

NEEDS ASSESSMENT

FEBRUARY 1, 2012

HAMILTON COUNTY CORONER

CINCINNATI, OHIO



TABLE OF CONTENTS

Executive Summary	i
Introduction	3
Building Condition Assessment	5
Introduction	5
Codes and Standards	5
Architectural Building Systems.....	5
Laboratory and Autopsy Spaces	9
Mechanical Systems	12
Electrical Systems	14
Miscellaneous Systems.....	16
Needs Assessment	17
Methodology - Goals, Facts, Needs and Concepts.....	17
Analysis of Need	18
Space Requirements	20
Organizational Structure/Staffing Analysis.....	20
Organizational Chart	21
Adjacencies and Process Flow	22
Program Detail	42
Development Options	47
Short-term operating and workflow improvements.....	47
Option One - Renovation of Existing Space.....	48
Option Two - Renovation of Existing / New Expansion.....	49
Option Three - New Development.....	51
Development Options Summary	53
Conclusion	54

Executive Summary

Provided here for your use is a summary of key elements found within the report body. These bulleted points are by no means an exhaustive list of those found within the document but should serve as an introduction to the overarching concepts discussed within this report.

- The Hamilton County Coroner facility provides forensic (autopsy, crime laboratory) functions for the citizens of Hamilton County and the counties of Clermont, Pike, and Scioto in Ohio and Franklin and Ohio counties in Indiana. (*Introduction, Page 3*)
- Additional staff is needed to provide adequate service to the community. Current staff of the facility total 50. The correct number of staff if the facility was right-sized to adequately service current caseload should be 63.5. Projections to service the community up to the year 2030 show a need for 82 staff. (*Analysis of Need, Pages 18-19; Space Requirements, Pages 20-21*)
- The current facility is at capacity with no space for additional staff. The current facility size is 34,795 gross square feet (gsf). A right-sized facility to adequately service current caseload and to appropriately accommodate the right-sized staffing projection listed above should be 79,696 gsf. The projected growth of the facility to service the community through the year 2030 prescribes a building size of 93,634 gsf. (*Analysis of Need, Pages 18-19; Space Requirements, Pages 20-21; Program Detail, Pages 42-45*)
- Due to overcrowding the current facility is:
 - Endangering the health and safety of the staff.
 - There are issues of code violations with dead-end corridors, inadequate safety shower accessibility in case of emergency, and suspected lack of containment with outdated fume hoods. (*Building Condition Assessment, Pages 5-16; Adjacencies and Process Flow, Pages 21-40*)
 - Inadequately secured.
 - Officers dropping off evidence have unsecured and unescorted accessibility into laboratory areas. (*Building Condition Assessment, Page 9; Adjacencies and Process Flow, Pages 21-27*)
 - Jeopardizing the integrity of evidentiary information.
 - Evidence drop off and triage is handled in an open corridor with traffic. Evidence could easily be confused or contaminated. (*Building Condition Assessment, Pages 8-9; Adjacencies and Process Flow, Pages 21-27*)
 - Compromising the respect of decedents and grieving families.
 - There are no private areas for the discussion of sensitive information with family members and these conversations often end up occurring out in the open office. (*Adjacencies and Process Flow, Pages 21, 37-40*)

- At daily risk of inadvertently divulging confidential information.
 - Confidential conversations between investigators or between pathologists also take place in office areas that are open to people outside of the organization. (*Adjacencies and Process Flow, Page 21*)
- In potential danger of losing accreditation.
 - The accrediting body for the crime laboratory has already made remarks regarding the state and location of evidence intake and release in regards to possible contamination. Both the accrediting body of the crime lab as well as the coroner have specific requirements for separation of office and laboratory areas, size and separation of work zones, number of pathologists per cases, and general long term storage needs for cases, samples, etc. (*Building Condition Assessment, Pages 8, 10*)
- Restricting service levels to the community.
 - Due to overcrowding, the impact of these restrictions on adding staff, certain cases or case types are not being worked or investigated. (*Adjacencies and Process Flow, Pages 30, 35, 37*)
- Three options are investigated in this report: (*Development Options, Pages 47-53*)
 1. Accommodate additional staff size in the current facility. This is **not feasible**. (*Pages 48*)
 2. Provide an addition to the current facility to increase size to accommodate additional staff needed. This is **not recommended** due to potential conflicts with leased property, addition size, and further disruption of service for addition construction. (*Pages 49-50*)
 3. Provide a new facility on a new property. This is **recommended**. (*Pages 51-52*)

Introduction

Project Overview

The needs assessment process utilizes historical workload data, data from projected population trends and interviews with staff to understand process issues, which are then used to generate projections of staffing and required facility needs to achieve desired service levels. The required facility needs are then measured against the existing facility capacities and limitations, with options developed to test different strategies for renovation, expansion or replacement of the current forensic facility.

The Hamilton County Coroner's office provides forensic services to the citizens of Hamilton County. Services are also provided on a fee-for-service basis to several surrounding counties including Clermont, Pike, and Scioto in Ohio and Franklin and Ohio counties in Indiana. These forensic services include autopsies, death investigations, firearms examination, serology, DNA, toxicology, drug identification, analysis of trace evidence and evaluation of questioned documents.

In 2010 3,457 deaths in Hamilton County were reported to the coroner's office. Of these reported deaths, jurisdiction was assumed in 911 cases resulting in 898 postmortem examinations. In addition to these cases, outlying counties in Ohio and Indiana which are served by the coroner's office requested 98 postmortem examinations for a total of 996 exams.

The 16,009 submissions to the laboratory in 2010 included: 62 arson investigations, 35 questioned document evaluations, 10,874 drug identifications (including those from the Bureau of Criminal Investigation), 580 firearms examinations, 533 histology examinations, 625 open container investigations, 1,580 serology (DNA) identifications, 1,497 toxicology investigations, and 223 trace evidence.

It is important to note that the service level provided by the crime laboratory is restricted because of limited money, staffing and space. Consequently, the laboratory primarily focuses on processing evidence for cases scheduled for trial. One goal of the laboratory is to be able to provide timely support to more investigations, not just prosecutions.

Recognizing a number of concerns related to the capacity and condition of the existing facility, the Hamilton County Coroner retained Crime Lab Design to provide an objective review of current conditions and to make a projection of future needs.

Improved facilities are a means of resolving existing problems and modernizing forensic processes. Program needs include state-of-the-art autopsy and support areas, decedent storage, offices, training facilities, technologically advanced equipment, additional instrumentation, and safe, efficient, ergonomic and productive work environments.

A key factor in determining the design of a forensic science laboratory is the service level the staff provides, the number of staff required for this service and the space per staff member to accomplish the task.

The study that is presented in the following document has arrived at conclusions on staffing and square footage for the coroner facility. Starting with programming meetings (including

facility and County staff), observation of current processes and service levels, assessment of the existing facility, and utilization of statistical data from the Hamilton County Coroner service area, it was determined that the facility would need to be approximately 93,650 gross square feet (GSF) with a projected total staff of 74 full-time employees (FTE) and 8 part-time employees (PTE) in order to accommodate the caseload for the year 2030.

According to a U.S. Department of Justice research report, "*Forensic Laboratories: Handbook for Facility Planning, Design, Construction and Moving*" (U.S. Department of Justice, Office of Justice Programs, National Institute of Justice (Publication NCJ 168106 April 1998), the per person space ratio for new forensic facilities is 700 to 1000 GSF per staff member. An additional 500 GSF per staff member is suggested for Medical Examiners Facilities. According to our comparison of similar facilities, medical examiner and coroner facilities trend higher in GSF per occupant than other forensic facility types. Based on benchmarking standards for forensic labs, the future space ratio of 1,340 GSF per person will place Hamilton County in good standing with respect to the gross square footage recommended for administrative and technical spaces as an average for both the coroner and crime laboratory spaces.

Project Scope – Facility Program Summary

Forensic facilities are ideally developed by using a square foot area, or module, that accommodates multiple program requirements on a building floor plate. The module length and width are sized to accommodate safe lab practices, metrics of equipment and casework, structural design and mechanical support. The module not only establishes a uniform grid for locating demising walls, columns, windows and other elements, but is also a tool for future expansion or contraction of the facility without major building modifications.

We have selected a module size of 11'-0" x 11'-0" (121 net square feet) for all autopsy areas, laboratory areas, support spaces, offices, and public use spaces. This module was selected because it provides sufficient circulation space within the facility to meet guidelines for safe forensic practices. Utilizing this modular concept, we are able to program the facility in a regular manner working in conjunction with structural bays.

The proposed net square foot area of approximately 57,975 NSF is measured "paint to paint" of the walls enclosing each specific function. A breakdown of net and gross areas for each group is provided in the Program Detail section of this document. In addition, we have chosen a net-to-gross ratio of 65:35 for office functions and a net-to-gross ratio of between 60:40 and 62:38 for lab functions which is based upon our experience with similar facilities in the United States. The existing facility is 34,795 gross square feet (GSF). Using the modular approach, the gross building area suggested to accommodate the Hamilton County Coroner facility with a projection to 2030 is approximately 93,650 GSF. This building area will accommodate current and future staff as calculated for the year 2000 through the year 2030. The proposed gross building area represents all spaces enclosed by the building envelope: wall structure, building systems, circulation, operations and maintenance spaces. This area includes individual spaces to be used by all groups and the common shared areas that support these groups jointly. Common spaces increase functional efficiency and reduce construction and operating costs.

Building Condition Assessment

Introduction

This building condition review is part of an overall assessment of need for the operations of the Hamilton County Coroner. The review of the existing building condition is intended to inform the development of options necessary to accommodate both long and short term operations. The physical review of the building conditions, as well as the original plans and “as built” drawings was performed on July 12, 2011 and was conducted by a team consisting of an architect, forensic lab planner, mechanical and electrical engineers from Crime Lab Design, who were accompanied by Hamilton County Facilities staff.

In general the building appears to be well maintained. The building envelope appears to be in good condition and most of the mechanical system central equipment has been recently renewed. The electrical service is original; however the county long-range planning anticipates a major update of the electrical central equipment.

The primary deficiencies in the building are related to suitability for current use and available space to accommodate current technical operations.

Codes and Standards

Any new projects or substantial renovations will need to comply with the current building codes adopted by the City of Cincinnati. This is the 2007 Ohio Building Code (OBC) which incorporates the 2006 Edition of the International Building Code (IBC Building Code) and the Cincinnati Building Code (CBC).

As a coroner's office the building's Use Group is 'B' Business (OBC, 304.1). The existing building appears to be Construction Type IIA or IB since the floor and roof beams are spray fireproofed (OBC, Table 601)

The building does not have an automatic sprinkler system.

The maximum travel distance in a non-fire protected building of this Use Group is 200 feet. (OBC, Table 1016.1). The maximum dead end corridor length is 20'-0" (OBC, 1017.3). The maximum common path of egress travel is 75'-0" (OBC, 1014.3). Please see further discussion regarding egress in the next section.

Architectural Building Systems

Building Exterior

The building exterior is in good condition, though some deficiencies and deferred maintenance items were noted that need repair.

The site planter and the east side walkways and stairs need general repairs. The brick planters have cracks in some locations and sealant is missing in some vertical expansion joints. The concrete nosing of some steps have broken off or are ready to break off. The

walkway slab below the highest set of stair risers has settled which causes that riser to be too high.

The roof is a built-up asphalt roof in good condition and is inspected annually by Tremco.

The exterior brick walls are in good condition with the exception of the southeast corner of the Lab Block which has some visible joint cracking that has been repaired, but does not match the existing mortar joints and may need to be repaired.

Building Interior

Floors:

The interior floor finishes vary. Thin set terrazzo is installed in the public corridors, autopsy areas and select rooms. Carpet and vinyl composite tile is installed in offices and labs. Epoxy has been installed in special areas including the fourth floor mechanical room. Janitor closets and mechanical rooms typically have exposed concrete floors.

Walls:

Wall construction and finishes vary. Circulation corridors are brick. Lab areas vary from painted gypsum board to glazed masonry units. Offices are typically painted gypsum board.

Windows:

There are no windows located in the laboratory areas and thus no natural light. Natural light is a key element to the visual acuity of many tasks required throughout the components of the coroner's office. Additionally, natural light has a positive impact on employees and their work.

Ceilings:

Ceiling in offices and labs are typically acoustic lay-in tile with a T-bar grid system. Ceilings in the autopsy suite are epoxy painted gypsum board or plaster.

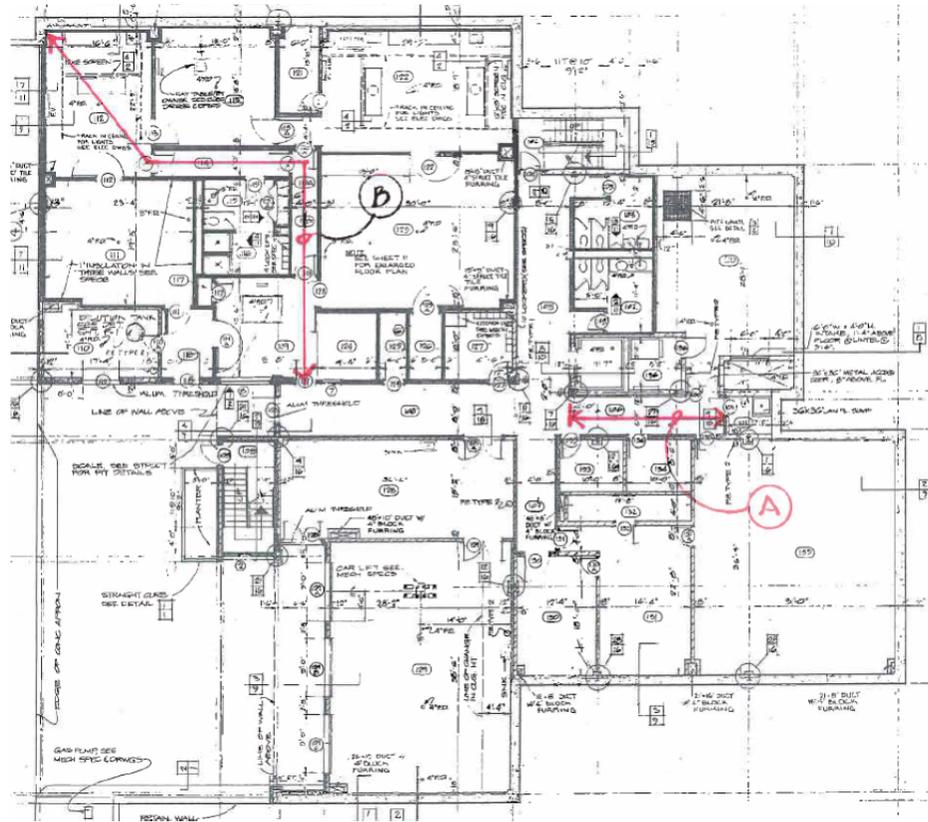
Toilets:

Men and women's toilet rooms on the second and third floors are not ADA accessible. The only ADA accessible toilet room in the building is the unisex toilet room on the first floor. This toilet room appears to meet the ADA requirements with the exception of the entrance door side latch clearance on the corridor side. The side latch clearance of the entrance door does not meet the required 12".

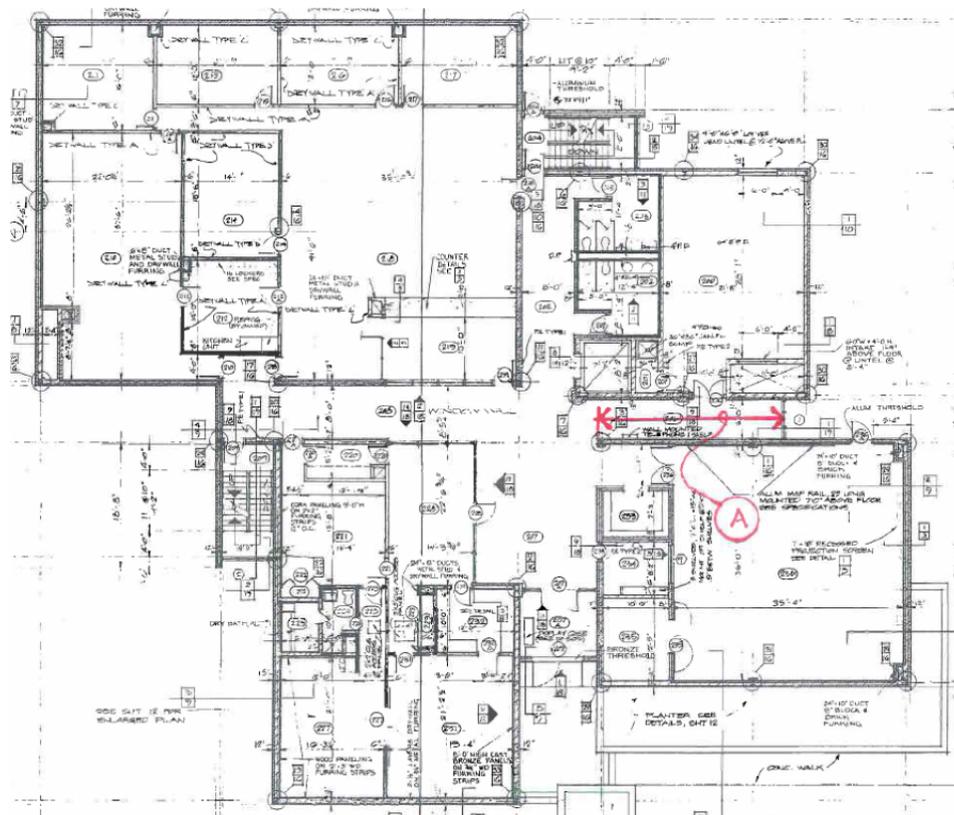
Egress:

The location of the exit stairs and egress doors create dead end corridors in excess of the allowable 20'-0" on the first, second and third floors in front of the mechanical rooms. A dead end corridor condition occurs in the Southwest Lab block on the third floor because there is no separation from the corridor. This condition is indicated as A on the following sketches.

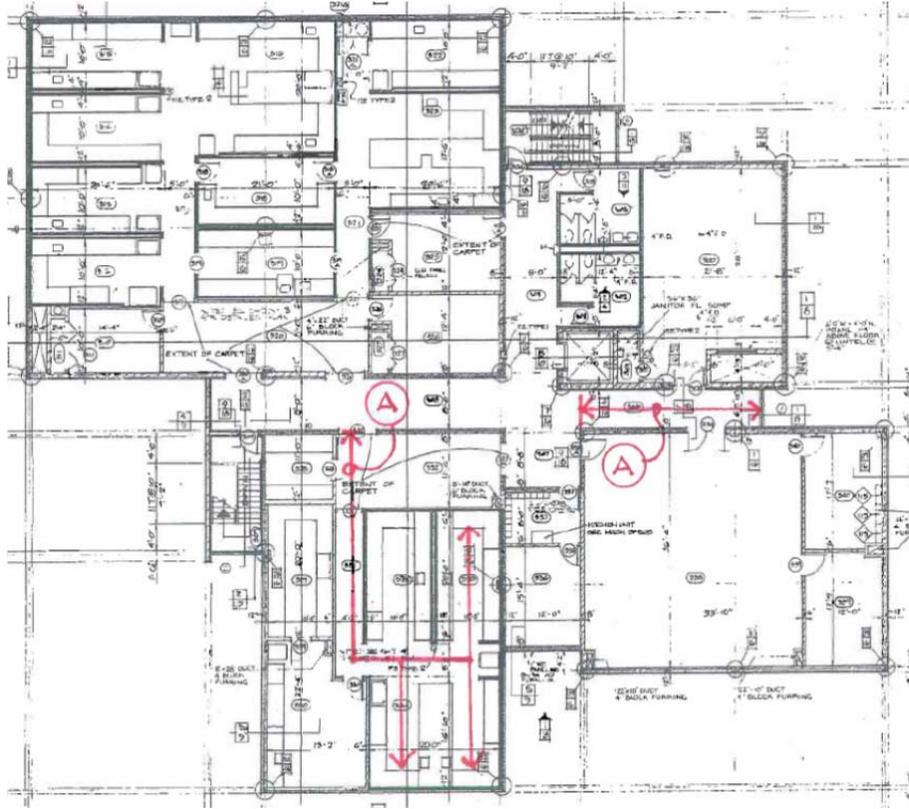
The common path of egress travel exceeds the allowable 75'-0" for Business Use without sprinklers in the first floor Autopsy Suite. This condition is indicated as B on the following sketches.



First Floor



Second Floor



Third Floor

Laboratory and Autopsy Spaces

The laboratory spaces are located on the third floor of the building and support scientific investigation into forensic biology (DNA), toxicology, fire arms, trace evidence, drugs, and histology activities. Also housed on the third floor are the evidence technicians and evidence storage. Since initial construction, only limited upgrades and improvements have been made to the laboratory spaces. Noted concerns with the laboratory spaces include:

Overcrowding, potential safety, and contamination issues

Virtually all of the laboratory spaces are overcrowded. For example, the histology lab is overcrowded and does not provide adequate space for equipment and processes which presents a concern for user safety. The overcrowding creates an environment where the possibility of a lab occupant being injured by cutting, puncture or exposure to a number of blood borne pathogens is elevated. Due to a lack of appropriate laboratory and office space staff often perform work in high traffic areas. This is a health and safety risk to the staff of the facility.

Of equal concern is the potential for cross-contamination between cases. This issue was first raised in 2000 during the initial ASCLD/LAB accreditation audit. Inspectors were concerned even then about the crowded conditions in the Trace Evidence examinations area. As corrective action the laboratory constructed special covers for the examination tables. This only minimized but did not correct the deficiency. For the DNA Section, the FBI DNA Quality Assurance standards (FBI DNA QAS Standards 6) mandate strict separations between examination, extraction and amplification areas. The examination area for large items such as bed sheets is inadequate. Currently a folding table is set up in an office area when needed and then stowed away. This precludes using the office area while the examination is in progress.

As illustrated by the examples above, the issues related to evidence and contamination control are currently being mitigated by processes and procedures that have been put in place by the laboratory. However, these processes and procedures ultimately have a negative impact on the efficiency and effectiveness of laboratory operations.



This is the only safety shower on the third floor. This violates American National Standards Institute (ANSI) code requiring emergency eyewash and shower devices to have unobstructed access located within 10 seconds of a hazardous area.

Outdated fume hoods that are expected to fail modern containment testing

The existing fume hoods are obsolete. New technology and design solutions found in modern units provide improved containment, utility and energy usage factors. In most cases, fume hood location in the laboratory space is also ineffective. The fume hood shroud does not have items such as splayed face openings and airfoil under sash by-pass for smooth passage of air into the hoods and the hoods lack any monitoring control systems. Additionally, many processes currently being conducted in fume hoods are better suited in a more appropriate device such as a biological safety cabinet, flammable storage cabinet, vacuum pump cabinet or local extraction device (snorkel). The placement of these devices in the laboratory is also just as important as to the proximity to ceiling mounted air supply grills, doors and traffic flow. Locating fume hoods in the path of frequent travel or in close proximity to air supply grills can disrupt the air flow into the hood leading to lack of containment.



An existing fume hood showing a supply air outlet too close to the hood face opening as well as poor lighting quality.

Current evidence flows are problematic

The existing location of evidence receipt on the third floor is a serious security and contamination issue. Currently, all submitting agencies enter the building; proceed to the elevator to the third floor all with minimal security examination easily allowing for the possibility of unescorted circulation within the building to occur. The interaction at the evidence receipt counter takes place in the same corridor that criminalists and analysts use. In addition, this is the same receipt counter that returns worked evidence to the submitting agency and where laboratory staff pick-up and drop-off evidence for analysis. Case files are also located here as well as evidence storage. Due to this overuse of the receipt area, individuals entering the lab may bring in with them a source of contamination since they may not be versed in correct lab protocols.

Proper exiting in the event of emergencies

Over time facility modifications have been instigated to increase area for office and laboratory functions. These modifications have created multiple nested spaces that force occupants to exit through several adjoining rooms to get to an exit corridor. Many times these adjoining rooms, which occupants must exit through, may be considered hazardous. This condition creates a level of obstacles when trying to exit the facility under an emergency situation.

Office environments located in the laboratory present health & accreditation issues

It is good laboratory practice to separate the functions of office and laboratory. There are several agencies including the Occupational Safety and Health Administration (OSHA) and The American Society of Crime Lab Directors Laboratory Accreditation Board (ASCLD/LAB) that specifically mention this separation in their guidelines and identify the benefits of lab and office separation. When office and laboratory environments are combined, the occupants spend nearly all of their time in the laboratory environment which increases the potential exposure to hazardous materials used in the laboratory as well as the elevated noise levels associated with much of the laboratory equipment.

Autopsy suite is outdated presenting concerns for employee safety

The current construction of the autopsy areas do not provide for optimum cleaning and/or decontamination during and following postmortem exams. In addition, the design does not allow for the separation of clean and contaminated areas. These flaws create an increased risk for employee safety and cross-contamination. Last, the space is too small to adequately service the current caseload leading to issues of overcrowding and the related concerns as previously discussed in this document.

Firearms range is not properly contained

The current range contains many design and functional issues which lead to potentially hazardous conditions for those utilizing the range. The ventilation system for the range is inadequate for the control of lead particulate or gasses from weapon discharge. The ventilation provided should be an even air flow from the rear of the shooting position that is taken downrange and exhausted from the building. Additionally the current range design does not include the use of ballistic resistant material on the walls or ceiling to contain accidental discharge.

The design of a new range should provide proper length and width of the range which prevents projectiles bouncing back at the occupant of the space. The new range should include the directional airflow and ballistic wall protection as listed above and additionally should include a ceiling baffle system that would create “no blue sky”; preventing a projectile from coming into contact with items above the ceiling.

Bullet recovery tank is open to the garage environment, presenting physical safety concerns

The tank and the activity of discharging firearms into it must be located in a well-designed ballistic containment room. The design considerations for the firearms range as discussed above also apply. Discharging a firearm in the current environment presents several safety hazards without a provision for proper airflow and ballistic containment.

Mechanical Systems

The central equipment associated with the building's heating, ventilating and air conditioning systems has been updated as part of the 1998 and 2001 equipment replacements and upgrades. This central equipment has over half of its useful life remaining.

Cooling Plant

The cooling plant consists of two-125 ton air-cooled chillers located on the roof of the building. The chillers replaced the original air cooled condensing units and appear to be in good functional condition.

Heating Plant

The heating plant consists of two – 2,500 MBH (1,000 Btu per hour) hot water boilers that were installed as part of the 2001 equipment replacement. The boilers appear to be in good functional condition.

Air Handling Systems

The building is equipped with three primary air handling systems, one for each floor. As part of the 2001 equipment replacement all three air handling units were replaced and appear to be in good condition.

The first floor air handling system is a constant volume system capable of supplying 10,800 cubic feet per minute. The air handling unit is a "multi-zone" design configured to provide eight different temperature control zones. Air supplied to autopsy areas is exhausted from the building and air supplied to the storage and office areas is returned to the air handling unit.

The second floor air handling system is a constant volume system capable of supplying 13,200 cubic feet per minute. The air handling unit is a "dual duct" design configuration with hot air and cold air distributed through the space to terminal boxes, where the airflows are mixed to provide for temperature control for that area of the building. This system is equipped with a return air fan and air is returned from most spaces on this floor.

The third floor air handling system is a constant volume system capable of supplying 12,600 cubic feet per minute. The air handling unit is a "dual duct" design configuration with hot air and cold air distributed through the space to terminal boxes, where the airflows are mixed to provide for temperature control for that area of the building. In general air supplied to laboratories is exhausted and air supplied to corridors and office areas is returned to the unit. In some cases areas which may have originally been used for office functions are now used for laboratories. It appears that the air from these spaces is being re-circulated, which is not code compliant.

A modern system would not be designed using these current configurations. One area of concern is that current design practice requires directional airflow be maintained, with air flows directed into areas of higher hazard and odor concern. While verification testing was not

undertaken it is expected that the systems installed in the building would not consistently provide this level of airflow control.

Laboratory & Autopsy Exhaust Systems

The exhaust air from laboratory and autopsy spaces are collected in horizontal ductwork on each floor and then connected vertically running to exhaust fans on the roof. The exhaust fans were upgraded in 1998 and appear to be in good functional condition.



Exhaust Fans on Roof

Electrical Systems

In general the power distribution, lighting and miscellaneous electrical systems are original to the 1971 building. Although in reasonably good condition the design concept and equipment is nearly 40 years old. Refer to the following for detailed information regarding the condition of the equipment and systems.

Power Distribution

The building receives 12,470 volt primary power from Duke Energy. Located in the penthouse is one 750 KVA, 480/277 dry type substation which serves the entire building. Various receptacle panels are located throughout the floors serving lighting and receptacle loads. The substation and panels are manufactured by Arrow Hart, Continental Division. The equipment is 40 years old and the Continental Division of Arrow Hart no longer exists, making factory made replacement parts unavailable. Parts are not readily available but can be custom made by a fabrication shop.

All of the transformers are dry type varnish insulated; varnish is both heat and age sensitive. Given the age of the equipment, degradation of the insulating properties of the transformers is possible and failure of the insulation is considered irreparable damage.

Although there are several panels per floor, the panel and circuit capacity is almost at full capacity precluding the addition of any new technologies in the laboratories. The occupants have requested additional circuits and panels to serve additional loads and for flexibility. See Capital projects, project No. FAC-3159-1134.



Existing Outdated Electrical Switchgear

Emergency Power

The facility is served by a 30 KW/37.5 KVA (45 amps at 480 volt), 480/277 volt generator which serves egress lighting, refrigerator, freezer and various other loads within the facility. Due to the limited capacity of the generator the morgue refrigeration equipment along with various exhaust fans, air supply fans and other equipment are not backed up by the generator. Thus, during every power outage (long or short) the fume hoods can no longer exhaust vapors creating hazardous conditions for building inhabitants and the building cannot be occupied. Also of concern during power outages is the rise of morgue temperatures above acceptable levels. This leads to a premature increase in decedent decomposition prior to final disposition to next of kin potentially precluding families from open casket visitation. See Capital Projects, project No. FAC-3159-1134.



Existing Undersized Generator

Lighting

The lighting fixtures mainly consist of 2' x 4' lay-in fluorescent lighting fixtures with dropped acrylic opal lens. The remaining lighting in the finished areas consists of lay-in 6" wide linear fluorescents with an acrylic prismatic lens. The existing lighting fixtures produce a quality level which is substandard as compared to what can be achieved with the new technology available in lighting fixtures today. The existing lighting fixtures with the dropped opal lens produce high veiling reflectance and poor glare control as compared to the new generation of lighting fixtures.

Overall the lighting power densities are higher than what is normal for new laboratories and result in greater energy consumption.



Antiquated, inefficient lighting

Miscellaneous Systems

Fire alarm

The fire alarm system in the facility was replaced in 2011 with an intelligent addressable fire alarm system providing full area smoke detection and evacuation signals (visual and audible) throughout the building. In addition to fire alarm detection, monitoring, and indication throughout the building, the system has a Mass Notification Emergency Communication System (MNECS) which contains pre-recorded messages to alert the occupants of the building in the event of terrorist activity and/or a severe weather event. The system is warranted through December of 2017.

Security Systems

Information from the Hamilton County Coroner suggests that the building is monitored but no other information was readily available at the time of this review.

Needs Assessment

Methodology - Goals, Facts, Needs and Concepts

The overall goal of this Needs Assessment is to determine the conditions required for creating a modern, cohesive facility for the Hamilton County Coroner complex. The assessment process is the first step when designing, planning and constructing a new facility. The basic premise is to build consensus among owners, users and staff on issues of scope, budget, future growth and schedule that will allow project representatives to proceed confidently into design. Stakeholder comments that are documented below were recorded during the initial data collection meeting. The following comments helped to shape the definition of program recommendations presented in this Needs Assessment.

Goals:

- Provide quality investigative and forensic services.
- Provide comprehensive and complete death investigations.
- Promote educational prevention programs in the community to prevent deaths.
- Provide open communication within the medical and legal community.
- Be innovative, responsive and dynamic as an organization and individuals.
- Maintain National Association of Medical Examiners (NAME) accreditation.
- Maintain ASCLD/LAB International accreditation in compliance with ISO 17025 and the FBI DNA QAS.
- Provide a safe and sane work environment for the employees.
- Choose an appropriate orientation for the facility on a potential new site based on utilities, adjacencies, future expansion capability and adequate connection to public services.

Facts:

- The Crime Laboratory services more than 60 law enforcement agencies.
- The members of the Hamilton Coroner Facility require a building that will serve their needs for 20 years (2030) and that will easily adapt to new technologies.
- The Coroner is currently also servicing Clermont, Pike, Scioto, Franklin and Ohio Counties.
- Physical limitations of the current facility are impeding the ability to provide the desired level of service to the community.

Needs:

- Provide space in the new facility for bio-safety level 3 and bariatric autopsy.
- Planning decisions should consider the effects of a mass casualty in all areas especially parking and security.

- The need for adequate evidence storage is essential and must not be undersized. Senate Bill 77 requires that for certain crimes, biological evidence be maintained for thirty years if not longer in some cases.
- Build for the moment, yet incorporate flexibility in building system and utility design to allow changes in the future.
- Design a state-of-the-art building that can be operated 24/7 and incorporates safety and security for the employees.

Concepts:

- Security: Proximity reader cardkey system or biometric readers; CCTV system for lobby, staff entrance, and decedent entrance; secure, fenced service yard with well-lit parking for the employees.
- Lighting: Windows provided for all offices, open office areas and public areas; natural light via skylight or high windows provided in the autopsy suite, the autopsy room and the recovery suite.
- Emergency utility backup systems should be provided, including emergency power.
- Finishes for the facility should be durable and long lasting while also being low-maintenance.
- Provide adequate space and utility support in service yard for mobile cooler/freezer units.
- Design facility to allow for tours and group educational programs with minimal disruption to facility operations.

Analysis of Need

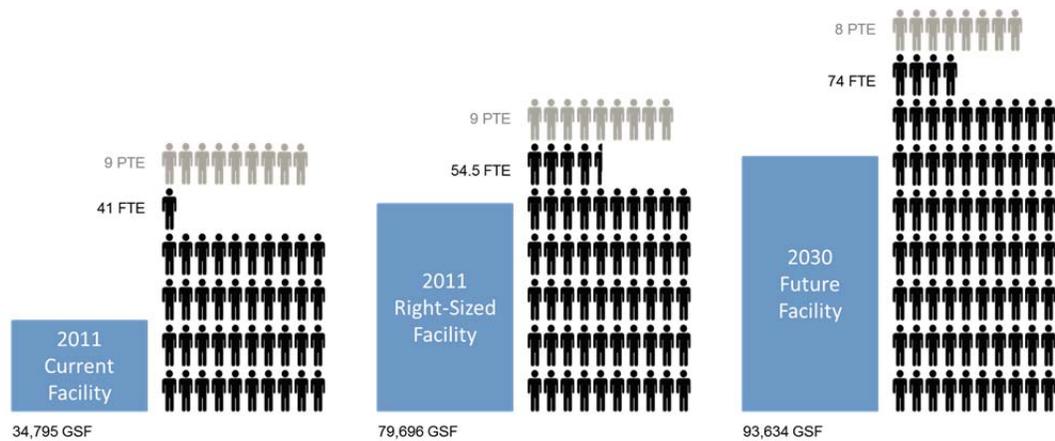
Statistics show that the population served by the Hamilton County Coroner facility consisting of Hamilton, Clermont, Pike, Scioto, Franklin, and Ohio Counties has remained relatively steady. Death rates for these counties have also remained steady. Deaths due to natural causes have been declining, suicide rates rise and fall, while homicides and accidental deaths have increased.

The current Hamilton County Coroner facility is undersized for the services provided. This has required the crime laboratory to focus on those cases scheduled for trial to the detriment of many cases still in the investigative phase. Even the Coroner's own investigators are limited in the number of scenes they can attend. There is a need to expand the number of investigations by death investigators in order to respond to certain additional death scenes insuring a complete and accurate investigation of all deaths in Hamilton County. This service cannot be accomplished in the current undersized facility.

As detailed in the previous section of the report, many spaces within both the laboratory and morgue section of the facility are inadequate in size and location creating inefficient and unsafe conditions.

Senate Bill 77 requires law enforcement to collect and preserve biological evidence for certain crimes for up to and in some cases beyond thirty years from the time of collection. This bill alone could require the addition of 6,000 square feet or more of secure storage over the next twenty years.

Projecting to 2030 there is a proven need to increase the staff to 82 and to provide adequate square footage for all administrative and technical spaces in the Hamilton County Coroner facility based on industry standards and accreditation. In order to accommodate this growth a new and larger facility would be required.

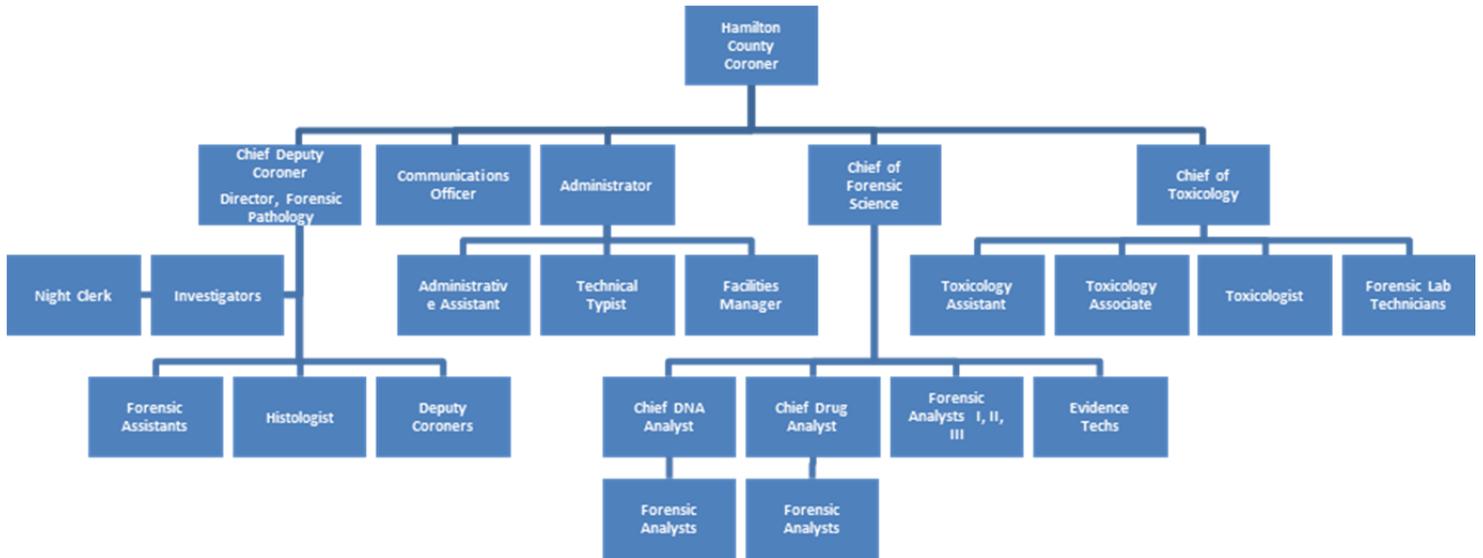


Graphic comparison of Current, Right-Sized, and Future Facility / Staff

Space Requirements

Organizational Structure/Staffing Analysis

The current organizational structure is led by the Coroner. Presently the number of staff is 41 full-time employees.



Hamilton County Coroner Organization Structure by Title

Future growth is expected to accommodate additional forensic pathologists, forensic autopsy assistants and administration and support staff, totaling 82. Please note that the program indicates discipline needs and staff numbers in the facility at a given time and is not likely to match staff totals by title. For example, the eight additional night staff on rotation is not counted in the program but do appear in the Organization Chart which follows.

Organizational Chart

Title	Number of Staff											Current	Right Sized	Projected				
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010			2011	2011	2015	2020	2025
Coroner	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chief Deputy Coroner Director, Forensic Pathology	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Investigators	4	4	4	4	4	4	4	4	4	4	4	4	8	9	9	10	10	
Night Clerks (PTE)	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Forensic Assistants	4	4	4	4	3	3	4	4	3	3	4	4	4	4	4	4	5	
Histologists	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Deputy Coroners	2	2	2	3	3	3	3	3	3	3	3	3	3.5	3.5	4	4	5	
Others: Forensic Path Fellow	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
Communications Officer / IT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	
Administrator	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Administrative Assistant	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Technical Typist	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Facilities Manager / Morgue Building Manager	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Others: Record Manager	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	
Chief of Forensic Science / Lab Director	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Chief Drug Analyst	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Forensic Analysts (I, II and III)	8	8	9	9	10	11	11	14	14	13	11	11	16	17	19	22	25	
Chief DNA Analyst	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	
Q/D Examiner (PTE)	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	
Evidence Techs	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Others: Quality Manager	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	
Chief of Toxicology	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Toxicology Assistant	2	2	2	3	3	2	3	1	1	0	0	1	1	1	2	2	2	
Toxicology Associate	0	0	0	0	0	1	1	3	3	3	3	2	3	3	4	4	4	
Toxicologist	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	
Forensic Lab Technicians	1	1	1	0	0	0	0	0	1	1	0	0	1	1	1	1	2	
Others: Custodian	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	
TOTAL - ALL STAFF												50	63.5	64.5	72	76	82	
TOTAL - FULL-TIME EMPLOYEES (FTE)												41	54.5	56.5	64	68	74	
TOTAL - PART-TIME EMPLOYEES (PTE)												9	9	8	8	8	8	

Adjacencies and Process Flow

Adjacency diagrams were utilized with the users to conceptualize the space types needed and their relationship to one another. Each individual bubble does not denote a specific room but rather a space where a particular activity takes place. How the bubbles touch one another explains the relationship of how the spaces should interact with each other. Each diagram includes a brief narrative describing the optimal flow and process of the various groups and users of the facility. This information will be used to inform future concepts and plans. The following is the key information for reading and following the bubble diagrams:

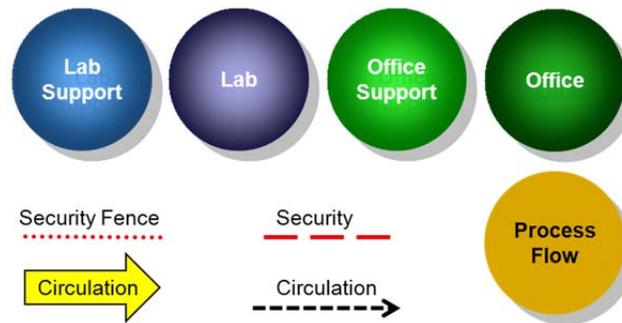


Diagram Key

Administration

Current Process:

Existing full-time staff consists of the Coroner, Chief Administrator, Administrative Assistant, Records Manager, Technical Typist and Communications Officer / IT. Future needs will require the addition of one IT staff member.

The current building design requires visitors to enter into a secure vestibule and utilize a phone system to request further entry into the facility. There is no receptionist or security personnel present to direct the daily flow of traffic but rather the investigators are responsible for screening and greeting visitors. This can present a significant security issue. A reception counter is located within the main office and is where all daily business is conducted. The main office also includes the investigators work stations. This open setting creates several significant issues. Death calls and case conferencing between investigators and pathologists occurs frequently and this confidential information could be easily overheard by visitors to this space. Additionally, investigators are not provided a space in which to converse privately with family members. These conversations and the release of personal effects and autopsy reports occur within this same open setting and do not provide privacy or sensitivity to grieving families.

The current space dedicated to Communications / IT is not suitable for the storage of the equipment necessary for information system management. In particular climate control for the server systems and their subsequent substantial heat generation is greatly inadequate.

*Proposed Processes:**Family Entry –*

Family members of a decedent would enter through the front door and proceed into the secure vestibule. Security would verify their identification through a secure window and pass-through system. Upon verification, entry is granted.

- A family member would leave the secure vestibule and enter the lobby area. The clerk would meet them at a check-in desk at this point and would then direct the family to the family room and notify the investigator handling the case of the family's arrival. The Investigator would meet the family member(s) and escort them to the proper area.
- If a family member arrives at the facility to pick up property from a decedent, he or she will be directed to the waiting area and be met by the Investigator and escorted to the Family Room or another area in which to turn over the property.
- Larger family groups would be directed or escorted to the Family Room or the All Purpose Lecture Hall.
- Families would leave the facility through the same sequence of lobby and secured vestibule.

Group Entry –

- Groups entering the facility for training or educational purposes would proceed through the front door into the secure vestibule. Security would verify their identification through the CCTV system.
- Upon verification, the group would proceed into the lobby area and into the All Purpose Lecture Hall with a staff escort.
- The All Purpose Lecture Hall would be divisible with movable sound-proof partitions to allow for multiple groups to utilize the space simultaneously or for the room to open to a single, large area. The All Purpose Lecture Hall would be equipped with A/V conferencing equipment, cable, internet and other SMART technology.
- Supporting the All Purpose Lecture Hall is an A/V control room, kitchen, staff conference room / library, toilets, reception and the lobby.
- If required the group would then proceed with the escort into the secure areas of the facility and utilize the laboratory spaces as necessary.
- Groups would leave the facility through the same sequence, returning to the All Purpose Lecture Hall, back through the lobby and secure vestibule and out of the facility.

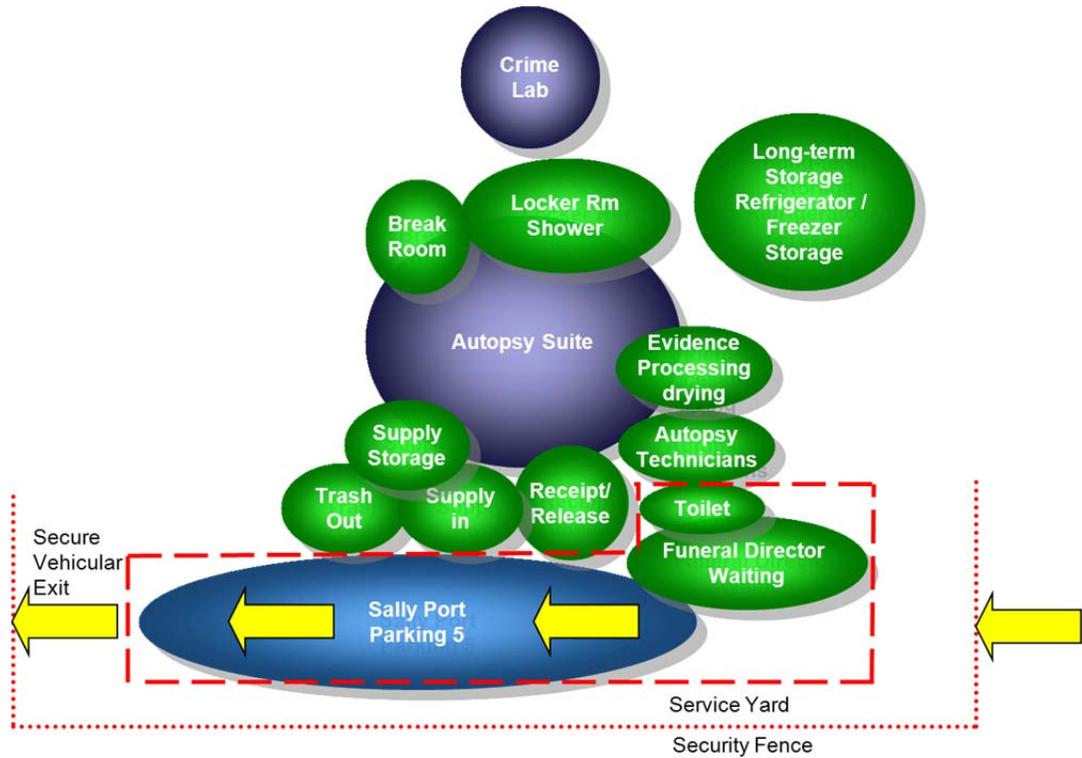
Employee Entry –

- Employees will enter through a staff entry separate from the public.
- Offices will be located adjacent to the front door activities while maintaining a close proximity to the Autopsy Suites.
- Employees will be provided with their own office space.
- Senior staff and Pathologists will have individual walled (private) offices with everyone else receiving individual office cubicles including varying degrees of privacy.
- Support spaces such as files, property and evidence storage, and office support will be adjacent to the administrative and investigator spaces.

Infrastructure Support / IT –

- Separate IT space will be provided for servers supporting the facility.
- Accommodations will be made for the secure housing of servers for federal uploads to databases such as CODIS, IBIS and AFIS.
- IT employees will be provided with their own office space.

Back Door Diagram



Evidence Control

The existing space consists of a counter, desk, and file area for current year and last year files. The basement storage area holds up to three additional years in total. All case files in excess of five years are then disposed of, with the exception of all positive DNA and homicide cases.

Future space needs are for a separate receipt room with rewrap capability which is located in an area directly accessible by outside agencies (not located in the heart of the facility), a file room, evidence storage room (a vault-like space), a drying room for the drying of marijuana and soiled clothing in specialized drying cabinets, refrigerator for evidence, and a blood work room for processing paternity testing blood samples from a vial to the blood card. The secure evidence storage room should be sufficiently large to permit storage of incoming and outgoing evidence in separately designated areas.

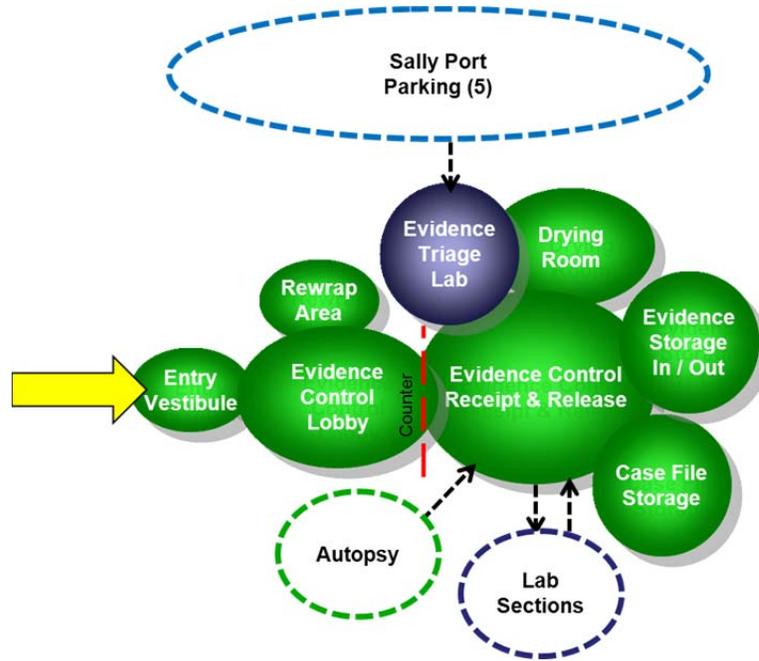
Process Flow

Currently those officers submitting evidence will park at the rear of the facility and use the call box to communicate with the evidence technicians who make visual confirmation of the submitting offers through a CCTV system. The evidence technician then views the entry of the officer on the CCTV system until they enter the elevator. The technician activates the elevator to bring the officer to the third floor. The technician checks the evidence against the documentation, logs it into the LIMS (Laboratory Information Management System) and ensures it is properly sealed and labeled. On some occasions the activity of rewrapping is necessary or a receiving consultation with the analyst prior to the lab allowing receipt of the evidence over the counter. Once received a crime lab case jacket is created electronically in the LIMS (Laboratory Information Management System) and a hard copy is printed for the files. The LIMS version is electronically signed and a receipt is provided to the submitter. The evidence technician prints a minimum of four barcode labels and delivers the evidence to the appropriate sections. In the short-term, the sections are responsible for evidence storage and case jacket control. The sections will work the evidence and return it to evidence control when complete. After the lab is finished the submitting agency returns to collect the evidence and the report.

In the future, the process flow is essentially the same; however the flow and security are greatly enhanced due to the closer proximity of this group to the exterior of the facility and not buried within the facility as it is today.

The addition of an evidence triage lab allows examiners, criminalists and pathologists to have the ability to gather in one place, review an item of evidence and make process suggestions to preserve evidence as a team.

Evidence Control Diagram



Trace Evidence

Existing full-time staff consists of two analysts dedicated to trace evidence and arson examinations. Three cross-trained analysts who work in other laboratory sections assist with selected categories of testing. This team of examiners is responsible for hairs, fibers, footwear impressions, paint, glass, gunshot (primer) residues, fire debris analysis, latent fingerprint development and other miscellaneous types of physical evidence. There will be a need in the near future for one full-time entry-level analyst.

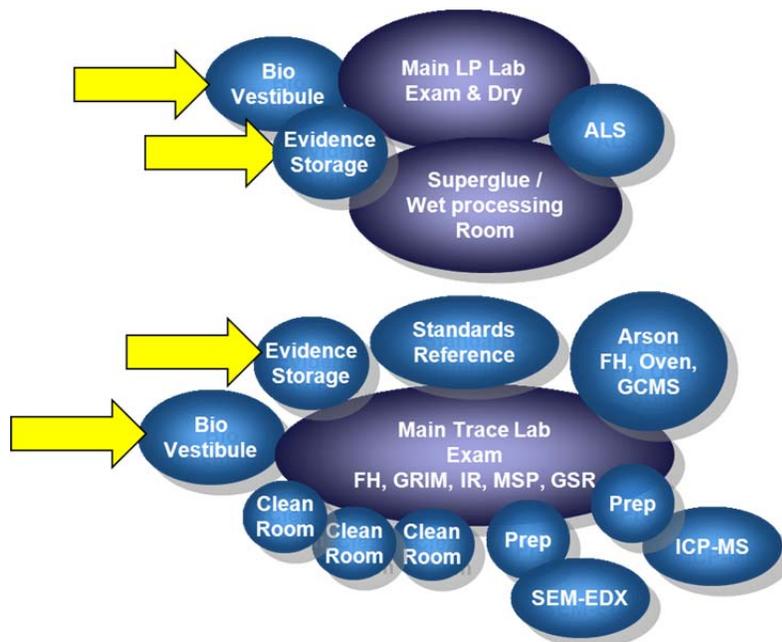
Existing caseload of forensic evidence includes 100 cases in arson, 250 trace cases, and 30 to 50 latent print cases.

Existing office and lab space are combined into one environment with the scanning electron microscope (SEM) lab on first floor with the glass refractive index measurement (GRIM3) system. The existing evidence room is shared with DNA, Questioned Documents and Firearms. It also includes space for photographic storage, supplies and reference collections.

Future space needs require separate laboratory and office environments to be in compliance with ASLCD/LAB accreditation (American Society of Crime Lab Directors Laboratory Accreditation Board.)

The main trace evidence laboratory is accessed through the bio-vestibule. The main trace evidence lab is equipped with instrumentation, comparison and stereo microscopes and has adjacent access to the following support spaces: evidence storage, standards and reference room, an arson lab equipped with specialized fire debris instrumentation, clean rooms for evidence examination and prep rooms for dedicated access into the SEM-EDX (scanning electronic Microscope - Energy-dispersive X-ray spectroscopy) lab for the characterization of gunshot residue, and ICP-MS (Inductively coupled plasma - mass spectrometry) Lab for detection of heavy metals.

Trace Evidence Diagram



Drug

The existing full-time staff consists of three analysts and a section chief. The drug staff is typically cross-trained to work in other sections as required.

Future staff needs will include the addition of two analysts. These individuals will need to be cross-trained in other disciplines.

In the future it is anticipated the Chief Drug Analyst will assume the additional duties of Quality Manager and be responsible for the accreditation program.

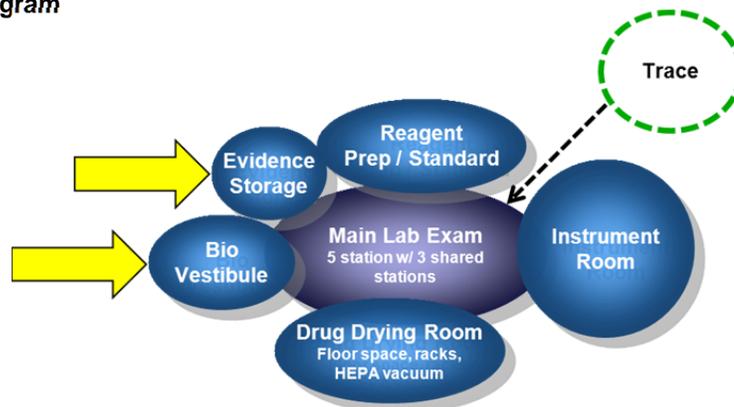
Existing case load is 700 to 800 cases per month with a 10-day turnaround that is driven by the courts and the “rapid indictment” process.

Existing conditions find that the office, laboratory and instruments are all combined into one space. This environment generates unusable space. For example, base cabinets contain a large number of drawers that are inappropriately sized for the laboratory materials that should be stored in them. Additionally, access to fume hoods is limited. Often latent print development or serial number restoration activities are carried out in the Drug Section because of inadequate hood access elsewhere.

Future space requires entry through a bio-vestibule into the main drug lab. This main lab includes space for one balance per analyst and the sharing of two centrifuges and stereoscopes between analysts. The main lab also requires access to the following support spaces: an evidence storage room with under-counter dishwasher, under-counter refrigerator and Freezer, additional refrigerator and freezer storage; a reagent prep and standards area, an instrument room with one HPLCMS-MS (High Pressure Liquid Chromatography–Mass Spectrometry), three GCMS (Gas Chromatography–Mass Spectrometry) plus one additional GCMS from the Ohio Bureau of Criminal Identification and Investigation (BCI), one FTIR (Fourier Transform Infrared Spectroscopy) and a drug drying room.

This discipline (as the rest of the lab) would also benefit from the addition of the following instrumentation: XRF (X-ray fluorescence), UV-vis (Ultraviolet-visible Spectroscopy), EDX (Energy-Dispersive X-ray Spectroscopy), and a GC-FID (Gas Chromatograph Flame Ionization Detector).

Drug Diagram



Toxicology

Existing full-time staff consists of one section chief, one toxicologist, two toxicology associates and one toxicology assistant. Future staff needs will require the addition of one toxicologist, two toxicology associates, one toxicology assistant and two forensic laboratory technicians.

Current caseload has been increasing over the years. Some work is sent out for analysis either because a procedure has not been developed or because an instrument is not available in-house to perform the requested testing. The section analyzes 500 DUI / OVI (with more testing today per case than three years ago), 50 rape cases, and 1,000 – 1,200 coroner cases. Analysis involves volatiles (i.e. ethyl alcohol) and ELISA (Enzyme Immunosorbent Assay) testing and a general drug screen in conjunction with specific confirmatory tests as required.

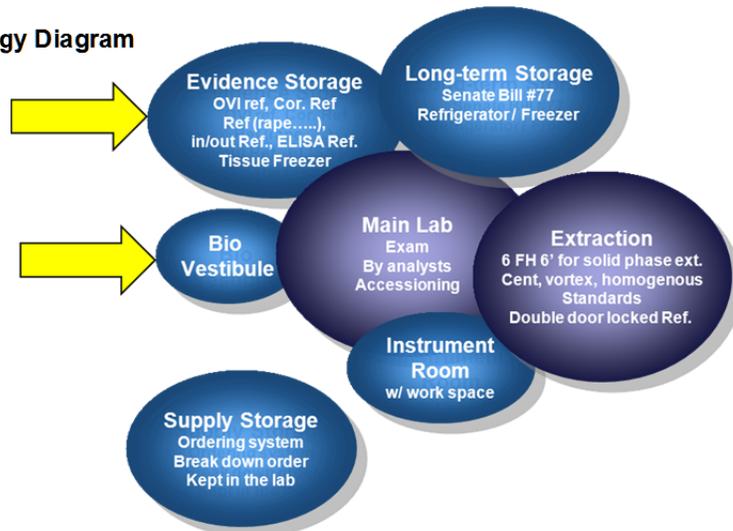
The existing space consists of an office for one chief, lab space existing of two bays with chemical fume hoods and analyst work space and a common space with instrumentation. Two staff members are currently sitting in the vestibule area due to lack of space. Instruments are split up between three rooms and include three GC/MS (Gas Chromatograph / Mass Spectrometer), two GC (Gas Chromatograph), one UV VIS (Ultraviolet-Visible Spectrophotometer), one HPLC (High Performance Liquid Chromatograph) and one ELISA system.

Future space will require two office cubicles to move the staff out of the vestibule area, a centrally located instrument room with laboratory space at the perimeter within close proximity to the office desks but in a separate space. All of this will greatly improve the material flow and safety for the staff.

Future instrumentation includes: LCMS-MS, one additional MS, an automated / robotic ELISA (or equivalent system), a new HPLC and cylinder tanks for each instrument station – one helium, one hydrogen, one compressed air, and nitrogen for drying at the fume hoods. While generators are considered a safer alternative for hydrogen, compressed air and nitrogen supply, the staff has expressed displeasure in their use.

New instrumentation and additional staff will improve turn-around time and expand the testing capabilities for this section.

Toxicology Diagram



Questioned Documents

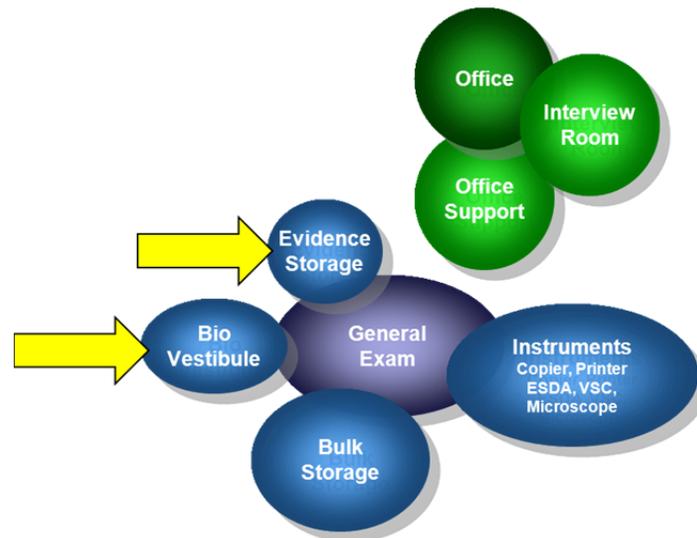
Existing staff consists of one part-time employee.

Existing caseload is 30 per year including suicide notes, murders, missing persons. This section also provides peer review with Miami Valley Regional Crime Lab cases and some Secret Service cases.

Currently the questioned document examiner is housed in a corner of the second floor library. Installed in this area is the ESDA (Electrostatic Detection Apparatus) for visualizing indented writing, a VSC (Video Spectral Comparator) for examining inks, and a stereo microscope. The work area also includes an examination table, a desk, phone, computer, printer and file storage cabinets.

A future space option may involve adding an interview room to help facilitate the collection of known samples. This option would also allow space for consultation and training.

Questioned Documents Diagram



Histology

The existing staff consists of one full-time histologist that is cross-trained in assisting in evidence transfer and control. Future needs may require separation of these two duties.

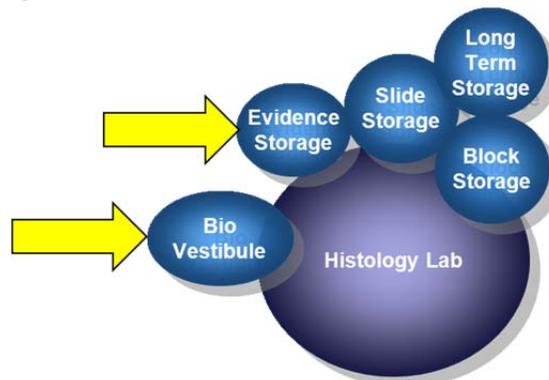
The caseload is dependent on the number of autopsies performed with many cases resulting in histological examinations. In general when histology is utilized, approximately five to twelve samples are generated per autopsy case and transferred in formalin daily from the autopsy suite. Microscope slides of these samples are then created.

The existing histology space consists of a small lab combined with office space which results in things having to be moved around every day to accommodate various processes. This is especially true when accommodating the process for special staining.

Future space requires a true histology lab, separate office space, climate-controlled paraffin block storage (sufficiently sized for a ten-year retention period), and space for expandable microscope slide storage (slides are held indefinitely).

Instrumentation includes an automatic cover slip device, an automatic special stainer, a microwave used for special stains, refrigerator and a ventilated grossing station.

Histology Diagram



DNA

The existing staff for the DNA section includes four full-time analysts. The Chief DNA Analyst who supervises the section also acts as an analyst, CODIS Administrator and DNA Technical Leader. The DNA staff is not cross-trained with any other section. There is an immediate need for two additional entry-level analysts.

The existing space meets the minimum requirements of the FBI DNA QAS. The Amplification room was enclosed in 2002 to meet this standard. The remaining functions of examination, extraction and preparation are separated by time or space. A nearby photographic darkroom has been converted to evidence storage and office space has been integrated into the laboratory itself.

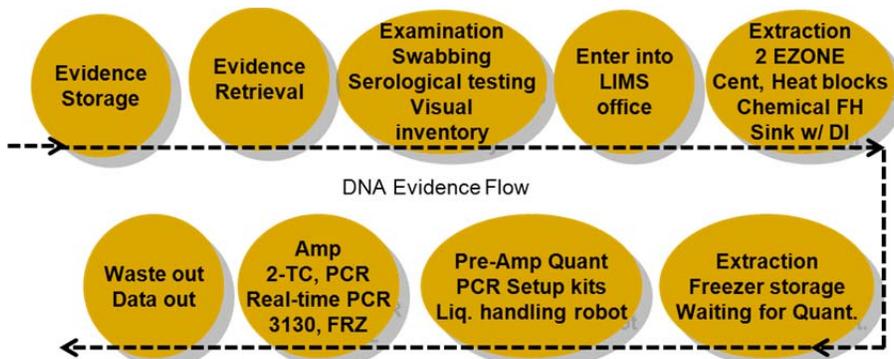
Future space will require that the office space be separate from the analytical laboratory area. Increased security will be necessary to prevent people from freely entering the space as required by the FBI DNA QAS to prevent contamination. A bio-vestibule for contamination control and storage of personal protective equipment (PPE) must be incorporated into the entryway design. Future laboratory space will include temporary evidence storage near the examination area and a large, secure examination room for bedding and large objects. This room must be suitable for use with an Alternate Light Source (ALS). Space is also required for additional staff examination areas, items of small equipment (pipettes, centrifuges and mixers), reagent preparation and more automated (robotic) instrumentation. Office space must also be identified for the CODIS (Combined DNA Index System) computer terminal to allow access to the national DNA database.

Instrumentation needs includes a future quantification instrument, a state-of-the-art DNA Analyzer, robotics utilized in the extraction process and updates to the CODIS terminal every three years.

DNA Diagram



DNA Flow Diagram



Firearms

Physical space limitations of the current Firearms laboratory are hampering the ability to provide the desired level of service to the community. Existing full-time staff includes three examiners and a trainee. There is an immediate staffing requirement for another firearms examiner.

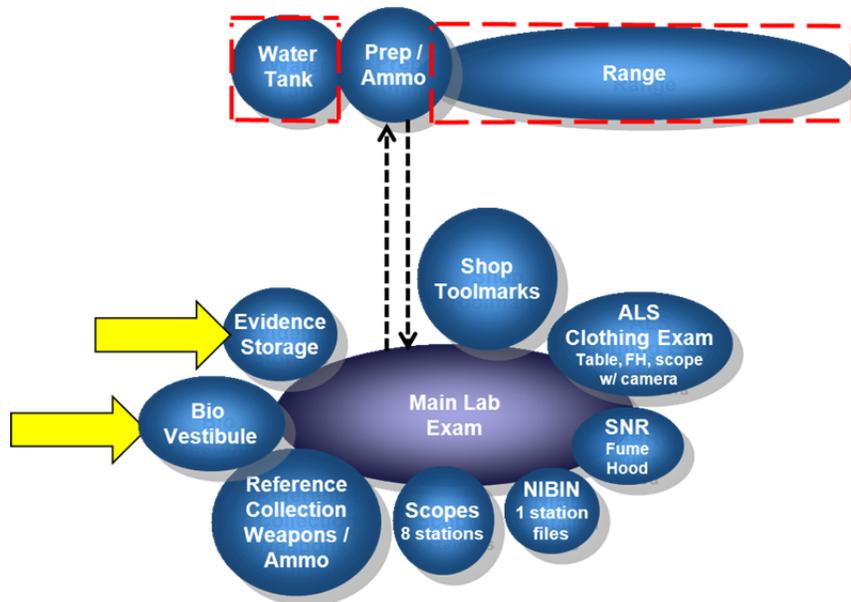
Current caseload is 550 to 600 cases per year with approximately 25% of those cases going to court.

The existing combined office / laboratory space is very crowded. It also includes a reference collection of 30-40 long guns and approximately 600 handguns as well as a firing range with a bullet trap. Live ammunition storage, cases in progress and an armorer's workbench are also located in the firing range. The bullet recovery water tank is located two floors below in the garage. Serial number restorations are done in the Drug Section fume hoods. Clothing examinations and distance determinations are done in the Trace Evidence Section.

Future space needs require offices and private microscopy areas for each examiner, a shared common area with boom mounted stereo microscopes, clothing examination areas and additional fume hoods for chemical investigative work such as serial number restorations. A hood accessible from two sides would increase productivity.

Current instrumentation consists of four comparison microscopes, three of which have cameras, and two stereo microscopes. There is also a digital computer imaging system for an in-house image database.

Firearms Diagram



Investigators

Currently the staff consists of four full-time investigators. These investigators share the majority of the scene responses. Additionally, night clerks are employed who are present in the facility after hours to answer phone calls, log in decedents, communicate with deputy coroners, and dispatch the appropriate scene responders. Presently multiple night clerks alternate on a once-every-nine-day rotation.

Future staff needs of six additional investigators will allow the investigators to become involved with more cases. Preferably additional investigators would allow for deployment into the field to investigate cases which they are not able to investigate today due to inadequate staffing.

Current investigator case activities include:

- Going out to the scene covering 10 – 15 calls per week when on call.
- Taking a phone call when a pathologist is accepting a case or when a case is NCC (Not a Coroner's Case).
- Current scene response is only 475 out of 3,457 reported cases due to staffing limitations.
- In the remaining cases the office was left to rely on the observations of others not under the authority of the coroner to determine jurisdiction. Additional staffing would ameliorate this issue.
- It is estimated that with double the investigators the agency would go to at least two to three times as many sites.
- Next of kin that come to the building for personal effects, Q&A, autopsy reports, death certificates number approximately one to two per day.
- Counseling and meeting with family.
- Interfacing with the local hospitals which require a close proximity to a level one trauma center.

Existing space in the facility includes a bullpen office space with desk, computer, and phone for each investigator, with a shared locker area for field gear storage, a kitchen, and records and property safe on the floor. Due to the current facility design, the general public has virtually direct access to these areas allowing for the potential of the public inadvertently overhearing confidential investigative conversations or to be able to see computer screens where graphic images may be visible.

Future space requirements include a safe for money and personal effects in a secure room including storage of pharmaceuticals, a large property holding room, a garage and sally port, a mud room, laundry facility for the staff with a separate washer and dryer for the morgue's use, a shower and locker room, a property processing / triage / decontamination room equipped with heat to kill bedbugs and drying cabinets for soiled clothing evidence, a field gear kit prep area and on-call rooms for the night shift.

Existing equipment and instrumentation includes one vehicle as the pool car, one vehicle for the courier, and one vehicle for investigators (two sport utility vehicles and one sedan).

Future equipment needed is a central copier/printer/scanner/fax and decentralized desktop printers.

Investigators Diagram



Autopsy Area Process

Current Process:

Currently, decedents are received and released in the rear of the building. The transport vehicle parks in the rear parking lot and wheels the gurney through the parking lot to or from the rear of the building. This process occurs in full view of the public in vehicles on the adjacent streets, walking on the sidewalk, or walking through the parking lot. The public nature of this requirement of transport of decedent to facility is not only disturbing to those members of the public that inadvertently see the process but is also disrespectful to the decedent and family.

Once inside the building a small office / room is utilized for both receiving and releasing decedents as well as intake processes such as weighing and the inventory of personal effects. This creates a critical situation in which evidence as well as personal effects can be lost and/or transferred unless precautionary measures are taken. These measures lead to an even greater inefficiency of the process.

Once examinations are begun they are conducted in overcrowded areas in which the resulting problems have been previously addressed in this document.

Proposed Processes:

Decedent Flow –

- Decedent is couriered to the rear of the facility through the secure service yard gate. Gaining access through the gate places the courier in the service yard allowing them to pull into and through the Sally Port.
- Decedent is unloaded from the courier's vehicle onto a body tray (this tray will remain with the decedent until departure), placed onto a transfer gurney and accepted into the receipt / release area. Doors will be on automatic sliding mechanisms and will be sufficiently wide for gurney maneuverability. Passing through the doors will also activate radiation detection gas mounted at the door notifying the courier if radiation is present. Paperwork will be started in this room if the decedent is delivered by someone other than coroner staff. A recessed floor scale will be located in this room for weighing and decedent identification will also occur. An overhead camera is available for recording images of the intake.
- Decedent moves from the receipt / release area into decedent processing. In decedent processing any property or evidentiary items are removed from the body. Clothing that needs to be dried for evidence processing is removed and moved into the drying area. Property or evidence is moved into secure locker storage in the temporary property and evidence area. Fingerprints will be taken at this time.
- Decedent moves from processing to x-ray. The body is documented via digital x-ray. Images are stored electronically and are immediately available for viewing.

- Decedent moves from x-ray into the intake cooler. The intake cooler has a capacity for the storage of 50 decedents on cantilevered rack systems. The cooler will have sufficient clearance for the maneuverability of a cadaver lift assisting the intake personnel with the placement and removal of the decedent and body tray from the storage rack.
- Decedent will travel from the intake cooler to the main autopsy suite. After removal of the body and body tray from the storage rack onto the autopsy gurney, the gurney will be moved to an autopsy station for processing. Areas that service the main autopsy suite will be odontology and a laboratory (which may be separate rooms or an area within the main autopsy suite). These areas will also assist in the collection of samples for analysis from the decedent.
- After autopsy, the decedent travels on the autopsy gurney to the out-going cooler area. This cooler will also have the capacity for 50 decedents on racking systems with sufficient clearances as necessary. The decedent and the body tray are removed from the autopsy gurney and placed onto the storage rack.
- The decedent leaves the facility through the receipt / release area. Servicing receipt / release is also an area for mortuary waiting where necessary paperwork can be assembled and signed before release.

Isolation Decedent Flow –

- Another flow route for a decedent is through isolation (iso) autopsy. The iso decedent will enter the facility directly into the iso cooler area via the service yard and its entry protocols to mitigate any undue odor or cross contamination issues in the main autopsy areas. The other option for entry into the iso autopsy is via the main autopsy suite. If concern arises during an autopsy necessitating isolation the body can be transferred into the iso autopsy.
- The isolation cooler is sized for 10 decedents utilizing cantilevered racking systems. The iso cooler is also located directly adjacent to the main decedent freezer room in order to make use of the freezer in cases of long-term or quarantine iso storage needs.
- The decedent would proceed from the iso cooler into the iso processing area to be weighed, evidence and property removed, the decedent fingerprinted and tagged. This area will be fit out with all the necessary equipment to facilitate processing.
- The cadaver then moves into the isolation autopsy suite for autopsy.
- Once the autopsy has been performed, the decedent would be moved back into the iso cooler or the freezer. Any tools or instruments utilized during the procedure would be sent to an autoclave / wash area for decontamination. The suite itself would also be decontaminated at this time.

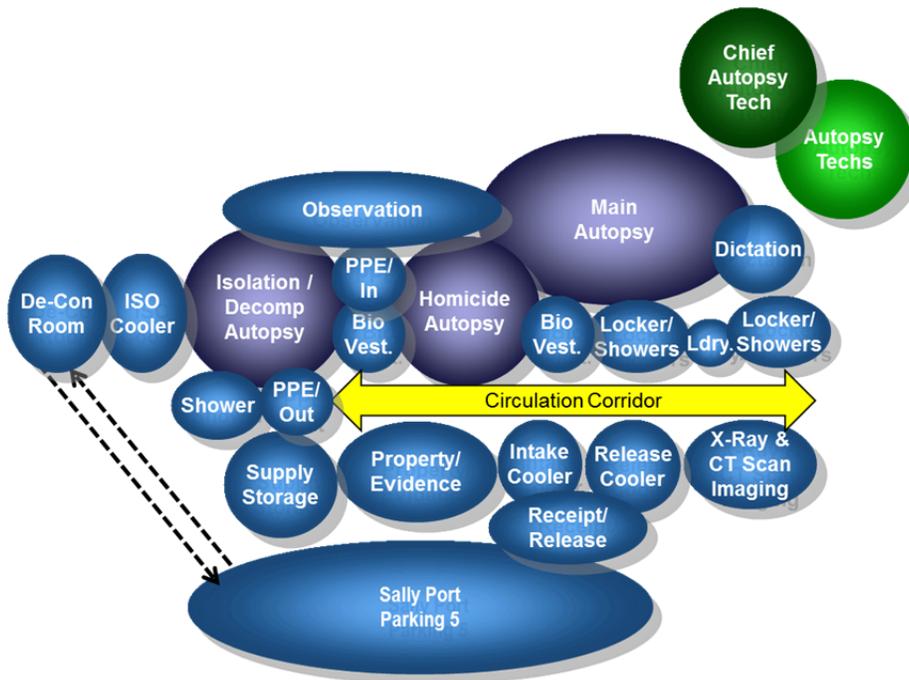
Pathologist Flow –

- Pathologist offices are located in the administrative office area of the facility.
- The pathologist would travel from the office area via a corridor to the locker/shower area. Street clothes might be removed and surgical scrubs worn. Anything removed will be stored in personal lockers residing here.
- From the locker / showers the pathologist would proceed to the personal protective equipment (PPE) area and don protective clothing. Protective clothing and other immediate equipment needs will be stored in this area. There will also be a hand wash sink. New items to be worn and dirty items removed for disposal or to be laundered will reside here.
- The pathologist would proceed from the PPE area into the main autopsy suite or the iso autopsy suite.
- The reverse course would occur when exiting either autopsy suite. The pathologist would first exit through the PPE area, dispose of PPE's and wash hands.
- From PPE the pathologist would exit through the locker / shower area and, if necessary, shower and re-dress.
- The pathologist will then reenter the office area via the corridor.

Observation Flow –

- Groups or individuals that will observe autopsies (whether a police unit observing a homicide case or a school group receiving an educational tour) would enter the coroner's facility through the front door past security.
- The group or individual would be escorted into the observation waiting area and then into the observation room. The observation waiting area is fitted out with chairs. The observation room could be situated to provide viewing of both the main autopsy suite and the iso autopsy suite to maximize usage. The observation room will be fitted out with A/V technology to facilitate conversation between the observation area and the autopsy suites.

Autopsy Diagram



Program Detail

Right-Sized Facility – Crime Lab

Discipline	Current Qty of Staff	Right Sized Qty of Staff	Examination	Preparation	Reference	Evidence Storage	Analysis	Instrument / Specialty	Instrument / Specialty	Instrument / Specialty	Office	Office Support	NSF / occupant	NSF fixed	Total NSF	GSF Factor	Total GSF	Construction Cost	Soft Cost	Total Project Cost
Firearms Forensic Analyst	4 4	5 5	121 Indv	91 ALS Exam Shop / Toolmarks Vestibule	121 Lib Ammo Weapon	48 Indv Bulk	91 Comparison Scopes SNR	121 NIBIN / BrassTrax	605 Water Tank Prep / Live Ammo	1,210 Range	80 Indv	15 Shared	2,835	1,936	4,771	62%	7,695	\$ 3,155,098.79	\$ 946,529.64	\$ 4,101,628.43
Drugs Chief Drug Analyst Forensic Analyst	3 1 2	3 1 2	48 Indv	35 Vestibule Prep	10 Lib	48 Indv Bulk	81 Comparison GC-MS FTIR HPLC MS/MS	61 Drug Standards	0	0	80 Indv	15 Shared	952	61	1,012	62%	1,633	\$ 669,384.04	\$ 200,815.21	\$ 870,199.26
Toxicology Chief of Toxicology Toxicology Assistant Toxicology Associate Toxicologist Forensic Lab Technician	5 1 1 2 1 0	7 1 1 3 1 1	61 Indv	30 Vestibule Prep	20 Lib Standards	40 Indv Bulk	30 Analysis Blood Urine	242 Repair & Calibration Breath Analyzer St.	121 ELISA	484 Frozen Storage	80 Indv	15 Shared	1,936	847	2,783	62%	4,489	\$ 1,840,618.95	\$ 552,185.69	\$ 2,392,804.64
Trace Forensic Analyst	3.5 3.5	4 4	121 Indv (3) Clean Rm	30 Vestibule Prep	20 Lib Standards	40 Indv Bulk	121 Arson Soil Glass Hair Fiber	363 SEM suite	363 ICP-MS suite	968 Latent Print Lab	80 Indv	15 Shared	1,711	1,694	3,405	62%	5,492	\$ 2,251,583.33	\$ 675,475.00	\$ 2,927,058.33
Forensic Biology / DNA Chief DNA Analyst Forensic Analyst	4 1 3	6 1 5	40 Indv Extraction	121 Vict ALS Sus ALS (2) Vestibule Swab Drying Reagent Prep	15 Lib	48 Indv Bulk	90 Pre Amp-PCR Post Amp-PCR	181.5 De-contamination	30.25 CODIS Server	0	80 Indv	15 Shared	2,460	212	2,672	62%	4,309	\$ 1,766,736.29	\$ 530,020.89	\$ 2,296,757.18
Questioned Documents	1	1	121 Indv	121 Waiting Interview	15 Lib	121 Indv Bulk	121 ESDA VSC	0	0	0	80 Indv	15 Shared	594	0	594	62%	958	\$ 392,971.77	\$ 117,891.53	\$ 510,863.31
Administration Quality Manager Lab Director	1 0 1	2 1 1	0	0	0	0	0	30 Server	726 Conf Library	242 File Room	100 Indv	15 Shared	230	998	1,229	62%	1,981	\$ 812,395.16	\$ 243,718.55	\$ 1,056,113.71
Evidence Control Evidence Technician	2 2	2 2	121 Indv	121 Vestibule Re-Wrap	0	121 Drying Rm	0	242 Evidence St. - IN	242 Evidence St. - OUT	242 Case Files - ACTIVE	80 Indv	15 Shared	916	726	1,642	60%	2,737	\$ 1,122,204.17	\$ 336,661.25	\$ 1,458,865.42
Building Support	0	0	0	0	0	0	0	1,815 Front Door Waiting	908 Back Door Storage	0	80	15	0	2,723	2,723	65%	4,188	\$ 1,717,269.23	\$ 515,180.77	\$ 2,232,450.00
Totals	23.5	30											11,635	9,196	20,831		33,484	\$ 13,728,261.74	\$ 4,118,478.52	\$ 17,846,740.26



Program Detail

Right-Sized Facility - Coroner

Discipline	Current Qty of Staff	Right Sized Qty of Staff	Examination	Preparation	Reference	Evidence Storage	Analysis	Instrument / Specialty	Instrument / Specialty	Instrument / Specialty	Office	Office Support	NSF / occupant	NSF fixed	Total NSF	GSF Factor	Total GSF	Construction Cost	Soft Cost	Total Project Cost
Autopsy Deputy Coroners	3 3	3.5 3.5	61 Indv	61 Vestibule Bench	15 Lib	15 Indv Bulk	50 Observation Dictation	1513 Autopsy Tables	726 Locker / Shower	363 Homicide Autopsy	100 Indv	20 Shared	1,124	2,602	3,726	60%	6,209	\$ 3,104,652.78	\$ 931,395.83	\$ 4,036,048.61
Autopsy Support Forensic Assistant	4 4	4 4	61 Indv ALS	182 Photo Vestibule Receipt / Release	0	61 X-Ray Images Case Files Evidence Collection	91 Fixed X-Ray Mobile X-Ray CT - Scan	1,356 Main Cooler (cap. 155)	578 Special Cooler (cap. 66)	968 Long-Term Freezer	80 Indv	20 Shared	1,974	2,902	4,875	60%	8,126	\$ 4,062,847.22	\$ 1,218,854.17	\$ 5,281,701.39
BSL3 / Bariatric Autopsy Forensic Pathology Fellow	0 0	0 0	121 Indv	484 Vestibule Gowning De-Gown/Shower De-Con	0	30 Indv Bulk	121 Comparison Instrument Tissue Dumping	363 BSL3 Autopsy	121 Overhead Crane	242 BSL3 Cooler	100 Indv	20 Shared	-	726	726	60%	1,210	\$ 605,000.00	\$ 181,500.00	\$ 786,500.00
Histology Histologist	1 1	1 1	121 Indv	121 Vestibule Tissue Prep	15 Lib	61 Indv Bulk	121 Stain Special Stain	484 Slide St. (cap. 100,000)	484 Block St. (cap. 75,000)	484 Tissue St. (cap. 1,000)	80 Indv	15 Shared	534	1,452	1,986	65%	3,055	\$ 1,527,500.00	\$ 458,250.00	\$ 1,985,750.00
Investigators Investigators Night Clerks	12 4 8	16 8 8	61 Indv	20 Field Gear Triage De-Con Rm	10 Lib	30 Indv Case Files Personal Property Pharmaceuticals	40 Work Room RMS Printers	4,114 Vehicle Sally port Mud Room Locker / Shower	726 On Call Area Gym Laundry	242 Family Room	80 Indv	20 Shared	4,176	5,082	9,258	60%	15,430	\$ 7,715,000.00	\$ 2,314,500.00	\$ 10,029,500.00
Administration Coroner Chief Deputy Coroner Director Communications / IT Administrator Administrative Assistant Technical Typist Facilities Manager Records Manager	8 1 1 1 1 1 1 1 1	8 1 1 1 1 1 1 1 1	0	0	0	0	0	726 Server (8) (3) Copy / Mail Resident's Office	968 Record Rm (cap. 30,000) IT Storage	1,452 Conf. / Lib. Dinning Hall	100 Indv	20 Shared	961	3,146	4,107	65%	6,319	\$ 3,159,487.18	\$ 947,846.15	\$ 4,107,333.33
Building Support Custodian	0 0	1 1	0	0	0	0	0	2,027 Front Door Lecture Hall Lobby	1,013 Back Door Loading Dock Funeral Dir. Wait	676 (2) Break Rm (2) Storage	80	15	95	3,716	3,811	65%	5,863	\$ 2,931,410.26	\$ 879,423.08	\$ 3,810,833.33
Totals	28	33.5											8,864	19,625	28,489		46,212	\$ 23,105,897.44	\$ 6,931,769.23	\$ 30,037,666.67

Program Detail

2030 Facility – Crime Lab

Discipline	Current Qty of Staff	2030 Qty of Staff	Examination	Preparation	Reference	Evidence Storage	Analysis	Instrument / Specialty	Instrument / Specialty	Instrument / Specialty	Office	Office Support	NSF / occupant	NSF fixed	Total NSF	GSF Factor	Total GSF	Construction Cost	Soft Cost	Total Project Cost
Firearms Forensic Analyst	4 4	7 7	121 Indv	91 ALS Exam Shop / Toolmarks Vestibule	121 Lib Ammo Weapon	48 Indv Bulk	91 Comparison Scopes SNR	121 NIBIN / BrassTrax	605 Water Tank Prep / Live Ammo	1,210 Range	80 Indv	15 Shared	3,969	1,936	5,905	62%	9,524	\$ 3,905,035.08	\$ 1,171,510.52	\$ 5,076,545.60
Drugs Chief Drug Analyst Forensic Analyst	3 1 2	5 1 4	48 Indv	35 Vestibule Prep	10 Lib	48 Indv Bulk	81 Comparison GC-MS FTIR HPLC MS/MS	61 Drug Standards	0	0	80 Indv	15 Shared	1,586	61	1,647	62%	2,656	\$ 1,088,968.03	\$ 326,690.41	\$ 1,415,658.44
Toxicology Chief of Toxicology Toxicology Assistant Toxicology Associate Toxicologist Forensic Lab Technician	5 1 1 2 1 0	11 1 2 4 2 2	61 Indv	30 Vestibule Prep	20 Lib Standards	40 Indv Bulk	30 Analysis Blood Urine	242 Repair & Calibration Breath Analyzer St.	121 ELISA	484 Frozen Storage	80 Indv	15 Shared	3,043	847	3,890	62%	6,274	\$ 2,572,336.69	\$ 771,701.01	\$ 3,344,037.70
Trace Forensic Analyst	3.5 3.5	5 5	121 Indv (3) Clean Rm	30 Vestibule Prep	20 Lib Standards	40 Indv Bulk	121 Arson Soil Glass Hair Fiber	363 SEM suite	363 ICP-MS suite	968 Latent Print Lab	80 Indv	15 Shared	2,139	1,694	3,833	62%	6,182	\$ 2,534,422.72	\$ 760,326.81	\$ 3,294,749.53
Forensic Biology / DNA Chief DNA Analyst Forensic Analyst	4 1 3	10 1 9	40 Indv Extraction	121 Vict ALS Sus ALS (2) Vestibule Swab Drying Reagent Prep	15 Lib	48 Indv Bulk	90 Pre Amp-PCR Post Amp-PCR	181.5 De-contamination	30.25 CODIS Server	0	80 Indv	15 Shared	4,100	212	4,312	62%	6,954	\$ 2,851,208.33	\$ 855,362.50	\$ 3,706,570.83
Questioned Documents	1	0	121 Indv	121 Waiting Interview	15 Lib	121 Indv Bulk	121 ESDA VSC	0	0	0	80 Indv	15 Shared	0	0	0	62%	-	\$ -	\$ -	\$ -
Administration Quality Manager Lab Director	1 0 1	2 1 1	0	0	0	0	0	30 Server	726 Conf Library	242 File Room	100 Indv	15 Shared	230	998	1,229	62%	1,981	\$ 812,395.16	\$ 243,718.55	\$ 1,056,113.71
Evidence Control Evidence Technician	2 2	2 2	121 Indv	121 Vestibule Re-Wrap	0	121 Drying Rm	0	242 Evidence St. - IN	242 Evidence St. - OUT	242 Case Files - ACTIVE	80 Indv	15 Shared	916	726	1,642	60%	2,737	\$ 1,122,204.17	\$ 336,661.25	\$ 1,458,865.42
Building Support	0	0	0	0	0	0	0	2,541 Front Door Waiting	1,271 Back Door Storage	0	80	15	0	3,812	3,812	65%	5,864	\$ 2,404,176.92	\$ 721,253.08	\$ 3,125,430.00
Totals	23.5	42											15,983	10,285	26,268		42,173	\$ 17,290,747.10	\$ 5,187,224.13	\$ 22,477,971.23

Program Detail

2030 Facility - Coroner

Discipline	Current Qty of Staff	2030 Qty of Staff	Examination	Preparation	Reference	Evidence Storage	Analysis	Instrument / Specialty	Instrument / Specialty	Instrument / Specialty	Office	Office Support	NSF / occupant	NSF fixed	Total NSF	GSF Factor	Total GSF	Construction Cost	Soft Cost	Total Project Cost
Autopsy Deputy Coroners	3 3	5 5	61 Indv	61 Vestibule Bench	15 Lib	15 Indv Bulk	50 Observation Dictation	1513 Autopsy Tables	726 Locker / Shower	363 Homicide Autopsy	100 Indv	20 Shared	1,606	2,602	4,207	60%	7,012	\$ 3,506,111.11	\$ 1,051,833.33	\$ 4,557,944.44
Autopsy Support Forensic Assistant	4 4	5 5	61 Indv ALS	182 Photo Vestibule Receipt / Release	0	61 X-Ray Images Case Files Evidence Collection	91 Fixed X-Ray Mobile X-Ray CT - Scan	1,356 Main Cooler (cap. 155)	578 Special Cooler (cap. 66)	968 Long-Term Freezer	80 Indv	20 Shared	2,467	2,902	5,369	60%	8,948	\$ 4,474,027.78	\$ 1,342,208.33	\$ 5,816,236.11
BSL3 / Bariatric Autopsy Forensic Pathology Fellow	0 0	1 1	121 Indv	484 Vestibule Gowning De-Gown/Shower De-Con	0	30 Indv Bulk	121 Comparison Instrument Tissue Dumping	363 BSL3 Autopsy	121 Overhead Crane	242 BSL3 Cooler	100 Indv	20 Shared	876	726	1,602	60%	2,670	\$ 1,335,138.89	\$ 400,541.67	\$ 1,735,680.56
Histology Histologist	1 1	1 1	121 Indv	121 Vestibule Tissue Prep	15 Lib	61 Indv Bulk	121 Stain Special Stain	484 Slide St. (cap. 100,000)	484 Block St. (cap. 75,000)	484 Tissue St. (cap. 1,000)	80 Indv	15 Shared	534	1,452	1,986	65%	3,055	\$ 1,527,500.00	\$ 458,250.00	\$ 1,985,750.00
Investigators Investigators Night Clerks	12 4 8	18 10 8	61 Indv	20 Field Gear Triage De-Con Rm	10 Lib	30 Indv Case Files Personal Property Pharmaceuticals	40 Work Room RMS Printers	4,114 Vehicle Sally port Mud Room Locker / Shower	726 On Call Area Gym Laundry	242 Family Room	80 Indv	20 Shared	4,698	5,082	9,780	60%	16,300	\$ 8,150,000.00	\$ 2,445,000.00	\$10,595,000.00
Administration Coroner Chief Deputy Coroner Director Communications / IT Administrator Administrative Assistant Technical Typist Facilities Manager Records Manager	8 1 1 1 1 1 1 1	9 1 1 2 1 1 1 1	0	0	0	0	0	726 Server (8) (3) Copy / Mail Resident's Office	968 Record Rm (cap. 30,000) IT Storage	1,452 Conf. / Lib. Dinning Hall	100 Indv	20 Shared	1,082	3,146	4,228	65%	6,504	\$ 3,251,923.08	\$ 975,576.92	\$ 4,227,500.00
Building Support Custodian	0 0	1 1	0	0	0	0	0	2,420 Front Door Lecture Hall Lobby	1,210 Back Door Loading Dock Funeral Dir. Wait	807 (2) Break Rm (2) Storage	80	15	95	4,437	4,532	65%	6,972	\$ 3,485,993.59	\$ 1,045,798.08	\$ 4,531,791.67
Totals	28	40											11,357	20,346	31,703		51,461	\$ 25,730,694.44	\$ 7,719,208.33	\$33,449,902.78

Square Footage Calculation Information

Grossing Factors

Estimates of gross square feet are calculated by dividing the net square feet of a room (measured paint to paint) by a ratio that approximates the room's need for building support. For example, although an 11'-0" x 11'-0" office of 121 NSF requires walls, air ducts, vertical access, a department corridor system and a major corridor system, it does not have the significant mechanical demand of comparable autopsy areas. For Hamilton County, office gross square foot need is calculated at a 65:35 ratio of net to gross using the following equation formula:

$$121 \text{ NSF} \div 65\% = 186 \text{ GSF}$$

Likewise, the Autopsy areas of the facility are calculated with a ratio of 60:40 net to gross based on the need for additional MEP infrastructure and support. Autopsy areas at the same 11'-0" x 11'-0" 121 NSF module would then yield:

$$121 \text{ NSF} \div 60\% = 202 \text{ GSF}$$

Last, the forensic laboratory areas are calculated with a ratio of 62:38 net to gross based on the need for additional MEP infrastructure that, while intensive, is slightly less intensive than that of the autopsy areas. The yield on gross square footage for laboratory spaces would yield:

$$121 \text{ NSF} \div 62\% = 195 \text{ GSF}$$

The grossing factors used for Hamilton are representative of this consultant's extensive experience in the design of laboratory and medical examiner buildings. Although the net to gross ratios may seem inefficient compared to office buildings or other public building types, forensic facilities are unique because of the need for separate mechanical systems for autopsy / laboratory and office spaces and in conjunction with extensive floor penetrations for utilities and building systems.

Development Options

Short-term operating and workflow improvements

The following are immediate solutions to some current operating conditions within the Hamilton County facility:

Lobby

- Provide additional seating with a computer for the investigators in the lobby. This may also be perceived as a security desk at the front door which will likely reduce wandering by visitors.

Laboratory Environment in General

- Improve lab safety by reducing the amount of through traffic in the space.
- Move office space and functions out of the laboratory environment. (*Note: This is not an option – there is not additional space for the relocation of this function*).
- Provide more safety equipment such as fire extinguishers and safety shower / eyewash units.

Each fume hood should be retrofitted with additional safety devices such as air foils to improve directional airflow into the fume hood and add airflow monitoring devices.

Assess the current ventilation device condition to determine if the current device is the most appropriate device for the current function / activity where ventilation is required.

Assess the adjacency of current ceiling-mounted room supply-air grille directional airflow to other exhaust devices (i.e. fume hoods) and make adjustments to improve airflow patterns in the existing labs.

Create an evidence receipt counter / lobby on the lower level near autopsy and before the main circulation and the elevator to improve security. (*Note: This is not an option – there is not additional space for the relocation of this function*).

The firearms range would benefit by having a ballistic material installed that could be used today and potentially reused in the new facility at a later date if possible.

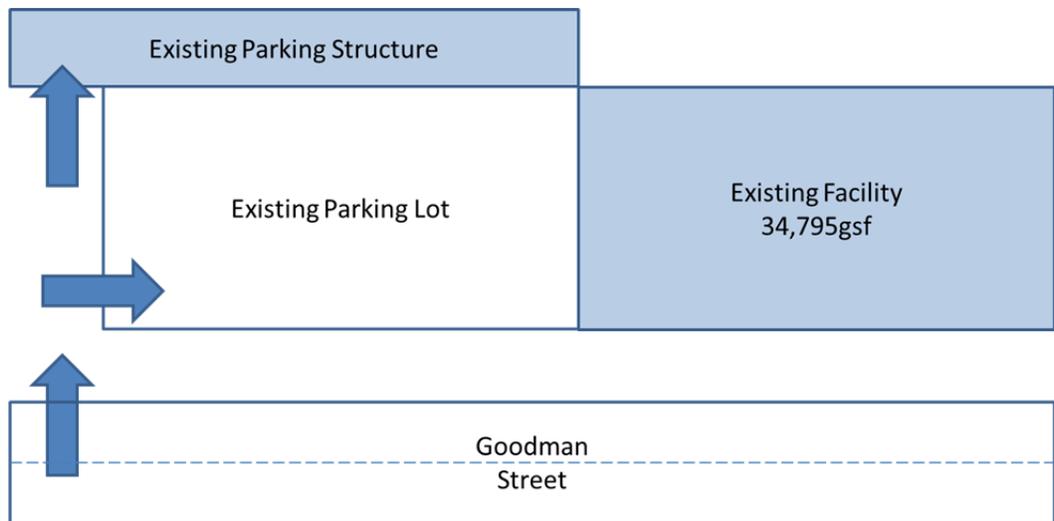
The firearms bullet recovery tank would also benefit by having a ballistic material installed so that it could be used today and reused in the new facility at a later date if possible.

Option One - Renovation of Existing Space

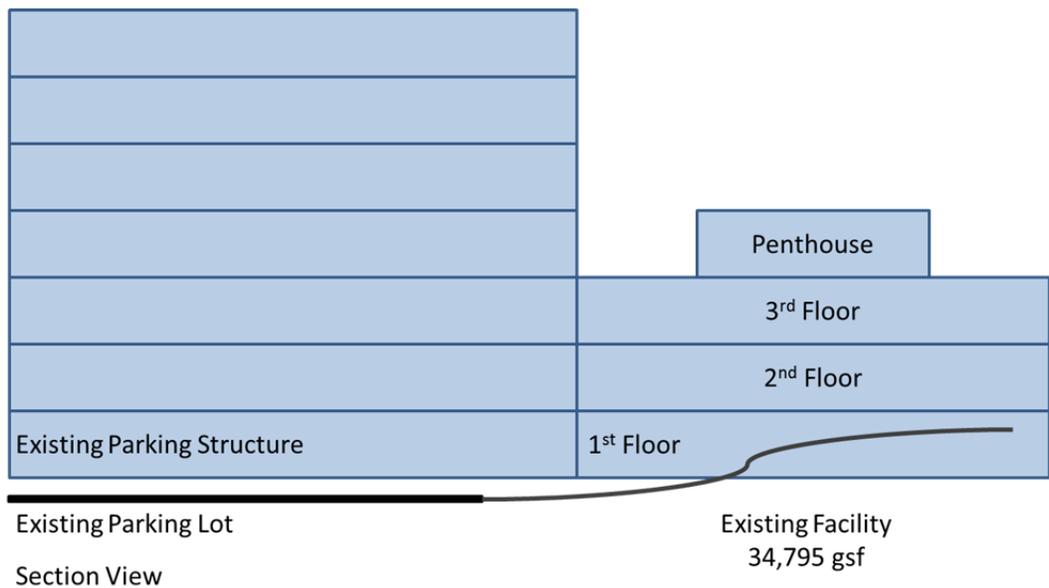
Option one provides renovation of the existing space improving the work environment, correcting some of the existing process work flow issues and mitigating health and safety concerns. However, renovation of the existing facility does not generate enough functional space to meet the projected requirements. Thus, this option is **not feasible**.

This option also poses a significant logistical challenge in renovating the existing laboratories and autopsy space while maintaining services, especially considering the issues associated with assuring integrity of criminal evidence.

The following plan and section diagrams show the existing facility to be renovated.



Plan View

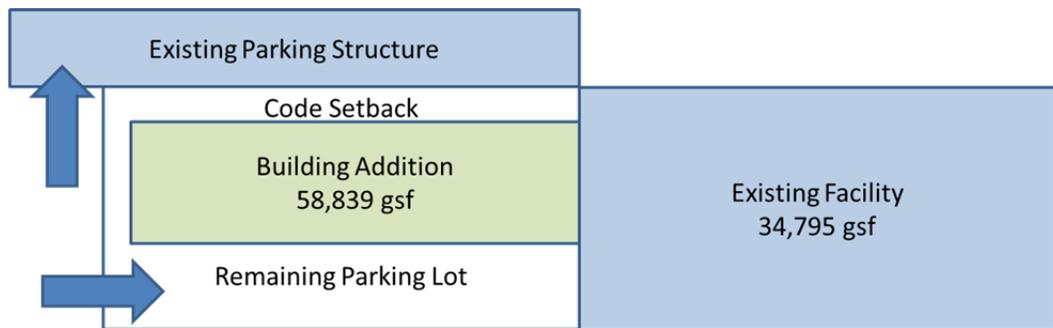


Option Two - Renovation of Existing / New Expansion

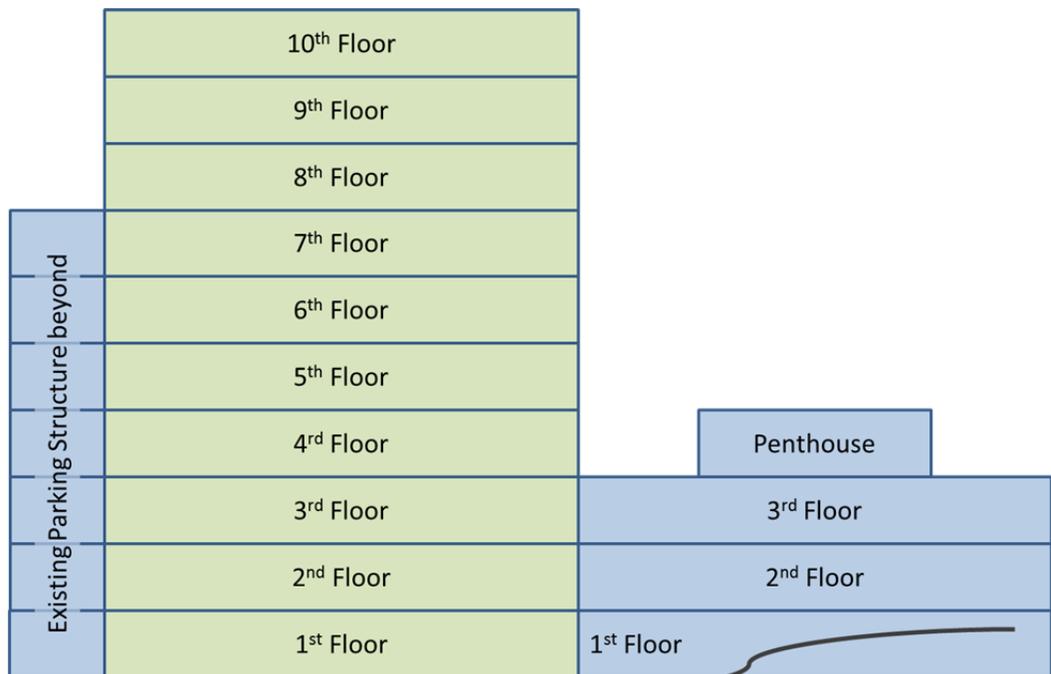
Option two involves constructing a new addition that would house laboratory and autopsy space. It is important to note that the land currently occupied by the existing facility is leased from the University of Cincinnati. Any expansion would have to be negotiated and reviewed by the University. Additionally, the requirement of a ten story addition to satisfy 2030 programmatic needs may exceed height limitations set forth by the local municipality.

After this addition is constructed and occupied the existing building could then be renovated in multiple phases. The completed complex would provide sufficient space to meet the projections. However, due to site restrictions, a narrow, inefficient floor plate results. The project would need to be executed in multiple phases (new construction, followed by three phases of renovation) and construction activities would extend over a significant time with great impact on facility operations. Surface parking would be displaced by the new addition and on-going construction activities. This option is **not recommended**.

The following plan and section diagrams show the existing facility along with the proposed addition on the site.



Plan View



Section View
 Addition 58,839 gsf
 Existing Facility 34,795 gsf

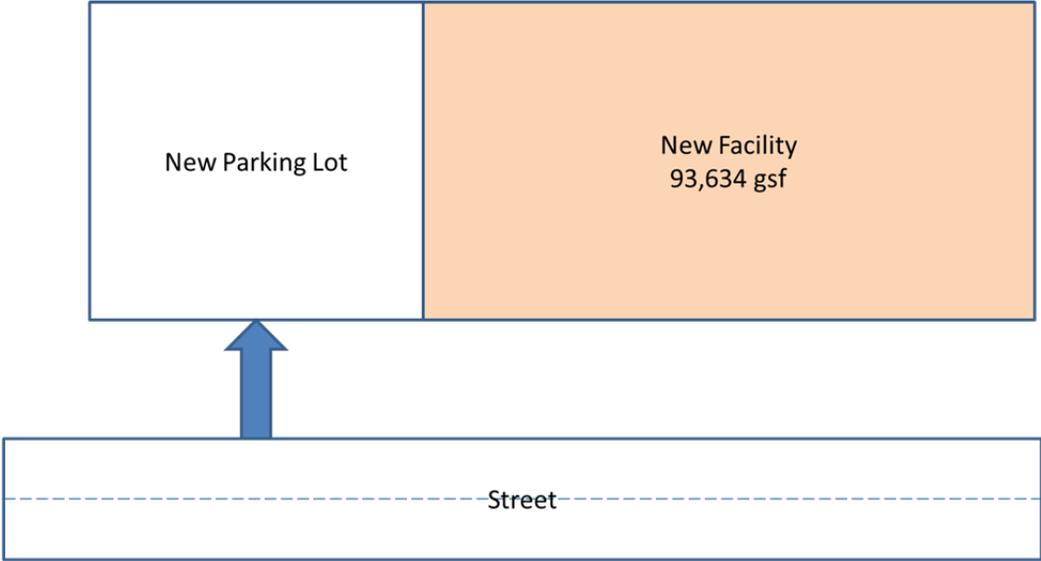
The following cost breakdown indicates a total of \$51,711,750 estimated for the renovation of the existing facility plus the construction of a new addition:

	New	Renovation	Total
Size	58,839	34,795	
Construction Cost	\$ 27,034,396	\$ 10,601,791	\$ 37,636,186
Foundations & Structure	\$ 5,877,731	\$ 521,378	\$ 6,399,108
Exterior Enclosure	\$ 2,655,572	\$ 314,080	\$ 2,969,652
Roofing	\$ 315,907	\$ 37,363	\$ 353,270
Interior Construction	\$ 5,143,353	\$ 2,737,413	\$ 7,880,766
Conveying	\$ 328,543	\$ 97,144	\$ 425,687
Plumbing	\$ 4,212,090	\$ 2,490,859	\$ 6,702,949
HVAC	\$ 2,406,908	\$ 1,423,348	\$ 3,830,257
Fire Protection	\$ 187,739	\$ 111,021	\$ 298,760
Electrical	\$ 2,406,908	\$ 1,423,348	\$ 3,830,257
Lab Casework & Equipment	\$ 1,408,643	\$ 833,014	\$ 2,241,658
Site Preparation & Utilities	\$ 1,463,400	\$ 86,540	\$ 1,549,940
Subtotal	\$ 26,406,794	\$ 10,075,508	\$ 36,482,302
General Conditions	\$ 131,177	\$ 232,717	\$ 363,894
Insurances, Tax, Bonds, Permits	\$ 496,425	\$ 293,566	\$ 789,990
Non-Construction Cost	\$ 8,110,318	\$ 5,965,246	\$ 14,075,564
Planning & Design	\$ 2,433,096	\$ 1,798,543	\$ 4,231,638
Permits	\$ 13,191	\$ 7,801	\$ 20,992
County Project Management @ 5%	\$ 1,351,720	\$ 999,190	\$ 2,350,910
Survey & Geotechnical	\$ 62,839	\$ 3,716	\$ 66,555
Construction Testing	\$ 117,678	\$ 17,398	\$ 135,076
Security	\$ 235,356	\$ 139,180	\$ 374,536
ITS & Cabling	\$ 531,238	\$ 314,153	\$ 845,391
FF&E	\$ 411,873	\$ 243,565	\$ 655,438
Art Allowance	\$ -	\$ -	\$ -
Commissioning	\$ 202,758	\$ 359,709	\$ 562,467
Move & Recalibration	\$ 47,130	\$ 83,611	\$ 130,741
Design & Const Contingency	\$ 2,703,440	\$ 1,998,381	\$ 4,701,820
Project Cost	\$ 35,144,714	\$ 16,567,036	\$ 51,711,750

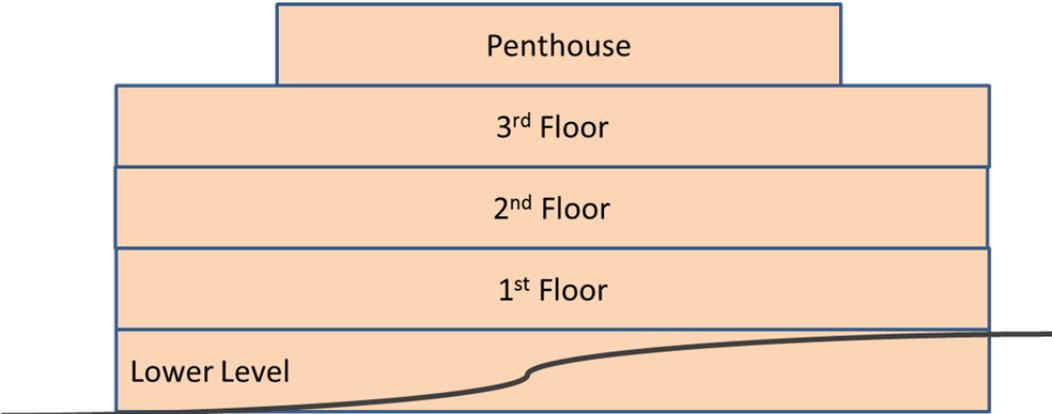
Option Three - New Development

Constructing a new facility would have the least impact to on-going operations of the coroner, allowing a single, one-time move from the existing facility to the new facility.

A new facility would also allow the facility design to fully reflect the operations and process flow of the coroner’s activities without constraints currently associated with the existing facility. This is the **recommended** option.



Plan View



Section View

New Facility
93,634 gsf

The total project cost to construct a new facility is estimated at \$55,928,000 including non-construction related project costs, but excluding site acquisition.

Construction Cost	\$ 43,021,442
Foundations & Structure	\$ 9,353,582
Exterior Enclosure	\$ 4,225,970
Roofing	\$ 502,721
Interior Construction	\$ 8,184,923
Conveying	\$ 522,830
Plumbing	\$ 6,702,949
HVAC	\$ 3,830,257
Fire Protection	\$ 298,760
Electrical	\$ 3,830,257
Lab Casework & Equipment	\$ 2,241,658
Site Preparation & Utilities	\$ 2,328,796
Subtotal	\$ 42,022,702
General Conditions	\$ 208,749
Insurances, Tax, Bonds, Permits	\$ 789,990
Non-Construction Cost	\$ 12,906,432
Planning & Design	\$ 3,871,930
Permits	\$ 20,992
County Project Management @ 5%	\$ 2,151,072
Survey & Geotechnical	\$ 100,000
Construction Testing	\$ 187,268
Security	\$ 374,536
ITS & Cabling	\$ 845,391
FF&E	\$ 655,438
Art Allowance	\$ -
Commissioning	\$ 322,661
Move & Recalibration	\$ 75,000
Design & Const Contingency	\$ 4,302,144
Project Cost	\$ 55,927,874

Development Options Summary

Development options range from short-term operating and workflow improvements to a new facility.

- Renovation of the existing facility (Option One) fails to provide adequate space to accommodate program projections and therefore is not considered feasible for development.
- Renovation of the existing facility plus expansion (Option Two) provides adequate space to accommodate program projections, however due to the complexities associated with the construction activities, the extended impact on coroner operations and the impact of the facility lease on the feasibility of an addition of this magnitude; it is not the preferred option. Parking is also displaced, which would need to be accommodated in some fashion.
- New development (Option Three) is the preferred approach allowing for the facility design to be optimized and minimizes impact on on-going coroner operations.

Conclusion

The current service level that the Hamilton County Coroner's Office is able to provide is restricted due to space and resource limitations. Based on modern forensic science space metrics the existing facility is undersized for the current staff by approximately 45,000 gross square feet (gsf). Many workspaces are inadequate in size and location which creates inefficient and, of particular concern, unsafe conditions. Facility layout of examination areas in the laboratory greatly increases the potential for cross-contamination between cases. To properly process current 2012 requests for service there is an immediate need to increase the staff from 50 to 63.5. This would necessitate a corresponding square footage increase from 35,795 gsf to 79,696 gsf. For servicing the anticipated caseload of the community through the year 2030 the facility square footage size should be 93,634 gsf to house a future projection of 82 staff members. An additional 6,000 gsf will likely be needed over the next 20 years to meet the requirements of Ohio Senate Bill 77 for secure long-term storage of biological evidence (DNA).

A facility appropriately sized for increased staff will improve the service levels the Hamilton County Coroner complex is able to provide. Properly designed, the facility not only will provide a safe and efficient workplace for the staff but will also be adaptable to meet the changing requirements of forensic science. This will ensure that the citizens of Hamilton County continue to receive, over the long term, the delivery of forensic services that are thorough, timely and accurate.



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