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VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Detroit Open School

Basic Property Information: COD 1-Detroit Open-24601 Frisbee

Short Name:	Detroit Open
Address:	24601 Frisbee Street, Detroit, Michigan 48219
Year Built:	1924
Additions Built:	1955
Outbuildings:	None
Year Vacated:	2009
Building Footprint:	200 feet x 215 feet
Square Footage:	35,253 sq. ft.
Number of Stories:	1
Building Height:	20 ft.

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

Structural Framing System:	■ Cast-in-Place Concrete ■ Brick Masonry ■ CMU ■ Structural Steel ■ Wood
Exterior Wall System:	■ Brick ■ Limestone
Window System(s):	■ Metal ■ Wood ■ Glass Block
Roofing System(s):	■ Built-Up Roof ■ Internal Roof Drains

Assessment Summary

Assessment Date:	March 12, 2020
WJE Inspector(s):	Cheryl Early; Andrew Lobbestael
Report Date:	November 12, 2020
Building Risk Index:	**57.60**

Cost Estimate

Base Rehabilitation Cost Estimate:	$1,885,900
Preparation for Rehabilitation Work:	$900,000
Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft):	$2,820,240
Sub-Total	$5,606,140
Contingency (25%):	$1,401,535
Sub-Total	$7,007,675
Overhead and Profit (15-18%):	$1,051,151
Sub-Total	$8,058,826
Escalation (6% for 2 years)	$483,529
Sub-Total	$8,542,355
Architectural and Engineering Design Services (20%):	$1,708,471
TOTAL COST ESTIMATE:	$10,250,826

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 relatively small basement area is partially flooded. The utility tunnels around the perimeter of the remaining slab-on-ground floor construction were not 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

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 single-story "U" shaped footprint of the building was created with an addition in 1954 which more than quadrupled the footprint of the original 1925 schoolhouse. The original construction is located at the south end of the east wing of the building. A central garden space opens to the playground along the south facade. The powerhouse is constructed integral with the 1954 addition and is located at the southern end of the east wing.

The building facade is clad with clay brick masonry. The addition has concrete masonry unit (CMU) backup and the original building has mass masonry walls. The brick masonry is laid in running bond with header courses every seventh masonry course. Limestone accent units are present at entrance surrounds, window sills and mullions, and copings. Punched wall openings with perimeter steel frames contain glass block infill above operable, single-pane metal windows. Aluminum-framed doors are located within punched entrance openings in the masonry facade. The building has a low-slope roof area that is covered with a smooth surface built-up roofing (BUR) and features internal drains.

The roof structure of the original building is of dimension lumber spanning between the exterior, composite masonry walls and interior steel beam and column lines aligned with the central east-west corridor walls. In the 1954 addition, the floor slabs consist of a concrete tee joist-slab system formed with a long span metal deck, which spans between concrete, or concrete encased steel, beams and columns. The columns are located at the exterior walls and within the walls of the central corridors.

Overall, the building is in fair condition with localized areas of distress. The wood roof structure of the original building is water stained and visibly decaying; rebuilding the original roof structure is recommended. The roof structure of the 1954 addition, being of more durable materials, exhibits signs of water infiltration into the roof structure, though only localized repairs are anticipated. The water infiltration of both the original building and the 1954 addition is primarily related to the poor condition of the roofing, which should be replaced. Replacement of the operable single-pane windows and glass block infill are anticipated to address significant corrosion of the perimeter steel frames and the resulting distress at the surrounding limestone units. The exterior doors are anticipated for replacement. Localized areas of the brick and stone masonry facade elements also require repair.

Facade

The window openings typically consist of glass block infill above metal-framed operable lower windows; both assemblies are set in perimeter steel frames. The windows are currently covered with temporary protective enclosures on the exterior. Round nosed limestone units are present at the perimeter of the window openings and between the upper and lower windows. The lower, operable, single-pane windows are generally intact, but contain localized distress including missing sashes, displaced frames, missing hardware, cracked and missing glass lites, and the sealant at the perimeter joints typically exhibited weathering and bond failure. The upper glass block infill areas are typically in good condition with isolated cracked units including units that were damaged during the installation of the temporary protective closures. Perhaps the most significant distress is the severe corrosion of the perimeter steel frames. We anticipate that replacement of the steel frames with the incidental replacement of the operable windows

and glass block infill will be necessary to prevent additional distress to the limestone. The numerous spalls and cracks in the limestone can then be addressed appropriately; this will likely include localized Dutchman repairs, replacement of select units, and repointing. Alternatively, near-term maintenance repairs can be completed to slow the rate of corrosion and defer replacement of the glass block and windows, though the steel corrosion and stone distress would be anticipated to continue.

Cracking and spalling of the brick masonry was observed at some of the powerhouse window heads and above the penthouse roof access door due to corrosion of the steel lintels caused by prolonged water infiltration. We recommend removal and replacement of the brick masonry; cleaning and painting of embedded steel lintels, or replacement if the steel exhibits severe deflection and/or section loss; and installation of through-wall flashing. Debonded mortar and step cracks were also observed in isolated locations throughout the facade, warranting repointing repairs.

Isolated limestone coping units are missing, exposing the masonry wall to moisture penetration. Some of the coping units that are resting on the roof levels are cracked and broken. Replacement of the missing coping units is recommended to mitigate further distress. Isolated limestone header units are also displaced on the west building wing. The cause of the displacement is unknown, but may be attributed to corrosion of the steel window lintels. We recommend further investigation to determine the cause prior to, or during, repair and resetting of the displaced units.

Localized cracking and eroded mortar were observed near the top of the brick masonry chimney. We recommend repointing the joints within the upper three feet of the chimney, performing crack repairs at the localized vertical cracks, and repairing the limestone copings with new through-wall flashing.

The barricaded exterior doors are generally intact, with the exception of the missing door between the courtyard and art room, with minor distress conditions including cracked or missing glass and missing hardware. Holes are also present in the doors from barricading measures. Rehabilitation of the building should consider replacement of the exterior doors, though restoration may be possible in some regions.

Roofing

The roofing assembly is severely deteriorated with vegetation growth, localized seam failures, and displaced perimeter flashings, plugged drains, open penetrations, and areas of standing water. Active leaks, more concentrated at roof penetrations, and indications of prolonged moisture infiltration, including peeled paint, moisture staining, and damage to the interior finishes, were observed at the interior of the building in multiple locations. Additionally, the fascia along the roof perimeter was missing which may be due to vandalism. Remnants of the fascia in a few areas are copper which suggest the original fascia was copper clad. The underlying exposed wood sub-fascia was decayed in multiple locations, and water was actively dripping from behind the fascia. We recommend removal and replacement of the roof assembly and drainage systems, as well as replacement of the missing and damaged fascia elements as a part of the building rehabilitation.

Structure

The roof structure of the original building is water damaged and visibly decayed. The dimensional wood rafters of the low-slope roof are black in color and white fungal growth is present near the central steel beam bearings. Replacement of the decayed roof decking and reinforcement or replacement of the

existing deteriorated wood rafters is recommended. The steel beam and column system at the interior corridor walls should be cleaned, further assessed, and recoated. The corroded steel bolts securing the wood framing to the steel beams are to be replaced.

Throughout the 1954 addition, varying degrees of corrosion is present on the long span metal deck and ceiling systems[1] of the roof structure, especially along the rooms fronting the central garden space. Corrosion of the metal deck is not a structural concern if it was used as a form deck but could be a structural concern if is behaving compositely with the concrete. Additional investigation would be required to determine if the deck is composite. At a minimum, the exposed steel is recommended to be cleaned and re-coated with a rust inhibiting paint as part of the rehabilitation effort. Further investigation into the condition of the concrete above the corroded metal ceilings is also recommended and can be coordinated with the development of roofing repairs.

Consistent with the water infiltration through the roof assembly, the second-floor corridor ceiling, composed of gypsum planks spanning between structural steel members, is wet and deteriorated or missing in some locations. Once saturated, gypsum planks are typically not salvageable, therefore the second-floor corridor ceiling is recommended to be replaced with a new attic floor/plenum structural system, if required for the new use of the building.

Where the gypsum plank has failed, the underside of the concrete flat roof slab is visible. The slab is cracked and water is migrating through the crack; corrosion staining is present. The crack may not require repair providing appropriate roofing repairs are completed to mitigate the water infiltration.

Approximately four feet of ponded water was observed in the lowest level of the basement space at the southeast corner of the building. The visible portions of the basement walls and underside of the first-floor structure are in good condition with no distress observed. The basement should be dewatered and the foundation walls assessed.

Miscellaneous

Many of the CMU walls are cracked at exterior wall corners, near beam bearings, and along interior walls. Repairs had been attempted at some of the crack locations and have re-cracked. 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. Repointing of the cracked mortar joints and replacement of cracked units is recommended. 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.

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[1] Initial review of the 1950s era long span metal deck system indicates the decking is acting non-compositely with the concrete tee joist-slab, that the decking was used as a stay-in-place form for the cast-in-place concrete. However, a non-technical, marketing brochure from this era was noted to advertise the decking as a “composite” concrete floor system.

The granite steps and landings at some of the building entrances are displaced and the joints are missing mortar or sealant. Some of the granite units are missing. We recommend rebuilding the steps and landings and salvaging or repairing the existing granite units.

PLOT PLAN

BURGESS SCHOOL

BOARD of EDUCATION

DETROIT

Dept of Building & Grounds

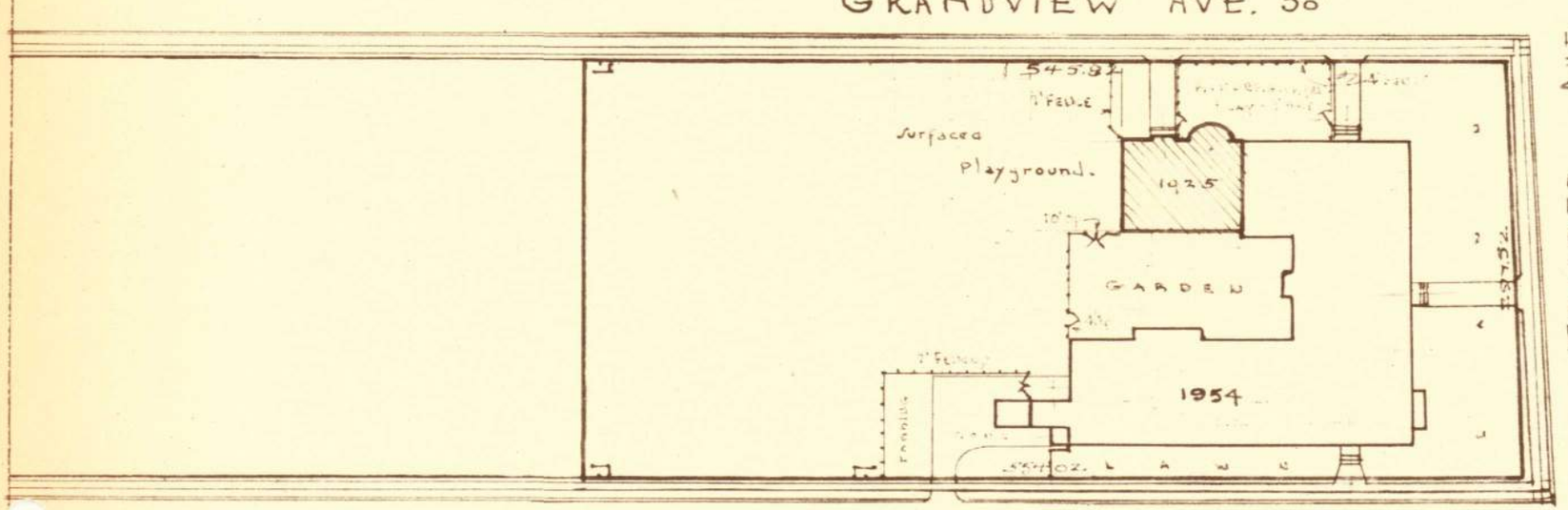
Drawn by PRM 5-5-29

Checked by

SCALE 1" = 100

N.

GRANDVIEW AVE. 50'



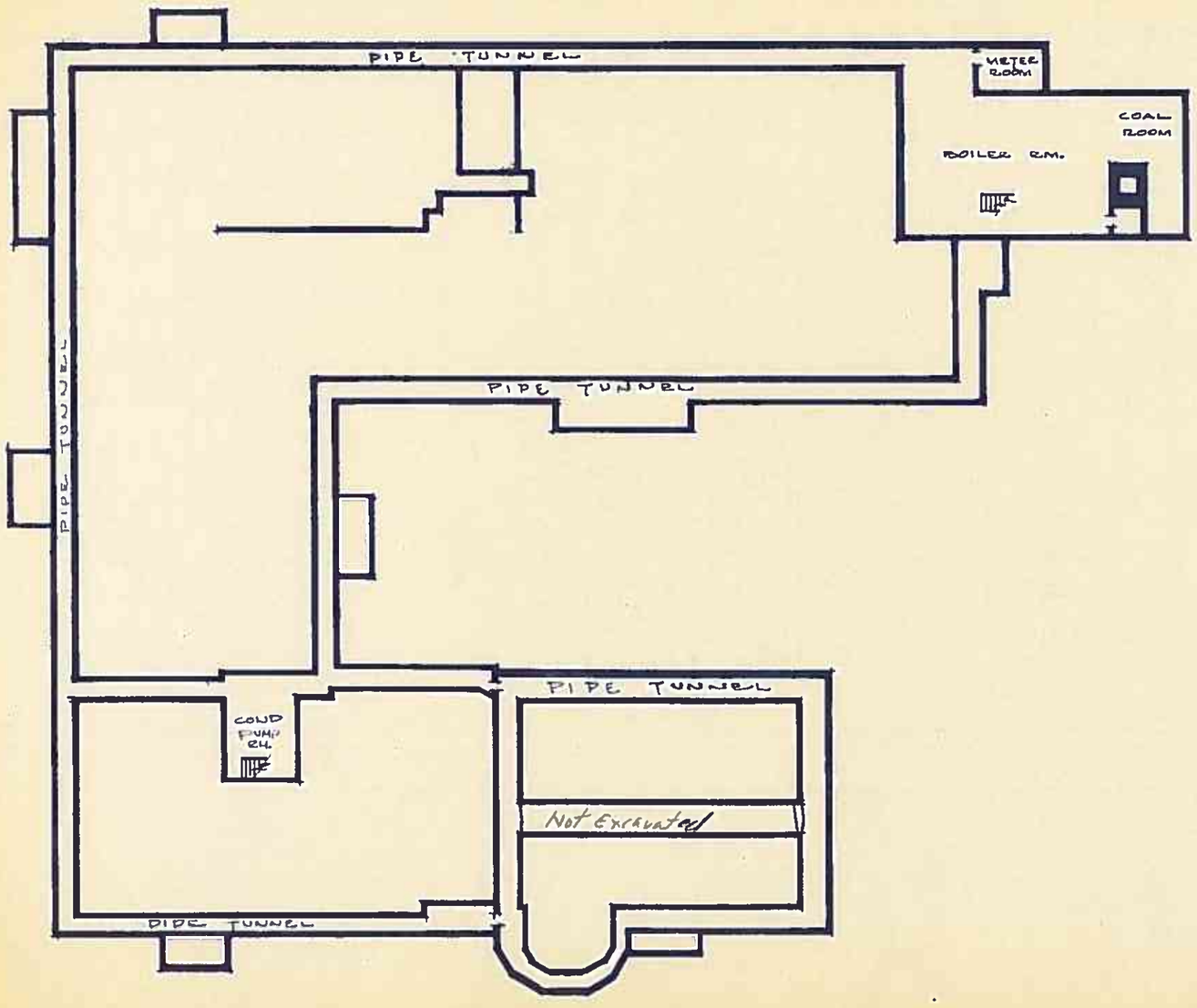
FRISBEE AVE. 50'

WINSTON AVE 50'

BURGESS SCHOOL
ELEMENTARY SCHOOL
BASEMENT PLAN

ARCHITECTURAL PLANNING DEPT.
BOARD of EDUCATION
DETROIT, MICHIGAN

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
DL	6/24/54				



BURGESS SCHOOL
ELEMENTARY SCHOOL
FIRST FLOOR PLAN

ARCHITECTURAL PLANNING DEPT.
BOARD of EDUCATION
DETROIT, MICHIGAN

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
D.C.	6/24/54