



A Full-Service Real Estate  
Inspection & Engineering Firm

**Foundation Inspection Report  
for  
718 Sue Barnett Drive  
Houston, Texas 77018**

**February 8, 2019**

**Prepared for:**

**Michael Norfleet  
718 Sue Barnett Drive  
Houston, Texas 77018**

**Prepared by:**

**Charles J. Jenkins, P.E.**

Charles J. Jenkins & Associates, Inc.  
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February 8, 2019

Michael Norfleet  
718 Sue Barnett Drive  
Houston, Texas 77018

Re: 718 Sue Barnett Dr, Houston, TX 77018

Dear Mr. Norfleet:

We performed the requested foundation evaluation of the referenced property on Monday, February 4, 2019. The purpose of this assessment was to determine the state of foundation performance, within the context of flooding of the site that reportedly occurred during Hurricane Harvey. This assignment was, therefore, specifically limited to evaluation of foundation performance. As part of this assignment, current conditions were to be compared with those recorded during the inspection performed in 2016. If any remedial measures were found to be required to the foundation, a plan for such work was to be provided.

This evaluation was limited to a visual examination of accessible areas and components of the structure and was performed following generally accepted engineering principles, practices and guidelines, consistent with a Level B evaluation as presented in the "Guidelines for Evaluation and Repair of Residential Foundations", published by the Texas Section of the American Society of Civil Engineers. Conclusions presented in this report are based solely on conditions observed by the undersigned, considered within the context of our 2016 report. Because of the limited nature of this inspection Charles J. Jenkins & Associates, Inc. ("CJJ&A") can make no representation regarding the possibility of concealed defects. Should additional information become available, CJJ&A reserves the right to review that information and revise the report, as appropriate. Contained herein are our findings, conclusions, and recommendations. For reference, left and right are determined from looking at the house from the street.

### Findings

1. General: The structure is a two-story, single-family residence of wood frame construction built on a foundation consisting of a concrete block and base supports under the exterior and interior load bearing walls. A crawl space was located beneath the house, with clearance below the bottom of siding of about 8 inches on the sides and rear. Clearance within the crawl space appears to be about six to twelve inches between the ground and the bottom of support beams.

Exterior walls were clad with a stone veneer at the right front and hardboard/Hardie-siding on other walls. The roof is of gable configuration, with a covering of composition shingles. An

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enclosed porch is attached to the house at the rear, with a wood composite deck behind the house and porch. A detached garage is located at the left rear of the house.

The perimeter of the crawl space under the house is enclosed by a plastic lattice, with little visibility of the crawl space through lattice openings. The stone veneer appears to be set on a concrete beam, preventing a close examination of the crawl space and supporting structure. Ventilation of the crawl space is excellent. Low clearance prevented entry into the crawl space, resulting in its being examined by looking through the latticework around the perimeter. The grade under the house appeared to be slightly above the surrounding grade. No deficiencies were observed in structural components within the crawl space, other than that wood had been used for shims between block supports and primary wood beams.

According to the Harris County Appraisal District website the residence was built in 2001. The house is located on a relatively flat residential lot with drainage to the street. Site drainage is augmented by an underground drain system, with area drain inlets at several locations, including at the left front and left rear of the house. The house is located on the north side of the street and faces south. The garage was not included within the scope of this assignment.

2. Foundation: According to plans provided for review, the foundation of this house consists of concrete pads that are imbedded in the ground about 18". Steel reinforcing bars are shown to be imbedded in the concrete pads, with the rods extending up into concrete filled blocks ("CMU") that are set on the pads. Threaded steel "J-bolts" are then shown to be imbedded in the concrete filled CMU blocks, with treated 2"x8" bottom plates laid across and bolted to the top of the CMU blocks. Doubled 2"x12" treated lumber "beams" and floor joists are then secured to the bottom plates. Joists and interior beams are spaced 16" on center and are set on the beams.

It was reported that foundation/floor adjustments had been performed in 2013, following our inspection in 2012. The work was reportedly performed by "Fix My Slab", with a minor secondary adjustment of the floors performed in 2014 to square up the door frames at the rear. Though no work has been done since the adjustment of 2014, sheetrock damage observed in the house suggests that the foundation has experienced differential movement since that time.

Exterior walls of the house are covered with stone veneer at the right front, with hardboard or Hardie-siding on all other walls. The front and back porches are wood and/or composite board decks, also supported on concrete footings. No significant irregularities, including material separations indicative of foundation movement were found in exterior siding and trim of the house.

Interior walls and ceilings of the house are finished with painted sheetrock. Irregularities found in the interior of the house included cracks and buckles in sheetrock, to include:

- In the foyer and entry hall,
  - A hairline horizontal sheetrock crush was found at the top front of the powder room door.
  - A hairline diagonal sheetrock crack was found at the top rear of the powder room door.
  - A hairline vertical sheetrock crush was found at the top rear of the doorway to the dining room.

- A hairline vertical sheetrock crack was found at the top rear of the left side, 45-degree, wall at the stairs.
- In the powder room, hairline separations were found at corners of crown molding.
- In the front entry hall, a 1/16" vertical sheetrock crack was found at the left side of the second level bridge floor.
- In the dining room,
  - A 1/16" diagonal sheetrock crack was found at the top right of the kitchen door.
  - A hairline separation was found in crown molding at the left rear corner.
  - Crown molding is separated at the right and left sides of the bay window.
- In the kitchen,
  - A diagonal sheetrock buckle was found at the top right of the dining room door.
  - The front cabinet, to the right of the dining room door, is tight against the wall at the bottom, but is separated from the top of the wall about 1/4".
  - Doors of cabinets on the right side are slightly misaligned, down to the rear.
- In the nook,
  - A hairline vertical sheetrock crack was found at the right front of the front angled wall of the bay window, at the transition to the kitchen.
  - A horizontal sheetrock buckle was found between the middle, front, and rear windows of the bay window.
  - A diagonal sheetrock crush was found at the top right of the utility room door.
  - A hairline separation was found at corners of crown molding.
- In the utility room,
  - A hairline sheetrock crack was found at the top left of the door.
  - A hairline sheetrock buckle was found at the top right of the door.
  - Crown molding is separated about 1/16" at the right front and left rear corners.
  - Hairline separations were found in crown molding at the right rear and left front corners.
- In the living room,
  - A hairline diagonal sheetrock crack was found at the top rear of the door to the master bedroom.
  - A 1/16" vertical crack was found along the left rear corner.
  - A hairline sheetrock crack was found at the top of the French doors, between the three sets of doors.
  - A vertical edging crack was found in the ceiling at the rear of the fireplace, with a crack extending into the flat.
  - A hairline separation was found at the front corner of the nook entry, with a crack with horizontal, vertical, and diagonal components at angled corners.
  - A vertical sheetrock repair was found at the top front of the 45-degree angle wall at the nook.
  - A 1/16" sheetrock crack was found along the left ceiling slope.
  - Loose sheetrock tape was found, with repair, at tape across the ceiling, about an inch to the front of the fireplace.
  - A 1/16" sheetrock crack was found along the rear slope of the ceiling on the right side and at the right flat.
- In the master bedroom,
  - A 1/16" horizontal sheetrock crack was found along the middle of the right wall.

- A hairline vertical sheetrock crack was found about four feet from the right front corner, with a second horizontal sheetrock crack adjacent.
- A diagonal sheetrock crack was found at the top left of the left rear window.
- A hairline vertical sheetrock crack was found at the right rear corner.
- A vertical sheetrock crush was found over the entry door.
- A 1/16" diagonal sheetrock crack was found at the top left of the bathroom door, viewed from the bedroom.
- A 1/16" diagonal sheetrock crack was found at the top right of the bathroom door, also viewed from the bedroom.
- A hairline crown molding separation was found at the right rear corner of the ceiling.
- In the master bathroom,
  - An edging crack was found along the slope of the ceiling under the stairs.
  - A diagonal sheetrock crack was found in the closet, at the right of the door.
  - A 1/16" vertical sheetrock crack was found at the top right of the small 45-degree wall at the right front, in the closet.
  - A vertical sheetrock crush was found at the top left of the bedroom door.
  - Vertical sheetrock cracks were found at the top center of the closet door.
  - A hairline diagonal sheetrock crack was found at the top right of the bedroom door.
  - A hairline diagonal sheetrock crack was found at the top rear of the tub window.
  - A vertical sheetrock crack was found at the left front corner.
  - A hairline diagonal sheetrock buckle was found at the top right of the front window.
  - A hairline diagonal crack was found at the top rear of the water closet door.
  - The frame of the closet door is spread at the latch.
  - Top trim of the closet door is slightly separated at corners.
  - Cabinets are separated from the bedroom wall at the rear of the cabinets.
  - Grout is loose at the front of the shower.
- On the second level, at the stair landing and dormer insets,
  - A hairline edging crack was found at the left rear of the right dormer, at ceiling slopes.
  - A 1/16" crown molding separation was found in the front slope.
- In the study,
  - A hairline diagonal crack was found at the top left of the library door.
  - The frame of the closet door is distorted down to the rear and the door drags the top of the frame at the rear.
- In the library,
  - A hairline vertical sheetrock crack was found at the top front of the left shelves.
  - A hairline diagonal crack was found at the top left of the study door.
  - The door does not latch.
  - A 1/4" separation was found along the top of the shelves at the rear wall.
- In the left front bedroom,
  - A hairline diagonal sheetrock crack was found at the top right of the closet door.
  - A hairline edging crack was found at the left rear of the dormer inset.
  - A hairline separation was found in crown molding at the right and left front corners.

- In the left rear bedroom,
  - Minor warped tape was found at the left front corner.
  - A hairline separation in crown molding was found at the left rear corner.
  - The frame of the entry door is distorted down to the front and the door does not latch.
  - The frame of the closet door does not latch.

A topographical (elevation) survey was performed on the ground floor level to determine the extent of floor deflection. In this survey, spot elevations were measured using an electronic manometer (“Compulevel” or “Zip Level”) that operates in the same manner as a “water level”. Elevations were measured in relation to a zero reference that was set at the middle of the front entry door. Elevations were then adjusted for changes in floor covering so that all elevations were relative to a common floor level. Measured elevations on the ground floor of this house were found to range from +0.4” to -2.1”. A drawing showing the results of this survey, as well as the survey taken in 2016, is provided as an attachment to this report.

### Conclusions and Recommendations

1. General: Grading around the structure appeared to be reasonable for this site. Though water does not appear to drain into the crawl space during normal rain events, water reportedly flooded the lot, including the area below the house, during Hurricane Harvey. This resulted in the soil under and around the house becoming saturated with water for an extended time, though the water flowed off the site relatively quickly when floor waters receded. That said, it appears that no remedial work is needed to correct drainage irregularities detrimental to foundation performance.

2. Foundation: Conditions observed during this evaluation were typical of those found in a house where the foundation has experienced noticeable foundation movement. That said, it is our opinion that this movement occurred because flood waters of Hurricane Harvey saturated the soil under and around the house, softening the soil under the supporting blocks. Settlement caused by this phenomenon was then exacerbated when the soil dried after the flood. The combined effects of these phenomena caused the blocks to settle enough to cause noticeable floor slopes and sheetrock damage to walls and ceilings. That said, all damage observed is relatively minor and cosmetic in nature. No evidence of severe structural distortion or structural damage was observed.

A review of the topographical surveys taken in 2016 and 2019 found noticeable, but for the most part, relatively minor changes in floor deflection. The area shown in blue is that with the most negative change in elevation (settlement), which correlates well with evidence of such movement. That said, the areas shown in magenta shows apparent positive changes, uplift. Of course, if the reference point moved, it would affect the size and nature of all changes measured. How it moved, however, whether up or down, would be an educated “guess” based on the overall magnitude and orientation of damage found. That said, in this case, evidence supports the conclusion that the reference point has been reasonably stable, supporting the conclusion that changes are essentially as observed.

That said, the dining room shows very minor elevation changes that are contrary to the nature of the damage observed. This means that the nature and/or placement of damage observed in the dining room is opposite that which would be expected from the elevation changes measured. This suggests that the damage was caused by movement that occurred during the flood, but that this movement was ameliorated when the soil dried after the storm.

Based on the above, it is our opinion that the foundation is reasonably stable at this time, as the soil has had time to achieve “normal” moisture levels following the storm. As such, further settlement is unlikely to occur within the foreseeable future, barring some unforeseen occurrence such as another flood event. Though the structure has experienced enough distortion to suggest some adjustment of primary support beams *could* be performed to improve floor flatness and relieve stresses induced by foundation settlement, such adjustment is considered optional. That is because it does not portend imminent or even potential structural damage. Further, neither floor deflection nor sheetrock damage is severe enough to *require* floor adjustment or foundation stabilization, though such adjustment could be performed, if desired. That said, the goal would be, primarily, to close cracks or relieve crushing in sheetrock, with a secondary goal of achieving a minor improvement in floor flatness.

Though either structural adjustment of the foundation, or deferral of adjustment for an indefinite time, would be acceptable, it is suggested that such work be deferred. That is because deflection is considered relatively minor and such work could cause more damage than is now present. If this option is implemented, it is recommended that cosmetic damage be repaired and the foundation monitored for evidence of further instability. If such evidence becomes apparent, the need for stabilization can then be reconsidered. Recognizing, however, that client intends to renovate the house soon, it may be desired to proceed with adjustment so that movement induced stresses can be alleviated prior to renovation. Recognizing this possibility, the general area of the structure recommended for adjustment is shown in blue on the drawing in Appendix C. Of course, some adjacent areas may require some adjustment depending on how the floor system responds to the lift. The magenta area is high and may subside if the soil is wetter than normal, though that is considered unlikely considering the time since the Harvey flood.

#### Certification

It is hereby certified that a foundation performance assessment of the residence located at the referenced address was performed on the date specified above. It is further certified that the findings and conclusions contained in this report have been correctly and completely stated without bias and are based upon our observations and experience. No responsibility is assumed for events that occur subsequent to the submission of this report and no warranty, either expressed or implied, is hereby made. Should additional information regarding the condition of this residence become available, the undersigned reserves the right to review such information and modify this report, as appropriate.

#### Limitations

This report is provided by a licensed Professional Engineer licensed to practice that profession in the State of Texas and is valid as of the date of the site visit. It excludes conditions and events that may occur after the site visit. This report makes no guarantee that every possible

Michael Norfleet  
Foundation Evaluation Report  
718 Sue Barnett Dr, Houston, TX 77018

discrepancy has been cited. CJJ&A makes no claim concerning any activity or conditions falling outside the specified purpose to which this report is directed. In addition, no warranty, expressed or implied, is made by the engineer for the professional services set forth. Only structural components and related conditions mentioned above were examined. The structural capacity of the framing was not reviewed nor analyzed, as no plans were provided for review and such analysis was beyond the scope of this assignment. As a result, the overall analysis and opinions presented herein are limited by these factors.

In recognition of the relative risks, rewards, and benefits of the service provided, to both the client and CJJ&A, the risks have been allocated such that the client agrees that the liability of CJJ&A is limited to the value of the service provided and the client shall indemnify and hold CJJ&A harmless from and against any and all claims, liabilities, obligations, costs, or expenses (including reasonable attorneys' fees) arising by reason of or associated with the performance of these services. In addition, should any additional work related to this evaluation be required, regardless of the nature of such work, such work would be considered an additional assignment and would be billed, as appropriate.

We thank you for the opportunity to be of service. If you have any questions, please let us know.

Sincerely,

CHARLES J. JENKINS & ASSOCIATES, INC.

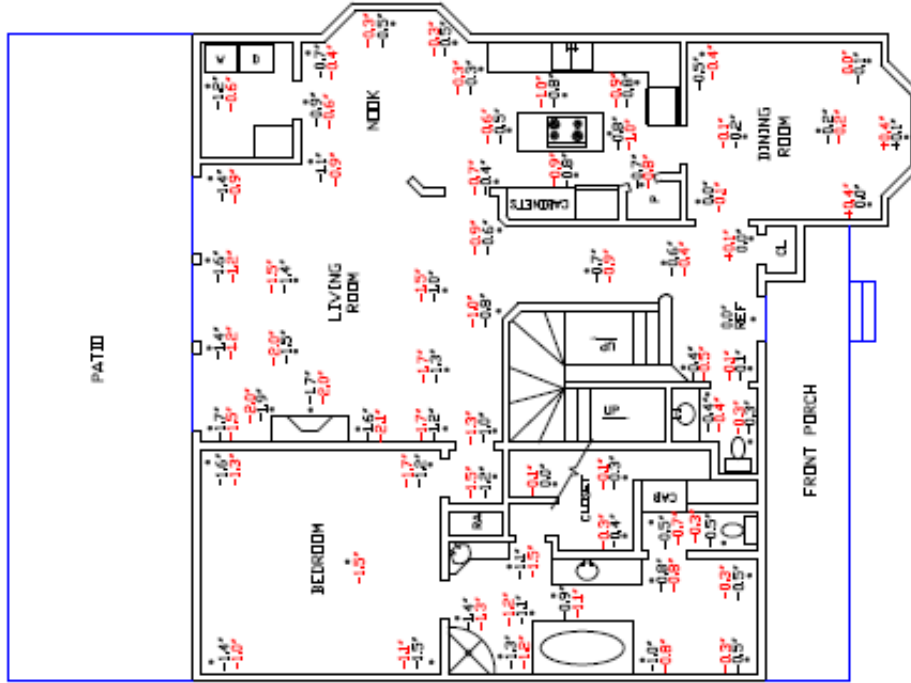
Charles J. Jenkins, P.E.  
President

Attachments – Appendix A – Elevation Survey Comparison (2016 – 2019)  
Appendix B – Selected Photographs  
Appendix C – Suggested Structural Adjustment Plan



**APPENDIX A**

**ELEVATION SURVEY**



LEGEND  
 -0.7' ELEVATIONS - 2016  
 -0.9' ELEVATIONS - 2019

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CLIENT:	MICHAEL NOMELET
STREET:	718 SUE BARNETT DRIVE
CITY, STATE, ZIP:	HOUSTON, TEXAS 77018
DATE:	3-8-2019
SHEET:	1 OF 1
FILE NAME:	718 SUE BARNETT DR.
DRAWN BY:	JMM

ELEVATION SURVEY  
 <COMPARISON 2016 V 2019>

**APPENDIX B**

**SELECTED PHOTOGRAPHS  
BY CJJ&A**

Photo # 1 Front of house



Photo # 2 Right side from rear





Photo # 3 Left side of house from rear



Photo # 4 Rear of house





Photo # 5 Crawl space



Photo # 6 Crawl space – minimal clearance under beam





Photo # 7 Crawl space from left rear



Photo # 8 Crawl space from rear



Photo # 9 Crawl space from right rear



Photo # 10 Crawl space from right rear





Photo # 11 Crawl space from right side



Photo # 12 Crawl space





Photo # 13 Utility room



Photo # 14 Crawl space, note wood shims



Photo # 15 Crack in wall at top rear of dining room doorway



Photo # 16 Crack at ceiling, left side of entry hall diagonal offset corner





Photo # 17 Crack at top of powder room doorway



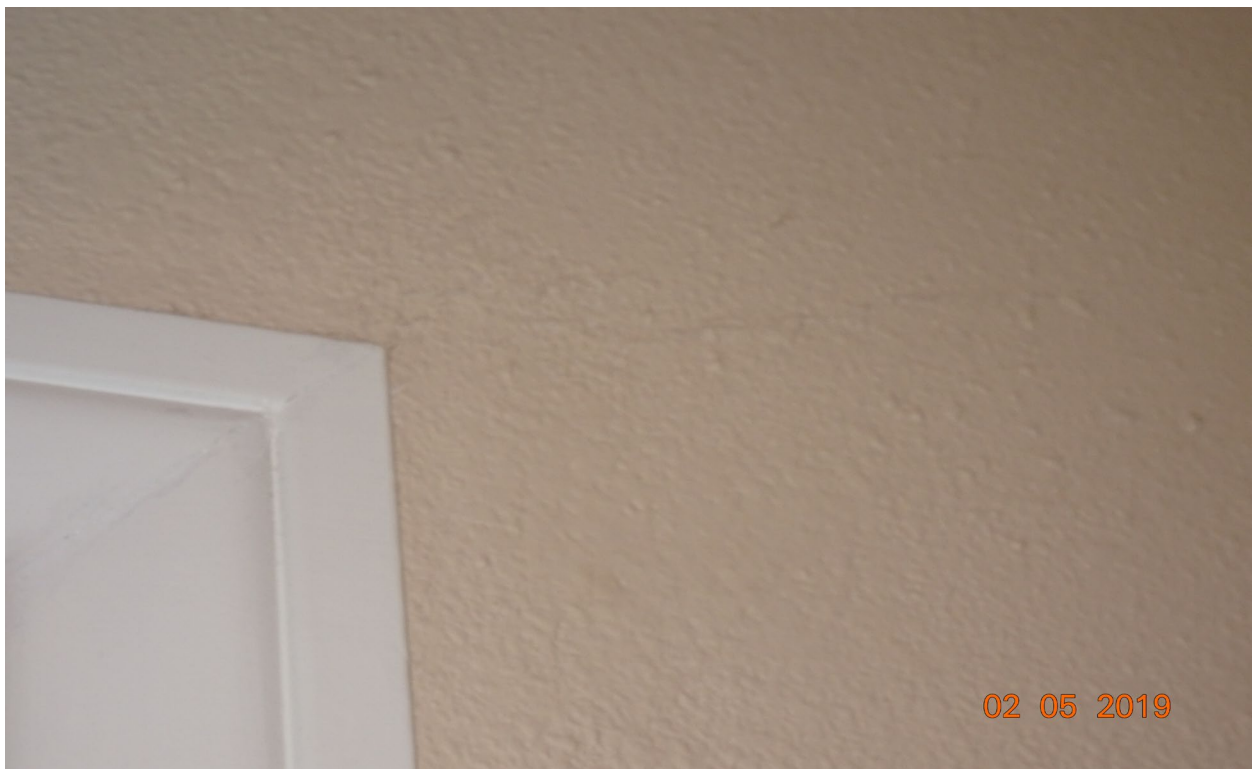
Photo # 18 Crack at left side of “bridge” over foyer



Photo # 19 Crack in sheetrock at top right of dining room door to kitchen

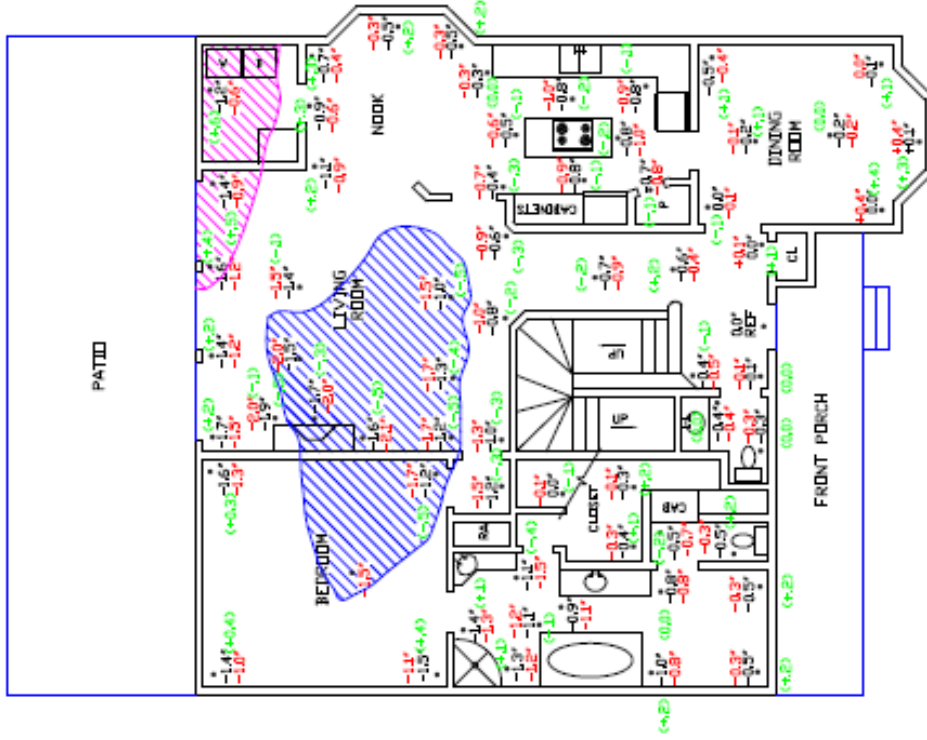


Photo # 20 Crack at top right of door to utility room



**APPENDIX C**

**SUGGESTED STRUCTURAL ADJUSTMENT PLAN**



LEGEND  
 -0.7' ELEVATIONS - 2016  
 -0.9' ELEVATIONS - 2019

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	DRAWN BY: JMM

ELEVATION SURVEY  
 <COMPARISON 2016 V 2019>