

# Building Envelope & Indoor Air Evaluation Report

Flagler County Sheriff's Operations Building  
901 E. Moody Blvd.  
Bunnell, FL

February 28, 2019

Terracon Project No. F9186371



**Prepared for:**

Flagler County Engineering Department  
Bunnell, FL

**Prepared by:**

Terracon Consultants, Inc.  
Winter Park, FL

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# Terracon

Geotechnical   ■   Environmental   ■   Construction Materials   ■   Facilities

February 28, 2019

Flagler County Engineering Department  
1769 E. Moody Blvd.  
Bunnell, FL 32110

Attn: Ms. Faith Alkhatib, P.E., County Engineer  
P: (407) 302-7360  
E. [falkhatib@flaglercounty.org](mailto:falkhatib@flaglercounty.org)

**Re: Building Envelope and Indoor Air Evaluation Report**  
Flagler County Sheriff's Operations Building  
901 E. Moody Blvd.  
Bunnell, Florida  
Terracon Project Number: F9186371

Dear Ms. Alkhatib:

**Terracon Consultants, Inc. (Terracon)** has completed the authorized evaluation services on the above referenced property. This assessment was authorized by Flagler County Engineering (FCE) via Proposal No. PF9186371 dated January 2, 2019. This report presents the findings of the existing conditions and assessment of the components that pertain to the existing building envelope and indoor air quality at the referenced property. Recommendations for repairs are also included.

We appreciate the opportunity to provide service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,

**Terracon Consultants, Inc.**



James E. Saizan, R.A., RRC  
Senior Project Architect  
Facilities Services



Brian J. DuChene, P.E.  
Principal  
Facilities Services



John L. O'Reilly  
Florida-Licensed Mold Assessor, MRSA 212  
Senior Scientist - Environmental Services

Enclosures

## **EXECUTIVE SUMMARY**

Terracon Consultants, Inc. (Terracon) visited the Sheriff's Operations Building on January 3 and 4, 2019 to perform a visual assessment and limited destructive testing on building envelope systems and assemblies. We were commissioned by FCE to perform an investigation of existing IAQ and try to determine the cause(s) of problems related to IAQ. The building is reportedly 40 years old and was originally constructed as a hospital. The facility sat dormant for about 10 years until the County had the building renovated as a new Sheriff's Operations facility in 2015. An evaluation of the existing exterior wall assemblies was required to evaluate whether water intrusion had caused mold or mildew which contributed to the odors.

Our efforts included limited destructive testing at the inside of exterior walls, observations in mechanical rooms, and removal of flooring in selected locations. We also obtained surface and air samples for laboratory analysis.

The results of our limited destructive testing showed no moisture intrusion above the floor level in each area, except at a wall penetration behind the Evidence Coolers, at the lower four inches of a perimeter concrete block wall within a wall cavity cut in the Main Evidence Storage Room, and behind vinyl cove base by the northeast exit door in the Investigations Room. The wall penetration by the Evidence Coolers was associated with coolant piping identified as condensing and causing mold growth on the back side of drywall in its vicinity. No visible mold growth was observed on fiberglass insulation or drywall within the intact wall cavity by water-stained concrete block wall in the Main Evidence Storage Room. Visible mold growth was observed on drywall behind approximately one linear foot of vinyl cove base by the northeast exit in the Investigations Room.

At floor level, moisture, musty odors and visible mold growth were observed where evaluated at 11 locations below carpet tile flooring in various offices, a vinyl floor tile in the common hallway and below a plastic floor mat on concrete flooring in the Evidence Room. Elevated surface mold counts below floor finishes, at the base of two localized wall areas, within an air handling unit and on older appearing wood observed within an upper wall cavity in the Evidence Room were also found.

In general, the airborne fungal genera identified from the indoor environment were generally lower than the fungal genera encountered outdoors with the exception of slightly elevated spore counts of *Aspergillus*/*Penicillium* in 2 of the 16 interior locations tested.

Our exterior evaluation revealed paving and grading flush with the interior floor level in many areas, with poor drainage away from the building. This condition has contributed to moisture intrusion below the walls in those areas. We also performed a thermal scan of exterior wall assemblies using an infrared camera. No thermal anomalies were observed in any exterior walls.

The client reported a considerable bat infestation along the southwest exterior of the building was resolved during renovation activities in 2015. Terracon collected droppings observed in the intact upper wall cavity in the southeast corner training room at the time of our evaluation, and laboratory analysis reported the presence of *Histoplasma Capsulatum*, an avian pathogen, associated with bat roosting.

## Building Envelope and Indoor Air Evaluation Report

Flagler Sheriff's Operations Building ■ Bunnell, FL

February 28, 2019 ■ Terracon Project No. F9186371



Based on the conclusions presented above, we recommend the following corrective actions:

### Exteriors:

- § Seal the penetrations through the EIFS cladding at the rear and west sides.
- § Seal tops and sides of the electrical boxes to prevent future water intrusion.
- § Regrade the east side to provide a grade level slightly below the floor level and positively sloped into the swale. Dig the swale deeper as needed. *(Note: The County is performing this work under a separate contract.)*
- § Cut in and install trench drains at the front and rear paving adjacent to the building to eliminate standing water against the building. *(Note: Coordinate this work with the aforementioned separate grading project.)*
- § Evaluate base of the concrete wall on the south side of the Main Evidence Storage Room and seal as necessary.
- § Evaluate gutter drainage away from the building and repair as necessary.

### Interiors:

- § Conduct Volatile Organic Compound (VOC) air sampling in several areas of the building to evaluate the presence of elevated VOCs which may be related to moisture below floor finishes and/or reported IAQ complaints.
- § Evaluate the concrete floor slab with a combination of Relative Humidity sensors and/or Anhydrous Calcium Chloride standard test kits on a 1,000 square-foot grid pattern per the applicable American Society for Testing and Materials (ASTM F2170-18 or F1869-16a) procedures to measure the moisture level and vapor emission rate.
- § Conduct up to four additional upper ceiling cuts in the vicinity of old wood identified in the upper wall cavity along the south side of the building. A surface sample of the old wood identified high mold spore counts, which includes viable and non-viable spores. The additional ceiling cuts can facilitate further evaluation of the extent of the old wood and provide additional sampling locations to distinguish viable versus non-viable spore types to be cleaned and sanitized.
- § Conduct up to six additional wall cuts in the southeast portion of the building (four upper and two lower wall cuts estimated) to further evaluate the extent of apparent bat droppings identified in the southeast upper wall cavity and remove or sanitize the impacted surfaces.
- § Conduct additional observations below floor finishes in the building to further evaluate the extent of mold and/or moisture below carpet tiles, vinyl tiles, residual adhesive and plastic mats. Contract with a Florida-licensed mold remediation firm to remove, clean and sanitize identified areas of moisture impacted floor finishes and at the base of walls by the northeast exit in the Investigations Room 111 and between the Evidence Coolers. Removal activities should be in accordance with the *Mold Remediation in Schools and Commercial Buildings (EPA 402-K-01-001, September 2008)* document; can be obtained at <https://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide>.
- § Seal top of concrete floor where elevated floor moisture is identified with product designed to reduce moisture emissions. Conduct moisture testing on the sealed concrete slab prior to re-installation of new floor finishes to evaluated replacement options.

## Building Envelope and Indoor Air Evaluation Report

Flagler Sheriff's Operations Building ■ Bunnell, FL

February 28, 2019 ■ Terracon Project No. F9186371



- § Conduct the HVAC repairs to the VAV boxes, test and balance the systems, and clean the AHU interiors, including coils. (*Note: County is performing this work under a separate Work Order.*)

Further Investigation: Related to the preceding, further investigation recommendations are summarized as follows:

- § Conduct Volatile Organic Compound (VOC) air sampling to evaluate the presence of elevated VOCs which may be related to moisture below floor finishes and/or reported IAQ complaints.
- § Remove selected floor finishes and evaluate the concrete floor slab on a 1,000 square-foot grid pattern with a combination of Relative Humidity sensors and/or Anhydrous Calcium Chloride standard test kits per ASTM procedures to measure the moisture level and vapor emission rate and evaluate options for reducing excessive vapor transmission, if identified.
- § Further evaluate areas of old wood identified in the upper wall cavity along the south side of the building for treatment where high mold counts were identified on a surface sample. Perform four additional wall cuts in the area to obtain additional surface samples for mold testing.
- § Further evaluate the extent of apparent bat droppings identified in the southeast upper wall cavity by performing six additional wall cuts (four upper and two lower wall cuts anticipated) and surface investigation with ultraviolet light.
- § At the conclusion of interior demolition work, conduct an IAQ follow-up evaluation to include air sampling.

## 1.0 PROJECT INFORMATION

<b>Building Use:</b>	Offices and Evidence Storage
<b>Areas Investigated:</b>	Entire Building
<b>Dates of Site Visit:</b>	January 3 and 4, 2019

## 2.0 SCOPE OF SERVICES

Our scope of services included:

- § Visit the site and provide a visual evaluation and detection of odors in most areas.
- § Remove small areas of drywall in 36 locations to expose the stud cavity at exterior walls and observe condition of drywall and materials in the cavity.
- § Provide a visual evaluation of exterior walls to identify defects in waterproofing systems.
- § Provide a thermal scan of exterior walls to identify evidence of moisture in the walls.
- § Provide moisture meter readings of interior finishes at exterior wall assemblies.
- § Provide a visual evaluation of mechanical equipment to determine any substances which could contribute to indoor air quality problems.
- § Provide sampling of indoor air and interior surfaces to determine air quality and contributions to indoor air quality problems.
- § Remove flooring in selected areas to observe mold and/or moisture beneath.

In addition, Terracon observed readily accessible interior components of the air handlers servicing the building and portions of the interior of ductwork.

Digital photographs illustrating our observations are included in Appendix A of this report.

The independent conclusions represent Terracon's professional judgment based on the information and data available to us during this assessment. Factual information regarding operations, conditions and test data provided by the client or their representatives has been assumed to be correct and complete.

## 3.0 OBSERVATIONS AND FINDINGS

### 3.1 Documentation Reviewed

Renovation drawings were made available for our review. Those drawings were prepared by TTV Architects, Inc. of Jacksonville, FL, and are dated 12/22/15. Drawings indicate that most of the existing structure was salvaged and the scope of the renovation work included new roofing, EIFS cladding, and interior finishes. The exterior wall assembly consists of existing CMU walls with 6" metal studs and R-19 batt insulation at the inside. The drywall finish and metal studs extend up to the existing metal roof deck throughout. The design also indicates that existing wood blocking and batt insulation were salvaged at the top of the exterior walls.

### **3.2 Inside Face of Exterior Walls**

Using a capacitance-type moisture meter, we checked several areas at the base of the exterior wall. Elevated moisture readings were identified in the gypsum board wall behind vinyl covebase by the northeast exit door in Investigations Room 111 (Photograph 22). Elevated moisture readings were identified in the gypsum board wall below wrapped refrigerant piping along the back side of the evidence cooler and freezer. Some areas along the east wall recorded slightly higher readings. Other wall readings indicated normal moisture levels (no evidence of excessive moisture).

We performed approximately 6" to 8" square test cuts in the drywall finish in 36 locations at the exterior walls in locations requested by the County. These included locations at the base of the walls (typically below windows) and at the top of the wall where it terminated at the deck. A test cut location map is provided in Appendix B.

Overall, test cut findings are summarized as follows:

- § Low wall test cuts (20 locations): These cuts were made at the base of walls, typically below windows. Dry conditions with no evidence of moisture or mold growth on the backside of the drywall, or the backside of the CMU wall were typically observed in the stud cavity and in the sill track. Exceptions occurred between the Evidence Cooler and Freezer where mold was observed on the back side of drywall (Photograph 21) and in the Main Evidence Storage Room, where elevated moisture was identified at the base of the perimeter concrete block wall (Photograph 25). The above exceptions appeared to correspond with wall penetrations or flush pavement conditions outside. Exceptions also were noted at the Sheriff's Office, Chief Deputy's Office, the Records Room, and the Files Room. In those locations, some surface rust was observed in the sill track, although no moisture was encountered. This could have resulted from standing water during construction.
  
- § Intermediate height test cuts (5 locations): These occurred at about 10' height (above ceiling) in Main Evidence storage room, Training room and adjacent Supervisor's Office at east side. Typically revealed dry conditions in the stud cavity. No evidence of moisture or mold growth on the backside of the drywall, or the backside of the CMU wall.
  
- § Top-of-wall test cuts (11 locations): Typically revealed dry conditions in the stud cavity and at the wood blocking at the outside. Existing wood blocking did not exhibit any rot or mold but was darker in color from aging. No evidence of moisture or mold growth on the backside of the drywall or on any materials in the cavity or beyond. Exceptions occurred in the Training Room (southeast corner) where evidence of bat or rodent droppings were noted at the top of the CMU wall (Photograph 10).

### **3.3 Flooring and Slab**

We removed carpet tiles in several locations at the east and northeast quadrants of the building. Moisture was observed on the slab, with wet adhesive, musty odors and/or visible mold growth on the backside of the carpet tiles and underlying concrete floor (Photographs 11, 12 and 23). A thinset coating was observed below portions of the floor coverings. We also removed a carpet tile in the Muster/Assembly Room at the west side and noted the same conditions. A musty odor and visible mold growth was observed below a plastic floor mat in the Evidence Reception Room 134 within the south portion of the building (Photograph 26).

In the corridor at the south east end, we removed a 12" x 12" vinyl floor tile and noted evidence of condensation and mold growth (Photograph 27).

Locations where observed below floor coverings is provided on the Sample Location Map in Appendix C.

### **3.4 Building Exteriors**

We observed exterior walls which consist of an exterior insulated finish system (EIFS) cladding over original CMU walls. At the interior, the old finishes were removed and new 6" deep metal studs with R-19 fiberglass batt insulation was installed with painted 5/8" gypsum drywall finish. We performed a thermal scan of the exterior walls using an infrared camera, to identify thermal anomalies usually associated with sub-surface moisture. Our observations were as follows:

- § The EIFS cladding and finish are new and without any detectable defects or points of possible water intrusion. Exceptions occur at some mechanical and electrical penetrations through the wall.
- § The bottom of the EIFS cladding is terminated at the base with a starter track designed for weeping, indicating a "rain-screen" assembly as designed.
- § The windows are fabricated of aluminum storefront framing and have a metal sill pan flashing below the sill frame, with an extrusion above the pan with 2 weep holes. This does not match the design drawings exactly, but no leak issues were detected below the windows.
- § Our thermal scan showed no detectable thermal anomalies in the wall assembly on any of the exterior walls.
- § At the base of walls, we observed paving at the north (front) wall and the rear where the surface of the concrete was flush with the floor level inside. In addition, both areas did not appear to have adequate slope away from the building. This indicates a potential for water to accumulate along the base of the walls and infiltrate through the CMU joints and below the stud track at the inside.
- § At the base of the east wall in the northeast quadrant, a swale has been constructed for draining roof runoff from downspouts. The grade actually slopes toward the building in this



area and is about flush with the floor level. This is another potential area for water to accumulate along the base of the walls and infiltrate through the CMU joints and below the stud track at the inside.

- § There is a louver on the west wall which provides make-up air to air handling units in the mechanical room. No damage or gaps were observed within a metal screen inside of the louver.

### **3.5 Limited HVAC Observations**

The heating, mechanical and air conditioning (HVAC) system for the building mainly consists of two 60-ton chillers, four main air handling units and variable air volume (VAV) boxes within duct work. Two small split systems were also observed to provide conditioned air to the IT Room and Mechanical Room. All of the observed HVAC equipment had been installed in 2015. Per Rob Govazzi, Flagler County Energy Management Coordinator, actuators in air handling units had been previously programmed to close make-up air dampers when the building's emergency generator was being tested due to past diesel odor complaints (Photograph 14). Mr. Gavazzi also reported VAV boxes not communicating with the programmed system (approximately 16 in Zones 1 and 2 along the north and east sides of the building) were scheduled to be repaired on January 10, 2019. The VAV boxes contain a damper to regulate air flow. Tablets were observed in condensate drain pans.

Overall, the interior of the HVAC equipment appeared in good condition. Air handling unit (AHU) #2, which serves the east complaint area, appeared overall clean (Photographs 15 and 16). Air filters were dated 11/9/2018 and exhibited some dust build-up (Photograph 17). Localized discoloration resembling mold was observed at the base of metal housing by the supply coils in AHU #1, which serves the majority of the north portion of the building (Photograph 18). Mr. Gavazzi as not aware of coils ever being cleaned since the AHU units were installed in 2015.

Temperature and relative humidity readings were taken January 3, 2019, at 16 interior areas and at 2 exterior locations. The interior temperatures ranged from 70.9°F to 77.2°F which were within the range considered by American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 55-2004 as acceptable for doing "office" work and wearing summer or winter clothing. The exterior temperatures were 89.4°F and 86.5°F. The interior RH levels ranged from 45.6% to 55.5% and were within the range considered by ASHRAE as acceptable, respectively. The exterior RH levels were 53.8% and 54.9%.

### **3.6 Mold Sampling**

The following is a discussion of mold sampling performed during this assessment.

#### **3.6.1 Mold Air Sampling**

Total non-viable (non-culturable) fungal spore trap samples were collected using Air-O-Cell® sampling cassettes and a Zefon Bio-Pump®, Product Number ZBP-100, at a flow rate of 15 liters per minute for 10 minutes. Air-O-Cell® sampling cassettes were collected at representative indoor

**Building Envelope and Indoor Air Evaluation Report**

Flagler Sheriff's Operations Building ■ Bunnell, FL

February 28, 2019 ■ Terracon Project No. F9186371



and outdoor sample locations (Table 3.0). After air sample collection, the sample cassettes were delivered under chain-of-custody (COC) protocol to EMSL Analytical, Inc. (EMSL). EMSL is accredited by the American Industrial Hygiene Association (AIHA®) Laboratory Accreditation Programs, LLC under the Environmental Microbiology Laboratory Accreditation Program (EMLAP Accreditation Number 163563). The results are reported as total fungal counts per cubic meter of air (counts / m3).

A summary of the indoor and outdoor total mold spore concentrations in counts/m<sup>3</sup> are provided in Table 1 below.

**Table 1.0 Indoor and Outdoor Total Mold Spore Counts on January 3, 2019**

Location	Mold Spores (Inside)	Mold Spores (Outside)
Exterior – North Parking Planting Bed		1,730
Investigations Room 129A entrance	340	
Break Room	60	
SE Corner Training Room	140	
IT Room 150	420	
Evidence Room 134	100	
SW Hallway	187	
Victims Services Room 118	220	
Exterior – NE Planting Bed by Sidewalk		2,770
Evidence Storage Room	200	
Evidence Cold Storage / Freezer Room 139	237	
Narcotics Storage Room	54	
Sheriff's Office Room 178	67	
Undersheriff's Office Room 175	47	
Lobby by Restrooms	40	
Records Room 103	87	
Commander' Office Room 113	287	
NE Investigations Room	277	
Exterior – West by Generator and Make-Up Air Intake		8,544

A Sample Location Map is provided in Appendix C. The laboratory analytical results for spore trap sampling conducted at the site on January 3, 2019, are provided in Appendix D. Sampling results

from 16 interior locations were compared to the 3 exterior samples. A comparison of the sampling results yielded the following general findings:

1. The total airborne mold spore concentration from each of the interior sample locations (Samples A2 through A8 and Samples A10 through A18) ranged from 40 counts/m<sup>3</sup> to 420 counts/m<sup>3</sup>.
2. The total outdoor mold spore concentration in exterior samples A1, A9 and A19 ranged from 1,730 counts/m<sup>3</sup> and 8,544/m<sup>3</sup>, respectively.
3. In general, the fungal genera identified from the indoor environment were qualitatively consistent with the fungal genera encountered outdoors with the exception a slightly elevated spore counts of Aspergillus/Penicillium at the following locations:
  - 210 counts/m<sup>3</sup> in Sample A11 from the Evidence Freezer room;
  - 250 counts/m<sup>3</sup> in Sample A18 from the northeast Investigations Room;
4. Exterior Aspergillus/Penicillium spore counts were identified as ranging from 40 counts/m<sup>3</sup> to 550 counts/m<sup>3</sup> and 270 counts/m<sup>3</sup>.

### 3.6.2 Tape Lift Sampling Results

Terracon collected 15 tape lift samples (Samples T1 through T15) of observed discoloration on various building components on January 3 and 4, 2019, including with air handling units, on ceiling tiles, below floor finishes and on older appearing wood and insulation within the upper wall cavity. Each tape sample was placed on a laboratory supplied glass slide and delivered with COC to EMSL for optical microscopy.

A summary of the tape lift sampling results is provided in Table 2.0 below:

**Table 2.0 Tape Lift Sample Results**

Sample ID	Location	Laboratory Result
T1	Evidence Cold Storage / Freezer Room 139 – Back Side of Drywall in Wall Cavity	<b>Medium</b> Cladosporium <b>High</b> Stachybotrys/Memnoniella
T2	File Storage Room 103A – Return Grille	Low Aspergillus/Penicillium Rare Basidiospores Rare Myxomycetes Rare Hyphal Fragment and Pollen
T3	Investigations - East Lower Wall by Exit	<b>High</b> Acremonium-like spores
T4	AHU #1 – Supply Side Coil Lower Metal Frame	<b>High</b> Cladosporium Rare Insect Fragments Low Pollen
T5	AHU #4 – Back Side of Supply Coils	Low Ascospores Low Basidiospores Rare Ganoderma

## Building Envelope and Indoor Air Evaluation Report

Flagler Sheriff's Operations Building ■ Bunnell, FL

February 28, 2019 ■ Terracon Project No. F9186371



Sample ID	Location	Laboratory Result
T6	AHU #4 – Metal Housing by Blower Wheel	Rare Ascospores Low Cladosporium Rare Epicoccum Low Hyphal Fragments and Pollen
T7	Investigations Room 129 – Ceiling Tile Edge	No mold detected
T8	Records Room 103 – Below Plastic Floor Mat on Carpet	No mold detected
T9	SE Training Room – Ceiling Tile Edge	No mold detected
T10	Investigations Room 129 – Below Carpet Square	Low Cladosporium <b>High</b> Scopulariopsis/Microascus Low Hyphal Fragments Rare Insect Fragments
T11	Evidence Storage – Upper Wall Cavity Old Wood	Rare Ascospores, Triadelphia and Pollen <b>High</b> Aspergillus/Penicillium <b>High</b> Cladosporium
T12	Evidence Entrance Room – Below Plastic Floor Mat on Concrete	Low Cladosporium, Acremonium-like and Pollen
T13	NE Investigations - Below Carpet Square	Rare Aspergillus/Penicillium and Hyphal Fragments <b>High</b> Scopulariopsis/Microascus
T14	SE Hallway - Below Vinyl Floor Tile by Drinking Fountain	Rare Aspergillus/Penicillium and Cladosporium <b>High</b> Scopulariopsis/Microascus
T15	Evidence Room – Upper Wall Cavity Old Yellow Insulation Debris	Rare Aspergillus/Penicillium, Ganoderma and Pollen Low Hyphal Fragments

Bolded = medium or high counts detected

The tape lift laboratory report is included in Appendix D.

### 3.7 Avian Pathogen Sampling Results

Terracon collected a swab sample of suspect droppings observed within the upper wall cavity check in the southeast corner training room. The swab sample was submitted to EmLab P&K (EmLab) for avian pathogen screen analysis by PCR methodology. EmLab is accredited by the American Industrial Hygiene Association (AIHA®) Laboratory Accreditation Programs, LLC under the Environmental Microbiology Laboratory Accreditation Program (EMLAP Accreditation Number 2072876).

A summary of the swab results is provided in Table 3 below.

**Table 3.0 Swab Sample Results**

Sample ID	Location	Laboratory Result
S1	SE Corner Upper Wall Cavity	Chlamydophila psittaci – No cell equivalents detected Cryptococcus neoformans – No cell equivalents detected Histoplasma capsulatum - Present

The swab sample laboratory report is provided in Appendix E.

## 4.0 CONCLUSIONS

Our evaluation of the building envelope and indoor air quality has led to conclusions as follows:

1. Wall Assembly: Our investigation showed no apparent signs of water intrusion through the wall assembly, except possibly the northeast corner exit door in Investigations Room 111 and south concrete block wall in the intact wall cavity of the Main Evidence Storage Room. The EIFS cladding on the exterior walls is applied directly over the original CMU wall and is a seamless finish. The insulating value of the cladding enhances the thermal performance of the wall assembly and reduces the possibility of vapor drive and resulting condensation at the inside of the wall.
2. Site Grading: The level of paving and grading and apparent lack of adequate drainage has contributed to water intrusion through the base of the wall and resulted in moisture and mold growth beneath floor finishes.
3. Flooring and Slab: The carpet tiles and adhesive have created a vapor barrier at the top of the slab, causing condensation and mold growth at the backside of the carpet tiles. In addition, similar issues are occurring at the backside of the vinyl floor tiles in the corridor and plastic mats on concrete in the Evidence Reception Room.
4. Odor Source and Abatement: It is Terracon's opinion that the primary source of odors and resulting employee complaints of skin rashes and upper respiratory issues is related to the stagnant moisture and mold growth on the back side of floor finishes.
5. Other Miscellaneous Areas of Concern: An avian pathogen was identified in droppings observed within the upper wall cavity of the southeast training room. Elevated moisture was identified at the base of drywall by the northeast exit door of Room 111, by the coolers in the Evidence Room, and concrete block wall in the wall cavity in the Main Evidence Storage Room. The AHUs appeared relative clean with localized mold growth within the housing of Unit 1. Approximately 17 of the VAV boxes were apparently not communicating with the programmed HVAC system. The building was reportedly programmed to operate at 60% to 64% humidity until about a year ago. The cleaning products have reportedly been changed and the carpets cleaned since employees left the building in June 2018.
6. Beyond scope considerations: The make-up air intake is located by the emergency generator and by roof exhausts in the evidence rooms, including where narcotics are stored. Prior chemicals associated with cleaning and pest control in the building were reportedly evaluated by others and were not within the scope of our assessment activities.

## 5.0 RECOMMENDATIONS

Based on the conclusions presented above, we recommend the following corrective actions and further investigation:

### Exteriors:

- § Seal the penetrations through the EIFS cladding at the rear and west sides.
- § Seal tops and sides of the electrical boxes to prevent future water intrusion.
- § Regrade the east side to provide a grade level slightly below the floor level and positively sloped into the swale. Dig the swale deeper as needed. *(Note: The County is performing this work under a separate contract.)*
- § Cut in and install trench drains at the front and rear paving adjacent to the building to eliminate standing water against the building. *(Note: Coordinate this work with the aforementioned separate grading project.)*
- § Evaluate base of the concrete wall on the south side of the Main Evidence Storage Room and seal as necessary.
- § Evaluate gutter drainage away from the building and repair as necessary.

### Interiors:

- § Conduct Volatile Organic Compound (VOC) air sampling in several areas of the building to evaluate the presence of elevated VOCs which may be related to moisture below floor finishes and/or reported IAQ complaints.
- § Evaluate the concrete floor slab with a combination of Relative Humidity sensors and/or Anhydrous Calcium Chloride standard test kits on a 1,000 square-foot grid pattern per the applicable American Society for Testing and Materials (ASTM F2170-18 or F1869-16a) procedures to measure the moisture level and vapor emission rate.
- § Conduct up to four additional upper ceiling cuts in the vicinity of old wood identified in the upper wall cavity along the south side of the building. A surface sample of the old wood identified high mold spore counts, which includes viable and non-viable spores. The additional ceiling cuts can facilitate further evaluation of the extent of the old wood and provide additional sampling locations to distinguish viable versus non-viable spore types to be cleaned and sanitized. Conduct up to six additional wall cuts in the southeast portion of the building (four upper and two lower wall cuts estimated) to further evaluate the extent of apparent bat droppings identified in the southeast upper wall cavity and remove or sanitize the impacted surfaces.
- § Conduct additional observations below floor finishes in the building to further evaluate the extent of mold and/or moisture below carpet tiles, vinyl tiles, residual adhesive and plastic mats. Contract with a Florida-licensed mold remediation firm to remove, clean and sanitize identified areas of moisture impacted floor finishes and at the base of walls by the northeast exit in the Investigations Room 111 and between the Evidence Coolers. Removal activities should be in accordance with the *Mold Remediation in Schools and Commercial Buildings*

(EPA 402-K-01-001, September 2008) document; can be obtained at <https://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide>.

- § Seal top of concrete floor where elevated floor moisture is identified with product designed to reduce moisture emissions. Conduct moisture testing on the sealed concrete slab prior to re-installation of new floor finishes to evaluated replacement options.
- § Conduct the HVAC repairs to the VAV boxes, test and balance the systems, and clean the AHU interiors, including coils. *(Note: County is performing this work under a separate Work Order.)*

Further Investigation: Related to the preceding, further investigation recommendations are summarized as follows:

- § Conduct Volatile Organic Compound (VOC) air sampling to evaluate the presence of elevated VOCs which may be related to moisture below floor finishes and/or reported IAQ complaints.
- § Remove selected floor finishes and evaluate the concrete floor slab on a 1,000 square-foot grid pattern with a combination of Relative Humidity sensors and/or Anhydrous Calcium Chloride standard test kits per ASTM procedures to measure the moisture level and vapor emission rate and evaluate options for reducing excessive vapor transmission, if identified.
- § Further evaluate areas of old wood identified in the upper wall cavity along the south side of the building for treatment where high mold counts were identified on a surface sample. Perform four additional wall cuts in the area to obtain additional surface samples for mold testing.
- § Further evaluate the extent of apparent bat droppings identified in the southeast upper wall cavity by performing six additional wall cuts (four upper and two lower wall cuts anticipated) and surface investigation with ultraviolet light.
- § At the conclusion of interior demolition work, conduct an IAQ follow-up evaluation to include air sampling.

## **6.0 LIMITATIONS**

The analysis and opinions presented in this report are based upon the information provided to us by our client, Flagler County Engineering Department (FCE), and data collected at the project site at the time of our site visit. While additional conditions may exist that could alter our conclusions, we feel that reasonable means have been made to fairly and accurately evaluate the existing conditions on this building.

This report has been prepared for the exclusive use of FCE for specific application to the project discussed and has been prepared in accordance with generally accepted engineering practices. No warranties, either expressed or implied, are intended or made. In the event that information described in this document which others provided is incorrect, or if additional information becomes available, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the information and either verifies or modifies the conclusions of this report in writing.

**APPENDIX A  
PHOTOGRAPHS**



## PHOTOGRAPHS



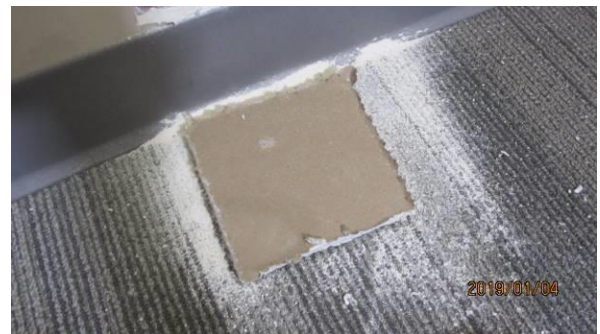
**Photo #1** Paving at front entrance. Flush with floor level and basically flat without slope to drain.



**Photo #2** Typical window sill with pan flashing and weep holes in the extrusion above the pan.



**Photo #3** Low wall cut in Investigations Room. No moisture or evidence of mold in cavity or backside of vinyl base.



**Photo #4** Typical low wall cut. Backside of gypsum drywall dry and free of any staining or mold.



**Photo #5** View of stud cavity in low wall cut at northwest quadrant. Some light corrosion noted in the track; no moisture evident.



**Photo #6** View of stud cavity in low wall cut at northeast quadrant. Some light corrosion noted in the track; no moisture evident.



**Photo #7** Cut at top of the wall in northwest quadrant. All wood blocking and framing dry and in good condition.



**Photo #8** View of same cut. Some debris noted on top of the CMU wall; possibly rodent or bat droppings.



**Photo #9** Cut at top of wall in Main Evidence room. Old insulation (yellow) and new insulation (pink) are noted. Recessed wood is original; dry, good condition.



**Photo #10** Cut at top of south wall, Training Room. Old wood dry and in good condition. Various types of debris on top of CMU, with possible bat droppings.



**Photo #11** Carpet tiles removed adjacent to east wall in Investigations Room. Evidence of moisture and mold on backside of carpet tiles.



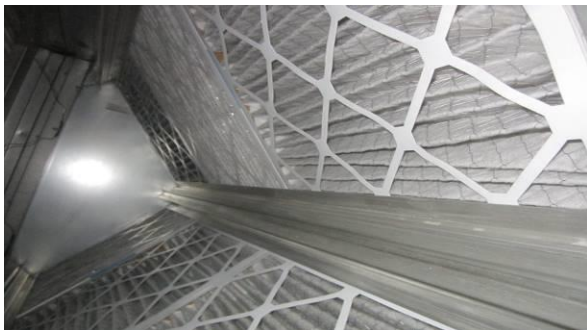
**Photo #12** Carpet tile removed at location away from outside wall, same room. Evidence of moisture on slab.



**Photo #13** Low drainage areas along east exterior.



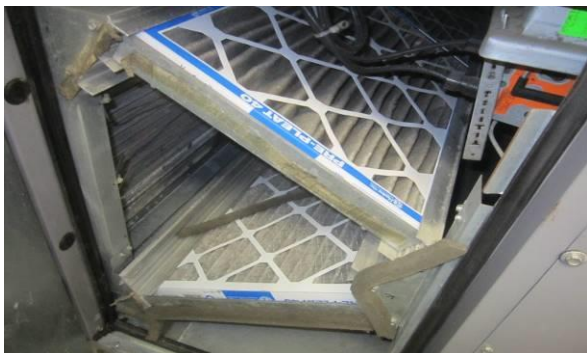
**Photo #14** Emergency generator by make-up air intake along the southwest exterior.



**Photo #15** Air filters in AHU #2 dated as changed on 11/9/2018 serving the east portion of the building.



**Photo #16** Coils in AHU #2.



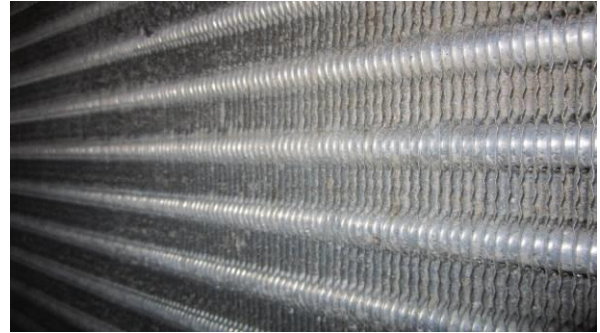
**Photo #17** Filters in AHU #3 serving the west central portion of the building.



**Photo #18** Visible mold at base of coils in AHU #1 serving the front lobby front lobby and northwest (Tape Sample T4).



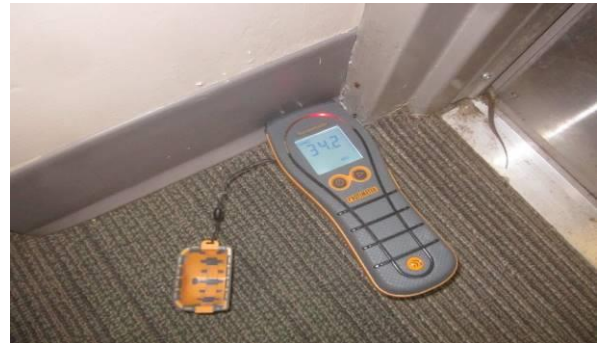
**Photo #19** AHU condensate drain pan tablets.



**Photo #20** Close-up view of coils in AHU #4 (Tape Sample T5).



**Photo #21** Visible mold on back side on drywall by Evidence Room freezer piping (Tape Sample T1).



**Photo #22** High moisture at base of drywall by the northeast exit in the Investigations Room.



**Photo #23** Visible mold and musty odor below carpet square in Investigations Room 129 (Tape Sample T10).



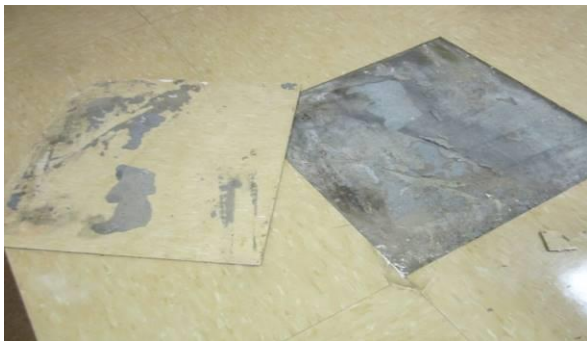
**Photo #24** Older wood with high mold counts on top of concrete block perimeter wall in the Evidence Room (Tape Sample T11).



**Photo #25** Water stain on Evidence Room block wall.



**Photo #26** Visible mold and musty odor identified on underside of plastic floor mat on concrete floor in the Evidence Room (Tape Sample T12).



**Photo #27** Visible mold below vinyl floor tile in the southeast common hallway (Tape Sample T14).

**APPENDIX B  
WALL CUT LOCATION MAP**



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www.tvarch.com

FL LIC#AA0002009

architecture planning interior design

PROJECT ARCHITECT  
CHRISTOPHER P. NOEL

LICENSE NO: #AR-92560

CONSULTANTS:

NO.	DATE	REVISION
1	02/24/15	LOGS SUBMITTAL
2	03/24/15	LOGS SUBMITTAL
3	12/22/15	PERMITS SET
4	12/22/15	RECORD DOCUMENTS

**NEW FLAGLER COUNTY SHERIFFS  
OPERATIONS CENTER**  
901 East Meedy Boulevard Bunnell, Florida

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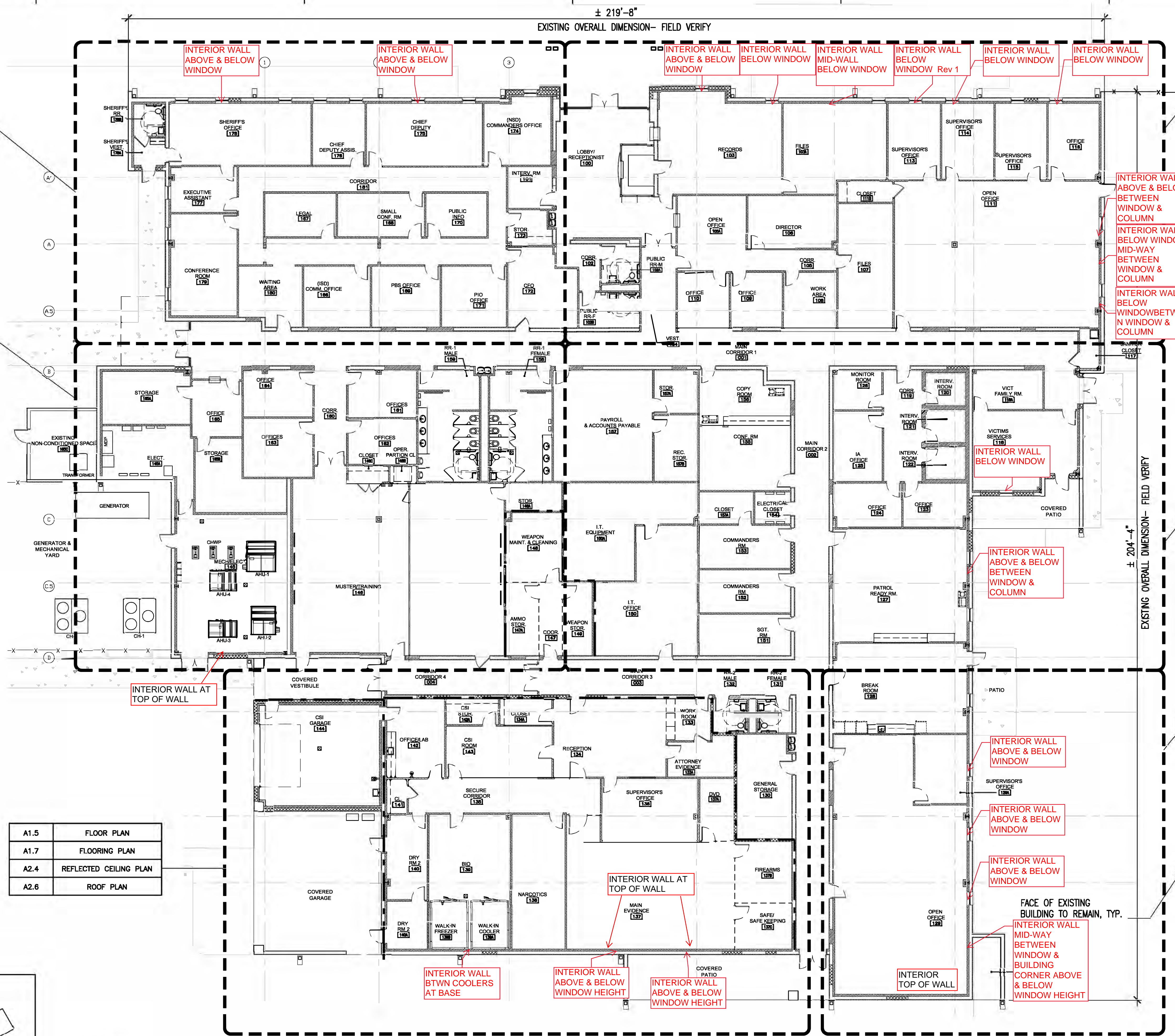
DATE: 12.22.15  
DRAWN BY: WDH  
CHECKED BY: CPH  
COMMISSION NO: 1408

overall  
key plan

A1.0

A1.1	FLOOR PLAN
A1.7	FLOORING PLAN
A2.0	REFLECTED CEILING PLAN
A2.6	ROOF PLAN

A1.3	FLOOR PLAN
A1.7	FLOORING PLAN
A2.2	REFLECTED CEILING PLAN
A2.6	ROOF PLAN

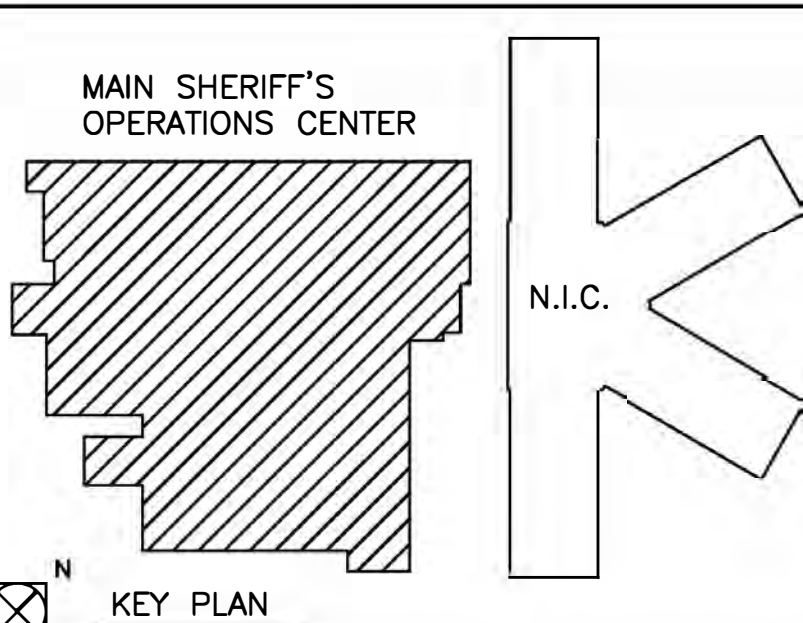


A1.2	FLOOR PLAN
A1.7	FLOORING PLAN
A2.1	REFLECTED CEILING PLAN
A2.6	ROOF PLAN

A1.4	FLOOR PLAN
A1.7	FLOORING PLAN
A2.3	REFLECTED CEILING PLAN
A2.6	ROOF PLAN

A1.6	FLOOR PLAN
A1.7	FLOORING PLAN
A2.5	REFLECTED CEILING PLAN
A2.6	ROOF PLAN

A1.5	FLOOR PLAN
A1.7	FLOORING PLAN
A2.4	REFLECTED CEILING PLAN
A2.6	ROOF PLAN



1 SHERIFF'S OPERATIONS CENTER-OVERALL KEY PLAN  
NTS

HIDDEN MOLD INVESTIGATION LOCATION EXHIBIT

Revision 1 - 11-8-18 Add Rm 113

Record Documents 12.22.2015

This record drawing has been prepared, in part, based upon information furnished by others. While this information is believed to be reliable, the Architect assumes no responsibility for the accuracy of this record drawing or for any errors or omissions that may have been incorporated into it as a result of incorrect information provided to the Architect. Those relying on this record document are advised to obtain independent verification of its accuracy.

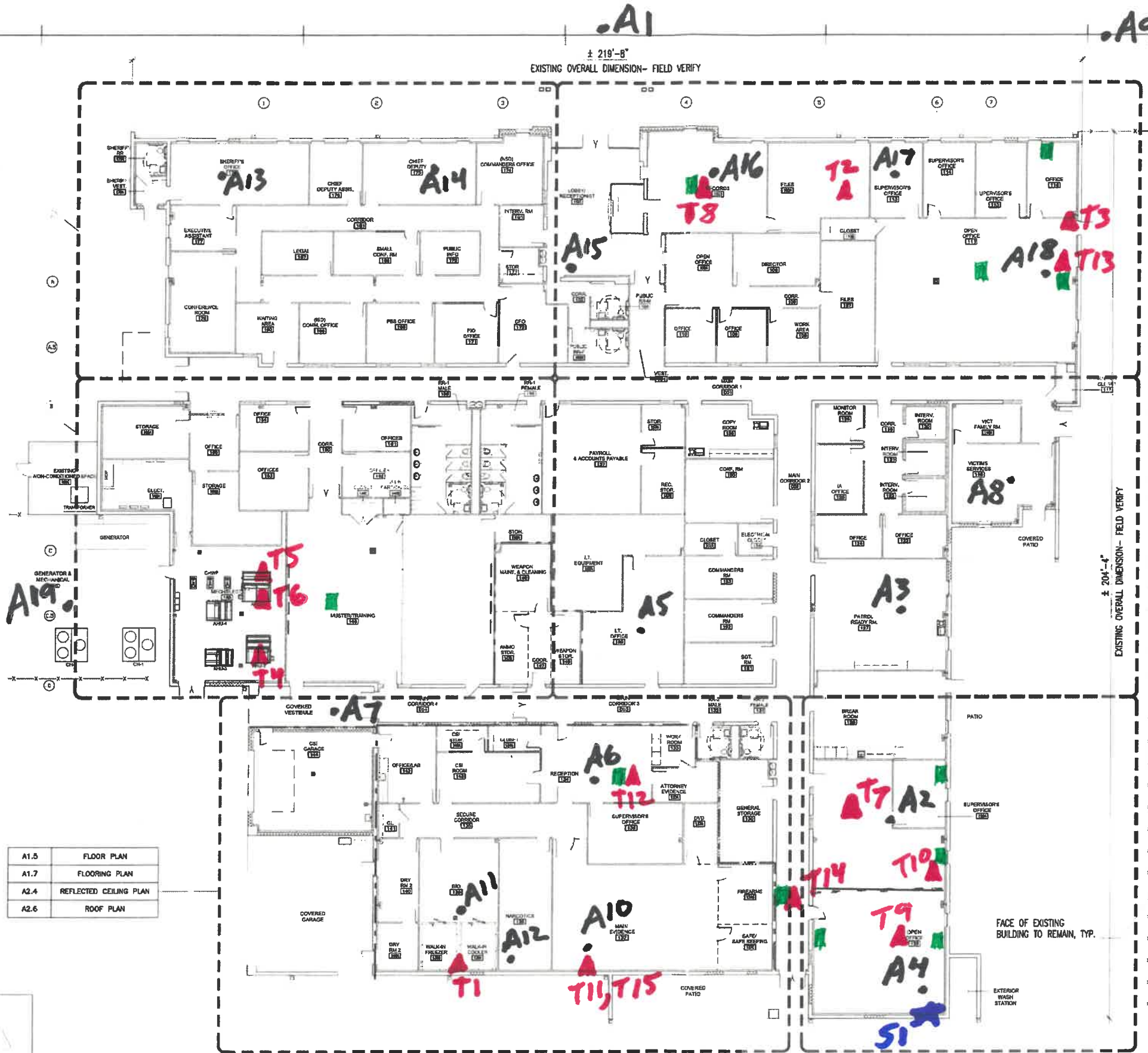
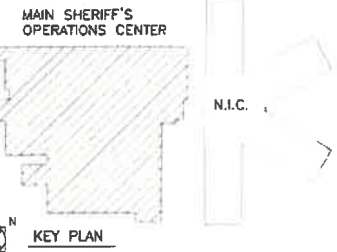
**APPENDIX C**  
**TESTING LOCATION FLOOR PLAN**



A1.1	FLOOR PLAN
A1.7	FLOORING PLAN
A2.0	REFLECTED CEILING PLAN
A2.6	ROOF PLAN

A1.3	FLOOR PLAN
A1.7	FLOORING PLAN
A2.2	REFLECTED CEILING PLAN
A2.6	ROOF PLAN

A1.5	FLOOR PLAN
A1.7	FLOORING PLAN
A2.4	REFLECTED CEILING PLAN
A2.6	ROOF PLAN



1 SHERIFF'S OPERATIONS CENTER-OVERALL KEY PLAN  
HTS

A1.2	FLOOR PLAN
A1.7	FLOORING PLAN
A2.1	REFLECTED CEILING PLAN
A2.6	ROOF PLAN

N ↑ Legend  
 ●A1 - Air Sample  
 ▲T1 - Tape Sample  
 ★SI - Swab Sample  
 ■ - observed below floor covering

A1.4	FLOOR PLAN
A1.7	FLOORING PLAN
A2.3	REFLECTED CEILING PLAN
A2.6	ROOF PLAN

A1.6	FLOOR PLAN
A1.7	FLOORING PLAN
A2.5	REFLECTED CEILING PLAN
A2.6	ROOF PLAN

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 LICENSE # 00002509

PROJECT ARCHITECT  
 CHRISTOPHER P. NOEL  
 LICENSE NO. #A-92560  
 CHAIRMAN  
 BOARD OF ARCHITECTS

DATE:	12.22.15
DRAWN BY:	BDI
CHECKED BY:	CPM
COMMISSION NO.:	1608

NEW FLAGLER COUNTY SHERIFFS  
 OPERATIONS CENTER  
 901 East Moody Boulevard Bunnell, Florida

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

overall key plan

# A1.0

**APPENDIX D**  
**MOLD LAB TEST REPORTS**



# EMSL Analytical, Inc.

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<b>EMSL Order:</b> 341900412
<b>Customer ID:</b> TERC62
<b>Customer PO:</b> F9186371
<b>Project ID:</b>

<b>Attn:</b> John O'Reilly Terracon Consultants, Inc. 1675 Lee Road Winter Park, FL 32789	<b>Phone:</b> (407) 740-6110 <b>Fax:</b> (407) 740-6112 <b>Collected:</b> 01/03/2019 <b>Received:</b> 01/07/2019 <b>Analyzed:</b> 01/10/2019
<b>Project:</b> Flagler Sheriff's OPS/F9186371	

### Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	341900412-0001			341900412-0002			341900412-0003		
	A1	A2	A3	Investigations 129A Entrance			Breakroom		
Sample Location	Exterior-N Parking			Investigations 129A Entrance			Breakroom		
Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	12	250	14.5	4	80	23.5	-	-	-
Aspergillus/Penicillium	2	40	2.3	4	80	23.5	-	-	-
Basidiospores	43	910	52.6	4	80	23.5	1	20	33.3
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	13	270	15.6	-	-	-	1	20	33.3
Curvularia	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	3	60	3.5	-	-	-	-	-	-
Myxomycetes++	3	60	3.5	1	20	5.9	-	-	-
Pithomyces++	-	-	-	1	20	5.9	-	-	-
Rust	-	-	-	1	20	5.9	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Arthrimum	-	-	-	-	-	-	-	-	-
Blakeslea/Choanephora	-	-	-	-	-	-	-	-	-
Cercospora++	7	100	5.8	-	-	-	-	-	-
Myrothecium/Paramyrothec	-	-	-	-	-	-	1	20	33.3
Nigrospora	-	-	-	1	20	5.9	-	-	-
Oidium	-	-	-	-	-	-	-	-	-
Pestalotia/Pestalotiopsis	-	-	-	1	20	5.9	-	-	-
Pyricularia	1	20	1.2	-	-	-	-	-	-
Spegazzinia	-	-	-	-	-	-	-	-	-
Tetraploa	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Zygosporium	1	20	1.2	-	-	-	-	-	-
<b>Total Fungi</b>	<b>85</b>	<b>1730</b>	<b>100</b>	<b>17</b>	<b>340</b>	<b>100</b>	<b>3</b>	<b>60</b>	<b>100</b>
Hyphal Fragment	1	20	-	3	60	-	1	20	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	47	990	-	3	60	-	-	-	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

  
 Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida  
 or other approved signatory

No discernable field blank was submitted with this group of samples.

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. ""\*"" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Orlando, FL AIHA-LAP, LLC EMLAP 163563

Initial report from: 01/10/2019 13:08:00

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)



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<b>Project:</b> Flagler Sheriff's OPS/F9186371	

### Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	341900412-0001			341900412-0002			341900412-0003		
Client Sample ID:	A1			A2			A3		
Volume (L):	150			150			150		
Sample Location	Exterior-N Parking			Investigations 129A Entrance			Breakroom		
Spore Types	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total
Analyt. Sensitivity 600x	-	21	-	-	21	-	-	21	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



**Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida**  
or other approved signatory

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Lab Sample Number: Client Sample ID: Volume (L): Sample Location	341900412-0004			341900412-0005			341900412-0006		
	A4	A5	A6	A4	A5	A6	A4	A5	A6
	150	150	150	150	150	150	150	150	150
	SE Corner Training Room			Room 150 IT Room			Evidence Room Room 134		
Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	1	20	14.3	6	100	23.8	1	20	20
Aspergillus/Penicillium	2	40	28.6	5	100	23.8	2	40	40
Basidiospores	4	80	57.1	1	20	4.8	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	-	-	-
Curvularia	-	-	-	5	100	23.8	1	20	20
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	2	40	9.5	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Arthrimum	-	-	-	-	-	-	-	-	-
Blakeslea/Choanephora	-	-	-	1	20	4.8	-	-	-
Cercospora++	-	-	-	-	-	-	1	20	20
Myrothecium/Paramyothec	-	-	-	1	20	4.8	-	-	-
Nigrospora	-	-	-	1	20	4.8	-	-	-
Oidium	-	-	-	-	-	-	-	-	-
Pestalotia/Pestalotiopsis	-	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-	-
Spegazzinia	-	-	-	-	-	-	-	-	-
Tetraploa	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Zygosporium	-	-	-	-	-	-	-	-	-
<b>Total Fungi</b>	<b>7</b>	<b>140</b>	<b>100</b>	<b>22</b>	<b>420</b>	<b>100</b>	<b>5</b>	<b>100</b>	<b>100</b>
Hyphal Fragment	-	-	-	6	100	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	1	20	-	1	20	-	1	20	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

  
 Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida  
 or other approved signatory

No discernable field blank was submitted with this group of samples.

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Initial report from: 01/10/2019 13:08:00

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Client Sample ID:	A4			A5			A6		
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Sample Location	SE Corner Training Room			Room 150 IT Room			Evidence Room Room 134		
Spore Types	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total
Analyt. Sensitivity 600x	-	21	-	-	21	-	-	21	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	1	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



**Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida**  
or other approved signatory

No discernable field blank was submitted with this group of samples.

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Initial report from: 01/10/2019 13:08:00

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# EMSL Analytical, Inc.

3303 PARKWAY CENTER COURT Orlando, FL 32808

Tel/Fax: (407) 599-5887 / (407) 599-9063

<http://www.EMSL.com> / [orlandolab@emsl.com](mailto:orlandolab@emsl.com)

<b>EMSL Order:</b> 341900412
<b>Customer ID:</b> TERC62
<b>Customer PO:</b> F9186371
<b>Project ID:</b>

<b>Attn:</b> John O'Reilly Terracon Consultants, Inc. 1675 Lee Road Winter Park, FL 32789	<b>Phone:</b> (407) 740-6110 <b>Fax:</b> (407) 740-6112 <b>Collected:</b> 01/03/2019 <b>Received:</b> 01/07/2019 <b>Analyzed:</b> 01/10/2019
<b>Project:</b> Flagler Sheriff's OPS/F9186371	

### Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	341900412-0007			341900412-0008			341900412-0009		
	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
A7 150 SW Hallway	A8 150 Room 118 Victims Services	A9 150 Exterior NE Planting Area							
<b>Spore Types</b>									
Alternaria (Ulocladium)	-	-	-	-	-	-	1	20	0.7
Ascospores	2	40	21.4	2	40	18.2	19	400	14.4
Aspergillus/Penicillium	-	-	-	-	-	-	2	40	1.4
Basidiospores	-	-	-	1	20	9.1	79	1700	61.4
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	3	60	32.1	1	20	9.1	15	320	11.6
Curvularia	-	-	-	2	40	18.2	1	20	0.7
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	1	20	10.7	-	-	-	-	-	-
Myxomycetes++	1	20	10.7	3	60	27.3	5	100	3.6
Pithomyces++	-	-	-	1	20	9.1	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Arthrinium	-	-	-	-	-	-	2*	10*	0.4
Blakeslea/Choanephora	-	-	-	-	-	-	-	-	-
Cercospora++	1	20	10.7	-	-	-	2	40	1.4
Myrothecium/Paramyrothec	-	-	-	-	-	-	-	-	-
Nigrospora	1	20	10.7	-	-	-	-	-	-
Oidium	-	-	-	-	-	-	7	100	3.6
Pestalotia/Pestalotiopsis	-	-	-	-	-	-	1	20	0.7
Pyricularia	-	-	-	-	-	-	-	-	-
Spegazzinia	-	-	-	1	20	9.1	-	-	-
Tetraploa	-	-	-	-	-	-	-	-	-
Torula-like	1*	7*	3.7	-	-	-	-	-	-
Zygosporium	-	-	-	-	-	-	-	-	-
<b>Total Fungi</b>	<b>10</b>	<b>187</b>	<b>100</b>	<b>11</b>	<b>220</b>	<b>100</b>	<b>134</b>	<b>2770</b>	<b>100</b>
Hyphal Fragment	2	40	-	3	60	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	32	680	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

  
 Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida  
 or other approved signatory

No discernable field blank was submitted with this group of samples.

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. ""\*"" Denotes particles found at 300X. ""-"" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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<b>Project:</b> Flagler Sheriff's OPS/F9186371	

### Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	341900412-0007			341900412-0008			341900412-0009		
Client Sample ID:	A7			A8			A9		
Volume (L):	150			150			150		
Sample Location	SW Hallway			Room 118 Victims Services			Exterior NE Planting Area		
Spore Types	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total
Analyt. Sensitivity 600x	-	21	-	-	21	-	-	21	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	2	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



**Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida**  
or other approved signatory

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<b>Project:</b> Flagler Sheriff's OPS/F9186371	

### Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	341900412-0010			341900412-0011			341900412-0012		
	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
A10 150 Evidence Storage Room	A11 150 Evidence Freezer Room	A12 150 Narcotics Room							
<b>Spore Types</b>	<b>Raw Count</b>	<b>Count/m³</b>	<b>% of Total</b>	<b>Raw Count</b>	<b>Count/m³</b>	<b>% of Total</b>	<b>Raw Count</b>	<b>Count/m³</b>	<b>% of Total</b>
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	1	20	10	-	-	-	1	20	37
Aspergillus/Penicillium	3	60	30	10	210	88.6	-	-	-
Basidiospores	1	20	10	1*	7*	3	-	-	-
Bipolaris++	1	20	10	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	2	40	20	-	-	-	1	20	37
Curvularia	2	40	20	-	-	-	1*	7*	13
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	1	20	8.4	1*	7*	13
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Arthrimum	-	-	-	-	-	-	-	-	-
Blakeslea/Choanephora	-	-	-	-	-	-	-	-	-
Cercospora++	-	-	-	-	-	-	-	-	-
Myrothecium/Paramyrothec	-	-	-	-	-	-	-	-	-
Nigrospora	-	-	-	-	-	-	-	-	-
Oidium	-	-	-	-	-	-	-	-	-
Pestalotia/Pestalotiopsis	-	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-	-
Spegazzinia	-	-	-	-	-	-	-	-	-
Tetraploa	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Zygosporium	-	-	-	-	-	-	-	-	-
<b>Total Fungi</b>	<b>10</b>	<b>200</b>	<b>100</b>	<b>12</b>	<b>237</b>	<b>100</b>	<b>4</b>	<b>54</b>	<b>100</b>
Hypal Fragment	6	100	-	2	40	-	1	20	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	6	100	-	-	-	-	1*	7*	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

  
 Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida  
 or other approved signatory

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<b>Project:</b> Flagler Sheriff's OPS/F9186371	

### Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	341900412-0010			341900412-0011			341900412-0012		
Client Sample ID:	A10			A11			A12		
Volume (L):	150			150			150		
Sample Location	Evidence Storage Room			Evidence Freezer Room			Narcotics Room		
Spore Types	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total
Analyt. Sensitivity 600x	-	21	-	-	21	-	-	21	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	3	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



**Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida**  
or other approved signatory

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### Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	341900412-0014 A13 150 Sherriff's Office Room 178			341900412-0015 A14 150 Under Sherriff Office Room 175			341900412-0016 A15 150 Lobby by Restrooms			
	Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	1	20	42.6	1	20	50	
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-	-
Basidiospores	-	-	-	-	-	-	1	20	50	
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	1	20	42.6	-	-	-	-
Curvularia	1	20	29.9	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-	-
Ganoderma	1*	7*	10.4	1*	7*	14.9	-	-	-	-
Myxomycetes++	1	20	29.9	-	-	-	-	-	-	-
Pithomyces++	1	20	29.9	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Arthrimum	-	-	-	-	-	-	-	-	-	-
Blakeslea/Choanephora	-	-	-	-	-	-	-	-	-	-
Cercospora++	-	-	-	-	-	-	-	-	-	-
Myrothecium/Paramyothec	-	-	-	-	-	-	-	-	-	-
Nigrospora	-	-	-	-	-	-	-	-	-	-
Oidium	-	-	-	-	-	-	-	-	-	-
Pestalotia/Pestalotiopsis	-	-	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-	-	-
Spegazzinia	-	-	-	-	-	-	-	-	-	-
Tetraploa	-	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-	-
Zygosporium	-	-	-	-	-	-	-	-	-	-
<b>Total Fungi</b>	<b>4</b>	<b>67</b>	<b>100</b>	<b>3</b>	<b>47</b>	<b>100</b>	<b>2</b>	<b>40</b>	<b>100</b>	
Hyphal Fragment	-	-	-	-	-	-	2	40	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-	-
Pollen	1	20	-	-	-	-	-	-	-	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

  
 Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida  
 or other approved signatory

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### Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	341900412-0014			341900412-0015			341900412-0016		
Client Sample ID:	A13			A14			A15		
Volume (L):	150			150			150		
Sample Location	Sherriff's Office Room 178			Under Sherriff Office Room 175			Lobby by Restrooms		
Spore Types	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total
Analyt. Sensitivity 600x	-	21	-	-	21	-	-	21	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	1	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	3	-	-	2	-	-	2	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



**Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida**  
or other approved signatory

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Lab Sample Number: Client Sample ID: Volume (L): Sample Location	341900412-0017			341900412-0018			341900412-0019			
	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	
A16 150 Records Storage				A17 150 Commanders Office 113			A18 150 Investigation East			
<b>Spore Types</b>										
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-	
Ascospores	2	40	46	1	20	7	-	-	-	
Aspergillus/Penicillium	-	-	-	-	-	-	12	250	90.3	
Basidiospores	-	-	-	2	40	13.9	1	20	7.2	
Bipolaris++	-	-	-	-	-	-	-	-	-	
Chaetomium	-	-	-	-	-	-	-	-	-	
Cladosporium	1	20	23	9	200	69.7	-	-	-	
Curvularia	-	-	-	1*	7*	2.4	1*	7*	2.5	
Fusarium	-	-	-	-	-	-	-	-	-	
Ganoderma	1	20	23	1	20	7	-	-	-	
Myxomycetes++	1*	7*	8	-	-	-	-	-	-	
Pithomyces++	-	-	-	-	-	-	-	-	-	
Rust	-	-	-	-	-	-	-	-	-	
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	
Arthrimum	-	-	-	-	-	-	-	-	-	
Blakeslea/Choanephora	-	-	-	-	-	-	-	-	-	
Cercospora++	-	-	-	-	-	-	-	-	-	
Myrothecium/Paramyothec	-	-	-	-	-	-	-	-	-	
Nigrospora	-	-	-	-	-	-	-	-	-	
Oidium	-	-	-	-	-	-	-	-	-	
Pestalotia/Pestalotiopsis	-	-	-	-	-	-	-	-	-	
Pyricularia	-	-	-	-	-	-	-	-	-	
Spegazzinia	-	-	-	-	-	-	-	-	-	
Tetraploa	-	-	-	-	-	-	-	-	-	
Torula-like	-	-	-	-	-	-	-	-	-	
Zygosporium	-	-	-	-	-	-	-	-	-	
<b>Total Fungi</b>	<b>5</b>	<b>87</b>	<b>100</b>	<b>14</b>	<b>287</b>	<b>100</b>	<b>14</b>	<b>277</b>	<b>100</b>	
Hyphal Fragment	-	-	-	-	-	-	-	-	-	
Insect Fragment	-	-	-	-	-	-	-	-	-	
Pollen	-	-	-	-	-	-	-	-	-	

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

  
 Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida  
 or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Orlando, FL AIHA-LAP, LLC EMLAP 163563

Initial report from: 01/10/2019 13:08:00

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)



# EMSL Analytical, Inc.

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<http://www.EMSL.com> / [orlandolab@emsl.com](mailto:orlandolab@emsl.com)

<b>EMSL Order:</b> 341900412
<b>Customer ID:</b> TERC62
<b>Customer PO:</b> F9186371
<b>Project ID:</b>

<b>Attn:</b> John O'Reilly Terracon Consultants, Inc. 1675 Lee Road Winter Park, FL 32789	<b>Phone:</b> (407) 740-6110 <b>Fax:</b> (407) 740-6112 <b>Collected:</b> 01/03/2019 <b>Received:</b> 01/07/2019 <b>Analyzed:</b> 01/10/2019
<b>Project:</b> Flagler Sheriff's OPS/F9186371	

### Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	341900412-0017			341900412-0018			341900412-0019		
Client Sample ID:	A16			A17			A18		
Volume (L):	150			150			150		
Sample Location	Records Storage			Commanders Office 113			Investigation East		
Spore Types	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total
Analyt. Sensitivity 600x	-	21	-	-	21	-	-	21	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	3	-	-	2	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	2	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



**Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida**  
or other approved signatory

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<b>Project:</b> Flagler Sheriff's OPS/F9186371	

### Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	341900412-0022				
Client Sample ID:	A19				
Volume (L):	150				
Sample Location	Exterior West By Generator				
Spore Types	Raw Count	Count/m³	% of Total		
Alternaria (Ulocladium)	2*	10*	0.1		
Ascospores	6	100	1.2		
Aspergillus/Penicillium	27	550	6.4		
Basidiospores	185	3790	44.4		
Bipolaris++	1*	7*	0.1		
Chaetomium	-	-	-		
Cladosporium	173	3550	41.5		
Curvularia	1	20	0.2		
Fusarium	1	20	0.2		
Ganoderma	13	270	3.2		
Myxomycetes++	1	20	0.2		
Pithomyces++	3	60	0.7		
Rust	-	-	-		
Stachybotrys/Memnoniella	-	-	-		
Arthrinium	-	-	-		
Blakeslea/Choanephora	-	-	-		
Cercospora++	-	-	-		
Myrothecium/Paramyrothec	-	-	-		
Nigrospora	1*	7*	0.1		
Oidium	-	-	-		
Pestalotia/Pestalotiopsis	-	-	-		
Pyricularia	3	60	0.7		
Spegazzinia	-	-	-		
Tetraploa	1	20	0.2		
Torula-like	3	60	0.7		
Zygosporium	-	-	-		
<b>Total Fungi</b>	<b>421</b>	<b>8544</b>	<b>100</b>		
Hyphal Fragment	8	200	-		
Insect Fragment	-	-	-		
Pollen	7	100	-		

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



**Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida**  
or other approved signatory

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<b>Project:</b> Flagler Sheriff's OPS/F9186371	

**Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

<b>Lab Sample Number:</b>	341900412-0022				
<b>Client Sample ID:</b>	A19				
<b>Volume (L):</b>	150				
<b>Sample Location</b>	Exterior West By Generator				
<b>Spore Types</b>	<b>Raw Count</b>	<b>Count/m³</b>	<b>% of Total</b>		
Analyt. Sensitivity 600x	-	21	-		
Analyt. Sensitivity 300x	-	7*	-		
Skin Fragments (1-4)	-	1	-		
Fibrous Particulate (1-4)	-	1	-		
Background (1-5)	-	3	-		

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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Customer ID: TERC62  
Customer PO: F9186371  
Project ID:

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1675 Lee Road  
Winter Park, FL 32789

Phone: (407) 740-6110  
Fax: (407) 740-6112  
Collected: 01/03/2019  
Received: 01/07/2019  
Analyzed: 01/10/2019

**Proj:** Flagler Sheriff's OPS/F9186371

## Test Report: Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, and Other Particulates from Tape Samples (EMSL Method MICRO-SOP-200)

Lab Sample Number:	341900412-0013	341900412-0020	341900412-0021	341900412-0023	341900412-0024
Client Sample ID:	T1	T2	T3	T4	T5
Sample Location:	139 Evidence Freezer Room	Return Vent 103A Files	Investigations E Lower Wall By Exit Door	AHU 1 Supply Side Lower Housing	AHU 4 Coils Back OF Supply
Spore Types	Category	Category	Category	Category	Category
Alternaria (Ulocladium)	-	-	-	-	-
Ascospores	-	-	-	-	Low
Aspergillus/Penicillium	-	Low	-	-	-
Basidiospores	-	Rare	-	-	Low
Bipolaris++	-	-	-	-	-
Chaetomium	-	-	-	-	-
Cladosporium	*Medium*	-	-	*High*	-
Curvularia	-	-	-	-	-
Epicoccum	-	-	-	-	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	Rare
Myxomycetes++	-	Rare	-	-	-
Pithomyces++	-	-	-	-	-
Rust	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-
Stachybotrys/Memnoniella	*High*	-	-	-	-
Unidentifiable Spores	-	-	-	-	-
Zygomycetes	-	-	-	-	-
Acremonium-like	-	-	*High*	-	-
Triadelphia	-	-	-	-	-
Hyphal Fragment	-	Rare	-	-	-
Insect Fragment	-	-	-	Rare	-
Pollen	-	Rare	-	Low	-

Category: Count/per area analyzed - Rare: 1 to 10 Low: 11 to 100 Medium: 101 to 1000 High: >1000

- Denotes Not Detected.  
++ = Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.  
\* = Sample contains fruiting structures and/or hyphae associated with the spores.

Yessica Martinez Seeman, Microbiology  
Technical Manager, Central Florida

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Samples analyzed by EMSL Analytical, Inc. Orlando, FL AIHA-LAP, LLC--EMLAP Accredited #163563

Initial report from: 01/10/2019 13:07:51

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Order ID: 341900412  
Customer ID: TERC62  
Customer PO: F9186371  
Project ID:

**Attn:** John O'Reilly  
Terracon Consultants, Inc.  
1675 Lee Road  
Winter Park, FL 32789

Phone: (407) 740-6110  
Fax: (407) 740-6112  
Collected: 01/03/2019  
Received: 01/07/2019  
Analyzed: 01/10/2019

**Proj:** Flagler Sheriff's OPS/F9186371

## Test Report: Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, and Other Particulates from Tape Samples (EMSL Method MICRO-SOP-200)

Lab Sample Number:	341900412-0025	341900412-0026	341900412-0027	341900412-0028	341900412-0029
Client Sample ID:	T6	T7	T8	T9	T10
Sample Location:	AHU 4 Blower Housing	Ceiling Tile Edge Room 129 Investigation	Below Floor Mat-Records Room 153	Ceiling Tile Edge-SE Training Room	Below 129 Investigation Carpet Square
Spore Types	Category	Category	Category	Category	Category
Alternaria (Ulocladium)	-	-	-	-	-
Ascospores	Rare	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-
Basidiospores	-	-	-	-	-
Bipolaris++	-	-	-	-	-
Chaetomium	-	-	-	-	-
Cladosporium	Low	-	-	-	Low
Curvularia	-	-	-	-	-
Epicoccum	Rare	-	-	-	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	-
Myxomycetes++	-	-	-	-	-
Pithomyces++	-	-	-	-	-
Rust	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	High
Stachybotrys/Memnoniella	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-
Zygomycetes	-	-	-	-	-
Acremonium-like	-	-	-	-	-
Triadelphia	-	-	-	-	-
Hyphal Fragment	Low	-	-	-	Low
Insect Fragment	-	-	-	-	Rare
Pollen	Low	-	-	-	-

**Sample Comment:** 341900412-0026 None Detected  
**Sample Comment:** 341900412-0027 None Detected  
**Sample Comment:** 341900412-0028 None Detected

Category: Count/per area analyzed - Rare: 1 to 10 Low: 11 to 100 Medium: 101 to 1000 High: >1000

- Denotes Not Detected.  
++ = Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.  
\* = Sample contains fruiting structures and/or hyphae associated with the spores.

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Technical Manager, Central Florida

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**Proj:** Flagler Sheriff's OPS/F9186371

## Test Report: Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, and Other Particulates from Tape Samples (EMSL Method MICRO-SOP-200)

Lab Sample Number:	341900412-0030	341900412-0031	341900412-0032	341900412-0033	341900412-0034
Client Sample ID:	T11	T12	T13	T14	T15
Sample Location:	Evidence Upper Wall Old Wood	Concrete Floor Evidence Below Floor Mat	Below Carpet Square NE Exit	Below VFT In SE Hall	Evidence Old Insulation Debris
Spore Types	Category	Category	Category	Category	Category
Alternaria (Ulocladium)	-	-	-	-	-
Ascospores	Rare	-	-	-	-
Aspergillus/Penicillium	*High*	-	Rare	Rare	Rare
Basidiospores	-	-	-	-	-
Bipolaris++	-	-	-	-	-
Chaetomium	-	-	-	-	-
Cladosporium	*High*	*Low*	-	Rare	-
Curvularia	-	-	-	-	-
Epicoccum	-	-	-	-	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	Rare
Myxomycetes++	-	-	-	-	-
Pithomyces++	-	-	-	-	-
Rust	-	-	-	-	-
Scopulariopsis/Microascus	-	-	*High*	*High*	-
Stachybotrys/Memnoniella	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-
Zygomycetes	-	-	-	-	-
Acremonium-like	-	*Low*	-	-	-
Triadelphia	Rare	-	-	-	-
Hyphal Fragment	-	-	Rare	-	Low
Insect Fragment	-	Low	-	-	-
Pollen	Rare	-	-	-	Rare

Category: Count/per area analyzed - Rare: 1 to 10 Low: 11 to 100 Medium: 101 to 1000 High: >1000

- Denotes Not Detected.  
++ = Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.  
\* = Sample contains fruiting structures and/or hyphae associated with the spores.

Yessica Martinez Seeman, Microbiology  
Technical Manager, Central Florida

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# Microbiology Chain of Custody

## EMSL Order Number (Lab Use Only):

341900412

PHONE:

FAX:

*Corporate*

Company: <i>Terracon Consultants</i>		EMSL-Bill to: <input checked="" type="checkbox"/> Different <input type="checkbox"/> Same <small>If Bill to is Different note instructions in Comments**</small>	
Address: <i>1675 Lee Rd</i>		Third Party Billing requires written authorization from third party	
City: <i>Winter Park</i>	State/Province: <i>FL</i>	Zip/Postal Code: <i>32789</i>	Country:
Report To (Name): <i>John O'Reilly</i>		Telephone #: <i>321-438-5488</i>	
Email Address: <i>joreilly@terracon.com</i>		Fax #:	Purchase Order:
Project Name/Number: <i>Flagler Sheriff's Ops/F9186371</i>		Please Provide Results: <input type="checkbox"/> FAX <input checked="" type="checkbox"/> E-mail <input type="checkbox"/> Mail	
U.S. State Samples Taken: <i>FL</i>		Connecticut Samples: <input type="checkbox"/> Commercial <input type="checkbox"/> Residential	

**Turnaround Time (TAT) Options\* - Please Check**

3 Hour  
  6 Hour  
  24 Hour  
  48 Hour  
  72 Hour  
  96 Hour  
  1 Week  
  2 Week

\*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements

**Non Culturable Air Samples (Spore Traps) - Test Codes**

• M001 Air-O-Cell	• M173 Allegro M2	• M004 Allergenco	• M032 Allergenco-D	• M172 Versa Trap
• M049 BioSIS	• M003 Burkard	• M043 Cyclex	• M002 Cyclex-d	
• M030 Micro 5	• M174 MoldSnap	• M176 Relle Smart	• M130 Via-Cell	

**Other Microbiology Test Codes**

• M041 Fungal Direct Examination • M005 Viable Fungi ID and Count • M006 Viable Fungi ID and Count (Speciation) • M007 Culturable Fungi • M008 Culturable Fungi (Speciation) • M009 Gram Stain Culturable Bacteria • M010 Bacterial Count and ID - 3 Most Prominent • M011 Bacterial Count and ID - 5 Most Prominent • M013 Sewage Contamination in Buildings	• M014 Endotoxin Analysis • M015 Heterotrophic Plate Count • M180 Real Time Q-PCR-ERMI 36 Panel • M018 Total Coliform (Membrane Filtration) • M020 Fecal Streptococcus (Membrane Filtration) • M210-215 Legionella Detection • M026 Recreational Water Screen • M027 Mycotoxin Analysis	• M029 Enterococci • M019 Fecal Coliform • M133 MRSA Analysis • M028 Cryptococcus neoformans Detection • M120 Histoplasma capsulatum Detection • M033-39 Allergen Testing • M044 Group Allergen (Cat, Dog, Cockroach, Dustmites) • Other See Analytical Price Guide
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Preservation Method (Water): *N/A*

Name of Sampler: *John O'Reilly*      Signature of Sampler: *John O'Reilly*

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
A1	Exterior N parking	Air	M001	150L	11/3/18 10:18 AM
A2	Investigations 129A entrance	↓	↓	↓	10:37
A3	Break Room				10:46
A4	SECURITY TRAINING ROOM				10:50
A5	Room 150 ITF Room				11:02 AM
A6	Evidence Room Room 134				11:08
A7	SW Hallway				11:23 AM
A8	Room 118 Victims Services				11:49 AM
A9	Exterior NE plantings area				1:14 PM
A10	Evidence Storage Room				1:36 PM

Client Sample # (s): *A1 - A10*      Total # of Samples: *34*

Relinquished (Client): *John O'Reilly*      Date: *11/7/19*      Time: *10:30 PM*

Received (Client): *[Signature]*      Date: *11/7/19*      Time: *1:05*

Comments: *M001 for all Air Samples A1-A10  
M041 for all type Samples T1-T15*

341900412

SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME Air	Area (Inches)	Day
A11	Evidence Freezer Room	Air Test M001	1502	1/31
A12	Narcotics Room	↓	1502	1/31
T1	139 Evidence Freezer Room	Tape M041	-	3:20p
A13	Sheriff's Office Room 178	Air M001	1502	3:20p
A14	Under Sheriff Office Room 175	↓	↓	3:23p
A15	Lobby by restroom	↓	↓	3:34p
A16	Records Storage	↓	↓	3:48p
A17	Commander's Office 113	↓	↓	4:04p
A18	Investigations East	↓	↓	4:07p
T2	Return vent 103A Files	Tape M041		4:31pm
T3	Investigation E lower wall by exit door	Tape M041		4:36p
A19	Exterior West by generator	Air M001	1502	3:09pm
T4	AHU 1 Supply side power housing	Tape M041		1/4/18 10:50A-
T5	AHU 4 coils back supply	↓	↓	11:08
T6	AHU 4 Blower housing	↓	↓	11:10Am
T7	Ceiling tile edge Room 129 Investigation	↓	↓	11:34Am
T8	Below Floor mat - Records Room	153		11:55Am
T9	Ceiling tile edge - SE Training Room	↓	↓	1:16pm
T10	Below 129 Investigation Carpet sample	↓	↓	1:53pm
T11	Evidence upper wall old wood	↓	↓	2:31pm
T12	Concrete Floor Evidence below Floor mat	↓	↓	2:43pm
T13	Below carpet sample NE exit	M041		4:12pm
T14	Below VFT in SE hall	↓	↓	4:18pm
T15	Evidence old insulation debris	↓	↓	1/31/19 5:25pm

Relinquished:  
Received:  
Relinquished:  
Received:

*John Kelly*

Date: 1/7/19 Time: 1:33pm  
Date: Time:  
Date: Time:  
Date: Time:

**APPENDIX E**  
**AVIAN PATHOGEN LAB TEST REPORT**



Report for:

**Mr. John O'Reilly**  
Terracon - Orlando, FL  
1675 Lee Road  
Winter Park, FL 32789

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Regarding: Project: F9186371; Flagler Sheriff's Ops Bldg  
EML ID: 2072876

Approved by:

Operations Manager  
Joshua Cox

Dates of Analysis:

PCR screen: Avian Pathogen: 01-10-2019

Service SOPs: PCR screen: Avian Pathogen (EM-BC-S-1097, EM-BS-S-1199 & EM-BC-S1206)

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All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the items tested.

EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Client: Terracon - Orlando, FL  
 C/O: Mr. John O'Reilly  
 Re: F9186371; Flagler Sheriff's Ops Bldg

Date of Sampling: 01-04-2019  
 Date of Receipt: 01-09-2019  
 Date of Report: 01-10-2019

**AVIAN PATHOGEN SCREEN: PCR METHODOLOGY**

Location:	S1: Upper Wall Cavity Debris SE Training	
Comments (see below)	None	
Sample Type:	Swab sample	
Lab ID-Version‡:	9791768-1	
Sample Size:	1	
Unit:	swab	
	CE*	CE*/Unit
<i>Chlamydomphila psittaci</i>	ND	<100
<i>Cryptococcus neoformans</i>	ND	<100
<i>Histoplasma capsulatum</i> §	Present	

\*Cell equivalents ND = Not Detected

**Comments:**

Method Reference: *Chlamydomphila psittaci*- Madico, G., Quinn T.C., Boman, J., and Gaydos C.A. 2000. Touchdown enzyme time release-PCR for detection and identification of *Chlamydia trachomatis*, *C. pneumoniae*, and *C. psittaci* using the 16S and 16S-23S spacer rRNA genes. J. Clin. Microbiol. Vol. 38. 1085-1093

Method Reference: *Cryptococcus neoformans*- Bialek, R., Weiss, M., Bekure-Nemariam, K., Najvar, L.K., Alberdi, M.B., Graybill, J.R., and U. Reischl. 2002. Detection of *Cryptococcus neoformans* DNA in tissue samples by nested and real-time PCR assays. Clin Diagn Lab Immunol. 9:461-469

Method Reference: *Histoplasma capsulatum*- Reid, T.M. and Schafer, M.P., 1999. Direct detection of *Histoplasma capsulatum* in soil suspensions by two-stage PCR. Mol Cell Probes. 13(4):269-73.

§This organism requires a two-stage PCR method of analysis. As a result, detection can only be reported as "Present" or "Absent".

‡A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".



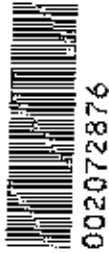
**CHAIN OF CUSTODY**

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 San Bruno, CA: 1150 Bayhill Drive, #100, San Bruno, CA 94066 • (866) 889-6653

WEATHER:			
None	Fog	Rain	Show
Light			Wind
Moderate			Clear
Heavy			



002072876

**CONTACT INFORMATION**  
 Company: Terracon Consultants 1675 Lee Rd. Winter Park FL  
 Special Investigator  
 Contact: John O'Reilly Email: JOHN.O'REILLY@TERRACON.COM 32788  
 Phone: 327-438-5488 Brian DuChene @terracon.com

**PROJECT INFORMATION**  
 Project ID: F9186371  
 Project Desc: Fluorocarbon Sheetrock Ops  
 Project: Sampling  
 Zip Code: 32110 Date & Time: 1/14/19 3:50 PM  
 PO Number: \_\_\_\_\_

**TURN AROUND TIME CODES - (TAT)**  
 STD - Standard (DEFAULT)  
 ND - Next Business Day  
 SD - Same Business Day Rush  
 WH - Weekend/Holiday

Rushes received after 2pm or on weekends, will be considered received the next business day. Please alert us in advance of weekend analysis needs.

Sample ID	Description	Sample Type (Below)	TAT (Above)	Total Volume/Ansa (Applicable)	NOTES (Time of day, Temp, RH, etc.)
S1	Upper wall cavity debris - SE Trench	SW NO	NO		3:50 pm

SAMPLE TYPE CODES		REQUIREMENT BY		DATE & TIME	
BC - BioCustries	ST - Spore Trap; Zefon, Allergenco, Burkard...	T - Tape	D - Dust		
A15 - Andersen	P - Porable Water	SW - Swab	SO - Soil		
SAS - Surface Air Sampler	NP - Non-Porable Water	B - Bulk	O - Other:		
CP - Contact Plate					

OTHER REQUESTS		RECEIVED BY		DATE & TIME	
Asbestos Analysis - PCM Airborne Fiber Count (NIOSH 7400)	Quant Tray - Sewage Screen				
Asbestos Analysis - PCM (EPA method 800/R-93-116)	MPN Bacteria (Please specify organism)				
PCR (Please specify test)	Membrane Filtration (Please specify organism)				
	Total Coliform, E.coli (Presence/Absence)				
	Legionella culture				
	Gram Stain and Counts (Culturable Air and Surface Inhabit)				
	Culturable Air Fungi (Genus ID + Sp. spp.)				
	1-Media Surface Fungi (Genus ID + Sp. spp.)				
	2-Media Surface Fungi (Genus ID + Sp. spp.)				
	1-Media Surface Fungi (Genus ID + Sp. spp.)				
	Quarantine Spore Count Direct Exam				
	Direct Microscope Exam (Qualitative)				
	Fungi - Spore Trap Analysis				
	Spore Trap Analysis - Other particles				
	Non-C				
	Swab Bulk				
	Water, Bells, Disc, Soil, Contact Plate				

By submitting this Chain of Custody, you agree to be bound by the terms and conditions set forth at www.emlabpk.com/terms.html  
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