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Consulting Services

Santa Monica-Malibu Unified School District

John Muir - SMASH Elementary School

2526 6th St,
Santa Monica, CA 90405

Findings Report

Building Envelope Investigation

April 05 – 06, 2022
June 15 – 16, 2022

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1. INTRODUCTION

1.1 Background

John Muir – SMASH Elementary School Campus located in Santa Monica, California, is comprised of four building groups which include classrooms, a cafeteria, a music room, an administration building, and technology rooms. The main buildings are grouped as building groups A, B, C, and D. The campus was originally built in 1996 and modernized in 2001. The 2001 modernization included new classrooms and elevated walkways. The buildings are Type V construction and are approximately 45,000 GSF. The walls are clad in cement plaster with both hollow metal and aluminum framed windows. Architectural elements and canopies have been installed on the elevations of many of the buildings. The higher steep-sloped roofs are topped with asphalt shingles while the low slope roofs are a mix of modified SBS roof materials and are coated with an unknown coating.

Recurring leaks have been reported at multiple locations. Window testing was carried out in December of 2017, it is unclear if remedial work was done to correct leaks discovered at that time. Santa Monica-Malibu Unified School District (SMMUSD) hired Alta/NV5 to inspect and test areas were biological growth was suspected. A remediation report was issued in March of 2022 after a visual inspection of the campus in June of 2021. DTR was not present for the previous inspection. Water intrusion was documented by the Architect (Little) during site visits dated May 25th, and July 26th, 2021.

A current modernization project was underway during the site visit on April 5th and 6th, 2022. Hollow metal-framed door assemblies were being replaced, a new HVAC system was being installed, and various exterior surfaces were being painted.

DTR was on-site for destructive testing and further investigation at several locations around the campus on June 15th and 16th, 2022. Little Diversified Architectural Consulting (architect), NV5 (industrial hygienist), Martain & Associates (Structural Engineer), and staff from Santa Monica-Malibu Unified School District were also on-site for the June 15th – 16th investigation. The testing and investigation followed the cladding/finish removal locations outlined by DTR and compiled by Little (see figures 03 – 06). Observations from the June testing and investigation are outlined in Section 04 of this revised findings report.

1.2 Weather Conditions

The weather conditions during the investigation on Tuesday, April 05th, 2022, in Santa Monica were generally sunny and calm, with temperatures ranging from 55 to 73 degrees F, with relative humidity ranging from approximately 53 to 90%. The average wind speed was 5.2 M.P.H., during the investigation. The weather conditions during the investigation on Wednesday, April 06th, 2022, in Santa Monica, were generally sunny and calm, with temperatures ranging from 58 to 73 degrees F, with relative humidity ranging from approximately 41 to 90%. The average wind speed was 6.8 M.P.H. The most recent precipitation measured 1.09-inches and fell on March 29th (seven days prior to the site visit).

The weather conditions during the investigation on Wednesday, June 15th, 2022, in Santa Monica were generally partly sunny and calm, with temperatures ranging from 61 to 73 degrees F, with relative humidity ranging from approximately 54 to 86%. The average wind speed was 5.2 M.P.H., during the investigation. The weather conditions during the investigation on Thursday, June 16th, 2022, in Santa Monica, were generally partly sunny and calm, with temperatures ranging from 63 to 72 degrees F, with relative humidity ranging from approximately 41 to 87%. The average wind speed was 3 M.P.H.

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2. EXISTING BUILDING CONDITIONS - OBSERVATIONS

2.1 General Observations

The exterior and the interior of the buildings were examined thoroughly during the investigation. Representatives from the Santa Monica-Malibu Unified School District and Little Architects walked the site with DTR and discussed current conditions and locations of known leaks and water damage. School district staff also discussed corrective work (painting and repairs) that have been made over time.

A contractor was on-site working to remove and replace hollow metal frames at several classroom entry doors. The exterior stairs were being repainted during the site visit. Prior to DTR arriving much of the campus had recently been repainted. New HVAC systems had recently been installed at several locations. Some of the mechanical equipment installations had not been completed at the time of the site assessment.

2.2 Exterior Vertical Enclosure Observations

2.2.1 Cement Plaster Wall Systems

The buildings are in heavy use by the student body and show much of the wear and tear associated with school campuses with young students. Impact and abrasion damage was present in the lower areas of the walls and was more prevalent at corners and entry points (**Photos 01 – 05**).

The exterior walls have numerous penetrations including electrical conduits, canopy mounting brackets, and HVAC and plumbing pipes. Many of the penetrations were not part of the original construction. In some locations (e.g. fire pull stations) sealant had been added to the perimeter of the penetrations. It is unclear if the sealant was applied due to water leaks or to aesthetically close the openings around the penetrations. In other locations, penetrations appeared to have been abandoned and not properly sealed (**Photos 06 – 15**). Some of the penetrations in the cement plaster assembly have been made for mounting items on the walls including hook and eyelet anchors, drywall fastener attachments, and coat racks attached to the walls with screws. Some of the penetrations appear to be part of the installation of new HVAC equipment and had not been connected to any equipment at the time of DTR's observations (**Photos 16 – 24**).

Cracks, spalling, and chipping were observed in several locations. While deficiencies were observed on every elevation, they were more prevalent along the metal control joint trim, at the base of the walls, and at other transitions (**Photos 25 – 31**).

In several locations, new paint had been applied over the cement plaster. The new application of paint did not match the old finish in color or texture. It was unclear if this was done to cover previously repaired damage, to cover graffiti, or for other reasons (**Photo 32 – 36**).

DTR observed openings along the juncture of cement plaster and roof edge and at the juncture of cement plaster and structural elements. Openings were also observed at expansion joints between buildings and between the raised walkways and the buildings. At some locations, the foam joint covers were loose or had fallen out (**Photo 37 – 40**).

At one location adjacent to the first-floor entry of Technical Room 520 on the south side of building D, the cement plaster j-mold was terminated at a structural member. No sealant was present at the joint leaving a gap in the cladding system. The plywood sheathing was visible through the joint. No building paper or waterproofing was visible at the location. The plywood sheathing was delaminated and appeared to have dry rot damage (**Photo 41 – 43**).

On the east side of building D, DTR observed damage along the wall and window sill behind a newly installed HVAC unit. What appeared to be salt corrosion damage was visible on the cement

plaster below a window. Substantial surface deterioration was visible on the face of the cement plaster (**Photo 44 – 45**).

2.2.2 Windows and Doors

Four of the hollow metal-framed door and window units were removed while DTR was on site. After the frames were removed, no flashing, waterproofing, or weather-resistive barrier was observed at the head, sill, or jambs of the rough openings. No substrate repair, waterproofing, or flashing was observed at these locations prior to the installation of the new hollow metal frames.

As each hollow metal frame was removed, DTR was able to observe the wall assemblies as well as the threshold transition to the traffic coating. At the threshold of classroom 480, an expansion joint ran parallel to the door. The expansion joint was meant to allow the elevated walkway to move separately from the building. A sufficient slope to drain was not achieved and standing water was observed in the neoprene water stop at the expansion joint. The neoprene water stop was installed at the same plane as the cement plaster which does not conform to the 2001 drawing set for the construction of the elevated walkways (**Photos 69 – 72 and Fig 02**). The exposed edge of the exterior plywood wall sheathing was damp to the touch. Moisture readings along the wood door sill framing ranged from 20.1 to 30.6 % moisture. These readings are high enough to result in wood damage. Dry rot and what appeared to be insect damage were also observed along the sill. Water damage was also observed at the upturn of the jambs (**Photos 73 - 79**).

At the other three locations where hollow metal frames were removed, the transition of the deck to the walls did not incorporate an expansion joint. Similar water damage was observed at each threshold. In some locations, such as Classroom 455 and Workroom 252, damage at the transition from the sill to jamb was significant, suggesting that water was moving down between the rough opening and the jambs of the hollow metal frames and collecting on the sill at those corner locations. The exposed edge of the exterior plywood wall sheathing was damp to the touch. Dry rot and what appeared to be insect damage were also observed along the sill. Corrosion was visible at fasteners at the sills and jambs of each door (**Photos 80 – 88**).

As each hollow metal frame was removed, DTR was able to observe the wall assemblies at each location. At the entry to technical room 570, adjacent to the door, the exterior plywood was partially visible below the window. The exterior surface of the plywood was delaminated and rough indicating repeated wetting. Fasteners at the window sill were corroded and easily removed from the framing wood indicating reduced fastening strength. No flashing was observed at the sill or jambs of the rough opening (**Photos 89 - 94**).

DTR observed that some of the hollow metal-framed doors had head flashing such as Technical Room 570, while others did not such as Classroom 480. When the head flashing above the door was removed at Technical Room 570, corrosion was observed along the head of the hollow metal frame. No weep screed was observed in the plaster stop at that location (**Photos 95 – 96**).

There were a variety of window types and sizes on the campus. The hollow-metal framed windows were, for the most part, combined door/window systems that were being removed. However, some of the upper clerestory windows on the saw-tooth roofs were also hollow-metal framed. Windows on the second floor of the light wells also had hollow-metal frames in some locations (**Photos 97 - 100**).

The remaining windows appear to be aluminum framed windows. Some of the aluminum-framed windows were operable and others are fixed. Some of the aluminum windows were inset whereas others were not. Some had weeps while others did not. There was no clear reasoning for the different types of windows or installation methods (**Photos 101 - 104**).

Perimeter sealant had failed at many windows. In other locations, clear gaps were observed between the cement plaster and the window frames. Clear silicone sealant had been installed at some glazing stops, most likely to stop water ingress. Damaged glazing gaskets were visible at

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some of the aluminum-framed windows (**Photo 105 – 115**). If water leakage resulting from this condition is uncertain.

At one location on the east side of building D, DTR observed damage along the wall and at the window sill behind a newly installed HVAC unit. What appeared to be salt corrosion damage was viable at both the cement plaster and the window frame. The window frames were pock-marked and the substantial deterioration was visible in the cement plaster (**Photo 116 – 118**).

At several locations, corrosion was observed at the bottom of door jambs. In some cases, the paint had been applied over the corrosion. This is consistent with the water damage observed when hollow-metal door frames were removed (**Photo 119 – 122**).

2.3 Exterior Horizontal Enclosure Observations

2.3.1 Roof systems

The campus has two different roofing systems depending on the roof configuration. The steep-sloped roofs are clad with asphalt shingles while the low slope roofs appear to be a built-up-roof (BUR) system. A white coating was added at some point in the life of the structures on top of the BUR materials. The larger low-sloped roofs are over the cafeteria/music room (building B) and the library and administration offices (building A). Both buildings C and D have small low sloped roof sections as well. The remaining steep-sloped roofs are configured as open gable, sawtooth, and pyramid or hip type roofs (**Photos 123 – 127**).

The BUR systems are past their useful life. Failures were observed in numerous locations. The white coating that had been applied over the BUR had also failed. Large areas of the coating had been worn thin over time. The coating was no longer fully adhered to the BUR roof, or had been damaged in many locations. Holes were also observed in the BUR system at some locations (**Photos 128 – 131**).

During the recent installation of HVAC systems over the multipurpose room, new mechanical curbs were built on several of the low slope roofs. DTR observed that a granulated cap sheet was installed over the new curbs and lapped onto the existing roof membrane. DTR was not present during this work. It is unclear if the coating was removed before the new granulated cap sheet was installed. There is concern that, given its condition, if the coating was not removed, the coating would not allow for proper adhesion of the new granulated cap sheet to the waterproofing layers of the BUR. It is also probable that the existing BUR membrane was too deteriorated to lap a new cap membrane into it (**Photos 132 – 134**).

Open seams were observed in the newly installed granulated cap sheet at the mechanical curbs. Spent tig welding rods were scattered around the roof as well as slag from the welding process. In some locations, small burn marks were also observed on the membrane. DTR suspects that these burn marks were caused by welding over the unprotected roof membrane by the HVAC installers (**Photos 135 – 137**).

Numerous deficiencies were observed in the BUR roofing system. A variety of penetration flashings had been installed including lead flashings capped with sealant joints, abandoned conical flashings, and coating flashings with drip guards. Some of the penetration flashings appeared to be new and part of the HVAC project, while other penetration flashings were aged and appeared to have been part of previous project work (**Photos 138 – 146**).

The sloped roofs are open gable, sawtooth, and pyramid-shaped roofs with asphalt shingle systems. The asphalt shingles are aged, granules are missing from large areas and the shingle reinforcement layer is often visible indicating the loss of the shingle system's waterproofing material. The edges of many of the shingles are brittle and have chipped or broken. In several locations, non-standard repairs were observed. At one location over the multipurpose room, a long swath of mastic had been applied over the lower end of the asphalt shingle roof. Exposed staples and fasteners (contrary to good roofing practice) were visible at the location. It is unclear what had

been installed in the area or what damage may have been caused by the staples and fasteners penetrating the shingles (**Photos 147 – 151**).

Significant granule loss from the asphalt shingle roofs was also apparent from the amount of washed-off debris that has built up in various areas. A downspout on building A was blocked and filled with debris. Several of the gutters were partially filled with granules. Corrosion and holes in the gutter system were also visible at several locations (**Photos 152 – 158**).

In several locations, shingle tabs were observed on the roof deck or were missing altogether. Vent pipe penetrations on the shingle roofs were corroded. At one location at building C, a leak was reported under one of these vents. The vent is adjacent to other deficiencies on the roof and the location of water ingress could have more than one contributing factor. Similar corroded vents at other buildings had a self-adhered membrane flashing it to the roof in a nonstandard installation (**Photos 159 – 162**).

A black self-adhered underlayment was present under the asphalt shingles. In many locations, the shingles could be lifted to view the underlayment. In some locations, the underlayment was not fully adhered to the edge-of-roof metal (**Photos 163 - 164**).

Sheet metal flashing on the asphalt shingle roofs showed various signs of age degradation. In some locations, the sheet metal was corroded. A black mastic had been applied to the sheet metal along a roof-to-wall valley. It was unclear if the mastic had been applied as a patch or for some other reason. The mastic was not allowing proper drainage in the valley, granules had built up against the mastic. The mastic was also cracked and had failed (**Photos 165 – 167**).

Sealant was observed at the ends of the sheet metal valley, at the downturn onto the wall. The sealant was cracked and openings were visible. This condition was systemic in many of the sawtooth valleys (**Photos 168 – 169**).

Sheet metal skirt flashing at the skylights was not flat and flush to the roof. In many locations, the fasteners had been pulled loose and were no longer holding the flashing to the roof. The sheet metal has likely been raised by wind over time. Openings left by loose penetrations are possible leak locations and the raised flashings make it easier for wind-driven rain to penetrate the roofing system (**Photos 170 – 172**).

Over the entire length of the wood trim of the sloped roofs, what appeared to be dry rot and insect damage was visible. In one location, approximately 12 inches of trim had broken off the building. In some locations, it appeared that previously damaged areas had been painted over. Similar dry rot and suspected insect damage were observed at the edge-of-roof trim at the bathrooms near the outdoor lunch area. The trim was close to the awning structure and this damage was only visible from directly under the trim. These bathrooms were also reported by Little to have had mold remediation (**Photos 173 – 178**).

2.3.2 Pedestrian Walkways and Stairs

Many of the elevated pedestrian walkways and exterior stairs were built as part of the 2001 modernization project. Approximately 5 years ago, the elevated walkways were resurfaced with a Tremco traffic coating with embedded granules. The traffic coating was flashed up onto the walls below the cement plaster. Nearly all of the plaster system base of wall drainage system weep screeds were blocked or obstructed by the coating directing water behind the traffic coating upturn and into the wall system (**Photos 46 – 49**).

In general, the traffic coating is well adhered to the substrate and in good condition. Several patches were observed around the campus. Blistering and pinholes were observed at several of the traffic coating patches (**Photos 50 – 52**).

At the walkway outside classroom 480, the cement plaster did not have a visible weep screed. The traffic coating on the deck appeared to terminate flush with the cement plaster. After the hollow metal door frame had been removed at that location, DTR observed that a Z-flashing had

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been installed below the cement plaster. A backer rod had been placed behind the Z-flashing (**Photos 53 – 54**).

Per request of the school district, several of the surface drains were tested outside Classroom 555, on the walkway above Communications room 205, and Kindergarten Classroom 600. Staining was observed under several of the drain assemblies but DTR was not able to recreate a leak when the drains were flooded. In some locations, it appeared that new drain assemblies and plumbing had been installed. Above Kindergarten Classroom 600 there was evidence that the drains had been relocated at some point during the life of the building. Current drains appear to have a 2" opening while the pipes under the deck are larger. Various drain covers were used in different locations, some were round and some were square (**Photos 55 – 62**).

During the flood testing, one of the traffic coating patches outside classroom 555 became saturated. DTR observed that a deficient location on the surface of the patch was allowing water to enter under the waterproofing. No water was observed inside the building during the test (**Photos 63 – 64**).

Steel-framed stairs were located at various locations around the campus. At several locations, corrosion was observed at the metal stair treads and risers. A crew was painting various stairs and trim during the investigation. DTR did not observe any surface preparation taking place before the areas were painted. Corrosion damage was still visible in some locations after the new paint had been applied (**Photos 65 – 68**).

2.4 Interior Observations

Evidence of water intrusion was observed and reported at numerous locations in each building throughout the campus. DTR walked the campus with school district staff and discussed leak locations and the types of remediation that had taken place over time. School District staff noted that many of the interiors had been repainted, covering evidence of previous water entry.

Water stains, corrosion, and staining were visible at numerous interior locations of building A. Staining was visible on the ceiling tiles along the outside wall in Room 210B Media Equipment. A hollow metal-framed door and blocked cement plaster weep screeds are located above the Media Equipment Room leak location. (**Photos 179 – 180**).

School District staff informed DTR that several leaks had been observed in Room 200 Media Center/Library. Locations in the library had recently been repainted. Many of the reported leaks were at the wall-to-roof juncture of the patio deck above the center of the north side of the library. A leak was confirmed over the east entry to the Media Center/the Library. Some water marks were still visible. Two (2) HVAC wall vents are located on the exterior of the 2nd floor covered walkway, above the east entrance to the library. The perimeter of those vents was not flashed or sealed and exterior light could be seen at the seams from the interior of the building. Water marks were observed on the ceiling tiles of room 205 communications on the east side of building A. The water stains were along the north perimeter wall, at the junction of the building and the walking deck above (**Photos 181 – 184**).

Water marks, corrosion, and staining were visible at numerous interior locations of Building B. Classroom 415 was reported to have had water intrusion issues at numerous locations and at different times. During the previous mold remediation, the shelves and lower portion of the gypsum board had been removed along the east wall. According to the school district, leaks had continued at the location. The south wall of the classroom was not part of the previous mold remediation. The south wall is directly under the door of classroom 480 where standing water was observed in the expansion joint and the exterior sheathing was found to be damp to the touch. Water stains, peeling paint, and staining were visible on the south wall of the classroom. Towels had been left on the classroom floor in the event of a rain event during the school break. Staining was visible at electrical outlets and the school district stated that water had also percolated through a floor outlet in the center of the classroom during a previous rain event. Staining was observed on the ceiling as well, both adjacent to the south wall and at beams on the north side of the classroom (**Photos 185 – 190**).

Water stains, peeling paint, and staining were visible at several locations in the Multipurpose Room in Building B. Staining was clear above the hanging ceiling over the stage area as well as on the lower surface. Corrosion was visible on many of the structural beams. The south side of the Multipurpose Room ceiling was exposed without finishes (**Photos 191 – 197**).

Water marks, corrosion, and staining were visible at numerous interior locations of Building C. During the flood testing deck drains, DTR was able to make observations of drain assemblies below the decks. While no leaks were observed at the drain assemblies during the testing, DTR was able to observe that multiple drain assemblies had been moved or replaced. While no active water was observed at those drains, evidence of previous leaks were visible in multiple locations. Water marks were found on plumbing pipes, on the top of storage bins, and on the tops of the shelves (**Photos 198 – 201**).

Water marks, corrosion, and staining were visible at numerous interior locations of building D. Ceiling tiles in Room 205 Teacher's Prep were heavily stained. DTR made observations above the ceiling tiles and noted corrosion at several plumbing pipes, water stains on wood surfaces, and possible organic growth. Room 500 Janitor is located above Room 205 Teacher's Prep. Cracks in the concrete floor of the janitor room 500 and the presence of plumbing and drain assemblies in the room are consistent with the corroded plumbing pipes and water stains observed above the ceiling panels in room 205 Teachers' Prep (**Photos 202 – 206**).

At Teachers' Prep 403, water stains were observed on the walls and corrosion was noted at the bottoms of the door jambs (**Photos 207 – 209**).

On the northeast side of Building D in the room 515 classroom, finishes had been removed under and above a classroom sink. Cardboard had been placed over openings in the interior wallboard. School District staff stated that the finishes had been removed to allow for observations of leak conditions. The interior finishes at the sink in the classroom above Room 515 had also been removed in an attempt to find the leak. This location correlates to deficiencies observed in the roof above this location, including openings in the sheet metal valley, deteriorated shingles, and a corroded roof vent (**Photos 210 – 212**).

During the flood testing of deck drains, DTR was able to make observations of the drain assemblies below the decks. While no leaks were observed at the drain assemblies, DTR was able to observe that multiple drain assemblies had been moved or replaced. DTR was not made aware of nor given any records of any work to move or replace drain assemblies. In many locations, the drain bowls were compressed to the underside of the deck with uni-strut and wood blocking. No anchor bolts were holding the drain bowl to the deck. This is a nonstandard mounting system for drains (**Photos 213 – 215**).

Many of the classrooms had acoustical panels on the ceiling. The panels partially obscured water stains that may have been present. School District staff stated that the ceilings had been painted also. New paint will have further obscured evidence of water stains. Discolored areas were still visible on the acoustical panels. In one location, recessed can lighting had also come loose from the ceiling (**Photos 216 – 219**).

3. ADDITIONAL OBSERVATIONS

Much of the at-grade ground surface on campus is covered in hardscape materials. Surface drains through the campus are widely spaced and in a variety of sizes. Some of the landscaping drains are partially covered by landscaping limiting their effectiveness. The hardscape is often uneven and does not promote positive drainage **(Photos 220 – 226**).

At several locations, the awnings attached to the building were corroded at the low point of the hollow metal tubing. It is unclear how water was entering into the awning framework, but it appears to be pooling at low spots and causing corrosion **(Photos 227 – 228**).

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What appeared to be a cement plaster texture coat had been applied at numerous curb locations. In some locations, this application blocked the cement plaster drainage system weep screeds from draining. The texture coat at the curbs was often cracked and chipped. Water may have become trapped between the texture coat and the curb, creating weak spots, inhibiting adhesion, and allowing water to saturate through the curbs into the buildings. (**Photos 229 – 232**).

4 FOLLOW-UP INVESTIGATION AND DESTRUCTIVE TESTING

4.1 Follow-up Investigation General

Following the initial campus assessment on April 5th and 6th, 2022, representatives of Little, SMMUSD, and DTR discussed the need for additional investigation and testing at various locations throughout the campus to follow up on the previous findings, allow for observations by a structural engineer (Martin & Associates), and further remediation by an industrial hygienist (NV5). DTR's investigation was to focus on identifying points of water ingress and additional areas damaged by water. A set of Demolition (Demo) Drawings were created by Little and DTR outlining areas of exterior cladding and interior finish removal to facilitate further investigation (figures 03 – 08).

Prior to the second investigation on June 15th and 16th, 2022, SMMUSD staff managed the removal of furniture and classroom items from rooms outlined in the Demo Drawings document. During the removal of furniture and fixtures, biological growth was observed in some locations. NV5 organized containment of areas that were to be opened and advised the team on safety precautions for working in areas with potential biological growth.

4.2 Exterior Vertical Enclosure Follow-up

4.2.1 Building B, Room 415

Classroom 415 had historically leaked at several locations. Water damage was observed along the south wall during DTR's initial investigation. SMMUSD staff reported that water had saturated much of the wall and run out onto the floor on several occasions. Due to the amount of damage observed during the initial investigation, DTR recommended that a structural engineer be on-site when the wall was open to assess the potential structural damage and provide recommendations regarding remediation of any structural damage that was observed (**Photos 233 – 234**).

During the second investigation on June 15th and 16th, 2022, a portion of the interior side of the south (exterior) wall of classroom 415 was opened. Gypsum board and Oriented Strand Board (OSB) were cut and removed from the sill plate above the concrete curb at the bottom of the wall and the opening was extended up to the ceiling. The area opened was approximately 16 feet wide. To DTR's knowledge, OSB is not approved for use as structural wood sheathing in DSA projects. The wall above the window was also opened to allow for observations. Fiberglass insulation in the area was also removed. Martin & Associates was on-site to provide insight on the structural integrity of the locations that were opened. NV5 was also on-site taking samples and making observations concerning biological growth and environmental conditions (**Photos 235 – 239**).

Biological growth was noted on the exterior and interior facing surfaces of the gypsum board and the interior side of the exterior shear wall plywood. The fiberglass insulation and inside face of the exterior sheathing were wet to the touch. The interior of the stud cavities had been coated with a white encapsulation product used during mold remediation, evidence that this wall had previously been remediated. Moisture readings taken on the inside face of the exterior wood sheathing maxed out the moisture meter at 40% moisture. Moisture readings at the sill plate, studs, and blocking ranged between 18.5 and 39.8% moisture. The prolonged exposure to moisture had resulted in extensive deterioration of the wood elements. The blocking was soft to the touch and visibly cracking. The wood studs were warped and the fasteners were corroded and brittle (**Photos 240 – 244**).

At several locations, holes were observed in the exterior sheathing and the wood sheathing was not whole or complete. Some of these appeared to have been deficiencies in the plywood sheathing when it was installed and some openings were cut to allow for the installation of pipe penetrations. Lath and cement plaster was visible from the interior of room 415 at one opening in the exterior wood sheathing near the base of the wall. In some of the locations, the holes in the exterior sheathing were due to water damage and deterioration of the wood (**Photos 245 – 248**).

Corrosion and water damage were observed at several electrical junction boxes and electrical conduits. The inside of one conduit connection box was damp to the touch. Conduits originating from that box extended to floor outlets. Water has been reported to flow from those floor outlets during rain events. Biological growth was observed on all wood surfaces inside the wall cavity at this room 415 opening. NV5 took numerous samples of biological growth for laboratory testing (**Photos 249 – 252**).

Additional areas of the wall in 415 were opened extending to the west along the south wall until the visual presence of water damage and biological growth ended. DTR measured the locations where damage was concentrated as reference points for the upcoming demolition at the exterior horizontal expansion joint above and in the upper classroom (room 480) (**Photos 253 – 256**).

4.2.2 Building B, Room 480

The lower interior portion of the upper floor south (exterior) wall in classroom 480 (above room 415) was opened to allow for observations of the inside of the wall cavity. Interior gypsum board and shear wall plywood were removed from the floor line, extending up the wall approximately 2 feet. A foil-faced vapor retarder and the fiberglass insulation were also removed (**Photos 257 – 260**).

Some water staining and marks were visible from the interior of room 480 at the base of the exterior plywood. Adjacent to the door, DTR was able to see light shining from the exterior along the base of the door frame. The door of classroom 480 had been one of those replaced during the site visits on April 5th and 6th, 2022. No sill pan or flashing was observed at the door frame and threshold. Damage along the south wall of room 480 was not as severe or as extensive as it was below in the south wall in room 415 below (**Photos 261 – 263**).

An 8 foot length of the exterior cladding approximately 2 feet tall, was removed from the base of the wall outside classroom 480. The area of removal correlated with the location of the water damage observed below in classroom 415. First, the cement plaster and lath were cut and removed. Two layers of 60-minute building paper were observed between the exterior sheathing and the cement plaster assembly. The building paper and lath had been installed with staples and occasionally with other fasteners. The building paper appeared to be shingle lapped and extended over the base-of-wall z-flashing. No plaster weep screed was observed at this location. The upper flange of the z-flashing was attached to the wall with fasteners that went through the building paper and the sheet metal creating penetration points through the water-resistive paper layer(s) along the base of the wall. The lower flange of the z-flashing was flashed into (i.e., coated with) the pedestrian traffic coat on the walkway (**Photos 264 – 267**).

The fasteners along the top edge of the z-flashing were removed and the z-flashing was cut vertically so that it could be pulled away from the wall to observe the underlying expansion joint connection to the walkway. See 4.3 below for a discussion of the horizontal enclosure at the walkway surface.

4.2.3 Building B, Room 400

Prior to the site visit on June 15th and 16th, 2022, NV5 had set up containment on the south and west walls of kindergarten classroom 400. DTR was informed by NV5 that classroom 400 had been previously remediated for mold growth. The remediation included the replacement of gypsum board, some interior plywood, and some insulation. Most of the previous remediation was focused on the low areas of the walls.

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During the site visit on June 16th, 2022, both the gypsum board and shear wall plywood were removed from the interior at the center of the south wall. Fiberglass insulation was also removed. The opening was approximately 6 feet wide and 8 feet tall. Insect damage was observed on the face of the shear wall plywood. The insulation that was removed did not appear to be wet. Moisture readings were taken at the interior face of the exterior wood sheathing on the south wall measured between 7.0 and 11.4% moisture. Some staining and delamination were visible on the interior face of the exterior plywood (**Photos 275 – 279**).

On the west elevation, the interior gypsum board and fiberglass insulation was removed from the center of the west exterior wall. There was no interior plywood at this (west) location. The opening was approximately 6 feet wide and extended from the curb to the ceiling line. Insect damage was observed on the interior face of the exterior shear wall plywood and at studs and blocking. Corrosion was visible on drain pipes inside the wall chase. Drain pipes were not wrapped in insulation. New HVAC penetrations were observed at these locations. It was unclear from the interior how these penetrations were sealed at the exterior face of the wall. Evidence of abrasion from previous mold abatement was visible as well as new deposits of biological growth (**Photos 280 – 289**).

4.3 Exterior Horizontal Enclosure Follow-up

4.3.1 Elevated Walkway Surface

The fasteners along the top edge of the base of wall z-flashing on the south exterior wall of Building B, Room 480 were removed and the z-flashing was cut vertically so that it could be pulled away from the wall. The mounting flange of the horizontal expansion joint assembly was attached to the building sheathing with screws and the top of the flange was mounted flush (level) with the top of the pedestrian deck. DTR observed that a line of sealant had been applied along the base of the mounting flange which partially covered the mounting fasteners. Some openings were visible at the fastener penetrations. A backer rod had been placed in the top side of the sealant. When removed, the sealant that had been applied inside the expansion joint and to the face of the building-side mounting flange showed signs of reversion, (returning to its original tacky state due to prolonged exposure to water) (**Photos 268 – 270**).

The upper edge of the building side mounting flange was bare and unsealed. In some areas, the flange was not flush to the vertical face of the wall sheathing leaving gaps between it and the sheathing. The building paper between it and the sheathing ran parallel to or just below the upper edge of the expansion joint mounting flange. A water saturation stain line was apparent on the exterior sheathing up to approximately 2 ½ inches above the expansion joint mounting flange (at the same level as the top of the z-flashing). The building paper above this location was water vapor permeable while the sheet metal z-flashing was not allowing the plywood to dry out above but not below the flashing. It is also probable that water was trapped behind the z flashing, saturating the area, and finding paths into the wall system. Sheathing fasteners below the watermark line were corroded. The edge of the sheathing plywood was located approximately ½ an inch below the edge of the expansion joint mounting flange. The sheathing was heavily damaged near the door jamb (**Photos 271 – 274**).

4.3.2 Elevated Walkway Soffits

The soffits on the undersides of the elevated walkways were opened in 3 locations to allow for observations of the structural assemblies, possible biological growth, and potential water damage. Martin & Associates, NV5, and DTR made observations at each of the locations.

4.3.2.1 Expansion Joint Location at Building A

An opening was cut on the underside of the pedestrian walkway between the administration and library spaces in Building A. The soffit assembly at this location was a lath and plaster system with a plastic backing sheet. The opening allowed for observations of the adjacent expansion joint assembly the joists supporting the walkway and how they attached to the building. At this location, DTR observed water stains on all of the joist hangers against the

(north) library wall. The joists attached to the wall just below the pedestrian traffic coating flashing at the weep screed assembly on the wall above. Staining was visible on the ledger and wood elements at the connection of the walkway to the building. Martin & Associates noted a crack at a structural beam adjacent to the expansion joint (**Photos 314 – 317**).
The metal cover was removed from the expansion joint on the walkway. The pedestrian traffic coating at that location appeared to be well adhered. The sealant at the expansion joint appeared to be new and no deficiencies were observed (**Photo 318**).
The compressed foam at the bottom of the expansion joint was loose and had fallen away at some locations. Insect damage was observed at wooden elements in the interstitial space behind where the compressed foam had come loose. DTR observed that the drainage system below the expansion joint was not properly attached to the expansion joint assembly and water was draining against the corner of the library wall. Observations inside the library revealed evidence of water damage and that location (**Photos 319 – 325**).

4.3.2.2 DT Location Outside Building B Room 420

Outside room 420 an approximately 4-foot by 8-foot opening was cut in the underside of the walkway. The soffit assembly at this location was a lath and plaster system with a plastic backing sheet. DTR noted water stains on many of the joists and joist hangers against the building wall. The joists are attached to the wall just below the pedestrian traffic coating flashing at the weep screed assembly on the wall above. Some corrosion was observed at structural anchor bolts. Leaves were also observed in the interstitial space. It is unclear how the leaves entered the space (**Photos 326 – 330**).
Much of the eave venting track that ran parallel to the building was corroded. The corrosion is concentrated below the water stains observed on the joist hangers and the ledger against the building (**Photos 331 – 333**).

4.3.2.3 DT location Outside Building B Room 415

Outside of room 415 at the underside of the walkway, an approximately 3-foot by 3-foot area was cut in the underside of the walkway. The soffit assembly at this location was a lath and plaster system with a plastic backing sheet. Water stains were visible in a few locations. The underside of the expansion joint that runs parallel to the building was not visible because it was behind the steel beam that supports the pedestrian walkway (**Photos 334 – 337**).

4.4 Interiors Follow-up Investigations

4.4.1 Building D, Janitorial Room 513

Prior to the site visit on June 15th and 16th, 2022, NV5 had set up containment on the first floor of building D in janitorial room 513, and the alcove entry outside the room to allow for demolition at room 513. The wall was opened above the entry to room 513, the right side of the jamb, and the adjacent wing wall on the right side of the door (**Photos 290 – 291**).

Above the entry to 513, the gypsum board was removed from the head of the door up to the ceiling line. Fiberglass insulation was also removed to allow for observations. No significant water damage was observed at this location. Where the wall was open on the right jamb of the door, the gypsum board was removed from the floor line up to the ceiling line. Fiberglass insulation was also removed to allow for observations. Along the edge of the wall that wrapped onto the interior wing wall, some water stains were visible (**Photos 292 – 293**).

The gypsum board on the wing wall adjacent to the entry door to room 513 was removed from the floor line. The opening extended approximately 8 feet up the wall. This area had been previously remediated for mold and two different fiberglass insulations were visible in the wall. Fiberglass that had been replaced low on the wall during the remediation was white while the previously existing fiberglass insulation higher on the wall was yellow. Biological growth was noted on the back of the gypsum board when it was removed from the wall. Staining was observed near the corner and appeared to be heavier higher on the wall. (**Photos 294 – 297**).

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An access hatch leading to the underside of the exterior stairs was accessible from inside room 513. DTR and Martin & Associates entered the area below the exterior stair through the hatch. The space was open to the exterior environment while closed off from entry (other than through the hatch). Extensive corrosion was observed on the steel structure and raisers of the stairs. In some locations, daylight could be seen through corroded openings in the steel. Martin & Associates stated that a corrosion inhibitor should be applied to the metal after it had been cleaned. The thickness of the metal should also be checked (**Photos 298 – 300**).

4.4.2 Building A, Room 210B

Prior to the site visit on June 15th and 16th, 2022, NV5 had set up containment in building A room 210B. Staining had been observed on ceiling tiles along the exterior wall of room 210B during previous site visits. Ceiling tiles were removed to allow for observations above the ceiling line. DTR noted some minor staining on the walls and the topside of the ceiling panels. Some staining was also observed on the wood structure of the ceiling above. These areas are adjacent to the exterior weep screeds on the plaster assemblies which were blocked by the flashing of the pedestrian traffic coating. Similar staining was seen at exterior locations when observations were made of the interstitial space under the elevated walkways (see section 4.3 of this report).

The gypsum board was not removed at this location as staining appeared to be limited and isolated to areas above the ceiling panels. Water ingress at this location is most likely due to the weep screeds being blocked by the pedestrian traffic coating (**Photos 301 – 307**).

4.4.3 Building C, Room 602

Room 602 is a teacher's prep room. The east wall of the room is an interior wall shared with kindergarten classroom 600. However, as the wall extends to the second floor, it becomes an exterior wall adjacent to the pedestrian deck over classroom 600. Prior to the investigation on June 15th and 16th, 2022, NV5 had set up containment in the room. Ceiling tiles were removed to allow for observations above the ceiling line. DTR noted some minor staining on the wood elements above ceiling panels. Water staining appears to correlate with the junction of the exterior deck and with plumbing penetrations to a janitorial room above the space. Some biological growth was noted by NV5 on the wooden surfaces (**Photos 308 – 309**).

Part of the ceiling of room 602 is the floor of Janitorial room 650. DTR did not make observations inside room 650 but similar janitorial rooms on campus have floor sinks and unsealed concrete floors, which are cracked in some locations. From above the ceiling panels in room 602, DTR noted a cracked drain pipe that extended to room 650 above. Corrosion was visible on the pipe. There is some concern that the water leaking from the drain could be considered black water (**Photos 310 – 311**).

A floor outlet in room 600 was raised. DTR noted corrosion around the flange of the outlet cover. When opened, corrosion was present in the junction box (**Photos 312 – 313**).

4.5 Guardrail Walls Investigation

During the review of photos and documents of previous work provided by the school district, DTR observed several photos of wood rot and damage that appeared to be under a sheet metal coping cap that runs along the curb wall supporting the guardrail of the pedestrian deck and walkways. The guardrails periodically penetrate the coping cap and the guardrail anchor plates are attached to the wood framing of the curb. It was unclear from the photos provided by the district if the damaged wood structure of the curb had been repaired during previous projects. School district personnel confirmed that the location of the photos showing the wood rot as the curb above the south wall of building B classroom 400.

During the investigation on June 15th and 16th, 2022, the coping on the curb above the south wall of classroom 400 was lifted. DTR observed that a self-adhered membrane had been installed over the top of the wooden structure of the curb. The self-adhered membrane was not continuous and

appeared to have been installed in short lengths. Several seams were not fully sealed, adhered, or attached to the substrate.

The sheet metal L-flashing where the pedestrian traffic coating turned up onto the side of the curb did not appear to be attached to the curb structure. Further observations confirmed that the wood structure of the curb had not been repaired. The area was heavily dry rotted and, in some locations, the guardrail anchor plates were no longer properly attached to the structure. Water appeared to have entered the curb/wall at the guardrail penetrations in the coping cap. Seams and poor installation of the self-adhered membrane under the coping created paths for water to travel into the structural elements of the building (**Photos 338 – 341**).

Due to the numerous locations where the guardrails penetrate the coping, Little, Martin & Associates, and DTR decided to undertake additional limited investigation at several other locations to confirm that the condition was systemic throughout the campus. Three additional locations over classroom 400 at building B were opened, a section of coping at the northwest corner of the pedestrian deck over classroom 500 at building D was opened, and a section of coping under the western guardrail above the communications classroom 205 at building A was opened. All locations that were opened had similar damage with varying severity. In some of the locations, the wood sheathing appeared to be OSB rather than plywood. OSB is not approved for use in DSA projects to DTR's knowledge. (**Photos 342 – 354**).

5. CONCLUSIONS

5.1 General

The campus buildings are in generally poor-to-moderately poor condition, exhibiting numerous leaks and construction issues. Roofing, including low-slope membrane and steep-slope shingle types, including associated roof flashing and rain drainage, and exterior cladding assemblies, including fenestration and openings, are in generally poor condition, have reached or passed the end of their functional life, and require replacement.

Prior reports prepared by others (e.g. Little, Alta/NV5) have identified various locations exhibiting water intrusion and some conditions where potential biologic growth was noted. The District reports that some of these areas have been remediated by a subcontractor to the Nazarian Group. Based on DTR's site observations, other locations appear to have had no repair or further review.

Water intrusion is manifested in numerous locations and is likely to be occurring extensively in other locations and going unnoticed where the leakage is concealed by other construction, or the intrusion is occurring in quantities small enough so to be contained within the concealed cavities.

The water intrusion appears to be largely caused by poor construction practices, age and exposure, deferred maintenance, and defective or inappropriate installation of materials, including during relatively recent repair or remediation work.

Numerous locations were observed where water intrusion has created conditions that appear to have a high potential to support biological growth (e.g., photo 81). Due to the length of time that the wall assemblies appear to have remained wet, DTR recommends having the School District engage an Industrial Hygienist to evaluate possible biological growth.

Evidence of what appears to be insect damage (e.g., photo 73) was also observed in multiple locations, including under second-floor door thresholds and roof edge trim. DTR is not an expert in entomology and we recommend that the School District engage a certified pest control agency to determine the type of insect and the extent of the damage. Suspected locations of insect damage include, but are not limited to, wood roof trim at the sloped roof over the multipurpose room, roof trim on Building D, wood elements under the thresholds of the removed hollow metal framed doors, and various planters around

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the campus. A thorough investigation by a specialist is required to identify all locations of potential insect damage.

5.2 Exterior Vertical Enclosure

The vertical building enclosure system is failing at the cladding, weather control layer, flashings, and sealants. Some of this is due to age and exposure and some is due to design and construction that does not conform to industry best practices (e.g., photo 90).

5.3 Exterior Horizontal Enclosure

The horizontal building enclosure systems are failing at the material level as well as at transitions, accessories, and drainage systems. Roofing materials (at both steep-slope and low-slope roofs) are mostly at or beyond the end of their useful life (e.g., photo 131). Pedestrian traffic coatings are installed in a manner that is leading to water intrusion and damage (e.g., photo 53). Doors lack sill pans and expansion joints are collecting water and leaking.

5.4 Interior

The failures in the exterior enclosure systems are leading to damage to the interiors (e.g., photo 207) of the structures.

5.5 Guardrail Curbs

The wood structural elements of the guardrail curbs show signs of significant and prolonged water ingress (e.g., photo 340). In some locations, the structural integrity of the guardrail mounting is in question.

5.6 Additional

The site drainage systems are obstructed in several instances (e.g., photo 224) and would benefit from a professional civil engineering assessment.

6. RECOMMENDATIONS

6.1 General

Repair or replace damaged structural systems including metal and wood framing, and structural and finish-supporting sheathing as recommended by the Structural Engineer.

Consult with a qualified environmental cleanup firm to determine if affected areas exhibit organic growth and follow recommendations for remediation.

Consult with a qualified pest control firm to identify insect damage (type and extent), determine if affected areas exhibit live infestations, and follow all recommendations for remediation.

Incorporate deflection, drainage, drying, and durability into the new/repaired building enclosure systems. Where practical, provide continuous water, air, thermal, and water vapor control layers as part of the building enclosure systems.

6.2 Exterior Vertical Enclosure

Remove all cement plaster and exterior cladding. Replace exterior sheathing and thermal insulation as needed.

Remove and reinstall windows (into properly flashed rough openings). This pertains to ALL windows regardless of type, or material. Replace all damaged windows.

Replace damaged or worn-out hollow metal frames. Consider using flanged frames instead of frames with straps.

Install head flashing at all doors and windows (properly lapped and flashing into the water control layer at the wall assembly).

Properly flash all wall penetrations (existing and new).

Re-clad the building walls, providing liquid-applied WRB on new and existing plywood sheathing, cover with new cement plaster cladding system with code-compliant expansion joints, control joints, sealant systems, and drainage accessories.

Replace all wood trim with new trim materials. Properly prep, paint and seal all exposed vertical exterior surfaces.

6.3 Exterior Horizontal Enclosure

Undertake a complete re-roof (all roof assemblies), including complete removal of existing roofing and flashing, deck repair or replacement, new penetration jacks, vents, edge metal, parapet caps, gutters, and downspouts. Engage a plumbing engineer to verify roof drain, gutter, and downspout sizing are appropriate to meet roof drainage requirements.

Remove and replace roof trim (to remediate insect and dry rot damage).

Install Sill pans at all door thresholds (with back and side legs flashed into the water control layer at rough openings). Integrate new sill pans with pedestrian traffic coatings and new deck-to-wall base flashings at walkways.

Clean, water-test, and check all surface drains on elevated walkways. Check with a plumbing engineer on the existing capacity of elevated walkway drains which appear to be under-sized for the prevailing drainage loads. Inspect and reconstruct edge flashings and tie-ins to wall construction to ensure proper drainage for both walkways and plaster cladding. Repair or replace walkway deck coating.

Some elevated walkways may require re-sloping depending on the results of further investigation.

Replace expansion joint accessories or assemblies that are incorrectly located, loose, leaking, lack proper slope, lack proper drainage, or have fallen out.

6.4 Interior

Repair and re-finish affected interior elements and finishes which have been water damaged or disturbed by exterior building enclosure repair work, insect remediation, or environmental cleanup. Replace cabinetwork and other interior amenities damaged by water intrusion or other causes.

6.5 Guardrail Curbs

Repair the wood structure of the guardrail curbs following the recommendations of the structural engineer. Flash the top of the curbs with a liquid-applied waterproofing product to provide a watertight

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system that directs water to drain away from the building. Consider mounting the guardrails on the face of the wall rather than through the top of the coping.

6.6 Additional

Engage a civil engineer to assess the existing site drainage systems and confirm if the number and size of existing landscape drains are sufficient to drain the areas around them.

Wrap the horizontal drain pipes with insulation. Insulation should extend a minimum of six (6) feet from the bottom of the drain assemblies along the horizontal run of the pipes.

7. LIMITATIONS

The recommendations and observations described in this report are intended to address limited objectives related to the intent of the report and are based on a limited survey of existing conditions, documents prepared and provided by others, and visual observations made during a site visit conducted in accordance with the limited conditions described in AIA Document A201, General Conditions of the Contract for Construction for field observations and there is no claim, either stated or implied, that all conditions were observed or every deficiency or defect discovered.

Observations describe conditions at the time and date noted and are based strictly on visual observations from ground or interior floor level unless specifically noted otherwise. This information will be the approved record unless written notice to the contrary is received within seven (7) calendar days of the issue date of this document. Written corrections shall be reported to the Preparer of this document.

References to project locations are from construction documents prepared by Dougherty and Dougherty dated 1993 and JE Jacobs Facilities Inc. dated 2001 (both construction document sets were provided by the District). No materials testing was performed, all observations and recommendations are based on visual evidence, project correspondence, previous field observations, and applied knowledge only.

DTR reserves the right to modify or revise the opinions and recommendations in this report subject to additional or new information being provided. The additional effort required to address changed information or conditions will be provided as additional services.

These recommendations are not a scope of work for remediation nor do they constitute an offer to repair or remediate. Appropriate licensed professionals should be engaged to prepare remedial documentation to develop scope, obtain regulatory approvals and determine accurate construction costs. All means and methods of construction, including excavation support, and shoring of existing elements are the responsibility of others.

These observations and recommendations were made using the same degree of skill and care ordinarily exercised under similar conditions by reputable members of the architectural profession practicing in the same or similar locality at the time of performance.

This report has been prepared for the exclusive use of the addressee for specific application to the referenced project and the content is applicable only to the referenced project. No warranty is expressed or implied. Release to any other company, concern, or individual is solely the responsibility of the addressee.

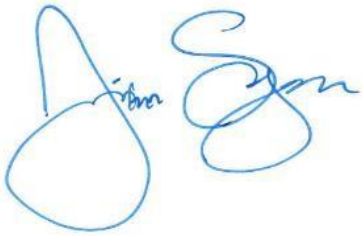
Verbal statements are not a part of this report, whether made before, during, or after the course of the investigation.

We appreciate the opportunity to be of service and trust this information meets your present needs. Please contact us with your questions.

This report was written and assembled by:

Nathan O. Taylor CSI, CDT

Building Envelope/Waterproofing Consultant



Additional review was provided by:
Jim Syme, AIA, IIBEC
Technical Architect

John Guill

Digitally signed by John Guill
DN: C=US, E=jguill@dtrcs.com, O=DTR Consulting Services, OU=DTR North Bay Office, CN=John Guill
Reason: I attest to the accuracy and integrity of this document
Date: 2022.07.01 14:50:08-07'00'

John Guill FCSI, AIA, IIBEC
Technical Architect/ Principal

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8. EXHIBITS AND PHOTOGRAPHS

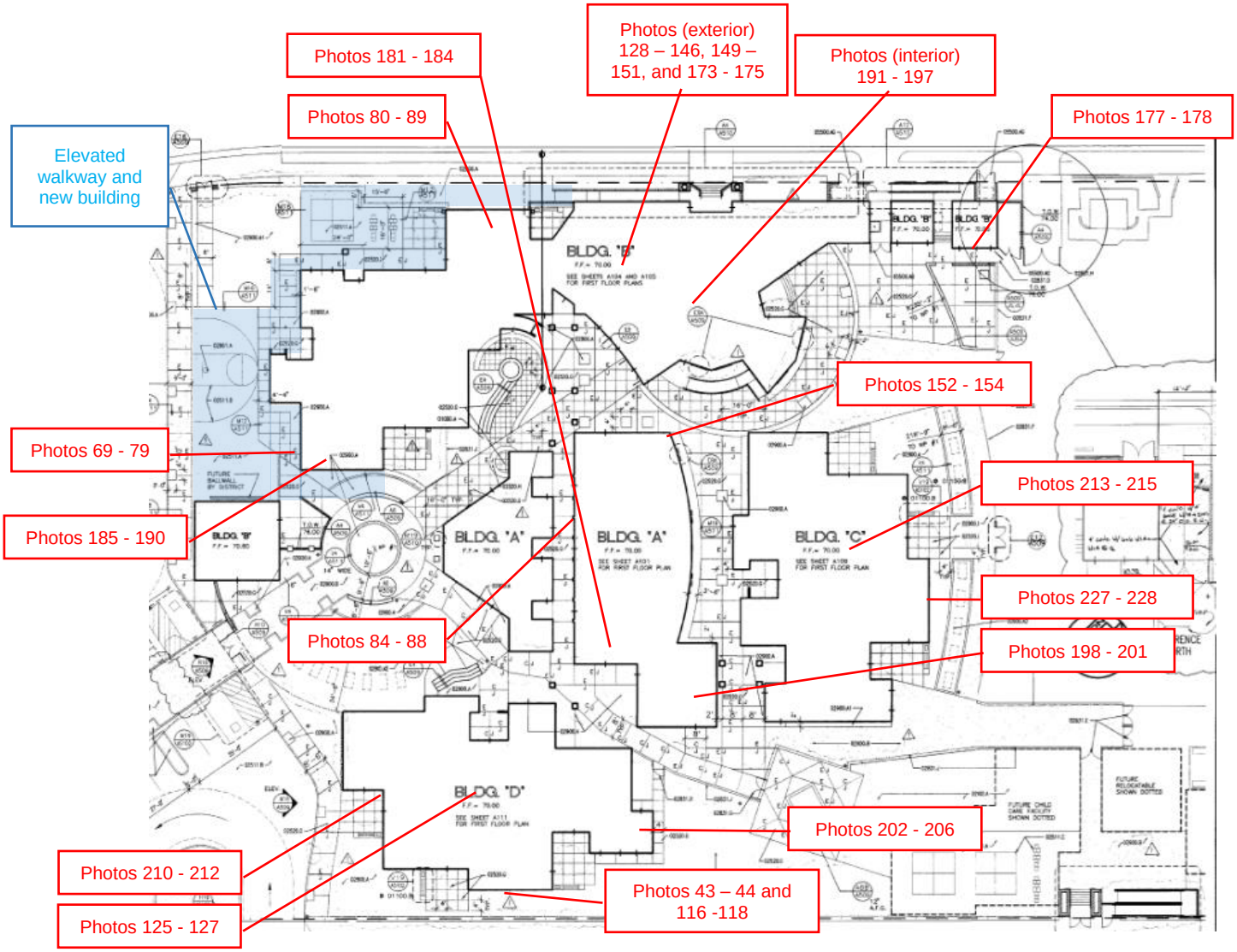

Fig 01: Campus map, per the 1993 drawing by Dougherty and Dougherty architects. New construction at building B is shown in blue. Photo call-out locations are approximate.

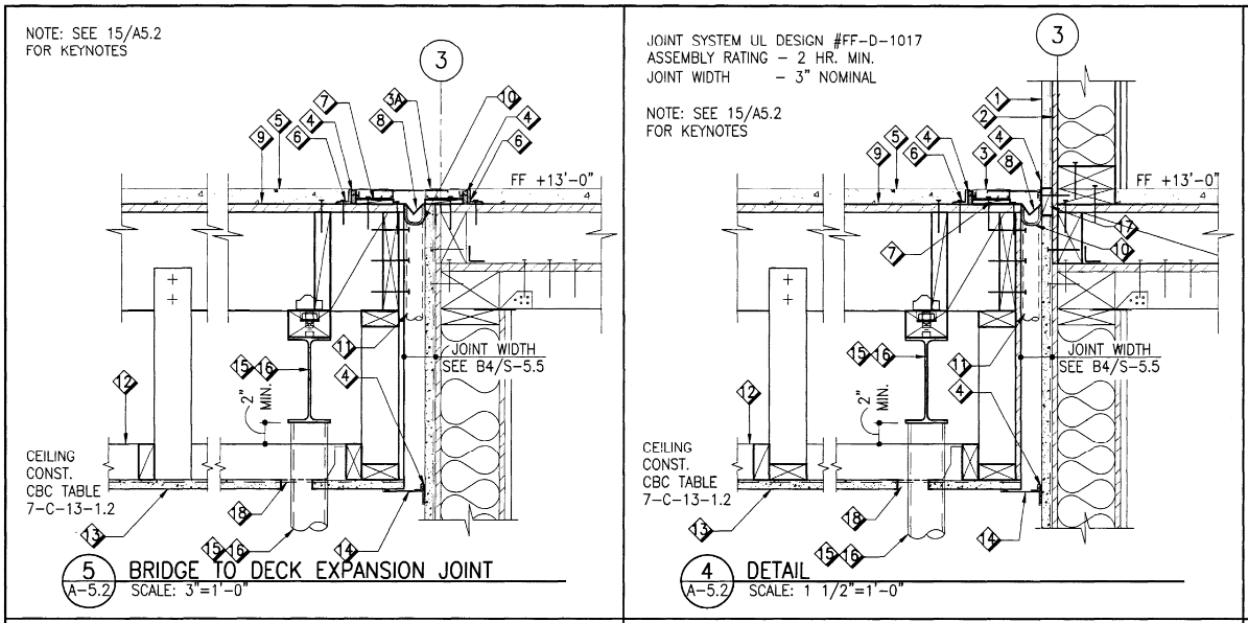

Fig 02: Details 4 and 5 A5.2 of the architectural drawings by JE Jacobs Facilities Inc. dated April 2, 2001.

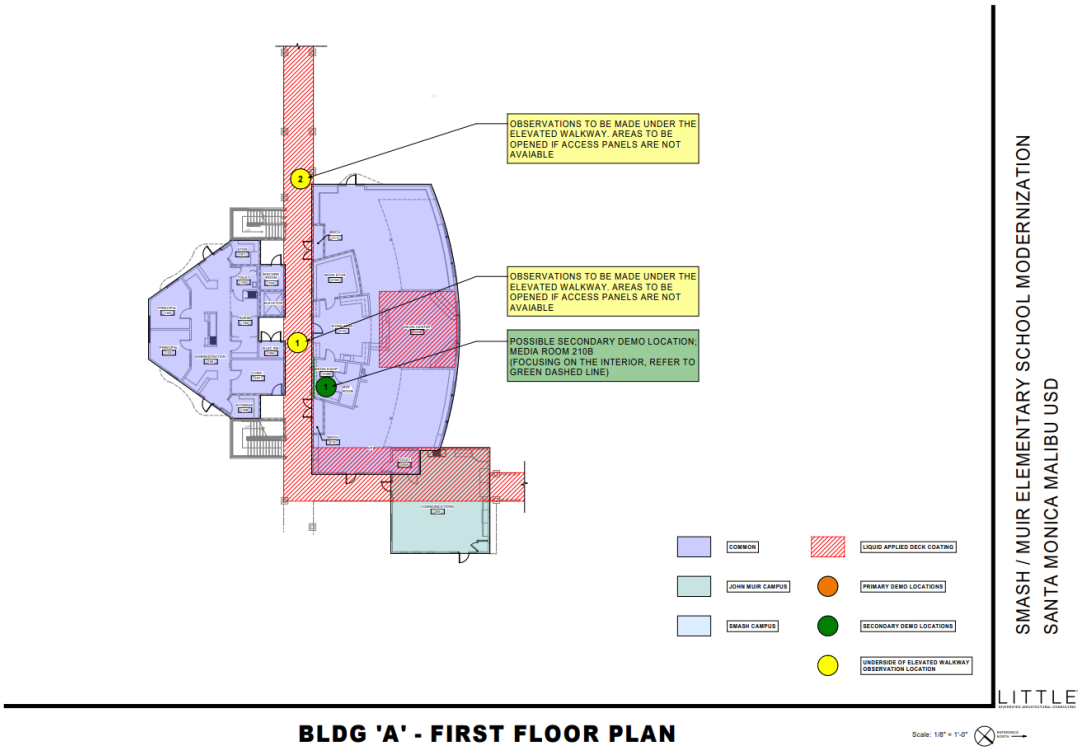

Fig 03: Demo Locations, Bldg A_First Floor Plan_Demo Locations.

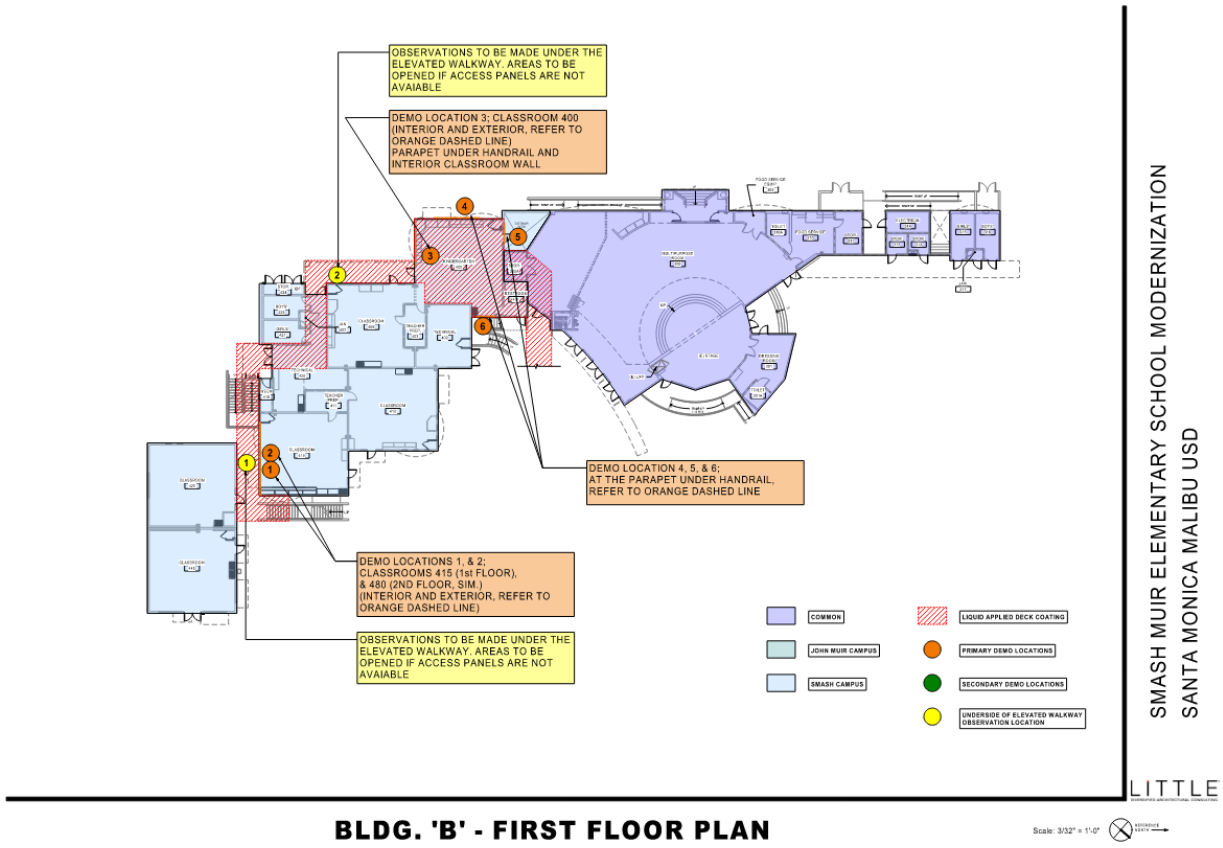

Fig 04: Demo Locations, Bldg B_First Floor Plan_Demo Locations.

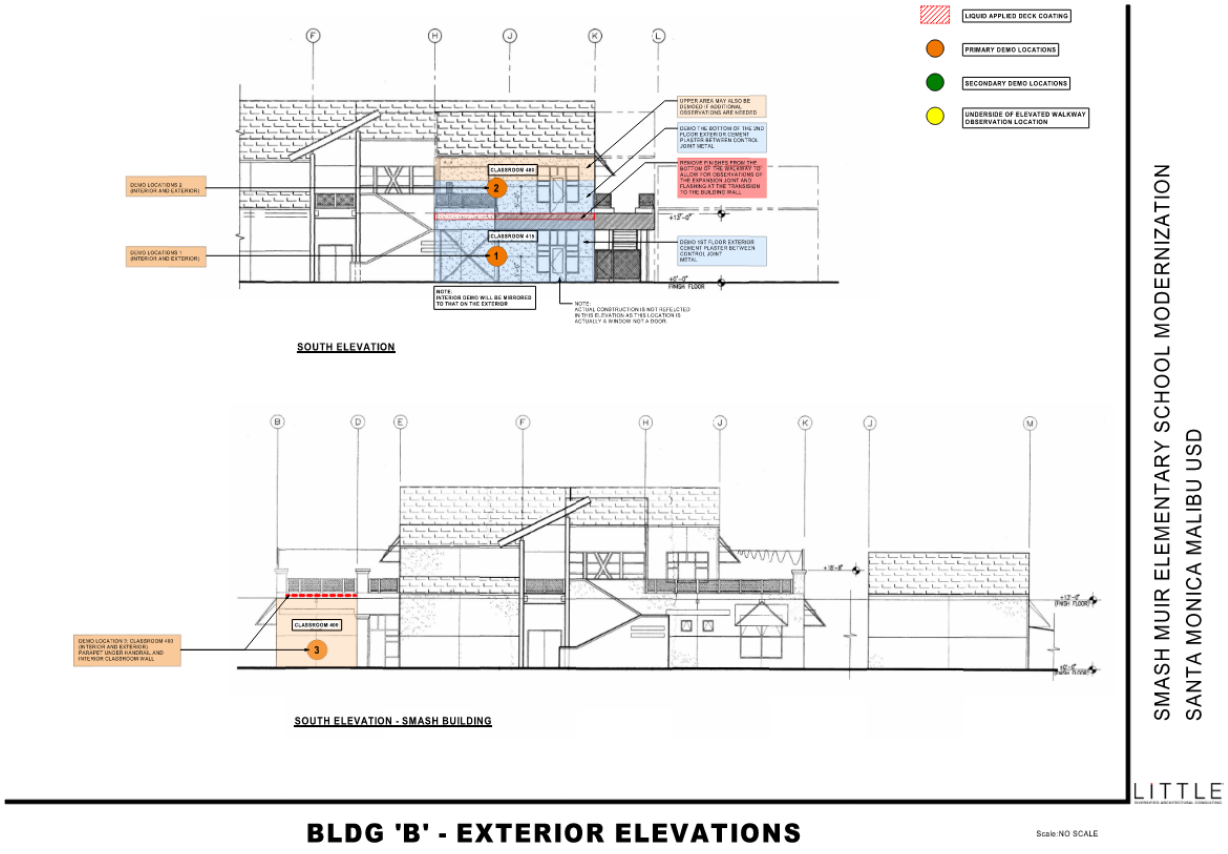

Fig 05: Demo Locations, Bldg B_Exterior Elevations_Demo Locations.

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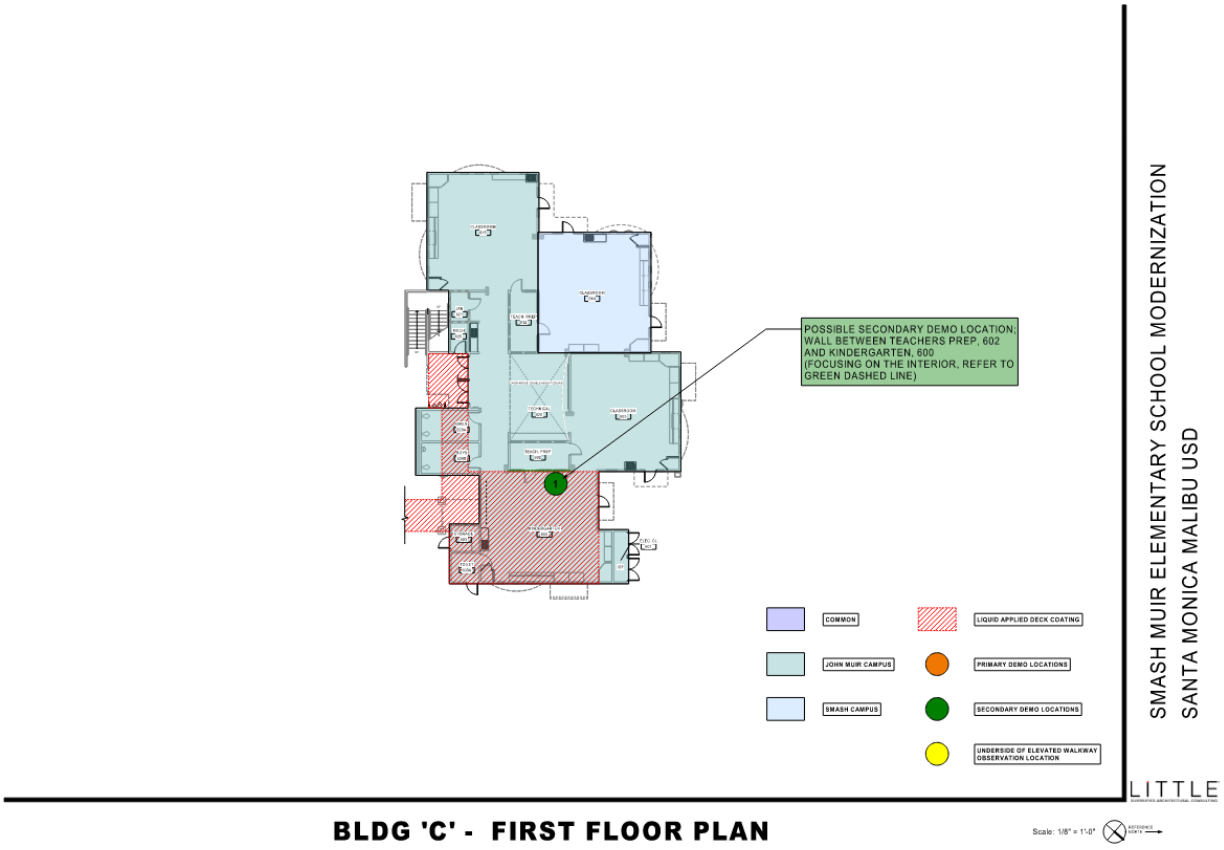

Fig 06: Demo Locations, Bldg C_First Floor Plan_Demo Locations.

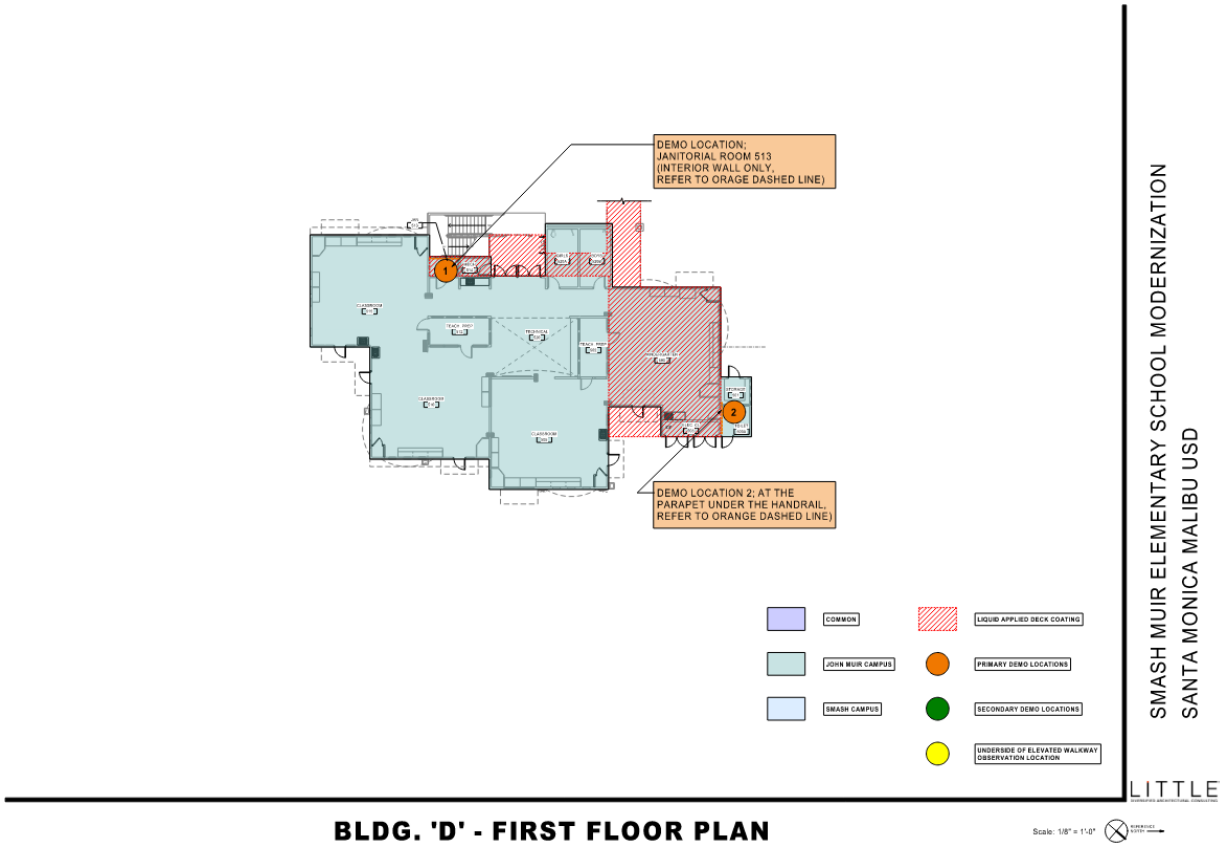

Fig 07: Demo Locations, Bldg D_First Floor Plan_Demo Locations.

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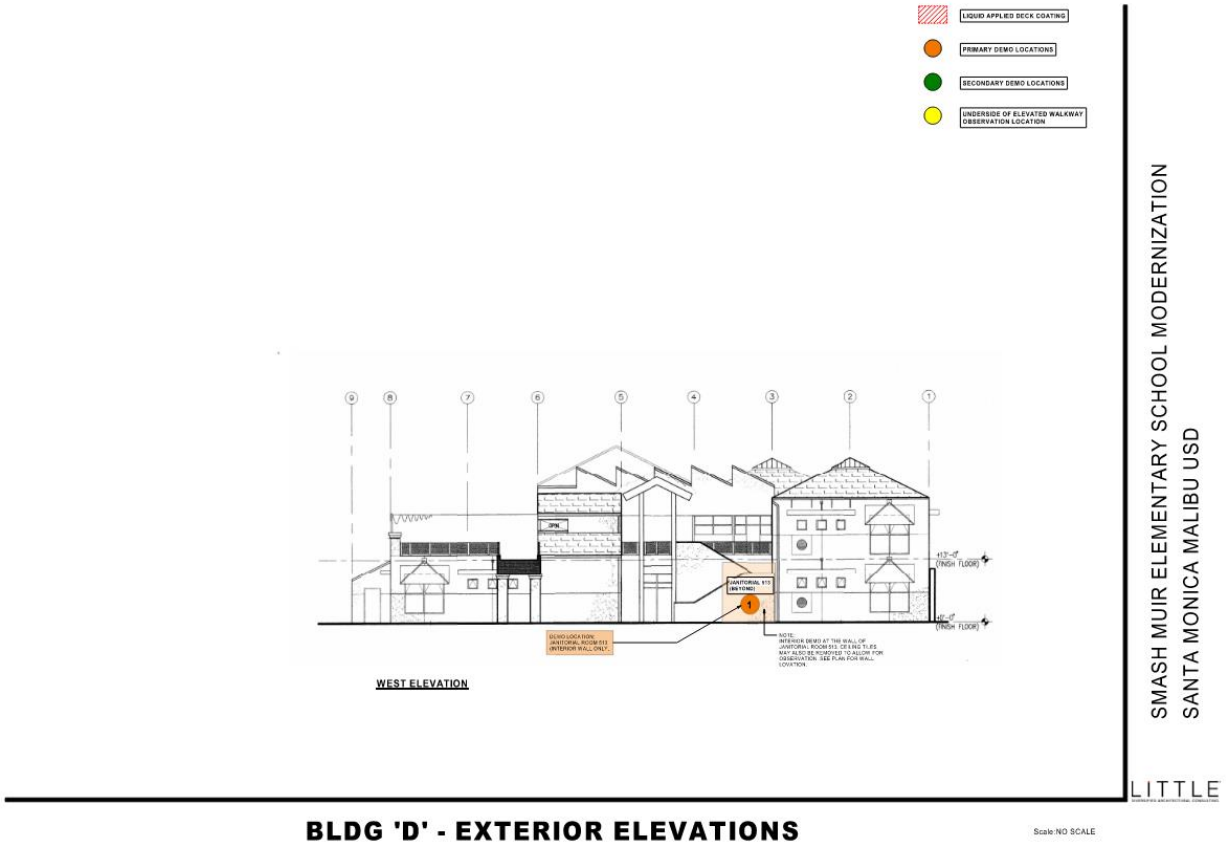

Fig 08: Demo Locations, Bldg D_Exterior Elevations_Demo Locations.

End of Report.

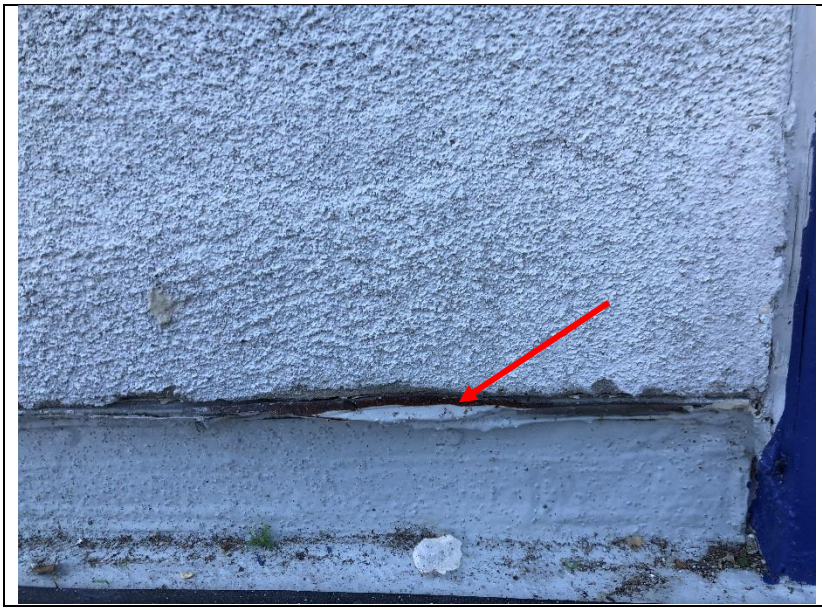

Photo 01:

Abrasion and impact damage to the cement plaster cladding at the lower portion of a wall adjacent to a door jamb.

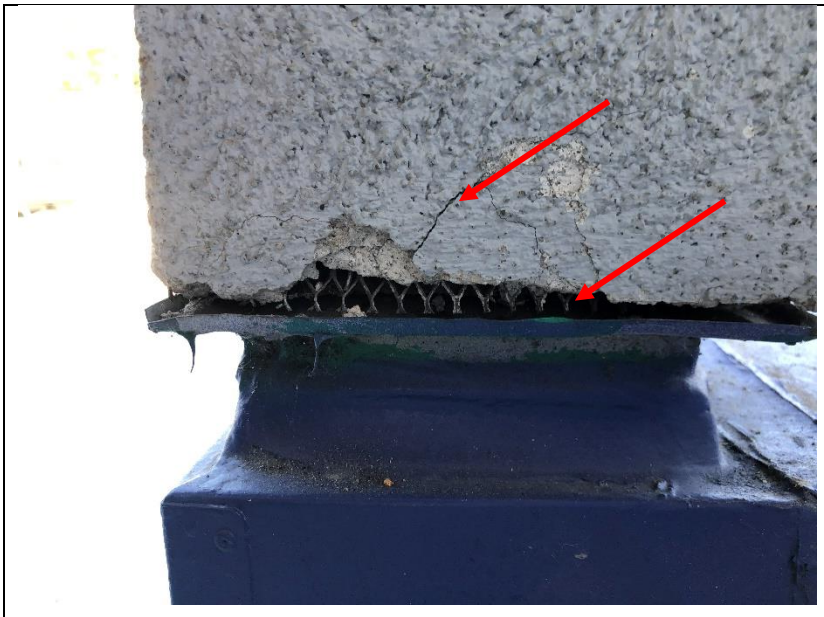

Photo 02:

Cement plaster cladding damage at the bottom of a column.

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Photo 03:

Abrasion and impact damage to the cement plaster cladding at the lower walls.

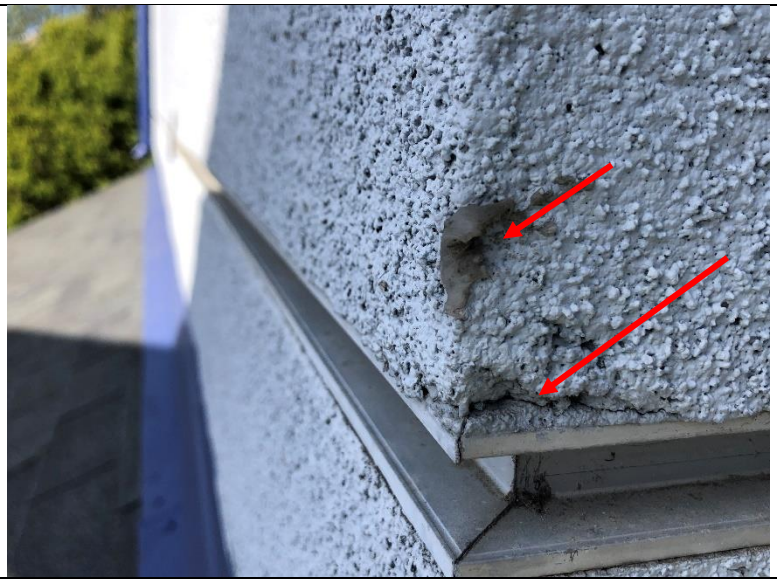

Photo 04:

Impact damage at the cement plaster.

Photo 05:

Abrasion and impact damage at the bottom of a plastered column.

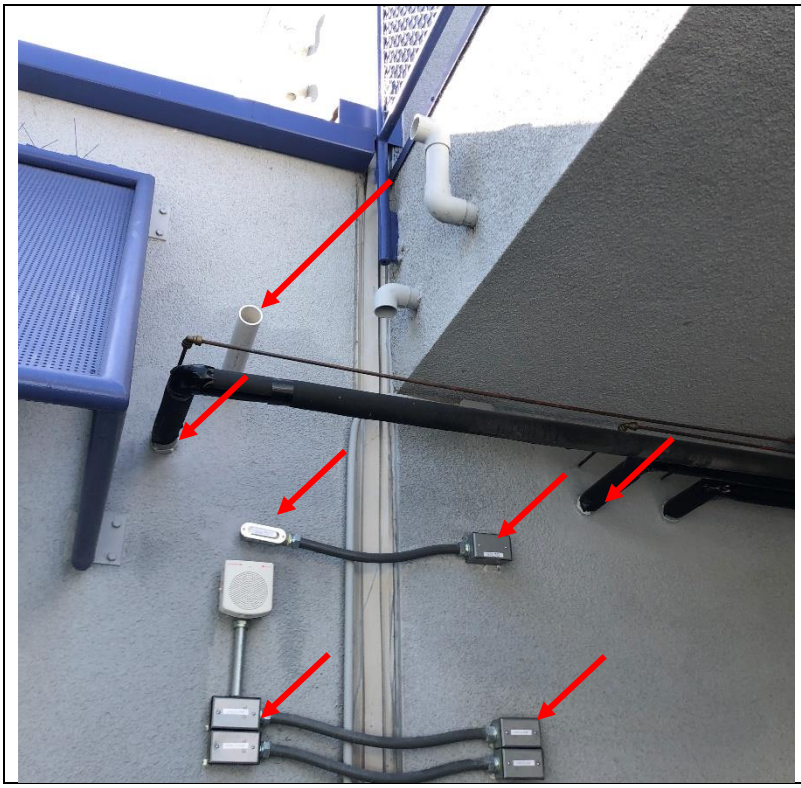

Photo 06:

Penetrations in the cement plaster assembly.

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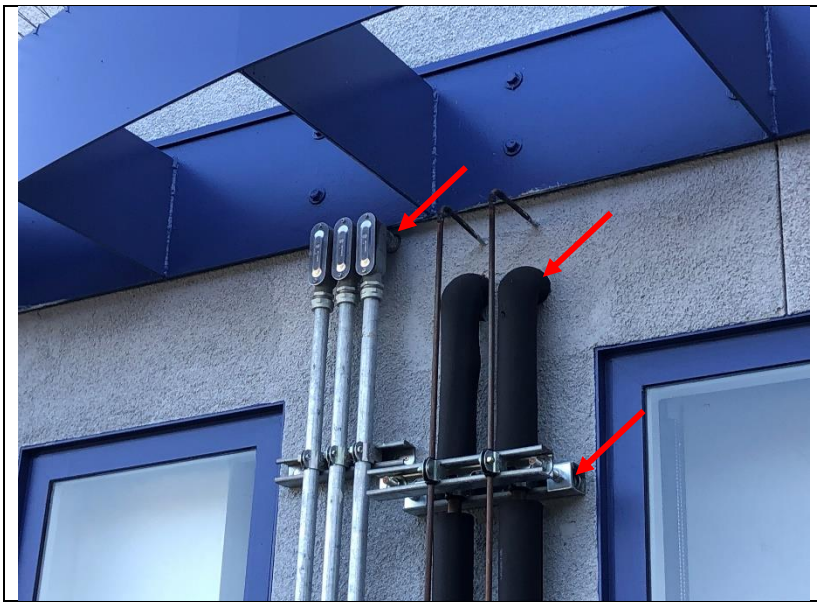

Photo 07:

Penetrations in the cement plaster assembly.

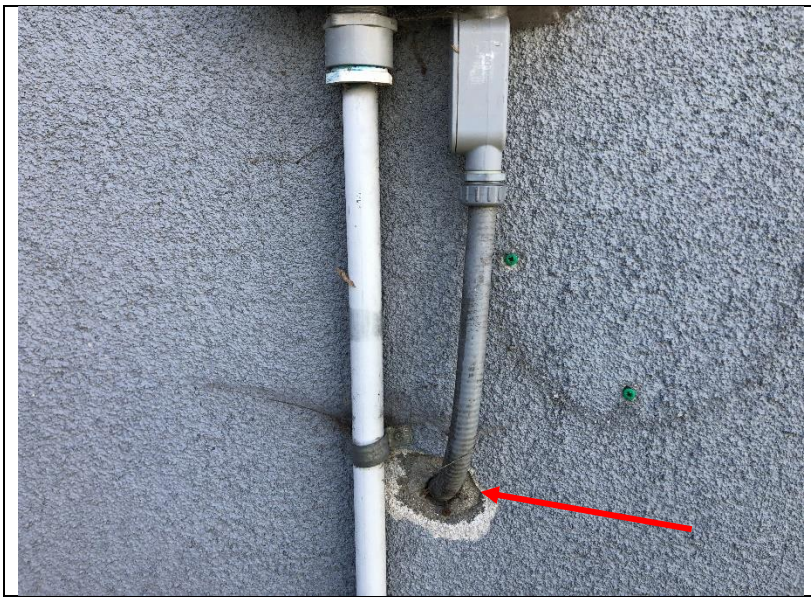

Photo 08:

Penetrations in the cement plaster assembly with no visible sealant.

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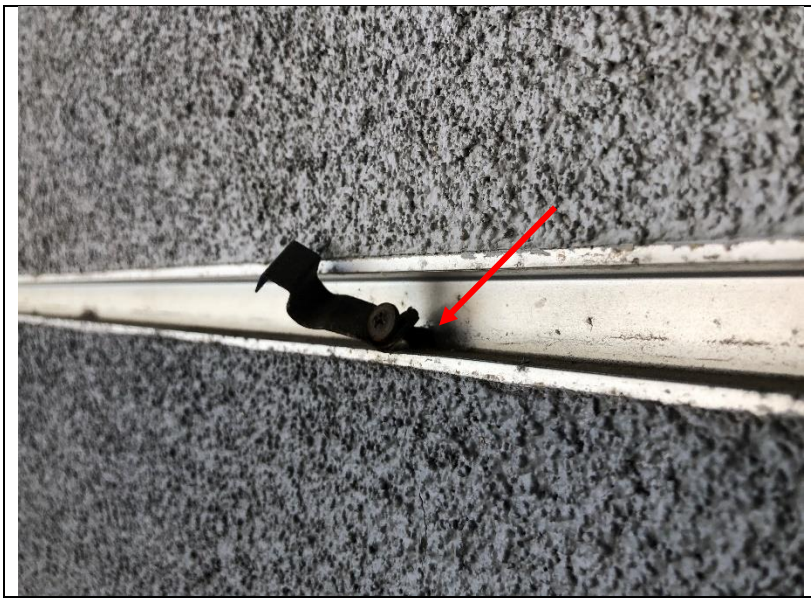

Photo 09:

An un-sealed penetration in a cement plaster control joint.

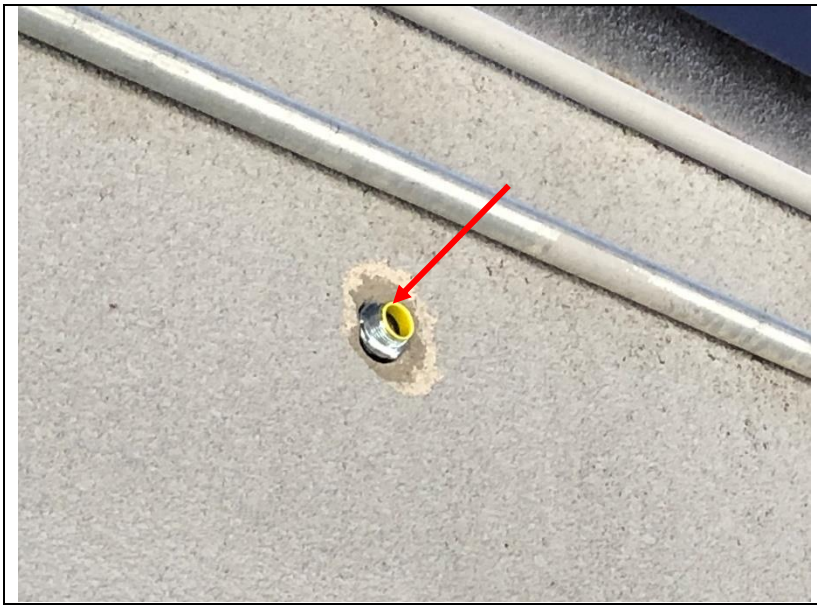

Photo 10:

An open penetration in the cement plaster assembly with no visible sealant.

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	**Photo 11:** Penetrations in the cement plaster assembly.

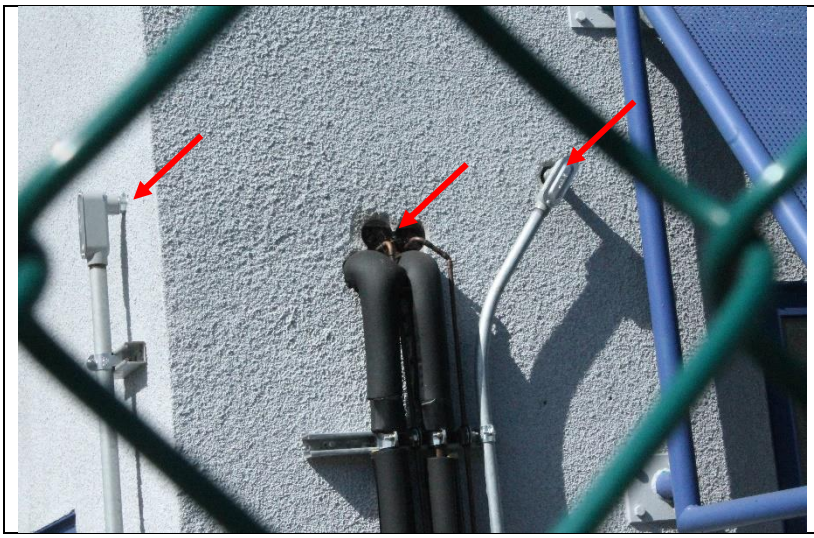	**Photo 12:** Penetrations in the cement plaster assembly with no visible sealant.

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Photo 13:

A fire alarm pull penetration in the cement plaster assembly with a failed sealant application.

Photo 14:

A penetration in the cement plaster assembly with a new sealant application.

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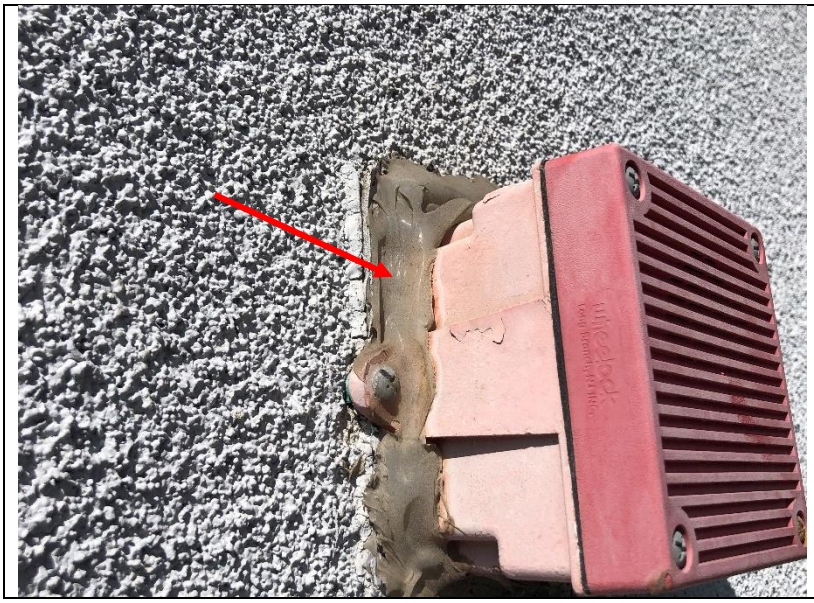

Photo 15:

A penetration in the cement plaster assembly with a failed sealant application.

Photo 16:

An abandoned penetration in the cement plaster assembly with what appears to be fire caulk (rather than a weather sealant) applied.

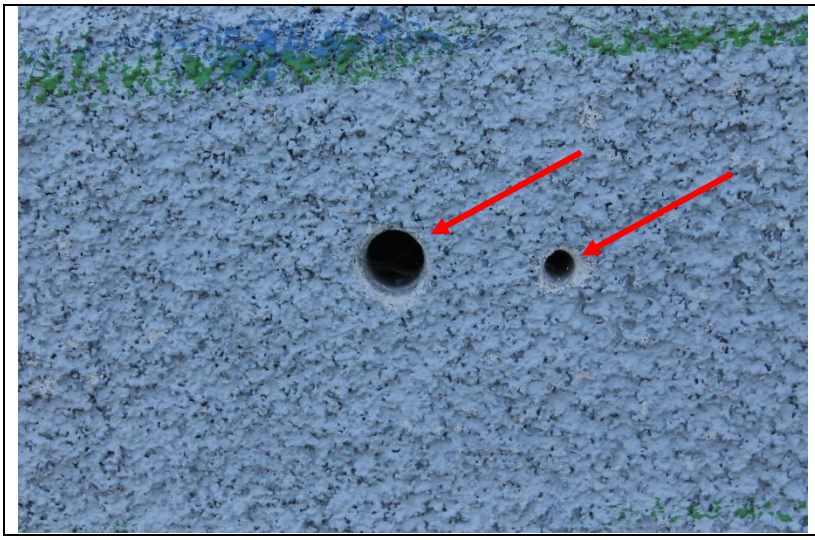

Photo 17:

Abandoned penetrations in the cement plaster assembly

Photo 18:

An abandoned penetration in the cement plaster assembly

Photo 19:

An abandoned penetration in the cement plaster assembly

Photo 20:

Hook anchor penetration in the cement plaster assembly

Photo 21:

Hook anchor penetration in the cement plaster assembly

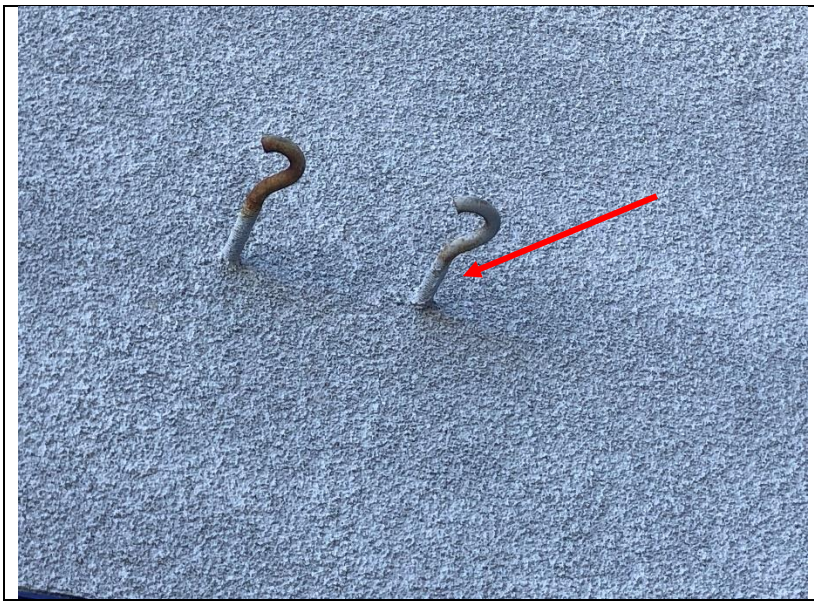

Photo 22:

Hook anchor penetration in the cement plaster assembly

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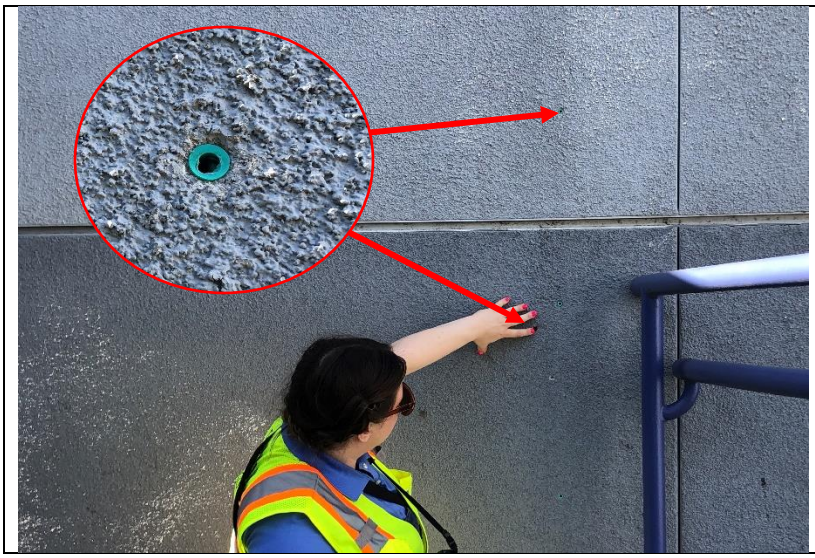

Photo 23:

Drywall anchor penetration in the cement plaster assembly.

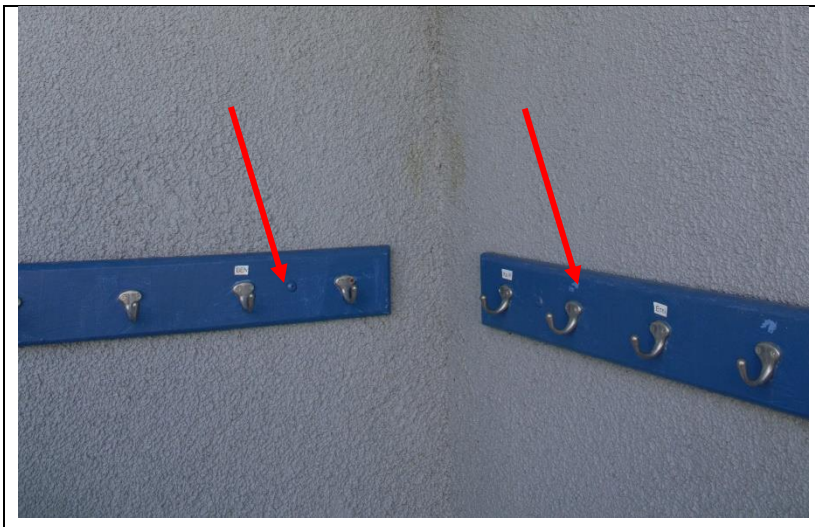

Photo 24:

Coat racks were mounted to the cement plaster walls.

Photo 25:

Deficiencies in the cement plaster were observed at the base of the walls

Photo 26:

Deficiencies in the cement plaster were observed at the base of the walls

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Photo 27:

Deficiencies in the cement plaster were observed at the base of the walls

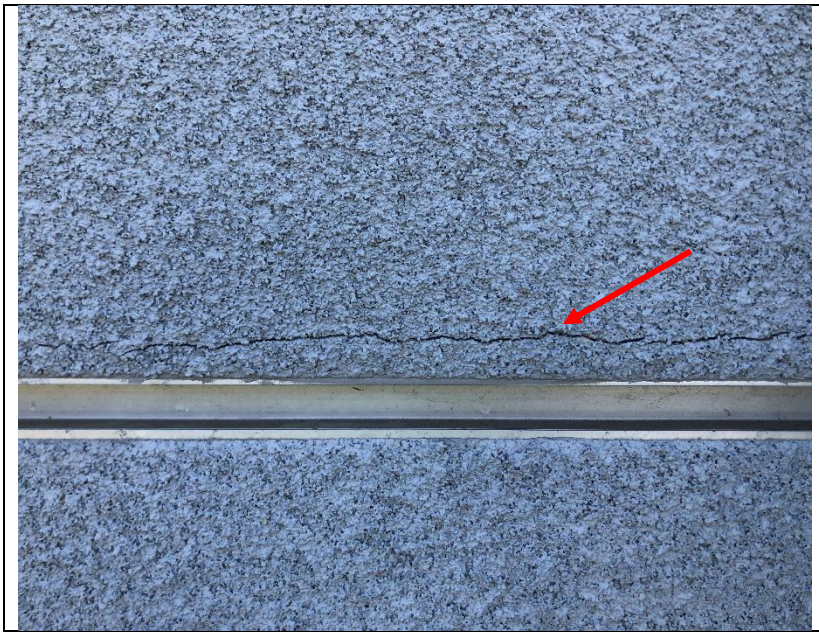

Photo 28:

Deficiencies in the cement plaster were observed at the control joints

	**Photo 29:** Deficiencies in the cement plaster were observed at the base of the walls

	**Photo 30:** Deficiencies in the cement plaster were observed at the base of the walls

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Photo 31:

A crack at the base of the cement plaster.

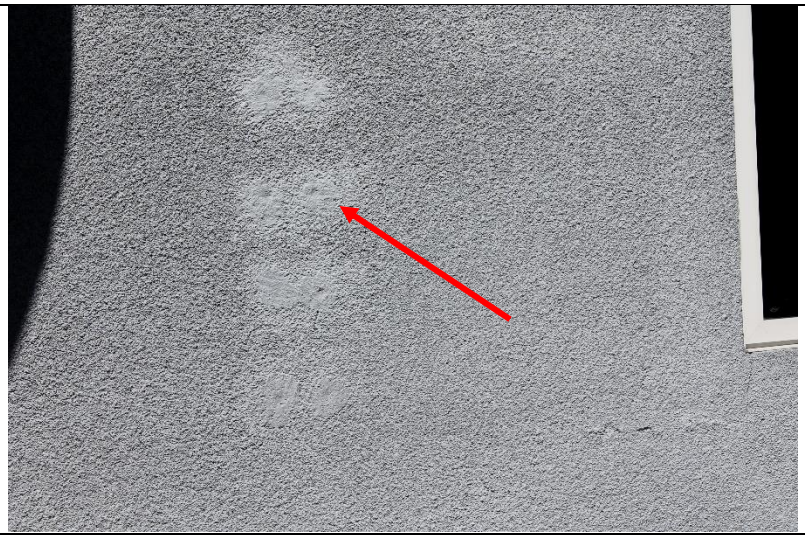

Photo 32:

New paint had been applied over penetrations in the cement plaster

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Photo 33:

New paint had been applied over repairs to the cement plaster

Photo 34:

New paint had been applied to the cement plaster above two hollow metal frame assemblies.

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Photo 35:

New paint had been applied on the cement plaster.

Photo 36:

New paint had been applied on the cement plaster.

Photo 37:

An opening between metal flashing and the top of the cement plaster assembly.

Photo 38:

An opening at the top of the cement plaster assembly.

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Photo 39:

An opening where the cement plaster assembly intersects a structural beam.

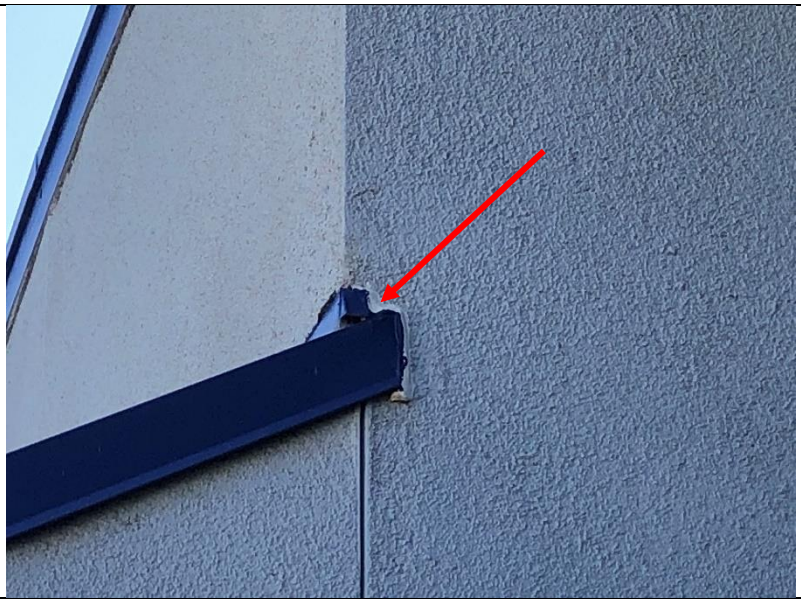

Photo 40:

An opening where the cement plaster assembly intersects a lower roof.

Photo 41:

An opening where the cement plaster assembly intersects a structural beam.

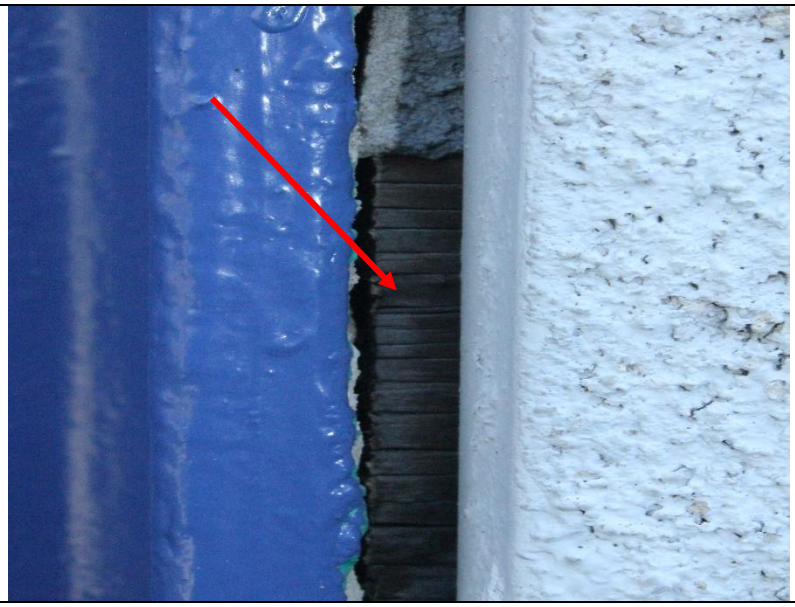

Photo 42:

Visible substrate damage and delamination of the unprotected wood sheathing inside the wall system.

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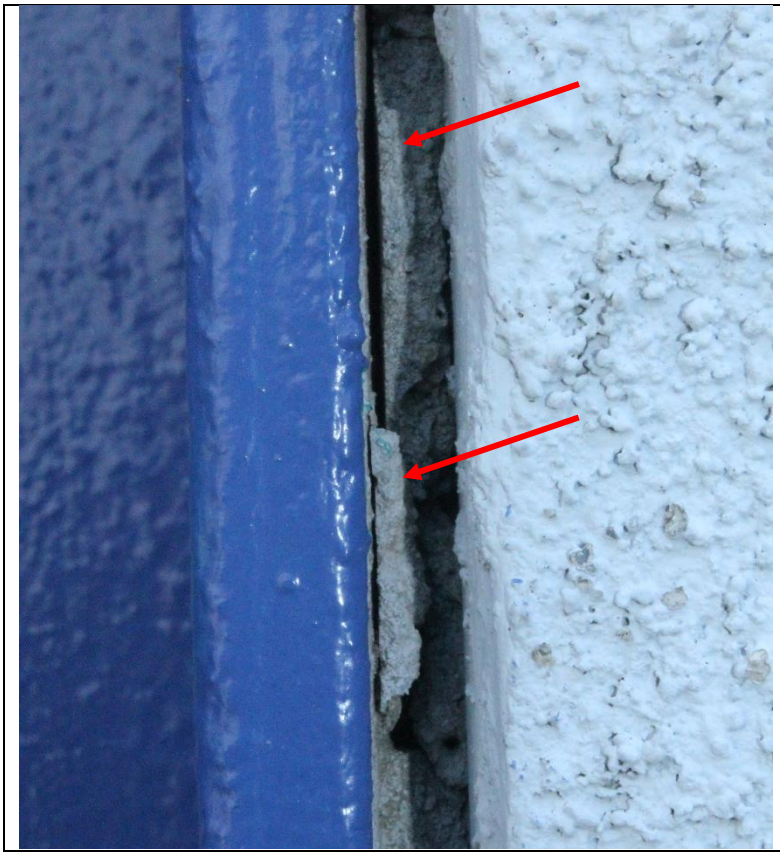

Photo 43:

An un-sealed opening in the cladding system where the cement plaster assembly intersects a structural beam.

Photo 44:

What appears to be salt corrosion of the cement plaster cladding under a window frame on the east side of building D.

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	**Photo 45:** What appears to be salt corrosion of the cement plaster cladding under a window frame on the east side of building D.

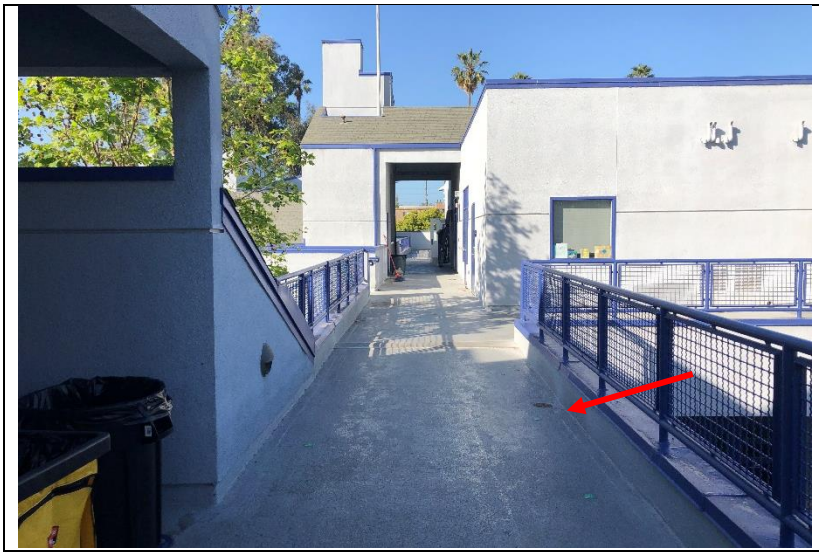	**Photo 46:** Overview of the traffic coating on an elevated walkway.

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Photo 47:

The traffic coating lapped up onto the weep screed with some of the weep holes blocked.

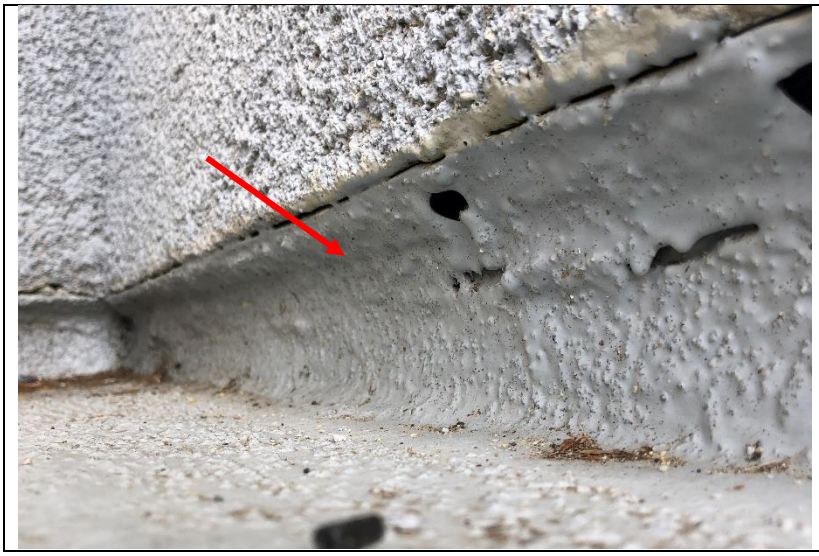

Photo 48:

The traffic coating lapped up onto the weep screed with some of the weep holes blocked.

Photo 49:

The traffic coating lapped up onto the weep screed. No weep holes were visible at this location.

Photo 50:

A patch in the traffic coating.

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Photo 51:

Blisters (blue arrow) and pinholes (red arrows) in a traffic coating patch indicating trapped water and/or coating failure.

Photo 52:

Blistering at a traffic coating patch indicating trapped water and/or coating failure.

Photo 53:

Z-flashing had been installed below the cement plaster instead of a weep screed. The traffic coating upturn is blocking the drainage path for the cement plaster cladding system and directing the water into the wall framing.

Photo 54:

Z-flashing had been installed below the cement plaster instead of a weep screed.

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Photo 55:

Flood testing of a square traffic coating drain over Communications room 205.

Photo 56:

Flood testing at a drain outside of classroom 555.

Photo 57:

Flood testing outside classroom 555.

Photo 58:

Flood testing a drain on the elevated walkway.

Photo 59:

A 6-inch round drain cover over a 2-inch pipe.

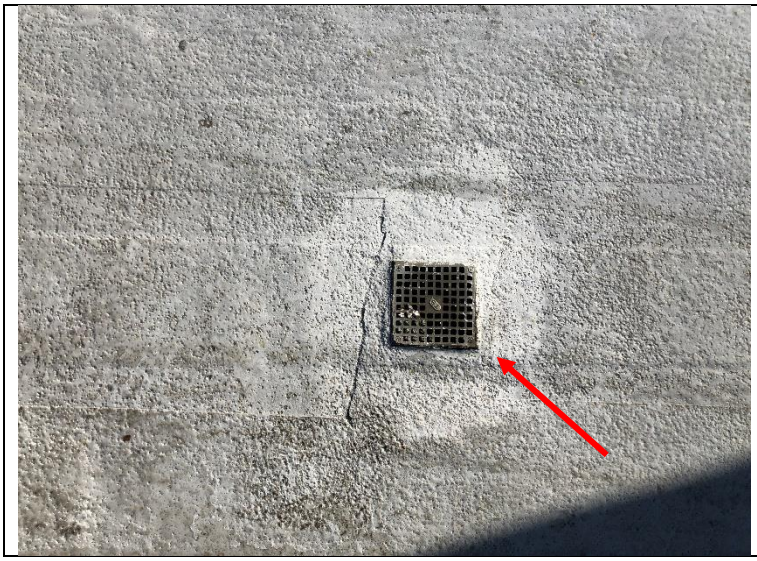

Photo 60:

A square drain cover over a 2-inch pipe.

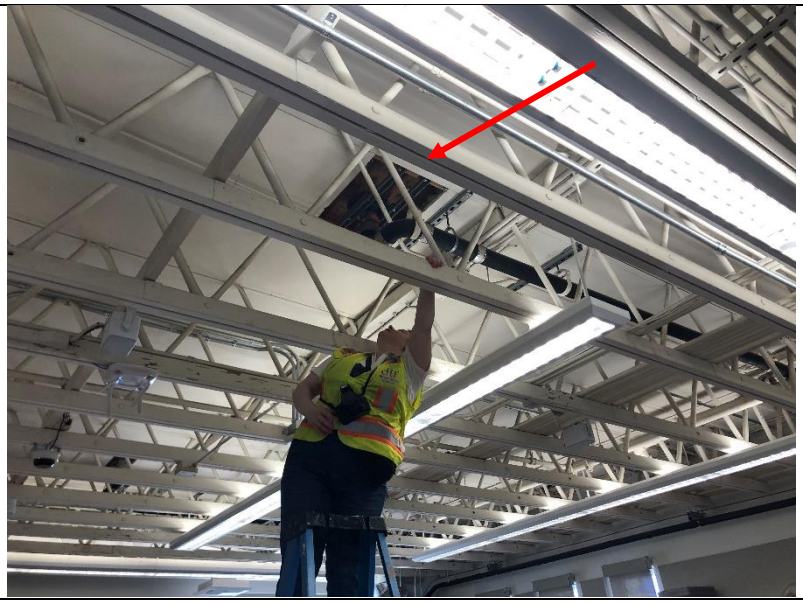

Photo 61:

DTR observing the underside of a drain assembly during a flood test.

Photo 62:

A drain assembly was attached to the bottom of the deck with uni-strut. No anchor bolts were holding the assembly to the deck.

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Photo 63:

A failure in a traffic coating patch adjacent to a drain test.

Photo 64:

A failure in a traffic coating patch adjacent to a drain test.

Photo 65:

Corrosion was observed at the stairs prior to repainting.

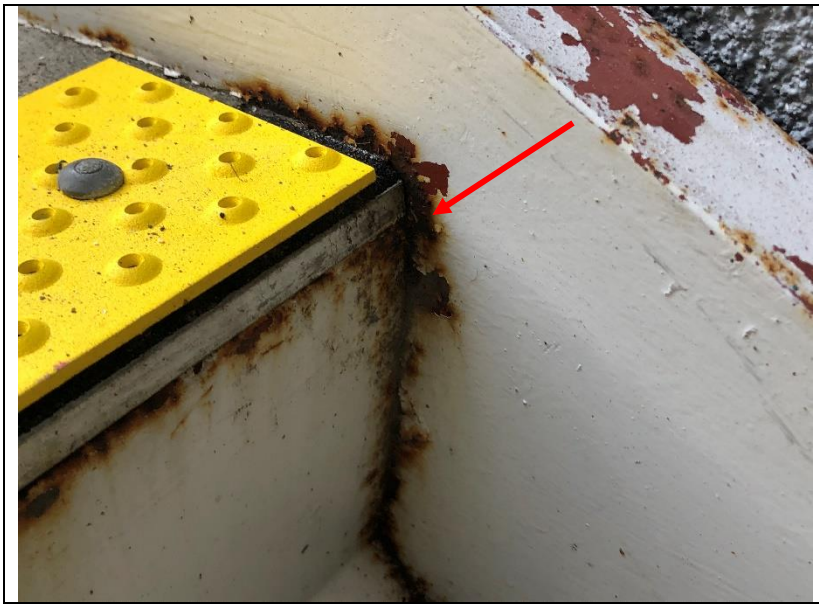

Photo 66:

Corrosion was observed at the stairs prior to repainting.

Photo 67:

The stairs were masked off during painting.

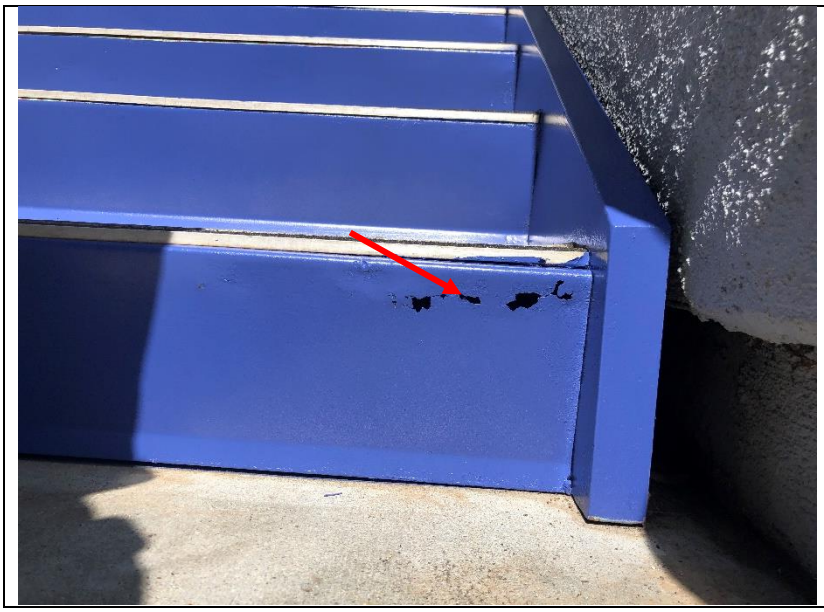

Photo 68:

Corrosion was observed on the stairs after repainting.

Photo 69:

The hollow metal frame was being removed at Classroom 480.

Photo 70:

The hollow metal frame after it was fully removed at classroom 480.

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Photo 71:

The neoprene water stop at the expansion joint drainage was level with the interior of the cement plaster assembly.

This does not conform to the 2001 drawing set (see fig 02)

Photo 72:

Dry rot and damp wood within the wall assembly.

Photo 73:
Dry rot, water damage, and suspected insect damage at the threshold of classroom 480

Photo 74:

A water activation strip shows a positive result for water at the deck to wall expansion joint at the threshold of classroom 480.

Photo 75:

Wood surfaces at the threshold were damp to the touch.

Photo 76:

Moisture reading of the wood at the threshold.

20.8 %

Photo 77:

Moisture reading of the wood at the threshold.

30.6 %

Photo 78:

Standing water in the neoprene water stop at the expansion joint.

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Photo 79:

Dry rot, water damage, and suspected insect damage at the threshold of classroom 480

Photo 80:

Hollow metal frame were being removed from the west side of building B.

Photo 81:

Water damage and potential biological growth at the jamb to sill juncture at the threshold.

Photo 82:

Water damage at the jamb to sill juncture at the threshold.

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Photo 83:

A hole into the wall system at the jamb to sill juncture.

Photo 84:

A hollow metal frame being removed at building A.

Photo 85:

Water damage at the jamb to sill juncture at the threshold.

Photo 86:

Dry rot and corroded fasteners were observed at the sill of a window after the hollow metal frame had been removed.

Photo 87:
Water damage at the jamb to sill juncture at the threshold. DTR requested that this area be cut and opened for further visual observation.

Photo 88:

Dry rot, water damage, corroded fasteners, and suspected insect damage at the threshold

Photo 89:

A hollow metal frame being removed at building D.

Photo 90:

Delamination of the exterior plywood sheathing was observed after the hollow metal frames were removed.

No flashing, waterproofing, or weather resistive barrier were observed at this location.

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	**Photo 91:** Delamination of the exterior plywood sheathing was observed after the hollow metal frames were removed. No flashing, waterproofing, or weather resistive barrier were observed at this location.

	**Photo 92:** Delamination of the plywood exterior wall sheathing was observed after the hollow metal frames were removed. No flashing, waterproofing, or weather resistive barrier were observed at this location.

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	**Photo 93:** Water damage and deteriorated materials at the jamb to sill juncture below a threshold.

	**Photo 94:** Water damage and deteriorated materials at the jamb to sill juncture below a threshold.

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Photo 95:

Corrosion was observed behind a head flashing at one of the hollow-metal framed doors indicating moisture behind the flashing.

Photo 96:

Corrosion was observed behind a head flashing at one of the hollow metal framed doors.

Photo 97:

A hollow metal frame door/window assembly.

Photo 98:

Hollow metal frame assemblies.

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Photo 99:

Hollow metal frame assemblies.

Photo 100:

A hollow metal frame window at the saw-tooth roof.

Photo 101:

Aluminum framed windows under one of the covered walkways.

Photo 102:

Aluminum framed windows on the north side of building B.

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Photo 103:

Aluminum framed windows on the north side of building A.

Photo 104:

An aluminum-framed window.

Photo 105:

A sealant failure at the perimeter of a hollow metal frame.

Photo 106:

A sealant failure at the perimeter of a hollow metal frame.

Photo 107:

A sealant failure at the perimeter of a hollow metal frame.

Photo 108:

A sealant failure at the perimeter of a hollow metal frame.

Photo 109:

A sealant failure at the perimeter of an aluminum-framed window at roof level.

Photo 110:

A sealant failure at the perimeter of an aluminum-framed window.

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Photo 111:

A glazing gasket failure at the perimeter of the glazing at an aluminum-framed window.

Photo 112:

A sealant failure at the perimeter of an aluminum-framed window.

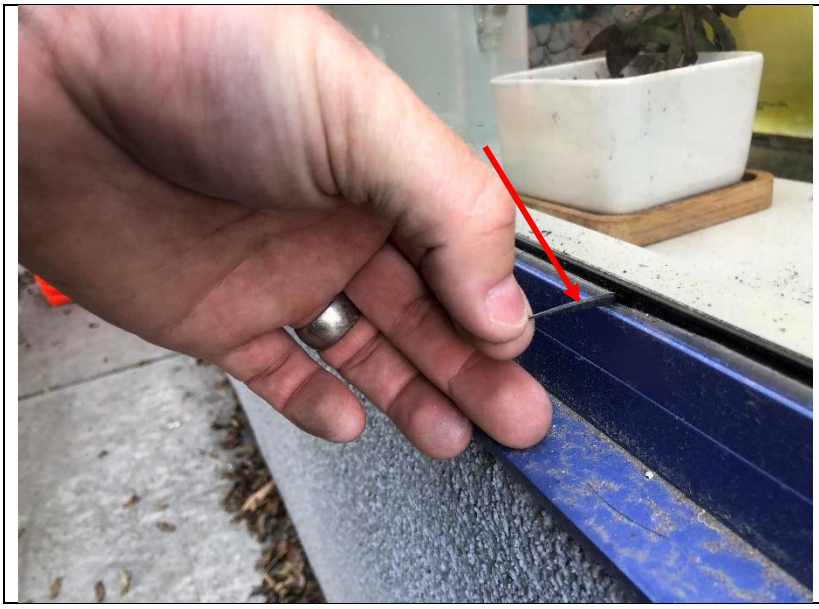

Photo 113:

A glazing gasket failure at the perimeter of the glazing at an aluminum-framed window.

Photo 114:

Silicone sealant was applied at the glazing of this hollow-metal framed window.

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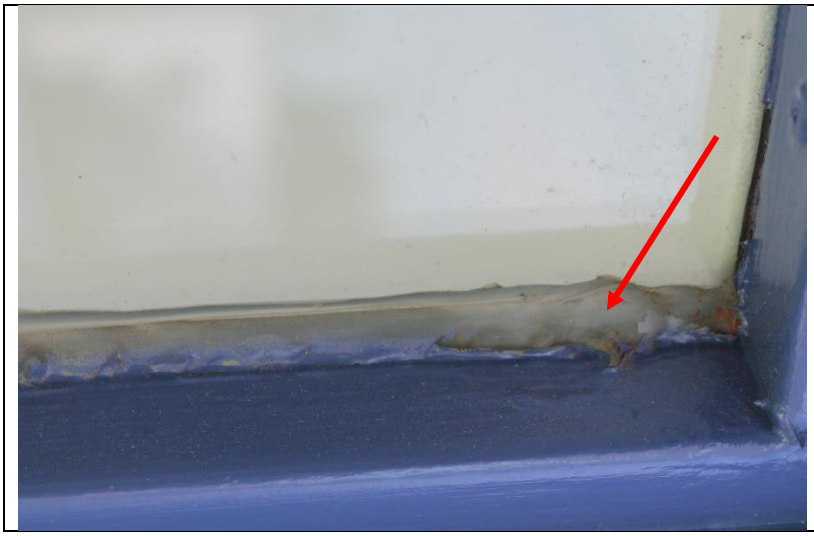

Photo 115:

Silicone sealant was applied at the glazing of this hollow-metal framed window.

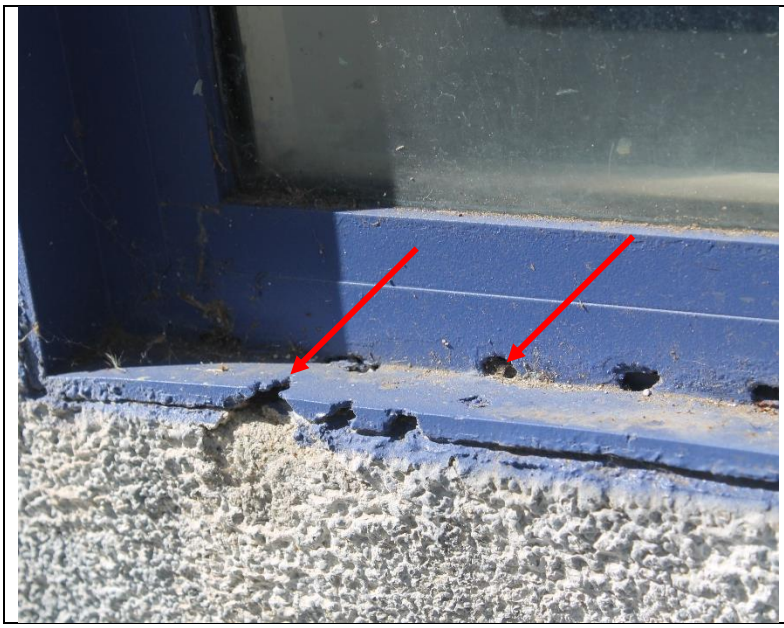

Photo 116:

What appears to be salt corrosion at a window sill on the east side of building D.

Photo 117:

What appears to be salt corrosion at a window sill on the east side of building D.

Photo 118:

What appears to be salt corrosion at a window sill on the east side of building D.

Photo 119:

Corrosion damage at the bottom of a door jamb.

Photo 120:

Corrosion damage at the bottom of a door jamb.

Photo 121:

Corrosion damage at the bottom of a door jamb.

Photo 122:

Corrosion damage at the bottom of a door jamb.

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Photo 123:
An overview of the campus roofs from the top of building C

Photo 124:

An overview of the BUR roof over the multipurpose room.

Photo 125:

The saw-tooth roof over building D.

Photo 126:

The shingle assembly on the roof of building D.

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Photo 127:

The shingle assembly on the roof of building D.

Photo 128:

A coating failure at the BUR roof over the multipurpose room.

Photo 129:

A coating failure at the BUR roof over the multipurpose room.

Photo 130:

A cut mark in the BUR roof over the multipurpose room.

Photo 131:

A hole in the BUR roof over the multipurpose room.

Photo 132:

The existing BUR with a coating (yellow arrow) and the new granulated cap sheet (red arrow) were installed at the new mechanical curbs.

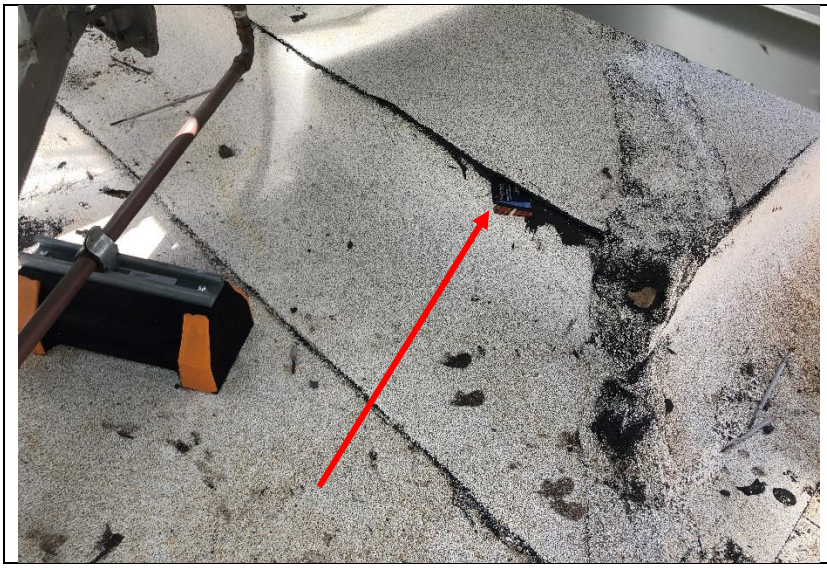

Photo 133:

A business card was inserted into a gap in the new granulated cap sheet installed at the new mechanical curbs.

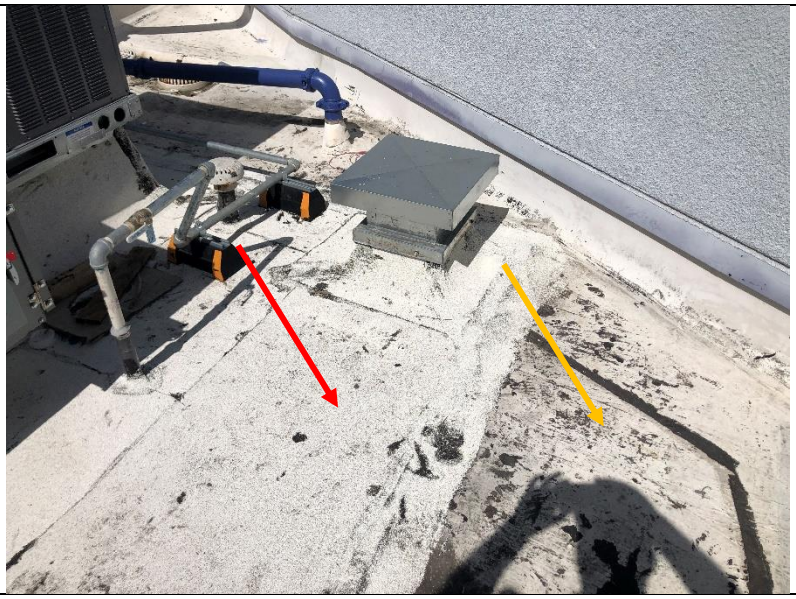

Photo 134:

The existing BUR with a coating (yellow arrow) and the new granulated cap sheet (red) were installed at the new mechanical curbs.

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Photo 135:

An open seam at the newly installed granulated cap sheep at a mechanical curb.

Photo 136:

Tig welding rods left on the roof.

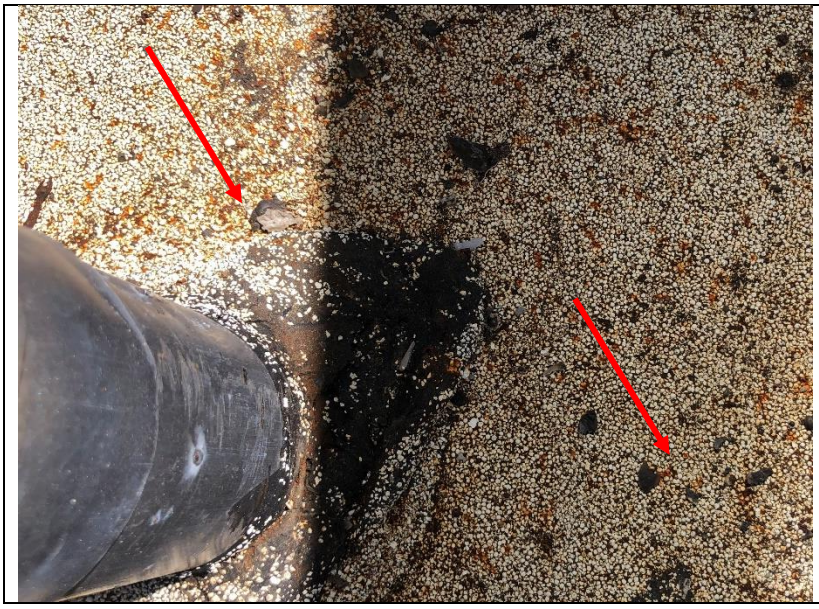

Photo 137:

Pock-marks and welding damage on the newly installed granulated cap sheet on the roof of the multipurpose room.

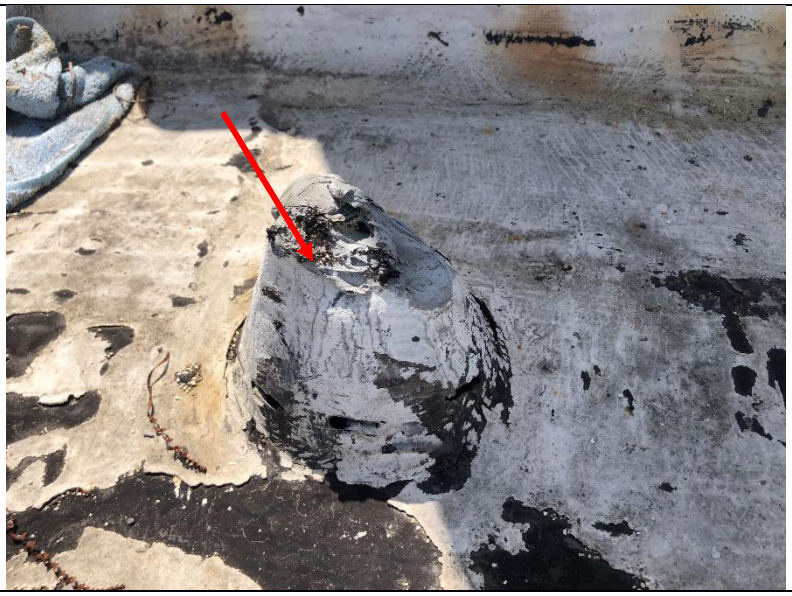

Photo 138:

An abandoned cone-flashing on the roof of the multipurpose room.

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	**Photo 139:** Abandoned flashing with drip guards on the roof of the multipurpose room.

	**Photo 140:** A mastic bed at penetrations for the newly installed granulated cap sheet on the roof of the multipurpose room.

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Photo 141:

Lead flashings were installed at the fall protection rail at the newly installed granulated cap sheet on the roof of the multipurpose room.

Photo 142:

Lead flashings were installed in the newly installed granulated cap sheet on the roof of the multipurpose room.

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Photo 143:

An opening at a lead flashing was installed in the newly installed granulated cap sheet on the roof of the multipurpose room.

Photo 144:

An electrical conduit flashing with a drip guard on the roof of the multipurpose room.

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Photo 145:

Penetrations with drip guards on the roof of the multipurpose room.

Photo 146:

An abandoned conical penetration flashing on the roof of the multipurpose room.

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Photo 147:

Granule loss and edge deterioration were observed on the asphalt shingle roofs.

Photo 148:

Granule loss and edge deterioration were observed on the asphalt shingle roofs.

Photo 149:

A swath of mastic was observed at the asphalt shingle roofs.

Photo 150:

Staples and nails were observed at the mastic swath.

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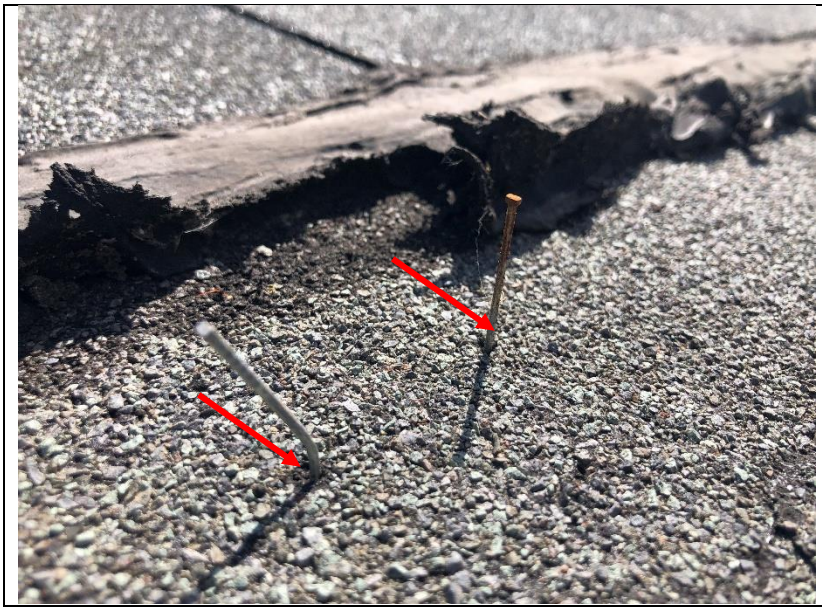

Photo 151:

Staples and nails were observed at the mastic swath.

Photo 152:

DTR clearing a blocked downspout.

Photo 153:

Granules had filled and blocked a scupper downspout.

Photo 154:

Granule loss was significant at all of the asphalt shingle roofs.

Photo 155:

Granule loss was significant at all of the asphalt shingle roofs.

Photo 156:

A gutter on building B was filled with granules and debris.

Photo 157:

A corrosion hole in one of the gutters.

Photo 158:

Corrosion was observed in many of the gutters.

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	**Photo 159:** Shingle tabs were observed on the roof deck, damages on the roof, or were missing altogether.

	**Photo 160:** Shingle tabs were observed on the roof deck, damages on the roof, or were missing altogether.

Photo 161:

Shingle tabs were observed on the roof deck, at damaged areas on the roof, or were missing altogether.

Photo 162:

Corroded vent stacks with deficient flashing were observed in several locations.

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Photo 163:

A black peel-and-stick underlayment was present under the asphalt shingle.

Photo 164:

The black peel-and-stick underlayment was not fully adhered at some locations.

Photo 165:

Sheet metal flashing on the asphalt shingle roofs showed various signs of age degradation.

Photo 166:

A black mastic had been applied to the sheet metal along a roof-to-wall valley.

The mastic was cracked and had failed.

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Photo 167:

Sheet metal flashing on the asphalt shingle roofs showed various signs of age degradation.

Photo 168:

Sealant was observed at the ends of the sheet metal valley

Photo 169:

Sealant at the ends of the sheet metal valleys was cracked and had failed in many locations.

Photo 170:

Sheet metal skirt flashing at the skylights was not flat and flush to the roof.

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Photo 171:

Sheet metal skirt flashing at the skylights was not flat and flush to the roof.

Photo 172:

Sheet metal skirt flashing at the skylights was not flat and flush to the roof.

Photo 173:

Dry rot and suspected insect damage at the wooden roof trim.

Photo 174:

Dry rot and suspected insect damage at the wooden roof trim.

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	**Photo 175:** Dry rot and suspected insect damage at the wooden roof trim.

	**Photo 176:** Dry rot and suspected insect damage at the wooden roof trim.

Photo 177:

Dry rot and suspected insect damage at the wooden roof trim.

Photo 178:
Dry rot and suspected insect damage at the wooden roof trim.

dtr job no. 10.22013.80

Photo 179:

Staining was visible on the ceiling tiles in room 210B Media Equipment

Photo 180:

Staining was visible on the ceiling tiles in room 210B Media Equipment

	**Photo 181:** DTR made observations in the library. Many reported leak locations had been obscured by new paint.

	**Photo 182:** DTR made observations in the library. Many reported leak locations had been obscured by new paint.

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Photo 182:
Exterior light was visible through the wall system over the east entrance to the library. The location is a reported leak site.

Photo 184:

Louvers at the elevated walkway over the east entrance to the library.

The louvers were not properly flashed and sealed.

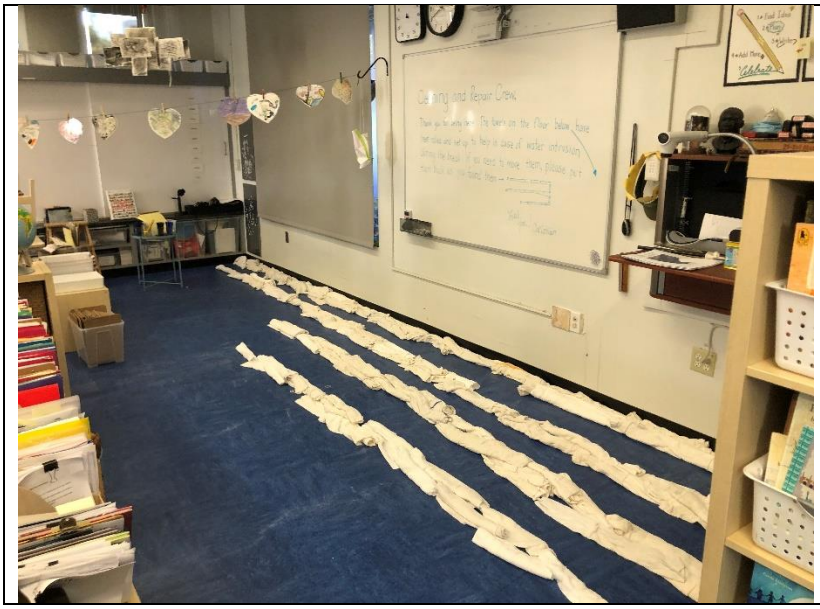

Photo 185:

Temporary water intrusion remediation was carried out by the teacher in classroom 415

Photo 186:

Previous mold abatement at classroom 415.

Photo provided by Little

Photo 187:

Water stains and damage at electrical outlets in classroom 415.

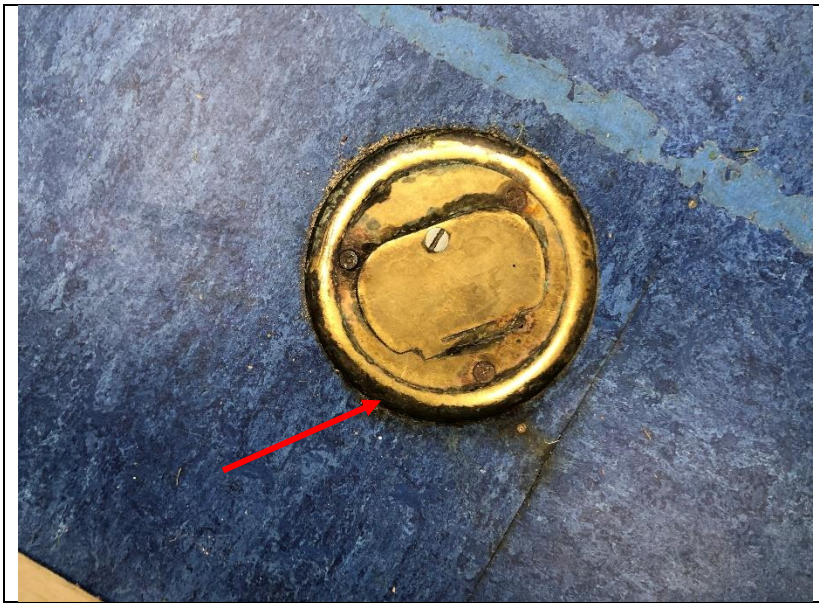

Photo 188:

Water was reported to percolate at floor outlets during rain events.

Photo 189:

Water stains on the whiteboard in classroom 415.

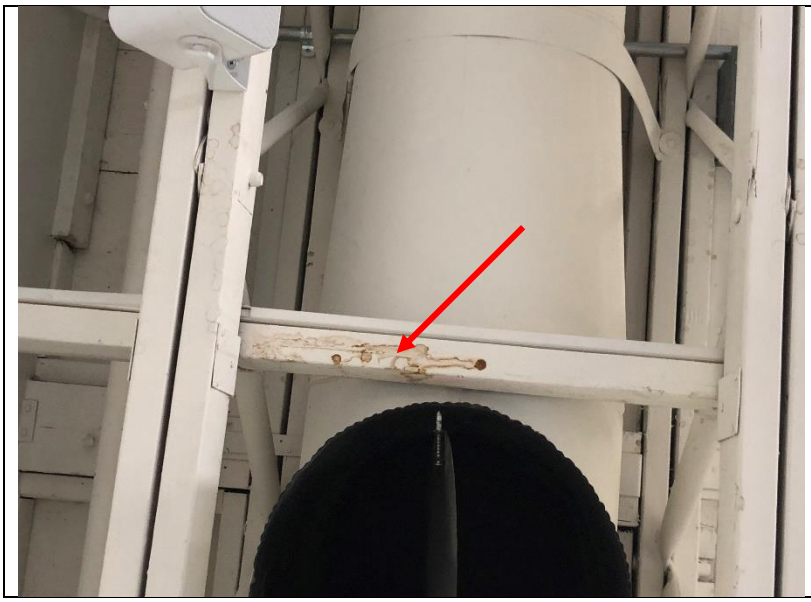

Photo 190:

Water stains on the ceiling along the south wall of classroom 415.

Photo 191:

Water stains on the recessed ceiling in the multipurpose room.

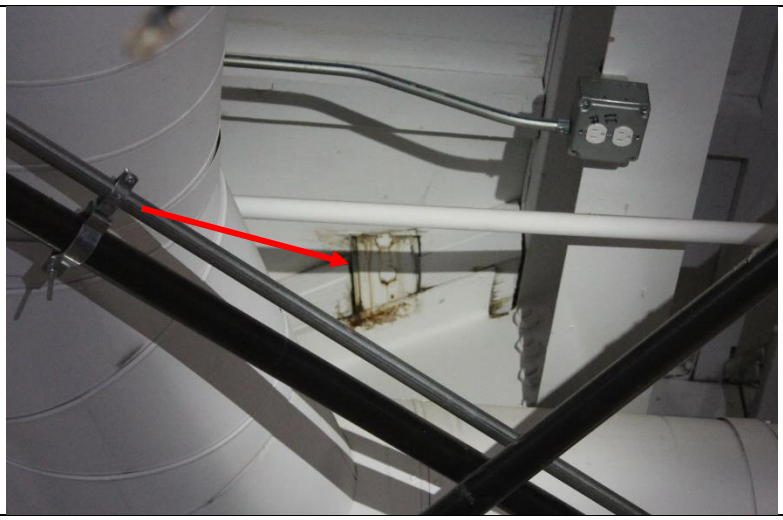

Photo 192:

Water stains above the recessed ceiling in the multipurpose room.

Photo 193:

New blocking was installed in the ceiling of the multipurpose room during the HVAC project.

Photo 194:

New blocking was installed in the ceiling of the multipurpose room during the HVAC project.

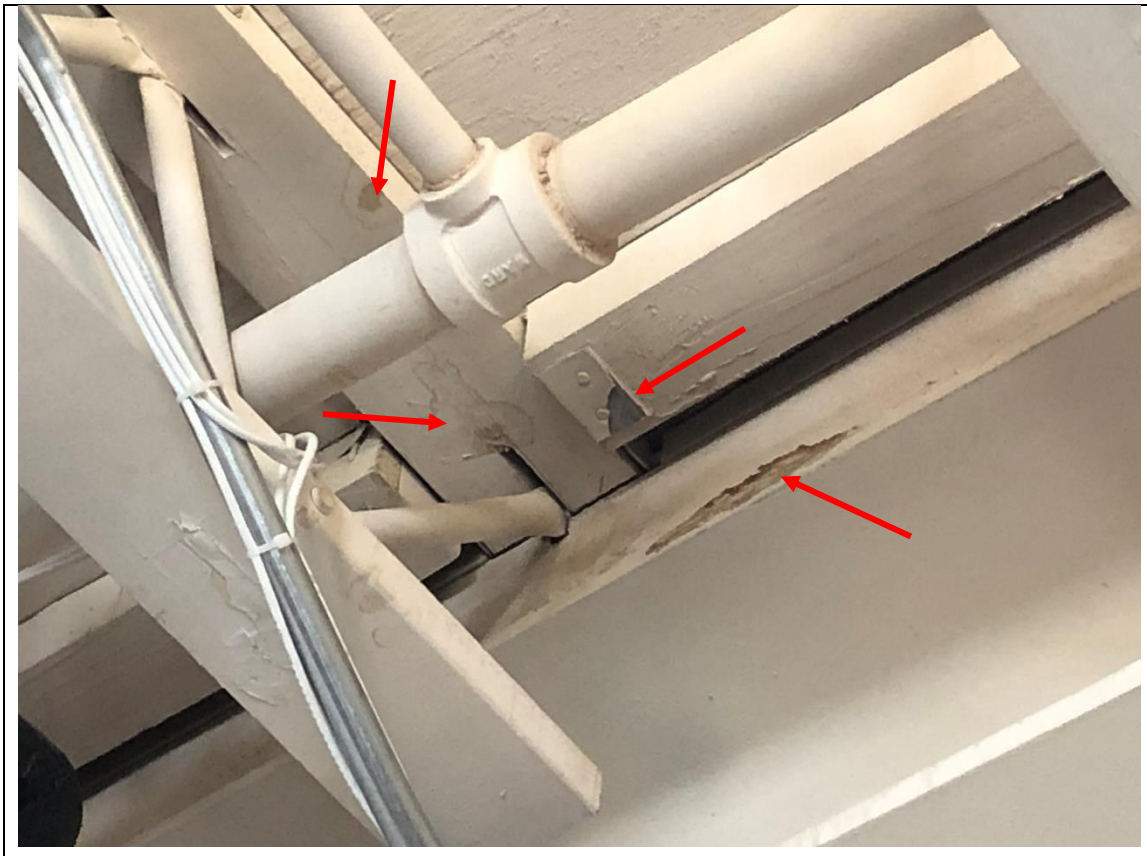

Photo 195:
Water stains and failing paint on the ceiling in the multipurpose room.

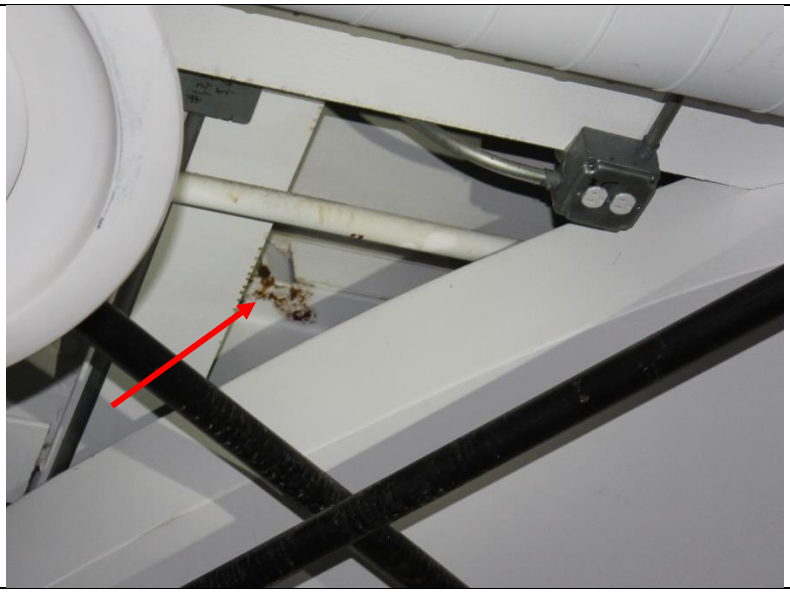

Photo 196:

Water stains above the recessed ceiling in the multipurpose room.

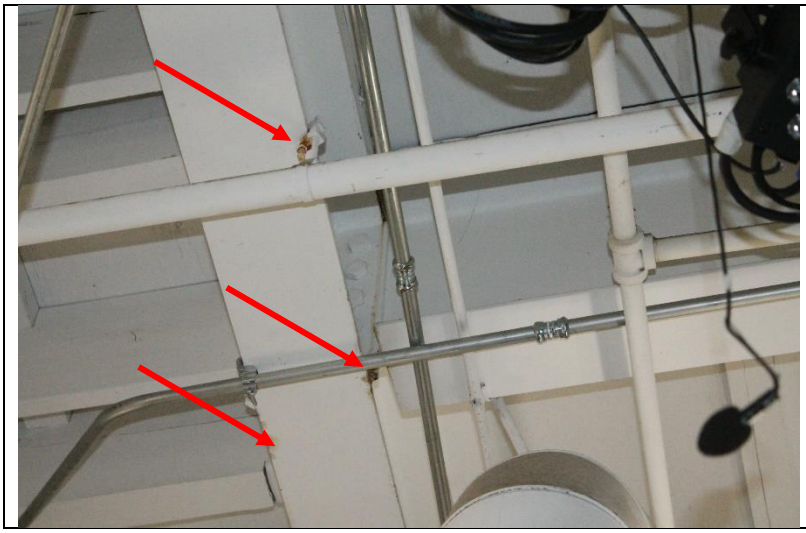

Photo 197:

Water stains on the ceiling in the multipurpose room.

Photo 198:

DTR making observations above the ceiling panels in a classroom in building C

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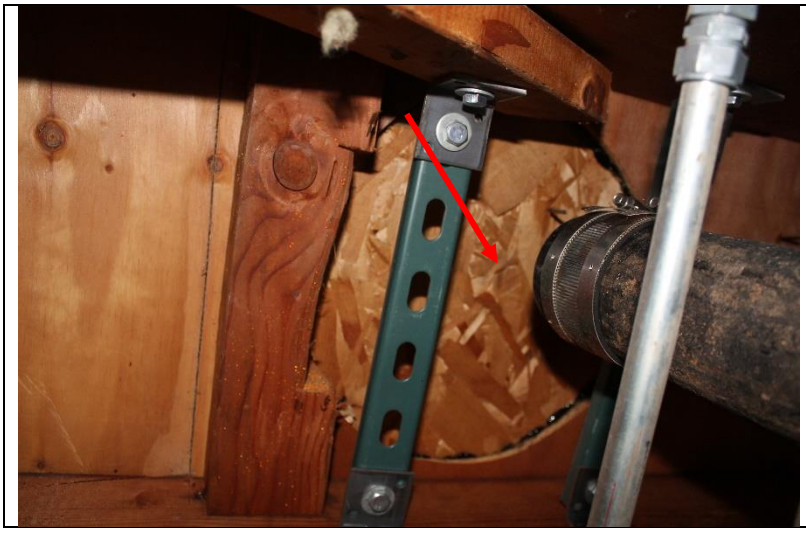

Photo 199:

A drain assembly had been relocated above the ceiling panels in a classroom in building C

Photo 200:

Water stains at a drain pipe from a previous leak. No active water was observed at this location.

Photo 201:

Water staining on top of a storage bin in a classroom in building C.

Photo 202:

Stained ceiling tiles in room 205 Teacher's Prep.

Photo 203:

Water damage and possible biological growth above the ceiling tiles in room 205 Teacher's Prep.

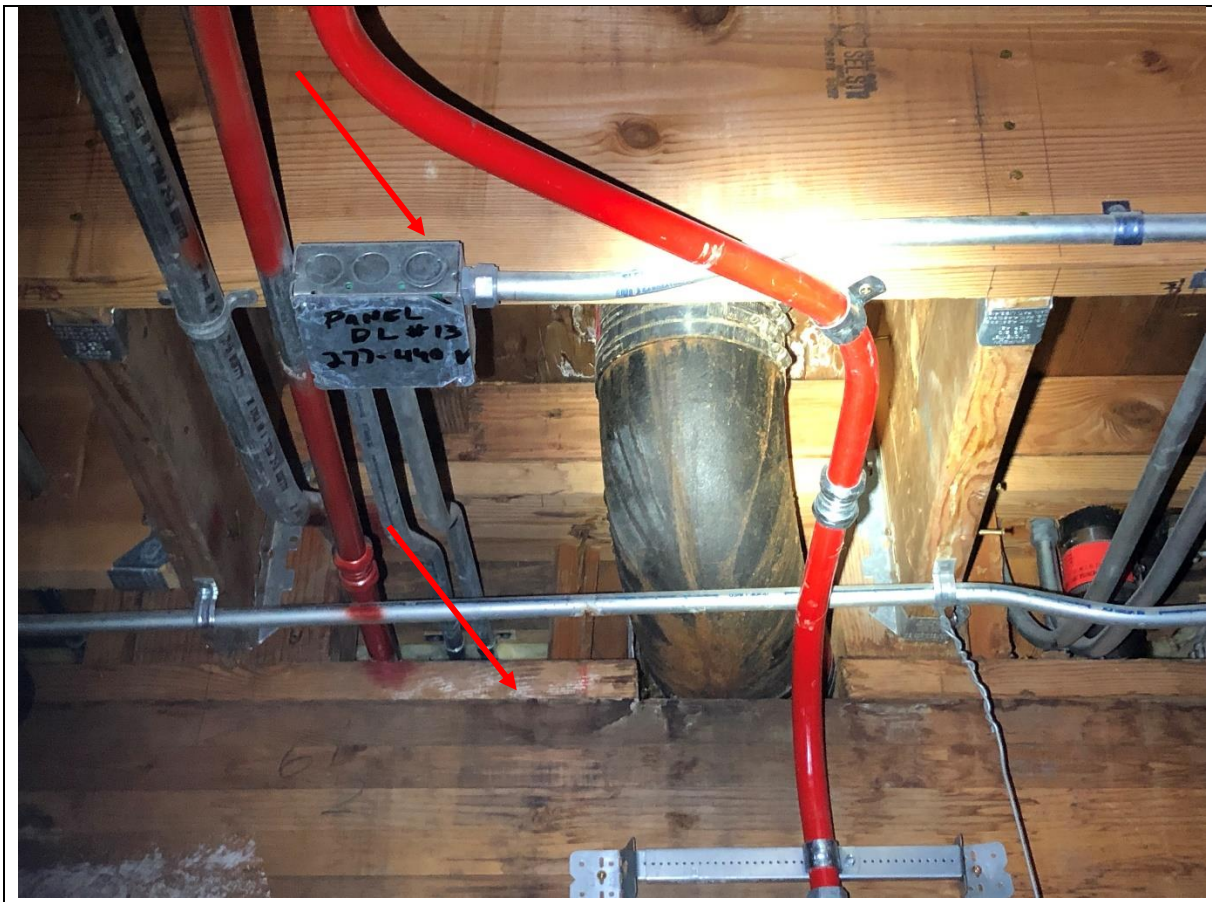

Photo 204:
Water damage and possible biological growth above the ceiling tiles in room 205 Teacher's Prep.

Photo 205:
Water damage and staining above the ceiling tiles in room 205 Teacher's Prep.

Photo 206:

A crack in the floor of the janitorial room above room 205 Teacher's Prep.

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Photo 207:

Water damage to the interior paint at Room 403 Teachers' Prep.

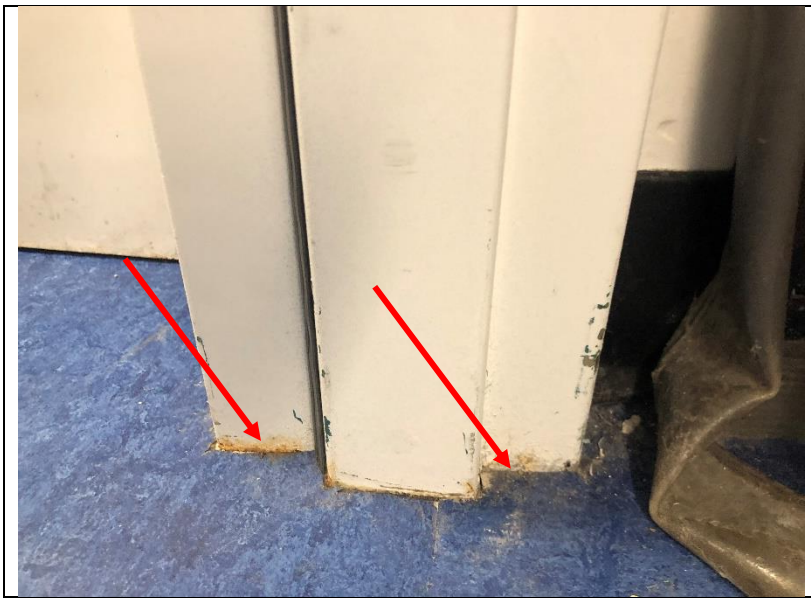

Photo 208:

Corrosion at the bottom of the door jamb at Room 403 Teachers' Prep.

Photo 209:

Corrosion at the bottom of the door jamb at Room 403 Teachers' Prep.

Photo 210:

Interior finishes had been removed at two classrooms in building D prior to the DTR site assessment, in an effort to address a leak at this location.

Photo 211:

Interior finishes had been removed at two classrooms in building D prior to the DTR site assessment, in an effort to address a leak at this location.

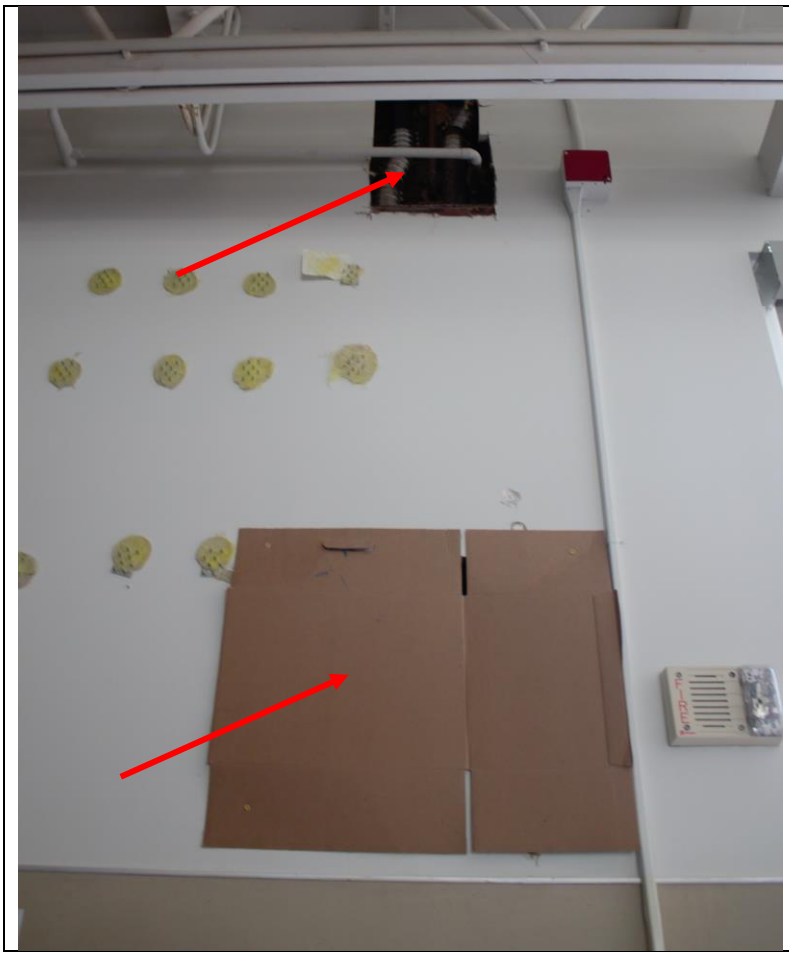

Photo 212:

Interior finishes had been removed at two classrooms in building D prior to the DTR site assessment, in an effort to address a leak at this location.

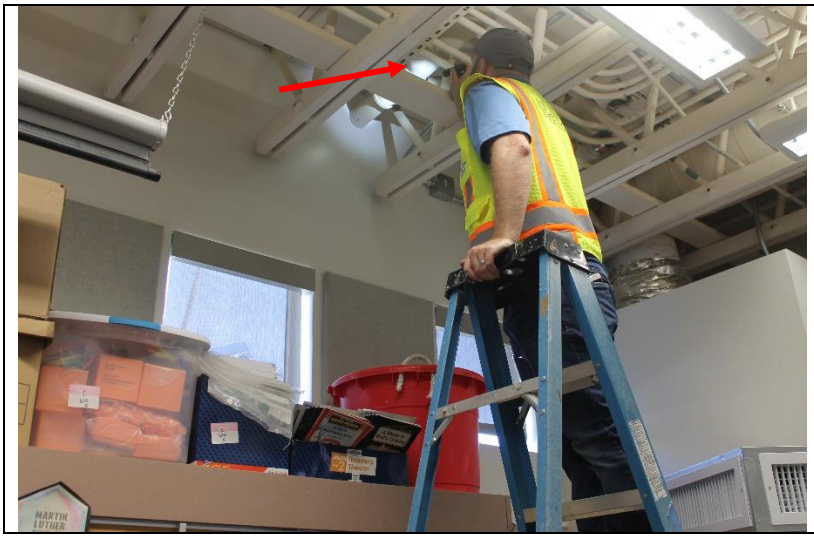

Photo 213:

DTR making observations of drain assemblies during a flood test.

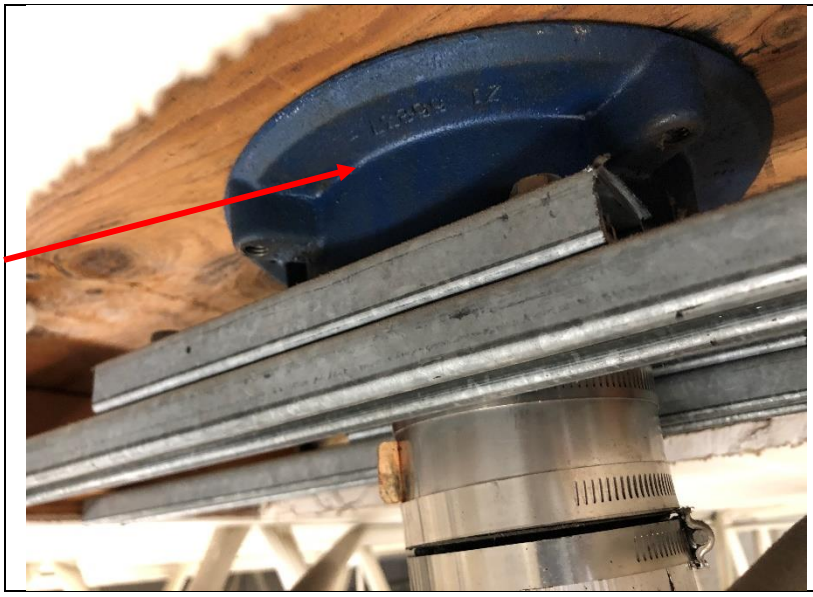

Photo 214:

Drain bowls were compressed to the underside of the deck with uni-strut and wood blocking.

No anchor bolts were holding the drain bowl to the deck.

This is a nonstandard mounting system for drains

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Photo 215:

Drain bowls were compressed to the underside of the deck with uni-strut and wood blocking.

No anchor bolts were holding the drain bowl to the deck.

This is a nonstandard mounting system for drains

Photo 216:

Acoustical panels on the ceiling of the pyramid roofed classroom in building D.

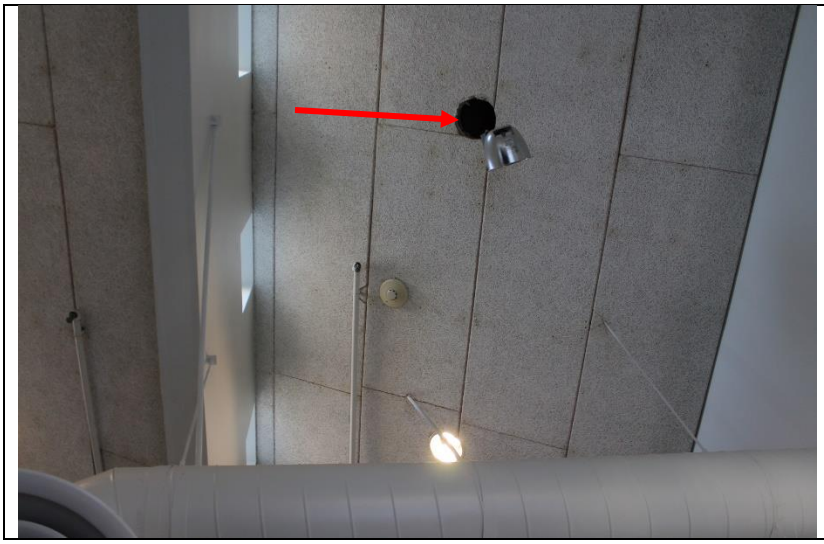

Photo 217:

A loose light fixture in the acoustical panels on the ceiling of the classrooms in building D.

Photo 218:

Acoustical panels on the ceiling of the classrooms in building D.

Photo 219:
Water staining at the acoustical panels on the ceiling of the classrooms in building D.

Photo 220:

The campus is extensively hardscaped.

Photo 221:

The campus is extensively hardscaped.

Hardscape has shifted in many locations.

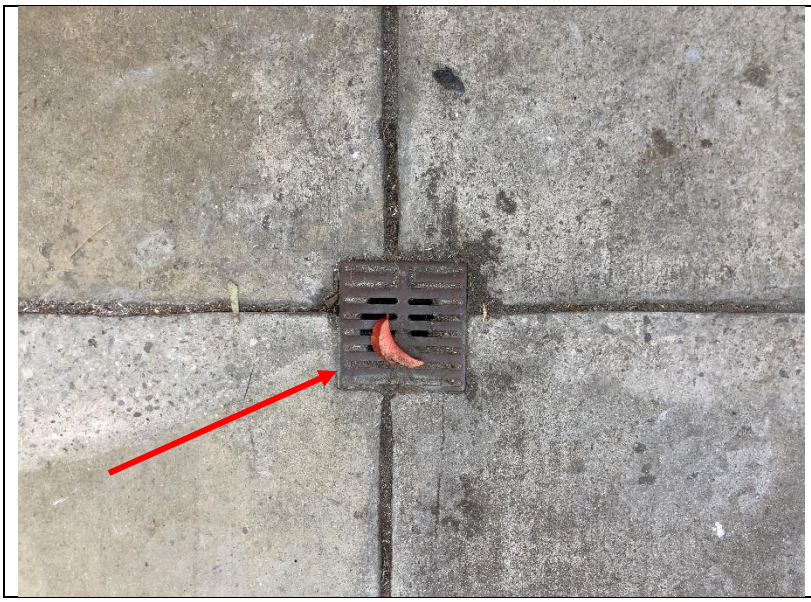

Photo 222:

Surface drains in the hardscape vary in size.

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Photo 223:

Surface drains in the hardscape vary in size.

Photo 224:

A surface drain at a landscaped area blocked by landscaping materials.

Photo 225:

Drains in the hardscape were often not at the lowest points.

Photo 226:

Drains in the hardscape were often not at the lowest points.

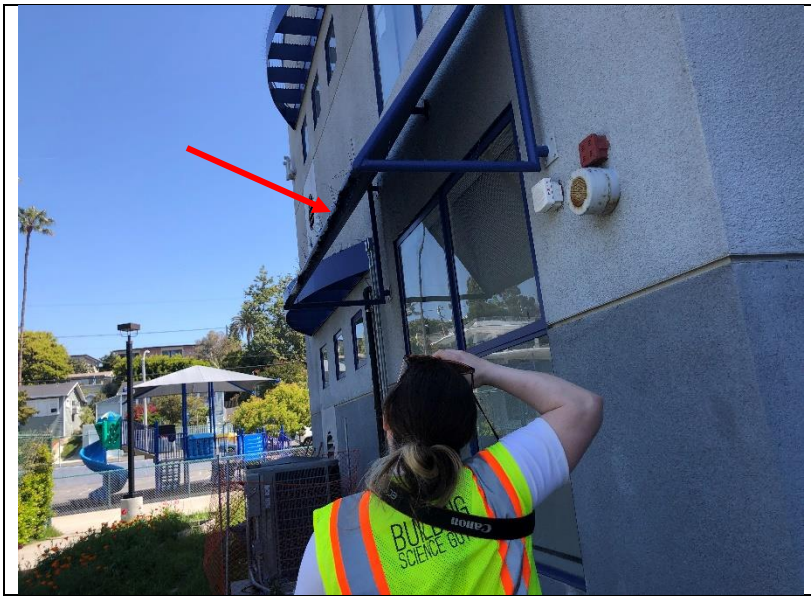	**Photo 227:** Corrosion at metal awnings was observed at several locations.

	**Photo 228:** Corrosion at metal awnings was observed at several locations.

Photo 229:

Cracked and broken cement plaster texture coat was observed at numerous curb locations

Photo 230:

Cracked and broken cement plaster texture coat was observed at numerous curb locations.

Photo 231:

Cracked and broken cement plaster texture coat was observed at numerous curb locations

Photo 232:

Cracked and broken cement plaster texture coat was observed at numerous curb locations

Photo 233:

An overview of the containment in building B room 415.

Photo 234:

A view of inside the containment area in room 415 before the wall was opened.

Biological growth was found when the whiteboard was removed from the wall.

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Photo 235:

Biological growth was observed at a junction box when the whiteboard was removed from the wall in room 415.

Photo 236:

Interior finishes and shear wall OSB were removed in layers from the interior side of the wall in room 415 to allow for observations of the wall framing.

Photo 237:

The south wall of room 415 after being opened for investigation.

Photo 238:

The south wall of room 415 above the window, after being opened for investigation.

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Photo 239:

The south wall of room 415 after the investigation removed additional interior finishes to the west of the intial opening.

Photo 240:

Biological growth was observed at different layers of the wall assembly.

Photo 241:

A moisture reading was taken at the base of the interior OSB.

The moisture meter maxed out at a Moisture reading of 40.0 percent.

Photo 242:

A moisture reading was taken from the sill plate at the base of the wall.

Moisture reading is high (34.6 percent).

Photo 243:

A moisture reading was taken at a section of blocking midway up the wall.

The wood moisture reading is high, (18.5 percent).

Photo 244:

Wood rot and decay at blocking elements inside the structure of the south wall of room 415.

Photo 245: an overview of the south wall in room 415 with interior finishes, OSB, and insulation removed. An opening in the exterior sheathing was observed (red arrow).

Photo 246:

A closer view of the opening in the exterior wood sheathing (red arrow).

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Photo 247:

Wood rot at the exterior sheathing in room 415. The interior (back) side of the building paper was visible and was wet to the touch.

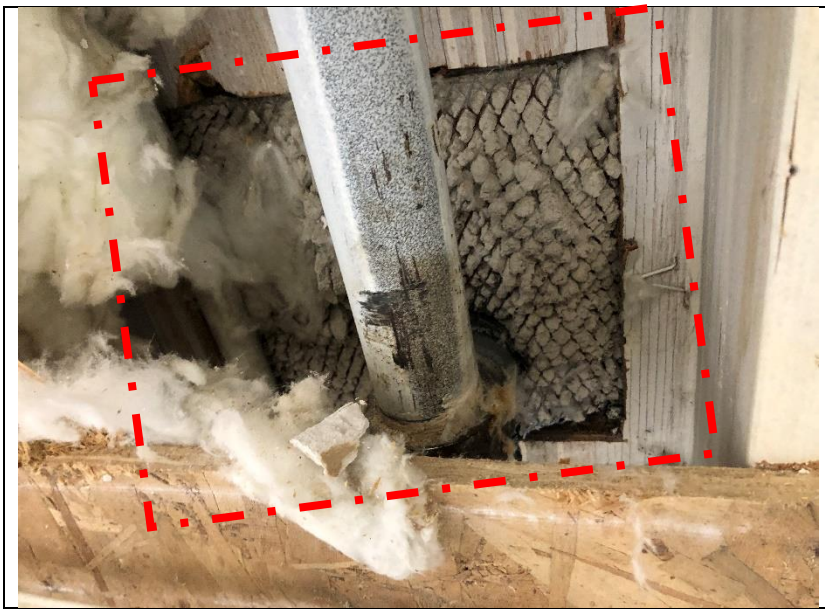

Photo 248:

The exterior sheathing was cut and lath and plaster were applied to the exterior of the building without a backing paper or a substrate. The lath exposed at this location in room 415 was corroded.

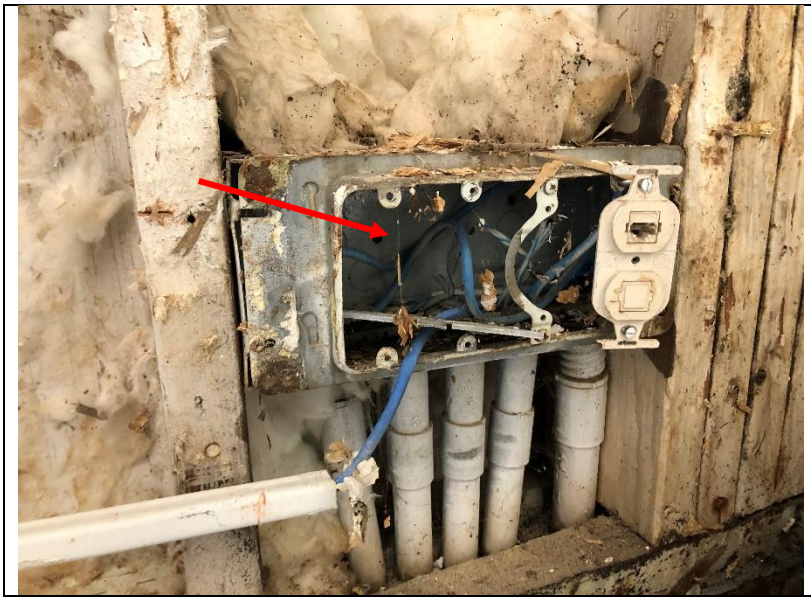

Photo 249:

Corrosion and water damage were observed at several electrical junction boxes and along electrical conduits in room 415.

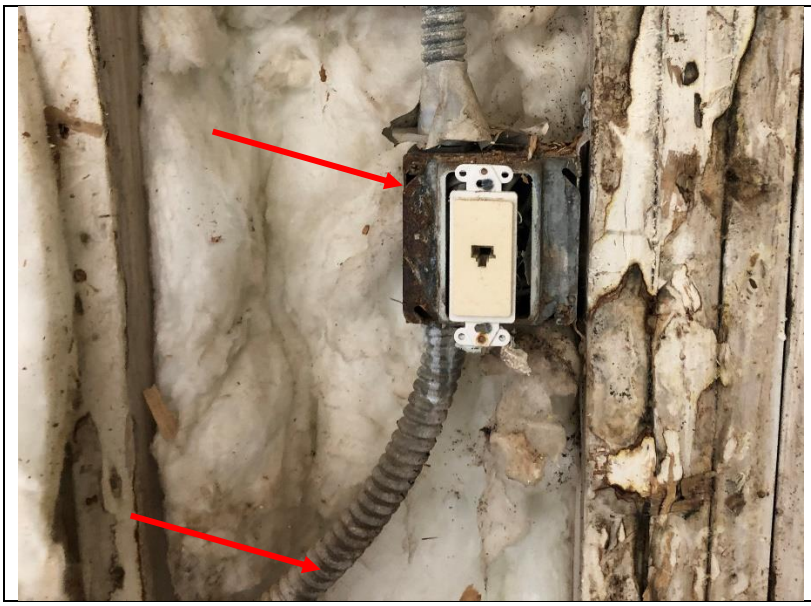

Photo 250:

Corrosion and water damage were observed at several junction boxes and electrical conduits.

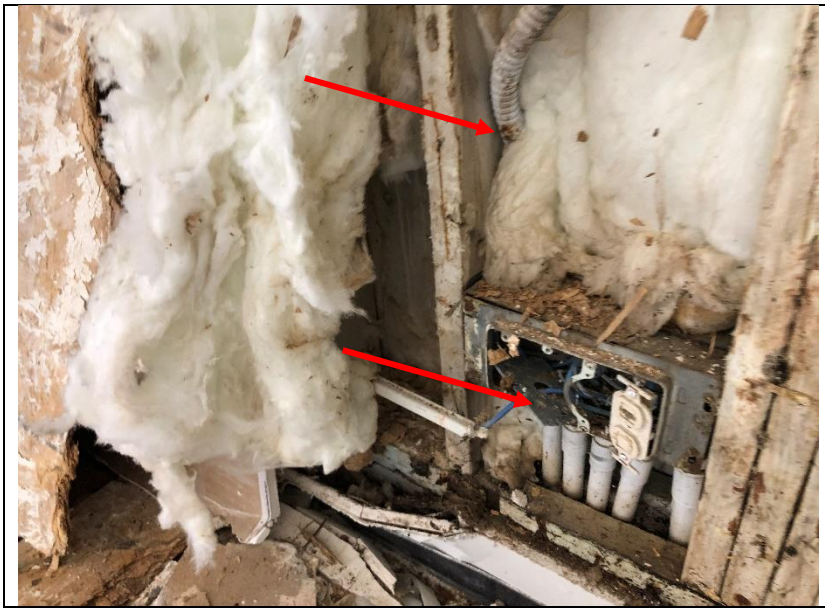

Photo 251:

Corrosion and water damage were observed at several electrical junction boxes and electrical conduits in the south (exterior) wall of room 415.

Photo 252:

Corrosion and water damage were observed at several electrical junction boxes and along electrical conduits.

Moisture reading at an adjacent wood stud was high (20.0 percent).

Photo 253:

Martin & Associates making observations of wood rot and deterioration to the south wall of room 415.

Photo 254:

Delineation of damaged (left of dashed line) and undamaged areas on the south wall of room 415.

Photo 255:

Another view showing the change between damaged and undamaged areas on the south wall of room 415.

Photo 256:

Close-up view of the transition between damaged (left) and undamaged areas on the south wall of room 415.

Photo 257:

An overview of containment from the exterior of building B room 480.

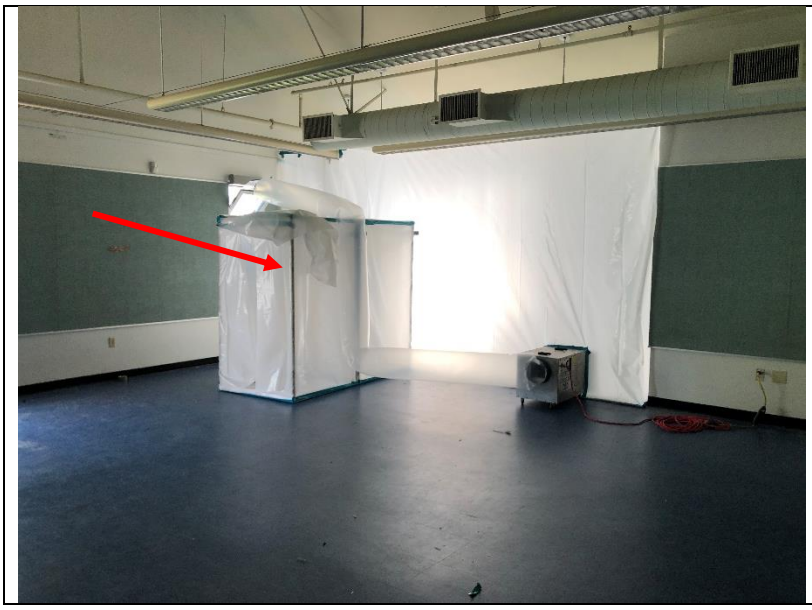

Photo 258:

An overview of containment at the interior of room 480.

dtr job no. 10.22013.80

Photo 259:

Removal of the interior finishes and shear wall plywood from the interior of room 480.

Photo 260:

Removal of the interior finishes and shear wall plywood from the interior of room 480.

Photo 261:

Biological growth was visible in a stud bay in room 480 after the insulation was removed.

Photo 262:

Exterior light is visible at the un-sealed base of the room 480 hollow metal door frame (viewed from the interior).

Photo 263:

Exterior light is visible in this closer view of the base of the room 480 hollow metal door frame (viewed from the interior).

Photo 264:

The contractor removed exterior cladding from the wall outside of classroom 480.

Photo 265:

Two layers of 60-minute building paper were removed from behind the cement plaster assembly at the exterior of building B room 480.

Photo 266:

Insect damage was observed on the exterior side of the exterior plywood sheathing after the building paper had been removed.

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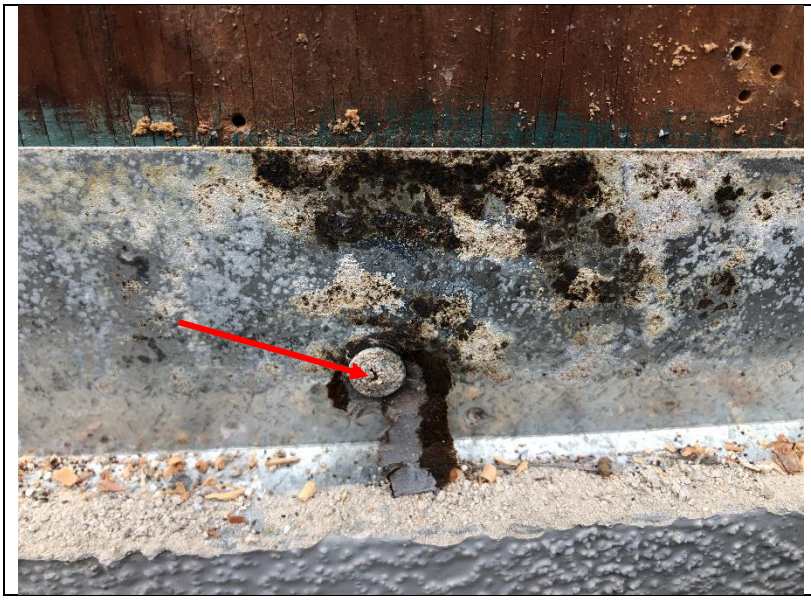

Photo 267:

Fasteners at the top flange of the z-flashing outside of room 480 penetrated the building paper.

Photo 268:

The contractor cut vertically through the z-flashing to allow for it to be pulled down and removed from the building.

Photo 269:

The mounting flange of the expansion joint assembly was attached to the building B room 480 exterior wall sheathing with fasteners.

Openings that would allow water penetration were observed at some of the fastener penetrations.

Photo 270:

The sealant along the expansion joint mounting flange showed signs of reversion; (returning to the original tacky state) due to the prolonged presence of water.

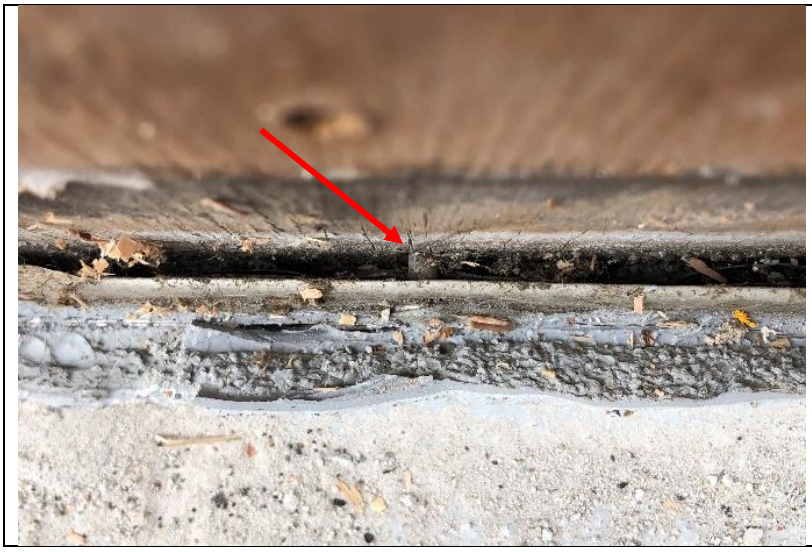

Photo 271:

The top edge of the mounting flange was bare and not sealed to the room 408 exterior sheathing. A potential water entry point.

In some areas, the flange was not flush to the sheathing but gapped.

Some of the mounting flange fasteners were not fully embedded into the sheathing.

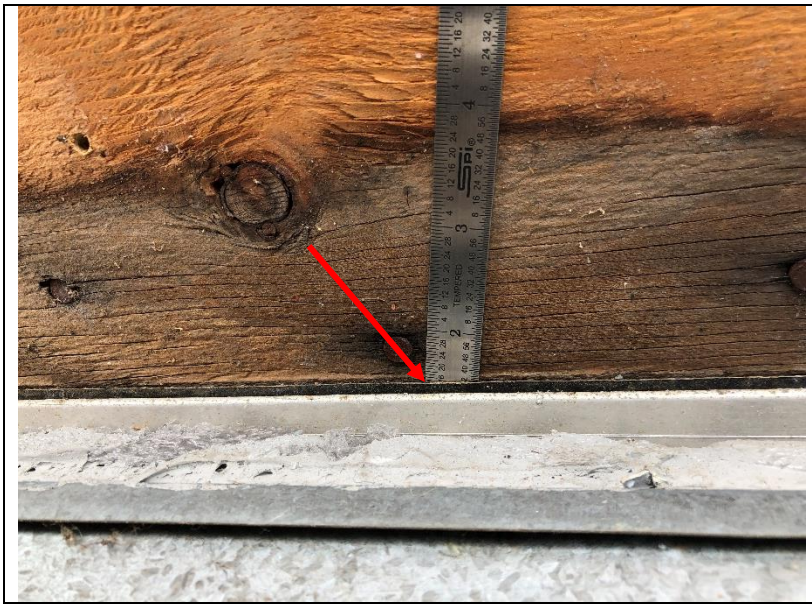

Photo 272:

A metal ruler illustrating that the upper edge of the mounting flange was bare and unsealed.

A water stain was observed extending two inches above the top edge of the mounting flange.

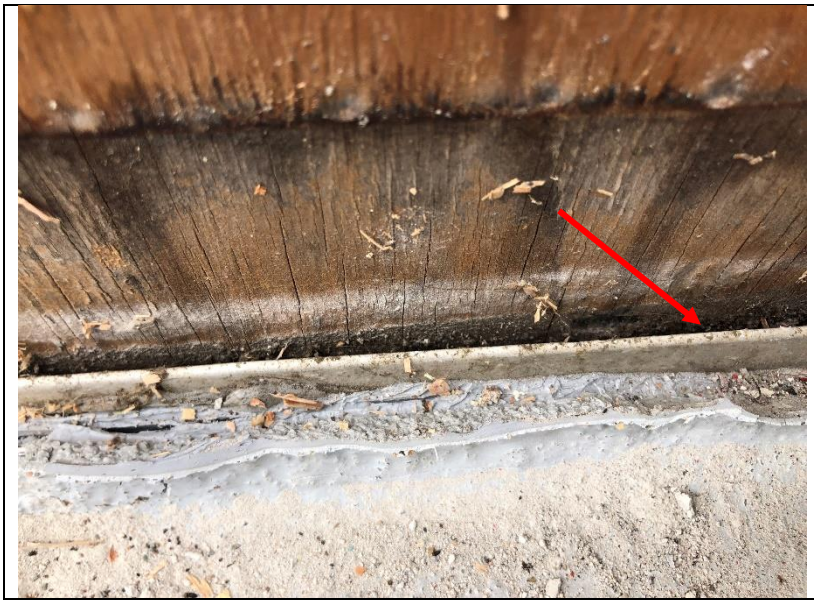

Photo 273:

The edge of the mounting flange outside of room 408 was bare and unsealed.

In some areas, the flange was not flush to the sheathing but gapped.

Photo 274:

The exterior wood sheathing at the base of the room 408 hollow-metal door jamb was damaged and deteriorated.

Photo 275:

An overview of containment in building b room 400.

Photo 276:

Insect damage at the interior shear wall plywood on the south wall of room 400.

Photo 277:

The interior shear wall plywood, gypsum board, and insulation were removed from the south wall of room 400.

Photo 278:

Delamination and water staining were observed on the exterior sheathing plywood on the south wall of room 400.

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Photo 279:

The interior shear wall plywood, gypsum board, and insulation were removed from the west wall of room 400.

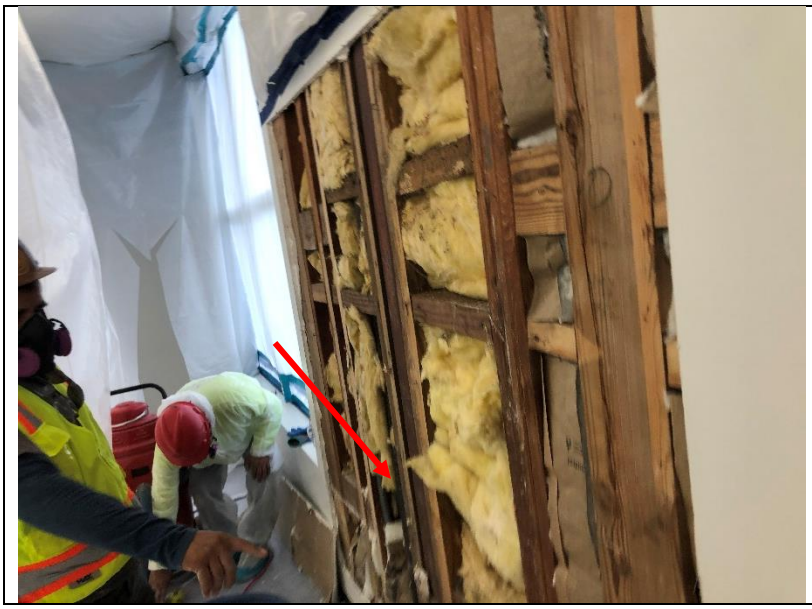

Photo 280:

View looking south at the interior shear wall plywood, gypsum board, and insulation removed from the west wall of room 400.

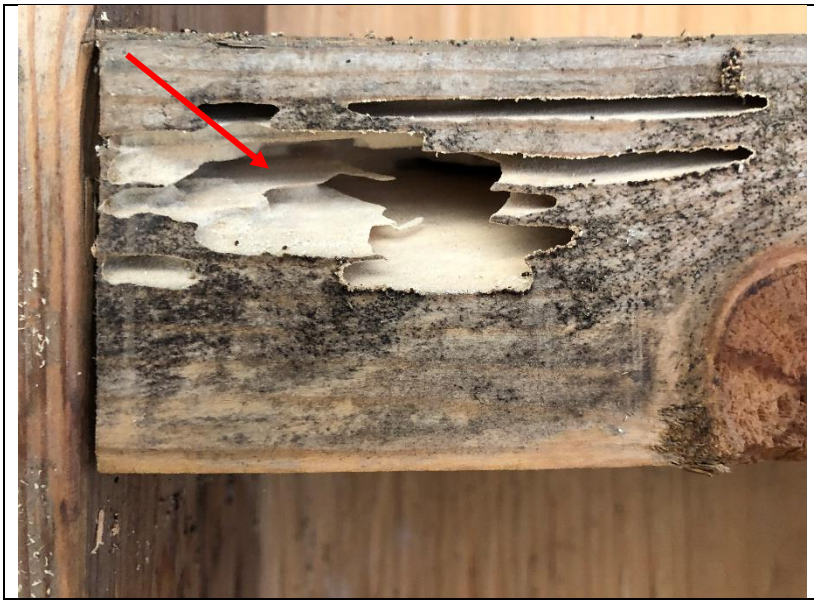

Photo 281:

Insect damage at blocking inside the west wall of room 400.

Photo 282:

Insect damage at blocking inside the west wall of room 400.

Photo 283:

Some water staining and corrosion were observed inside the west wall of room 400.

Photo 284:

Some corrosion was observed on the drain pipes inside the west wall of room 400.

The pipes were not wrapped in insulation.

Photo 285:

Some corrosion was observed on the drain pipes inside the west wall of room 400.

The pipes were not wrapped in insulation.

Photo 286:

It is unclear if the new HVAC penetrations on the west wall of room 400 are properly flashed at the exterior sheathing.

Photo 287:

Evidence of abrasion and previous mold remediation were visible inside the west wall of room 400.

Photo 288:

Evidence of abrasion and previous mold remediation were visible inside the west wall of room 400.

Photo 289:

Evidence of abrasion and previous mold remediation were visible inside the west wall of building B room 400.

Photo 290:

Inside the containment area at the alcove to building D janitorial room 513.

dtr job no. 10.22013.80

Photo 291:

Interior finishes were removed from the wing wall outside the entry of room 513.

Photo 292:

Interior finishes and insulation were removed above the door to room 513.

Photo 293:

Water damage was present on the wing wall but also wrapped the corner onto the entry wall of room 513.

Photo 294:

Two different insulations were observed in the wing wall outside the entry of room 513.

The lower section of this wall had been previously abated for mold and the white insulation was installed at that time.

Photo 295:

Biological growth was observed on the back of the interior gypsum board when it was removed from the wing wall outside the entry of room 513.

Photo 296:

Biological growth was observed on the back of the gypsum board when it was removed from the wing wall outside the entry of room 513.

Photo 297:

Moisture readings were taken on the gypsum board inside the wall cavity outside room 513.

Moisture readings were taken using the moisture meter's built-in wood scale, and yielded an 11.2 percent wood moisture content reading.

Photo 298:

The crawl space entry access hatch to the space under the exterior stairs from inside building D janitorial room 513.

dtr job no. 10.22013.80

Photo 299:
Daylight was visible through corroded areas on the risers of the stairs.

Photo 300:

Metal surfaces on the underside of the stairs were corroded.

Photo 301:

Containment was in place at building A in room 210B.

Photo 302:

Observations were made above the ceiling tiles in room 210B.

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Photo 303:

Staining is visible at several locations adjacent to the exterior wall overhead in room 210B.

Photo 304:

Staining visible at several locations adjacent to the exterior wall.

Photo 305:
Staining visible at several locations adjacent to the exterior wall of room 210B which correlates to the location where the exterior pedestrian walkway joins the building.

Photo 306:

Staining was observed on the top of the ceiling panels.

dtr job no. 10.22013.80

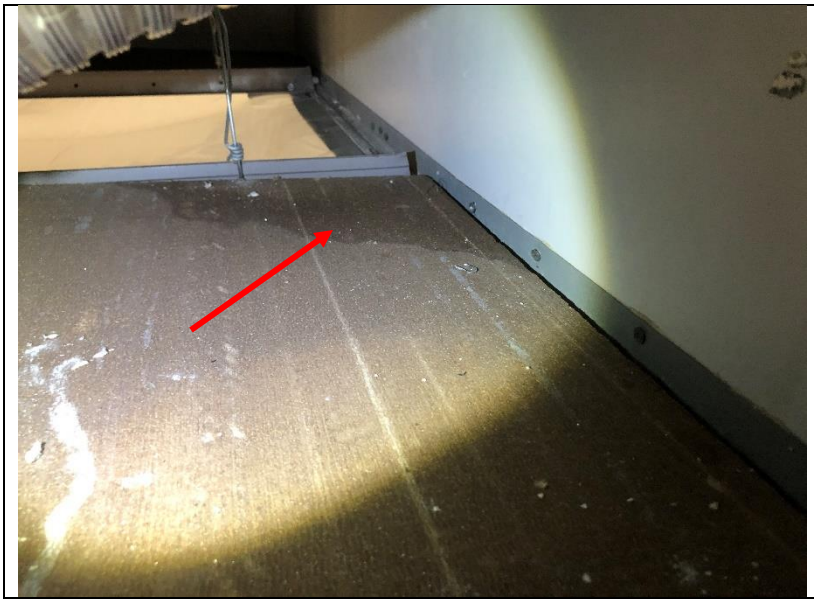

Photo 307:

Staining was observed on the top of the ceiling panels.

Photo 308:

Observations were made above the ceiling panels in room 602.

Photo 309:
A cracked drain pipe was observed above the ceiling tiles of room 602.

Photo 306:

The janitorial room above room 602.

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Photo 312:

A floor outlet in building C room 600 (adjacent to the entrance to room 602) was raised.

DTR noted corrosion around the flange of the outlet cover. When opened, corrosion in the junction box was present.

Photo 313:

A floor outlet in room 600 (adjacent to the entrance to room 602) was raised.

DTR noted corrosion around the flange of the outlet cover. When opened, corrosion was present in the junction box.

Photo 314:

An overview of the destructive testing (DT) location under the walkway between the building A administration and library spaces adjacent to an expansion joint.

Photo 315:

Staining at the ledger and joist under the walkway between the administration and library spaces adjacent to an expansion joint.

dtr job no. 10.22013.80

Photo 316:
Staining was observed at the ledger and joist under the walkway at bulding A between the administration and the library adjacent to an expansion joint.

Photo 317:

A crack and compression in a structural beam adjacent to an expansion joint, on the walkway.

Photo 318:

The expansion joint above the DT location at the walkway between the administration and library spaces at building A.

The metal cover was removed to allow for observations.

Photo courtesy of JAMA

Photo 319:

The compressed foam at the bottom of the expansion joint was loose and had fallen away at some locations.

Photo courtesy of JAMA

Photo 320:

The compressed foam at the bottom of the building A expansion joint was loose and had fallen away at some locations.

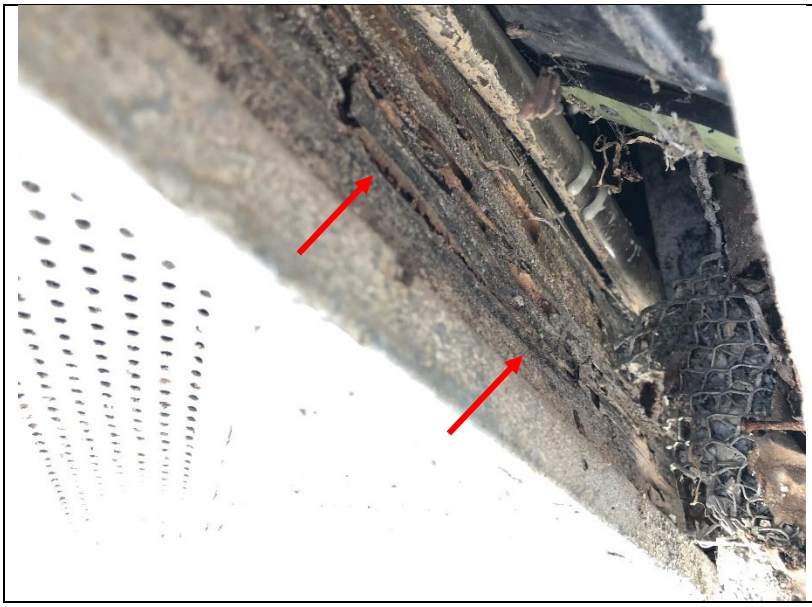

Photo 321:

Insect damage on wood surfaces at the bottom of the expansion joint after the compressed foam had been removed.

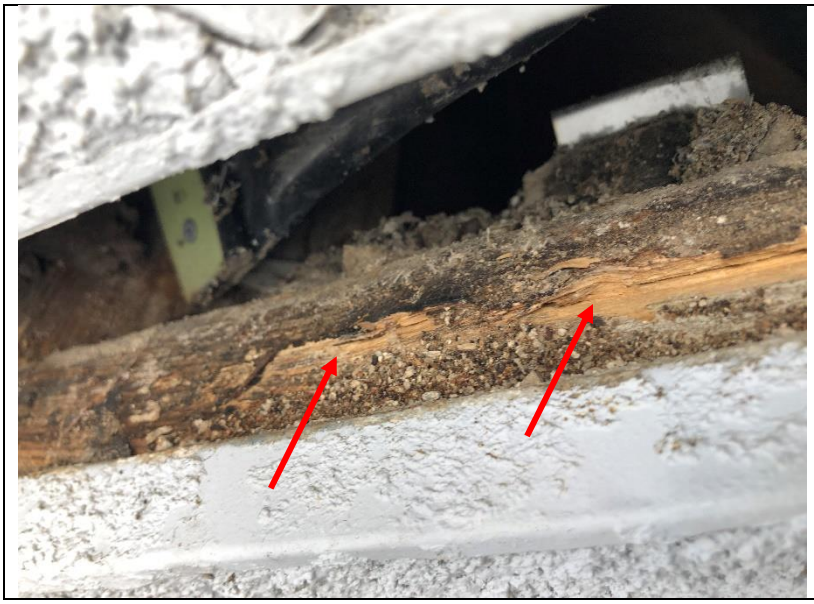

Photo 322:

Insect damage on wood surfaces at the bottom of the building A expansion joint after the compressed foam had been removed.

Photo 323:

The drainage assembly under the expansion joint was hanging loose and no longer attached to the bottom of the expansion joint assembly.

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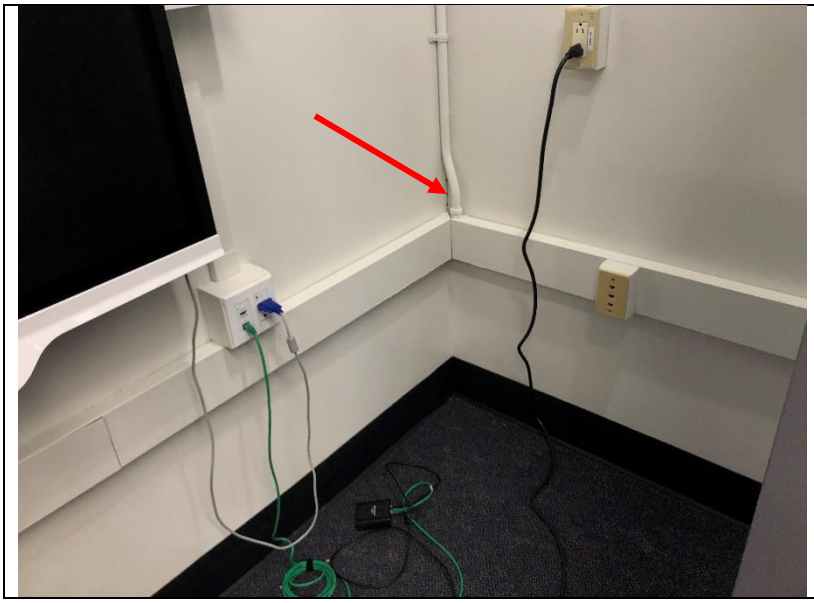

Photo 324:

The location of water damage at the interior corner of the library adjacent to the DT location under the buildng A walkway expansion joint.

Photo 325:

Close view of water damage at the interior corner of the library.

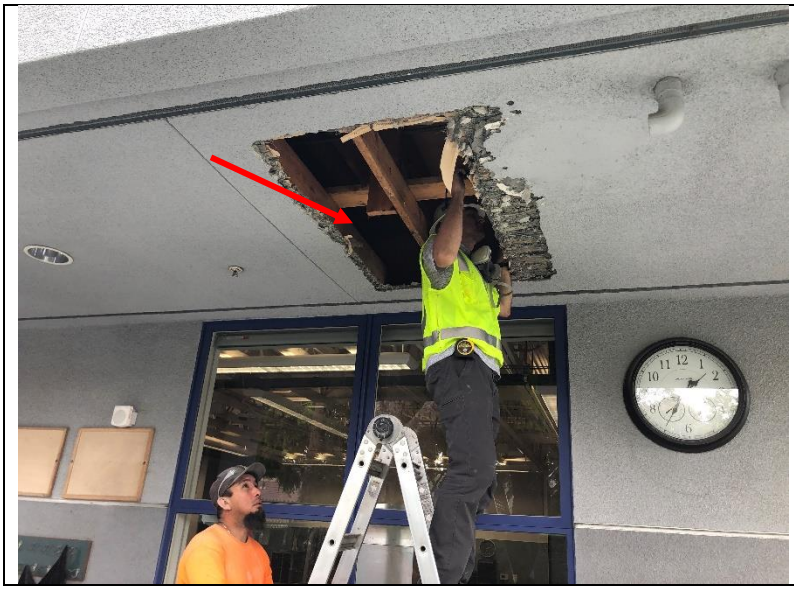

Photo 326:

An overview of a DT location outside building B room 420 where an approximately 4-foot by 8-foot opening was cut in the underside of the walkway.

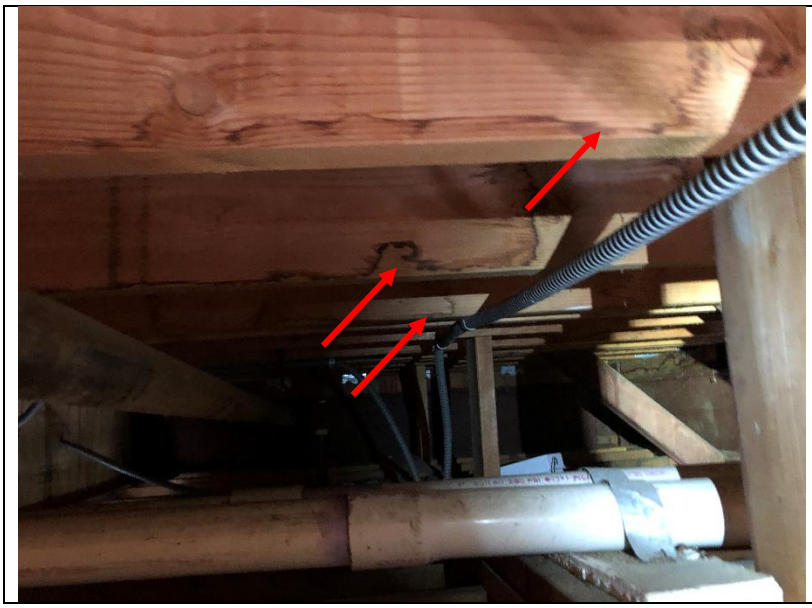

Photo 327:

DTR noted water stains on many of the joists. The joists attached to the wall just below the pedestrian traffic coating flashing at the weep screed assembly on the wall above.

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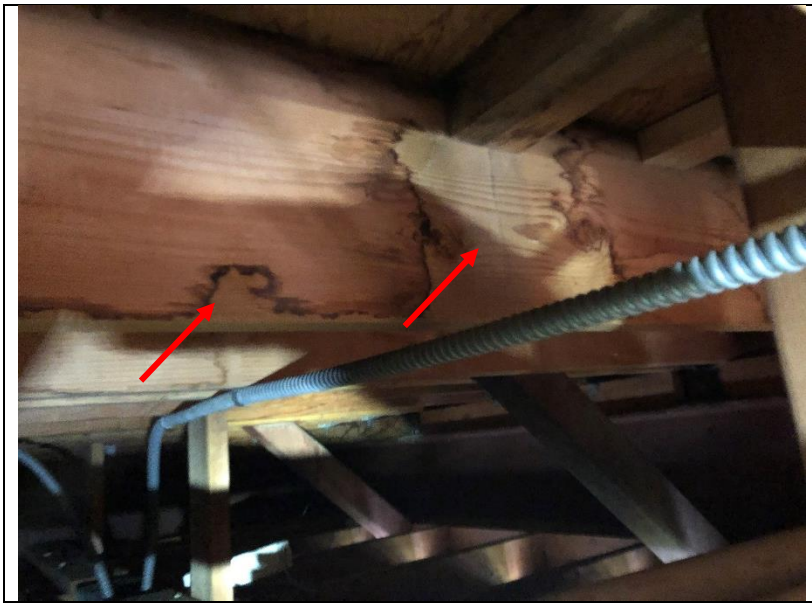

Photo 328:

DTR noted water stains on many of the joists and joist hangers against the building wall. The joists attached to the wall just below the pedestrian traffic coating flashing at the weep screed assembly on the wall above.

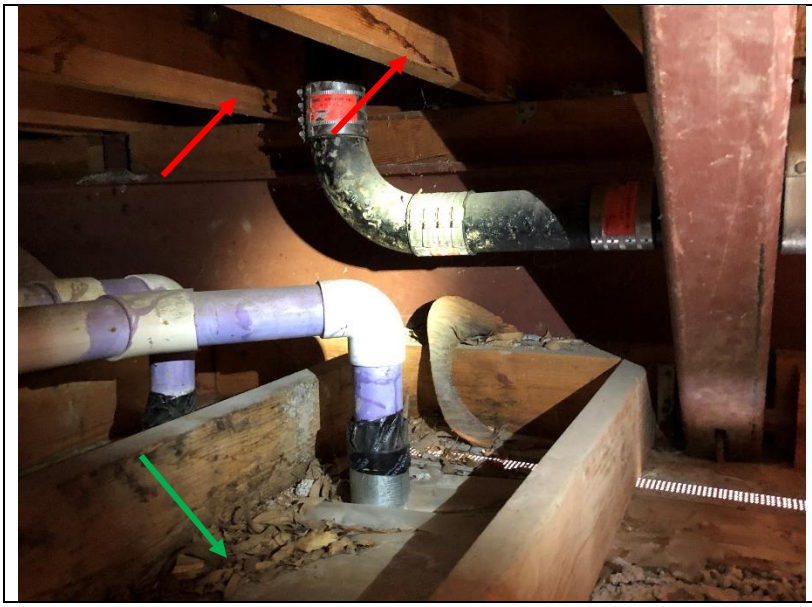

Photo 329:

DTR noted water stains on many of the joists and joist hangers against the building wall.

Leaves were also observed in the interstitial space. (Green arrow).

Photo 330:

Some corrosion was observed at structural anchor bolts.

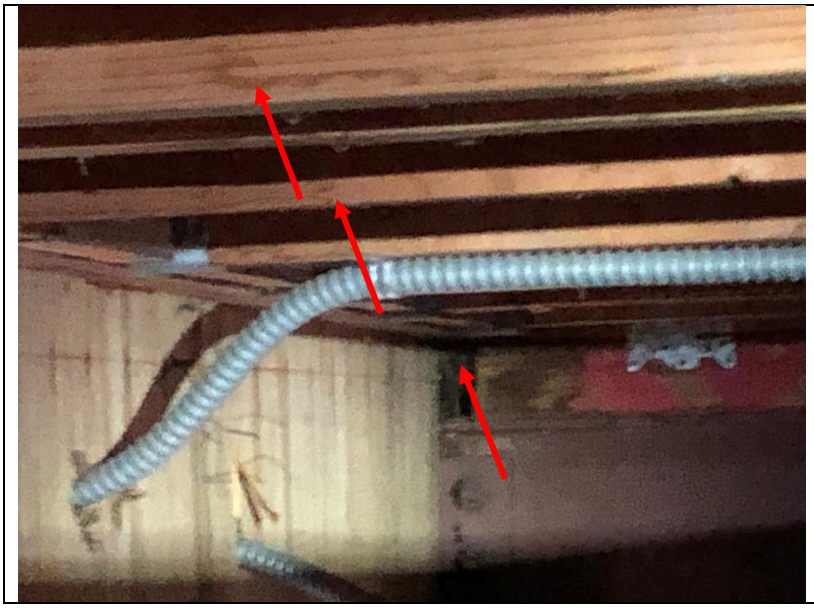

Photo 331:

DTR noted water stains on many of the joists and joist hangers against the building wall.

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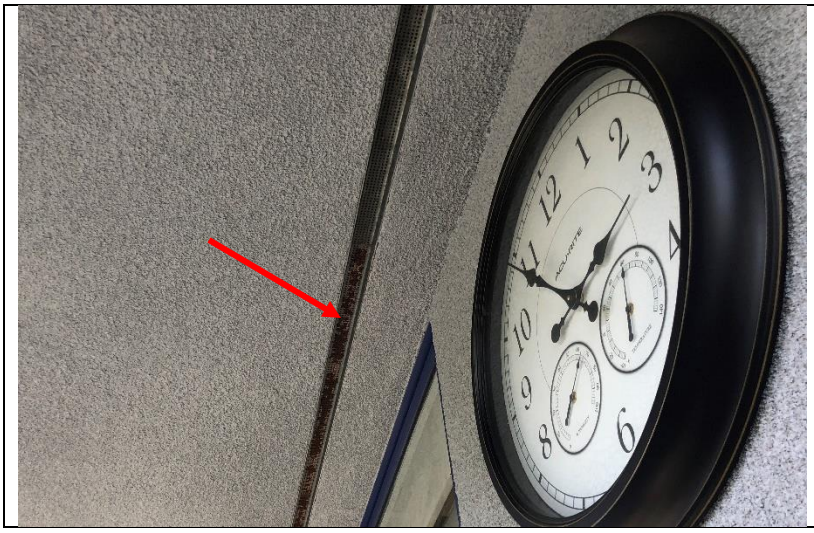

Photo 332:

Much of the soffit venting track that ran parallel to building B was corroded.

The corrosion is below the water stains observed at the joist hangers and the ledger against the building.

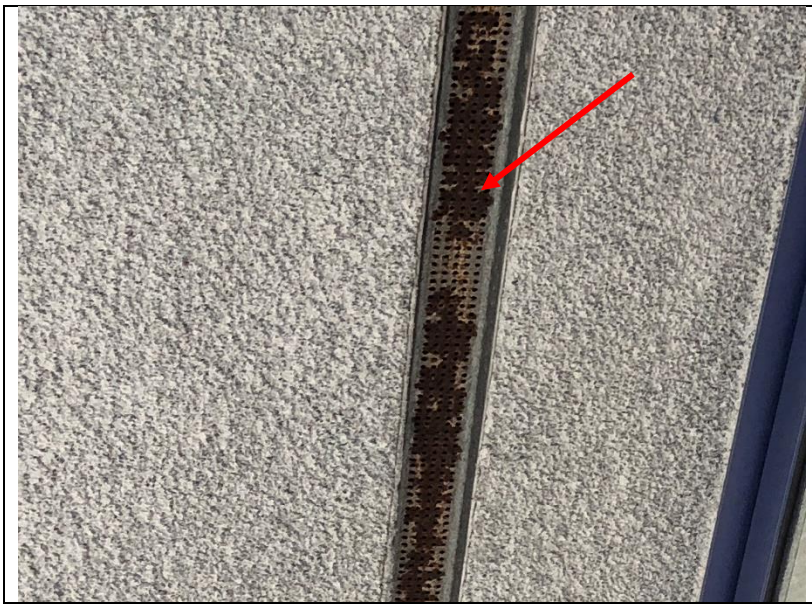

Photo 333:

Much of the soffit venting track that ran parallel to building B was corroded.

The location is below the water stains observed at the joist hangers and the ledger against the building.

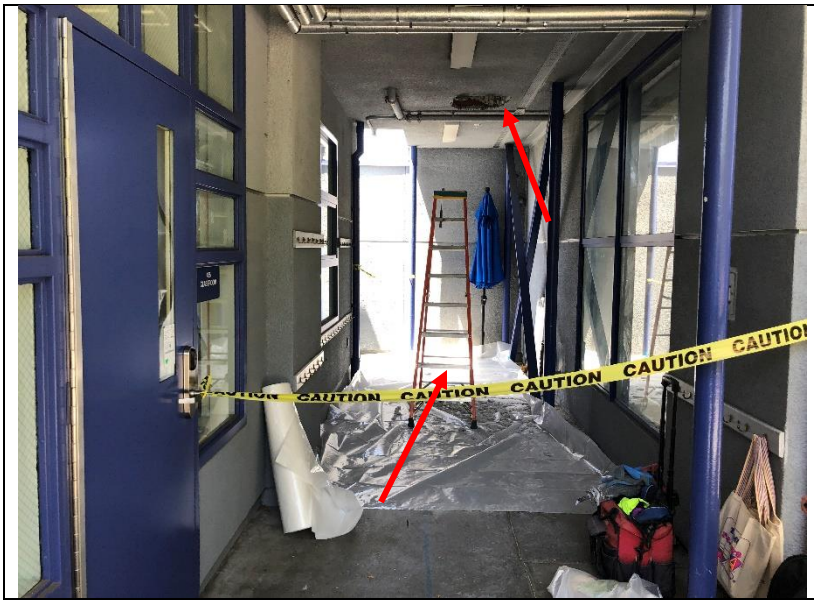

Photo 334:

An overview of the DT location at the underside of the elevated walkway outside building B room 415.

Photo 335:

An overview of the DT location at the underside of the elevated walkway outside room 415.

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Photo 336:

Staining was observed at the joists under the walkway outside room 415.

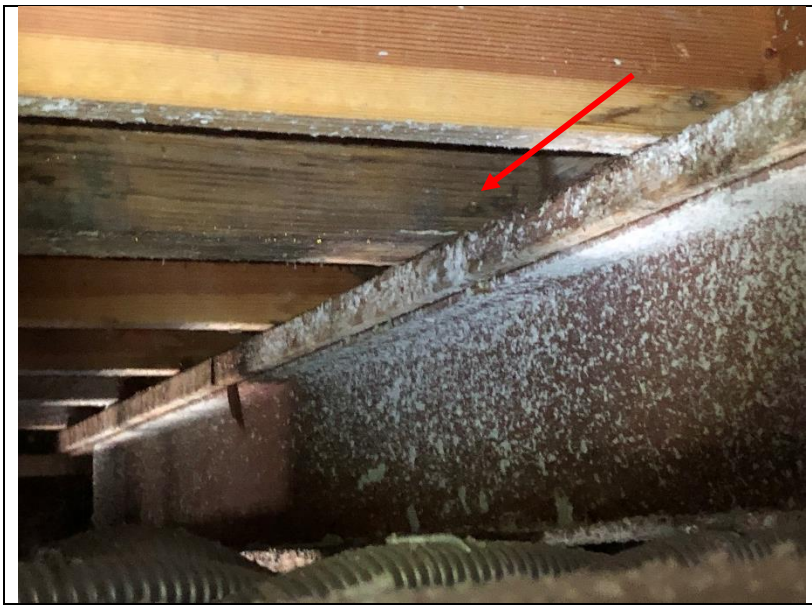

Photo 337:

Staining was observed at the joists under the walkway outside room 415.

Photo 338:

An overview of the DT location at the handrail curb on the south side of room 400.

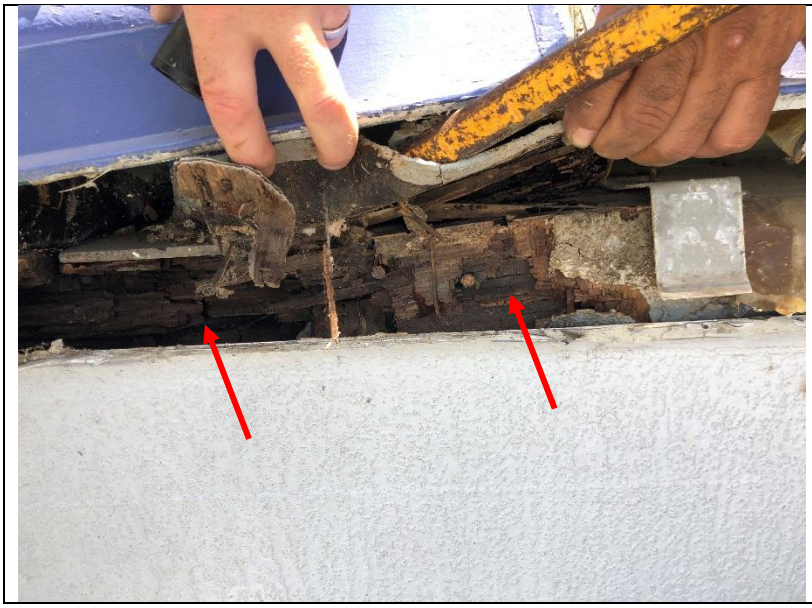

Photo 339:

Wood rot and deteriorated wood materials were observed under the coping cap at the handrail curbs.

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Photo 340:

A void was observed under the coping cap outside room 400 at one of the handrail anchor plates where the wood structure had deteriorated.

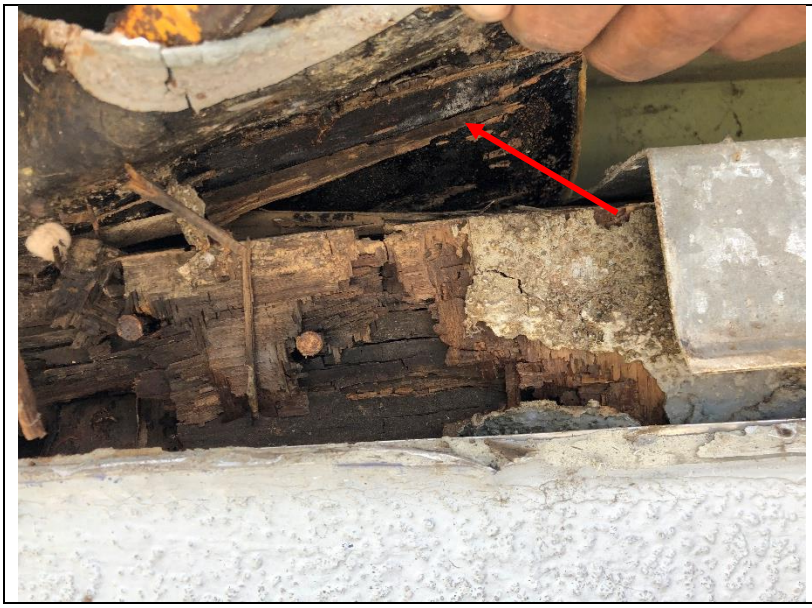

Photo 341:

The self-adhered sheet membrane was not adhered to the substrate and numerous open seams were observed in the installation of the product.

Photo 342:

An overview of a second DT location at the handrail curb on the west side of room 400.

Photo 343:

Wood rot and deteriorated wood materials were observed under the coping cap at the handrail curbs.

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Photo 344:

An overview of a third DT location at the handrail curb on the north side of room 400.

Photo 345:

Wood rot and deteriorated wood materials were observed under the coping cap at the handrail anchor plates on the curbs.

Photo 346:

Wood rot and deteriorated wood materials at the handrail curb under the coping cap outside room 400.

Photo 347:

Deteriorated OSB material that fell from under the coping cap at the handrail curbs during observations.

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Photo 348:

An overview of a fourth DT location at the handrail curb on the east side of room 400.

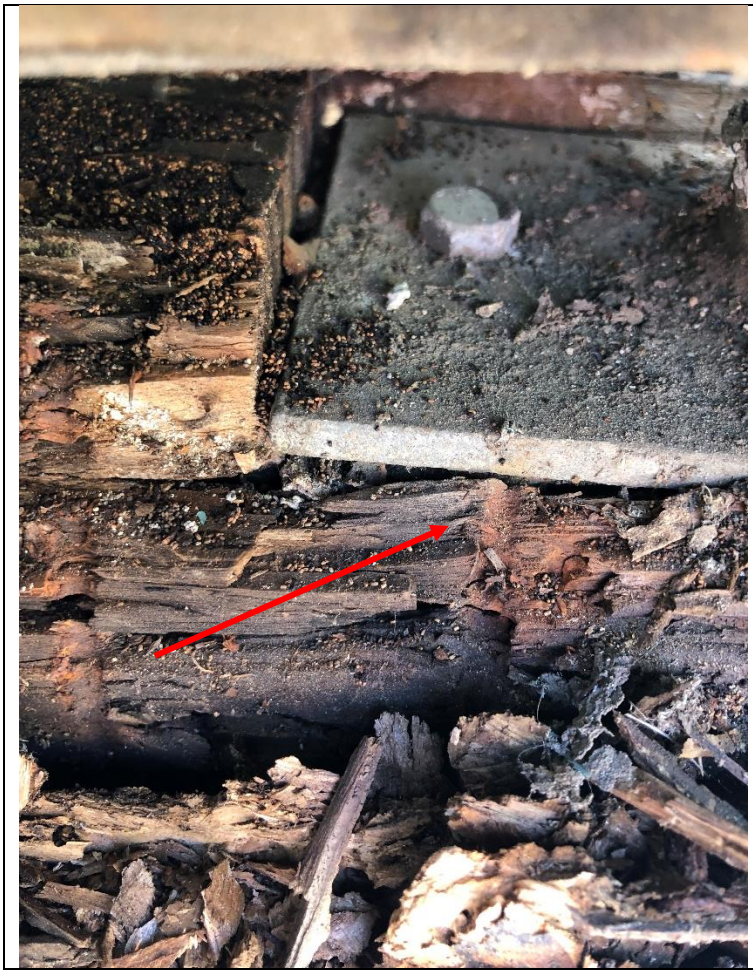

Photo 349:

Wood rot and deteriorated wood materials were observed under the coping cap at the handrail anchor plates on the curbs.

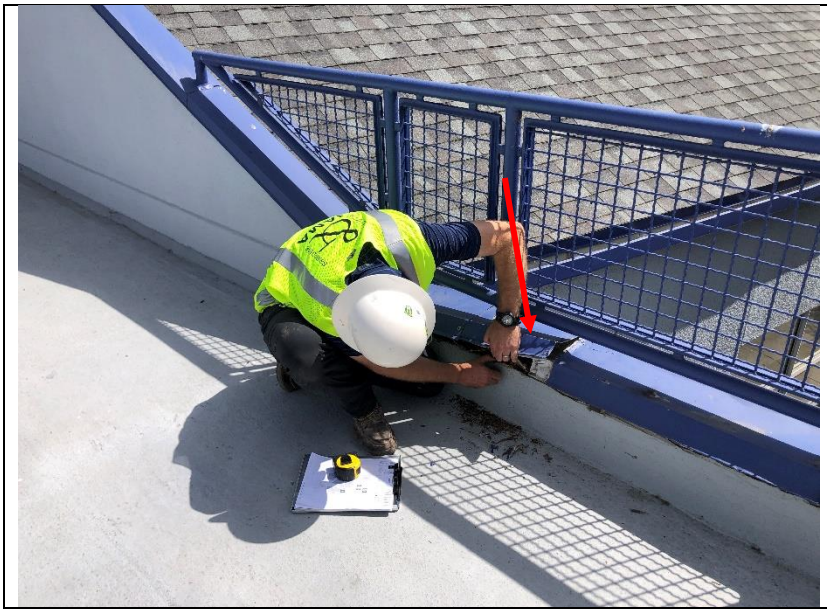

Photo 350:

An overview of a DT location at the handrail curb on over the building A communications classroom 205.

Photo 351:

Wood rot and deteriorated wood materials were observed under the coping cap at the handrail curb.

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Photo 352:

An overview of a DT location at the handrail curb on the north side of building D classroom 500.

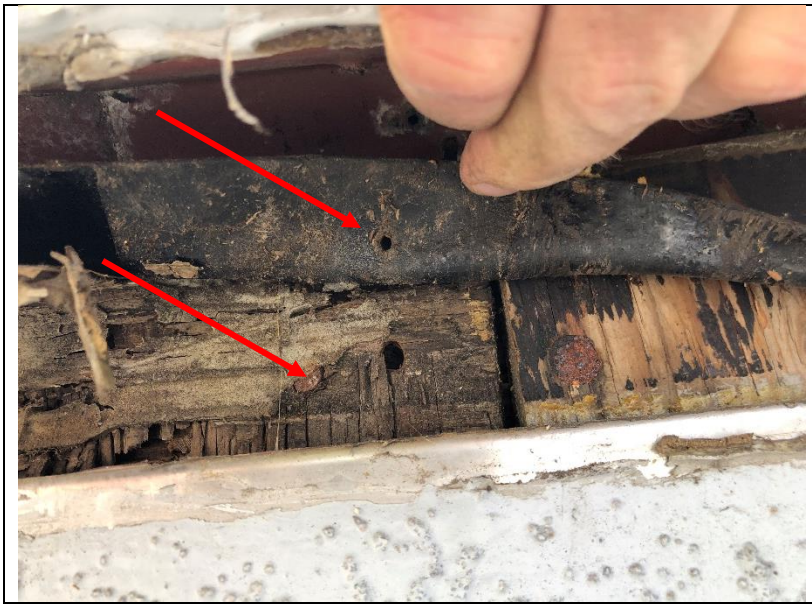

Photo 353:

Wood rot and deteriorated wood under the coping cap at the handrail curb north of room 500.

Photo 354:

Deteriorated wood material with a fastener that fell from under the coping cap at the handrail curbs during coping removal.

dtr job no. 10.22013.80