Staff Report

To: Okeechobee Planning Board
From: Ben Smith, AICP
Meeting Date: October 21, 2021
Subject: Workshop- Lot Filling and Earthmoving

Staff has been made aware of drainage and flooding issues at several properties within the City which seem to have resulted from lot filling and earthmoving practices performed on neighboring parcels. The purpose of this workshop is to examine potential code changes to prevent these situations from continuing to occur.

Section 90-79 of the City's Land Development Code contains standards for the construction of foundations for single family dwellings and mobile homes. It requires construction to be performed according to the Florida Building Code (FBC) and includes the following text:

> *any lot or area where such dwelling unit is intended to be placed and as permitted by the city, must be filled and/or graded to ensure that the ground upon which such foundation is to be placed is of an elevation no less than 12 inches above the crown of the roadways immediately adjacent to such lot or area. The city reserves the right to increase this elevation in the event the installation of septic tank service requires a corresponding increase in overall height*

Section 7.08.01 of the Okeechobee County Land Development Code is very similar to City Section 90-79 in that it contains foundation construction standards and includes much of the same language. It is likely that the city adopted this portion of the County Code many years ago. However, the above text from the City Code, which requires foundations to be elevated at least 12 inches above the crown of the road and infers that foundation elevation could be based on septic tank elevation, is not included in the County Code. It is possible that it was once included but has since been removed. The city may wish to remove this text from their code now, especially since there are other codes which dictate minimum construction elevations:

- The FBC requires elevating the first habitable floors of dwellings to at least one foot above FEMA base flood elevation (BFE) or to the design flood elevation (DFE).
- The FBC includes standards for filling land to support construction activities.
- Article V of Chapter 82 of the City's Land Development Code includes significant regulatory language related to construction in flood hazard zones, including the requirement that BFE may not be increased on any property in a floodplain (special flood hazard area).

In addition to removing the above text which requires a minimum foundation elevation, the city may also wish to adopt standards to prevent owners from adding so much fill that it creates flooding for neighbors. Potential examples of standards that could be applied are:

- Average grade elevation of a parcel may not be increased more than 24".
- Average grade elevation of a parcel may not be increased more than 24" above the existing average grade elevation at the property lines.

The city may also wish to adopt some generalized standards to regulate lot filling and earthmoving. If earthmoving and/or lot filling is being conducted in conjunction with the construction of a building/structure, where a building permit is already being reviewed, the earthmoving and/or lot filling can be reviewed as part of that permit. However, the city may wish to require a permit for certain types of earthmoving activities which are being conducted alone, to ensure that the proposed work will not negatively affect neighboring properties. The threshold for what should require an earthmoving could be based on several conditions. Below is an example code section which could be considered:

Section 90-84. Earthmoving Permit Required

All earthmoving activities not performed in conjunction with a building permit for other construction activities shall require submittal of an earthmoving permit which shall be reviewed for code compliance by the building department and, at the discretion of the City Building Official, reviewed by the City Engineer. Only activities which meet all of the following criteria shall be exempt from permitting:

(a) Off-site drainage flow shall not be restricted or altered.

(b) The earthmoving operation shall not cause a change in grade at the property line (except for swales and driveway access).

(c) Drainage and/or stormwater management facilities required as part of a previous building permit, FDEP permit, SFWMD permit, USACE permit, or other state or federal permitting shall not be altered to impede or redirect flow.

(d) Eighteen cubic yards or less of material added to a parcel within any one-year period shall be allowed, provided other conditions are met.

(e) Regular maintenance to remove accumulated sediment in ditches and swales to improve designed flow of stormwater shall be allowed, provided other conditions are met.

Sec. 90-79. - Dwelling foundations.

Properly designed and constructed foundations are essential for the public safety and welfare. Regardless of the method of housing construction, securely anchored and installed dwelling units serve not only to reduce the likelihood of widespread hurricane or storm damage but contribute to architectural and aesthetic compatibility important to the long term value and viability of neighborhood communities. The following foundation and onsite installation requirements are intended to be reasonable, uniformly applied and enforced without distinction as to the type of dwelling unit.

(1) *Foundation requirements for single-family dwellings in all zoning classifications except RMH.*

a. *Foundation and elevation requirement.* All dwelling units shall be placed on a foundation in accordance with the Florida Building Code; or the codes adopted by Code section 66-10; or for manufactured homes shall be set up in accordance with the Permanent Foundations Guide for Manufactured Housing issued by the U.S. Department of Housing and Urban Development (Handbook 4930.3 1989), the provisions of Chapter 15C-1, F.A.C. Prior to the pouring of any concrete or the placement of concrete blocks or footings, the area under which concrete or the unit will be placed shall be cleared of all organic material and shall be prepared to ensure drainage as required by applicable codes and approval of the city building official and/or the technical review committee. Further, any lot or area where such dwelling unit is intended to be placed and as permitted by the city, must be filled and/or graded to ensure that the ground upon which such foundation is to be placed is of an elevation no less than 12 inches above the crown of the roadways immediately adjacent to such lot or area. The city reserves the right to increase this elevation in the event the installation of septic tank service requires a corresponding increase in overall height.

b. *Compaction under concrete slab.* Where a concrete slab is utilized, the entire area under the concrete slab shall be compacted as follows:

1. Remove any organic topsoil and other deleterious materials to their horizontal and vertical extremities to three feet beyond concrete slab lines.

2. Compact the entire area under the concrete slab as needed to achieve a compaction of at least 95 percent of ASTM D1557 maximum density. Place fill as needed in not greater than 12 inches compacted thickness layers. Minimum compaction density shall be 2,000 pounds per square feet.

c. *Perimeter footer.* A perimeter footer, where required by the Florida Building Code, shall be in accordance with the Florida Building Code.

d. *Piers and blocking.* Where piers or blocking are utilized to elevate structure from the slab, poured concrete runners or finished grade, support and anchoring/tie-down of the structure shall be in accordance with the Florida Building Code requirements incorporated by Code section 66-10; or the Permanent Foundations Guide for Manufactured Housing issued by the U.S. Department of Housing and Urban Development (Handbook 4930.3 1989); or the manufacturer's specifications provided they meet or exceed the requirements of the F.A.C. Stabilizing plates or collars shall be required where auger anchors are used. Where piers and blocking are utilized, the following shall be required:

1. The site shall be graded to ensure adequate drainage away from the unit;

2. All piers must have the top course filled with concrete or have a solid cap block;

3. The maximum proposed pier height and the maximum pier height beyond which the manufacturer requires or recommends that an engineer design the foundation shall be indicated on the development permit application;

4. Where a concrete slab or the interior poured runners are not used, the development permit application shall indicated the bearing capacity of the soil and the methodology used to determine that bearing capacity;

5. The development permit application shall include the calculations used to determine the sizing and spacing of footers required based on the soil bearing capacity and based on other criteria of the manufacturer, such as piers required to support sidewall openings, heavy appliances or other load bearing points. The relevant pages from the manufacturer's specifications shall be included with the application, with the appropriate calculations and guidelines highlighted. A plot plan or site plan shall indicate the number, location and construction of proposed piers and footings;

6. The development permit application shall indicate the type and model of anchor to be used, the gauge and model of the strap to be used, the soil type, the methodology used to determine the soil type; and

7. The development permit application shall include all relevant pages from the manufacturer's specifications and highlight the specific methods to be used to assemble double-wide or larger units, and to connect utility systems.

e. *Crawl space and closure wall.* A crawl space shall be defined as the area between the slab or finished grade and the floor of any structure elevated above that slab or finished grade. A closure wall shall be defined as the load bearing or non-load bearing wall structurally attached between the floor or bottom of the structure and the required perimeter footer, perimeter runner or the ground. Where a slab is used, and where load bearing points are interior to the perimeter slab, a perimeter footer or concrete runner is not required, and the closure wall shall be attached to the slab. All dwelling units installed or constructed with a crawl space of less than seven feet in height shall have a closure wall constructed of one of the following:

1. Brick.

2. Concrete block or poured concrete finished by painting or extending the dwelling siding to the slab or footer. Where the slab or footer is more than eight inches of the finished grade level.

3. Frame and sheathing finished with either lathe and stucco or by extending the dwelling siding to the slab or footer. Where the slab is more than eight inches above the finished grade level, the siding shall extend to within eight inches of the finished grade level.

4. Framing, lathing and stucco in accordance with Florida Building Code requirements incorporated by Code section 66-10.

5. Continuous interlocking vinyl skirting provided that the skirting is architecturally compatible with the residential dwelling, and provided that the following minimum specifications are met: panel thickness shall be at least 0.035 inches; top front and top back rail thickness shall be at least 0.050 inches; and bottom rail thickness shall be at least 0.045 inches. A crawl space enclosed by vinyl skirting shall not exceed 28 inches in height from the finished grade to the floor of the dwelling. Perforated panels may be used for ventilation, provided that such panels shall not exceed 30 percent of the total number of panels per side of the dwelling. Vinyl skirting shall be attached to the perimeter concrete footer or runner where a footer or runner exists or is required to exist. The skirting shall be fastened using less than ¼-inch in diameter or by rust expansion anchors no less than 5/16 -inch in diameter. The fasteners shall be spaced no more than 18 inches apart. Where no perimeter concrete footer or runner exists, or is required to exist, vinyl skirting shall be attached to the ground using rust-resistant ground spikes no less than eight inches in length, and spaced no more than 18 inches apart.

   Any access point in the closure wall shall be fitted with a removable panel or door and shall be similar in appearance with the remaining wall unless a vent is used as an access point. No more than a single three-foot access point per side shall be permitted.

Dwelling units to be installed or constructed with a crawl space of seven feet or greater in height shall be submitted to the city building official engineering plans demonstrating compensating design features and that the proposed dwelling will be compatible and harmonious with existing structures in the vicinity. The determination of the building official may be appealed to the board of adjustments as provided in Code section 70-371.

f. *Standard codes.* All foundation types shall meet the Florida Building Code requirements incorporated by Code section 66-10.

(2) *Foundation and elevation requirements for RMH zones.*

a. All dwelling units shall be placed either on a permanent reinforced concrete slab as described in subsection (1) of this section, or on poured concrete strip footers with blocking and tie-down as provided in subparagraph c. below, or may be set up according to the manufacturer's specifications, units may be set up in accordance with Chapter 15C-1, F.A.C. Prior to the pouring of any concrete or the placement of concrete blocks or footings, the area under which concrete or the unit will be placed shall be cleared of all organic material. Further, any lot or area where such dwelling unit is intended to be placed and as permitted by the city, must be filled and/or graded to ensure that the ground upon which such foundation is to be placed is of an elevation no less than 12 inches above the crown of the roadways immediately adjacent to such lot or area. The city reserves the right to increase this elevation in the event the installation of septic tank service requires a corresponding increase in overall height.

b. Either foundation type shall meet the Florida Building Code requirements incorporated by Code section 66-10.

c. Blocking and tie-down shall be in accordance with provisions of the Florida Building Code requirements incorporated by Code section 66-10 for conventional construction; Chapter 15C-1.010, Florida Administrative Code (or the manufacturer's specifications provided they meet or exceed the minimum requirements set forth in the Florida Administrative Code) for manufactured housing. Stabilizing plates or collars shall be required where auger anchors are used. In addition, the requirements of Code section 90-79(1)d.1—7 above must also be met.

d. Where a crawl space exists, the crawl space shall be enclosed by a bearing or non-bearing perimeter concrete, lathe and stucco, masonry or architecturally compatible skirting/enclosure. Extending the unit siding to the ground as described in Code section 90-169(4) shall be permitted skirting/enclosure provided it is securely fastened to the ground.

(3) *Foundation requirements for mobile home and manufactured home parks.* Regardless of zone, mobile home parks are designed for transitory use by mobile and manufactured homes. Accordingly, the requirements of subsections (1) and (2) above to the contrary notwithstanding, where a manufactured home or mobile home is to be located inside a mobile home or manufactured home park as defined in Code section 66-1, mobile home or manufactured home blocking and tie-down shall be in accordance with the provisions of Chapter 15C-1.010, Florida Administrative Code (or the manufacturer's specifications provided they meet or exceed the minimum requirements set forth in the Florida Administrative Code). All such units shall be fully skirted. Stabilizing plates or collars shall be required where auger anchors are used. Prior to the poring of any concrete or the placement of concrete blocks or footings, the area under which concrete will be placed shall be clear of all organic material. In addition, the requirements of Code section 90-79 above must also be met.

(4) *Foundation requirements for miscellaneous dwellings.* Foundation requirements for dwelling units not classified by subparagraphs (1) through (3) above shall be as described in subparagraph (1) above regardless of zone.

(Ord. No. 1203 , § 2, 2-4-2020)

7.08.01. Dwelling foundations.

Properly designed and constructed foundations are essential for the public safety and welfare. Regardless of the method of housing construction, securely anchored and installed dwelling units serve not only to reduce the likelihood of widespread hurricane or storm damage but contribute to architectural and aesthetic compatibility important to the long term value and viability of neighborhood communities. The following foundation and onsite installation requirements are intended to be reasonable, uniformly applied and enforced without distinction as to the type of dwelling unit.

A. *Foundation requirements for single-fam dwellings in all zoning classifications except residential mobile home (RMH) and agriculture (A) zoned parcels ten or more acres in area.*

1. *Foundation requirement.* All dwelling units shall be placed on a foundation in accordance with the Standard Building Code, or for manufactured homes shall be set up in accordance with the Permanent Foundations Guide for Manufactured Housing issued by the U.S. Department of Housing and Urban Development (Handbook 4930.3 1989), the provisions of Chapter 15C-1, F.A.C. or the manufacturer's specifications provided they meet or exceed the requirements of the F.A.C. Prior to the pouring of any concrete or the placement of concrete blocks or footings, the area under which concrete or the unit will be placed shall be cleared of all organic material and shall be prepared to ensure drainage away from the unit.

2. *Compaction under concrete slab.* Where a concrete slab is utilized, the entire area under the concrete slab shall be compacted as follows:

    a. Remove any organic topsoil and other deleterious materials to their horizontal and vertical extremities to three feet beyond concrete slab lines.

    b. Compact the entire area under the concrete slab as needed to achieve a compaction of at least 95 percent of ASTM D1557 maximum density. Place fill as needed in not greater than 12 inches compacted thickness layers. Minimum compaction density shall be 2,000 psf.

3. *Perimeter footer.* A perimeter footer, where required by the standard building code, shall be in accordance with the standard building code.

4. *Piers and blocking.* Where piers or blocking are utilized to elevate the structure from the slab, poured concrete runners or finished grade, support and anchoring/tie-down of the structure shall be in accordance with the standard building code requirements incorporated by Article VIII into this Code, the Permanent Foundations Guide for Manufactured Housing issued by the U.S. Department of Housing and Urban Development (Handbook 4930.3 1989), the provisions of chapter 15C-1.010, Florida Administrative Code (F.A.C.) or the manufacturer's specifications provided they meet or exceed the requirements of the F.A.C. Stabilizing plates or collars shall be required where auger anchors are used. Where piers and blocking are utilized, the following shall be required:

    a. The site shall be graded to ensure adequate drainage away from the unit;

    b. All piers must have the top course filled with concrete or have a solid cap block;

    c. The maximum proposed pier height and the maximum pier height beyond which the manufacturer requires or recommends that an engineer design the foundation shall be indicated on the development permit application;

    d. Where a concrete slab or interior poured runners are not used, the development permit application shall indicated the bearing capacity of the soil and the methodology used to determine that bearing capacity;

e. The development permit application shall include the calculations used to determine the sizing and spacing of footers required based on the soil bearing capacity and based on other criteria of the manufacturer, such as piers required to support sidewall openings, heavy appliances or other load bearing points. The relevant pages from the manufacturer's specifications shall be included with the application, with the appropriate calculations and guidelines highlighted. A plot plan or site plan shall indicate the number, location and construction of proposed piers and footings;

f. The development permit application shall indicate the type and model of anchor to be used, the gauge and model of the strap to be used, the soil type, and the methodology used to determine the soil type; and

g. The development permit application shall include all relevant pages from the manufacturer's specifications and highlight the specific methods to be used to assemble double-wide or larger units, and to connect utility systems.

5. *Crawl space and stem wall.* A *crawl space* shall be defined as the area between the slab, or finished grade where there is no slab, and the base of any structure elevated above that slab or finished grade. Any crawl space as well as all piers, blocking and exposed tie-downs shall be screened on all sides by a stem wall. The stem wall shall consist of a masonry wall with a suitable foundation in accordance with the Florida Building Code. The stem wall shall have an aesthetically compatible finish and extend from ground level to the base of the structure. Exterior steps if any, must be permanently affixed to the foundation or stem wall.

   Dwelling units to be installed or constructed with a crawl space of seven feet or greater in height shall submit to the director of planning and development engineering plans demonstrating compensating design features and that the proposed dwelling will be compatible and harmonious with existing structures in the vicinity. The determination of the director may be appealed to the board of adjustments and appeals as provided in article XIII of this Code.

6. *Standard codes.* All foundation types shall meet the standard building code requirements incorporated by article VIII into this Code.

B. *Foundation Requirements for Residential Mobile Home (RMH) Zones and Agriculture (A) zoned parcels ten or more acres in area.*

1. All dwelling units shall be placed either on a permanent reinforced concrete slab as described in subsection A of this section, or on poured concrete strip footers with blocking and tie-down as provided in subparagraph 3. below, or may be set up according to the manufacturer's specifications. In the absence of manufacturer's specifications, units may be set up in accordance with Chapter 15C-1, F.A.C. Prior to the pouring of any concrete or the placement of concrete blocks or footings, the area under which concrete or the unit will be placed shall be cleared of all organic material.

2. Either foundation type shall meet the standard building code requirements incorporated by article VIII into this Code.

3. Blocking and tie-down shall be in accordance with the provisions of the standard building code requirements incorporated by article VIII into this Code for conventional construction; chapter 15C-1.010, Florida Administrative Code (or the manufacturer's specifications provided they meet or exceed the minimum requirements set forth in the Florida Administrative Code) for manufactured housing. Stabilizing plates or collars shall be required where auger anchors are used. In addition, the requirements of 7.08.01(A)(4)(a.—g.) above must also be met.

4. Where a crawl space exists, the crawl space shall be enclosed by a bearing or non-bearing perimeter concrete, lathe and stucco, masonry or architecturally compatible skirting/enclosure.

Extending the unit siding to the ground as described in section 7.08.02D. shall be a permitted skirting/enclosure provided it is securely fastened to the ground.

C. *Foundation requirements for mobile home and manufactured home parks.* Regardless of zone, mobile home parks are designed for transitory use by mobile and manufactured homes. Accordingly, the requirements of subsections A. and B. above to the contrary notwithstanding, where a manufactured home or mobile home is to be located inside a mobile home or manufactured home park as defined in appendix B, mobile home or manufactured home blocking and tie-down shall be in accordance with the provisions of chapter 15C-1.010, Florida Administrative Code (or the manufacturer's specifications provided they meet or exceed the minimum requirements set forth in the Florida Administrative Code). All such units shall be fully skirted. Stabilizing plates or collars shall be required where auger anchors are used. Prior to the pouring of any concrete or the placement of concrete blocks or footings, the area under which concrete will be placed shall be cleared of all organic material. In addition, the requirements of 7.08.01(A)(4)(a.—g.) above must also be met.

D. *Foundation requirements for miscellaneous dwellings.* Foundation requirements for miscellaneous dwellings units not classified by subparagraphs A. through C. above shall be as described in subparagraph A. above regardless of zone, provided however, owners of mobile homes or manufactured homes as defined by section 320.01(2), Florida Statutes, may select the alternative closure wall methods and construction described in section 7.08.01B.4 of this Code.

E. *Foundation requirements for agricultural labor.* Due to the predominance of agricultural activities in the county which make the continued viability of such activities a critical county concern, the minimum foundation requirements for the use of bona fide agricultural labor for on-premises employment shall be as provided in subsection B. above, provided the dwelling units are located in the agricultural (A) zoning classification. Such dwelling units shall be at least 200 feet from any public road right-of-way.

(Ord. No. 93-10, § 7 (7.08.01A), 7-22-93; Ord. No. 93-17, §§ 1—3 (7.08.01A—C), 12-16-93; Ord. No. 96-03, § 1, 4-11-96; Ord. No. 97-02, § 1, 2-27-97; Ord. No. 2004-02, § 3, 5-27-04; Ord. No. 2004-06, § 3, 11-8-04; Ord. No. 2005-12, § 2(Exh. A), 7-28-05)