

## **Project Description**

**Stephen Friedman, #2, 8<sup>th</sup> Place  
City of Tybee Island, Georgia  
Removal of Sand from House Foundation  
Chatham County, Georgia**

The following information is submitted in association with the attached application requesting authorization for a Permit from the Shore Protection Committee to authorize the relocation of sand from a house foundation where sand accretion from the beach and adjacent dune field continues to grow causing structural damage to the house foundation. Specifically this application proposes the removal of sand from the house foundation and the construction of a gravity block retaining wall seaward of the house foundation to remove the sand pressure from the house foundation. The project also includes the completion of the stormwater drainage system that was partially authorized in Shore Protection Act Permit #466. This storm drainage includes the installation of 114 linear feet of PVC pipe seaward of the proposed gravity wall and ending seaward of the existing house in an existing depressional sand area with a flattened and screened outlet set at the existing grade.

### **1.0 Project Description:**

The proposed project includes the removal of sand from the existing house foundation located at #2 8<sup>th</sup> Place on Tybee Island, Georgia and to install a gravity concrete block retaining wall approximately 8-feet seaward of the existing house foundation. The project also includes completing the storm water discharge pipes that were partially authorized in SPA Permit Number 466.

### **1.2 Background and Migrating Sand Cause:**

The house at #2 8<sup>th</sup> place was originally constructed on the western portion of the lot in 1998-1999 (based on the original Construction Plans dated 1998). Mr. Friedman (Applicant) purchased the house and lot in 2014. The eastern property line of the lot extends an additional 50 feet seaward towards the beach. Beyond the eastern property line is an existing rock seawall originally constructed around 1938 to prevent storm tidal surges moving inland along the beach front (Dr. George Oertel, 2013). In a draft report titled *Conceptual Plan for Correcting and Managing Dune Instability along Commercial Beaches for Tybee Island, Georgia* (Oertel Coastal Consultants, Belleair Beach, Florida, October 2013), Dr. George Oertel provides a history of the Tybee beach beginning in the 1920's and states that through the 1960's there was no dry sand beach on Tybee between Fort Screven and Tybee Creek on the south end of the island, and therefore no chance for a dune ridge to form with no dry sand beach. During the 1970's, groins were constructed and beach renourishment began with an initial 2.3 million yards of sand pumped onto the beach. The beach renourishment project was completed again in 1987, 1995, and 2000. Between 2000 and 2005 large fields of linear dune ridges formed between Third Street

and Fourteenth Street. By 2012, the dune field along the Tybee shore expanded seaward from the rock seawall over the newly placed dry beach surface, and by 2012, the dune field had grown inland and seaward and was greater than 450-feet wide between Eighth Street and Twelfth Street. The most recent Tybee Island renourishment project was completed in 2019-2020 to repair and replace sand lost during Hurricanes Matthew and Irma. This expansive Tybee Island dune field began to form after the 1970's renourishment with the formation of parallel dune ridges on the dry sand beaches (Oertel, 2013), and has continued to expand in the central beach portion of Tybee Island as a result of the on-going beach renourishment projects.

The GADNR-Shore Protection Committee has authorized sand removal from house foundations and porches when the structural integrity of the house foundation is at risk due to migrating/wind-blown sand. Specifically, this type of activity was authorized on three structures on March 5, 2007 (SPA Permit Number 371). Dune fields, without proper management, can become dissected, poorly developed, and unstable (Oertel, 2013). The primary dune closest to the ocean must be maintained as a continuous parallel ridge that forms along the upper beach and achieves a height of over 10 feet (Oertel, 2013). This parallel primary dune becomes the main protector against major storm and tide events. When the primary dune becomes dissected, breaches occur (blow-outs) which allows wind-blown sand from the dry sand beach to migrate inland. These blow-outs typically begin with scour basins where wind blows through the breach, scours the dry sand landward of the primary dune, and wind-blown sand continues landward until the sand contacts a structure, plant, or tree where it forms mounds that are typically pyramidal shaped and unstable. Breaches in the primary dune can occur from natural or man-made causes. Poorly managed renourishment projects where the primary dune is breached or not maintained properly, pedestrian paths that damage dune plants and expose dune surfaces and re-activate wind-blown sand landward of the primary dune, and pedestrian cross walks that are too low and short can all alter and increase wind patterns that lead to a blow-out. Poorly maintained sand fencing can be a contributor to an increase or decrease in wind speeds leading to a blow-out. The exact cause of the shifting sand migrating to the house foundation at #2 8<sup>th</sup> place is unknown, but based on the Oertel report, one can conclude this source of migrating sand could be associated with beach renourishment activities and a breach in the primary dune that has allowed wind-blown sand to migrate inland and against the house. The applicant observed this piling of sand on the foundation of his house shortly after he purchased the property and has stated that this accumulation of sand has accelerated over the past 3-4 years.

Due to the increased rate of sand piling on the house, the Applicant consulted with a Professional Engineer to evaluate the house foundation, stability, and proposed solution if necessary. Based on the engineer (Ball Maritime Group, Mr. Jason Ball, P.E.) assessment of the sand and foundation, Mr. Ball offered the following assessment and proposed recommendation to stabilize the foundation and house structure:

***Background:***

*The dune to the eastern side of the property is encroaching on the existing residential structure compromising the structural integrity of the foundation and perimeter walls on the lower floor. The lateral pressure from the sand stacking up alongside does not appear*

to be a consideration of the original design intent. The mortar between the CMU blocks is cracking and separating which indicates a combination of settlement and lateral shifting.

**Proposed Solution:**

*The proposed solution to alleviate the pressure induced by the dune is to remove dune material from beside the foundation wall, leaving an eight-foot-wide access way and a concrete gravity block retaining wall. The sand removed could be placed on the ocean side of the dune in non-vegetated areas. The discharge from the existing stormwater sump system (serving this lot and the adjacent lots on 8<sup>th</sup> Place and Terrace) will be re-piped to the oceanside of the retaining wall, final location is to be determined and approved by the GADNR. The accessway between the house foundation and new retaining wall will be surfaced with pervious pavers with a gated access point on each side of the house. The eight-foot clear dimension between the house and retaining wall is to allow for smaller equipment (10' L x 4' W Skid Steer or Extension Ladder [32' height = 8' standoff per OSHA Ladder Safety 1926.1053(b)(5)(i)]) to maintain the house and provide access to collect and remove future sand material that may overflow the retaining wall. This proposed solution to alleviate the sand pressure on the structure will require a permit from the GADNR Shore Protection Committee after the approval by Tybee Island.*

The Applicant's agent and Engineer have met with Georgia Department of Natural Resources - Coastal Resources Division (GADNR) staff on-site to review the proposed plan, and the Applicant has adjusted the proposed plan to incorporate the GADNR recommendations. The proposed plan to remove sand from the house foundation is the least environmentally damaging approach that will satisfy the overall project purpose of protecting the structure from encroaching sand that, if left unprotected, will ultimately damage the structural integrity of the house foundation.

The specific plan for the sand removal is to remove 778 square feet of sand on the seaward side of the house from an approximate elevation of 16 down to an elevation of 9 which is the approximate natural ground elevation. The sand removal area will include an area 10-feet wide on the seaward side of the house and approximately 77.8 feet long. The excavated sand will be hauled off site to a suitable upland disposal area. One small water oak and three small palm trees will be removed during the sand removal. The excavated area will be stabilized with 6-inches of gravel. Once the grade is established and gravel bed complete, the design includes the installation of a 62 foot long gravity block retaining wall that is interlocked with shear knobs and filled with gravel to stabilize and stop the encroaching sand (210 square feet). The wall will be placed 8 feet seaward of the existing house foundation. The wall is to be backfilled with clean sand and drain pipes installed to drain water to the sides of the house and off the foundation. Once the wall is complete, pervious pavers will be installed on the gravel bed between the house foundation and the newly installed block wall (568 square feet). The pervious pavers will extend along the eastern side of the existing house and a portion of the southern side of the house to tie into the existing grade on the south side of the house. Thirty-six linear feet of metal fencing is proposed on the north and south side of the house for security. The sand removed from the eastern side of the house is to use for backfill on the seaward

side of the new wall, and all excess excavated sand is to be removed from the property to a suitable off site upland location.

The second component of the project is to complete the stormwater outfall drainage pipes that were authorized in SPA Permit #466 which was issued on February 28, 2019. The Applicant was authorized to install two sump pumps and three catch basins on the western side of his property to alleviate stormwater flooding in his western neighbor's house. The pumps are connected to PVC pipe that extend eastward along the north side of the Applicant's house. The pipes currently end at the northeastern corner of the house and are capped and not attached to any outfall. The applicant proposes to attach the existing PVC pipes to two new PVC pipes that will extend seaward past the newly constructed concrete block wall. The pipes will then turn to the south and extend along the eastern face of the newly constructed wall to the southern property limits. The PVC pipes will then turn east and extend another 30 feet through the sand and into a natural depressional catch basin that is at elevation 13.30. This eastern section of pipe is to be installed by directional drill or hydro-jet to prevent any disturbance to the vegetated sand dune. At the end of the pipe the applicant proposes to flatten the end of the pipe to match the existing ground contour and screen wrap the pipe end. Monitoring of the outfall will be required to ensure the pipes are functioning properly with no erosion. Coordination with GADNR-CRD will occur if any erosion is observed and maintenance is required.

The remaining portions of the 9,012 square foot lot east of the newly constructed retaining wall (Approximately 3,800 square feet – greater than one-third of the lot) will remain in a natural vegetated and topographic state.

It is anticipated that the proposed work will take 6 months to complete depending on material availability.

## **2.0 Threatened and Endangered Species**

SECI evaluated the site for potential impacts to listed threatened and endangered species and concluded there are no threatened or endangered species of concern that could be negatively impacted by the proposed sand removal work.

## **4.0 Public Interest**

The proposed project includes the removal of wind-blown sand, that is most likely a result of the ongoing beach renourishment projects, from an existing house foundation that has recently accumulated. It is the Applicant's opinion that granting the proposed permit will not interfere with access and recreational use and enjoyment of the public beaches on Tybee Island, and should create a safer and more stable foundation for the existing structure. The proposed work will not create any harmful alteration of the dynamic dune field or submerged lands, and will not negatively impact the sand sharing system of this important sand dune ecosystem.

From: Stuart Sligh [s\\_sligh@slighec.com](mailto:s_sligh@slighec.com)  
Subject: RE: Friedman. 2 8th Place, Tybee  
Date: Dec 16, 2022 at 11:09:21 AM  
To: Barreiro, Deb [Deb.Barreiro@dnr.ga.gov](mailto:Deb.Barreiro@dnr.ga.gov)

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Deb: Below are our specific measurements in Blue that you requested (Measurements provided by Jason Ball).

In addition you asked for additional information concerning the walkway adjacent to the stairs on the south side of the house, and the following is the response and justification concerning that walkway.

**Response:** *Sand accumulating along this location and any area with impervious pavers would only cause more impacts to the foundation. The pervious paver area on the south side of the house is an improved access point from the drive way since the proposed retaining wall area cannot be easily accessed by the north side of the building due to existing fencing, propane tanks, HVAC platform, etc.). In the event there is a significant storm event where significant sand overtops the proposed retaining wall, access from the driveway to the pervious paved area seaward of the house to remove sand from the foundation is necessary. (Response by Jason Ball - Project Engineer)*

Additionally, you requested information to ensure that the existing stormwater collection grates have the capacity to handle the storm water and that the discharge/drain field area in the dune can handle the volume of water:

**Response:** *The drainage system is a simplified sump style for residential use. The stormwater system is designed to accommodate 1.2-inches per hour, resulting in 40-GPM. The pumps are designed to run at 100-gpm at peak, and run at 40% efficiency during this storm with a peak velocity of 2-fps. The end of the pipe will be fitted with a diffuser tee type energy dissipator. The hydraulic conductivity is estimated based on local soil NRCS survey data. At 50 inches per hour, the receiving dune system will be easily able to accommodate the inflow through infiltration. 600-sf of drainage area required, approximately 6,000-sf dune field available seaward of the project w/ the property limits. (Response provided by Jason Ball – Project Engineer)*

**From:** Barreiro, Deb <[Deb.Barreiro@dnr.ga.gov](mailto:Deb.Barreiro@dnr.ga.gov)>  
**Sent:** Tuesday, December 6, 2022 3:39 PM  
**To:** Stuart Sligh ([s\\_sligh@slighec.com](mailto:s_sligh@slighec.com)) <[s\\_sligh@slighec.com](mailto:s_sligh@slighec.com)>  
**Subject:** Friedman. 2 8th Place, Tybee

Hey!

Was working on this PN.

Was hoping you could help.

I believe the majority of this information is provided in the plans and or within the written description,

but could you please provide me with worksheet that breaks out the following information for the platted parcel:

Lot (sq.ft.) 11,586 square feet

SPA jurisdiction area of lot (sq.ft.) 8,887 sq. ft.

Dune field seaward of landward toe of dune on parcel (sq.ft.) 6,686 sq. ft.

Total existing impacts to SPA jurisdiction:

(House sq.ft.) 1,253 sq. ft.

(Deck sq.ft.) 135 sq. ft.

(stairs sq.ft.) 67 sq. ft.

(brick driveway sq.ft.) 508 sq.

ft.

(concrete driveway sq.ft.) 238

sq. ft.

(retaining wall sq.ft.) 15 sq. ft.

(fence sq.ft.) 5-10 sq. ft.

(pavers sq.ft.) 127 sq. ft.

(other existing impacts in SPA

sq.ft.)

Total existing Impacts in Jurisdiction: 2,353 sq. ft.

Total proposed impacts:

(excavation sq.ft.) 815 sq. ft.

(retaining wall sq.ft.) 186 sq.

ft.

(fill / #57 stone sq.ft.) 61 sq.ft.

(pavers sq.ft.) 568 sq. ft.

(length of directional bore

linear feet / sq.ft.) 30 linear feet.

(outfall impacts sq.ft.) None.

(fence / gates sq.ft.) 6 sq. ft.

SPA jurisdiction impacted by the proposed project (sq.ft. & % of SPA) 815 sq. ft. and 9% of SPA.

SPA jurisdiction retained after the proposed project (sq.ft. & % of SPA) 5,719 and 65% percent of SPA

What is the L' x W' x H' of the proposed retaining wall? 61, 3, and 8.

Will the directional bore cut / drill through the seawall? No, the directional drill is seaward

of the wall.

What is the size of the drainage area served by the existing pvc pipe on the north side of the residence? 4,147 sq. ft.

Does the property have gutters on the eastern side of the residence? Yes.

If so do those downspouts connect to the proposed drainage project? Yes.

Think that is it!

See you tomorrow at the Autoplex.

Thanks and please confirm receipt that you have this information.

Sincerely,  
Stuart Sligh

MAYOR  
Shirley Sessions

CITY COUNCIL  
Barry Brown, Mayor Pro Tem  
Jay Burke  
Nancy DeVetter  
Michael "Spec" Hosti  
Monty Parks  
Brian West



CITY MANAGER  
Shawn Gillen

CITY CLERK  
Janet LeViner

CITY ATTORNEY  
Edward M. Hughes

**CITY OF TYBEE ISLAND**

Petitioner: Stephen Friedman

Description: requesting to build a block retaining wall/drainage system in dunes.

Property Address: 2 8<sup>th</sup> Place

Zoning Action Requested: Site Plan with Variance

Following any required Public Hearing, the Mayor and Council of the City decided on the 9th day of June, 2022, to approve the application for a Site Plan with Variance, to-wit:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Petitioner

Date

*6-22-2022*

Planning and Zoning Manager

Date

*6-14-2022*

Mayor

Date

*6/20-2022*

Clerk of Council

Date

*20 June 2022*



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