

**REPORT OF THE VIRGINIA
DEPARTMENT OF GENERAL SERVICES**

**The Desirability and Feasibility
for Installing Emergency Key
Boxes on State-Owned
Structures (Chapter 1180, 2020)**

**TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA**



SENATE DOCUMENT NO. 9

**COMMONWEALTH OF VIRGINIA
RICHMOND
2020**

PREFACE

Appreciation is extended to the following state agencies and law enforcement jurisdictions that provided input for this report (*Figure 1*).

State Agencies

Dept. of Military Affairs (123)	Wilson Workforce and Rehabilitation Center (203)	VA Museum of Fine Arts (238)	Dept. of Transportation (501)
Dept. of Emergency Management (127)	College of William & Mary (204)	Christopher Newport University (242)	Dept. of Health (601)
Science Museum of Virginia (146)	University of Virginia (207)	George Mason University (247)	Dept. for the Blind and Vision Impaired (702)
Dept. of Motor Vehicles (154)	Virginia Tech (208)	VA Community College System (260)	Dept. of Social Services (765)
VA State Police (156)	VA Military Institute (211)	VA Institute of Marine Science (268)	Dept. of Juvenile Justice (777)
VA Retirement System (158)	Virginia State University (212)	Dep't of Agriculture and Consumer Services (301)	Dept. of Forensic Science (778)
State Corporation Commission (171)	Norfolk State University (213)	Fort Monroe Authority (360)	Dept. of Corrections (799)
VA Lottery (172)	Longwood University (214)	VA Marine Resources Commission (402)	Dept. of Aviation (841)
VA Employment Commission (182)	James Madison University (216)	Dept. of Wildlife Resources (403)	Dept. of Veterans Services (912)
VA Worker's Comp. Commission (191)	Radford University (217)	Dept. of Mines, Minerals and Energy (409)	VA Museum of Natural History (942)
Dept. of General Services (194)	VA School for the Deaf and Blind (218)	Gunston Hall (417)	SW VA Higher Education Center (948)
Dept. of Conservation and Recreation (199)	Old Dominion University (221)	Jamestown-Yorktown Foundation (425)	Alcoholic Beverage Control Authority (999)
Library of Virginia (202)	Virginia Commonwealth University (236)		

Law Enforcement Jurisdictions

Buena Vista	Gloucester County	New Market	Salem
Capitol Police	James City County	Nottoway County	Smithfield
Clifton Forge	Lancaster County	Patrick County	Smyth County
Covington	Leesburg	Powhatan	South Hill
Department of Forestry Services - Eastern Division	Lynchburg	Prince William County	Suffolk
	Martinsville	City of Richmond	Tazewell County
Dinwiddie County	New Kent County		Virginia Beach

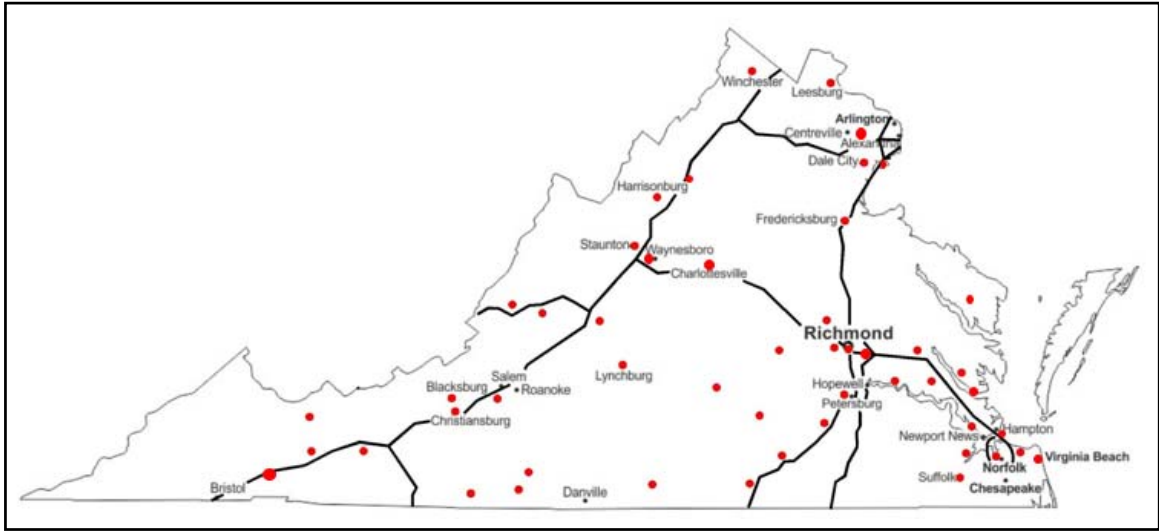


Figure 1: State agencies and law enforcement jurisdictions that provided input for this report.

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1.0 Introduction

1.1 Reason for the Study

Senate Bill 1065 directed the Virginia Department of General Services (DGS) to determine which state-owned structures have a higher likelihood of being involved in a natural or man-made emergency that may require special access by law-enforcement personnel and to study the desirability and feasibility of coordinating with local law enforcement in the installation of key boxes containing keys or other credentials that may be necessary for law-enforcement officials to gain access to such structure, or an area within such structure, during an emergency in strategic locations on the outside of such structures. To the extent that DGS determines that installation of such key boxes is desirable and feasible, it may implement procedures to do so. DGS shall report its findings to the Governor and the General Assembly by December 1, 2020.¹

1.2 Description - What is an Emergency Key Box?

Emergency key boxes (EKB) are rapid access systems that remove barriers for first responders' entry into a building when they respond to an emergency. Building keys and credentials are stored within a small, secure wall-mounted safe that can be accessed only with a master key. Emergency key boxes also may help reduce response time and property damage by avoiding forced entry situations during an emergency



event. Emergency key boxes are readily available from multiple sources including but not limited to Knox, Kidde, and Doorking, and shall be UL 437 listed for security and UL 1037 listed as anti-theft devices. The most common and currently used devices are simple surface-mounted or recessed devices that are accessed with a master key; however, other types of boxes using electronic access are becoming more readily available.

¹ Summarized from Virginia General Assembly 2020 session, Chapter 1180, SB 1065, approved April 11, 2020

1.3 How Risk is Determined for Buildings in the Virginia Construction Code

Current building code identifies risk by both Use and Occupancy classifications. These two units of measure are interconnected yet somewhat exclusive in how they are determined and executed. The Use and Occupancy of a building will influence everything from the exterior character, site location, and interior layout.

The Use of a building determines the level of importance to the preservation of human life and the role a facility may have during an emergency event as well as impacting the allowable size and height of a building. This designation is critical in determining the structural characteristics and integrity of a building in the event of a natural or man-made disaster. There are four risk categories defined as follows:

IV: **ESSENTIAL** Designated facility. (Ex: hospitals, police, fire & rescue stations, designated emergency shelters, critical national defense facilities, and utility generation)

III: **SUBSTANTIAL** hazard to human life in event of failure. (Ex: schools, prisons, jails, psychiatric hospitals, and public assembly containing greater than 300 occupants)

II: **MODERATE** Those NOT listed in Categories I, III or IV. (Ex: small office and commercial buildings)

I: **LOW** hazard to human life in event of failure. (Ex: agricultural and minor storage buildings)

The Occupancy of a building is based on the maximum number of people that may be within the building at any time. This calculation is used for numerous strategies in defining the interior layout of a building including size and quantity of stairs, corridors and doors, allowable distances to exits, and fire safety measures. A square footage allowance is provided per person, where the smaller multiplier number equates to larger occupant load, as follows:

<u>Building type</u>	<u>Square Foot multiplier per occupant</u>
Gymnasiums/Arenas	Range of 5 to 7 square feet per person
Theaters/Performing Arts	Range of 7-15
Dining Halls	15
Student Centers	Range of 15-100
Museums	30
Courts/Hearing Rooms	40
Dormitories	50
Libraries	Range of 50-100
Multipurpose Bldgs.	Range of 15-100
Welcome Centers	60
Classrooms	100
Science Laboratories	100
Offices	100
Hospitals/Clinics	Range of 100-240
Parking Structures	200
Storage/Warehouse	500 square feet per person

2.0 Background

2.1 Virginia Statewide Fire Prevention Code

Section 506 of the 2015 Virginia Statewide Fire Prevention Code (VSFPC) authorizes the fire code official to require an emergency key box be installed in an approved location to provide access to and within a structure for life-saving and fire-fighting purposes. The operator of the building is responsible for the maintenance of the various keys and credentials located within the emergency key box.

2.2 Existing Conditions

It was determined through the agency and law enforcement survey responses that Emergency Key Boxes are currently, almost exclusively, only accessed by fire departments and not by law enforcement or other first responders. Because the emergency key boxes rely on a singular master key that can access all boxes, newly installed devices must be compatible with existing systems within a singular jurisdiction and require approval for brand and location. This master key system also requires security through limited distribution. As a result of the VSFPC language, it was determined through the agency survey responses that emergency key boxes have been installed on many new buildings and substantial renovations at the request of local fire officials. Agencies also indicated in their survey responses that older buildings often do not have them installed. Currently, the use of emergency key boxes on state-owned buildings, although prevalent, appears to be varied and diverse. Usage is determined by local, municipal or regional fire officials regardless of the authority having jurisdiction.

2.3 Existing Policies and Procedures

It is typical for most state colleges and universities to utilize their own accredited police department and dispatch services, which have exclusive access into all campus buildings. In the event of an emergency, the school's police department responders would assess the situation and, if appropriate, request mutual aid/resources from the local law enforcement jurisdiction and facilitate entry, as needed. A majority of state agencies employ sworn police departments or contract with private security personnel to provide 24/7/365 services. These law enforcement personnel play an integral role including first-response assessment,

coordinating building evacuation, and facilitating access for the local law enforcement into and within the building. Nearly every agency that provided a survey response has some form of protocol or operational procedure in place that accounts for various types of natural or man-made emergency events. The initiation of any additional policy, such as requiring emergency key boxes, must take into consideration the range of existing policies currently in place.

3.0 Approach

3.1 Methods of the Study

The following is an enumerated summary of the efforts to produce this report. The tasks were systematically scheduled, spanning from the end of June to early November 2020.

DEB used the existing Building Inventory Listing to identify the sixteen primary building types that make up the majority of state-owned buildings: classroom, science lab, student center, dining hall, dormitory, gym/arena, hospital, library, multipurpose, museum, courts/hearing rooms, office, parking, storage, theater, and welcome center.

DEB created a four-question survey intended for state agency contacts to:

- 1.) Identify and gauge the current usage and prevalence of EKBs on existing state-owned buildings.
- 2.) Identify whether state agencies employed, or contracted with, private security personnel that would respond to an emergency and potentially utilize EKBs.
- 3.) Identify their local law enforcement contact. The intent was to provide a familiar reference when reaching out into the law enforcement community beyond the state agency level.
- 4.) Identify the first authority to enter a building in various types of emergency events and how efforts to coordinate with other emergency responders, including law enforcement, is provided.

DEB used its existing state agency contact list to email this survey to over 100 contacts representing 57 state agencies. A follow-up second request was sent to the contacts that had not responded, which yielded an increased total response rate of 88%. DEB received and logged survey responses from 50 agencies.

Several agencies that are dispersed across Virginia, such as the Department of Conservation and Recreation, Virginia Community College System, and the Virginia Department of Transportation, provided responses for multiple locations and regions.

DEB developed a security/law enforcement contact list based on the information provided from the state agency survey responses. DEB cross-referenced this initial security/law enforcement contact list with a list of the Commonwealth of Virginia counties and municipalities to identify any regions with limited representation. DEB researched potential law enforcement contacts for these remaining jurisdictions. The contact list was then updated to include security/law enforcement contacts for all jurisdictions, wherever available.

DEB created a four-question survey intended for security/law enforcement to:

- 1.) Identify whether their building access would benefit by EKBs given current procedures, resources and protocols.
- 2.) Identify whether they believed EKBs should be made available, at the point of use, for any secondary locking or barricade devices within a building.
- 3.) Identify whether law enforcement personnel were aware of any state-owned buildings that currently don't have EKBs that should have them installed.
- 4.) Identify whether they believed EKBs should be installed universally in any of the sixteen primary building types should universally have EKBs installed.

DEB received survey responses from 52 law enforcement personnel representing 48 jurisdictions. These survey responses were used to develop statistics, collect comments, observe patterns and create the determinations and conclusions.

4.0 Analysis

The survey data showed that 61% of state agency respondents reported current installation and use of emergency key boxes on state-owned buildings (*Figure 2*). This statistic does not reflect the overall quantity of individual EKBs currently in use, as most state agencies have multiple buildings with varying degrees of age and importance. It was noted that the presence of EKBs was either prevalent or entirely absent. This contrast reinforces the view that the installation and utilization of EKBs is currently being directed by fire department jurisdictions at the local level.

The survey data showed that 59% of state agencies reported having either private security contractors or employ security staff (*Figure 3*). These on-site personnel provide the 24/7/365 service that allow for emergency building access otherwise provided by emergency key boxes.

The survey data from law enforcement showed that 56% of respondents indicated their emergency access would benefit with emergency key boxes installed on state-owned buildings (*Figure 4*). This response rate can be attributed to law enforcement utilizing other means or existing protocols to access a building. If one considers that 59% of agencies have some form of on-site security, this level of response is somewhat expected. However, only 37% of law enforcement respondents indicated that emergency key boxes were needed within a structure at secondary locking or barricade device locations (*Figure 5*). A majority of the comments provided indicated all keys, whether for exterior or interior use, should be located within a single box on the exterior of the building.

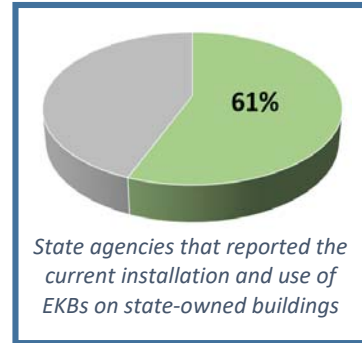


Figure 2

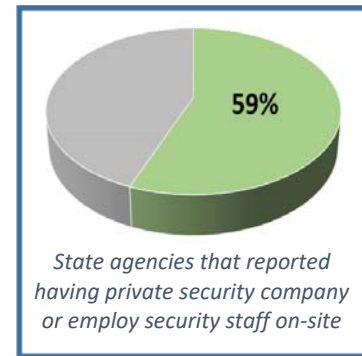


Figure 3

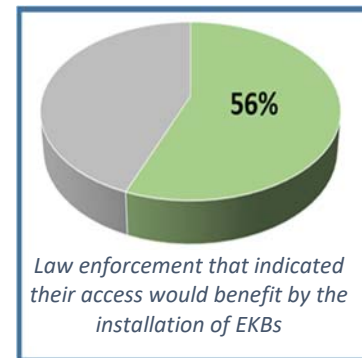


Figure 4

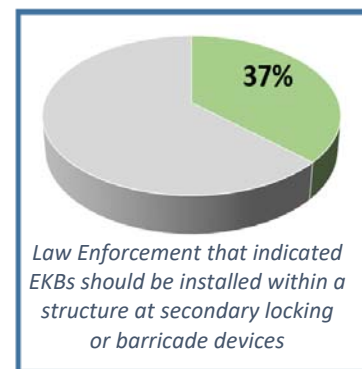


Figure 5

A component of the survey to law enforcement personnel requested their input on which of the sixteen building types should have emergency key boxes installed. Out of the 52 respondents, nine selected all of the building types, eight selected none and the remaining thirty five respondents identified specific selections. The combined results of the data is represented in the following graph (Figure 6). A majority (26 or more) of the law enforcement respondents selected the top eleven building types with the bottom five building types garnering limited preference.

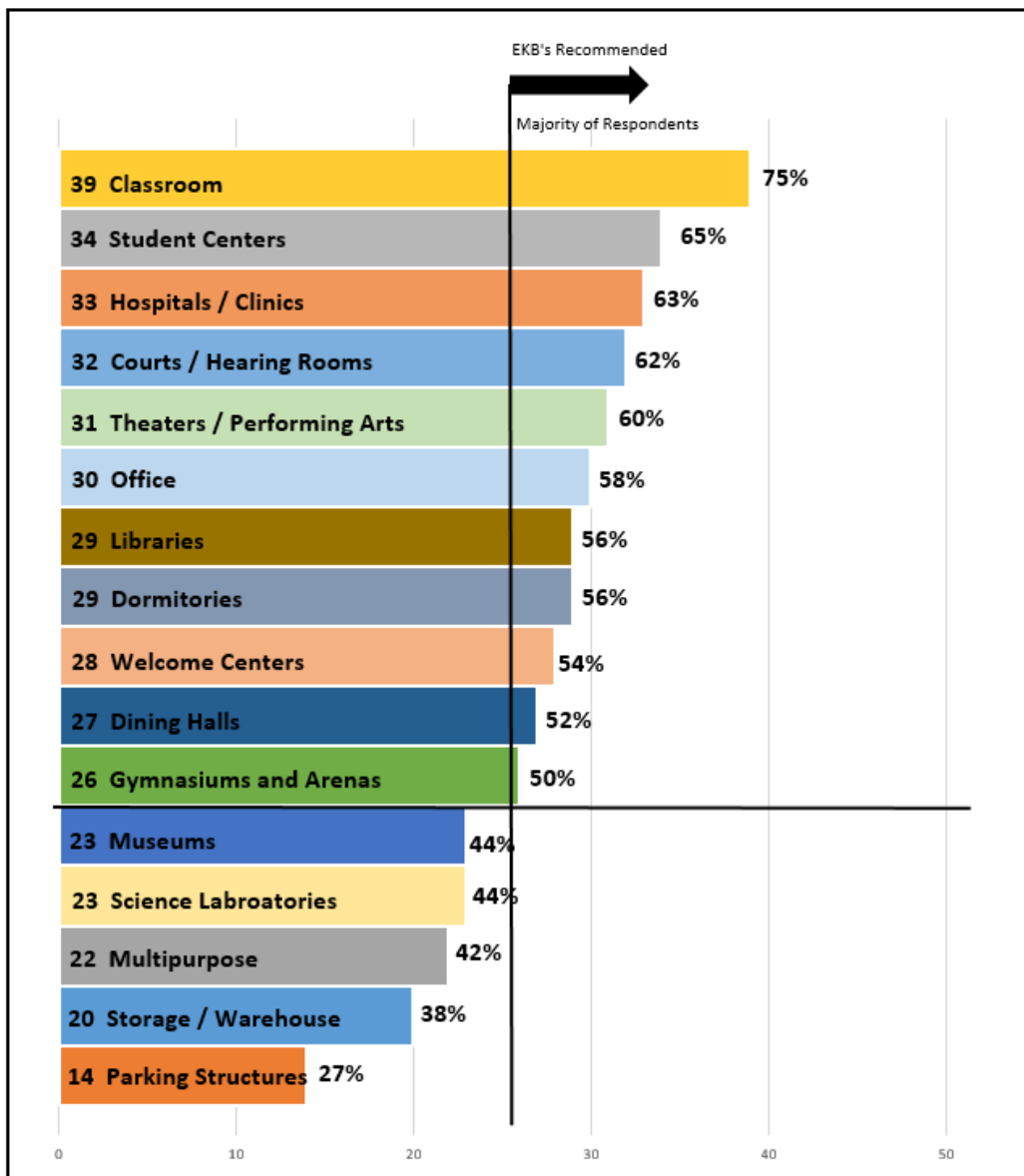


Figure 6: A total of 52 law enforcement respondents identified which of the sixteen building types should universally have EKBs installed.

When compared to the list of building types identified in Section 1.3 above, it is clear that law enforcement expect emergency key boxes to be installed on those buildings identified as higher risk and with higher occupancy potential. The overall impact of these top eleven selected building types is best understood when compared to the overall state-owned inventory listing, which is in excess of 12,000 structures of various types and sizes. The following tabulations include only those buildings that are 5,000 square feet and larger. This size limitation is determined by taking into account the level of risk for use and occupancy. This compilation also removes buildings that are inherently secure, such as the prisons and psychiatric hospitals. Also omitted from this analysis are miscellaneous structures such as pavilions, towers, and sheds. When reduced by these factors, the state-owned building inventory is calculated to be 2,024 significant buildings (*Figure 7*) broken down into the sixteen building types as follows:

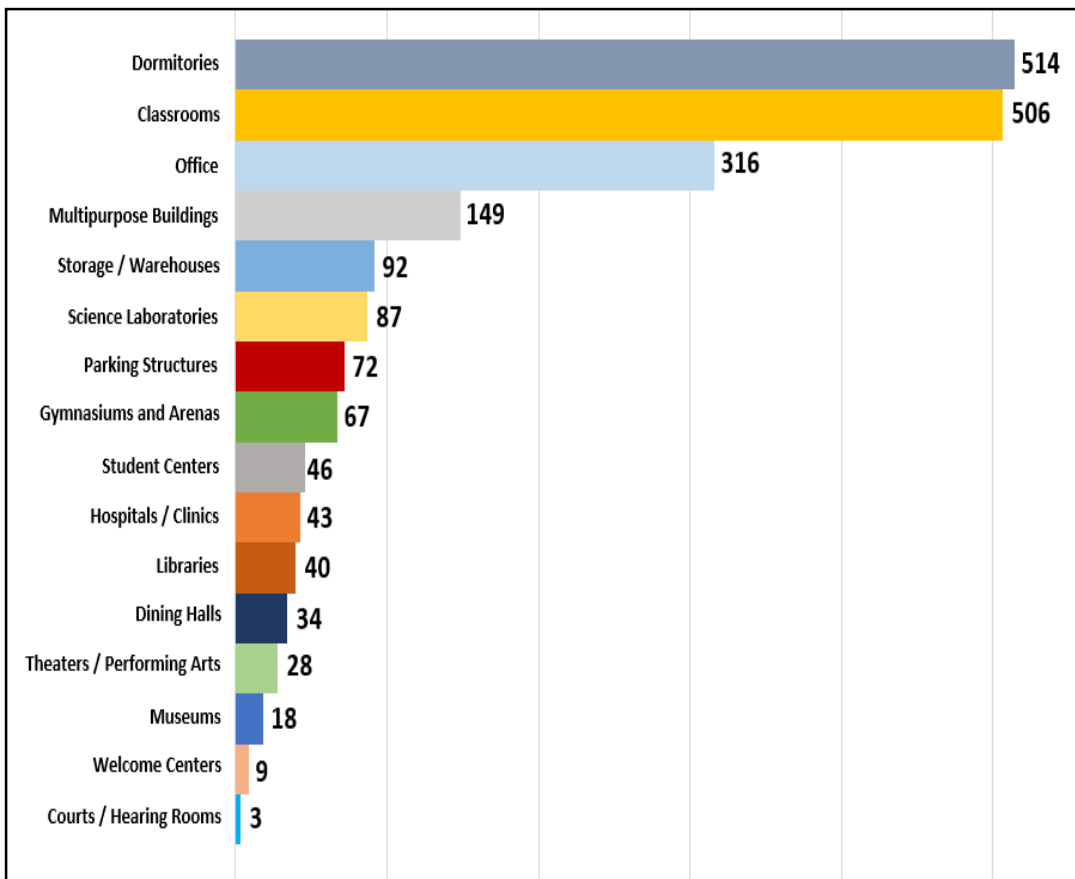


Figure 7: Compilation of selected state-owned inventory grouped by building type

These eleven building types, selected by a majority of law enforcement respondents (see Figure 6 above) to have emergency key boxes universally installed make up over 79% of the selected inventory, equating to 1,606 significant buildings (Figure 8). The two building types with the largest amounts, dormitories and classrooms, represent over 50% of the significant buildings. The survey responses received from higher education agencies indicated emergency key boxes already are installed on a majority of these significant building types, resulting in a reduced impact to potential implementation.

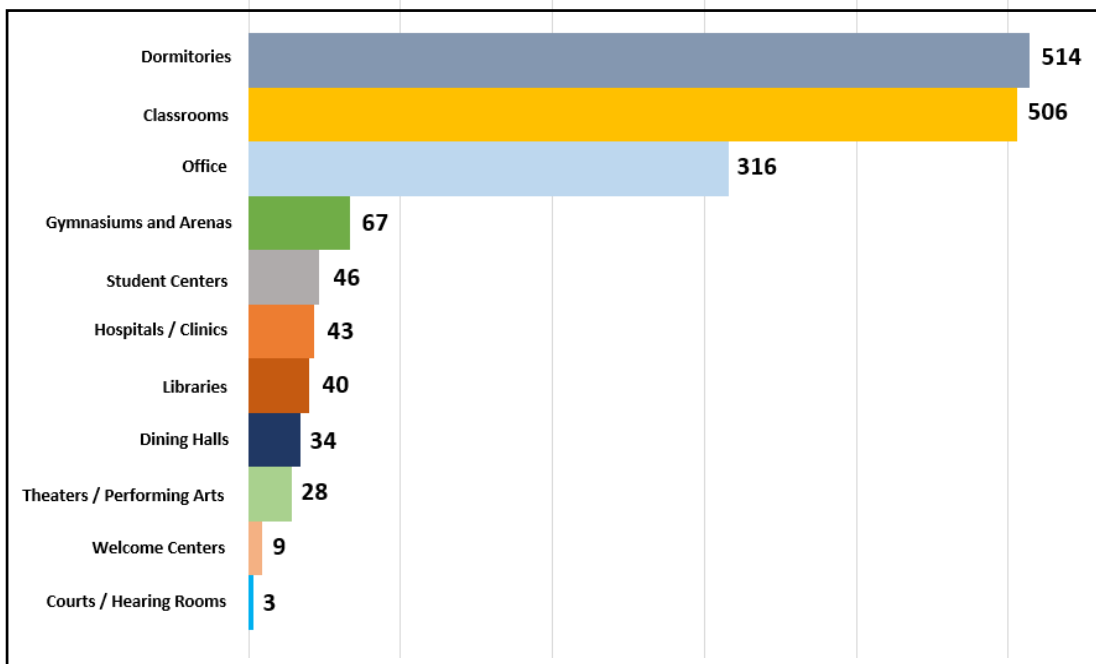


Figure 8: Breakdown, by building type, of the 1,606 significant buildings selected by law enforcement personnel to have emergency key boxes universally installed.

5.0 Cost for Implementation

For the purposes of a basic cost analysis, a standardized amount of \$665 per emergency key box, which includes direct cost of the EKB and a markup for installation and maintenance, is used for all 2,024 significant buildings regardless of existing conditions and location. This estimate equates to **\$1,350,000**. However, this estimated amount may be reduced by an estimated 30% if existing EKBs continue to be used and are augmented with new units, as required. This estimate also may be increased by an estimated 400% to **\$5,400,000** if all emergency key boxes are transitioned to products with enhanced electronic technology.

6.0 Conclusion

6.1 Practical Use of Emergency Key Boxes

The practical use of emergency key boxes for universal emergency access would depend upon overall recognition by law enforcement personnel of the existence, use and efficacy of emergency key boxes. It also would require their active coordination with other emergency responders and the secure distribution of master keys to the appropriate personnel. Presently, master keys are primarily in the sole possession of the local fire department that typically are dispatched from a central location. Law enforcement typically are dispatched from vehicles, and the availability of master keys may cause unforeseen challenges for law enforcement personnel. In addition, the responsibility for emergency key box and key maintenance falls upon agency staff, which may become more challenging with increased distribution of keys and access. Using current or developing technologies (similar to realtor key boxes), where a cellular signal can be sent to unlock EKBs, may help alleviate some of the challenges created by additional access as well as assisting agency staff by providing them with an auditable and more easily maintained system. The impact of not having emergency key boxes available to law enforcement personnel is a possible delay in entering a building. This delay may be overcome by forced entry or other available protocols, such as on-site security to assist with access and other measures.

6.2 Emergency Key Boxes Located Within a Structure

An amendment for the use of secondary barricade devices is being proposed for inclusion within the next edition of the Virginia Uniform Statewide Building Code. These non-standard devices, which may require special knowledge, equipment, or may be engaged accidentally, can negate the usefulness of emergency key boxes for emergency access by physically blocking the door shut while also endangering the occupants from free egress. To alleviate this potential endangerment, keyed locking door hardware that complies with current building code provides the added security feature, while maintaining free egress from the door interior and emergency responder access from the door exterior by way of keys available in an emergency key box.

6.3 Authority Having Jurisdiction

Emergency key boxes are regulated by the Virginia Statewide Fire Prevention Code. DGS recognizes that the State Fire Marshal serves as the Authority Having Jurisdiction for this code. If a policy to promote the use of emergency key boxes for emergency access is implemented for state-owned buildings, DGS recommends that the installation of emergency key boxes be coordinated through the relationship that the State Fire Marshal has with local fire departments. Because emergency key boxes are addressed by the Statewide Fire Prevention Code, many law enforcement respondents consider emergency access to be a fire department issue rather than a law enforcement issue.

7.0 Recommendation

The Virginia Department of General Services recommends that emergency key boxes remain an option for each state agency due to the lack of consensus among law enforcement response, the current responsibilities of the local fire departments and because most emergency response services are provided by localities that require specific approved products that align with their existing protocols. The Department of General Services does not intend to issue a mandate for implementation but will continue to support all state agencies and the State Fire Marshal's office on this matter.

