Williams Elementary School Site Summary

| Address                        | 500 Mairo Street  
|                               | Austin, Texas 78748 |
| Number of Permanent Campus Facilities | 1                 |
| Original Year of Construction | 1976              |
| Total Campus Building Area (combined) | 64,846 SF         |

**Introduction**

The Williams Elementary School campus is located in southeast Austin, Texas, at 500 Mairo Street. The Main School Building (BLDG-166A) was built in 1976. It contains administration offices, classrooms, cafeteria, and gymnasium. There appears to have been an addition of classrooms on the west end of the building.
Main School Building – BLDG-166A

<table>
<thead>
<tr>
<th>Building Purpose</th>
<th>Administration, Classrooms, Cafeteria, and Gym</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Area</td>
<td>64,846 SF</td>
</tr>
<tr>
<td>Inspection Date</td>
<td>August 9, 2016</td>
</tr>
<tr>
<td>Inspection Conditions</td>
<td>100°F - Sunny</td>
</tr>
</tbody>
</table>

System Deficiency Overview

The following table provides a summary of the systems and their respective conditions found by each discipline.

<table>
<thead>
<tr>
<th>System</th>
<th>Subsystem</th>
<th>Condition and Deficiency Overview</th>
<th>System Condition Rating</th>
</tr>
</thead>
</table>
| Exterior  | Exterior Walls | Exterior walls are primarily brick. Metal panel infill is used above windows and above the main entry and one side entry. There are metal panels at walls above the main roof for the gymnasium and cafeteria. The louvers in the gymnasium are original to the facility.  
   The exterior brick and metal system were in good condition. Brick work was typically clear of physical damage to the masonry units. There was evidence of cracking at the head of a window at the kitchen.  
   Discoloration of the brick was noted on the west and north sides of the building from the removal of graffiti. In addition, the brick on the north side of the building appeared unclean or discolored. Staining of the brick from water infiltration or continuous wetting was noted in several areas. All sealant applied between brick sections was aged, cracking, or missing. The metal panel system suffered from a similar issue at the joints between the brick and the metal panels. The metal panel system included physical damage to panel edges or the system itself. In AHU10, a column was noted as rusted through a the base.  
   On the north side of the building, there were numerous holes adjacent to the foundation. It has been reported that a variety of pests have been seen and heard in the building. A substantial number of wasp nests were noted. | Good                    |
| Exterior Windows | Single-hung metal window systems are installed in the |                                                                                                                                                                                                                                                                                                                                                               | Good                    |
### System Condition and Deficiency Overview

<table>
<thead>
<tr>
<th>System</th>
<th>Subsystem</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Exterior Walls</strong></td>
<td>These units appear to be aluminum and original to the structure but have recently repainted. Units have metal panels in the bottom section. The window were in good condition. It was reported, but not confirmed, that the windows were painted shut. The paint system applied to the window units showed significant peeling or adhesion issues on the south and west sides of the building. On the west side, several broken panes were noted in the same units.</td>
</tr>
<tr>
<td></td>
<td><strong>Exterior Doors</strong></td>
<td>Exterior doors are hollow metal doors set in hollow metal frames. Typically, the doors contain glazing. Mechanical room doors on the exterior of the building have louvers set in them. The exterior doors were in average condition. The finish systems applied to the doors was noted as peeling or chipped in on multiple door units. Rust was present on the exterior mechanical room doors. In the main mechanical room, the louvered door system lacked hardware on the inside of the door. This created a potential safety hazard for workers inside the space. One door had an eyebolt installed on the door frame, likely an additional physical security for the exit door. This created a safety hazard if it was actually used. It was reported that several doors, including the main entry, required a large amount of force to operate.</td>
</tr>
<tr>
<td></td>
<td><strong>Roofing</strong></td>
<td>Three roofing systems exist on the building. The first is a modified bitumen roofing that is coated with a fluid-applied material to extend the roof life or increase the reflectance of the roof surface. The second system is a built-up type system with a gravel top layer. The third is a mechanically fastened standing seam metal roof system at the upper roof sections and mechanical screening. Access to the roof is via a roof ladder that starts at nine feet off the ground with security gate swings down that closes off the bottom of the fall protection cage. The roofing was in average condition. Of the three systems, the built-up portions were considered to be in poor condition based on the deficiencies listed below and reported leakage. The modified bitumen system showed signs of ponding, aged roofing sealants, loose top sheets, and organic material growing on or in the top coating. The built-up roofing system had evidence of aged roofing sealants, erosion to the point of exposing fibers, and reports of leaking likely associated with the mechanical equipment screening structural system that penetrated the roofing system. The metal roof system was observed to have eroding finish systems, missing fasteners and system elements, rusting structural supports, and aged wood blocking that had fallen out in place due to exposure. The ground around the ladder access was uneven, creating a hazard in the use of</td>
</tr>
<tr>
<td>System</td>
<td>Subsystem</td>
<td>Condition and Deficiency Overview</td>
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<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Interior</td>
<td>Interior Walls</td>
<td>Interior wall construction is a combination of gypsum wall board, CMU (concrete masonry unit), demountable partitions, and one operable partition in the gymnasium. One partition is built from wood framing and plywood for a wall surface. The interior walls were in good condition. There was a crack in the gypsum wall board in the lounge. The painted CMU showed pitting in a variety of locations. The mass at the bottom of these pits appeared dark and inconsistent with the material matrix around it. In the cafeteria, there appeared to be mineral leaching out of the CMU common with water infiltration. Similarly, the unpainted CMU wall in AHU5 (air handling unit) had staining suggestive of moisture infiltration. In the practice room of the music room, a control joint in the CMU construction had been filled with grout in lieu of the appropriate sealant, allowing for movement. The operable partition was observed to have damage to the surface of multiple panels. It was reported that the gypsum board construction contained asbestos, and its presence limited the ability of staff to do maintenance or repairs.</td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior</td>
<td>Interior Doors</td>
<td>The interior doors are solid core wood veneer door slabs set in hollow metal frames. Some doors have window units. There are a limited number of hollow metal doors inside the facility. The doors observed were in average condition. Throughout the facility, the wood doors showed wear and tear on the veneer or the paint on the frames. Wear and tear was especially evident on the doors of the gymnasium, cafeteria, and kitchen. Several doors were noted as having loose hardware. It was reported that there were multiple keyways for this facility, requiring more than one master key.</td>
</tr>
<tr>
<td>Specialties</td>
<td></td>
<td>System not present.</td>
</tr>
<tr>
<td>Stairs</td>
<td>Exterior Stairs</td>
<td>The exterior stairway is cast-in-place concrete with metal nosings. The exterior stairs were in average condition. The connection of the railing to the concrete steps and landing was observed to be rusting to the point of causing the surrounding concrete to separate. The metal nosing on the treads was observed to be worn smooth.</td>
</tr>
<tr>
<td>System</td>
<td>Subsystem</td>
<td>Condition and Deficiency Overview</td>
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</tr>
<tr>
<td>Interior Stairs</td>
<td>System not present.</td>
<td></td>
</tr>
<tr>
<td>Interior Finishes</td>
<td>Interior Wall Finishes</td>
<td>The interior wall finishes include painted gypsum board, painted vinyl wall over gypsum board, paint over CMU, and laminate installed over gypsum board as a wainscot. The interior wall finishes were in good condition. Deficiencies noted were corrosion at the diamond tread protection plate at the freezer, vinyl wall covering lifting from the gypsum board substrate, damage to the vinyl wall covering at the operable partition, paint damage, and one instance of a cracked finish system at the head and sill of a window. It was reported that the interior gypsum board systems in a portion of the building contain asbestos. Staff has requested that this material is removed from the facility for maintenance to be possible.</td>
</tr>
<tr>
<td>Interior Floor Finishes</td>
<td>Interior Floor Finishes</td>
<td>Interior floor finishes include VCT (vinyl composite tile), strip wood flooring at the stage, quarry tile in the kitchen, plastic interlocking tile flooring in the gymnasium, ceramic tile in restrooms, and carpet in the library. The floor finishes were in good condition. The quarry tile in the kitchen appeared to be uneven at the freezer. The floor tile in the janitorial storage room was damaged and missing in one area. The ceramic tile in the male restroom 120 was noted as having multiple patches and the concrete substrate appeared to have shifted. Cove base was observed to be missing in the janitorial office.</td>
</tr>
<tr>
<td>Interior Ceiling Finishes</td>
<td>Interior Ceiling Finishes</td>
<td>Ceilings are a 2’x4’ suspended ceiling system with limited amounts of gypsum board ceilings in restrooms and exposed structure in the gymnasium. The ceiling finishes were noted to be in good condition. Deficiencies noted were humidity damage at ceiling tiles in the form of sagging tiles and water damage at ceiling tiles, gypsum board construction, and a bar joist in the gymnasium. In the kitchen, there appeared to be installation issues requiring foam to be used to close gaps.</td>
</tr>
<tr>
<td>Conveying</td>
<td>System not present.</td>
<td></td>
</tr>
<tr>
<td>Plumbing</td>
<td>Plumbing Fixtures</td>
<td>The building has public restrooms for males and females, students, and separate staff restrooms located throughout the facility. These restrooms typically have vitreous china hand sinks in counters with manual faucets, along with vitreous china floor-mount and/or</td>
</tr>
</tbody>
</table>
### Facility Condition Assessment: AISD

#### Williams ES

**September 16, 2016**

<table>
<thead>
<tr>
<th>System</th>
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<th>System Condition Rating</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>wall toilets with manual flushing mechanisms, and vitreous china wall-hung urinals in the male restrooms with manual flushing mechanisms. There are service sinks in the janitorial closets, and water coolers are located throughout the facility, typically near the public restrooms. Several of the bubblers on the water coolers were clogged or corroded. Several of the water closets had flush valves that did not flush properly. All fixtures were original to the building and were aged. Due to the observed deficiencies and the age of the system, plumbing fixtures were rated as poor.</td>
<td></td>
</tr>
<tr>
<td>Domestic Water</td>
<td></td>
<td>All of the plumbing fixtures are serviced with domestic cold water from the main water entry in the main mechanical room. There is a gas water heater in the main mechanical room that serves the kitchen. In addition, several electric water heaters serve isolated areas such as the teachers’ lounge and janitorial closets. A building back-flow preventer was not observed. There was a floor drain in the kitchen that had several items draining to it. None of the items draining to it exhibited a proper air gap. Some interfered with others’ ability to drain.</td>
<td></td>
</tr>
<tr>
<td>Distribution</td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Other Plumbing</td>
<td></td>
<td>The roof drains are equipped with metal grate covers to prevent debris from entering the drainage system. It was reported that the roof drain elbow outside of classroom 137 has failed and needs to be replaced. The roof drains appeared to be in average condition.</td>
<td>Average</td>
</tr>
<tr>
<td>Mechanical/</td>
<td></td>
<td>The major mechanical equipment consists of indoor chilled/hot water single-zone AHUs, two split air-cooled chillers, and one gas-fired boiler. In addition, the building utilizes GSHP (ground source heat pumps). There are ERUs (energy recovery units) on the roof serving each of the AHUs. All AHUs are located in mechanical closets. These closets are located on the stage of the auditorium and around the main building, serving individual pods of classrooms. All of the AHUs were aged and in excess of their typical design service life. During the assessment, there were crews measuring the existing AHUs for replacement. Several control valves exhibited large amounts of corrosion. The GSHPs serving the classrooms in the addition were aged. There was an abandoned condensing unit on the roof. The ERUs were aged but appeared in serviceable condition. It is reported that these ERUs need to be replaced. The chillers appeared to be serviced. It was reported that the chillers needed to be</td>
<td></td>
</tr>
<tr>
<td>HVAC</td>
<td></td>
<td>Average</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>Fire Protection</td>
<td>Fire Alarm</td>
<td>The building has a fire alarm system that consists of alarm and signaling devices such as horns/annunciators, strobes, horn/strobe combinations, pull stations, and detectors. The fire alarm system is controlled by a Silent Knight control panel. The fire alarm system appeared to be in good condition. Staff reported the fire alarm system required frequent maintenance.</td>
<td>Good</td>
</tr>
<tr>
<td>Fire Protection/Suppression</td>
<td></td>
<td>The building does not have a fire suppression system. The building is protected by portable fire extinguishers placed throughout the facility. All observed portable fire extinguishers had inspection tags dated within the last year as required.</td>
<td>Good</td>
</tr>
<tr>
<td>Electrical</td>
<td>Electrical Distribution</td>
<td>The electrical service enters the building from the 277/480-volt 2000-amp main switchboard “MSB” located on the exterior near the service transformer. The service then feeds another 1200-amp switchboard “MSB2” in the “MAINMECH” room that distributes service to branch panelboards and step-down transformers located in various electrical rooms throughout the building. The electrical distribution equipment appeared to be in average condition. Staff reported that the switchboard “MSB2” in the “MAINMECH” room was aged and not up to code. It was requested that it be replaced with a new switchboard that included a single main disconnect to turn off the entire switchboard. It was also reported that the classrooms needed more receptacles, but the panelboards did not have the capacity. AHU-6 on the roof had a heavily corroded disconnect switch with no cover. The building does not have a lightning protection system.</td>
<td>Average</td>
</tr>
<tr>
<td>Lighting</td>
<td></td>
<td>The building’s exterior lighting consists of HID (high-intensity discharge) light fixtures located along the entire perimeter. The interior lighting consists of 2’x4’ fluorescent recessed troffers and 1’x4’ fluorescent pendant-mounted light fixtures. The interior and exterior lighting appeared to be in average condition. Staff reported that the lighting levels were adequate, but the light fixtures were aged. Staff reported inadequate lighting in the parking lot, front drive, near the track, and in the crawlspace. It was</td>
<td>Average</td>
</tr>
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<tr>
<td></td>
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<td>requested that the emergency lights be replaced with lighting frog eye type fixtures.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communications &amp; Security</td>
<td>There is a security system including surveillance cameras in the building. There is a public address system and telecommunications system. The systems appeared to be in good condition with no deficiencies to report. Staff requested a more secure vestibule entry and reported that there was inadequate camera coverage at the playground, track, and bus loop areas.</td>
<td>Good</td>
</tr>
</tbody>
</table>

**Exterior System Deficiency Examples**

**Exterior Walls**

![Exterior Wall Example 1](image1)

![Exterior Wall Example 2](image2)

![Exterior Wall Example 3](image3)

![Exterior Wall Example 4](image4)

![Exterior Wall Example 5](image5)
Exterior Windows

Exterior Doors

Roofing Deficiency Examples
Interior Construction Deficiency Examples

Interior Walls
Interior Doors

Stairs Deficiency Examples

Exterior Stairs

Interior Finishes Deficiency Examples

Interior Wall Finishes

September 16, 2016
Interior Floor Finishes

Interior Ceiling Finishes

Plumbing System Deficiency Examples

Domestic Water Distribution
Mechanical/HVAC System Deficiency Examples

Electrical System Deficiency Examples

Electrical Distribution
Williams Elementary School Campus Summary of Recommendations

This document is based on current conditions observed during fieldwork and provides recommendations for corrective actions by each discipline. The following recommendations provide a summary of the findings.

**Main School Building Recommendations**

**Exterior**

1. Repair the surface of the brick where graffiti has been removed.
2. Clean the masonry on the north side of the building.
3. Repair and clean the wall due to uncontrolled flow of water down exterior walls.
4. Remove old sealant at brick work and joints between the metal panel system and masonry. Install new sealants at joints after properly preparing the surfaces.
5. Repair or replace metal siding system elements that are damaged.
6. Fill holes at the foundation, and investigate the possible presence of animals under the building.
7. Repair the crack in the kitchen window.
8. Replace the column in AHU10. Direct condensate in such a way that it does not degrade structural elements.
9. Review the entire exterior envelope for openings that allow pests to infiltrate the building. Seal openings.
10. Paint the soffits and canopy ceilings on the exterior a lighter shade of blue to deal with the wasp nests issue.
11. Replace broken window panes with new glazing.
12. Remove the existing paint system from windows where damaged. Repaint window frames.
13. Investigate the operation of windows. Remove paint where blocking operation of window.
14. Strip and repaint damaged doors.
15. Install appropriate hardware on the inside of the door at the MAINMECH room.
16. Remove the eyebolt from the door frame of room 139, and patch and repair the frame.
17. Adjust exterior doors that require force to operate to meet code requirements for accessibility.
18. Remove existing louvers in the gymnasium and infill the wall.

**Roofing**

1. Repair or replace the modified bitumen system on surfaces A01 through A08.
2. Replace the built-up roofing system on surfaces A06 and A09.
3. Repair the metal roofing system at A07, including refinishing the exposed structural system. Repair and protect the wood blocking.
4. Remove the organic growth on the roof system.
5. Install an appropriate roof access ladder with a security device safe for the user.

**Interior Construction**

1. Investigate the CMU damage that is the result of foreign material within the block composition. Replace or repair as required. Investigation of the condition should include opening the exterior wall at the documented location to verify that vapor and moisture barriers in the wall system have not been compromised from similar pitting.
2. Investigate the source of mineral flow from the CMU wall in the cafeteria/gymnasium. Stem flow of moisture and repair finish on CMU
3. Investigate possible water infiltration in AHU5’s CMU wall.
4. Install appropriate sealant at the control joint in MUSICPRA.
5. Replace the wood frame construction with noncombustible construction in GYMNASIUMEQSTO.
6. Replace damaged panels on the operable partition.
7. Refinish damaged interior doors, door frames, and associated window units.
8. Repair loose hardware on interior doors.
8. Repair or replace damaged millwork.

Stairs
1. Repair the concrete landing and steps. Address moisture infiltration causing rusting of metal imbeds.
2. Replace metal nosings of treads with an anti-slip surface.

Interior Finishes
1. Remove and reinstall diamond tread panels in the kitchen at a height to avoid continuous wetting from mopping but low enough to protect the freezer box.
2. Re-adhere the vinyl wall covering where it is lifting.
3. Replace the vinyl wall covering on the operable partition in the gymnasium unless the unit is being replaced in its entirety.
4. Repair the head and sill of the window with cracking.
5. Repaint the rooms with the damaged paint system.
6. Investigate the uneven flooring at the freezer in the kitchen. This may be a sign of permafrost forming under the slab if not above a crawlspace. Repair as required.
7. Repair or replace the floor tile in CUSTSTO.
8. Investigate possible movement in the substrate. Repair as required. Replace ceramic tile in BHRR120.
9. Install a cove base in CUSTOF.
10. Diagnose the source of water damage to ceiling tiles, and repair and replace ceiling tiles.
11. Replace humidity damaged tiles in rooms 139 and 140. Review the HVAC system for this area and address humidity build-up.
12. Reinstall suspended ceiling system in Kitchen where sealed with foam at drywall ceiling.
12. Review the source of discoloration on the bar joist in the gymnasium. Review bar joist for degradation. Repair as necessary.

Plumbing
1. Continue preventive maintenance on aged plumbing fixtures and plan for replacement in the future as fixtures continue to age.
2. Repair or replace any damaged or missing piping insulation as needed.
3. Clean and flush out all of the roof and interior floor drainage piping.

Mechanical/HVAC
1. Plan to replace out-of-date AHUs.
2. Plan to replace and update controls and controls strategies.
3. Plan to replace out-of-date GSHPs.
4. Plan to replace ERUs
5. Plan to replace Chillers.

Fire Protection
1. Continue annual inspections of the portable fire extinguishers.

Electrical
1. Review the exterior lighting levels and repair/replace as needed to ensure security and safety.
2. Provide egress lighting where required.
3. Provide security cameras on the exterior and interior where necessary for proper coverage.
4. Verify whether AHU-6 is being used, then remove or replace the electrical disconnect for a safe electrical connection.
5. As suggested by the facility staff, inspect the distribution switchboard “MSB2” in the “MAINMECH” room and replace if necessary with a new distribution switchboard and a single main disconnect to comply with current codes.
## Crawl Space System Deficiency Overview

**NOTES CONCERNING CRAWL SPACE OBSERVATIONS:** The addition on the west side of the building has a slab-on-grade foundation.

The following table provides a summary of the systems and their respective conditions found by each discipline.

<table>
<thead>
<tr>
<th>System</th>
<th>Subsystem</th>
<th>Condition and Deficiency Overview</th>
<th>System Condition Rating</th>
</tr>
</thead>
</table>
| Soil, Drainage, Ventilation & Access    | Soil Below Building, Site Drainage in Crawl Space   | Soil was relatively flat. Soil at perimeter of the building was saturated and damp. There did not appear to be a drainage system present in the west side of the building. A drain was observed on the east side of the main building. Crawl space showed signs of water penetration from perimeter of building. Soil/Drainage deficiencies:  
  • Saturated soil / Poor drainage  
  • Water infiltration at perimeter of building | Average                                               |
|                                          | Soil Retainers                                      | Void at perimeter of crawl space was maintained by precast concrete earth retainers. Missing soil retainers were observed on the northeast and northwest side of the building. There were failed retainers under the mechanical room. Describe any soil retainer deficiencies.  
  • Missing concrete soil retainers  
  • Failed concrete soil retainers      | Average                                               |
|                                          | Areaways/Ventilation                                | Ventilation did not appear adequate in crawl space. No areaways were observed. Condensation was present on pipes, beams and slab. Areaway/ventilation deficiencies:  
  • Poor ventilation  
  • Condensation on underside of slab   | Average                                               |
| Access Hatches | Four floor access hatches were located in the mechanical rooms at corners of the building. Another was located on the wall of the main mechanical room on the northeast side of the building. All access hatches were easily accessible and generally in good condition. Access hatch deficiencies:  
- Spalling and exposed rebar around edges of hatches  
- Rusting access door in main mech room | Average |
|----------------|---------------------------------------------------------------------------------|--------|

<table>
<thead>
<tr>
<th>Exposed Structure</th>
<th><strong>Exposed Columns &amp; Tops of Foundations</strong></th>
<th>Good</th>
</tr>
</thead>
</table>
|                   | Exposed columns generally appeared in good condition. Honeycombing and minor spalling was observed on some columns. Formwork was left in place in some areas. Column/Foundation deficiencies:  
  - Honeycombing and minor spalling. |       |

| Exposed Faces of Perimeter Walls / Beams | Suspended perimeter beams are approximately 3’ deep. Exposed reinforcement due to insufficient cover was observed on the southwest corner of the building. Honeycombing was present on some perimeter beams. In few areas, the bottoms of perimeter beams were in contact with soil underneath (i.e. no void space). Perimeter wall/beam deficiencies:  
  - Soil in contact with bottom of beam (no void)  
  - Exposed reinforcement  
  - Honeycombing | Average |

| Exposed Portions of Interior Floor Beams Above | Interior suspended floor beams spanned between columns. Minor honeycombing was observed on a few beams. Beam deficiencies:  
  - Minor honeycombing | Good |
| Underside of Suspended Floor Slabs Above | The floor slab system is comprised of precast pan joists. Many joists have longitudinal cracking near the bottom of the joists. Spalling and exposed/corroded reinforcing was observed at underside of slab and at pipe penetrations in some locations. In many instances, exposed reinforcing was due to insufficient cover on the underside of the slab. In one location, a precast pan joists showed signs of badly mixed concrete with holes in the joists and slab as a result. Severe honeycombing was observed on some precast joists.  
Slab deficiencies:  
• Mild to severe honeycombing & spalling  
• Exposed/corroded reinforcement in deck  
• Exposed/corroded reinforcement in joists  
• Longitudinal cracking  
• Poorly mixed concrete | Poor |
|---|---|---|
| SUSPENDED PIPES & HANGERS | Many pipes were observed in the crawl space. Generally, cast iron pipes had rusting and some had degraded and/or detached insulation. A small leak was observed in a pipe near the southwest corner of the building. Some hangers had failed and one pipe had fallen to the ground; a leak was observed in this fallen pipe.  
Pipe deficiencies:  
• Pipe leaks  
• Detached pipe  
• Mild rust on cast iron pipes  
• Rusted and failed pipe hangers  
• Degraded/detached pipe insulation | Average |
| EXPOSED DUCTWORK | The crawl space has a lot of internally insulated ducts. Ducts were generally in good condition. Some showed signs of mild rusting.  
Ductwork deficiencies:  
• Minor rusting | Average |
| MEP EQUIPMENT | Rusting electrical conduit was observed. A junction box was observed without a cover.  
MEP equipment deficiencies:  
• Minor rusting  
• Rusted and exposed junction box | Average |
| SPRAY FIREPROOFING/INSULATION | N/A – No spray fireproofing or insulation was present in the areas observed. | N/A |
### Crawl Space Deficiency Examples

#### Soil, Drainage, Ventilation & Access

<table>
<thead>
<tr>
<th>Image</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="saturated-soil.jpg" alt="Image" /></td>
<td>Saturated soil</td>
</tr>
<tr>
<td><img src="missing-reinforcement.jpg" alt="Image" /></td>
<td>Missing concrete soil retainers</td>
</tr>
<tr>
<td><img src="failed-soil-retainers.jpg" alt="Image" /></td>
<td>Failed soil retainers</td>
</tr>
<tr>
<td><img src="condensation-pipe-penetration.jpg" alt="Image" /></td>
<td>Condensation at pipe penetration</td>
</tr>
<tr>
<td><img src="exposed-reinforcement-access-hatch.jpg" alt="Image" /></td>
<td>Exposed reinforcement and spalling at access hatch</td>
</tr>
<tr>
<td><img src="rusted-access-door.jpg" alt="Image" /></td>
<td>Rusted access door in main mech’l room</td>
</tr>
</tbody>
</table>

#### Exposed Structure

<table>
<thead>
<tr>
<th>Image</th>
<th>Description</th>
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<tr>
<td><img src="column-honeycombing-spalling.jpg" alt="Image" /></td>
<td>Column honeycombing and spalling</td>
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<tr>
<td><img src="perimeter-beam-exposed-reinforcement.jpg" alt="Image" /></td>
<td>Perimeter beam exposed reinforcement</td>
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<tr>
<td><img src="perimeter-beam-honeycombing.jpg" alt="Image" /></td>
<td>Perimeter beam honeycombing</td>
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</tbody>
</table>
Facility Condition Assessment: AISD
Williams ES
August 26, 2016

Interior beam honeycombing  Honeycombing on precast panels  Exposed reinforcement under slab

Exposed reinforcement in joists  Longitudinal cracking in precast joists  Poorly mixed concrete

Pipes, Ducts, Equipment & Fireproofing

Detached Pipe insulation  Detached leaking pipe  Failed pipe hanger

Leaking pipe  Minor ductwork rusting  Rusted electrical conduit
<table>
<thead>
<tr>
<th>Rusted and exposed junction box</th>
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Williams ES – Campus Summary of Crawl Space Recommendations

This document is based on current conditions observed during fieldwork and provides recommendations for corrective actions by each discipline. The following recommendations provide a summary of the findings.

**Main School Building (166-A) Recommendations**

Soil, Drainage, Ventilation & Access
1. Improve drainage inside crawl space.
2. Investigate need to re-grade around exterior of building to promote positive drainage away from building.
3. Replace missing and failed soil retainers.
4. Investigate need to improve ventilation.

Exposed Structure
5. Clean exposed reinforcing and repair concrete.
6. Test floor panels for poorly mixed concrete and strengthen as needed.

Pipes, Ducts, Equipment & Fireproofing
1. Repair detached & leaking pipes
2. Replace rusted and failed hangers
3. Repair degraded/detached pipe insulation
4. Replace junction box and rusting conduit
DEFICIENCIES FOUND IN THIS LOCATION:
1) SATURATED SOIL
2) POOR VENTILATION
3) MISSING SOIL RETAINER PANELS
4) SPALLING AND EXPOSED REBAR AT ACCESS HATCH
5) EXPOSED REINFORCING AT PIPE PENETRATIONS
6) CONDENSATION UNDER SLAB
7) CONDENSATION ON PIPES
8) RUSTED HANGERS
9) MECHANICAL ROOM EQUIPMENT LEAKING ON ACCESS HATCH

DEFICIENCIES FOUND IN THIS LOCATION:
1) DAMP SOIL AROUND PERIMETER
2) POOR VENTILATION
3) EXPOSED REINFORCEMENT AT ACCESS HATCH
4) HONEYCOMBING ON COLUMN
5) EXPOSED REINFORCING AT PIPE PENETRATIONS
6) EXPOSED REINFORCING & LONGITUDINAL CRACKING IN PAN JOISTS
7) RUSTED PIPES WITH MISSING INSULATION
8) RUSTED DUCTWORK
9) RUSTED ELECTRICAL CONDUIT

DEFICIENCIES FOUND IN THIS LOCATION:
1) SLIGHTLY DAMP AT PERIMETER, POOR VENTILATION
2) EXPOSED REINFORCEMENT AT PERIMETER BEAM
3) HONEYCOMBING AT INTERIOR BEAMS
4) LONGITUDINAL CRACKING IN PAN JOISTS
5) INSUFFICIENT CLEAR COVER UNDER SLAB REINFORCING
6) LEAKING PIPE

DEFICIENCIES FOUND IN THIS LOCATION:
1) SATURATED SOIL
2) EXPOSED REINFORCEMENT AT ACCESS HATCH
3) MINOR SPALLING AT TOP OF COLUMN
4) UNDERSIDE OF PERIMETER BEAM IN CONTACT WITH SOIL
5) POORLY MIXED CONCRETE AT JOIST AND UNDERSIDE OF DECK
6) CONDENSATION ON PIPES
7) PIPE HANGERS SLIGHTLY RUSTED

DEFICIENCIES FOUND IN THIS LOCATION:
1) DAMP SOIL AROUND PERIMETER
2) POOR VENTILATION
3) EXPOSED REINFORCEMENT AT ACCESS HATCH
4) HONEYCOMBING ON COLUMN
5) RUSTED PIPES WITH MISSING INSULATION
6) RUSTED DUCTWORK
7) RUSTED ELECTRICAL CONDUIT

DEFICIENCIES FOUND IN THIS LOCATION:
1) MISSING SOIL RETAINERS ON NORTH SIDE
2) ACCESS HATCH RUSTED
3) HONEYCOMBING AT PERIMETER BEAM
4) EXPOSED REINFORCING UNDER DECK
5) BADLY SPALLED CONCRETE UNDER DECK
6) CONDENSATION UNDER DECK, POOR VENTILATION
7) DEGRADED PIPE INSULATION
8) SPALLING AND HONEYCOMBING ON FLOOR SYSTEM
9) BADLY MIXED CONCRETE IN PRECAST JOISTS
10) RUSTED AND EXPOSED JUNCTION BOX
11) RUSTED CONDUIT

DEFICIENCIES FOUND IN THIS LOCATION:
1) SATURATED SOIL
2) POOR VENTILATION
3) EXPOSED REINFORCEMENT AT ACCESS HATCH
4) HONEYCOMBING AT INTERIOR BEAMS
5) INSUFFICIENT CLEAR COVER UNDER SLAB REINFORCING
6) LEAKING PIPE

DEFICIENCIES FOUND IN THIS LOCATION:
1) SATURATED SOIL
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