

VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Holcomb Elementary School

Basic Property Information: COD 1-Holcomb-18100 Bentler

Short Name:	Holcomb
Address:	18100 Bentler Street, Detroit, Michigan 48219
Year Built:	1925
Additions Built:	1928, 1948
Outbuildings:	None
Year Vacated:	2010
Building Footprint:	180 feet x 325 feet
Square Footage:	44,173 sq. ft.
Number of Stories:	1
Building Height:	29 ft.



Current Ownership:	City of Detroit	Structural Framing System:	<ul style="list-style-type: none"> ▪ Cast-in-Place Concrete ▪ Brick Masonry ▪ CMU ▪ Wood
City Council District:	1	Exterior Wall System:	<ul style="list-style-type: none"> ▪ Brick ▪ Limestone ▪ Cast Stone
SNF District:	NWGR	Window System(s):	<ul style="list-style-type: none"> ▪ Metal ▪ Wood ▪ Glass Block
		Roofing System(s):	<ul style="list-style-type: none"> ▪ Built-Up Roof ▪ Asphalt Shingles ▪ Gutters ▪ Internal Roof Drains ▪ Slag Surface



Assessment Summary

Assessment Date: March 12, 2020

WJE Inspector(s): Cheryl Early; Andrew Lobbestael

Report Date: November 10, 2020

Building Risk Index: 52.71

Cost Estimate

Base Rehabilitation Cost Estimate: \$1,061,100

Preparation for Rehabilitation Work: \$900,000

**Mechanical, Electrical, Plumbing,
Fire Protection (\$80/sq ft):** \$3,533,840

Sub-Total \$5,494,940

Contingency (25%) \$1,373,735

Sub-Total \$6,868,675

Overhead and Profit (15-18%): \$1,030,301

Sub-Total \$7,898,976

Escalation (6% for 2 years) \$473,938

Sub-Total \$8,372,914

**Architectural and Engineering
Design Services (20%):** \$1,674,582

TOTAL COST ESTIMATE: \$10,047,497

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 roof levels, using binoculars as needed. On the interior, WJE performed a walkthrough of accessible areas of each floor of the building. The basement level is mainly flooded, and thus, was only partially accessed. 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
- "Holcomb School Adaptive Reuse Request for Proposals" dated October 20, 2017

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 1925 building has a "T" shaped footprint which occupies the west and central wings of the current building layout. A 1929 addition to the north and east created a courtyard space between the original portion and addition. A second addition was constructed in 1948 to the south and east, again creating a courtyard space between the original and new addition. The building is generally a single-story, while the gymnasium and auditorium are two-story spaces. Mechanical spaces are located at the basement level of the additions; the original building is a slab-on-ground construction.

The facade is primarily clad with red-brown brick with areas of limestone and cast stone accents. The stone accents include mullioned bay windows bearing a stone cartouche at the library and art room, limestone mullioned windows at the gymnasium, cast stone surrounds at entrances on the street facing facades, and at setbacks in the pilasters. The 1946 addition features a more utilitarian facade with minimal ornamentation. The fenestrations at the original building and the 1929 addition include wood framed windows and wood framed doors with transom windows. The fenestration at the 1946 addition generally consists of conventional steel doors and window openings with glass block infill above operable steel-framed lower lites. Steel frames surround the lower, operable lites and support the weight of the glass block above, while the glass block infill is mortared in place. The windows have mostly been boarded up with a combination of painted sheathing and corrugated translucent panels.

The building includes steep-slope gable roofs and low-slope roof areas. The gable roofs are present along the west and north sides of the building in the original structure and the 1929 addition. The gable roofs intersect with a hip roof at the northwest corner of the building and feature over-framed hip roofs at entrances. The steep-slope gable roofs are covered with asphaltic shingles and copper flashings and are interrupted by multiwythe brick masonry walls that extend above the roof. These steep-slope roof areas drain to the rear low-slope roof areas and an internal drainage channel at the base of the parapets.

The low-sloped roof areas are covered with slag-surfaced bituminous built-up roofing (BUR). The bitumen type is unknown. The base flashings are granular surfaced cap sheets. These roof areas are general sloped to interior drains and are surrounded by parapet walls or rising walls. The parapet walls are covered with a combination of terra cotta coping pieces and pre-finished metal coping. The elevated slab over the boiler room is covered with a smooth surfaced BUR.

The gabled roof areas are framed with wood plank decking and particle board spanning between steel purlin members which are supported on built-up steel trusses. The steel trusses are supported on the exterior masonry walls and interior steel columns located within the corridor walls. The low-slope roof areas of the original building are framed with wood plank decking and dimension lumber rafters. The low-slope area above the corridor of the 1929 addition is framed with shallow, open web steel joists spanning the width of the corridor. The 1948 roof structure was unverified due to the intact condition of the finishes in this wing. The perimeter masonry wall construction is of brick masonry, composite CMU and brick masonry, and CMU masonry, respective of the chronology of construction. The supported first floor structure over the mechanical spaces is of cast-in-place concrete construction with flat slabs over the utility tunnels and tee joist-slab and beam systems over mechanical rooms and crawl space areas.

Overall, the building is in good condition with localized distress noted in the envelope and structure. The roofing is generally in serviceable condition and can be repaired and maintained to extend its service life, though more significant repairs are anticipated in isolated regions, including areas of missing flashings, copings, and over the boiler room. Localized masonry distress is present on the facades and repairs are warranted. Replacement and repair of the windows should be anticipated given the deteriorated conditions. The supported concrete floor over the storage room at the basement level of the 1929 addition is spalled, exposing corroded reinforcement in the bottom of the tee joist-slab structure. Wood roof decking decay and corrosion of the structural steel roof members are both related to water infiltration into the building. Further detail of the observed distress is provided below.

Facade

The masonry is in serviceable condition with localized areas of distress and deterioration, largely resulting from water penetration into the wall assembly and subsequent corrosion of the embedded steel support elements. The most significant conditions include deteriorated cast stone materials and corroding steel lintels at window and door openings.

Several of the cast stone accent features on the original building are significantly deteriorated. The distress includes craze cracking, spalls, erosion and eroded mortar around the masonry units, primarily occurring at the pilasters. We recommend that the deteriorated cast stone units be removed and replaced, as well as repointing of the eroded mortar. Repointing is also appropriate at miscellaneous cracks and areas of eroded mortar at the base of the building and at top of masonry wall that extends past the roof at the corridors. The limestone accent units are generally in good, serviceable condition.

The steel lintels above the windows and louvers of the original building and 1929 addition are corroded. The corrosion is causing distress to the adjacent masonry such as cracking of the mortar and brick. We recommend repairing or replacing the corroded lintels and incorporating flashing into the repairs. The steel lintels above the window openings in the 1946 addition are in better condition than in the other parts of the building, though sealant was added at the toe of the lintels on the east elevation of the 1946 addition and should be removed. We recommend cleaning and painting the exposed steel surfaces throughout the building.

The masonry chimney has a rectangular base that transitions to a tapered octagon shape in plan. The chimney exhibits localized erosion of the mortar and loose brick units at the top several feet of the chimney. The cast stone accent pieces at the transition exhibits localized distress, including cracked and eroded stone units with eroded mortar. We recommend repairs including repointing and localized stone and brick replacement to address the observed deterioration.

The windows and louvers in the original building and 1929 addition are wood framed. The majority of these windows are missing, decayed or damaged. New windows will be required in the original building and 1929 addition.

The windows on the 1946 addition are typically a combination of glass block infill with steel-framed lower lights. The steel frame around the lower lites support the weight of the glass block units above. The lower lights have been boarded up, but where exposed from the interior and exterior, the perimeter steel frames contain minor corrosion with peeling paint. A few of the lower steel-framed windows are still operable and in serviceable condition, which may be restored, but others are missing and will require replacement.

The observed distress within the operable windows that remain intact include paint failure, minor surface corrosion, isolated cracked or missing glass, and failed perimeter sealant materials. Many of the glass blocks are broken or missing or have been repaired with mismatch glass block units. At a minimum, it would be appropriate to install new windows where the lower lites are missing, clean and paint the corroded steel windows and perimeter frames, replace damaged glass and sealant, and replace isolated units within the glass block infill. Replacement of all steel-framed windows may also be considered during the schematic design phase in lieu of repair for improved thermal performance and for a relative cost comparison.

The doors on the 1946 addition are steel framed with steel leaves and wood framed transom windows above. The doors on the original building and 1929 addition are wood framed and are in various stages of disrepair with decayed wood leaves and frames. We recommend that the doors and frames be replaced on the original building and 1929 addition. The frames may be salvageable on the 1946 addition, but the leaves warrant replacement.

Roofing

The low-slope roofs are generally in good, serviceable condition. Minor damage or distress within the field of the roof includes missing drain strainers and isolated cracking at seams. Notable distress includes one area of ponding water over Room 108 where the wood joists are deflected. Coordinate the roofing work in this area with the anticipated structural repairs (discuss below). About half of the prefinished aluminum coping is missing, presumably by vandals, which will require replacement. Where the coping is missing, the continuous galvanized cleat used to secure the coping is still present. The base flashing for the roof runs up and over the parapet thus the missing coping is not an immediate waterproofing concern. The interior spaces below these low-slope roof areas are largely dry. Based on the observed conditions, the low-slope roof areas likely require only maintenance-type repairs to extend the service life of the existing roof assembly.

The field of the asphalt shingle roofs are generally in serviceable condition, though distress is concentrated at areas where copper flashing has been removed, presumably by vandals. This includes valleys and step flashing at rising walls as well as a copper copula that is now missing. Some the areas with missing copper have been covered with tarps and some of the missing step flashing has been replaced with continuous piece of membrane adhered to the roof and wall; this repair has left many of the mortar joints open where the flashing had previously been let into the wall. Even with the temporary repairs, the missing step flashing is actively permitting water into the building and installation of new step flashing is warranted with localized repairs anticipated at the adjacent shingles and wood decking, as discussed in further detail below. The area of missing copula can be roofed over level with the adjacent roofing. There is one area above the corridor adjacent to the Library where the shingles at the eave were missing and the decking was covered with rolled roofing; we recommend a more permanent and appropriate repair at this location to provide more durable watertight construction.

The roofing over the boiler room near grade is in general disrepair with open seams, failed base flashings, and exposed reinforcement. It is beyond its useful service life and replacement is warranted.

Structure

The structure is in good condition. Areas of distress are generally isolated or are of minor structural concern.

Water infiltration into the building, related to vandalism of the copper flashings and roofing, is causing decay in the wood decking and corrosion of the structural steel roof members. The decayed wood decking is to be replaced and the steel cleaned, assessed and re-coated with a rust-inhibiting coating, coordinating the structural repairs with the roofing repairs. Water was observed to be ponding on the low-slope, wood-framed roof of the original building during the assessment, over Room 108. The rafters in this area were visibly deflected when observed from the exterior, but minimal distress was observed in the plaster ceiling finish on the interior. In the kindergarten coat room, the plaster ceiling finish had failed exposing the dimensional wood roof rafters and wood decking. Both the rafters and wood decking are water stained with fungal growth present in this area. Further assessment of this roof structure is recommended as part of a building rehabilitation effort and may require reinforcement of the roof rafters above Classroom 108 and the adjacent ancillary rooms.

The base of two interior steel columns in the north corridor are corroded where water was observed to be ponded on the corridor floor, and require cleaning, further assessment and re-coating. At the base of the masonry columns or piers along these same corridor walls, the brick is soft and powdery (friable) at the bottom eight courses above the first-floor level. These bricks were soap cut in an "unclean" fashion giving the appearance of a spalled surface but may have just been modified to fit the lockers between the masonry piers. The deteriorated bricks, assumed to be the outermost wythe of the pier, are recommended to be replaced. The source of the water for the corrosion is most likely related to failed roof drainage assemblies.

Cracking observed in the CMU walls of the 1948 addition relate to the water infiltration through the building envelope. Several of the cracks are occurring in joints which have been previously repointed based on the color differences of the repointing mortar. The cracked mortar joints can be repointed again and cracked units replaced after the envelope is made water tight, however, it may be prudent to investigate the wall assembly for potential corroded steel elements which may be embedded in the wall, and repair those elements as needed in conjunction with the CMU repointing effort to mitigate re-cracking of the masonry repairs.

The supported first floor structure over the basement level storage room of the north 1929 addition is of concrete tee joist-slab construction spanning to concrete basement walls and a concrete beam and column system. The concrete in this area has spalled and exposed corroded steel reinforcement bars in the bottom of the joists and beams. Partial depth concrete repairs are recommended for this area. No other readily visible distress was observed within the areas accessed in the partially flooded basement level.

Miscellaneous

Localized areas of the concrete slab-on-ground throughout the building are cracked and the concrete is scaling, indicating potential freeze-thaw damage of the concrete material. Although not a significant structural concern, the distressed areas may warrant spot replacement or repair of the slab for proper application of any finish materials.

Many of the interior walls are cracked at corners, vertically at midspan, and diagonally near corners. Repairs had been attempted at some of the crack locations. Further investigation is recommended to determine the cause of the distress, but it is suspected to be related to the water infiltration occurring and thermal or volumetric changes in the wall materials. Cracking within select walls, such as interior classroom walls, may be related to the relative stiffness of the walls within the structural building frame system. These cracks may recur after rehabilitation and remain an ongoing maintenance item unless the underlying cause of the cracking is further assessed and mitigated.

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 extant attic catwalk over the second-floor corridors consists of nominal 2x boards laid flat and supported on steel ceiling framing members. Water staining and fungal growth were common on these boards. Consideration to replace the catwalk to meet current code requirements as required for potential new building use is recommended; however, replacement of the decayed boards and recoating of the steel support may be sufficient.

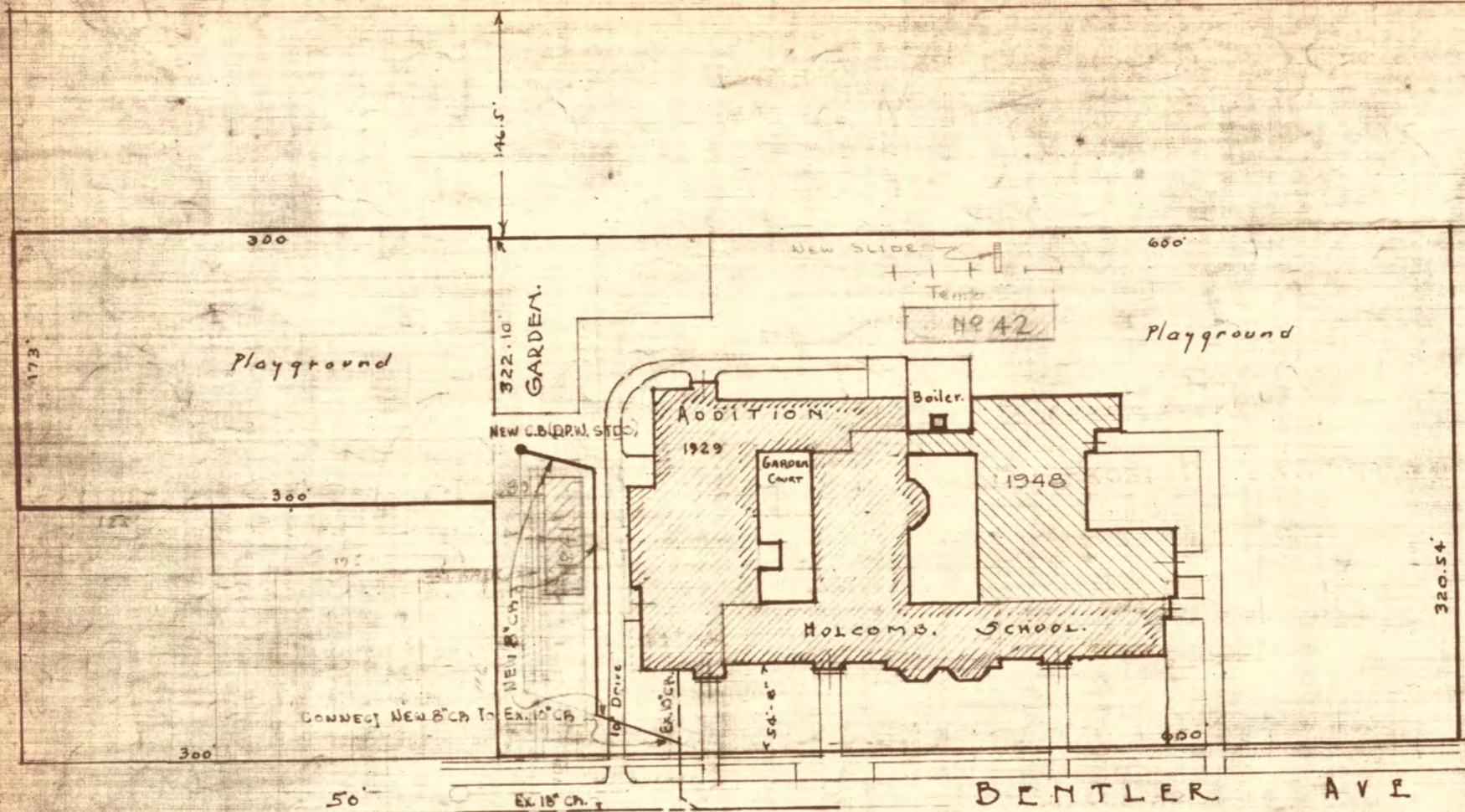
PLOT PLAN
 SAMUEL D. HOLCOMB SCHOOL
 BOARD OF EDUCATION
 DETROIT.

ARCHITECTURAL PLANNING DEPT.
 Drawn by S.H. 12.15.27.
 Revised by S.H. 5.25.48 2.7.49 5.14.52

WESTBROOK AVE. 50'

5.62 Acres.

KARL AVE



Scale 1" = 100'

50' BENTLER AVE 59.7'

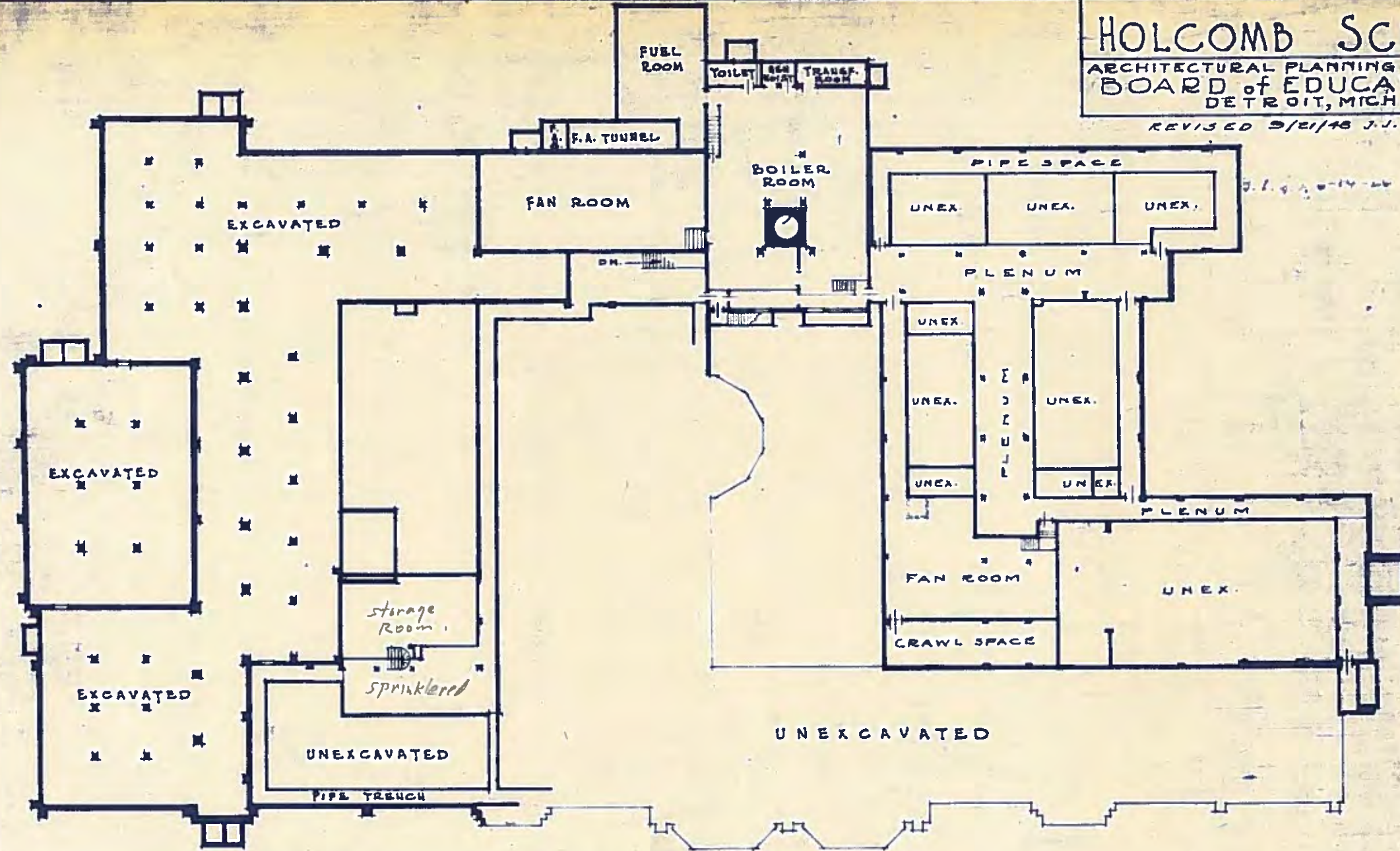
CURTIS AVE 50'

GLENCO AV. 50'

THATCHER 75'

BENNETT AV 50'

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REVISED 5/21/48 J.J.



BASEMENT PLAN
SCALE 1/32" = 1'-0"

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REVISED 9/22/46 J.W.



CLNG. HGT. = 10' ±

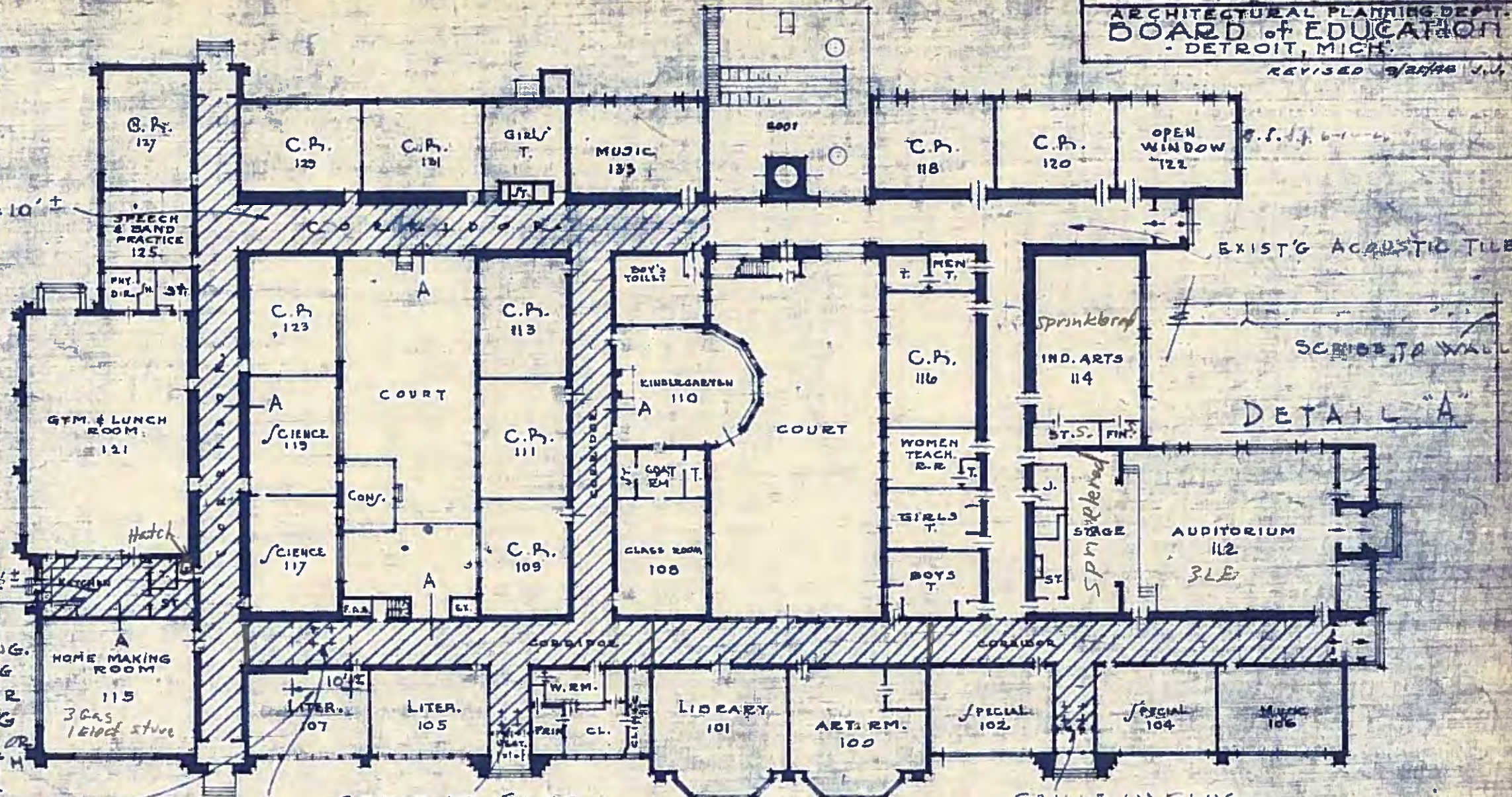
CLNG. HGT. 12' ±

BD. OF ED. TO CLEAN CLNG. BY WASHING WITH WATER & CLEANING COMPOUND OR CLEAN WITH XYLENE OR MINERAL SPIRITS

BD. OF ED. TO REPAIR CEILING IN THIS AREA - (CLNG. HAS SAGGED)

GRILLE IN CLNG. ACCESS DOOR IN CEILING.

INSTALL ACOUSTIC TILE ON CEILINGS OF CROSS HATCHED AREAS.



FIRST FLOOR PLAN
 SCALE 1/8" = 1'-0"

W.O. E-9717