

State of Maryland

**Interagency Commission on
School Construction**

**School Mapping
Data Standards**



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Record of Changes

| Version | Description | IAC Approval Date |
|---------|------------------|-------------------|
| 1.0 | Initial Adoption | 06/12/2025 |
| | | |

Acknowledgments

The IAC acknowledges the following individuals for their contributions to the development of these standards:

- Allegany County Public Schools, Anne Arundel County Public Schools, and Baltimore County Public Schools
- The Maryland 9-1-1 Board
- Julia Fischer, Maryland Department of Information Technology
- Dawn Baldrige, NG 9-1-1 Coordinator – Maryland Department of Information Technology
- Jeyan Jebaraj, Maryland Center for School Safety
- Peter Hanna, Montgomery County Police Department
- Graham Twibell, Regional Planner, IAC



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1. Executive Summary

The School Mapping Data Program, established in 2024 by House Bill 472 (2024 Md. Laws, Ch. 167), was created to provide funding to Local Education Agencies (LEAs) to produce school mapping data for each public Prekindergarten through Grade 12 school, including public charter schools. The school mapping data will enable the production of maps of school facilities that should be usable by multiple authorized stakeholders, including first responders in case of emergencies at a school, and by facilities management, funding, and oversight personnel.

State funding for mapping will be administered by the Maryland Center for School Safety (MCSS) through the Safe Schools Fund. This standards document is the result of collaboration between MCSS, the IAC, the Maryland Department of Information Technology, Local Education Agencies, subject-matter experts from the Maryland 9-1-1 Board, and stakeholders from local governments and public safety agencies. This document provides uniform standards for the mapping of physical attributes of public schools and accompanying roles, responsibilities, and guidance for document maintenance.

2. Purpose

These standards aim to support the creation of uniform school mapping data formats across all public school systems in Maryland.

The IAC reserves the right to revise these standards, but will provide updates to stakeholders in the event of changes. It is possible that advances in technology will precede revisions; the IAC recommends that LEAs stay abreast of updates to any mapping technologies they utilize.

The entities that created these standards will have no liability for any consequential, incidental, special, or punitive damages arising from use of the document. Included within these standards are items which may be mandatory, as well as items that may be optional or suggested. While these standards are intended to ensure uniform mapping across all public school systems in Maryland and have been developed in coordination with public safety agencies, the IAC recommends that users of this standard contact their 9-1-1 System Service Provider (9-1-1 SSP) representative to ensure compatibility with the 9-1-1 network, and their legal counsel to ensure compliance with current regulations. The IAC recognizes that local needs may vary and items listed here as optional, or absent from this standard, may be required within individual jurisdictions.

These standards were developed collaboratively and as such, recommendations for changes are welcome and can be submitted to iac.pscp@maryland.gov.



3. Scope

School mapping data produced with funding from the School Mapping Data Program or added to data produced with funding from the School Mapping Data Program must meet the standards listed in this document.

4. Authority

Education Article § 5-310.1, Annotated Code of Maryland.

5. Disclosure of Data

Under Maryland’s Public Information Act (PIA) (Gen. Prov. Art. §4-201 et seq.), a custodian must, with certain possible exceptions, deny inspection of any record disclosing school mapping data produced under the bill.

6. Definitions & Acronyms

| Term/Acronym | Definition |
|---------------------|---|
| IAC | Interagency Commission on School Construction |
| LEA | Local Education Agency |
| MCSS | Maryland Center for School Safety |
| School Mapping Data | Data in an electronic or digital format to assist first responders in responding to emergencies at a school and to support LEAs and the State in activities related to management of facilities and portfolios of facilities, including facilities planning, operations, and maintenance. |
| True north | The geographic north pole where all longitude lines meet, also known as geodetic north. |

7. Mapping Data Standards

Data-collection methodologies for the School Mapping Data Program for mapping the inside of a building are based on best practices; at this time, no national school mapping standards exist. This technology is



quickly evolving and updates to these data collection practices will be documented to meet or exceed additional recommendations or standards that may be developed.

The technology used for mapping indoor spaces is similar to mapping the outdoors, but the end results are achieved differently. The final datasets produced by data collection efforts will ultimately be used by first responders in the form of digital and/or paper maps, and public safety applications that can be accessed via mobile platforms or while in office buildings, in 2D (2-dimensional) or 3D (3-dimensional), and be made available at a moment's notice.

The scope of the School Mapping Data Program provides for the establishment of standards that include data in a "digital file format." In striving for compatibility with the latest indoor mapping technologies in-use, the IAC recognizes that the requirements established within these standards may evolve, particularly as geospatial routing standards are developed to better handle 3D data.

In these Standards, the terms "shall," "must," and "required" refer to required standards and "preferably," "may," and "recommended" refer to recommended standards. **These standards do not place requirements on the appearance (coloring or symbols used) of mapped elements, solely the content required in the mapping.** To obtain guidance on the best practices for the appearance of mapping products for the purpose of school emergency operations plans, please contact the Maryland Center for School Safety at mcss.mcss@maryland.gov.

7.A. Format

Data must be available in a printable and digital file format that can be integrated into interactive mobile platforms and is compatible with software platforms used by the school at issue, State, LEA, and federal public safety agencies that provide emergency services to the school without requiring the purchase of additional software or charging a fee to view or access the data. The data must be oriented true north and be overlaid on current aerial imagery with gridded X and Y coordinates.

7.B. Accuracy

Be verified for accuracy by a periodic walk-through of the school buildings and grounds.

7.C. Labeling

Must contain site-specific labeling that matches the structure of school buildings (including room labels, hallway names, external door or stairwell numbers, locations of hazards, critical utility locations, key boxes, and automated external defibrillators and trauma kits) and the school grounds (including parking areas, athletic fields, surrounding roads, and neighboring properties).



7.D. Case Sensitivity

All data compliant with this standard MUST preserve case. Map labeling must adhere to the casing rules of the applicable responsible naming authority (local school board, building owner, or managing jurisdiction).

7.E. Interoperability

Interoperability is a key feature expected for all spatial data created in Maryland. Various public safety systems ingest different file formats including, but not limited to, GIS, CAD, BIM, and geoPDF. Due in part to the dynamic nature of file formats and in part to the variety of formats that an entity may or may not be in a position to support with their chosen mapping platform, this standard currently places no requirement on the file format to use so long as the data:

- 1) Can generate maps in both digital and printable formats that can be integrated into interactive mobile platforms; and
- 2) Is compatible with software platforms used by the school and local, State, and federal public safety agencies that provide emergency services to the school without requiring the purchase of additional software or charging a fee to view or access the data.

In alignment with the requirements above, all deliverables must be interchangeable between systems, **either natively or through a simple conversion**. In many cases, when an entity is exchanging data with a vendor, the vendor's requirements will drive the use of a particular file format. When exchanging data between entities, it is expected that the entities will coordinate to ensure the receiving public safety entity can read the file format provided.

Of principal importance in the generation of data and mapping for the School Mapping Data Program within the State of Maryland is that **data is collected in a format and organization that supports interoperability**.

7.F. School Facilities Mapping Extents and Feature Definitions

Importantly, the IAC School Mapping Data Standards utilize the National Council of School Facilities definition of a school facility as, "a single site or contiguous adjacent site(s) in which typically a building or buildings house and/or support educational activities."

With this definition in mind, at a high-level, a single school facility is described as the combination of the site element and the building element(s) and cannot be adequately mapped or identified by a single component. Please note, following from this definition, the IAC School Mapping Data Standards may therefore differ from other mapping information models in use throughout the geospatial industry that define "Facilities" as "Buildings." It is critically important to school safety that the full facility is included in



the school mapping data produced including floorplans for all buildings and site features that may need to be accessed by first responders.

The following subsections describe critical components of school facilities mapping.

7.F.1. Sites

The geographic extent of the property or contiguous adjacent properties in which the school building or buildings are located that house and/or support educational activities.

7.F.2. Buildings

Describes the footprints of managed buildings. Each building on a site should be captured in the mapping data produced. Buildings are built features with a vertical dimension, including walls, doors, and a roof. Common school building categories to map include, but are not limited to, a main building, stadium, relocatable, modular, shed, and annex with definitions as follows:

Main - The primary building located on the site that houses the educational program(s) and/or administrative operations.

Stadium - A structure, whether roofed or non-roofed, whose primary purpose is to accommodate athletic activities and spectators of such activities and may include provision of services to participants or spectators.

Relocatable - Prefabricated buildings that can be moved around the site and are used to house or support educational programs or other functions on the site. Each relocatable should be captured as a separate and individually labeled building.

Modular - Factory-fabricated structures meeting State standards, as defined in COMAR 14.39.02.12, that are designed and certified for educational use and permanently installed on a school site.

Shed - A simple roofed structure, typically made of wood or metal, used as a storage space or workshop.

Annex - A building physically separate from but associated with the main building, providing additional space or accommodations for educational programs and/or administrative operations. An annex may share one or more building systems or utilities with the main building, but is physically separate and not connected by any enclosed corridors or room unit spaces.



7.F.3. Levels

“Levels” describes the footprint of each level contained in managed buildings. Levels must be fully contained in a building feature. Each level within a building, including levels below ground level, should be captured. Levels may also be described as a floor or story, such as “3rd floor” or “mezzanine level.” Every building, including single level and single unit buildings, must possess at least one mapped level.

7.F.4. Units

“Units” describes the footprints of nonoverlapping individual functional areas such as workspaces, classrooms, elevators and stairways, and so on. Unit footprints must be contained within the mapped boundary of a level or floorplan footprint. A unit represents a single, distinctly identified, space within a structure and are most commonly identified in school facilities as rooms but are not limited to completely enclosed spaces; some school buildings may possess open-space classrooms, or collaboration areas that have a distinct location, name, and identifier, but are not bounded on all sides by walls or by walls that fully span from the floor to the ceiling. Every building, including those with a single level must possess labeled unit features.

Units must be uniquely identified on the mapping and should be distinctly identified within each building to support ease of navigation. In the case of multiple units within a building that possess the same use, each such unit must be assigned a unique name such as “Gymnasium 1” and “Gymnasium 2” or “West Gymnasium” and “East Gymnasium.” Buildings that house co-located programs which may contain multiple units for the same purpose should have distinct names for each.

Recommended Details for Units:

ADA: Indicate if the room unit meets American Disabilities Act (ADA) accessibility guidelines. Can be particularly helpful in flagging corridors or stairwells that are not accessible.

GRADE_LEVEL: Specific grade level assigned for instruction within the unit. Not all units will have a grade level assigned or a single assigned grade level (e.g., special subjects like music, art, etc.).

7.F.5. Details

“Details” are linear assets, such as walls, doors, windows, and so on.

7.F.6. Access Points

School building access points include the physical location of various access points to enter/exit the site and associated buildings. Access point locations are not necessarily located on building features, for example, emergency curbside access may be the nearest point for vehicular access in a driveway or parking area near the associated building. If multiple buildings are depicted on a single map, the



applicable curbside or main entrance for each should be clearly distinguished through labeling. The access points identified may be used to highlight access restrictions such as gate locations with specific restrictions and should identify for first responders which building access points are ADA accessible.

Recommended access points to map include, but are not limited to, main entrance, emergency curbside access, all exterior entrance points at-grade, fire escapes, and roof access points.

Restrictions that may be used to limit access at the marked locations such as key, badge, or keypad access restrictions are recommended to be included in the mapping, where applicable.

7.F.7. Points of Interest

School facilities contain many important indoor and outdoor Points of Interest (POI). School mapping data **MUST** include the locations of POI within the site such as hazards, critical utility locations, key boxes, automated external defibrillators, and trauma kits; and relevant POI outside the site such as surrounding roads and neighboring properties. In addition to these required elements, public safety personnel recommend that school mapping include fire extinguishers, camera locations, response staging areas, and family reunification areas.

8. Spatial Accuracy

For data collected as part of the School Facility Mapping Program, coordinates should be collected for indoor and outdoor locations **as accurately as possible (sub-meter accuracy minimum expected)**. Horizontal position (x,y) may be captured via a variety of methods including as-built drawings, GPS locations, or other technology, but to display detailed assets (AEDs, fire extinguishers, etc.) at a floor plan scale in a manner that is readable, mapping may need to be produced at a large scale of 1:600 or less.

9. Metadata

Metadata is a record of information which captures the basic characteristics of a data or information resource. Special attention should be paid to capturing information that describes the **data lineage, data quality, and maintenance requirements** within metadata accompanying any produced mapping products. Data creators are encouraged to be as descriptive as possible and to optionally include additional metadata for individual data layers and attributes as well as metadata specific to data collection methods. Metadata records may include core library catalog elements such as Title, Summary, Description, Credits, Data Owner, Data Owner contact, Frequency of Data Update, Last Updated, and Publication Data; geographic elements such as Geographic Extent and Projection Information; and database elements, if applicable.



10. Standards and Expectations for Maintenance of Data

Data produced for the School Mapping Data Program should reflect the physical state and programmed uses of the facility at the time in which it is produced. Any data produced using historical plans (electronic or otherwise) shall be verified for accuracy with current conditions prior to distribution to the IAC, MCSS, or local public-safety agencies. The LEA is responsible for verifying that the data is accurate and up to date. Furthermore, the LEA is ultimately responsible for the quality and accuracy of the school mapping data, even if the development and/or maintenance of this data is outsourced, shared, or obtained through others.

Under the IAC's statutory authority to establish standards for the School Mapping Data Program, LEAs are required to contribute data as requested by the IAC. Additionally, data collected with funding through the program, including renewal or updates to existing data, shall comply with this standard. The School Mapping Data Program **does not mandate the collection of school mapping data or updates to data on a set interval**; however, LEAs should strive to at all times maintain data integrity and accuracy with current conditions of both the site and buildings at the facility in the interest of school safety. At a minimum, LEAs should prioritize the capture of physical updates to the floorplans, including the location of individual assets shown on the floorplan, and site geography as a result of construction projects or the addition or removal of semi-permanent structures such as relocatable classrooms. It is strongly recommended that each LEA annually review the school mapping data to verify the name, numbering, and use of individual rooms, and provide any updates to the IAC and MCSS.

It is anticipated that the rigorous requirements and highly standardized nature of the school mapping data needed may require:

- Improvements to the currentness, accuracy, quality, and completeness of existing data, and
- Security-related standard operating procedures be developed or revised.

11. Recommended Reading

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