
ORIGINATION FORM

Proposed Revisions to a Standard Plans Index

(Please provide all information — Incomplete forms will be returned)

Contact Information:

Date: June 5, 2023

Originator: Dino Jameson

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Email: dino.jameson@dot.state.fl.us

Standard Plans:

Index Number: 455-440

Sheet Number (s): 1 of 4

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



Summary of the changes:

Sheet 1: Changed the "PLASTIC FILTER FRABRIC" Note in the SHEET PILE DESIGN CRITERIA AND NOTES to "GEOTEXTILE: Provide and install Type D-2 or D-3 geotextile in accordance with Specifications 514. Extend the geotextile to the bottom of the "X" dimension."; Changed all references of "Filter Fabric" or "Plastic Filter Fabric" to "Geotextile".

Areas of the Standard Plans where 985 is referenced for drainage details needs to now reference Specs 514 (Division II specs). The Contractor is not responsible for the producer requirements division III specs, but ensure that the product used is on the APL and used for appropriate intended use. Specs 514 essentially does reference 985 to meet the materials requirement.

Commentary / Background:

In the July 2022 SSRBC workbook, construction requirements for the Contractor for geosynthetic materials from Section 985 was removed. The reason for it was that the construction requirements doesn't belong in Division III of the specifications, as this is for producer requirements. Instead of applying specific requirements to each individual specs that references 985 in Division II, the Department is going to modify specification 514 to cover geosynthetics used for drainage applications. Specs 145 covers the reinforcement (structural) applications and construction requirements and erosion control has specific requirements in various areas of Division II, therefore, both erosion and reinforcement are covered. The only missing link in Division II is the drainage applications. Proposed changes to 514 cover construction requirements and material acceptance. In addition, specs 514 ensures that the Contractor obtains geosynthetic product from a manufacturer that meets 985 spec requirements.

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 checked="" type="checkbox"/> | <input type="checkbox"/> | Standard Specifications – Various sections where 985 is referenced. |
| <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: (Submit package to Rick Jenkins)

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

Implementation:

- | | |
|-------------------------------------|----------------------------------|
| <input type="checkbox"/> | Design Bulletin (Interim) |
| <input type="checkbox"/> | DCE Memo |
| <input type="checkbox"/> | Program Mgmt. Bulletin |
| <input checked="" type="checkbox"/> | FY-Standard Plans (Next Release) |

Contact the Roadway Design Office for assistance in completing this form

Email to: Rick Jenkins rick.jenkins@dot.state.fl.us and Darren Martin darren.martin@dot.state.fl.us

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
 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 per requirements of Specification Section 933.
 Carbon FRP: Prestressing strand shall be CFR 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.~~

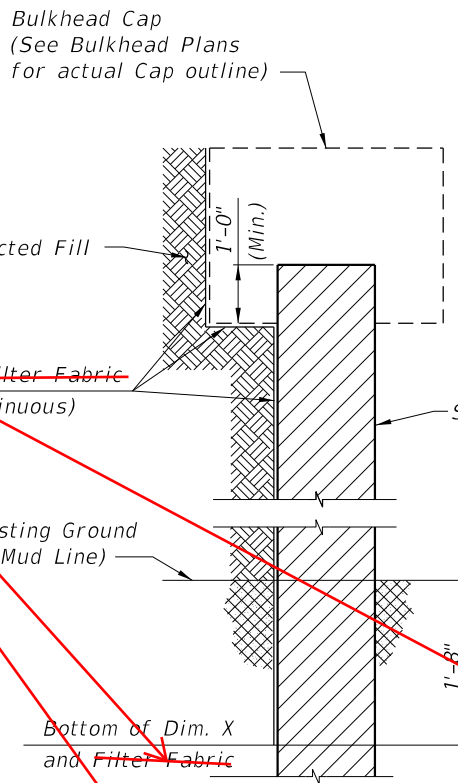
PILE PICK-UP AND HANDLING:
 Two-point pick-up for lifting out of forms & two-point support for storage & transportation.
 Single-point pick-up for installation only.

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.

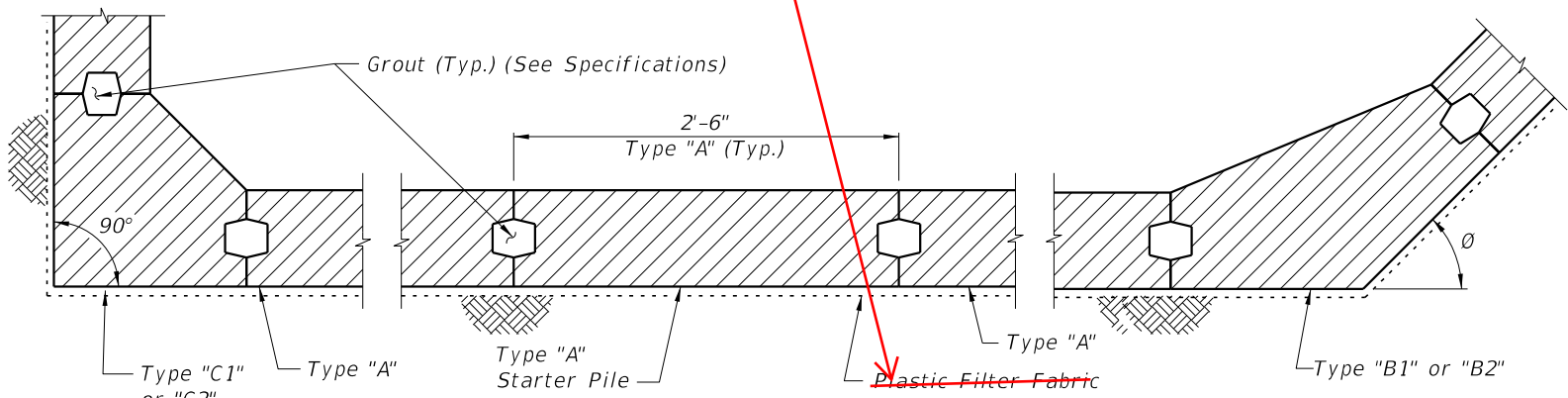
CHANGED:
 Provide and install Type D-2 or D-3 geotextile in accordance with Specification 514. Extend the geotextile to the bottom of the "X" dimension.

CHANGE: Geotextile

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

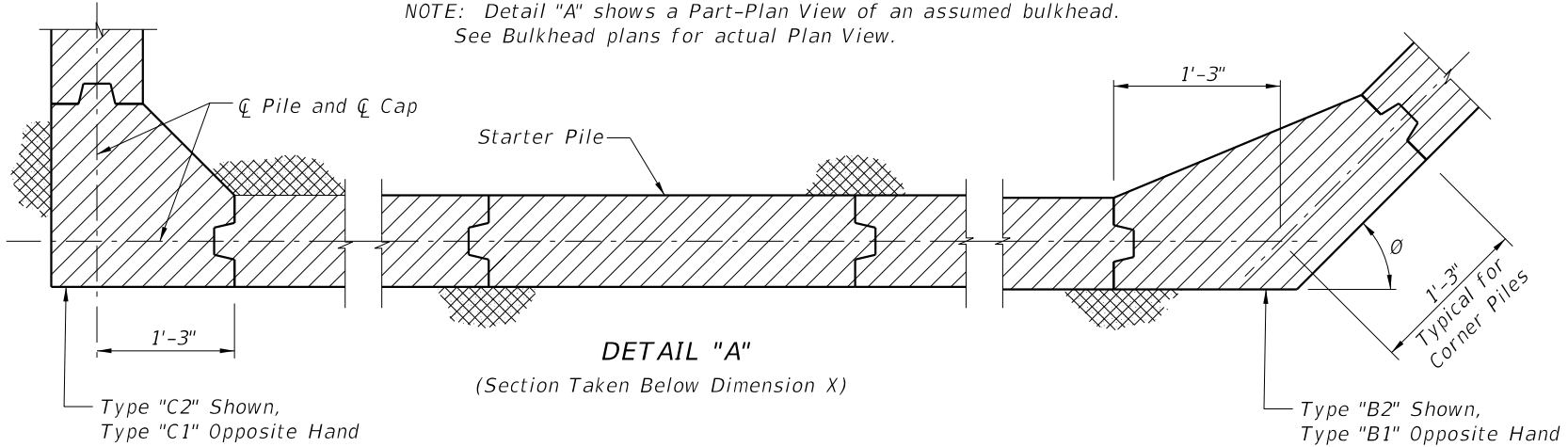


SECTION THRU BULKHEAD
 (Showing Plastic Filter Fabric)

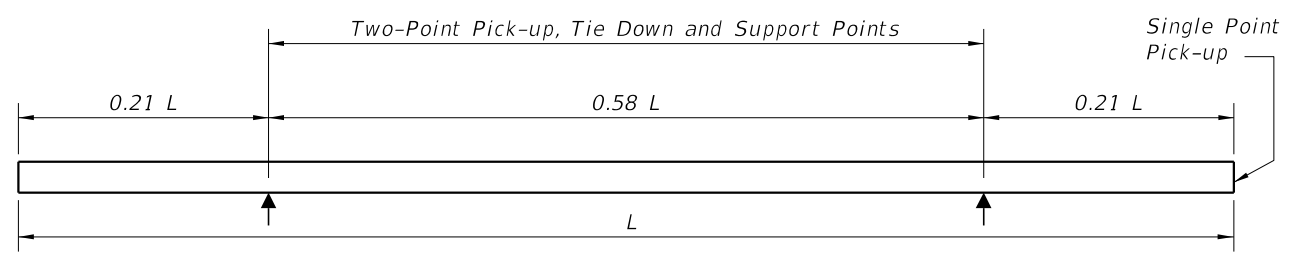


DETAIL "A"
 (Cap and Anchoring System Not Shown)
 (Section Taken Above Dimension X)

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

LAST REVISION	DESCRIPTION
11/01/22	11/01/23



**FY 2023-24
 STANDARD PLANS**

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

INDEX	SHEET
455-440	1 of 4

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 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.

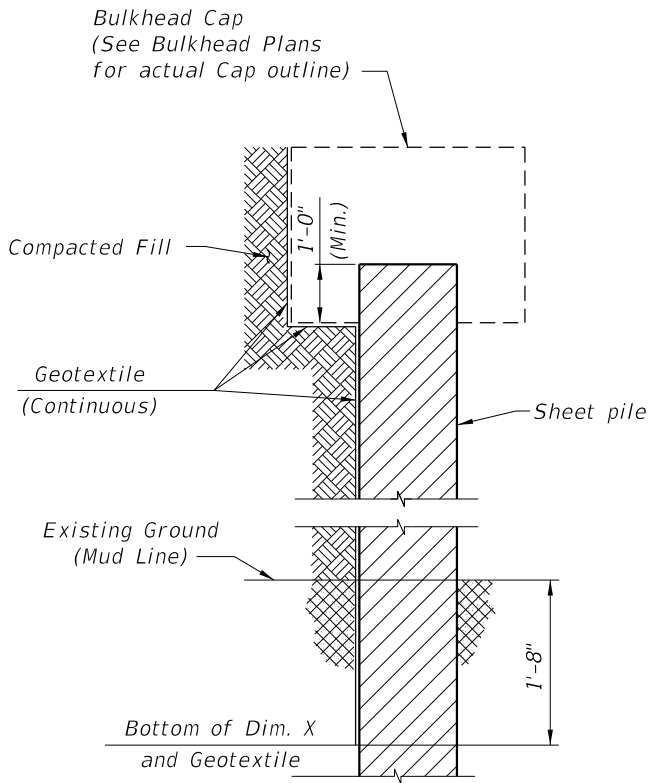
DESIGN PARAMETERS:
 Type "A"
 Concrete Compressive Strength at release of prestressing: 4000 psi minimum
 Uniform compression after prestressing losses: 700 psi minimum
 Pick-up, Storage and Transportation: 450 psi tension with 1.5 times pile self weight for single-point pick-up at $f'c \geq 6000$ psi
 Types "B1", "B2", "C1" & "C2"
 Pick-up, Storage and Transportation: Minimum compressive strength $f'c \geq 4000$ psi required for two-point pick-up; $f'c \geq 6000$ psi for single-point pick-up.

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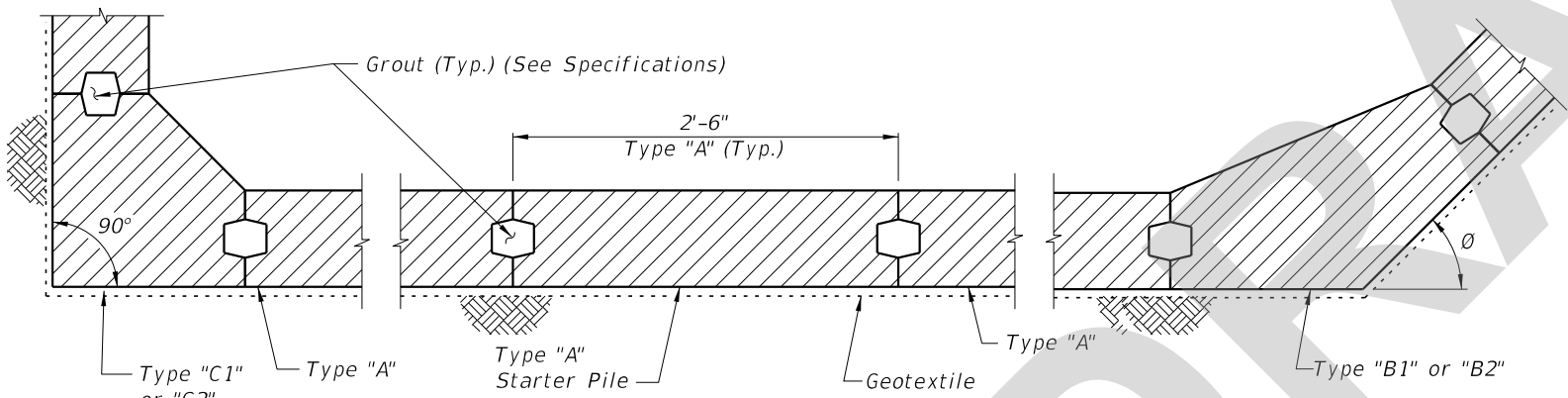
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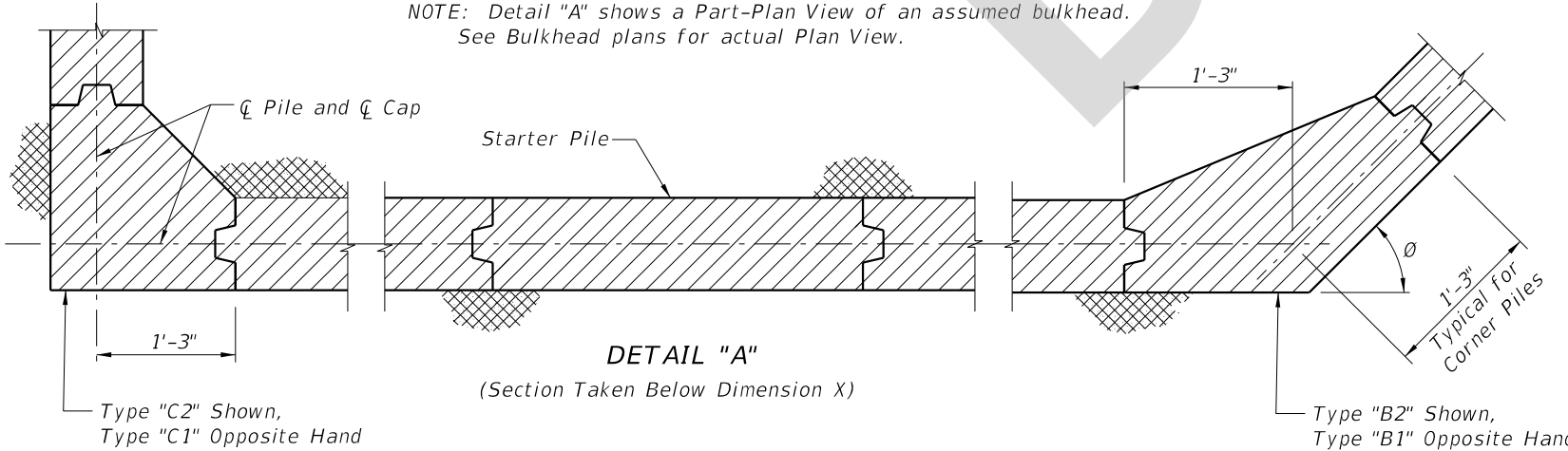


SECTION THRU BULKHEAD
 (Showing Geotextile)

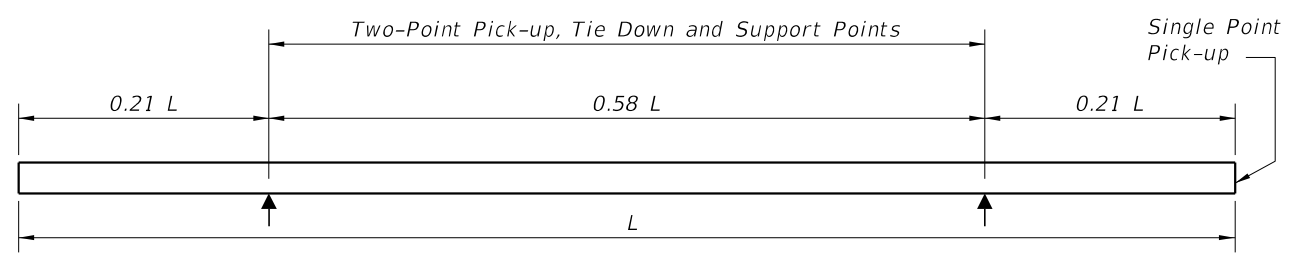


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DETAIL "A"
 (Section Taken Below Dimension X)



PILE STORAGE AND TRANSPORTATION SUPPORT DETAILS

NOTES AND DETAILS

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LAST REVISION 11/01/23	DESCRIPTION:		FY 2024-25 STANDARD PLANS	PRECAST CONCRETE SHEET PILE WALL (CFRP/GFRP & HSSS/GFRP)	INDEX 455-440	SHEET 1 of 4
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