Brentwood Elementary School Site Summary

Address	6700 Arroyo Seco Austin, TX 78757
Number of Permanent Campus Facilities	2
Original Year of Construction	1951
Total Campus Building Area (combined)	62,890 SF

Introduction

The Brentwood Elementary School campus is located at 6700 Arroyo Seco in Austin, Texas. Brentwood Elementary School was established in 1951, and consists of the primary school along with one additional campus building. These permanent campus buildings include the Main School Building (BLDG-107A) and the Storage Building (BLDG-107B). The buildings are connected to one another by a series of exterior uncovered concrete sidewalks.

Meeting Log		Revision Log		
Date	**Meeting**	**Revision**	**Date**	**Summary of Content**
8/9/16	Interview	00	9/9/16	Draft Issue
8/11/16	Assessment	01	11/18/16	Added comments from PM Randall Sakai as indicated on email dated 10/28/16.
9/29/16	Campus Visit			
10/12/16	Cluster Meeting (Attended)			

Main School Building – BLDG-107A

Building Purpose	Administration Offices, Classrooms, Cafeteria, and Gymnasium
Building Area	62,319 SF
Inspection Date	August 11, 2016
Inspection Conditions	90°F - Sunny and hot
Facility Condition Index	

System Deficiency Overview

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

System	Subsystem	Condition and Deficiency Overview	System Condition Rating
Exterior	Exterior Walls	The exterior walls are brick veneer with masonry unit backup. The 100-wing's concrete structure is exposed and painted. Newer building additions have cut limestone parapet caps, window headers and sills. The original building 100-wing classrooms have a glass block clerestory. The glass block has been covered with metal siding on the exterior but is still visible from inside. There are gutters and downspouts along some walls. The exterior walls were observed to be in average condition. There was visible discoloration on courtyard walls at the 100-wing that may be related to moisture in the crawlspace. Peeling paint was visible on the 100-wing concrete structural members. There was organic growth on some brick and limestone surfaces around the building. The gutters were visibly aged and severely corroded on the north and east walls near administration offices. Gutters were not present along the courtyard side of the 100-wing, which was reported to contribute to organic growth on the masonry surfaces. Cracks were observed in the masonry wall at the corner of room 101. Sealants were typically flexible and intact. No specific penetrations were visible, but pests and rodents were reported to be seen in the building, possibly entering from the crawlspace or foundation.	Average
	Exterior Windows	The exterior windows are metal framed with single-pane glazing and translucent fiberglass panels. Exterior	Good

System	Subsystem	Condition and Deficiency Overview	System Condition Rating
		windows in the classrooms have an operable sash. The exterior windows have been recently replaced, except in the gymnasium and at the building entrance. The original exterior windows in the gymnasium and main entrance were aged and were reported to be difficult to open and close. The newer metal-framed exterior windows appeared to be in good condition. A cracked pane was reported in a window in room 208.	
	Exterior Doors	The exterior doors are steel with metal frames. The building's entrance doors and individual doors to 100-wing classrooms have transoms, and in some locations, sidelights. The exterior doors were observed to be in average condition. The exterior doors are original to the building and were reported to be difficult to latch. The exterior doors and hardware were observed to be aged and marginally functional in some locations.	Average
Roofing	Approximately 90% of the roof has a modified bitumen membrane, while the remainder is built-up. The roof system was observed to be in average condition. The built-up roofing and about half of the modified bitumen roofing were nearing the end of their typical design service lives. The aged modified bitumen roof surfaces had areas of ponding, loss of granular surface, and blisters. Some gutters and downspouts appeared relatively new, other gutters had corrosion and holes and were not functional. The scuppers at the 300-wing appeared undersized relative to the roof area, likely resulting in ponding during significant rain events. A roof leak was reported above office 4. This roof area had been recently repaired. However, ponding was still evident, and a roof from a higher adjacent area unnecessarily discharged directly to this problematic roof area. The counterflashing on roof area A-14 above the kitchen was detached from the wall.		Average
Interior Construction	Interior Walls	Most of the interior walls in the original building are constructed of glazed masonry units on the lower half and brick above. The interior walls in the 300-wing classroom addition are painted CMU (concrete masonry unit) or are framed partitions with wood paneling surfaces. Some recently renovated spaces such as the library have gypsum board surfaces. The cafeteria has its original metal-framed windows with operable sashes along the interior corridor wall. In the 300-wing, accordion partitions separate pairs of classrooms. The interior walls were observed to be in good condition. Accordion partitions appeared to be in average condition. Campus staff requested removal of	Good

System	Subsystem	Condition and Deficiency Overview	System Condition Rating
		the accordion walls and replacement with solid partitions.	
	Interior Doors	The interior doors are solid core wood with both wood and metal frames. The interior door hardware is original to the building. Vision panels are common in classroom and common space doors. The interior door at administration is incorporated into a hollow metal storefront system with wired glass. The interior doors and frames were observed to be in average condition. However, their hardware was aged, and in many locations, difficult to operate.	Average
	Interior Specialties	Painted steel lockers are found in the kitchen restroom area. The steel lockers were observed to be in good condition.	Good
Stairs	Exterior Stairs	There are concrete steps and ramps at numerous entrances around the building and at the kitchen loading dock. Steps and ramps typically have metal railings. The concrete steps, ramps and metal railings were in good condition.	Good
	Interior Stairs	The only interior stairs in the building provide access to the stage and have wood framing and treads. The interior stairs were observed to be in good condition.	Good
Interior Finishes	Interior Wall Finishes	The predominant interior wall finish in the building is glazed masonry units with painted brick on the upper half of the wall. The upper brick walls in the gymnasium are unpainted. The library has painted gypsum board surfaces. The wood paneling in the 300-wing classrooms is stained and sealed. The recently renovated restrooms near the gymnasium have ceramic tile wall finishes. The interior wall finishes were observed to be in average condition due to the building's age and signs of wear and use. Some scuffing was visible, and peeling paint was observed on the concrete columns in corridor C5.	Average
	Interior Floor Finishes	The predominant interior floor finish throughout the building is vinyl tile with a 4-inch rubber base. Carpet is found in the library, in some administration spaces, and in some classrooms in the 100- and 200-wings. The kitchen has quarry tile, and all restrooms have ceramic tile. The gymnasium has a special plastic interlocking	Average

System	Subsystem	Condition and Deficiency Overview	System Condition Rating
		flooring system for play activities. The carpet in the music room, administration spaces and library appeared to be in good condition. The carpet in classrooms appeared aged and deteriorated. The carpet in rooms 101, 103, 202 and 204 was visibly worn and had split seams and rippling. The vinyl flooring throughout the building appeared to be in average condition. The majority of the ceramic and quarry tile floors appeared to be in average condition, depending upon their age.	
	Interior Ceiling Finishes	The building's interior ceilings are both suspended and attached acoustical tiles. The tiles in the kitchen are vinyl covered. The ceilings in the restrooms near the gymnasium are painted cement plaster. The interior ceilings were observed to be in average condition. Ceiling tiles in the 100- and 200-wings were observed to have stains from roof leaks, and tiles in both wings had detached from their support structure.	Average
Conveying	System not present.		N/A
Plumbing	Plumbing Fixtures	The building has public male and female restrooms for students and separate staff restrooms located throughout the facility. These restrooms typically have vitreous china hand sinks with manual faucets, along with vitreous china floor-mount 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, with water fountains and water coolers located throughout the facility, typically near the public restrooms. The restroom plumbing fixtures were observed to be in poor condition. The fixtures throughout the facility appeared to be mostly original and significantly aged and worn. Rust and corrosion were noticed on many fixtures, including mop sinks and restroom sinks. Corrosion was observed on sink drain piping throughout the facility. Select water coolers were observed to not cool properly. The water cooler located in the cafeteria was not functional and was covered with a black trash bag. A staff toilet was loose and partially unseated from the floor.	Poor
	Domestic Water Distribution	The sinks located throughout the facility are not equipped with hot water with the exception of the kitchen and the staff restrooms. The primary hot water	Poor

System	Subsystem	Condition and Deficiency Overview	System Condition Rating
		service for the building is provided by a GWH (gas water heater)-1, located in the kitchen mechanical room. The hot water in the staff restrooms is provided by a small EWH (electric water heater)-1. The plumbing distribution equipment serving the facility appeared to be in poor condition. The GWH serving the building was observed to be in average condition. The water heater nameplate indicated that it was installed in 2010. Both heaters appeared aged. The hot water piping insulation associated with the water heaters was either damaged or missing. The EWH in the library was past its typical design service life and appeared to be in poor condition. The nurse's office was equipped with a small EWH, which was not operating at the time of assessment.	
	Other Plumbing	The building is not equipped with roof drains. The plumbing equipment serving the facility was in poor condition, primarily due to age. Condensate drains terminated at the exterior wall, causing ponding on the ground below. Building staff reported that plumbing leaks occurred behind equipment in the walls.	Poor
Mechanical/ HVAC	The major mechanical equipment consists of RTUs (roof top units) located on the roof and serving the 300-wing and floor-mounted WSHPs (water-source heat pumps) within the classrooms. These serve the HVAC (heating, ventilating, and air conditioning) system along with roof-mounted exhaust fans and FCUs (fan coil units) serving select spaces. The mechanical drawings indicated a mechanical room housing a chiller, boiler and associated distribution pumps. The equipment was not present in the mechanical room at the time of assessment. The HVAC system appeared to be in poor condition. The majority of the classroom WSHPs were observed to be aged and in poor condition. The 300-wing was served by RTUs that were observed to be in average condition. The remaining RTUs were observed to be in aged and in poor condition. Coil damage was observed on several RTU condenser coils. Select electrical disconnects on the roof were rusted and corroded. Condensate drain piping was either damaged or missing for most of the units located on the roof. The gas piping was observed to be rusted and corroded. Rust and corrosion was observed on mechanical equipment housings throughout the roof. Abandoned piping was observed in the mechanical room. The through-wall air conditioning unit serving the library and the FCU serving the janitorial office appeared aged and need replacement. Aged fans and heaters were located throughout the building. The condenser unit associated with the FCU serving the MDF (main distribution frame) room appeared to be aged and needs replacement. The corridors were conditioned. The roof top EFs appeared aged and in poor condition.		Poor

System	Subsystem	Condition and Deficiency Overview	System Condition Rating
Fire Protection	Fire Alarm	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 the Silent Knight control panel. The fire alarm system appeared to be in average condition.	Average
	Fire Protection/ Suppression	A fire suppression system associated with the kitchen exhaust hoods is present. 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 with the exception of one extinguisher located near the south entry door and another between rooms 303 and 304. The building's fire protection systems were observed to be in average condition.	Average
Electrical	Electrical Distribution	The electrical service enters the building at the 120/208-volt 2500-amp main exterior switchboard. The service feeds panelboards, located in various electrical rooms and corridors walls throughout the building. The electrical distribution equipment appeared to be in average condition. The exterior housing door of the main switchboard had been damaged, and the integrity of the NEMA 3R rating may have been compromised. The exterior housing of panel "RP" on the roof was deteriorating due to exposure to outdoor elements. In the interview notes, facility staff reported that the circuit to the serving line from the kitchen panel tripped frequently. The building does not have a lightning protection system.	Average
	Lighting	The interior lighting consists primarily of T8 fluorescent light fixtures. The building's exterior lighting consists of HID (high-intensity discharge), LED (light-emitting diode), and incandescent light fixtures located along the entire perimeter and canopies. Soffit lights have been modified to fit LED surface-mounted light fixtures. About 80% of the interior lights appeared to be aged and past their design life. Observed deficiencies included inconsistent lamp color temperatures, non-functional fixtures, and fixtures not hanging properly. There are exit light signs present in the building, but	Poor

System	Subsystem	Condition and Deficiency Overview	System Condition Rating
		they appeared to be aged. Lighting for the exterior of the building appeared to be in average condition.	
	Communications & Security	There is a Gemini security system including surveillance cameras in the building's interior and exterior. There is a public address system in the building. The Gemini security system appeared to be in average condition. The public address system appeared to be in average condition. The exterior horns appeared to be aged due to exposure to the outdoor elements.	Average

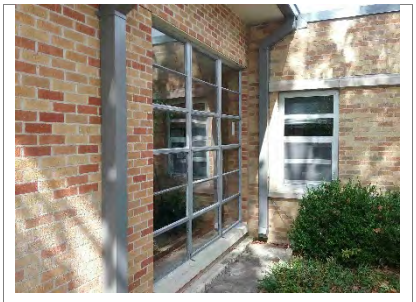
Exterior System Deficiency Examples

Exterior Walls






Exterior Windows



Exterior Doors

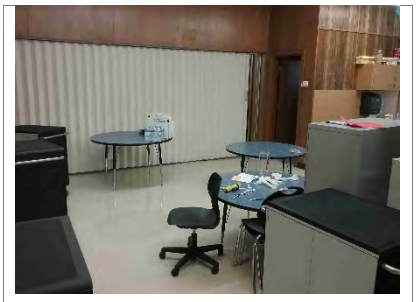
Roofing Deficiency Examples





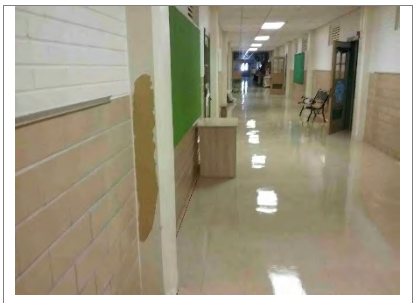

Interior Construction Deficiency Examples

Interior Walls



Interior Finishes Deficiency Examples

Interior Wall Finishes

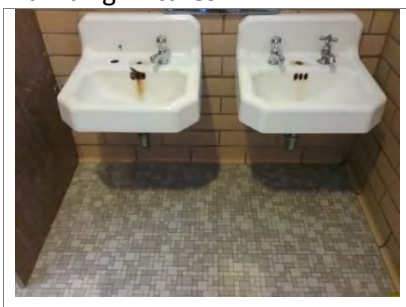


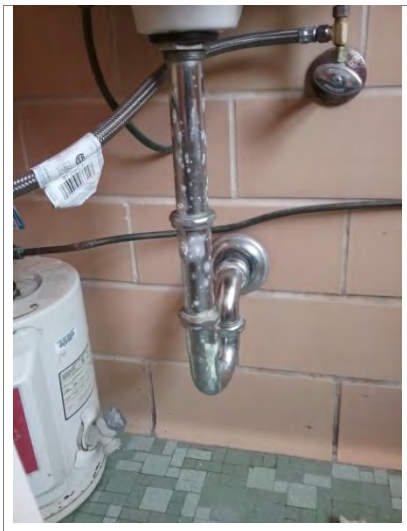
Interior Floor Finishes

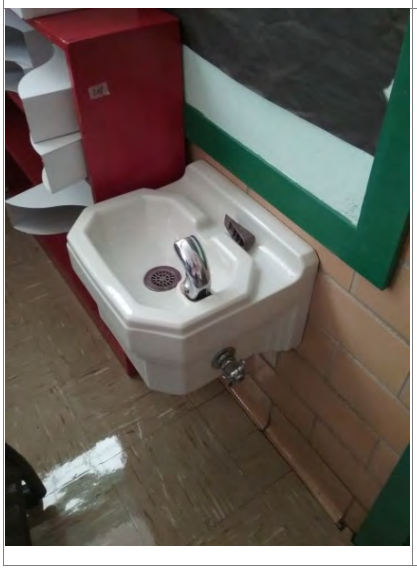
Interior Ceiling Finishes

Plumbing System Deficiency Examples

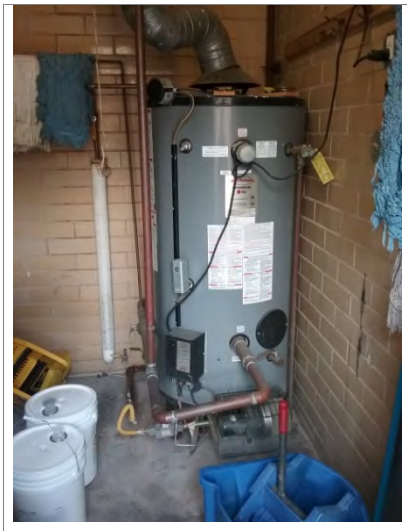
Plumbing Fixtures

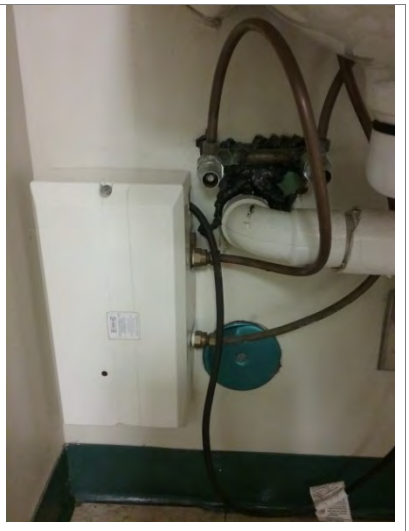





Domestic Water Distribution

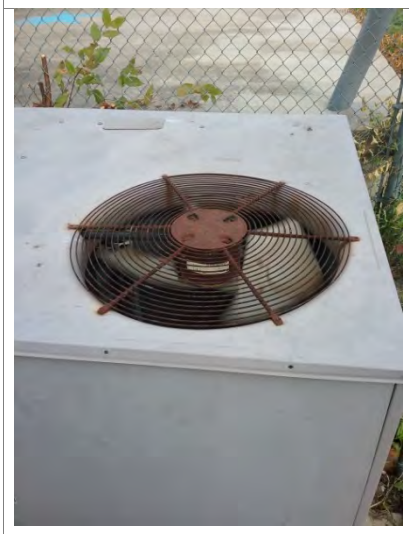


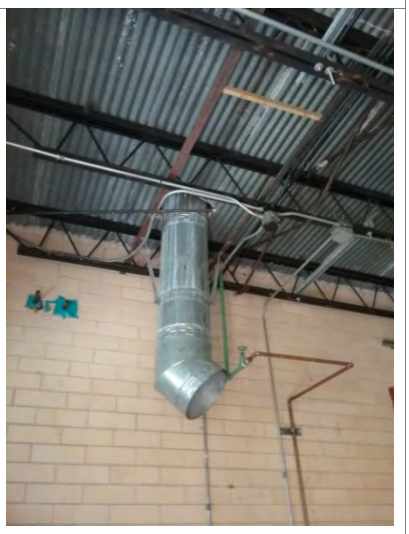


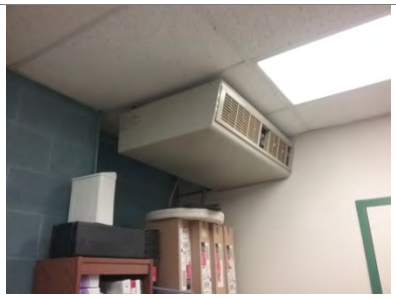
Other Plumbing

Mechanical/HVAC System Deficiency Examples

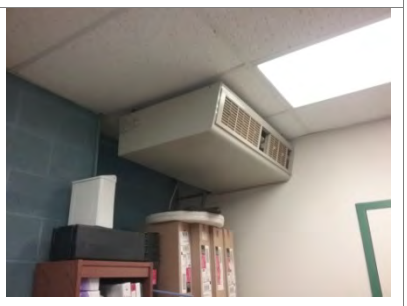










Fire Protection System Deficiency Examples

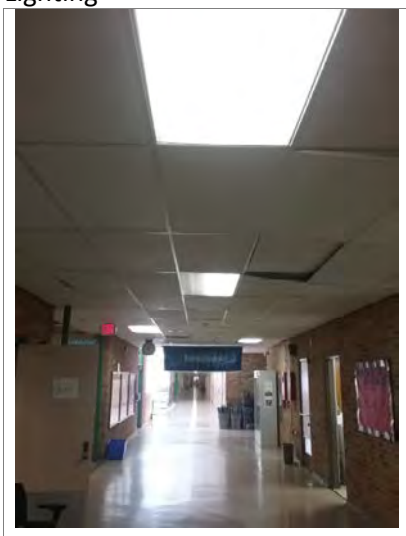
Fire Alarm

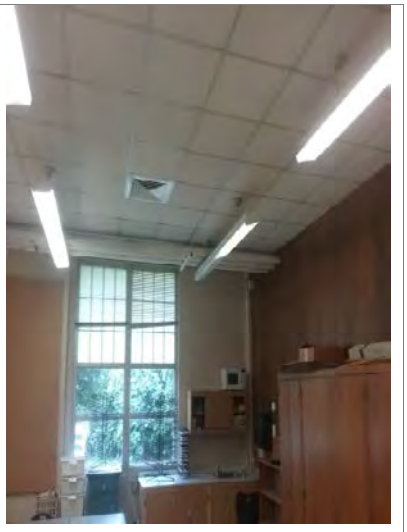
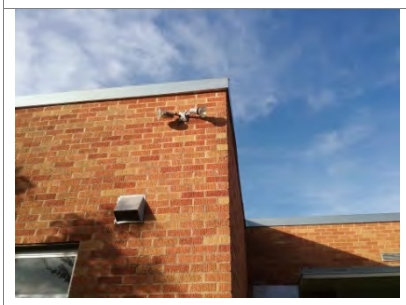
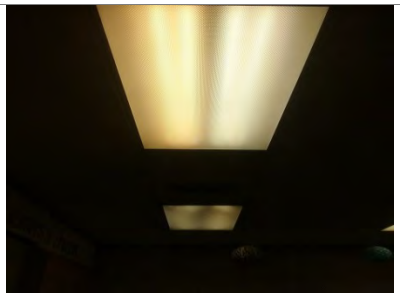
Fire Protection/Suppression

Electrical System Deficiency Examples

Electrical Distribution


Lighting




Storage Building (Old Boiler House) – BLDG-107B

Building Purpose	Storage
Building Area	571 SF
Inspection Date	August 11, 2016
Inspection Conditions	90°F - Sunny and hot
Facility Condition Index	

System Deficiency Overview

The following table provides a summary of the conditions and deficiencies found by each discipline.

System	Subsystem	Condition and Deficiency Overview	System Condition Rating
Exterior	Exterior Walls	The exterior walls are solid brick and original to their 1951 construction. Organic growth was visible on some surfaces of the brick exterior walls.	Average
	Exterior Windows	The exterior windows are covered by cement plaster with a painted mural finish. The glazing was not visible at the time of the assessment. The exterior windows were presumed to be in poor condition. For security reasons, exterior windows may not be suitable to the building's current use as a play equipment storage room.	Poor
	Exterior Doors	The exterior doors are steel with hollow-metal frames. The exterior doors to the storage room were difficult to open. The door to the electrical room could not be opened. Corrosion was visible at the bottoms of all doors. The door hardware was aged and worn.	Poor
Roofing	The roof was not accessible, but was observed from an adjacent building's roof. The roof is built-up and most likely past its typical design service life. The roof was presumed to be in average condition. The roof was estimated to be of the same age and condition as the built-up roof on the Main School Building. The roof and gutter were visibly damaged at the building's northwest corner. No visible damage to the masonry wall was observed.		Average
Interior Construction	Interior Walls	System not present.	N/A
	Interior Doors	System not present.	N/A
	Interior Specialties	System not present.	N/A
Stairs	Exterior Stairs	System not present.	N/A
	Interior Stairs	System not present.	N/A
Interior	Interior Wall Finishes	System not present.	N/A

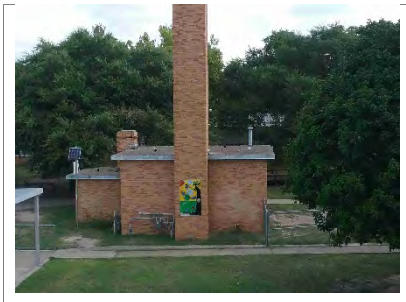
System	Subsystem	Condition and Deficiency Overview	System Condition Rating
Finishes	Interior Floor Finishes	The interior floor is unfinished concrete. The interior concrete floor appeared to be in good condition.	Good
	Interior Ceiling Finishes	System not present.	N/A
Conveying	System not present.		N/A
Plumbing	Plumbing Fixtures	System not present.	N/A
	Domestic Water Distribution	System not present.	N/A
	Other Plumbing	Abandoned piping was observed in the building. The piping appeared to be aged, corroded, and in poor condition.	Poor
Mechanical/ HVAC	A unit heater was observed in the building. The unit appeared to be in poor condition due to age.		Poor
Fire Protection	Fire Alarm	System not present.	N/A
	Fire Protection/ Suppression	The building does not have a fire suppression system. The building is protected by a portable fire extinguisher. The fire extinguisher had an inspection tag dated within the last year.	N/A
Electrical	Electrical Distribution	System not present.	N/A
	Lighting	The interior lighting consists primarily of incandescent lights. Exit signage was not present in the building. The interior pendant mounted light fixtures appeared to be in poor condition.	Poor
	Communications & Security	System not present.	N/A

Exterior System Deficiency Examples

Exterior Walls


Exterior Doors


Roofing Deficiency Examples




Plumbing System Deficiency Examples

Other Plumbing

Mechanical/HVAC System Deficiency Examples

Electrical System Deficiency

Lighting

Brentwood 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.

Campus Recommendations

Exterior

1. Remove organic growth from the exterior of masonry surfaces. Determine the cause of moisture intrusion and repair to eliminate re-occurrence of growth.

Fire Protection

1. Continue annual inspections of the portable fire extinguishers.
2. Continue annual assessments of the fire alarm system.

Electrical

1. Replace all electrical equipment affected by age.
2. Remove any floor receptacles as they are being phased out of use district-wide.
3. Replace all outdated light fixtures with LED fixtures and dimming capabilities.
4. Replace all existing exit signs with LED fixtures.

Main School Building Recommendations

Exterior

1. Replace the remaining leaking exterior windows at the gymnasium and the main entrance.
2. Replace cracked window glazing in room 208.
3. Repaint peeling paint on the exterior of the concrete structure.
4. Investigate the cause of cracks on the south brick wall of the 100-wing.
5. Replace or repair exterior door hardware as necessary to allow doors to operate and latch properly.
6. Investigate and block access points for pests and rodents through penetrations at the walls and the crawlspace.

Roofing

1. Add new gutters to the roof in the courtyard, and repair gutters that have corrosion.
2. Modify downspout discharge points on roof A-04 to reduce the potential for ponding water on roof A-05.
3. Repair roof A-05 to eliminate ponding and leaks at office 4.
4. Re-install counter flashing on roof A-14 above the kitchen.
5. Further investigate the condition of built-up roofs and modified bitumen roofs that have aged out of service. Anticipate replacement within the next five years.
6. Further investigate roof scuppers along the south side of the 300-wing to determine if openings are adequately sized to drain the roof without ponding.

Interior Finishes

1. Replace stained or detached ceiling tiles in the 100- and 200-wings resulting from past roof leaks.
2. Replace aged and worn carpet in rooms 101, 103, 202, 204.
3. Repair or replace worn interior door hardware that does not operate properly.
4. Repaint any peeling or damaged paint in corridor 5.

Plumbing

1. Continue preventive maintenance on aged plumbing fixtures and plan for future replacement as fixtures continue to age.
2. Replace fixtures where corrosion or rust exists.
3. Repair or replace loose fixtures.
4. Replace water coolers that are not cooling properly.
5. Track installed years of water heaters, and plan for replacement as the typical design service life for a water heater is 10 to 15 years.
6. Insulate the piping associated with the water heaters.
7. Reroute condensate drains to an approved sewer drain to eliminate ground ponding.
8. Repair the gutter system where damaged or corroded.
9. Replace EWH servicing the nurse's office.

Mechanical/HVAC

1. Plan for replacement of the ground-mounted FCUs as they appeared to be past or near the end of their design service life.
2. Plan for replacement of the RTUs that appeared to be past or near the end of their design service life.
3. Replace electrical disconnects that appear aged and rusted.
4. Repair or replace any fin assemblies of HVAC equipment that showed extensive wear and tear.
5. Address any rust or corrosion observed on the equipment, its associated piping, or any other sub-asset by cleaning, repainting, or repairing to prevent further deterioration.
6. Repair or replace any damaged or missing piping insulation as needed.
7. Ensure routine preventive maintenance is conducted for cleaning ductwork to promote efficient and clean air flows to all of the facilities' spaces.

Electrical

1. Replace or repair the 2500-amp main switchboard's door to provide a rain-tight enclosure.
2. Replace exterior building lights and walkway canopy lights with LED fixtures.

Storage Building Recommendations

Exterior

1. Determine the cause for the electrical room door not opening properly and repair or replace as needed.
2. Replace all exterior doors that have rust and corrosion.

Roofing

1. Repair the damaged gutter and downspout on the northwest corner of the building.
2. Replace the roof within the next five years.

Plumbing

1. Remove abandoned piping.

Brentwood Elementary School Planned Future Improvements

The following are any known planned and funded improvements scheduled to take place at this campus in the future. Their scope and schedule are subject to change.

2017 Bond Planned Improvements from PM Randall Sakai on 10/28/16.

- Summer 2017.
  - Replace HVAC equipment in the 100-wing.
  - Replace HVAC equipment in the 200-wing.
  - Replace RTU in administration.
  - Replace selected HVAC units near the 300-wing.

CRAWL SPACE – Brentwood ES – Main School Building (BLDG-107A)

Building Purpose	Administration, Classrooms, Gym, and Cafeteria
Inspection Date	November 2, 2016, (Afternoon) November 14, 2016, (morning)
Inspection Conditions	81°F - Cloudy and dry

Revision Log		
Revision	**Date**	**Summary of Content**
00	11/14/16	Draft Issue
01	1/10/17	Added comments from Drew Johnson as indicated on email dated 12/22/16. See page 1.

Crawl Space System Deficiency Overview

NOTES CONCERNING CRAWL SPACE OBSERVATIONS: Most of the building is slab-on-grade construction with no crawl space. According to the existing plans and site observations, there are three areas with suspended construction and a crawl space: the original building (kitchen and cafeteria), Wing C from 1951, and part of Wing B from 1951 below the gym. See attached plan for locations of different building areas and phases of construction.

Drawings for the original building were not available, so limits of the crawl space are based on limited observations. The crawl space under the original building (kitchen and cafeteria) could not be accessed because the only areaway opening was only 10 inches tall. The crawl space below the kitchen area was observed only by photos taken from the outside of the areaway opening.

Access to 1951 B Wing crawlspace (gym area) could not be found. There is potentially a floor hatch in the janitor's closet near the restrooms but stacked boxes covered the floor and we could not ascertain whether a floor hatch was present. The exterior doors beside the east wall of the gym lead to a below-grade transformer vault room - not the crawl space under the gymnasium. On November 2, 2016 the vault room (which we believed to be the crawl space) was inaccessible due to approximately 12 inches of standing water in the space. On November 14, 2016 we returned to the school after the water had been pumped out and were able to enter the vault and understand that this entrance did not serve the crawl space. The vault room was roughly 10ft x 10ft x 8ft high with cast-in-place walls, ceiling and slab. Although we could not confirm, the gym floor system is similar to the C Wing floor system so it is possible that the B Wing floor system is in poor condition.

The 1951 C Wing crawl space was the only crawl space that could be closely observed, and the observations discussed below apply to this area unless specifically as notes as pertaining to a different area.

The kitchen staff and head custodian were questioned about additional floor hatches but they did not know of any additional access points.

Asbestos testing was performed under MAC JOB NO. 12832-00 during October 2016. Pipe insulation, soil, and debris samples were tested In several crawl space areas underneath the 200-wing classrooms (including rooms 202, 206, and 208). None of the collected samples were identified as containing asbestos.

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

System	Subsystem	Condition and Deficiency Overview	System Condition Rating
Soil, Drainage, Ventilation & Access	Soil Below Building, Site Drainage in Crawl Space	The soil under the C Wing was generally damp in all areas observed. The soil under the kitchen appeared dry. No drainage system was observed under the building. The vault under the gym had a concrete slab. Soil/Drainage deficiencies: • Damp soil	Average
	Soil Retainers	No soil retainers were observed under the building and none were specified in the available plans.	N/A
	Areaways/Ventilation	The crawl space under the C Wing was ventilated with small rectangular vents along the east and west sides of the building. Condensation under the beams and slabs, damp soil and high humidity in the crawl space indicated poor ventilation. The crawl space under the kitchen is apparently ventilated by one areaway located south of the kitchen. Areaway/ventilation deficiencies: • Poor ventilation • Condensation under beams and slabs	Poor
	Access Hatches	Access points to the C Wing crawl space are located on the north and south ends of the wing in the electrical room and custodial closet. The north floor hatch frame was severely corroded; the south floor hatch frame was also corroded although not as badly. The slab concrete around the north hatch had exposed/corroded reinforcement, honeycombing, and some cracking. The only access found for the kitchen crawl space was through an areaway with a 10” tall opening. Access hatch deficiencies: • Low clearance prevented access to original building kitchen crawl space • No access could be found for B Wing crawl space • Slab honeycombing and exposed/rusted rebar around C Wing floor opening • Severely corroded C Wing hatch frames	Poor
Exposed Structure	Exposed Columns & Tops of Foundations	All observed columns were square cast-in-place concrete. Foundations were drilled piers centered below columns. Columns and tops of foundations generally appeared in good condition. No obvious deficiencies were observed	Good

	Exposed Faces of Perimeter Walls / Beams	Observed perimeter beams are suspended and span between columns/piers. All observed perimeter beams were in good condition. Perimeter beam deficiencies: • Mild honeycombing	Average
	Exposed Portions of Interior Floor Beams Above	Suspended interior floor beams spanned between columns and perimeter beams. Generally, the floor beams were in good condition. Formwork was left in place at one location under the 200 wing. Beam deficiencies: • Minor spalls • Mild honeycombing	Average
	Underside of Suspended Floor Slabs Above	**Original Building**: Based on limited observations, the floor system under the kitchen appeared to consist of a cast-in-place suspended flat slab supported by cast-in-place suspended beams. The slab under the kitchen appeared in good condition. **1951 C Wing**: **Note that the floor system in the C Wing is severely compromised and will require remediation or replacement soon.** The floor system in the C Wing consists of precast concrete channels and topping slab that span between interior and perimeter beams. The precast channels were in bad condition. Many of the channels had longitudinal cracking and spalling along the bottoms of the legs. The longitudinal reinforcement in the precast channels was exposed, heavily rusted and scaling. The deterioration of the channel leg bottoms is a common result of inadequate clear cover: the reinforcement is too close to the concrete surface and is exposed to moisture, which causes the rebar to rust and expand, which causes the surrounding concrete to crack and spall. There is similar damage to the slab soffit (spalling and exposed/corroded rebar) at isolated locations due to poor slab clear cover, and similar damage to the side faces of channels due to insufficient clear cover of steel lifting inserts. Slab spalling and exposed/corroded rebar was also observed at pipe hanger connections. **1951 B Wing**: The B Wing crawl space could not be accessed but existing plans indicate the floor system is identical to the C Wing (precast channels with topping). Given the poor condition of the channels observed in the C Wing, we believe it is likely that the B Wing channels are also in a state of deterioration. Slab deficiencies:	Poor

		• Advanced longitudinal cracking and spalling along bottoms of precast channels • Severe corrosion and scaling of channel leg longitudinal reinforcement • Diagonal shear cracking at channel ends • Spalling and corroded rebar on slab soffit due to inadequate clear cover and damage at pipe hanger connections • Spalling and corroded rebar on sides of channel joists at lifting inserts with insufficient clear cover	
Pipes, Ducts, Equipment & Fireproofing	Suspended Pipes & Hangers	The crawl space under the C Wing had few pipes. Rusted cast iron pipes and pipe hangers were observed. Many pipes under the kitchen were observed – some were made with cast iron and some were insulated and material could not be determined. The pipes and pipe insulation under the kitchen looked generally in good condition except for some limited rust. Pipe deficiencies: • Rusted pipes and pipe hangers • Deteriorated and missing pipe insulation	Average
	Exposed Ductwork	N/A – No exposed ductwork was present in the crawl space areas observed.	N/A
	MEP Equipment	N/A – No MEP Equipment was present in the crawl space areas observed.	N/A
	Spray Fireproofing/ Insulation	N/A – No spray fireproofing or insulation was present in the crawl space areas observed.	N/A

Crawl Space Deficiency Examples

Soil, Drainage, Ventilation & Access

Condensation under beam indicates poor ventilation

Slab honeycombing and corroded steel frame at C Wing floor hatch

Exposed/corroded reinforcement at C Wing floor hatch

Kitchen crawl space areaway opening to small to access

Standing water in vault access on November 2, 2016.

Mud at bottom of vault under gym and sump pit observed November 14, 2016 (after standing water removed).

Exposed Structure

Longitudinal cracks along bottoms of precast channel legs

Longitudinal spalling & corroded/scaling reinforcement along bottoms of precast channel legs

Advanced corrosion & scaling on channel leg longitudinal reinforcing

Channel leg exposed longitudinal bar has less than 1/2in of clear cover to outside face of concrete

Channel leg spalling & corroded metal lifting inserts

Slab spalling & corroded rebar

Slab spalling at pipe hanger connection

Pipes, Ducts, Equipment & Fireproofing

Rusted cast iron pipes and pipe hangers

Degraded pipe insulation

Brentwood 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 Recommendations

Soil, Drainage, Ventilation & Access

1. Investigate need for improved ventilation at all crawl spaces.
2. Provide access to B Wing crawl space (may have hatch in janitor's closet or new access point may need to be provided).
3. Clean corrosion from floor hatch frames and paint to prevent further corrosion.

Exposed Structure

1. Clean corrosion from exposed reinforcement and remove unsound concrete along bottoms of channel legs. Patch damaged areas with a repair mortar. Enlarge leg section as needed to establish adequate clear cover to the rebar. Note that approximately one-half of the channel legs below the C Wing will require repair, and the B Wing floor framing may be in similar condition.
2. Clean corrosion from exposed slab reinforcement and channel lifting bars and paint with a rust-inhibitive coating to protect from further corrosion

Pipes, Ducts, Equipment & Fireproofing

1. Clean corrosion from pipes and paint to prevent further corrosion.
2. Replace heavily corroded pipe hangers.
3. Replaced degraded/missing pipe insulation.

DRAFT

DEFICIENCIES OBSERVED AT THIS LOCATION:
1) DAMP SOIL
2) POOR VENTILATION, CONDENSATION ON UNDERSIDE OF CONCRETE STRUCTURE
3) CORRODED STEEL FLOOR HATCH FRAME
4) SLAB HONEYCOMBING & EXPOSED REBAR AROUND FLOOR HATCH OPENING
5) SEVERE LONGITUDINAL CRACKING, SPALLING AND CORRODED REBAR AT BOTTOMS OF PRECAST CHANNEL LEGS
6) SPALLING AND EXPOSED/RUSTED REBAR AT UNDERSIDE OF SLAB AND SIDES OF CHANNEL LEGS
7) MINOR HONEYCOMING AND SPALLING
8) RUSTED PIPES AND PIPE HANGERS
9) DEGRADED AND/OR MISSING PIPE INSULATION

B
FLR-107B-01

A
FLR-107A-01

1951 BOILER RM (SLAB-ON-GR.)

1951 CONSTR WING A (SLAB-ON-GRADE)

1951 CONSTR. WING C (PRECAST CHANNEL WITH CRAWL SPACE)

1951 CONSTR. WING B (PRECAST CHANNELS W/ CRAWL SPACE)

1951 CONSTR WING B (SLAB-ON-GR.)

ORIGINAL CONSTRUCTION (DATE UNKNOWN, NO PLANS AVAILABLE)

1964 CLASSROOM ADDITION (SLAB ON GRADE)

1956 ADDITION (SLAB ON GRADE)

1999 LIBRARY ADDITION (SUSPENDED HOLLOW-CORE PANELS ON CIP BEAMS - VOID SPACE IS INACCESSIBLE)

1999 ADMIN ADDITION (SUSPENDED HOLLOW-CORE PANELS ON CIP BEAMS - VOID SPACE IS INACCESSIBLE)

FLOOR HATCH TO CRAWL SPACE

FLOOR HATCH TO CRAWL SPACE

EXACT LIMITS OF CRAWL SPACE ARE UNKNOWN

AREAWAY ACCESS

NOTE: THIS SMALL AREA BELOW THE FLOOR SLAB IS AN ENCASED TRANSFORMER VAULT RATHER THAN CRAWL SPACE. STANDING WATER AT ENTRANCE PROHIBITED ACCESS ON NOV 2, 2016. WATER WAS LATER PUMPED OUT BY AISD AND WE WERE ABLE TO ACCESS ON NOV 14, 2016 (& DETERMINED ACCESS DID NOT LEAD TO CRAWL SPACE AT THAT TIME).

VAULT ACCESS

NO ACCESS TO CRAWL SPACE FOUND

POSSIBLE FLOOR HATCH TO CRAWL SPACE, BUT FLOOR IS COVERED WITH STACKED BOXES.

DEFICIENCIES OBSERVED AT THIS LOCATION:
1) LOW CLEARANCE UNDER PERIMETER BEAM RESTRICTED ACCESS
2) NO VENTILATION
2) RUSTED PIPES

APPROXIMATE LIMITS OF CRAWLSPACE OBSERVED DURING SITE VISIT

APPROXIMATE LIMITS OF CRAWLSPACE PER AVAILABLE PLANS AND SITE OBSERVATIONS

NORTH

AUSTIN I.S.D.

DEPARTMENT OF CONSTRUCTION MANAGEMENT

BRENTWOOD ELEMENTARY SCHOOL

6700 Arroyo Seca
Austin, Texas

FLOOR PLAN
1ST FLOOR

APPROVALS		
DRAWN	CHECKED	APPROVED
J.R.		
06/18/14		
DWG: 107-FLR-01		SHEET
DRAWING SCALE		1 OF 1
1" = 20'		