Waterfront Property Owner's Manual

Prepared by the City of Punta Gorda
Public Works Department

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INTRODUCTION

This manual is meant to familiarize property owners and prospective property owners with the canal system lying within the city limits of Punta Gorda.

The Punta Gorda seawall maintenance program is a unique benefit to waterfront property owners. Under the authority of the City's Canal Maintenance Assessment Districts, the Canal Maintenance Division is responsible for the maintenance & repair of all seawalls in the canal system which relieves the homeowner from the worry and financial burden of a seawall failure.

There are two canal districts within Punta Gorda; Punta Gorda Isles (PGI) and Burnt Store Isles (BSI). PGI was constructed in the late 50's through mid 70's and has approximately 50 miles of canals (or 100 miles of seawalls). BSI was constructed in the mid 70's and has approximately 15 miles (or 30 miles of seawalls).

The following pages provide valuable information to help you understand the canal system and seawalls as well as answer any questions you may have.

GLOSSARY OF SEAWALL TERMS

Berm: Ground or soil in the canal which gives support to the seawall. Rip-rap is used when the berm is inadequate.

Brackish water: A mixture of salt water and fresh water.

Cap: Concrete (usually reinforced) box structure which ties the seawall together at top.

Deadman: Large concrete block buried in the yard approximately 12' from the seawall which anchors the panel and cap seawall structure. The concrete block is connected to the seawall with a tie-back.

Erosion: The action or process of wearing away land caused by water or wind.

Panel (or Slab): A reinforced concrete rectangle, usually 6" thick and 6' wide and 10' long. These are placed vertically to form the wall. The panels have a tongue and groove to form an interlock.

Rip-rap: Large size stone placed at the bottom of the seawall to stabilize its position and prevent or reduce erosion in areas of strong currents to avoid undermining of the wall.

Depressions: Depression formed by soil from behind the seawall escaping either under or through the seawall joints or cracks.

Tie-back: Steel rods supporting the seawalls anchored to deadman.

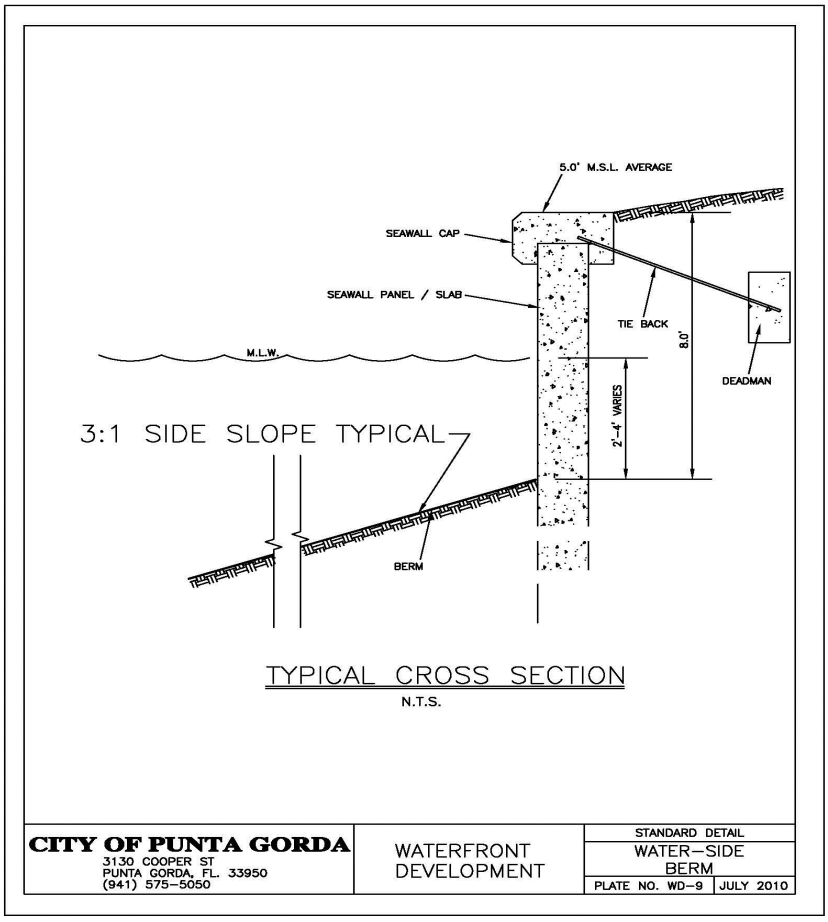
Weep Hole: 2" hole in seawall panel to facilitate drainage and reduce water pressure from the landward side of water.

WHAT IS A SEAWALL AND SEAWALL CAP?

A seawall is a structure made of concrete, which separates a body of water from adjacent land, protecting the property of waterfront owners from erosion. Seawalls are composed of distinct portions: a series of interlocked concrete panels installed vertically from the land elevation to below the water floor, a “concrete cap” which ties the panels together and the tie rods which anchor the vertical structure in an upright position and prevent the wall from falling into the water. The seawall is fabricated with weep holes to allow water collecting behind the panels to drain and alleviating pressure on the structure. The ends of the tie rods are secured in concrete blocks called deadmen.

The drawing on the next page illustrates a typical cross-section of a seawall.

TYPICAL CROSS SECTION



This typical cross section depicts the slope of the berm from the seawall waterward, providing reinforcement for the wall.

WHY ARE SEAWALLS IMPORTANT?

Seawalls perform multiple functions, all of which are important to property owners and the City of Punta Gorda. The most important function is to protect private property from loss of land mass into the water due to erosion caused by drainage and wave action. Seawalls also serve a navigational purpose by maintaining the proper water depth in the canal system. Further, the seawall delineates the boundary between private property (the owner's land) and public property (the water which covers sovereign lands of a government entity). The seawall is used to define the width of a waterway for dock permitting purposes. A properly maintained seawall will contribute to the stability of neighboring properties, providing structural support to roads and bridges as well as adds to the value of the property.

SEAWALL CONSTRUCTION METHODS

Seawall construction methods have improved throughout the years. The original seawall panels were constructed with unprotected metal rebar, 2,500 psi concrete and were 8 feet in length. Today, seawall panels are constructed with protected rebar, 5,500 psi concrete and are 10 feet in length providing for a superior design with an extended life span.

The failure of seawalls is generally classified into any of the following four categories:

- Joint Separation
- Tie-Back or Seawall Cap Failure
- Toe and Berm Failure
- Breakage at the Water Line / Oyster Line

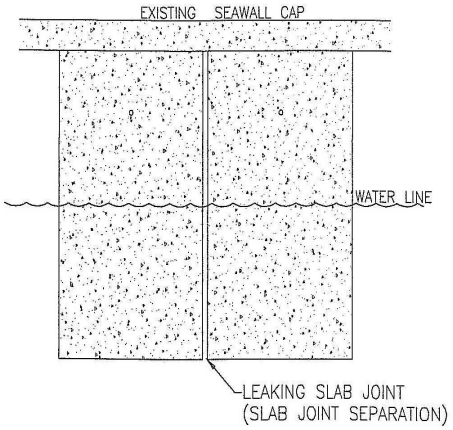
Each of these categories is further explained on the following pages.

JOINT SEPARATION OF SEAWALL PANEL AND SEAWALL

Cause: Age, settling, structural failure or perhaps insufficient berm at the slab toe line. A joint separation is caused when slabs move apart vertically, allowing backfill to migrate through the openings into the water. Uneven hydrostatic pressure is exerted on the slabs, particularly at low tide. This may be critical during heavy rain and low tide conditions.

Symptoms: Depressions behind the wall, visible seawall backfill in the water on the canal side seawall joints (most visible at low tide).

Remedies: All of the remedies are relatively simple and may be done on undeveloped or developed lots by calling Public Works (941) 575-5050 to generate a work order for Canal Maintenance. A City crew will visit the site and evaluate the situation to decide the best course of action. Repairs may be as simple as patching the joint with hydraulic cement or more detailed work involving excavating behind the seawall.



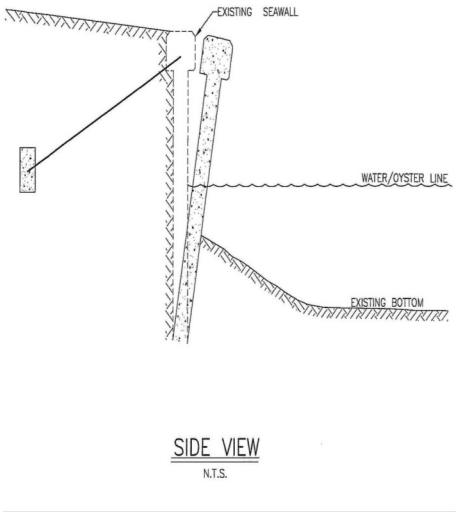
SIDE VIEW

TIE BACK OR SEAWALL CAP FAILURE

Cause: This is the result of brackish water corrosion in the cap reinforcing or tie-back rods. It could also stem from movement of the structure. The results are cracking or crumbling of the concrete cap and its ability to keep the slabs aligned, and/or the slabs tilting waterward.

Symptoms: A deteriorating cap and wavy or sagging panels. Often these indications occur together.

Remedies: Replacement of the seawall cap with a new poured concrete cap. Panels or slabs may have to be replaced. If failure is due to rusted tie-back rods, excavation further into the property is necessary for replacement of the tie-backs.

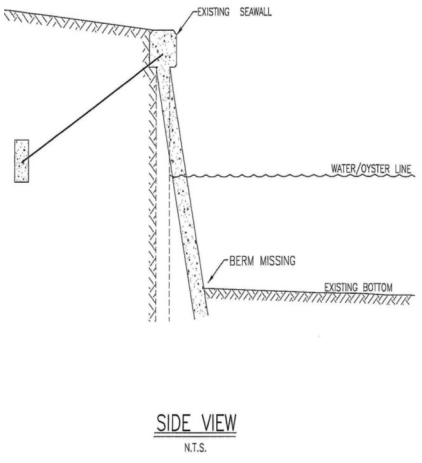


TOE AND BERM FAILURE

Cause: Loss of supporting berm at the bottom of the slabs in the water. The panels tilt out and sometimes crack or cause the cap to twist or break. Loss of berm is usually associated with wave action or fast currents from tides on major inlets. Improper berm placement may be the cause of such failures.

Symptoms: Cap rotation, movement or cracking, a gap opening between seawall and dock (if present) and support pilings (if present) tight against the seawall meaning pressure on the structure from the failure. A good way to determine berm loss is to measure the height of the wall from the cap to the berm. Originally, panels or slabs are 8' in length so that less than two or three feet of berm holding them in place may be cause for existing toe-out or future toe-out.

Remedies: Placement of additional rip-rap to stabilize the bottom of the structure if the toe-out is not too severe. In bad cases, the panels may be pulled and replaced. Repairs to the cap will depend on the amount of damage.

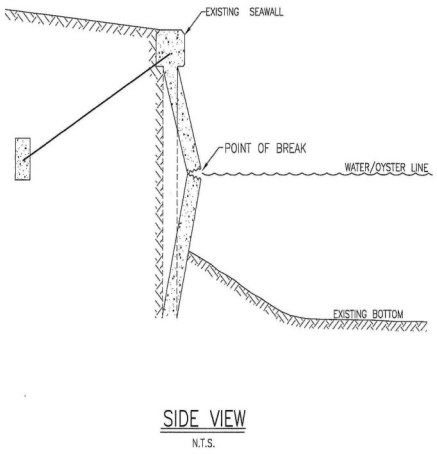


BREAK AT THE WATER LINE / OYSTER LINE

Cause: Aging, corrosion of concrete and reinforcing rod, and uneven hydrostatic pressure. Slabs or panels develop horizontal cracks usually along the waterline and the panels eventually break along these lines.

Symptoms: The principal symptom is the cracks along the top of edge of the oyster line.

Remedies: The remedy for an advanced failure will usually mean new panels, cap tie-back rods and deadmen; in other words a complete new seawall. Seawalls with minor cracks are monitored for progression. Attention will need to be given to any existing depressions as a means of reducing or eliminating uneven hydrostatic pressure from water behind the wall.



REPAIR AND REPLACEMENT PROCEDURES
How is it all done?

Inspections: City personnel are continually inspecting seawalls in an effort to correct small defects before major problems develop. Since inspectors can not be in all places at all times, residents are encouraged to call Public Works at (941) 575-5050 to report any problems they may notice, especially depressions or newly formed cracks.

Depressions: When depressions are reported to Public Works, a service request is generated and given to a crew who performs filling of depressions on a daily basis. When the work is finished, the service request is updated to reflect the completion date.

Caps: Caps can be placed into two categories. They can be repaired or replaced depending on the severity. If the cap can be repaired by patching, the work will be performed by a City crew. Seawall replacement work is performed by either a City crew or the City's contractor through the issuance of a SOW (statement of work). The contractor used is selected by low bid process following a Request for Services by the Procurement Division.

Walls: A seawall is deemed for replacement if it has already fallen over or broken. On inspections, if a wall has severe cracks along the water line, it is suggested the wall be replaced before failing. When a wall is designated for replacement, a SOW is furnished to the contractor for replacement. The new seawall panels are constructed within the Public Works maintenance yard and stored for future replacement.

It should be pointed out a wall or cap will be replaced for the portion to be considered bad which may or may not extend the entire width of the property. Budget constraints will not allow for the replacement of the remainder of wall/cap that still has serviceable life.

TIPS FOR THE WATERFRONT PROPERTY OWNER

There are a few things that a waterfront property owner may do to prolong the useful life of a seawall and thereby postpone repairs or replacement. They include:

1. Maintain the ground on the landward side of the seawall. Refrain from planting anything but grass for at least 6' back from the cap. Stones or mulch allow water to drain behind the wall, causing hydrostatic pressure. Avoid placement of large trees adjacent to the seawalls.
2. Avoid continuous suspension of vessels on davits as this will create additional pressure behind seawalls.
3. Avoid sprinkler heads in the vicinity of seawalls to minimize water application behind the wall. Sprinkler heads should be a minimum of 6' behind the cap.
4. Avoid the use of heavy equipment traveling along seawall perimeter so as to reduce pressure on the seawall.
5. Encourage your neighbors to properly maintain their seawalls. A sagging seawall adjacent to yours may cause damage. Call Public Works at (941) 575-5050 to report any problems.
6. Boaters are urged to obey ALL posted speed signage in the canal system, observing "Idle Speed, No Wake" and/or "Slow Speed, Minimum Wake". This protects berms securing the lower end of the slabs or panels, in addition to secured vessels. Encourage friends and neighbors with boats to do the same and report violations to City officials.

MAXIMIZING THE LIFE OF YOUR SEAWALL

Waterfront property owners play an important part in the maintenance of the seawall and seawall cap along their property. By following a few basic tips, property owners can assist in the effort to maximize the life of the seawall and seawall cap and reduce property damage.

** Seawall repairs / replacement may be very expensive, costing up to $300 per linear foot. The wide range in cost is due to access problems. Undeveloped (vacant) lots provide reasonable access for contractor's equipment and materials. However, developed lots present access problems, often requiring work to be done from a barge.

** As a homeowner, periodically inspect your seawall and cap. If cracks are appearing where they were not present before or pieces of cap are falling into the water, this may be the start of something serious.

** At no time should you as a property owner take it upon yourself to do any repairs to a cap or wall.

Any problems should be reported immediately to Public Works at (941) 575-5050. A work order will be generated for Canal Maintenance to visit the site for evaluation, determining the necessary repair work for scheduling.

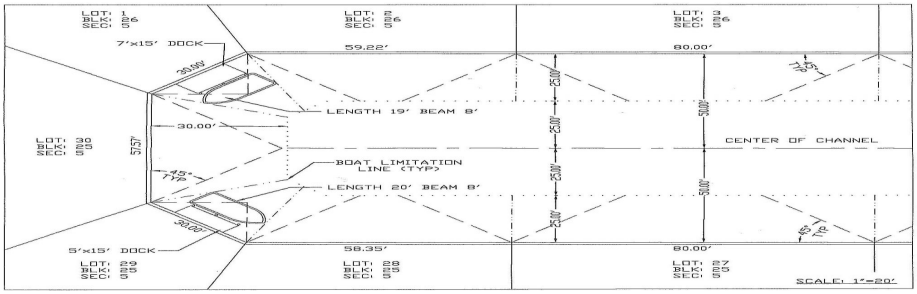
CONSTRUCTION WITHIN THE CANAL AND CODE COMPLIANCE

Permitted construction in platted canals dedicated to the public: Single family residential lots may have freestanding concrete docks protruding no more than ten (10) feet waterward of the seawall, the number of boatlifts and out pilings are determined by the length of seawall and the width of canal.

All structures must be placed within an area defined by projected lines extending waterward at a 45 degree angle from the property's seawall at the side property lines.

Fifty (50) feet of navigable channels must be maintained, except in Burnt Store Isles when only one side of the waterway is seawalled (typical perimeter canal), a passageway of forty (40) feet is required to be maintained.

To obtain information on construction within the canal, contact the Building Division at (941) 575-3324. For questions concerning waterway code compliance, please call (941) 575-3352.



Special permitting is an option for waterfront property owners when the requirements for permitted canal construction are unable to be met. The application and checklist for special permits are available through the Building Division, located at 126 Harvey Street, or online at the City's website, www.pgorda.us. Property owners are encouraged to schedule a pre-application meeting with staff. Complete the checklist for application and site plan, including payment of the application fee. A public hearing will be held before the appropriate Canal Advisory Committee for final consideration. Contact Public Works at (941) 575-5050 for more information on special permitting.

RELATED ISSUES FOR WATERFRONT PROPERTY OWNERS

As a waterfront property owner, there are areas of concern that non-waterfront property owners may experience. The following topics are meant to assist you with some of those issues.

WATER QUALITY - NPDES
IMPROVING THE QUALITY OF OUR CANALS AND CHARLOTTE HARBOR

Silt screens protect dirt and debris from entering the storm drain and flowing to Charlotte Harbor

With the intent to effectively improve water quality, the Environmental Protection Agency (EPA) devised the National Pollutant Discharge Elimination System (NPDES) permit program. The City of Punta Gorda is part of this program and thus is required to comply with regulations set forth by the EPA.

As stormwater flows over driveways, lawns, and sidewalks, it picks up debris, chemicals, dirt, and other pollutants. Storm water can flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the canals. Polluted runoff is the nation's greatest threat to clean water.

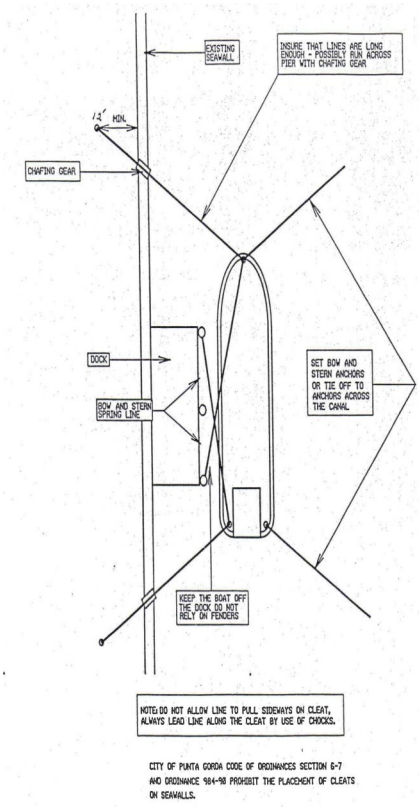
By practicing healthy household habits, homeowners can keep common pollutants like pesticides, pet waste, grass clippings, and automotive fluids off the ground and out of storm water. Adopt healthy household habits and help protect our canals and coastal waters. Remember to share your healthy habits with your neighbors!

For more information on the NPDES program, visit: http://cfpub.epa.gov/npdes/stormwatermonth.cfm.

Remember - Storm Drains Connect to our Canals!

HURRICANE PREPAREDNESS

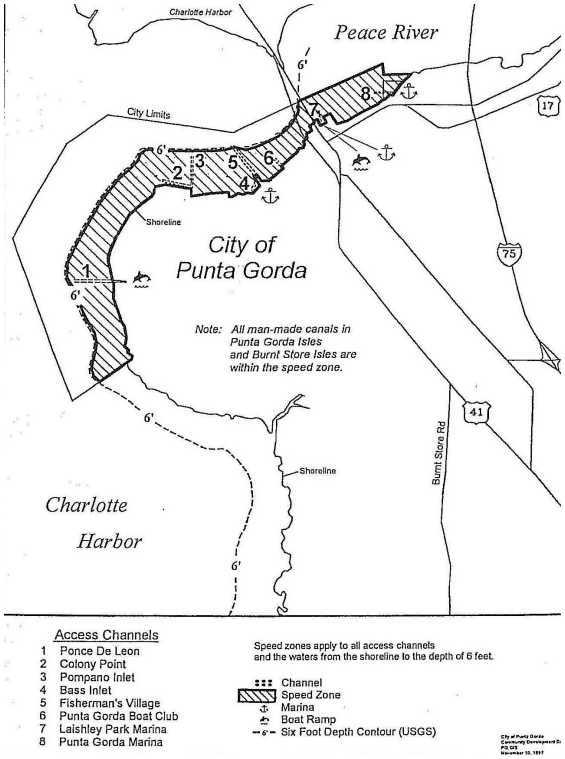
Plans for securing boats should be made early -- before or when a Hurricane Watch is announced and coordinated with neighbors if canals are to be blocked. If boats are to be moved through the canal system to outside hurricane moorings, it must be done before or during the Hurricane Watch time frame.



Should heavy downpours occur, it is wise to check bilge pumps to make sure water is being removed from the boat. If you have davits, it is recommended that boats be taken from the water and secured on such davits in the inboard position resting on the ground. It is important to remember boats on pilings or lifts may float free or exert a strain on the pilings or lifts as the water rises.

Upon declaration of a Tropical Storm/ Hurricane WARNING for our area, securing of boats in the middle of the channel is permitted. It is recommended boat lines be secured to pilings and/ or ground anchors on both sides of the canal with the ground anchors placed a minimum of 12 feet from the seawall and protected from chafing against the seawall. **DO NOT use the seawall for cleats** -- Section 6-7.b-2c prohibits any object or structure from being attached to or resting on or against the seawall or seawall cap, including cleats or anchors for the purpose of tying a vessel. For detailed information, visit the City's website at www.pgorda.us and go to Emergency Preparedness.

MANATEE PROTECTION SPEED ZONE PROGRAM



As a waterfront community, the City of Punta Gorda urges all boaters to be aware of the presence of manatees and observe all posted speed zones. City established speed zones apply to all access channels and the waters from the shoreline to the depth of 6 ft. Additionally, all man-made canals in Punta Gorda Isles and Burnt Store Isles are within the speed zone.

MARINE POLICING

The Punta Gorda Police Marine Officer and Volunteers in Policing (VIP) Marine Patrol, patrol all city waterways with an emphasis on public education, safety and to address issues such as:

- Unsafe vessel operations
- Excessive wakes & speeds
- Depositing of waste, refuse and debris
- Anchoring in a way that interferes with navigation
- Illegally securing boats to markers and mangroves

Violations should be reported to the Punta Gorda Police Department at (941) 639-4111 for further investigation.