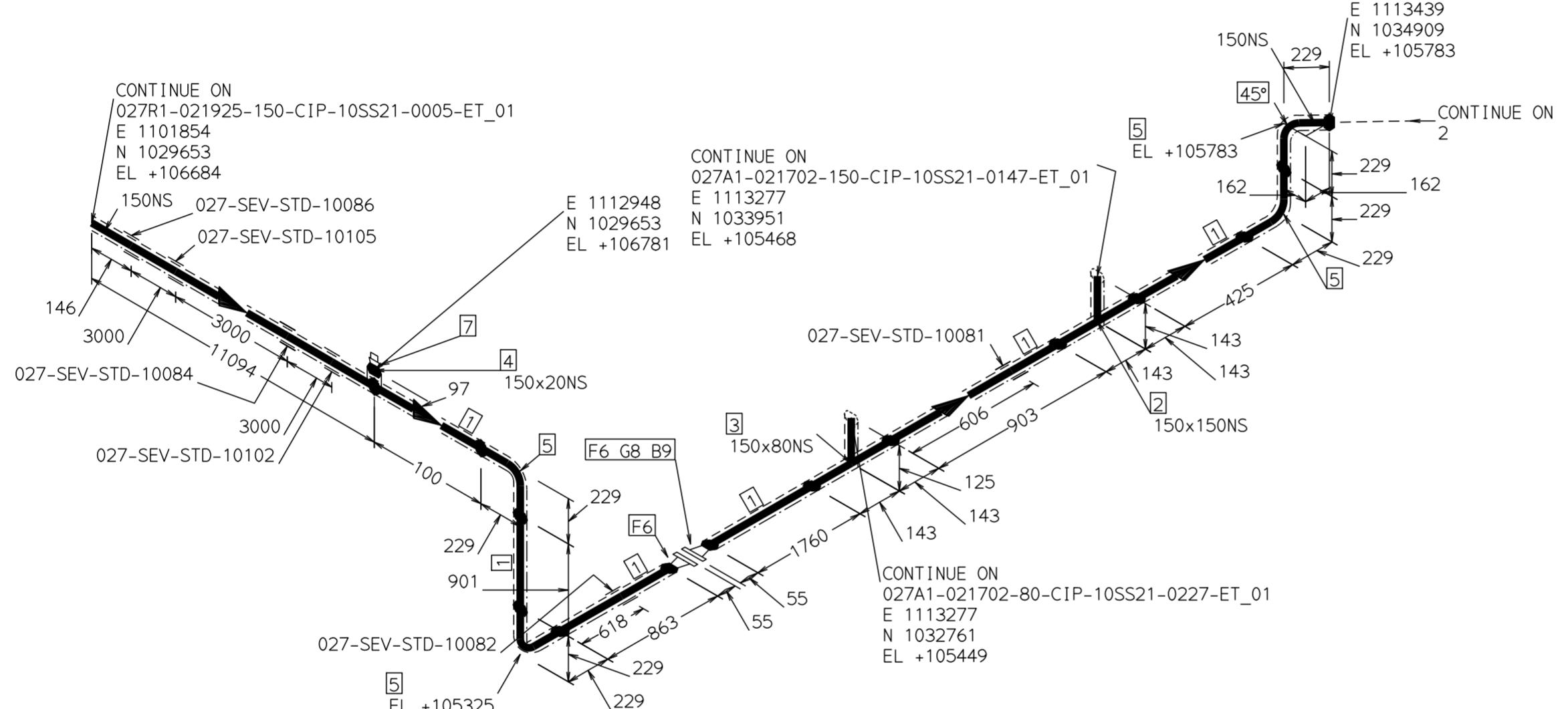


ISOMETRIC IFC - CHECK LIST

Line Number	021925CIP0005	Stress CN / Level	cn-203	Nº	Level:	 Cargill TechnipFMC – Butterfly Project																							
Isometric Number	027A1021925CIP0005_01	Process Approval Required	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Intrumentation Approval Required (N/A)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO																								
Information to be attached:						HOLDS <table border="1"> <thead> <tr> <th>Nº</th> <th>SHORT DESCRIPTION</th> <th>RESOLVED (✓)</th> </tr> </thead> <tbody> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> </tbody> </table>			Nº	SHORT DESCRIPTION	RESOLVED (✓)																		
Nº	SHORT DESCRIPTION	RESOLVED (✓)																											
Master Copy of PID:	<input checked="" type="checkbox"/> YES	N/A <input type="checkbox"/>	Nº 554-1000-10-PIDS	Rev. 8																									
PID Modification Sheet:	<input type="checkbox"/> YES	N/A <input checked="" type="checkbox"/>	Nº	Rev.																									
Equipment Vendor Dwg. :	<input type="checkbox"/> YES	N/A <input checked="" type="checkbox"/>	Nº	Rev.																									
Instrument Dwg. :	<input checked="" type="checkbox"/> YES	N/A <input type="checkbox"/>	Nº	Rev.																									
Project By-Pass ⁽⁴⁾ :	<input type="checkbox"/> YES	N/A <input type="checkbox"/>	Nº	Rev.																									
SPO Approved Isometric:	<input type="checkbox"/> YES	N/A <input checked="" type="checkbox"/>	Rev.	Extraction Date:																									
SIT Approved Isometric:	<input checked="" type="checkbox"/> YES	N/A <input type="checkbox"/>	Rev.	Extraction Date:																									
A VERIFICAR / TO BE CHECKED Revision By : (D) Designer / (LDG) Design Leader / (ST) Stress Specialist / (LST) Stress Leader / (SP) Supports Specialist / (LSP) Supports leader / (M) Materials / (SL) Spooler / (CHK) Issuer / (L) Discipline Lead						<table border="1"> <thead> <tr> <th>IFC</th> <th>REV 0</th> <th>REV 1</th> <th>REV 2</th> </tr> </thead> <tbody> <tr><td>✓</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>✓</td><td>X⁽¹⁾</td><td>1st-Chk⁽²⁾</td><td>2nd-Chk⁽³⁾</td></tr> </tbody> </table>			IFC	REV 0	REV 1	REV 2	✓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓	X ⁽¹⁾	1st-Chk ⁽²⁾	2nd-Chk ⁽³⁾									
IFC	REV 0	REV 1	REV 2																										
✓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																										
✓	X ⁽¹⁾	1st-Chk ⁽²⁾	2nd-Chk ⁽³⁾																										
Revision By : (D) Designer / (LDG) Design Leader																													
Iso Information	Nº de línea según PID y lista de líneas / Line Nbr. according to PID and line list																												
	Datos de la línea según lista de líneas / Line data according to line list																												
	Clase de tubería según PID y Lista de Lineas / Piping class according to PID and Line List																												
	Vínculo E3D con Diagramas (Process Unit, Temp Operación, Numeracion TODAS válvulas manuales) / Link between E3D and Diagrams (Process Unit, Op Temp, ALL manual valves Tagged)																												
	Diámetro de la línea indicado en número de línea en el cajetín / Line diameter indicated in the line number in the title block																												
Equipment	Equipo modelado según plano Vendor válido para generar isométrica IFC / Equipment modelled according Vendor drawing valid for Isometric IFC generation Código / Code: 2 <input type="checkbox"/> 3 <input type="checkbox"/>																												
	Nombre de tubuladuras según PID y plano Vendor / Name of nozzle according to PID and Vendor drawing																												
	Rating y diámetro de tubuladuras según plano Vendor / Rating and diameter of nozzles according to vendor drawing																												
	Posición y elevación de tubuladuras según plano Vendor / Position and elevation of nozzles according to Vendor drawing																												
	Revision By : (D) Designer / (LDG) Design Leader																												
Line Design	Línea sin colisión (verificación incluyendo la nube de puntos) / Line is clash free (checked including points cloud)																												
	Comentarios de SPO a líneas críticas recibidos e implementados antes de extracción final para emisión / Process comments to critical lines received and implemented before final extraction for issuance																												
	Verificación contra P&ID y Lista de Lineas / Check Iso vs P&ID and Line List : Correcta referencia de la continuidad de la isométrica en líneas nuevas, líneas existentes u otra hoja de la isométrica en los extremos de línea y sus ramales, incluyendo elevaciones y coordenadas / Correct continuity isometric reference to new lines, existing lines or other isometric sheet in each end of the line and its branches including elevations and coordinates																												
	Verificación contra P&ID / Check Iso vs P&ID : Elementos en línea incluidos, secuencia de picajes, pendiente, sentido de flujo, numeración de instrumentos, cambios de especificación, cumplimiento de notas / in-line components included, branch sequence, slope, flow direction, instrument numbering, pipe class breaks, notes accomplishment																												
	Verificación contra P&ID / Check Iso vs P&ID : Longitudes requeridas de entrada y/o salida a equipos, distancias y/o elevaciones mínimas o máximas requeridas, formación de condensados / Required inlet and/or outlet lengths to equipments, minimum or maximum distances and/or elevations, condensate generation																												
	Comentarios de SIT a recibidos e implementados antes de extracción final para emisión / Instrumentation comments received and implemented before final extraction for issuance																												
	Verificación contra Planos de Vendor o Hook-up Instrumentación / Check Iso vs Instrument Vendor Drawings or Hook-up : Tamaño de las válvulas de control y de seguridad, instalación de acuerdo a hook-up / Size of control valves and safety valves, instrument installation according to hook-up																												
	Picajes según tabla de picajes correspondiente / Branch configuration according to correspondent branch table																												
	Venteos y drenajes de Procesos según requerimientos de PIDs y de puntos altos y bajos para prueba hidrostática y modelados según "assembly" correspondiente / Process vents and drains according PID requirements and high and low points for hydrostatic test and modelled according proper assembly																												
	Verificación de distancia mínima entre soldaduras / Check minimum distance between welds																												
Notas explicativas adicionales incorporadas / Additional clarification notes added																													
Revision By : (ST) Stress Specialist / (LST) Stress Leader						<table border="1"> <thead> <tr> <th>By: ST</th> <th>By: LST</th> </tr> </thead> <tbody> <tr><td>✓</td><td>✓</td></tr> <tr><td>✓</td><td>✓</td></tr> </tbody> </table>			By: ST	By: LST	✓	✓	✓	✓															
By: ST	By: LST																												
✓	✓																												
✓	✓																												
Stress	El cálculo de stress disponible no está pendiente de revisión en curso / Available stress calculation is not awaiting for revision																												
	Los requisitos según el cálculo de stress están incorporados (si son aplicables) / Stress calculation requirements have been added (if applicable)																												
Revision By : (SP) Supports Specialist / (LSP) Supports leader						<table border="1"> <thead> <tr> <th>By: SP</th> <th>By: LSP</th> </tr> </thead> <tbody> <tr><td>✓</td><td>✓</td></tr> <tr><td>✓</td><td>✓</td></tr> </tbody> </table>			By: SP	By: LSP	✓	✓	✓	✓															
By: SP	By: LSP																												
✓	✓																												
✓	✓																												
Supports	La línea está soportada por completo y la lista de soportes está actualizada en el excel extraído del E3D / Line is completely supported and support list updated according file from E3D																												
	Concepto de soporte y separación máxima entre soportes / Support concept and support spans																												
	Requerimientos de soportes están de acuerdo al cálculo de stress y ajustados con el especialista de Stress / Support requirements according to stress calculation note are included and adjusted jointly with stress specialist																												
	Numeración correcta de los soportes / Supports correctly numbered																												
	Código de soportes correctamente indicados (STD - SPC - COM - MRS - PRF) / Support code correctly indicated (STD - SPC - COM - MRS - PRF)																												
Marcado de elementos soldados de los soportes en Iso Spool preliminar correspondiente / Mark-up of welded supports components in the correspondent preliminary Iso Spool	N/A																												
Revision By : (M) Materials						<table border="1"> <thead> <tr> <th>By: M</th> </tr> </thead> <tbody> <tr><td>-----</td></tr> <tr><td>-----</td></tr> <tr><td>-----</td></tr> <tr><td>-----</td></tr> </tbody> </table>			By: M	-----	-----	-----	-----																
By: M																													

Materials	La Linea pertenece a alguna o varias categorías de Criticidad. La Linea está listada en la Lista de Lineas Críticas de Materiales. Sus isometrías requieren Verificación exhaustiva / The Line belongs to some or several categories of Criticality. The Line is listed in the Critical Material Lines List. The isometrics require exhaustive verification				N/A																								
	Todos los materiales están identificados en la isométrica y se encuentran listados en el listado de materiales / All materials are identified in the isometric and are listed in the BOM																												
	Añadidos elementos especiales de tubería en Línea de acuerdo a PIDs última revisión y lista de especiales de tubería (Verificar en adicional correcta Numeración, criterios de Posicionamiento en diseño si aplican) / Inclusion of special piping elements in line according to PIDs latest review and Special Piping Material List (Verify identification number, piping design location criteria if applicable)																												
	Nº de identificación de válvulas manuales (según PID) / Identification number of manual valve (according to PID)																												
	Todas las juntas y pernos colocadas según tipo requerido (RF, FF, Bolts, Machine Bolts) / All gaskets and bolts placed according required type (RF, FF, Bolts, Machine Bolts)																												
	Extensión de volante de válvula modelada y reflejada en lista de materiales de la isométrica / Valves axis extension modelled and reflected in Isometric BOM				N/A																								
	Válvulas colocadas según PID y Piping Class / Valves placed according PID an Piping Class																												
Revision By : (CHK) Issuer						<table border="1"> <thead> <tr> <th>By: CHK</th> </tr> </thead> <tbody> <tr><td>1st-Chk⁽²⁾</td></tr> <tr><td>X</td></tr> <tr><td>✓</td></tr> <tr><td>X</td></tr> </tbody> </table>			By: CHK	1st-Chk ⁽²⁾	X	✓	X																
By: CHK																													
1st-Chk ⁽²⁾																													
X																													
✓																													
X																													
Final Check	La isométrica verificada por Procesos (SPO) se corresponde a la última revisión / The isometric verified by Process (SPO) corresponds to its last revision																												
	La isométrica verificada por Instrumentación (SIT) se corresponde a la última revisión / The isometric verified by Instrumentation (SIT) corresponds to its last revision																												
	Las notas a mano están incorporadas en las isométricas / The hand-made annotation is included																												
	La revisión de los documentos para la verificación siguen siendo las actuales / Current revision of documents for checking are still the latest available																												
	El número de revisión y la fecha son correctos / The revision number and the date are correct																												
	Todos los comentarios se han revisado para ser incluidos o descartados / All comments have been checked to be included or discarded																												
	Holds resueltos o en su defecto By-Pass aprobado / Holds resolved or instead By-Pass approved																												
	SIGNATURES (Name and date)																												
DESIGN LEADER (LD) REVIEWED By Ruth Herrero at 5:16 pm, Jan 26, 2021	SUPPORTS LEADER (LSP) REVIEWED By Jose G. Suarez at 12:07 pm, Feb 05, 2021	ISSUER (CHK) REVIEWED By jrblanco at 6:01 pm, Feb 12, 2021																											
STRESS LEADER (LST) REVIEWED By José Blas Rico at 10:59 am, Feb 12, 2021	MATERIALS (M) REVIEWED By Jose G. Suarez at 2:49 pm, Feb 12, 2021	DISCIPLINE LEAD (L) REVIEWED																											
NOTES: [1] If "X" marqued, a "HOLD" note should be included in the Holds area for justification. [2] 1st checking round: Checker to place a (✓) or a (X) confirming or not Designer verification. A (✓) or a (X) should also be placed to confirm or reject any (X) mark placed by the Designer confirming or not the implicit HOLD. [3] 2nd checking round: Checker to place a (✓) to validate the points that were not confirmed in the 1st round and were corrected by respective Specialist. [4] If an isometric with HOLD is approved by IFC Leader for issuance, the correspondent By-Pass should be attached.																													



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	150	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPF0	16.1M
2	150 x 150	Eq Te, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF5CU	1
3	150 x 80	Red Te, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF07Z	1
4	150 x 20	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94T	1
5	150	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKF	4
6	150	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMX	2

MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
7	20	Plug, EN 10241, BSPPM End, Square Type, -./ EN 10216-5 Gr.X2CrNi19-11,	C3R8XUTJ	1
8	150	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 16, IBC Type, Thk=3.2mm, Klingsersil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1NKU6DX	1
9	20	110 SBLt 2 HHx N&W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70.	C3JHBDAW	8

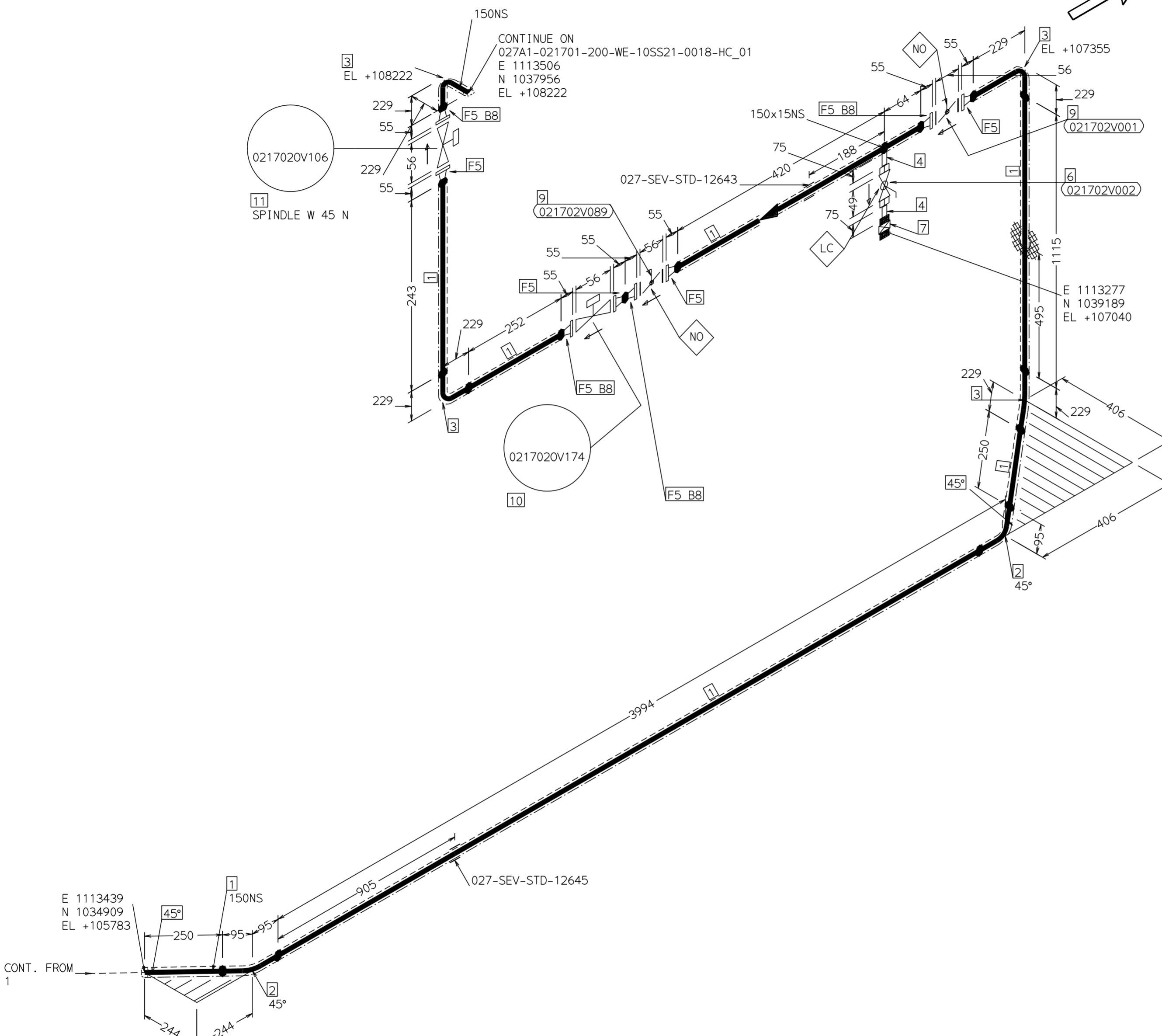
PIPING DPT.
ISSUER
CHECKED

By irblance at 5:56 pm, Feb 12, 2021

0	15/01/21	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION
REV	DATE	DWN	CHK	APP	DESCRIPTION

All dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.

horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.						
NOTES: For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.	REFERENCES / DOCUMENTS		SPEC 10SS21	PROJECT DESCRIPTION/LOCATION		
			SYMBOLS	BUTTERFLY PROJECT/KREFELD		 TechnipFMC
	LINE LIST	30201-042-001000-001	Insulated Pipe — — — —	Insulated and Traced Pipe — — — — —	LINE NUMBER	TRAIN
	ISOMETRIC INDEX	30303-042-001000-200	PROCESS UNIT — — — —	DESIGN AREA — — — —		SHEET
	PIPING SUPPORT	30207-042-001000-001	029	027A1	021925-150-CIP-10SS21-0005-ET	REV 01 1 OF 2 0



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	150	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr. X2CrNi19-11,	C1P0FPFO	6.5M
2	150	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKE8K	2	
3	150	M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKF	4
4	15	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEKF		
5	150	M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,		
6	15	Nip, Mnf Std, PE/BSPTM End, Seamless, L = 75mm, -, /2.9MM EN 10216-5 Gr.X2CrNi19-11,	C3PDPWAA	2
		WN Flg, EN 1092-1, RF/BW End, PN 16, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMX	8
		Bal Fem,FB,PN 63,BSPTF Ends,Datasheet: 6000/ EN 10213 Gr.GX5CrNiMo19-11-2,	C1YMLP29	1

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
7	15	021702A700 Hose Connection as per 30205-042-001000-001	C488SNHD	1
8	20	190 SBLT 2 HHx N&2W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDBC	32
9	150	But Waf,PN 10,Lug-type RF,Datasheet: 6103/ Ductile Iron,	C2W7ZDY4	2
10	150	GENERIC ON-OFF VALVE 021702V174	- -	1
11	150	GENERIC ON-OFF VALVE 021702V106	- -	1

PIPING DPT.
ISSUER
CHECKED

By jiblanco at 5:56 pm, Feb 12, 2021

0	15/01/21	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION
REV	DATE	DWN	CHK	APP	DESCRIPTION

ALL dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.

NOTES:

For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

REFERENCES / DOCUMENTS

LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-001000-200
PIPING SUPPORT	30207-042-001000-001

SPEC

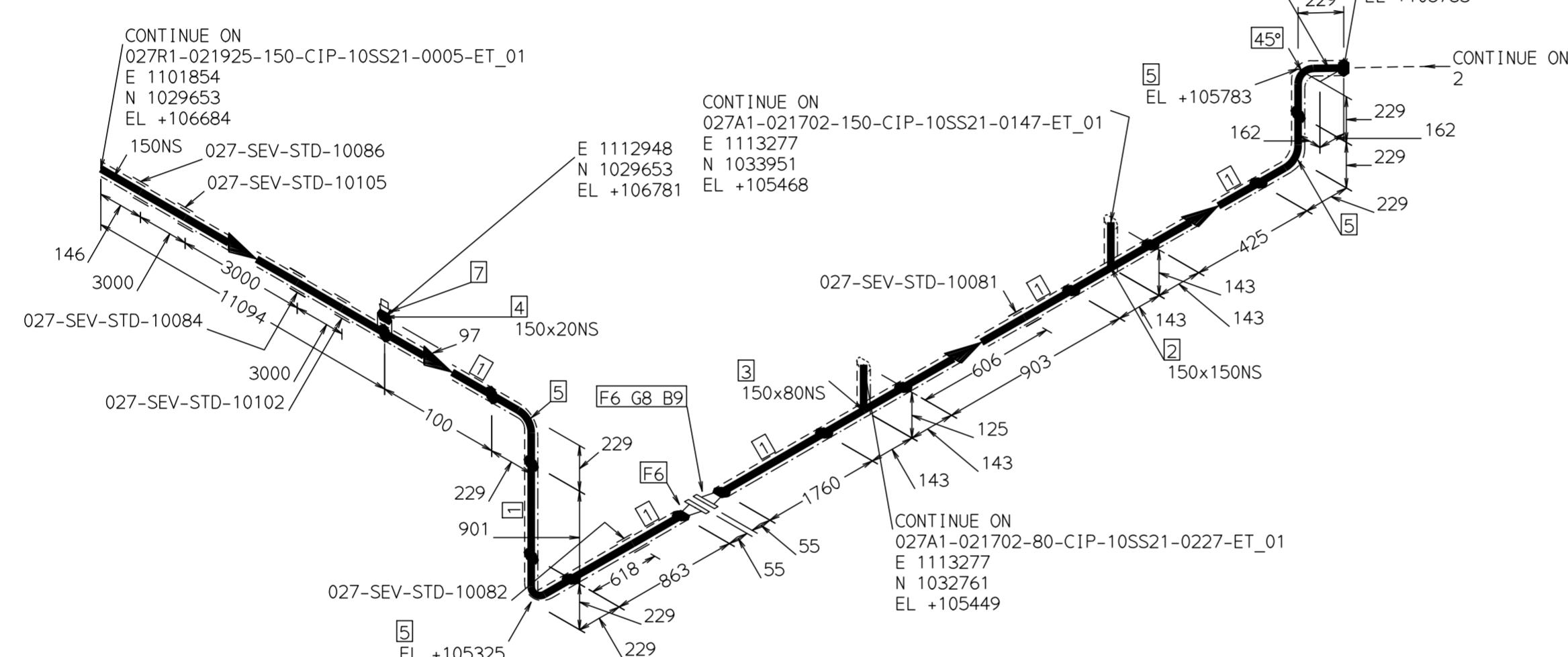
SYMBOLIC

10SS21

BUTTERFLY PROJECT/KREFELD

PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	sheet	REV
029	027A1	021925-150-CIP-10SS21-0005-ET	01	2 OF 2	0





MATERIAL LIST - FABRICATION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
1	150	Pipes (Length), EN 10220, BE, EFW + 100% RT, - ,/2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FF0	16.1M
2	150 x 150	Eq Te, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF5CU	1
3	150 x 80	Red Te, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1,/2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF07Z	1
4	150 x 20	Half Coup, Prj Std, BSPPF End, 40 Bar, - , - ,/ EN 10216-5 Gr.X2CrNi19-11,	C3CLV94T	1
5	150	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKF	4
6	150	WN Flg, EN 1092-1, RF/BW End, PN 16, - ,/4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMX	2

MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
7	20	Plug, EN 10241, BSPPM End, Square Type, -./ EN 10216-5 Gr.X2CrNi19-11,	C3R8XUTJ	1
8	150	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 16, IBC Type, Thk=3.2mm, Klingsersil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1NKU6DX	1
9	20	110 SBLt 2 HHx N&W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70.	C3JHBDAW	8

PIPING DPT.

MATERIALS

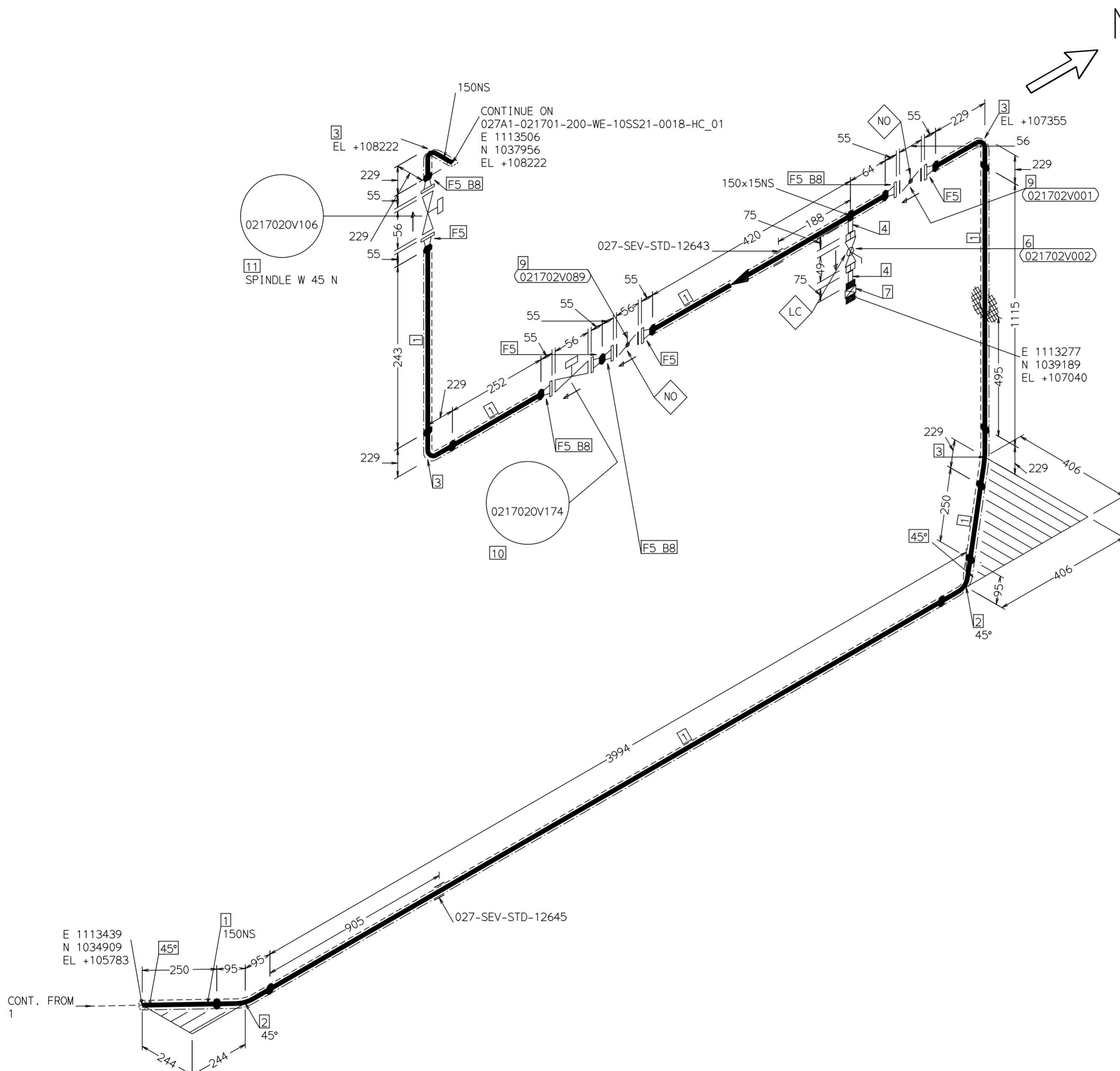
CHECKED

By Joss C. Suarez at 3:10 pm, Feb 13, 2021

0	15/01/21	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION	
REV	DATE	DWN	CHK	APP	DESCRIPTION	

All dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.

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NOTES: For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.	REFERENCES / DOCUMENTS		SPEC 10SS21	PROJECT DESCRIPTION/LOCATION		
			SYMBOLS	BUTTERFLY PROJECT/KREFELD		 TechnipFMC
	LINE LIST	30201-042-001000-001	Insulated Pipe — — — —	Insulated and Traced Pipe — — — — —	LINE NUMBER	TRAIN
	ISOMETRIC INDEX	30303-042-001000-200	PROCESS UNIT — — — —	DESIGN AREA — — — —		SHEET
	PIPING SUPPORT	30207-042-001000-001	029	027A1	021925-150-CIP-10SS21-0005-ET	REV 01 1 OF 2 0



MATERIAL LIST - FABRICATION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
1	150	Pipes (Length), EN 10220, BE, EFW + 100% RT, - ,/2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FF0	6.5M
2	150	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKE8K	2
3	150	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKF	4
4	15	Nip, Mnf Std, PE/BSPTM End, Seamless, L = 75mm, - ,/2.9MM EN 10216-5 Gr.X2CrNi19-11,	C3PDPWVA	2
5	150	WN Flg, EN 1092-1, RF/BW End, PN 16, - ,/4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMX	8
6	15	Bal Fem,FB,PN 63,BSPTF Ends,Datasheet: 6000/ EN 10213 Gr.GX5CrNiMo19-11-2,	C1YMLP29	1

MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
7	15	021702A700 Hose Connection as per 30205-042-001000-001	C488SNHD	1
8	20	190 SBLt 2 HHx N&2W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDPC	32
9	150	But Waf,PN 10,Lug-type RF,Datasheet: 6103/ Ductile Iron,	C2W7ZDY4	2
10	150	GENERIC ON-OFF VALVE 0217020V174	- -	1
11	150	GENERIC ON-OFF VALVE 0217020V106	- -	1

PIPING DPT.

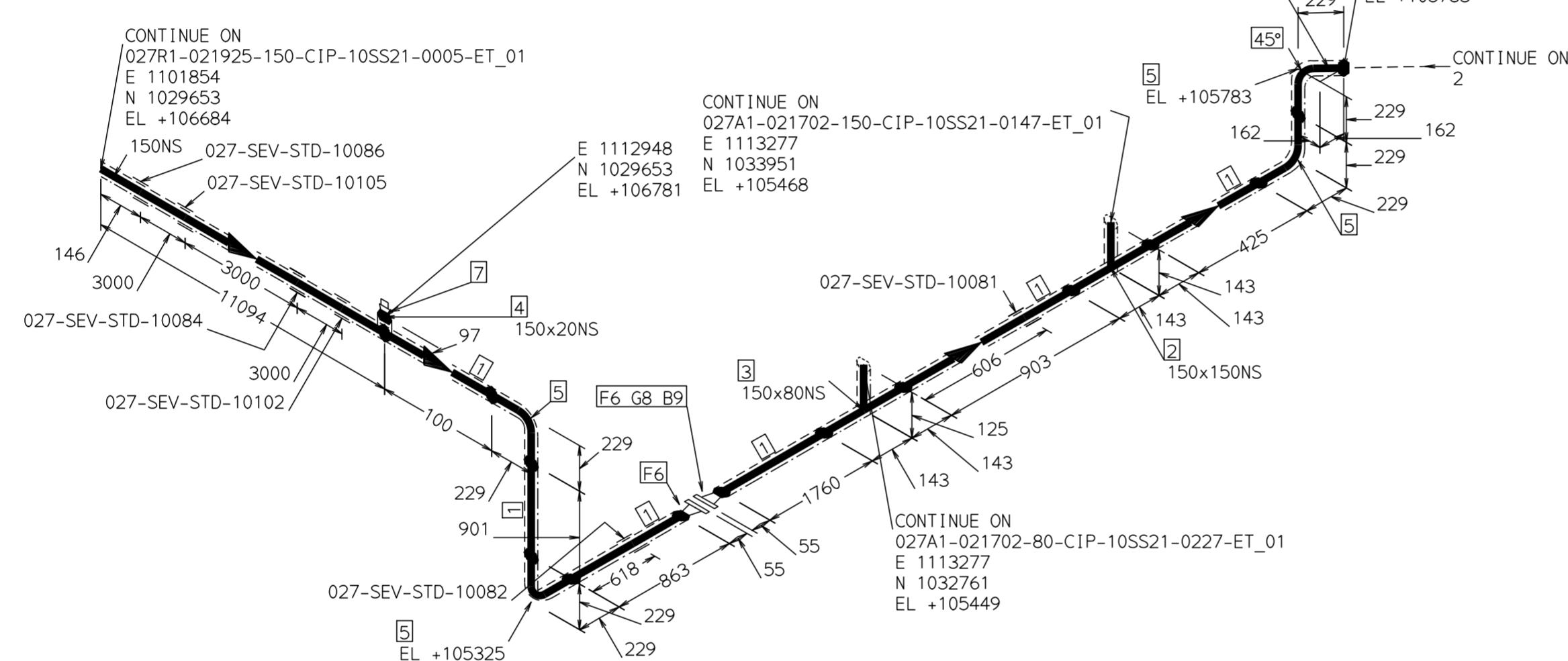
MATERIALS

CHECKED

Page 33 of 43 - Page 5 of 10 - 2021

Project Status Report - Q1 2021					
Key Findings & Issues					
Detailed Project Overview					
0	15/01/21	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION
REV	DATE	DWN	CHK	APP	DESCRIPTION

All dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.



MATERIAL LIST - FABRICATION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
1	150	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPF0	16.1M
2	150 x 150	Eq Te, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF5CU	1
3	150 x 80	Red Te, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF07Z	1
4	150 x 20	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94T	1
5	150	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKF	4
6	150	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMX	2

MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
7 20		Plug, EN 10241, BSPPM End, Square Type, -./ EN 10216-5 Gr.X2CrNi19-11,	C3R8XUTJ	1
8 150		NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 16, IBC Type, Thk=3.2mm, Klingsersil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1NKU6DX	1
9 20		110 SBlt 2 HHx N&W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70.	C3JHBDAW	8

PIPING DPT.
**STRESS
CHECKED**

BRUNSWICK COLLEGE OF BUSINESS ADMINISTRATION

PIPING DPT.
SUPPORTED

By iccpanes at 11:55 am, Feb 05, 2021

PIPING DPT.
SUPPORTS
CHECKED

CHIEFRED

0	15/01/21	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION
REV	DATE	PWN	CHM	APP	DESCRIPTION

All dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.

NOTES:

For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

REFERENCES / DOCUMENTS

SPEC

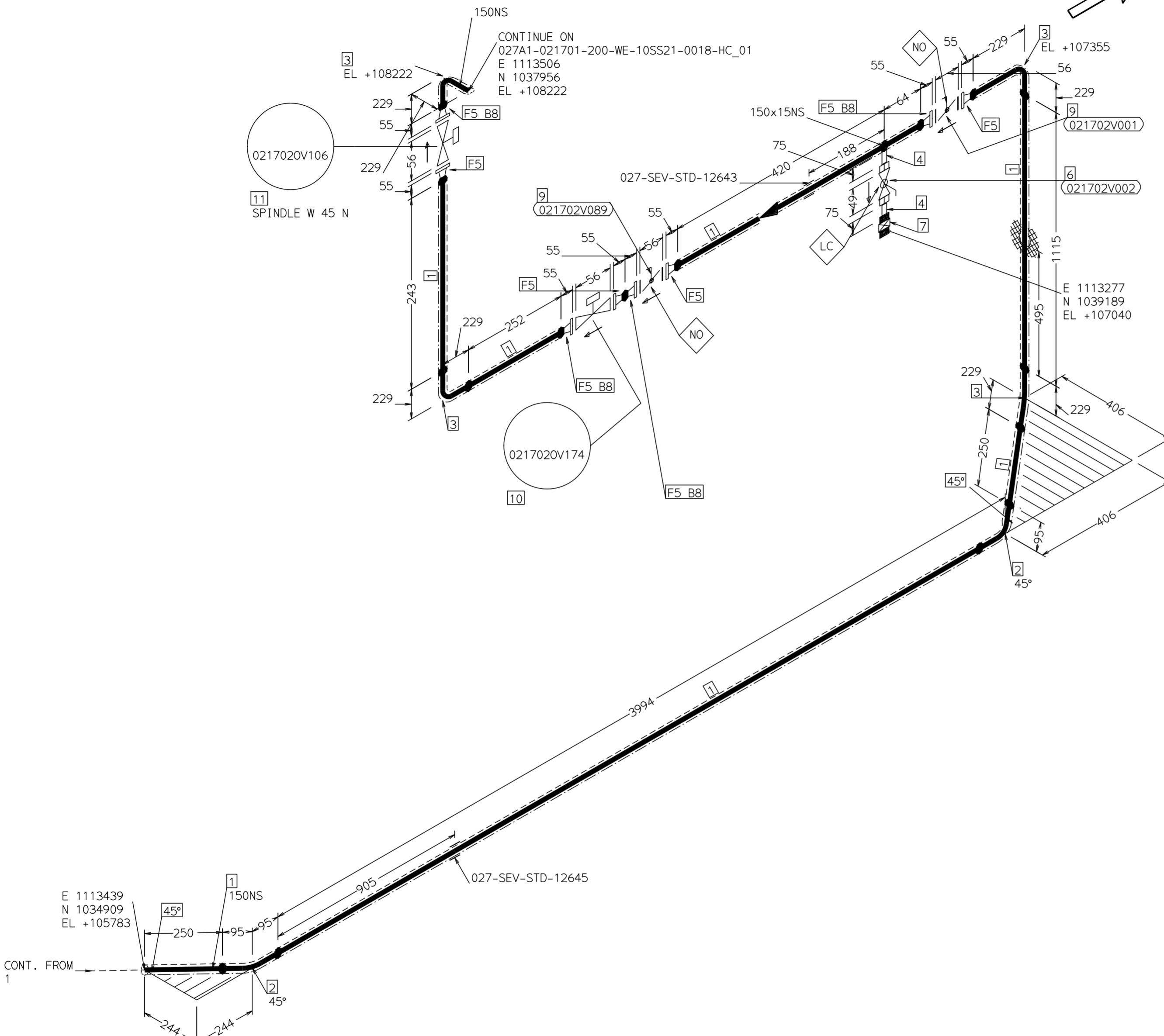
ANSWER

10SS21

PROJECT DESCRIPTION/LOCATION



	BUTTERFLY PROJECT/KREFELD	 TechnipFMC	 Cargill		
PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
029	027A1	021925-150-CIP-10SS21-0005-ET	01	1 OF 2	0


MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	150	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPFO	6.5M
2	150	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKE8K	2	
3	150	M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKF	4
4	15	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEKF	C3PDPWAA	2
5	150	Nip, Mnf Std, PE/BSPTM End, Seamless, L = 75mm, -, /2.9MM EN 10216-5 Gr.X2CrNi19-11,	C1KU0MMX	8
6	15	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,		
		Bal Fem,FB,PN 63,BSPTF Ends,Datasheet: 6000/ EN 10213 Gr.GX5CrNiMo19-11-2,		1

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
7	15	021702A700 Hose Connection as per 30205-042-001000-001	C488SNHD	1
8	20	190 SBLT 2 HHx N&2W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDBC	32
9	150	But Waf,PN 10,Lug-type RF,Datasheet: 6103/ Ductile Iron,		2
10	150	GENERIC ON-OFF VALVE 021702V174		1
11	150	GENERIC ON-OFF VALVE 021702V106		1

**PIPING DPT.
STRESS
CHECKED**

By José Blas Rico at 10:56 am, Feb 12, 2021

**PIPING DPT.
SUPPORTED**

By jccanales at 11:55 am, Feb 05, 2021

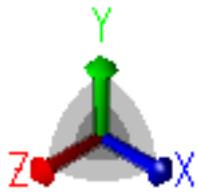
**PIPING DPT.
SUPPORTS
CHECKED**

By jccanales at 11:55 am, Feb 05, 2021

0	15/01/21	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION
REV	DATE	DWN	CHK	APP	DESCRIPTION

ALL dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.

PROCESS UNIT	DESIGN AREA	LINE NUMBER			TRAIN	SHEET	REV
		029	027A1	021925-150-CIP-10SS21-0005-ET			
					01	2 OF 2	0



N

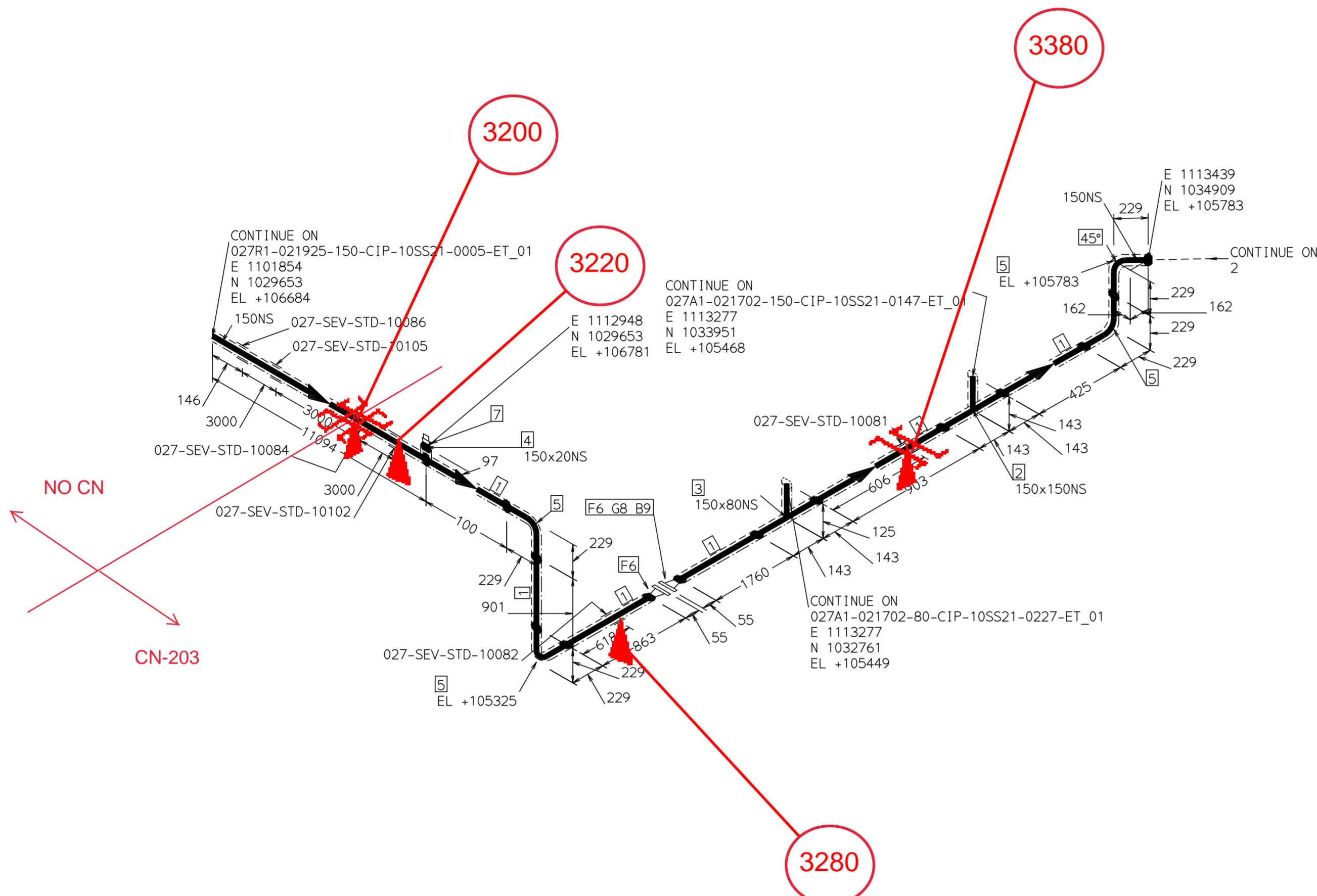


MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	150	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPFO	16.1M
2	150 x 150	Eq Te, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF5CU	1
3	150 x 80	Red Te, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1,/2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF07Z	1
4	150 x 20	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94T	1
5	150	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKF	4
6	150	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMX	2

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
7	20	Plug, EN 10241, BSPPM End, Square Type, -, / EN 10216-5 Gr.X2CrNi19-11,	C3R8XUTJ	1
8	150	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 16, IBC Type, Thk=3.2mm, Klingsil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1NKU6DX	1
9	20	110 SBLT 2 HHx N&2W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDAW	8



PIPING DPT.
**STRESS
MASTER**

By José Blas Rico at 11:02 am, Feb 04, 2021

0	15/01/21	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION
REV	DATE	DWN	CHK	APP	DESCRIPTION

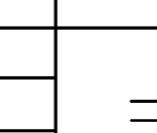
ALL dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.

NOTES:
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

REFERENCES / DOCUMENTS

LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-001000-200
PIPING SUPPORT	30207-042-001000-001

SPEC



SYMBOLIC

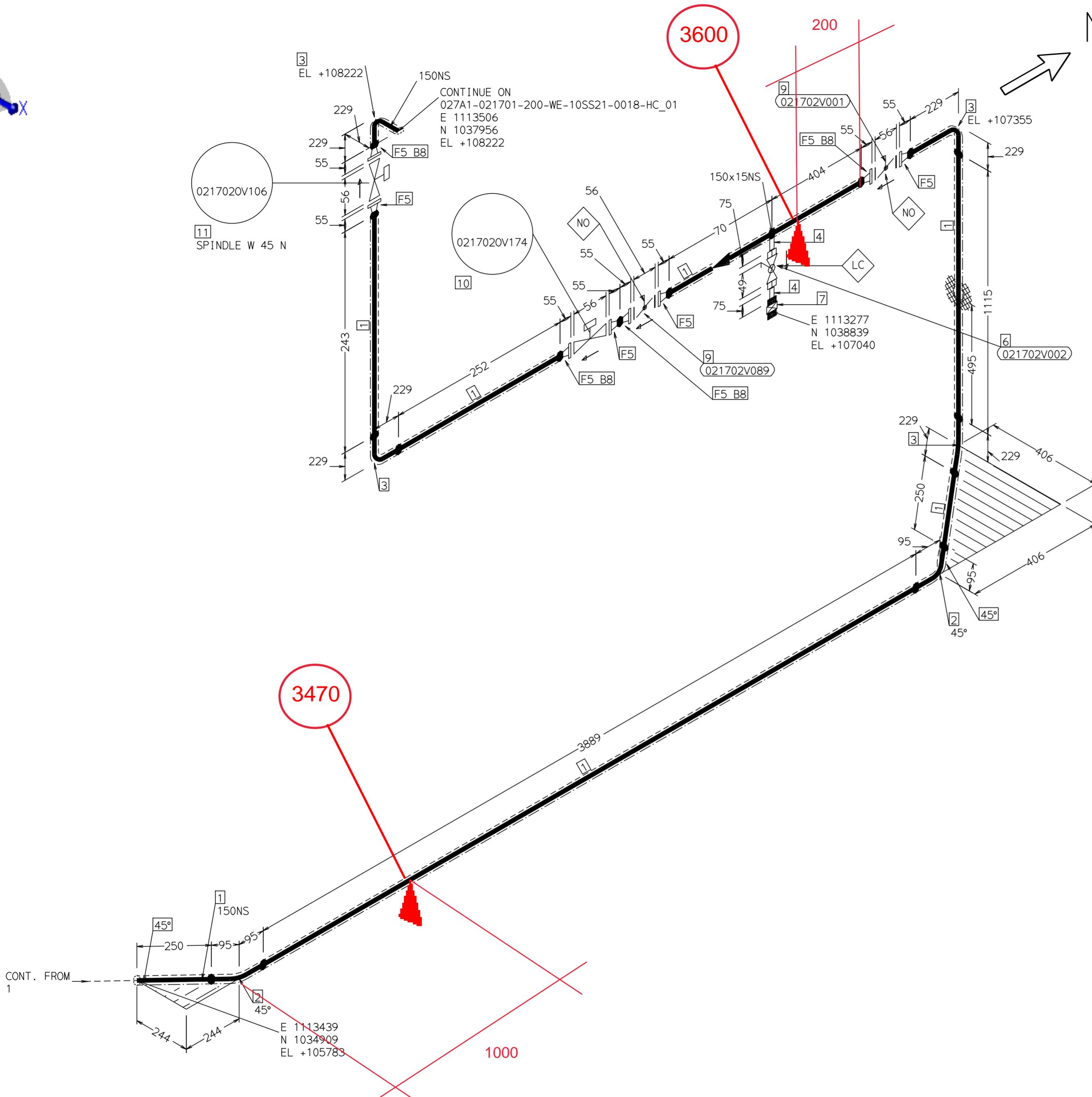
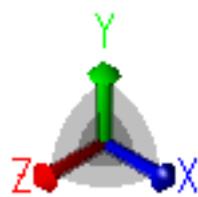


PROJECT DESCRIPTION/LOCATION

BUTTERFLY PROJECT/KREFELD



PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	sheet	REV
029	027A1	021925-150-CIP-10SS21-0005-ET	01	1 OF 2	0



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	150	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPF0	6.5M
2	150	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKE8K	2	
3	150	M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKF	4
4	15	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEKF		
5	150	M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C3PDPWWA	2
6	15	Nip, Mnf Std, PE/BSPT End, Seamless, L = 75mm, -, /2.9MM EN 10216-5 Gr.X2CrNi19-11,	C1KU0MMX	8
		WN Flg, EN 1092-1, RF/BW End, PN 16, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,		
		Bal Fem,FB,PN 63,BSPTF Ends,Datasheet: 6000/ EN 10213 Gr.GX5CrNiMo19-11-2,	C1YMLP29	1

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
7	15	021702A700 Hose Connection as per 30205-042-001000-001	C488SNHD	1
8	20	190 SBLT 2 HHx N&2W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDBC	32
9	150	But Waf,PN 10,Lug-type RF,Datasheet: 6103/ Ductile Iron,	C2W7ZDY4	2
10	150	GENERIC ON-OFF VALVE 021702V174	- -	1
11	150	GENERIC ON-OFF VALVE 021702V106	- -	1

**PIPING DPT.
STRESS
MASTER**

By José Blas Rico at 11:02 am, Feb 04, 2021

0	15/01/21	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION
REV	DATE	DWN	CHK	APP	DESCRIPTION

ALL dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.

NOTES:

For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

REFERENCES / DOCUMENTS

LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-001000-200
PIPING SUPPORT	30207-042-001000-001

SPEC

SYMBOLIC

10SS21

SYMBOLIC

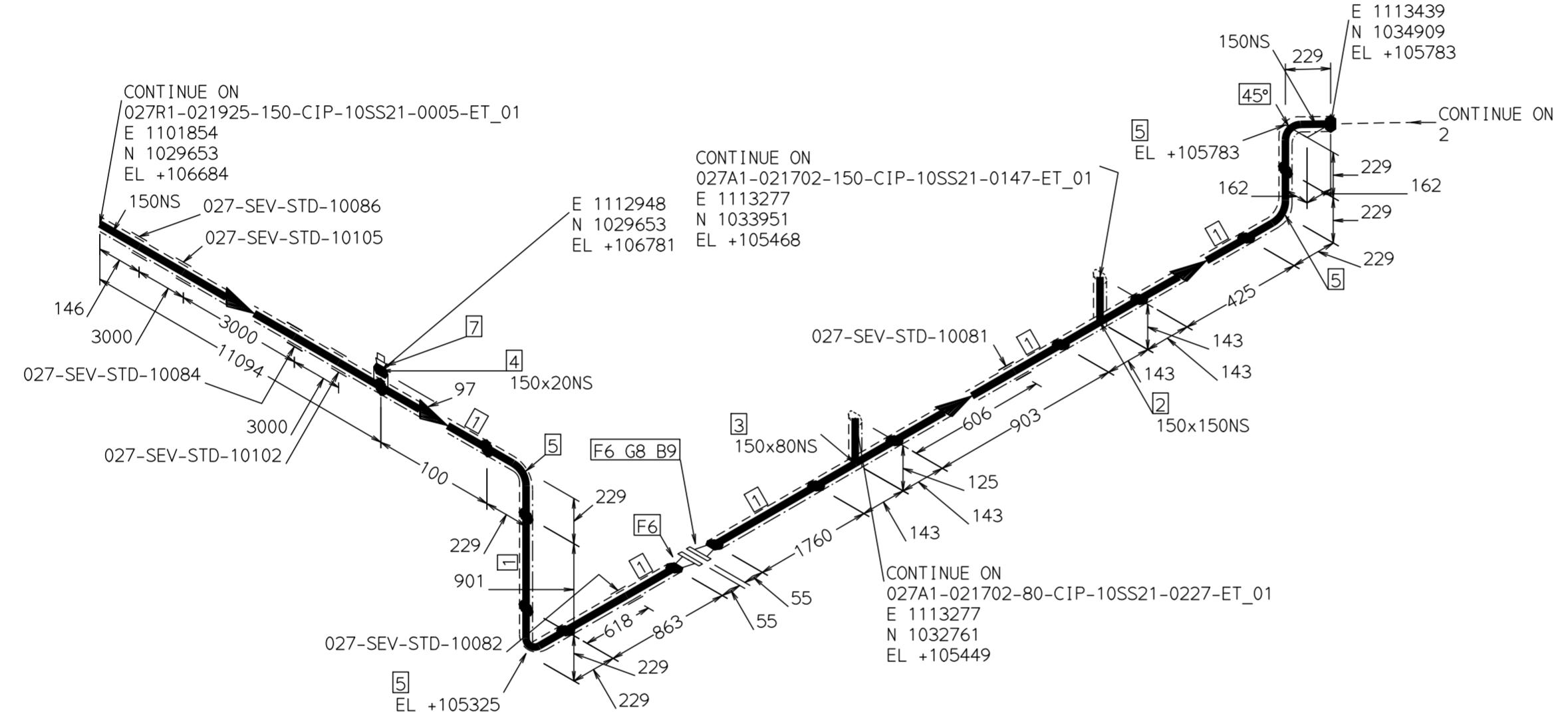
Insulated Pipe	Insulated and Traced Pipe
— — — —	— — — —

PROJECT DESCRIPTION/LOCATION

BUTTERFLY PROJECT/KREFELD



PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	sheet	REV
029	027A1	021925-150-CIP-10SS21-0005-ET	01	2 OF 2	0



MATERIAL LIST - FABRICATION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
1	150	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FF0	16.1M
2	150 x 150	Eq Te, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF5CU	1
3	150 x 80	Red Te, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF07Z	1
4	150 x 20	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94T	1
5	150	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKF	4
6	150	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMX	2

MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
7 20		Plug, EN 10241, BSPPM End, Square Type, - ,/ EN 10216-5 Gr.X2CrNi19-11,	C3R8XUTJ	1
8 150		NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 16, IBC Type, Thk=3.2mm, Klingsersil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1NKU6DX	1
9 20		110 SBLt 2 HHx N&2W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70.	C3JHBDAW	8

PIPING DPT.
**DESIGN
CHECKED**

By Ruth Herrera at 5:16 pm - Jan 26, 2021

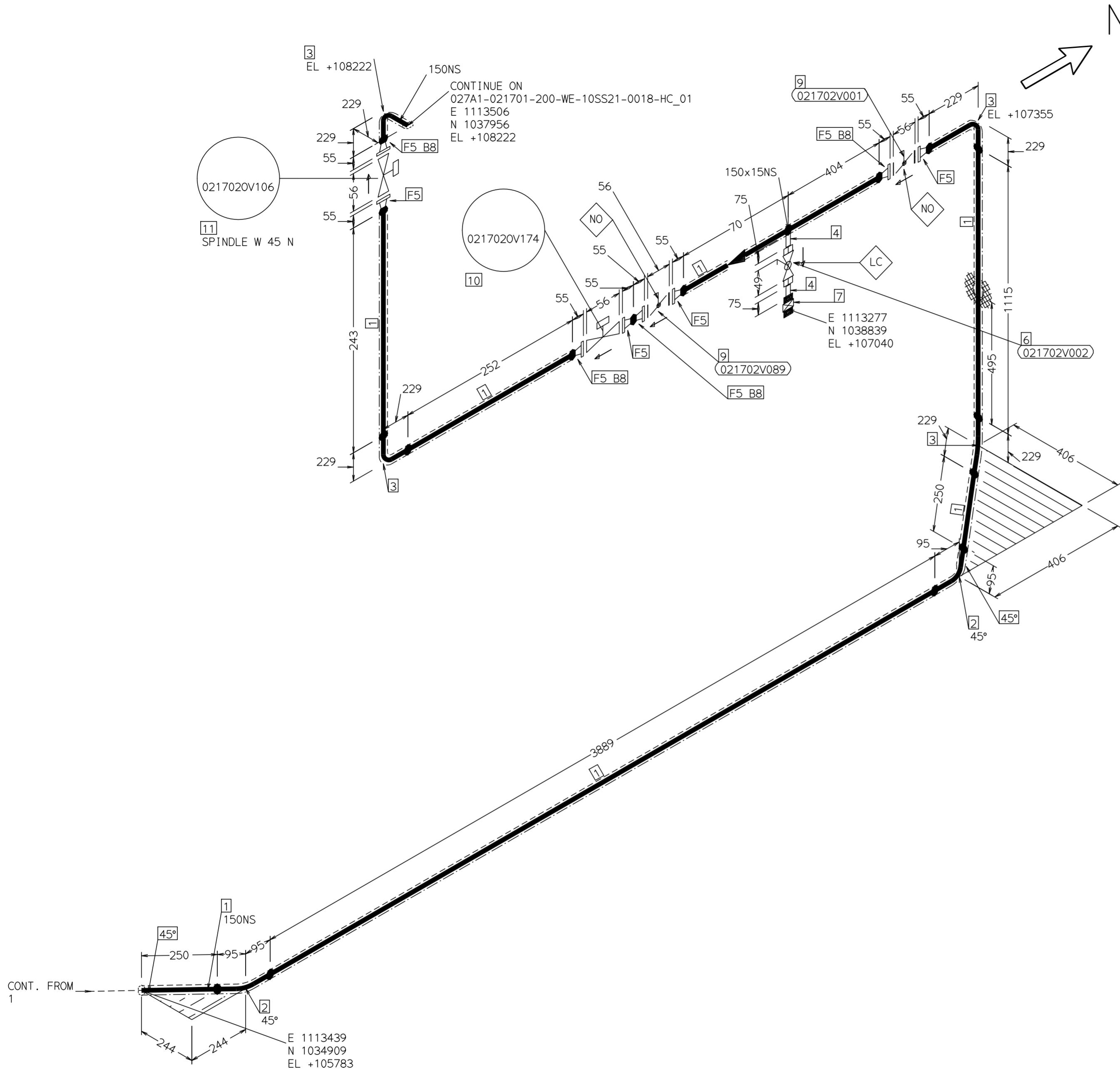
PIPING DPT.
DESIGNED

By smartinez at 5:09 pm - Jan 18, 2021

0	15/01/21	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION
REV	DATE	DWN	CHK	APP	DESCRIPTION

All dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in millimeter unless noted otherwise. Fieldwelds and overlengths to be determined by piping contractor. Bolt holes to straddle horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.

NOTES:		REFERENCES / DOCUMENTS		SPEC	10SS21	horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.	
				SYMBOLS		PROJECT DESCRIPTION/LOCATION	
						BUTTERFLY PROJECT/KREFELD	
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.		LINE LIST	30201-042-001000-001	Insulated Pipe — — — —		Insulated and Traced Pipe — — — —	PROCESS UNIT DESIGN AREA LINE NUMBER TRAIN SHEET REV
		ISOMETRIC INDEX	30303-042-001000-200				
		PIPING SUPPORT	30207-042-001000-001				
 TechnipFMC	 Cargill	029	027A1	021925-150-CIP-10SS21-0005-ET	01	1 OF 2	0



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	150	Pipes (Length), EN 10220, BE, EFW + 100% RT, - ,/2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPF0	6.5M
2	150	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKE8K M.3D, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,		2
3	150	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEKF M.3D, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,		4
4	15	Nip, Mnf Std, PE/BSPTM End, SeamLess, L = 75mm, - ,/2.9MM EN 10216-5 Gr.X2CrNi19-11,	C3PDPWVA	2
5	150	WN Flg, EN 1092-1, RF/BW End, PN 16, - ,/4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMX	8
6	15	Bal Fem,FB,PN 63,BSPTF Ends,Datasheet: 6000/ EN 10213 Gr.GX5CrNiMo19-11-2,	C1YMLP29	1

MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
7	15	021702A700 Hose Connection as per 30205-042-001000-001	C488SNHD	1
8	20	190 SBLt 2 HHx N&2W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDBC	32
9	150	But Waf,PN 10,Lug-type RF,Datasheet: 6103/ Ductile Iron,	C2W7ZDY4	2
10	150	GENERIC ON-OFF VALVE 0217020V174	- -	1
11	150	GENERIC ON-OFF VALVE 0217020V106	- -	1

PIPING DPT.
**DESIGN
CHECKED**

By Ruth Horrocks at 5:16 pm - Jan 26, 2021

**PIPING DPT.
DESIGNED**

By amartinez at 5:00 pm - Jan 18, 2021

REV	DATE	DWN	CHK	APP	DESCRIPTION
0	15/01/21	SMA	RHE	OMC	IFC-ISSUED FOR CONSTRUCTION

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NOTES:		REFERENCES / DOCUMENTS		SPEC	10SS21	PROJECT DESCRIPTION/LOCATION						
				SYMBOLS		BUTTERFLY PROJECT/KREFELD		 TechnipFMC				
		LINE LIST	30201-042-001000-001 <th data-kind="parent" data-rs="3">Insulated Pipe — — — —</th> <th data-kind="parent" data-rs="3">Insulated and Traced Pipe — — — — — — — —</th> <th>PROCESS UNIT</th> <th>DESIGN AREA</th> <th data-cs="2" data-kind="parent">LINE NUMBER</th> <th data-kind="ghost"></th> <th>TRAIN</th> <th>SHEET</th> <th>REV</th>	Insulated Pipe — — — —	Insulated and Traced Pipe — — — — — — — —	PROCESS UNIT	DESIGN AREA	LINE NUMBER		TRAIN	SHEET	REV
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.		ISOMETRIC INDEX	30303-042-001000-200									
		PIPING SUPPORT	30207-042-001000-001			029 027A1 021925-150-CIP-10SS21-0005-ET		01	2 OF 2	0		