TECHNICAL BULLETIN

Community Development & Planning, Building Inspections
TOPIC: Earthwork and/or Construction Work
In and Around Lake Arlington – For Fort Worth Citizens
Edited May 15, 2012

This Technical Bulletin will provide contractors the information needed to apply for and secure building permits for earthwork, retaining walls, ***boat houses*** and ***piers*** in and/or adjacent to ***Lake Arlington*** and/or within the ***Lake Arlington Flowage Easement***. There are special requirements for construction activities in and/or adjacent to ***Lake Arlington*** or within the ***Lake Arlington Flowage Easement***. If you are unsure if your proposed project is within the ***Lake Arlington Flowage Easement*** (see definitions), then you must secure the services of a Registered Surveyor or a Professional Engineer to provide elevations for your property. Vertical surveying standards shall be tied to NAVD 88.

For proposed construction projects that are not in and/or adjacent to ***Lake Arlington*** and/or within the ***Lake Arlington Flowage Easement***, please refer to other permit requirements for your specific project.

This information is divided into two parts: ***Earthwork*** and ***Building Permits***. The ***Building Permits*** section contains details for retaining walls, ***boat houses*** and ***piers***. Certain projects such as retaining walls, ***boat houses*** and ***piers*** may require compliance with both parts. Listed at the end of this bulletin are definitions of terms used throughout this bulletin. Words that appear in ***bold italics*** have specific definitions.

EARTHWORK

Approval is required before any person performs any ***Earthwork*** in the ***Reservoir Area*** or ***Flowage Easement***. Prior to any ***Earthwork***, a "Grading, Excavation, Fill" permit must be issued. If the proposed ***Earthwork*** is in conjunction with a retaining wall and/or a ***boat house/pier***, the ***Earthwork*** will be included in the permit for the retaining wall and/or a ***boat house/pier***.

The application for "Grading, Excavation, Fill" shall include the following items:

(NOTE: If the proposed ***Earthwork*** is in conjunction with a retaining wall and/or a ***boat house/pier***, the ***Earthwork*** will be included in the permit for the retaining wall and/or a ***boat house/pier***.)

1. Description of the work.
2. Plan prepared by a licensed Professional Engineer showing existing and proposed grades (topography), easements and structures where applicable. Existing topography shall be verified by a Registered Public Land Surveyor.
3. Cross-section(s) of any proposed excavation or fill at intervals sufficient to determine the volume of earth to be placed within or removed from the ***Flowage Easement.***
4. Earthwork calculations demonstrating the volume of fill to be placed within the Flowage Easement and/or Lake Arlington.

5. Copy of 404 permit from the U.S. Army Corps of Engineers, as necessary.

Plans which showing the work has been completed as originally intended on the approved site plan (Record Drawings) must be provided and accepted upon completion of earthwork activities. The record drawing must include a verification statement or seal prepared by a Registered Public Land Surveyor.

BUILDING PERMITS

A **Building Permit** is required to erect, construct, enlarge, alter or move any building, ***boat house*** and/or ***pier*** or other structure or any combination of structures on the ***Reservoir Area.*** A ***Flowage Easement Review*** is required to construct a retaining walls, ***boat house*** and ***piers*** in the ***Flowage Easement.*** A ***Building Permit*** or a ***Flowage Easement Review*** may only be issued when the proposed work complies with the construction standards and with the building codes as may be applicable. The Building Official may not issue a ***Building Permit*** for any work proposed for new or existing ***boathouses*** or ***piers*** or other structures unless there is a current annual ***License*** agreement.

Contractors performing work in or on the ***Lake Arlington Reservoir Area*** must be registered and have Contractor's Public Liability Insurance on files with a combined single limit of not less than $500,000 per occurrence, with an aggregate of not less than $500,000. The contractor shall make the City of Arlington a Certificate Holder and present proof of insurance at the time of registration and all subsequent renewals. Notice of policy cancellations or failure to renew coverage shall be cause for revocation of registration, denial of inspections or cancellation of permits.

Design and Construction Requirements for Retaining Walls

1. All retaining wall plans must be designed and sealed by a licensed professional engineer. If any part of the retaining wall is located at or below 560 feet above mean seal level, then this applies to the entire wall.

2. Retaining walls must be constructed in stepped or terraced design. The maximum exposed height for a retaining wall that is located closest to the water's edge shall be no more than six (6) feet. The maximum exposed height for subsequent terraced retaining walls shall be no more than four (4) feet in height.

   EXCEPTION. If physical limitations on the site or structural engineering conditions make terracing technically unfeasible. In any case the maximum exposed height of any retaining wall or retaining wall segment is six (6) feet.

3. When walls are terraced, the upper wall shall be separated from the lower wall by a minimum of five (5') feet measured horizontally

4. A bio-retention planting strip is required in the areas between terraced retaining walls and behind the top of the upper retaining wall. The planting strip shall extend a minimum five feet (5') from the back and top of the retaining wall for the entire width of the retaining wall. The bio-retention planting strip shall be planted with deep rooted native or adapted grasses, ground cover and /or shrubs. Approved Lake Arlington Planting Materials:

Table 19A - Approved Lake Arlington Planting Materials		
Buffalo Grass	Bouteloua dactyloides	grass
Indian Paintbrush	Castilleja indivisa	grass
Plains coreopsis	Coreopsis lanceolata	grass
Lindheimer's Muhly	Muhlenbergia lindheimeri	grass
Indian Blanket	Gaillardia pulchella	grass
Annual Phlox	Phlox drummondii	grass
Island Sea Oats	Chasmanthium latifolium	tall grass
Purple Cone Flower	Echinacea pallida	tall grass
Black-eyed Susan	Rudbekia hirta	tall grass
Maidenhair Fern	Adiantum capillus-veneris	ground cover
Frogfruit	Phyla nodiflora	ground cover
Spiderwort	Tradescantia spp.	ground cover
Wax Myrtle	Myrica cerifera	shrub
Dwarf Palmetto	Sabal minor	shrub
Turk's Cap	Malvaviscus arboreus var. drummondii	shrub

5. The following materials are approved for the construction or veneer of retaining walls:

a. Interlocking masonry, stone, or brick;

b. Poured decorative concrete; and

c. Aesthetic sheet piling designed specifically for shoreline retaining walls.

6. Rock gabion or rock rip-rap is required at the exposed foot of the lowest retaining wall and may only extend one foot above and below the foot of the wall. Rock or rip-rap shall consist of rocks ranging in sizes from eight inches in diameter to twelve inches in diameter and must be installed over a non-woven structural fabric.

7. The following materials are expressly prohibited for the construction or veneer of retaining walls:

   a. concrete bags;

   b. plain concrete

   c. reclaimed or broken concrete;

   d. commercial sheet piles;

   e. other metal; or

   f. wood.

8. For information related to the general design, construction and inspection of retaining walls, please also refer to the Technical Bulletin entitled "Minimum Submittal and Inspection Criteria for Retaining Walls located at:

   http://www.arlingtontx.gov/build/pdf/codes/Minimum_Submittal_Inspection_Criteria_for_Retaining_Walls.pdf

The **Design and Construction of *Piers* and *Boathouses*** shall comply with the following requirements and the ***building permit*** application and plans shall indicate the following:

All ***piers*** and ***boathouses*** must be designed and sealed by a licensed professional engineer. The following specific criteria must be incorporated in the engineer's design and be included on the construction documents:

1. All piers and/or boathouses shall be designed to withstand the loads as specified in the Building Code,
    a. Live load design = 30 psf
    b. Design Wind Speed = 70 mph sustained, 90 mph 3 second gust
2. All ***piers*** and/or ***boathouses*** shall be designed to withstand a minimum of four foot high wave action and the design wind load simultaneously;
3. Designs shall include the impacts of wind and wave action effects of boats attached to the ***pier*** and/or ***boathouse***.
4. Floating ***piers*** and ***boathouses*** shall be designed with anchorage footing and piers to remain in place to prevent the structure from floating or rising above the 563.80' elevation;
5. Cables and chains used in anchoring systems shall be designed with a minimum working load safety factor of 3.0 for cables and 2.0 for chains;
6. Flotation devices for ***boathouses***, ***walkways and bridges*** shall be designed and/or manufactured to support the dead load and live load as a fixed structure.

Building zone width. The building zone width is determined by the extension of the side property lines of a lot into the lake less the required minimum side setback. Minimum side setbacks for ***piers*** and ***boathouses*** from the extended side property lines are as set forth in Table 19B – Buildable Zone Width.

Table 19B – Buildable Zone Width

LOT WIDTH	MIN SIDE SET BACK
Less than 50 feet	5 feet
50 feet to 69 feet	10 feet
70 feet to 99 feet	15 feet
100 feet or more	20 feet

Maximum structure area. The maximum horizontal area of structures incidental to a single property (***piers*** and/or ***boathouses***) is 1,000 square feet.

EXCEPTION: For property owners that remove existing retaining walls and provide shoreline restoration; or, for property owners that elect to preserve existing natural shoreline areas, the maximum area of structures may be 1,250 square feet. Shoreline Restoration and Preservation projects must comply with the Lake Arlington Chapter.

Maximum length into the Lake. ***Piers*** and/or ***boathouses*** shall not extend into the lake more than 100 feet from the shoreline.

EXCEPTIONS:

1. If the elevation of the Lake bottom at the 100 foot limit is higher than 545 feet above mean sea level then the dock may extend to the point where the Lake

bottom is 545 feet above mean sea level to a maximum length of 150 feet as measured from the shoreline regardless of Lake Bottom elevation. This exception may not apply in narrow areas of the reservoir.

2. In narrow areas of the reservoir, no structure shall occupy more than one third (1/3) of the channel width and in no case shall a structure extend out into the reservoir to a point that is more than 20 feet from the centerline of the channel. For the purposes of this provision, the channel width is measured from water's edge at the normal lake elevation of 548 feet mean sea level.

3. For property owners that remove existing retaining walls to undergo a shoreline restoration effort; or, for property owners that elect to preserve existing natural shoreline areas the maximum length of a pier may be extended to 125 feet. This exception may not apply in narrow areas of the reservoir.

All ***piers*** and ***boathouses*** shall have lights in accordance with this subsection. These requirements apply to any ***piers*** and ***boathouses*** that extend into the Lake more than eight feet from a shoreline measured perpendicular to the shoreline.

1. ***Piers*** and ***boathouses*** must be continuously lighted with amber lights between sunset and sunrise each day.

2. ***Piers*** and ***boathouses*** must have at least one light station. Except as otherwise provided in this subsection, the light station must be located on the end of the pier and/or boathouse and on the side that is farthest from and parallel to the shoreline. The light must be visible to a properly approaching watercraft.

3. A ***pier*** or ***boathouse*** that extend thirty feet or more from the shoreline must have at least one light station on each side of the pier and/or boathouse not facing the shoreline.

4. A ***pier*** or ***boathouse*** that extends fifty feet or more from the shoreline must have light stations from the shoreline to the end of the pier and /or boathouse at intervals of not more than twenty five feet except that a light station may not be located within eight feet of the shoreline.

5. Each light station required by this subsection must have a two-bulb fixture with two working light bulbs between 7.5 and 25 watts. Light bulbs or covers must be amber and white light cannot radiate from the fixture. Light stations must be controlled by only a photoelectric cell to insure dusk to dawn continuous operation.

6. All electrical wiring on any ***pier*** and/or ***boathouse*** shall be in accordance with the City of Arlington electrical code for marine applications.

7. Other lights installed that are not required by this subsection may only cast light down and shall not cast light outward from the pier.

8. Any ***pier*** and/or ***boathouse*** that require lights under this subsection shall provide temporary lighting during construction and until the permanent lighting is installed.

Address. Each ***pier*** and/or ***boathouse*** shall have an address placard stating the street address and the street name of the primary residence associated with the structure. The address placard shall be clearly legible from the lake side of the structure. The lettering shall be a

minimum of 6-inches high and be made of reflective material so that the address can be read at night. Placards shall be made of cast aluminum and be rectangular in shape.

Specific design requirements for boathouses.

1. Single Story. All ***boathouses*** are limited to a single story (lower deck) and a sundeck (upper deck) or roof.
2. Height. The maximum height of any ***boathouse*** is thirteen feet as measured vertically from the pier walking surface to the top plate line.

3. Pitch. The maximum pitch for any sloped roof is 3:12.

4. Roofs. Flat roofs shall have a minimum roof pitch of 1/2:12. The upper flat roof may be constructed for use as a sundeck. When the upper deck is utilized as a sundeck, the following regulations apply:

   a. The sundeck may not have a permanent roof or covering.

   b. The sundeck is accessible by stairway and handrails constructed in accordance with the building code.

   c. The sundeck area is protected with a surrounding guardrail constructed in accordance with the building code.

   d. Except for the required guardrails, no other vertical construction is permitted on the upper deck.

5. Enclosed ***boathouses*** are prohibited. Solid sides on the ***boathouse*** are permitted at a maximum of two feet downward from the top plate. No additional materials (i.e. lattice, fencing, bars, screen fabric, doors, glass, etc.) may be installed below the two foot sidewalls.

6. A single enclosed storage area is permitted only on the lower deck of a ***boathouse***. The enclosed storage area may only be used for the purpose of storing items such as fishing tackle, skis and life jackets. Products considered hazardous material or any material which has a warning label prohibiting its use or storage near water and/or public water supplies is prohibited. The maximum area allowed for the enclosed storage shall be 32 square feet.

Design criteria for ***piers*** and/or ***boathouses***.

1. The use of wood piles is prohibited;

2. Metal piles shall be a minimum of three inches inside diameter schedule 40 pipe. Such piles shall be driven to a by a pile hammer to a point of resistance. Such piles shall be driven in pairs, one on either side of the structure and braced.

3. Flotation structures shall be anchored with solid units that will provide the following anchorage:
   a. All anchors shall be of masonry, concrete, or steel and shall be securely fastened to the pier or boathouse by cable, chain, or other approved methods.

b. All ***piers*** and ***boathouses*** shall be anchored to the shore line.

c. ***Piers*** less than fifty feet in length shall be anchored on each corner designed to support one-fourth of the total dead load plus one-eighth the total live load.

d. ***Piers*** fifty feet or more in length shall also be anchored at the midpoint of the pier.

4. Required Water Proofing: All wood below one foot above Flowage Easement elevation (560') shall be approved pressure-preservative-treated wood as defined in the building code. All metal, including bolts, lag bolts, and fasteners, shall be galvanized or factory painted and listed for immersion in water. Creosote treated wood is prohibited.

5. Floating structures and flotation. Flotation material shall be extruded polystyrene, expanded polystyrene, or a copolymer of polyethylene and polystyrene and have the following characteristics:

a. A minimum density of 0.9 pounds per cubic foot and be of consistent quality throughout the float.

b. Beads shall be firmly fused together with no voids inside the encasement.

c. Flotation material shall have a water absorption rate of less than 3.0 pounds per cubic foot over seven days when tested by the Hunt Absorption Test.

d. All flotation material shall be encased in solid polyethylene or a polyurethane type coating, both of which shall be watertight and have a nominal thickness of 0.125 inches.

e. Drums made of plastic or metal, whether new or recycled, are prohibited from use as an encasement or float.

f. All floats shall be warranted for a minimum of fifteen (15) years against sinking, becoming waterlogged, cracking, peeling, fragmenting, or losing beads, and shall not be prone to damage by animals.

6. Upon the issuance of the ***building permit,*** the following inspections and/or certifications are required for ***boat houses*** and/or ***piers***:

a. An initial inspection to verify that the temporary lights as required are installed.

b. An electrical inspection for the inspection of the installation of the lights or other electrical work.

c. A plumbing inspection if a water line is extended.

d. A statement from the design engineer that he personally, or his authorized agent did inspect the construction of the work authorized by

the ***building permit*** and finds that the work is in substantial compliance with his design.

e. Building Final inspection by the building inspector.

Repairs to Existing Structures

When an existing structure within Lake Arlington or the Flowage Easement is to be replaced, repaired, or extended, the existing structure must comply or be brought into compliance with this Article when any of the following apply:

1. The work affects more than fifty percent (50%) of the length of a retaining wall, or
2. The work affects more than fifty percent (50%) of the floor area of the dock/pier, or
3. The work affects more than fifty percent (50%) of the area of a sundeck, or
4. The work affects more than fifty percent (50%) of the area of the roof structure.

EXCEPTION. If the cost of such replacement, repair, or extension does not exceed 50% of the reasonable value of the existing structure, only the portion of the structure replaced, repaired, or extended must conform to the provisions of the ordinance. The applicant has the burden of proof to establish the reasonable value of the existing structure and the cost of the requested replacement, repair, or extension.

If you have additional questions, please visit the One Start Center on the 2nd floor of City Hall located at 101 W. Abram Street. There are building plans examiners; planners and engineers available without appointment for consultation every working day during normal office hours. For general questions, please call (817) 459-6502.

DEFINITIONS

"***Boathouse***" means any covered structure or attached appurtenance which is used for the temporary or permanent storage of watercraft or personal property on or over the water.

"***Building Permit***" means an official document or certificate issued by the City of Arlington which authorizes performance of a specified construction activity.

"***Earthwork***" means the disturbance of soils associated with filling, clearing, and grading or excavation activity.

"***Lake Arlington***" means all of the waters within the Lake Arlington reservoir area that are located within the corporate limits of the City of Arlington.

"Lake Arlington Flowage Easement or Flowage Easement" means that area adjacent to the Reservoir Area which is bounded by the contour line of elevation five hundred sixty feet (560') above mean sea level, lying between said contour line and the Lake Arlington Reservoir Area.

"***Lake Arlington Reservoir Area*** or ***Reservoir Area***" means the area bounded by the Lake Arlington Dam and the contour line of elevation five hundred fifty feet (550') above mean sea level.

"License" means that license required for any boathouse, pier or other structure or any combination of structures.

"***Pier***" means any pier, wharf, boat dock, gangway, or other platform or structure in or adjoining the water to which vessels may be moored, by which they may be boarded, or on which persons may walk or sit.

"Shoreline" means the edge of the water as established by the 550 foot elevation.

"Shoreline Restoration" means shoreline modifications maintaining, reestablishing or preserving the natural attributes of the lake including the maintenance of intact shoreline areas, repairing degraded shoreline habitat, reestablishing native plants, erosion control improvements and modifications that minimize the opportunity for human disturbance.

"Walkways and bridges" means the constructed pedestrian facilities for the purpose of connecting piers and boathouses to the property. Walkways and bridges are located above the 550 feet elevation.

ANNUAL LAKE LICENSE: This License is entered into on the date signed below between the undersigned ("Licensee") and the City of Arlington ("City") acting through its Ordinance Administrator as authorized by the Lake Chapter of the City Code.

1. GRANT AND TERM. City grants to Licensee nonexclusive use of certain property located at the address listed below along with any encroachment approved by City permit. This License term shall be for no more than 12 months or the period beginning on the date signed and ending September 31st. Licensee will not expand the property beyond what is specifically described in the City permit. Licensee agrees and acknowledges that this License is solely for the purpose of permitting Licensee to construct and maintain a structure on the described property and is not a conveyance of any right, title or interest in or to any public property or easement.

2. CONSIDERATION. In exchange for use of the property, Licensee agrees to pay the License fee as adopted by Arlington City Council resolution.

3. USE. The property shall be used only for a City permitted structure. All construction, maintenance and operations in connection with the property shall be performed in strict compliance with the City Code of Ordinances and the directions of the Director of the Water Utility Department. Licensee agrees that City may enter and utilize the property at any time for the purpose of installing, repairing, replacing or maintaining public facilities or utilities necessary for the public health and safety or for any public purpose. Should it become necessary to remove the property or structure to install, repair, replace or maintain improvements to City public facilities or utilities on the property, Licensee shall remove any encroachment at Licensee's expense. The City shall furnish the Licensee with written notice if removal of any structure is deemed necessary by the Water Utilities Director. Licensee agrees that upon request of the City and within 30 days from the date of such request, to relocate any structure on the property away from public property or public easement and to restore the public property or easement to its original condition at the sole cost and expense of Licensee.

4. MAINTENANCE and REPAIRS. Licensee contracts, at its own expense, to maintain and promptly repair the property to keep it free of any ordinance violation and in a structurally sound, sanitary, safe and clean condition during the term of this License and maintain insurance in the amounts appropriate to cover risks associated with property and structures near water. Licensee agrees to City removal in accordance with the abatement procedure set forth in section 4.04 of the Nuisance Chapter of the City Code if the property becomes unsafe or dilapidated at any time in the sole discretion of the Ordinance Administrator.

5. TERMINATION. Licensee agrees that the City shall have the absolute right at its discretion to terminate this License and any structure over, under or across the property if the City determines that the property or public property is substantially damaged by any structure, or that the property structure places an undue burden on the operation of municipal utilities or in the event the Licensee fails to comply with the provisions of this License or the Lake Chapter or other City Code. City shall furnish Licensee with notice requiring the removal in a time period as is reasonable under the circumstances. After notice, the Licensee shall immediately remove the structure and restore the property to the same condition as existed prior to the installation of any structure.

Agreed to this __ day of _____, 20__ *(Ordinance Administrator provides this date)*

Property Address:_____

LICENSEE	ORDINANCE ADMINISTRATOR
Print Name: _____	_____
Signature: _____	_____
Date: _____	_____