

BELVEDERE LAGOON  
PROPERTY OWNERS ASSOCIATION

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P.O.BOX 465 • BELVEDERE, CALIFORNIA 94920

March 2020

To: Belvedere Lagoon Property Owners

Subject: Bulkhead replacement City Permitting Process for installation of Vinyl Sheet Piling

Dear Owners,

Many of the original bulkheads installed at the lagoon/dry land interface have deteriorated to the point they may no longer function to retain soils in place. This deterioration can result in soil erosion or slumping into the lagoon. This action can partially destabilize home foundations, docks and outdoor patios on the lagoon side of the home. In addition, erosion and slumping are partially to blame for the shallowing of the lagoon over time.

The BLPOA Board would like to encourage home owners to review the condition of their bulkheads and consider upgrading or repair. Should a new bulkhead be considered, the following guide will help to obtain the required City permits. This guide has been drafted in cooperation with the City of Belvedere which has offered to lower the Building permit fee given the standard design proposed. The Fee is now set at \$463.50 for the vinyl sheet pile bulkhead (note if additional changes to docks are included then the fee may be higher). This Guide is designed to help facilitate a simple and quick process for obtaining the necessary city permits for replacing existing<sup>1</sup> bulkheads (of less than four feet (4 ft) high as measured from mudline to top of fill), with vinyl sheet piling.

All lagoon/dry land interface bulkhead replacements should be located in the same location as the existing bulkhead. This will help to avoid Design Review approval issues with the City.

There are two permits required, A) **Design Review Exemption** and B) **Building Permit**.

**A) Design Review Exemption**

The process starts with the Design Review Exemption application, see attachment A example attached. We have provided the wording for the proposed project description. This application is submitted to the City of Belvedere along with the Site Plan (see page C example attached), and photographs of the existing area of proposed work. The Site Plan should be on an official site survey.

Following City Staff approval of the Design Review Exemption, make contact with the Chairman of the BLPOA to obtain a letter from the BLPOA Chairman to the City which states that the BLPOA agrees that the proposed project will be entirely located on the home owner's property and not on BLPOA property. This letter is necessary to obtain the required building permit.

**B) Building Permit**

Once you have the approved Design Review Exemption and the BLPOA letter in hand, you can then apply for your Building Permit (see page B example attached). We have provided the wording for the Work Description. This application should be submitted to the City of Belvedere along with the approved Design Review Exemption (page A), BLPOA letter, Site Plan (page C), Engineering Data sheet for Vinyl Sheet Piling (pages D & E), the appropriate section of the planned installation (page F), and Detailed Plan and Section views along with the wall Cap details (page G).

The Engineering Data sheet for Vinyl Sheet Piling (pages D & E) are important and indicate the minimum specifications for the vinyl sheet piling to be used which will meet the design requirements for a

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<sup>1</sup> Not applicable for "FEMA" homes (where an existing home is completely demolished and replaced with a FEMA compliant home). Please see Attachment (H) – Belvedere City Policy regarding Bulkheads in the Belvedere Lagoon.

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maximum 4 ft high bulkhead wall. The 4 ft height is the difference in elevation of soil on one side of the wall to the level of soil on the opposite side of the wall.

The sections on page F shows an example installation of the sheet pile at the lagoon/dryland interface side of the existing dock structure. Your details may be different, this is for example purposes.

We sincerely hope you will find this packet helpful in your efforts to safe guard your homes and help protect this beautiful Lagoon for the enjoyment of future generations.

Attachments:

- A) Design Review Exemption
- B) Permit Application
- C) Site Plan (with Boundary survey)
- D) Engineering Data – Vinyl Sheet Piling
- E) Vinyl Bulkhead Products – data sheet
- F) Sheet pile at inner edge of dock – example section
- G) Plan View Sheet Pile Detail
- H) City of Belvedere – Development Procedures & Policies -  
Subject: Bulkheads in the Belvedere Lagoon



# DESIGN REVIEW EXEMPTION: STATEMENT OF PROPERTY IMPROVEMENTS

(A)

CITY OF BELVEDERE • PLANNING DEPT.  
450 SAN RAFAEL AVE • BELVEDERE, CA 94920-2336  
PH. 415-435-3838 • FAX 415-435-0430 • WWW.CITYOFBELVEDERE.ORG

## FOR STAFF USE ONLY

Date: \_\_\_\_\_ Rec'd. by: \_\_\_\_\_ Assessor's Parcel No: \_\_\_\_\_ Zone: \_\_\_\_\_  
ARBORIST DEPOSIT \$ \_\_\_\_\_ Receipt # \_\_\_\_\_ Date \_\_\_\_\_

## TO BE COMPLETED BY APPLICANT

Address of Property: \_\_\_\_\_ Type of Property: \_\_\_\_\_  
Record Owner of Property: \_\_\_\_\_  
Mailing \_\_\_\_\_ Daytime Phone: \_\_\_\_\_  
Address: \_\_\_\_\_ Fax: \_\_\_\_\_  
\_\_\_\_\_ Email: \_\_\_\_\_  
Owner's Representative: \_\_\_\_\_ Daytime Phone: \_\_\_\_\_  
Mailing \_\_\_\_\_ Fax: \_\_\_\_\_  
Address: \_\_\_\_\_ Email: \_\_\_\_\_

Proposed project description: (print) Replace retaining wall/bulkhead < 4'  
mudline to top of backfill with vinyl sheet piling capped  
with:  wood,  concrete,  other: \_\_\_\_\_

Attachments showing existing conditions:  Site Plan  Photographs

I, the undersigned owner of the property herein described, (or owner representative), have read and understand the Design Review Exemption criteria on the reverse of this form. I hereby certify that this project conforms to those criteria and that it does not conflict with any previous conditions of approval for this property. The contents of this document are a public record.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Name: \_\_\_\_\_

Determined exempt from Design Review per Belvedere Municipal Code Section 20.04.015B.

Planner \_\_\_\_\_ Date \_\_\_\_\_

### CONDITIONS:

May require a:  Building Permit  Encroachment Permit - Contact City to determine if needed.

Approved Copy:  Emailed  Mailed  Faxed  By Hand to:  Applicant  Owner by: \_\_\_\_\_

**A. Structures and improvements subject to design review**

Except as exempted in Parts (B) and (C) of this Section, all new buildings, new structures and other exterior physical improvements, including any relocation or exterior addition, the extension or exterior change of a structure, landscaping changes, or any change to a previously approved project proposal, shall be subject to design review, whether or not a building permit is required, and whether the property is privately- or publicly-owned. Physical changes and improvements subject to design review under the foregoing shall include, but are not limited to, the following:

1. Location and design of any and all structures in any and all zones;
2. Construction or installation of fences, retaining walls, walkways, sidewalks, patios, decks, fountains, ponds, swimming pools, garbage or trash enclosures, and sport courts;
3. When a visually significant portion of a parcel is affected; landscaping projects, grading and filling of land, and the addition of trees which can be expected to exceed a height of 12 feet at maturity;
4. Parking and loading areas, carports, garages and driveways;
5. Exterior lighting, signs, skylights, satellite dishes, antennas and solar panels;
6. Exterior textures and colors for new construction, or for exterior repainting or refinishing if colors or materials are inconsistent with the provisions of Section 20.04.140;
7. The replacement or placement of utility distribution poles and facilities.

**B. Exemptions**

The following physical changes or improvements shall be exempt from the provisions of this Chapter:

1. Changes in color(s) and/or roof or siding material(s) of an existing structure, when such changes are consistent with the provisions of section 20.04.140;
2. Landscape changes and/or additions to existing landscaping when such changes/additions are not part of a larger project subject to approval by the Planning Commission, including but not limited to the addition of trees which typically will not exceed a height of 12 feet at maturity, removal of trees, and changes to landscaping not visible to the public under normal circumstances;
3. Minor changes to previously approved plans, which the City Planner determines do not alter the intent of the approved design;
4. Any other work determined by the Planning Director to be minor or incidental in nature and consistent with the intent and objectives of this Chapter.

**C. Staff review of applications for certain minor changes or improvements**

The following physical changes or improvements may be processed as a Design Review Exception as provided in section 20.04.020(B): Additions, extensions or exterior changes to, or reconstruction of existing single-family dwellings and related accessory structures that involve more than 0 but less than 250 square feet of new floor area, or those projects that involve the addition of an upper-level addition of up to 100 square feet. Notwithstanding the foregoing, if the Planning Director determines that the proposed improvements may be inconsistent with the goals and purposes of this Chapter, the Planning Director will refer the application to the Planning Commission for action.

**Determination of Exemption is made by staff. This application must be signed for valid Exemption approval. Please ask for a copy for your records.**

(B)



CITY OF BELVEDERE
450 San Rafael Ave, Belvedere, CA 94920
Tel: (415) 435-3838
Fax: (415) 435-0430

Permit # \_\_\_\_\_

PERMIT APPLICATION

PLEASE PRINT (FILL OUT COMPLETELY EXCEPT FOR SHADED AREA)

JOB ADDRESS \_\_\_\_\_

OWNER \_\_\_\_\_

ADDRESS \_\_\_\_\_ PH# \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

DESIGNER/ARCHITECT \_\_\_\_\_

ADDRESS \_\_\_\_\_ PH# \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

ENGINEER \_\_\_\_\_

ADDRESS \_\_\_\_\_ PH# \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

CONTRACTOR \_\_\_\_\_

ADDRESS \_\_\_\_\_ PH# \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

I hereby affirm under penalty of perjury that I am licensed under provisions of chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

LICENSE # & CLASS \_\_\_\_\_ CITY BUS. LIC# \_\_\_\_\_

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

WORKERS COMPENSATION DECLARATION

I hereby affirm under penalty of perjury one of the following declarations:
I have and will maintain a certificate of consent to self-insure for workers compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.
I have and will maintain workers compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers compensation insurance policy number and carrier are:

Carrier \_\_\_\_\_

POLICY NUMBER \_\_\_\_\_

I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers compensation laws of California, and agree that if I should become subject to the workers compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

CONTRACTOR (signature) \_\_\_\_\_ Date \_\_\_\_\_

WARNING: FAILURE TO SECURE WORKERS COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000). IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

CONSTRUCTION LENDING AGENCY

I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civic Code C.)

Lender's Name \_\_\_\_\_

Lender's Address \_\_\_\_\_

OWNER BUILDER DECLARATION

I hereby affirm under penalty of perjury that I am exempt from the Contractor License Law for the following reasons (Sec. 7031.5 Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor License Law Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he is exempt therefrom and the basis for alleged exemption. Any violation of Sec. 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.)

I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professions Code: The Contractor's license law does not apply to owner of the property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale.)

WORK DESCRIPTION: \_\_\_\_\_

Replace retaining wall/Bulkhead < 4ft high from mudline to top of backfill with vinyl sheet piling capped with: [ ] WOOD [ ] CONCRETE [ ] OTHER: \_\_\_\_\_

Assessor's Parcel Number \_\_\_\_\_

OCCUPANCY: Group \_\_\_\_\_ Const. Type \_\_\_\_\_ Zoning \_\_\_\_\_ Stories \_\_\_\_\_

VALUATION: \_\_\_\_\_

[ ] ESTIMATED (Time and Materials) [ ] CONTRACT PRICE
ON ESTIMATED COST JOBS, ALL INVOICES MUST BE REVIEWED AND ALL ADDITIONAL FEES PAID BEFORE A PERMIT CAN BE FINALED.

(For staff use only)

Planning approval: PC / DRE / Staff Date: \_\_\_\_\_

\* Pre-paid PLAN CHECK FEE \_\_\_\_\_ # \_\_\_\_\_

Table with columns: BUILDING, PLUMBING, RECAP, MECHANICAL, ELECTRICAL. Rows include PERMIT, Other, SMIP, TOTAL, F.A.U., VENT FAN, BOILER, Other, TOTAL. Sub-headers include BLDG, MECH, PLUMB, ELECT, CA FEE, ROAD FEE, TECH FEE, DAMAGE DEPOSIT, PENALTY, MICRO FICHE FEE, GRAND TOTAL.

CONDITIONS OF PERMIT APPROVAL:

Does this Permit have an assigned time limit (CTL) for construction with an expiration date? YES [ ] or NO [ ]

If YES, this permit must be finalized (signed-off) by the Planning Department) by: \_\_\_\_\_, or penalties of up to \$1,200 a day may be assessed.

Notify City if construction does not begin directly after permit is issued. Construction time limit will not be extended after construction starts. (Authority: BMC Sec. 20.04.035)

Does this project have an approved Staging, Parking and Material Delivery Plan? YES [ ] or NO [ ]

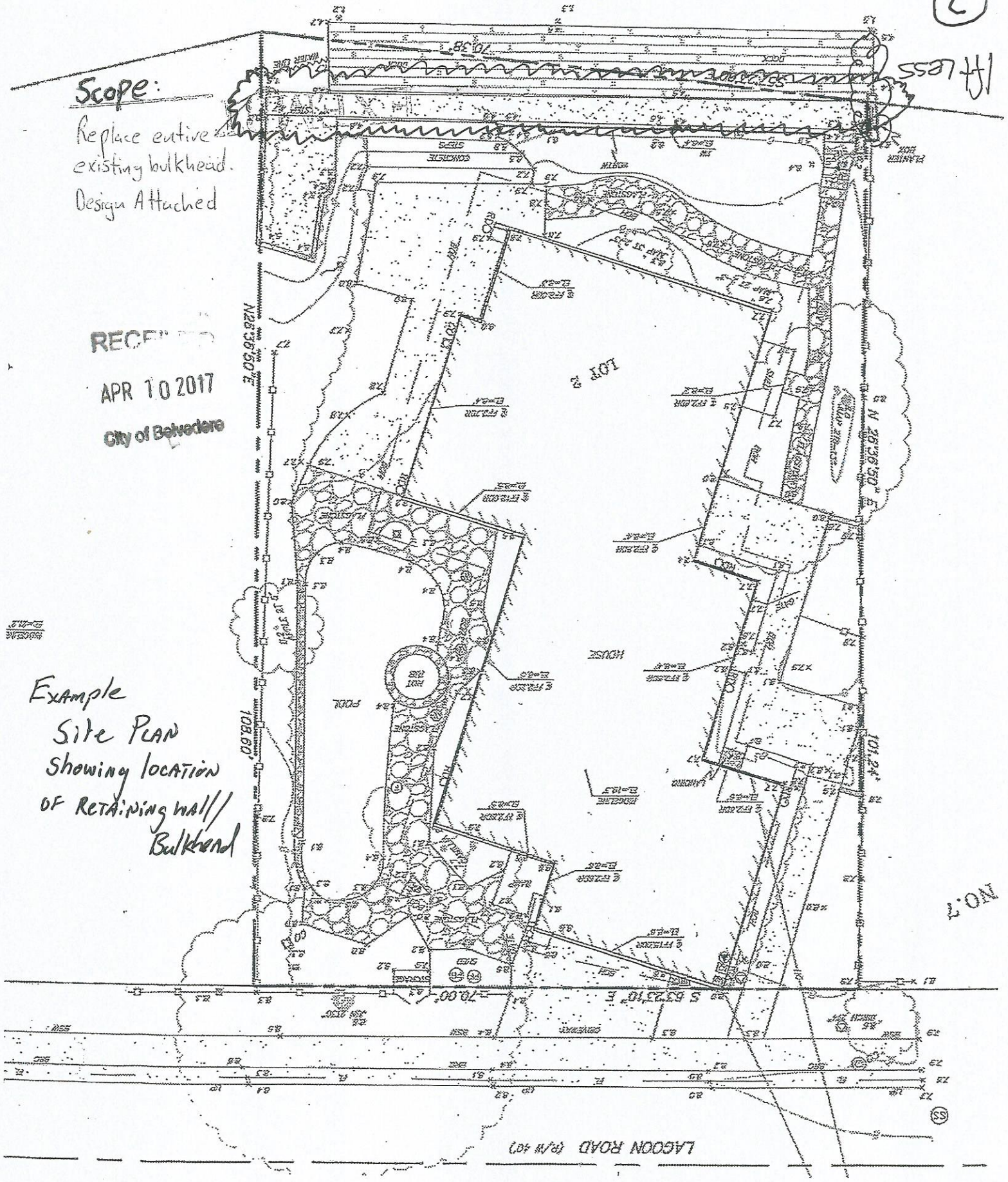
This Permit will expire if more than 180 days lapses between inspections. (Authority: CBC Sec. 106.4.5)

(C)

Scope:  
Replace entire  
existing bulkhead.  
Design Attached

RECEIVED  
APR 10 2017  
City of Belvedere

Example  
Site Plan  
Showing location  
of retaining wall/  
Bulkhead



26 Lagoon Rd - Install Vinyl Bulkhead

(D)

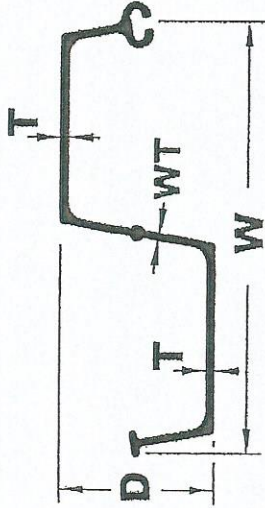
# Shoreline Plastics, LLC | ENGINEERING DATA VINYL SHEET PILING



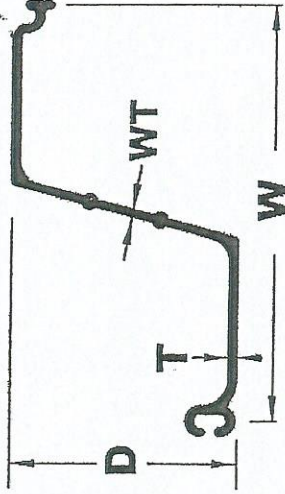
| MECHANICAL PROPERTIES            | SLP-200 | SLP-350 | SLP-400 | SLP-460L | SLP-560L | SLP-700 | SLP-730 | SLP-740 | SLP-800 |
|----------------------------------|---------|---------|---------|----------|----------|---------|---------|---------|---------|
| MASS - LBS/SQFT                  | 3.07    | 3.25    | 4.00    | 3.38     | 3.91     | 3.67    | 4.45    | 4.90    | 5.68    |
| COVERAGE PER SHEET - IN          | 12.00   | 12.00   | 12.00   | 24.00    | 24.00    | 18.00   | 18.00   | 18.00   | 18.00   |
| DEPTH OF CROSS SECTION - IN      | 4.50    | 6.50    | 6.50    | 9.00     | 9.00     | 8.25    | 8.25    | 8.25    | 10.00   |
| WALL THICKNESS (t) - IN          | 0.23    | 0.24    | 0.31    | 0.25     | 0.29     | 0.32    | 0.35    | 0.40    | 0.45    |
| SECTION MODULUS (S) - INCU/FT    | 6.29    | 11.02   | 13.45   | 15.83    | 18.95    | 19.72   | 20.50   | 22.30   | 29.14   |
| ALLOWABLE MOMENT (M) - LBS FT/FT | 3,000   | 5,258   | 6,418   | 7,553    | 9,044    | 5,785   | 6,308   | 6,878   | 13,843  |
| MOMENT OF INERTIA (I) - IN 4/FT  | 28.40   | 71.62   | 89.57   | 137.72   | 158.78   | 151.56  | 168.80  | 184.00  | 459.15  |

|                                 |            |
|---------------------------------|------------|
| CELL CLASSIFICATION: 1-42443-33 | ASTM D4216 |
|---------------------------------|------------|

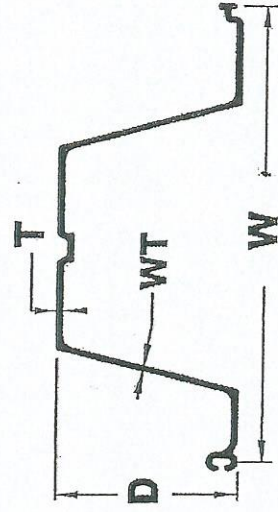
| MATERIAL PROPERTIES                                      | VALUE                  | ASTM TEST |
|--|------------------------|-----------|
| SPECIFIC GRAVITY<br>GMS/CC                               | 1.44                   | D-792     |
| IZOD IMPACT<br>FTLBS/IN.NOTCH<br>J/M of Notch            | 1.5<br>80.1            | D-638     |
| TENSILE YIELD STRENGTH<br>PSI<br>Mpa                     | 6,300<br>43.47         | D-638     |
| TENSILE MODULUS (E)<br>PSI<br>Mpa                        | 400,000<br>2758        | D-638     |
| FLEXURAL YIELD STRENGTH<br>PSI<br>Mpa                    | 12000<br>82.8          | D-790     |
| FLEXURAL MODULUS<br>PSI<br>Gpa                           | 380,000<br>2.6         | D-790     |
| DTUL<br>@264 psi, Degrees.C.<br>@1.821 N/mm2.Degrees.F.  | 70<br>158              | D-648     |
| COEFFICIENT LIN EXPANSION<br>IN/IN/DEG F<br>CM/CM/ DEG C | <5.5 x10-5<br><10x10-5 | D-696     |



PROFILE "A"



PROFILE "B"



PROFILE "C"



CORNERS

| PROFILE                                     | SLP-200 | SLP-350 | SLP-400 | SLP-460L | SLP-560L | SLP-700 | SLP-730 | SLP-740 | SLP-800 |
|---|---------|---------|---------|----------|----------|---------|---------|---------|---------|
| A   | B       | B       | B       | C        | C        | B       | B       | B       | B       |
| THICKNESS (IN) - "T"                        | .225"   | .240"   | .310"   | .250"    | .290"    | .320"   | .350"   | .400"   | .450"   |
| WEB THICKNESS (IN) - "WT"                   | .215"   | .240"   | .310"   | .250"    | .290"    | .320"   | .350"   | .400"   | .420"   |
| WIDTH (IN) - "W"                            | 12"     | 12"     | 12"     | 24"      | 24"      | 18"     | 18"     | 18"     | 18"     |
| DEPTH (IN) - "D"                            | 4.5"    | 6.5"    | 6.7"    | 9"       | 9"       | 8.25"   | 8.25"   | 8.25"   | 10"     |
| SECTION MODULUS (IN <sup>3</sup> /FT)       | 6.29    | 11.02   | 13.45   | 15.83    | 18.95    | 19.72   | 20.50   | 22.30   | 29.14   |
| MOMENT OF INERTIA (I) (IN <sup>4</sup> /FT) | 28.4*   | 71.62*  | 89.57*  | 137.72   | 158.78   | 151.56* | 168.80* | 184.00* | 459.15* |
| BUNDLE QUANTITY (Sheets)                    | 36      | 40      | 40      | 10       | 10       | 20      | 20      | 20      | 20      |

\* Values are shown in paired sections | "L" - The SLP-460L & SLP-560L are 24" wide box profiles that are produced under a license agreement with CMI.

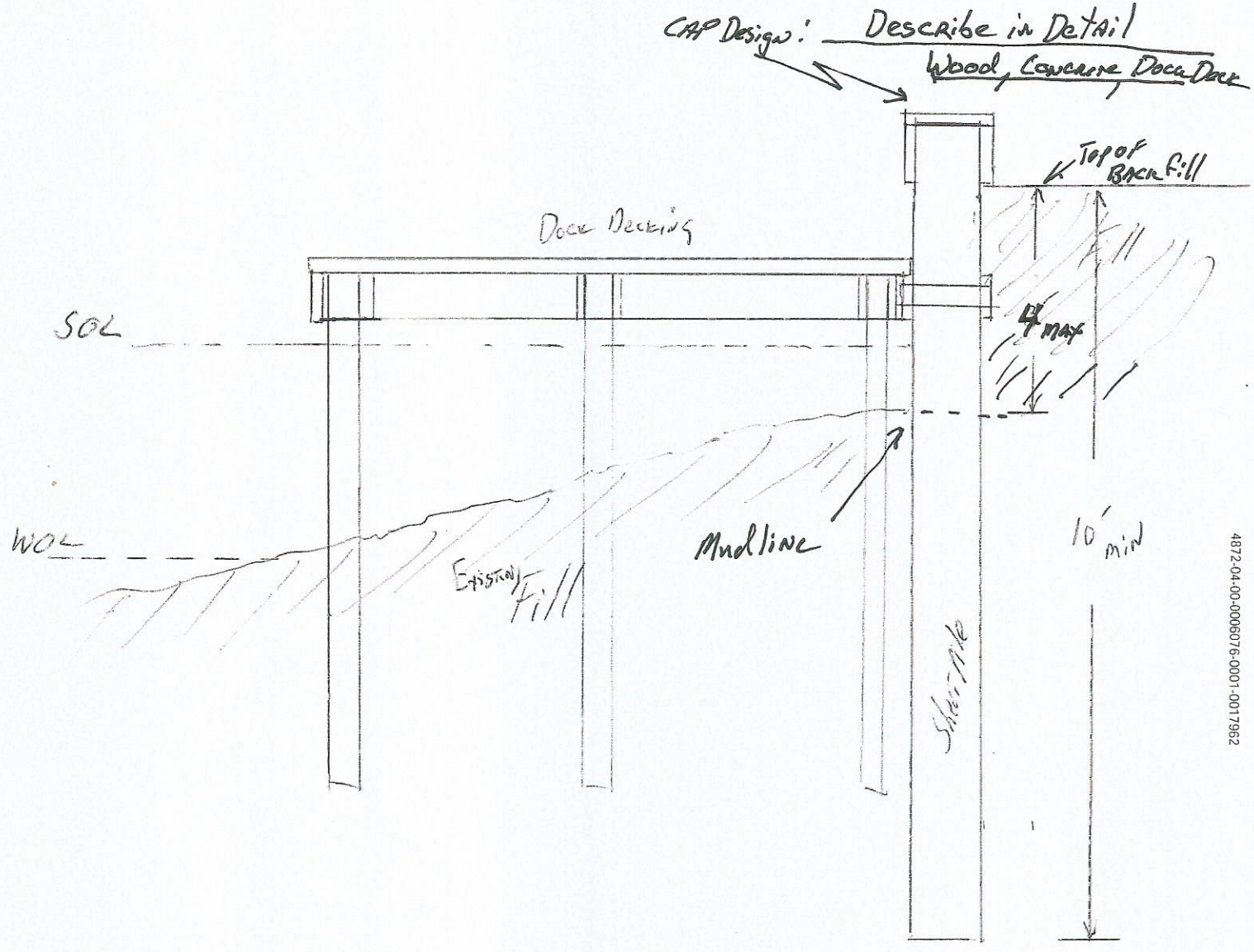
Shoreline Plastics, LLC 300 Alton Box Road W. Jacksonville, FL 32218  
 904.696.2981 ph | 904.757.8427 fax | www.Shoreline Bulkheads.com

The Products





Sheer Pile at Inner edge of Dock  
Example



Lagoon water levels  
SOL - Summer operating level  
WOL - Winter operating level



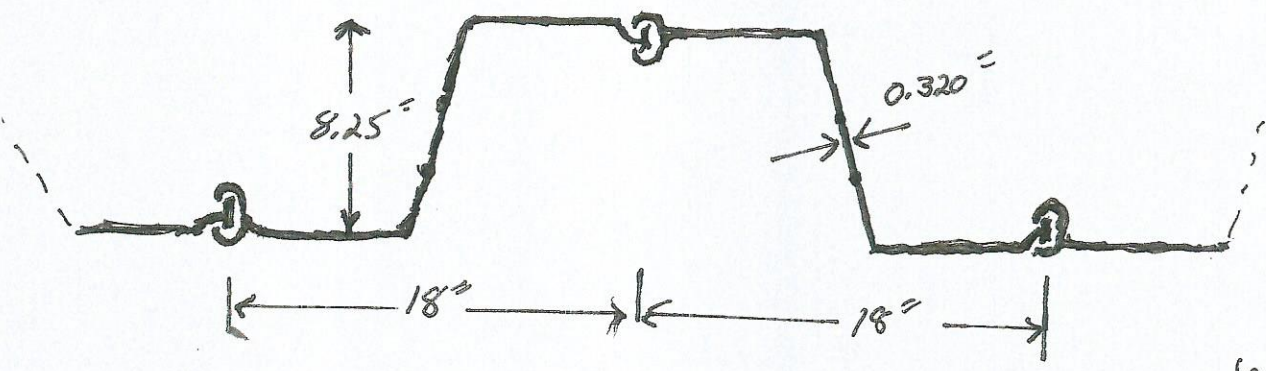


G

Plan View

Shear Pile Detail

Shoreline Plastics  
SLP-700

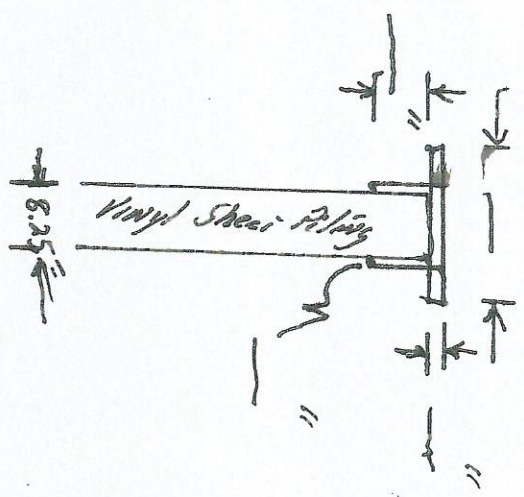


- Wood Cap (Redwood, TPT, etc)
- Corker
- Deck Backing
- Other

Plan View  
Cap Design Detail



Section  
Cap Design Detail





# CITY OF BELVEDERE

## Development Procedures & Policies

|                            |  |                                   |  |
|----------------------------|--|-----------------------------------|--|
| Department(s)<br>Affected: | <input checked="" type="checkbox"/> Building     | <input type="checkbox"/> Planning | <input type="checkbox"/> Public Works              |
| Policy No.                 | BD-16  | Subject:                          | Bulkheads in the Belvedere Lagoon                  |
| Code Ref:                  | Municipal Code<br>Section 16.04.10               |                                   |  |
| Effective Date:            | August, 2017                                     |                                   |  |
| Revision Date:             |  |                                   |  |
| Attachments?               | <input type="checkbox"/> Yes, #___ attachment(s) |                                   | <input checked="" type="checkbox"/> No attachments |

### Background

In May 22, 2017, Building Official Blake Salzman received a letter from the Belvedere Lagoon Property Owners Association (BLPOA) regarding bulkheads on the Belvedere Lagoon. The concern presented in the letter was the issues arising from the classification of lagoon bulkhead repairs and replacements and how they affect the BLPOA lagoon property. The bulkheads are retaining walls designed to protect the adjacent BLPOA property from erosion into the lagoon. These are historically constructed out of a variety of materials, the most recent of which is vinyl sheet piling. New bulkheads are designed using the requirements of California Building Code Section 1610 and 1807. Repairs to existing bulkheads are typically allowed to be repaired in like-kind if it can be demonstrated that the repairs will not be detrimental to the safety of the existing construction.

During the first half of 2017 multiple building permits applications were received by the Building Department to replace bulkheads with vinyl piling in the lagoon area, and were subsequently denied for having a lack of engineering basis or illustrated design of proposed construction. The BLPOA began working on a standardized design that could be utilized for the repair of bulkheads, to minimize obstacles in obtaining a building permit and encourage upkeep of the lagoon bulkheads.

### Comments

The City of Belvedere has also expressed interest in pursuing further classifications within FEMA flood insurance reduction programs that relate to advanced flood safety and design principles in Special Flood Hazard Areas. While the City is not currently pursuing a program classification, it remains a relevant issue to the community and improving upon our construction design is aligned with this interest.

The BLPOA has noted the lagoon is regulated by the Association and presents a unique dilemma if the lagoon mud (floor) level was to be modified in the future. On July 31<sup>st</sup>, 2017, Buestad Construction and C.R. Baumsteiger Construction invited the Building Official to observe torque testing of helical pier installations at a lagoon property. The purpose of this visit was to verify the practicality of an increased design requirement, and ensure that it would not be prohibitive as the soils at the lagoon are less than desirable to design with. Ultimately, the soils of the lagoon could be utilized for alternative type foundation systems and would not be cost prohibitive to a project with the scope of a full bulkhead replacement.

Typically a bulkhead replacement occurs at the time of a whole-house tear down and complete replacement with a new FEMA compliant structure. Due to the increased elevation and foundation requirements, the new house may have additional weight loaded onto the soils that exhibit poor bearing loads and have the potential to impact the mudline at the BLPOA property line. An appropriate design should consider the bulkhead as not only protecting against erosion from the lagoon water, but also from soil sloughing and other types of soil failure caused by the additional weight of the new home. This is meant to protect finished grade elevations of the new home along with the integrity of the elevation of the BLPOA mudline at the property boundary.

### Policy/Procedure

## **BULKHEAD REPLACEMENT AND REPAIRS ON THE BELVEDERE LAGOON**

### BULKHEAD PERMIT APPLICATION REQUIREMENTS

1. Prior to the application for a bulkhead replacement building permit for new FEMA compliant homes, an approval letter shall be obtained from the Belvedere Lagoon Property Owner's Association. This letter shall specify the intended depth of mudline to summer operating water level, at the BLPOA property line, to be utilized for the bulkhead design criteria. While this depth may be more than what currently exists, the Association is targeting a long range depth for bulkhead designs that would allow mud excavation from the BLPOA property to this target depth sometime in the future without causing any infilling, sloughing or movement of any kind, of soils from the property beyond the bulkhead onto BLPOA property. The target depth provided should be the highest intended water depth at the property line for the lagoon during the life of the bulkhead for the most appropriate design. This requirement does not indicate any exceptions to the dredging restrictions contained in Chapter 16.16 of the Belvedere Municipal Code. The President of the BLPOA indicated in a May 22, 2017 letter that an appropriate height would be 4 feet from the Summer Operating Water Level to the mud line at the BLPOA property boundary. The responsible engineer shall utilize this target mud depth level as a minimum in the design of the bulkhead. When included as part of a substantial improvement project or new development, the bulkhead shall be designed to resist the movement of soil on either side of the bulkhead for compliance with the finished grade requirements of Belvedere Municipal Code Chapter 16.20. The design shall be reviewed by the responsible geotechnical engineer for substantial compliance with the geotechnical recommendations.
2. For repairs and maintenance to existing bulkheads (non FEMA compliant homes), the applicant shall provide the manufacturer's engineering data for the material to be utilized,

along with a dimensioned site plan and elevations of the proposed wall. All exterior changes must have approval by the City of Belvedere Planning Department.

3. Standardizing these types of building maintenance permits will not only make the process more streamlined and simple for the applicant, but will also alleviate some of the financial burden placed on the applicant through building permit fees. The standardization of the permit process allows the Building Dept. to forego a formal plan review and therefore eliminate the need to charge the property owner for such a review. This results in a savings of \$235.63 per permit or 33% of the building permit fee total. This may also incentivize property owners to obtain building permits to repair failed bulkheads that have otherwise been neglected.

Written By: Blake Salzman, Building Official  
Revised By: Brian Van Son, CBO

Date: August 17, 2017  
Date: March 14, 2018