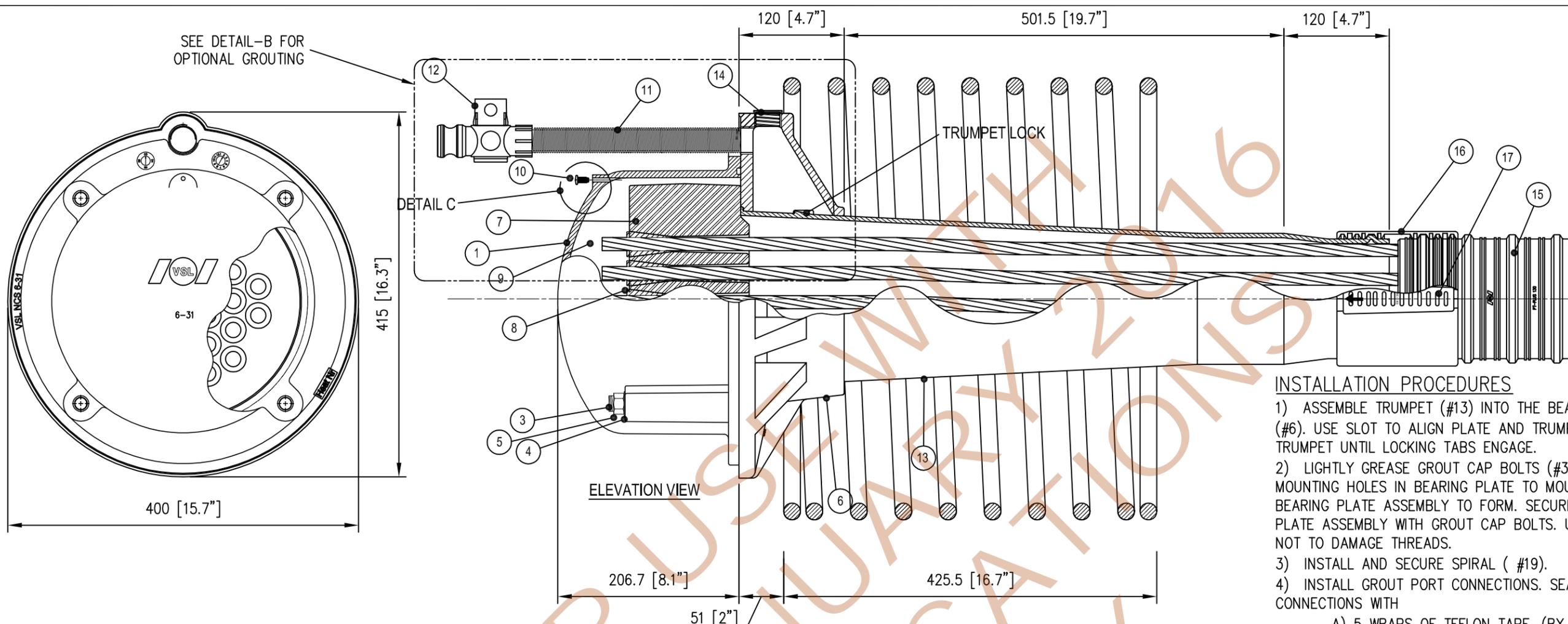


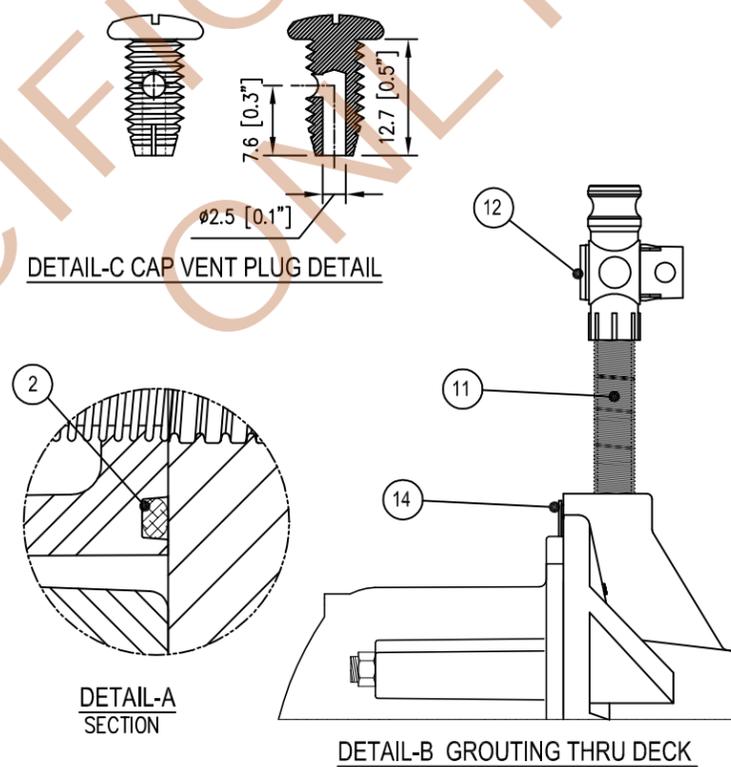
FOR USE WITH 2016 PRE-JANUARY SPECIFICATIONS ONLY

	CONSTRUCTION	CONSTRUCTION	APPROVAL	ISSUED FOR	CHK
	MM	MM	MM	MM	MM
	3RD SUBMITTAL	2ND SUBMITTAL	FIRST SUBMITTAL	DESCRIPTION	
	9/09/10	5/31/10	4/30/10	DATE	
	2	1	0	NO.	
<p>VStructural LLC Pompano Beach, FL office 8600 NW 12th Avenue, Suite 213 Fort Lauderdale, FL 33309 Phone: 954/468-3981 Fax: 954/468-3982</p> <p>Dallas, TX / Washington, DC / Denver, CO / Pompano Beach, FL / Atlanta, GA</p>					
<p>NCS6-27 SYSTEM OVERVIEW</p> <p>FOR INTERNAL, EXTERNAL & SEGMENTAL CONSTRUCTION</p> <p>VSL</p> <p>SYSTEM DRAWING</p>					
<p><small>VSTRUCTURAL LLC ("VSL") claims a strict proprietary right in all drawings, specifications and calculations ("Information") set forth on this sheet. The use of such information in whole or in part, or any reproduction thereof, is restricted to the site for which it was prepared and to the material and/or service provided by VSL. Any other use is strictly prohibited, and VSL DISCLAIMS ANY LIABILITY therefore.</small></p>					
<p><small>VStructural LLC (VSL) SHOP DRAWING</small></p> <p><small>These shop drawings illustrate the details of the VSL Post-Tensioning System. They were prepared in conformance with the structural design provided to VSL by project owner or its representative. VSL took no part in the preparation or review of said structural design and VSL DISCLAIMS ANY LIABILITY for it. The stamp or seal of a VSL employee on these shop drawings pertains only to the transfer of the forces required by the engineer of record on the structural drawings, and not to the adequacy of the structural design. NO WARRANTY, EXPRESSED OR IMPLIED, as to the adequacy of the structural design is made by virtue of any such stamp or seal.</small></p>					
SCALE: NTS					
JOB NO:					
SHEET: A273					



INSTALLATION PROCEDURES

- 1) ASSEMBLE TRUMPET (#13) INTO THE BEARING PLATE (#6). USE SLOT TO ALIGN PLATE AND TRUMPET. INSERT TRUMPET UNTIL LOCKING TABS ENGAGE.
- 2) LIGHTLY GREASE GROUT CAP BOLTS (#3) USE MOUNTING HOLES IN BEARING PLATE TO MOUNT BEARING PLATE ASSEMBLY TO FORM. SECURE BEARING PLATE ASSEMBLY WITH GROUT CAP BOLTS. USE CARE NOT TO DAMAGE THREADS.
- 3) INSTALL AND SECURE SPIRAL (#19).
- 4) INSTALL GROUT PORT CONNECTIONS. SEAL ALL CONNECTIONS WITH
 - A) 5 WRAPS OF TEFLON TAPE. (BY OTHERS) OR
 - B) BONDUIT OR SIMILAR. (BY OTHERS)
- 5) INSTALL DUCT AND DUCT COUPLERS. LIGHTLY GREASE COUPLERS WITH ASSEMBLY GREASE TO ENSURE SEAL. (BY OTHERS)
- 6) SECURE DUCT SUPPORTS @ 2' MAX
- 7) SYSTEM IS NOW READY TO AIR TEST.
- 8) AFTER CONCRETE PLACEMENT INSTALL STRAND. LEAVE SUFFICIENT STRAND FOR STRESSING EQUIPMENT.
- 9) INSTALL ANCHOR HEADS (#7) MAKE SURE WEDGE CAVITIES ARE CLEAN AND RUST FREE. USE WIRE BRUSH TO CLEAN IF NECESSARY.
- 10) ONLY STRESS STRANDS IF CONCRETE HAS REACHED REQUIRED STRENGTH SPECIFIED ON DRAWINGS
- 11) ELONGATION SHOULD BE WITH IN +/- 7%
- 12) AFTER ENGINEERS APPROVAL STRAND TAILS MAY BE CUT.
- 13) AFTER FORM WORK IS REMOVED, USE MOUNTING BOLTS TO INSTALL GROUT CAP (#1). REINSTALL O-RING INTO GROUT CAP.
- 14) GROUT TENDON PER GROUTING SPEC.
- 15) IN BALANCED CANTILEVER CONSTRUCTION, THE TENDON MUST BE GROUTED AFTER EACH SEGMENT IS PLACED DUE TO THE LOCATION OF THE GROUT VENT SCREW.

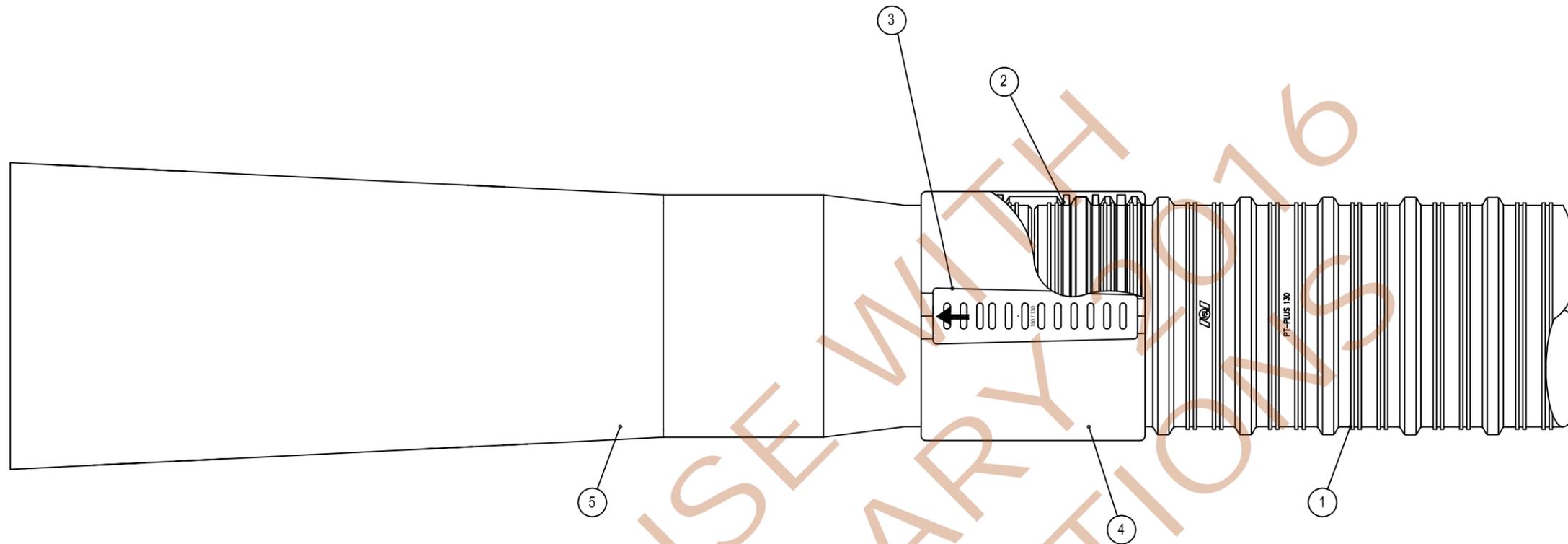


ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING REFERENCE	INVENTORY NUMBER
19*	1	SPIRAL, #6, DIA. 19", 2" PITCH, 8 TURNS	A615	C678	OSP63102
17	2	COUPLER CLAMP, 130 mm PT-PLUS	P.P.	C625	02DT0046
16	2	COUPLER HALF, 130 mm PT-PLUS	P.P.	C449.4	02DT0054
15	1	DUCT, WHT PP, 130 mm PT-PLUS	P.P.	C417-3	02DT0453
14	1	BEARING PLATE GROUT PLUG 23MM	P.P.	C583	02DT0341
13	1	TRUMPET	P.P.	C645	02BP4436
12	1	LOCK OFF VALVE	P.S.	C589 & C590	02DT0311
11		GROUT HOSE, 23 mm (21 mm)	P.E.	C587	02DT0310
10	1	CAP VENT PLUG - SS SCREW	STAINLESS STEEL		02WX7001
9		GROUT	JOB SPECIFIC		
8	31	1.6G WEDGE	11-L-17	C218	02WG0008
7	1	ANCHOR HEAD	A536 GR80-55-06	C677	02AH6031
6	1	BEARING PLATE GALVANIZED	A536 GR80-55-06	C638	02BP6031
5	4	5/8-11 NUT	(316L) STAINLESS	-	INC W/02WX6023
4	4	5/8" FLAT WASHER	(316L) STAINLESS	-	INC W/02WX6023
3	4	5/8-11NC x 7"	(316L) STAINLESS	-	02WX6023
2	1	O-RING (.210 CS X 8.975" ID # -373)	BUNA-N 70 D.	-	02WX5042
1	1	GROUT CAP	ABS LUSTRAN 633	C551-2	02WX5043

* USE ITEM 19 WITH $f_c' = 6500$ psi
ITEM 19 SHOWN ON ELEVATION

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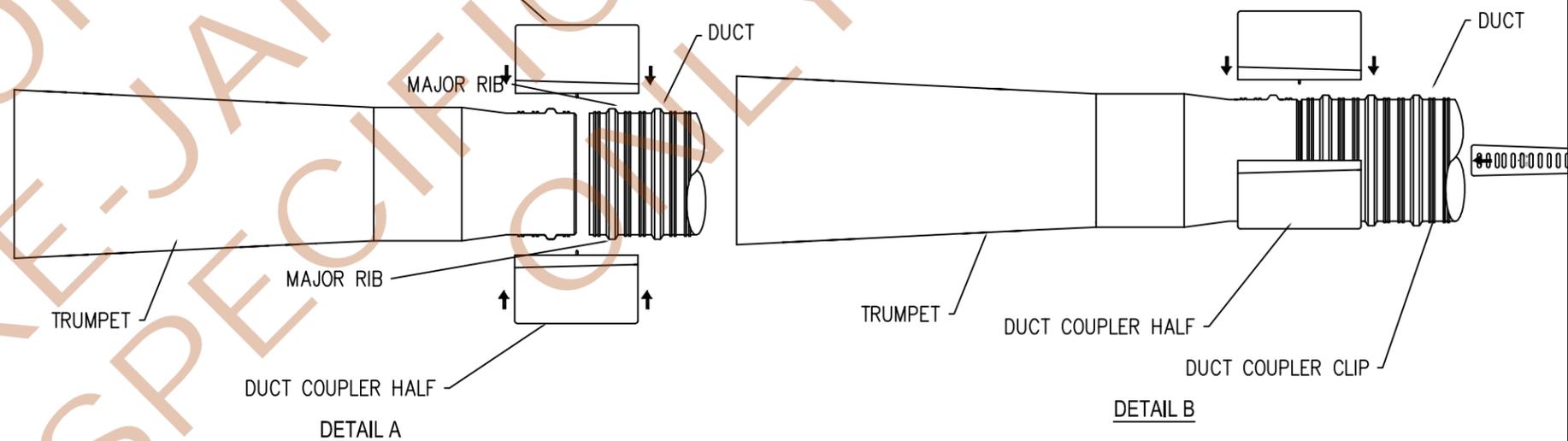
VSL		7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET	
ISSUED FOR CONSTRUCTION	2	5/26/10	DATE
ISSUED FOR CONSTRUCTION	1	4/29/10	REV.
REVISION			BY
			CHK
VSL SYSTEMS DRAWING			
PROJECT: NCS 6-27 INTERNAL TENDON WITH PT PLUS 130MM DUCT ASSEMBLY			
SCALE: 1/16" = 1'-0"			
VSL JOB NO:			
VSL DWG. NO. A268			



FRONT VIEW

INSTALLATION PROCEDURES

- 1) CUT DUCT HALF WAY BETWEEN 2 MAJOR RIBS SEE DETAIL A
- 2) INSTALL DUCT INTO COUPLER HALF. PLACE COUPLER HALF OVER MAJOR RIB. SEE DETAIL B
- 3) PLACE SECOND COUPLER HALF OVER DUCT, USING INTERLOCKING PINS TO CENTER SECOND COUPLER HALF
- 4) PARTIALLY INSTALL COUPLER CLIPS IN DIRECTION INDICATED BY ARROWS SHOWN ON COUPLER HALF.
- 5) INSURE BOTH TRUMPET AND DUCT ARE SECURED IN COUPLER.
- 6) FINISH INSTALLATION OF CLIPS.



DETAIL A

DETAIL B

ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING NUMBER	INVENTORY NUMBER
5	1	NCS 6-31 TRUMPET	P.P.	C645	02BP4436
4		DUCT, WHT PP, 130 MM PT-PLUS	ASTM D4101	C417	02DT0453
3	2	COUPLER CLAMP, 130 MM PT-PLUS	ASTM D4101	C625	02DT0046
2	2	SEAL (INCLUDED IN COUPLER HALF)			INCLUDED W/ 02DT0044
*1	2	COUPLER HALF, 130 MM PT-PLUS	ASTM D4101	C449.4	02DT0044

* SEE SHEET C449.4 FOR COUPLER HALF, 130 MM PT-PLUS VENTED PART NUMBER 02DT0054

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VSL
SYSTEMS DRAWING

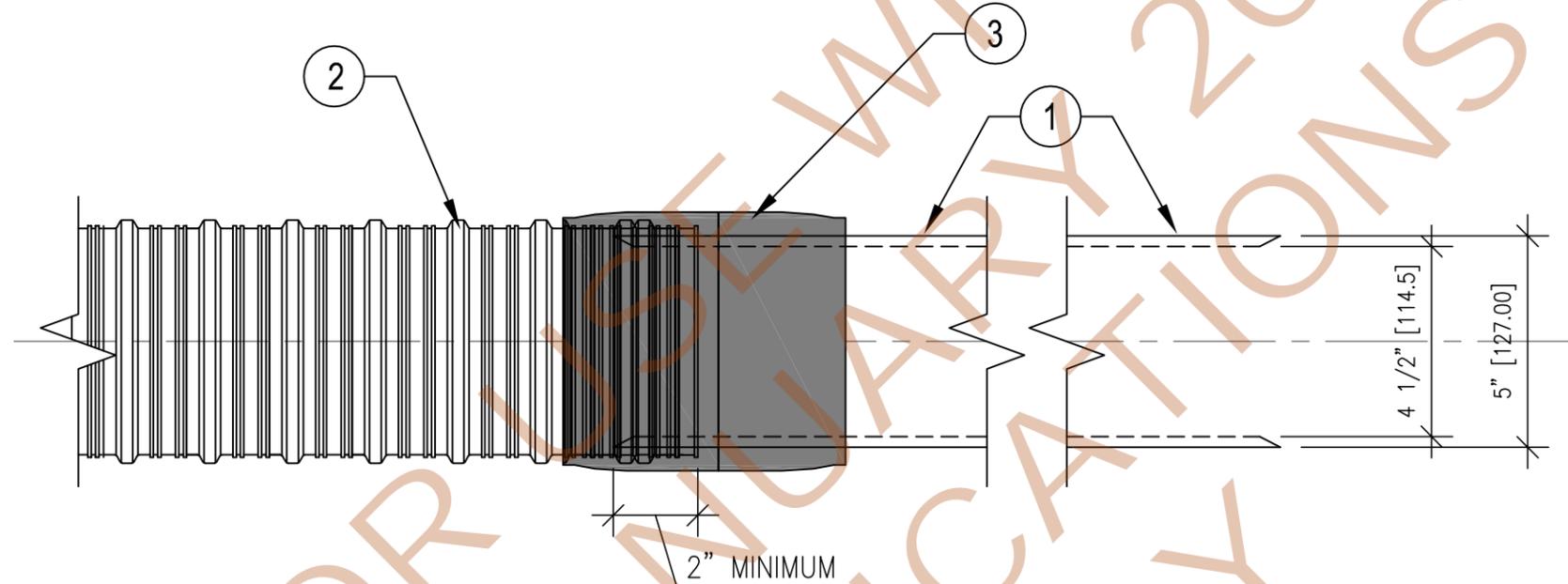
TYPICAL NCS 6-31 TRUMPET TO 130 MM
PT PLUS DUCT CONNECTION

VSL
SYSTEMS DRAWING

SCALE: 1:2
VSL JOB NO:
VSL DWG. NO. A277

DATE: 6/08/10
REV: 1
APPROVED FOR CONSTRUCTION
BY: SAN MM
CHK: CHK

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HANOVER, MD. 21076
WWW.VSL.NET



ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING NUMBER	INVENTORY NUMBER
1	1	*GALVANIZED 4.5" SCHEDULE 40 PIPE (5" OD)	ASTM A53	-----	-----
2	1	DUCT, WHT PP, 130 mm PT-PLUS	ASTM D4101	E0951-3	02DT0443
3	1	HEAT SHRINK SLEEVE (6" LONG)	(CANUSA) PLA-125-YE	-----	02DT0508

* STEEL PIPE ENDS TO BE CHAMFERED TO APPROXIMATELY 45 DEGREES ON INSIDE EDGES. CHAMFERS SHALL BE SPRAY GALVANIZED AFTER MACHINING.

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therefore.

VStructural LLC (VSL) SHOP DRAWING
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Post-Tensioning System. They were prepared in conformance
with the structural design provided to VSL by project owner or
its representative. VSL took no part in the preparation or
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drawings, and not to the adequacy of the structural design.
NO WARRANTY, EXPRESSED OR IMPLIED, as to the adequacy of
the structural design is made by virtue of any such stamp or
seal.

TYP. PT PLUS 130MM DUCT TO 4.5" SCH. 40 CONNECTION

VSL
SYSTEM DRAWING

SCALE: NTS
JOB NO:
SHEET: A265

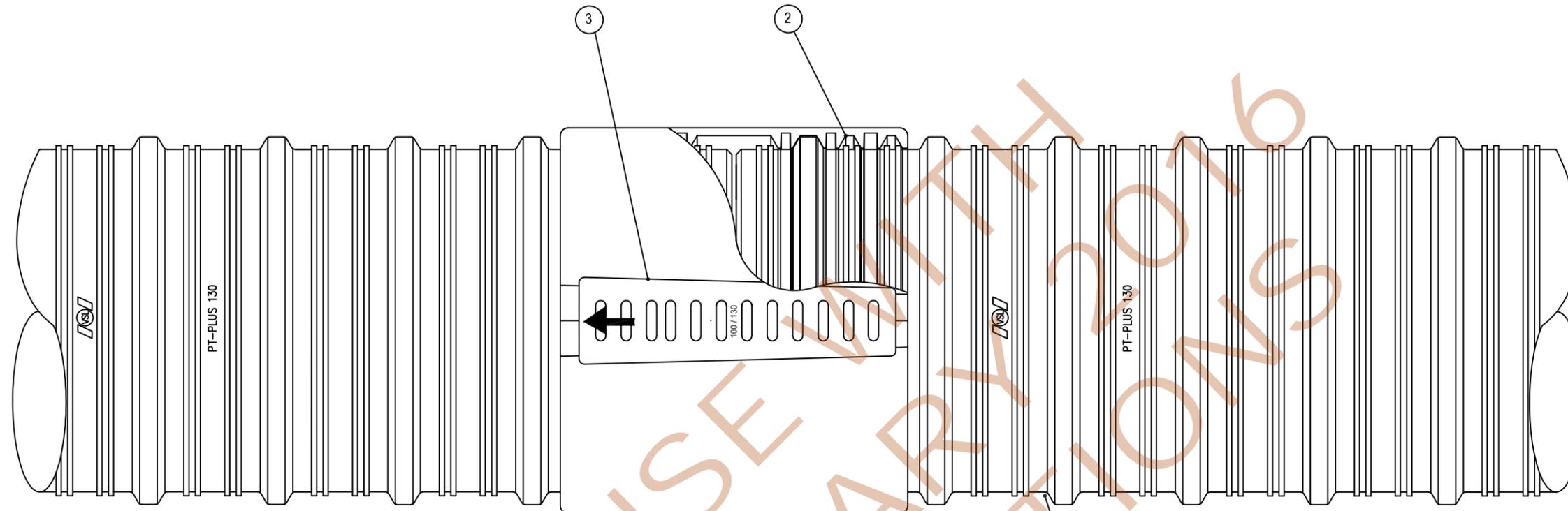


VStructural LLC (VSL)
Pompano Beach, FL office:
6800 NW 12th Avenue, Suite 213
Fort Lauderdale, FL 33309
Phone: 954/480-3994
Fax: 954/480-3992

Dallas, TX / Washington, DC / Denver, CO / Pompano Beach, FL / Atlanta, GA

NO.	DATE	DESCRIPTION
1	4/13/10	SECOND SUBMITTAL
0	3/29/10	FIRST SUBMITTAL

BY	CHK
CONSTRUCTION	SN
APPROVAL	SN
ISSUED FOR	BY



FRONT VIEW

DUCT COUPLER HALF

MAJOR RIB

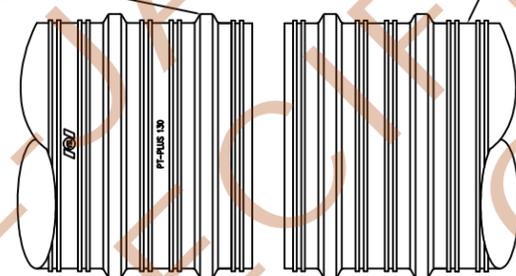
DUCT

DUCT

DUCT

INSTALLATION PROCEDURES

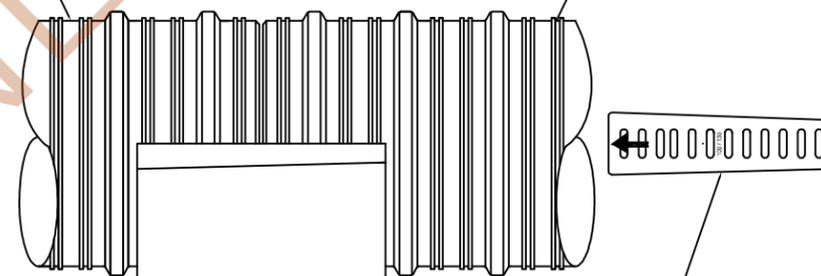
- 1) CUT DUCT HALF WAY BETWEEN 2 MAJOR RIBS SEE DETAIL A
- 2) INSTALL DUCT INTO COUPLER HALF. PLACE COUPLER HALF OVER MAJOR RIB. SEE DETAIL B
- 3) PLACE SECOND COUPLER HALF OVER DUCT, USING INTERLOCKING PINS TO CENTER SECOND COUPLER HALF
- 4) PARTIALLY INSTALL COUPLER CLIPS IN DIRECTION INDICATED BY ARROWS SHOWN ON COUPLER HALF.
- 5) INSURE BOTH DUCTS ARE SECURED IN COUPLER.
- 6) FINISH INSTALLATION OF CLIPS.



MAJOR RIB

DUCT COUPLER HALF

DETAIL A



DUCT COUPLER HALF

DETAIL B

DUCT COUPLER CLIP

BILL OF MATERIAL WITHOUT VENT

ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING NUMBER	INVENTORY NUMBER
4		DUCT, WHT PP, 130 MM PT-PLUS	ASTM D4101	C417	02DT0453
3	2	COUPLER CLAMP, 130 MM PT-PLUS	ASTM D4101	C625	02DT0046
2	2	SEAL (INCLUDED IN COUPLER HALF)			INCLUDED W/ 02DT0044
1	2	COUPLER HALF, 130 MM PT-PLUS	ASTM D4101	C449.4	02DT0044

BILL OF MATERIAL WITH VENT

ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING NUMBER	INVENTORY NUMBER
4		DUCT, WHT PP, 130 MM PT-PLUS	ASTM D4101	C417	02DT0453
3	2	COUPLER CLAMP, 130 MM PT-PLUS	ASTM D4101	C625	02DT0046
2	2	SEAL (INCLUDED IN COUPLER HALF)			INCLUDED W/ 02DT0044
1	1	COUPLER HALF VENTED, 130 MM PT-PLUS	ASTM D4101	C449.4	02DT0045
	1	COUPLER HALF, 130 MM PT-PLUS	ASTM D4101	C449.4	02DT0044

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		VSL 7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET	
TYPICAL 130 MM PT-PLUS DUCT TO DUCT CONNECTION		VSL SYSTEMS DRAWING	
REV.	DATE	BY	CHK
2	5/26/10		
1	6/30/09		
		APPROVED FOR CONSTRUCTION	ISSUED FOR REVIEW
		REVISION	
		GDH	MM
		GDH	??

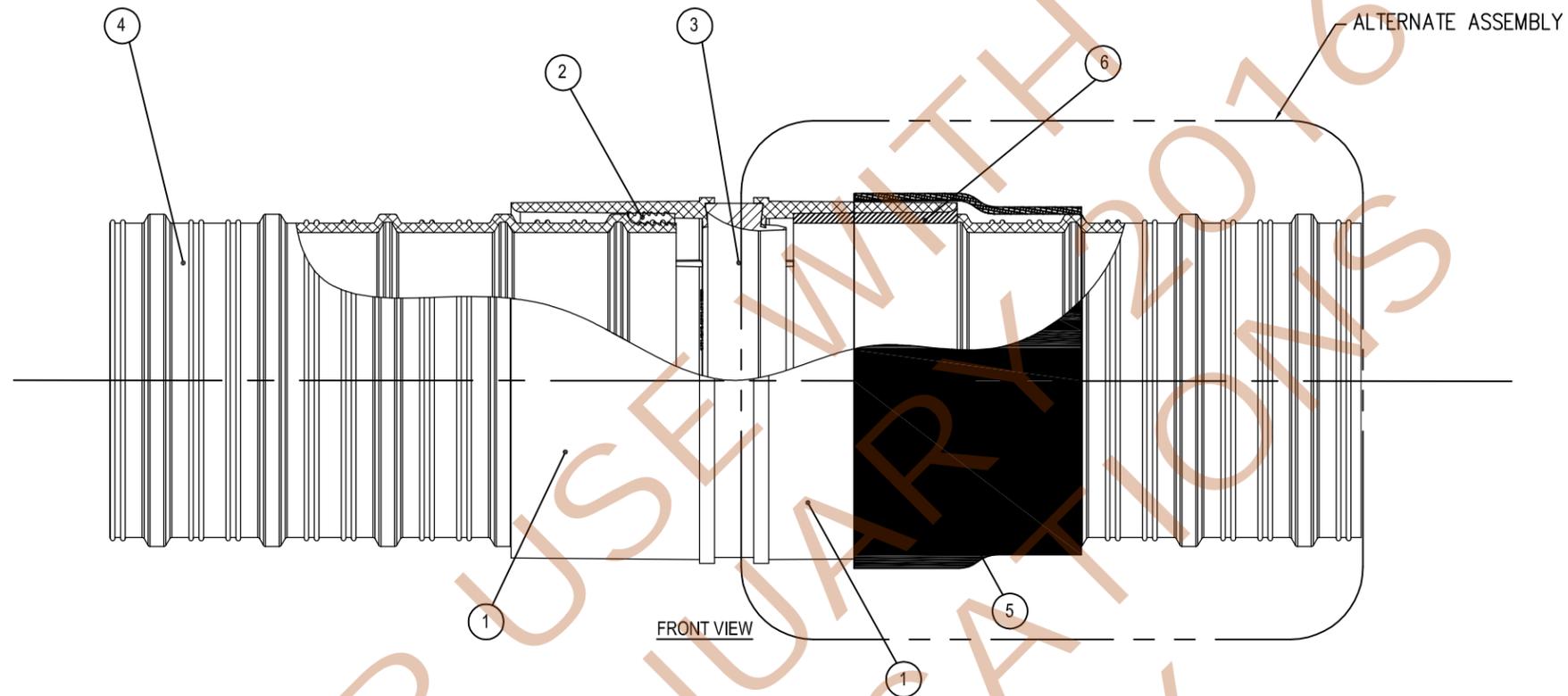
DWG. TITLE:

SCALE: 1:2

VSL JOB NO:

VSL DWG. NO.

A235



ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING NUMBER	INVENTORY NUMBER
6	1	INSERT	HDPE	-	02SC13009
5	1	HEAT SHRINK	POLYOLEFIN	-	CANUSA PLA-125-YE
4	--	DUCT, WHT PP, 130 MM PT-PLUS	PP	E 0937-3	02DT0453
3	1	130 MM SEG. COUP. FACE SEAL	SANTOPRENE	C658	02SC10003
2	1	130 MM SEG. COUP. HUB SEAL	SANTOPRENE	C657	02SC10002
1	2	130 MM SEG. COUP. HUB	PP	C656	02SC10001

NOTE: ALTERNATE ASSEMBLY ACCEPTABLE ONLY WHEN PRE-FABRICATED BY VSL. ALTERNATE ASSEMBLY DOES NOT ALTER STANDARD INSTALLATION PROCEDURES.

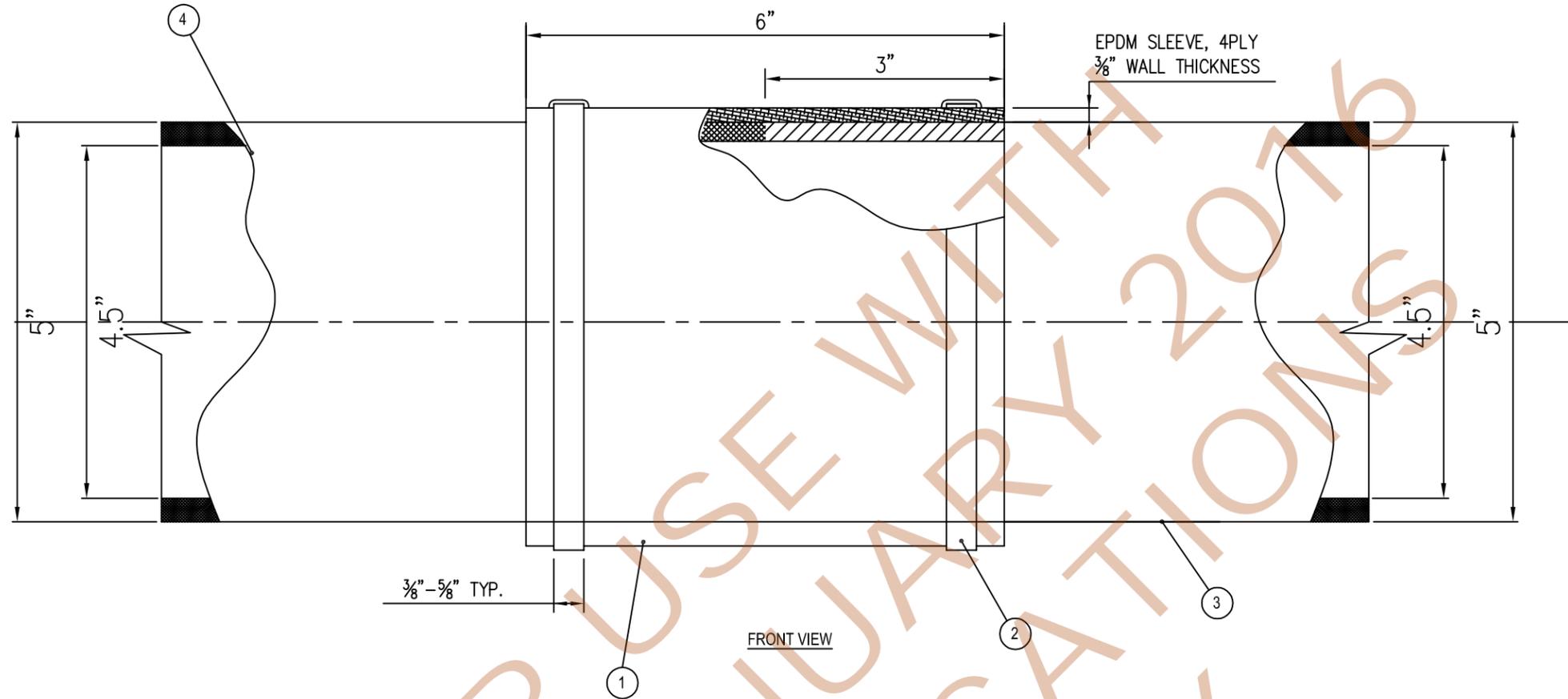
REV.	DATE	REVISION	BY	CHK
2	6/1/10	APPROVED FOR CONSTRUCTION	SAN MM	
1	3/4/10	APPROVED FOR CONSTRUCTION	SAN MM	

VSL
7455 NEW RIDGE RD.
HANOVER, MD. 21076
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DWG. TITLE: TYPICAL 130MM PT PLUS SEGMENTAL DUCT COUPLER CONNECTION
PROJECT: VSL SYSTEMS DRAWING

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SCALE: NONE
VSL JOB NO:
VSL DWG. NO. A242

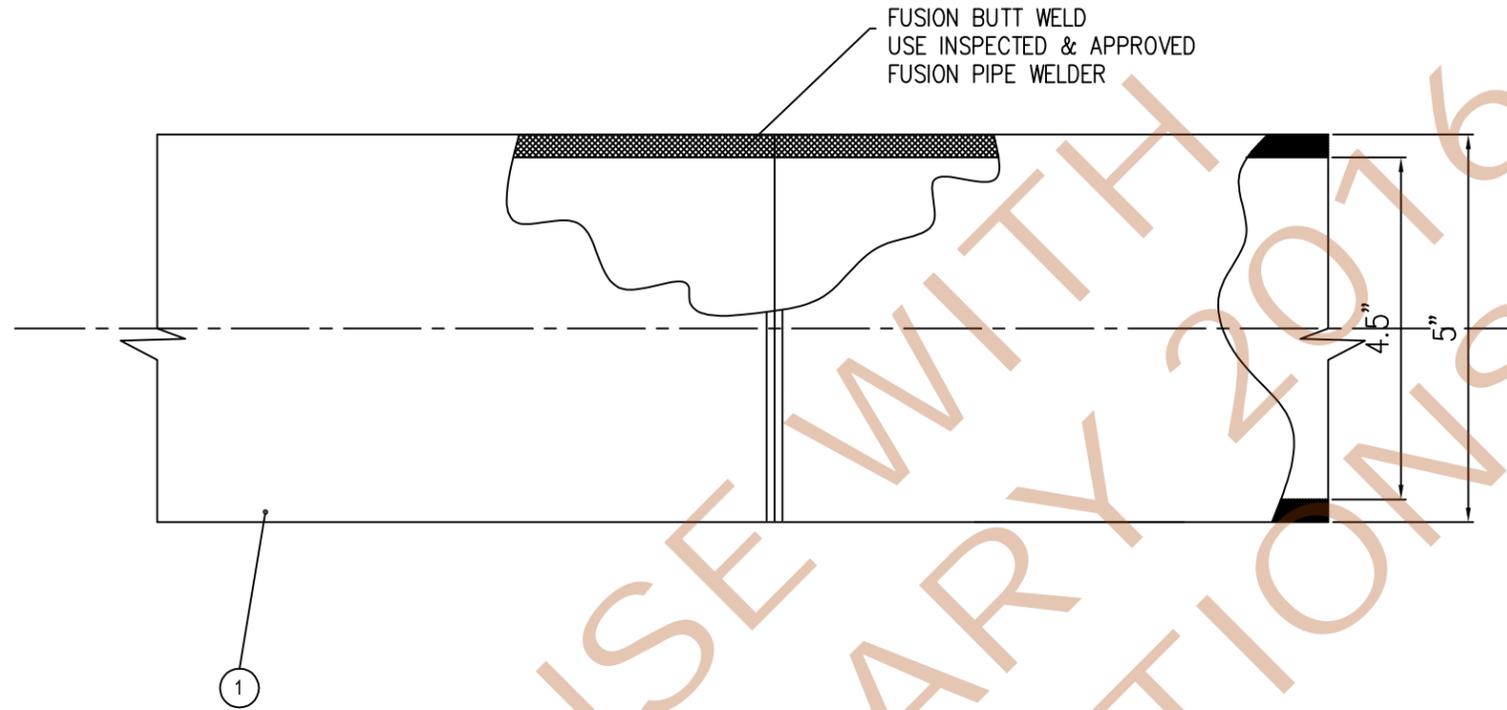


ITEM	QTY	DESCRIPTION	MATERIAL
4	1	4.5" HDPE PIPE DR-17	ASTM D3350
3	1	4.5" SCH. 40 PIPE GALVANIZED	ASTM A53
2	2	STAINLESS STEEL PUNCH LOCK BANDS	ASTM A240 316L
1	1	EPDM SLEEVE	EPDM ASTM D 1171

NOTE:

- 1) INSTALL 6" EPDM SLEEVE
- 2) INSTALL 2 SS BAND CLAMPS
- 3) CENTER EPDM SLEEVE OVER THE JOINT
- 4) APPLY 80 TO 120 LBS SEATING FORCE PER PUNCH LOCK.
- 5) EPDM SLEEVE HAS NO TEXT OR MARKINGS. EPDM IS BLACK IN COLOR.
- 6) HDPE PIPE RUNNING LABEL READS: 4.5" IPS/DR17/DRISCOPEX 4100/PE4710/PE3408.

	VSL 7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET				
DWG. TITLE: TYPICAL 4.5" HDPE PIPE TO 4.5" GALVANIZED SCHEDULE 40 STEEL PIPE - EPDM CONNECTION	VSL SYSTEMS DRAWING				
PROJECT: APPROVED FOR CONSTRUCTION	REV. 0 DATE 4/30/10	REVISION	BY SAN	MM	CHK MM
SCALE: NONE VSL JOB NO.: VSL DWG. NO.: A266		Copyright © 2004 VStructural LLC (VSL). All rights reserved. The drawings, specifications and calculations set forth on this sheet may not be reproduced, changed, copied or transmitted in any form or by any means, electronic or mechanical, including, but not limited to, photocopying, digital imaging or film, except as may be expressly permitted in writing by VSL. Any unauthorized use is strictly prohibited, and VSL disclaims any liability therefrom.			



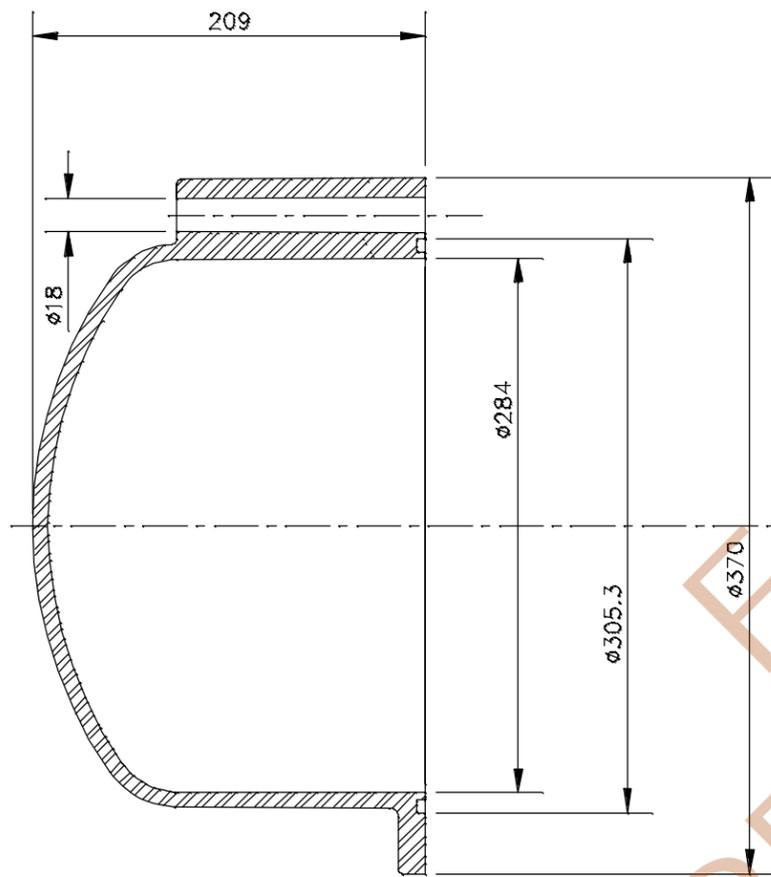
ELEVATION VIEW

ITEM	QTY	DESCRIPTION	MATERIAL
1	2	4.5" PLASTIC HDPE PIPE DR-17	HDPE ASTM D 3350

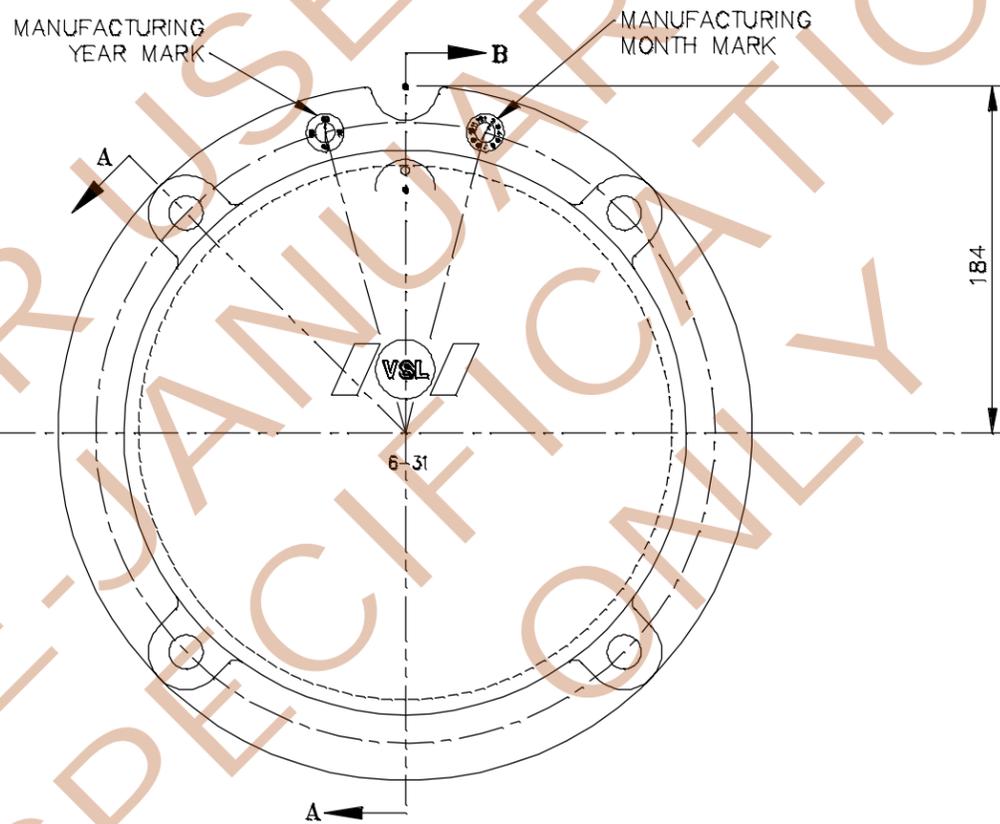
- NOTE: 1.) HDPE PIPE RUNNING LABEL READS: 4.5" IPS/DR17/DRISCOPLEX 4100/PE4710/PE3408.
 2.) SEE VSL BUTT-WELDING PROCEDURE

FOR USE WITH 2016 PRELIMINARY SPECIFICATIONS ONLY

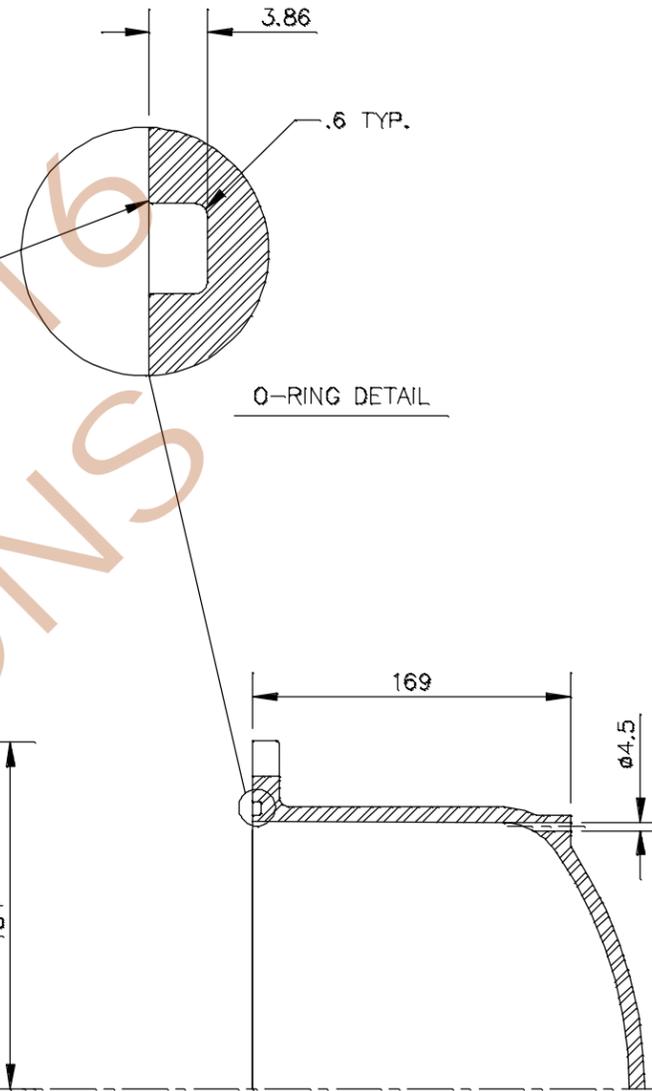
				VSL 7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET			
DWG. TITLE: TYPICAL 4.5" HDPE PIPE TO 4.5" HDPE PIPE FUSION WELDED CONNECTION		PROJECT: VSL SYSTEMS DRAWING					
SCALE: NONE VSL JOB NO: VSL DWG. NO.		REV. DATE 0 4/13/10 APPROVED FOR CONSTRUCTION SAN MM BY CHK					
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SECTION A-A



6-31 GROUT CAP
LETTERING SHALL BE 1MM PROUD



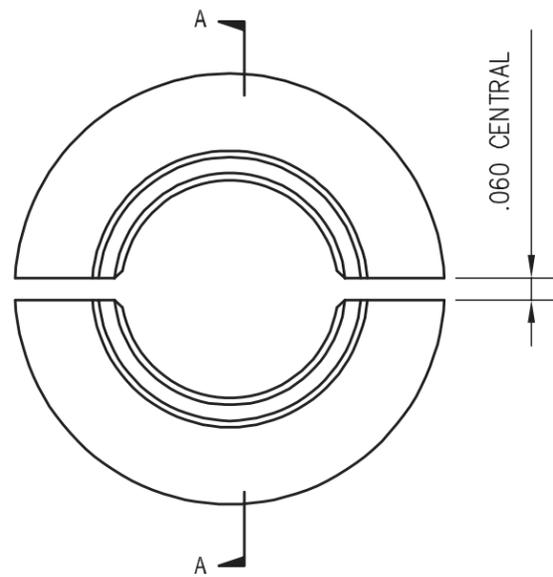
SECTION B-B

TOLERANCES	
UNLESS OTHERWISE SPECIFIED	
FRACTIONAL	± 1/32
DECIMAL	.X ± .030
	.XX ± .010
	.XXX ± .005
ANGULAR	± 1/2°

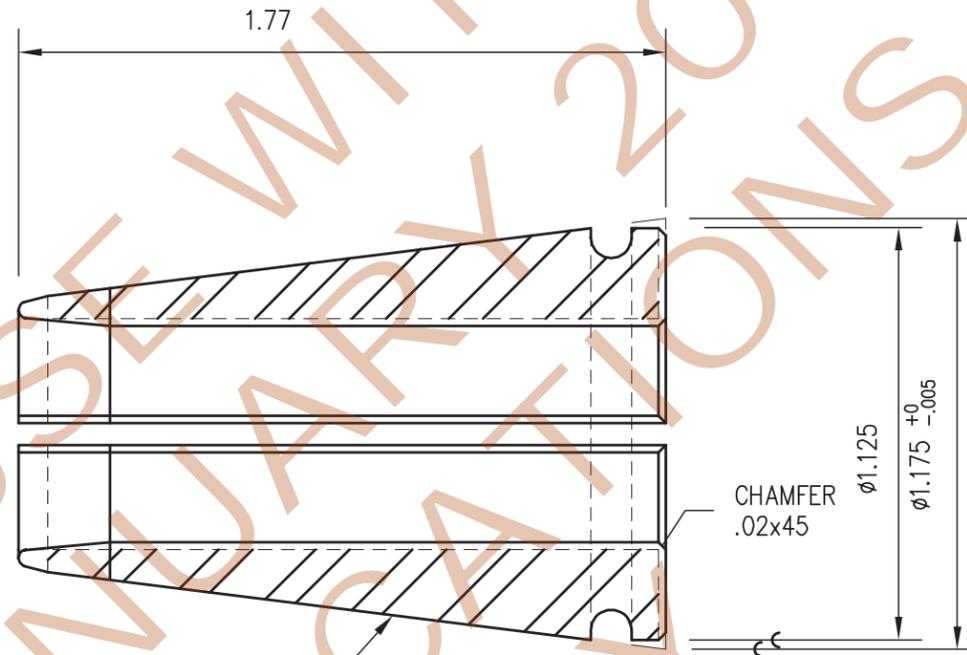
NOTES:
 1) DIMENSIONS ARE IN MILLIMETERS
 2) MATERIAL: ABS
 3) INVENTORY #: 02W5043

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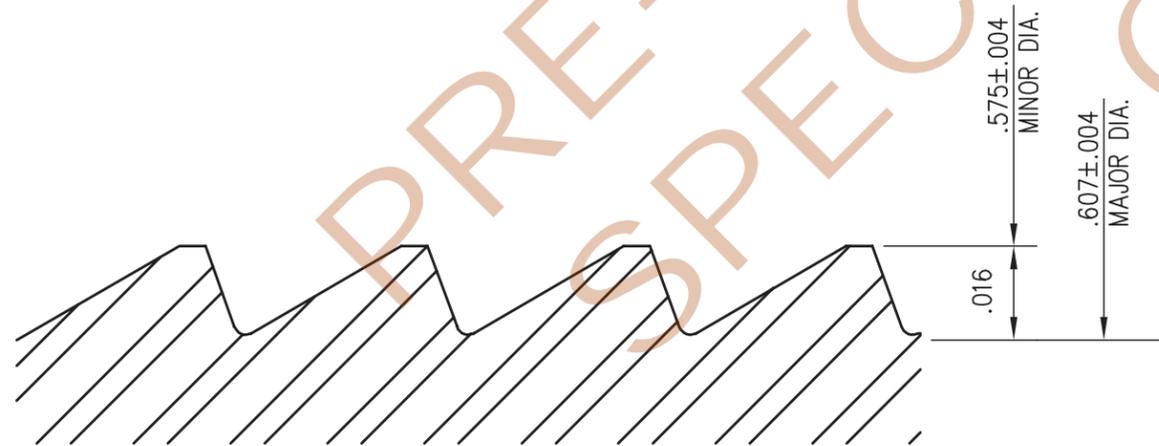
VSL 7455 NEW RIDGE RD. HANOVER, MD, 21076 WWW.VSL.NET	
DWG. TITLE: 6-31 GROUT CAP	PROJECT: VSL SPRINGFIELD
REV.	DATE
2	3/8/10
1	1/19/04
ADD O-RING DETAIL (APPROVED FOR CONSTRUCTION)	GY MM
	L.S
REVISION	BY
	CHK
SCALE: 1 : 4	
VSL DWG. NO. C551-2	



0.6" DIA. MULTIWEDGES
TYPE 1.6G



SECTION A-A



THREAD DETAIL

TOLERANCES
UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES.

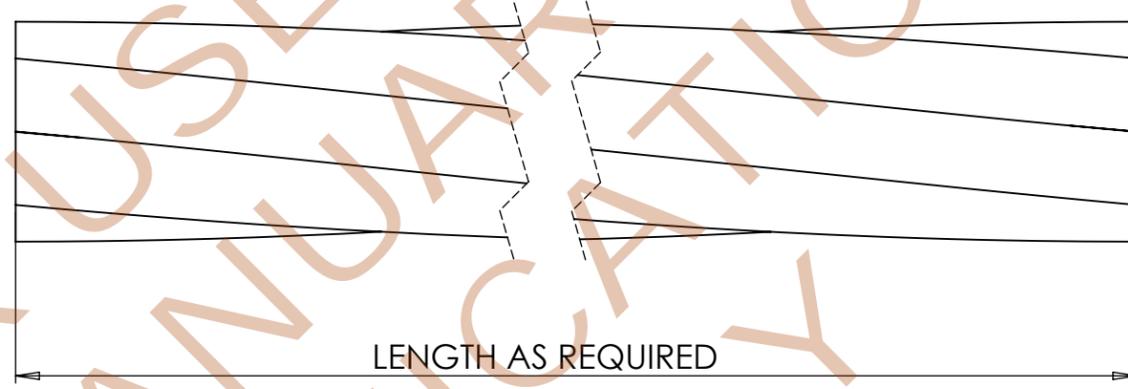
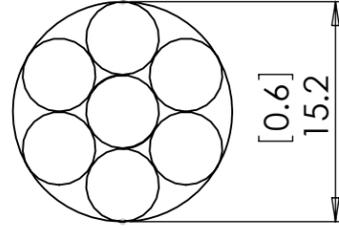
FRACTIONAL	± 1/64
DECIMAL	± .030
.X	± .010
.XX	± .005
.XXX	± 1/2°
ANGULAR	± 1/2°
SURFACE QUALITY	√ 125

NOTES:
 1) BREAK SHARP EDGES .010 MAX.
 2) REMOVE ALL BURRS.
 3) DO NOT SCALE DRAWING.
 4) DIMENSIONS SHOWN THUS "(XX)" ARE IN MILLIMETERS.
 5) DIMENSIONS IN MM SHALL CONFORM TO DIN 1685 GTB16 TOLERANCES

- GENERAL NOTES**
- 1) MATERIAL: VSL MS 3.1.006
 - 2) WEIGHT: 0.197 LBS. (APPROX.)
 - 3) HEAT TREATMENT: CASEHARDEN- CASE DEPTH .013-.025 TEMPER CASE HARDNESS TO BE EQUIVALENT TO HRC 59-66, CORE 25-40 HRC AS MEASURED BY ROCKWELL "SUPERFICIAL", VICKERS, KNOOP OR EQUIVALENT.
 - 4) DIAMETERS MARKED ← MUST BE CONCENTRIC WITHIN .004 T.I.R.
 - 5) SURFACE FINISHED √ 125 / U.N.O.
- INVENTORY No. 02WG008

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DWG. TITLE: 0.6" MULTIWEDGE TYPE 1.6G	PROJECT: VSL SYSTEM DRAWING	3	4/29/04	UPDATED BORDER	GOH NDS
		2	1/1/89	ADDED INVENTORY NUMBER	TKW
		1	1/1/89	ISSUED FOR PRODUCTION	BB
		REV.	DATE	REVISION	CHK
				VSL 7465 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET	
				VSL	
				SCALE: 2:1	
				VSL JOB NO:	
				VSL DWG. NO.	C218

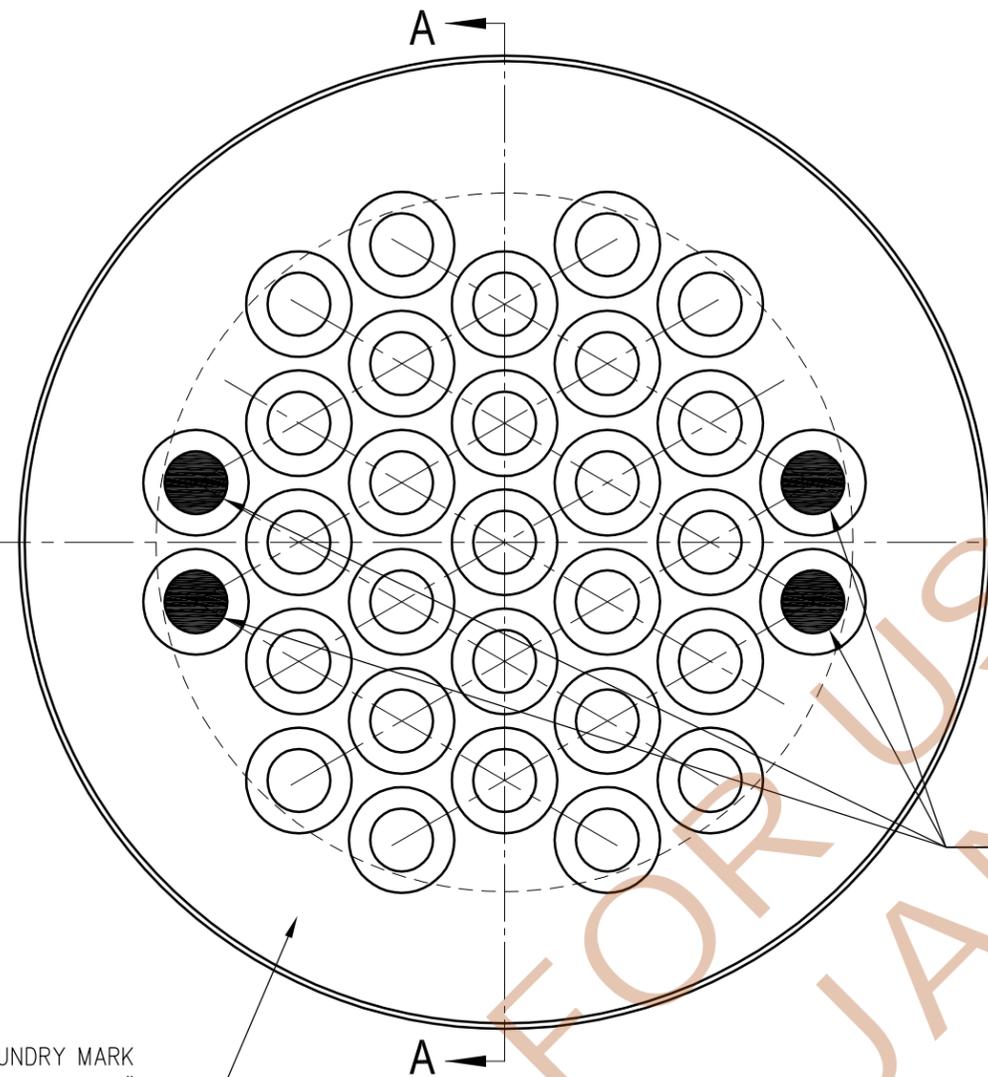


FOR USE WITH PRE-JANUARY 2016 SPECIFICATIONS ONLY

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VStructural LLC (VSL) SHOP DRAWING
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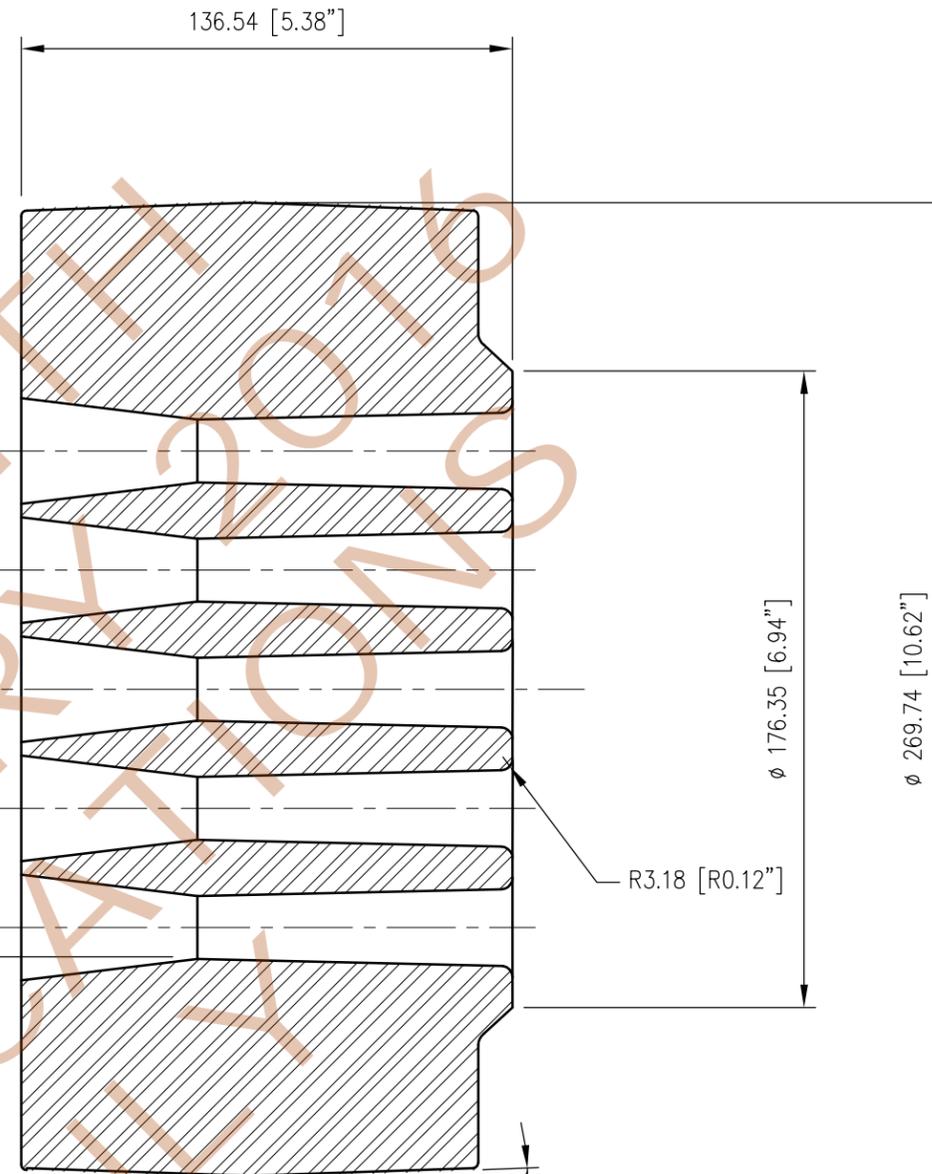
 VStructural LLC Dallas, TX office Dallas, TX / Washington, DC / Denver, CO / Pompano Beach, FL / Atlanta, GA Phone: (817) 545-4807 Fax: (817) 545-4827	0	2/24/2010	FOR FDOT	MM	BY	CHK
	NO.	DATE	DESCRIPTION	ISSUED FOR		
VSL POST TENSIONING 0.6" BARE STRAND (270 KSI) P/N: 01SD0002 (COMMERCIAL) P/N: 01SD0013 (DOMESTIC)						
SCALE: DO NOT SCALE						
DRW NO: C674						
SHEET: 1 OF 1						



HOLES TO BE EPOXY FILLED
IN ON STANDARD
"VSL NCS 6-31"
EPOXY COLOR: GREY

DATE CODE, FOUNDRY MARK
AND TYPE "VSL NCS 6-31"
STAMPED THIS SURFACE.
MUST BE RECESSED

PLAN VIEW



SECTION A-A

2°
DRAFT

TOLERANCES	
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN MILLIMETERS.	
0 THROUGH 50mm	±0.5
51mm THROUGH 100mm	±1.0
MORE THAN 100mm	±1.5
ANGULAR	±1/2°
SURFACE QUALITY	✓
NOTES:	
1) BREAK SHARP EDGES	
2) REMOVE ALL BURRS.	
3) DO NOT SCALE DRAWING.	
4) ALL DRAFT ANGLES 2° UNO	

ANCHORHEAD NCS 6-31

GENERAL CASTING NOTES

- 1) ALL HOLES TO BE FREE FROM BURRS
- 2) ALL RADII 1mm UNO
- 3) MATERIAL: ASTM A536 GR 80-55-06
VSL Q.A. DOC MS 1.1.005
- 4) MANUFACTURERS IDENTIFICATION AND BATCH No.
MUST BE CLEARLY VISIBLE ON CASTING
- 5) HARDNESS RANGE: 187-255 BHN (TEST AT *)
- 6) SCALE: DRAWING NOT TO SCALE
- 7) WEIGHT: 106 est.

INVENTORY No. 02AH6031

REV.	DATE	REVISION	BY	CHK
2	5/26/10	ISSUED FOR CONSTRUCTION	SAN MM	
1	4/30/10	ISSUED FOR CONSTRUCTION	SAN MM	

VSL
7465 NEW RIDGE RD.
HANOVER, MD. 21076
WWW.VSL.NET

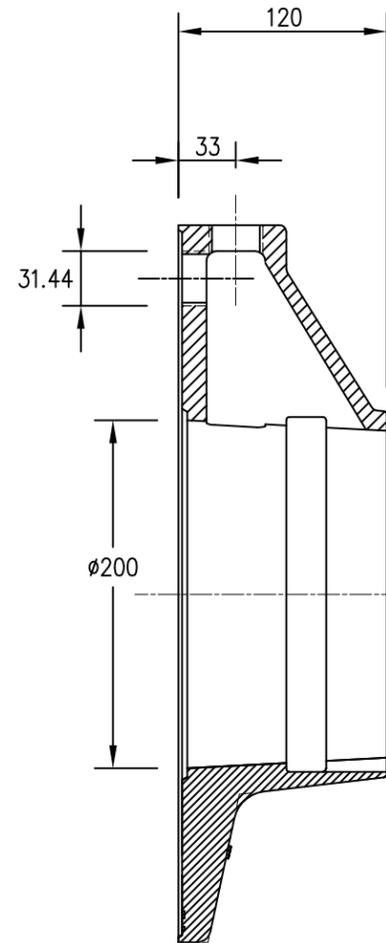
DWG. TITLE: NCS 6-27 ANCHOR HEAD
PROJECT: VSL SYSTEMS DRAWING

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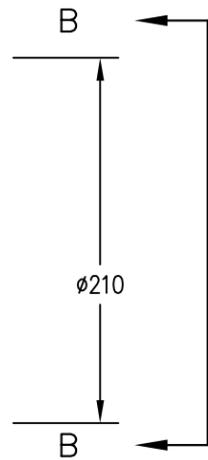
SCALE: 1:2
VSL JOB NO:
VSL DWG. NO.
C677

GENERAL CASTING NOTES

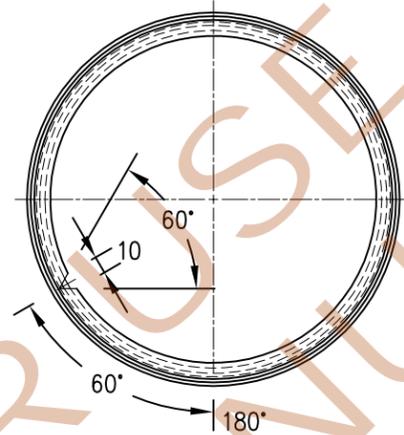
- 1) ALL HOLES TO BE FREE FROM BURRS
- 2) ALL RADII 6mm UNO
- 3) MATERIAL : ASTM A536-84, GRADE 80-55-06
- 4) MANUFACTURERS IDENTIFICATION AND BATCH No. MUST BE CLEARLY VISIBLE ON CASTING
- 5) HARDNESS RANGE: 187-255 BHN
- 6) VSL PART# 02BP6031



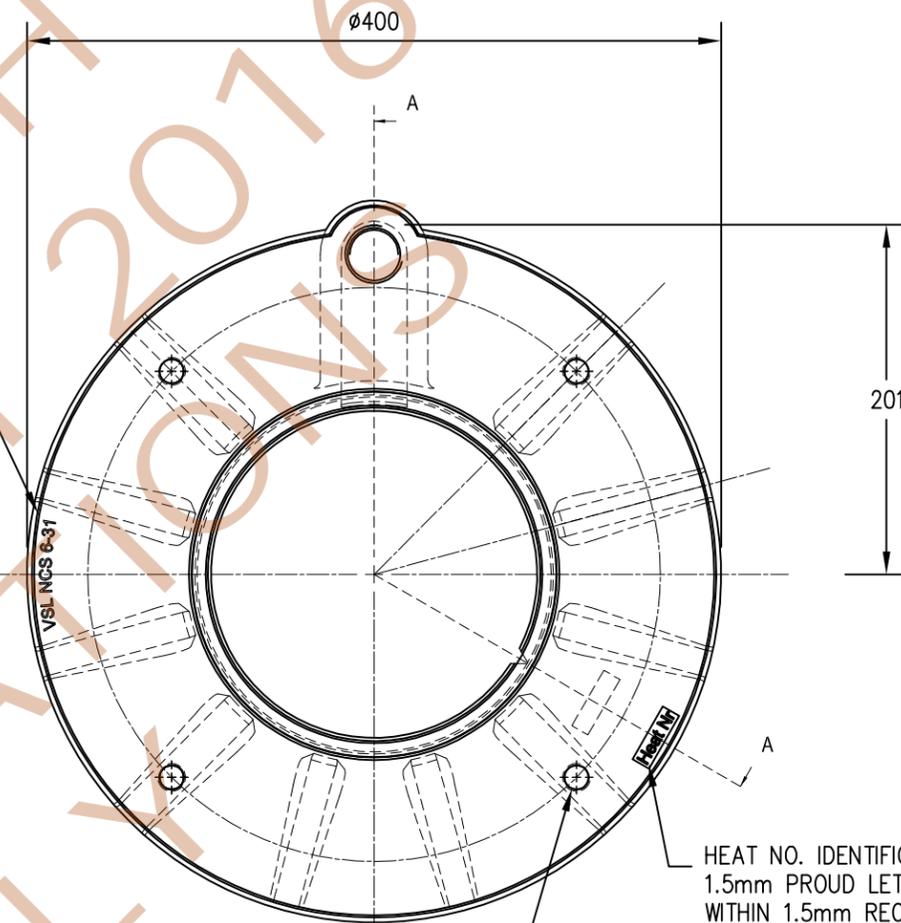
SECTION A-A



SECTION B-B



TYPE IDENTIFICATION LETTERING
1.5mm RECESSED



TAP 5/8-11UNC X 1" DP.
4 PLS. EQ. SPACED
ON 12.992" B.C.

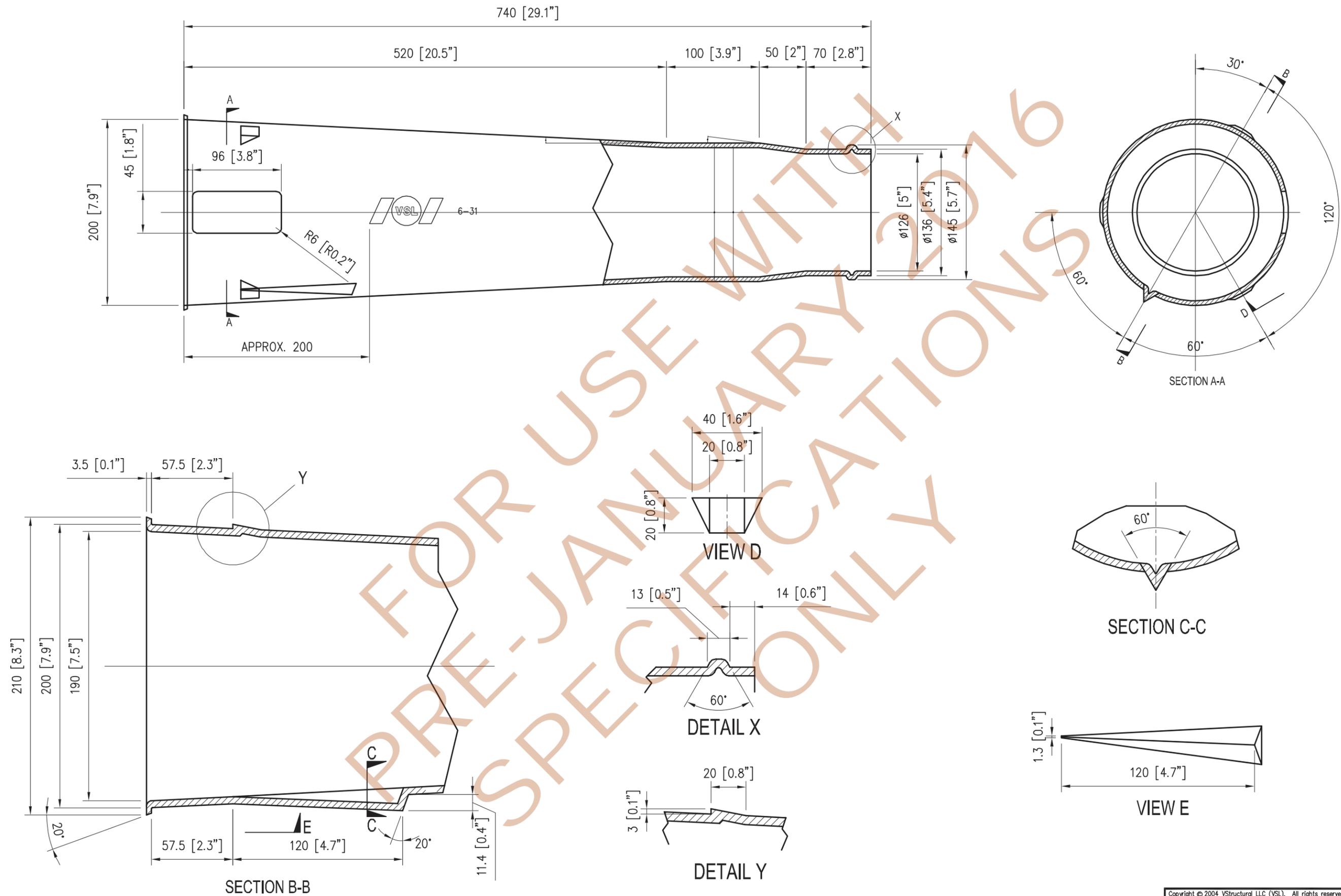
HEAT NO. IDENTIFICATION
1.5mm PROUD LETTERING
WITHIN 1.5mm RECESSED
PANEL

NOTE:

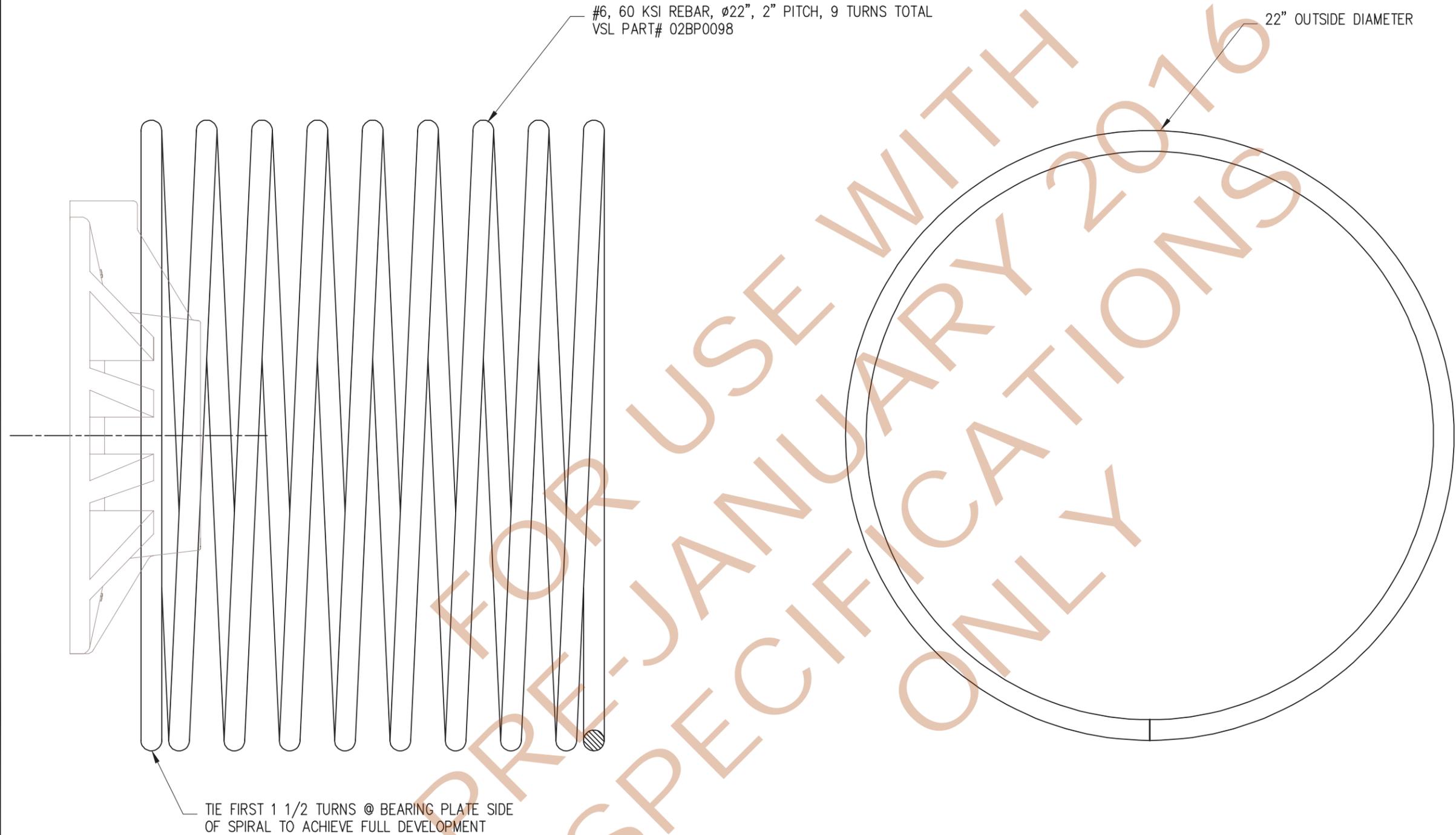
PLATE AVAILABLE BLACK OR GALVANIZED. FOR
FDOT PROJECTS USE GALVANIZED PLATES ONLY.

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VSL 7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET		REV.	DATE	REVISION	CHK
3	5/24/10	REVISOR	5/24/10	BY	GY
2	3/8/10	REVISOR	3/8/10	BY	GY
1	6/17/09	PRELIMINARY NOT FOR PRODUCTION	6/17/09	BY	GH
NCS 6-31 BEARING PLATE		VSL SYSTEMS DRAWING			
DWG. TITLE:		SCALE: NONE			
PROJECT:		VSL JOB NO:			
		VSL DWG. NO. C-638			



DATE	10/27/09	REV.	1
ISSUED FOR CONSTRUCTION	JE	BY	JE
REVISION		CHK	
<p>VSL 7455 NEW RIDGE RD. HANOVER, MD, 21076 WWW.VSL.NET</p>			
<p>NCS 6-31 TRUMPET ASSEMBLY</p>			
<p>VSL SYSTEMS DRAWING</p>			
<p>SCALE: 1/16" = 1'-0"</p>			
<p>VSL JOB NO: 054-0000</p>			
<p>VSL DWG. NO. C645</p>			
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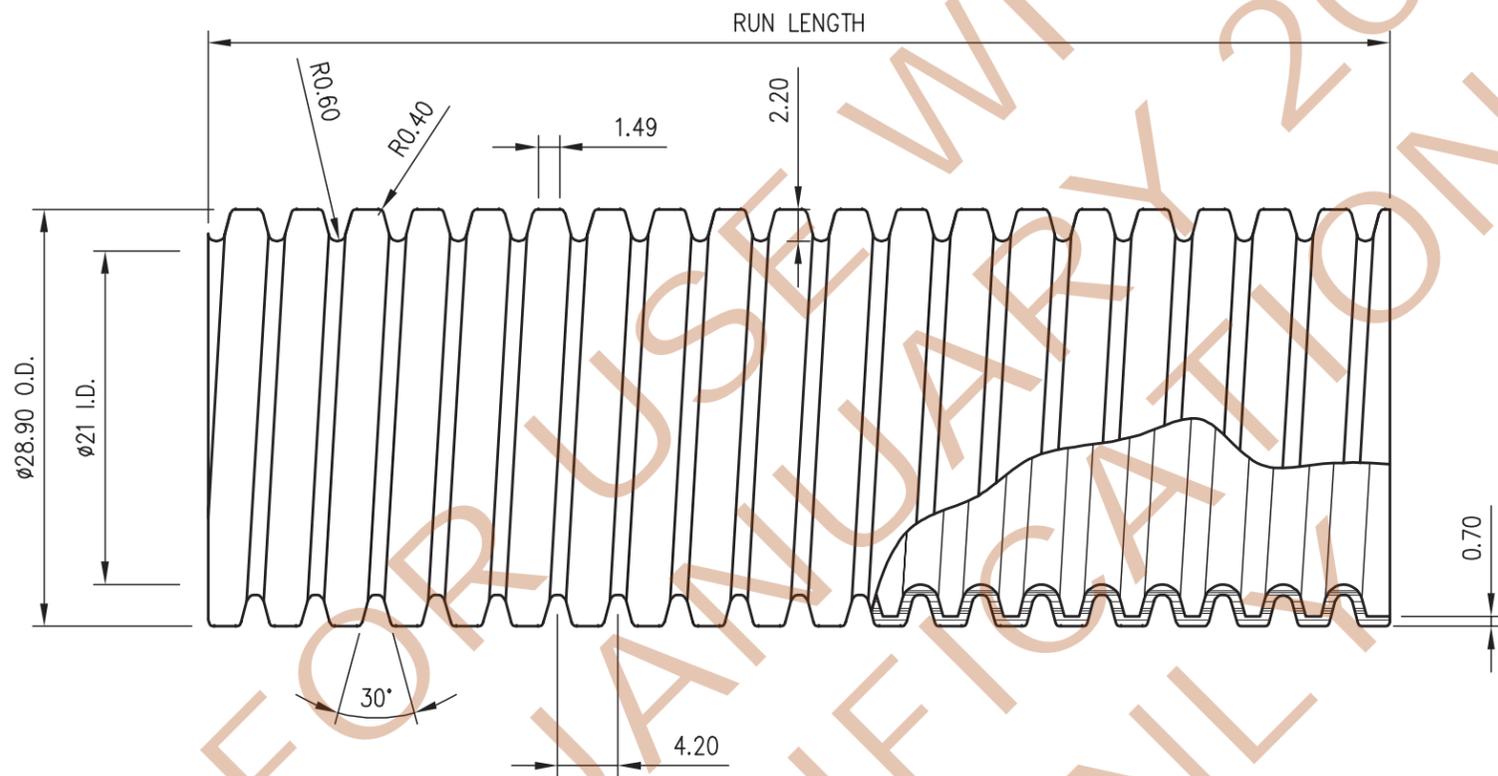


PLAN VIEW
SCALE 1:4

TOP VIEW
SCALE 1:4

VSL 7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET		REV.	DATE	BY	CHK
VSL		1	9/24/08	GDH	GY
NCS 6-31 SPIRAL FOR 5500 PSI OR 3500 PSI CONCRETE		RELEASED FOR CONSTRUCTION			
PROJECT:		REVISION			
VSL SYSTEMS DRAWING					
DWG. TITLE:					
SCALE: 1:4					
VSL JOB NO:					
VSL DWG. NO.		C644			

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TOLERANCES
 UNLESS OTHERWISE SPECIFIED
 DIMENSIONS IN MILLIMETERS.

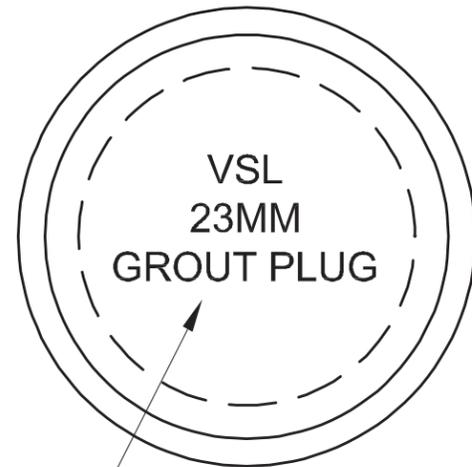
0 THROUGH 50mm	± 0.5
51mm THROUGH 100mm	± 1.0
MORE THAN 100mm	± 1.5
ANGULAR	$\pm 1/2^\circ$
SURFACE QUALITY	\checkmark

NOTES:
 1) BREAK SHARP EDGES .25 MAX.
 2) REMOVE ALL BURRS.
 3) ALL RADII 1mm UNO
 4) DO NOT SCALE DRAWING.
 5) DIMENSIONS IN MM SHALL CONFORM TO DIN 1685 GTB16 TOLERANCES
 6) MATERIAL: PP
 INVENTORY No. 02DT0310

PRE-JANUARY 2016 FOR USUAL APPLICATIONS WITH 2016

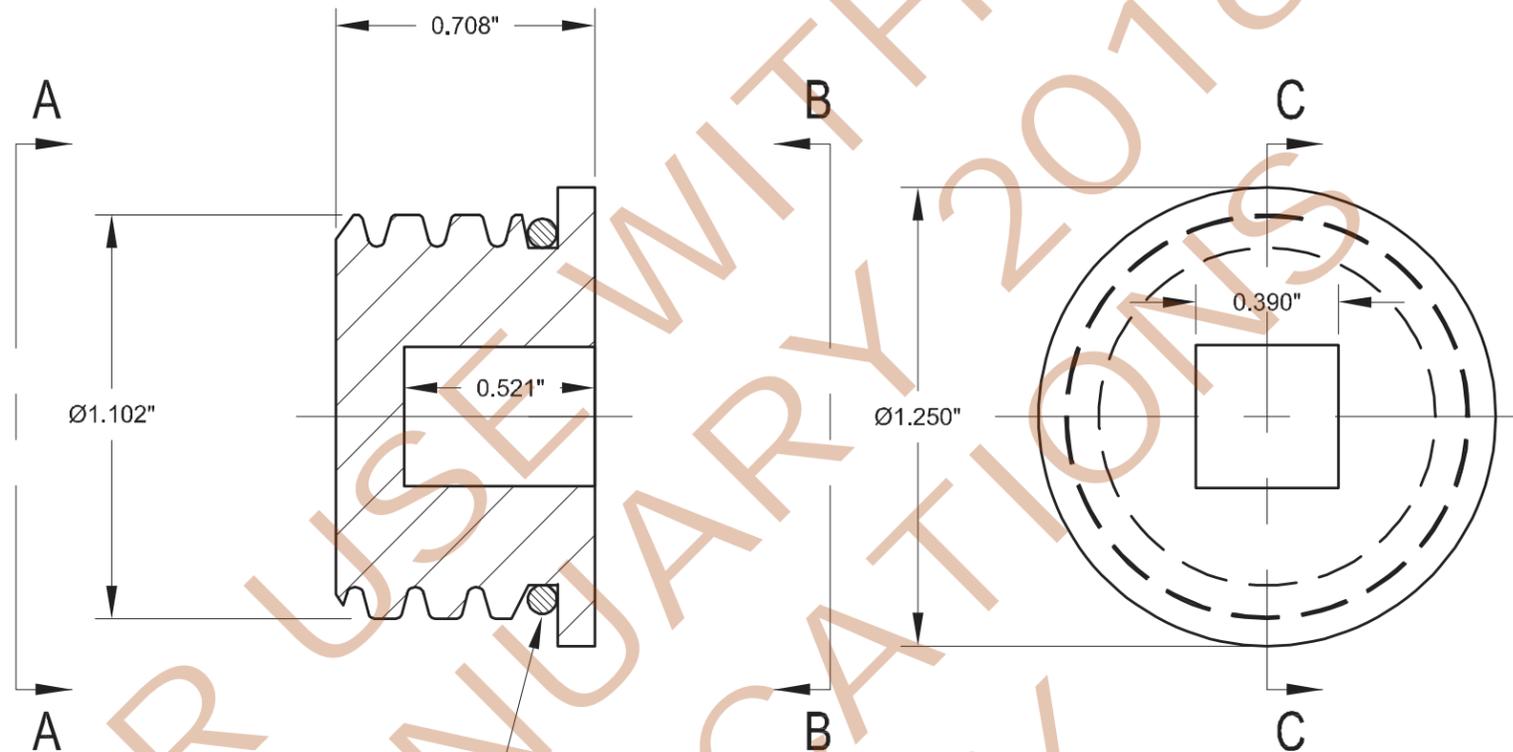
				VSL 7465 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET				
								
23MM GROUT HOSE FABRICATION				VSL SYSTEMS DRAWING				
DWG. TITLE:				SCALE: 2:1				
PROJECT:				VSL JOB NO.:				
				VSL DWG. NO. C587				
				REV. DATE		BY CHK		
				1 4/26/04		GDH NDS		
				RELEASED FOR PRODUCTION				
				REVISION				

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VIEW A-A

.1" LETTERING
RECESSED



O-RING
(PARKER #212)
INSTALL DURING
MANUFACTURING

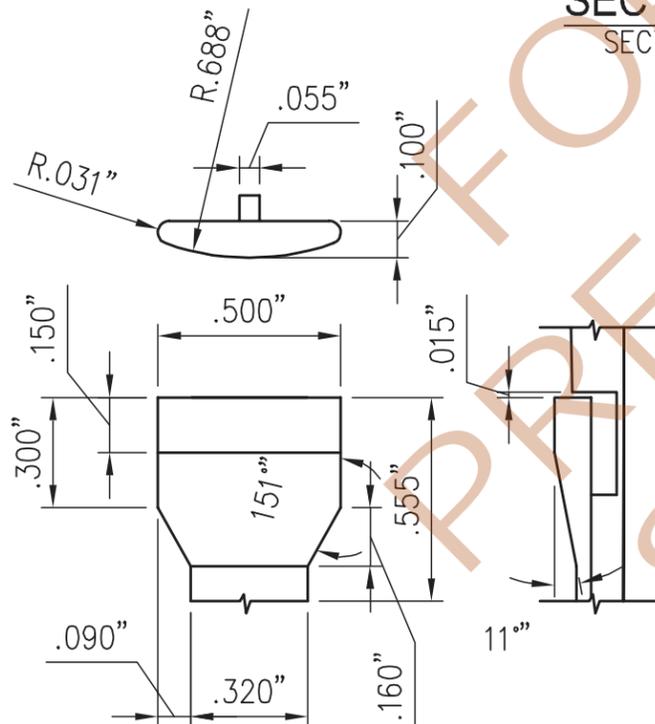
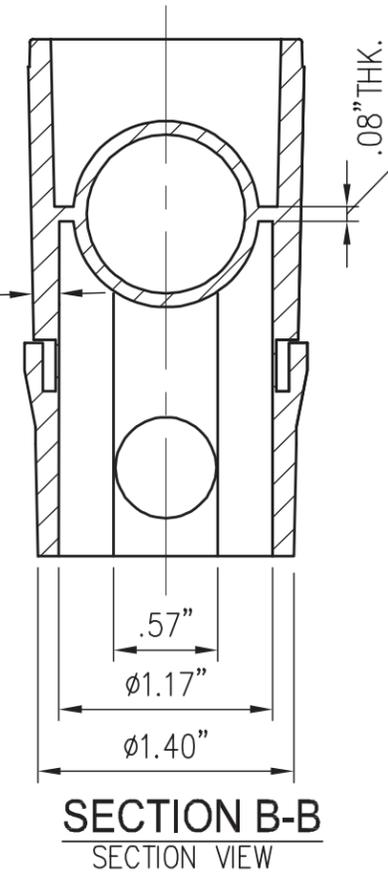
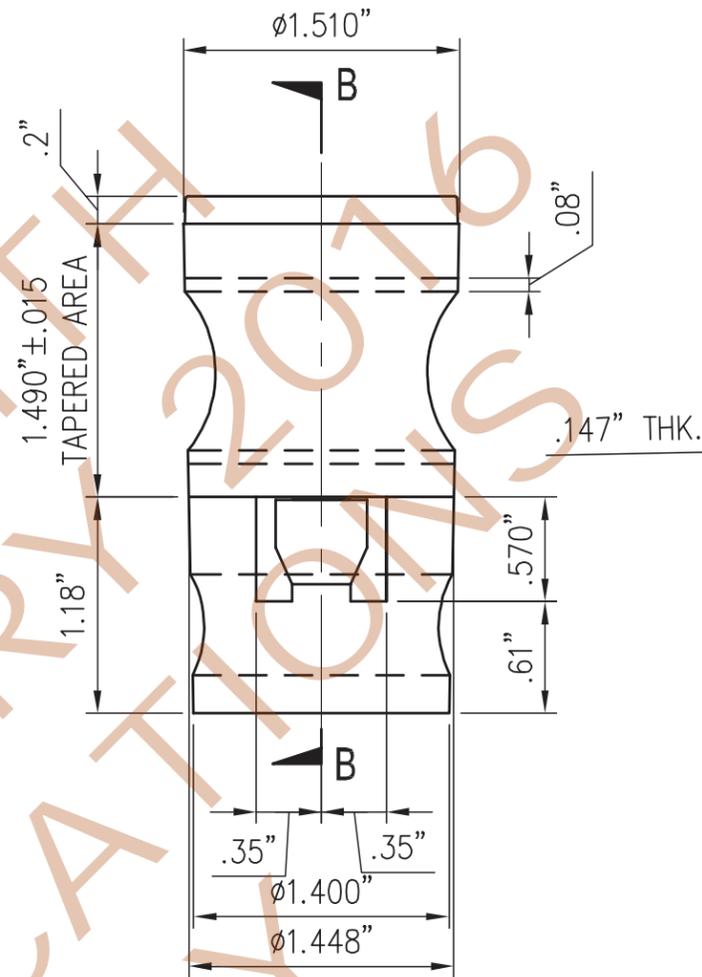
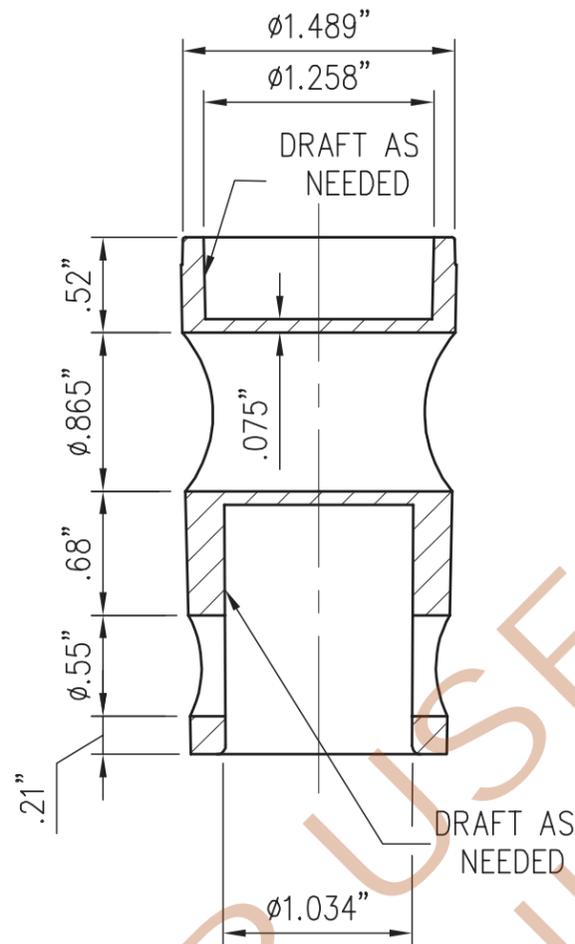
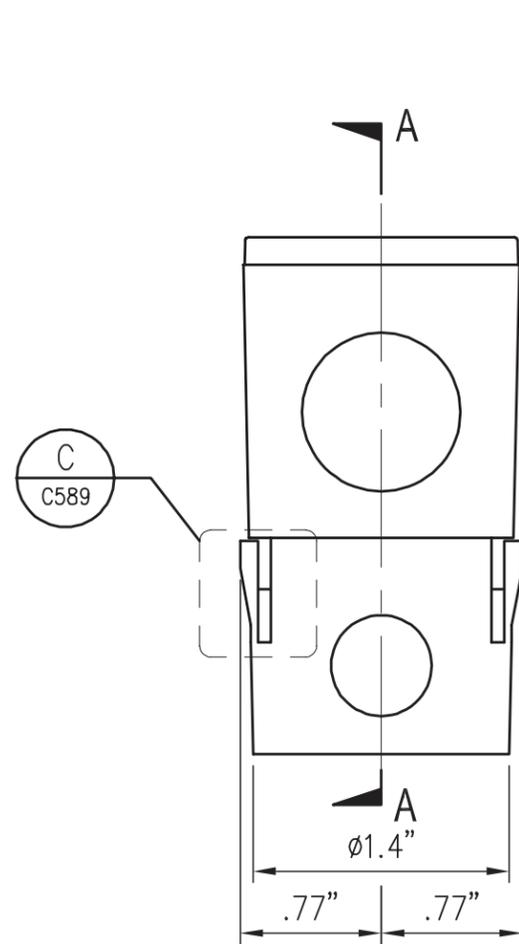
SECTION C-C

VIEW B-B

TOLERANCES	
UNLESS OTHERWISE SPECIFIED	
DIMENSIONS IN INCHES.	
FRACTIONAL _____	± 1/64
DECIMAL _____.X ____	± .030
. XX ____	± .010
. XXX ____	± .005
ANGULAR _____	± 1/2°
SURFACE QUALITY √	
NOTES:	
1) BREAK SHARP EDGES .010 MAX.	
2) REMOVE ALL BURRS.	
3) DO NOT SCALE DRAWING.	
4) DIMENSIONS SHOWN THUS "(XX)" ARE IN MILLIMETERS.	
5) DIMENSIONS IN MM SHALL CONFORM TO DIN 1685 GTB16 TOLERANCES	
5) MATERIAL: POLYPROPYLENE BLACK	
5) INVENTORY No. 02DT0341	

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VSL 7465 NEW RIDGE RD. HANOVER, MD, 21076 WWW.VSL.NET		DATE	
VSL SYSTEMS DRAWING		REV.	DATE
23MM GROUT PLUG FABRICATION		2	1/02/07
VSL		1	4/26/04
SYSTEMS DRAWING		BY	CHK
C583		GDH	GDH
SCALE: 2:1		MATERIAL CHANGE (BLACK)	
VSL JOB NO:		RELEASED FOR PRODUCTION	
VSL DWG. NO.		REVISION	



DEATAIL VIEW
LOCKING TANG
SCALE: 2:1

C
C589

TOLERANCES
UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES.

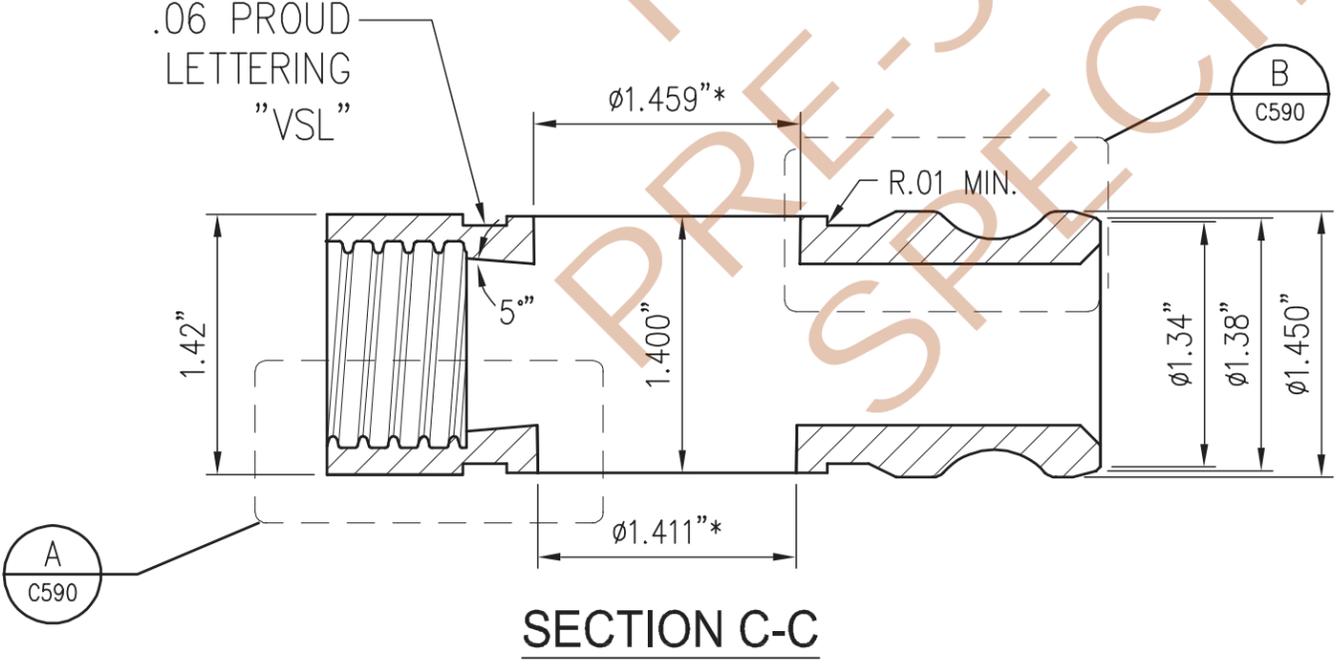
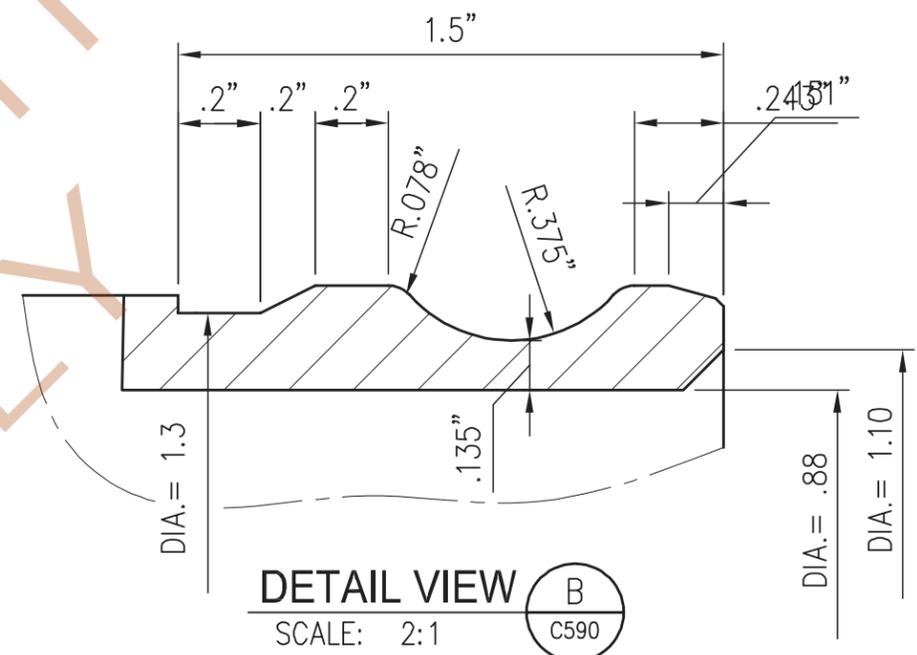
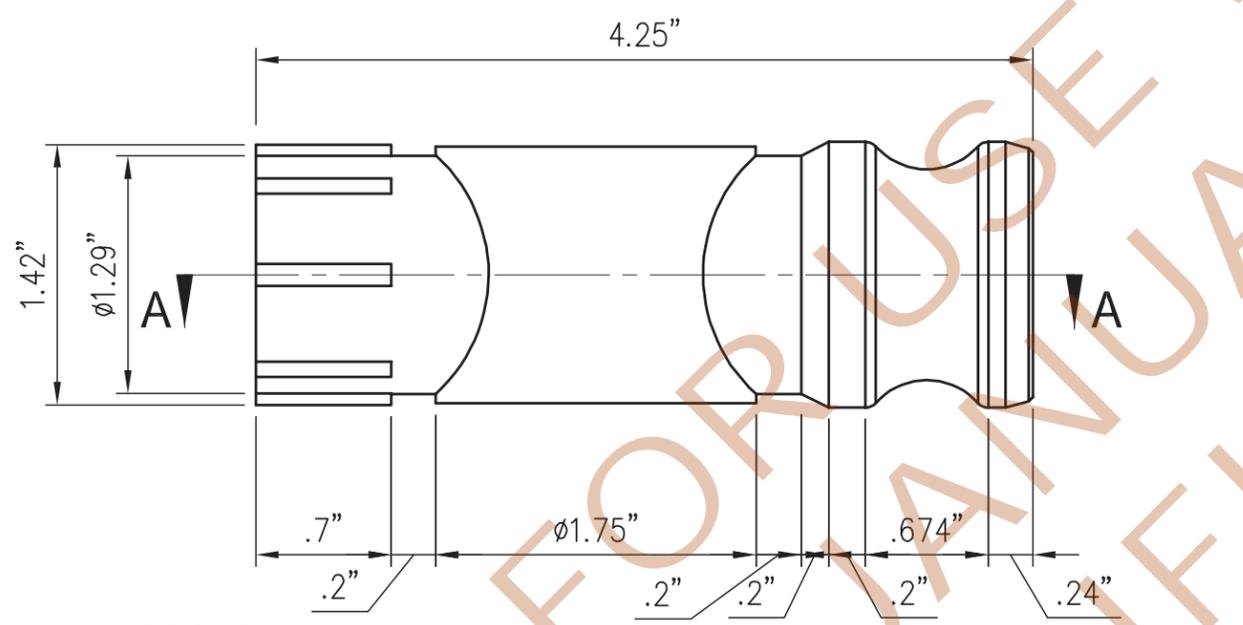
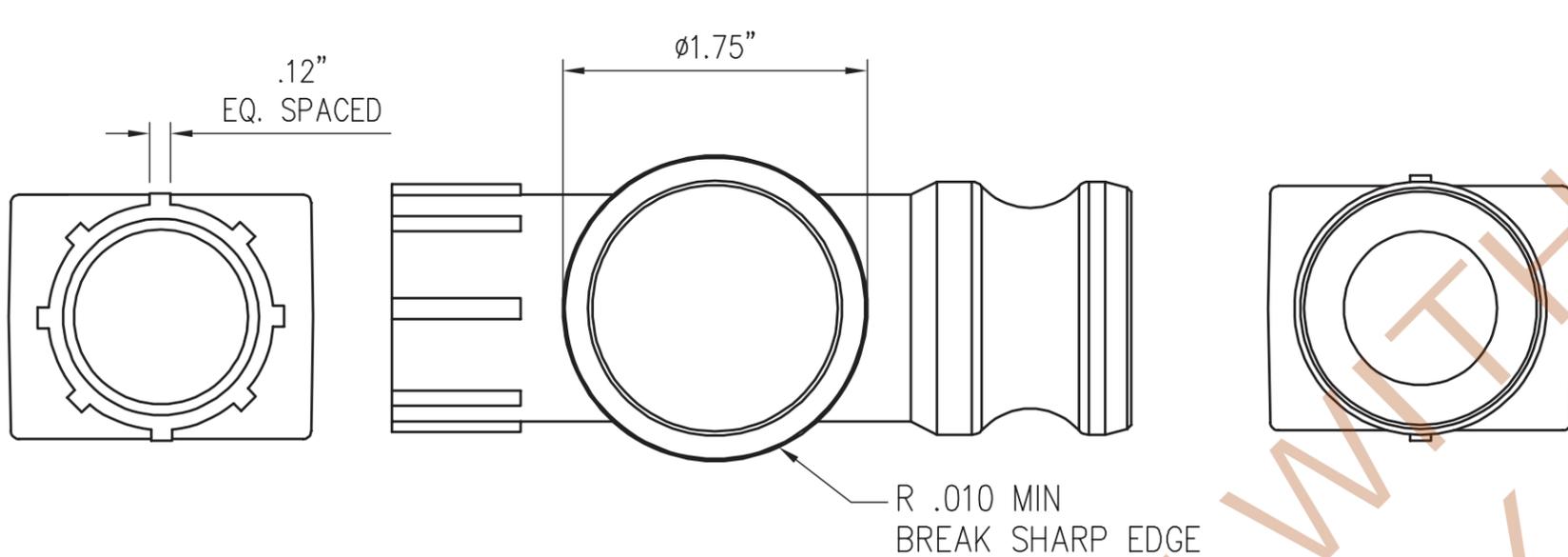
FRACTIONAL _____ ± 1/32
DECIMAL ____ .X ____ ± .030
 ____ .XX ____ ± .010
 ____ .XXX ____ ± .005

ANGULAR _____ ± 1/2°
SURFACE QUALITY √

NOTES:
1) BREAK SHARP EDGES .010 MAX.
2) REMOVE ALL BURRS.
3) DO NOT SCALE DRAWING.
4) DIMENSION W/* CRITICAL DIMENSION
5) MATERIAL: HIPS COLOR BLACK
5) INVENTORY: 02DT0330

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DATE	REV.	BY	CHK
4/26/04	1	GDH	GDH
6/22/05	2	GDH	GDH
RELEASED FOR PRODUCTION		BLACK COLOR ADDED	
DATE		REVISION	
VSL 7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET			
VALVE GROUT SHUTOFF VALVE		VSL SYSTEMS DRAWING	
DWG. TITLE:		SCALE: 1:1 UNO	
PROJECT:		VSL JOB NO:	
C589		VSL DWG. NO.	



TOLERANCES
 UNLESS OTHERWISE SPECIFIED
 DIMENSIONS IN INCHES.

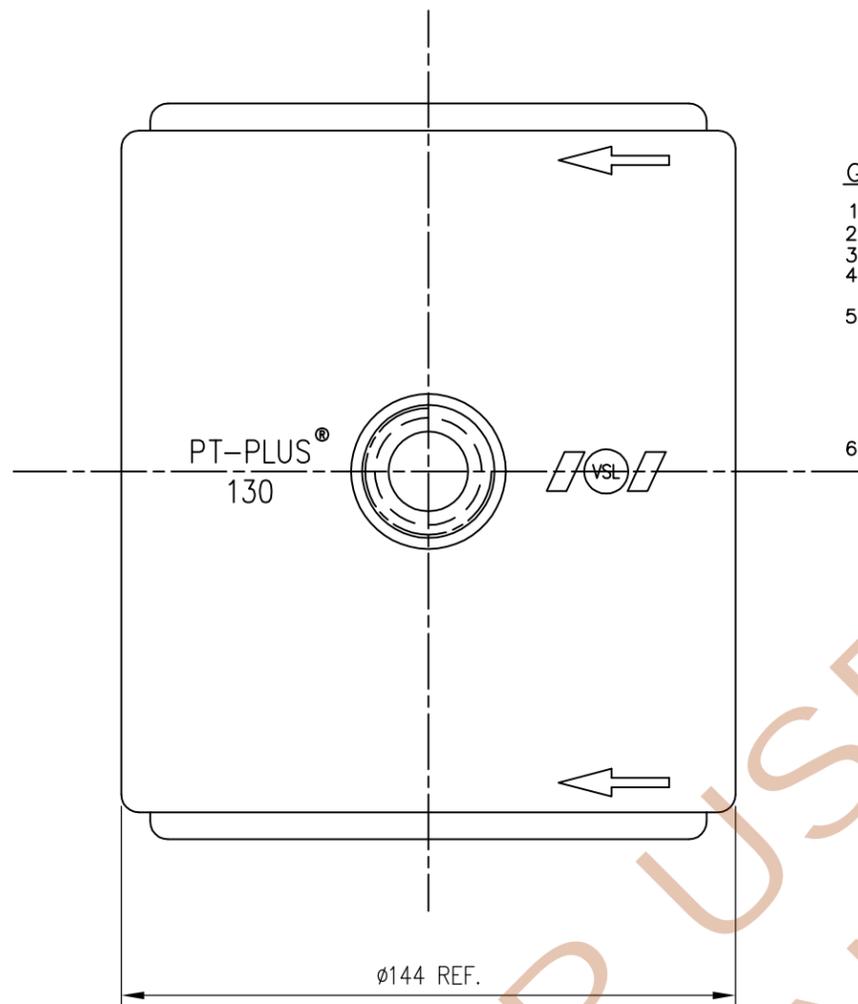
FRACTIONAL _____ ± 1/32
 DECIMAL _____.X ____ ± .030
 _____.XX ____ ± .010
 _____.XXX ____ ± .005

ANGULAR _____ ± 1/2°
 SURFACE QUALITY √

NOTES:
 1) BREAK SHARP EDGES .010 MAX.
 2) REMOVE ALL BURRS.
 3) DO NOT SCALE DRAWING.
 4) DIMENSION W/* CRITICAL DIMENSION
 5) MATERIAL: HIPS COLOR BLACK
 5) INVENTORY: 02DT0330

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DATE	REV.	BY	CHK
4/26/04	1		
6/22/05	2		
		BLACK COLOR ADDED	
		RELEASED FOR PRODUCTION	
			GDH
			INDS
 VSL SYSTEMS DRAWING			
BODY GROUT SHUTOFF VALVE			
PROJECT: VSL			
SCALE: 1:10			
VSL JOB NO: C590			
VSL DWG. NO. C590			
VSL 7455 NEW RIDGE RD. HANOVER, MD, 21076 WWW.VSL.NET			

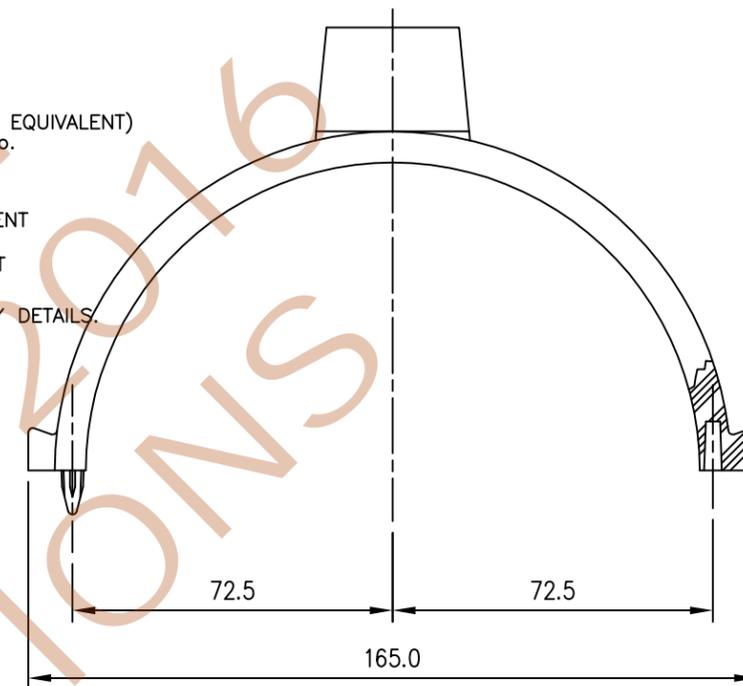


GENERAL NOTES

- 1) ALL HOLES TO BE FREE FROM BURRS
- 2) ALL RADII 1mm UNO
- 3) MATERIAL POLYPROPYLENE ELTEX PRS210 (OR EQUIVALENT)
- 4) MANUFACTURERS IDENTIFICATION AND BATCH No. MUST BE CLEARLY VISIBLE ON CASTING
- 5) SCALE: DRAWING NOT TO SCALE
- 6) SEE DRAWING A235 FOR ADDITIONAL ASSEMBLY DETAILS.

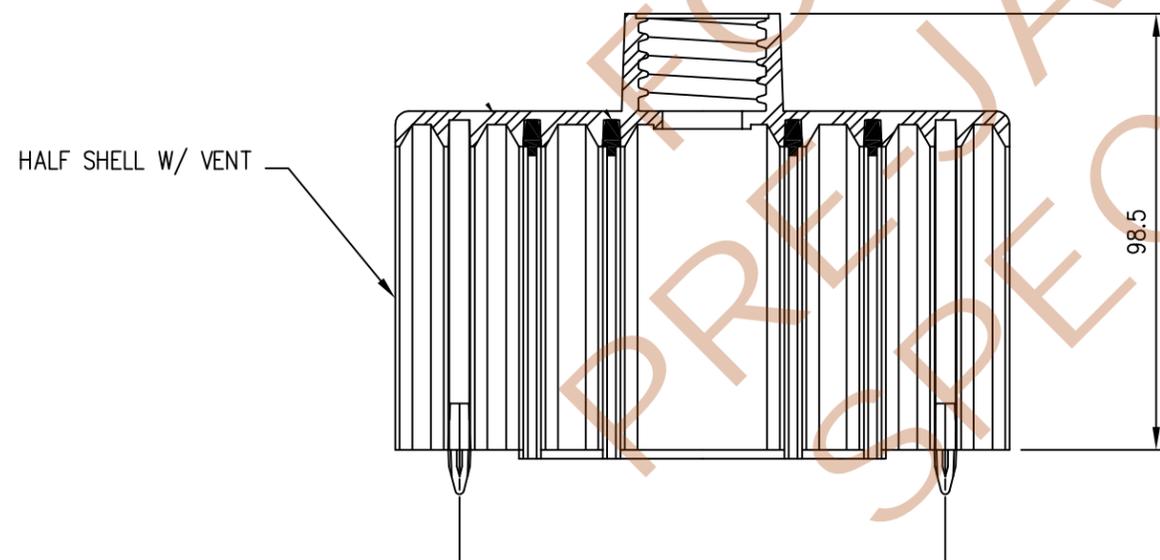
INVENTORY No. 02DT0054 W/OUT VENT

INVENTORY No. 02DT0054 WITH VENT

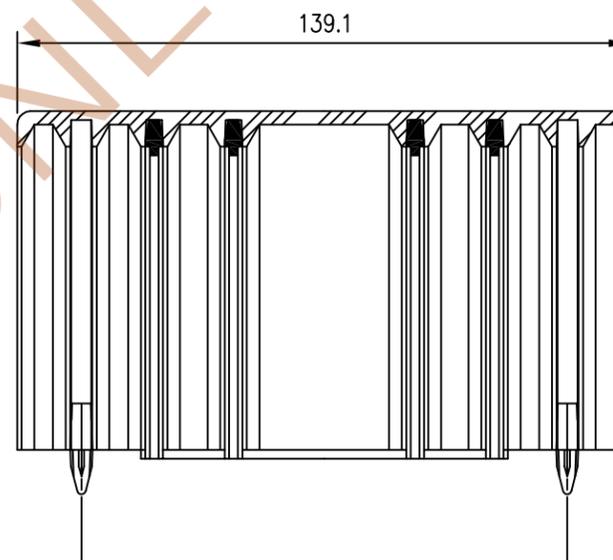


USE TWO HALF-SHELLS W/O VENT (P/N 02DT0054) FOR STANDARD DUCT COUPLING

USE ONE HALF SHELL W/O VENT (P/N 02DT0054) AND ONE HALF SHELL W/ VENT (P/N 02DT0055) FOR DUCT COUPLING WHERE A GROUT VENT IS NEEDED



HALF SHELL W/ VENT



HALF SHELL W/O VENT

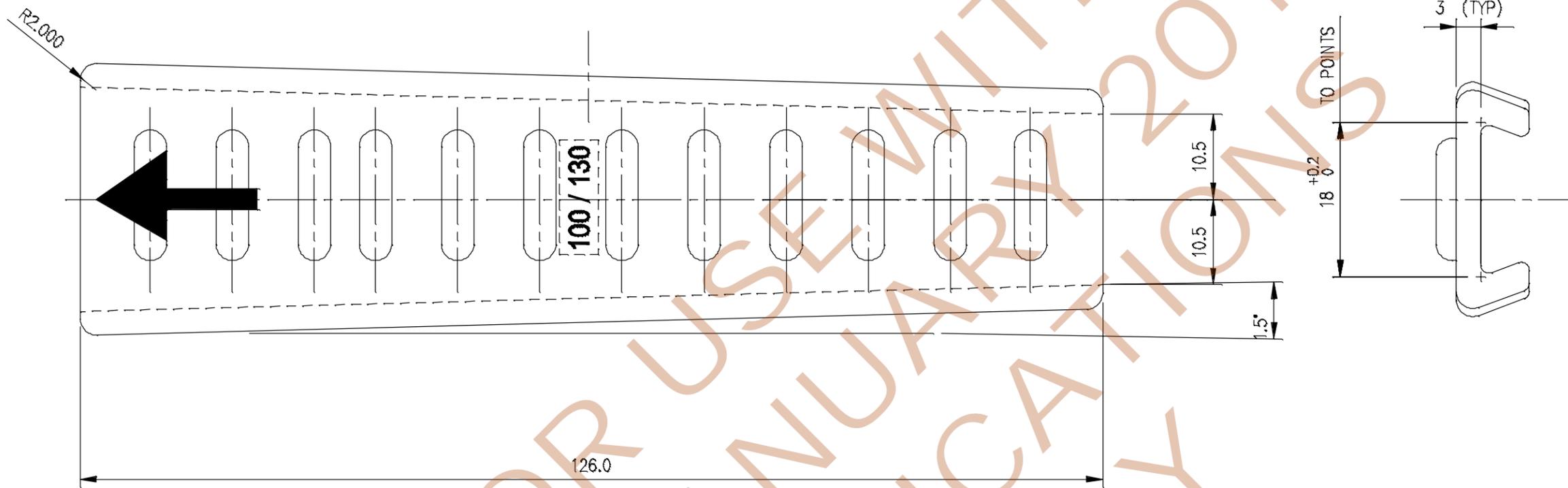
REV.	DATE	REVISION
6	6/8/10	ISSUED FOR CONSTRUCTION
5	3/8/10	ADDED OUTSIDE DIAMETER DIM.
4	10/29/09	NEW BORDER ADDED

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HANOVER, MD. 21076
WWW.VSL.NET

DWG. TITLE: 130 MM PT PLUS DUCT COUPLER
PROJECT: HALF SHELL NON-VENTED AND HALF SHELL VENTED
VSL
SYSTEMS DRAWING

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SCALE: 1/16" = 1'-0"
VSL JOB NO: 054-0000
VSL DWG. NO. C449.4



FOR USE WITH 2016
PRE-JANUARY 2016
SPECIFICALLY ONLY

TOLERANCES - U.S.
UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES.
FRACTIONAL _____ ± 1/64
DECIMAL _____X _____ ± .030
 _____.XX _____ ± .010
 _____.XXX _____ ± .005

ANGULAR _____ ± 1/2°
SURFACE QUALITY _____ ✓

NOTES:
1) BREAK SHARP EDGES .010 MAX.
2) REMOVE ALL BURRS.
3) DO NOT SCALE DRAWING.
4) DIMENSIONS SHOWN THUS "(XX)" ARE IN MILLIMETERS.
5) DIMENSIONS IN MM SHALL CONFORM TO DIN 1685 GTB16 TOLERANCES

GENERAL NOTES

- 1) ALL HOLES TO BE FREE FROM BURRS
- 2) ALL RADII 1mm UNO
- 3) MATERIAL SHALL BE: PP SG702 HI-IMPACT COPOLYMER
- 4) MANUFACTURERS IDENTIFICATION AND BATCH No. MUST BE CLEARLY VISIBLE ON PART
- 5) SCALE: DRAWING NOT TO SCALE

INVENTORY No. 02DT0046

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SCALE: 1:10
VSL JOB NO:
VSL Dwg. No. **C625**

	VSL 7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET			
100 / 130 MM PT-PLUS CLIP FABRICATION	VSL	SYSTEMS DRAWING		
Dwg. Title	Project	Rev.	Date	By
		1	6/17/03	GSH
			APPROVED FOR PRODUCTION	REVISION
				BY
				CHK

PATENT PENDING

MATERIAL

Santoprene, Black in color
(per VSL MS 8.1.091209.2)

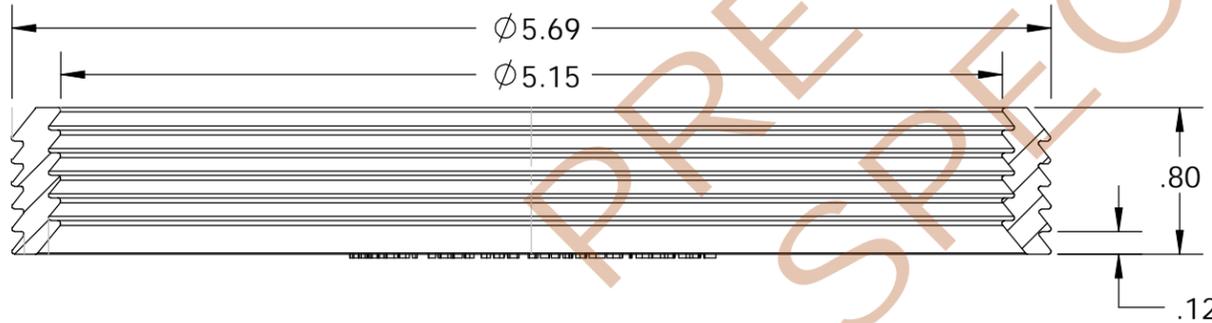
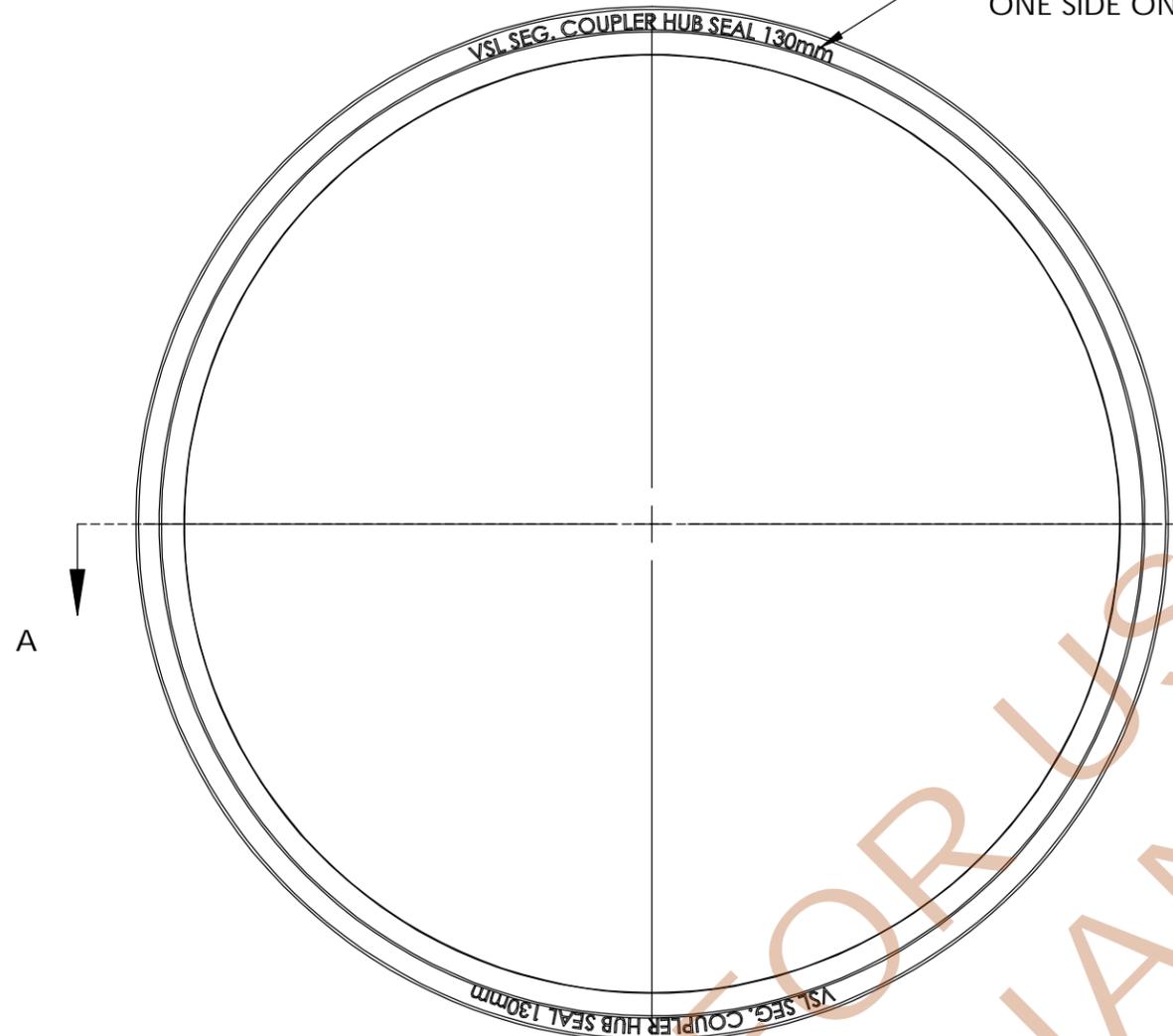
TOLERANCES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES

FRACTIONAL	_____	±	1/64
DECIMAL	____.X	±	.030
DECIMAL	____.XX	±	.010
DECIMAL	____.XXX	±	.005
ANGULAR	_____	±	0°30'

SURFACE QUALITY _____ ✓

TEXT 0.020" PROUD:
"VSL SEG. COUPLER HUB SEAL 130mm"
ONE SIDE ONLY



SECTION A-A



FOR USE WITH 2016
 PRE-JANUARY 2016
 SPECIFICALLY ONLY

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VStructural LLC (VSL) SHOP DRAWING

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VSL	VStructural LLC Dallas, TX office	15600 Trinity Blvd, Ste 118 Fort Worth, TX 76155	Phone: (817) 545-4807 Fax: (817) 545-4827	Dallas, TX / Washington, DC / Denver, CO / Pompano Beach, FL / Atlanta, GA
	VSL 130mm SEGMENTAL DUCT COUPLER SYSTEM			
HUB SEAL		VSL P/N 02SC13002		
SCALE:	DO NOT SCALE			
DRW NO:	C657			
SHEET:	1 of 1			
NO.	1	3/26/2010	FOR PRODUCTION	ISSUED FOR
NO.	0	1/21/2010	PRELIMINARY	BY
NO.			DESCRIPTION	CHK

PATENT PENDING

MATERIAL

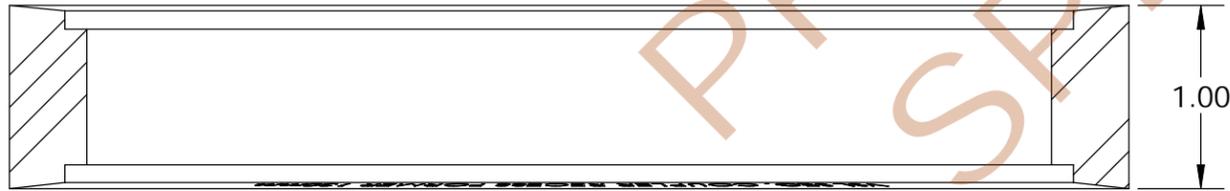
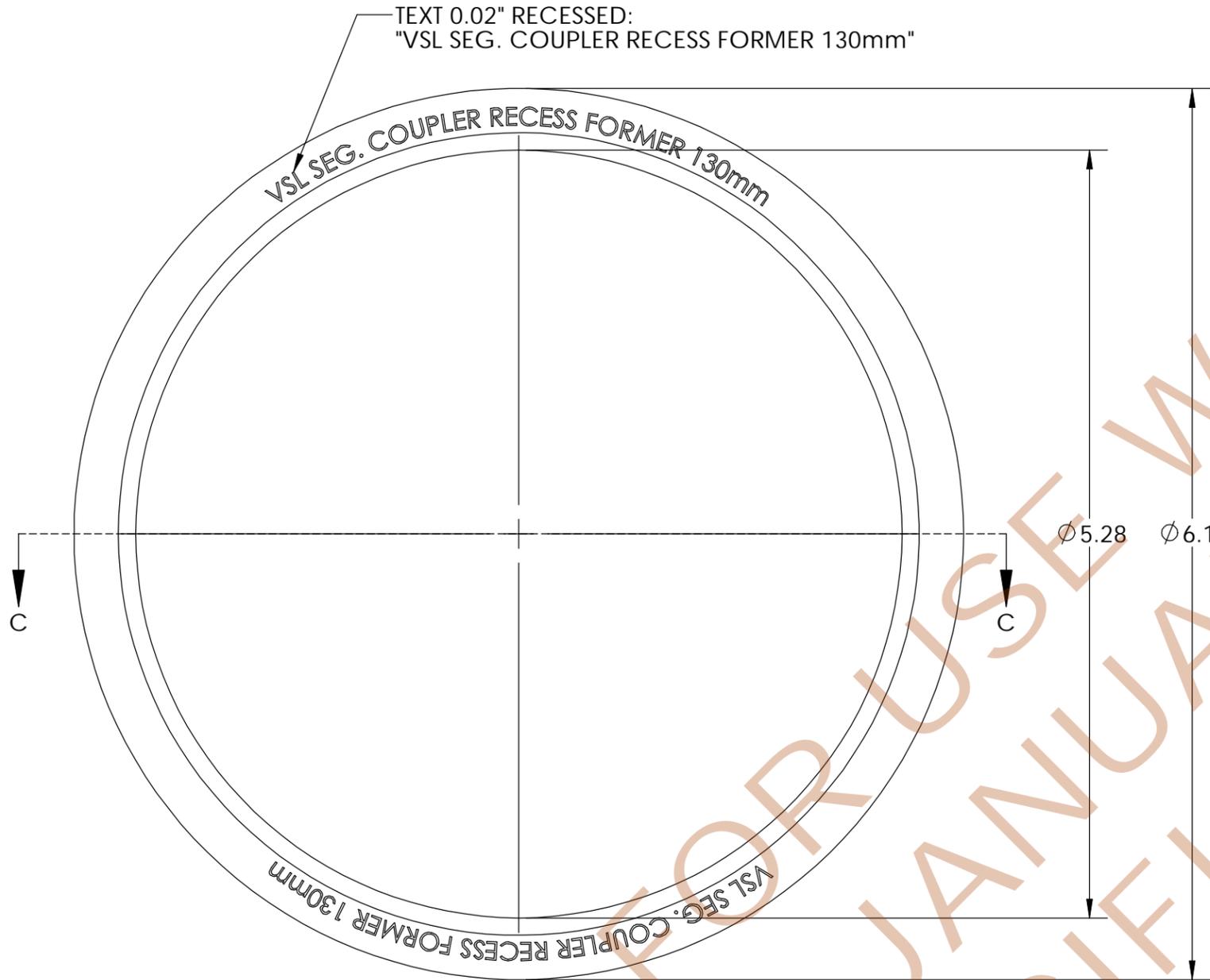
Santoprene, Black in color
(per VSL MS 8.1.091209.3)

TOLERANCES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES

FRACTIONAL		± 1/64
DECIMAL	.X	± .030
DECIMAL	.XX	± .010
DECIMAL	.XXX	± .005
ANGULAR		± 0°30'

SURFACE QUALITY



SECTION C-C

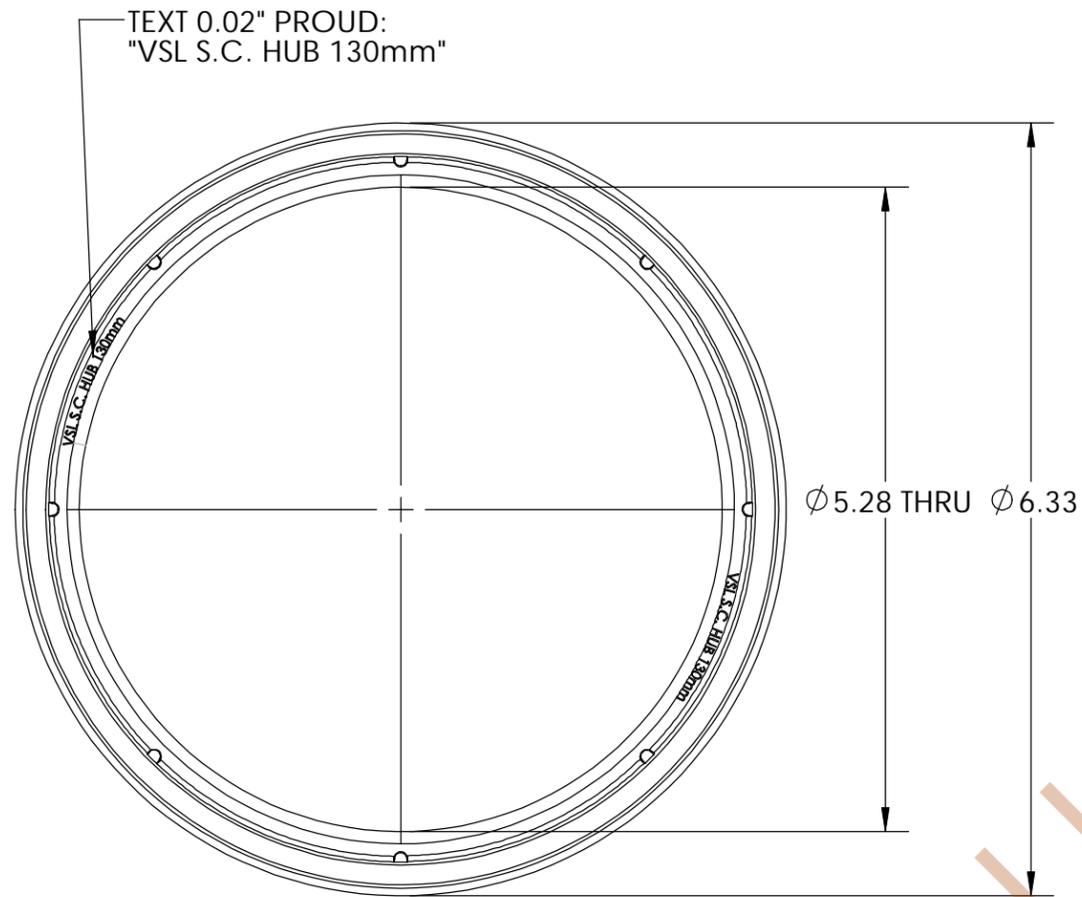


PRELIMINARY FOR PRODUCTION ONLY JANUARY 2016

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			1	1/21/2010	PRELIMINARY	BY	GY
VSL 130mm SEGMENTAL DUCT COUPLER SYSTEM			NO.	DATE	DESCRIPTION		
RECESS FORMER							
VSL P/N 02SC13007							
SCALE: DO NOT SCALE							
DRW NO: C659							
SHEET: 1 of 1							



MATERIAL

PP, White in color
(per VSL MS 8.1.091209.1)

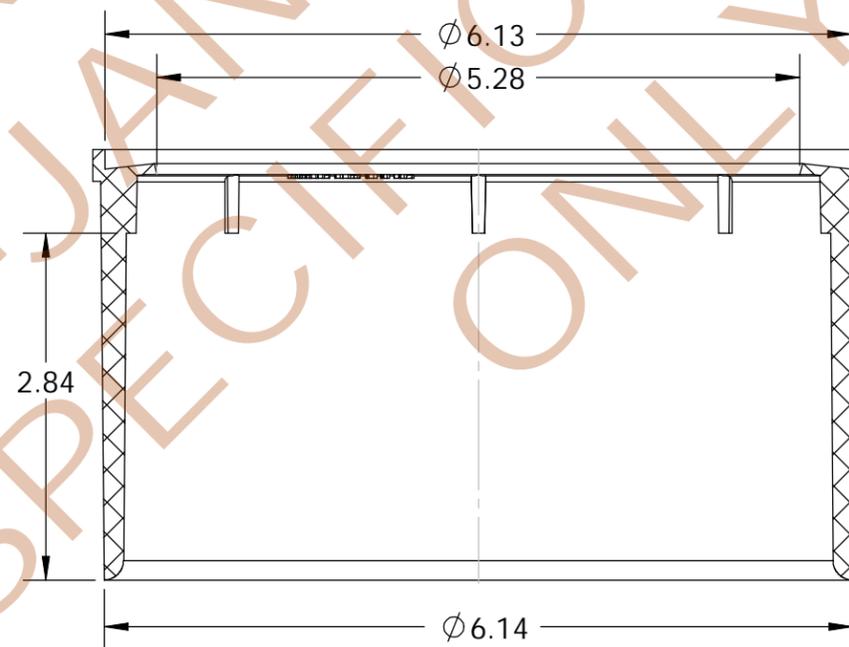
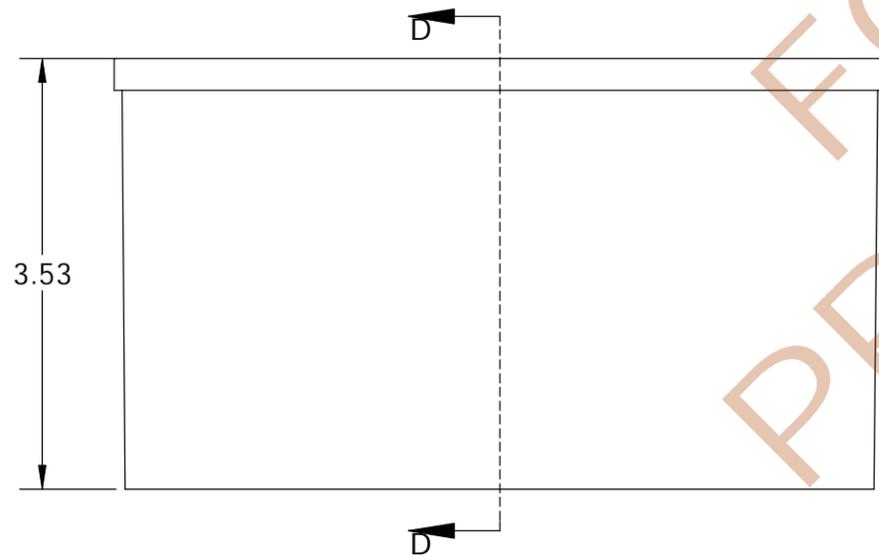
TOLERANCES

UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES

FRACTIONAL _____ ± 1/64
DECIMAL _____ .X _____ ± .030
DECIMAL _____ .XX _____ ± .010
DECIMAL _____ .XXX _____ ± .005
ANGULAR _____ ± 0°30'

SURFACE QUALITY _____ ✓

PATENT PENDING



SECTION D-D

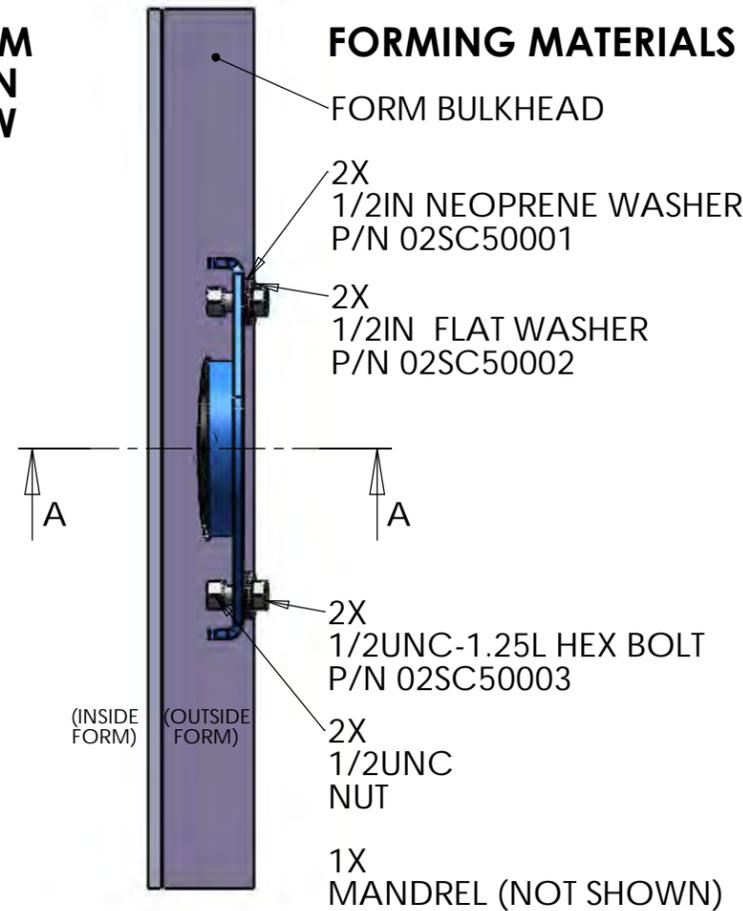
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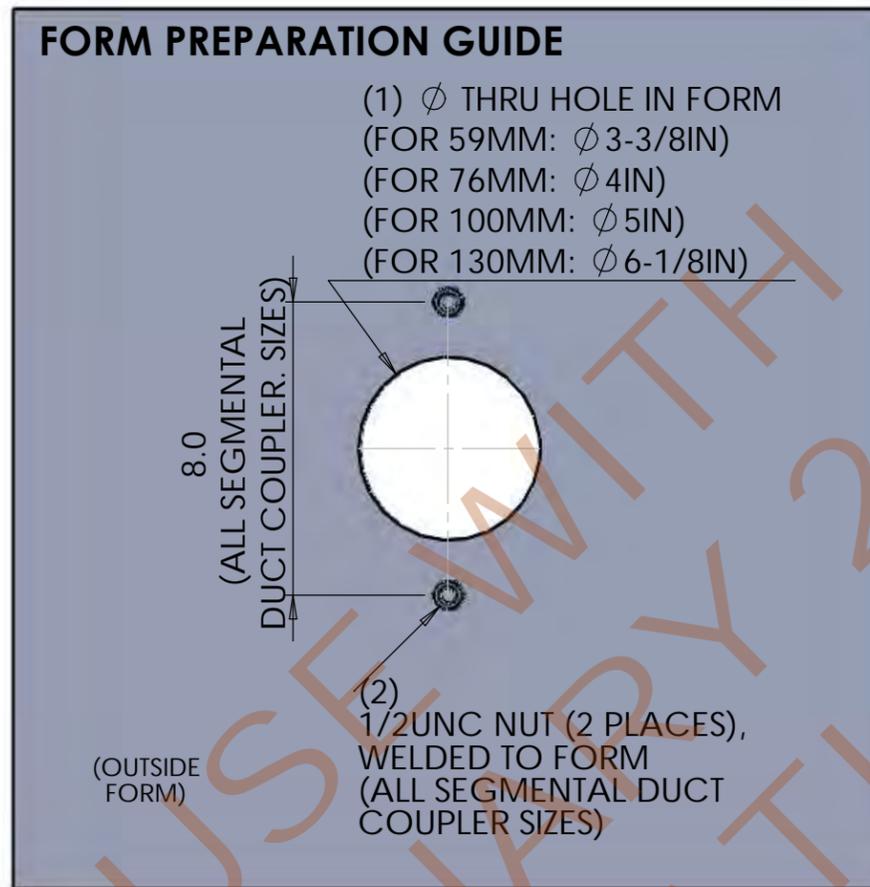
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		MM	GY	MM	GY	ISSUED FOR	CHK
							BY
		FOR PRODUCTION		PRELIMINARY		DESCRIPTION	
		3/26/2010	1/21/2010	DATE		NO.	
1		0		NO.		DATE	
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VSL 130mm SEGMENTAL DUCT COUPLER SYSTEM		HUB		VSL P/N 02SC13001			
SCALE:		DO NOT SCALE					
DRW NO:		C656					
SHEET:		1 of 1					

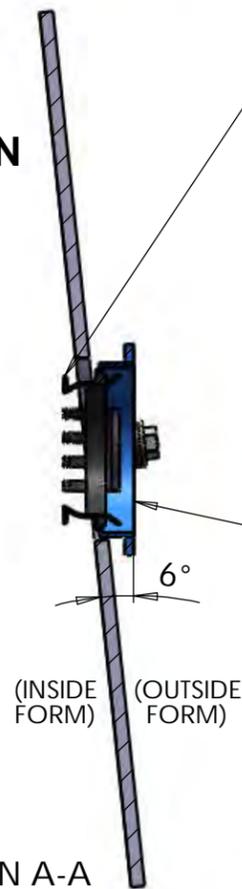
FORM PLAN VIEW



FORM PREPARATION GUIDE



FORM ELEVATION VIEW



FOR 59MM, P/N 02SC05904, DRW NO. C671
 FOR 76MM, P/N 02SC07604, DRW NO. C650
 FOR 100MM, P/N 02SC10004, DRW NO. C643
 FOR 130MM, P/N 02SC13004, DRW NO. C660

NOTES:

- The "open" side of the Spider Clip is manually "snapped" onto either the Hub (shown sheet 4) or the Form Tool (shown here)
- The "closed" side of the Spider Clip is "engaged" when the Mandrel is inserted through the Spider Clip from the "open" side (see sheet 2).
- The Spider Clip is used to:
 - Secure the Form Tool to the Hub in the case of a wet cast (see sheets 1-3), and
 - Secure the Hub of a match-cast segment to the Hub of a pre-cast segment (see sheets 4-6).
- Spider Clip should always be oriented as shown with the wide Mandrel Ramps verticle to each other.

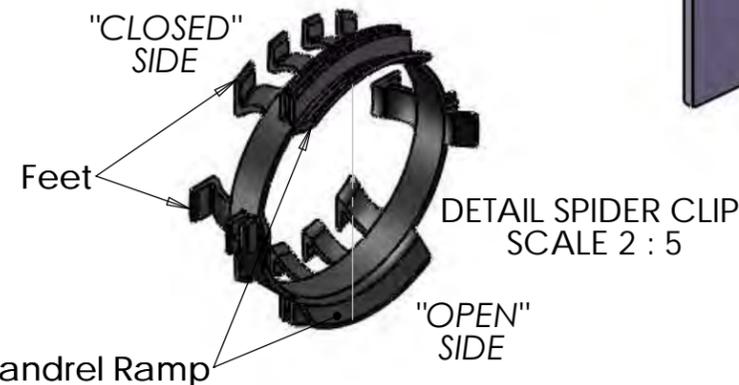
FORM TOOL

PIVOTS ON 1/2UNC BOLTS
 $\pm 6^\circ$ SKEW FROM BULKHEAD

FOR 59MM, P/N 02SC05905, DRW NO. C672
 FOR 76MM, P/N 02SC07605, DRW NO. C651
 FOR 100MM, P/N 02SC10005, DRW NO. C645
 FOR 130MM, P/N 02SC13005, DRW NO. C661

Notes:

- P/Ns SHOWN ARE FOR 3/8" THICK FORMWORK ONLY
- Alternate Form Tools May be used by Contractor only if they permit $\pm 6^\circ$ skew angle and if they position the Recess Former half-way inside the form being cast.



SECTION A-A

		GY	CHK
		MM	BY
		ISSUED FOR	
		FOR CONSTRUCTION	DESCRIPTION
		DATE	
		NO.	
		Phone: (817) 545-4807 Fax: (817) 545-4827	Dallas, TX / Washington, DC / Denver, CO / Pompano Beach, FL / Atlanta, GA
VSL SEGMENTAL DUCT COUPLER		INSTALLATION GUIDE	
SCALE: DO NOT SCALE		DRW NO: A243	
SHEET: 1 of 8			

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VSL SEGMENTAL DUCT COUPLER INSTALLATION GUIDE

WET CAST FORM

(1) Bolt the appropriate Form Tool to the Bulkhead with a Spider Clip installed in each Form Tool.

(2) Position a Recess Former between the Form Tool and the Hub.

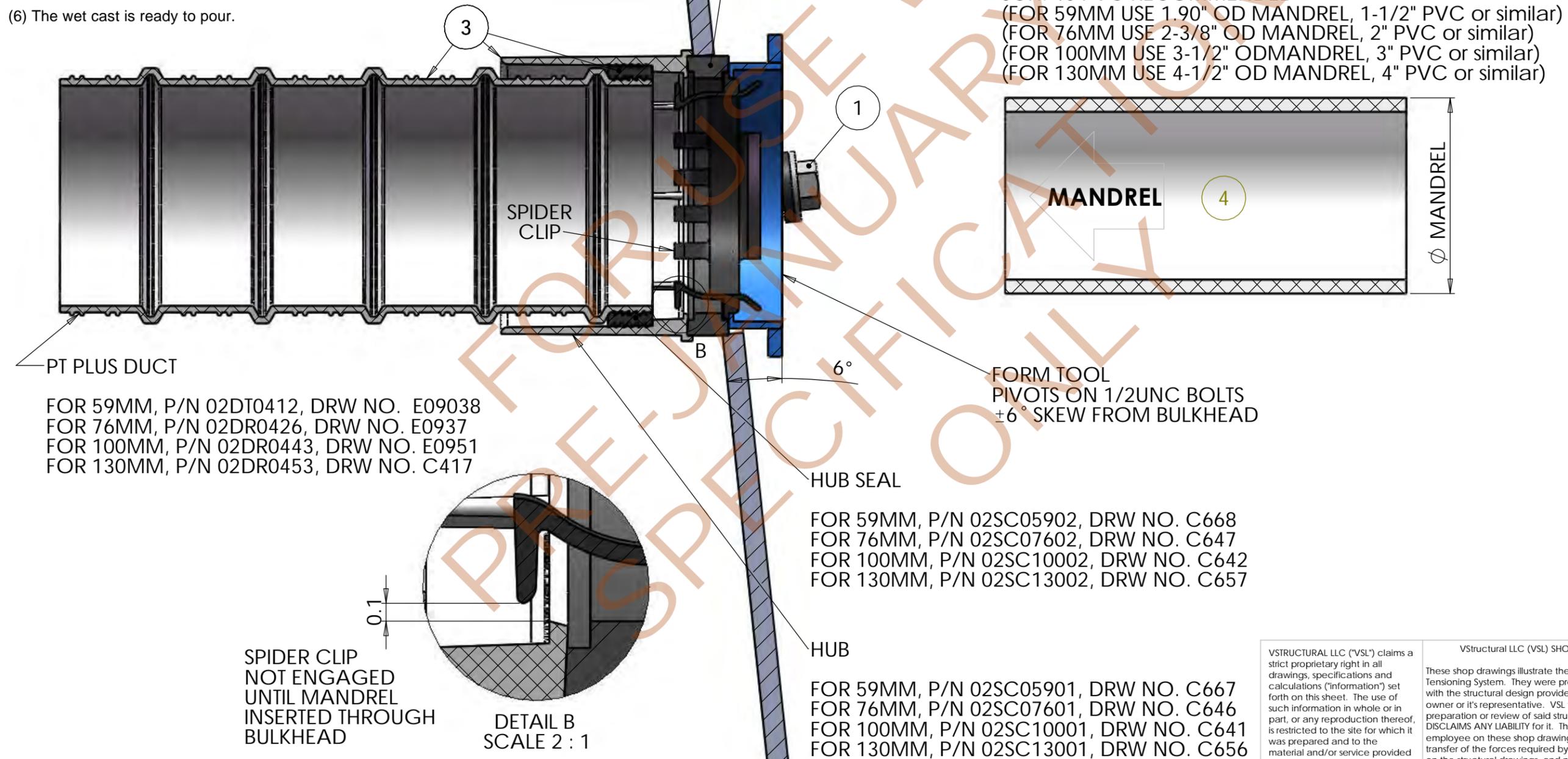
(3) (Optional) Ducts can be pre-assembled with Hub Seals and Hubs to speed the forming time. Any silicon-based or oil-based lubricant or dishwashing detergent solution acceptable to the contractor and the local DOT may be used to assist with the assembly of VSL's Segmental Duct Coupler components.

NOTE: Duct should always be cut between two major ribs. Cut length is the segment length, minus 2 inches, rounded down to the nearest cut position.

(4) Insert Mandrel through the form tool, engaging the Spider Clip and securing the Form Tool to the Hub, with a Recess Former sandwiched in-between.

(5) Note: The Spider Clip may also be installed on the Hub where the mandrel will be inserted from the opposite direction as shown. In such a case, the Spider Clip will be attached the Hub and will engage the Form Tool once the Mandrel is inserted.

(6) The wet cast is ready to pour.



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VStructural LLC (VSL) SHOP DRAWING

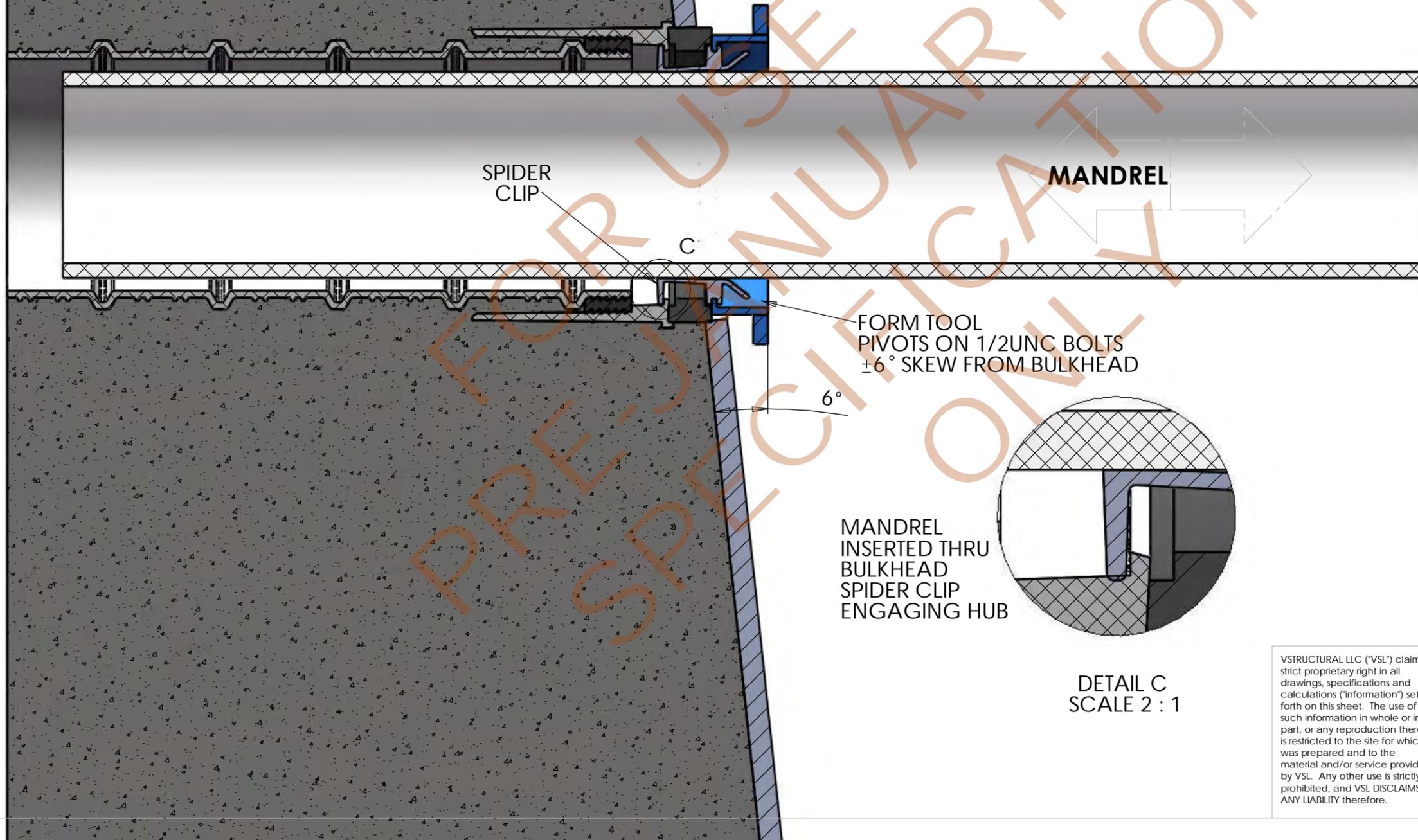
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VSL SEGMENTAL DUCT COUPLER	INSTALLATION GUIDE	SCALE: DO NOT SCALE	DRW NO: A243	SHEET: 2 of 8
		VStructural LLC Dallas, TX office 15600 Trinity Blvd, Ste 118 Fort Worth, TX 76155 Phone: (817) 545-4807 Fax: (817) 545-4827		
		NO.	DATE	ISSUED FOR
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				DESCRIPTION
				BY
				CHK
				GY
				MM

WET CAST FORM

VSL SEGMENTAL DUCT COUPLER INSTALLATION GUIDE (continued)

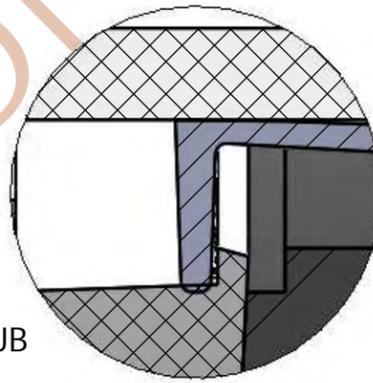
- (7) After the concrete is poured, disassemble the form in the following order:
- (a) Remove all Mandrels
 - (b) Strip the bulkhead formwork from the segment face
 - (c) Remove all Recess Formers. Visually inspect. If there are not significant cuts or tears, retain Recess Former, otherwise discard.
 - (d) There is no need to remove the Form Tools from the bulkhead. Visually inspect the Spider Clips. If there are no broken or missing 'feet,' retain Spider Clip, otherwise discard.



FORM TOOL
PIVOTS ON 1/2UNC BOLTS
±6° SKEW FROM BULKHEAD

6°

MANDREL
INSERTED THRU
BULKHEAD
SPIDER CLIP
ENGAGING HUB



DETAIL C
SCALE 2 : 1

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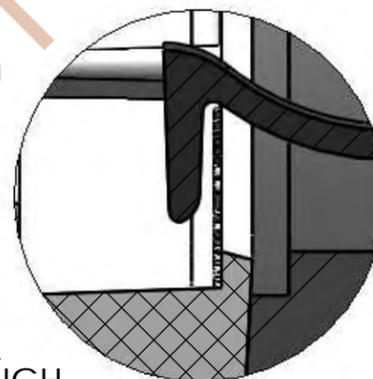
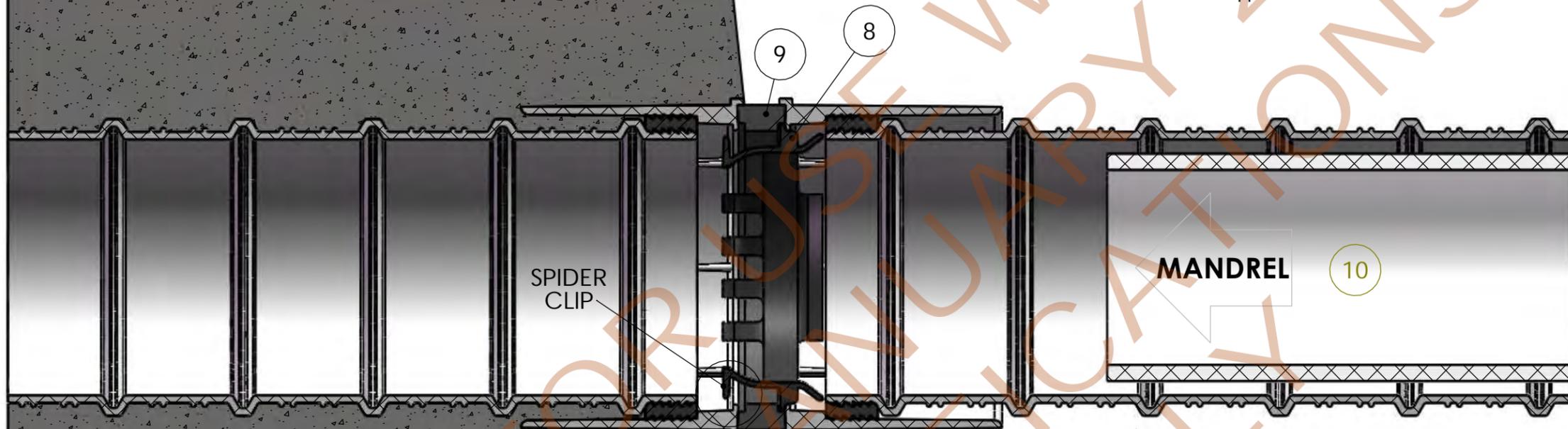
VSL SEGMENTAL DUCT COUPLER	INSTALLATION GUIDE	VStructural LLC Dallas, TX office	15600 Trinity Blvd, Ste 118 Fort Worth, TX 76155	Phone: (817) 545-4807 Fax: (817) 545-4827	0	1/26/2010	FOR CONSTRUCTION	ISSUED FOR	BY	CHK	
		VSL		VStructural LLC (VSL) SHOP DRAWING		SCALE: DO NOT SCALE		DRW NO: A243		SHEET: 3 of 8	

PRE-CAST SEGMENT

MATCH-CAST FORM

**VSL SEGMENTAL DUCT COUPLER
INSTALLATION GUIDE (continued)**

- (8) Install the Spider Clip as shown.
- (9) Ensure a Recess Former is positioned between the Hubs.
- (10) Slide a Mandrel through the length of the duct, engaging the Spider Clip to secure the match-cast Hub to the pre-cast segment Hub.
- (11) Note: The Spider Clip may also be installed on the Hub of the Pre-cast Segment where the mandrel will be inserted from the opposite direction as shown.



SPIDER CLIP
NOT ENGAGED
UNTIL MANDREL
INSERTED THROUGH
BULKHEAD

DETAIL D
SCALE 2 : 1

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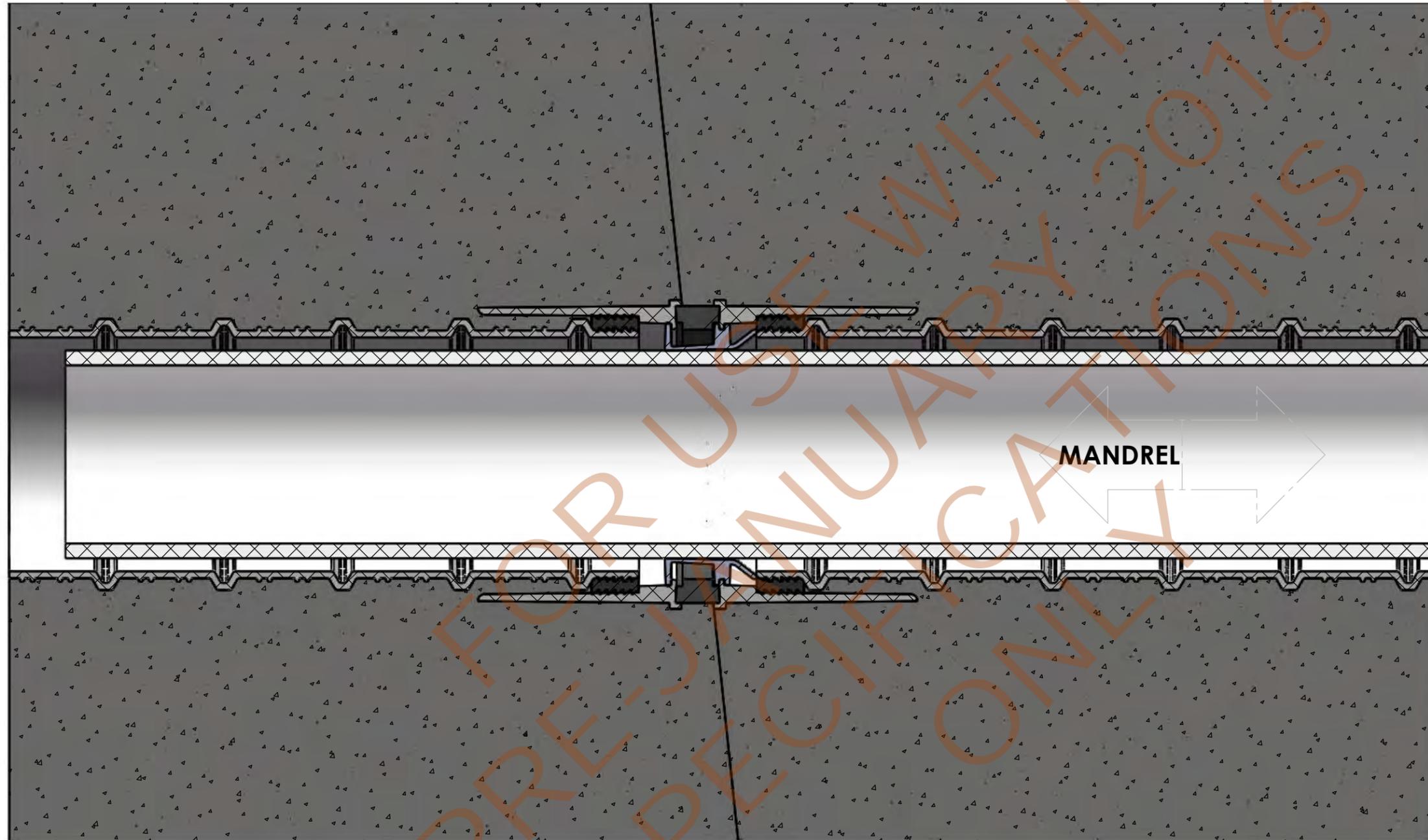
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INSTALLATION GUIDE		Dallas, TX / Washington, DC / Denver, CO / Pompano Beach, FL / Atlanta, GA								
SCALE: DO NOT SCALE		DRW NO: A243		SHEET: 4 of 8						

PRE-CAST SEGMENT

MATCH-CAST SEGMENT



**VSL SEGMENTAL DUCT COUPLER
INSTALLATION GUIDE (continued)**

(12) Once the Mandrel is inserted, the Spider Clip has locked the two Hubs together, and the match-cast segment can be poured.

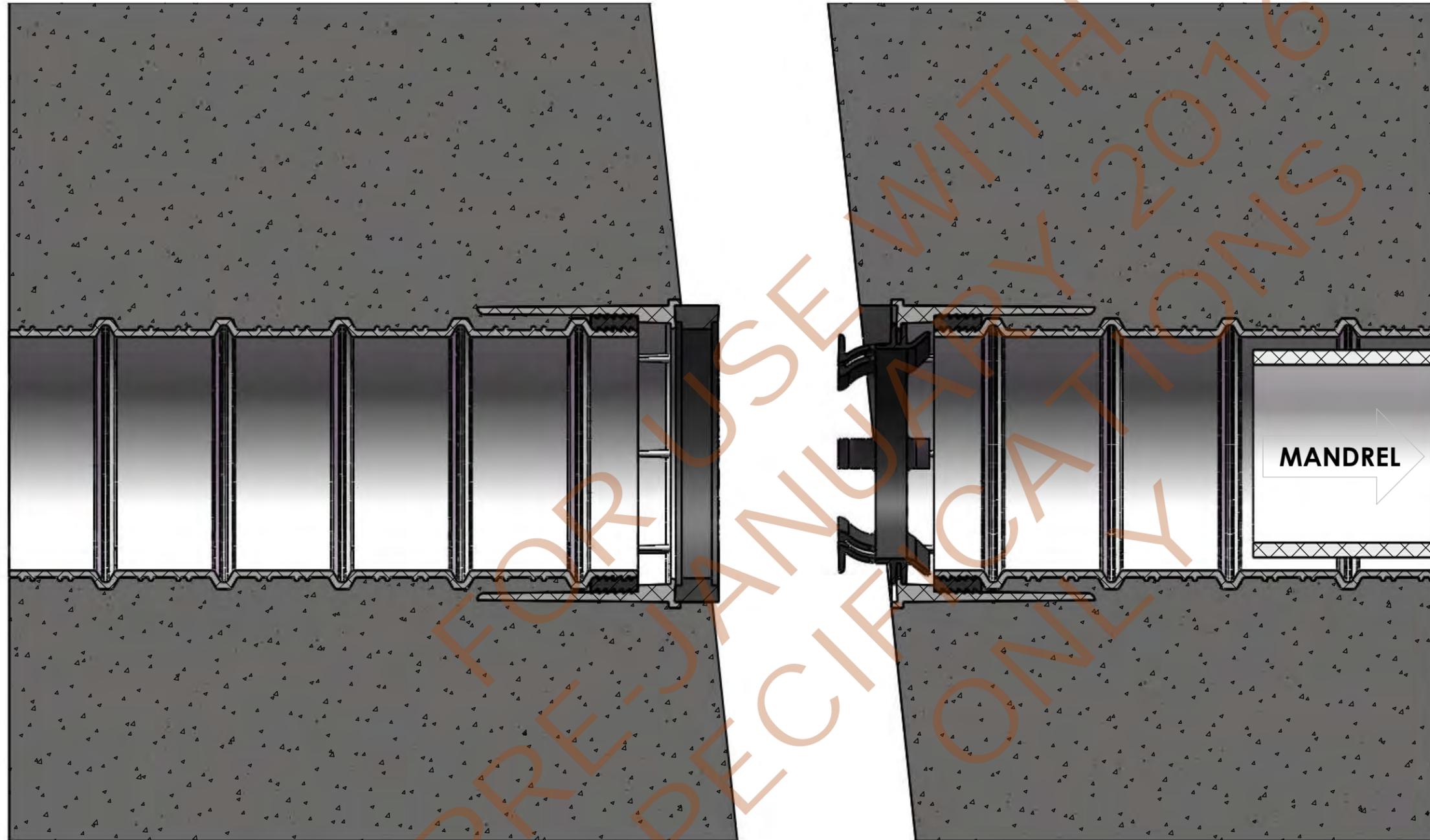
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			DESCRIPTION	NO.	DATE	BY
VSL SEGMENTAL DUCT COUPLER INSTALLATION GUIDE	SCALE: DO NOT SCALE DRW NO: A243 SHEET: 5 of 8					

PRE-CAST SEGMENT

MATCH-CAST SEGMENT



**VSL SEGMENTAL DUCT COUPLER
INSTALLATION GUIDE (continued)**

- (13) To separate the match-cast segment from the pre-cast segment, disassemble the form in the following steps:
 - (a) Remove all Mandrels
 - (b) Separate Segments
 - (c) Remove all Spider Clips. Visually inspect. If there are no broken or missing 'feet,' retain Spider Clip, otherwise discard.
 - (d) Note: There is no need to remove the Form Tools from the bulkhead. Visually inspect the Spider Clips as noted above.
- (14) Install (OPTIONAL) Protective Caps over duct openings
 (FOR 59MM, DRW NO. C673, P/N 02SC05906; FOR 76MM, DRW NO. C663, P/N 02SC07606; FOR 100MM, DRW NO. C662, P/N 02SC10006; FOR 130MM, DRW NO. 664, P/N 02SC13006).

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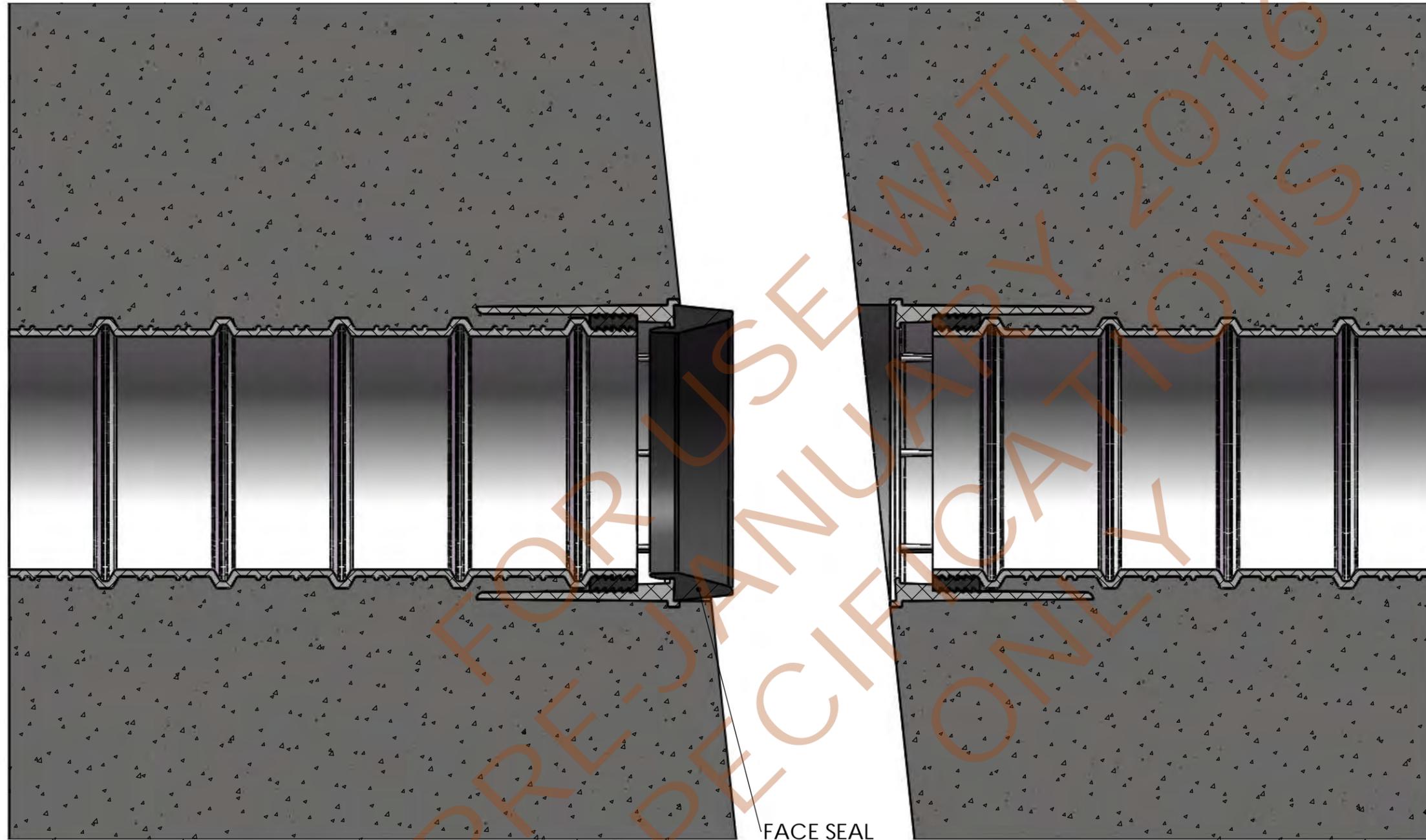
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	0	1/26/2010				
VSL SEGMENTAL DUCT COUPLER INSTALLATION GUIDE						
SCALE: DO NOT SCALE						
DRW NO: A243						
SHEET: 6 of 8						

PRE-CAST SEGMENT 1

PRE-CAST SEGMENT 2



**VSL SEGMENTAL DUCT COUPLER
INSTALLATION GUIDE (continued)**

Once the Segments have been transported and are ready for erection:

- (15) Remove protective caps from duct openings
- (16) Install Face Seals into one segment face only.
- (17) Apply segmental epoxy to segment faces as required.
(Do not apply epoxy to Face Seal. Steps: 17 and 18 may be reversed at the discretion of the contractor.)
- (18) Bring segments together and secure with PT bar.

FACE SEAL

FOR 59MM, P/N 02SC05903, DRW NO. C669
 FOR 76MM, P/N 02SC07603, DRW NO. C648
 FOR 100MM, P/N 02SC10003, DRW NO. C640
 FOR 130MM, P/N 02SC13003, DRW NO. C658

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	0	1/26/2010	FOR CONSTRUCTION		MM	GY
<p>VSL SEGMENTAL DUCT COUPLER</p> <p>INSTALLATION GUIDE</p>	SCALE:	DO NOT SCALE				
	DRW NO:	A243				
	SHEET:	7 of 8				



CanusaTube™ - PLA

Tubular sleeve for pipeline corrosion protection

For more than 35 years, Canusa-CPS has been a leading developer and manufacturer of specialty pipeline coatings for the sealing and corrosion protection of pipeline joints and other substrates. Canusa-CPS high performance products are manufactured to the highest quality standards and are available in a number of configurations to accommodate many specific project applications.

Product Description

The CanusaTube™ is a heat shrinkable tubular sleeve designed for corrosion protection of buried and exposed steel pipelines. CanusaTube™ consists of a crosslinked polyolefin backing, coated with a protective heat sensitive adhesive which effectively bonds to steel substrates and common pipeline coatings including polyethylene and fusion bonded epoxy.

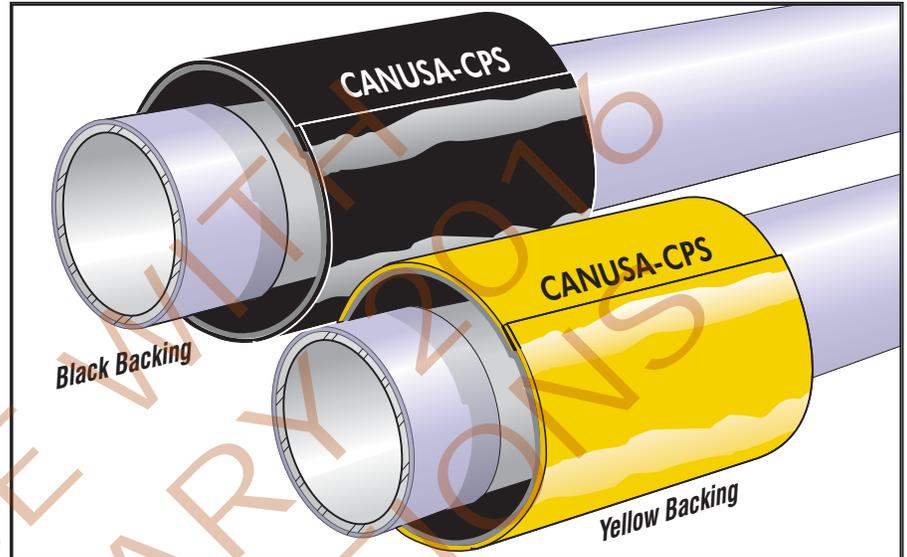
Features & Benefits

Rapid & Reliable Installation

Because CanusaTube™ consists of a unique tubular configuration that has been factory constructed, quick and reliable field installation is easy to accomplish. CanusaTube™ is available with a specially formulated adhesive to accommodate demanding operating temperatures and soil stress conditions. To further optimize installation, CanusaTube™ is available in yellow which includes a thermochromic indicator to visually confirm proper installation.

Long Term Corrosion Protection

CanusaTube™ provides excellent resistance to cathodic disbondment resulting in effective long term corrosion protection. The high performance crosslinked backing in combination with the specially formulated adhesive is engineered to have excellent resistance against temperature cycling, and chemical and environmental attack.



Saves Time & Money

With CanusaTube's™ unique construction, less time is required handling, positioning and installing separate closures. With the application of heat, this feature allows for fast, simple and complete installation of the sleeve. No additional costly primers are required. This minimizes installation time and labour costs while promoting high production rates. CanusaTube™ is also available in a high shrink ratio for high profile joint protection. Consult the High Shrink data sheet for additional information.

Applications

- Oil & Gas
- Girth-Weld Joints
- Water Pipelines
- Pre-Insulated Pipes
- Utility Poles

Configurations

- CanusaTube™
- 2-Layer
- Standard Shrink

Pipe Sizes

- 55 - 315 (2" - 12")

Temperature Range

- up to 55°C (131°F)

Approvals

- DIN 30672

Product Selection Guide Choose your sleeve based on your Pipe Diameter

Shrink Range	Nominal Pipe Diameter DN (inches)	Outside Pipe Diameter mm (inches)	Tubular Sleeve PLA XXX-YYY ZZ	Tubular Sleeve Diameter	
				As Supplied mm (in)	Fully Recovered mm (in)
	50 (2)	61 (2.4)	PLA 55-YYY ZZ	90 (3.5)	55 (2.3)
	65 (2.5)	76 (3)	PLA 63-YYY ZZ	90 (3.5)	63 (2.5)
	80 (3)	89 (3.5)	PLA 90-YYY ZZ	120 (4.8)	81 (3.3)
	90 (3.5)	102 (4)	PLA 100-YYY ZZ	130 (5)	90 (3.5)
	100 (4)	114 (4.5)	PLA 115-YYY ZZ	145 (5.5)	98 (3.8)
	125 (5)	141 (5.5)	PLA 125-YYY ZZ	160 (6.3)	110 (4.3)
	150 (6)	168 (6.6)	PLA 170-YYY ZZ	205 (8)	140 (5.5)
	200 (8)	219 (8.6)	PLA 230-YYY ZZ	260 (10)	180 (7)
	250 (10)	273 (10.7)	PLA 280-YYY ZZ	315 (12.3)	211 (8.3)
	300 (12)	324 (12.8)	PLA 315-YYY ZZ	360 (14)	245 (9.5)

For pipe diameters > DN300 (12"), consult your Canusa representative.

Operating Characteristics

Pipeline Operating Temperature	Celsius	Fahrenheit	Hot Melt PLA
		70°	158°
	60°	140°	
	50°	120°	
	40°	104°	
	30°	85°	
Minimum Installation Temp.	60 °C (°F)		60 (140)
Resistance to Circumferential Forces			very good
Resistance to Soil Stress			very good
Resistance to Axial Pipe Movement			very good
Main Line Coating Compatibility			PU, PE, FBE, PP

Typical Product Properties

Adhesive	Test Standard	Unit	PLA
Softening Point	ASTM E28	°C (°F)	72 (162)
Lap Shear	DIN 30 672	N/cm ² (psi)	60 (87)
Specific Gravity	ASTM D792		0.93
Tensile Strength	ASTM D638	MPa (psi)	20 (2900)
Elongation	ASTM D638	%	600
Hardness	ASTM D2240	Shore D	46
Abrasion Resistance	ASTM D1044	mg	45
Volume Resistivity	ASTM D257	ohm-cm	10 ¹⁷
Dielectric Voltage Brkdown.	ASTM D149	kV/mm	20
Impact	DIN 30 672	class B	pass
Indentation	DIN 30 672	class B	pass
Peel	ASTM D1000	N/cm (pli)	50 (29)
Peel	DIN 30 672	N/cm (pli)	35 (20)
Cathodic Disbondment	ASTM G8	mm rad	13
Water Absorption	ASTM D570	%	0.05
Low Temp. Flexibility	ASTM D2671-C	°C (°F)	-32 (-26)
DIN Approval	DIN 30 672	class	B50
Fully Recovered Thickness		mm (mils)	2.3 (92)

How To Order:

Dimensions & Ordering Info	PLA 115-450 YE	Standard Ordering Options	
		Colour	Sleeve Width
		YE - Yellow, BK - Black	300mm, 450mm, 600mm, 900mm (12", 18", 24", 36")
			55mm - 315mm (2" - 12")
			A - 0.75 mm (30 mils)
			L - 0.80 mm (31 mils)
			P - Tubular

Min. Sleeve Width = Bare Steel Dimension + 50 mm (2") min. on each side of the pipe joint.

The above represent standard ordering options. Consult your Canusa representative for any unique project requirements.



www.canusacps.com

Canada

CANUSA-CPS
a division of SHAWCOR LTD.
25 Bethridge Road
Toronto, Ontario
M9W 1M7,
Canada
Tel: +1 (416) 743-7111
Fax: +1 (416) 743-5927

U.S.A./Latin America

CANUSA-CPS
a division of SHAWCOR INC.
2408 Timberloch Place
Building C-8
The Woodlands, Texas
77380, U.S.A.
Tel: +1 (281) 367-8866
Fax: +1 (281) 367-4304

Europe/Middle East

CANUSA-CPS
a division of Canusa Systems Ltd.
Unit 3, Sterling Park
Gatwick Road
Crawley, West Sussex
England RH10 9QT
Tel: +44 (1293) 541254
Fax: +44 (1293) 541777

Asia/Pacific

CANUSA-CPS
a division of SHAWCOR LTD.
#05-31, Blk 52, Frontier
Ubi Avenue 3
Singapore
408867
Tel: +65-6749-8918
Fax: +65-6749-8919