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ENGINEERING REPORT  
1024 CRUCE ST., NORMAN, OK  
RE. FLOOD PLAIN PERMIT APPLICATION

### Introduction

The subject property is a residential lot located at 1024 Cruce St., Norman, OK. Joe Vaughn, the owner has applied for a floodplain permit to construct a swimming pool in the back yard of this property. During processing of the permit application, it was discovered that two other improvements have been made to this property that are required to have a floodplain permit. Consequently, an earth berm and a wood fence are included in this application. The existing chain-link fence is believed to have been constructed prior to the effective date of the current ordinance; therefore, it is not address herein.

### Pool

The swimming pool details are shown in an exhibit provided by Spartan Pool and Patio. The pool will be surrounded by a concrete deck. The total area covered by the pool and deck is approximately 25 feet by 40 feet for a total area of 1000 square feet. This improvement is located in the fringe area of the floodplain but not in the floodway. The impacting stream is Imhof Creek, which flows southward, and is partially contained in a concrete lined channel at this location. The construction of the pool will occupy some of the volume currently available for floodwater storage; therefore compensatory storage will be required. The average depth of the loss in floodplain storage is 0.6 feet; therefore, the volume of compensatory storage is 600 cubic feet or 22 cubic yards. As discussed below, one cubic yard of compensatory storage is required for an earthen berm that is located partially in the fringe area of the floodplain; therefore, the quantity of soil to be removed for compensatory storage is 23 cubic yards. This soil is intended to be removed from the south-east corner of the portion of the yard enclosed by the chain-link fence. This area is withing the floodplain but outside the floodway. The soil will be removed as shallow in depth and covering a larger area, and this area will be graded to drain to prevent ponding of water. The disturbed area will be planted in grass to avoid erosion problems.

### Earthen berm

The owner stated that he constructed an earthen berm that existing is the front side yard on the east side of his lot as part of a landscaping project. He did not know that regulations pertain to any work performed in a floodplain and he did not know the precise location of the floodplain. Actually, nearly all of this berm is located just outside the floodplain, but the extreme south end of this berm is barely within the floodplain. Removing one cubic yard of soil from the floodplain in a different area of this property will be more than enough to compensate for the flood storage that was lost due to the construction of this berm. Removing additional compensatory soil is recommended as discussed above.

### Wood Fence

The owner has constructed a wood fence running east-west along the southern part of his lot. Again, the owner was not aware of the need for a floodplain permit for this improvement; therefore, this item is being included in this permit. Most of the length of this fence is located within the floodplain, but a

little of the west end is out of the floodplain. At the east end, the existing ground is about 2.5 feet below the BFE elevation of 1145.8 feet. Incidentally the BFE at Cruce Street is 1146.1 feet NGVD according to the stream profile contained in the FEMA FIS.

Although this fence is not located in the floodway; there is a floodway present nearby. The floodplain regulations do not allow any increase in the elevation of the floodway and only 0.05 feet (about ½ inch) in a floodplain. Any increase in a floodplain adjacent to a floodway is certainly going to increase the elevation of the floodway also. Therefore, it is concluded that this fence should be modified so that it does not cause a measurable increase in the floodwater elevation (BFE).

This fence is constructed of wood posts set into the ground and horizontal planks placed between the posts. This fence appears to be rather new and in excellent condition. At the site, a person who seems to be familiar with the property stated that the purpose of this fence is to provide privacy screening for the area of the swimming pool. The fence appears in photographs that are submitted with this elevation.

A reasonable solution for the situation with this fence seems to be to remove one or two lower boards along part of the fence and to create hinged swing-out panels on the downstream side of the posts for the portions of the fence where the existing ground is farther below the BFE. A practical approach to this problem is to mark the existing post at the east end of the fence at a point located 2.5 feet higher than the existing ground level. Then run a level line westward along this fence until the level line intersects the ground. The portion of the horizontal fence boards located completely or partially below the level line would be removed or replaced with hinged swing-out panels. Swing-out panels would be supported by two or more hinges located at the top of the panel and the bottom of the panel would not be secured so that the flow of floodwaters would cause these panels to swing outward (toward the down stream side) to allow the floodwaters to flow onward. The wooded posts would remain.

Hopefully, the Committee can approve this arrangement and thus allow the owner to keep the wooden fence. Thus far, the owner has been very agreeable about complying with floodplain regulations.

#### CONSTRUCTION METHODS AND CLEANUP

Spartan Pool and Patio is the contractor for the pool construction, but possibly not for any other part of the work to be performed. The owner will be the main contractor for any part of this work not delegated to Spartan. Any sub-contractors employed must be informed regarding the protection of the stream and floodway, particularly in regard to the discard of materials, including any soil removed.

All soils removed from the site, such excavation for the pool cannot be placed in a floodplain. Not on this site or in any other floodplain in the City of Norman. It is recommended that a contractor contact the City's staff to get approval of any disposal site being considered for soil in the City of Norman. Other construction materials must be delivered to an approved disposal facility.

Any questions regarding the protection of this floodplain or compliance with the approved floodplain permit may be directed to the City's Floodplain Manager or this engineer.

A building permit will be required for the swimming pool prior to beginning construction.