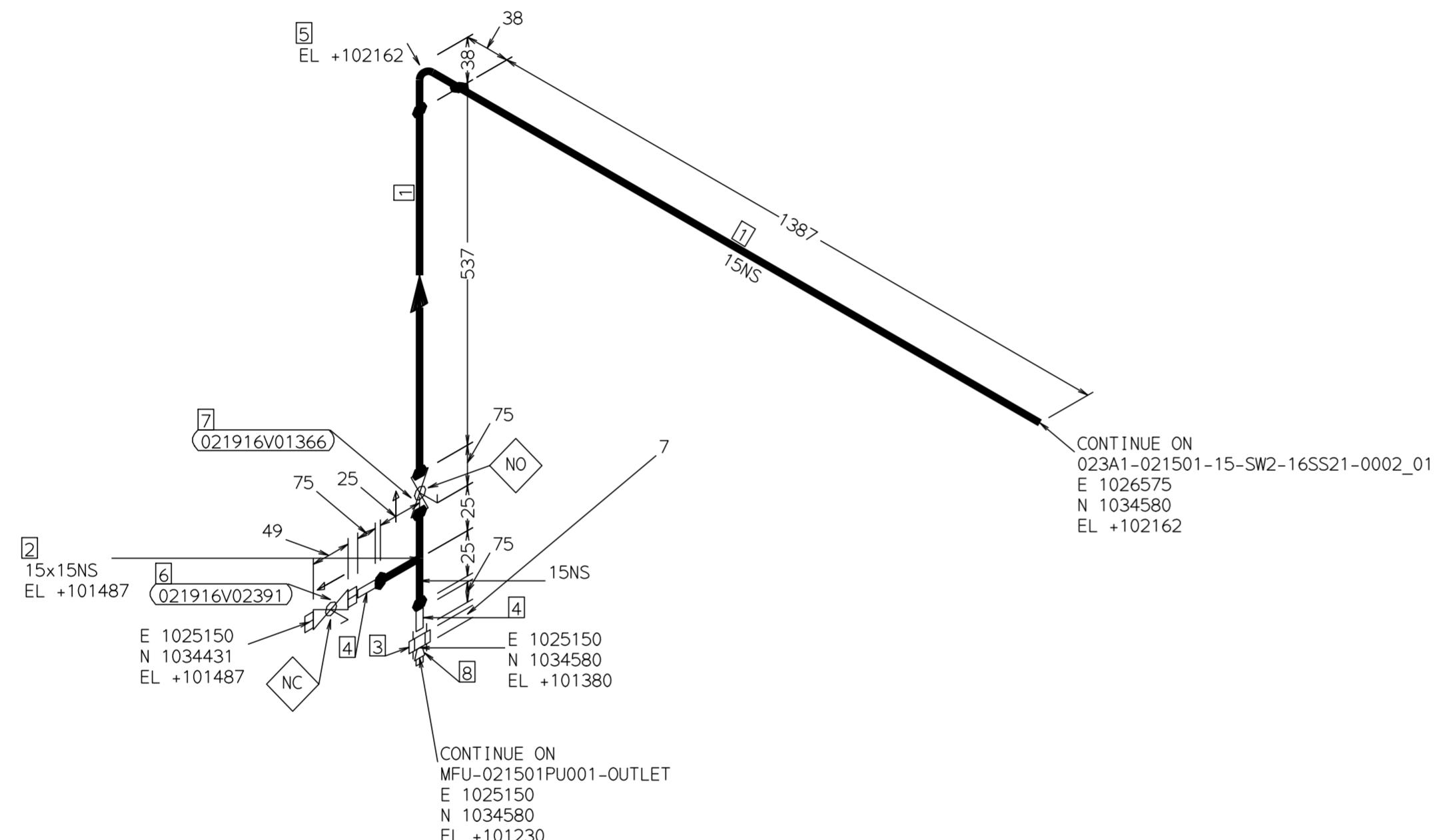


**ISOMETRIC IFC - CHECK LIST**

Line Number	021501SW20001	Stress CN / Level	Nº -	Level: I	 <b>TechnipFMC – Butterfly Project</b>	
Isometric Number	023A1021501SW20001_01	Process Approval Required	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>		
		Instrumentation Approval Required (N/A)	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>		
<b>Information to be attached:</b>						
Master Copy of PID:	YES <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>	Nº 800124-025-PID-0021-001 & 800124-029-PID-0031-043	Rev. 1		
PID Modification Sheet:	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Nº	Rev.		
Equipment Vendor Dwg. :	YES <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>	Nº 1316608-000400-1101-01-04-C	Rev.		
Instrument Dwg. :	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Nº	Rev.		
Project By-Pass <sup>(4)</sup> :	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Nº	Rev.		
SPO Approved Isometric:	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Rev.	Extraction Date:		
SIT Approved Isometric:	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Rev.	Extraction Date:		
<b>A VERIFICAR / TO BE CHECKED</b> <b>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</b>					" N/A " NO APPLICA / NOT APPLICABLE	
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 Líneas / Piping class according to PID and Line List					
	Vinculo E3D con Diagramas (Process Unit, Temp Operación, Numeracion TODAS válvulas manuales) / Link between E3D and Diagrams (Process Unit, Op Temp, ALL manual valves Tagged)					
Equipment	Diámetro de la línea indicado en número de línea en el cajetín / Line diameter indicated in the line number in the title block					
	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 checked="" type="checkbox"/>					
	Nombre de tubuladuras según PID y plano Vendor / Name of nozzle according to PID and Vendor drawing					
Line Design	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					
	Línea sin colisión (verificación incluyendo la nube de puntos) / Line is clash free (checked including points cloud)					
Stress	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					<input checked="" type="checkbox"/>
	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					
Supports	Comentarios de SIT a recibidos e implementados antes de extracción final para emisión / Instrumentation comments received and implemented before final extraction for issuance					<input checked="" type="checkbox"/>
	Verificación contra Planos de Vendor o Hook-up Instrumentacion / 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					<input checked="" type="checkbox"/>
	Picajes según tabla de picajes correspondiente / Branch configuration according to correspondent branch table					<input checked="" type="checkbox"/>
	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					<input checked="" type="checkbox"/>
Materials	Verificación de distancia mínima entre soldaduras / Check minimum distance between welds					<input checked="" type="checkbox"/>
	Notas explicativas adicionales incorporadas / Additional clarification notes added					<input checked="" type="checkbox"/>
	Revision By : (ST) Stress Specialist / (LST) Stress Leader					
	El cálculo de stress disponible no está pendiente de revisión en curso / Available stress calculation is not awaiting for revision					
Final Check	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					
	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 estan 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						
Materials	La Linea pertenece a alguna o varias categorías de Criticidad. La Linea está listada en la Lista de Líneas Críticas de Materiales. Sus isometricas 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 Linea 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)					N/A	
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						
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					<input checked="" type="checkbox"/>
	La isométrica verificada por Instrumentación (SIT) se corresponde a la última revisión / The isometric verified by Instrumentation (SIT) corresponds to its last revision					<input checked="" type="checkbox"/>
	Las notas a mano están incorporadas en las isométricas / The hand-made annotation is included					<input checked="" type="checkbox"/>
	La revisión de los documentos para la verificación siguen siendo las actuales / Current revision of documents for checking are still the latest available					<input checked="" type="checkbox"/>
El número de revisión y la fecha son correctos / The revision number and the date are correct					<input checked="" type="checkbox"/>	
Todos los comentarios se han revisado para ser incluidos o descartados / All comments have been checked to be included or discarded					<input checked="" type="checkbox"/>	
Holds resueltos o en su defecto By-Pass aprobado / Holds resolved or instead By-Pass approved					<input checked="" type="checkbox"/>	
<b>SIGNATURES (Name and date)</b>						
DESIGN LEADER (LD)	<b>REVIEWED</b> By Andrea Ferranti at 3:19 pm, Feb 25, 2021	SUPPORTS LEADER (LSP)		ISSUER (CHK)	<b>REVIEWED</b> By rvasquezhu at 4:11 pm, Feb 26, 2021	
STRESS LEADER (LST)		MATERIALS (M)	<b>REVIEWED</b> By Jose G. Suarez at 3:49 pm, Feb 25, 2021	DISCIPLINE LEAD (L)		

**NOTES:**

- [1] If "X" marked, 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	15	Pipes (Length), EN 10220, PE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV24XG	2.0M
2	15 x 15	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER92	1
3	15	Union, Prj Std, BSPPF Ends, 40 Bar, 3-piece union fitting/ EN 10216-5 Gr.X2CrNi19-11,	C46GHUD1	1
4	15	Nip, Mnf Std, PE/BSPTM End, SeamLess, L = 75mm, -, /2.9MM EN 10216-5 Gr.X2CrNi19-11,	C3PDPWVA	2
5	15	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 4, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1P0JOPF	1
6	15	Bal Fem,FB,PN 63,BSPTF Ends,Datasheet: 6000/ EN 10213 Gr.GX5CrNiMo19-11-2,	C1YMLP29	1
7	15	Bal BW,RB,SP,PN 63,BW Ends,Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3N	1

## MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
8	15	021501A013 Flexible Hose as per 30205-042-001000-001	C46GRC2L	1

**PIPING DPT.**  
**ISSUER**  
**CHECKED**

By rvasquezhu at 4:11 pm, Feb 26, 2021

0	19/02/21	MMP	LPD	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.														
<p><b>NOTES:</b></p> <p>For pipes &lt; dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.</p>	<b>REFERENCES / DOCUMENTS</b>			SPEC	16SS21	PROJECT DESCRIPTION/LOCATION								
				SYMBOLS		BUTTERFLY PROJECT/KREFELD								
	LINE LIST		30201-042-001000-001		Insulated Pipe 	Insulated and Traced Pipe 	LINE NUMBER		TRAIN	SHEET	REV			
	ISOMETRIC INDEX		30303-042-023000-200				025		01	1 OF 1	0			
	PIPING SUPPORT		30207-042-021300-001				021501-15-SW2-16SS21-0001							

N

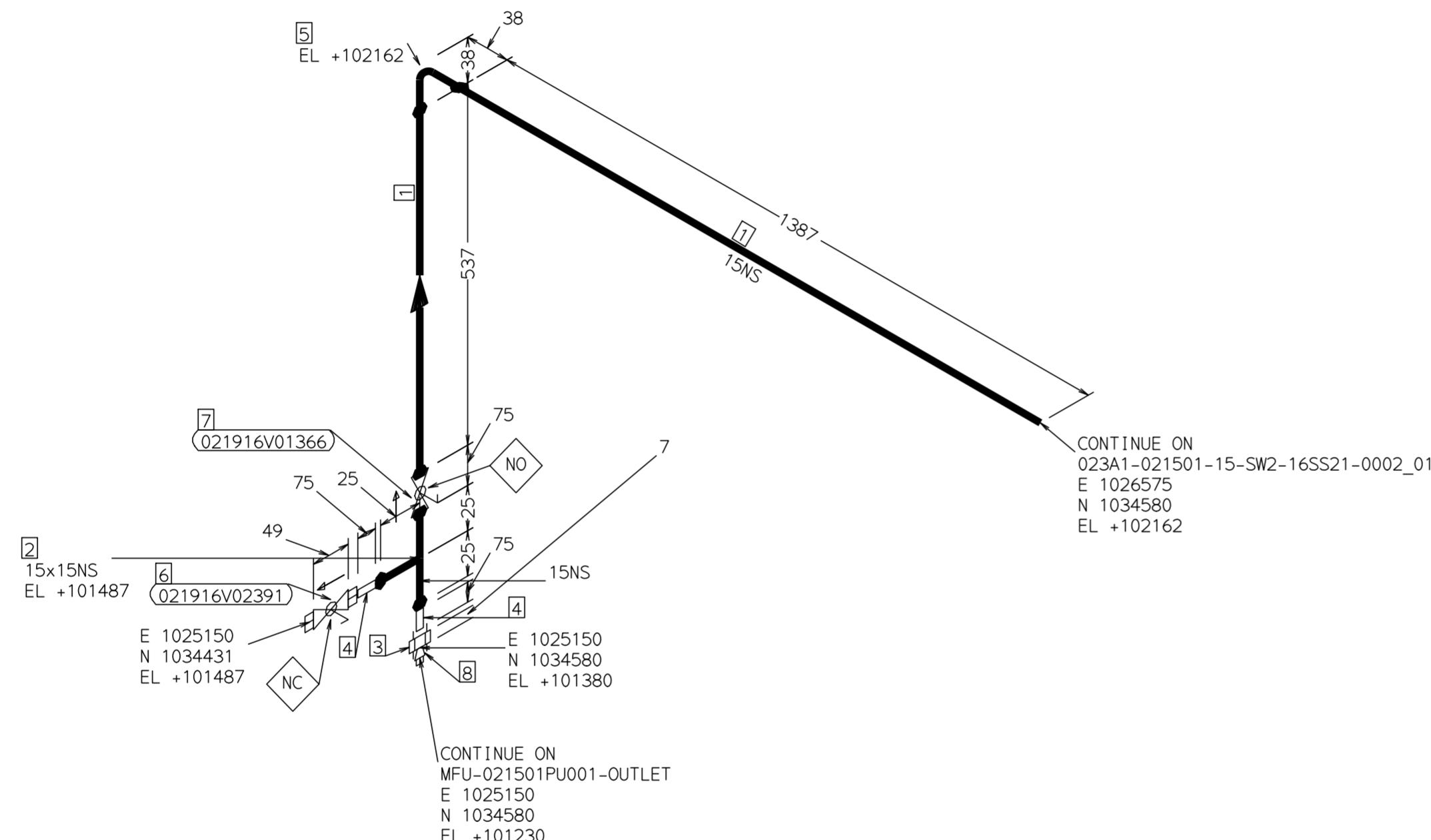


## MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1 15		Pipes (Length), EN 10220, PE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV24XG	2.0M
2 15 x 15		Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER92	1
3 15		Union, Prj Std, BSPPF Ends, 40 Bar, 3-piece union fitting/ EN 10216-5 Gr.X2CrNi19-11,	C46GHUD1	1
4 15		Nip, Mnf Std, PE/BSPFM End, Seamless, L = 75mm, -, /2.9MM EN 10216-5 Gr.X2CrNi19-11,	C3PDPWVA	2
5 15		90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1P0J0PF 1	M.3D, Serie 4, /2MM EN 10253-4 Gr.X2CrNi19-11,	1
6 15		Bal Fem,FB,PN 63,BSPTF Ends,Datasheet: 6000/ EN 10213 Gr.GX5CrNiMo19-11-2,	C1YMLP29	1
7 15		Bal BW,RB,SP,PN 63,BW Ends,Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3N	1

## MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
8 15		021501A013 Flexible Hose as per 30205-042-001000-001	C46GRC2L	1



PIPING DPT.  
**MATERIALS CHECKED**  
By Jose G. Suarez at 3:49 pm, Feb 25, 2021

0	19/02/21	MMP	LPD	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

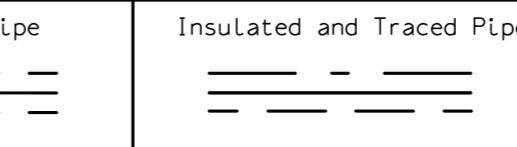
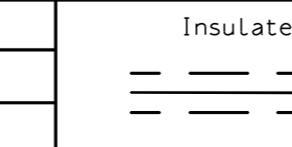
LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-023000-200
PIPING SUPPORT	30207-042-021300-001

## SPEC

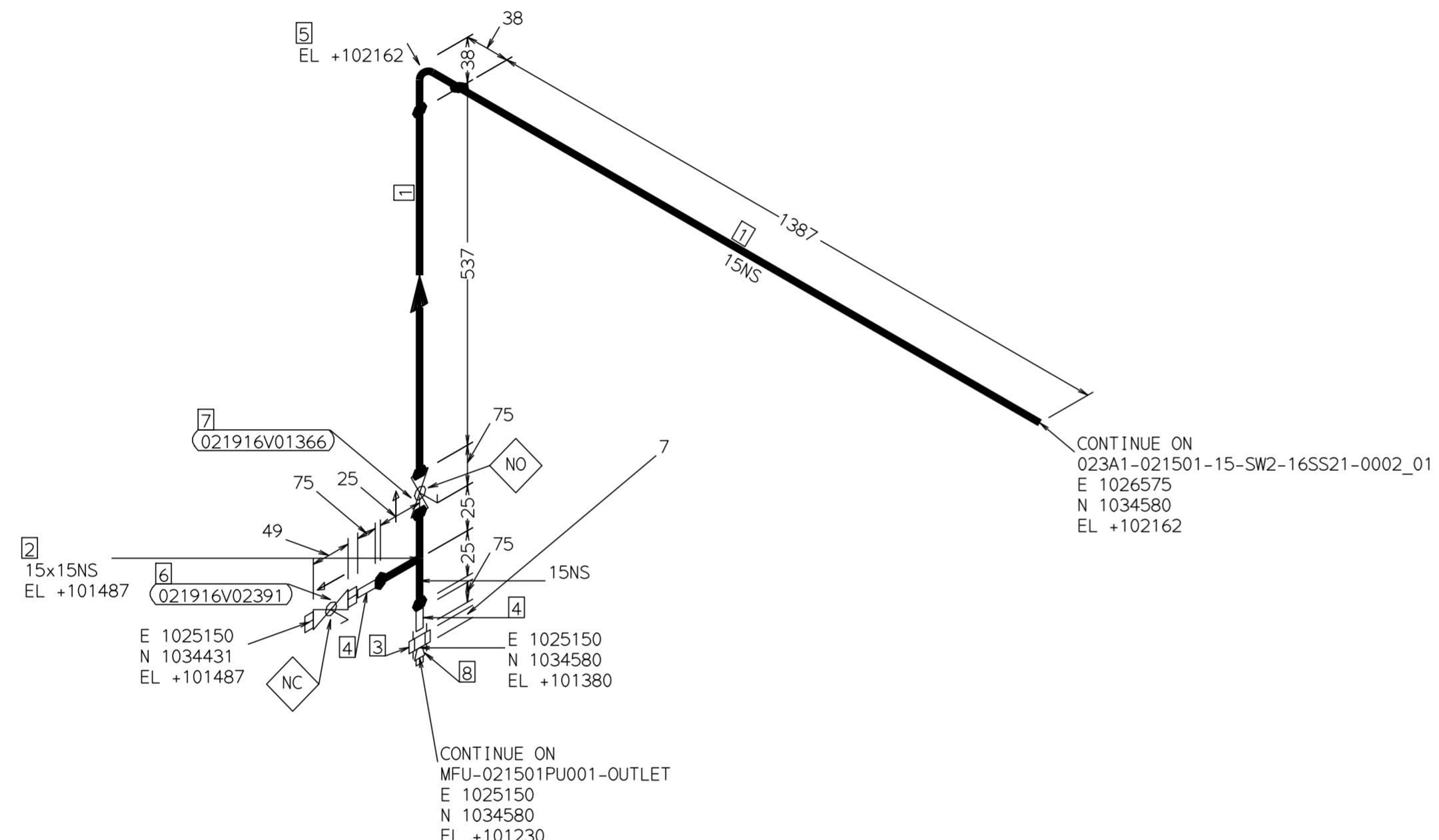
## SYMBOLS

## 16SS21

## BUTTERFLY PROJECT/KREFELD



PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
025	023A1	021501-15-SW2-16SS21-0001	01	1 OF 1	0



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	15	Pipes (Length), EN 10220, PE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV24XG	2.0M
2	15 x 15	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER92	1
3	15	Union, Prj Std, BSPPF Ends, 40 Bar, 3-piece union fitting/ EN 10216-5 Gr.X2CrNi19-11,	C46GHUD1	1
4	15	Nip, Mnf Std, PE/BSPTM End, SeamLess, L = 75mm, -, /2.9MM EN 10216-5 Gr.X2CrNi19-11,	C3PDPWVA	2
5	15	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 4, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1P0JOPF	1
6	15	Bal Fem,FB,PN 63,BSPTF Ends,Datasheet: 6000/ EN 10213 Gr.GX5CrNiMo19-11-2,	C1YMLP29	1
7	15	Bal BW,RB,SP,PN 63,BW Ends,Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3N	1

MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
8	15	021501A013 Flexible Hose as per 30205-042-001000-001	C46GRC2L	1

# DESIGNED

DESIGNED

By mimportero at 11:59 am, Feb 19, 2021

PIPING DPT.  
**DESIGN  
CHECKED**

*By Andrea Ferranti at 3:18 pm, Feb 25, 2021*

REV	DATE	DWN	CHK	APP	DESCRIPTION
0	19/02/21	MMP	LPD	OMC	IFC - ISSUED FOR CONSTRUCTION

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	16SS21	PROJECT DESCRIPTION/LOCATION		 TechnipFMC	 Cargill				
				SYMBOLS		BUTTERFLY PROJECT/KREFELD							
	LINE LIST		30201-042-001000-001	Insulated Pipe	Insulated and Traced Pipe	LINE NUMBER		TRAIN	SHEET				
	ISOMETRIC INDEX		30303-042-023000-200										
	PIPING SUPPORT		30207-042-021300-001										
				PROCESS UNIT	DESIGN AREA			025	023A1	021501-15-SW2-16SS21-0001	01	1 OF 1	0