# DMPS FACILITY ASSESSMENT | HILLIS ELEMENTARY

12.12.2023

ARCHITECTS
ENGINEERS

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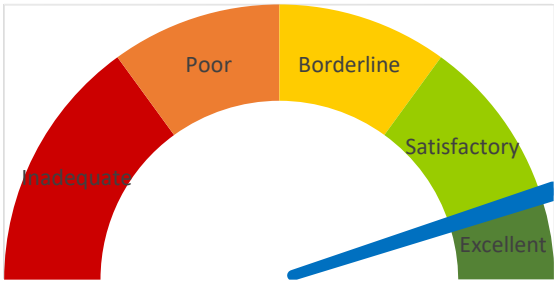
Des Moines, IA 50309
515.244.7167

**www.bbsae.com**



# REPORT ORGANIZATION

# EXECUTIVE BUILDING SUMMARY

Hillis Elementary's on-site facility conditions assessment was conducted on December 12, 2023 and included visual conditions assessment from professionals covering interior architecture, exterior building envelope, the property's grounds (site), structural condition, mechanical (HVAC/Plumbing) systems, electrical systems (power, exterior lighting, interior lighting, fire alarm, and general IT), and the elevator conditions.

Maintenance items noted for Hillis Elementary include:

- Door and hardware adjustments to ensure latching of exterior doors
- Roof and roof drain cleaning
- Repair of insulation jackets on exterior ductwork
- Service for non-operational DOAS-2 unit
- Review of boiler sequence controls
- Grounding of equipment in the MDF room

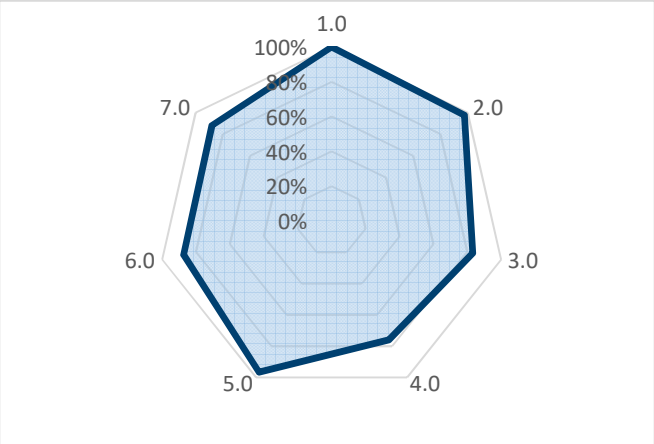
Potential projects identified as 1-2 year priorities for Hillis Elementary include:

- Gypsum board wall repairs
- Roof repairs at select areas
- Repainting of exterior doors
- Sidewalk repairs
- Replacement of an energy recovery unit and exhaust fans
- Exterior lighting upgrades

These projects along with all of the recommended potential projects at the 3-4 year and 5-10 year priority levels are further described within this report.

| Discipline Comparison | | | | Building Health | | | | |
|---|---|---|---|---|---|---|---|---|
| Assessment Category Summary | | Max Pnts | Earned Pnts | Bldg Weight Factor | Max Pnts | Earned Pnts | % | Rating |
| 1.0 | Educational Adequacy | 165 | 165 | 2.00 | 330 | 330 | 100% | Excellent |
| 2.0 | Environment for Education | 325 | 317 | 0.60 | 195 | 190 | 98% | Excellent |
| 3.0 | Exterior Envelope | 95 | 79 | 3.00 | 285 | 237 | 83% | Satisfactory |
| 4.0 | School Site | 100 | 76 | 1.50 | 150 | 114 | 76% | Satisfactory |
| 5.0 | Structural Conditions | 145 | 140 | 1.30 | 189 | 182 | 97% | Excellent |
| 6.0 | Mechanical Systems | 635 | 555 | 0.80 | 508 | 444 | 87% | Satisfactory |
| 7.0 | Electrical Systems | 455 | 401 | 0.75 | 341 | 301 | 88% | Satisfactory |
| **Total** | | | | | **1,998** | **1,798** | **90%** | **Excellent** |

**Hillis Elementary**
**Discipline Comparison**




| Rating Table | | | | |
|---|---|---|---|---|
| 1-29% | 30-49% | 50-69% | 70-89% | 90-100% |
| Inadequate | Poor | Borderline | Satisfactory | Excellent |

After totaling the scores from the various discipline assessment reports Hillis Elementary scored a building health rating of 90%, or EXCELLENT, per the scale described above. Per the graph shown on the cover page of this report, scores within the "green" range are considered positive scores. 70 years from its original construction, Hillis Elementary is still in great condition today as a result of well-planned additions / upgrades and attentive care and maintenance. The maintenance and upgrade projects proposed in this report will help Hillis retain this excellence for many years into the future.

# Building Data Record

Building Name: Hillis Elementary

Date: December 12, 2023

Address: 2401 56th Street
Des Moines, IA 50310

High School Feeder System: Hoover High School

Building SF: 57,720 SF

Site Acreage: 8.03 acres

Date(s) of Construction: 1953, 1960, 2007

Date(s) of Roof Replacement: 2008, 2021

Current/Scheduled Projects: No projects currently planned.

Existing Building Data:

- [x] Egress Plans
- [x] Original Docs
- [x] Major Renovations and Additions
- [ ] Minor Projects
- [ ] Maint. Reports

Site Items:

- [x] Student Garden
- [ ] Loading Dock
- [x] Stormwater Detention

Energy Source:

- [x] Electric
- [ ] Gas
- [x] Geothermal
- [ ] Solar

Cooling:

- [x] DX RTU or DOAS
- [ ] Chiller
- [ ] VRF
- [ ] Water Source Heat Pump
- [ ] Fluid Cooler

Heating:

- [x] Gas/Electric RTU or DOAS
- [ ] Boiler
- [ ] Water-to-Water Heat Pump
- [ ] VRF
- [x] Water Source Heat Pump

Structure Fireproofing:

- [x] No
- [ ] Yes

Construction:

- [x] Load Bearing Masonry
- [x] Steel Frame
- [x] Concrete
- [ ] Wood
- [ ] Other

Exterior Facade:

- [x] Brick
- [x] Stucco
- [x] Metal
- [ ] Wood
- [x] Other
  Precast Concrete

Floor/Roof Structure:

- [ ] Wood Joists
- [x] Steel Joists/Beams
- [x] Slab on Grade
- [x] Struct. Slab
- [x] Other
  Concrete Pan Joists

# A | Architectural, Programming

ASSESSOR: Tim Bungert

## 1.0 Educational Adequacy

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| **General** | | | | | |
| 1.1 | **Floor materials** are appropriate for space type. | 2 | 5 | 10 | |
| **Elective/Secondary Classroom** | | | | | |
| 1.2 | **Gymnasium** is adequate for providing physical education programming. | 2 | 5 | 10 | |
| 1.3 | **Cafeteria** has adequate space, furniture, and acoustics for efficient lunch use. | 2 | 5 | 10 | |
| 1.4 | **Music room** is adequate for providing introductory music instruction. | 2 | 5 | 10 | |
| 1.5 | **Art room** has sufficient accommodations for program. | 2 | 5 | 10 | |
| 1.6 | **Library/Resource/Media Center** provides appropriate and attractive space. | 1 | 5 | 5 | |
| **Core Classroom** | | | | | |
| 1.7 | Classroom space permits arrangements for **small group activity.** | 3 | 5 | 15 | |
| 1.8 | **Student storage space** is adequate. | 2 | 5 | 10 | |
| 1.9 | **Teacher storage space** is adequate. | 3 | 5 | 15 | |
| 1.10 | Classroom **acoustical treatment** of ceiling, walls, and floors provide effective sound control. | 3 | 5 | 15 | |

# A | Architectural, Programming

ASSESSOR: Tim Bungert

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 1.11 | **Classroom power and data receptacles** are located to support current classroom instruction. | 4 | 5 | 20 | |
| 1.12 | Educational **technology** supports instruction. | 4 | 5 | 20 | |
| **Administration** | | | | | |
| 1.13 | **Conference/Private meeting rooms** are adequate for large and small meetings. | 1 | 5 | 5 | |
| 1.14 | **Main office** has a check-in and waiting area. | 2 | 5 | 10 | |
| | **TOTAL** | | | 165 | |

# A | Architectural, Interior

ASSESSOR: Tim Bungert

## 2.0 Environment for Education

### Design

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 2.1 | **Traffic flow** is aided by appropriate foyers and corridors. | 1 | 5 | 5 | |
| 2.2 | Communication among students is enhanced by **common areas.** | 1 | 3 | 3 | No common areas outside of media center and cafeteria. |
| 2.3 | Areas for students to **interact are suitable to the age group.** | 1 | 5 | 5 | |
| 2.4 | Large group areas are designed for effective **management of students.** | 2 | 5 | 10 | |
| 2.5 | **Furniture Systems** are in good or like new condition. | 1 | 5 | 5 | |
| 2.6 | **Color schemes**, building materials, and decor are **engaging and unify** the school character. | 2 | 5 | 10 | |
| 2.7 | Windows and skylights provide access to **adequately controlled daylight** for regularly occupied spaces. | 3 | 5 | 15 | |
| 2.8 | Windows provide access to **quality views** (to exterior, courtyards, artwork etc.) for regularly occupied spaces. | 3 | 5 | 15 | |
| 2.9 | **Lighting has proper controls** to provide the required light levels for various teaching and learning needs. | 2 | 5 | 10 | |
| 2.10 | **Staff dedicated spaces** include conference space, work space, and dedicated restrooms. | 1 | 5 | 5 | |

# A | Architectural, Interior

ASSESSOR: Tim Bungert

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 2.11 | **Main office** is visually connected to the entry and is welcoming to students, staff, and guests. | 2 | 5 | 10 | |
| 2.12 | **Break room** is adequately sized and furnished for proper use. | 1 | 5 | 5 | |
| 2.13 | **Mother's room** is a separate designated space properly furnished. | 1 | 0 | 0 | No mother's room observed. |
| **Maintainability** | | | | | |
| 2.14 | **Floor surfaces** are durable and in good condition. | 1 | 5 | 5 | |
| 2.15 | **Ceilings** throughout the building – including services areas – are easily cleaned and resistant to stain. | 1 | 5 | 5 | |
| 2.16 | **Walls** throughout the building – including services areas – are easily cleaned and resistant to stain. | 1 | 4 | 4 | Damage noted on gypsum board walls in classrooms and other high-traffic areas. |
| 2.17 | **Built-in casework** is designed and constructed for ease of maintenance. | 1 | 5 | 5 | |
| 2.18 | **Doors** are either solid core wood or hollow metal with a hollow metal frame and well maintained. | 3 | 5 | 15 | |
| 2.19 | **Facility doors** are keyed to standardized master keying system. | 3 | 5 | 15 | |
| 2.20 | **Restroom partitions** are securely mounted and of durable finish. | 2 | 5 | 10 | |

# A | Architectural, Interior

ASSESSOR: Tim Bungert

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 2.21 | **Adequate electrical outlets** are located to permit routine cleaning in corridors and large spaces. | 1 | 5 | 5 | |
| **Occupant Safety** | | | | | |
| 2.22 | Classroom doors are **recessed and open outward.** | 4 | 5 | 20 | |
| 2.23 | Door hardware (into classrooms or any occupied rooms off of corridors) include **intruder classroom locksets.** | 3 | 5 | 15 | |
| 2.24 | **Door panels** into classrooms and other occupied spaces contain **vision lite.** | 3 | 5 | 15 | |
| 2.25 | **Vision lite** in doors is clear and uncovered. | 2 | 5 | 10 | |
| 2.26 | **Glass** is properly located and protected to prevent accidental injury. | 2 | 5 | 10 | |
| 2.27 | **Flooring** is maintained in a **non-slip** condition | 2 | 5 | 10 | |
| 2.28 | **Traffic areas terminate at exit or** stairway leading to egress | 5 | 5 | 25 | |
| 2.29 | Multi-story buildings have at least **two stairways** from all upper levels for student egress. | 5 | N/A | 0 | |
| 2.30 | **Stairs (interior and exterior)** are well maintained and in good condition meeting current safety requirements. | 5 | N/A | 0 | |

# A | Architectural, Interior

ASSESSOR: Tim Bungert

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| **2.31** | At least **two independent exits** from any point in the building | 5 | 5 | 25 | |
| **2.32** | **Emergency lighting** is provided throughout the building. | 5 | 5 | 25 | |
| | **TOTAL** | | | 317 | |

# A | Architectural , Exterior

ASSESSOR: Matthew Gaul

## 3.0 Exterior Envelope

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| **Design** | | | | | |
| **3.1** | Overall **design is aesthetically pleasing** and appropriate for the age of students. | 2 | 5 | 10 | |
| **Maintainability** | | | | | |
| **3.2** | **Roofs** appear sound, have positive drainage, and are water tight. | 3 | 3 | 9 | Areas of the built up roofing have developed bubbling and wrinkling that should be patched. Sealant repair and roofing under flashing<br>Roof replacement in 5-10 years. |
| **3.3** | **Roof access** is safe for all roofs. | 3 | 5 | 15 | |
| **3.4** | Exterior **window sealant** is fully intact without cracks or gaps. | 3 | 4 | 12 | Windows overlooking roof area D require new sealant. |
| **3.5** | **Glazing** is low-e coated, insulated, and overall in good condition. | 1 | 5 | 5 | Low-e coating cannot be determined, but glazing is tinted. |
| **3.6** | **Operable windows** are functional and safe. Operable portion of window fully seals when closed without gapping or leaking. | 2 | 5 | 10 | |
| **3.7** | **Exterior doors** are of durable material requiring minimum maintenance. | 2 | 4 | 8 | Repainting of some doors required. |
| **3.8** | **Exterior walls** are of material and finish requiring little maintenance, | 1 | 2 | 2 | Exterior wall design at east most addition is problematic in that the exterior steel tubes create a significant density of sealant joints and have caused spalling at concrete above.<br>Sealant replacement, various locations, see project description. |
| **3.9** | **Exterior Doors** open outward and are equipped with **panic hardware.** | 1 | 5 | 5 | |
| **3.10** | **Exterior Doors are monitored** or controlled by an access control system. | 1 | 3 | 3 | 02 - Doors do not latch<br>07 - Doors with card readers<br>03 - Doors with locks or no exterior lock<br>10 - Doors with no signage. |
| | **TOTAL** | | | 79 | |

# C | Civil

ASSESSOR: Jack Gorman / Joel Jackson

## 4.0 The School Site

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 4.1 | **Site topography** and grading drains water away from the building and retaining walls. | 1 | 4 | 4 | Site is fairly flat, one drainage issue in the north parking lot where an erosion channel has formed by the curb cut. |
| 4.2 | **Parking areas** are in good condition. | 5 | 3 | 15 | The concrete is in good condition. The asphalt parking is cracking in sections but not failing immediately will need to be monitored for future replacement. |
| 4.3 | **Drive areas** are in good condition. | 3 | 4 | 12 | The accesses are in good condition, some of the concrete is cracking but still holding up well. |
| 4.4 | **Sufficient on-site, solid surface parking** is provided for faculty, staff, and community. | 1 | 3 | 3 | Site has enough parking for day to day but short on large events with limited street parking. |
| 4.5 | **Sidewalks** around the facility are in good **condition.** | 1 | 4 | 4 | Most of the walks were in good condition. Some tripping hazards on the west side. Asphalt walk on the north side of the building needs replaced. |
| 4.6 | **Sidewalks are located** in appropriate areas with adequate building access. | 1 | 5 | 5 | |
| 4.7 | **Hard surface** playground surfaces are in good condition. | 3 | 4 | 12 | Concrete appeared new and in good condition. Asphalt area by the basketball hoops looks to be right on the border of 5+ year replacement, could last longer if weather conditions are not harsh. |
| 4.8 | **Fencing** around the site is in good condition. | 1 | 4 | 4 | Fence along the north and east appeared old but was still in good condition, some of sections along the east were overgrown with vegetation. |
| 4.9 | **Trash enclosure** is in good condition. | 1 | 5 | 5 | Fence, gate, and pavement all in good condition |
| 4.10 | **Utilities** are in newly constructed conditions and placed in suitable locations. | 1 | 4 | 4 | There was a broken fiber box lid with a cone attached to it, no other issues observed. |

ASSESSOR: Jack Gorman / Joel Jackson

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 4.11 | **Site has sufficient room** for both building and parking expansion. | 1 | 5 | 5 | Room for building expansion on the SE side of the existing building, room to north for parking expansion |
| 4.12 | Site has **onsite bus and parent pickup** up with adequate length, good separation and general good site circulation. | 1 | 3 | 3 | Bus drop off on the west side of the site. Stacking onto the street with some conflicts between buses and parent pickup. |
| | **TOTAL** | | | 76 | |

# S | Structural

ASSESSOR: Niles Quick

## 5.0 Structural Conditions

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| **Foundations** | | | | | |
| **5.1** | **Foundations** appear to be in good condition with no visible cracks. | 1 | 5 | 5 | |
| **5.2** | There does not appear to be any **foundation settlement.** | 2 | 5 | 10 | |
| **5.3** | **Basement walls** do not appear to have any cracks. | 1 | 5 | 5 | |
| **5.4** | **Stoops** appear to be in good condition. | 1 | 5 | 5 | |
| **Slab on Grade** | | | | | |
| **5.5** | **Slabs on grade** do not appear to have any cracks | 1 | 5 | 5 | |
| **5.6** | Slabs on grade do not appear to have any **settlement.** | 1 | 5 | 5 | |
| **Exterior Walls** | | | | | |
| **5.7** | **Brick masonry** appears to be in good condition. | 2 | 5 | 10 | |
| **5.8** | **Lintels** appear in good condition (no visible deflection or rust). | 1 | 5 | 5 | |
| **5.9** | **CMU** is in good condition. | 1 | 5 | 5 | |
| **5.10** | **Precast** is in good condition. | 1 | 5 | 5 | |

# S | Structural

ASSESSOR: Niles Quick

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| **Interior Walls** | | | | | |
| 5.11 | **Interior walls** appear to be in good condition. | 1 | 5 | 5 | |
| **Floor Framing (Elevated)** | | | | | |
| 5.12 | **Floor framing** appears to be in good condition. | 3 | 5 | 15 | |
| 5.13 | Floor framing appears to meet the **code requirements.** | 3 | 5 | 15 | |
| **Roof Framing** | | | | | |
| 5.14 | **Roof framing** appears to be in good condition. | 3 | 5 | 15 | |
| **Miscellaneous** | | | | | |
| 5.15 | **Retaining walls** appear to be in good condition. | 1 | N/A | 0 | |
| 5.16 | **Canopies** appear to be in good condition. | 1 | 5 | 5 | |
| 5.17 | **Loading dock concrete** appears to be in good condition. | 2 | N/A | 0 | |
| 5.18 | **Mechanical screening** appears to be in good condition. | 2 | 5 | 10 | |
| 5.19 | **Stairs** appear to be in good condition. | 1 | 5 | 5 | |
| 5.20 | **Stair railings** appear to be in good condition. | 1 | 5 | 5 | |

# S | Structural

ASSESSOR: Niles Quick

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| **5.21** | **Tunnels** appear to be in good condition without cracks. | 1 | 5 | 5 | |
| **5.22** | There is a **designated hardened area** in the building. | 1 | 0 | 0 | No designated hardened area observed. |
| **5.23** | The hardened area appears consistent with the **ICC 2018 code.** | 1 | N/A | 0 | |
| | **TOTAL** | | | 140 | |

# MP | Mechanical & Plumbing

ASSESSOR: Chuck Heldenbrand

## 6.0 Mechanical Systems

### HVAC Design

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 6.1 | **Zone Control.** Thermostats are provided in each space for individual zone control of space temperatures. | 3 | 5 | 15 | |
| 6.2 | **Thermostat location.** Thermostats are properly located in the space. | 3 | 5 | 15 | |
| 6.3 | Appropriate **amount of ventilation** are provided to each space. | 5 | 5 | 25 | |
| 6.4 | **Ventilation** is provided during occupied hours. | 5 | 4 | 20 | One DOAS unit is offline. |
| 6.5 | **Outdoor air intake locations** are appropriate. | 4 | 4 | 16 | Rooftop equipment has intake and exhaust points adjacent to each other. |
| 6.6 | Appropriate **levels of exhaust** are provided for areas requiring this such as restrooms, janitor's closets and locker rooms. | 5 | 5 | 25 | |
| 6.7 | **Building pressurization.** The design takes into account the balance between ventilation and exhaust air | 2 | 5 | 10 | |
| 6.8 | **Major HVAC Equipment** appears to be within it's acceptable **service life.** | 5 | 3 | 15 | It appears that most equipment was replaced during a 2021 project including DOAS units, horizontal heat pumps and loop water circulating pumps. An existing ERU (ERU-4) remains along with all of the console heat pumps in the classrooms. Replace roof mounted exhaust fans for art and kitchen. |
| 6.9 | **Cooling loads** are within equipment operational capacity. | 5 | 5 | 25 | |
| 6.10 | **Heating loads** are within equipment operations capacity. | 5 | 3 | 15 | Geothermal should be capable of maintaining heating loads, but operations has enabled the boiler to maintain loop at 68 degF. It is unclear if this was done because of insufficient capacity at wellfield, or if heat pumps cannot operate successfully at lower loop water temperatures. |

# MP | Mechanical & Plumbing

ASSESSOR: Chuck Heldenbrand

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 6.11 | **Dehumidification** is provided and addressed humidity loads in incoming outside air. | 3 | 5 | 15 | New DOAS equipment has dehumidification capacity. |
| **Plumbing Design** | | | | | |
| 6.12 | **Water Supply Pressure** is adequate to allow for operation of plumbing fixtures. | 5 | 4 | 20 | Some fluctuations in pressure with flush valve usage. May need to increase pipe sizes in building. |
| 6.13 | Appropriate **backflow preventer** is provided at connection to city water supply. | 5 | 5 | 25 | |
| 6.14 | **Domestic hot-water systems** are within equipment operational capacity. | 5 | 5 | 25 | Single electric domestic hot water heater |
| 6.15 | Domestic **hot-water recirculating systems** allow for hot-water at fixtures within a reasonable amount of time. | 3 | 4 | 12 | Hot water is present rapidly at most hand washing stations. Some single lavatories are slower to receive hot water. |
| 6.16 | **Sanitary sewer systems** are sized and sloped to allow for proper drainage. | 5 | 5 | 25 | |
| 6.17 | Appropriately sized **grease interceptors** are provided for facilities with food service. | 3 | 5 | 15 | |
| 6.18 | **Roof drainage** systems are sized appropriately and overflow drainage systems are installed. | 5 | 5 | 25 | |
| 6.19 | **Restroom fixtures** are in good condition and comply with current DMPS standards. | 3 | 3 | 9 | All manual flush valves and faucets |
| **Maintainability** | | | | | |
| 6.20 | Equipment is provided with **adequate service clearance** to allow for regular maintenance | 3 | 4 | 12 | Ceiling mounted heat pumps are tight. |

# MP | Mechanical & Plumbing

ASSESSOR: Chuck Heldenbrand

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 6.21 | AHUs and chiller are provided with **coil pull space.** | 2 | N/A | 0 | |
| 6.22 | **Filter** sizes are standard and filter types are standard. | 2 | 4 | 8 | Varies with equipment type. Filter list and a floor plan located on drawings to assist with identifying sizes and locations. |
| 6.23 | **Equipment mounting heights** are reasonable. | 3 | 4 | 12 | Gym units require lift to access heat-pumps at ceiling. |
| 6.24 | **Floor surfaces** throughout the mechanical room are non-slip and are dry. | 2 | 4 | 8 | Some moisture around backflow preventer in sub-basement |
| 6.25 | **Isolation valves** are located in the plumbing and hydronic systems to allow for isolation of only portions of the system for servicing. | 2 | 5 | 10 | |
| 6.26 | Appropriate means are provided for **airflow and water balancing.** | 3 | 5 | 15 | |
| 6.27 | **Hose Bibbs** located in proximity to **outdoor condensers and condensing units**. Is cottonwood an issue at this location? | 2 | 4 | 8 | No roof hydrant present to clean rooftop equipment. Have to rely on wall hydrants on walls on the level below. |
| 6.28 | **Fall protection** is provided for equipment within 15 ft of roof edge as per OSHA standard 1910.28(b). | 2 | 5 | 10 | No equipment located within 15 ft of roof edge. |
| 6.29 | **Building devices are on DDC controls** and fully visible through Building Automation System. No pneumatic controls remain. | 4 | 5 | 20 | |
| **Occupant Safety** | | | | | |
| 6.30 | **Backflow prevention** is provided at all **cross-connections** to non-potable water. | 5 | 5 | 25 | |

# MP | Mechanical & Plumbing

ASSESSOR: Chuck Heldenbrand

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| **6.31** | Building is fully **sprinklered.** | 5 | 5 | 25 | |
| **6.32** | **Domestic hot-water temperature** at lavatories used by students or staff is provided with a thermostatic mixing valve and adjusted properly. | 5 | 5 | 25 | Central mixing valve |
| **6.33** | **Emergency eye-washes and tempering valves** are located where required. | 5 | 0 | 0 | Not observed. Recommend evaluation with an occupational safety and health professional to determine necessity of eye wash(es) for facility spaces. |
| **6.34** | **Emergency boiler stop switches** are located at exits from boiler rooms. | 5 | 5 | 25 | |
| **6.35** | **Refrigeration evacuation systems** are provided in rooms with chillers. | 5 | N/A | 0 | |
| **6.36** | **Carbon Monoxide monitoring** and alarming is provided for areas with gas-fired equipment. | 5 | N/A | 0 | |
| | **TOTAL** | | | 555 | |

# E | Electrical

ASSESSOR: Rob Hedgepeth

## 7.0 Electrical Systems

### Electrical Design

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 7.1 | **Transformer location** is easily accessible by utility line truck to allow for rapid transformer replacement in the event of an issue. | 5 | 4 | 20 | Bike rack 6' in front of transformer will hinder replacement of unit. |
| 7.2 | **Transformer** has adequate clearance from non-combustible building components, paths of egress, etc. 10' clear working area in front of doors. | 5 | 4 | 20 | Bike rack in front of unit will hinder free and clear work area. |
| 7.3 | **The MDP environment** is safe, has adequate clearances and exiting. | 3 | 5 | 15 | No obstructions. Pit at tunnel is a bit concerning for safe egress from room. |
| 7.4 | The **MDP** appears serviceable. | 4 | 5 | 20 | 2019 build date. 1600A 480V main. Eaton<br>Recent instantaneous trip - coordination issue? |
| 7.5 | The MDP is **maintainable.** | 3 | 5 | 15 | |
| 7.6 | The MDP will support **future expansion.** | 4 | 3 | 12 | 3 of 16 spare breakers (on, but not labeled for loads). 18% |
| 7.7 | The Distribution Panel **environment is safe**, has adequate clearances and exiting. | 4 | 5 | 20 | |
| 7.8 | The Distribution Panel appears **serviceable.** | 4 | 4 | 16 | 2007<br>GE - 600A |
| 7.9 | The Distribution Panel is **maintainable.** | 4 | 5 | 20 | |
| 7.10 | The Distribution Panel will support **future expansion.** | 4 | 4 | 16 | 4 of 14 spare/space 29% |

# E | Electrical

ASSESSOR: Rob Hedgepeth

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| 7.11 | **Electrical panels and disconnect switches** observed during assessment are safe, serviceable, and maintainable. | 2 | 5 | 10 | 2007 era GE panels |
| 7.12 | Building has adequate and appropriately located, **safe exterior power** to allow for regular maintenance activities. | 1 | 4 | 4 | Minimal exterior receptacles. |
| 7.13 | Building has adequate **exterior lighting** to promote safety and security of the property. | 5 | 4 | 20 | Rooftop photoelectric sensor broken.<br>NW corner and south end of building dark. Dark areas of N and W sides along playground/grass areas.<br>Parking lighting good. |
| **Electronic System Design** | | | | | |
| 7.14 | MDF is **neatly organized** and has appropriate clearances and working spaces. Cables are neatly laced or trained. Entry to the room is restricted. | 4 | 5 | 20 | |
| 7.15 | MDF Equipment Racks have adequate space for **future growth.** | 4 | 5 | 20 | |
| 7.16 | MDF is equipped with UPS to back up main switch(es), providing **backup power** to necessary equipment in the event of a power outage. | 5 | 5 | 25 | Two Minuteman 2000VA. 3 of 4 switches plugged in to UPS power, one to wall power. |
| 7.17 | MDF Power is supplied by **20A circuits and receptacles.** | 1 | 5 | 5 | |
| 7.18 | MDF Power is supplied from a branch panel located in the room with **adequate spare circuit capacity.** | 1 | 5 | 5 | 7/18 breakers spare/space. Fire alarm breaker not locked or painted. |
| 7.19 | MDF employs up-to-date **network cabling.** | 2 | 5 | 10 | Cat 6A with some 5e. Multi mode fiber terminated to classrooms. |
| 7.20 | MDF is connected to Intermediate Distribution Frame (IDF) closets with **fiber optic cabling.** | 1 | 5 | 5 | |

# E | Electrical

ASSESSOR: Rob Hedgepeth

| | | Weight Factor | Rating | Points | Comments |
|---|---|---|---|---|---|
| **7.21** | MDF has adequate **grounding busbar capacity.** | 2 | 4 | 8 | Good ground bar, but some grounding needs maintenance. Blue#12 to fiber sheath. JCI cabinet replaced, conduit not re-grounding. CATV not grounded at main splitter. |
| **7.22** | Building is equipped with an **addressable fire alarm system.** | 5 | 5 | 25 | Simplex 4100U |
| **7.23** | Building is equipped with an **access control system.** | 5 | 2 | 10 | 4/10=40% |
| **7.24** | Building is equipped with a **CCTV system.** | 5 | 4 | 20 | Cameras along south side of east wing do not have adequate exterior lighting. |
| **7.25** | Building is equipped with an **intercom system.** | 4 | 5 | 20 | |
| **7.26** | Building is equipped with a **master clock system.** | 4 | 5 | 20 | Primex |
| | **TOTAL** | | | 401 | |

# RECOMMENDED PROJECTS AND COST ESTIMATING METHODOLOGIES

One of the major impetuses for our facility condition assessment work is the need to support strategic fiscal and maintenance planning for their facilities. As such, DMPS requires that recommended projects be assigned a total project cost in order to support the strategic planning needs of the District. A total project cost is a cost that includes the estimated construction cost as well as the various other 'hard' and 'soft' costs of a construction project such as professional design fees, contractor overhead, required contingencies, inflation, direct costs (e.g. permitting costs), etc. The full list of these hard and soft costs are defined later in this section.

## Project Descriptions

Every building assessment report includes a section titled Recommended Projects and Priorities. This section is divided into the following subcategories: "Short Term Maintenance", "1-2 Year Project Priorities", "3-4 Year Project Priorities", "5 - 10 Year Project Priorities", and "Projects Requiring a Study". Each of these subcategories includes a list of project recommendations. The projects listed in each subcategory are grouped by discipline and listed in the following order: interior architecture, exterior architecture, civil (site), structural, mechanical, electrical, and elevator projects. The discipline order as described mirrors the order of the discipline Scoring Reports section found earlier in the building assessment report. The projects listed within Short Term Maintenance section do not include a cost. It is assumed that DMPS will perform this work. Additionally, projects which recommend furniture repair or replacement do not include a cost since furniture systems are selected and procured via a separate process. All other projects associated with the remaining subcategories, other than "Projects Requiring a Study" are provided an estimated total project cost.

## Projects Requiring a Study

The projects listed within Projects Requiring a Study are provided estimated professional design fees to produce the recommended design study. In the future, once commissioned and completed, these recommended studies will not produce a completed design. Rather, the completed study will provide recommended project descriptions and estimated total project costs similar to the projects listed in this assessment report. For studies that most likely will result in a substantial project with a substantial cost associated, an "anticipated capital investment" cost number has been provided to help assist the District's strategic planning. This anticipated capital investment cost is based on a 5-10 Year Priority completion date and very high level general 'rules of thumb' estimations since it is unknown exactly what conclusions or recommendations will be determined by the study before the study is commissioned and completed.

## Cost Estimating

To achieve the total project cost reflected in this building report, the recommended projects incorporate construction costs with added percentages to account for professional design services, design phase contingency, construction contingency, general contractor overhead and profit, other direct costs incurred by the project, and year-over-year inflation dependent on how many years out the recommended project is recommended to be completed. Not included in the total project cost are costs associated with hazardous materials abatement, testing, surveys, or site exploration (geotechnical testing, etc.). Additionally, for projects that are expected to produce a minimal amount of waste that is normally acceptable to City of Des Moines collection, costs for dumpsters have been excluded. To arrive at the final estimated total project cost as described above, the following methodology was used by the assessment team for each recommended project:

Step 1: Determine estimated direct cost of construction in 2024 dollars.

The recommended projects are conceptual in nature; therefore, all cost multipliers are overall systems level and/or unit costs. (These costs are not based on itemized breakdowns.) The cost information used is based on current available information which is in 2024 dollars and is a mixture of recent bids, firm experience, manufacturer provided information, and RS Means costing data.

Step 2: For recommended projects that are smaller in scale, scope, and estimated cost, a "small project fee" additive cost is applied to the estimated direct cost of construction determined in Step 1. This additive cost works to cover outsized mobilization, staffing, and equipment costs that are incurred on a small scale project the same as for a large project with a large economy of scale. These costs are as follows:

For projects with a Step 1 cost of $4,999.99 or less, an additive cost of $5,000.00 has been added.

For projects with a Step 1 cost of $5,000.00 to $14,999.99, a graduated additive cost from $5,000.00 to $0 has been added.

For all other projects (Step 1 cost of $15,000.00 and above) this step is skipped.

Step 3: Add 10% of the estimated direct construction cost for construction contingency.

# RECOMMENDED PROJECTS AND COST ESTIMATING METHODOLOGIES

Step 4: Add a percentage of estimated direct construction cost plus construction contingency for inflation.
The projects are grouped based on how many years out it is recommended that the project is started. Projects closer to 2024 are more urgent projects. As project start times move further and further away from 2024, inflation must be added to best estimate how 2024 dollars will translate into the future. 5% year-over-year inflation was chosen as a reasonable assumption for this work.

- For projects assigned the 1-2 Year Priority add 10% of the estimated construction cost.
- For projects assigned the 3-4 Year Priority add 20% of the estimated construction cost.
- For projects assigned the 5-10 Year Priority add 50% of the estimated construction cost.

Step 5: Add 5% of the estimated direct construction cost, construction contingency, plus inflation for general conditions.
This cost covers the incidental costs incurred by the contractor to perform the work that are not directly tied to the specific materials and labor; examples include mobilizing to the site and final cleaning.

Step 6: Add 10% of the estimated direct construction cost, construction contingency, inflation, plus inflation for general contractor overhead and profit; combined, this is the total construction cost.

Step 7: Add 10% of the total construction cost for professional design services.
These services include, when appropriate: architectural design and project management, civil engineering, structural engineering, mechanical engineering, and electrical engineering. These services are for conceptual design through construction phase work.

Step 8: Add 5% of the total construction cost and professional design services for other direct costs.
These costs cover various other costs directly associated with the project such as printing, equipment, required permits, etc.

At the conclusion of Step 8, the total project cost for the recommended project is finalized.

# PROJECT RECOMMENDATIONS

Below are recommended maintenance, projects, and studies based on the previous assessment scoring information. Short Term Maintenance items are items requiring DMPS attention in less than a year's time and is less than approximately $5,000. Costs for these items are not estimated. 1-2 year priority projects are projects that require attention within the next 2 years. 3-4 year priority projects are projects that require attention within the next 4 years. 5+ year priority projects are projects that require attention within the next 10 years. Project costs are listed. Project requiring Study are items where project scope is not able to be defined at this time and further investigation is required. Costs for these items are design service fees, not project costs. See the Cost Methodology description in the appendix for additional information.

## Short Term Maintenance

| | |
|---|---|
| Exterior Door Adjustment | Adjust 2 exterior doors so that they latch from any closing position. One door at main entrance and one at room 155. Also, repair and enclose visible wire at room 155. |
| Roof Cleaning | Remove debris from roof low spots, drains, overflows, and other areas where it collects so that the roof membrane remains in good condition and sheds water as intended. |
| Exterior Pipe Extension Installation | Add extension to exterior pipe outside of bathrooms 126 and 130 so that water does not fall back on brick. |
| Telecom Box Lid Replacement | Replace the broken fiber box lid. For location, refer to civil site plan exhibit found in the appendix of this report. |
| Exterior Duct Insulation Repair | The exterior ductwork on DOAS needs repairs including replacement of insulation and aluminum jacket to provide weathertight enclosure. |
| DOAS Service | DOAS-2 not operational and in need of service. |
| Boiler Sequence | Review boiler operation sequence of control. While on site, the boiler was found to be operating and maintaining a loop temp of 68°F. We would not have expected it to operate as the wellfield should be sufficient to support heating needs. Unnecesar operation of the boiler can cause issues in the summer with too warm of a wellfield when cooling is required. |

| | | |
|---|---|---|
| Backflow Preventer and Piping Repair | Water found on floor at water service entrance. May need to repair piping or backflow preventer. | |
| Photoelectric Sensor Replacement | Replace broken roof-mounted photoelectric sensor. Consider relocating the sensor to better location. | |
| MDF Grounding | Ground BAS cabinet and CATV. Replace blue conductor with green conductor for fiber sheath ground. | |

## 1 - 2 Year Priority

| | | Project Costs |
|---|---|---|
| Gypsum Board Wall Repairs and Protection | Repair and repaint damaged gypsum board (150 SF total) in rooms 124, 139, and 149. Install 48" corner guards (3 total) on gypsum board outside corners in rooms 134, 135, and 139 to protect walls from future damage. | $8,000 |
| Ships Ladder Repair | Ships ladder for roof access in room 157 has one steel step that is significantly bent and poses a safety risk. Remove and replace one steel step of ships ladder. | $6,000 |
| Roof Repair | Patch built up roofing at south end of roof area A at 130 SF and north end of area B at 15 SF. Extend roofing under flashing at east end of area D, 1' high, 25 LF. Add 2 LF of sealant at north east corner parapet area A. Add 25 LF sealant at flashing at south end of area A. | $12,000 |
| Exterior Door Repaint | Repaint east most exterior double door and sidelights. Remove existing paint and rust. | $7,000 |
| Sidewalk Repair | Repair damaged sidewalks across the site. Approximately 112 SY. For locations, refer to civil site plan exhibit found in the appendix of this report. | $20,000 |
| Energy Recovery Unit Replacement | Replace ERU-4 (Venmar) with new DOAS unit. Gas heat with heatpump and HGR. | $280,000 |
| Roof Hydrant Installation | Install hydrant on roof to perform service and cleaning of DOAS unit. | $11,000 |

| | | |
|---|---|---|
| EFs or Duct to DOAS Unit Replacement | Replace Kitchen and Art Room Exhaust fans, EF-1 and 2, with new exhaust fans. | $13,000 |
| Exterior Lighting Installation | Add exterior lighting at northwest corner, south end of building, and south side of east wing. | $12,000 |
| | **Total 1-2 Year Project Costs:** | **$369,000.00** |

## 3 - 4 Year Priority

| | | Project Costs |
|---|---|---|
| Cafeteria Wood Floor Finish Repair | Wood flooring shows early signs of finish wear at doorways. Repair and refinish 50 SF of wood flooring. | $6,000 |
| Paint Casework | Cosmetic damage to paint finish on casework doors and/or base trim noted in rooms 120, 121, 124, 172, 174, and 176. Touch up paint on approximately 50 SF of casework. | $6,000 |
| Interior Door Repainting | Cosmetic damage to paint finish on hollow metal doors noted in rooms 123, 179, and 180. Repaint 3 single doors. | $7,000 |
| Paint Lockers | Cosmetic damage to paint finish on metal lockers noted in rooms 177 and 178. Repaint 200 SF of locker fronts. | $7,000 |
| Exterior Sealant Replacement | Replace exterior sealant at the following locations. 75 LF 1/4" wide at windows roof area D. 3 LF 1/2" and 8 LF 1/2" masonry soft joints roof area A and D respectively. 6 LF corner joints at roof area D (2 LF at NE, SE, and SW corners).<br>130 LF, 100 LF, 100 LF, and 13 LF 1/2" masonry soft joints at interior corners and pilasters at south wing east and west facade, east wing south and north facade, respectively.<br>Sealant between exterior steel tubes and EIFs at south facade of east extension, 340 LF at 1/4".<br>Approx total: 785 LF<br>115 LF 1" wide at precast roof A, E, and H. 200 LF 1" wide at precast east facade.<br>Approx total: 315 LF | $20,000 |

| | | |
|---|---|---|
| Roof Replacement | Remove 11,200 SF of modified bitumen roofing and insulation over roof areas A, B, and D.<br>Install code compliant insulation and TPO roofing.<br>Approx in 2028. | $300,000 |
| Concrete Patching | Patch spalled concrete at east extension, at top and bottom of wall, and stairs. 11 SF at 1/2" deep (top of wall). 8 SF at 1" deep cumulative across SE corner, NE corner, ramp, and steps. | $11,000 |
| Drainage Repair | Install flume down to basin to prevent further undermining of concrete. For location, refer to civil site plan exhibit found in the appendix of this report. | $9,000 |
| Pavement Replacement | Remove and replace 31 SY of asphalt and 12 SY of PCC. For locations, refer to civil site plan exhibit found in the appendix of this report. | $11,000 |
| Heat Pump Replacement | Replace all of the older 2007 heat pumps, console units in Classrooms, with extended range. Include two stage compressors for dehumidification and to more closely match load. | $2,000,000 |
| Flush Valves Replacement | Install automatic flush valves to match school standard. | $75,000 |
| | **Total 3-4 Year Project Costs:** | **$2,452,000.00** |

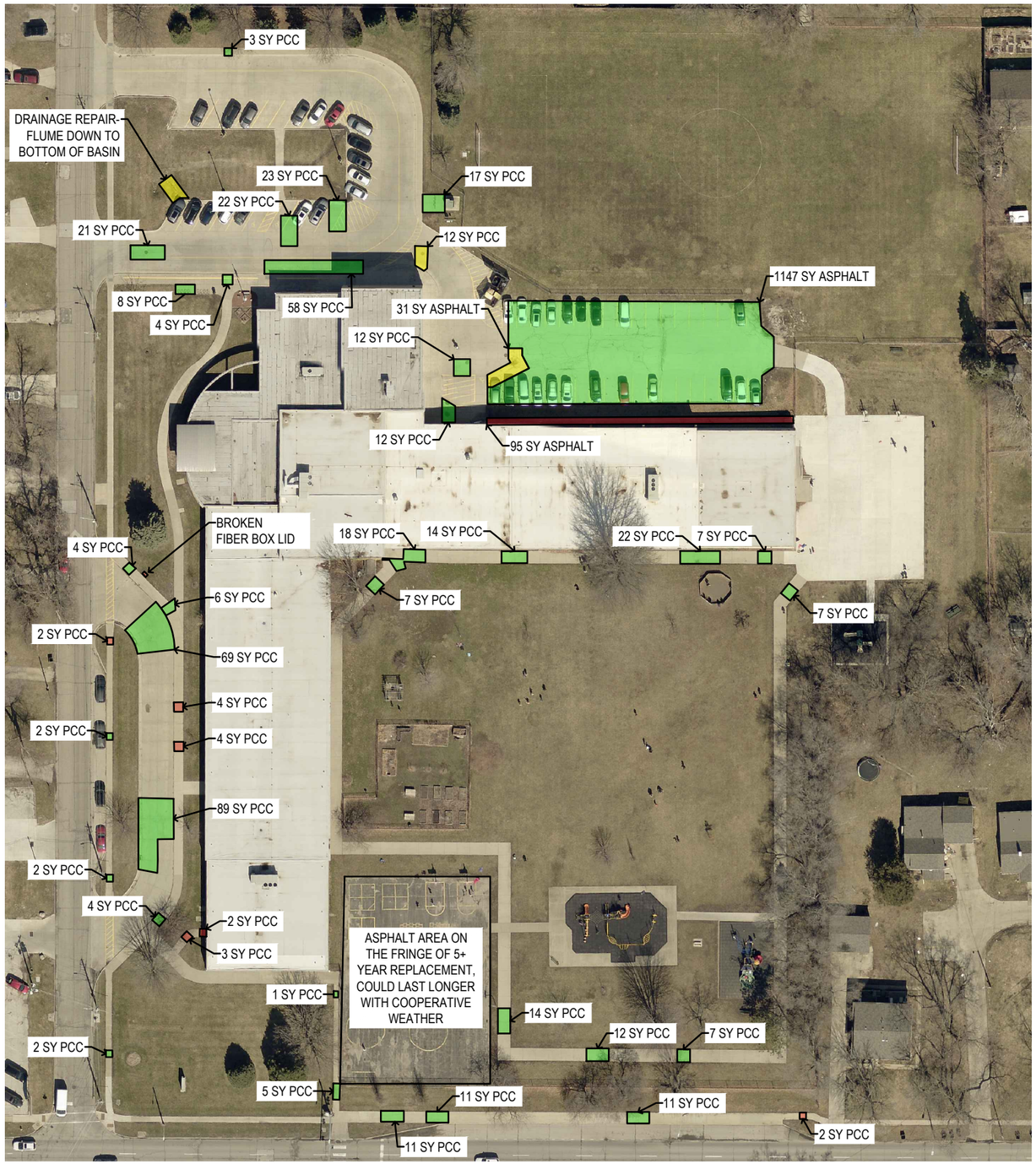
## 5+ Year Priority

| | | Project Costs |
|---|---|---|
| Pavement Replacement | Remove and replace 1147 SY of asphalt and 309 SY of PCC. For locations, refer to civil site plan exhibit found in the appendix of this report. | $260,000 |
| Sidewalk Repair | Repair damaged sidewalks across the site. Approximately 199 SY. For locations, refer to civil site plan exhibit found in the appendix of this report. | $45,000 |
| Central Thermostatic Mixing Valve Replacement | Replace central thermostatic mixing valve with digital style. | $15,000 |
| | **Total 5-10 Year Project Costs:** | **$320,000.00** |

## Projects Requiring Study

| | | Design Services Fee |
|---|---|---|
| Mother's Room Space Study | Study to define a private dedicated space for a Mother's Room that includes a sink, side table, chair, and privacy door hardware. | $10,000 |
| Gymnasium Storm Drain Piping | Study to evaluate rerouting and/or enclosing storm drain riser in the northeast corner of the gymnasium. Pipe size and location presents a safety risk to students playing in the gymnasium. | $5,000 |
| Gas Line Study | Design a way to prevent someone from climbing the exterior gas line on the west façade. Consider taking the gas line inside the building and up through the roof in lieu of an exterior fence or other screening. | $5,000 |
| Designated Hardened Area | No designated hardened area was observed. Study to determine the feasibility of adding a designated hardened area to the building including location within the existing building, schematic design concept if deemed feasible, and preliminary project costs. | $2,500 |
| Domestic Water Flow Issues Study | Water pressure fluctuates with the operation of flush valves indicating a restriction in pipe somewhere. Further investigation required to determine cause of this issue and design repairs or replacement of water piping. | $7,500 |
| | Anticipated Capital Investment $1,100,000 | |
| Main Breaker Tripping | Conduct overcurrent protective device coordination study if main breaker tripping continues to be a problem. | $7,500 |
| | **Anticipated Capital Investment Costs:** | **$1,100,000** |
| | **Total Study Design Service Fees:** | **$37,500** |

# APPENDIX




5+ YEAR REPLACEMENT

3-4 YEAR REPLACEMENT

1-2 YEAR REPLACEMENT

NORTH

GRAPHIC SCALE

80 0 40 80 160

bbs ARCHITECTS ENGINEERS

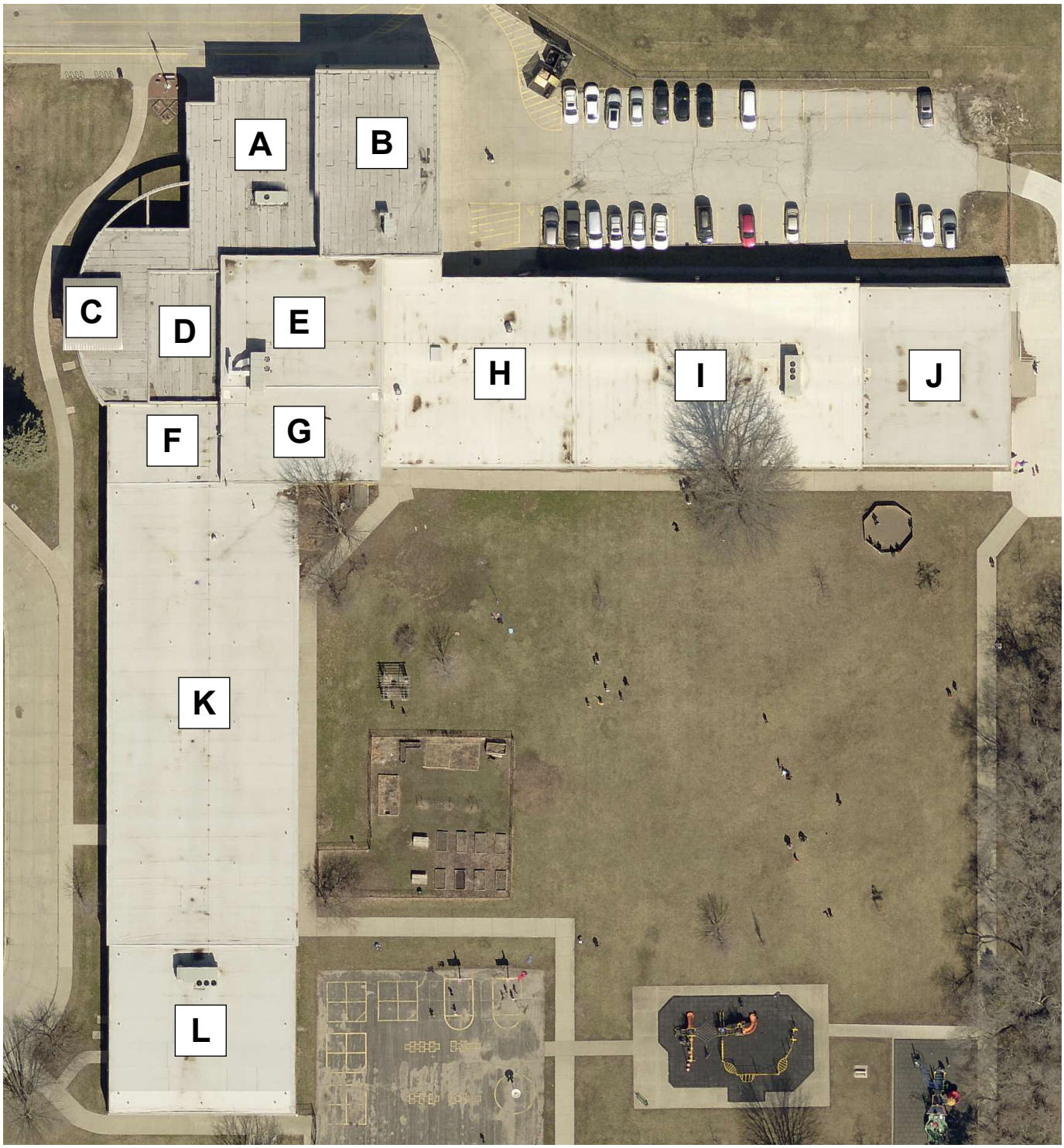
BISHOP ENGINEERING +

# HILLIS ELEMENTARY

EXHIBIT

PROJECT # 230286-12

DATE 11/2/2023




N

bbs
ARCHITECTS
ENGINEERS

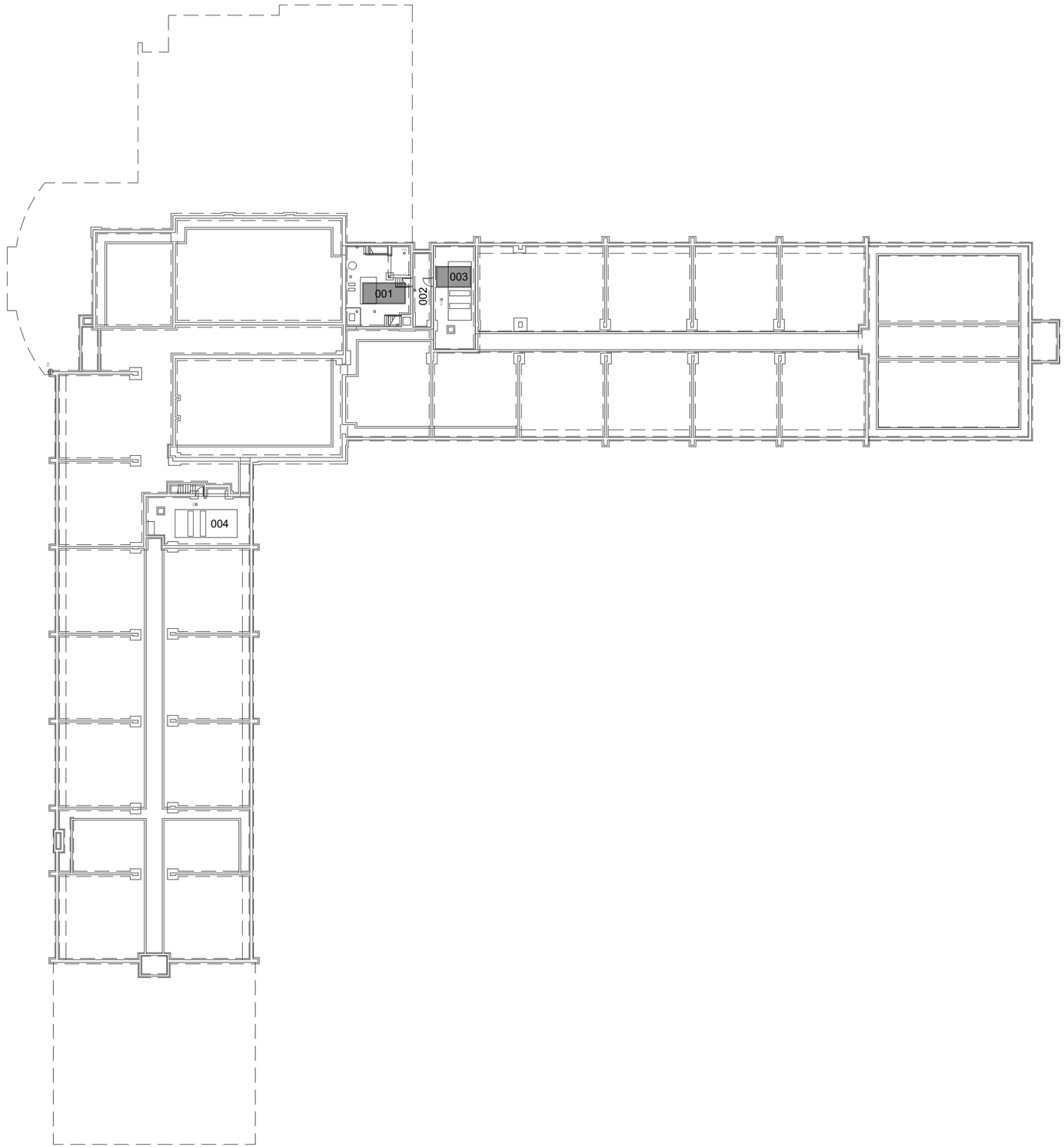
23055 - DMPS Facility Conditions Assessment
Roof Identification Image
Hillis Elementary
December 12, 2023

# HILLIS ELEMENTARY SCHOOL

2401 56TH STREET
DES MOINES, IOWA 50310

# FOUNDATION

NORTH



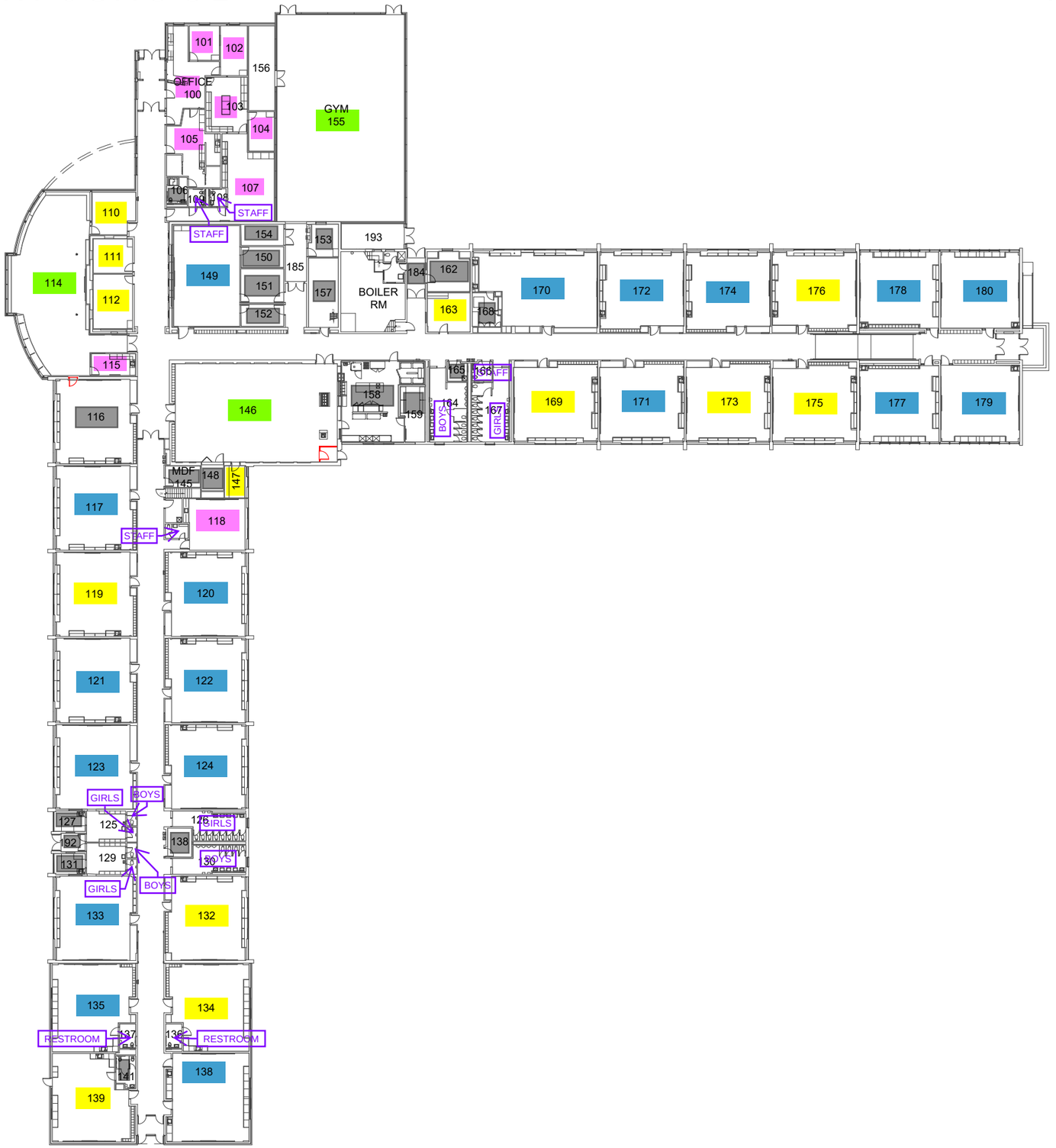
DesMoines PUBLIC SCHOOLS

# HILLIS ELEMENTARY SCHOOL

2401 56TH STREET
DES MOINES, IOWA 50310

## FIRST FLOOR

NORTH



# HILLIS ELEMENTARY SCHOOL

2401 56TH STREET
DES MOINES, IOWA 50310

# SECOND FLOOR

NORTH