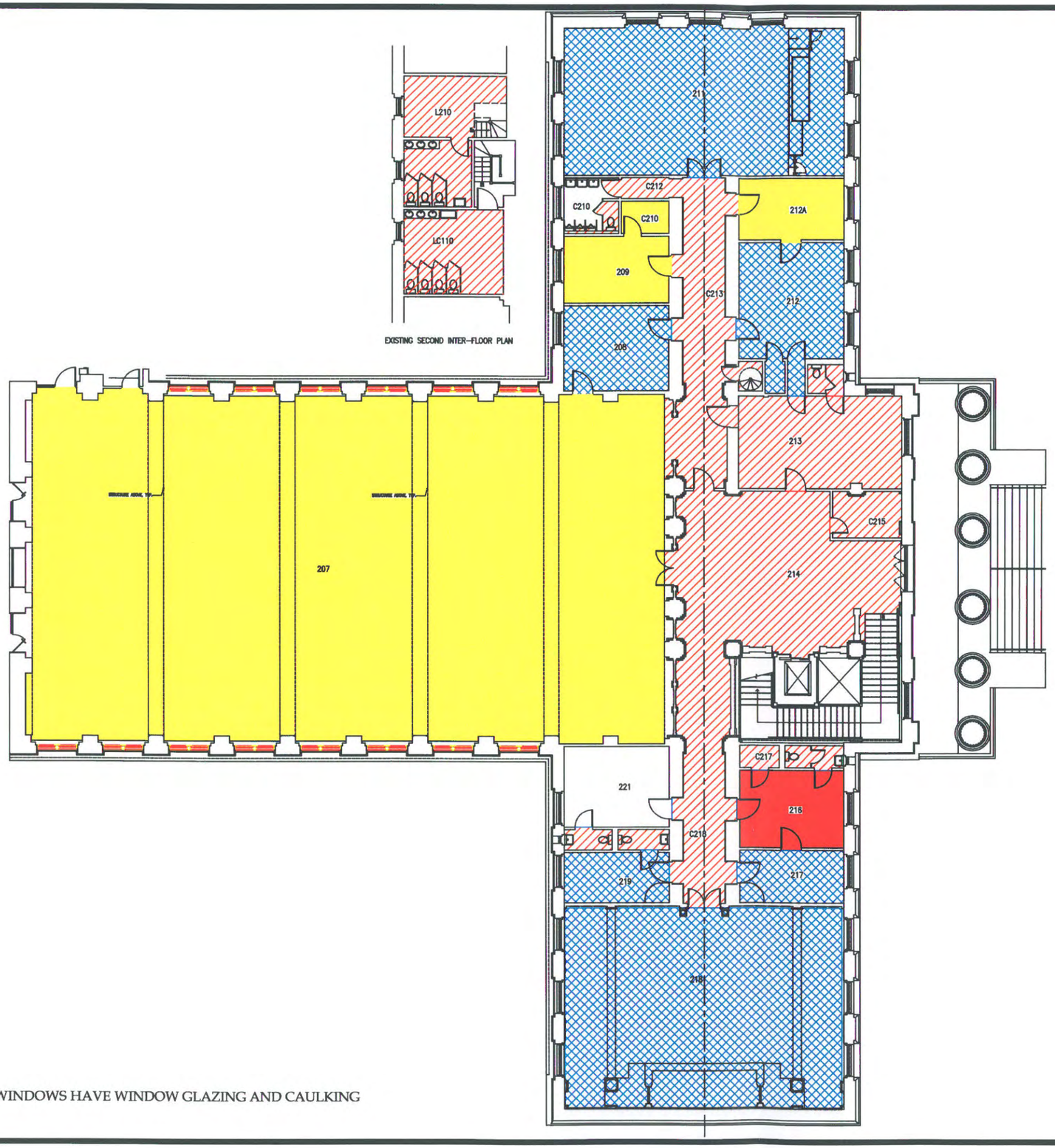
VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	OC1

BUILDING MATERIALS
SURVEY

CLIENT:		PM:
	Division of Capital Asset Management	DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	RAV	60.22267.0023	MOC1



LEGEND

- PLASTER WALLS CEILINGS
  MARBLE/TERRAZZO PANELS
  MARBLE/TERRAZZO FLOOR
- PLASTER CEILING
  PLASTER WALLS
  FLOOR TILE AND MASTIC
- PLASTER CEILING
  PLASTER WALLS
  CARPET MASTIC
  FLOOR TILE AND MASTIC
- PLASTER CEILING
  PLASTER WALLS
  CARPET MASTIC
  LINOLEUM FLOORING AND MASTIC
- 1X1 SPLINE CEILING TILE
  PLASTER/SHEET ROCK WALLS
  CARPET MASTIC
- PLASTER CEILING
  PLASTER WALLS
  CARPET MASTIC
- 2'X4' CEILING TILE/PLASTER CEILING
  PLASTER WALLS
  MARBLE/TERRAZZO FLOOR
- CONCRETE FLOOR/CEILING
- 2'X2' CEILING TILE
  PLASTER/SHEET ROCK WALL
  CARPET MASTIC
- 2'X4' CEILING TILE
  PLASTER/SHEET ROCK WALL
  CONCRETE FLOOR
- NON INVESTIGATED AREA

Second Floor - Probate and Family Court

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

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N.T.S.	4/1/2006	OC-2

BUILDING MATERIALS
SURVEY

CLIENT:		PM:
	Division of Capital Asset Management	DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
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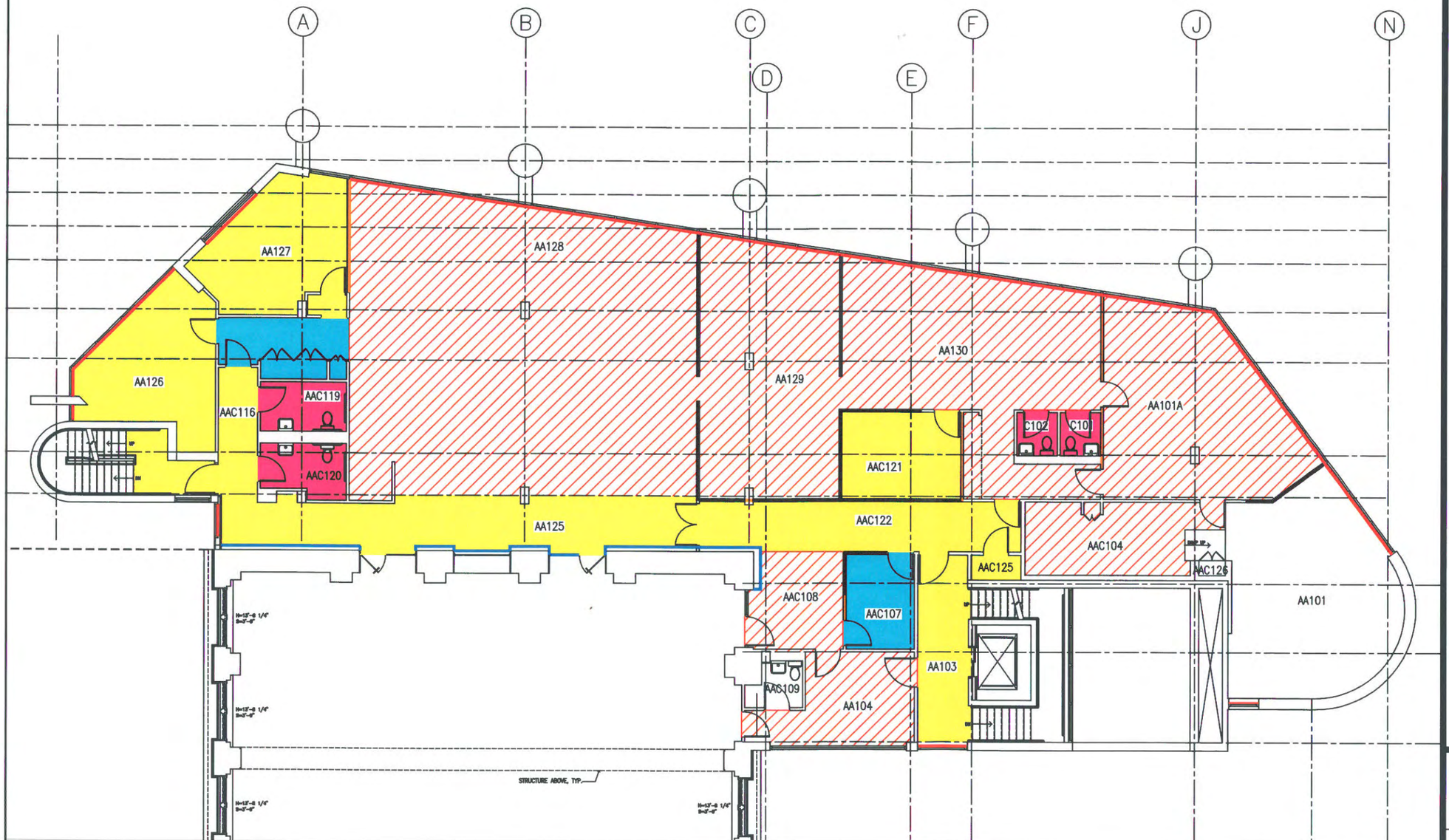

LEGEND

- METAL CEILING, SHEET ROCK WALLS, COVEBASE MASTIC, CARPET MASTIC, FLOOR TILE AND MASTIC
- METAL CEILING, SHEET ROCK WALLS, COVEBASE MASTIC, FLOOR TILE AND MASTIC
- METAL CEILING, SHEET ROCK WALLS, COVEBASE MASTIC, CARPET MASTIC
- 2'X2' CEILING TILE, SHEET ROCK WALLS, COVEBASE MASTIC, FLOOR TILE AND MASTIC
- 2'X2' CEILING TILE, SHEET ROCK WALLS, COVEBASE MASTIC, CARPET MASTIC
- SHEET ROCK WALLS/CEILINGS, CERAMIC TILE FLOOR/WALLS
- METAL CEILING, SHEET ROCK WALLS, COVEBASE MASTIC, RESIDUAL MASTIC
- PERIMETER UNIT WINDOW CAULKING
- INTERIOR WINDOW UNIT GLAZING
- GRANITE CAULKING
- NON INVESTIGATED AREA

First Floor - Administrative Addition

NOTES:
ALL STAIRWELLS CONTAIN TEXTURED PLASTER WALLS, CONCRETE FLOOR AND METAL CEILINGS.

ALL INTERIOR DOOR UNITS HAVE CAULKING

FLOORING IN ROOM AA101 IS A RASIED FLOOR. ASSUMED THAT STANTION MASTIC IS PRESENT.

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

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N.T.S.	4/1/2006	AA-1

BUILDING MATERIALS SURVEY

CLIENT:	Division of Capital Asset Management	PM: DR
LOCATION:	Probate and Family Court Complex, 36 Federal Street, Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
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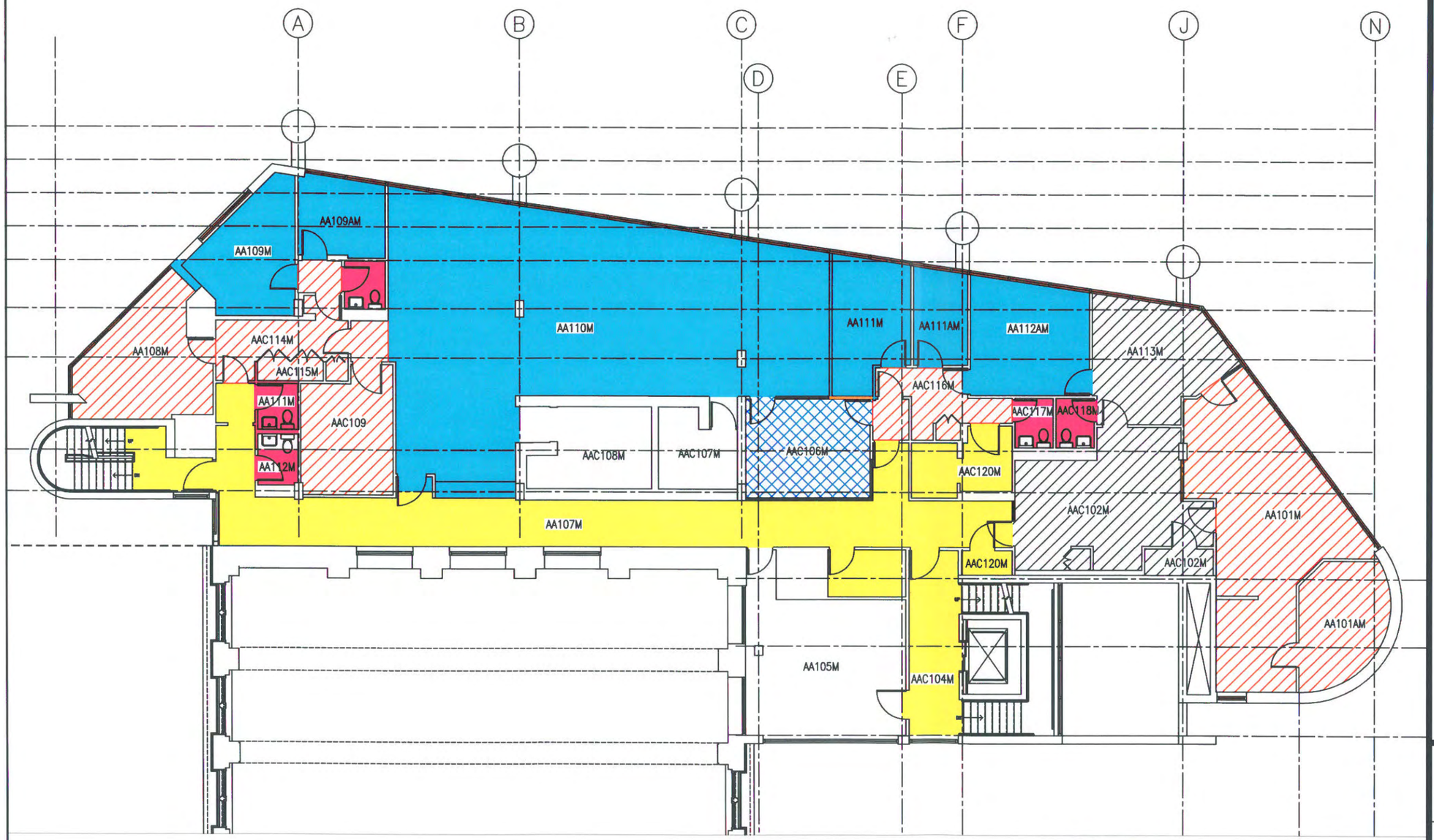


NOTES:
ALL STAIRWELLS CONTAIN TEXTURED PLASTER WALLS, CONCRETE FLOOR AND METAL CEILINGS.

ALL INTERIOR DOOR UNITS HAVE CAULKING

ROOMS AAC108M AND AAC107M HAVE CONCRETE WALLS, FLOOR AND CEILINGS.

LEGEND

- METAL CEILING
  SHEET ROCK WALLS
  COVEBASE MASTIC
  CARPET MASTIC
  FLOOR TILE AND MASTIC
- METAL CEILING
  SHEET ROCK WALLS
  COVEBASE MASTIC
  FLOOR TILE AND MASTIC
- METAL CEILING
  SHEET ROCK WALLS
  COVEBASE MASTIC
  CARPET MASTIC
- 2'X2' CEILING TILE
  SHEET ROCK WALLS
  COVEBASE MASTIC
  FLOOR TILE AND MASTIC
- 2'X2' CEILING TILE
  SHEET ROCK WALLS
  COVEBASE MASTIC
  CARPET MASTIC
- SHEET ROCK WALLS/CEILINGS
  CERAMIC TILE FLOOR/WALLS
- METAL CEILING
  SHEET ROCK WALLS
  COVEBASE MASTIC
  RESIDUAL MASTIC
- PERIMETER UNIT WINDOW CAULKING
- INTERIOR WINDOW UNIT GLAZING
- GRANITE CAULKING
- NON INVESTIGATED AREA

Second Floor - Administrative Addition

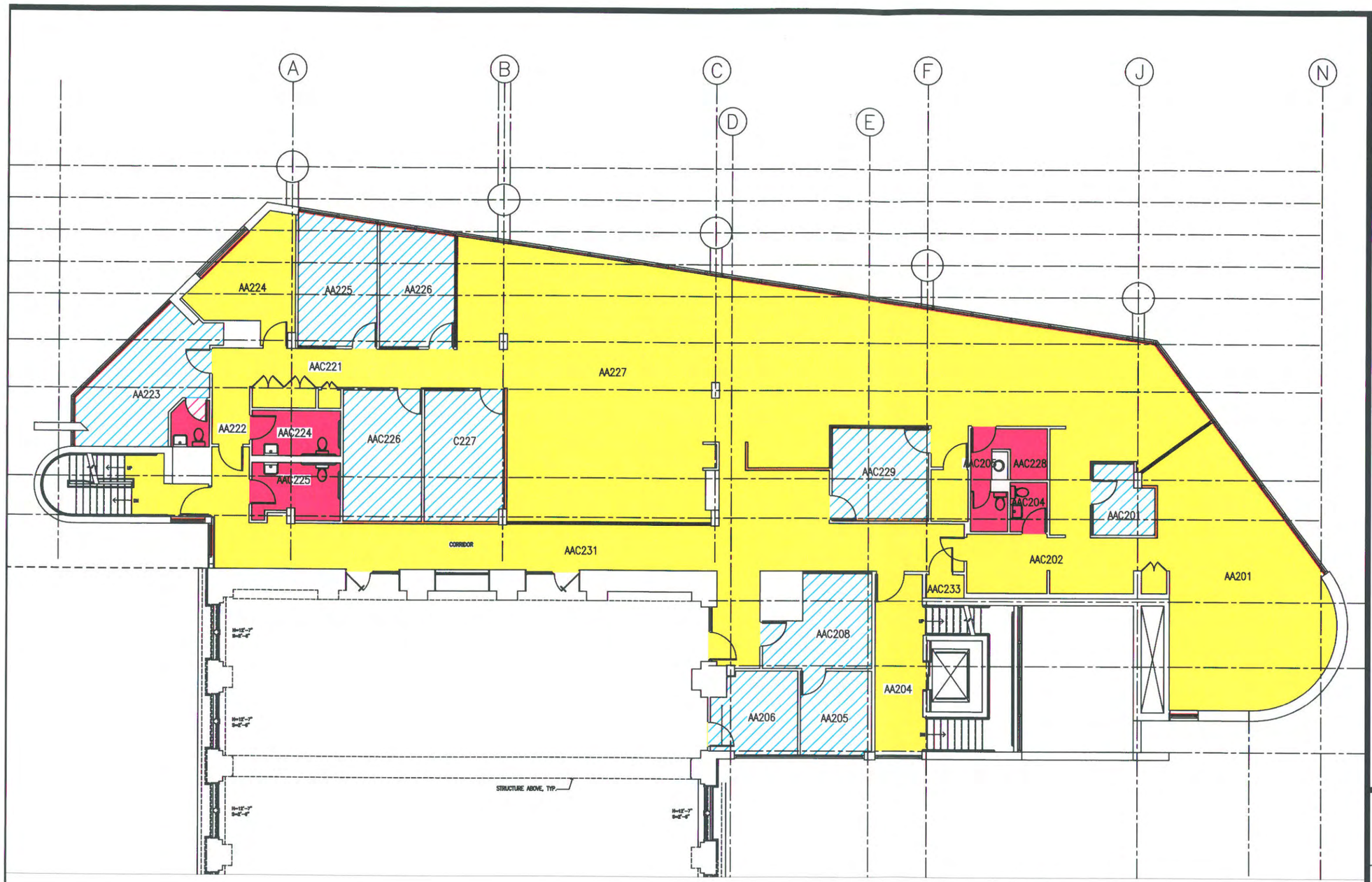
VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-2

BUILDING MATERIALS SURVEY

CLIENT:	Division of Capital Asset Management	PM: DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	RAV	60.22267.0023	MAA-2



NOTES:
ALL STAIRWELLS CONTAIN TEXTURED PLASTER WALLS, CONCRETE FLOOR AND METAL CEILINGS.

ALL INTERIOR DOOR UNITS HAVE CAULKING

LEGEND

- METAL CEILING
  SHEET ROCK WALLS
  COVEBASE MASTIC
  CARPET MASTIC
  FLOOR TILE AND MASTIC
- METAL CEILING
  SHEET ROCK WALLS
  COVEBASE MASTIC
  FLOOR TILE AND MASTIC
- METAL CEILING
  SHEET ROCK WALLS
  COVEBASE MASTIC
  CARPET MASTIC
- 2'X2' CEILING TILE
  SHEET ROCK WALLS
  COVEBASE MASTIC
  FLOOR TILE AND MASTIC
- 2'X2' CEILING TILE
  SHEET ROCK WALLS
  COVEBASE MASTIC
  CARPET MASTIC
- SHEET ROCK WALLS/CEILINGS
  CERAMIC TILE FLOOR/WALLS
- METAL CEILING
  SHEET ROCK WALLS
  COVEBASE MASTIC
  RESIDUAL MASTIC
- PERIMETER UNIT WINDOW CAULKING
- INTERIOR WINDOW UNIT GLAZING
- GRANITE CAULKING
- NON INVESTIGATED AREA

Third Floor - Administrative Addition

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-3

BUILDING MATERIALS
SURVEY

CLIENT:	Division of Capital Asset Management	PM: DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
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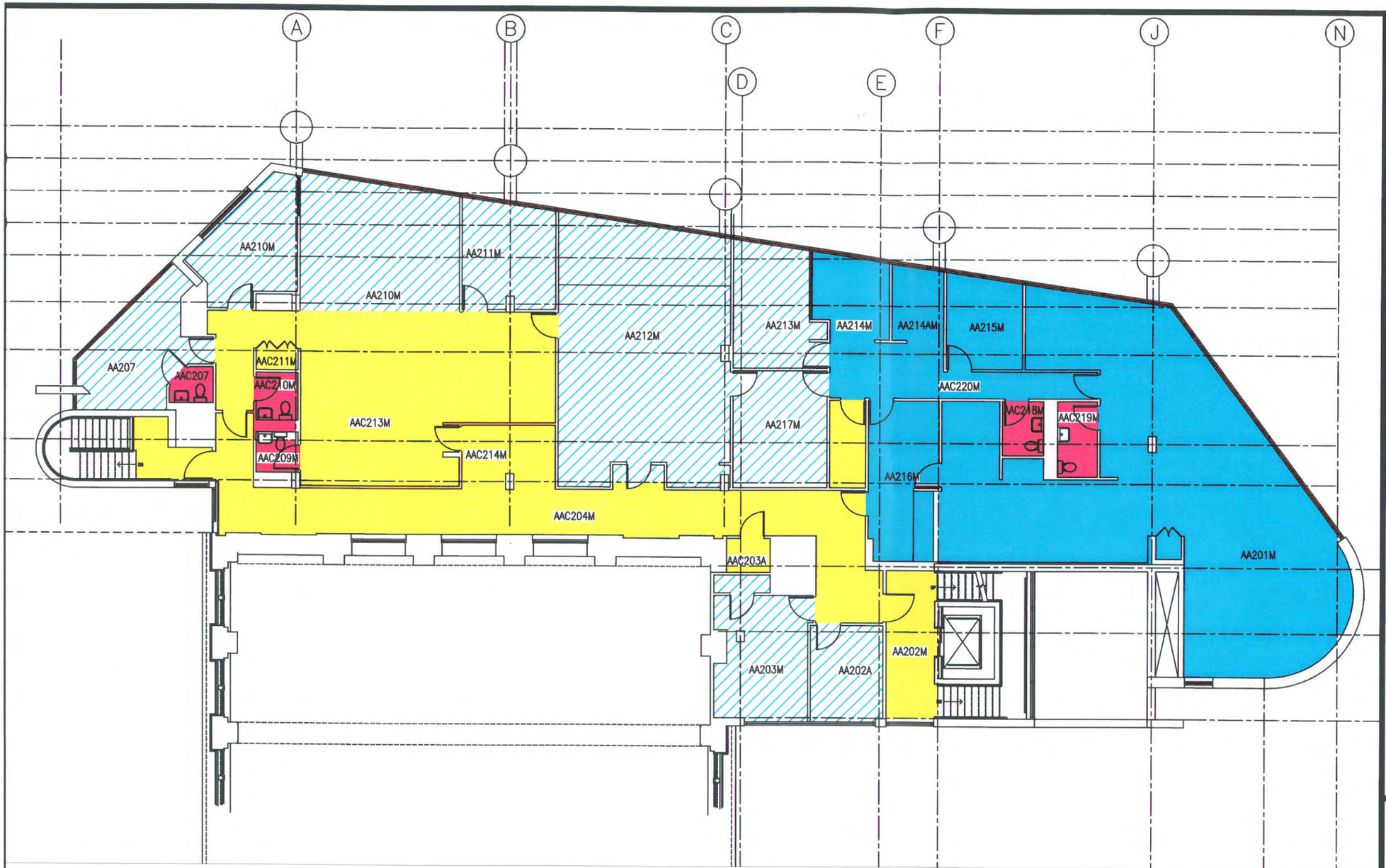


LEGEND

- METAL CEILING, SHEET ROCK WALLS, COVEBASE MASTIC, CARPET MASTIC, FLOOR TILE AND MASTIC
- METAL CEILING, SHEET ROCK WALLS, COVEBASE MASTIC, FLOOR TILE AND MASTIC
- METAL CEILING, SHEET ROCK WALLS, COVEBASE MASTIC, CARPET MASTIC
- 2'X2' CEILING TILE, SHEET ROCK WALLS, COVEBASE MASTIC, FLOOR TILE AND MASTIC
- 2'X2' CEILING TILE, SHEET ROCK WALLS, COVEBASE MASTIC, CARPET MASTIC
- SHEET ROCK WALLS/CEILINGS, CERAMIC TILE FLOOR/WALLS
- METAL CEILING, SHEET ROCK WALLS, COVEBASE MASTIC, RESIDUAL MASTIC
- PERIMETER UNIT WINDOW CAULKING
- INTERIOR WINDOW UNIT GLAZING
- GRANITE CAULKING
- NON INVESTIGATED AREA

Fourth Floor - Administrative Addition

NOTES:
ALL STAIRWELLS CONTAIN TEXTURED PLASTER WALLS, CONCRETE FLOOR AND METAL CEILINGS.

ALL INTERIOR DOOR UNITS HAVE CAULKING

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

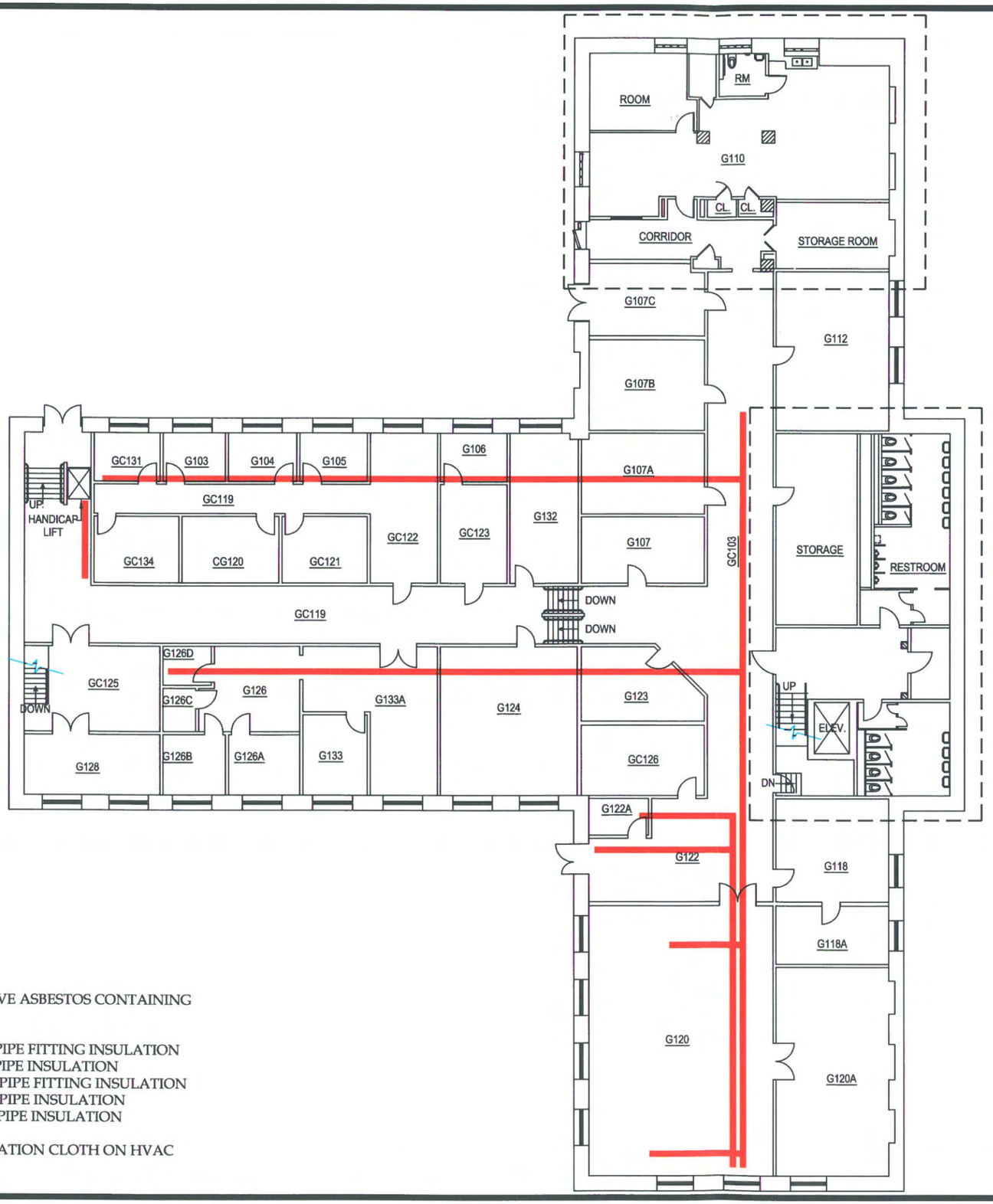
SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-4

BUILDING MATERIALS SURVEY

CLIENT:	Division of Capital Asset Management	PM: DR
LOCATION:	Probate and Family Court Complex, 36 Federal Street, Salem, Massachusetts	PE:
DESIGNED:	DETAILED: RAV	PROJECT NO.: 60.22267.0023 / FIGURE: MAA-4

APPENDIX C

ASBESTOS-CONTAINING MATERIAL LOCATION DRAWINGS



NOTES:
ALL EXTERIOR WINDOWS HAVE ASBESTOS CONTAINING WINDOW GLAZING.

ASBESTOS CONTAINING 0-6" PIPE FITTING INSULATION
ASBESTOS CONTAINING 0-6" PIPE INSULATION
ASBESTOS CONTAINING 6-12" PIPE FITTING INSULATION
ASBESTOS CONTAINING 6-12" PIPE INSULATION
ASBESTOS CONTAINING >12" PIPE INSULATION

ASBESTOS CONTAINING VIBRATION CLOTH ON HVAC (ASSUMED)

LEGEND

ASBESTOS CONTAINING PIPE INSULATION (APPROXIMATE LOCATIONS)

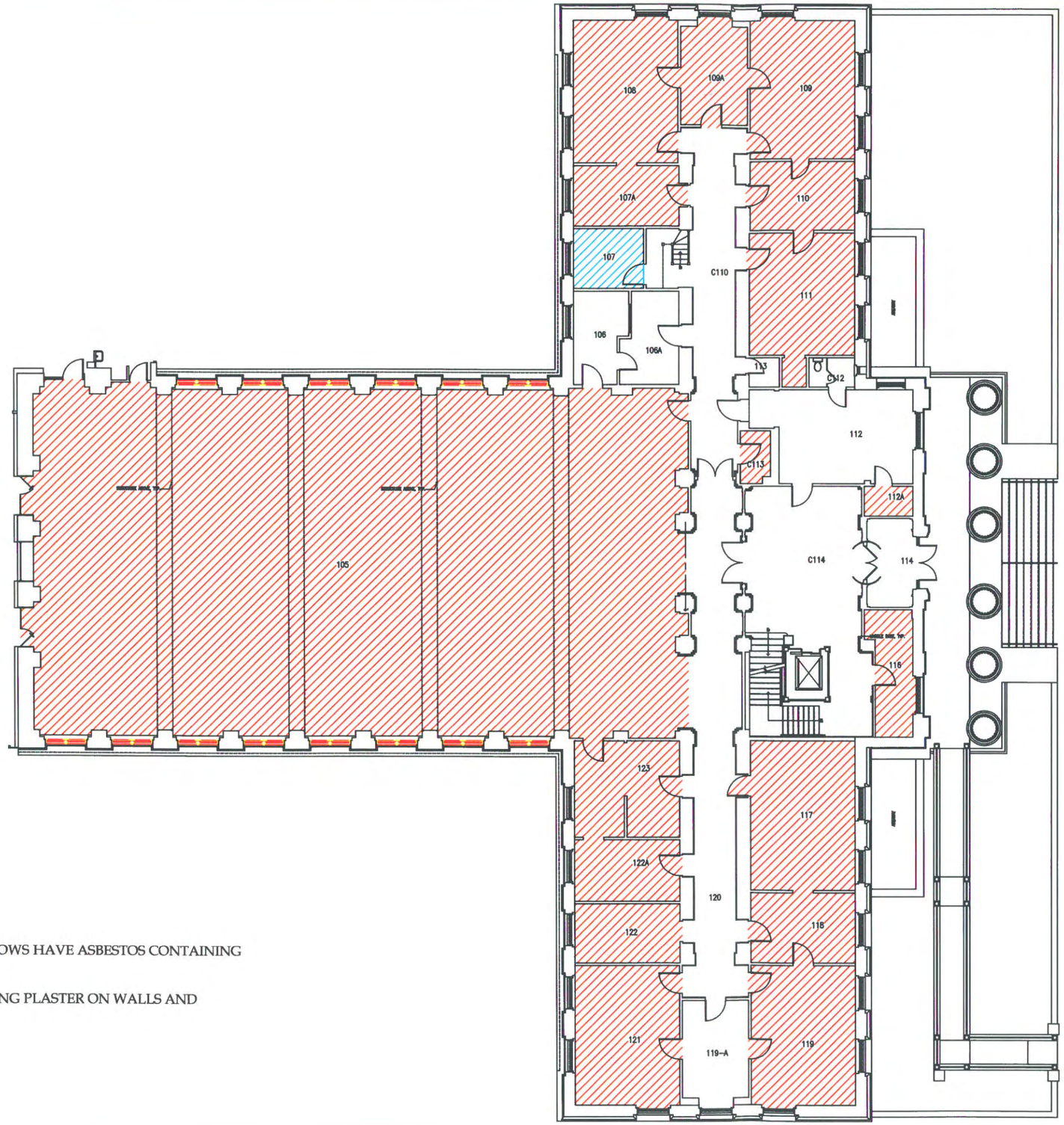
Basement Floor - Probate and Family Court

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	OCB

ASBESTOS CONTAINING MATERIALS

CLIENT: Division of Capital Asset Management		PM: DR
LOCATION: Probate and Family Court Complex, 36 Federal Street, Salem, Massachusetts		PE:
DESIGNED:	DETAILED: RAV	PROJECT NO.: 60.22267.0023 / FIGURE: AM-CB



NOTES:
ALL EXTERIOR WINDOWS HAVE ASBESTOS CONTAINING WINDOW GLAZING.

ASBESTOS CONTAINING PLASTER ON WALLS AND CEILINGS.

LEGEND

ASBESTOS CONTAINING FLOOR TILE AND MASTIC

ASBESTOS CONTAINING FLOOR TILE AND MASTIC UNDER NON-ASBESTOS CONTAINING CARPET MASTIC

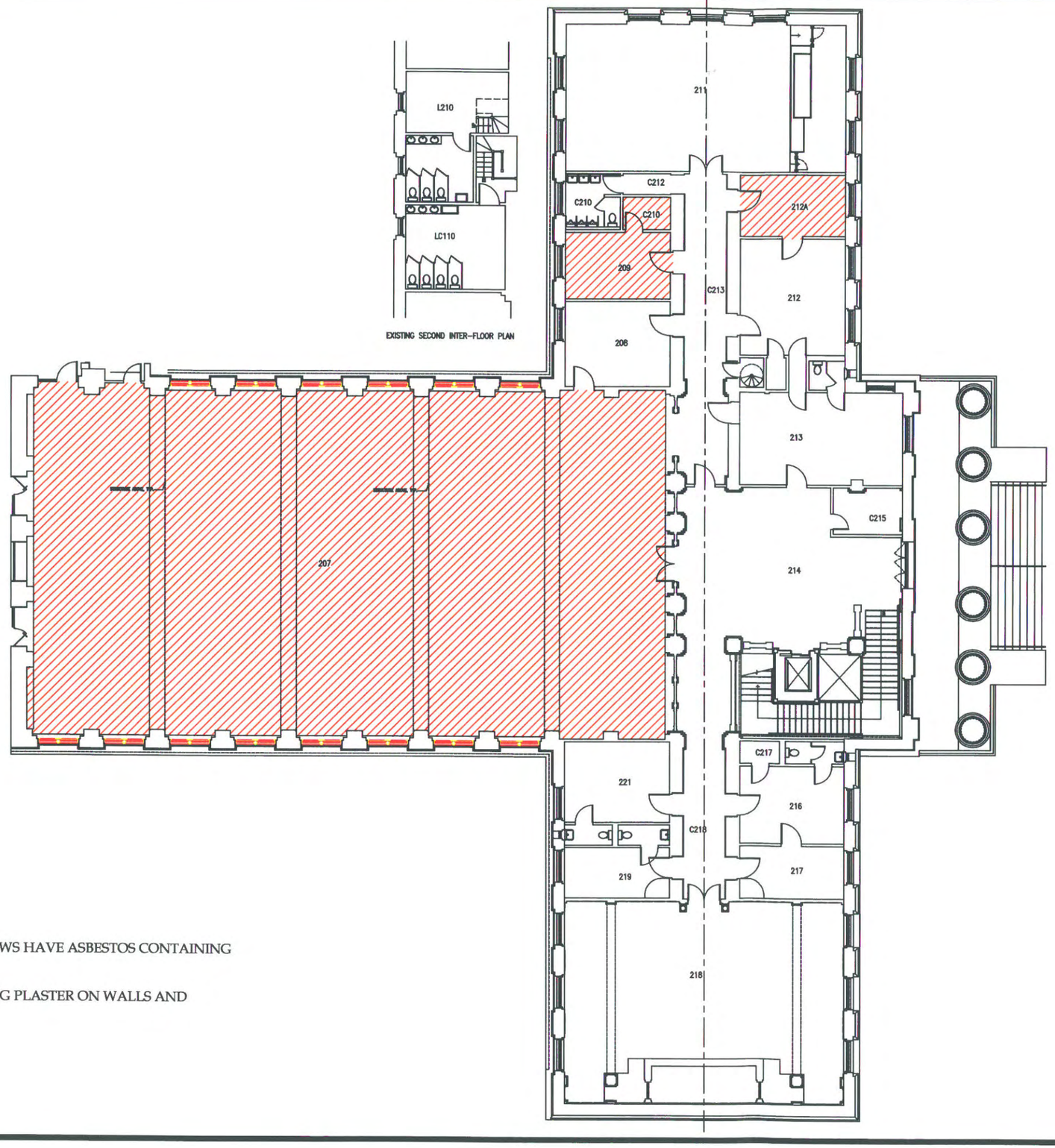
Second Floor - Probate and Family Court

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	OC1

ASBESTOS CONTAINING MATERIALS

CLIENT: Division of Capital Asset Management		PM: DR
LOCATION: Probate and Family Court Complex, 36 Federal Street, Salem, Massachusetts		PE:
DESIGNED:	DETAILED: RAV	PROJECT NO.: 60.22267.0023 / FIGURE: AM-C1



EXISTING SECOND INTER-FLOOR PLAN

NOTES:
ALL EXTERIOR WINDOWS HAVE ASBESTOS CONTAINING WINDOW GLAZING.

ASBESTOS CONTAINING PLASTER ON WALLS AND CEILINGS.

LEGEND

ASBESTOS CONTAINING FLOOR TILE AND MASTIC

ASBESTOS CONTAINING FLOOR TILE AND MASTIC UNDER NON-ASBESTOS CONTAINING CARPET MASTIC

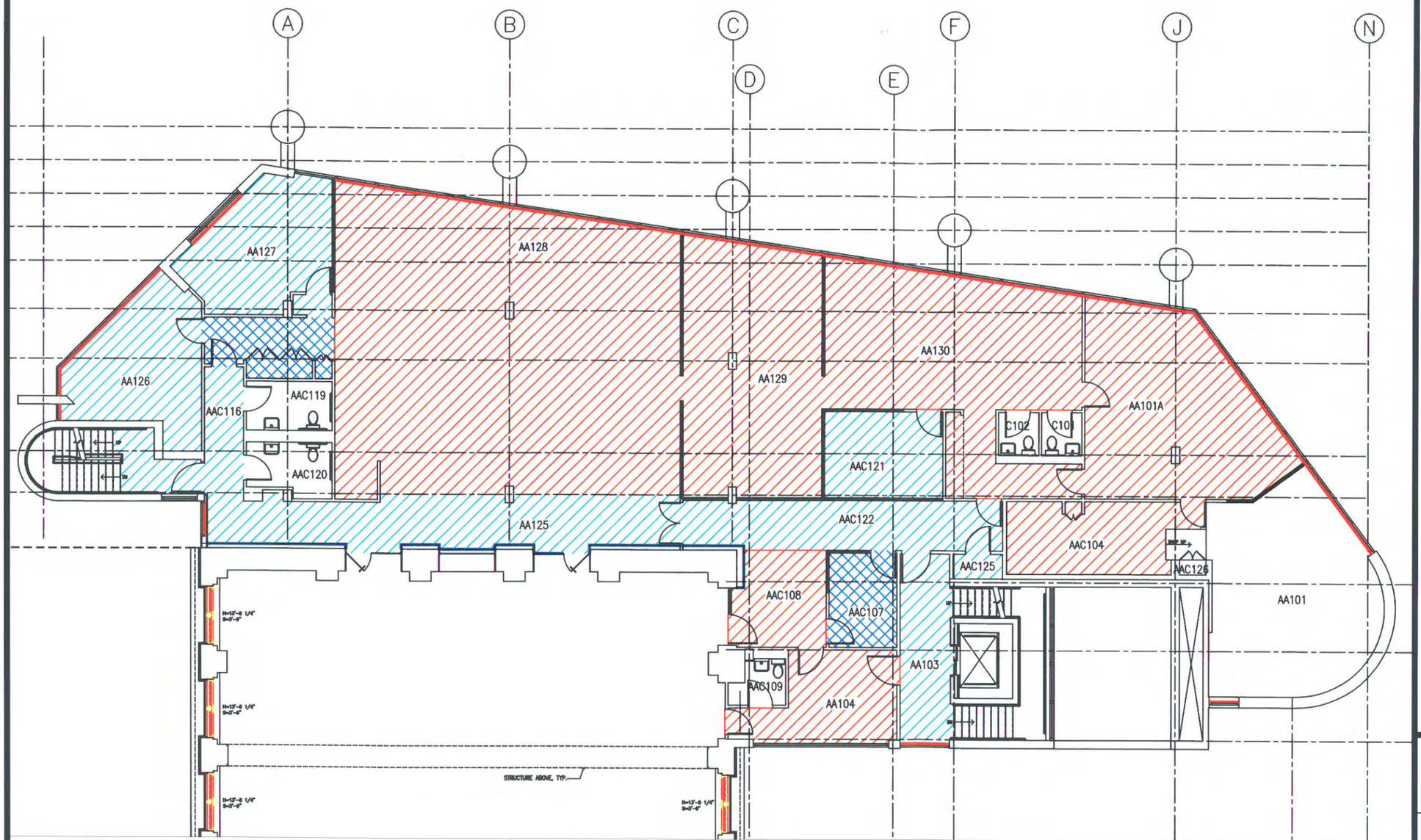
Second Floor - Probate and Family Court

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	OC2

ASBESTOS CONTAINING MATERIALS

CLIENT: Division of Capital Asset Management		PM: DR
LOCATION: Probate and Family Court Complex, 36 Federal Street, Salem, Massachusetts		PE:
DESIGNED:	DETAILED: RAV	PROJECT NO.: 60.22267.0023 / FIGURE: AM-C2



NOTES:
ALL INTERIOR DOOR UNITS HAVE ASBESTOS CONTAINING DOOR UNIT CAULKING.

ASBESTOS CONTAINING RED DUCT SEALANT ON HVAC DUCTS THROUGH OUT.

ASSUMED ASBESTOS CONTAINING STANTION MASTIC IN ROOM AA101 ASSOCIATED WITH RAISED FLOOR.

ASBESTOS CONTAINING PINK SINK COATING PRESENT IN ROOM AA128

LEGEND

- ASBESTOS CONTAINING FLOOR TILE AND MASTIC UNDER NON-ASBESTOS CONTAINING CARPET MASTIC
- ASBESTOS CONTAINING FLOOR TILE AND MASTIC
- ASBESTOS CONTAINING BLACK RESIDUAL MASTIC UNDER NON-ASBESTOS CONTAINING CARPET MASTIC
- PERIMETER UNIT WINDOW CAULKING
- GRANITE CAULKING

First Floor - Administrative Addition

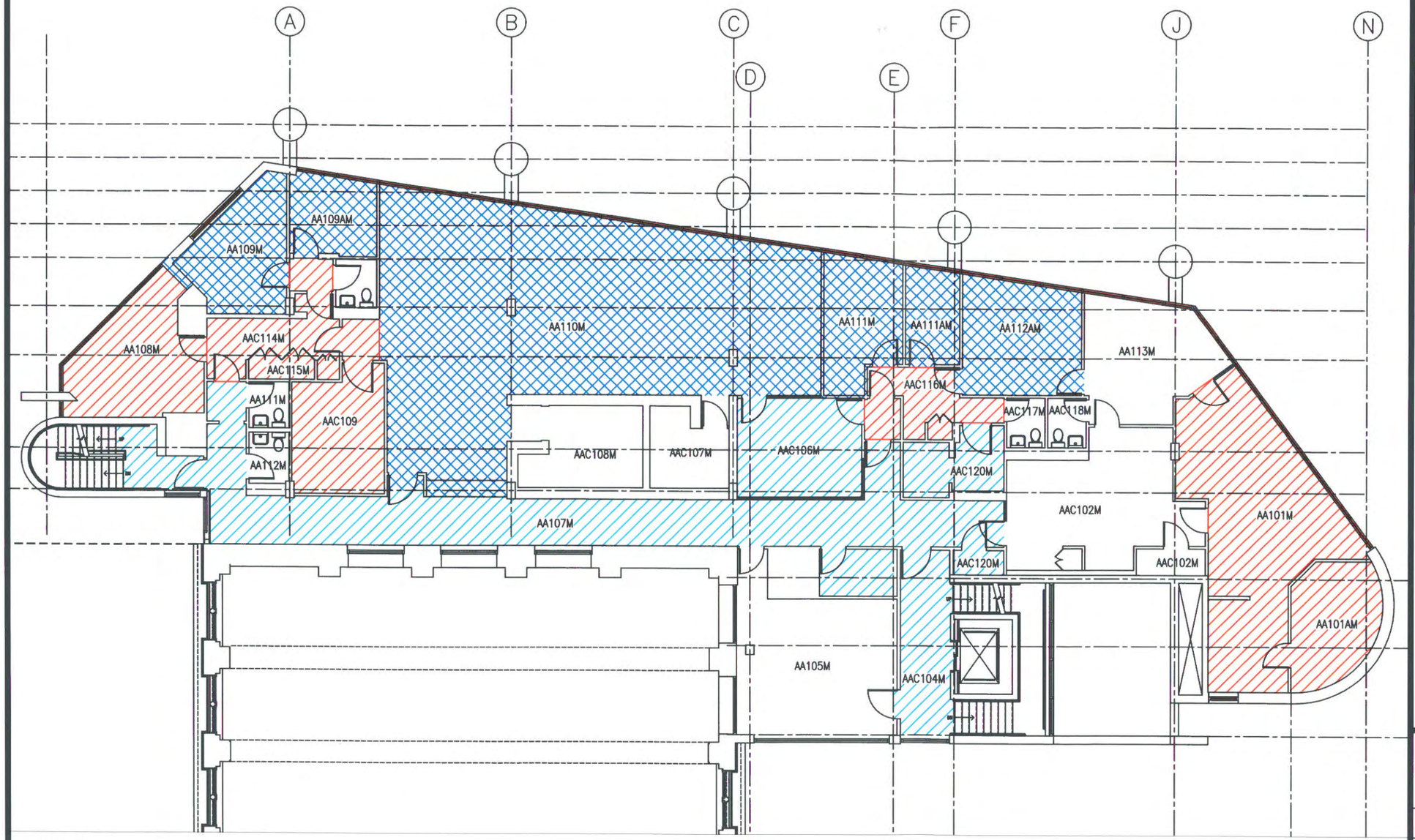
VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-1

ASBESTOS CONTAINING MATERIALS SURVEY

CLIENT:		PM:
	Division of Capital Asset Management	DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	RAV	60.22267.0023	AM-A1



NOTES:
ALL INTERIOR DOOR UNITS HAVE ASBESTOS CONTAINING DOOR UNIT CAULKING.

ASBESTOS CONTAINING RED DUCT SEALANTAND BLACK DUCT SEALANT ON HVAC DUCTS THROUGH OUT.

LEGEND

- ASBESTOS CONTAINING FLOOR TILE AND MASTIC UNDER NON-ASBESTOS CONTAINING CARPET MASTIC
- ASBESTOS CONTAINING FLOOR TILE AND MASTIC
- ASBESTOS CONTAINING BLACK RESIDUAL MASTIC UNDER NON-ASBESTOS CONTAINING CARPET MASTIC
- PERIMETER UNIT WINDOW CAULKING

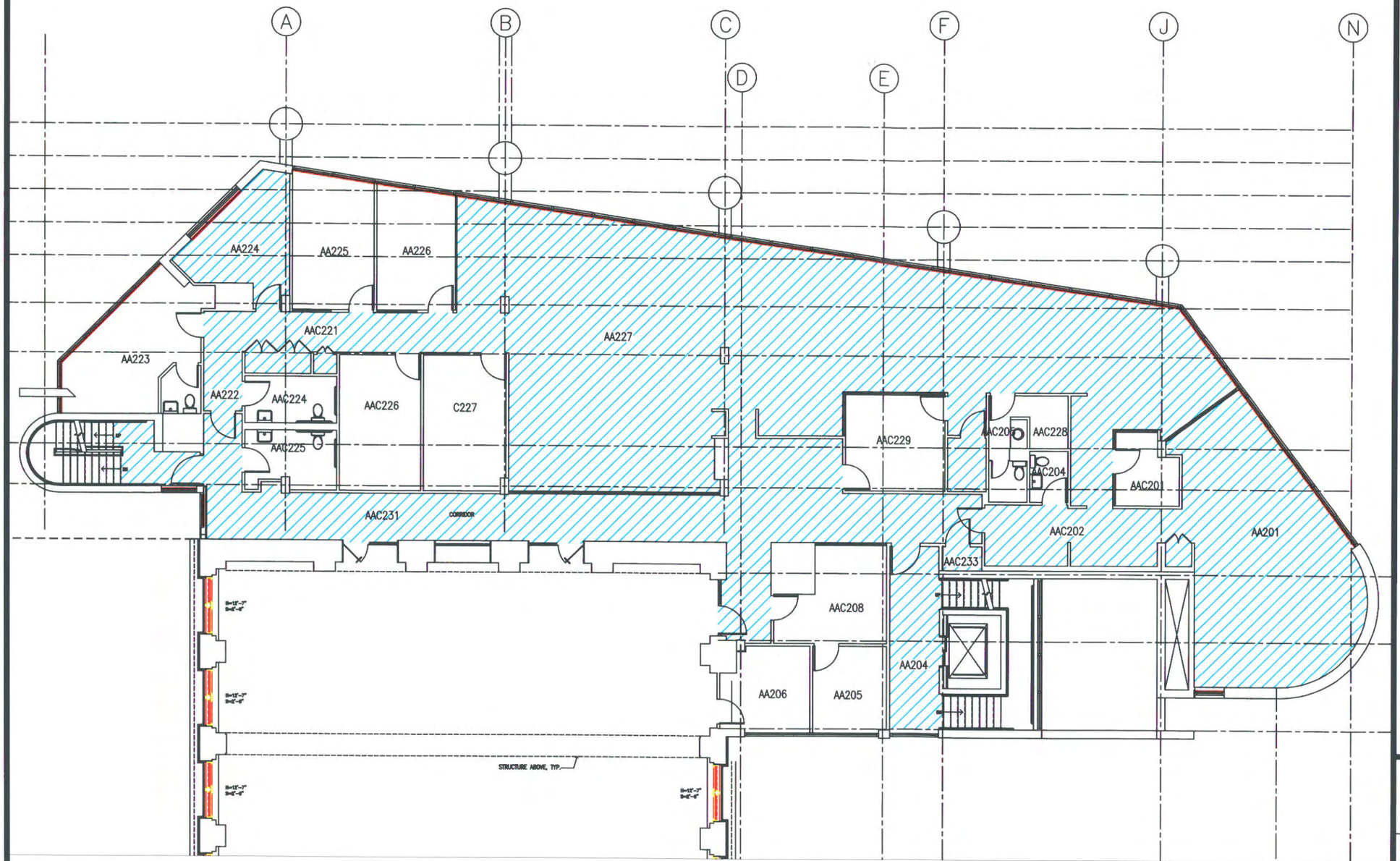
Second Floor - Administrative Addition

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-2

ASBESTOS CONTAINING MATERIALS

CLIENT: Division of Capital Asset Management		PM: DR
LOCATION: Probate and Family Court Complex 36 Federal Street Salem, Massachusetts		PE:
DESIGNED:	DETAILED: RAV	PROJECT NO.: 60.22267.0023 / FIGURE: AM-A2



NOTES:
ALL INTERIOR DOOR UNITS HAVE ASBESTOS CONTAINING DOOR UNIT CAULKING.

ASBESTOS CONTAINING GREY DUCT SEALANT ON HVAC DUCTS THROUGH OUT.

ASBESTOS CONTAINING PINK SINK COATING PRESENT IN ROOM AA201

LEGEND

- ASBESTOS CONTAINING FLOOR TILE AND MASTIC UNDER NON-ASBESTOS CONTAINING CARPET MASTIC
- ASBESTOS CONTAINING FLOOR TILE AND MASTIC
- ASBESTOS CONTAINING BLACK RESIDUAL MASTIC UNDER NON-ASBESTOS CONTAINING CARPET MASTIC
- PERIMETER UNIT WINDOW CAULKING

Third Floor - Administrative Addition

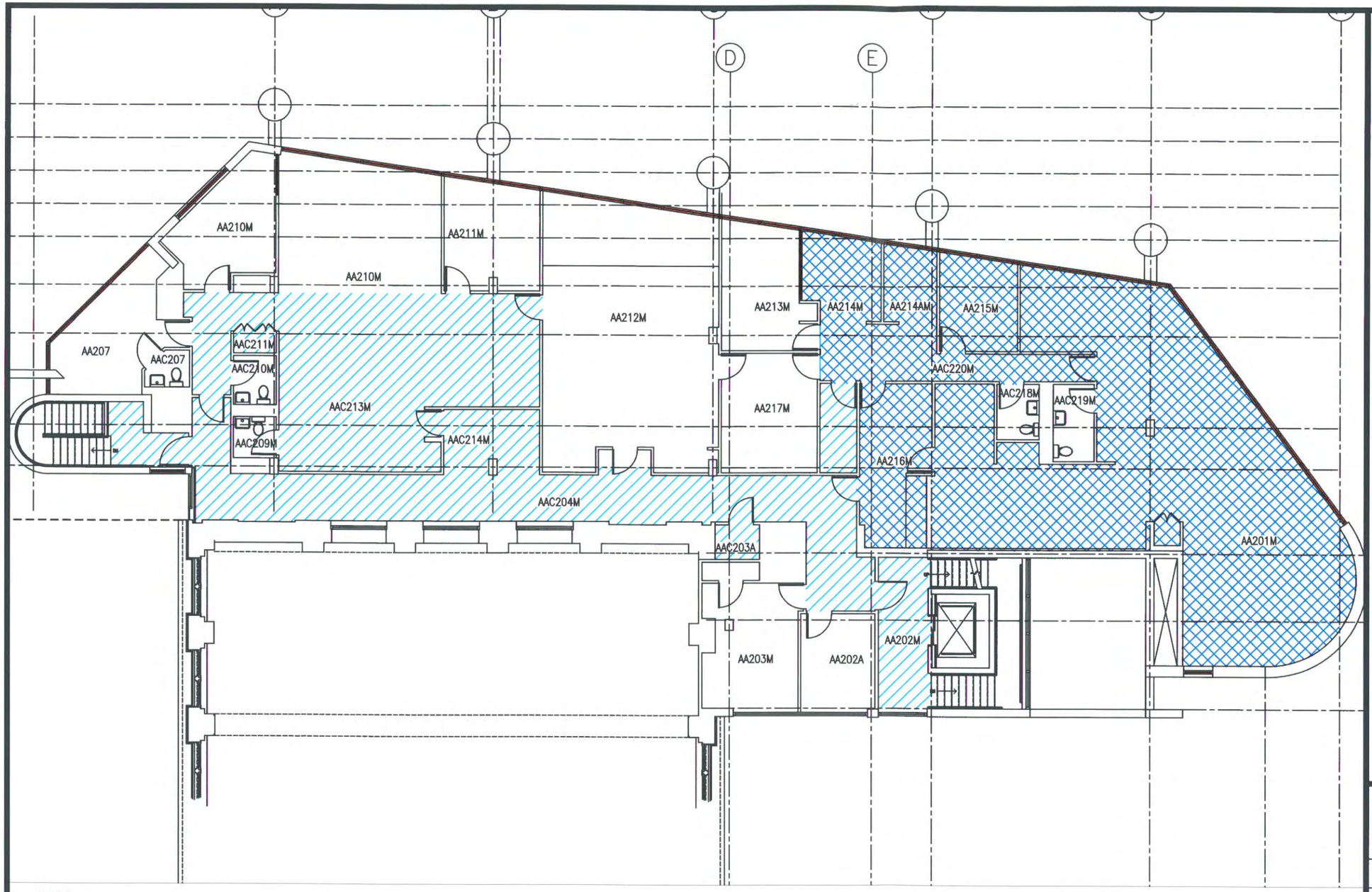
VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-3

ASBESTOS CONTAINING MATERIALS SURVEY

CLIENT:		PM:
	Division of Capital Asset Management	DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	RAV	60.22267.0023	AM-A3



LEGEND

- ASBESTOS CONTAINING FLOOR TILE AND MASTIC UNDER NON-ASBESTOS CONTAINING CARPET MASTIC
- ASBESTOS CONTAINING FLOOR TILE AND MASTIC
- ASBESTOS CONTAINING BLACK RESIDUAL MASTIC UNDER NON-ASBESTOS CONTAINING CARPET MASTIC
- PERIMETER UNIT WINDOW CAULKING

Fourth Floor - Administrative Addition

NOTES:
ALL INTERIOR DOOR UNITS HAVE ASBESTOS CONTAINING DOOR UNIT CAULKING.

ASBESTOS CONTAINING GREY DUCT SEALANT ON HVAC DUCTS THROUGH OUT.

ASBESTOS CONTAINING PINK SINK COATING PRESENT IN ROOM AAC213M

ATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

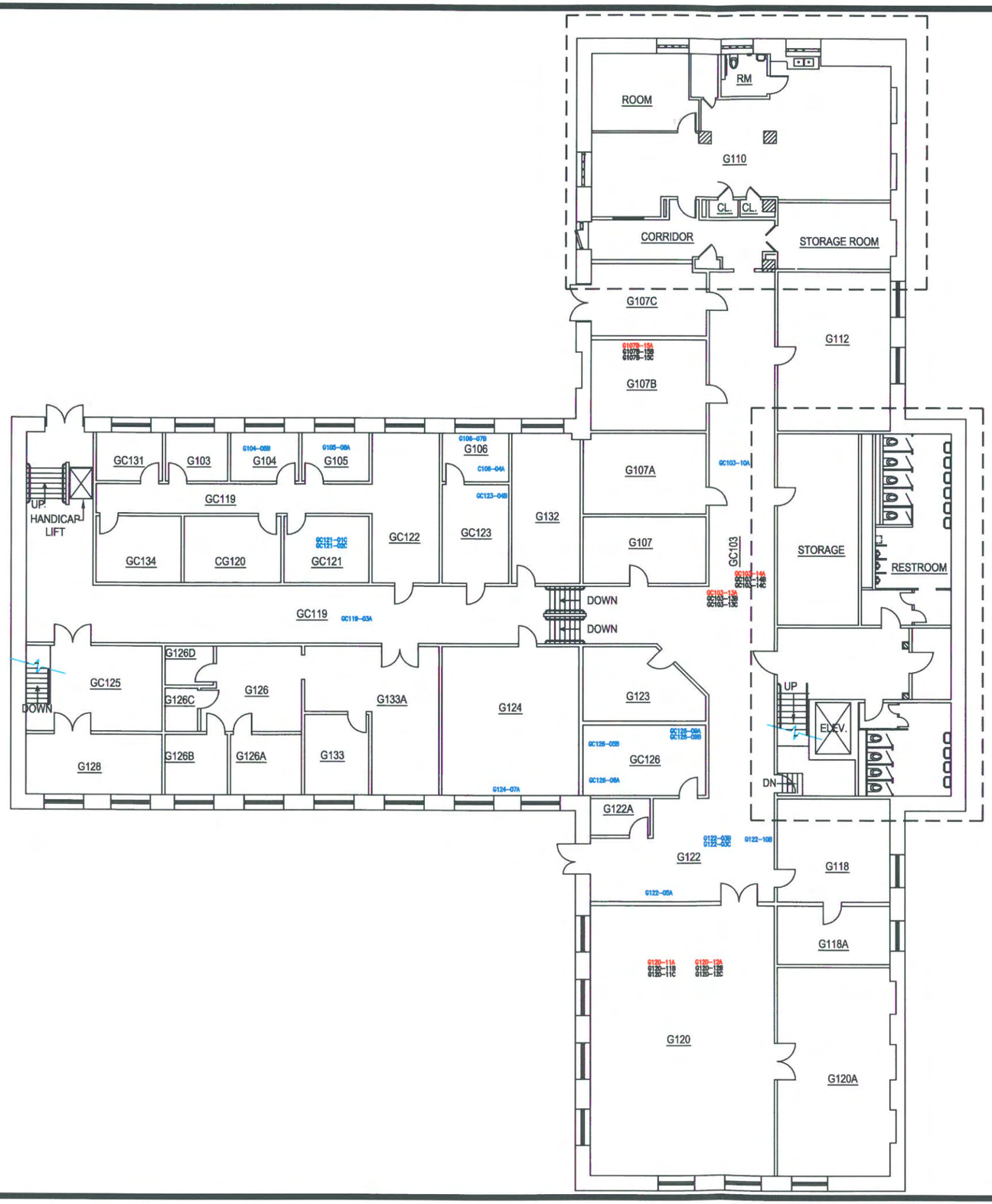
SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-4

ASBESTOS CONTAINING MATERIALS

CLIENT:		PM:
Division of Capital Asset Management		DR
LOCATION: Probate and Family Court Complex, 36 Federal Street, Salem, Massachusetts		PE:
DESIGNED:	DETAILED: RAV	PROJECT NO.: 60.22267.0023 / FIGURE: AM-A4

APPENDIX D

SAMPLE LOCATION DRAWINGS



LEGEND

AA101-01A	SAMPLE LOCATION NOT ANALYZED
AA101-01A	SAMPLE LOCATION SAMPLE POSITIVE FOR ASBESTOS
AA101-01A	SAMPLE LOCATION SAMPLE NEGATIVE FOR ASBESTOS

Basement Floor - Probate and Family Court

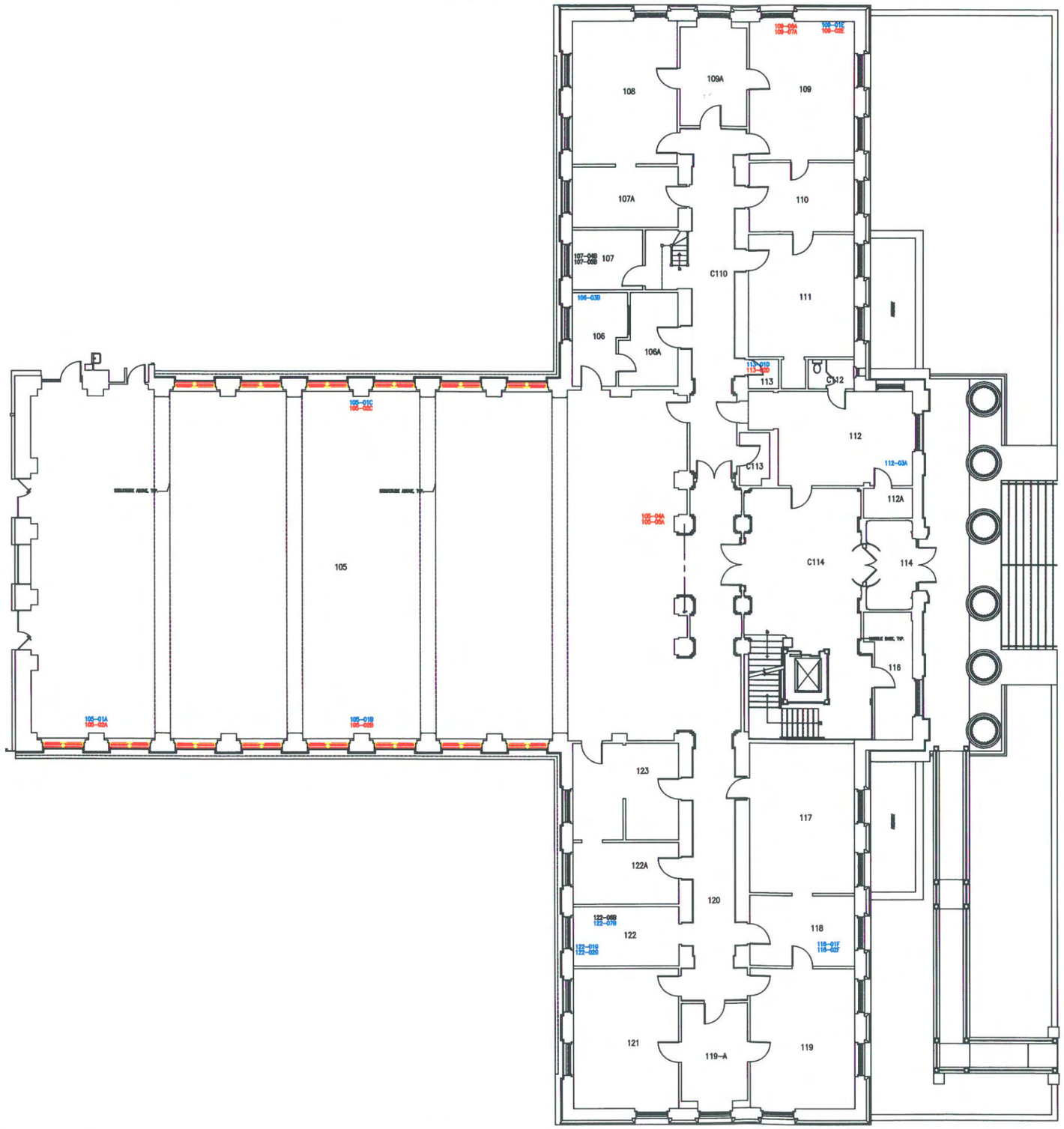
VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	OCB

ASBESTOS SAMPLE LOCATIONS

CLIENT:	Division of Capital Asset Management	PM: DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	RAV	60.22267.0023	AM-CB



LEGEND

AA101-01A	SAMPLE LOCATION NOT ANALYZED
AA101-01A	SAMPLE LOCATION SAMPLE POSITIVE FOR ASBESTOS
AA101-01A	SAMPLE LOCATION SAMPLE NEGATIVE FOR ASBESTOS

First Floor - Probate and Family Court

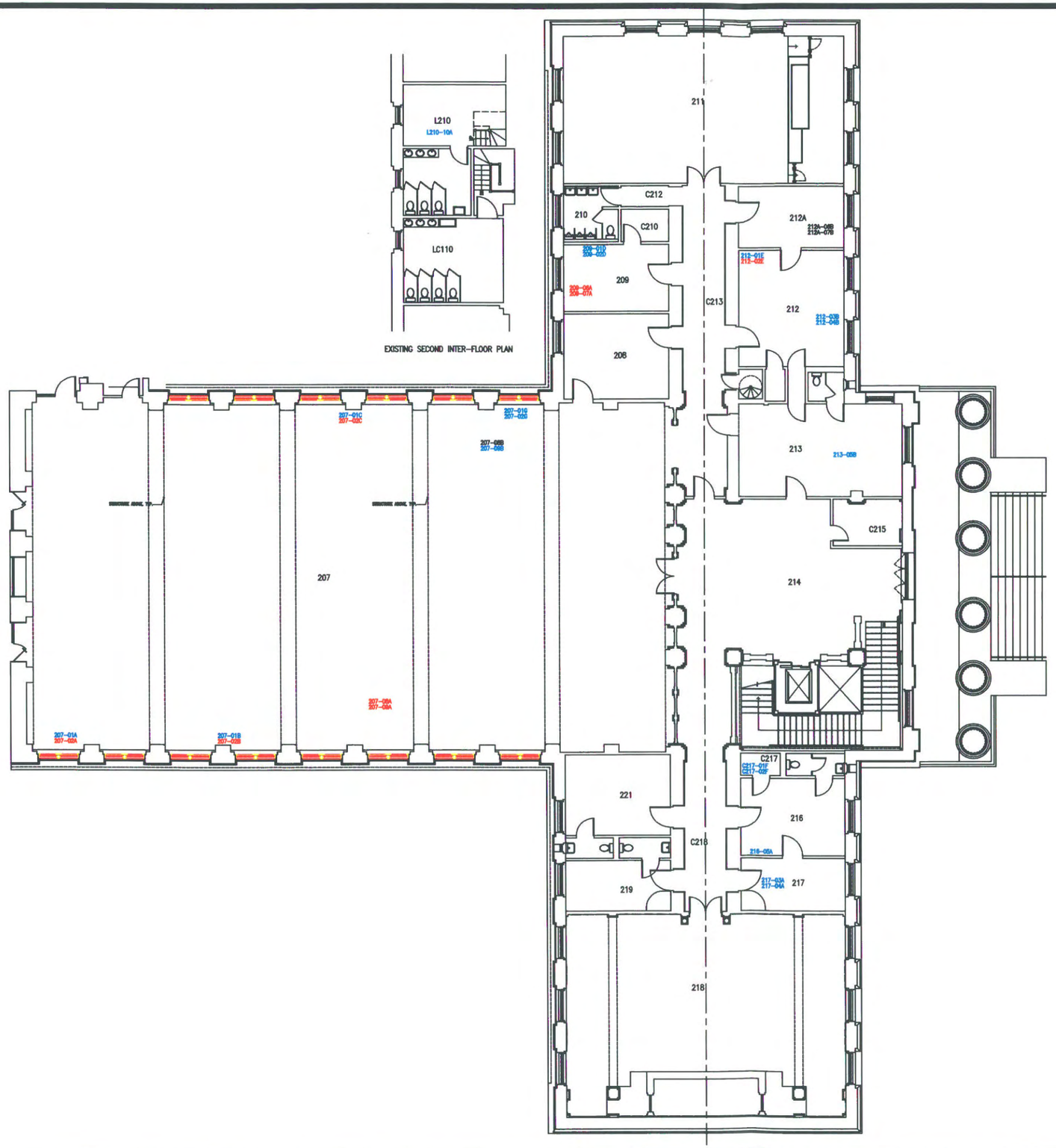
VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	OC1

ASBESTOS SAMPLE LOCATIONS

CLIENT:	Division of Capital Asset Management	PM: DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	RAV	60.22267.0023	AM-C1



LEGEND

AA101-01A	SAMPLE LOCATION NOT ANALYZED
AA101-01A	SAMPLE LOCATION SAMPLE POSITIVE FOR ASBESTOS
AA101-01A	SAMPLE LOCATION SAMPLE NEGATIVE FOR ASBESTOS

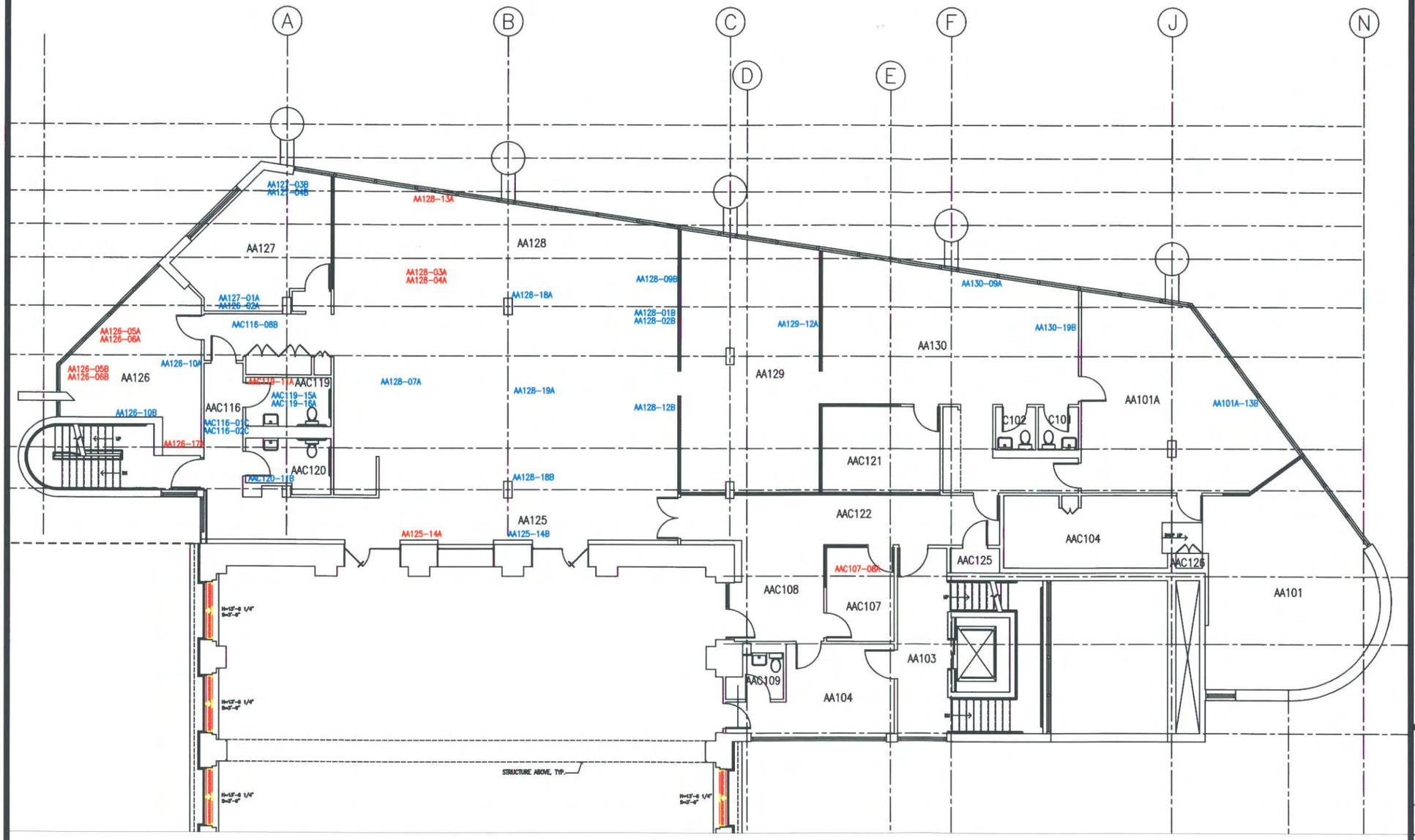
Second Floor - Probate and Family Court

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	OC2

ASBESTOS SAMPLE LOCATIONS

CLIENT: Division of Capital Asset Management		PM: DR
LOCATION: Probate and Family Court Complex 36 Federal Street Salem, Massachusetts		PE:
DESIGNED:	DETAILED: RAV	PROJECT NO.: 60.22267.0023
		FIGURE: AM-C2



LEGEND

AA101-01A	SAMPLE LOCATION NOT ANALYZED
AA101-01A	SAMPLE LOCATION SAMPLE POSITIVE FOR ASBESTOS
AA101-01A	SAMPLE LOCATION SAMPLE NEGATIVE FOR ASBESTOS

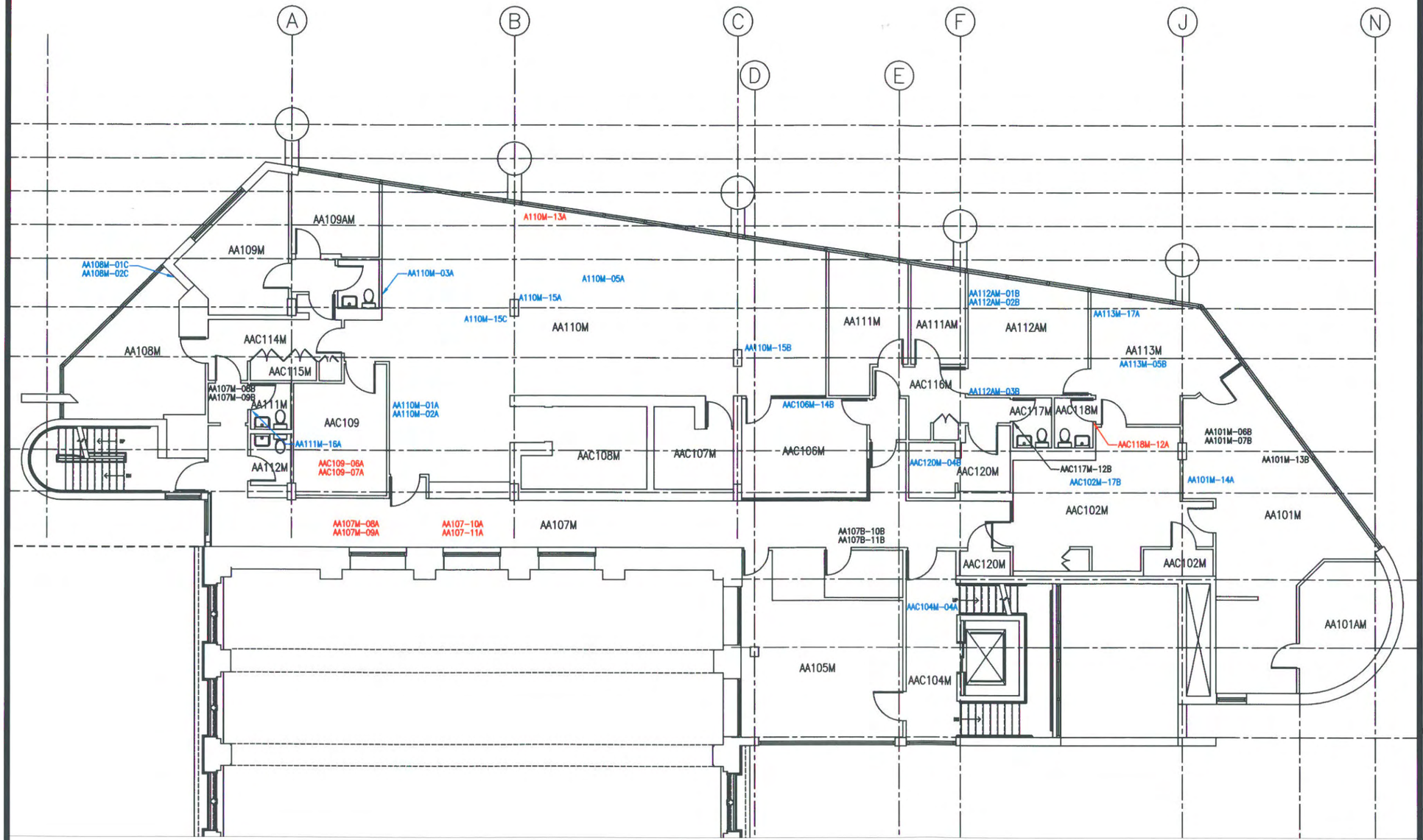
First Floor - Administrative Addition

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-1

ASBESTOS SAMPLE LOCATIONS

CLIENT: Division of Capital Asset Management		PM: DR
LOCATION: Probate and Family Court Complex 36 Federal Street Salem, Massachusetts		PE:
DESIGNED:	DETAILED: RAV	PROJECT NO.: 60.22267.0023
		FIGURE: AM-A1



LEGEND

AA101-01A	SAMPLE LOCATION NOT ANALYZED
AA101-01A	SAMPLE LOCATION SAMPLE POSITIVE FOR ASBESTOS
AA101-01A	SAMPLE LOCATION SAMPLE NEGATIVE FOR ASBESTOS

Second Floor - Administrative Addition

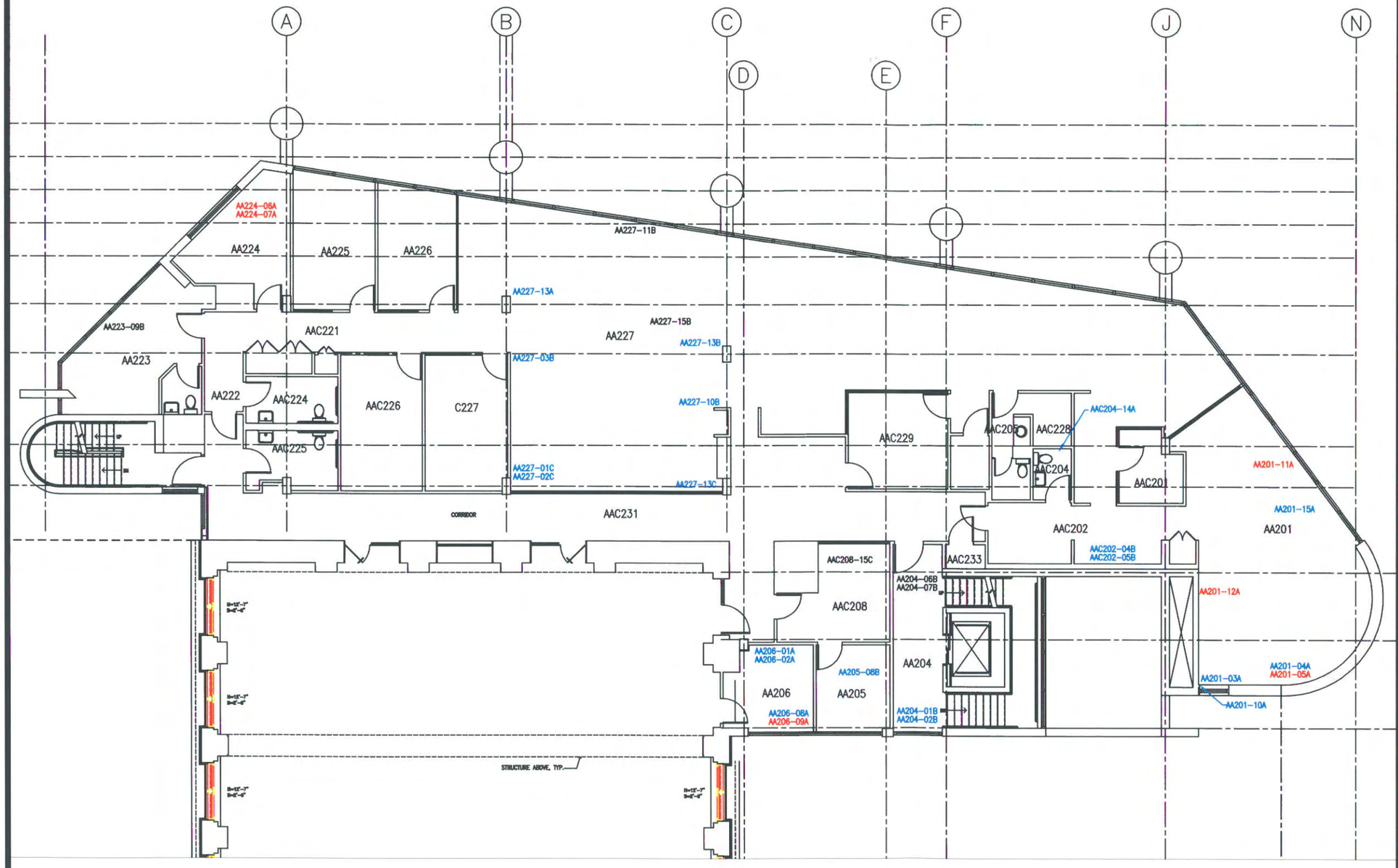
VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-2

ASBESTOS SAMPLE LOCATIONS

CLIENT:	Division of Capital Asset Management	PM: DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	RAV	60.22267.0023	AM-A2



LEGEND

AA101-01A	SAMPLE LOCATION NOT ANALYZED
AA101-01A	SAMPLE LOCATION SAMPLE POSITIVE FOR ASBESTOS
AA101-01A	SAMPLE LOCATION SAMPLE NEGATIVE FOR ASBESTOS

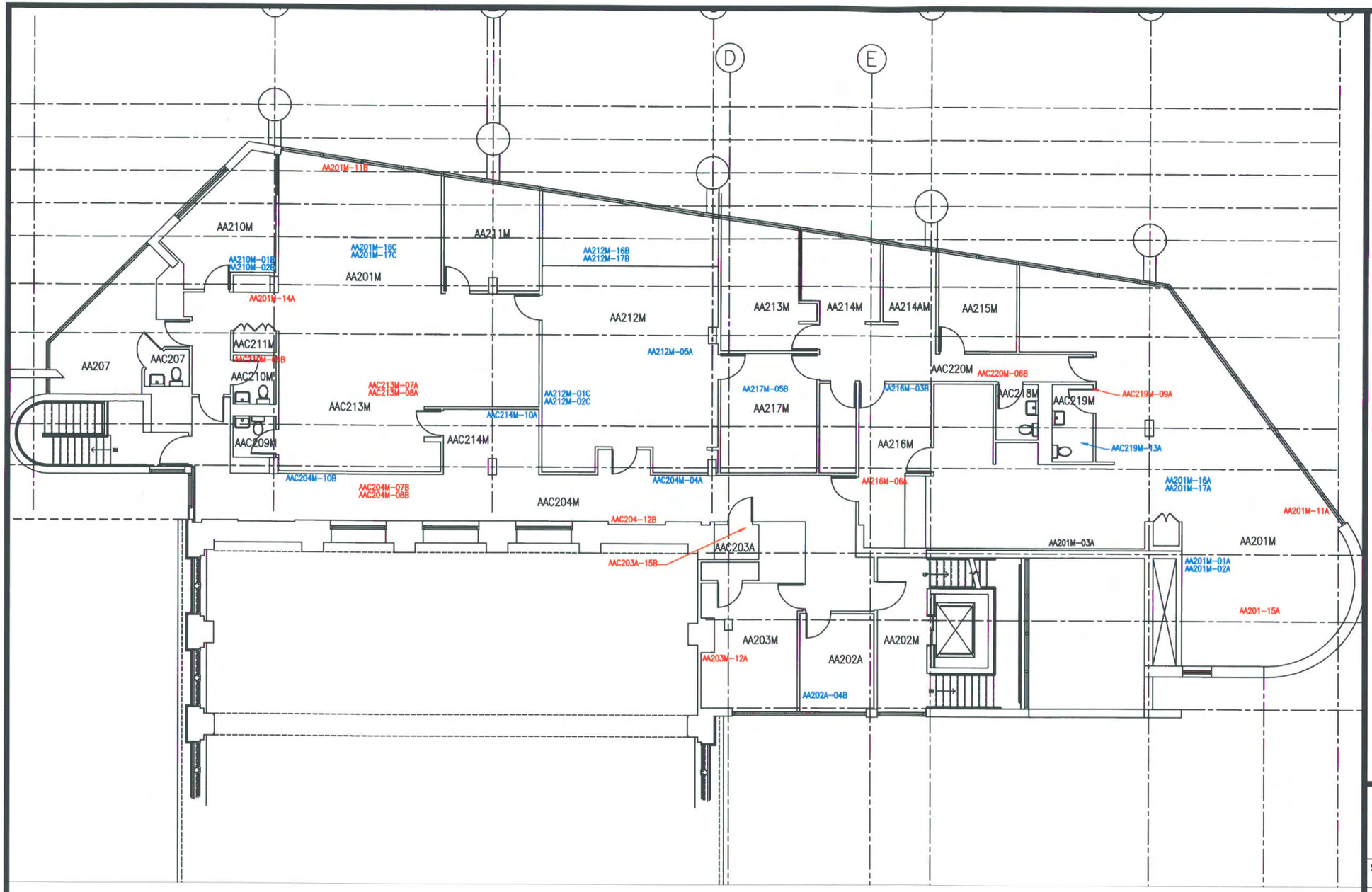
Third Floor - Administrative Addition

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-3

ASBESTOS SAMPLE LOCATIONS

CLIENT: Division of Capital Asset Management		PM: DR
LOCATION: Probate and Family Court Complex 36 Federal Street Salem, Massachusetts		PE:
DESIGNED:	DETAILED: RAV	PROJECT NO.: 60.22267.0023
		FIGURE: AM-A3



LEGEND

AA101-01A	SAMPLE LOCATION NOT ANALYZED
AA101-01A	SAMPLE LOCATION SAMPLE POSITIVE FOR ASBESTOS
AA101-01A	SAMPLE LOCATION SAMPLE NEGATIVE FOR ASBESTOS

Fourth Floor - Administrative Addition

VATC ASSOCIATES INC.
600 West Cummings Park, Suite 5500
Woburn, Massachusetts 01801-6350
Tel.(781)932-9400 Fax.(781)932-6211

SCALE:	DRAWING DATE:	ACAD FILE:
N.T.S.	4/1/2006	AA-4

ASBESTOS SAMPLE LOCATIONS

CLIENT:	Division of Capital Asset Management	PM: DR
LOCATION:	Probate and Family Court Complex 36 Federal Street Salem, Massachusetts	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	RAV	60.22267.0023	AM-A4

APPENDIX I

TABLE OF ITEMS AND COST

HAZARDOUS MATERIALS

PROBATE AND FAMILY COURT

Table 1
Table of Items and Cost
Hazardous Materials Survey
Probate and Family Courthouse
Salem, MA

Room/Area	Item Description																	
	1-foot long fluorescent bulbs	2-foot long fluorescent bulbs	3-foot long fluorescent bulbs	4-foot long fluorescent bulbs	8-foot long fluorescent bulbs	U-shaped, 2-foot long fluor. Bulbs	Fluorescent light fixture ballasts (potential PCB-containing)	Fluorescent light fixture ballasts (No PCBs)	High Intensity light bulbs (potential mercury-containing)	Wall/Window-mounted air conditioner	Fire Extinguisher (ABC, 5 or 10 lb)	Rechargeable Batteries (all types)	Refrigerator/Freezer/Vending	Motors/pumps/blowers (lube oil)	Potential Mercury Thermometer	Mercury Thermostat/Switch	Cleaning/Maintenance Products/ Paint (< 5 gallon - cans/bottles)	Misc. Items (see notes at bottom)
Boiler Room/Tunnel																		
Maintenance Tunnel				4			4					4						
Boiler Room				40			27				1		1	X	6	3	X	*
Basement																		
GC125				4			4			10			1					
G128	82		30	87	375		6	108	2		1	1		2			X	*
GC119				8			8					2						*
GC119					1		1				1							
GC103 & G122				32	36		7				1	4						
GC122 & GC119				4	4		8					2						
G105				4				2										
G104				4				2										
GC121				4				2										
GC103 & G122				4				2										
GC120				4				2										
GC131				4				2										
GC134				4				2										
GC122A					4		2											
GC123					2		1											
G132												2						
G106				2			1											
G132				2			1											
G132				2			1											
G124					14		14			1		2	1					
Entrance Room to G126					2		2											
G133				2				1		1								
G126					2		2											
G126A				2				1										
G126B				2				1										
G126C				2				1										
G126D				2				1										
G123	No items observed																	
Elevator Room off GC103																		*
Elevator Shaft off Lobby																		*
GC126				8				4					1				X	
G122A				2			2											
G107				100		60								3				
???				8				4										
G120				3	12						1	4		6			X	*
G120A					6		6										X	
G118						10	5											
G118A						6	3											
GC103				9			5			1		30						
G107A														1	1			
G107B & G107C	No items observed																	
Corridor off GC103				4			4											
G110 and Adjoining Rooms	Not Inspected - Renovation in Progress																	
Storage Room off GC103	No items observed																	
G112				8			4											
Electronics Room off Lobby												15					X	
New Restrooms	Not Inspected - Renovation in Progress																	

Table 1
Table of Items and Cost
Hazardous Materials Survey
Probate and Family Courthouse
Salem, MA

Room/Area	Item Description																		
	1-foot long fluorescent bulbs	2-foot long fluorescent bulbs	3-foot long fluorescent bulbs	4-foot long fluorescent bulbs	8-foot long fluorescent bulbs	U-shaped, 2-foot long fluor. Bulbs	Fluorescent light fixture ballasts (potential PCB-containing)	Fluorescent light fixture ballasts (No PCBs)	High intensity light bulbs (potential mercury-containing)	Wall/Window-mounted air conditioner	Fire Extinguisher (ABC, 5 or 10 lb)	Rechargeable Batteries (all types)	Refrigerator/Freezer/Vending	Motors/pumps/blowers (lube oil)	Potential Mercury Thermometer	Mercury Thermostat/Switch	Cleaning/Maintenance Products/ Paint (< 5 gallon - cans/bottles)	Misc. Items (see notes at bottom)
1st Floor																			
105				10	54		39					16							
123				4	2		4			1									
122A	Inaccessible																		
122					2			2					1					X	
121					2			2		1		2							
119A				4			2			1									
119					4		4			1									
118					2			2										X	
117					4			4										X	
120 & C110												8	3						
C113													1						
112					4		4			1	1								
C112	No items observed																		
113																		X	
111				14			12												
110				4			2												
109				8			4			1								X	
109A					2		2												
108					10		10			1		2							
107A				4			4												
East Wing Staircase to L107	No items observed																		
L107				8			4												
107				4			2			1									
106 & 106A					4		4			1	1							X	
C114		3		1			4				1	2						X	
116				1			1												
114	No items observed																		
2nd Floor																			
207				155	64		125					16							
211					22		22			2									
C210																		X	
209					2		2											X	
208					2		2												
C210	No items observed																		
Lounge and Bathroom below				2			1												
209																			
214, C218, & C213											1	4							
218										3									
221					4		2												
Bathroom off 221																		X	
219					2		2						1						
Bathroom off 219										1								X	
217					2		2			1									
216 & C217					2		2			1									
Bathroom off 216													1					X	
Front Stairwell												6							
213					6		6			1									
Bathroom off 213																		X	
Closets off 213																		X	
Janitors Closet off C213											1							X	
212					4		2												
212A					4		2												

Table 1
Table of Items and Cost
Hazardous Materials Survey
Probate and Family Courthouse
Salem, MA

Room/Area	Item Description																	
	1-foot long fluorescent bulbs	2-foot long fluorescent bulbs	3-foot long fluorescent bulbs	4-foot long fluorescent bulbs	8-foot long fluorescent bulbs	U-shaped, 2-foot long fluor. Bulbs	Fluorescent light fixture ballasts (potential PCB-containing)	Fluorescent light fixture ballasts (No PCBs)	High intensity light bulbs (potential mercury-containing)	Wall/Window-mounted air conditioner	Fire Extinguisher (ABC, 5 or 10 lb)	Rechargeable Batteries (all types)	Refrigerator/Freezer/Vending	Motors/pumps/blowers (lube oil)	Potential Mercury Thermometer	Mercury Thermostat/Switch	Cleaning/Maintenance Products/ Paint (< 5 gallon - cans/bottles)	Misc. Items (see notes at bottom)
C215	Inaccessible																	

Table 1
Table of Items and Cost
Hazardous Materials Survey
Probate and Family Courthouse
Salem, MA

Room/Area	Item Description: 1-foot long fluorescent bulbs	2-foot long fluorescent bulbs	3-foot long fluorescent bulbs	4-foot long fluorescent bulbs	8-foot long fluorescent bulbs	U-shaped, 2-foot long fluor. Bulbs	Fluorescent light fixture ballasts (potential PCB-containing)	Fluorescent light fixture ballasts (No PCBs)	High intensity light bulbs (potential mercury-containing)	Wall/Window-mounted air conditioner	Fire Extinguisher (ABC, 5 or 10 lb)	Rechargeable Batteries (all types)	Refrigerator/Freezer/Vending	Motors/pumps/blowers (lube oil)	Potential Mercury Thermometer	Mercury Thermostat/Switch	Cleaning/Maintenance Products/ Paint (< 5 gallon - cans/bottles)	Misc. Items (see notes at bottom)
Attic														4				
Total Units	82	3	30	584	662	76	390	145	2	31	10	122	11	16	7	3	NA	NA
Estimated Disposal Cost per Unit	$0.50	$0.50	$0.50	$0.50	$1	$1	$10	$0	$8	$50	$200	$10	$50	$50	$30	$30	NA	NA
Total Cost	$41	$2	$15	$292	$662	$76	$3,900	$0	$16	$1,550	$2,000	$1,220	$550	$800	$210	$90	$1,500	$1,405
																	Probate & Family Court Total Cost	$15,734

Notes:
X = Items present but not counted because it is presumed they will be removed by occupants prior to renovation/demolition.

*Miscellaneous Items:

Room	Item Quantity & Description	Disposal Cost
GC119	One potential hydraulic lift	$500
G128	Thirty 3-foot long fluorescent bulbs	$15
Elevator Room off GC103	50-100 gallons hydraulic fluid (in new elevator equipment)	$200
Elevator Shaft off Lobby	Four gas/fuel containers (< 5 gallons each)	$40
G120	One CO_2 Fire Extinguisher	$200
Boiler Room	Multiple pumps/motors/boilers (lubricating oils)	$200
	One wall-mounted diesel tank (approx. 25 gallons)	$50
	One thirty-gallon drum water treatment chemicals	$100
	Two 5-gallon containers water treatment chemicals	$100
	Total Misc. Items Cost	$1,405

APPENDIX J

TABLE OF ITEMS AND COST

HAZARDOUS MATERIALS

ADMINISTRATIVE ADDITION

Table 2
Table of Items and Cost
Hazardous Materials Survey
Administrative Annex
Salem, MA

Room/Area	Item Description																	
	1-foot long fluorescent bulbs	2-foot long fluorescent bulbs	3-foot long fluorescent bulbs	4-foot long fluorescent bulbs	8-foot long fluorescent bulbs	U-shaped fluorescent bulbs	Fluorescent light fixture ballasts (potential PCB-containing)	Fluorescent light fixture ballasts (No PCBs)	High intensity light bulbs (potential mercury-containing)	Wall/Window-mounted air conditioner	Fire Extinguisher (ABC, 5 or 10 lb)	Rechargeable Batteries (all types)	Refrigerator/Freezer/Vending	Motors (lubricating oil)	Potential Mercury Thermometer	Mercury Thermostat/Switch	Cleaning/Maintenance Products/ Paint (< 5 gallon - cans/bottles)	Misc. Items (see notes at bottom)
1st Floor																		
AAC120				4				2										
AAC119				4				2										
West Stairwell										5								*
AA128 & AAC116				100				50										
AA126				12				6					1				X	
AA127				16				8										
AA129				33				19										
AA130				36			20											
AA121				10				6										
C102				2				1										
C101				2				1										
AA101A				32				16										
AA101 & AAC104				45				24					1				X	
East Stairwell, AA103, AAC104M, AA204, AA202M				32			16			3								*
AAC122 & AAC108				12				6										
AAC107				8				4										
AA104				12				6										
AAC109				2				1										
1st Floor Mezzanine																		
AA112M				2				1										
AA111M				2				1										
AA107M				5				2										
AAC114M & AAC115M				4				4										
AA108M				10				5										
AA108M				20														
AA109M				6				3										
AA109AM				6				3										
Bathroom off AAC114M				2				1										
AAC109				8				4					1				X	
AA110M				30				15										
AAC108M				8				2										
AA110M				68				34										
AAC107M				4				1										
AAC106M				18				36										
AA111AM				4				2										
AA111A				3				2										
AAC120M				2				1										
AAC120M				2				1									X	
AA112AM				14				8										
AA113M				9				9										
AAC118M				2				1										
AAC102M, AAC102M & AA101M				39		2		18									X	
AA101M				10				5										
AAC120M	2			2													X	
AA105M				28				14									X	

Table 2
Table of Items and Cost
Hazardous Materials Survey
Administrative Annex
Salem, MA

Room/Area	Item Description: 1-foot long fluorescent bulbs	2-foot long fluorescent bulbs	3-foot long fluorescent bulbs	4-foot long fluorescent bulbs	8-foot long fluorescent bulbs	U-shaped fluorescent bulbs	Fluorescent light fixture ballasts (potential PCB-containing)	Fluorescent light fixture ballasts (No PCBs)	High intensity light bulbs (potential mercury-containing)	Wall/Window-mounted air conditioner	Fire Extinguisher (ABC, 5 or 10 lb)	Rechargeable Batteries (all types)	Refrigerator/Freezer/Vending	Motors (lubricating oil)	Potential Mercury Thermometer	Mercury Thermostat/Switch	Cleaning/Maintenance Products/ Paint (< 5 gallon - cans/bottles)	*Misc. Items (see notes at bottom)
2nd Floor																		
AAC231				6				3										
AAC233																	X	
AAC225				4				2										
AA223				8				4										
Bathroom off AA223				2				1										
AAC221 & AA222				8				5										
AAC224				4				2										
AA224				8				4										
AA225				12				6										
AA226				12				6										
AAC226				12				6										
C227				12				6										
AA227				134				68									X	
AA229				8				4										
Closet off AA227				2				1									X	
AAC228				5				3									X	
AAC201				6				3										
AA201 & AAC202				78				21					2				X	
AAC204				2				1										
AAC208				12				6										
AA205				8				4										
2nd Floor Mezzanine																		
AA202A				8				4										
AA203M				10				5										
AAC204M				2				2										
AAC203A																	X	
AA201M & AA216M				82				41										
AAC219M				4				2										
AAC218M				2				1									X	
AAC220M				6				3										
AA215M				10				5										
AA214M				8				4										
AA214AM				8				4										
Storage Room off AAC220M				1				1							2			
AA213M				16				8										
AA217M	No items observed																	
AA212M				40				20										
AAC213M, AAC211M, AA210M				76				41					1				X	
AA211M				12				6										
AAC214M	No items observed																	
AAC209M				2				1										
AA210M				8				4										
AA207 & AAC207				12				6										
AAC210M				2				1										
Total Units	2	0	0	1322	0	2	36	640	0	8	0	0	6	0	2	0	NA	NA
Estimated Disposal Cost per Unit	$0.50	$0.50	$0.50	$0.50	$1	$1	$10	$0	$8	$50	$200	$10	$50	$50	$30	$30	NA	NA
Total Cost	$1	$0	$0	$661	$0	$2	$360	$0	$0	$400	$0	$0	$300	$0	$60	$0	$500	$60
Administrative Annex Total Cost																		$2,404

Notes:
X = Items present but not counted because it is presumed they will be removed by occupants prior to renovation/demolition.

*Miscellaneous Items:

Room	Item Quantity & Description	Disposal Cost
West Stairwell	One pressure gauge (potential mercury containing)	$30
East Stairwell	One pressure gauge (potential mercury containing)	$30

Table 2
Table of Items and Cost
Hazardous Materials Survey
Administrative Annex
Salem, MA

Room/Area	1-foot long fluorescent bulbs	2-foot long fluorescent bulbs	3-foot long fluorescent bulbs	4-foot long fluorescent bulbs	8-foot long fluorescent bulbs	U-shaped fluorescent bulbs	Fluorescent light fixture ballasts (potential PCB-containing)	Fluorescent light fixture ballasts (No PCBs)	High intensity light bulbs (potential mercury-containing)	Wall/Window-mounted air conditioner	Fire Extinguisher (ABC, 5 or 10 lb)	Rechargeable Batteries (all types)	Refrigerator/Freezer/Vending	Motors (lubricating oil)	Potential Mercury Thermometer	Mercury Thermostat/Switch	Cleaning/Maintenance Products/ Paint (< 5 gallon - cans/bottles)	*Misc. Items (see notes at bottom)
	Item Description																	

Total Misc. Items Cost $60

A2.7 MEP HVAC Options for Minimal Renovation to PFC

Salem Courts
September 27, 2006

MEP HVAC OPTIONS FOR MINIMAL RENOVATION TO PFC

We have evaluated a few options to reduce the cost of work to the Probate and Family Court (PFC) Building.

Under the various options, the scope of renovation work for the PFC building will be reduced and no work will be carried out in the PFC 70's Addition Building.

The reduction in renovation work will result in the following deviations from the base design.

A. With this reduced scope, the cooling and ventilation for the PFC 70's Addition will remain and be provided by the existing roof top units. The buildings heating will continue to be provided by hot water supplied from the main heating plant located in basement level of the PFC building.
B. The roof top units currently serving the PFC Addition and their associated air distribution systems will be maintained. This eliminates the necessity of providing new chilled water roof top air handling units.
C. The total capacity of the new cooling plant will be reduced from 800 to 725 tons.
D. The total cooling tower capacity will be reduced from 800 to 760tons.
E. The outside air energy recovery unit located, in the PFC attic space, will be reduced from a 17,000cfm unit to a 14,000cfm unit.

Further the various options will be constrained by whether the site Plan A or Plan B is implemented. Plan B will necessitate the division of service between the New and Existing buildings as it will mean the building will not be on adjoining sites. The various design scenarios are outlined below.

PLAN A

This site plan encompasses the existing Church site located between the existing PFC Building and the New Trial Building thus providing one contiguous site.

Scenario A.1

- Under this option the heating and cooling plants will be housed in the PFC Building basement similar to the base design. It will consist of the following heating and cooling plant configurations.
- A 725 ton chiller plant located in the basement of the PFC building serving the PFC and New Trial buildings.
- 430 HP of heating provide by three new 140HP hot water boilers to be installed in the existing PFC's boiler room to serve the New Trial, PFC and PFC 70's Addition. This installation will be carried out on a phased basis, to accommodate eventual termination of steam service to adjoining buildings.
- Cooling towers of 760 ton capacity which would be located on the roof of the PFC 70's Addition.

Advantages

- Makes the maximum use of existing buildings basement space, which may be unsuitable for any other use.
- Minimizes new mechanical space requirements in the New Trial Building.

Disadvantages

- The systems cooling towers will require significant roof space and structural support will need to be added to the PFC 70's Additions roof.

Scenario A.2

- Under this option the cooling plant will be split between the New Trial and existing PFC buildings. The heating plant will be located in the existing PFC boiler room. The equipment will be configured as follows.
- A 175 ton Chiller plant located in the basement of the PFC building and serving this building alone.
- Cooling towers of 190 ton capacity located on the roof of the PFC 70's Addition Building to serve the PFC Building's chillers. An alternative may be to locate for the towers at grade level (not recommended).
- A 550 tons chiller plant located in the New Trial building and serving that building alone.
- Cooling towers of 580 ton capacity located on the roof of the New Trial building to serve the buildings Chiller plant.
- 430 HP of heating provide by three new 140 HP hot water boilers to be installed in the existing PFC's boiler room to serve the New Trial, PFC and PFC Addition spaces. This installation will be carried out on a phased basis, to accommodate eventual termination of steam service to adjoining buildings.

Advantages

- Reduces the space requirements and structural support modification needed on the PFC 70's Addition roof. Splitting the cooling towers into small cell units may reduce the necessity of additional structural support. Additionally, locating the towers at grade would eliminate this work completely.

Disadvantages

- Slightly increases equipment cost by requiring the duplication of components such as water treatment and condenser pumps sets.
- Locating the tower at grade will result in noise and tower drift problems.

Scenario A.3

- Under this option the cooling plant will be located in the New Trial Building. The heating plant will still be located in the existing PFC boiler room. The equipment will be configured as follows.
- A 725 ton Chiller plant located in the New Trial building serving both the PFC and New Trial Buildings.
- 430 HP of heating provide by three new 140 HP hot water boilers to be installed in the existing PFC's boiler room to serve the New Trial, PFC 70's and PFC Addition. This installation will be carried out on a phased basis, to accommodate eventual termination of steam service to adjoining buildings.
- Cooling towers of 760 ton capacity located on the roof of the New Trial Building serving the chiller plant in that building.

Advantages

- Eliminates the need for locating cooling towers on PFC 70's Addition roof and the associated structural support work.
- Eliminates duplication of components such as water treatment and condenser pumps sets associated with scenario 2.A.

Disadvantages

- Increases mechanical space requirement both within the New Trial Building and on the buildings roof.

PLAN B

In this case the existing Church site is not encompassed in the overall site and thus the New Trial building and the Existing PFC building will not be on adjoining sites and will therefore need completely separate services.

Scenario B.1

- Under this option the separate heating and cooling plant will be located in the buildings which they serve. They will be configured as follows.
- A 175 ton Chiller plant located in the basement of the PFC Building and serving this building alone.
- Cooling towers of 190 ton capacity located on the roof of the PFC 70's Addition to serve the PFC building's Chillers. An alternative may be to locate for the towers at grade level (not recommended).
- A 550 ton chiller plant located in the New Trial Building and serving that building alone.
- Cooling towers of 580 ton capacity located on the roof of the New Trial Building to serve the buildings chiller plant.
- 300 HP of heating provide by three new 100 HP hot water boilers to be installed in the New Trial Building to serve this building alone.
- Retain the existing boilers in the PFC boiler room, as a least cost measure to serve the existing buildings. Provide new hot water heat exchanger and pumps to serve the renovated PFC Building.

Advantages

- Accommodates the complete separation of the new and existing building complexes and their associated services which would be required under Site Plan B.

Disadvantages

- Increases equipment cost by requiring the duplication of components such as water treatment and condenser pumps.
- The systems cooling towers will require roof space and structural support will need to be added to the PFC 70's Additions.
- The final PFC solution uses the existing inefficient steam systems.

A2.8 Salem Courts Expansion Study

Salem, Massachusetts
Structural Evaluation
Green International Affiliates, Inc.
July 2003

Salem Courts
Expansion Study
Salem, MA

Structural Evaluation

Prepared for:

ICON architecture, inc.

July, 2003

Prepared by:

GREEN INTERNATIONAL AFFILIATES, INC.

CONSULTING ENGINEERS, MEDFORD, MA

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1. Data Collection:

1.1. Review of Existing Documents

A research was conducted at the Registry of Deeds Engineering Office to obtain and examine available existing documents such as drawings, reports, and specifications. The following drawings were the only available documents and were obtained as a result of the research:

- Design drawings indicating structural framing for Superior Court Building-Phase I construction (built 1861).
- Design drawings indicating architectural plan for Superior Court Building-Phase II construction. (built 1891).
- Design drawings indicating structural framing for Registry of Deeds and Probate Family Building construction. (built 1912)

1.2. Site Visits

Two visits to the project site took place during June, 2003 to review the existing structural system for each building, review structural condition of the buildings, and to verify existing documents where possible.

2. Description of Existing Building Structures:

Based on the review of the available existing documents and the site visits, the following describes the existing building structures:

2.1. County Commissioner's Building (1841)

There are no structural plans available for the County Commissioner's Building.

The exterior of the building was observed to be brick with a granite façade. During our site visits, the exterior of the building appeared to be in good condition and no visual cracks, deficiencies, or excessive loss of mortar in joints was evident. The building foundation was observed to be made of stone walls. The foundation walls appeared to be in good condition and no visible settlement or cracks on foundation walls were observed during the site visits. The basement floor appeared to be in sound condition and no significant evidence of water penetration or settlement was noticed during the site visits. The central corridor walls in the basement appeared to be bearing walls that support the first floor system, and the first level floor is supported by a brick vaulted system. In general, the building appeared to be well maintained.

2.2. Superior Court Building (1861/1891)

The building was constructed in two phases; Phase I was constructed in 1861 and Phase II was constructed in 1891. Structural drawings are available only for the Phase

I part of the building showing the basement plans, and first and second floor framing. Only architectural drawings are available for Phase II of the building construction.

The exterior of the building appeared to brick. During our site visits, the exterior of the building appeared to be in good condition and no visual cracks, deficiencies, or excessive loss of mortar in joints was observed. The Phase I building foundation was observed to be made of brick walls resting on stone walls and the foundation walls appeared to be in good condition. No visible settlement or cracks on foundation walls were observed during the site visits. The basement floor was observed to be concrete. The concrete floor appeared to be in good condition and no significant evidence of water penetration or settlement was observed in the basement during the site visits. There is a central corridor with walls on each side and 12-inch square brick columns in the basement. According to the structural drawings, the central corridor walls and brick columns support the first floor system.

According to the structural drawings, the floor system consists of 1-inch thick wood plank and wood floor beams that vary in size from 2 x 12-inch in the central corridor, to 3 x 12-inch and 5 x 12-inch in both the west and east sides of the corridor. The floor beams carry the floor loading and transfer it to the central corridor and building bearing walls and brick columns in the basement. The first floor beams on either side of the corridor were checked and verified for their sizes during the site visits and they appeared to match the structural drawing. No evidence of waving of the wood floor, and no rotting or excessive cracks in wood joists were observed during the site visits.

Based on the structural drawings, the second level floor system consists of 1-inch thick wood planks and wood floor beams. The central corridor beams are 3 x 12-inch that transfer floor loading to the corridor bearing walls on either side. The west and east sides of the corridor floor systems are supported by 2, 3, and 4 x 12-inch beams which transfer the loading to the central corridor and building bearing walls.

The Phase II building foundation was observed to be made of brick walls resting on stone walls. The foundation walls appeared to be in good condition and no visible settlement or cracks were observed during the site visit. The basement floor appeared to be made of concrete. The basement floor appeared to be in sound condition and no significant evidence of water penetration or settlement was observed in the basement during our site visits. In general, the building appeared to be well maintained.

2.3. Registry of Deeds/Probate and Family Building (1912/1979)

The exterior of the building was observed to be brick with a granite façade. Based on our site visits, the exterior of the building appeared to be in good condition, and no visual cracks, deficiencies, or excessive losses of mortar in joints were observed. The basement floor was observed to be made of concrete. The basement floor appeared to be in good condition and no visible cracks or settlement was noticed on the concrete slab during the site visits. According to the structural drawings, there are concrete encased steel columns and bearing walls in the basement which appeared to be sound

during the site visits. The structural drawings do not indicate the concrete floor thickness or reinforcement.

The structural drawings indicate that the structural floor system consists of a concrete slab supported on concrete encased steel columns and bearing walls in the basement. The structural plans for the building do not indicate concrete slab thickness or reinforcement. However, the first floor slab was measured by the maintenance personal during the site visits to be an 11-inch thick concrete slab. Slab reinforcement could not be determined.

According to the structural drawings, the front section of the first level consists of floor system which frames into the short span steel I-beams. The I-beams transfer the floor loading to steel girders which transfer the load to either a bearing wall or concrete encased steel I-beam columns in the basement. The back section of the level is an open space library. The floor system consists of a concrete slab carried by short and long span steel I-beams; the I-beams transfer the floor loading to both the bearing walls and to the concrete encased I-beams located at the center of the library.

The structural drawings for the front section of the second level indicate that the floor system is similar to the floor system on the first level. The back section of this level is an open space library. The floor system consists of a concrete slab carried by long span steel I-beams; the I-beams transfer the floor loading to the concrete encased steel girders (I-beams). The girders then transfer the loading to the bearing walls on each side of the building structure.

3. Analysis of Existing Building Structures:

Generally, the existing building structures are structurally sound and they could be reused in the new reuse program as long as the loads do not change drastically. Structural analysis of selected locations for each building was performed to determine the capacity of the structure for high density file cabinet system and identify the need for structural improvements and upgrades. The selected locations for each building were identified by ICON architecture based on the potential new reuse for each building. The design parameter of the high density file cabinet used in the analysis was approximately 165 lbs per square foot. The design parameter was determined by Mark L. Carter, a representative of Systematics which supplies the high density file cabinets, based on the actual in-place high density file cabinet systems that exist in the second floor of the Registry of Deeds. The analysis for each building can be summarized as follows:

3.1. County Commissioner's Building (1841)

Currently there are high density file cabinets on the first floor of the building. Based on the fact that there are no structural plans available and the potential variation of the structural layout of the floor, it is our recommendation that potential areas where high density file cabinets are to be located on the second floor should be inspected in detail to determine load capacity which may also include an in-place load capacity test.

3.2. Superior Court Building (1861/1891)

A typical floor section on the east side of the second floor of the building was analyzed to determine whether it had sufficient capacity for a new high density file cabinet system. The analysis was performed on a 3 x 12-inch wood beam to determine the ultimate live load capacity of the beam. The analysis concluded that the beam does not have sufficient capacity for the new file system.

In order to analyze whether the building has sufficient capacity for expanded library use in the second floor and high density file cabinet use as a result of potential relocation of the Registry of Deeds, a detailed inspection of these areas should be performed to determine their load capacity which may also include a load capacity test.

3.3. Registry of Deeds/Probate and Family Building (1912/1979)

There are old library shelves on the first floor of the building in the open space area. The weight of these shelves is not available.

There are two high density file cabinet systems on the second floor of the building. According to Mark L. Carter, the first system occupies an approximately 560.25 sq. ft. area and the total weight of the system at maximum capacity is 88,214 lbs including the high density file cabinet self weight of 17,501 lbs. The second system covers a 275 sq. ft. area and the total weight at maximum capacity is 45,098 lbs including the high density file cabinet self weight of 10,391 lbs.

A typical floor section in the front wing of the building was analyzed for a potential new location of a high density file cabinet system. An analysis was performed on the steel I-beam structural member to determine the ultimate live load capacity of that member. The analysis concluded that the element has sufficient capacity to bear the additional loading by the new high density file cabinet system.

A2.9 Permitting Analysis

J. Michael Ruane Judicial Center and Salem Trial Courts
Epsilon Associates
November 2005

Received by Hand - 11/22/05
DCAM Gail R. to Jean C. @ Goody Clancy

Permitting Analysis

J. MICHAEL RUANE JUDICIAL CENTER / SALEM TRIAL COURTS

Submitted to:

DIVISION OF CAPITAL ASSET MANAGEMENT
One Ashburton Place
Boston, MA 02108

Prepared by:

EPSILON ASSOCIATES, INC.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

November 2005

Epsilon
ASSOCIATES INC.
ENGINEERS ENVIRONMENTAL CONSULTANTS

Scale 1:12,000
1 inch = 1000 feet

500 0 500 1,000
Feet

Figure 1
Locus USGS

DCAM
Salem, Massachusetts

Basemap: 1985 USGS Quadrangles, MassGIS

Epsilon Associates Inc

Scale 1:2,400
1 inch = 200 feet

100 0 100 200
Feet

Figure 2
Locus Map (Aerial)

DCAM
Salem, Massachusetts

Basemap: 2001 Orthophotography, MassGIS

Epsilon Associates Inc

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1.0 INTRODUCTION AND OVERVIEW

1.1 Scope of Work

The Division of Capital Asset Management ("DCAM") has proposed a new consolidated Trial Court Facility on Federal Street in Salem, Massachusetts (Figure 1). The new facility will replace three existing courthouses in Salem: Superior Court, currently housed in the Superior Courthouse/County Commissioners Building at 32 & 34 Federal Street; the District Courthouse at 65 Washington Street; and the Juvenile Court currently located in leased space at the Shetland Park office park. The project will also include renovations to the existing Registry of Deeds / Probate and Family Courthouse at 36 Federal Street.

This report provides an analysis of the environmental permitting constraints associated with the Federal Street site. In particular, the following sections evaluate the potential regulatory review in four areas: 1) review under the Massachusetts Environmental Policy Act ("MEPA"); 2) review by the Massachusetts Historical Commission ("MHC") and other local historic commissions and organizations; 3) review in accordance with Massachusetts Department of Environmental Protection Waterways Program Chapter 91 license requirements; and 4) review under the relevant state and local wetlands regulations.

1.2 Project Description

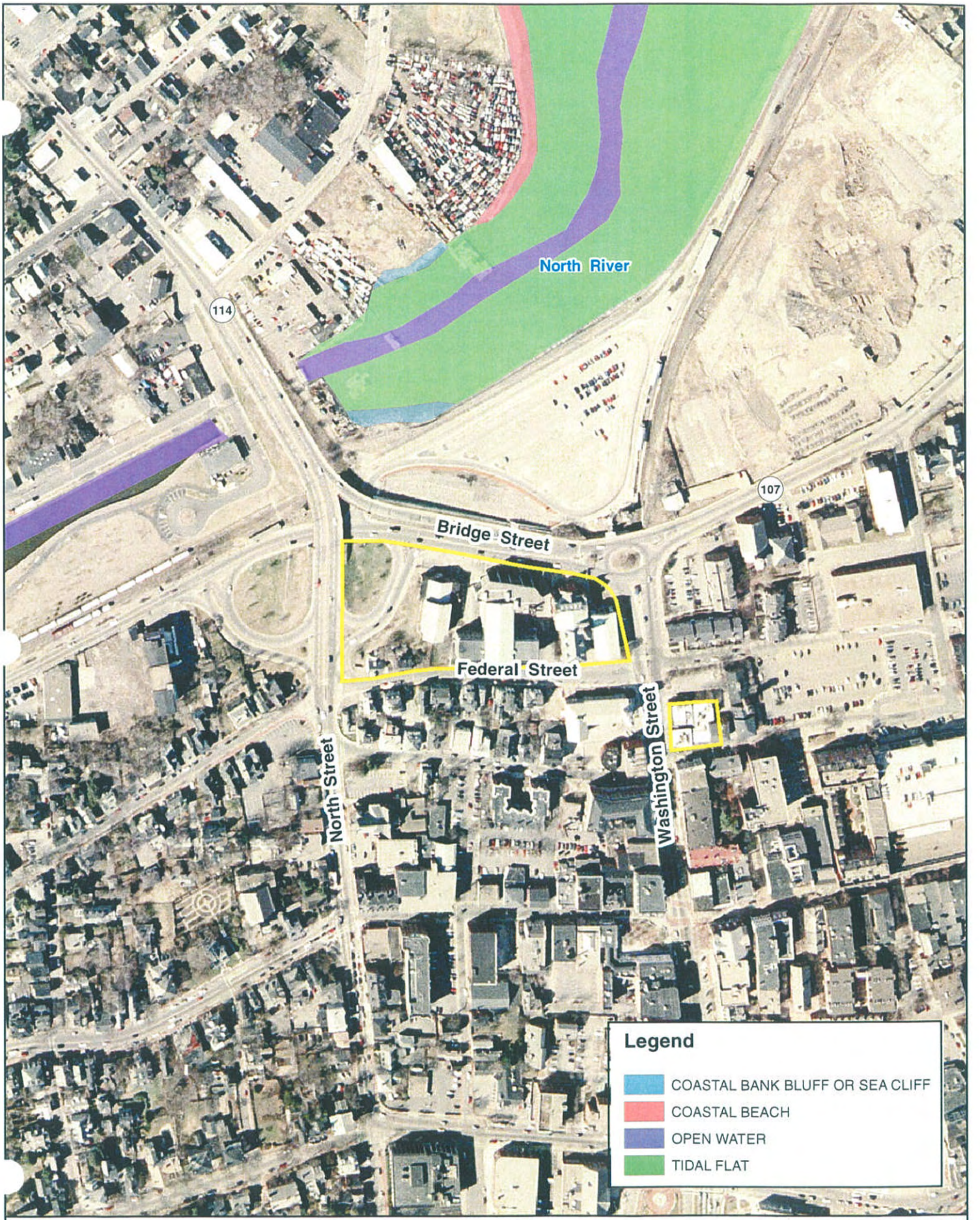
The proposed project involves the construction of a new 180,000 square foot consolidated Trial Court Facility on Federal Street in Salem, Massachusetts. The new facility will consolidate Superior Court, District Court, Housing Court, Juvenile Court, and the Law Library and contain approximately 11 courtrooms. The new courthouse will include limited secured on site surface parking that is similar to the existing parking layout.

The project will also include renovations to the existing Registry of Deeds / Probate and Family Courthouse at 36 Federal Street, possibly including the removal of the 1970s rear addition fronting on Bridge Street. The project may also include the relocation of the First Baptist Church at 54 Federal Street, for possible adaptive reuse as the Law Library. Three buildings at 58, 60, and 62 Federal Street are being considered for possible relocation to accommodate the construction of the new facility.

Figure 2 depicts an aerial view of the project site illustrating the existing courthouses and other buildings on the site as well as the proposed location of the new courthouse.

1.2.1 Project Site

The Federal Street site is bounded by Bridge Street to the north, Washington Street to the east, Federal Street to the south and North Street to the west. The project site is located in a densely development urban setting with a mix of institutional buildings and former residences dating from the early 19th century through the early 20th century. Many of the



Scale 1:3,600
1 inch = 300 feet

150 0 150 300
Feet

Figure 3
Hydrographic Features

DCAM
Salem, Massachusetts

Basemap: 2001 Orthophotography, MassGIS

Epsilon Associates Inc.

Scale 1:3,600
1 inch = 300 feet

150 0 150 300
Feet

Figure 4
Regulated Areas

DCAM
Salem, Massachusetts

Basemap: 2001 Orthophotography, MassGIS

Epsilon Associates Inc

2.0 MEPA ANALYSIS

2.1 Introduction

MEPA review is required of projects that involve state agency actions and that exceed review thresholds. Since the project is being carried out by DCAM, a state agency, the project will require review under MEPA if it exceeds any of the MEPA thresholds listed under 301 CMR 11.03 of the MEPA Regulations.

2.2 MEPA Thresholds

The MEPA review threshold for historic resources is the "demolition of all or any exterior part of any historic resource listed in the State Register of Historic Places or included in the Inventory of Historic and Archaeological Assets of the Commonwealth." MEPA review is not required if "the Project is subject to a Determination of No Adverse Effect by the Massachusetts Historical Commission or is consistent with a Memorandum of Agreement with the Massachusetts Historical Commission that has been the subject of public notice and comment." However, the project also appears to exceed other MEPA thresholds including land and transportation thresholds. The project exceeds a MEPA land threshold as a project within an urban renewal district that results in 50,000 or more square feet of non-residential space, and a transportation threshold for the anticipated removal of five or more public shade trees. Appendix A includes a map and boundary description for the Heritage Plaza West Urban Renewal District.

The table on the following pages lists the MEPA thresholds and discusses the applicability of those thresholds to the project.

[Need to add schedule and budget for ENF]

Table 2-1: MEPA Threshold Table

LAND	
ENF and EIR	
1. Direct alteration of 50 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar generally accepted agricultural or forestry practices.	Does not apply; project site is less than 50 acres
2. Creation of ten or more acres of impervious area.	Does not apply; project is not creating ten or more acres of new impervious area
ENF	
1. Direct alteration of 25 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar generally accepted agricultural or forestry practices.	Does not apply; project is not altering 25 acres
2. Creation of five or more acres of impervious area.	Does not apply; project is not creating five or more acres of new impervious area.
3. Conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97.	Does not apply; project site does not include Article 97 land
4. Conversion of land in active agricultural use to nonagricultural use, provided the land includes soils classified as prime, state-important or unique by the United States Department of Agriculture, unless the Project is accessory to active agricultural use or consists solely of one single family dwelling.	Does not apply; project site does not include agricultural land
5. Release of an interest in land held for conservation, preservation or agricultural or watershed preservation purposes.	Does not apply
6. Approval in accordance with M.G.L. c. 121A of a New urban redevelopment project or a fundamental change in an approved urban redevelopment project, provided that the Project consists of 100 or more dwelling units or 50,000 or more square feet (sf) of non-residential space.	The project is within the Heritage Plaza West Urban Renewal Plan and will result in a new facility of approximately 180,000 square fete of non-residential space.
7. Approval in accordance with M.G.L. c. 121B of a New urban renewal plan or a major modification of an existing urban renewal plan.	

RARE SPECIES	
ENF and Mandatory EIR	
None	
ENF	
1. Alteration of designated significant habitat.	According to the Natural Heritage and Endangered Species Program (NHESP) Atlas, the project site is not a designated significant habitat.
2. Taking of an endangered or threatened species or species of special concern, provided that the Project site is two or more acres and includes an area mapped as a Priority Site of Rare Species Habitats and Exemplary Natural Communities.	According to the NHESP Atlas, the project site does not include an area mapped as a Priority Site of Rare Species Habitats and Exemplary Natural Communities.

WETLANDS, WATERWAYS AND TIDELANDS	
ENF and Mandatory EIR	
1. Provided that a Permit is required: a. alteration of one or more acres of salt marsh or bordering vegetating wetlands; or b. alteration of ten or more acres of any other wetlands.	Does not apply; project work will stay outside of buffer zone
2. Alteration requiring a variance in accordance with the Wetlands Protection Act.	Does not apply
3. Construction of a New dam.	Does not apply
4. Structural alteration of an existing dam that causes an Expansion of 20% or any decrease in impoundment Capacity.	Does not apply
5. Provided that a Chapter 91 License is required, New non-water dependent use or Expansion of an existing non-water dependent structure, provided the use or structure occupies one or more acres of waterways or tidelands.	Does not apply, no Chapter 91 license is required (see Chapter 91 text below).
ENF	
1. Provided that a Permit is required: a. alteration of coastal dune, barrier beach or coastal bank; b. alteration of 500 or more linear feet of bank along a fish run or inland bank; c. alteration of 1,000 or more sf of salt marsh or outstanding resource waters; d. alteration of 5,000 or more sf of bordering or isolated vegetated wetlands; e. New fill or structure or Expansion of existing fill or structure, except a pile-supported structure, in a velocity zone or regulatory floodway; or f. alteration of ½ or more acres of any other wetlands.	Does not apply; project work will stay outside of buffer zone.
2. Construction of a New roadway or bridge providing access to a barrier beach or a New utility line providing service to a structure on a barrier beach.	Does not apply
3. Dredging of 10,000 or more cubic yards (cy) of material.	Does not apply
4. Disposal of 10,000 or more cy of dredged material, unless at a designated in-water disposal site.	Does not apply
5. Provided that a Chapter 91 License is required, New or existing unlicensed non-water dependent use of waterways or tidelands, unless the Project is an overhead utility line, a structure of 1,000 or less sf base area accessory to a single family dwelling, a temporary use in a designated port area, or an existing unlicensed structure in use prior to January 1, 1984.	Does not apply, no Chapter 91 license is required (see Chapter 91 text below).
6. Construction, reconstruction or Expansion of an existing solid fill structure of 1,000 or more sf base area or of a pile-supported or bottom-anchored structure of 2,000 or more sf base area, except a seasonal, pile-held or bottom-anchored float, provided the structure occupies flowed tidelands or other waterways.	Does not apply

WATER	
ENF and Mandatory EIR	
1. New withdrawal or Expansion in withdrawal of: a. 2,500,000 or more gallons per day (gpd) from a surface water source; or b. 1,500,000 or more gpd from a groundwater source.	Does not apply; project will use approximately **???** gpd of water
2. New interbasin transfer of water of 1,000,000 or more gpd or any amount determined significant by the Water Resources Commission.	Does not apply
3. Construction of one or more New water mains ten or more miles in length.	Does not apply
4. Provided that the Project is undertaken by an Agency, New water service to a municipality or water district across a municipal boundary through New or existing pipelines, unless a disruption of service emergency is declared in accordance with applicable statutes and regulations.	Does not apply
ENF	
1. New withdrawal or Expansion in withdrawal of 100,000 or more gpd from a water source that requires New construction for the withdrawal.	Does not apply; project will use approximately **???** gpd of water
2. New withdrawal or Expansion in withdrawal of 500,000 or more gpd from a water supply system above the lesser of current system-wide authorized withdrawal volume or three-years' average system-wide actual withdrawal volume.	Does not apply
3. Construction of one or more New water mains five or more miles in length	Does not apply
4. Construction of a New drinking water treatment plant with a Capacity of 1,000,000 or more gpd.	Does not apply
5. Expansion of an existing drinking water treatment plant by the greater of 1,000,000 gpd or 10% of existing Capacity.	Does not apply
6. Alteration requiring a variance in accordance with the Watershed Protection Act, unless the Project consists solely of one single family dwelling.	Does not apply
7. Non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities.	Does not apply

WASTEWATER	
ENF and Mandatory EIR	
1. Construction of a New wastewater treatment and/or disposal facility with a Capacity of 2,500,000 or more gpd.	Does not apply
2. New interbasin transfer of wastewater of 1,000,000 or more gpd or any amount determined significant by the Water Resource Commission.	Does not apply
3. Construction of one or more New sewer mains ten or more miles in length.	Does not apply
4. Provided that the Project is undertaken by an Agency, New sewer service to a municipality or sewer district across a municipal boundary through New or existing pipelines, unless an emergency is declared in accordance with applicable statutes and regulations.	Does not apply
5. New discharge or Expansion in discharge of any amount of sewage, industrial waste water or untreated stormwater directly to an outstanding resource water.	Does not apply
6. New Capacity or Expansion in Capacity for storage, treatment, processing, combustion or disposal of 150 or more wet tons per day (tpd) of sewage sludge, sludge ash, grit, screenings, or other sewage sludge residual materials, unless the Project is an Expansion of an existing facility within an area that has already been sited for the proposed use in accordance with M.G.L. c. 21 or M.G.L. c. 83, § 6.	Does not apply
ENF	
1. Construction of a New wastewater treatment and/or disposal facility with a Capacity of 100,000 or more gpd.	Does not apply
2. Expansion of an existing wastewater treatment and/or disposal facility by the greater of 100,000 gpd or 10% of existing Capacity.	Does not apply
3. Construction of one or more New sewer mains: a. that will result in an Expansion in the flow to a wastewater treatment and/or disposal facility by 10% of existing Capacity; b. five or more miles in length; or c. ½ or more miles in length, provided the sewer mains are not located in the right of way of existing roadways.	Does not apply **Need to confirm**

WASTEWATER (continued)	
ENF (continued)	
4. New discharge or Expansion in discharge: a. to a sewer system of 100,000 or more gpd of sewage, industrial waste water or untreated stormwater; b. to a surface water of: i. 100,000 or more gpd of sewage; ii. 20,000 or more gpd of industrial waste water; or iii. any amount of sewage, industrial waste water or untreated stormwater requiring a variance from applicable water quality regulations; or c. to groundwater of: i. 10,000 or more gpd of sewage within an area, zone or district established, delineated or identified as necessary or appropriate to protect a public drinking water supply, an area established to protect a nitrogen sensitive embayment, an area within 200 feet of a tributary to a public surface drinking water supply, or an area within 400 feet of a public surface drinking water supply; ii. 50,000 or more gpd of sewage within any other area; iii. 20,000 or more gpd of industrial waste water; or iv. any amount of sewage, industrial waste water or untreated stormwater requiring approval by the Department of Environmental Protection of a variance from Title 5 of the State Environmental Code for New construction.	Does not apply; project will generate approximately **???** gpd of sewage
5. New Capacity or Expansion in Capacity for: a. combustion or disposal of any amount of sewage sludge, sludge ash, grit, screenings, or other sewage sludge residual materials; or b. storage, treatment, or processing of 50 or more wet tpd of sewage sludge or sewage sludge residual materials.	Does not apply

TRANSPORTATION	
ENF and Mandatory EIR	
1. Unless the Project consists solely of an internal or on-site roadway or is located entirely on the site of a non-roadway Project: a. construction of a New roadway two or more miles in length; or b. widening of an existing roadway by one or more travel lanes for two or more miles.	Does not apply
2. New interchange on a completed limited access highway.	Does not apply
3. Construction of a New airport.	Does not apply
4. Construction of a New runway or terminal at an existing airport.	Does not apply
5. Construction of a New rail or rapid transit line along a New, unused or abandoned right-of-way for transportation of passengers or freight (not including sidings, spurs or other lines not leading to an ultimate destination).	Does not apply
6. Generation of 3,000 or more New average daily traffic (adt) on roadways providing access to a single location.	Does not apply
7. Construction of 1,000 or more New parking spaces at a single location.	Project will not change the number of parking spaces on the project site.
ENF	
1. Unless the Project consists solely of an internal or on-site roadway or is located entirely on the site of a non-roadway Project: a. construction of a New roadway one-quarter or more miles in length; or b. widening of an existing roadway by four or more feet for one-half or more miles.	Does not apply
2. Construction, widening or maintenance of a roadway or its right-of-way that will: a. alter the bank or terrain located ten more feet from the existing roadway for one-half or more miles, unless necessary to install a structure or equipment; b. cut five or more living public shade trees of 14 or more inches in diameter at breast height; or c. eliminate 300 or more feet of stone wall.	The project is anticipated to result in the removal of five or more living public shade trees of 14 or more inches in diameter within the North Street / Bridge Street interchange ramps.
3. Expansion of an existing runway at an airport.	Does not apply
4. Construction of a New taxiway at an airport.	Does not apply
5. Expansion of an existing taxiway at Logan Airport.	Does not apply
6. Expansion of an existing terminal at Logan Airport by 100,000 or more sf.	Does not apply

TRANSPORTATION (continued)	
ENF (continued)	
7. Expansion of an existing terminal at any other airport by 25,000 or more sf.	Does not apply
8. Construction of New or Expansion of existing air cargo buildings at an airport by 100,000 or more sf.	Does not apply
9. Conversion of a military airport to a non-military airport.	Does not apply
10. Construction of a New rail or rapid transit line for transportation of passengers or freight.	Does not apply
11. Discontinuation of passenger or freight service along a rail or rapid transit line.	Does not apply
12. Abandonment of a substantially intact rail or rapid transit right-of-way.	Does not apply
13. Generation of 2,000 or more New adt on roadways providing access to a single location.	Does not apply; Project represents a relocation of existing uses that are located on, or adjacent to the site.
14. Generation of 1,000 or more New adt on roadways providing access to a single location and construction of 150 or more New parking spaces at a single location.	Does not apply; Project will not change the number of parking spaces on the project site
15. Construction of 300 or more New parking spaces at a single location.	Project will not change the number of parking spaces on the project site.

ENERGY	
ENF and Mandatory EIR	
1. Construction of a New electric generating facility with a Capacity of 100 or more MW.	Does not apply
2. Expansion of an existing electric generating facility by 100 or more MW.	Does not apply
3. Construction of a New fuel pipeline ten or more miles in length.	Does not apply
4. Construction of electric transmission lines with a Capacity of 230 or more kv, provided the transmission lines are five or more miles in length along New, unused or abandoned right of way.	Does not apply
ENF	
1. Construction of a New electric generating facility with a Capacity of 25 or more MW.	Does not apply
2. Expansion of an existing electric generating facility by 25 or more MW.	Does not apply
3. Construction of a New fuel pipeline five or more miles in length.	Does not apply
4. Construction of electric transmission lines with a Capacity of 69 or more kv, provided the transmission lines are one or more miles in length along New, unused or abandoned right of way.	Does not apply

AIR	
ENF and Mandatory EIR	
Construction of a New major stationary source with federal potential emissions, after construction and the imposition of required controls, of: 250 tpy of any criteria air pollutant; 40 tpy of any HAP; or 100 tpy of any combination of HAPs.	Does not apply
ENF	
1. Construction of a New major stationary source with federal potential emissions, after construction and the imposition of required controls, of: 100 tpy of PM as PM10, CO, lead or SO2; 50 tpy of VOC or NOx; 10 tpy of any HAP; or 25 tpy of any combination of HAPs.	Does not apply
2. Modification of an existing major stationary source resulting in a "significant net increase" in actual emissions, provided that the stationary source or facility is major for the pollutant, emission of which is increased by: 15 tpy of PM as PM10; 100 tpy of CO; 40 tpy of SO2; 25 tpy of VOC or NOx; 0.6 tpy of lead.	Does not apply

SOLID AND HAZARDOUS WASTE	
ENF and Mandatory EIR	
New Capacity or Expansion in Capacity of 150 or more tpd for storage, treatment, processing, combustion or disposal of solid waste, unless the Project is a transfer station, is an Expansion of an existing facility within a validly site assigned area for the proposed use, or is exempt from site assignment requirements.	Does not apply
ENF	
1. New Capacity or Expansion in Capacity for combustion or disposal of any quantity of solid waste, or storage, treatment or processing of 50 or more tpd of solid waste, unless the Project is exempt from site assignment requirements.	Does not apply
2. Provided that a Permit is required in accordance with M.G.L. c. 21D, New Capacity or Expansion in Capacity for the storage, recycling, treatment or disposal of hazardous waste.	Does not apply

HISTORICAL AND ARCHAEOLOGICAL RESOURCES	
ENF and Mandatory EIR	
None	
ENF	
Unless the Project is subject to a Determination of No Adverse Effect by the Massachusetts Historical Commission or is consistent with a Memorandum of Agreement with the Massachusetts Historical Commission that has been the subject of public notice and comment: 1. demolition of all or any exterior part of any Historic Structure listed in or located in any Historic District listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth; or 2. destruction of all or any part of any Archaeological Site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth.	All the buildings located on the project site are listed on the State and National Registers of Historic Places. However, project proponents anticipate executing an MOA with the MHC, the Salem Historical Commission, and local historic preservation organizations that will identify appropriate measures to mitigate impacts to historic resources.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN	
ENF and Mandatory EIR	
None	
ENF	
Any Project within a designated ACEC, unless the Project consists solely of one single family dwelling.	Does not apply; project site is not in an ACEC

3.0 HISTORIC RESOURCES ANALYSIS

3.1 Introduction

Epsilon reviewed the State and National Registers of Historic Places, the Inventory of Historic and Archaeological Assets of the Commonwealth, and the files of the City of Salem Office of Planning and Community Development pertaining to the City's Local Historic District in an effort to identify the various historic designations associated with the project site and the immediate project vicinity. In addition, Epsilon visited the project site to confirm and photographically document the existing conditions of the project site.

3.2 Historic Resources

3.2.1 Superior Courthouse / County Commissioner's Building, and Registry of Deeds and Probate and Family Courthouse

The County Commissioners Building (SAL.2272), at 32 Federal Street, also known as the Old Granite Courthouse, was constructed in 1841 replacing an earlier 1785 courthouse and townhouse on a nearby Washington Street site. The building was designed in the Greek Revival style by Boston architect Richard Bond, who also designed Salem's 1838 City Hall. Constructed of smooth Rockport granite, the building features temple fronted porticos on the north and south elevations. The classical porticos each feature two fluted granite Corinthian columns and the building's "1841" construction date centered in the frieze. The center entrance on the south portico contains a modern glass and metal door, whereas, the center bay of the north elevation contains a window. A modern glass and metal two story addition connects the County Commissioners building to the Superior Court building to the west.

The Superior Courthouse / County Commissioner's Building are two buildings connected by a late 20th century connector at the rear of the buildings. The Superior Courthouse (SAL.2271), 34 Federal Street, was constructed in 1862 in the Italianate style. Originally designed by Enoch Fuller, the building was substantially enlarged and received its current Romanesque Revival appearance in 1889 after the addition of a three-story, gabled pavilion on the front façade, and large rear addition. The building's brick exterior is accented with rough-faced stone trim including beltcourses at the base of the first and second story windows, under the projecting eaves, and above the foundation. The building's symmetrical façade is dominated by its central projecting gable. At the base of the projecting gable is a center entrance set under a semi-circular stone arch supported on each side by three squat columns. The rough-faced stone blocks extend to the base of the second story openings which contain four narrow windows divided by three engaged columns. The projecting gable is lit by two third story windows which are topped by a recessed semi-circular arch featuring the building's "1861-1891" start and end construction dates. To the rear, on the east elevation is a square tower which rises to a pyramid-roof. The brick tower is trimmed with beltcourses which are continuous with those on the main

building. The 1889 rear, two story addition is slightly wider than that original building and features copper-topped conical towers suspended at the northeast and northwest corners.

The Neoclassical Revival granite Registry of Deeds and Probate and Family Courthouse building (SAL.1444), at 36 Federal Street was constructed in 1909 and designed by noted Boston architect Clarence H. Blackall. Five houses between the Superior Courthouse and the First Baptist Church were removed for the construction of the building. Displaying a T-shaped plan, the pedimented, symmetrical building is dominated by its monumental entrance portico featuring six fluted, two-story Ionic columns. Access to the portico is gained via a flight of broad granite steps. A rear addition, added in 1981, is constructed in reinforced concrete and features large plate glass windows, a rounded corner at the east end, and three-story concrete columns. The three-story concrete and glass addition dominates the Bridge Street (north elevation) side of the building.

The three buildings, the 1841 County Commissioners Building (a.k.a. Old Granite Courthouse), 32 Federal Street; the 1862/1889 Superior Courthouse, 34 Federal Street; and the 1909 Registry of Deeds and Probate and Family Courthouse were listed in the National Register of Historic Places as an historic district in 1976 as the Essex County Court Building Complex. In 1983, the Federal Street Historic District, which includes the three courthouse buildings, was also listed in the National Register of Historic Places. In addition to the three courthouse buildings, the Federal Street Historic District also includes all the properties on both sides of Federal Street, between Washington Street to the east and North Street to the west. Appendix B contains copies of the National Register nomination forms for the two historic districts.

3.2.2 First Baptist Church, 54 Federal Street

The First Baptist Church (SAL.1443) was constructed in 1806 and is the oldest brick meetinghouse in Salem. The original Federal design of the church was later modified with Italianate style details in 1850. The pedimented façade is dominated by a projecting pavilion. The façade contains three, symmetrically placed entrances framed in heavy rusticated brownstone. A belt course separates the lower, English basement level and the principal story composed of tall arched windows. An arched window forms the centerpiece of the heavily modillioned pediment. The present appearance of the church reflects numerous alterations, including additions to the rear that date from 1837, 1885, and 1909. The vestry of the church was enlarged in 1837 to its present size. The 1850 remodeling resulted in numerous stylistic alterations, including the addition of the quoins around the three front entrance doors and at the corners of the façade. The round arched windows also appear to date from the mid-19th century. Around 1885 two rooms were added to each side of the vestry, resulting in the two flat roof sections that extend out from the rear wall of the building. In 1909 the vestry was again enlarged with the addition of bay windows. In 1926, the church's original, 90-foot steeple was removed due to its extensive deteriorated condition.

As indicated above, the First Baptist Church was listed in the National Register as part of the Federal Street Historic District.

3.2.3 58, 60, and 62 Federal Street

The property at 58 Federal Street (SAL.1442) is a ca. 1850 five bay, two story, center entrance, Greek Revival style residence. Fronting along Federal Street, the double door entry features a simple surround consisting of pilasters and entablature. Three pedimented dormers are located on the front slope of the gable roof. The building was altered sometime in the mid-20th century with the applications of asbestos shingle siding. More recently, the building's original six-over-six window sash were replaced with new vinyl replacement units. The building currently houses numerous single room occupancy residential rental units.

The property at 60 Federal Street (SAL.1441) is a modest ca. 1810 Federal style former residence. The two-story cottage features a hipped roof and a three bay façade with a side entry recessed under a entrance porch in the first bay. The building appears to retain its original six-over-six windows. Currently, the building houses a law office.

The two and a half story Queen Anne style residence at 62 Federal Street (SAL.1440) has a cross-gable plan and features a two story curved bay set beneath the front project gable. The entrance is located in the inside southwest corner, beneath a second story oriel window. Originally sheathed in a mix of clapboards and scalloped shingles, the building has been extensively altered with the application of vinyl siding and the replacement of its original multi-pane and leaded windows with modern vinyl units.

The three properties at 58, 60, and 62 Federal Street, together with the First Baptist Church, County Commissioners Building, Superior Courthouse, and Registry of Deeds and Probate and Family Courthouse, collectively form the northern half of the National Register listed Federal Street Historic District.

3.2.4 District Courthouse, 65 Washington Street

The District Courthouse building (SAL.2433), at 65 Washington Street is included in the MHC's Inventory of Historic and Archaeological Assets of the Commonwealth. Despite its 1976 construction date the District Court Building was inventoried as part of a 1979 survey of downtown Salem buildings. The building lacks any architectural or historic significance that would make it worthy of inclusion in the National Register. In fact, when the Downtown Historic District was listed in the National Register in 1983, the district boundaries were drawn to specifically exclude the District Courthouse. The Downtown National Register Historic District includes commercial and institutional buildings in the area roughly bounded by Church, Central, New Derby, and Washington Street, including the Old Salem Firehouse at 30 Church Street, directly abutting the eastern property boundary of the District Courthouse. Appendix C contains copies of the MHC Inventory

forms referenced above.

3.2.5 McIntire Historic District

Created in 1981 the McIntire Historic District is named after Salem's most celebrated architect, Samuel McIntire. The historic district, which is roughly bounded by North and Summer Streets to the east, Broad Street to the south, the western limits of Essex Street, and Federal Street to the north, contains one of the greatest concentrated collections of pre-1900 domestic architecture in the United States. Most notable are the Federal period townhouses and single family residences lining Chestnut Street. The project site is directly opposite North Street from McIntire Historic District, and is not included in the local historic district boundaries.

3.3 Regulatory Overview

The construction of the new courthouse facility is anticipated to utilize state or federal funding, licensing, or permitting, for which state and federal regulations pertaining to historic resources may be relevant. A summary of these regulations, as well as local reviews, and their relevance to the project is provided below.

3.3.1 Section 106

Section 106 of the National Historic Preservation Act (36 CFR 800) ("Section 106"): Section 106 requires that federal agencies consider what effects their actions and actions they may assist, permit, or license may have on historic resources. If the project will utilize any federal assistance, permits or licenses, then the entire undertaking will be subject to review by the MHC, in its role as the State Historic Preservation Officer. The review process involves identifying what historic resources the proposed undertaking could effect and then determining what affect the proposed undertaking may have on the resource in coordination with the lead federal agency. Currently no federal funds, permits or licenses are anticipated to be utilized or required for the project, therefore, the project is not subject to Section 106 review by the MHC.

3.3.2 Chapter 254

M.G.L. Chapter 9, sections 26-27c, as amended by Chapter 254 of the Acts of 1988, (950 CMR 71) ("Chapter 254"): The MHC has review authority of projects undertaken, funded, and/or licensed by a state body to determine whether such project will have any adverse effect on properties listed in the State Register of Historic Places. As a state agency action which involves properties listed in the State Register, the proposed project is subject to Chapter 254 review by MHC.

The project site is located within the National Register listed Federal Street Historic District. All the buildings located on the project site, the Superior Courthouse / County Commissioner's Building; the Registry of Deeds / Probate and Family Courthouse; the First

Baptist Church; and the three buildings at 58, 60, and 62 Federal Street are all identified as buildings which contribute to the historic and architectural significance of the Federal Street Historic District. Prior to the creation of the Federal Street Historic District, the three court buildings (Superior Courthouse / County Commissioner's Building, and the Registry of Deeds / Probate and Family Courthouse) were all listed in the National Register as a three building historic district known as the Essex County Court Building Complex. The District Courthouse, 65 Washington Street, while not listed in the State or National Registers is included in the MHC's Inventory of Historic and Archaeological Assets of the Commonwealth, and directly abuts the Downtown National Register Historic District.

Due to their National Register status, the Federal Street Historic District, Essex County Court Complex historic district, and the Downtown Historic District are automatically included in the State Register of Historic District. Because the project is being undertaken by DCAM, a state agency, the project is subject to MHC's Chapter 254 review. In their review of the project MHC will be concerned with the potential relocation of the First Baptist Church and the properties at 58, 60, and 62 Federal Street. It can be assumed that MHC will determine the proposed relocation of these properties constitute an "adverse effect" and will request alternatives to avoid, minimize or mitigate the impacts. Of equal concern to MHC will be the project's potential impacts to the character and setting of the historic districts, the new facility's size, scale, massing, location, and exterior materials and how they impact the surrounding historic districts will be of great concern to MHC.

As discussed above the project is located in close proximity (across North Street) to the McIntire Historic District, one of Salem's four local historic districts. MHC will also be concerned about potential impacts to the McIntire Historic District, most notably, potential impacts resulting in modifications to the ramps in the southwest quadrant of the North Street / Bridge Street interchange.

As was expressed by MHC at the informational meeting held September 21, 2005, the proposed disposition of the Superior Courthouse / County Commissioner's is also of great concern to MHC. To address MHC's concerns it will be important to develop a disposition plan that should include detailed mothballing specifications for the Superior Courthouse / County Commissioners building. In addition, it is anticipated that MHC will request that preservation restrictions be placed on the Superior Courthouse / County Commissioners building prior to being transferred out of state ownership.

The Chapter 254 process would commence with the preparation and filing of a Project Notification Form ("PNF") with the MHC. The MHC PNF will include a description of the project, together with project plans, photographs, elevations, and other visual studies, and a discussion of alternatives that have been considered to avoid adverse effects to the historic resources. Because adverse effects are anticipated, the PNF should include an Alternatives Analysis that includes visual and/or narrative documents that illustrate/discuss alternative configurations for the new facility that would avoid or minimize impacts. In addition, the PNF should include a preliminary discussion on measures to mitigate the project's impacts

to historic resources. In addition to the informational meeting held with MHC on September 21, 2005, several consultation meetings with MHC will be needed to discuss alternatives considered to avoid, minimize or mitigate the project's impacts to historic resources. Alternatives which will need to be considered include reusing the existing Superior Courthouse / County Commissioner's building, retaining the church and the three buildings at 58, 60, and 62 Federal Street in their original locations, and constructing a courthouse smaller than the proposed 180,000 square foot facility to minimize impacts the setting of the surrounding historic districts. Ultimately, a Memorandum of Agreement will need to stipulate agreed upon measures to mitigate the projects impacts historic resources. Potential mitigation measures may include additional documentation of the historic significance of the Salem Court Complex, MHC's design review over the new facility, preservation restrictions and detailed specifications on the mothballing of the Superior Courthouse / County Commissioner's building. In addition, MHC will likely request an active role in the review of potential redevelopment proposals considered as part of the disposition process of the Superior Courthouse / County Commissioner's building.

3.3.3 Salem Historical Commission, Historic Salem Inc., and other interested parties

In accordance with Chapter 254, MHC will be soliciting comments from interested parties. It is expected that MHC will invite the Salem Historical Commission, Historic Salem Inc., and other interested parties including the Federal Street Neighborhood Association to participate in the Chapter 254 consultation process. While these local preservation and neighborhood organizations do not have a formal review authority over the proposed project, they will play an important role the Chapter 254 review process. In addition, it is likely that MHC will invite these organizations to be consulting parties to the MOA.

[Need to add schedule and budget for MHC PNF]

4.0 CHAPTER 91 ANALYSIS

4.1 Introduction

Portions of the Project site appear to be located within areas of filled tidelands, but the site's setback from the current shoreline and the presence of an intervening public way (Bridge Street and associated ramps) preclude Chapter 91 licensing jurisdiction at this location.

The geographic areas subject to Chapter 91 licensing jurisdiction are defined in the Chapter 91 Waterways Program regulations to include "all flowed tidelands" and "all filled tidelands, except for landlocked tidelands..." (310 CMR 9.04). Landlocked tidelands are defined to include "any filled tidelands which on January 1, 1984 were entirely separated by a public way or interconnected public ways from any flowed tidelands, except for that portion of such filled tidelands which are presently located: (a) within 250 feet of the high water mark..." (310 CMR 9.02). The net result of this combination of regulatory requirements is that Chapter 91 licensing jurisdiction over filled tidelands extends from the current high water mark to the first public right of way, or 250 feet, *whichever is greater.*

A review of historic maps of the North River suggests that a portion of the Project site may have been developed over former tidelands, now filled. This portion of the site is therefore potentially within Chapter 91 jurisdiction. However, because this portion of the Project site is also separated from the North River by a public right-of-way and is located greater than 250 feet from the current high water mark of the North River, Chapter 91 licensing is not required for activities occurring over any of the former tideland areas of the site.

4.2 Preliminary Jurisdictional Boundary Determinations

There are a number of important boundaries to be determined for Chapter 91 jurisdictional and licensing purposes in filled tidelands. These include the current mean high water line (the Project shoreline), the historic mean high water line (the former shoreline), and the licensing limit of "landlocked tidelands." While often important to projects located directly on the shoreline, the "water-dependent use zone" boundary as defined by DEP would not extend onto the Project site and, hence, is not included in this list. Similarly, while the current and/or historic mean low water is utilized to define filled tidelands as either Private or Commonwealth tidelands, this issue is not relevant in this case.

4.2.1 Current Mean High Water Line.

The high water mark of the bank of the North River represents the current shoreline in the Project area (also referred to as the "project shoreline"). The approximate high water line along the bank of the North River is shown on Figure 5.

Basemap: 2001 Orthophotography, MassGIS

Figure 5
Historic Shoreline and
Chapter 91 Jurisdictional Areas

DCAM
Salem, Massachusetts

Scale 1:4,200
1 inch = 350 feet

0 350 700 Feet

Epsilon Associates, Inc.

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11/8/05

4.2.2 Historic Mean High Water Line

A review of readily available historic mapping of the Project area indicates that the former shoreline of Salem lay considerably inland of its current location in this area, and that a portion of the Project site lies over former tidelands, now filled tidelands. The approximate location of the historic shoreline in this area of Salem as taken from the map *Part of Salem in 1700* compiled by W.K. Freeman in 1933 is shown on Figure 5.

4.2.3 Landlocked Tidelands

As noted above, licensing jurisdiction over filled tidelands extends from the water's edge to the first public right of way, or 250 feet inland, whichever is greater. The Project site is clearly separated from the current North River shoreline by Bridge Street, a public right-of-way. In addition, as shown in Figure 5, it would appear that the 250-foot setback from the current shoreline falls short of the Project site. Hence, the filled tidelands of the site meet the definition of landlocked tidelands.

4.3 Summary

Preliminary analysis would suggest that a portion of the site lies over filled tidelands and, hence, is subject to DEP Waterways Program jurisdiction. However, these former tidelands also meet the definition of "Landlocked tidelands," which are defined by the Chapter 91 regulations as lying beyond the geographic limits of Chapter 91 licensing jurisdiction. Hence, no Chapter 91 license is required for work over former tidelands located within the boundaries of the site.

5.0 GIS MAPS

5.1 Introduction

As requested, Epsilon generated site-specific Geographic Information Service (GIS) maps from the Massachusetts' Executive Office of Environmental Affairs (EOEA) GIS data layers to further document the physical setting and sensitive environmental receptors on or near the Site. In addition to Figures 1-5 mentioned earlier, this effort resulted in the identification of the following figures:

Figure 6: Public transportation routes

Figure 7: Bedrock and Surficial Geology, and

Figure 8: Conservation areas

Scale 1:2,400
1 inch = 200 feet

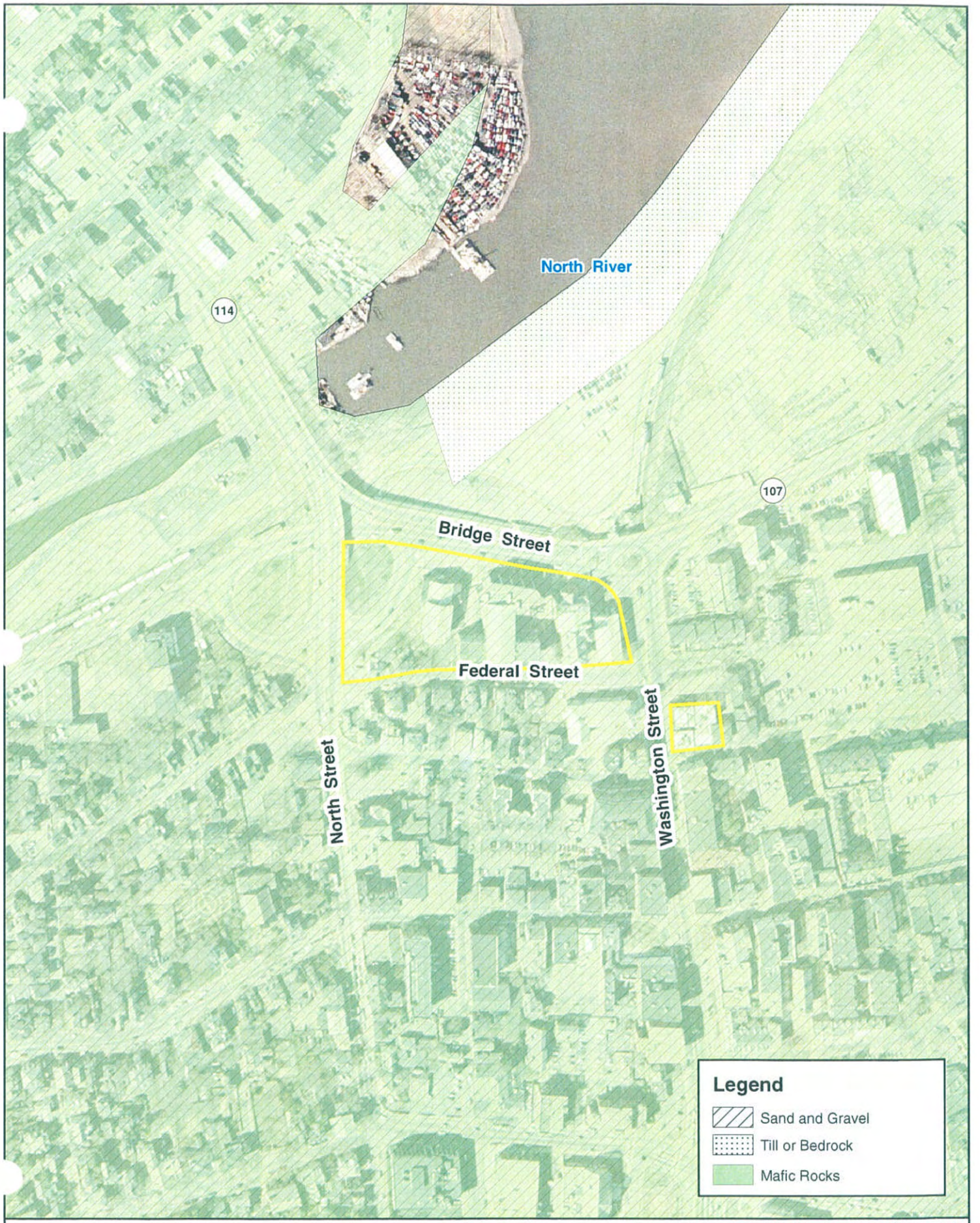
100 0 100 200 Feet

Figure 6
Public Transportation Routes

DCAM
Salem, Massachusetts

Basemap: 2001 Orthophotography, MassGIS

Epsilon Associates Inc.



Scale 1:3,600
1 inch = 300 feet

150 0 150 300
Feet

Figure 7
Bedrock and Surficial Geology

DCAM
Salem, Massachusetts

Basemap: 2001 Orthophotography, MassGIS

Epsilon Associates Inc

Scale 1:3,600
1 inch = 300 feet

150 0 150 300
Feet

Figure 8
Conservation Areas

DCAM
Salem, Massachusetts

Basemap: 2001 Orthophotography, MassGIS

Epsilon Associates Inc.

A2.10 Calculation of Water Usage and Discharge in New Court Facilities

DCAM

March 7, 2007

APPENDIX A2.10
CALCULATION OF WATER USAGE AND DISCHARGES
IN NEW COURT FACILITIES

1.0 INTRODUCTION

The purpose of this Appendix is to provide concise direction to DESIGNERS when calculating and documenting potential water usage and subsequent wastewater discharges for use in MEPA threshold determinations and sewer permit submissions. This Appendix is provided solely for new court facilities (not renovations). This Appendix is not designed to estimate the number of fixtures required by the Massachusetts Building Code, nor the size of required piping and pumps. This Appendix shall be used by DESIGNERS to provide consistency in calculating expected water demand; and a conservative estimate of wastewater discharges.

DCAM has received documents that vary substantially in the approach and methodologies used in estimating water consumption and wastewater discharges. These estimates are then used in the evaluation of permitting requirements. The variability in the estimation process has significant adverse effects on the project's schedule and budget. DCAM requires that DESIGNERS use the subsequent methodology in estimating water consumption and wastewater discharge quantities for permit applications for new court facilities. DCAM requires that DESIGNERS adhere to the requirements contained herein.

Note that design of a new court facility is an iterative process during the Study and schematic design phases. As such, it may require reassessment of water usage and wastewater discharge as the courthouse evolves to its final configuration.

2.0 OBJECTIVES

The objectives of this Appendix are:

- To provide a brief synopsis of the methodology's development and background;
- To identify the minimum information and details necessary for estimating expected water consumption in a court facility, based on number and size of the courtrooms as well as expected square footage associated with transaction areas;
- To standardize procedures for estimating water consumption and subsequent wastewater discharges associated with court facilities; and
- To prescribe that the DESIGNER provide DCAM with quality documentation that can be used by DCAM in making informed decisions on permitting obligations.

Note that water consumption and wastewater discharge estimates should be refined as the design process proceeds and as improved water conservation equipment and technologies are incorporated into the design.

3.0 COURT FACILITIES OPERATIONS

Court facilities are unique structures and are not readily compartmentalized into typical office building methodologies with regard to occupancy. Typically office buildings are designed and constructed to optimize use of floor space and maximize the number of employees that can be accommodated. However, courthouses are public buildings where the majority of the users are transient occupants (i.e., jury pool) and the number of full-time occupants is generally less than 300 staff. In addition, due to the fact that the facility is designed to express solemnity, stability, integrity, rigor and fairness of the American judicial process, courthouses are generally more spacious.

Unlike courthouses, typical office buildings provide for food preparation and service. Courthouses do not have food preparation or services available, other than vending machines and perhaps a kiosk to purchase coffee. This, coupled with the relatively small full-time staff, does not result in the typical demands on water consumption or the subsequent wastewater discharges that you would expect in a similarly sized private office building.

Some of the key elements of a courthouse that further differentiate these structures from other office buildings are the following:

1. Courtrooms of various sizes and functions;
2. Separate circulation zones for public, restricted and secure movement; and
3. Court facilities.

Each of these elements is briefly discussed below.

Courtrooms

Courtrooms are traditionally sized based on the type of court. They can range from 1,200 square feet for a small courtroom to 2,500 square feet for an Extra-Large courtroom with detainee dock. A significant portion of the courtroom extending from the bar to the back of the judge's bench, referred to as "the well", has a limited number of personnel that are allowed in this space. These occupants include the judge, court officers, court reporters, and defense and prosecution attorneys. In addition, the members of a jury, when empanelled, occupy this area. The well may cover 1,600 square feet but may have a maximum number of 37 people. Beyond the well, there is spectator seating, which may have no spectators or be fully packed. As such, courtrooms do not reflect typical office types of use and do not lend themselves to typical office building methodologies when calculating water use.

Separate Circulation Zones

Unlike normal office spaces, courthouses require three separate and distinct secure circulation zones for public, restricted, and secure movement. Public circulation requires a single controlled entry, but allows free movement within the public areas of the building. Restricted circulation has a controlled interior entry and is limited to judges, court personnel, and official visitors. Secure circulation is intended for prisoners and is controlled at all times. None of these groups should come into contact with each other, so that an impartial and fair trial can be held (i.e., the members of a jury should not see a defendant in handcuffs prior to seeing the individual in the courtroom). This division of pathways combines to increase the number of hallways, which is not typical for other buildings.

Court Facilities

Each courtroom is made up of a number of support rooms for conducting courtroom business. These

include ancillary offices, jury facilities, judge's conference rooms, judge's robing rooms/chambers, news media rooms, small holding area for detainees, and administrative support offices. For a large courtroom covering 2,500 square feet, the required ancillary space is approximately 2,200 square feet. As such, there is almost an additional 90 percent of ancillary space for each courtroom. Note that the individuals who occupy the ancillary space are the same individuals that occupy the courtroom. These spaces are not all occupied simultaneously.

4.0 DISCUSSION

Anticipated water consumption for new courthouse facilities is comprised of domestic uses (drinking and sanitary), janitorial activities, and provision of makeup water to mechanical systems (HVAC, electrical and plumbing). Development of estimated quantities can be calculated through many methods including: use of standard engineering practice; actual values from similar structures; egress analyses, codes; or from regulations such as Title V (310 CMR 15.000). However, many of these methods overestimate the quantities in order to ensure excessive safety factors. In so doing, methods fail to take into account the unique operation of court facilities. This difference becomes important during the permitting process, such as evaluation of the Massachusetts Environmental Protection Act (MEPA) or determining if an on-site septic system is viable from a permitting prospective. It is also important to recognize that the Title V values are for domestic water consumption, i.e., drinking fountains and sanitary uses, but not for mechanical wastewater from boiler blowdown, etc.

4.1 Water Consumption

Domestic Water Consumption: Title V

Normally, the use of values presented in the Title V regulations (310 CMR 15.203(2) through (5)) can be used to assess potential water use for many types of structures such as office buildings, schools, and commercial establishments. Courthouses, however, are not among the listed structures. An argument can be made that a courthouse can be considered an office building; however, this approach will overestimate the values as many courthouses have a significant square footage (particularly in courtrooms), which is not fully utilized on daily basis but may be required for special trials. Use of only square footage will severely overestimate water usage.

Domestic Water Consumption: Existing Courthouse Comparison

Based on discussions with the Massachusetts Department of Environmental Protection (MassDEP), the lack of specifically listing courthouses in 310 CMR15.203(2) through (5) requires the DESIGNER to use the procedure in 310 CMR 15.203(6), presented below:

> "(6) Facilities other than those listed in 310 CMR 15.203(2) through (5), and nonresidential facilities with unique design features that result in significantly different design flows than those listed above may apply to the Department for a determination of design flow using actual meter readings of established flows from existing or similar installations without the need for a variance pursuant to 310 CMR 15.410 or 15.416. Prior to making a determination the Department will consult with the local Approving Authority. For state and federal facilities, the Department may also establish system design flows other than those listed above using actual meter readings of established flows from existing or similar installations. Any design flow established by the Department pursuant to 310

CMR 15.203(6), shall be based on 200% of average water meter readings in order to assimilate maximum daily flows or on other methods determined to be appropriate by the Department."

Evaluation of existing courthouse water consumption rates could be used to develop water consumption rates that could then be doubled as per MassDEP regulations for Title V purposes. DCAM reviewed the concept of the use of design flows for Courthouses based on 200 percent of average water meter readings from other courthouses of similar size in order to assimilate maximum daily flows for facilities not listed in 310 CMR 15.203(2) through (5). However, variables such as number and types of courts, as well as a courthouse's square footage, do not lend themselves to easily comparable values. In addition, many of these facilities are antiquated and overcrowded; further making comparisons difficult and resulting in a situation ripe for overestimating required quantities.

Domestic Water Consumption: Composite Approach

DCAM, as part of a new courthouse construction in Plymouth, negotiated with MassDEP regarding the permitting of a Title V system. The result of the negotiation was an understanding that, based on the language listed in 310 CMR 15.203(1), wastewater flows for activities listed in the referenced section could be assembled into creating a composite wastewater discharge value. DCAM based that interpretation on the phase *"… Actual water meter data shall not be substituted for the design flow criteria for the **activities** listed below…*"

MassDEP and DCAM agreed that a composite approach to courthouses was appropriate. DCAM constructed a water consumption model by defining components/activities in the courthouse similar to the activities identified in 310 CMR 15.203(3). Typically, the courthouse contains the following two components/activities:

- OFFICE BUILDING, which is used for all transaction activities such as paying traffic tickets, etc.; and
- ASSEMBLY, which covers all courtrooms and hearing rooms.

The approach sums the applicable gallons per day by the unit for each component/activity and generates a composite value for the Courthouse. The agreement was that court functions would be estimated on the basis of 3 gallons per person per day and that transaction areas would be computed on the office value in 310 CMR 15.203(3) of 0.075 gallons per square foot per day. The 3 gallons per person per day value is shown in 310 CMR 15.203(3) and is for *Theaters Auditorium*.

DCAM believes that the development of a composite water consumption quantity based on the activities within the courthouse fulfills the intent of the regulations and provides a conservative estimate of water consumption for domestic water consumption rates for the Courthouse.

The types of courtrooms and estimated occupancy values are presented below:

Court Room Size	Occupancy per Court Room	Maximum Occupancy
Extra-Large	120 to 170 (w/ 16 person jury)	170
Large	80 to 110 (w/ 16 person jury)	110
Medium	60 to 75 (w/ 8 person jury)	75
Small	45 to 55 (no jury)	55

Mechanical Water Consumption

Mechanical systems such as cooling towers, boilers, etc. require makeup water to offset losses due to evaporation, boiler blowdown condensate, and other wastestreams associated with mechanical equipment. The volume of water necessary for use in the mechanical systems is a function of the types of equipment and water conservation methods. In addition, water consumption is impacted by the time of year; cooling towers may require several thousand gallons per day during the summer months to offset evaporation whereas, the quantity necessary in the winter months may be relatively small.

4.2 Wastewater Estimation

Domestic Wastewater Discharges

Domestic wastewater discharges are associated with sanitary, shower, laundry, food preparation and other similar activities. Typically, the estimated water consumption estimates are either used directly to estimate wastewater discharges or are reduced by a factor between 0.2 and 0.4. As courthouses do not have or have a negligible amount of these activities, it is expected that the domestic wastewater estimates should be lower for the courthouse. However, in the interest of being conservative, domestic wastewater discharge quantities are assumed to be identical to the domestic water consumption values.

Mechanical Wastewater Discharges

The mechanical systems may have a relatively small quantity of wastewater that requires management. The quantity of this non-domestic wastewater is a function of the equipment, operation, maintenance, layout and other factors. DCAM has traditionally used a factor of 0.005 per building square foot to estimate the quantity of non-domestic wastewater.

In urban environments, these quantities are typically discharges to sanitary sewers. However, in more rural settings, the mechanical wastewater can not be discharged into Title V system. In these instances treatment of the wastewater may be required before disposal either off-site or into a system designed in accordance with Underground Injection Control regulations (310 CMR 27.00).

5.0 METHODOLOGY EXAMPLE

In order to illustrate the procedures for estimating water consumption, the following example is provided.

EXAMPLE

Domestic Water Usage

A proposed new Courthouse is projected to be an approximately 185,000 gross square foot structure, housing 11 courtrooms. The size and number of occupants for each courtroom are shown below:

Court Room Size	Number of Courtrooms	Occupancy per Room	Total Number Of Persons
Extra-Large	2	170	340
Large	5	110	550

Medium	3	70	210
Small	1	55	55
TOTAL	11		1,155

As explained in Section 4.1, the occupants of the courtrooms are assumed to need 3 gallons per person per day. For the example above, this equates to 1,155 persons times 3 gallons per person per day or 3,465 gallons per day. As explained in Section 4.1, this assumes that all courtrooms are fully occupied, which is a very conservative estimate, as courtrooms typically have between 25 to 50 percent occupancy.

In addition, approximately 26,000 square feet of the new Courthouse will be used as transaction space and will be configured similar to general office space. Using the 0.075 gallons per day per square feet for office space, as described in Section 4, yields 1,950 gallons per day {26,000 sq. ft. times 0.075 gallons per day per square foot.}.

To estimate the total domestic water consumption associated with the proposed Courthouse, the courtroom associated water is added to the office space related water for a total of 5,415 gallons per day.

Mechanical Water Usage

Mechanical water consumption is dependent upon the types of equipment necessary to operate the courthouse. As discussed in Section 4.1, the quantity of water required will vary according to the season, with the summer usage being significantly greater than the winter months. For purposes of this example, an estimate of approximately 5,000 gallons per day may be required during the summer months.

Domestic Wastewater Discharge

As discussed in Section 4.2, the domestic wastewater quantity is assumed to be identical to the domestic water consumption of 5,415 gallons per day.

Mechanical Wastewater

As explained in Section 4.2, various mechanical systems within the courthouse require water for their operations. For this example, the 185,000 square foot building is expected to require approximately 925 gallons per day {185,000 square feet multiplied by 0.005 gallons per building square foot}.

Example Summary

The information developed as part of the example can be used in assessing water consumption and subsequent wastewater discharges from courthouses to city sanitary systems or to on-site septic systems. The maximum estimated water consumption would be approximately 11,000 gallons per day during the summer months. If the courthouse will connect to a city system, then the domestic wastewater quantity should be added to mechanical wastewater discharge quantity and would be 6,340 gallons per day. However, if an on-site system is required, then the domestic wastewater (5,415 gallons per day) can be discharged to the on-site system but the estimated mechanical wastewater (925 gallons per day) would require treatment or storage for off-site disposal.

6.0 DOCUMENTATION

Reports prepared for DCAM shall be prepared in a professional manner and shall be peer-reviewed by a principal of the firm to ensure the accuracy of the assumptions and information presented therein. All reports submitted to DCAM shall contain the following:

- Proposed Project description including the status of the study or design (i.e., end of study or schematic design);
- Summary of key components of the new court facilities including the gross square footage, number and types of courtrooms, and the estimated transaction square footage;
- Source of data used for the mechanical system estimates; and
- Identification of data gaps that require additional input for refinement of the estimates (i.e., estimated size of cooling towers).

The DESIGNER shall provide an electronic file of all contents of the report including, but not limited to, drawings, text, and appendices. See the *Designer's Manual* for electronic formats and media.

7.0 SUMMARY

The methodology presented in this document is to be used by DESIGNERS in estimating water consumption and wastewater discharges. The methodology uses a number of conservative assumptions and is appropriate for developing estimates in the study or schematic design phases of the project. The DESIGNER may use actual values from the HVAC consultants on the project team but must clearly indicate the source of values used.