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## ORIGINATION FORM

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Proposed Revisions to a Standard Plans Index  
(Please provide all information — Incomplete forms will be returned)

**Contact Information:**

Date: February 12, 2020

Originator: Cheryl Hudson

Phone: 414-5332

Email: cheryl.hudson@dot.state.fl.us

**Standard Plans:**

Index Number: 455-440

Sheet Number (s): 1

Index Title: Precast Concrete Sheet Pile Wall (CFRP/GFRP & HSSS/GFRP)

**Summary of the changes:**

Changed Prestressing Strand SS Note

**Commentary / Background:**

New criteria for HSSS strand

**Other Affected Offices / Documents:** (Provide name of person contacted)

- | Yes                      | No                                  |                             |
|--------------------------|-------------------------------------|-----------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Other Standard Plans –      |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | FDOT Design Manual –        |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Basis of Estimates Manual – |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Standard Specifications –   |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Approved Product List –     |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Construction –              |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Maintenance –               |

**Origination Package Includes:**

(Email or hand deliver package to Rick Jenkins)

- | Yes                                 | N/A                                 |  |
|-------------------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Redline Mark-ups                         |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Proposed Standard Plan Instruction (SPI) |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Revised SPI                              |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Other Support Documents                  |

**Implementation:**

- Design Bulletin (Interim)
- DCE Memo
- Program Mgmt. Bulletin
- FY-Standard Plans (Next Release)

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Contact the Roadway Design Office for assistance in completing this form

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DESCRIPTION:

This Index includes details for six types of piles with two thicknesses. Type "A" is prestressed concrete construction with CFRP or HSSS strands. Types "B1", "B2", "C1" and "C2" piles (corner piles) are reinforced concrete construction. Manufacture, cure and install Sheet Piles in accordance with the requirements of the contract documents.

MATERIALS: (for materials not listed refer to the Specifications)

CONCRETE

Class: V (Special)  
 Unit weight: 145 pcf  
 Modulus of Elasticity: Based on the use of Florida limerock aggregate concrete

REINFORCING BARS

Glass Fiber Reinforced Polymer (GFRP) bars meeting the requirements of Specification Section 932.

PRESTRESSING STRAND

Stainless Steel: Prestressing steel shall be seven-wire HSSS, ~~UNS S32205 (Type 2205)~~ or ~~UNS S31803~~ strand, meeting the requirements of Specification Section 933.  
 Carbon FRP: Prestressing strand shall be CFRP strand, meeting the requirements of Specification Section 933.

Grade 240

DESIGN PARAMETERS:

Type "A"

Concrete Compressive Strength at release of prestressing: 4000 psi minimum  
 Uniform compression after prestressing losses: 700 psi minimum  
 Pick-up, Storage and Transportation: 450 psi tension with 1.5 times pile self weight for single-point pick-up at  $f'c \geq 6000$  psi

Types "B1", "B2", "C1" & "C2"

Pick-up, Storage and Transportation: Minimum compressive strength  $f'ci \geq 4000$  psi required for two-point pick-up;  $f'c \geq 6000$  psi for single-point pick-up.

PLASTIC FILTER FABRIC:

The plastic filter fabric shall extend to the bottom of the "X" dimension.

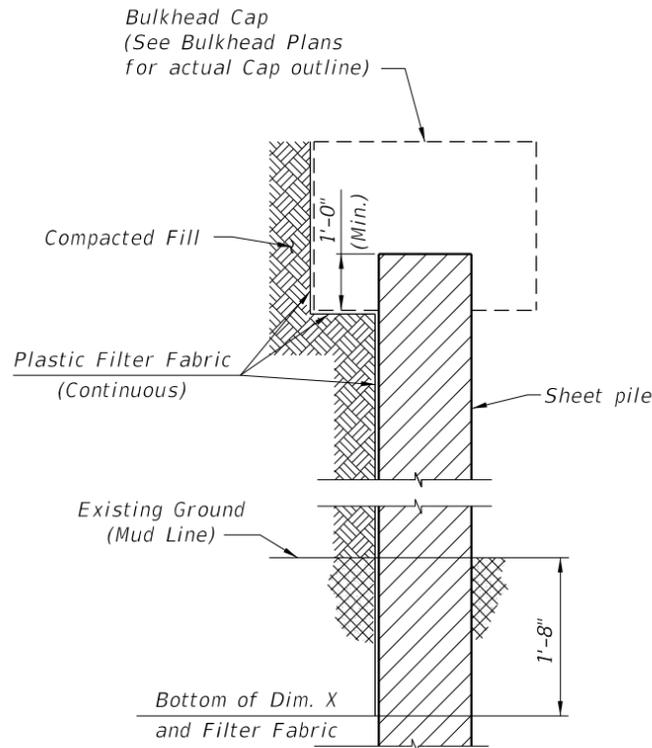
PILE PICK-UP AND HANDLING:

Two-point pick-up for lifting out of forms & two-point support for storage & transportation.  
 Single-point pick-up for installation only.

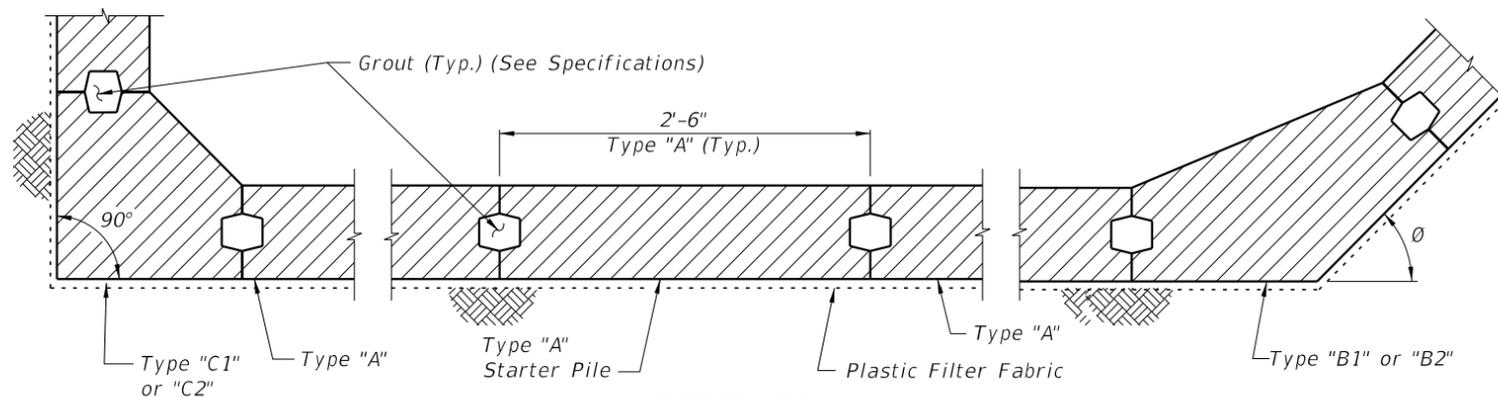
PILE FIT-UP:

The 2'-6" Sheet Pile dimension is nominal. This dimension may be shortened by the Manufacturer up to 1/2" to allow for Sheet Pile fit-up in its final position. Minimum Sheet Pile width is 2'-5 1/2". No changes shall be made to the tongues or grooves.

CROSS REFERENCES:  
 For Dimensions L and X see Sheet Pile Wall Data Table in Structures Plans.

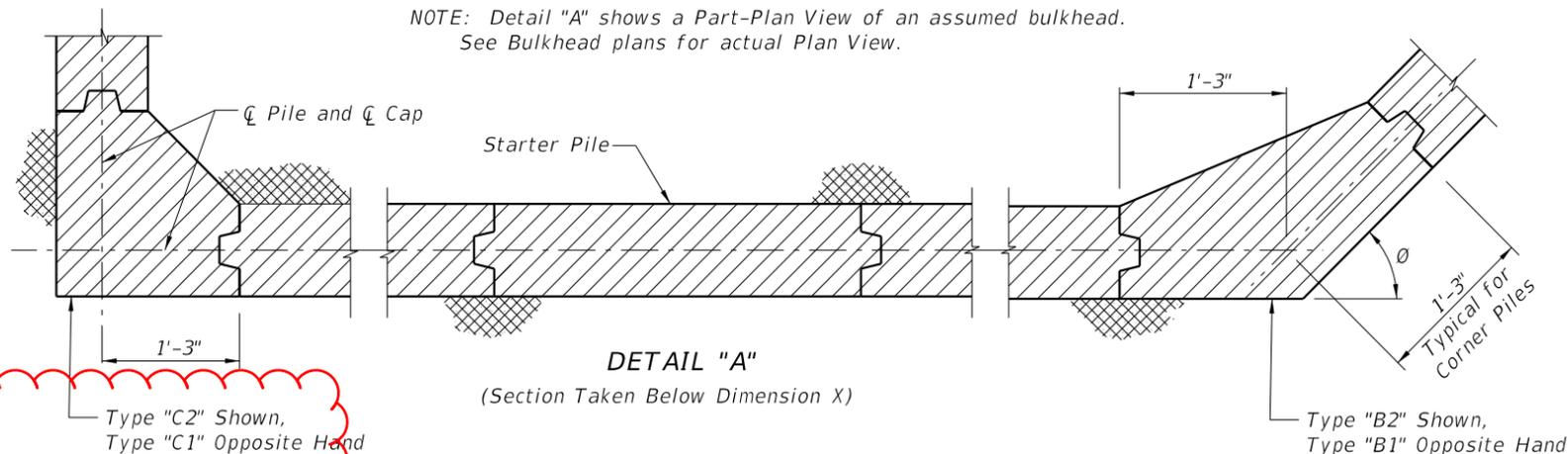


SECTION THRU BULKHEAD  
 (Showing Plastic Filter Fabric)

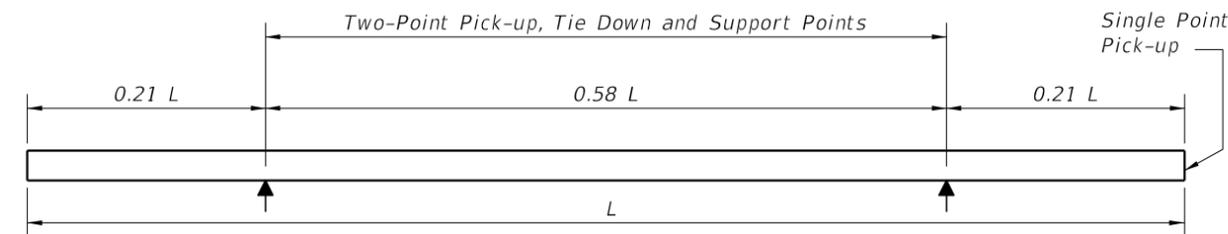


DETAIL "A"  
 (Cap and Anchoring System Not Shown)  
 (Section Taken Above Dimension X)

NOTE: Detail "A" shows a Part-Plan View of an assumed bulkhead. See Bulkhead plans for actual Plan View.



DETAIL "A"  
 (Section Taken Below Dimension X)



PILE STORAGE AND TRANSPORTATION SUPPORT DETAILS

NOTES AND DETAILS

10:14:12 AM  
 10/14/2019

LAST REVISION	DESCRIPTION:
11/01/16	20



FY 2020-21  
 STANDARD PLANS

PRECAST CONCRETE SHEET PILE WALL  
 (CFRP/GFRP & HSSS/GFRP)

INDEX  
 455-440

SHEET  
 1 of 4

**SHEET PILE DESIGN CRITERIA AND NOTES**

**DESCRIPTION:**

This Index includes details for six types of piles with two thicknesses. Type "A" is prestressed concrete construction with CFRP or HSSS strands. Types "B1", "B2", "C1" and "C2" piles (corner piles) are reinforced concrete construction. Manufacture, cure and install Sheet Piles in accordance with the requirements of the contract documents.

**MATERIALS: (for materials not listed refer to the Specifications)**

**CONCRETE**  
 Class: V (Special)  
 Unit weight: 145 pcf  
 Modulus of Elasticity: Based on the use of Florida limerock aggregate concrete

**REINFORCING BARS**

Glass Fiber Reinforced Polymer (GFRP) bars meeting the requirements of Specification Section 932.

**PRESTRESSING STRAND**

Stainless Steel: Prestressing steel shall be seven-wire HSSS, Grade 240 strand, meeting the requirements of Specification Section 933.  
 Carbon FRP: Prestressing strand shall be CFRP strand, meeting the requirements of Specification Section 933.

**DESIGN PARAMETERS:**

Type "A"  
 Concrete Compressive Strength at release of prestressing: 4000 psi minimum  
 Uniform compression after prestressing losses: 700 psi minimum  
 Pick-up, Storage and Transportation: 450 psi tension with 1.5 times pile self weight for single-point pick-up at  $f'c \geq 6000$  psi

Types "B1", "B2", "C1" & "C2"  
 Pick-up, Storage and Transportation: Minimum compressive strength  $f'ci \geq 4000$  psi required for two-point pick-up;  $f'c \geq 6000$  psi for single-point pick-up.

**PLASTIC FILTER FABRIC:**

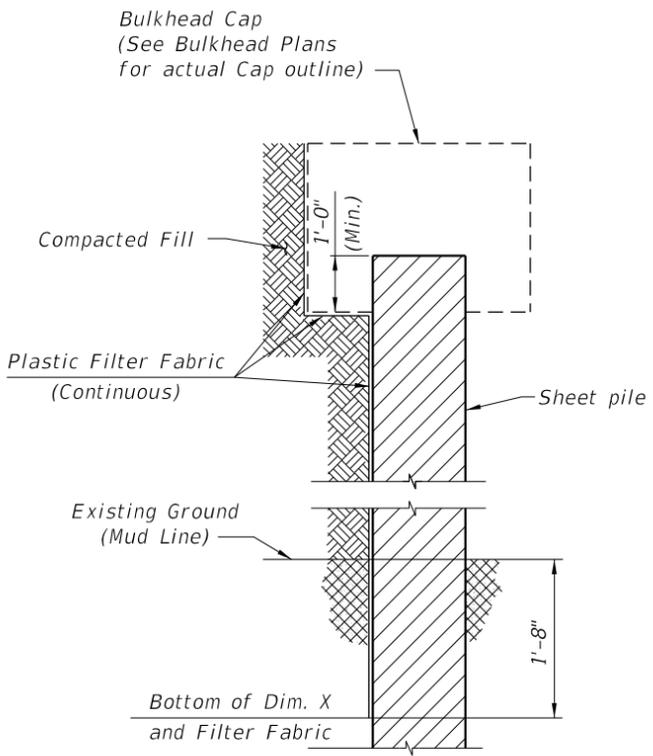
The plastic filter fabric shall extend to the bottom of the "X" dimension.

**PILE PICK-UP AND HANDLING:**

Two-point pick-up for lifting out of forms & two-point support for storage & transportation.  
 Single-point pick-up for installation only.

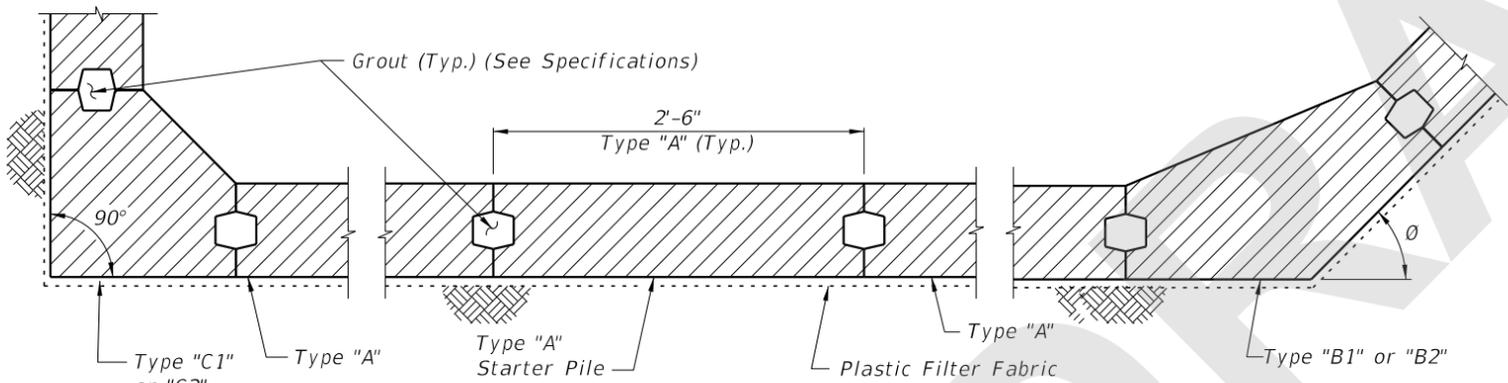
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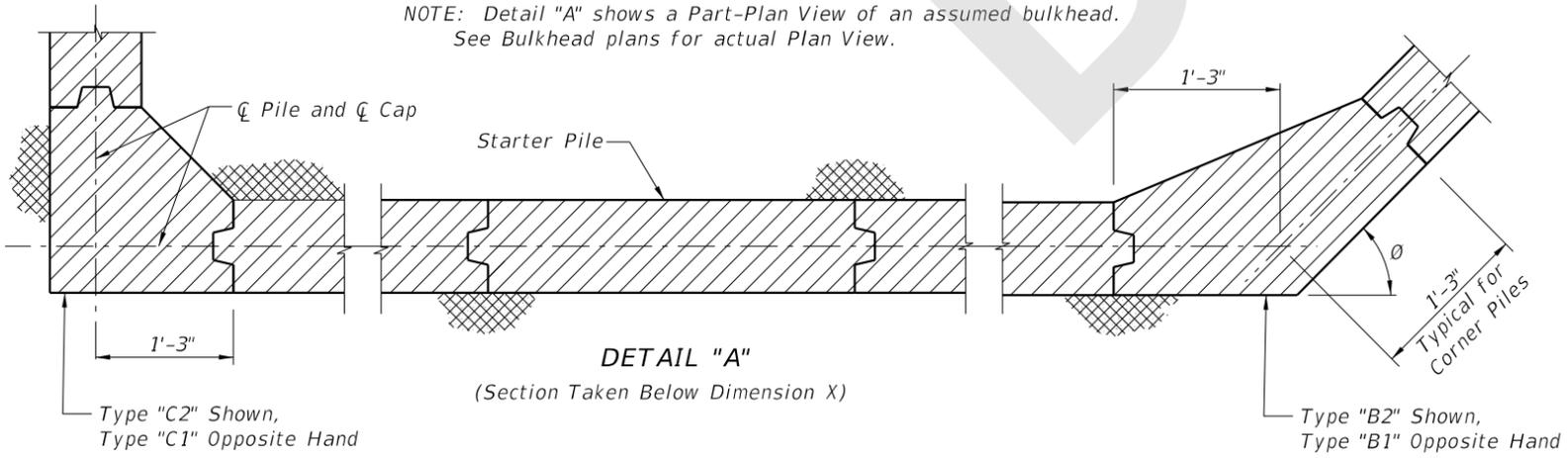
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 (Showing Plastic Filter Fabric)

**CROSS REFERENCES:**  
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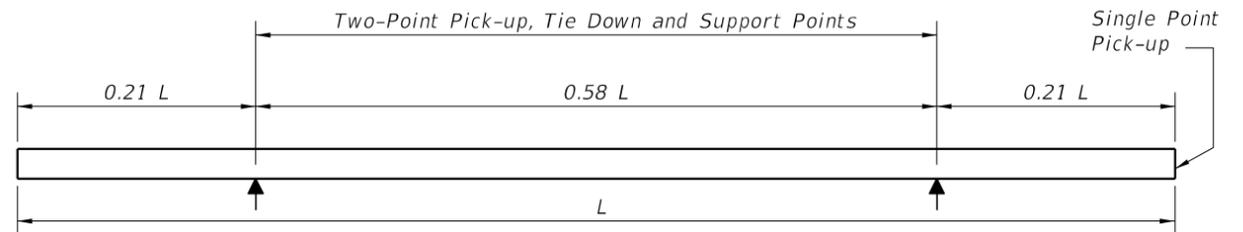


**DETAIL "A"**  
 (Cap and Anchoring System Not Shown)  
 (Section Taken Above Dimension X)

NOTE: Detail "A" shows a Part-Plan View of an assumed bulkhead. See Bulkhead plans for actual Plan View.



**DETAIL "A"**  
 (Section Taken Below Dimension X)



**PILE STORAGE AND TRANSPORTATION SUPPORT DETAILS**

**NOTES AND DETAILS**

LAST REVISION 11/01/20	DESCRIPTION:	 FY 2020-21 STANDARD PLANS	PRECAST CONCRETE SHEET PILE WALL (CFRP/GFRP & HSSS/GFRP)	INDEX 455-440	SHEET 1 of 4
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