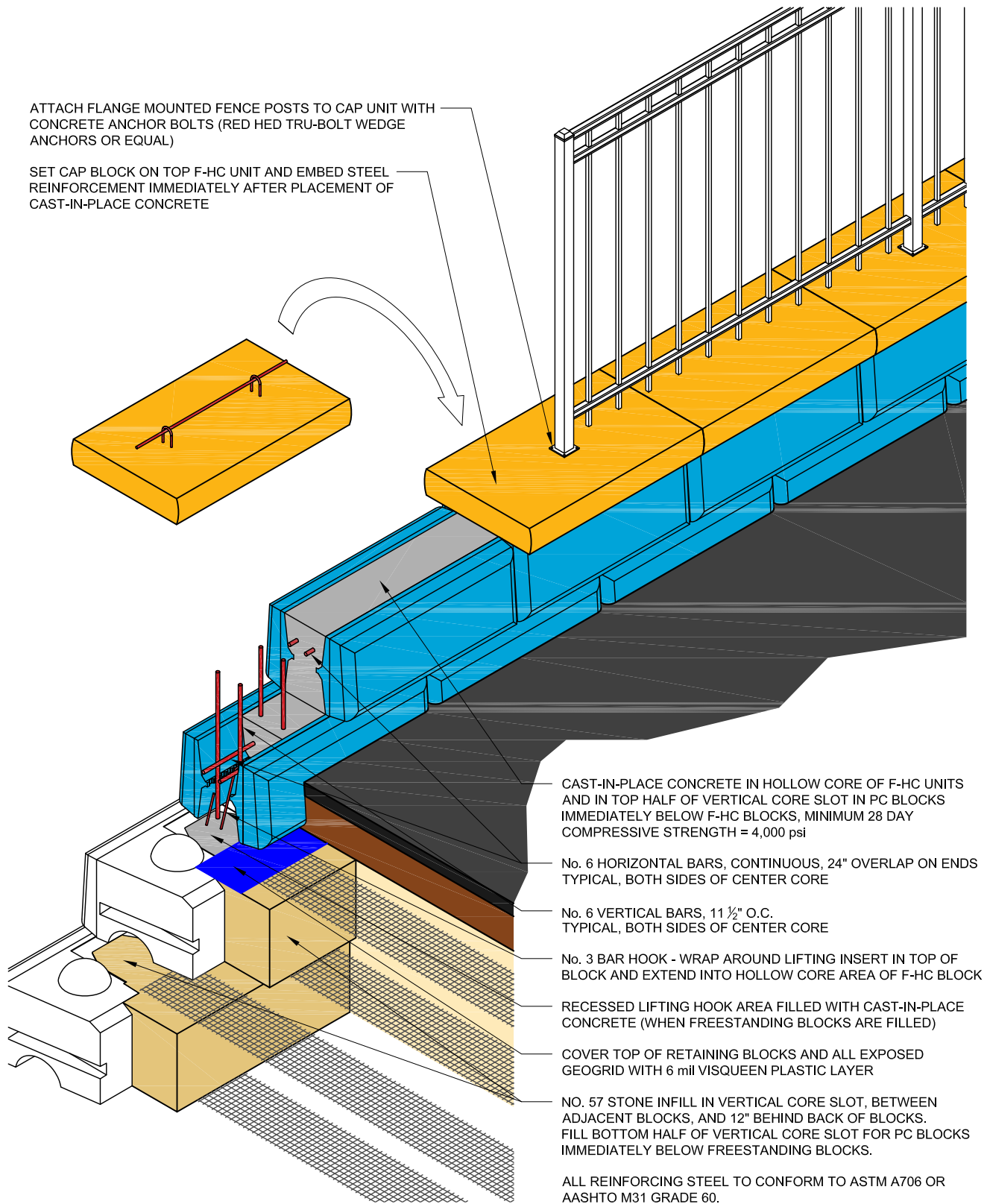


ATTACH FLANGE MOUNTED FENCE POSTS TO CAP UNIT WITH CONCRETE ANCHOR BOLTS (RED HED TRU-BOLT WEDGE ANCHORS OR EQUAL)

SET CAP BLOCK ON TOP F-HC UNIT AND EMBED STEEL REINFORCEMENT IMMEDIATELY AFTER PLACEMENT OF CAST-IN-PLACE CONCRETE



CAST-IN-PLACE CONCRETE IN HOLLOW CORE OF F-HC UNITS AND IN TOP HALF OF VERTICAL CORE SLOT IN PC BLOCKS IMMEDIATELY BELOW F-HC BLOCKS, MINIMUM 28 DAY COMPRESSIVE STRENGTH = 4,000 psi

No. 6 HORIZONTAL BARS, CONTINUOUS, 24" OVERLAP ON ENDS TYPICAL, BOTH SIDES OF CENTER CORE

No. 6 VERTICAL BARS, 11 1/2" O.C. TYPICAL, BOTH SIDES OF CENTER CORE

No. 3 BAR HOOK - WRAP AROUND LIFTING INSERT IN TOP OF BLOCK AND EXTEND INTO HOLLOW CORE AREA OF F-HC BLOCK

RECESSED LIFTING HOOK AREA FILLED WITH CAST-IN-PLACE CONCRETE (WHEN FREESTANDING BLOCKS ARE FILLED)

COVER TOP OF RETAINING BLOCKS AND ALL EXPOSED GEOGRID WITH 6 mil VISQUEEN PLASTIC LAYER

NO. 57 STONE INFILL IN VERTICAL CORE SLOT, BETWEEN ADJACENT BLOCKS, AND 12" BEHIND BACK OF BLOCKS. FILL BOTTOM HALF OF VERTICAL CORE SLOT FOR PC BLOCKS IMMEDIATELY BELOW FREESTANDING BLOCKS.

ALL REINFORCING STEEL TO CONFORM TO ASTM A706 OR AASHTO M31 GRADE 60.

DRAWN BY: J. JOHNSON

APPROVED BY:

DATE: 01/18/17

SHEET: 1 OF 2

TITLE:

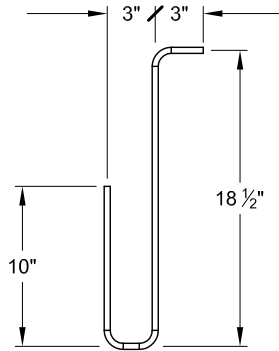
**F-HC FREESTANDING BLOCK COPING WITH FENCE ATTACHMENT**

FILE: F-HC Coping with Fence Attachment R-Anchor Option 011817.dwg

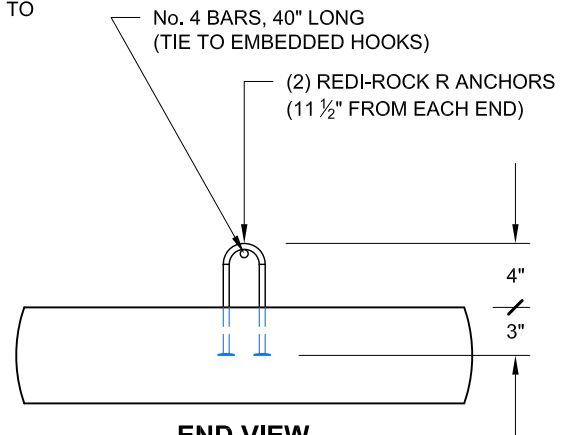
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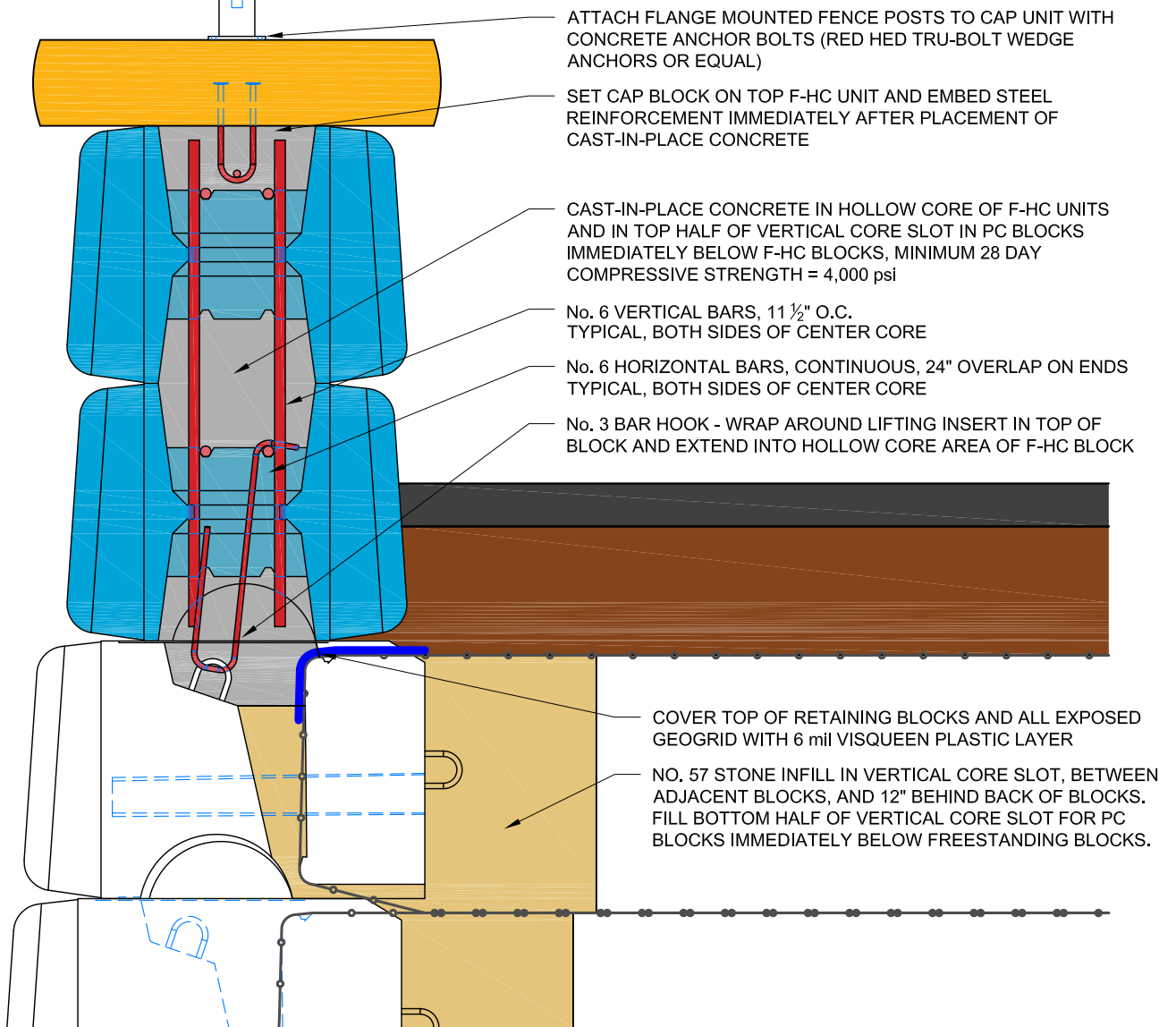
ALL REINFORCING STEEL TO CONFORM TO ASTM A706 OR AASHTO M31 GRADE 60.



**BEND DETAIL**  
NO. 3 REBAR HOOKS



**END VIEW**  
CAP BLOCK CAST WITH R-ANCHORS (SPECIALTY BLOCK)



ATTACH FLANGE MOUNTED FENCE POSTS TO CAP UNIT WITH CONCRETE ANCHOR BOLTS (RED HED TRU-BOLT WEDGE ANCHORS OR EQUAL)

SET CAP BLOCK ON TOP F-HC UNIT AND EMBED STEEL REINFORCEMENT IMMEDIATELY AFTER PLACEMENT OF CAST-IN-PLACE CONCRETE

CAST-IN-PLACE CONCRETE IN HOLLOW CORE OF F-HC UNITS AND IN TOP HALF OF VERTICAL CORE SLOT IN PC BLOCKS IMMEDIATELY BELOW F-HC BLOCKS, MINIMUM 28 DAY COMPRESSIVE STRENGTH = 4,000 psi

No. 6 VERTICAL BARS, 11 1/2" O.C. TYPICAL, BOTH SIDES OF CENTER CORE

No. 6 HORIZONTAL BARS, CONTINUOUS, 24" OVERLAP ON ENDS TYPICAL, BOTH SIDES OF CENTER CORE

No. 3 BAR HOOK - WRAP AROUND LIFTING INSERT IN TOP OF BLOCK AND EXTEND INTO HOLLOW CORE AREA OF F-HC BLOCK

COVER TOP OF RETAINING BLOCKS AND ALL EXPOSED GEOGRID WITH 6 mil VISQUEEN PLASTIC LAYER

NO. 57 STONE INFILL IN VERTICAL CORE SLOT, BETWEEN ADJACENT BLOCKS, AND 12" BEHIND BACK OF BLOCKS. FILL BOTTOM HALF OF VERTICAL CORE SLOT FOR PC BLOCKS IMMEDIATELY BELOW FREESTANDING BLOCKS.

DRAWN BY: J. JOHNSON

APPROVED BY:

DATE: 01/18/17

SHEET: 2 OF 2

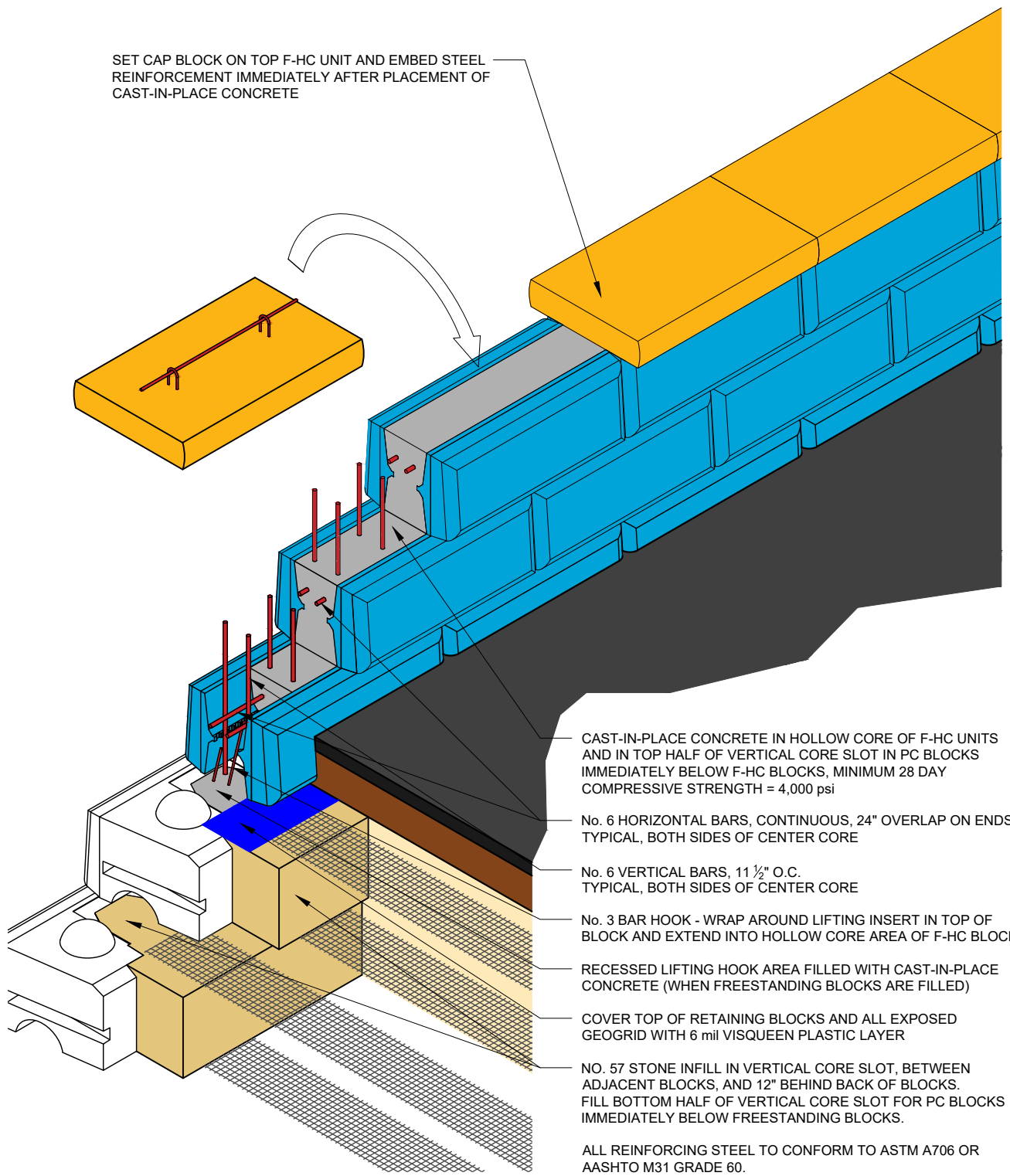
TITLE:

**F-HC FREESTANDING BLOCK COPING WITH FENCE ATTACHMENT**

FILE: F-HC Coping with Fence Attachment R-Anchor Option 011817.dwg

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SET CAP BLOCK ON TOP F-HC UNIT AND EMBED STEEL REINFORCEMENT IMMEDIATELY AFTER PLACEMENT OF CAST-IN-PLACE CONCRETE

CAST-IN-PLACE CONCRETE IN HOLLOW CORE OF F-HC UNITS AND IN TOP HALF OF VERTICAL CORE SLOT IN PC BLOCKS IMMEDIATELY BELOW F-HC BLOCKS, MINIMUM 28 DAY COMPRESSIVE STRENGTH = 4,000 psi

No. 6 HORIZONTAL BARS, CONTINUOUS, 24" OVERLAP ON ENDS TYPICAL, BOTH SIDES OF CENTER CORE

No. 6 VERTICAL BARS, 11 1/2" O.C. TYPICAL, BOTH SIDES OF CENTER CORE

No. 3 BAR HOOK - WRAP AROUND LIFTING INSERT IN TOP OF BLOCK AND EXTEND INTO HOLLOW CORE AREA OF F-HC BLOCK

RECESSED LIFTING HOOK AREA FILLED WITH CAST-IN-PLACE CONCRETE (WHEN FREESTANDING BLOCKS ARE FILLED)

COVER TOP OF RETAINING BLOCKS AND ALL EXPOSED GEOGRID WITH 6 mil VISQUEEN PLASTIC LAYER

NO. 57 STONE INFILL IN VERTICAL CORE SLOT, BETWEEN ADJACENT BLOCKS, AND 12" BEHIND BACK OF BLOCKS. FILL BOTTOM HALF OF VERTICAL CORE SLOT FOR PC BLOCKS IMMEDIATELY BELOW FREESTANDING BLOCKS.

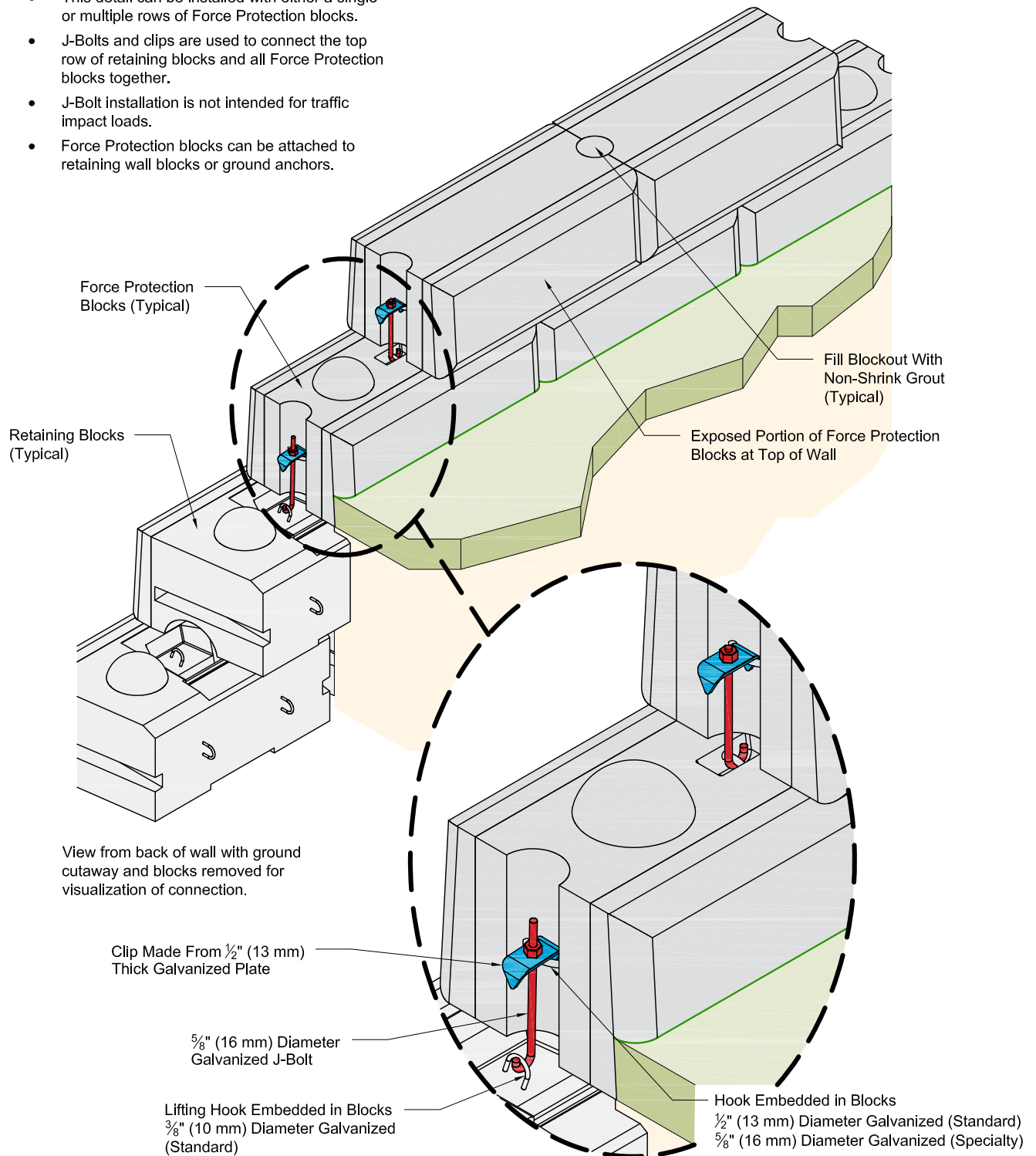
ALL REINFORCING STEEL TO CONFORM TO ASTM A706 OR AASHTO M31 GRADE 60.

DRAWN BY:	N. LINDWALL
APPROVED BY:	J. JOHNSON
DATE:	06/06/2018
SHEET:	1 OF 1

TITLE:	<b>F-HC FREESTANDING BLOCK COPING</b>
FILE:	F-HC Coping R-Anchor Option 060618.dwg

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- This detail can be installed with either a single or multiple rows of Force Protection blocks.
- J-Bolts and clips are used to connect the top row of retaining blocks and all Force Protection blocks together.
- J-Bolt installation is not intended for traffic impact loads.
- Force Protection blocks can be attached to retaining wall blocks or ground anchors.



- This drawing is for reference only.
- Final designs for construction must be prepared by a registered Professional Engineer using the actual conditions of the proposed site.
- Final wall design must address both internal and external drainage and shall be evaluated by the Professional Engineer who is responsible for the wall design.

DRAWN BY:	J. JOHNSON
APPROVED BY:	J. JOHNSON
DATE:	FEB. 7, 2015
SHEET:	1 of 1

TITLE:	<b>FORCE PROTECTION COPING WITH J-BOLTS</b>
FILE:	FS Coping w Force Protection 020715.dwg

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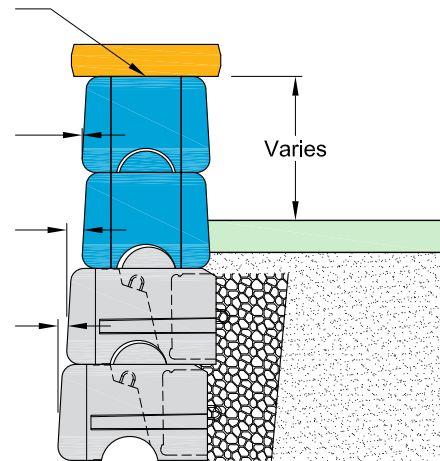
## Freestanding Blocks with Cap at Top of Wall

Secure cap block to freestanding block with polyurethane sealant.  
Optional shear lugs cast into cap block or rebar ties that can be embedded in site-cast concrete (with garden block) are also available.

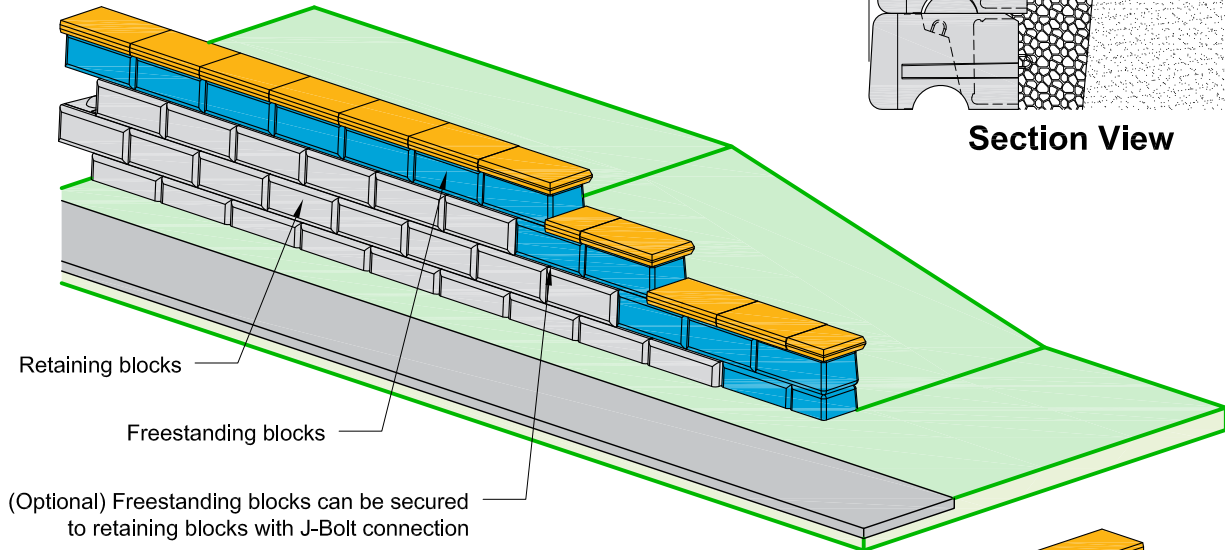
Setback = 0" (0 mm) on Freestanding blocks

Setback =  $2 \frac{7}{8}$ " (73 mm) when 10" (254 mm) knob used  
Setback =  $1 \frac{5}{8}$ " (41 mm) when  $7 \frac{1}{2}$ " (190 mm) knob used

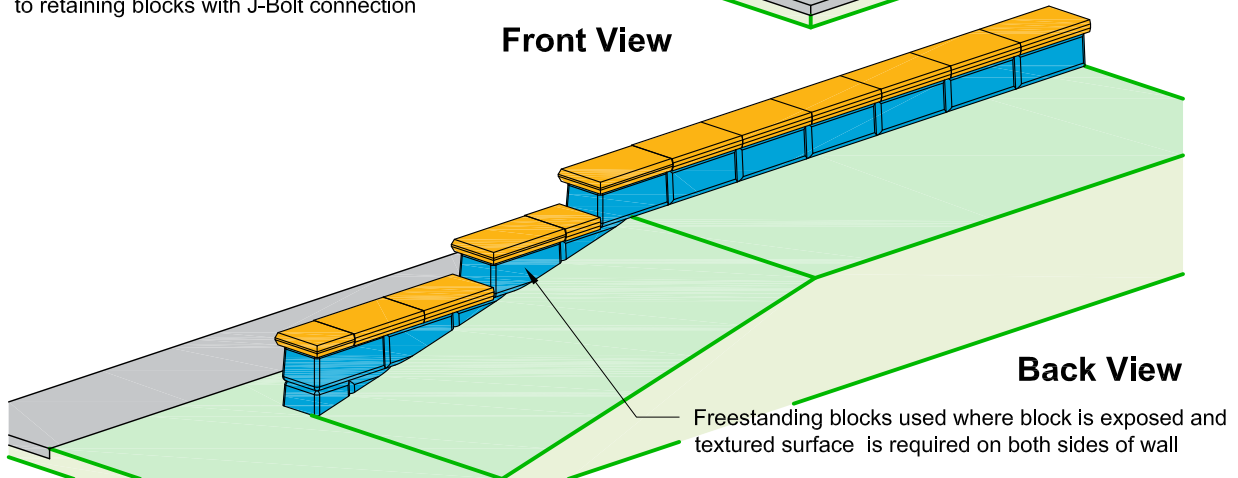
Setback =  $1 \frac{5}{8}$ " (41 mm) when 10" (254 mm) knob used



**Section View**



**Front View**



**Back View**

One-component, highly flexible, non-priming, gun grade, high performance elastomeric polyurethane sealant shall have movement of plus or minus 25% per ASTM C719, tensile strength greater than 200 psi (1.4 MPa) per ASTM D412, and adhesion to peel on concrete greater than 20 PLI per ASTM C794. Apply sealant in one and one half-inch (1.5") (38 mm) diameter round "hersey kiss" shaped dollops located in two rows at the top of the Freestanding blocks at 8" (203 mm) on center.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

DRAWN BY:	JRJ
APPROVED BY:	JRJ
DATE:	06-22-2015
SHEET:	1 of 1

TITLE:	Freestanding Blocks with Cap at Top of Wall
FILE:	3 Freestanding Blocks with Cap at Top of Wall 062215.dwg

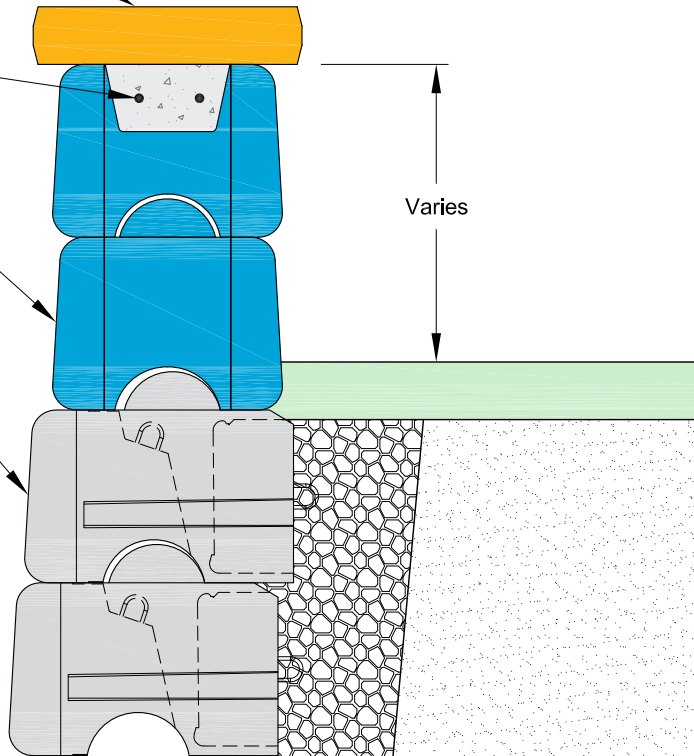
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Cap Block, Secure to Freestanding Block with Polyurethane Sealant, or Optional Rebar Embedded in Concrete

Freestanding Garden Block with Two (2) Continuous Reinforcing Bars, Filled with Cast-in-Place Concrete, as Designed by Wall Design Engineer

Freestanding Wall Blocks

Retaining Wall Blocks



### Section View

Sealant Adhesive: One-component, highly flexible, non-priming, gun grade, high performance elastomeric polyurethane sealant shall have movement of plus or minus 25% per ASTM C719, tensile strength greater than 200 psi (1.4 MPa) per ASTM D412, and adhesion to peel on concrete greater than 20 PLI per ASTM C794. Apply sealant in one and one half-inch (1.5") (38 mm) diameter round "hersey kiss" shaped dollops located in two rows at the top of the Freestanding blocks at 8" (203 mm) on center.

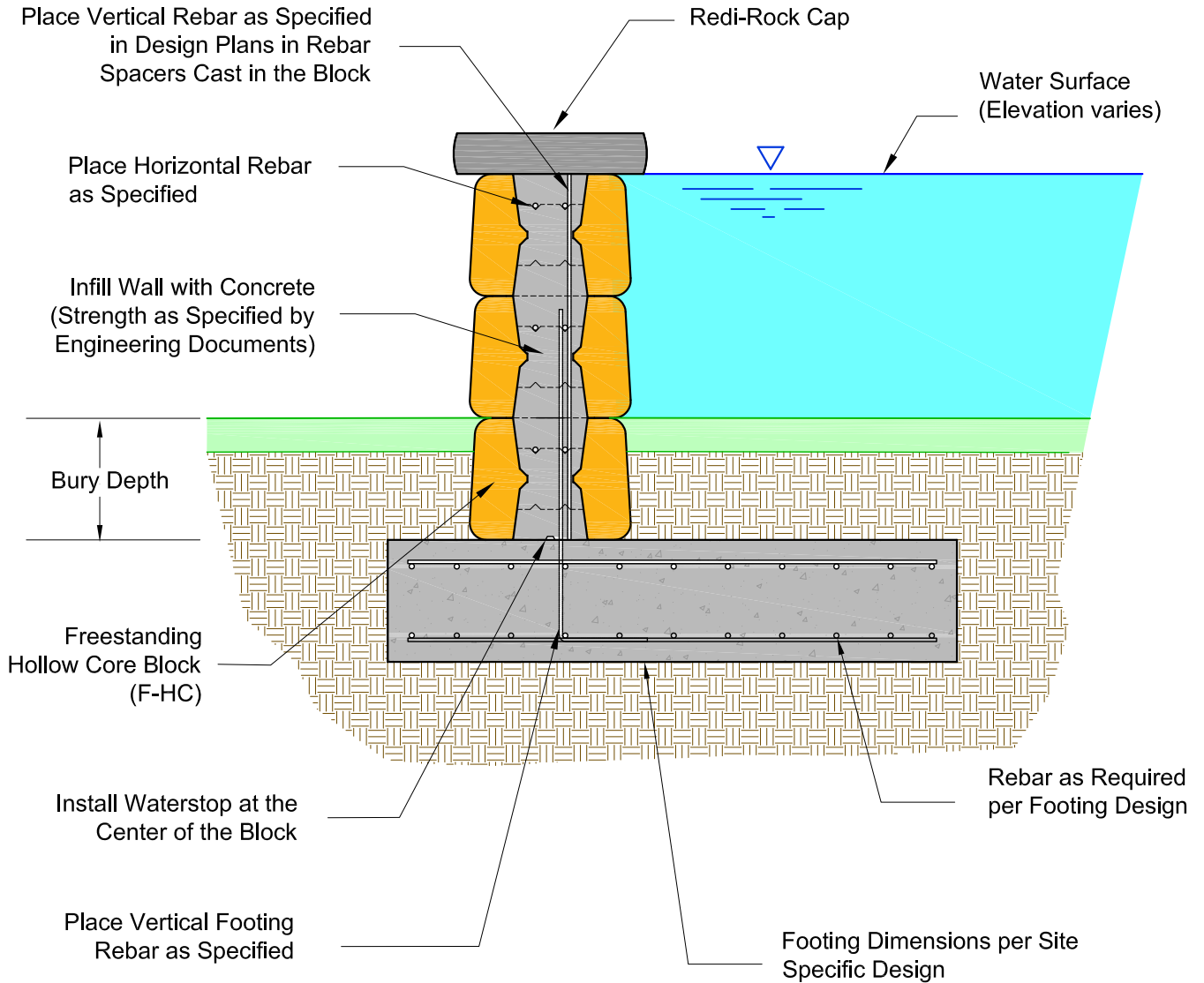
This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

DRAWN BY:	BWL
APPROVED BY:	JRJ
DATE:	01-14-2016
SHEET:	1 of 1

TITLE:	Freestanding Bond Beam at Top of Wall
FILE:	

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## CONCEPTUAL FLOOD CONTROL WALL

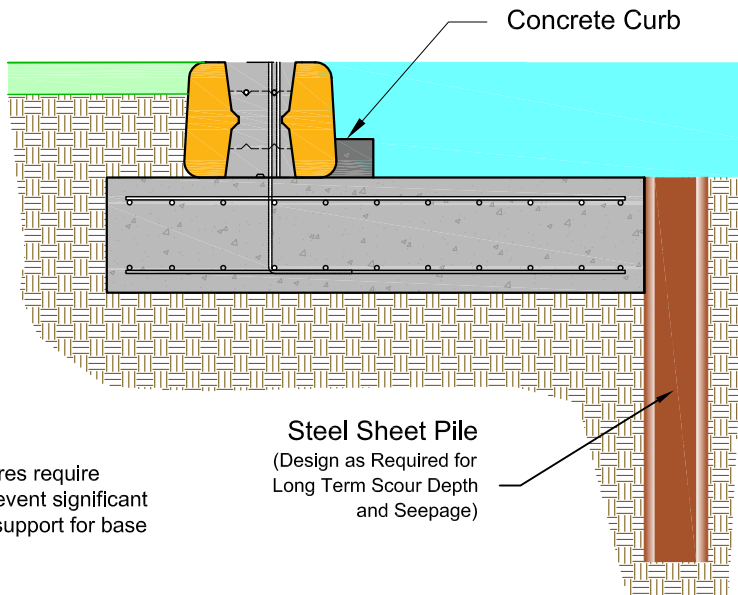
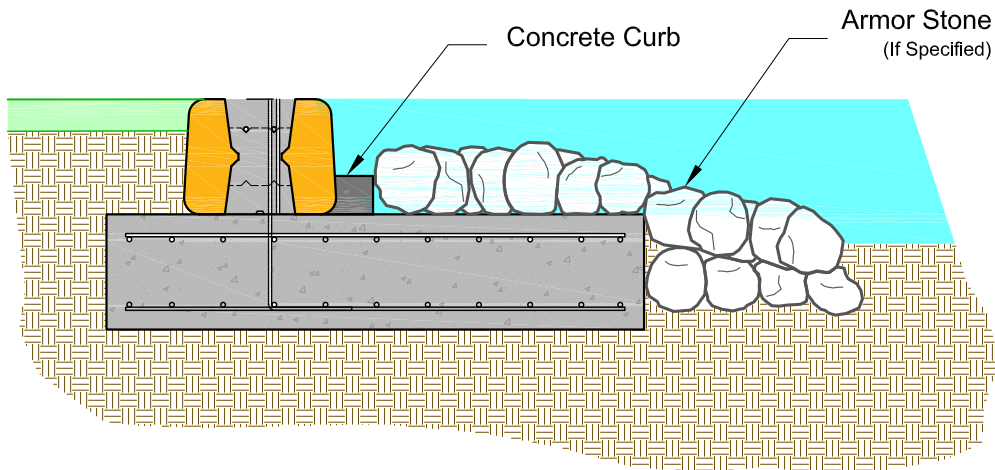
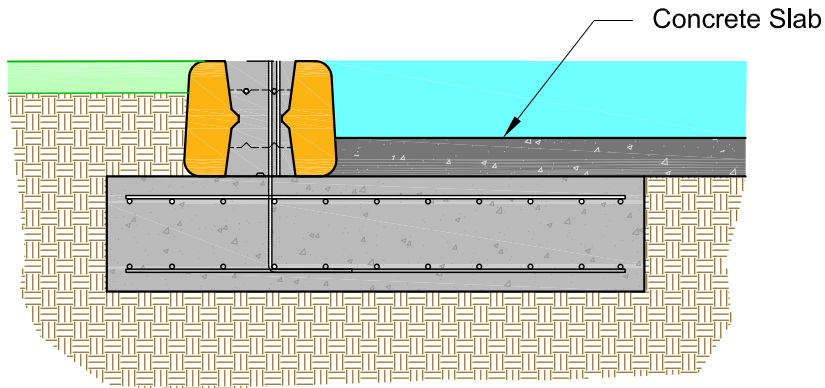


NOTE: Degree of water tightness depends on many factors. Slight seepage through joints can be expected using standard construction practices. See [www.Red-Rock.com](http://www.Red-Rock.com) for more information on flood control walls including detailed notes from full scale demonstration project testing.

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site. Final wall design must address both internal and external drainage and all modes of wall stability.

DRAWN BY: D. Cerminaro	TITLE: <b>Conceptual Flood Control Wall Section</b>	<p style="font-size: small; margin: 0;">05481 US 31 SOUTH, CHARLEVOIX, MI 49720 (866) 222-8400 ext 3010 • <a href="mailto:engineering@redi-rock.com">engineering@redi-rock.com</a> <a href="http://www.redi-rock.com">www.redi-rock.com</a></p>
APPROVED BY: J. Johnson		
DATE: 20 December 2017		
SHEET: 1 of 2	FILE: F-HC Conceptual Flood Control Wall Section 122017.dwg	

## OPTIONAL BASE DETAILS FOR FLOOD CONTROL WALLS



NOTE: Flood control structures require long-term maintenance to prevent significant erosion and loss of soil and support for base of wall

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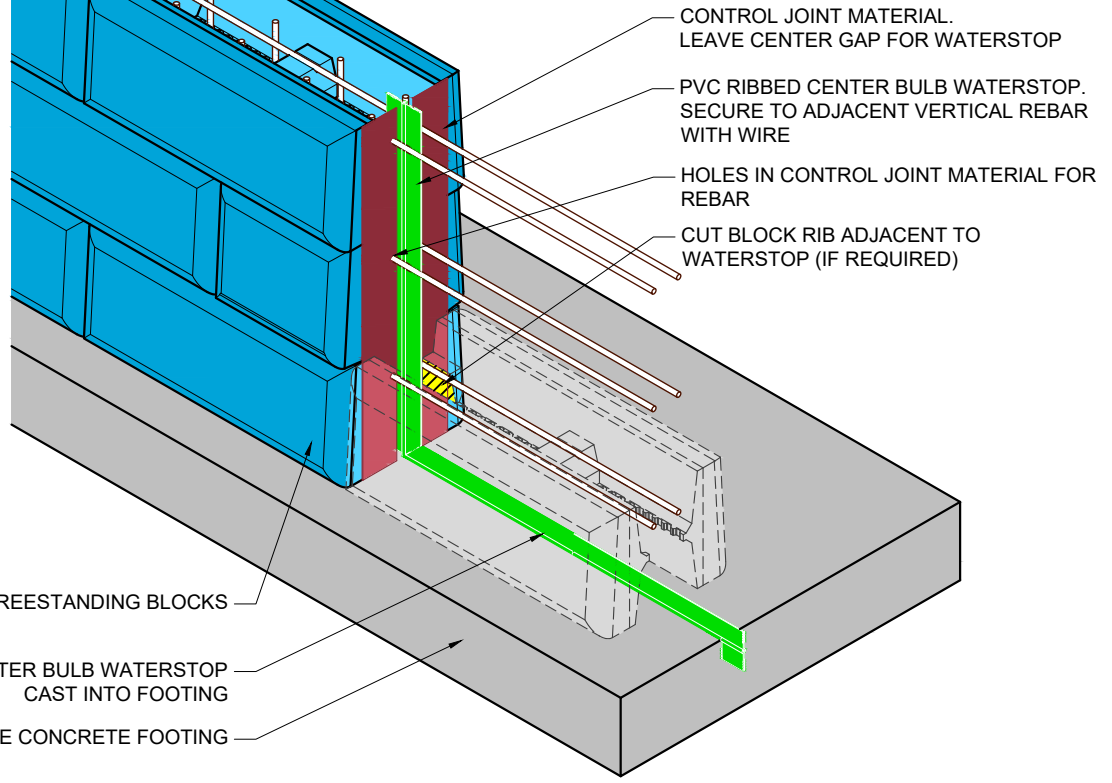
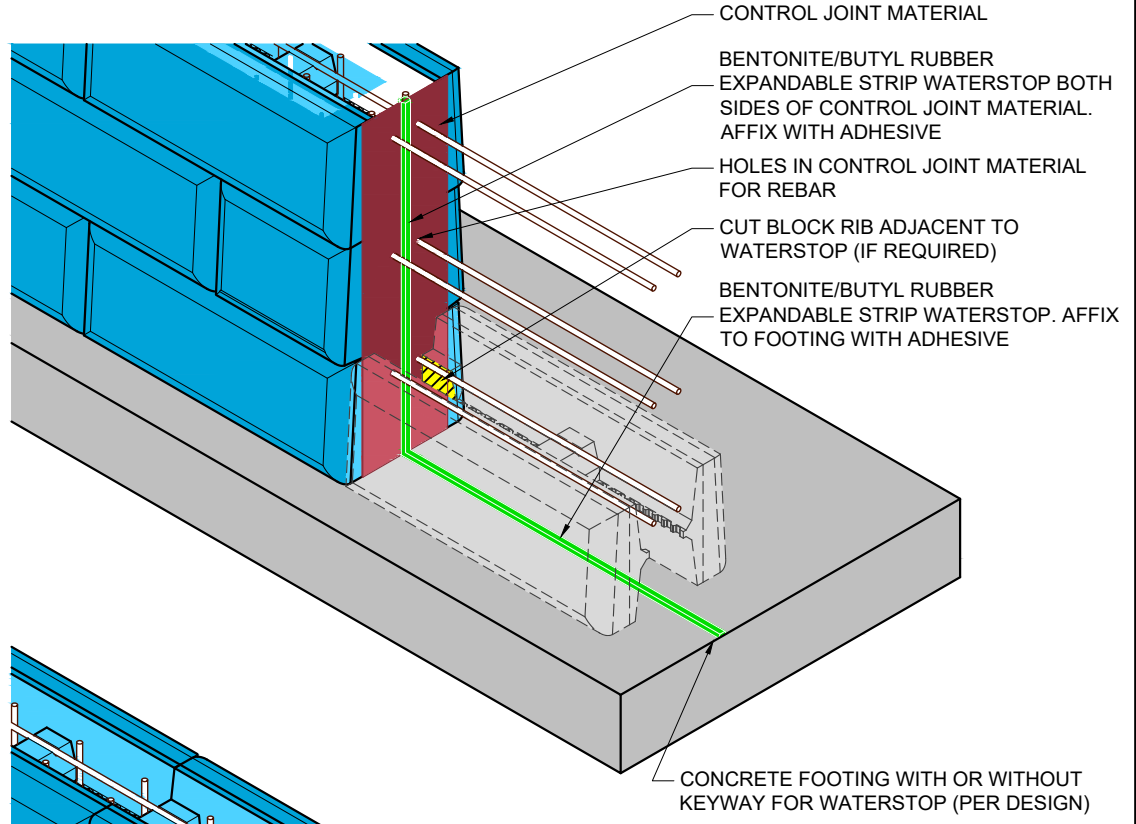
DRAWN BY:	D. Cerminaro
APPROVED BY:	J. Johnson
DATE:	20 December 2017
SHEET:	2 of 2

TITLE:	<b>Optional Base Details for Flood Control Walls</b>
FILE:	F-HC Conceptual Flood Control Wall Section 122017.dwg

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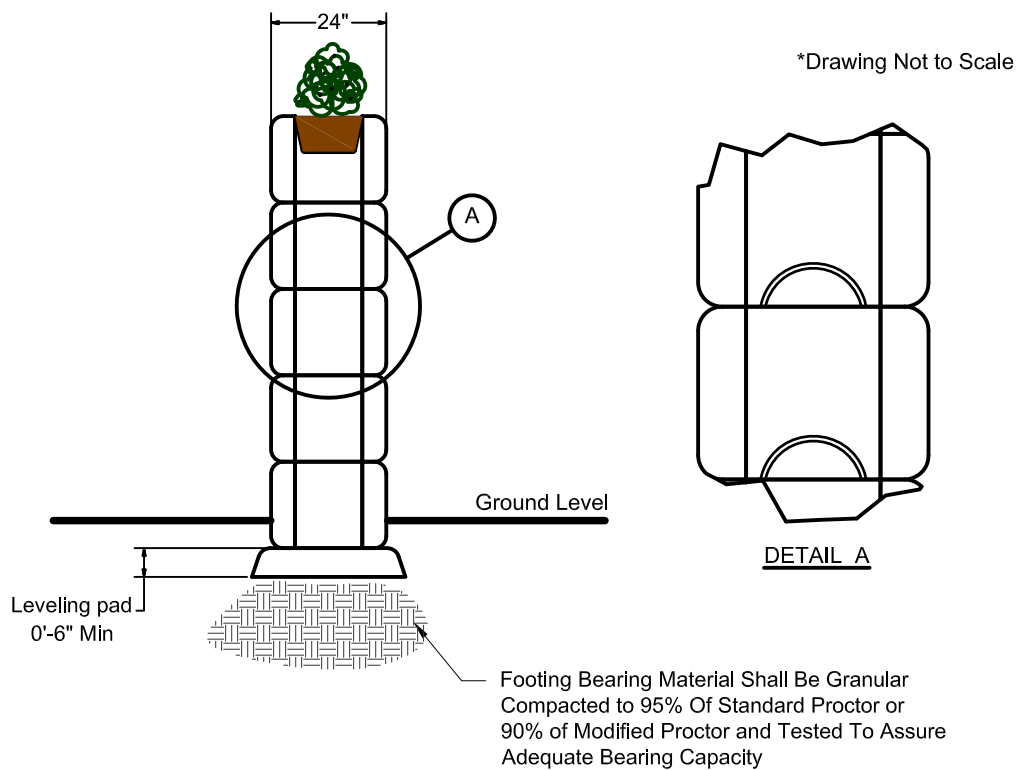


DRAWN BY: N. LINDWALL  
 APPROVED BY: J. JOHNSON  
 DATE: 12/20/17  
 SHEET: 1 of 1

TITLE:  
**F-HC FREESTANDING BLOCK  
 WATERSTOP OPTIONS**  
 FILE: F-HC Waterstop Options 122017.dwg

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# Freestanding Perimeter Wall



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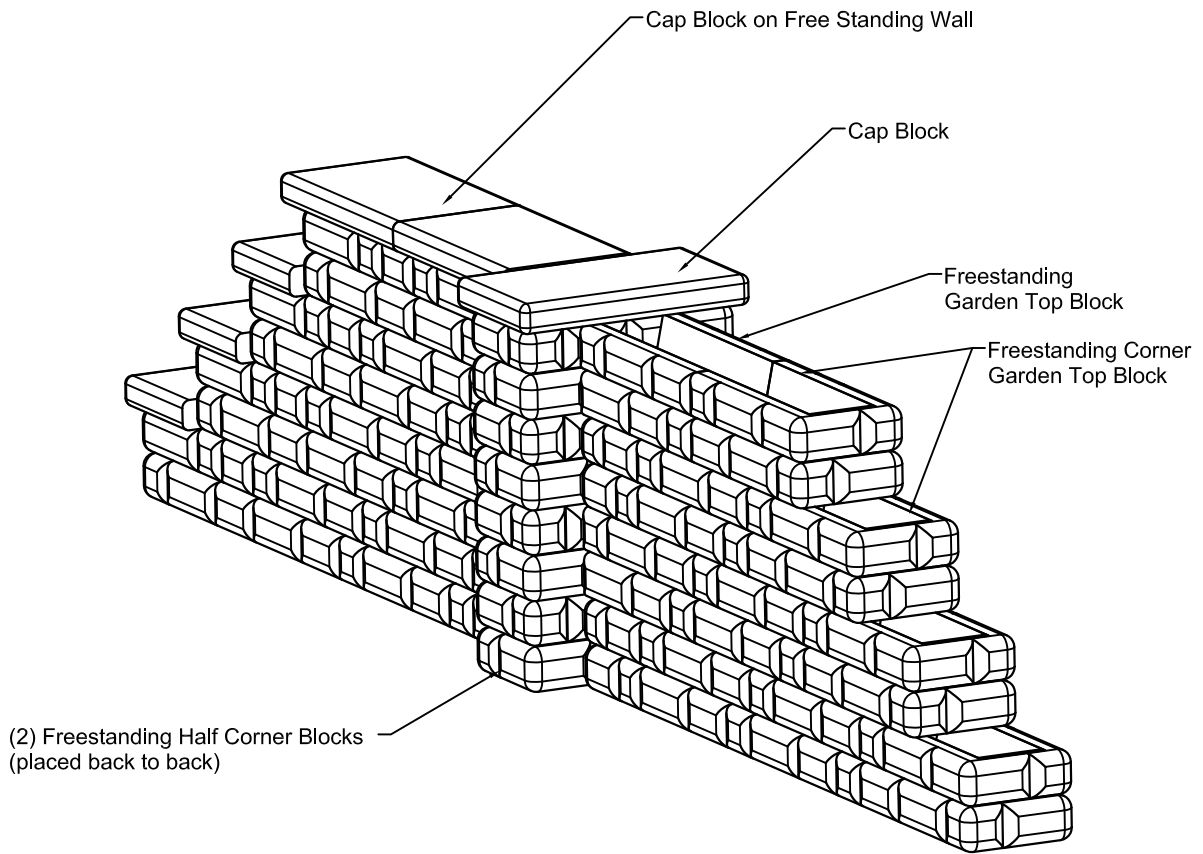
DRAWN BY:	JRJ
APPROVED BY:	JRJ
DATE:	06-22-2015
SHEET:	1 of 1

TITLE:	<h2>Freestanding Perimeter Wall</h2>
FILE:	

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# Freestanding Pilaster Wall



This sketch shows two options: On the near side of Pilaster, Freestanding Garden Blocks for vegetation, and solid cap blocks on the far side of the pilaster.

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DRAWN BY: JRJ	TITLE: <b>Freestanding Pilaster Wall</b>	<small>05481 US 31 SOUTH, CHARLEVOIX, MI 49720 (866) 222-8400 ext 3010 • <a href="mailto:engineering@redi-rock.com">engineering@redi-rock.com</a> <a href="http://www.redi-rock.com">www.redi-rock.com</a></small>
APPROVED BY: JRJ		
DATE: 06-22-2015		
SHEET: 1 of 1	FILE: 2 Freestanding Pilaster Wall 062215.dwg	