

OVERALL ASSEMBLY

FOR PRELIMINARY USE ONLY 2016

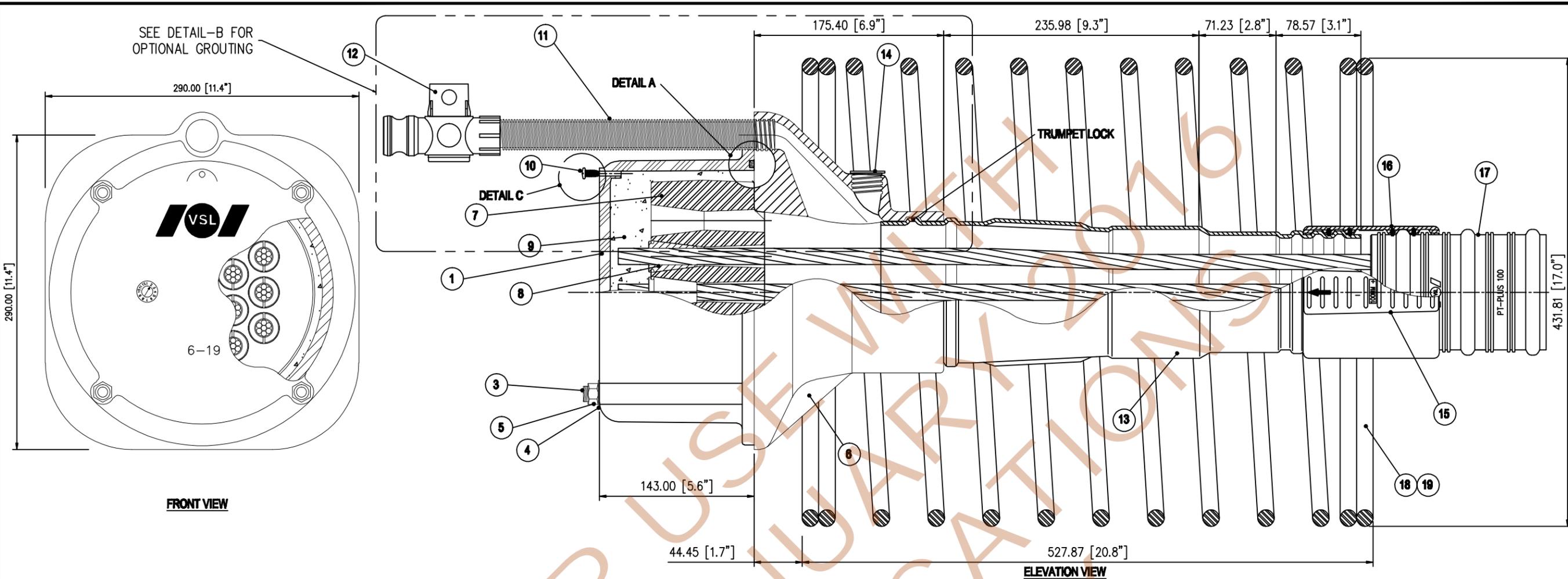
REV.	DATE	REVISION	BY	CHK
5	6/7/10	APPROVED FOR CONSTRUCTION	SAN	MM
4	5/10/10	APPROVED FOR CONSTRUCTION	CY	MM
3	5/8/06	APPROVED FOR CONSTRUCTION	GDH	ZX
2	2/25/05	CHANGE AT SHEAR TRANSFER DEVICE	GDH	ZX


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DWG. TITLE: **ECI 6-19 EXTERNAL TENDON W/ BONDED ANCHORAGE**
 PROJECT: **OVERALL ASSEMBLY**
 VSL
 SYSTEMS DRAWING

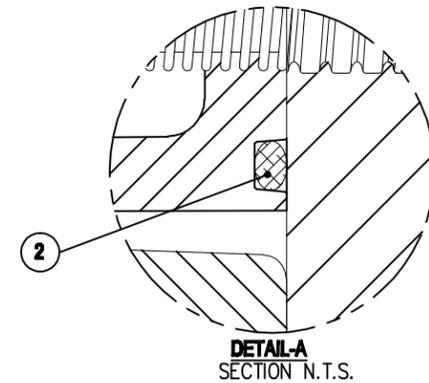
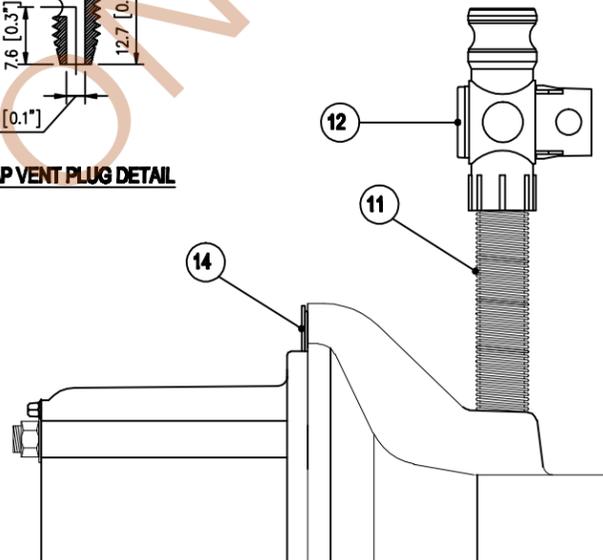
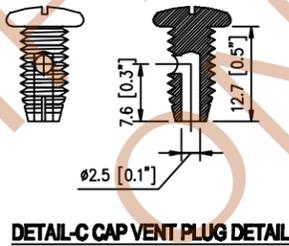
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SCALE: NONE
 VSL JOB NO:
 VSL DWG. NO. **A170**



ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING REFERENCE	INVENTORY NUMBER
19*	1	SPIRAL, #5, DIA. 15", 2" PITCH, 10 1/2 TURNS	A615		02BP0094
18*	1	SPIRAL, #5, DIA. 17", 2" PITCH, 11 1/2 TURNS	A615		02BP0093
17	1	DUCT, WHT PP, 100 mm PT-PLUS	ASTM D4101	E0951-3	02DT0443
16	2	COUPLER HALF, 100 mm PT-PLUS	PP	E0940-3	02DT0044
15	2	COUPLER CLAMP, 100 mm PT-PLUS	PP		02DT0046
14	1	BEARING PLATE GROUT PLUG, 23 mm	HDPE	C583	02DT0341
13	1	ECI 6-19 TRUMPET	P.P.	C579	02BP4322
12	1	GROUT VALVE, 23 mm	P.S.	C500 & C501	02DT0311
11		GROUT HOSE, 23 mm (21 mm)	P.E.		02DT0310
10	1	CAP VENT PLUG - SS SCREW	STAINLESS STEEL		02WX7001
9		GROUT	JOB SPECIFIC		
8	19	1.6G WEDGE	11-L-17	C218.1	02WG0008
7	1	ECI 6-19 ANCHOR HEAD	A536 GR80-55-06	C558	02AH0038
6	1	ECI 6-19 GALV BEARING PLATE	A536 GR80-55-06	C554	02BP0038
5	4	1/2"-13 NUT	(316L) STAINLESS	-	INCLUDED W/ 02WX5033
4	4	Ø1/2" FLAT WASHER	(316L) STAINLESS	-	INCLUDED W/ 02WX5033
3	4	1/2-13 NC x 7"	(316L) STAINLESS	-	02WX5033
2	1	O-RING (.210 CS X 8.975" ID #373)	BUNA-N 70 D.	-	02WX6020
1B	1	6-19 GROUT CAP W/ VENT SCREW PORT	ABS LUSTRAN 633	C549	02WX6019
1A	1	6-19 GROUT CAP W/ 3/4"NPT GROUT PORTS	ABS LUSTRAN 633	C681	2GC61901

NOTE: 1. USE GROUT CAP ITEM 1A FOR BALANCED CANTILEVER CONSTRUCTION [GROUTING THROUGH DECK]
 2. * USE ITEM 18 FOR CONCRETE WITH $f_c' = 3500$ psi, ITEM 19 FOR CONCRETE WITH $f_c' = 5500$ psi
 ITEM 18 IS SHOWN ON ELEVATION



REV.	DATE	BY	CHK
2	11/18/10		
1	4/5/06		

ADDED ITEM 1A TO BOM AND ADDED NOTE
 APPROVED FOR CONSTRUCTION

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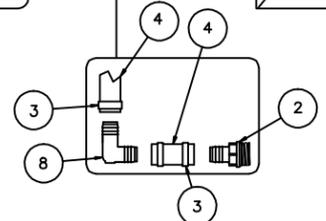
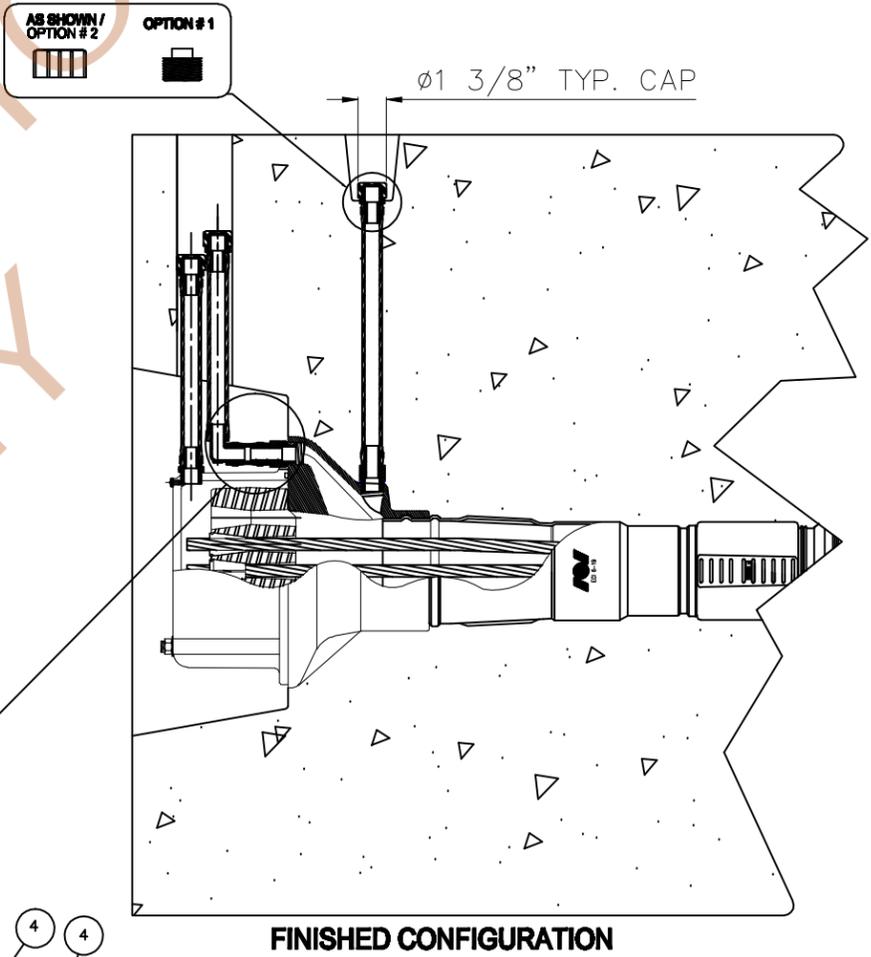
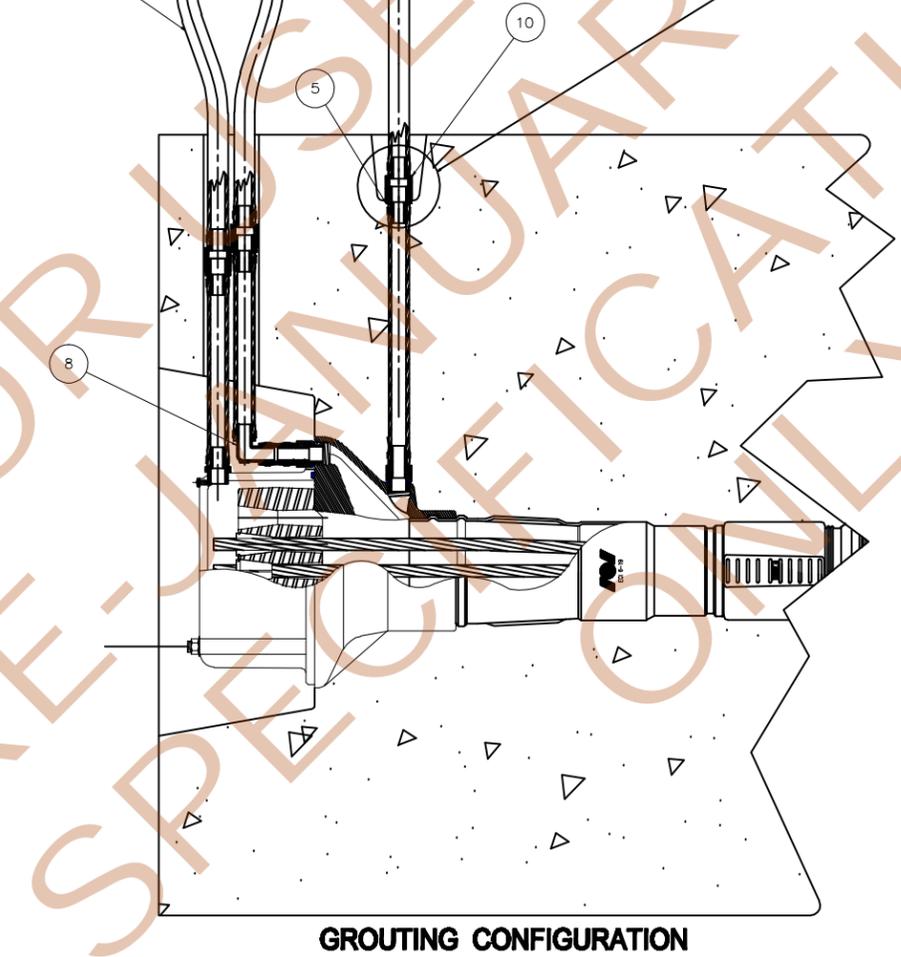
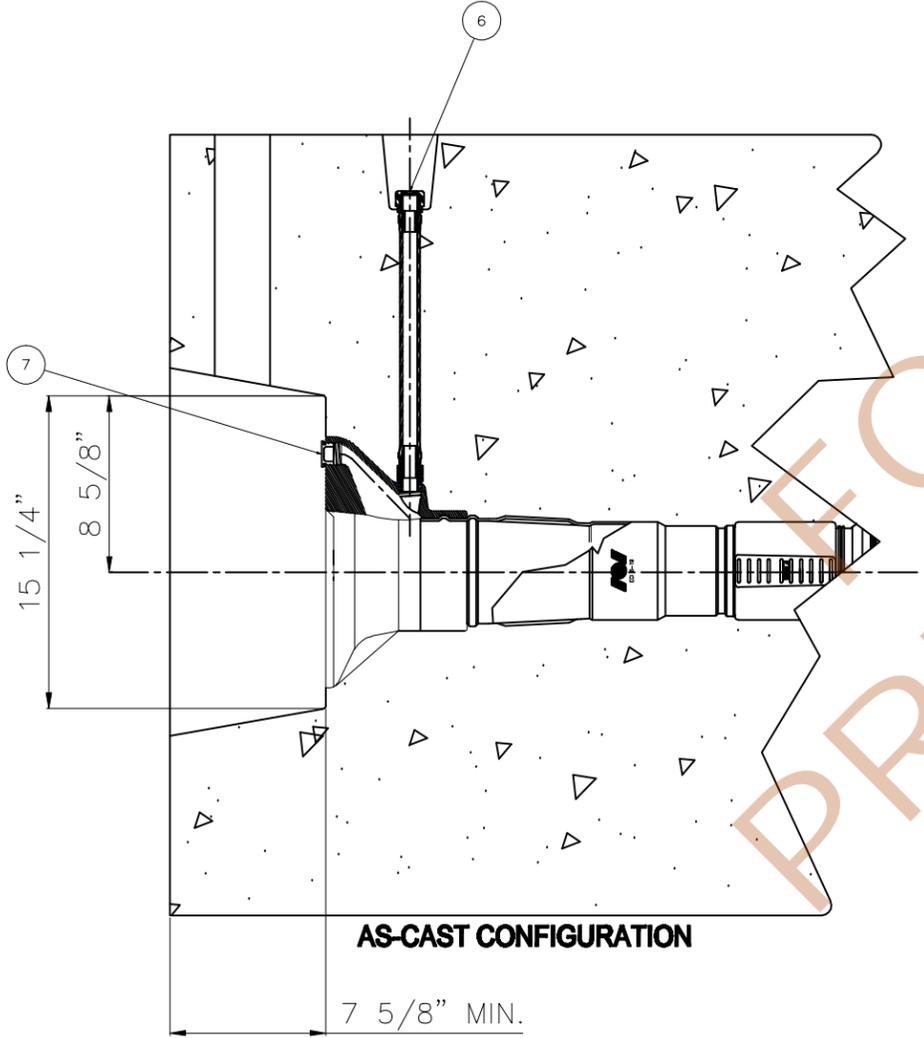
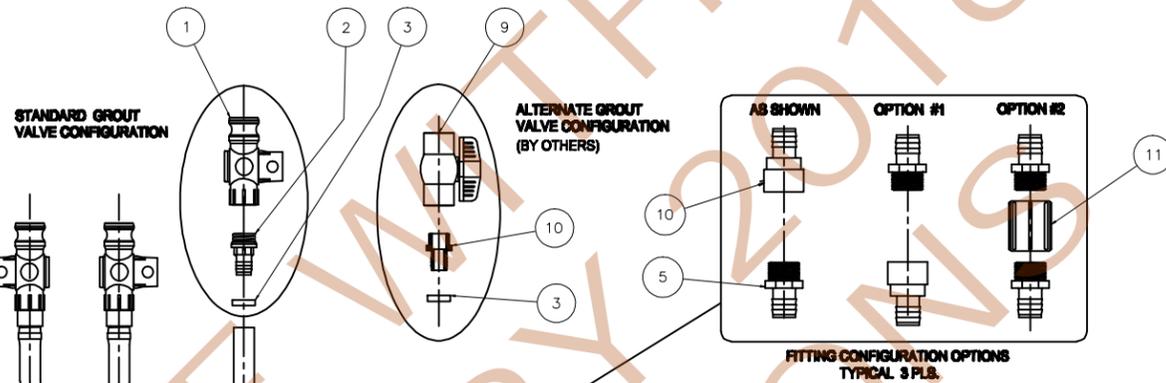
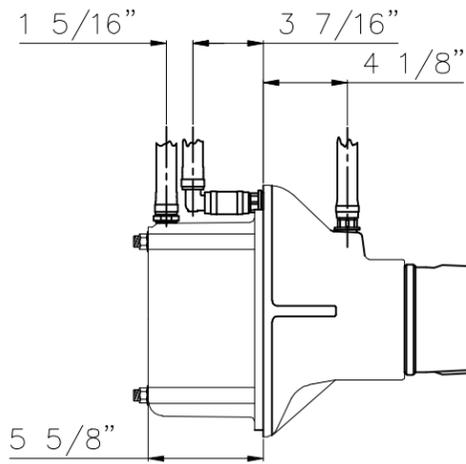
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ECI 6-19 INTERNAL TENDON W/ 100 MM PT-PLUS DUCT ASSEMBLY

VSL SYSTEMS DRAWING

SCALE: NONE

VSL JOB NO.
 VSL DWG. NO.
A153



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08/2016			

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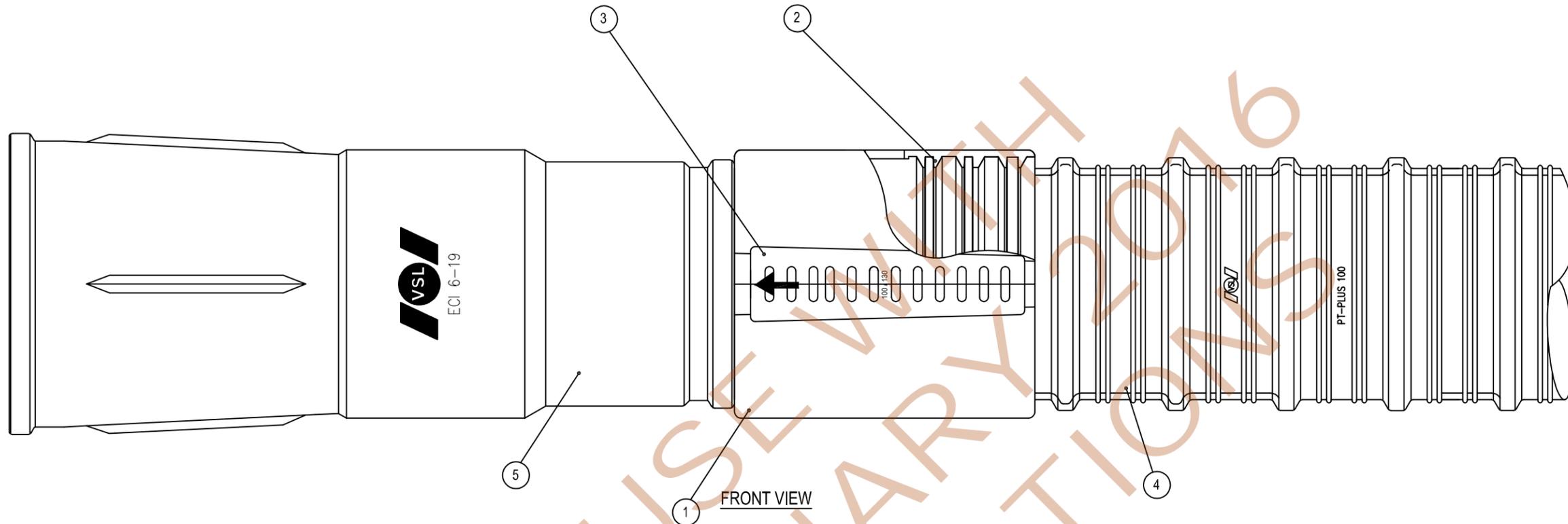
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ECI 6-19 GROUTING CONFIGURATION OPTIONS

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SYSTEMS DRAWING

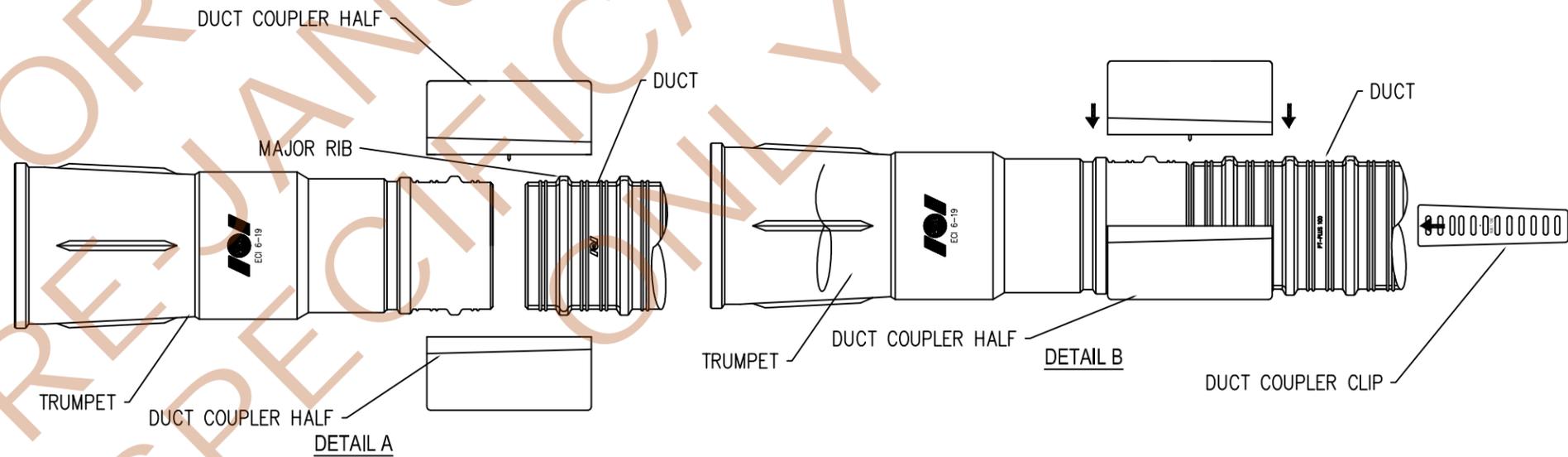
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DWG. TITLE	SCALE: NONE
PROJECT	VSL JOB NO:
	VSL DWG. NO. A279



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.



ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING NUMBER	INVENTORY NUMBER
5	1	ECI 6-19 TRUMPET	P.P.	C579	02BP4322
4		DUCT, WHT PP, 100 MM PT-PLUS	ASTM D4101	C622	02DT0443
3	2	COUPLER CLAMP, 100 MM PT-PLUS	ASTM D4101	C625	02DT0046
2	2	SEAL (INCLUDED IN COUPLER HALF)			INCLUDED W/ 02DT0044
*1	2	COUPLER HALF, 100 MM PT-PLUS	ASTM D4101	C623	02DT0044

* SEE SHEET C623 FOR COUPLER HALF, 100 MM PT-PLUS VENTED PART NUMBER 02DT0045

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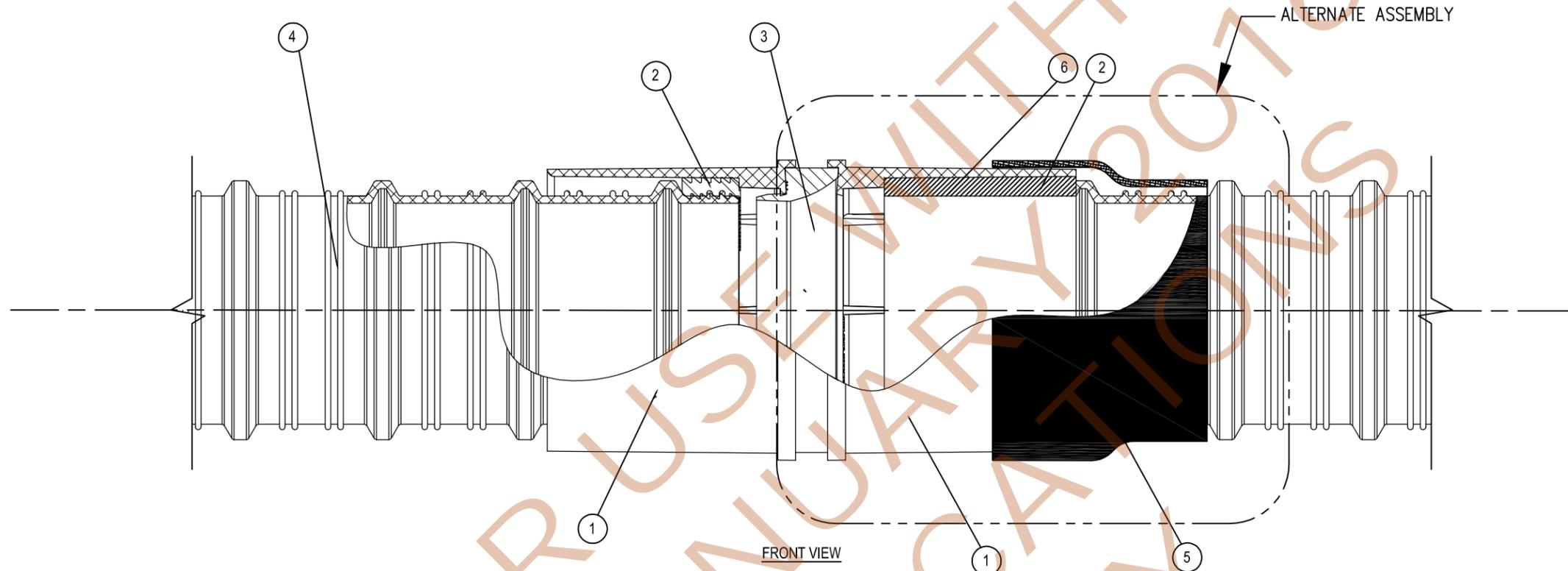
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**TYPICAL ECI 6-19 TRUMPET
TO 100MM PT PLUS DUCT CONNECTION**

VSL
SYSTEMS DRAWING

REV.	1	6/8/10	DATE
ISSUED FOR CONSTRUCTION			
REVISION			
BY	SAN MM		CHK

DWG. TITLE: PROJECT: SCALE: NTS
VSL JOB NO: VSL DWG. NO. A276



ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING NUMBER	INVENTORY NUMBER
6	1	INSERT	PE	-	-
5	1	HEAT SHRINK	POLYOLEFIN	-	CANUSA PLA-115-YE
4	--	DUCT, WHT PP, 100 MM PT-PLUS	PP	E 0951-3	02DT0443
3	1	100 MM SEG. COUP. FACE SEAL	SANTOPRENE	C640	02SC10003
2	1	100 MM SEG. COUP. HUB SEAL	SANTOPRENE	C642	02SC10002
1	2	100 MM SEG. COUP. HUB	PP	C641	02SC10001

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

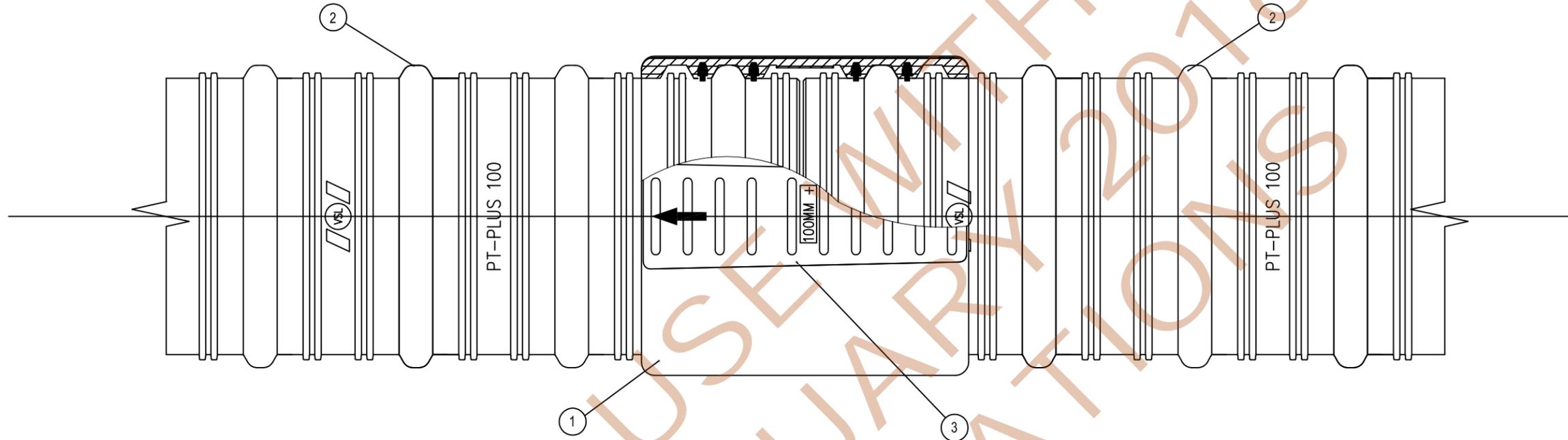
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1	2/23/10		

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DWG. TITLE: TYPICAL 100 mm PT-PLUS SEGMENTAL DUCT COUPLER CONNECTION
PROJECT: VSL SYSTEMS DRAWING

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SCALE: NONE
VSL JOB NO:
VSL DWG. NO. A238



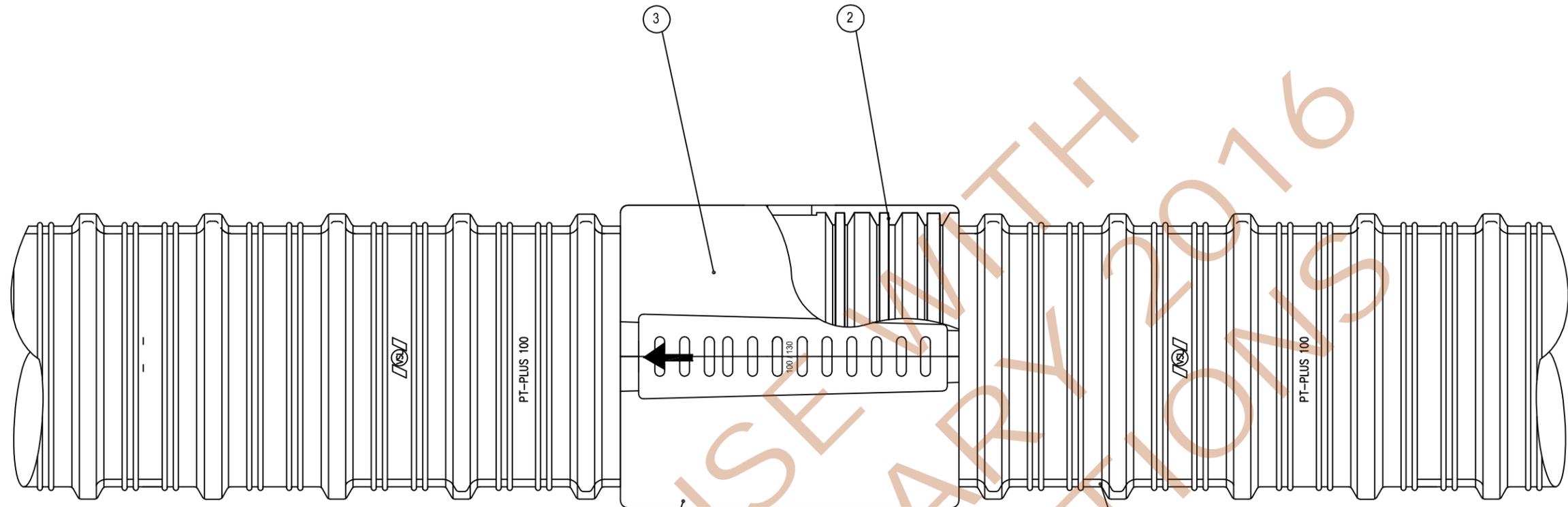
ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING REFERENCE	INVENTORY NUMBER
3	2	COUPLER CLAMP, 100/130 mm PT-PLUS	PP	C625	02DT0046
2	1	DUCT, WHT PP, 100 mm PT-PLUS	ASTM D4101	E 0951-3	02DT0443
1	1	COUPLER HALF, 100 mm PT-PLUS	HDPE	C623	02DT0044

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REV.	DATE	BY	CHK		
1	4/5/06			APPROVED FOR PRODUCTION	
2	6/06/10			APPROVED FOR PRODUCTION	
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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 DUCTS ARE SECURED IN COUPLER.
- 6) FINISH INSTALLATION OF CLIPS.

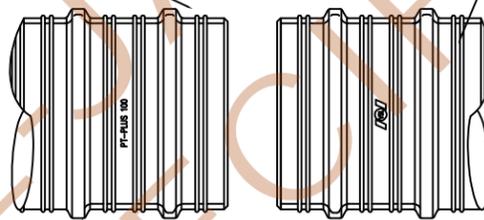
DUCT COUPLER HALF

MAJOR RIB

DUCT

DUCT

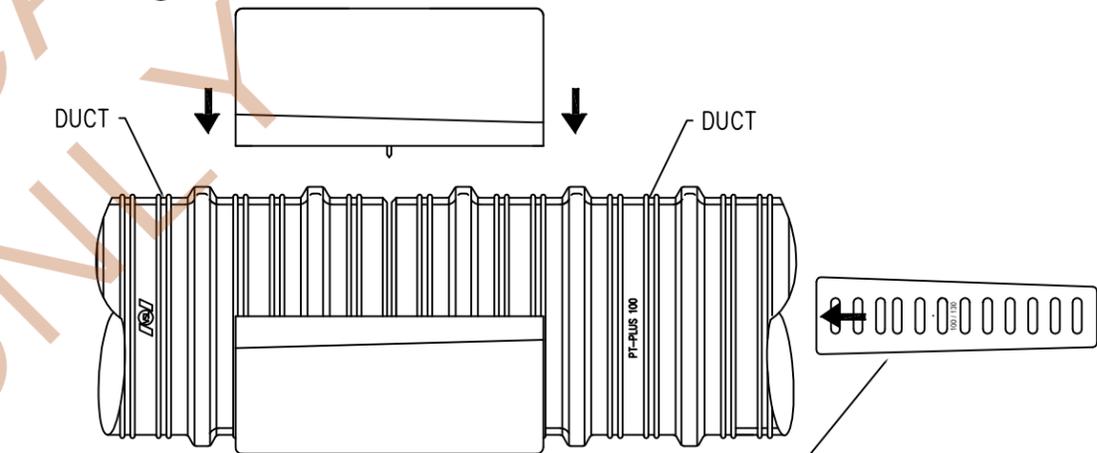
DUCT



MAJOR RIB

DUCT COUPLER HALF

DETAIL A



DUCT COUPLER HALF

DUCT COUPLER CLIP

DETAIL B

ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING NUMBER	INVENTORY NUMBER
4		DUCT, WHT PP, 100 MM PT-PLUS	ASTM D4101	C622	02DT0443
3	2	COUPLER CLAMP, 100 MM PT-PLUS	ASTM D4101	C625	02DT0046
2	2	SEAL (INCLUDED IN COUPLER HALF)			INCLUDED W/ 02DT0044
*1	2	COUPLER HALF, 100 MM PT-PLUS	ASTM D4101	C623	02DT0044

* SEE SHEET C623 FOR COUPLER HALF, 100 MM PT-PLUS VENTED

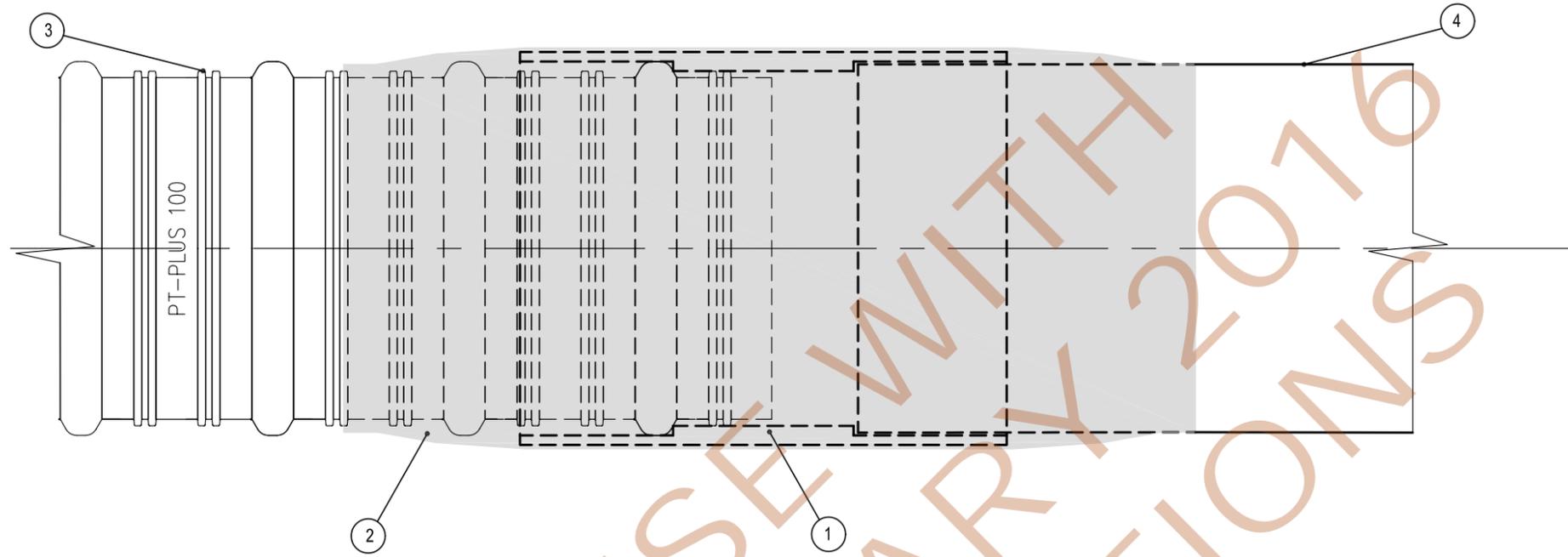
REV.	DATE	REVISION	BY	CHK
2	6/06/10	ISSUED FOR CONSTRUCTION	SAN MM	
1	5/27/10	ISSUED FOR CONSTRUCTION	SAN MM	

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DWG. TITLE: TYPICAL 100 MM PT-PLUS DUCT TO DUCT CONNECTION
PROJECT: VSL SYSTEMS DRAWING

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SCALE: NTS
VSL JOB NO:
VSL DWG. NO. A275



ITEM	QTY	DESCRIPTION	MATERIAL	DRAWING NUMBER	INVENTORY NUMBER
4		GALVANIZED 4" SCHEDULE 40 PIPE	ASTM A53		
3		DUCT, WHT PP, 100 MM PT-PLUS	ASTM D4101	E0951-3	02DT0443
2	1	HEAT SHRINK SLEEVE (12" LONG)			(CANUSA) PLA-115-YE
1	1	SLIP-ON COUPLER	HDPE	(GTI) C220415	(GTI) C220415

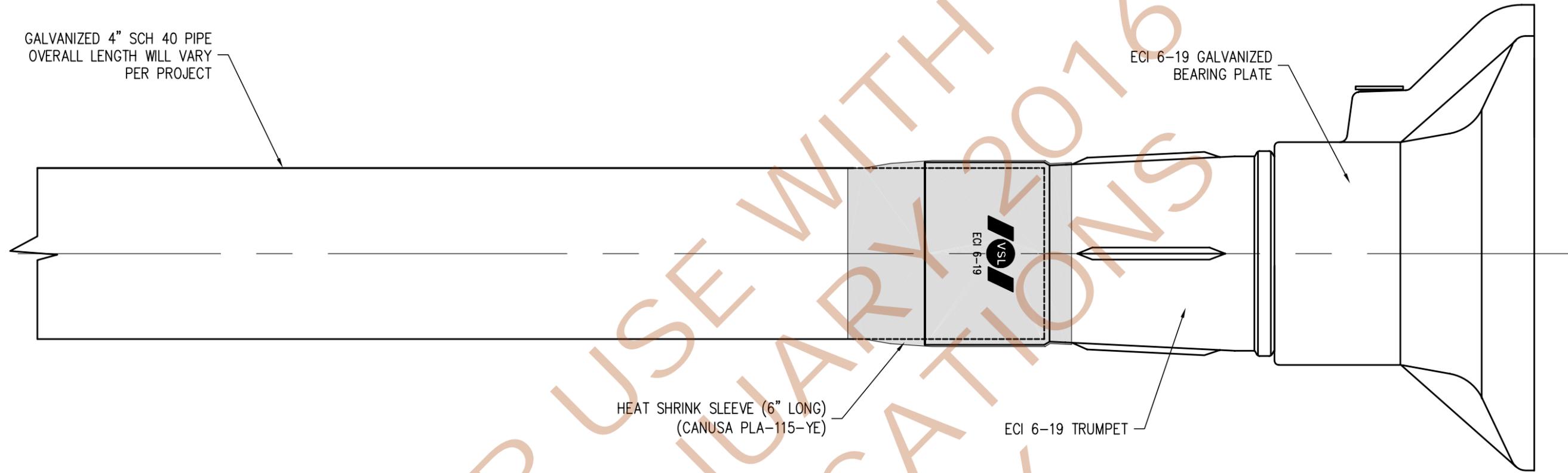
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<p>VSL 7455 NEW RIDGE RD. HANOVER, MD, 21076 WWW.VSL.NET</p>	<p>DWG. TITLE: TYPICAL ECI 6-19 100 MM PT-PLUS DUCT TO PIPE CONNECTION</p> <p>PROJECT: VSL SYSTEMS DRAWING</p>
<p>DATE: 4/5/06</p>	
<p>REV. 1</p>	
<p>APPROVED FOR CONSTRUCTION</p>	
<p>VEN ZX</p>	<p>BY</p>
<p>CHK</p>	
<p>A195</p>	

GALVANIZED 4" SCH 40 PIPE
OVERALL LENGTH WILL VARY
PER PROJECT

ECI 6-19 GALVANIZED
BEARING PLATE



STEEL PIPE ASSEMBLY

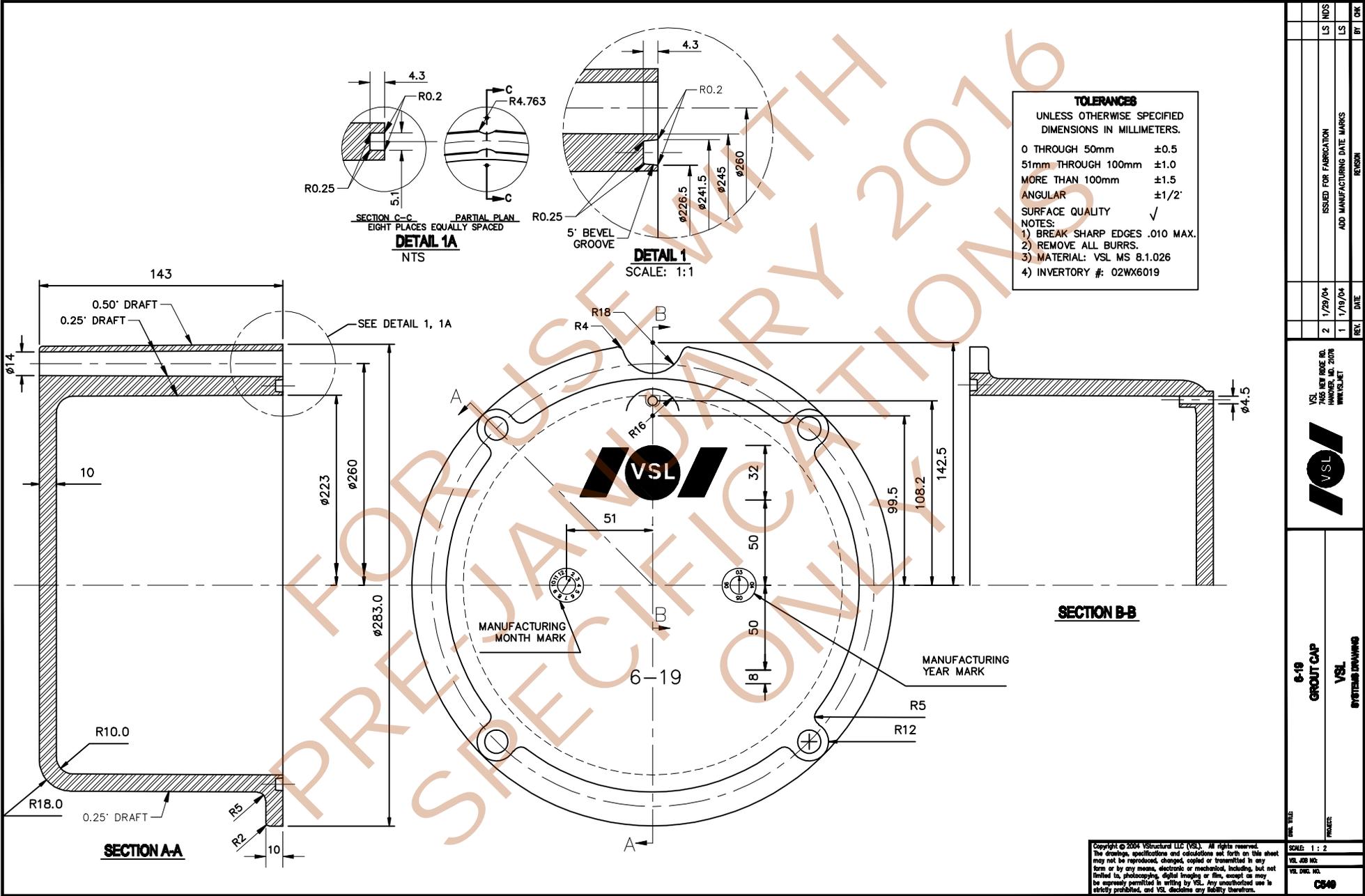
(IF APPLICABLE)
ALL DIMENSIONS IN mm U.N.O.

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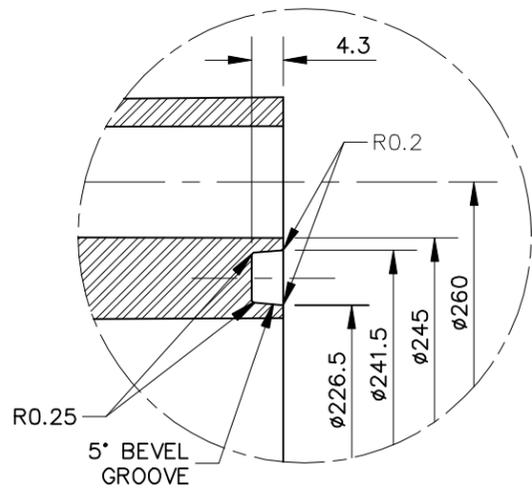
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VSL		1	4/5/06		GDH	ZX
ECI 6-19 INTERNAL TENDON WITH STEEL PIPE ASSEMBLY				REVISION		
VSL SYSTEMS DRAWING						

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DWG. TITLE: ECI 6-19 INTERNAL TENDON WITH STEEL PIPE ASSEMBLY
PROJECT: VSL SYSTEMS DRAWING
SCALE: NONE
VSL JOB NO:
VSL DWG. NO. A179



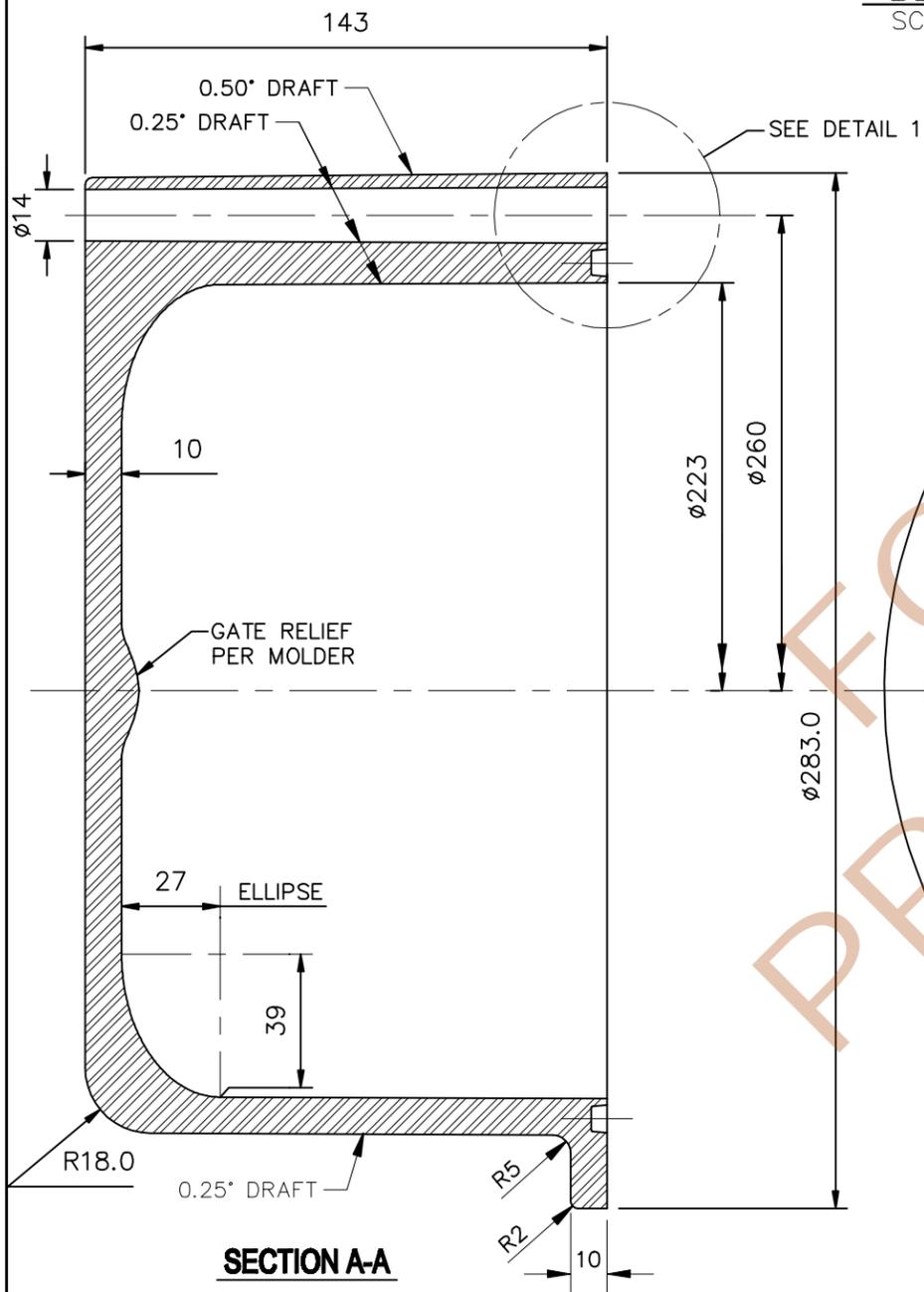
BY	OK
LS	MS
ISSUED FOR FABRICATION	ADD MANUFACTURING DATE MARKS
1/29/04	1/19/04
REV.	DATE
1	1/19/04
2	1/29/04
VSL HAS REVIEWED THIS DRAWING FOR CONFORMANCE WITH VSL STANDARDS	
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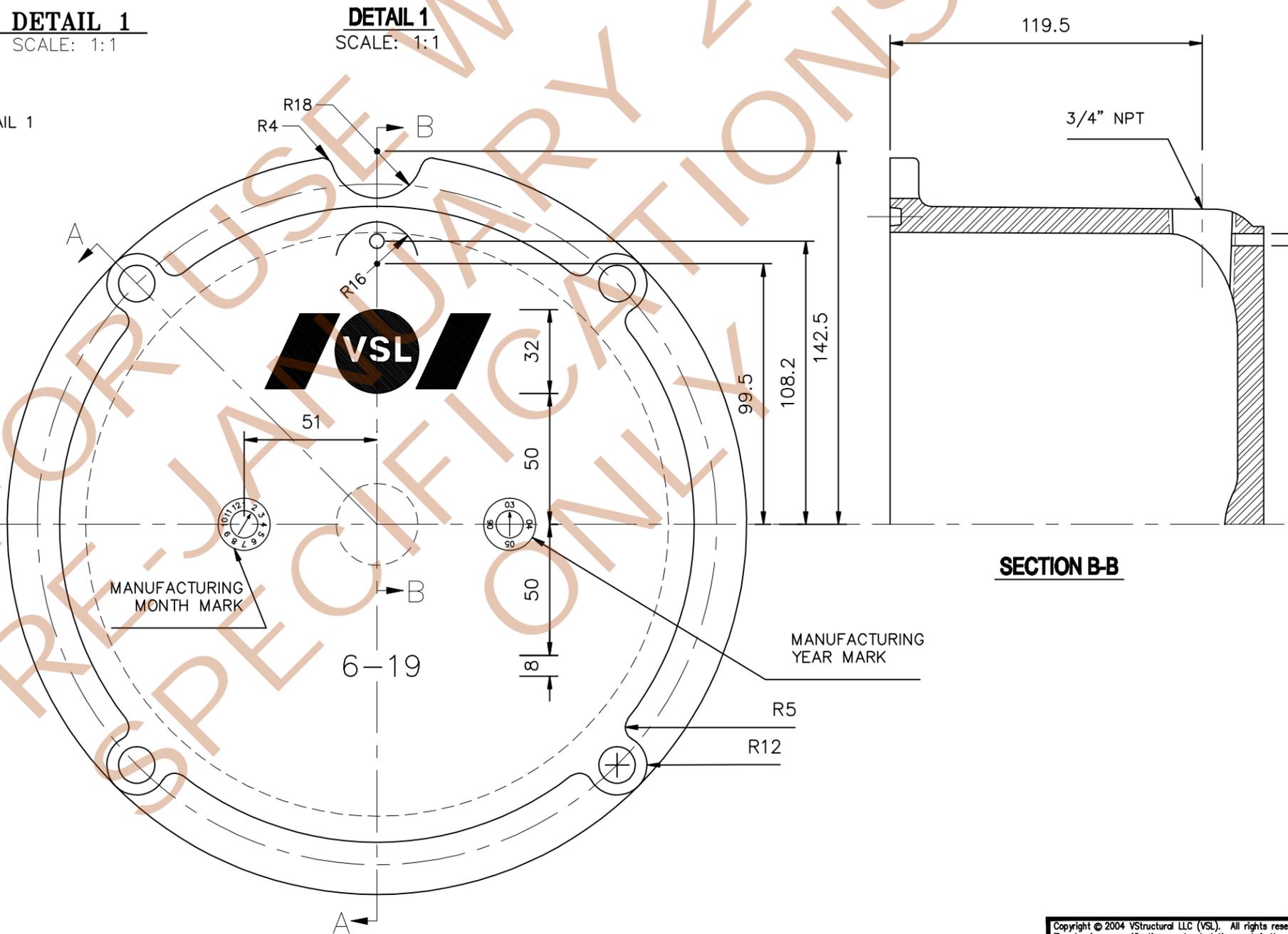
DETAIL 1
SCALE: 1:1

DETAIL 1
SCALE: 1:1

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 .010 MAX.	
2) REMOVE ALL BURRS.	
3) MATERIAL: VSL MS 8.1.026	
4) INVENTORY #: 2GC61901	



SECTION A-A



SECTION B-B

REV.	DATE	BY	CHK
3	10/1/10		
2	1/29/04		
1	1/19/04		

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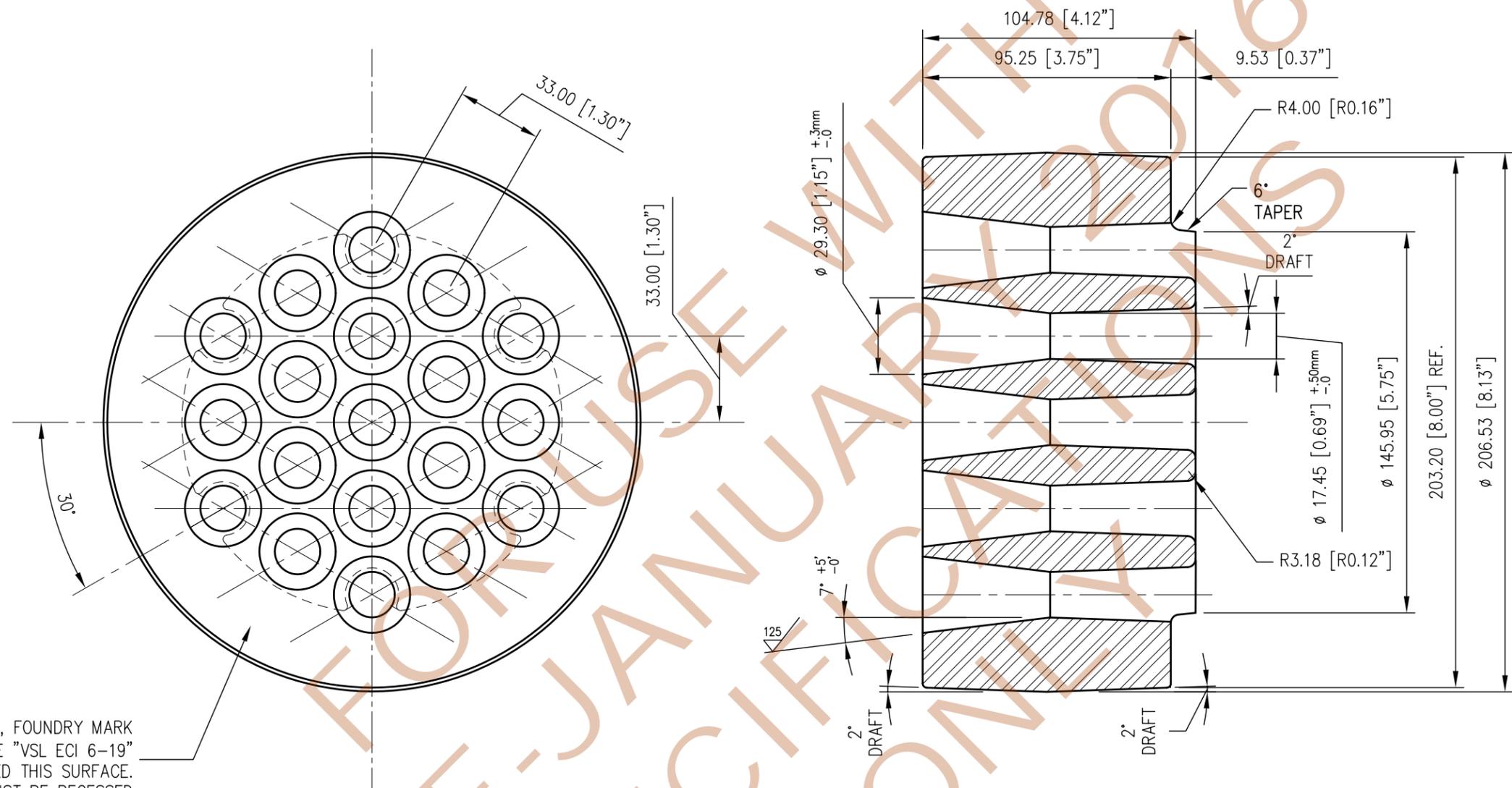
MODIFIED 6-19 GROUT CAP
FOR BALANCED CANTILEVER CONSTRUCTION

VSL
SYSTEMS DRAWING

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DWG. TITLE:	SCALE: NONE
PROJECT:	VSL JOB NO.:
	VSL DWG. NO.:

C681



DATE CODE, FOUNDRY MARK
AND TYPE "VSL ECI 6-19"
STAMPED THIS SURFACE.
MUST BE RECESSED

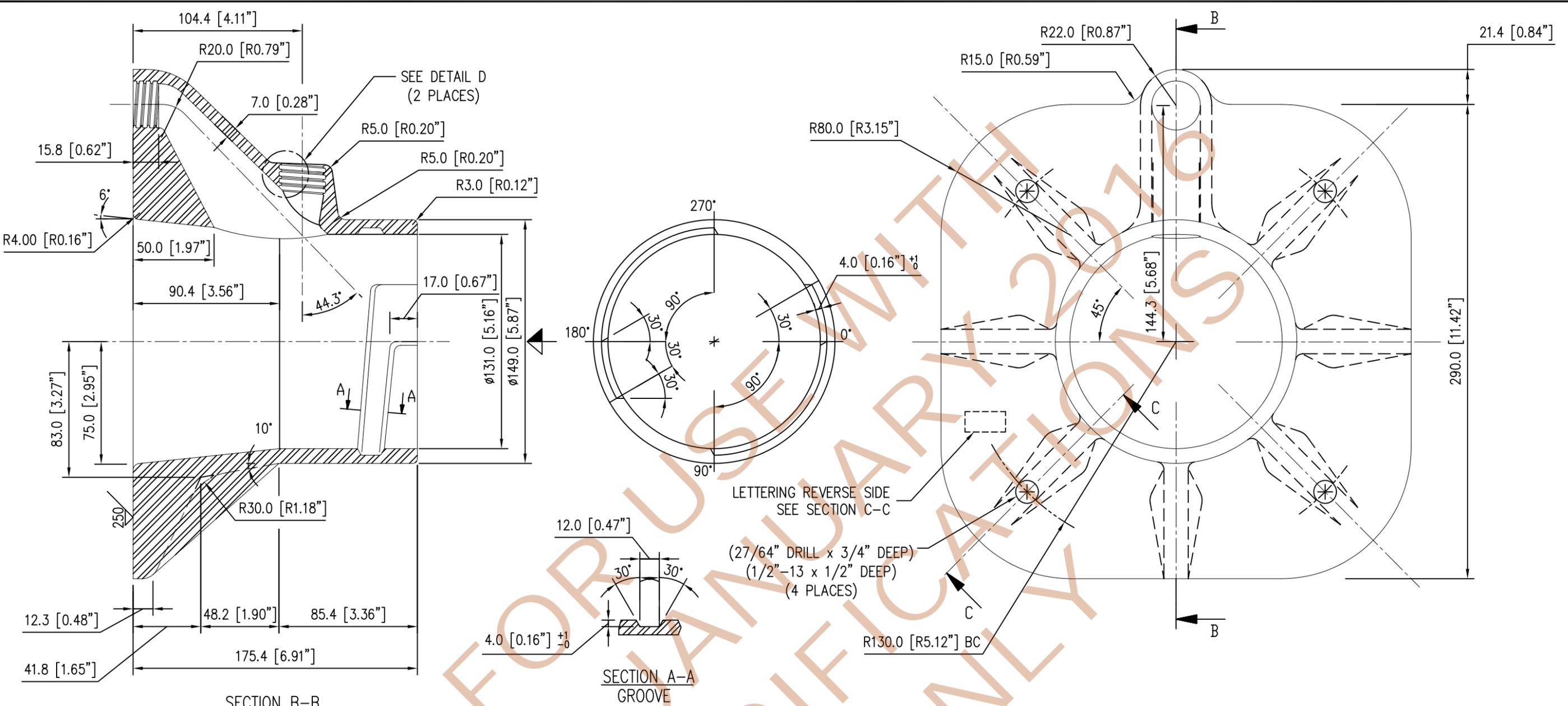
ANCHORHEAD ECI 6-19

- NOTES:
1. MATERIAL: ASTM A536 GR 80-55-06
VSL Q.A. DOC MS 1.1.002
 2. ALL RADII 1mm UNO
 3. WEIGHT 43.6 LBS (APPROX)
 4. INVENTORY NUMBER: 02AH0038
 5. ALL DRAFT ANGLES 2° UNO

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.	

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ECI 6-19 BEARING PLATE					
VSL DALLAS					
DWG. TITLE:					
PROJECT:					
SCALE:	1:2				
VSL JOB NO:					
VSL DWG. NO:	C557-1				



LETTERING REVERSE SIDE
SEE SECTION C-C

(27/64" DRILL x 3/4" DEEP)
(1/2"-13 x 1/2" DEEP)
(4 PLACES)

GENERAL CASTING NOTES

- 1) ALL HOLES TO BE FREE FROM BURRS
- 2) ALL RADII 1mm UNO
- 3) MATERIAL: ASTM A536 GR 80-55-06
- 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

INVENTORY No. 02BP0038

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.

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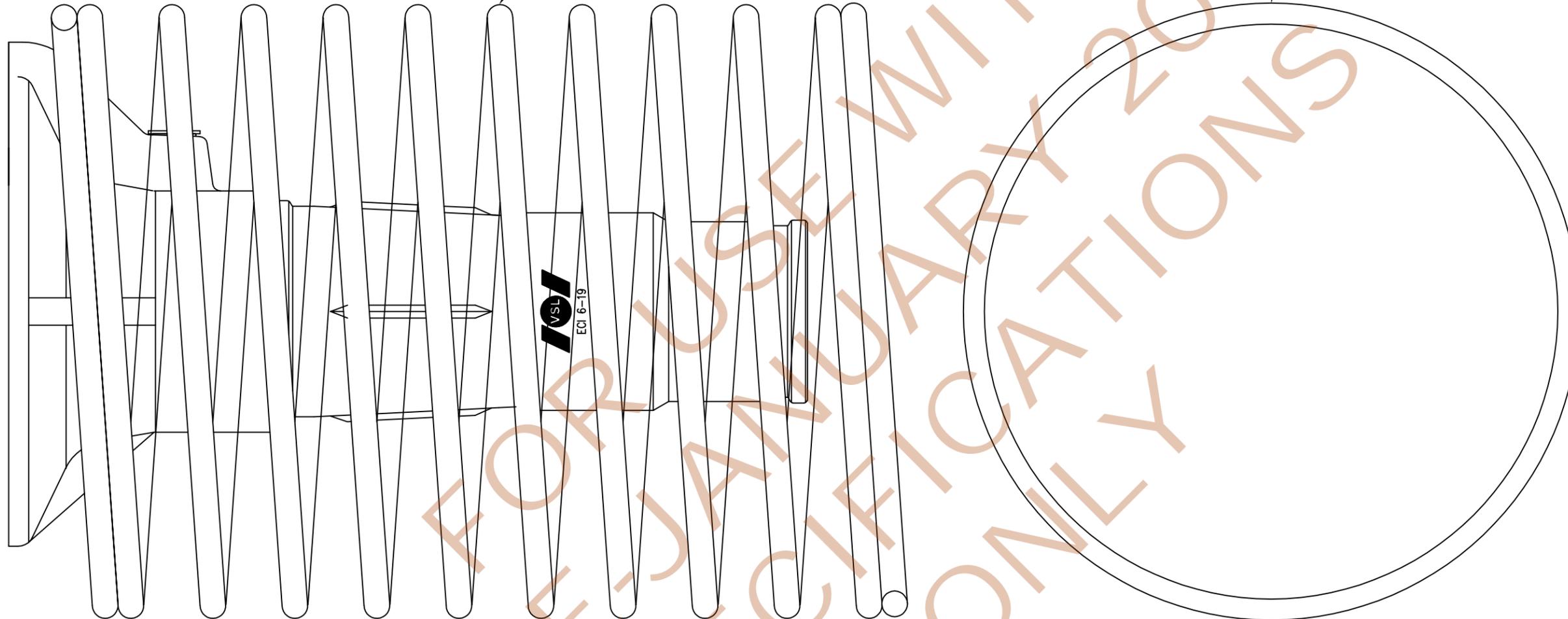
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1	1/21/04	DATE	REV.
GDH	BY	JC	CHK
ECI 6-19 BEARING PLATE		VSL DALLAS	
SCALE: 3/16"=1"		VSL JOB NO:	
C554-1		VSL DWG. NO.	

#5, 60 KSI REBAR, $\phi 14"$, 2" PITCH, 10 1/2 TURNS TOTAL
VSL PART# 02SP61903 FOR 6,500 PSI CONCRETE

#5, 60 KSI REBAR, $\phi 15"$, 2" PITCH, 10 1/2 TURNS TOTAL
VSL PART# 02BP0094 FOR 5,500 PSI CONCRETE

#5, 60 KSI REBAR, $\phi 17"$, 2" PITCH, 11 1/2 TURNS TOTAL
VSL PART# 02BP0093 FOR 3,500 PSI CONCRETE

14" OUTSIDE DIAMETER
15" OUTSIDE DIAMETER
17" OUTSIDE DIAMETER



TIE FIRST 1 1/2 TURNS @ BEARING PLATE SIDE
OF SPIRAL TO ACHIEVE FULL DEVELOPMENT

PLAN VIEW

TOP VIEW



REV.	DATE	REVISION	BY	CHK
1	5/31/10	RELEASED FOR CONSTRUCTION	SAN MM	

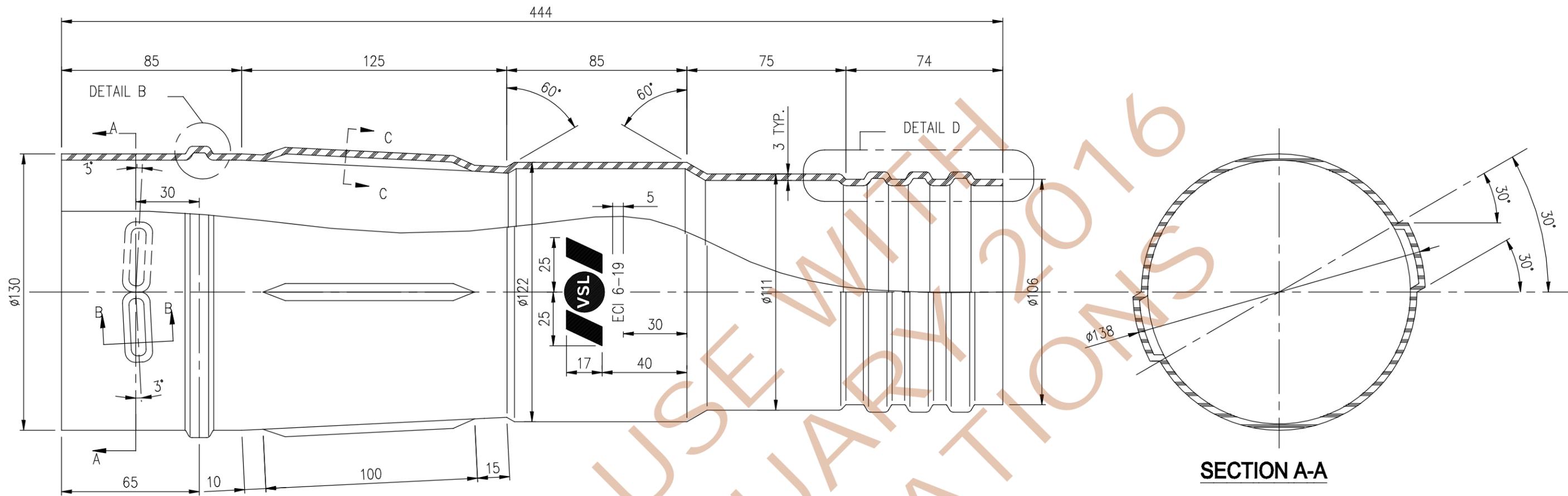
VSL
7455 NEW RIDGE RD.
HANOVER, MD. 21076
WWW.VSL.NET

DWG. TITLE: ECI 6-19 SPIRAL
FOR 3500, 5500 & 6500 PSI CONCRETE

PROJECT: VSL
SYSTEMS DRAWING

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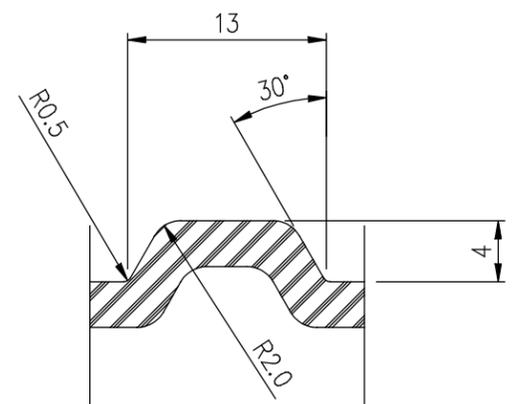
SCALE:
VSL JOB NO:
VSL DWG. NO:
C679



SECTION A-A

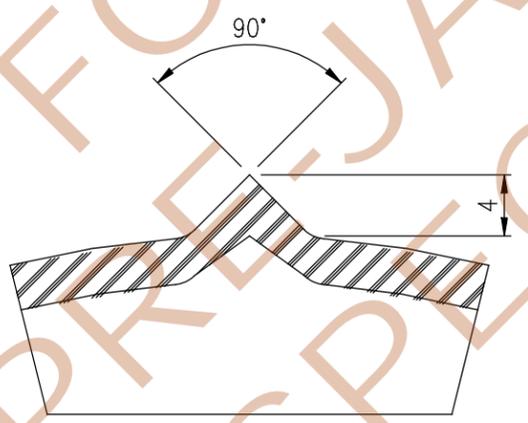
PLASTIC TRUMPET ECI 6-19

LETTERING SHALL BE 1MM PROUD



SECTION B-B & DETAIL B

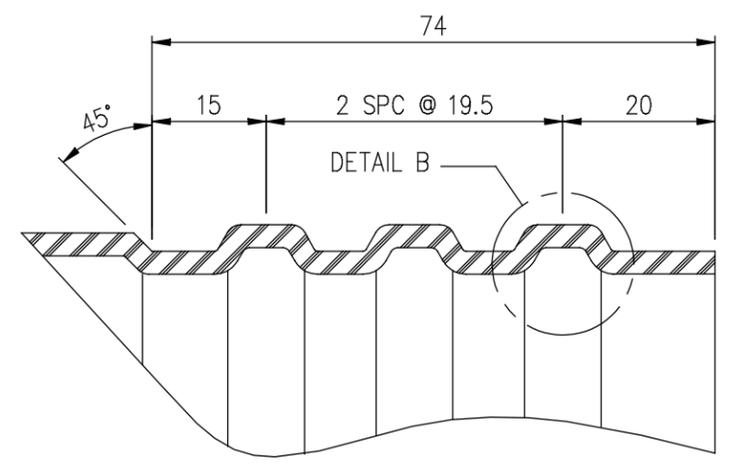
SCALE 2:1



SECTION C-C

(4 RIBS ON THE CIRCUMFERENCE)
SCALE 2:1

TOLERANCES	
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN MILLIMETERS.	
0 THROUGH 50mm	
51mm THROUGH 100mm	±0.5
MORE THAN 100mm	±1.0
ANGULAR	±1.5
SURFACE QUALITY	±1/2°
NOTES:	
1) BREAK SHARP EDGES	
2) REMOVE ALL BURRS. ✓	
3) DO NOT SCALE DRAWING.	
4) ALL RADII 1mm UNO	
5) MATERIAL: POLYPROPYLENE	
ASTM D4101 VSL Q.A.	
DOC MS 8.1.027	
INVENTORY No. 02BP4322	



DETAIL D

SCALE 1:1

REV.	DATE	BY	CHK
1	4/1/04	LS	JC

APPROVED FOR PRODUCTION

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HANOVER, MD. 21076
WWW.VSL.NET

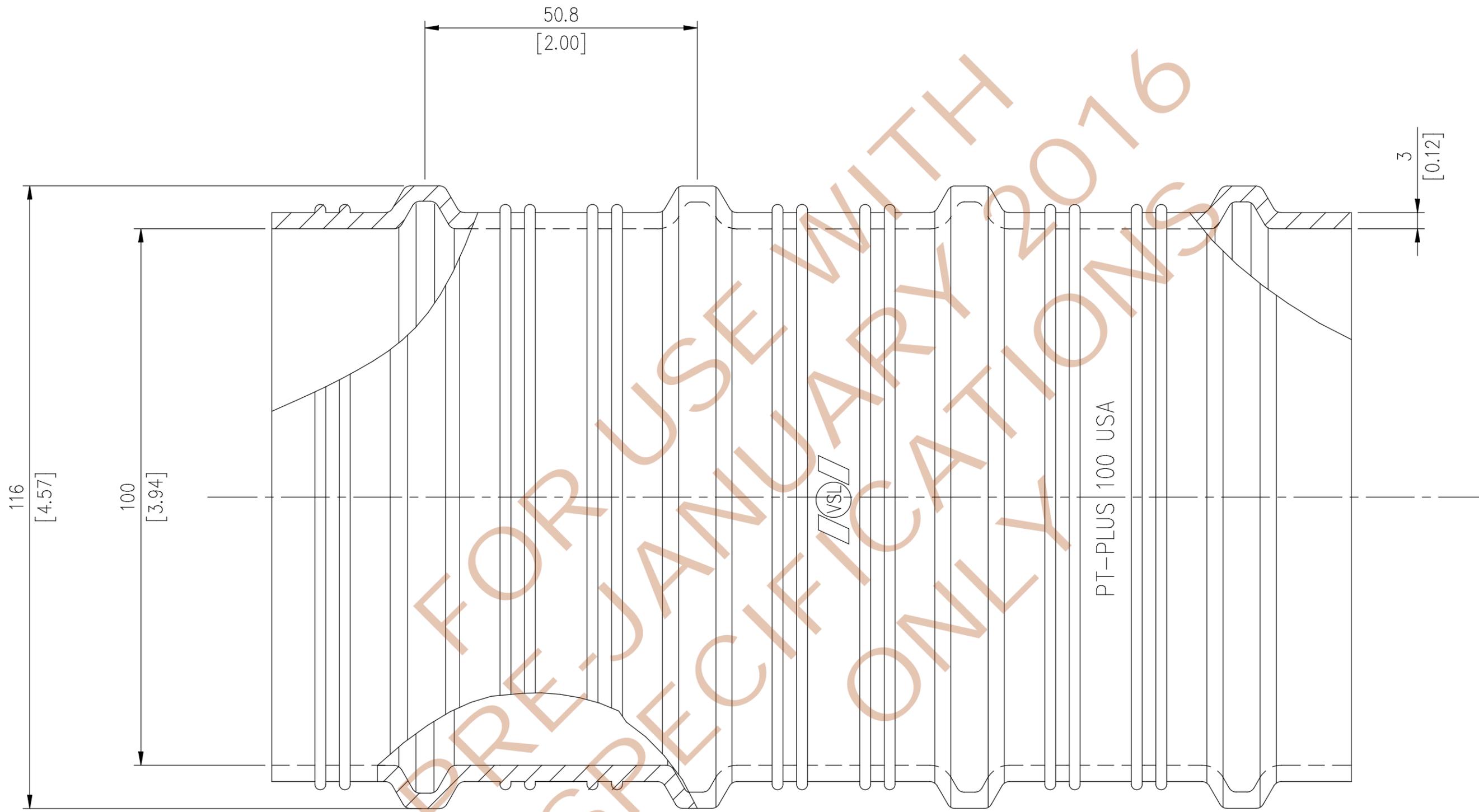
ECI 6-19
TRUMPET

VSL
SYSTEMS DRAWING

DWG. TITLE: PROJECT:

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SCALE: 1:2 UNO
VSL JOB NO.
VSL DWG. NO.
C579



FOR PRELIMINARY USE ONLY

JANUARY 2016

SPECIFICATIONS

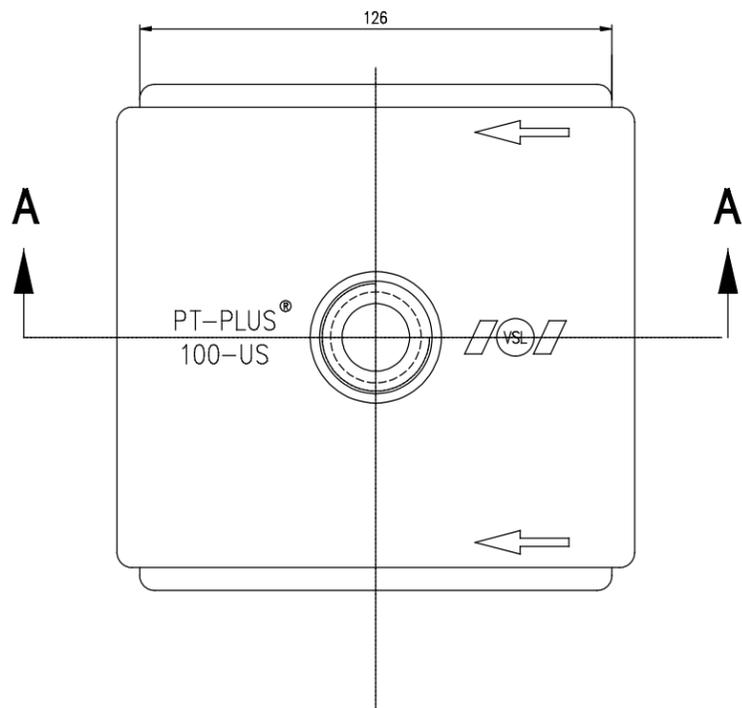
GENERAL NOTES

- 1) ALL HOLES TO BE FREE FROM BURRS
- 2) ALL RADII 2mm UNO
- 3) MATERIAL SHALL BE (PP, WHITE)
- 4) LOGO AND PART DESCRIPTION EVERY 2M
- 5) SCALE: DRAWING NOT TO SCALE
- 6) MINIMUM BEND RADIUS: 20FT

INVENTORY No. 02DT0443

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DWG. TITLE: PT-PLUS 100 DUCT	PROJECT: VSL SYSTEMS DRAWING	VSL 7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET	REV. DATE 1 1/03/07	REVISION PRELIMINARY NOT FOR PRODUCTION	BY GDH	CHK GDH
SCALE: 1:10 VSL JOB NO: VSL DWG. NO.		C822				

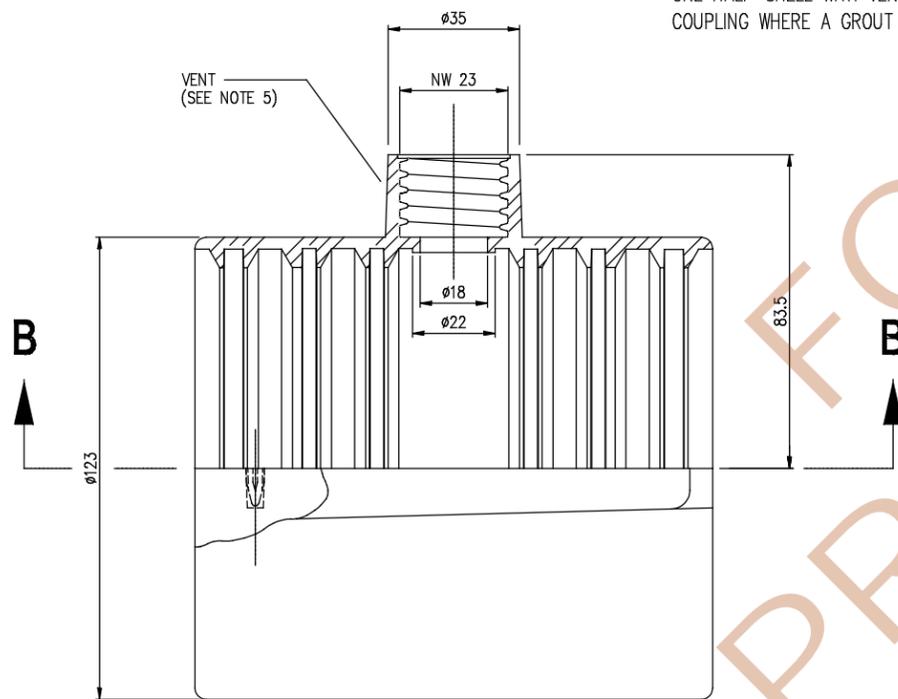


PLAN

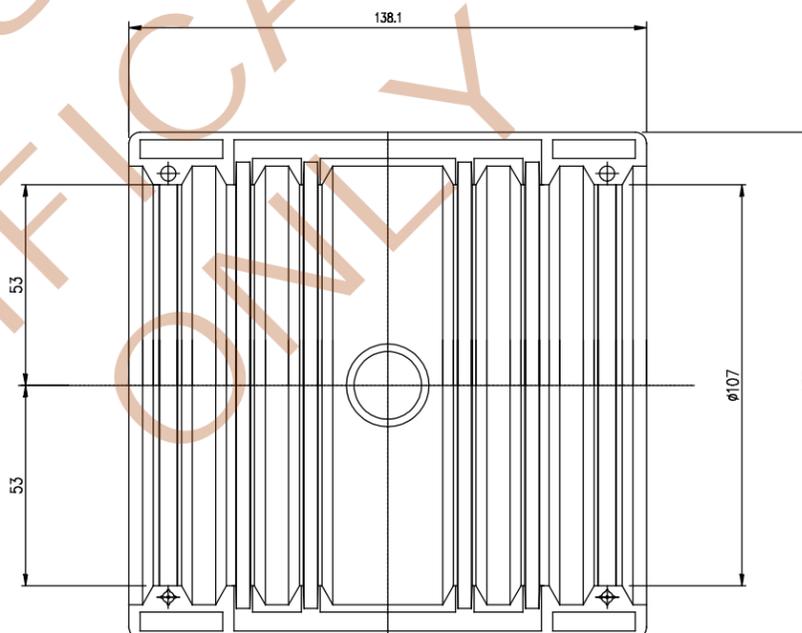
NOTE:

USE TWO HALF-SHELLS W/OUT VENT (02DT0044) FOR STANDARD DUCT COUPLING

USE ONE HALF SHELL W/OUT VENT (02DT0044) AND ONE HALF-SHELL WITH VENT (02DT0045) FOR DUCT COUPLING WHERE A GROUT VENT IS NEEDED"



SECTION A-A



SECTION B-B

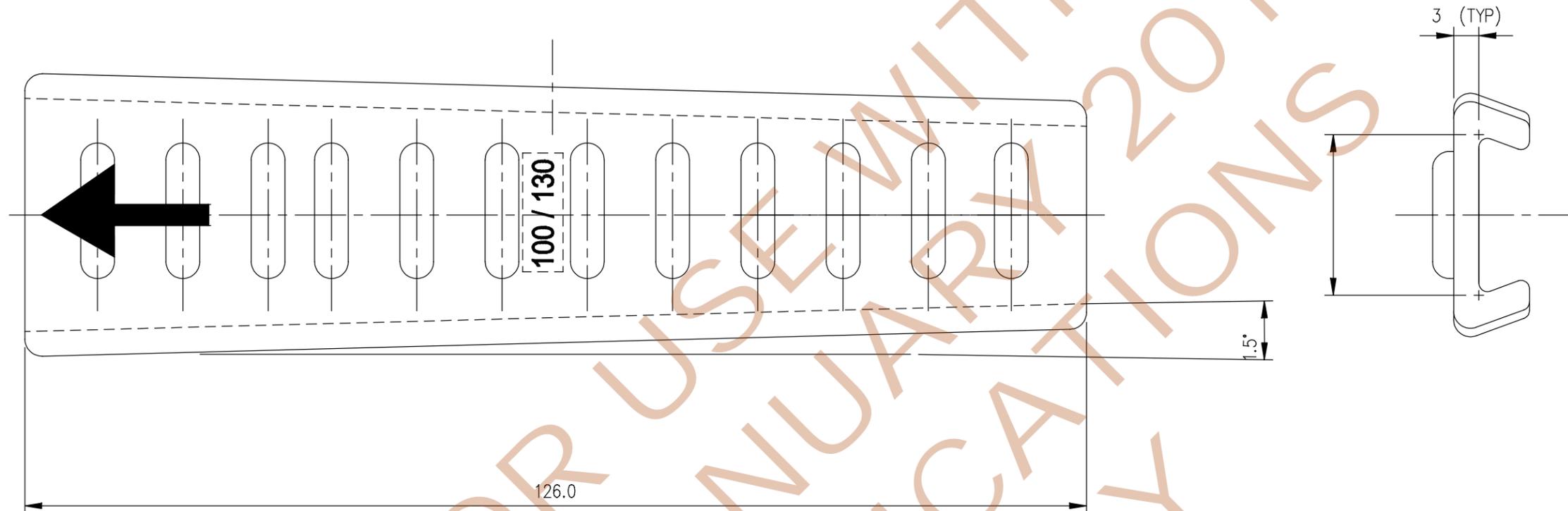
NOTES:

1. MATERIAL POLYPROPYLENE ELTEX PRS210 (OR EQUIVALENT)
2. DIMENSIONS ARE IN mm
3. DO NOT SCALE
4. COMPATIBILITY WITH PT+100-US DUCT, i.e. ADJUST GROOVE
5. ONE HALF SHELL WITH VENT AND ONE WITHOUT. SEE DRAWING C626 FOR ADDITIONAL THREAD DETAILS.

INVENTORY No. 02DT0044, W/OUT VENT
 INVENTORY No. 02DT0045, WITH VENT

PRE-JANUARY 2016
 FOR USE WITH SPECIFICATIONS ONLY

			GDH	BY
		CHANGED DIMENSIONS	GDH	
	3/12/07	APPROVED FOR PRODUCTION	GDH	
	2	REVISION		
	1	DATE	2/05/07	
		REV.		
VSL 7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET				
100MM PT-PLUS DUCT COUPLER Half Shell Non-Vented and Half-Shell Vented				
VSL SYSTEMS DRAWING				
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SCALE: 2:1 VSL JOB NO:		PROJECT:		
VSL DWG. NO.		C623		



FOR USE WITH 2016 PRE-FABRICATED ONLY SPECIFICATIONS

GENERAL NOTES

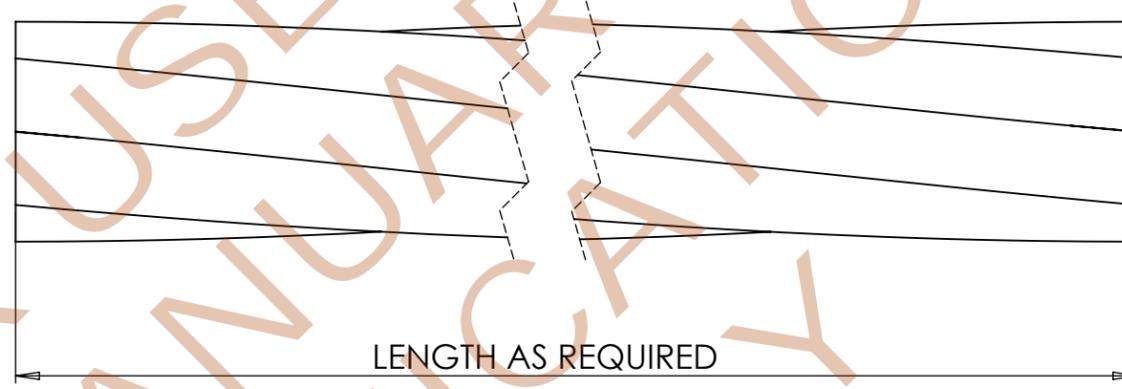
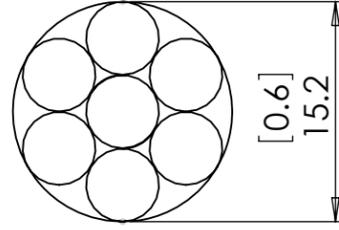
- 1) ALL HOLES TO BE FREE FROM BURRS
- 2) ALL RADII 1mm UNO
- 3) MATERIAL SHALL BE: PP SG702 HI-IMPACT COPOLYMER
- 4) MANUFACTURERS IDENTIFICATION AND BATCH No. MUST BE CLEARLY VISIBLE ON PART
- 5) SCALE: DRAWING NOT TO SCALE

INVENTORY No. 02DT0046

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	

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	VSL 7455 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET			
100 / 130 MM PT-PLUS CLIP FABRICATION	VSL	SYSTEMS DRAWING		
DWG. TITLE:	SCALE: 1:10	REV. DATE	PRELIMINARY NOT FOR PRODUCTION	CHK BY
PROJECT:	VSL JOB NO.	1 6/17/03	REVISION	GDH
VSL DWG. NO.	C625			



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VStructural LLC (VSL) SHOP DRAWING
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VSL POST TENSIONING

0.6" BARE STRAND (270 KSI)
 P/N: 01SD0002 (COMMERCIAL)
 P/N: 01SD0013 (DOMESTIC)

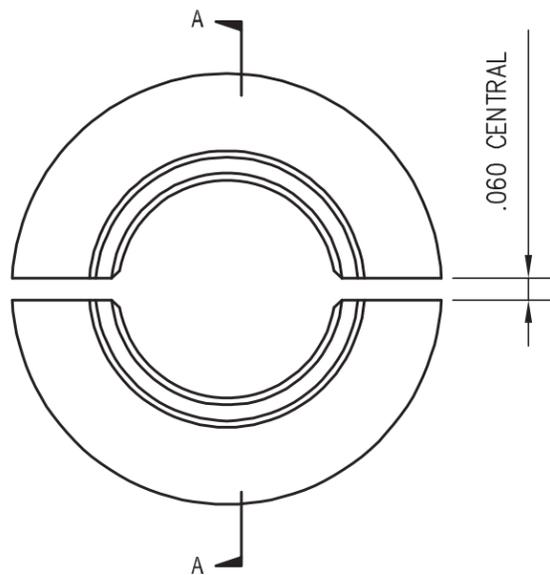
SCALE: DO NOT SCALE
 DRW NO: C674
 SHEET: 1 OF 1



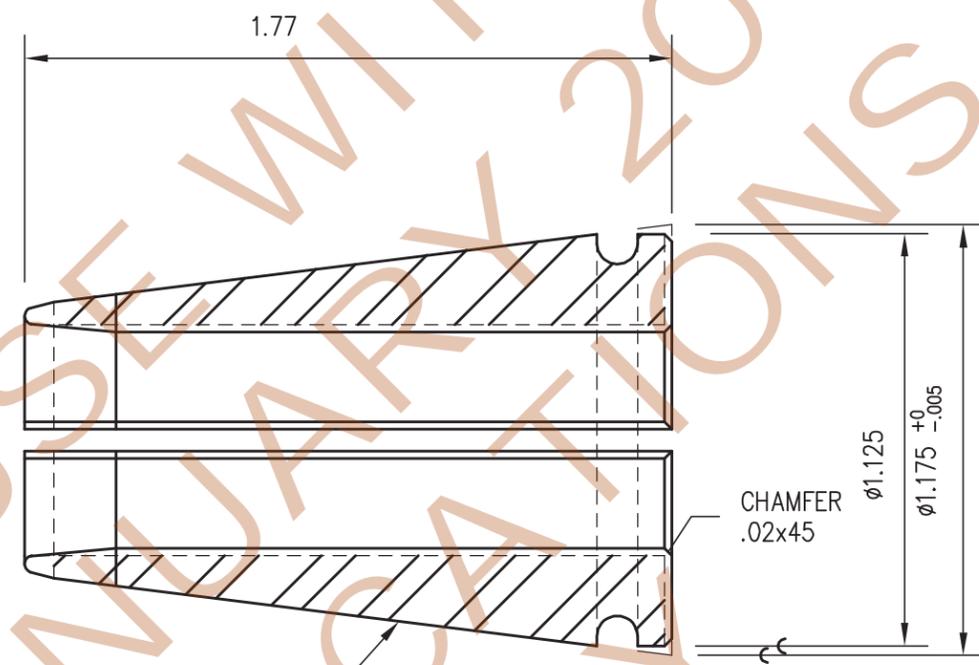
VStructural LLC
 Dallas, TX office
 15600 Trinity Blvd, Ste 118
 Fort Worth, TX 76155
 Phone: (817) 545-4807
 Fax: (817) 545-4827

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

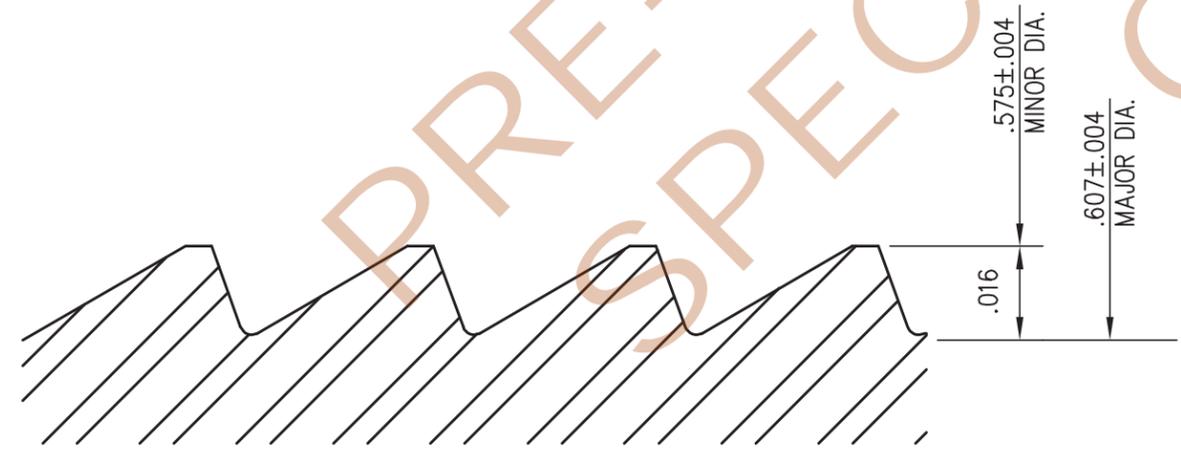
0	2/24/2010	FOR FDOT	ISSUED FOR	MM	BY	CHK
		DESCRIPTION				



0.6" DIA. MULTIWEDGES
TYPE 1.6G



SECTION A-A



THREAD DETAIL

TOLERANCES
UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES.

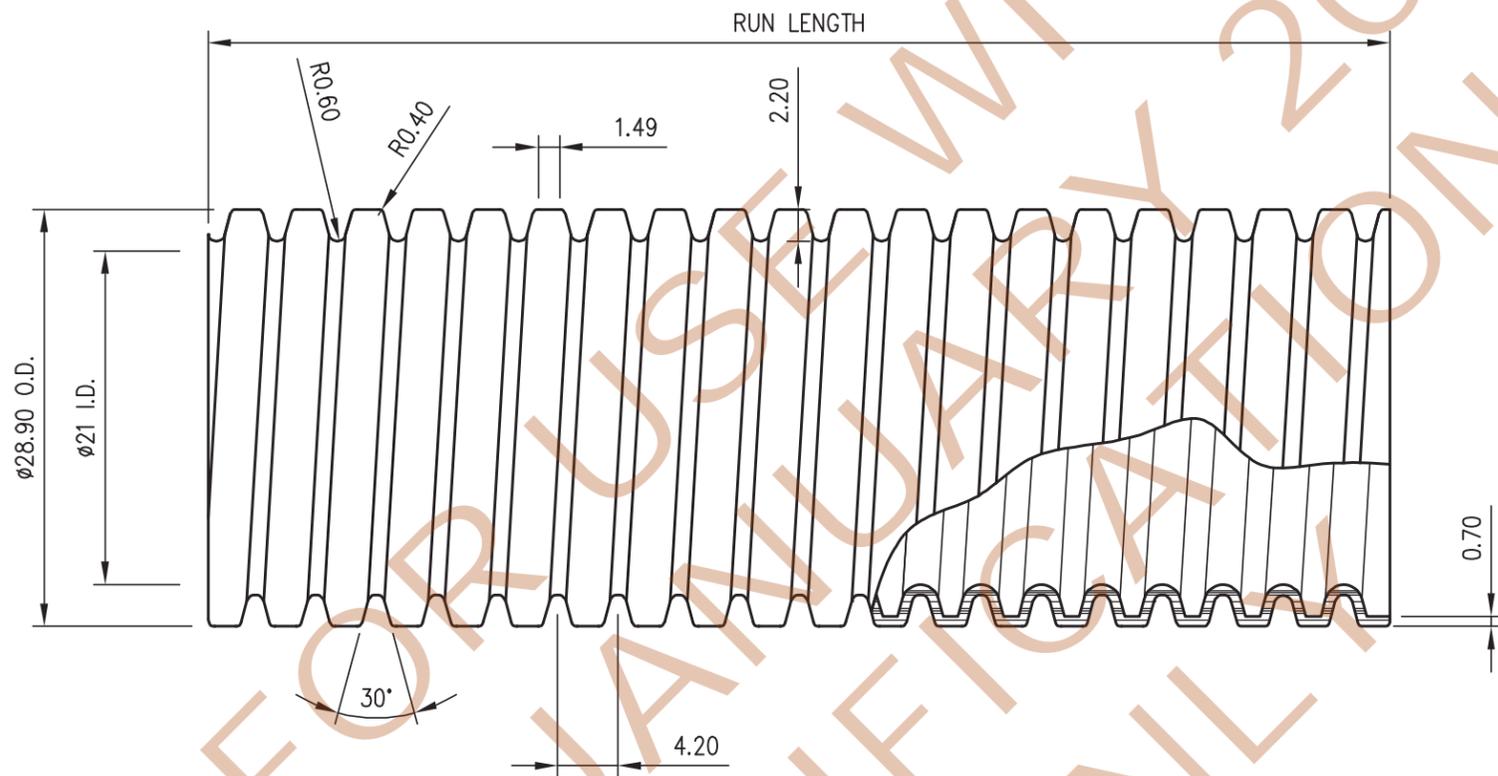
FRACTIONAL	± 1/64
DECIMAL	± .030
.X	± .010
.XX	± .005
.XXX	± 1/2°
ANGULAR	± 1/2°
SURFACE QUALITY	✓ 125

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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DWS 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	
				SCALE: 2:1	
				VSL JOB NO:	
				VSL DWG. NO.	C218



TOLERANCES
 UNLESS OTHERWISE SPECIFIED
 DIMENSIONS IN MILLIMETERS.

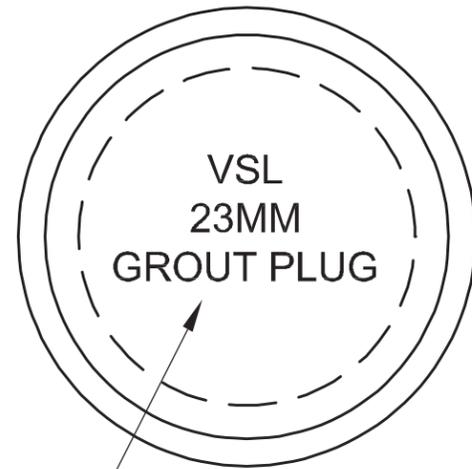
0 THROUGH 50mm	±0.5
51mm THROUGH 100mm	±1.0
MORE THAN 100mm	±1.5
ANGULAR	±1/2°
SURFACE QUALITY	✓

NOTES:
 1) BREAK SHARP EDGES .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

PRELIMINARY SPECIFICATIONS WITH 2016

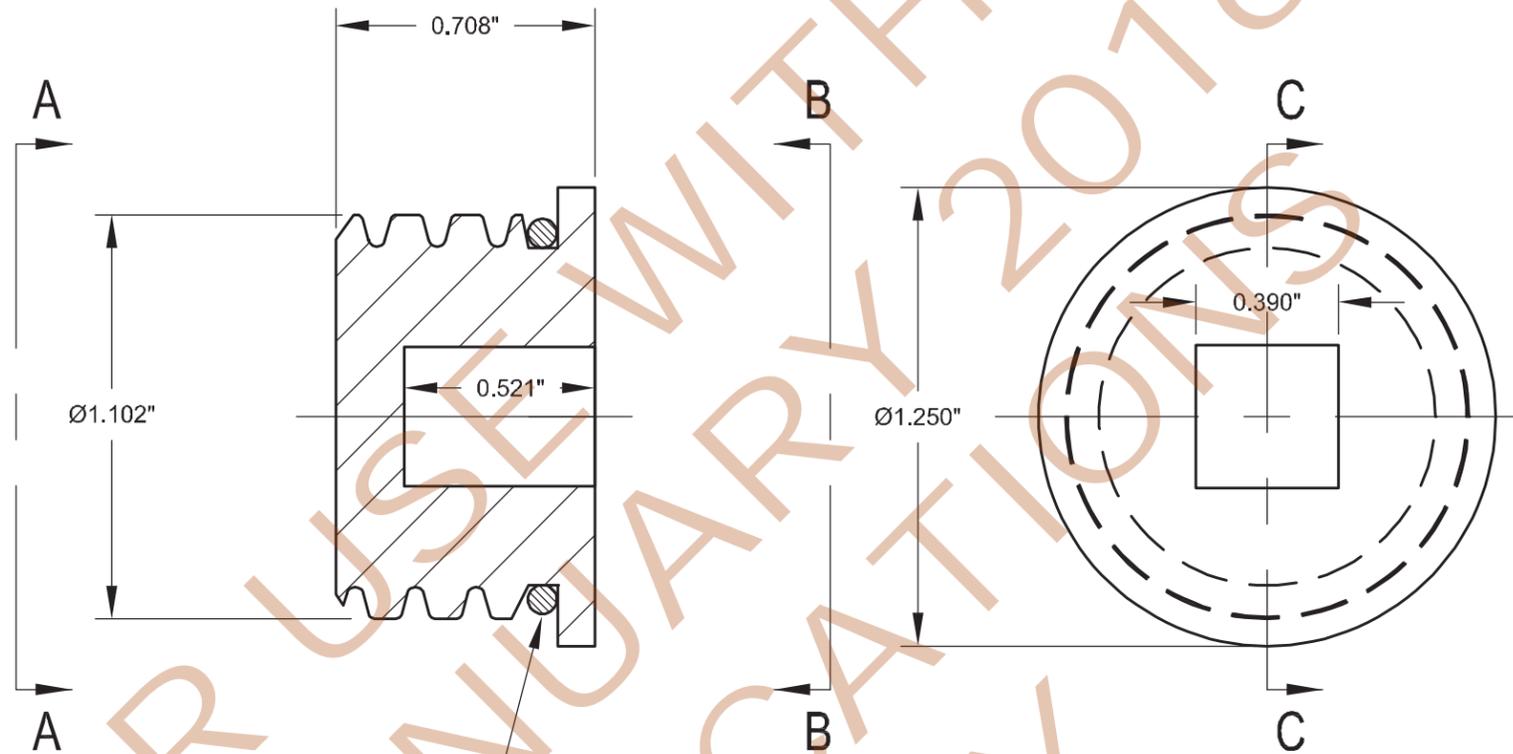
VSL 7465 NEW RIDGE RD. HANOVER, MD. 21076 WWW.VSL.NET		23MM GROUT HOSE FABRICATION	VSL SYSTEMS DRAWING	1	4/26/04
DWG. TITLE:			REV.		
PROJECT:			DATE		
SCALE: 2:1			RELEASED FOR PRODUCTION		
VSL JOB NO.:			BY		
VSL DWG. NO. C587			CHK		

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VIEW A-A

.1" LETTERING
RECESSED



O-RING
(PARKER #212)
INSTALL DURING
MANUFACTURING

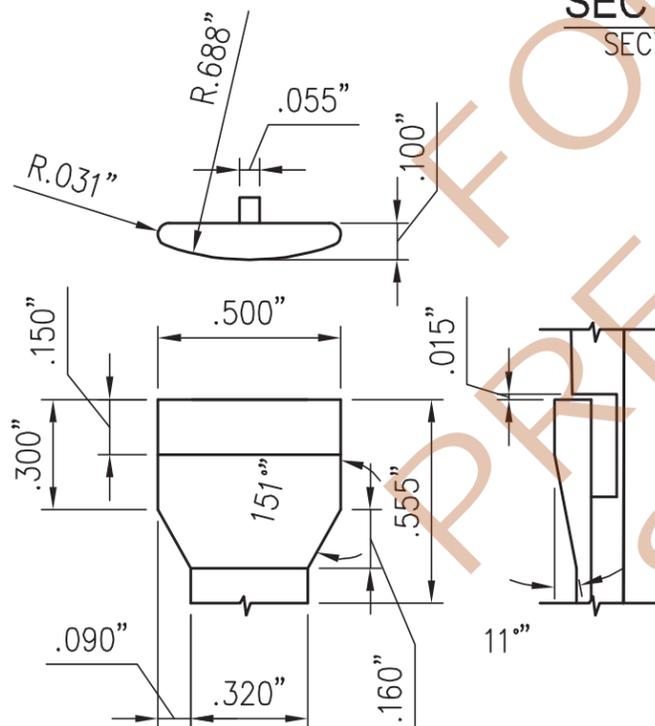
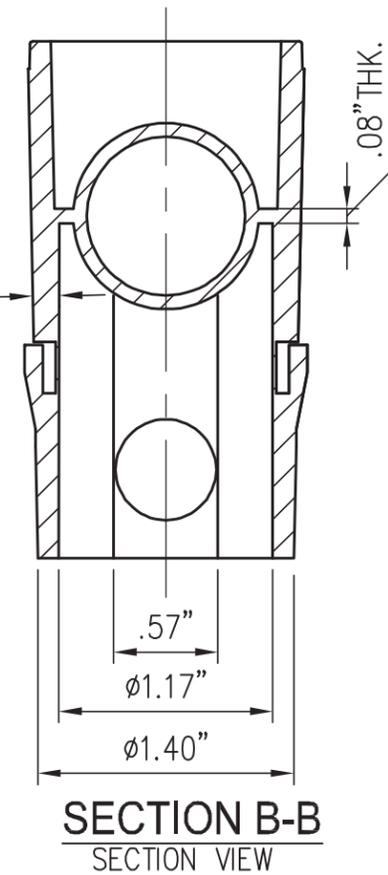
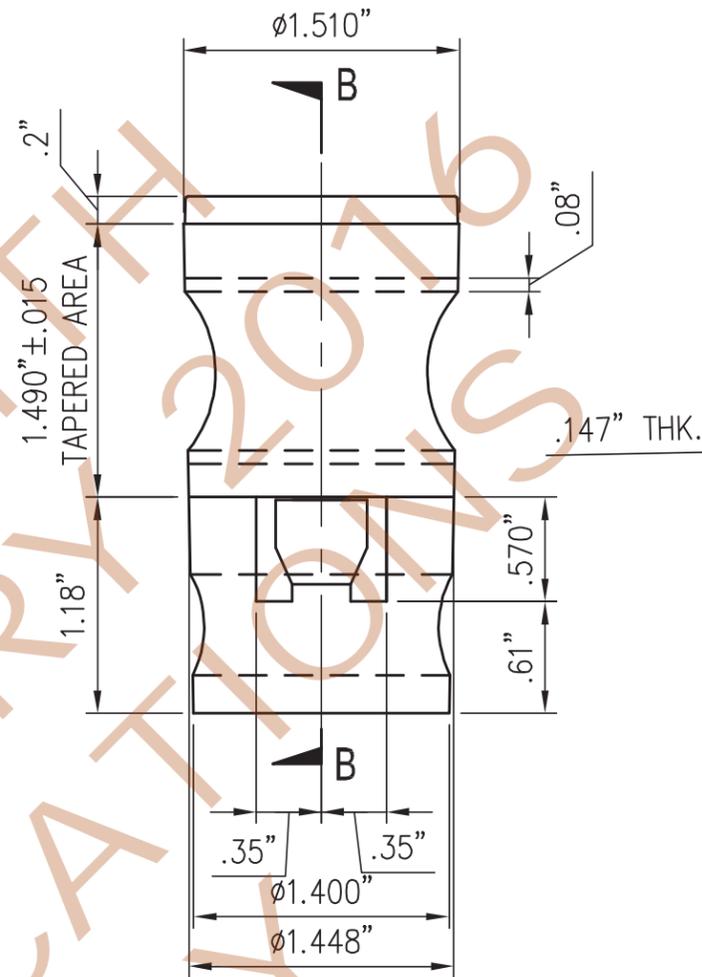
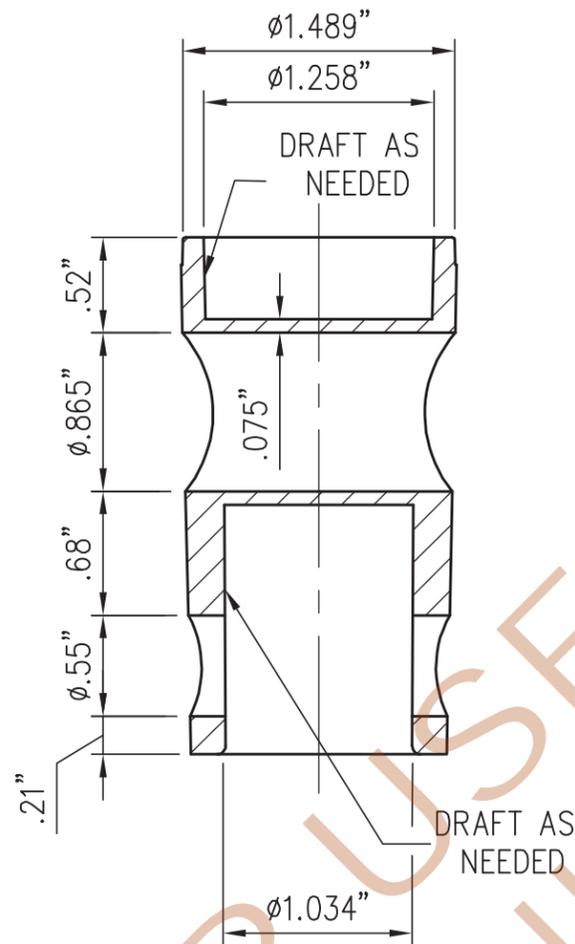
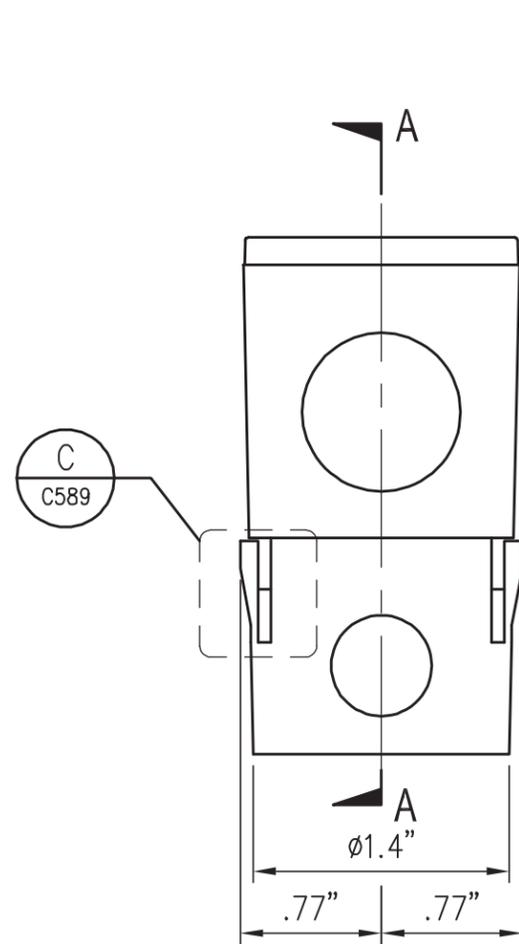
SECTION C-C

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 $\sqrt{\quad}$	
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		REV.	
23MM GROUT PLUG FABRICATION		2	10/2/07
VSL SYSTEMS DRAWING		1	4/26/04
DWG. TITLE:		MATERIAL CHANGE (BLACK)	
PROJECT:		RELEASED FOR PRODUCTION	
SCALE: 2:1		REVISION	
VSL JOB NO.:		GDH	BY
VSL DWG. NO. C583		GDH	CHK



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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VSL 7465 NEW RIDGE RD. HANOVER, MD, 21076 WWW.VSL.NET		DATE	REV.	BY	CHK
VSL SYSTEMS DRAWING		4/26/04	1	GDH	GDH
VALVE GROUT SHUTOFF VALVE		6/22/05	2	GDH	GDH
PROJECT:		BLACK COLOR ADDED			
DWG. TITLE:		RELEASED FOR PRODUCTION			
SCALE: 1:1 UNO		REVISION			
VSL JOB NO:					
VSL DWG. NO:					
C589					



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.

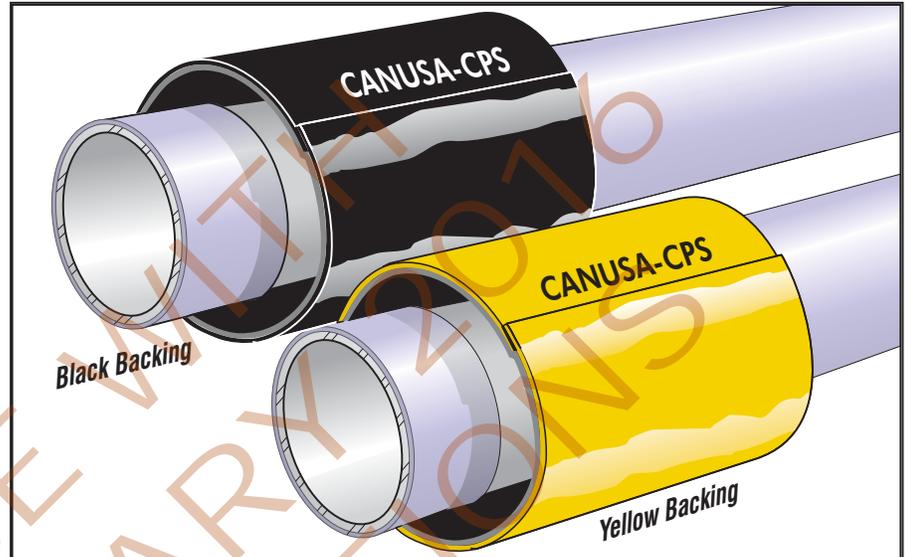
Features & Benefits

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

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Toronto, Ontario
M9W 1M7,
Canada
Tel: +1 (416) 743-7111
Fax: +1 (416) 743-5927

U.S.A./Latin America

CANUSA-CPS
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Building C-8
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77380, U.S.A.
Tel: +1 (281) 367-8866
Fax: +1 (281) 367-4304

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Fax: +44 (1293) 541777

Asia/Pacific

CANUSA-CPS
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#05-31, Blk 52, Frontier
Ubi Avenue 3
Singapore
408867
Tel: +65-6749-8918
Fax: +65-6749-8919

PATENT PENDING

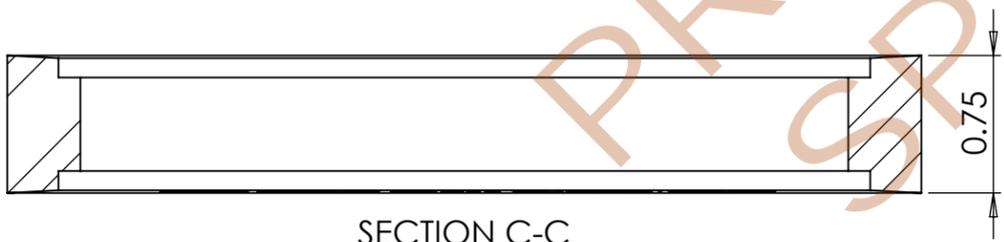
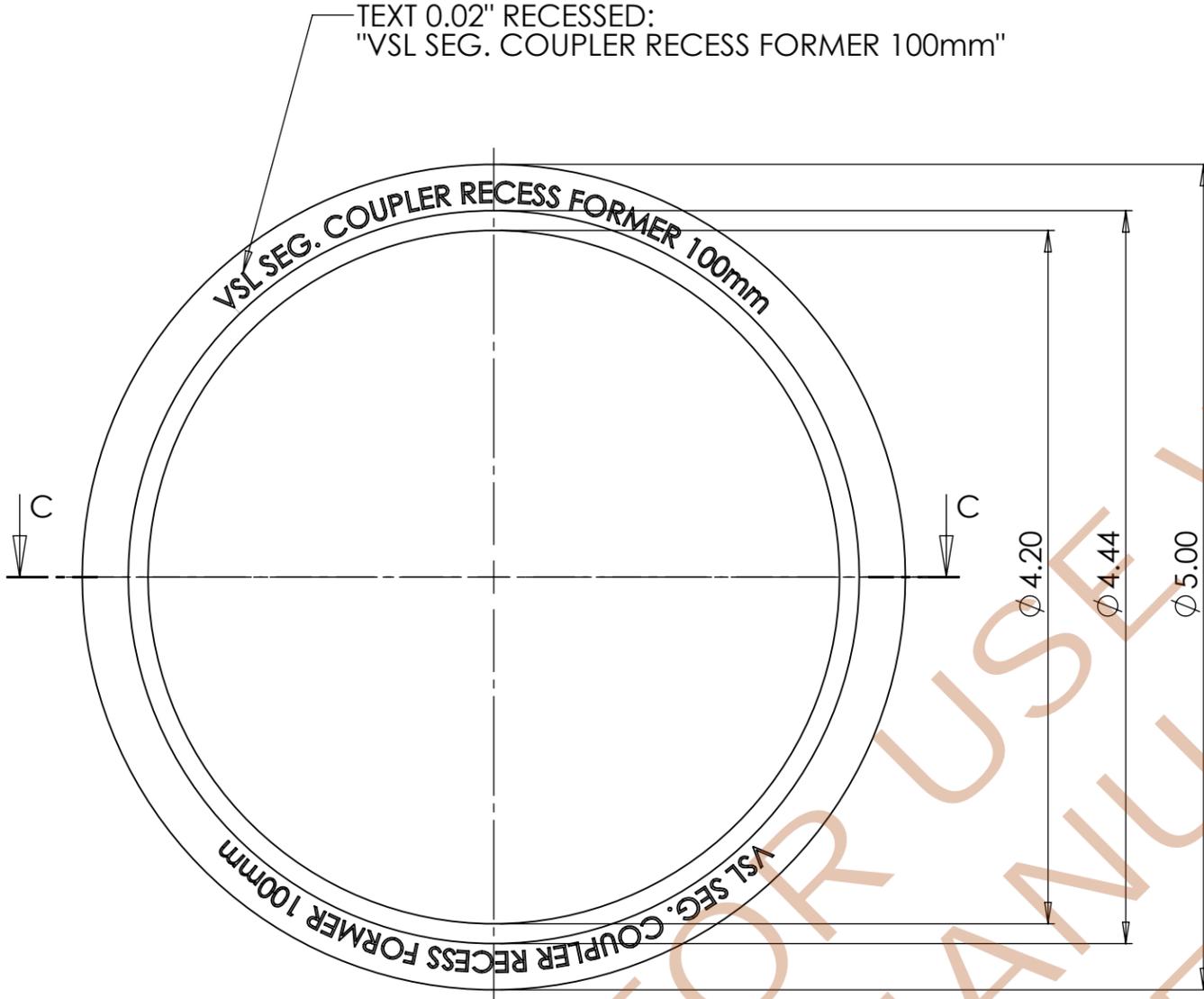
MATERIAL
 Santoprene, Black in color
 (per VSL MS 8.1.091209.3)

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

PRE-JANUARY 2016
 FOR US ONLY
 WITH VSL

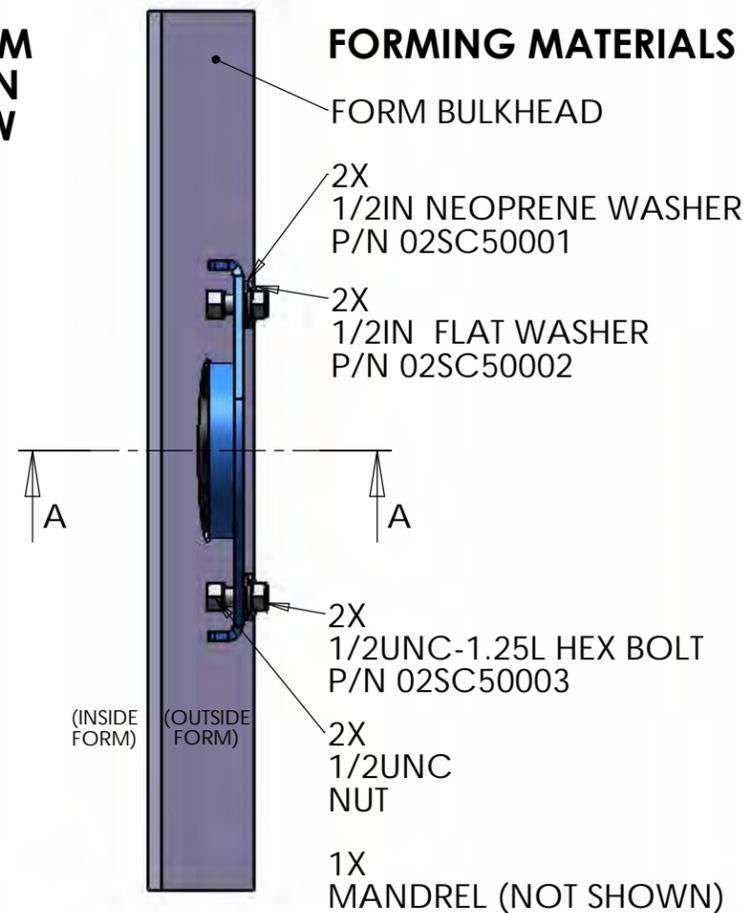
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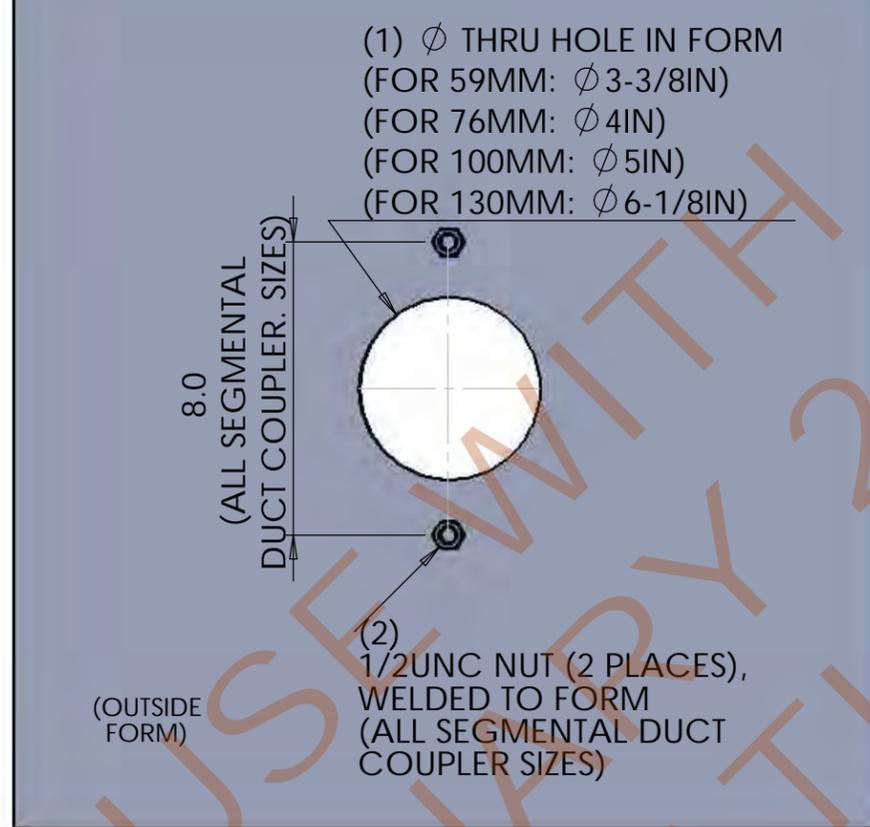
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VSL 100mm SEGMENTAL DUCT COUPLER SYSTEM	SCALE: DO NOT SCALE	
	DRW NO: C639.2	
RECESS FORMER VSL P/N 02SC10007	SHEET: 1 of 1	
	NO. DATE DESCRIPTION	
2	1/14/2010	FOR PRODUCTION
1	11/10/09	FOR REVIEW
0	10/30/09	PRELIMINARY
ISSUED FOR	BY	CHK
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15600 Trinity Blvd, Ste 118 Fort Worth, TX 76155	Phone: (817) 545-4807 Fax: (817) 545-4827	

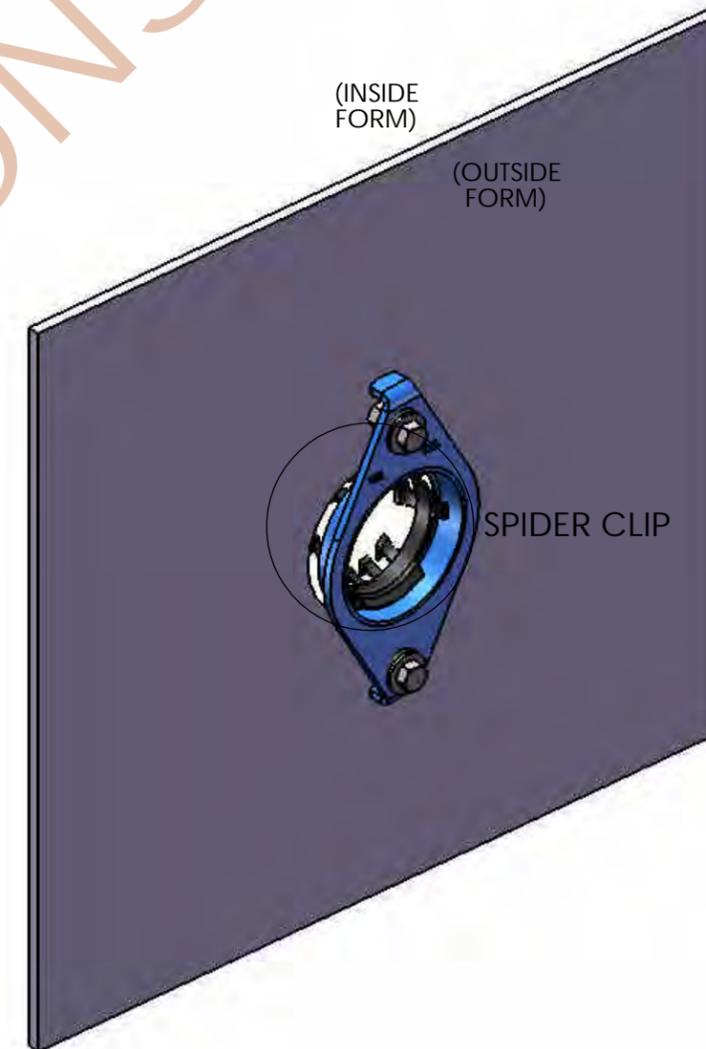
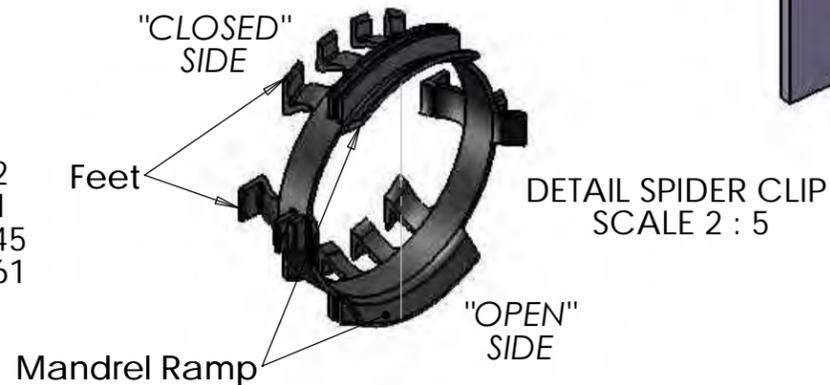
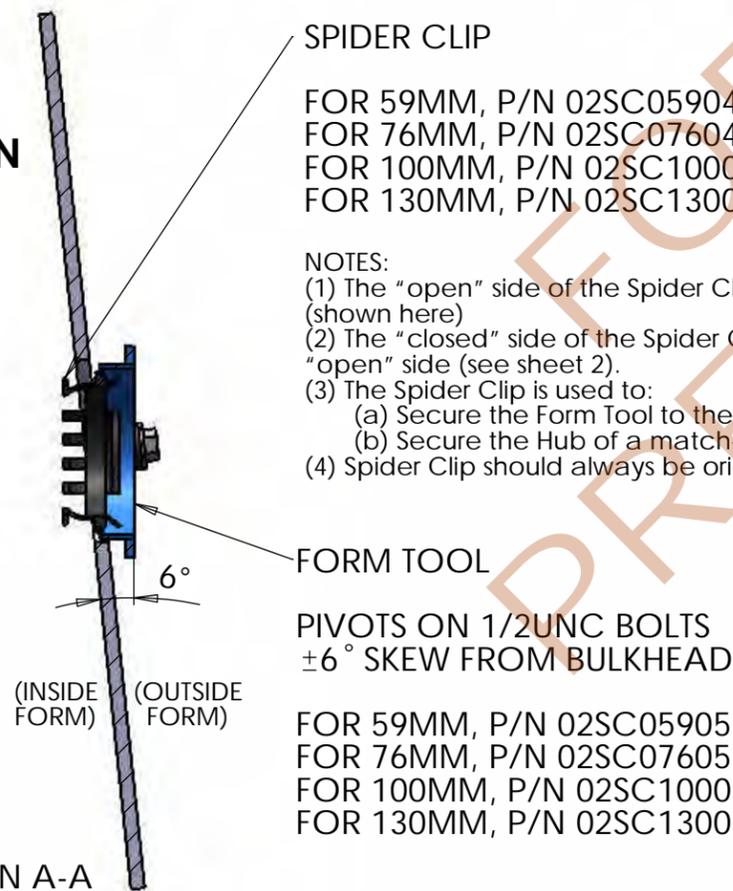
FORM PLAN VIEW



FORM PREPARATION GUIDE



FORM ELEVATION VIEW



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VSL SEGMENTAL DUCT COUPLER	INSTALLATION GUIDE	SCALE: DO NOT SCALE	DRW NO: A243	SHEET: 1 of 8
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		NO.	DATE	DESCRIPTION
		0	1/26/2010	PRELIMINARY
				ISSUED FOR
				BY
				CHK

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.

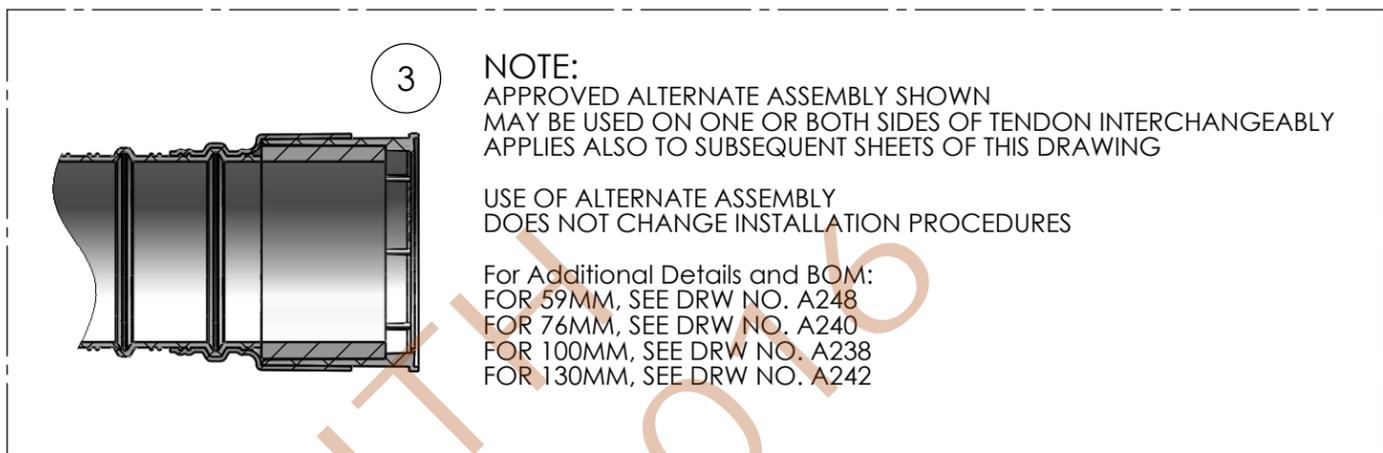
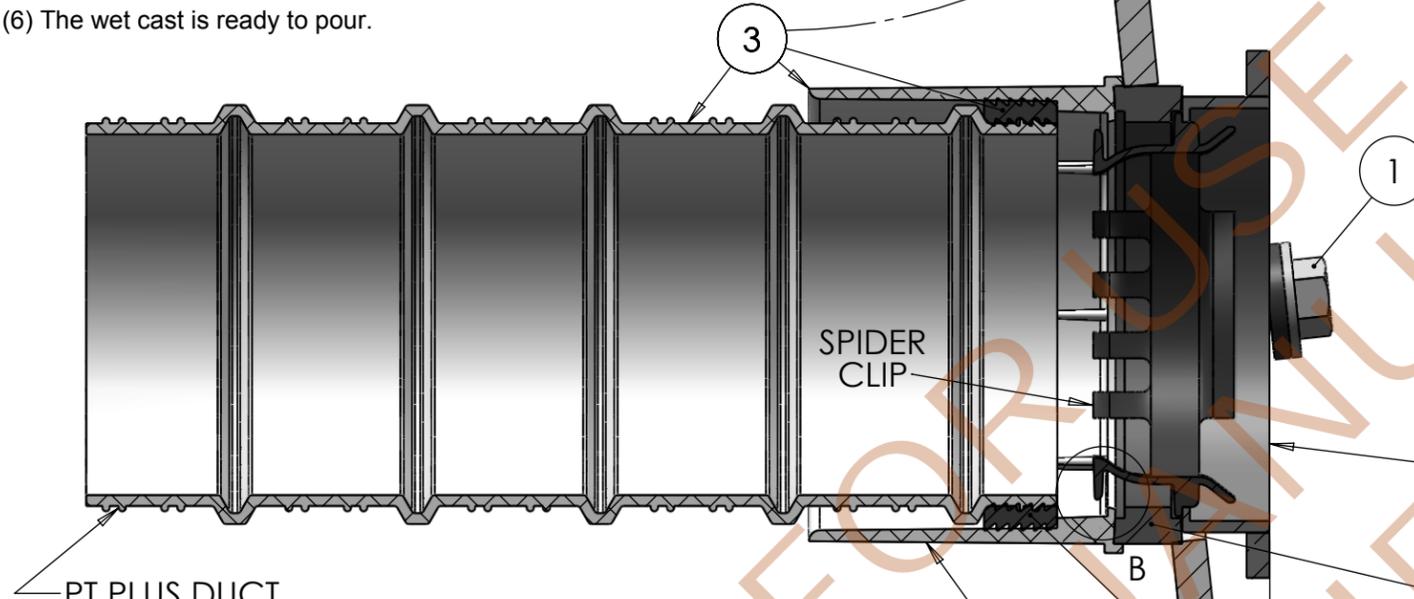
(3) (Optional) Ducts can be pre-assembled with Hub Seals and Hubs to speed the forming time. Any silicon-based or oil-based lubricant or dishwashing detergent solution acceptable to the contractor and the local DOT may be used to assist with the assembly of VSL's Segmental Duct Coupler components.

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.

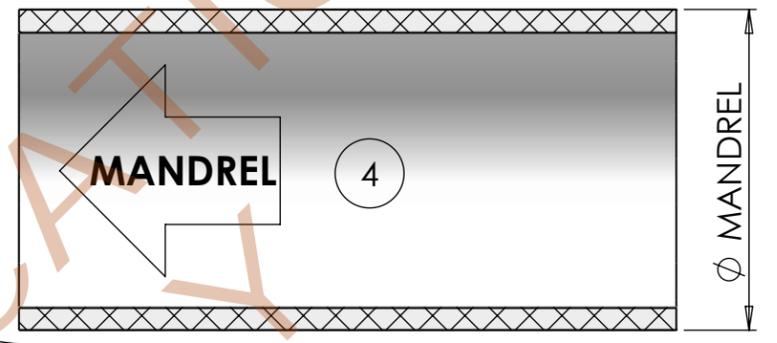
(4) Insert Mandrel through the form tool, engaging the Spider Clip and securing the Form Tool to the Hub, with a Recess Former sandwiched in-between.

(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.



MANDREL
SCH. 40 PVC RECOMMENDED
(FOR 59MM USE 1.90" OD MANDREL, 1-1/2" PVC or similar)
(FOR 76MM USE 2-3/8" OD MANDREL, 2" PVC or similar)
(FOR 100MM USE 3-1/2" ODMANDREL, 3" PVC or similar)
(FOR 130MM USE 4-1/2" OD MANDREL, 4" PVC or similar)



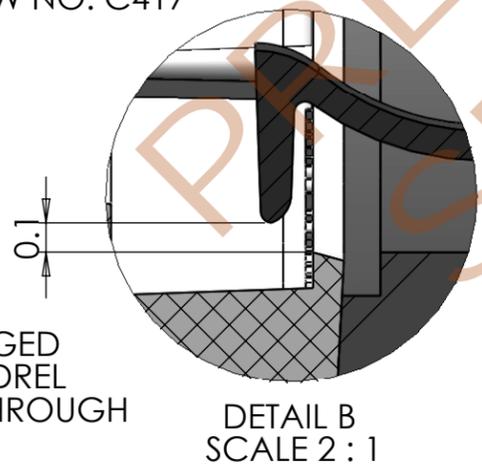
FORM TOOL
PIVOTS ON 1/2UNC BOLTS
±6° SKEW FROM BULKHEAD

FOR 59MM, P/N 02DT0412, DRW NO. E09038
FOR 76MM, P/N 02DR0426, DRW NO. E0937
FOR 100MM, P/N 02DR0443, DRW NO. E0951
FOR 130MM, P/N 02DR0453, DRW NO. C417

(2) FOR 59MM, P/N 02SC05907, DRW NO. C670
FOR 76MM, P/N 02SC07607, DRW NO. C648
FOR 100MM, P/N 02SC10007, DRW NO. C639
FOR 130MM, P/N 02SC13007, DRW NO. C659

HUB SEAL
FOR 59MM, P/N 02SC05902, DRW NO. C668
FOR 76MM, P/N 02SC07602, DRW NO. C647
FOR 100MM, P/N 02SC10002, DRW NO. C642
FOR 130MM, P/N 02SC13002, DRW NO. C657

HUB
FOR 59MM, P/N 02SC05901, DRW NO. C667
FOR 76MM, P/N 02SC07601, DRW NO. C646
FOR 100MM, P/N 02SC10001, DRW NO. C641
FOR 130MM, P/N 02SC13001, DRW NO. C656



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		0	1/26/2010	FOR CONSTRUCTION		MM	GY
SCALE: DO NOT SCALE							
DRW NO: A243							
SHEET: 2 of 8							



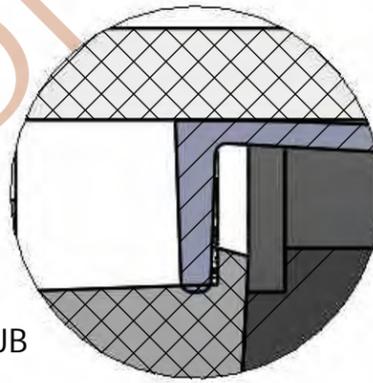
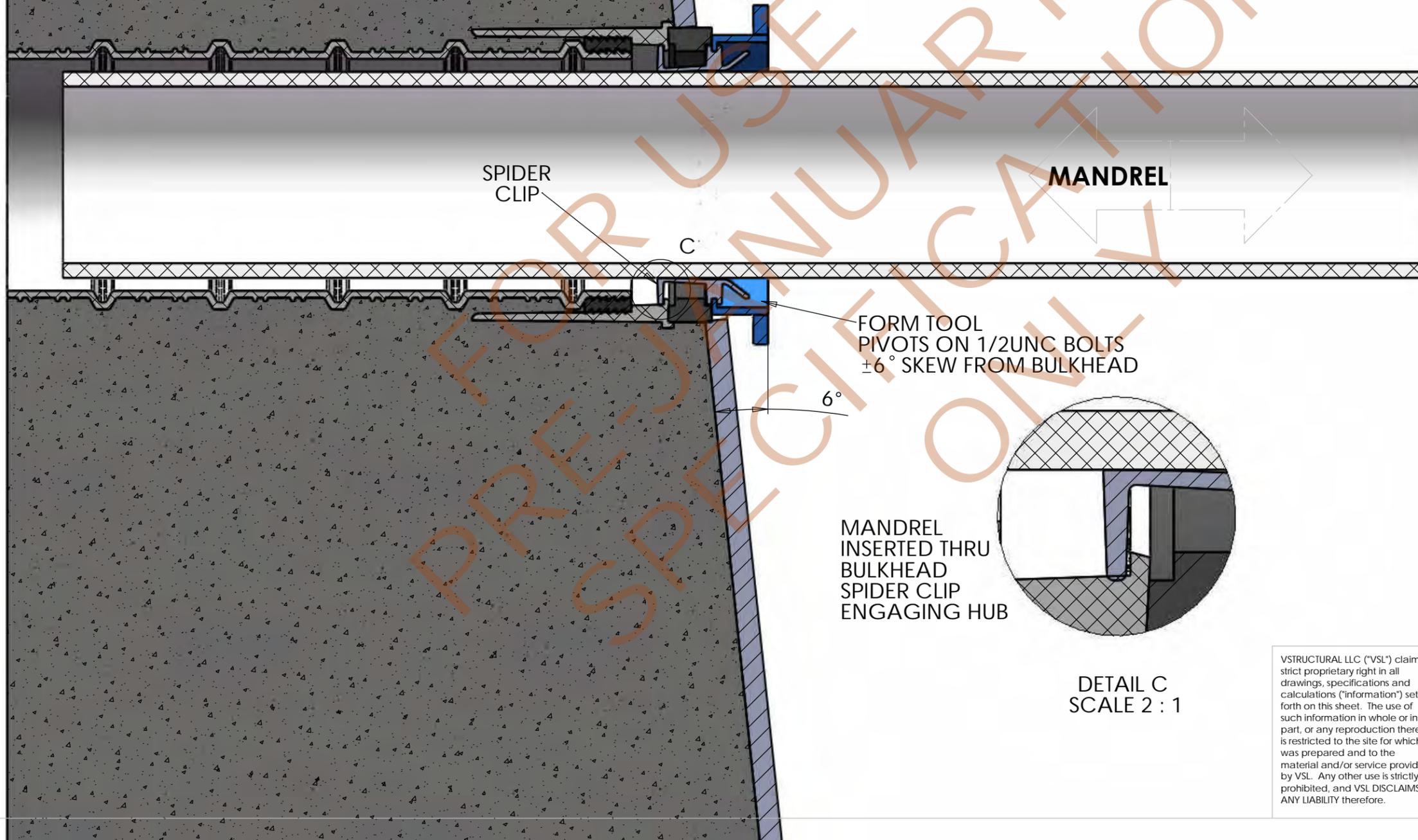
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WET CAST FORM

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.



DETAIL C
SCALE 2 : 1

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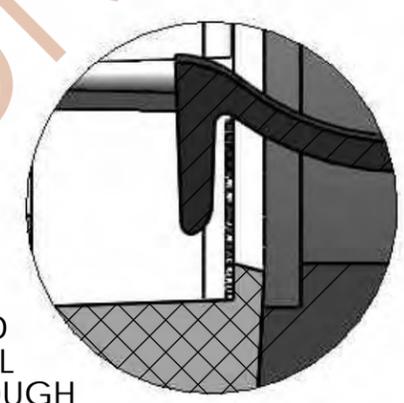
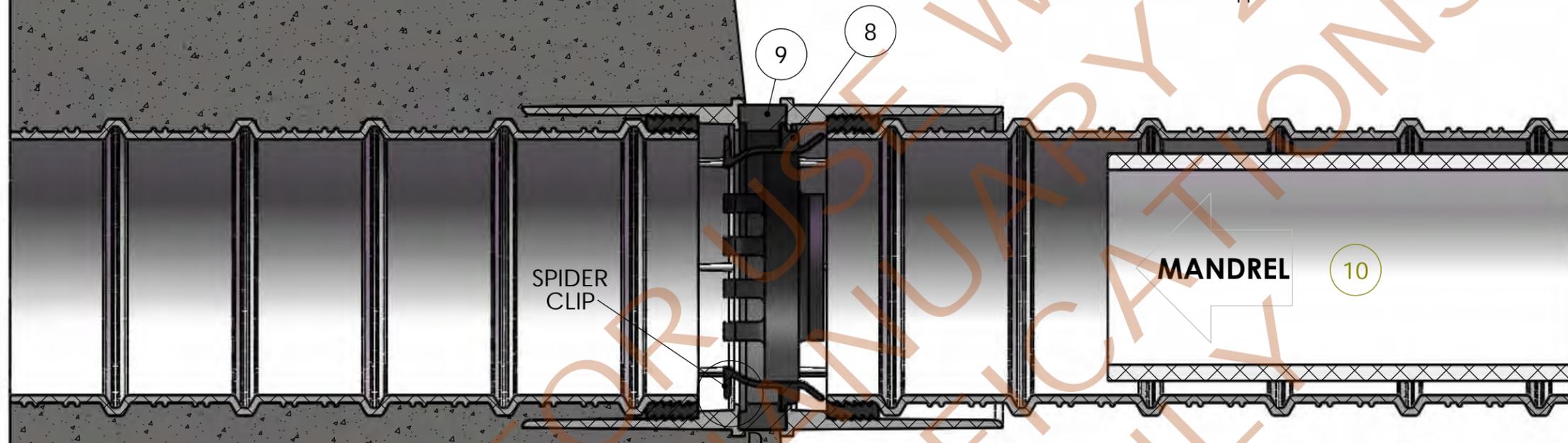
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							DESCRIPTION	BY			
SCALE: DO NOT SCALE											
DRW NO: A243											
SHEET: 3 of 8											

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

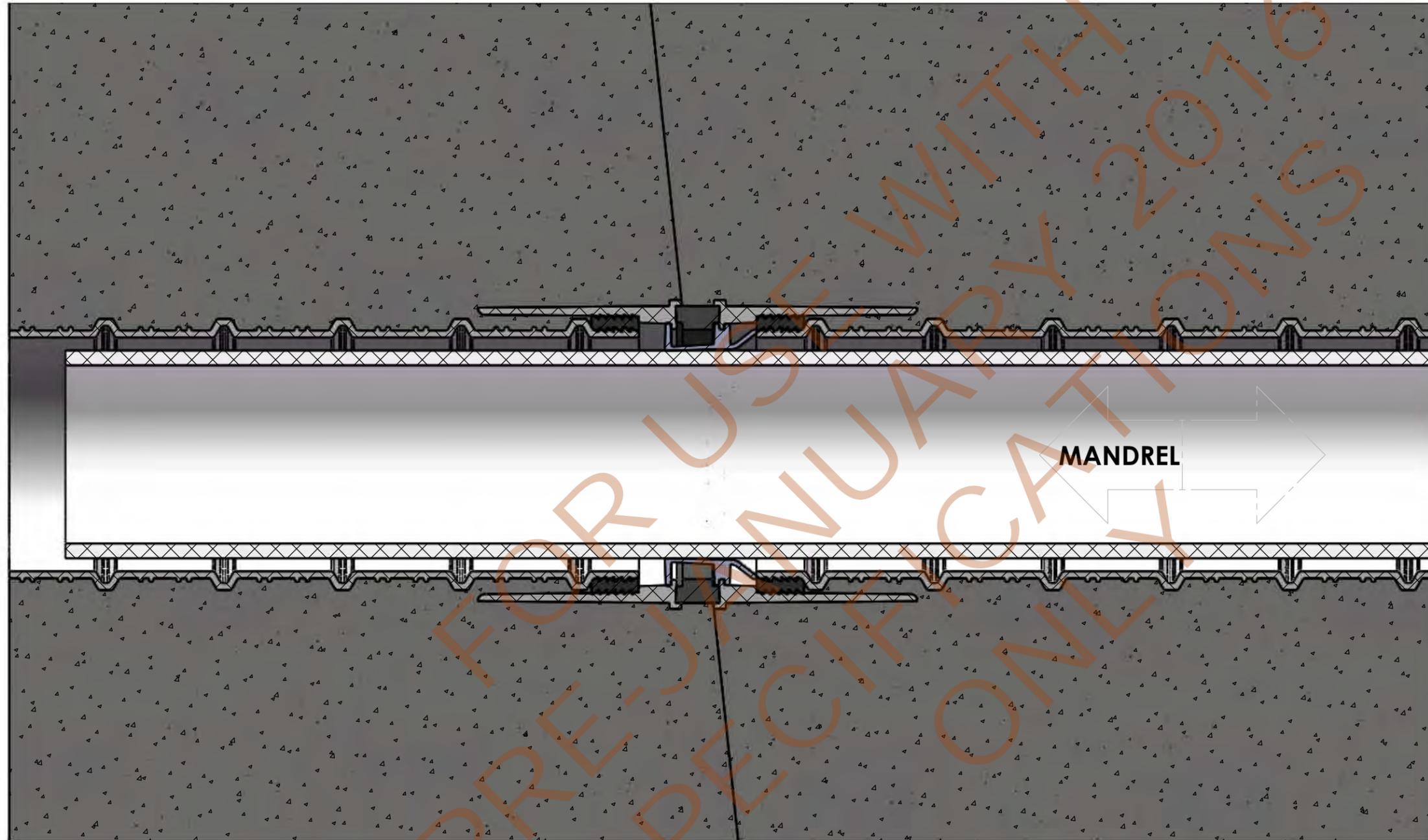
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INSTALLATION GUIDE		Dallas, TX / Washington, DC / Denver, CO / Pompano Beach, FL / Atlanta, GA		NO.	DATE	DESCRIPTION			
SCALE: DO NOT SCALE									
DRW NO: A243									
SHEET: 4 of 8									

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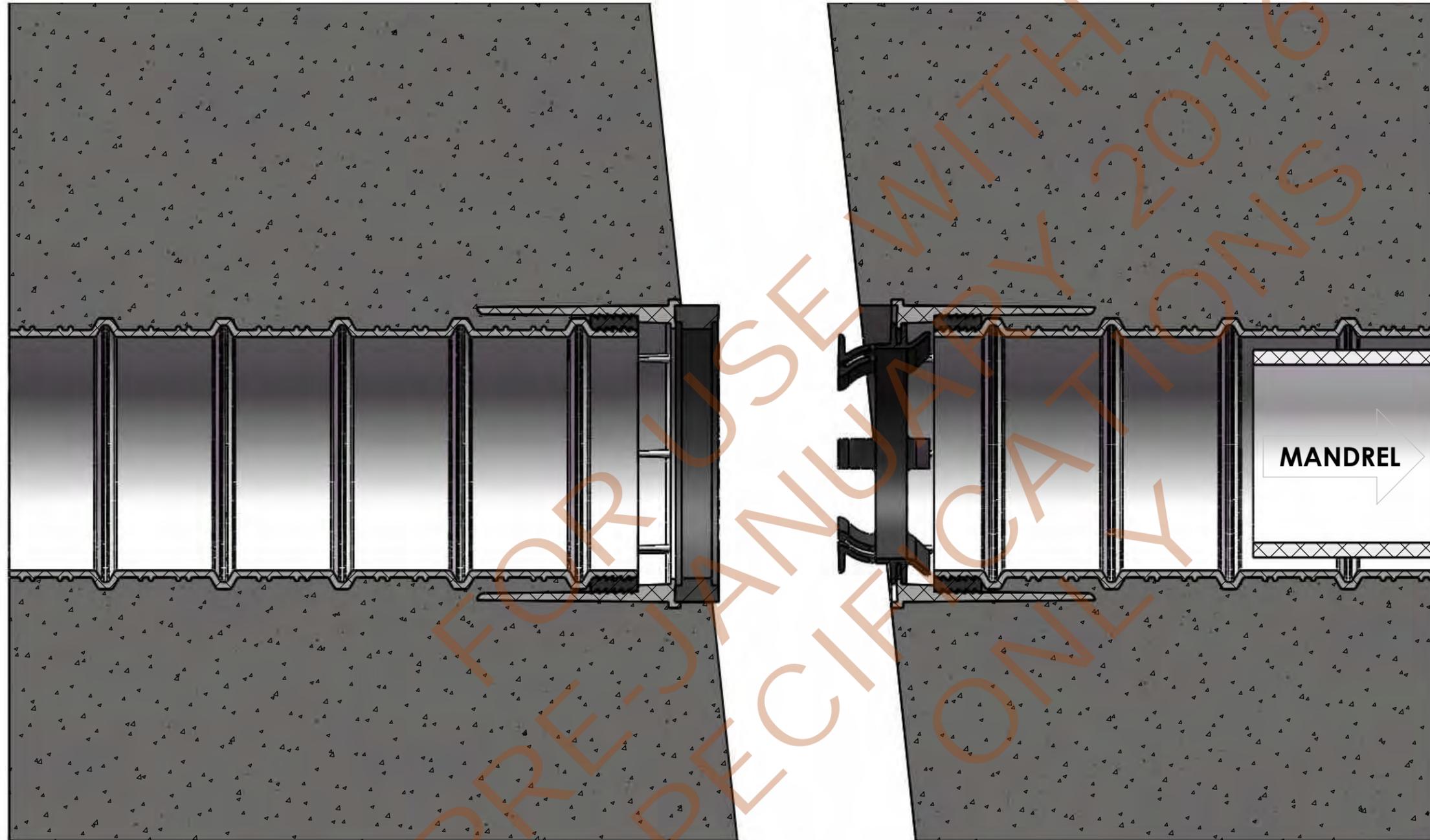
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					DESCRIPTION		BY	CHK	
VSL SEGMENTAL DUCT COUPLER		INSTALLATION GUIDE		SCALE: DO NOT SCALE		DRW NO: A243		SHEET: 5 of 8	

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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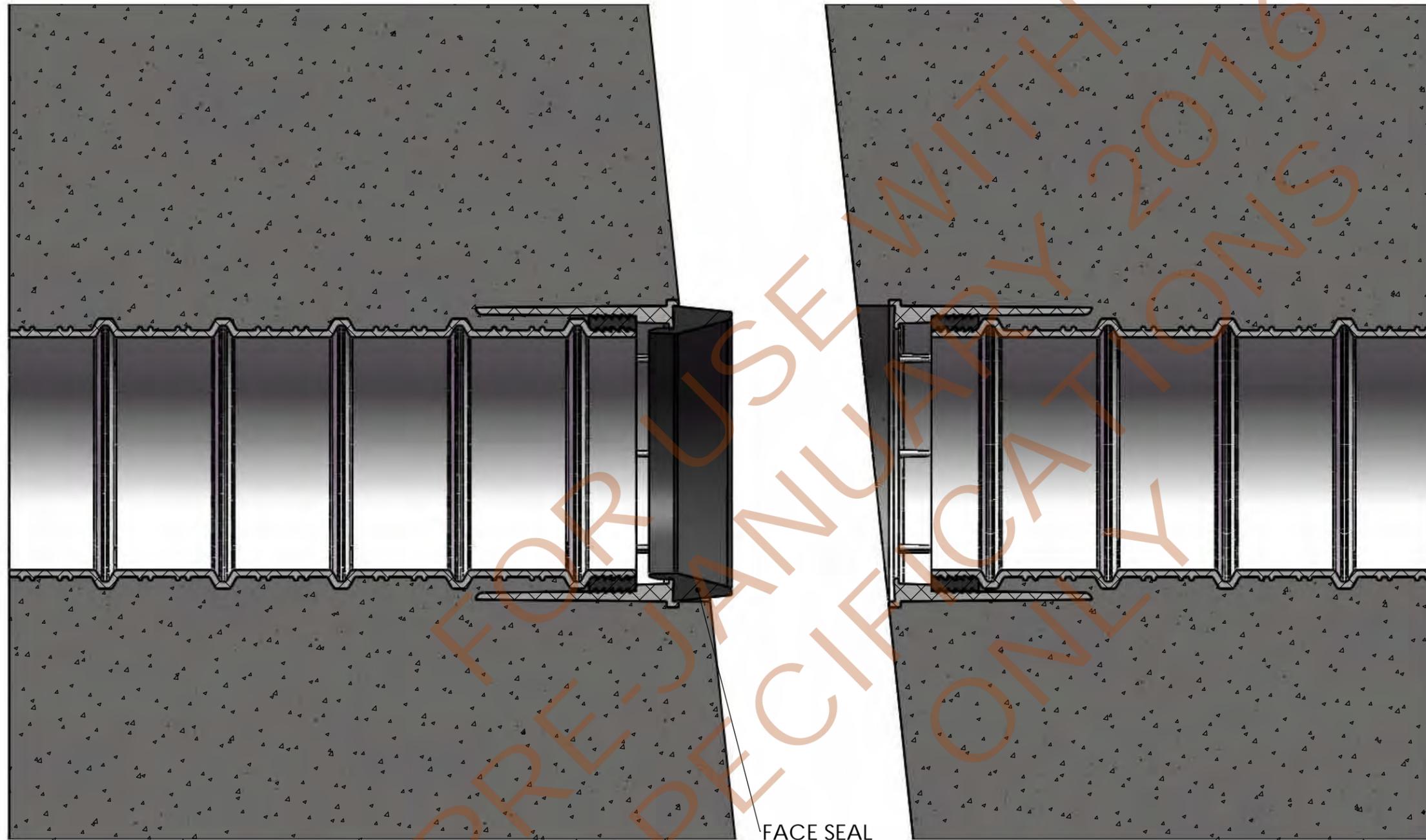
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VSL SEGMENTAL DUCT COUPLER	INSTALLATION GUIDE		
SCALE: DO NOT SCALE			
DRW NO: A243			
SHEET: 6 of 8			

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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	Dallas, TX / Washington, DC / Denver, CO / Pompano Beach, FL / Atlanta, GA			0	1/26/2010	PRELIMINARY		MM	GY
VSL SEGMENTAL DUCT COUPLER		INSTALLATION GUIDE							
SCALE: DO NOT SCALE		DRW NO: A243							
SHEET: 7 of 8									

