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VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Hubert Elementary School

Basic Property Information: COD 1-Hubert-14825 Lamphere

Short Name:	Hubert
Address:	14825 Lamphere Street, Detroit, Michigan 48223
Year Built:	1925
Additions Built:	1926, 1930, 1953
Outbuildings:	None
Year Vacated:	2005
Building Footprint:	270 feet x 375 feet
Square Footage:	59,911 sq. ft.
Number of Stories:	2
Building Height:	27 ft.

Current Ownership:	City of Detroit
City Council District:	1
SNF District:	NA

Structural Framing System:	■ Cast-in-Place Concrete ■ Precast Concrete ■ Brick Masonry ■ CMU ■ Wood
Exterior Wall System:	■ Brick Masonry ■ CMU ■ Cast Stone ■ Limestone
Window System(s):	■ Metal ■ Wood
Roofing System(s):	■ Built-up Roof ■ Slag Surfacing ■ Asphalt Shingles ■ Gutters ■ Internal Roof Drains

Assessment Summary

Assessment Date:	March 10, 2020
WJE Inspector(s):	Cheryl Early; Sarah Rush
Report Date:	November 10, 2020
Building Risk Index:	**113.92**

Cost Estimate

Base Rehabilitation Cost Estimate:	$2,592,000
Preparation for Rehabilitation Work:	$900,000
Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft):	$4,792,880
Sub-Total	$8,284,880
Contingency (25%):	$2,071,220
Sub-Total	$10,356,100
Overhead and Profit (15-18%):	$1,035,610
Sub-Total	$11,391,710
Escalation (6% for 2 years)	$683,502
Sub-Total	$12,075,212
Architectural and Engineering Design Services (20%):	$2,415,042
TOTAL COST ESTIMATE:	$14,490,255

ASSESSMENT METHODS

Visual Survey

As requested, Wiss, Janney, Elstner Associates, Inc. (WJE) performed a visual review of the building envelope and structure to assess the viability of the building for reuse. WJE was joined by Mr. Andrew Wald of Interboro Partners and Ms. Jennifer Ross and Mr. Garrick Landsberg of City of Detroit Planning and Development Department. During the time on site, Mr. Wald gathered information pertinent to the general building site and layout of the building, and Ms. Ross and Mr. Landsberg assessed the condition of the historic fabric of the building.

WJE performed a visual review of the building envelope from grade and accessible roof levels, using binoculars as needed. The main roof levels were inaccessible due to limited roof access. On the interior, WJE performed a walkthrough of accessible areas of each floor of the building, including accessible areas of the basement. Limited access to the attic was obtained near the roof hatch. The interior finishes are in a state of deterioration in localized areas, exposing portions of the structural framing systems in these locations. Up-close examination of building elements and destructive inspection openings involving the removal of building finishes to review underlying conditions were generally not performed.

WJE's observations were documented with tablets and digital photography. WJE has shared our field data with Interboro Partners; City of Detroit Planning and Development representatives; and A.M. Higley Company, the cost estimator for this project. Each observed condition is documented in the field data and assessed as discussed under "Risk Characterization" below. A summary of the conditions observed is provided in the "Building Overview" section below.

Limitations of Assessment

Limited to four hours on site, WJE visually assessed the exposed portions of the building envelope and structure. Recognizing the limitations on visually detecting distress from afar and the limitations on detecting concealed internal distress, the assessment may not include all current conditions. As such, completion of this assessment is not an indication, certification, or representation that all deterioration or hazards have been observed or recorded, including underlying deterioration not evident from the building exterior or interior. Additionally, the conditions of the building elements discussed herein are exposed to further damage and deterioration due to the existing condition and unoccupied status of the property, and as such, WJE cannot state the conditions discussed herein will remain unaltered and as observed during the visual survey. However, we have performed these assessments in accordance with the requirements of applicable regulations and the applicable standard of care for architects or structural engineers performing such services.

WJE identified structural or building envelope issues that have significant impact on the viability of future reuse of the property. Items posing little risk such as regular maintenance items are not included in the assessment. The assessment was limited to within the walls of the building; on-grade walkways, access roads, parking lots, landscaping, play structures, or other site features were excluded from this assessment. The assessment, remediation, and identification of hazardous materials (e.g., asbestos, lead, etc.) or other environmental issues were also excluded. Based on WJE's past experience with building rehabilitation projects, WJE has assumed existing mechanical, electrical, plumbing, interior finishes, and other building

systems are anticipated be removed and replaced with future reuse of the building, and as such, were not included in WJE's assessment.

Document Review

WJE performed a cursory review of documentation provided by Interboro Partners to gain familiarity of the property. The documentation provided included:

- Site Plan (included with this report)
- Floor Plans (included with this report)
- Environmental Reports
- National Register of Historic Places Registration Form

Other documents, such as original construction drawings, specifications, or maintenance records, were not made available for our review.

Risk Characterization

WJE has categorized each significant area of distress, damage, or deterioration observed with a systematic methodology to provide an objective, quantitative characterization of its relative condition and associated risk, or its Condition Risk Index (CRI). The CRI is based on the primary building system affected by the condition and the condition's severity, prevalence, and the associated consequence of failure. A higher CRI score indicates that observed conditions embody relatively higher risk than conditions with a lower CRI. The CRI is the product of each of the rankings below multiplied and normalized to meet a maximum score of 100 per condition.

Specifically, the CRI assigns a numerical value to the following:

- System (Structural, Roofing, Facade, Other)
  Conditions affecting the structure are assigned a higher rating than those affecting the facade or roofing systems. Other includes items such as non-load bearing partition walls and exterior steps, and are assigned a lower rating.
- Building Performance Impact (Minor, Moderate, Advanced, Critical, Imminently Hazardous)

  This parameter addresses the severity of the impact of the observed condition on the performance of the affected building system. Imminently Hazardous is assigned the highest rating. For example, a crack in a concrete slab may be a minor distress, but a damaged prominent skylight is considered advanced distress. Imminently hazardous conditions are discussed immediately with Interboro Partners and the City of Detroit representatives.
- Size/Distribution (Isolated/Infrequent/Frequent/Widespread/Pervasive)

  In short, this parameter rates how large and/or frequent a condition is with respect to the entire affected building system/component. Pervasive is assigned the highest rating. Examples include: an isolated step crack in a masonry wall versus pervasive corrosion of metal floor decking throughout a building.

- Consequence of Failure (Low, Moderate, High)

  This parameter allows inspectors to exercise judgment regarding general risk to the public, considering the unoccupied status of the buildings. High is assigned a higher priority, and, for example, might be assigned to a condition whose failure would result in potential harm within the public right of way. Conditions rated with a high consequence of failure are discussed immediately with Interboro Partners and the City of Detroit representatives.

The CRI for each observed condition is summed to calculate a total Building Risk Index (BRI), as provided in this report. The reported BRI is therefore a numerical expression of the relative risk present at one property, as compared to other properties in the scope of this assessment.

Both the CRI and the BRI are expressions of WJE's professional opinion of the relative significance of an observed condition to other building conditions, and the collective relative risk of the structural and building enclosure elements of this property. Neither the CRI nor the BRI are an expression of actual risk or probability of occurrence of any event. The CRI for each condition is tabulated in WJE's electronic field notes. The BRI provides a numerical tool for the project team and the property owners to compare and make decisions about this property and the other properties included in this overall effort, in context with the cost estimate, market analysis and community input. Both the CRI and BRI are intended only for this assessment project. The numerical values do not have substantive meaning beyond the context of the Vacant Historic School Buildings Disposition Plan project.

Recommendations

Recommendations developed in the assessment are conceptual and are intended for budgetary and planning considerations. Recommendations are provided within the narrative below, and in the field data provided. It is not the intent or purpose of this report or the field data to direct a contractor to bid, or otherwise implement, the recommendations. Significant additional investigation by various professional disciplines is necessary to develop appropriate scopes of repair and rehabilitation efforts to enable the re-use of any facility included in this assessment.

Cost Estimating

The rehabilitation costs are opinions of probable construction cost and have been developed with the assistance of A.M. Higley Company, a contractor familiar with rehabilitation of historic buildings. The costs have been developed for evaluating the relative cost of repair of distressed conditions as well as establishment of order-of-magnitude repair budgets. They are based on national construction cost data, adjusted based on the local construction market, and our experience with similar past projects.

Understanding the rehabilitation cost may vary depending on type of future occupancy, this assessment assumes the building will be rehabilitated to a weathertight and "grey box" condition with unfinished walls, flooring and ceilings; no mechanical, electrical, plumbing or other building systems installed. The costs assume the rehabilitation work would occur in 2022 and are not inflated should the work occur in future years.

In addition to this "grey box" base rehabilitation cost, an allowance, based on percentage of costs and square footage of the building, is delineated for:

- Preparation for Rehabilitation Work

- Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft)
- Contingency (25%)
- Overhead and Profit (15-18%)
- Escalation (6% for 2 years)
- Architectural and Engineering Design Services (20%)

The preparation for rehabilitation work item includes mobilization, hazardous material abatement as well as salvaging for potential later duplication or re-installation pertinent historic interior finishes identified by the City. For the purposes of the cost estimating effort, all roofing replacement or repair work is recommended to be performed with like-kind materials; all windows are assumed to be replaced with new commercial window assemblies in lieu of restoration of existing elements, and any exterior doors are to be repaired or replaced in like-kind. Where like-kind materials may no longer be available, WJE will offer alternative materials for the cost estimating purpose. For rehabilitation design and construction efforts, further evaluation of each of these elements is recommended. All work is recommended to be performed as per the Secretary of Interior's Standards for The Treatment of Historic Properties.

The condition-based subdivision of repair recommendations used to develop the base cost estimate is not representative of how a repair program could be implemented to remediate building conditions. Moreover, the costs assume that all repairs would be remediated in the same rehabilitation project. Execution of separate repair projects, or phasing of the rehabilitation project, could result in increases in the total repair cost. Furthermore, the final scope of repair work and the actual repair costs may vary depending on underlying or concealed conditions that were not apparent during our limited assessment.

BUILDING OVERVIEW

Overall

The original school, located in the northwest portion of the current building layout, was originally constructed in the early-1920s as a small, single-story building with what might be an addition extending to the east behind the gabled roof front section of the school. These 1920s structures largely make up the north wing of the current building footprint that is oriented east to west. Another single-story addition was constructed in 1930 to the south of and parallel to the original structures. This 1930s era addition comprises a majority of the central wing of the current building footprint and its construction created a central courtyard space between the 1920s and 1930s wings. In 1953, another addition was constructed, which included both a single-story wing at the northeast corner of the current building layout and a two-story wing that extends to the south of the previously constructed original building and additions. The construction varies between the original building and each of the subsequent additions. Below is a summary of the building enclosure and structure for each of the construction vintages.

Original 1920s Construction

The 1920s portions of the existing building, at the north wing, are of similar construction. The facade consists of multi-wythe clay brick masonry with various types of masonry backup including clay tile, concrete brick, and clay brick masonry. Cast stone units accent the entrances, window sills, and copings, which are typically surface treated or painted. Aluminum covers were installed over the original wood frames and the original sashes were replaced with aluminum replacement inserts. The main west entrance door of the original 1920s building is wood-framed, while the entrances elsewhere at the building (including all additions) are conventional steel doors.

The majority of the roof consists of an internally drained, slag surfaced, bituminous built-up roofing (BUR) system with granular cap sheet base flashing. The gable roof at the west end of the north wing is covered with asphalt shingles, which have been installed over a previous asphalt shingle roof system.

The finishes, especially on the western end of this portion of the building are deteriorated, exposing the roof structural systems. The structure in the gabled region consists of a wood plank roof deck supported by built-up, dimensional lumber trusses which bear on brick and clay tile composite masonry walls and a steel beam that spans the opening in the east wall to the adjacent low slope roof area. The low slope roof area is framed with dimension lumber rafters bearing on the composite brick and clay tile masonry exterior walls and a steel beam and column line located within the corridor walls. The floor consists of concrete slab-on-ground construction over a partial basement space for mechanical rooms.

1930s Addition

The building envelope of the 1930 addition is similar in construction to the 1920s construction of the existing north wing. The structure that houses the multi-purpose room at the east end of the 1930s addition has a gable roof that is covered with asphalt shingles.

Water and fire have caused damage to the interior finishes exposing the structure in numerous locations. The structure differs from the 1920s construction and consists of precast concrete planks supported by steel beams and columns. The exterior walls consist of multiwythe brick masonry construction and the

interior walls consist of gypsum block construction. The floor is concrete slab-on-ground, except in the mechanical room spaces connecting the 1930 addition to the original construction, which consist of a concrete tee joist-slab system spanning between concrete beams, columns, and foundation walls.

1953 Additions

The facade of the single-story 1953 addition at the northeast corner of the site consists of brick masonry veneer over concrete masonry unit (CMU) backup. Limestone units are present at window sills, entrances, and copings. Windows, consisting of operable steel-framed windows with glass block infill above, are located within punched openings in the exterior walls. The lower operable lites are framed with limestone that support the weight of the glass block infill above. The low-slope roofing system is similar to the north and center wings.

The roof structure is visible and soot covered due to a past fire event. The roof deck consists of gypsum planks spanning between open web steel joists which frame into a steel beam and girder system. The steel beams and girders bear on CMU walls. There are utility tunnels located below portions of the concrete slab floor, but the majority of the floor is a concrete slab-on-ground.

The two-story 1953 addition at the south portion of the site is similar in construction to the northeast 1953 addition with respect to the building envelope; however, a portion of the west facade consists of single-wythe CMU with large painted murals, and a region of the clay brick veneer on the first floor of the west facade has also been painted.

The interior finishes are constructed of more durable materials and are thus relatively intact, however, the structural system is exposed in isolated areas that have been vandalized or damaged from water infiltration. The structural system consists of a concrete tee joist-slab system, formed with stay-in-place concrete masonry forms, spanning to concrete beams and columns which may be a concrete-encased steel frame system. Flat concrete slabs are located at the corridors and toilet rooms. The first-floor structure is constructed over mechanical and crawl space areas.

Overall Condition

Overall, the building is in fair condition. The observed distress within the building interior is largely related to water and fire damage. The windows and roofing will require replacement. Significant masonry repairs will be required within the 1920s, 1930s, and northeast 1953 building areas. Various structural members throughout the building may require repair or replacement. Most notably, the wood roof framing of the 1920s portion of the building is exposed to the elements and will most likely require replacement. Further investigation is needed to fully understand the extent of distress of the precast and gypsum plank roof decks, the open web steel joists, and other exposed steel members. Further detail of the observed distress is provided below.

Facade

The 1920s and 1930 facades are generally in poor condition. Masonry cracking, displacement, and bulging was observed, which is primarily attributed to water infiltration within the wall assembly and corrosion of the steel lintels. The observed masonry distress is mainly concentrated at the piers located between punched wall openings, above lintels, and at building corners. A surface treatment appears to have been

applied to the cast stone units surrounding the main west entrance of the 1920s wing and a painted parge coating has been applied to the cast stone sills and window surrounds during a past repair attempt. The parge coating over several cast stone units is spalled. Coping units above the library alcove within the 1930s addition have been removed, resulting in significant water related distress within the wall assembly below the roof level. Previous repairs within the 1920s and 1930s wings appear to include only localized repointing beyond the localized parge coat patch repairs at the cast stone units. Rehabilitation should include repair of the masonry elements to mitigate water penetration and further masonry distress. This would include repair or replacement of the corroded steel lintels with appropriate flashing details, as well as substantial rebuild of brick masonry at displaced wall areas below lintels and replacement of isolated cast stone units.

The 1953 facades are generally in fair condition, though the limestone elements on the northeast addition are significantly distressed. Localized brick masonry cracking and spalling was observed, which is generally concentrated at building corners and near the roof level. Previous repairs are present and include localized areas of rebuilt masonry, some of which have re-cracked. The observed cracking and spalling distress is largely attributed to water penetration into the wall assembly, freeze-thaw damage, and corrosion of the steel lintels, though a lack of expansion joints and the presence of mortar with higher material strengths than the individual brick units may also be contributing to these distressed regions. Within the northeast addition, significant distress was observed within the limestone mullions that surround the lower lites of the punched wall openings, which is attributed to water and fire related damage. A majority of these limestone units will require replacement. The limestone coping units have generally been covered with sheet metal caps and the condition of the stone units is unknown at this time. Rehabilitation should include repair of the masonry elements to mitigate water penetration and further masonry distress. This would include replacement of spalled brick units, rebuilding areas of displaced masonry with appropriate detailing, grinding and pointing of distressed mortar joints, repair or replacement of the corroded steel lintels with appropriate flashing details, and replacement of isolated limestone units.

The windows and doors throughout the building are generally missing or significantly distressed and require replacement. Restoration of the wood framed doors on the main west entrance may be possible, though the repairs are anticipated to be significant. Repair of the glass block units, where present, may also be possible in lieu of replacement.

Roofing

The roof assemblies are in poor condition. At the original 1920s gable roof area on the northwest corner of the building, significant distress was observed including large areas of missing asphalt shingles and wood sheathing, exposing the building interior to the elements, and flashings, gutters, and downspouts were missing or damaged. Elsewhere in the 1920s addition, water infiltration within the building interior was observed to be a result of failed internal roof drains and drain conductors, which are generally located along the main corridor. The 1930s gable roof area on the east end of the building is in better condition, though some areas of missing shingles and flashing were observed. The main low-slope roof levels were not accessed at the time of this assessment due to limited roof ladder access. Where visible from grade, lower roof levels, and interior spaces, the low-slope roofing assemblies exhibit significant distress including weathering, cracking, organic growth, ponded water, failed drains, and missing rooftop

mechanical units. Rehabilitation of the building should include removal and replacement of all existing roof assemblies and drainage systems.

Structure

Overall, the structural systems are in serviceable condition, however localized areas of significant distress are located throughout and require further evaluation to determine severity and extent of the concerns.

The structures of the gabled roof and classroom low slope roof immediately east of the gable roof in the original 1920s portion are in poor condition where the roofing and decking are missing. Exposure of the structure due to continued water infiltration has resulted in decay of the wood framing. At least two trusses at the southwest corner of the gable roof are no longer intact and are susceptible to collapse if not temporarily shored. The wood member bearings and the bearings of the steel beam supporting the gable roof may be compromised due to the amount of water infiltration into the top of the walls. Additionally, the low-slope roof over the southern classroom immediately east of the west gable roof is fire-damaged. Both the west gable and low-slope roof structures over these areas may be able to be reinforced/repaired in-place, but it may be more cost effective to completely replace these distressed areas of roof. Masonry repairs required at the tops of the walls and bearing locations should be coordinated with the facade and roofing repairs.

The roof structure of the 1930 addition also exhibits localized distress. The precast planks, especially near roof drains and of the lower, sloped roofs of the bays projecting into the courtyard, are cracked and the reinforcement is exposed and corroded, significantly reducing the capacity of the roof planks. The structural steel elements supporting these planks are corroded. The interior wythes of brick masonry at the steel beam bearings have open, cracked joints; the units are displaced and several units are disintegrating. Areas of these roofs with concrete planks with exposed reinforcement and extensive cracking should not be accessed without temporary shoring placed below. Localized reinforcement of some structural steel beams may be necessary, and bearings of these beams on masonry walls that exhibit corresponding corrosion-related distress should be exposed and further assessed. Full restructuring of these small areas of roof may be most cost effective. Repair of the masonry is to be coordinated with the facade and roofing repairs.

Fire damage has exposed the structure in the science rooms located on the south side of this wing. CMU within the composite masonry wall shared with the play and lunch room appears to be discolored, indicating a potential loss of strength of the concrete material. Although it may not be of great concern, the wall should be cleaned and further evaluated.

A fire event in the northern 1953 addition has fully exposed the underside of the gypsum roof deck and the open web steel joist roof structure. Distress of the structure was not visibly evident beyond the soot deposits from the fire. However, based on the amount of water infiltration into the building, in addition to the fire event, further evaluation of this roof structure is warranted. The CMU pier supporting a structural steel girder beam at the reentrant corner located in Classroom 120 is cracked at the girder bearing. Further investigation of the beam bearing is recommended, with repointing of the cracked joints and replacement of the cracked units of the masonry pier anticipated. Based on corrosion of the embedded steel elements in the gypsum roof deck and corrosion of the open web steel joists, the small area of roof

structure over the gymnasium office will require replacement of the decking and potential reinforcement or replacement of the open web steel joists.

The structure at the southern 1953 two-story portion of the building is in better condition than the other areas of the building, mainly due to the more durable construction materials used. The undersides of the concrete tee joist-slab and flat slab roof structures are wet in numerous locations, with some areas of efflorescence and water staining occurring at crack locations of the flat slabs. The cracks may not require repair pending appropriate roofing repairs are completed to mitigate the water infiltration through the concrete slab.

Vertical cracks exist in the CMU piers between windows in multiple locations and at interior wall intersections. Steel columns may be embedded within the CMU and the cracking may be related to the relative rigidity of the columns in relation to the CMU; the stacked bond construction detailing of the pier, thermal and volumetric movements, or water infiltration. Repointing of the cracks is a minimum solution, but the cracks may recur and remain an ongoing maintenance item unless the underlying cause of the cracking is further assessed and mitigated.

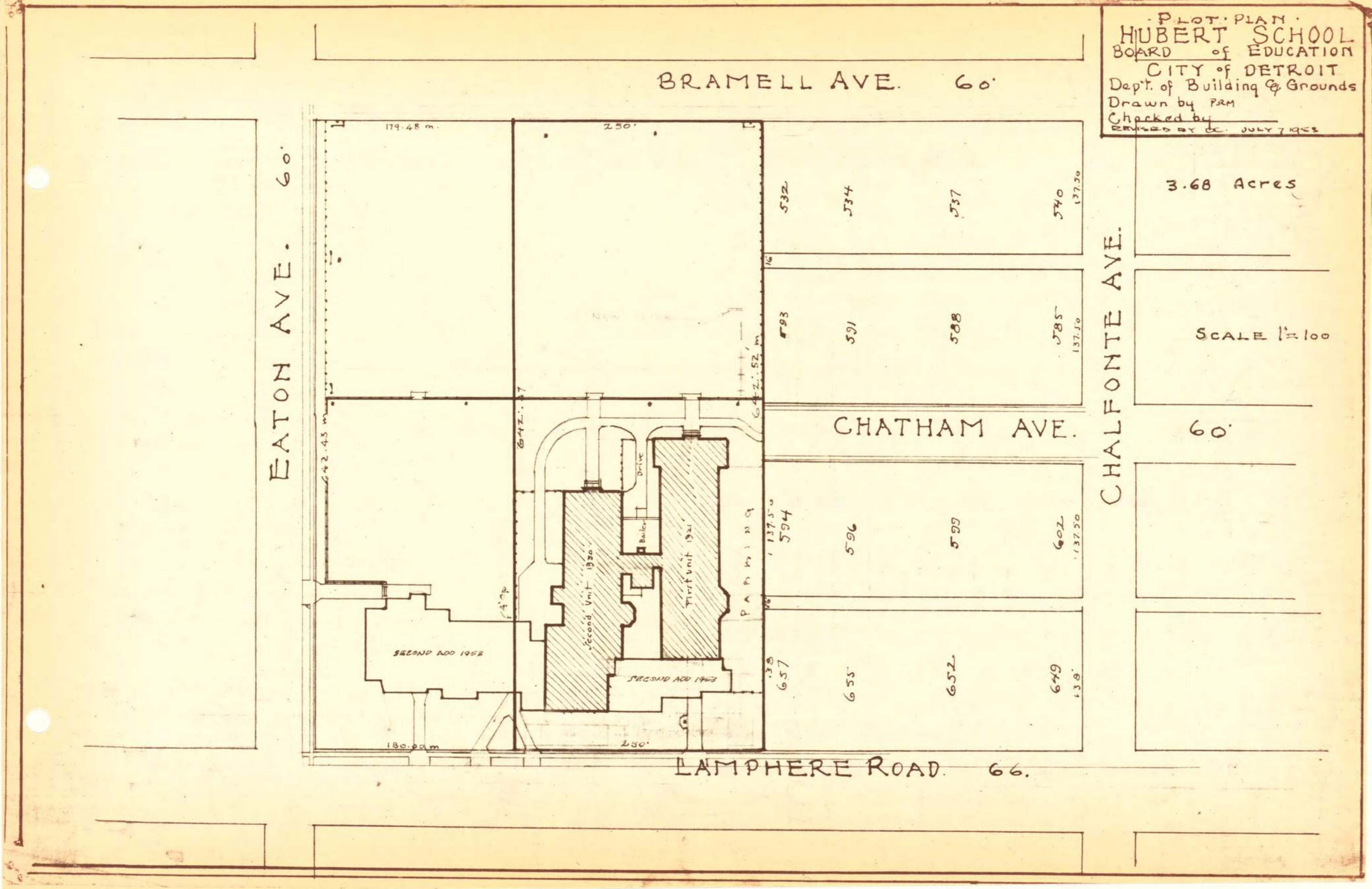
At the southernmost stair, a masonry beam supports the second-floor landing and the bottom of the flight of stairs up to the second floor. The bottom of the masonry has spalled exposing the corroded reinforcing bars. Repairs may be similar to a partial depth concrete repair but further assessment is needed to confirm.

The basement level of the building is of concrete construction. The first-floor structure consists of concrete tee joist-slabs formed with corrugated metal forms which have been removed, or flat slabs, depending upon the area of the building. The slab systems span between the foundation walls and interior concrete beam and column systems. The concrete is spalling, exposing corroded reinforcement of the joists in one of the basement rooms and of beams in the boiler room. Stalactites have formed on the underside of the flat slab and concrete beams in the southern basement plenum space. Select beams are cracked with a crazed pattern on the side and underside of the beam. Partial depth repairs are recommended for the joists and beams; however, beyond removing the stalactites and pending the water infiltration into the building is mitigated, concrete repair is not anticipated of the flat slab and beam areas.

Miscellaneous

Some localized masonry infill areas and partition walls are damaged from vandalism during the removal of plumbing and heating elements. Repair of these partition walls is recommended as appropriate for potential new use of the spaces.

The fan room in the 1953 southern addition is flooded preventing full access, but where visible from the stairwell, the underside of the first-floor concrete structure is in good condition with no distress observed. This room is recommended to be dewatered to allow for assessment of the foundation walls and remaining area of the first-floor structure.



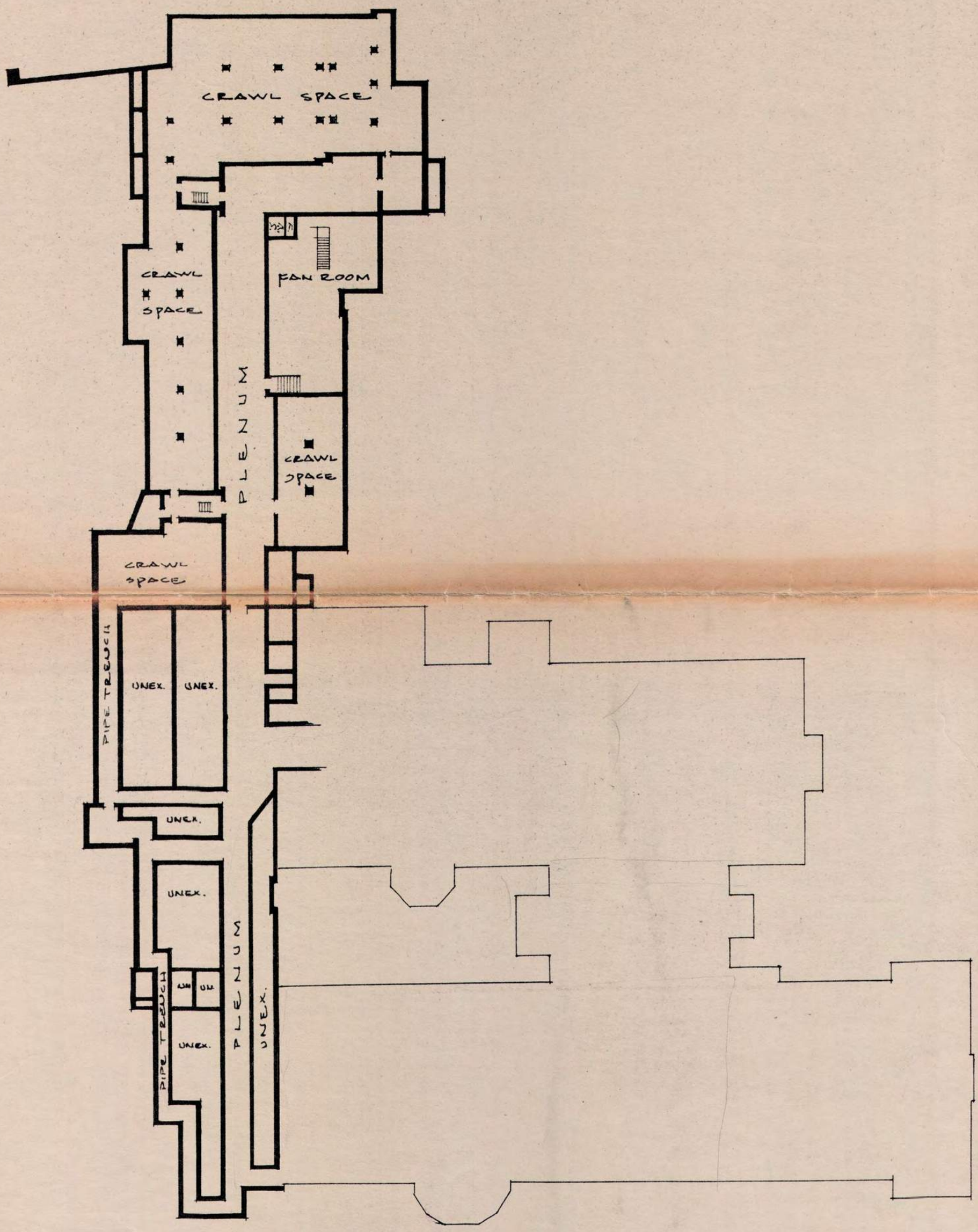
PLOT PLAN
HUBERT SCHOOL
BOARD of EDUCATION
CITY of DETROIT
Dep't. of Building & Grounds
Drawn by PRM
Checked by
BRAMELL AVE. 60'
EATON AVE. 60'
CHATHAM AVE. 60'
CHALFONTE AVE.
LAMPHERE ROAD 66.
3.68 Acres
SCALE 1"=100
250'
179.48 m
180.00 m
642.43 m
642.52 m
Drive
Boiler
Parking
Second Unit 1930
First Unit 1921
SECOND ADD 1953
532
534
537
540
593
591
588
585
594
596
599
602
657
655
652
649
137.50

- HUBERT SCHOOL -

BASEMENT PLAN
SCALE 1/8"-1'-0"

ARCHITECTURAL PLANNING DEPT.
BOARD of EDUCATION
DETROIT, MICHIGAN

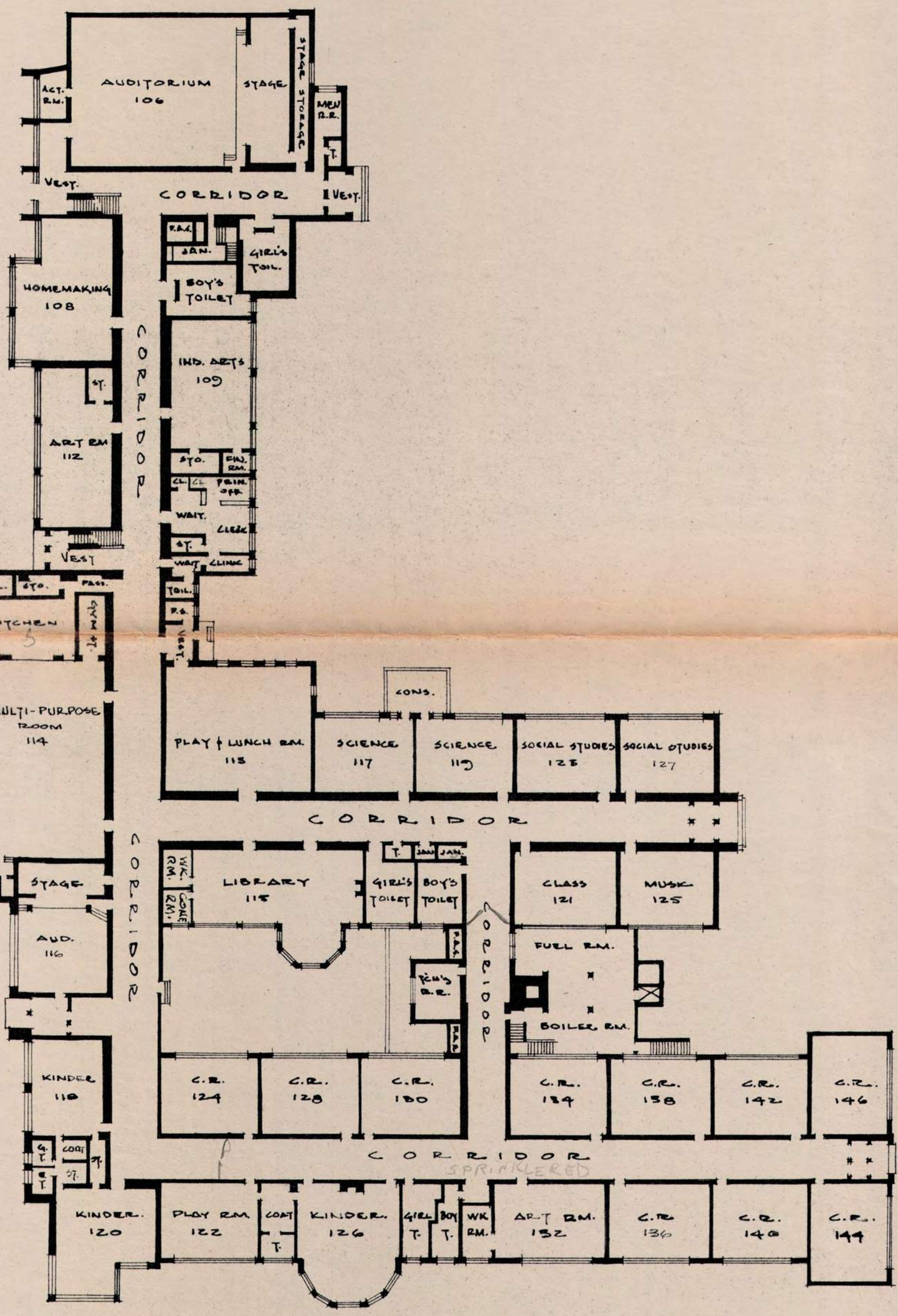
DRAWN	DATE	CH'K'D	DATE	APP'V'D	DATE
D.C.	7/8/60				



HUBERT SCHOOL
FIRST FLOOR PLAN
SCALE 1/32"-1'0"

ARCHITECTURAL PLANNING DPT.
BOARD of EDUCATION
DETROIT, MICHIGAN

DRAWN	DATE	CH'K'D	DATE	APP'VD	DATE
D.C.	1/8/54				



HUBERT SCHOOL
SECOND FLOOR PLAN

Scale 1/32"-1'0"

ARCHITECTURAL PLANNING DEP'T.
BOARD of EDUCATION
DETROIT, MICHIGAN

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DC.	1/8/54