

EARL "GARY" KEEN, PE  
P. O. BOX 89100  
OKLAHOMA CITY, OK 73189  
405-823-8240  
Email: garykeen47@att.net

Engineer's Report  
3126 Meadow Avenue  
Norman, OK

## INTRODUCTION

The residence located at 3126 Meadow Avenue is part of a structure that contains four units having separate ownership, which is a condo-type arrangement. This structure is located in a very attractive area that back up to The Trails Golf Course. This structure is located at the extreme easterly edge of the floodplain of the Canadian River. The floodplain of this river is more than a mile wide and part of it is located in an adjacent municipality. This structure was constructed prior to implementation of all of the current floodplain regulations; therefore this structure was constructed with the elevation of the lowest flood being lower than would be permitted today. Actually, this structure is not in the regulatory floodplain because the structure was removed from the floodplain by a LOMA approved some time ago by FEMA. However, the LOMA did not include the land located outside the structure. This engineer was requested to assist the owner in obtaining a Floodplain Permit from the City of Norman, and this report covers the activities of this engineer in regard to this matter.

Unfortunately, the owner had construction work done in the floodplain prior to obtaining the required Floodplain Permit, and this work include the removal of soil and the introduction of paving blocks, bricks, landscape blocks, etc. Since the earthwork was done before getting the permit, the engineer was deprived of the opportunity to obtain survey data to show the elevations of the ground under pre-construction conditions. Consequently, the reference data in regard to elevations is not directly available at this location.

## INSPECTIONS

This engineer inspected this site on several occasions. The first time he visited the site was in 2022, At that time the owner had applied for a building permit to include substantial work on the interior of the residence at 3126. During the preliminary review of the building permit application, the staff decided that this work would require a Floodplain Permit prior to issuance of a building permit. Consequently, the owner contacted me and requested my assistance is applying for a FP permit. I went to the site along with my surveyor to get the necessary elevation data and other information needed to prepare a site plan. But, upon arriving at the site, I was informed that the City or somebody else had discovered a LOMA for this structure. Accordingly, the staff determined that the FP permit would not be required. Accordingly, we did not conduct a survey and I did not assist the owner at that time.

Since being notified by the City that a floodplain violation has occurred on her property, the owner contacted me again and requested my assistance in applying for a FP permit. I agreed to assist her in that effort, and that is why I am writing this application.

I recall from visiting the site in 2022 that the patio door threshold was only a short distance above grade at that time, but I do not recall specific details. Apparently, I did not take photographs at that

time.

Since being retained by the owner, I have assisted a licensed surveyor in making a detailed elevation survey of the back yard of this property and a detailed site plan. I took numerous photographs of this yard and surrounding area on multiple occasions. I even inspected the site during a minor rainstorm. A larger rainstorm was not available during daylight hours.

I have had multiple discussions with the contractor that did the work in the yard in an attempt to fully understand the pre-construction conditions and the work that was done. The contractor has been very cooperative, and I think he regrets the failure to obtain the FP permit in advance of the work.

The contractor is certain that the portion of the yard covered by the patio slab, as shown in photographs, is approximately four inches lower the historic ground in this yard. He stated that the owner gave his strict instructions that the ground elevation from the house to the gate must be lowered to prevent floodwater from getting into the residence around the patio door, as had happened before. The owner expressed the same concern to me and stated that I am to do everything that the City wants done, except that we should not place anything in the yard that would raise the ground. She is worried that raising the ground will cause stormwater runoff from local rainfalls to enter her residence as it has in the past. Incidentally, this area experience a major rainstorm event recently, and her residence remained completely dry; therefore, she is satisfied with the drainage improvement that her contractor did. The contractor mentioned two locations that he said show how much the patio slab was lowered. The first location is at the patio door. The current patio slab is about five inches below the threshold at the door, and he said that the original grade was only about one inch below the threshold. The second location that he referred to is the gas meter located in the decorative rock area a near the southwest corner of the patio area. He stated that prior to any excavation, the gas valve (shown in a photograph) was located with the bottom of the valve at ground level. This also indicates that the grade has been lowered about four inches.

I looked at the elevations of the ground beneath the rear fence on this yard. There is a slight ridge in the ground beneath this fence—about one inch high. West of this fence, the ground slopes downward toward the golf course and away from the fence. I am recommending that a few shovels of soil be removed at this location to remove this ridge and promote drainage onto the golf course. In addition, this fence has vertical boards that extend a couple of inches below the horizontal 2 x4 plank that supports the vertical boards. I am recommending that the vertical boards be sawed-off at the bottom of the 2x4 plank to increase the opening onto the golf course and to provide a greater path for water to flow from this yard. Removing soil and cutting-off the boards will increase the opening under this fence by approximately three inches.

### FLOODPLAIN DISCUSSION

The floodplain at this location is connected to the Canadian River and is very wide as mentioned previously. The flow of the river at this point is basically from the north-west to the south-east, which is parallel to the rear yard fences associated with this condo structure, that contains units with house addresses of 3120, 3122, 3124 and 3126. All of the yards have back yard fences of various ages. A portion of these fences is actually located on ground that is higher then the BFE. These fences will a minuscule impact on the floodplain because the fence runs parallel to the direction of flow of the floodplain. Cross-fences will have a much greater impact. Floodplain permits applications are being prepared for units 3124 and 3126 Meadow Avenue, and it is recommended that cross-fences associated with these properties be modified by removing the portion of these fences that extend below the BFE

(1100.00' per the FEMA FIS). Cross-fences on the other two properties are not addressed herein.

#### ESTIMATED VOLUME OF STORMWATER STORAGE GAINED FROM WORK PERFORMED

As stated previously, there are not precise ground elevations to show the ground elevations in the yard of this unit prior to the construction of the fence, patio slab and other improvements, as discussed herein and shown on photos submitted along with other exhibits. But, two points that appear to be adequate for making an estimate of soil volumes and stormwater storage have been identified. Accordingly, an estimated that is believed to be reasonable is hereby submitted.

The area of the patio (covered by patio blocks) is 320 square feet. The area of the decorative rock is 213 square feet. Other areas of the yard appear to be at original grade. According to the contractor, no fill material or sod was brought in. And, all of the soil dug-out was hauled off.

On the patio area, the estimate excavated soil is 5.9 cubic yards, a average depth of six inches. The estimated volume of soil excavated for the decorative rock is 3.3 cubic yards. The volume of additional stormwater storage created is 2.0 cubic yards and 1.3 cubic yards, respectively, for a total additional stormwater storage of 4.6 cubic yards. Incidentally, the volume of flower pots setting on the ground, etc., which is negligible was ignore.

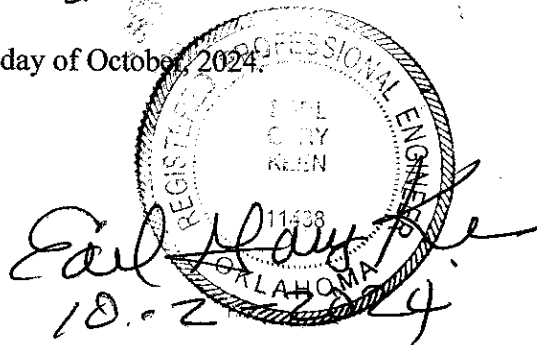
#### RECOMMENDED CORRECTIVE ACTION ON 3126 MEADOW AVENUE

1. Cut off the cross-fence on the north-side of unit 3126. This fence was constructed by the owner of unit 3124 (shared fence) and it is understood that the owner of unit 3124 is proposing to cut-off this fence at the elevation of the BFE (1100.00'). Wire fencing having large openings between wires may be placed across the open area below the fence if desired by owner. The work required on this fence will be included in a FP to be submitted for Unit 3124.
2. Remove the two bottom boards of the wooden fence existing along the SE property line, between Unit 3126 and the adjacent parking lot. Boards are to be removed from the corner of the residential structure to the west end of the fence. This will cause the bottom of the fence to be higher than the BFE. Wire fencing may be placed if desired, as described in (1) above.
3. Several borders have been created on the yard of Unit 3126 using landscape blocks of various types. These borders are slightly higher than the adjacent ground and it is recommended to either remove or lower these blocks or replace with existing blocks with shorter blocks. Such blocks are located: (a) Around small flower bed at the extreme SW corner of the yard. (b) Across the deco rock area and east of the gas meter. (c) Parallel to the easterly fence and these blocks should be removed or lowered from a point adjacent to the SW corner of the residential structure on Unit 3126 to the westerly end of this row of border blocks.
4. Cut off the fence along the property line with The Trails Golf Course at the bottom of the lower 2x4 plank, which run along the fence and parallel to the ground. This will create approximately two inches of open space beneath the fence. A slight earthen ridge exists under part of this fence, and this ridge is approximately one inch in height. Remove this ridge, which will require removing approximately one-fourth cubic yard of soil. Removing this ridge will add

approximately one inch of additional open space beneath this fence and will result in a total open space of approximately three inches below this fence. The ground immediately west of this fence slopes downward across the golf course, and drainage from the yard at Unit 3126 will be promoted. This proposed work will reduce the chances of stormwater ponding on the yard of Unit 3126.

*2015 EPK*  
Signed and Sealed on this 3<sup>rd</sup> day of October, 2024.

Earl (Gary) Keen, PE  
11438 PO Box 891200  
Oklahoma City, OK 73189  
Cell: (405) 823-8240



Email: garykeen47@att.net