CHAPTER 4 - THE CCCL PROGRAM AND COVERED ACTIVITIES

The CCCL Program

Purpose and Intent

The CCCL Program is managed by FDEP and is the principal program used by the State of Florida to regulate construction activities on Florida’s sandy beach-dune system. More specifically, its purpose “is to preserve and protect (Florida’s beaches) from imprudent construction which can jeopardize the stability of the beach-dune system, accelerate erosion, provide inadequate protection to upland structures, endanger adjacent properties, disrupt wildlife habitat, or interfere with public beach access” [161.053(1)(a), F.S.]. The Coastal Construction Control Line represents that portion of the beach-dune system vulnerable to surge or storm waves due to a 100-year storm. CCCL lines are established on a county-by-county basis along Florida’s sandy beaches fronting the Atlantic Ocean, the Gulf of Mexico, or the Straits of Florida after a comprehensive engineering study and topographic survey and public hearings have been conducted in the affected area. Twenty-five (25) coastal counties have established CCCLs.

The FDEP has not established a CCCL in Wakulla, Taylor, Dixie, Levy, Citrus, Pasco, or Monroe Counties because their shorelines are mostly vegetated. However, there are isolated pockets of sandy beaches within these counties. In these areas, individuals may not build a structure within fifty feet of the MHWL without first obtaining a permit from the FDEP. The types of activities permitted under Section 161.052, F.S., are essentially the same as those permitted under the CCCL program.

Brief Overview

CCCL permits are the FDEP instruments authorizing a proposed construction activity. There are five types of CCCL permits, and a brief description of each is provided:

1. **Administrative Permit**: Section 161.053, F.S., requires an applicant to obtain a CCCL permit for any coastal construction or activity that is likely to have a material physical effect on the beach-dune system seaward of the CCCL line. Rule Chapter 62B-33, F.A.C. outlines specific permitting, application, and approval processes. Administrative permits are processed in Tallahassee, and once the CCCL application is deemed complete, final agency action (approval or denial) is issued within 90 days. The following activities typically are authorized as an Administrative permit:

   1. **Armoring** – includes shoreline protection projects which harden the shoreline against upland erosion or wave or current action. Applications for seawalls, revetments, geotextile tubes, and other types of armoring structures are reviewed by the CCCL Program and are closely
evaluated for impacts to the beach and dune system, adjacent properties and lateral public access. These projects also require close coordination with FWC regarding impacts to sea turtle nesting habitat.

2. **Large Multi-Family, Commercial, and Recreational Projects** – includes condominiums, beachfront resorts, shopping centers, restaurants, and park improvements. A review of proposed project lighting conditions is conducted during the permit review process. If required, it is recommended that a stormwater management permit be obtained from one of the FDEP’s District offices prior to issuance of the CCCL permit.

3. **Single-Family Projects** – includes the construction of new homes, pools, additions, and remodeling. These projects entail FDEP concurrence with the proposed siting of improvements, protection of dune vegetation, and review of lighting plans (for sea turtle protection).

4. **Non-habitable Major Structures** – includes construction of gazebos, large decks, spas, pools, and other similar structures or activities.

5. **Minor Structures and Activities** – includes construction of minor projects that cannot be approved via field permits and require permit manager review.

2. **General Permit**: Chapter 62B-34, F.A.C., includes requirements for general permits which are a streamlined permitting process developed for minor activities or structures that will not interfere with the natural functioning of the beach-dune system or sea turtles or their nesting sites. A general permit may be issued for single-family homes or non-habitable major structures that do not advance the “line of construction” or are located landward of an established General Permit Line (the line that defines the seaward limit where general permits can be issued).

General permits cannot be used for home additions. A general permit requires the applicant to meet strict setbacks and dune protection rules and must be submitted as a complete application. Final agency action is issued within 30 days of the application submittal. The processing fee is low and non-refundable.

3. **Field Permit**: Field permits are typically issued by the FDEP field inspectors; permit managers in Tallahassee may also issue field permits. The field permit is issued on a form with site-specific information. Below is a list of activities included in the FDEP field inspector’s Manual:

(a) Construction of, or repair to, the following structures within vegetated or unvegetated dune areas:

- Beach access stairs.
- Elevated, wooden beach and dune walkover structures meeting FDEP standards.
- Decks, gazebos, tiki huts, or similar unenclosed, elevated, wooden structures not exceeding 13.4 m² (144 ft²) in floor area, located a minimum of 9.1 m (30 ft) landward of the frontal dune, escarpment, or coastal armoring structure.
(b) Construction of, or repair to, the following structures located a minimum of 9.1 m (30 ft) landward of the frontal dune, escarpment, or coastal armoring structure and where the construction will have a minimal impact on the existing beach and dune vegetation:

- Unroofed wooden decks less than 56 m² (600 ft²) attached to existing buildings.
- Building stairways, concrete slabs (less than 13.4 m², 144 ft²), and understructure latticework.
- Utility or storage sheds (including understructure storage areas) of a breakaway design, not exceeding 13.4 m² (144 ft²) in floor area.
- Fences, privacy walls, and sidewalks to existing developments.
- Driveways, parking aprons, and understructure parking pads to existing developments.
- Enclosures to conceal or protect solid waste containers such as dumpsters, garbage cans, trash bags, etc.
- Onsite sewage disposal systems.
- Water and irrigation wells.
- Temporary excavation for subgrade utilities including water, sewer, electrical, and gas lines to existing developments.
- Any other minor structures similar in nature to those listed above which would not result in measurable interference with the natural functioning of the beach-dune system, as determined by FDEP.

(c) Repair of the following structures (no expansion or enlargement of the existing structures is allowed) located landward of the frontal dune, escarpment, or coastal armoring structure:

- Asphalt street and road shoulders, parking areas and pavements not draining or discharging onto the beach.
- Recreational concrete slabs such as tennis courts or shuffleboard courts.
- Swimming pools undergoing progressive structural failure.
- Existing wooden decks.

(d) Other minor activities:

- Beach vehicular ramp maintenance.
- Placement of sand fill material, installation of sand fencing, and planting of vegetation for dune restoration, to include the filling of blow-outs and other low areas.
- Temporary placement of sand fill or sand bags to relieve emergency conditions when no emergency has been declared. The duration of the permit is not to exceed six months. This activity will be conducted in accordance with established guidelines for the protection of sea turtles.
- Beach cleaning activities.
- Placement of sand fill material immediately landward of existing rigid coastal structures.
• Construction of temporary structures or activities for special events in non-vegetated areas of the beach.
• Limited grading not to exceed 0.3 m (one vertical foot) from existing grade elevation landward of the frontal dune.
• Landscaping not involving net excavation of existing grade or destruction or removal of native salt resistant vegetation.
• Removal of collected windblown sediment provided that it is retained seaward of the CCCL and returned to the active beach or dune system in the general vicinity.
• Access to the beach to conduct other authorized activities.
• Removal of any rigid coastal structure or loose debris from the upland in areas not requiring the permanent removal of sediment.
• Any other activity similar in nature to the activities listed above and which is not expected to cause a measurable interference with the natural functioning of the beach and dune system, as determined by FDEP.

(e) Once an emergency has been declared at the federal, state, or local level:

• Limited and temporary emergency measures to protect the foundation of existing structures from further damage or collapse after a coastal storm.
• Limited and temporary emergency measures to relieve coastal flooding which has resulted from a coastal emergency.
• Measures to remove debris seaward of the coastal construction control line.
• Measures to restore public power, water, sanitary, and storm sewer facilities.
• Measures to return sand deposited upland by the storm to the beach and dune system to restore it, provided such material is free of debris and is not used to cover other debris.

4. After-the-Fact Permit: After-the-fact permits are administrative permits that authorize work that has already been completed. These permits are often subject to enforcement actions by the FDEP and are necessary to assure that the projects have been constructed in compliance with state law. Field permits can not authorize after-the-fact construction.

5. Emergency Permits: Chapter 62B-33.014, F.A.C., outlines emergency permitting procedures used to alleviate conditions resulting from a shoreline emergency. Field permit forms are used to issue an emergency permit, by designating the field permit as an emergency permit.
A list of activities exempt from the permitting requirements of the CCCL program includes:

1. Structures which were built or were “under construction” prior to the establishment of a CCCL in the county where the structure exists. In order to have been considered “under construction,” construction must have progressed to or above the level of the building’s foundation. Most of the initial CCCLs were established in coastal counties in the mid-1980s.

2. Modifications, maintenance, or repairs to existing structures that occur within the limits of the existing foundation and do not involve modifications to the foundation itself. Specifically excluded from this exemption are seawalls and any additions or enclosures added below the first dwelling floor of the existing structure.

3. Minor activities determined by the FDEP that do not have an adverse impact on the beach and dune system. (For a partial list of these activities, see the Miscellaneous, Minor to Moderate Impact section below).

The general criteria governing approval of a CCCL permit are identified in 62B-33.005, F.A.C. The rule requires the applicant to “provide the FDEP with sufficient information about the proposed project to show that any impacts associated with the construction have been minimized and that the construction will not result in a significant adverse impact” to the beach-dune system, either individually or cumulatively. Fill placement that extends seaward of the MHWL requires a JCP, and any take associated with that activity is addressed through the Federal section 7 consultation process.

**CCCL Policies, Rules and Statutes**

The CCCL Program is one component of the Statewide Beach Management Program as set forth in the Beach and Shore Preservation Act (Chapter 161, F.S.). The FDEP rules for the CCCL Program are contained in Chapter 62B-33, F.A.C., Rules and Procedures for Coastal Construction and Excavation (Permits for Construction Seaward of the Coastal Construction Control Line and Fifty-Foot Setback), Chapter 62B-34, F.A.C., General Permit for Activities Seward of the CCCL, and Chapter 62B-56, F.A.C., Rules and Procedures for Using Sand-Filled Geotextile Dune Cores (Permits for Construction and Maintenance). The CCCL Program regulates and permits construction activities only. No maintenance or operational activities are included in the permits with the one exception of the installation and maintenance of geotextile tubes.

A list of all the rules, laws, and statutes that apply to the CCCL program are listed below:

- Section 161.053, F.S.
- Rule 62B-26, F.A.C.
- Rule 62B-33, F.A.C.
- Rule 62B-34, F.A.C.
Coastal Armoring:
  - Section 161.085, F.S.
  - Rule 62B-33.0051, F.A.C.
  - Rule 62B-56.

**CCCL Boundaries**

The area under the jurisdiction of the CCCL program is defined as the portion of the beach and dune system which is subject to severe fluctuations caused by a 100-year storm surge, storm waves, and other forces such as wind, waves, or changes in water-level. The establishment of the CCCL is based on the modeling of a 100-year return interval storm event, which is defined as “a shore-incident hurricane or any other storm with accompanying wind, wave, and storm surge intensity having a one percent chance of being equaled or exceeded in any given year” [62B-33.002(46), F.A.C]. It should be noted that the 100-year storm surge is not the only criterion used to establish the CCCL. The 100-year storm surge is used to attain the following:

- Beach-dune erosion limits.
- Wave action effects.
- Limits of wave run up.

In addition to the three elements above, topographic and hydrographic data are also used to establish the CCCL.

The “landward limit” of the area covered by the CCCL program, as defined in related rules and statutes, is the CCCL itself. The “seaward limit” of the area regulated by the CCCL program is the seaward extent of the “coastal system.” However, in practice, the seaward limit of CCCL jurisdiction is usually considered to be the MHWL. This is because a Joint Coastal Permit is issued for activities impacting the beach seaward of the MHWL, including fill placement. Any take associated with activities reviewed through the JCP program requires Federal section 7 consultation with the USFWS and/or NMFS.

The width of the area regulated under the CCCL program may vary significantly throughout the state, as a result of differences in topography and bathymetry. For example, along portions of the east coast of Florida, the CCCL is only a couple hundred feet or so landward of the MHWL; however, in southwest Florida the CCCL in some places may be close to 1,000 feet landward.

**Covered Activities**

The FDEP is seeking Federal authorization for all take of covered species within the Plan Area, see Chapters 5 and 6) causally related to activities carried out in conformance with the terms and conditions
of a CCCL permit issued by the FDEP, as per Chapter 161.052 or 161.053, F.S., on or after the date of issuance of the ITP. Those activities are too numerous and diverse to list in detail in this chapter but were generally characterized in Chapter 1.

In reviewing CCCL permit applications, the FDEP considers potential impacts to the beach and dune system but, with the exception of sea turtles, does not currently consider impacts to any federally listed or otherwise protected species and their habitats. For the purpose of this HCP, activities permitted under the CCCL program have been assigned to one of eight categories (listed below), which the FBHCP Working Group felt constituted the principal threats to covered species (Chapter 7). These categories serve as the basis for estimating future take (Chapter 8). Issues considered during review of CCCL permit applications and potential construction activities associated with each CCCL activity group are described below:

1. Coastal Development – Major Structures
2. Beach-Dune Restoration
3. Armoring
4. Dune Walkovers
5. Mechanical Beach Cleaning
6. Sand Fencing
7. Emergency Response
8. Special Events

**Coastal Development – Major Structures**

**Activity Description**

Coastal development includes the construction of residential (e.g., single-family homes to multi-family condominiums), commercial (e.g., restaurants to hotels) and public infrastructure (e.g., roads to parks) projects, as well as construction of ancillary structures, such as pools, garages, and cabanas. Generally, all of these activities involve clearing of existing vegetation, grading, and construction of buildings, stormwater systems and parking accommodations. Lighting and landscaping are also typically included with these activities. The extent to which any structure permitted under the CCCL program may impact the beach-dune system and/or covered species is largely dependent on its footprint and proximity to the beach. For example, small projects sited on the dune may have much more impact than larger projects sited further landward.

For the purpose of processing CCCL permit applications, proposed activities are broken down into Major and Minor Structures. Only Major Structures are included in the Coastal Development category. Chapter 62B-33.002(60)(c), F.A.C., defines Major Structures as those “which, as a result of design, location, or size could cause an adverse impact to the beach and dune system.” Major Structures are
Further classified as Non-habitable or Habitable. As the terms infer, this distinction is defined by whether or not a structure is used for human occupancy or could be used as shelter from storms. For example, residences, hotels, and restaurants are considered Major Habitable Structures; roads, bridges, stormwater outfalls, bathhouses, cabanas, swimming pools and garages are considered Major Non-habitable Structures. Conversely, Minor Structures “are designed to be expendable, and to minimize resistance to forces associated with high frequency storms and to break away when subjected to such forces, and which are of such size or design as to have a minor impact on the beach and dune system” [Chapter 62B-33.002(60)(b) F.A.C]. Organizing coastal development activities into the above-defined categories allows the CCCL permit processors to apply different standards to each type of project, with the goal of maximizing protection of the natural, fluctuating processes of the beach and dune system.

All Major Habitable Structures seaward of the CCCL, built under a permit issued by the FDEP after March 17, 1985, must be designed to withstand major storm events and thereby minimize the need for future shoreline armoring. Accordingly, they must be elevated on, and securely anchored to, an adequate pile foundation, with the lowest horizontal structural member supporting the first habitable floor. The first floor should be positioned above the predicted 100-year storm elevation and the pile cap positioned below the predicted 100-year storm erosion profile (design grade). All portions of a Major Habitable Structure’s understructure (wall and slab) between the lowest structural member (supporting the first habitable floor) and the design grade elevations (i.e., expected to be subject to wave, water, and erosion impacts during a storm) must be designed to be frangible.

The location of structures on the beach-dune system is a primary concern to the FDEP. “Major structures must be located a sufficient distance landward of the beach and frontal dune to permit natural shoreline fluctuations, to preserve and protect dune system stability, and to allow natural recovery to occur following storm-induced erosion” [62B-33.005(8), F.A.C.]. The CCCL program’s most limiting criterion is that no permit for any structure other than a coastal or shore protective structure, minor structure, pier, or intake/discharge structure can be permitted seaward of the 30-Year Seasonal High Water Line Projection. The 30-Year Seasonal High Water Line Projection is an estimate of shoreline recession over a 30-year period based on historical measurements. Construction is not permitted seaward of the projected line except under strictly defined circumstances for construction of a single-family home, as set forth in Chapter 161.053(5)(b), F.S.

Construction Process

Construction of the pile foundations described above typically requires significant excavation on site to install a pile cap (horizontal member) below the expected erosion elevation of a 100-year storm. Planning for the excavation, including an excavation plan, is included in the CCCL permitting process when necessary. All sandy material excavated on site is required to remain on site. It should be noted that the further seaward a structure is sited, the lower the modeled erosion profile will be and the more excavation that will be needed to properly construct the pile foundation.
Lighting and landscaping improvements are typically components of proposed coastal development projects, as described above. For single-family homes, exterior and pool lighting plans are reviewed by FDEP CCCL project managers. For multi-family homes, commercial, or recreational projects, exterior lighting plans are reviewed by the FWC. All lighting and landscape improvements are required to minimize impacts to sea turtles and their nests. Typically, low wattage, long-wavelength, shielded lights are required to reduce the amount of light reaching the beach. The landscaping plans must include the location of proposed plants, existing native vegetation, and plants to be removed. FDEP’s policies prohibit use of plants listed by the Exotic Pest Plant Council and require the use of native, salt-tolerant plants.

**Beach/Dune Restoration**

**Activity Description**

This category involves the placement of sand on the dune and upper beach above the MHWL. For purposes of this section, the following FDEP definitions (62B-33.002, F.A.C.) for the beach and dune system terms are used:

- “Beach” is the zone of unconsolidated material that extends landward from the mean low water line to the place where there is marked change in material or physiographic form, or to the line of permanent vegetation.
- “Beach and Dune System” is that portion of the coastal system where there has been or there is expected to be, over time and as a matter of natural occurrence, cyclical and dynamic emergence, destruction, and reemergence of beaches and dunes.
- “Dune” is a mound, bluff or ridge of loose sediment, usually sand-sized sediment, lying upland of the beach and deposited by any natural or artificial mechanism, which may be bare or covered with vegetation and is subject to fluctuations in configuration and location.

To protect the environmental functions of Florida’s beaches, only fill material compatible with the native beach material can be placed in dunes and on the beach above the MHWL. “Beach quality sand,” as defined by FDEP rule [62B-56.020(7) F.A.C.] means “sand that maintains the general appearance, and the engineering and ecological functions of the native sand occurring on the beach and in the adjacent dune and coastal system.” By rule, beach material must be predominately of carbonate, quartz or similar material with a particle size distribution ranging between 0.062mm (4.0 φ) and 4.76mm (-2.25 φ) (classified as sand by either the Unified Soils or the Wentworth classification), must be similar in color and grain size distribution (sand grain frequency, mean and median grain size, and sorting coefficient) to the material in the existing coastal system at the disposal site and must not contain:

1. Greater than 5 percent, by weight, silt, clay or colloids passing the #230 sieve (4.0 φ).
2. Greater than 5 percent, by weight, fine gravel retained on the #4 sieve (-2.25 φ).
3. Coarse gravel, cobbles or material retained on the 19 mm (3/4 in) sieve in a percentage or size greater than found on the native beach.
4. Construction debris, toxic material or other foreign matter; and must not result in cementation of the beach.

The quality of sand used as fill within the beach/dune system is important to:

- Maintain the natural functioning of the coastal system.
- Provide a suitable sea turtle nesting habitat.
- Provide suitable soil for native beach/dune vegetation.

For volumes of fill equal to 153 m³ (200 cy) or less, the field inspectors are authorized to determine beach sand compatibility and to issue a field permit for fill placed on or upland of the dune system, if the source of sand excavation is either (1) landward of the CCCL, or (2) upland of the dune system and the project results in less than a 0.3 m (1 ft) change to beach grade elevation.

If the volume of material to be placed on the beach is 153 m³ (200 cy) or greater, or if more than 1,529 m³ (2,000 cy) is placed on the beach and dune system, an administrative permit is required and core borings from the excavation site must be obtained. Additionally, if the volume of fill material is 1,529 m³ (2,000 cy) or greater, regardless of where it is placed, the permit manager coordinates with the FDEP geotechnical and coastal engineering staff to review beach sand compatibility and provide special permit conditions or monitoring requirements to be included within the Permit.

The FDEP has developed specifications for dune restoration plantings that apply to most planting activities:

- Spacing of "plug" or "liner" planting units should be in staggered rows a maximum distance of 46 cm (18 in) apart.
- Spacing of "gallon" sized plants can be increased to 0.9 m (36 in).
- Planting units should be buried 15 cm (6 in) below the surface.
- A slow release fertilizer should be placed in the planting hole to encourage growth.
- New plantings should meet at least 80 percent success criteria.
- Transplants should meet at least 75 percent success criteria.

Late fall and early winter plantings of small, plug-like planting units often require no supplemental irrigation once the planting is watered-in.
Construction Process

The construction process for a dune restoration project typically involves trucking sand from an inland site and spreading the sand on the beach with trucks, graders or other heavy machinery to design specifications. The spreading of the sand over the existing beach foundation is called beach filling. Change or alteration of the beach-dune profile and/or vegetative buffer may occur during the process. Construction and security lights are often used at night in the project area, but no lights are allowed during sea turtle nesting season. Construction equipment may be left on the beach overnight, outside of sea turtle nesting season. During sea turtle nesting season, construction equipment and material must be stored in a manner that will minimize impacts to sea turtles to the maximum extent practicable and no dune planting can commence until the daily nesting surveys are completed. Planting of the most common species of dune plants occurs from March through November south of Tampa Bay and Cape Canaveral and from April through October northward of these areas.

Permanent or temporary irrigation systems are sometimes installed for new dune restoration projects. The irrigation system consists of main and lateral PVC pipes, control zones, supports, control valves, fittings, and related hardware that are capable of applying 1.3 cm (1/2in) of water over the entire zone in an 8-hour period. If irrigation systems are used, FDEP recommends that they be located on the windward edge of plantings to compensate for the effect of wind. It is also recommended that low pressure irrigation systems (1.4 to 3.5 kg/cm² (20 to 50 lb/in², or psi), household pressures) should have the sprinkler heads and irrigation lines spaced no further than 6.1 m (20 ft) apart to minimize wind spray. Trickle irrigation systems (Natural Resources Conservation Service) may also be used. Recommended irrigation intervals during the dry season are daily watering during the first month after planting, every other day the second month, every third day the third month, and according to the water budget thereafter, until a 91.4 cm (36 in) root depth has been established. Excessive irrigation allows other species to compete with dune vegetation by rinsing the salt spray off the leaves and out of the soil. Therefore, regular irrigation or fixed irrigation systems are not recommended after the plants have become reached the recommended root depth. In the absence of irrigation systems, water trucks are sometimes used to maintain plant vegetation until it becomes established.

Armoring (Including Geotextile Tubes)

Activity Description

Coastal armoring includes seawalls, revetments and geotextile structures. Coastal armoring is constructed on the coastline to protect upland structures from erosion and storm events. Seawalls are defined as “…a structure separating land from water areas, primarily designed to prevent erosion and other damage due to wave or current action” [62B-33.002(55), F.A.C.]. Revetments are defined as “…a sloped, facing structure made of an armoring material designed to protect an escarpment or embankment or an upland structure from erosion by wave or current action” [62B-33.002(53), F.A.C.]. Geotextile tubes, or containers, are defined as “…a bag or tube, made of blanket-like synthetic fibers manufactured
in a woven or loose nonwoven manner, used as an agent to hold together a large mass of sand forming a rigid tubular structure” [62B-56.020(24), F.A.C.].

Armoring Permits

FDEP will only process applications for CCCL armoring permits to protect structures that are either “eligible” and “vulnerable” or located within a “gap,” as described below. Eligible structures are defined as public infrastructure, Major Habitable Structures constructed prior to March 17, 1985 (referred to by the FDEP as non-conforming structures), non-expendable Major Non-habitable Structures, and expendable Major Non-habitable Structures whose loss could result in damage to connected habitable structures. “Expendable Structures” are defined as those structures subject to use or consumption, suitable for sacrifice, or not essential to preserve [62B-33.002(22)]. Examples of expendable structures include swimming pools, wading pools, waterfalls, and spas. Public infrastructure includes roads used for evacuations, emergency facilities, bridges, power facilities, water or wastewater facilities, hospitals and structures of local, state or national significance.

If a structure meets the eligibility definition above, the applicant must still demonstrate the structure’s vulnerability to qualify for an armoring permit. The vulnerability criterion is met when an eligible structure is subject to direct wave attack, any portion of its foundation is exposed, or if it could be damaged by future erosion caused by a 15-year return interval storm, as determined by the dune erosion model stipulated in Chapter 62B-33.0051(1)(a)2, F.A.C.

Lastly, applicants may qualify for armoring if they are closing a gap between two adjacent armoring structures. The gap must not exceed 250 feet (76 m). In addition, the proposed armoring must: a) be sited no further than the adjacent armoring; b) close the gap between the adjacent armoring; c) avoid significant adverse impacts to sea turtles; d) not exceed the highest level of protection provided by the adjoining walls; and e) comply with Section 161.053, F.S.

Geotextile Permits

The department may authorize dune restoration incorporating sand-filled geotextile containers or similar structures proposed as the core of a restored dune feature providing that the structures:

- Provide for protection of an existing major structure that is vulnerable to damage for frequent coastal storms or has experienced significant beach-dune system erosion from storm events
- Are constructed using native or beach quality sand and native vegetation as approved by the FDEP
- May also include other materials used to contain beach-quality sand in order to maintain stability of dune core
- Are continuously covered with three feet of native or beach-quality sand with vegetation
- Are sited as far landward as practicable
Florida FDEP of Environmental Protection, Chapter 4 – The CCCL Program and Covered Activities

- Are designed and sited to minimize potential for erosion
- Do not materially impede public access
- Are designed to minimize adverse effects to nesting marine turtles and turtle hatchlings
- Are designed to facilitate easy removal of geotextile containers as needed
- Must have obtained an ITP from the USFWS if required
- Must provide financial assurance from property owner in form of surety or performance bonds or other mechanism that the geotextile containers will be remove if permit condition are not met

Construction Process

Seawalls are constructed of vertical sheet piles that may be composed of steel, aluminum, vinyl, concrete or timber. The sheet piles are driven into the ground and connected vertically by joints (between sheet piles) and horizontally by a cap (on the top of the sheet piles) and/or a whaler (along the face of the sheet piles). In most cases, excavation or water jetting, typically in conjunction with vibratory hammering, is required to install the sheet piles. Typically a crane is used for installation and requires a 4.6 m (15 ft) wide corridor to access the construction site. The crane may be staged landward or waterward of the structure’s footprint, depending on site conditions. However, armoring permits are typically conditioned to prohibit operation, transportation and/or storage of equipment/materials seaward of the dune crest during sea turtle nesting season. During construction, a shore perpendicular swath of up to 9.1 m (30 ft) may be required for the construction of the seawall’s lateral support system. If a seawall has a cantilevered design (i.e., no braces or anchoring structures) or utilizes soil anchors, the swath of construction may be limited to 4.6 m (15 ft). If soil anchors are used in lieu of deadmen and tiebacks, the creation of an additional workable berm on the waterward side of the seawall is typically required and limited to 4.6 m (15 ft). Additional equipment, including a dump truck to bring backfill onto the site and a front-end loader or forklift to transport sheet piles from a delivery vehicle to the crane may be utilized during construction.

Revetments are constructed of piled armoring stone on top of a base material consisting of smaller stones and aggregate which is placed on a permeable filter cloth. The armoring stone is commonly coquina, granite or limestone. Revetments are also constructed on the seaward face of seawalls, to serve as scour protection for the seawall. The stone is usually brought on site via dump truck and placed with the use of an excavator or crane.

Geotextile structures are typically sand-filled tubes, very large bags (i.e., several feet on a side) or other similar containers. When used for armoring, the containers are often placed one on top of another in a revetment geometry extending up the face of an eroding escarpment or bank; or, they may be used as an erosion resistive core for dune restoration with sand and vegetation used to restore the upper beach profile. In revetment geometry, the tiered containers extend along the beach for the full length of the erosion problem and typically have a relatively wide cross-shore base, frequently as wide as tall, for stability of the structure. Some installations include providing various forms of strapping or similar ties.
to aid in stability if the beach profile continues to erode and potentially threatens to undermine the containers. In both the revetment geometry and the dune core design, the geotextile containers are usually bedded in an initial excavation or trench to add further stability. The containers are filled with sand and water slurry pumped in through open ports and the free water flows and seeps out, leaving the sand inside. Once in place, geotextile structures are required by permit to be covered by a minimum of 0.9 m (3 ft) of native or beach-compatible sand and a reconstructed dune is required to be planted with native salt-tolerant vegetation. Storm events have the potential to remove the covering sand, exposing and/or damaging the geotextile structure.

Other experimental types of armoring structures may be used on Florida beaches. These armoring structures typically involve excavation and or placement of rigid material on or under the beach surface in front of the vulnerable structure. Permits for these experimental types of armoring are typically processed under rule 62B-56, F.A.C.

For all armoring construction, fencing is typically erected around the landward side of the construction area to restrict access from the uplands. Fencing may also be erected on the seaward side of the armoring construction site for the safety of beachgoers but is not typical.

**Dune Walkovers**

**Activity Description**

Walkovers are designed to provide pedestrian access through the dunes to the beach berm. Typically, walkovers are associated with upland developments and have a landward terminus at a parking or pool area. Walkovers are considered minor structures and are therefore designed to be expendable in order to have a minor impact on the beach and dune system. Walkovers designed to be compliant with the Americans with Disabilities Act typically require more structure on the seaward end to bring a ramp down to the beach berm level. The slope of an ADA-compliant walkover can be no steeper than 0.3 m (1 ft) of elevation change for every 3.7 m (12 ft) of walkover length. Thus, the greater the difference in elevation between the dune crest and the beach berm, the greater the length of the ADA walkover is. Commonly, the lengthy portions of ADA walkovers seaward of the dune crest are designed and constructed to maximize the shore-parallel extent and minimize the shore-perpendicular extent the structure on/over the beach berm. The intent of this methodology is to keep the walkover structure out of those portions of the beach more frequently subject to wave forces during storms events. Nevertheless, the shore-parallel extent of such structures at the seaward toe of the dune or onto the beach berm is significantly greater than for non-ADA walkovers.

The CCCL program currently guides applicants to walkover designs that include posts no wider than 15.2 cm (6 in) in diameter and that extend no further than 3 m (10 ft) from the seaward toe of the frontal
dune. However, ADA-compliant walkovers commonly extend more than 3 m (10 ft) seaward of the dune toe in order to meet the slope requirements mentioned above. Permits are typically conditioned to prohibit operation, transportation and/or storage of equipment materials seaward of the dune crest during sea turtle nesting season.

**Construction Process**

Walkovers are typically timber structures with vertical posts driven, augured, or water jetted into the sand. Single-family walkovers are typically 4 feet (1.2 m) wide and multi-family, commercial, or public walkovers are typically 6 feet (1.8 m) wide. Walkovers are required to be elevated a sufficient distance above existing vegetation and dune features to permit natural dune formation and growth. Vegetation within the footprint of the walkover is usually removed during construction or shaded out within weeks of the decking installation. The seaward terminus of walkovers is typically buried so the first step is at an elevation 2-4 feet above sea level (*i.e.*, buried 0.9-2.1 m (3-7 feet), depending on the elevation of the beach berm).

**Mechanical Beach Cleaning**

**Activity Description**

Applicants wishing to clean the beach using mechanical equipment must obtain a field permit from a FDEP Field Inspector. The permits are renewed on a yearly basis. These permits contain special conditions for sea turtle and other resource protection, as described below:

1. Daily coordination with a FWC-approved Marine Turtle Permit Holder (MTPH) is required during the sea turtle nesting season to ensure all nest locations are conspicuously marked prior to initiation of each day’s activity.
2. The penetration of equipment into the beach sand is limited to not more than 5 cm (2 in).
3. The tire pressure of equipment used to conduct the cleaning is limited to 0.7kg/cm² (10 psi) or less.
4. All material collected must be disposed of landward of the primary dune.
5. A 3 m (10 ft) buffer must be maintained between the cleaning equipment and the dune vegetation and marked sea turtle nests.
6. Cleaning over native salt tolerant vegetation is prohibited.

Less common than the field permit process mentioned above, some municipalities are issued area-wide permits that allow for mechanical beach cleaning, as needed, over a five-year period. These five-year permits are reviewed in Tallahassee but typically include the same permit conditions mentioned above.
Hand raking is exempt from the need to obtain a permit by Chapter 161.053(11)(c)9, F.S. However, per Chapter 62B-33.004(2)(c), F.A.C., the activity may not disturb marked sea turtle nests or known nest locations or damage existing native salt-tolerant vegetation.

**Construction Process**

Beach cleaning is done to remove trash and debris from the beach and/or “groom” the beach. Often seaweed or “wrack” is removed from the beach during the process along with varying amounts of debris. Beach cleaning is conducted in a variety of ways. The most common includes the dragging of a fixed rake or a mechanical rake behind a tractor. Other vehicles used to tow beach cleaning rakes include all terrain vehicles (ATVs), pick-up trucks, and electric carts. All vehicles used are required to maintain a tire pressure of 0.7 kg/cm² (10 psi) or less (as mentioned above).

**Sand Fencing**

**Activity Description**

Sand fencing is a type of barricade (wooden or man-made material) established in a line or pattern to trap wind-blown sand, thereby facilitating dune formation and/or enhancement, and can be an effective tool for rebuilding sand dunes.

Sand fencing is considered a minor activity under FDEP’s CCCL program and therefore can be permitted by FDEP field inspectors. However, sand fencing can have adverse impacts to native vegetation and sea turtles. Consequently, project-specific sea turtle protection measures are included as standard permit conditions for sand fences. Because of the limited benefits and the potential for adverse impacts in high-density sea turtle nesting beaches, FDEP does not permit sand fencing in the following areas unless it is in conjunction with a large-scale beach or dune restoration effort:

- Brevard County through Monroe County (Southeast Coast).
- Manatee County through Collier County (Southwest Coast).

Pre-approval from FWC is required for individual sand fencing projects that exceed 152 m (500 ft) in shore-parallel length. For smaller projects, standard guidelines for minor activities are followed (e.g., no installation of sand fences or related activities is permitted during the sea turtle nesting season).

**Construction Process**

Standard fencing used in dune restoration projects typically consists of wooden slats wired together with spacing between the slats, although woven fabric has also been used. Fabric-type fences generally do
not perform as well as the wooden slats and are susceptible to ultraviolet degradation that causes the material to become brittle and deteriorate, sag and lose the original shape over time, thus reducing its performance. However with sufficient maintenance, this problem can be reduced or avoided. Regardless of the material used, FDEP policy requires that the fencing must contain a 40 percent to 60 percent open space to closed space ratio. In order to maximize the benefits of sand fencing, FDEP recommends that the fence be lifted and repositioned prior to becoming 50 percent buried as a result of sand accretion. If more sand is allowed to accumulate, the fence will not only become difficult to remove but it will also lose its ability to collect additional sand. Initial installation of sand fencing may require vehicular access to the construction site.

Sand fences are usually 0.6 to 1.2 m (2 to 4 ft) high and are placed seaward of the crest of the primary dune. FDEP design and installation specifications require that the fencing be installed in sections rather than as a continuous line. Each section, or spur, cannot exceed 3.0 m (10 ft) in length and must be diagonally aligned (facing the predominate wind direction) in a shore-parallel manner, with a minimum spacing of 2.1 m (7 ft) between spurs. Pre-approval from FWC is required for alternative designs. Sand fencing should not be used solely as a means of preventing pedestrian access to and from the beach through the dune. If that is the intent, a post and rope fence with a single strand of rope placed a minimum of 0.9 m (3 ft) above the beach surface will generally suffice. Where a demonstrated need is identified, the installation of post and rope fences in Brevard through Broward County may be permitted by the FDEP.

**Emergency Response**

**Activity Description**

An “emergency” is defined as “any unusual incident resulting from natural or unnatural causes which endangers the health, safety, or resources of the residents of the state, including damages or erosion to any shoreline resulting from a hurricane, storm, or other such violent disturbance” [(Section 161.021(8) FS)]. Two different FDEP rule sections govern the issuance of emergency permits, one for permits issued directly by FDEP and another for permits issued by a local government. Under 62B-33.014, F.A.C., Emergency Procedures, the FDEP can issue emergency permits after a state of emergency is declared by either Executive Order of the Governor or by the Secretary of the FDEP. After the declaration, FDEP field inspectors may process emergency permits upon request or submittal of an emergency permit application for the purpose of alleviating conditions resulting from the shoreline emergency. The request must be submitted using the “Emergency Permit Application,” per sections 161.052 or 161.053, F.S. “Emergency protection measures” may include the placement of beach compatible sand from upland sources to restore and fortify the dune, placing temporary barriers seaward of the vulnerable structure using sand bags (less than 100 lbs; 45 kg), shoring up and reinforcing foundations, and/or installing temporary retaining walls, cantilever sheetpile walls (without concrete caps, tie backs, or other reinforcement), or similar structures seaward of the vulnerable structure. Processing fees are waived and required information is deferred if the delay will compound the
emergency. Public notice procedures are waived. Emergency permits expire 90 days after the date of issuance unless a permittee demonstrates the emergency conditions still exist and failure to complete the work within the authorized time was beyond the permittee’s control.

Procedures for local government issuance of emergency permits are contained in 62B-330051(5), F.A.C., Emergency Protection. These FDEP rules state that upon the occurrence of a coastal storm which causes erosion of the beach and dune system such that existing structures have either become damaged or vulnerable to damage from a subsequent frequent coastal storm, pursuant to Section 162.085, F.S., the local governmental entity may take emergency protection measures to protect public infrastructure and private structures within its jurisdiction and that upon declaring a shoreline emergency and providing notification to affected property owners and to the FDEP, the local governmental entity may issue permits authorizing private property owners within their jurisdiction to protect their private structures.

If erosion resulting from a major storm event (e.g., hurricane, tropical storm, northeaster, etc.) threatens private structures or public infrastructure, and a permit for shoreline protection has not already been issued by the FDEP, a political subdivision of the State may authorize its citizens to implement temporary protection measures, as prescribed under Chapter 161.085, F.S. This authorization must follow an official declaration of emergency by the state or Federal government or local governmental entity affected by the storm.

When issuing emergency permits, state law requires local governments to consider the potential effects of shoreline protection on the beach-dune system, protected species, and native coastal vegetation. Potential impacts to adjacent properties and preservation of public beach access must also be factored into the permitting decision. Structures placed on the beach as the result of a declared emergency must be properly sited and designed, and they must be temporary. If a structure is to remain on the beach beyond a two-month period, as specified by law, the property owner must apply for a FDEP CCCL permit to retain the temporary structure as a permanent structure.

The following requirements apply to emergency protection measures initiated under an emergency permit issued by a local government:

1. Measures used for temporary protection must be the minimum required, as determined by the local governmental issuing the permit to protect the structure from imminent collapse.
2. Armoring or other measures must be sited and designed to minimize: excavation of the beach and frontal dune; impacts to existing native coastal vegetation, sea turtles, and adjacent properties; and encroachment onto the beach.
3. Temporary protection must be sited and designed to facilitate its removal.
4. Temporary reinforcement of foundations, placement of sandbags, and construction of protective sand berms must use beach compatible material and be obtained from an upland source.
5. Excavation of the beach face or near shore area cannot be conducted without a permit from the FDEP.
6. Construction of temporary wooden retaining walls, cantilever sheetpile walls (without concrete caps, tiebacks, or other reinforcement), or similar structures is allowed.
7. Construction debris resulting from the coastal storm shall not be buried on the beach or used for emergency protection.
8. If a structure is to remain on the beach beyond a two-month period, as specified by law, the property owner must apply for a FDEP CCCL permit to retain the temporary structure as a permanent structure. In order for a CCCL permit to be issued for retention of a temporary structure, it must meet all eligibility, siting, and design criteria, as set forth in Chapters 161.053 and 161.085, F.S., and must not result in a significant adverse impact to the beach and dune system, as defined in Chapter 62B-33.002, F.A.C.
9. Sandfilled geotextile containers used as the core of a reconstructed dune for dune stabilization or restoration activities are not authorized under the emergency protection rules.

If installation of emergency protection structures occurs during the sea turtle nesting season, the following measures for the protection of sea turtles are to be implemented prior to siting and during installation of the emergency protection structure:

1. The FDEP must be contacted for information on appropriate siting of the emergency structure to minimize impacts to sea turtles and be provided with the location of any known sea turtle nests within the area of the proposed project.
2. Temporary emergency protection structures must be sited and constructed in a manner that protects sea turtles.
3. Construction and storage of equipment or materials shall be conducted from or located at upland locations landward of the nesting beach (62B-33.00(5) (k) F.A.C.).

In addition, consultation between FDEP and FWC occurs before activities are authorized during turtle nesting season.

With respect to take, Chapter 62B-33, F.A.C., advises local governments who anticipate authorizing installation of emergency shoreline protection structures to obtain a Federal ITP for impacts to sea turtles.

Construction Process

The construction process during an emergency response will likely involve heavy vehicles carrying materials or moving sand. It may also involve construction and security lights, excavation, and other construction activities. Construction equipment may be left on the beach overnight if not during sea turtle nesting season. Pedestrian traffic is likely to be heavy in the emergency response beach area.
Sometimes temporary bulkheads or retaining walls are constructed via permits from the local entity or FDEP. As mentioned above, debris may not be buried or used for emergency response. Nevertheless, removal of debris is necessary for human health and safety and will generate human traffic and machinery use. Substantial debris may not be located near to already designated access points and may require travel by machinery a considerable distance down the beach.

**Special Events**

**Activity Description**

Special event activities permitted under the CCCL program may result in construction and a variety of activities on the beach. Special events may include events such as single concerts or recurring group or family meetings. The events range from small weddings on the beach involving an arch and chairs with perhaps 50 people in attendance to concerts and air shows involving vendor stands, stages, equipment and huge crowds. These events may last from a few hours to several days. There are five basic categories of special events which are permitted:

- Festivals (art, turtle, and concerts), which last several days in a single location.
- Contests (volleyball, rugby, and sand sculpture), which are short-term daytime events in a single location.
- Races (boat, swimming, air shows, foot races, and surfing tournaments), which could last several days and may encompass a considerable shore-parallel stretch of beach.
- Private parties (weddings, reunions, open houses, and conference mixers), which are often nighttime events in a single location and occupy a relatively small shore-parallel stretch of beach.
- Other (filming on the beach)

The potential for impacts to listed species is directly related to the location, type, scale, and duration of the event.

The following structures and activities are regulated in association with the special event:

- Tents.
- Platforms.
- Mats, paths.
- Temporary lighting.
- Inflatable rides.
- Grandstands/bleachers.
- Fences, guardrails.
- Volleyball nets and other recreational structures.
- Generator pads.
Port-a-potties.
Chuppahs.
Grading, fill.
Other.

Signs, tables and chairs, and umbrellas are not regulated in association with special events.

Activity-specific sea turtle protection measures are provided in standard permit conditions and guidelines for field permitted activities including some special events. Field permits can be issued for construction of temporary structures or activities for special events in non-vegetated areas of the beach, but administrative permits are required for activities within the vegetated beach-dune areas. Special events may not require a CCCL permit if the proposed activity does not include regulated structures (e.g., beach chairs in lieu of bleachers) or activities (e.g., minor recreational digging in lieu of large-scale excavation or filling for sand sculpture contests).

Consultation with FWC prior to issuing a special events permit is not required if the activity is in accordance with the appropriate guidelines and standard conditions for special events. The following is a summary of the required conditions for special events relating to sea turtles:

- No operation, transportation or storage of equipment or materials is authorized seaward of the dune crest or rigid coastal structure during the sea turtle nesting season, which occurs from May 1 through October 31 (except in Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward counties where the sea turtle nesting season occurs from March 1 through October 31).
- Minimum vertical clearance for structures constructed in sea turtle nesting habitat and left out overnight.
- No disturbance of existing beach and dune topography and vegetation is permitted. No excavation of sand landward of the mean high water line is permitted. Any temporary minor disturbances in the sand (including ruts, depressions, holes, or mounds) must be filled in and raked smooth with hand tools each evening.
- Required surveys by a licensed MTPH for sea turtle nesting should be ongoing and occur at least 65 days prior to the special event or at the beginning of the sea turtle nesting season, whichever period is shorter.
- If an unmarked sea turtle nest is exposed, or a dead, injured, or sick sea turtle is discovered during the event, the MTPH shall be notified immediately such that appropriate conservation measures can be taken. Within 24 hours of any such occurrence, a report of the incident must be faxed to the FWC Imperiled Species Management Section.
- No lighting for the event after 9 p.m.
- No water from the structure or event area shall be allowed to run onto the beach where it could impact adjacent sea turtle nests.
Construction Process

Special events usually cause increased construction of structures such as stages or seating. In addition, human activity, vehicles, and pedestrian access to the beach and dune system increase because of special events. Crowd control and security details are often part of larger events. Increased use of artificial lighting, flashlights and human refuse also often results from these events. Refuse could include improperly discarded food, fishing line, or products with toxic chemicals such as mosquito repellant or fire starter. Furniture and recreational equipment may be stored on or adjacent to the beach for events. Domestic pets are often brought to special events by their owners and in some cases are allowed to roam unleashed. Minor excavation may occur for pads, paths, bleachers, or recreational courts. The use of heavy equipment is prohibited except where local ordinance allows. Use of vehicles is allowed only for set-up or take-down of structures.

Other CCCL Activities

Not all activities permitted under the CCCL program can be logically placed in the eight categories described above. They include a variety of miscellaneous activities with varying degrees of potential for impacting covered species and their habitats. However, the HCP Working Group felt that none would cause sufficient impacts to warrant treatment as a stand-alone activity. Furthermore, as described in Chapter 8, the conservative approach used in estimating take for the eight principal categories should adequately capture any minor amount of take resulting from the miscellaneous activities.

Examples of miscellaneous activities included in this category are described below. However, it should be recognized that many more activities could be potentially permitted under the CCCL program, and the FDEP is seeking take authorization for all.

Miscellaneous – Minor to Moderate Impacts

Stormwater Outfalls

Stormwater outfalls convey collected rain water, via buried pipeline, to the ocean. The installation of these structures has declined significantly with the onset of current stormwater laws, as regulated by the FDEP’s Environmental Resource Permitting program, but maintenance and repair of these structures is still permitted by the CCCL program. Rule 62B-33.007(4)(l), F.A.C., requires these outfalls to be buried across the beach and littoral system and constructed to withstand the erosion, scour, and loads associated with a 20-year return interval storm.
Vegetation Maintenance or Removal

Vegetation removal is most commonly permitted in conjunction with new coastal development (as described previously) but is also separately permitted. Chapter 62B-33, F.A.C., provides for protection of native salt-tolerant vegetation and requires that removed native vegetation be replaced by similar species.

Utility and Storage Sheds

Sheds that do not exceed 13.4 m² (144 ft²) in floor area are considered minor structures. These structures should comply with the minimum requirements of the local building code and be sited landward of the beach-dune system. Consideration should be given to the effects that the debris from the shed would have on other buildings in its vicinity.

Fences and Privacy Walls

Like other minor structures, fences and privacy walls need not meet specific structural requirements for wind and wave forces, but their placement should be limited to areas landward of the beach and dune system to avoid disturbance of dune topography and vegetation. Limiting their seaward extent also minimizes debris on the beach if the structures are damaged.

Beach Vehicular Ramps

Construction of these ramps is considered a minor activity, but initial construction can lead to a loss in areal extent of habitat and potentially degraded habitat.

Exemptions

FDEP field inspectors are authorized to make a determination that the following activities do not require a CCCL permit [161.053(12), F.S. and 62B-33.004, F.A.C.]; FDEP, Field Inspectors Manual]:

- Routine maintenance (e.g., pruning) of coastal vegetation performed in accordance with species-specific guidelines but without harming the vegetation.
- Minor activities listed in paragraph 62B-33.004(3)(c), F.A.C. Minor activities are defined as “activities which do not cause an adverse impact on the coastal system and do not cause a disturbance to any significant or primary dune.” Such activities shall be conducted so as not to disturb marked sea turtle nests or known nest locations or damage existing native salt-tolerant vegetation. The activities which are exempt under the minor activities exemption include, but are not limited to, the following:
1. Beach or deck furniture and awnings.
2. Tie-downs, or anchors to existing minor structures or trees.
3. Portable public lifeguard stands.
4. Mono-post structures including umbrellas, antennas or light posts provided there is minimal disturbance to the beach and dune system, no damage to vegetation, and the grade is restored.
5. Minor recreational diggings and other forms of art on the unvegetated beach, provided there is no removal or filling of sand at the site.
6. Removal of windblown sand from paved roads and parking areas, beach access ramps, pools, patios, walkways or decks, not involving a change in the general grade and provided that any beach quality sand is returned to the beach and dune system seaward of the CCCL.
7. Minor maintenance of bulkheads and seawalls specifically involving scraping, chipping, sandblasting, guniting, and painting.
8. Minor structures, including but not limited to driveways, water wells, and irrigation wells which are either located within the landward shadow of existing Major Habitable Structures, landward of the second line of development of Major Structures, or landward of public evacuation routes.
9. Maintenance or repair of streets and roads, parking areas, and other paved areas not draining or discharging onto the beach and above-ground swimming pools, provided the activity does not involve excavation.
10. Landscaping located a minimum of 9.1 m (30 ft) landward of the frontal dune, escarpment, or coastal armoring structure which does not involve excavation of existing grade or destruction or removal of native salt resistant vegetation.
11. Repairs to pile supported foundations which include replacing bolts, hurricane straps, secondary members, and shore-normal cross bracing.