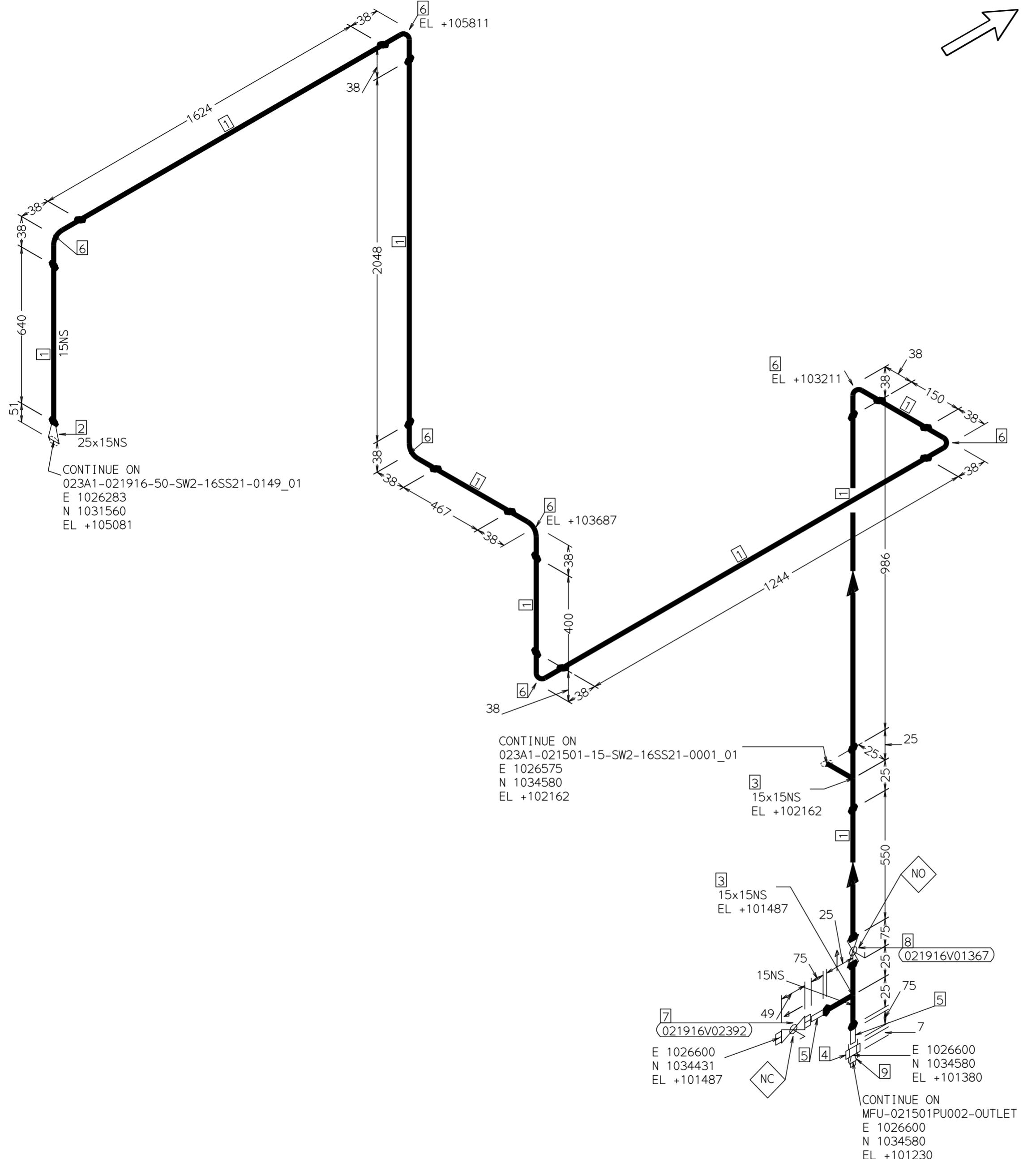


ISOMETRIC IFC - CHECK LIST

Line Number	021501SW20002	Stress CN / Level	Nº --	Level: I	Cargill® TechnipFMC – Butterfly Project			
Isometric Number	023A1021501SW20002_01	Process Approval Required	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>				
Information to be attached:					Intrumentation Approval Required (N/A)	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
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 ⁽⁴⁾ :	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"/>		Extraction Date:				
SIT Approved Isometric:	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>		Extraction Date:				
A VERIFICAR / TO BE CHECKED					"N/A" NO APPLICA / NOT APPLICABLE	HOLDS		
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					Nº	SHORT DESCRIPTION	RESOLVED (✓)	
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							
Equipment	Clase de tubería según PID y Lista de Líneas / 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)							
Line Design	Diámetro de la linea indicado en número de linea 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							
Stress	Código / Code: 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/>							
	Nombre de tubuladuras según PID y plazo Vendor / Name of nozzle according to PID and Vendor drawing							
Supports	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								
Materials	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					✓		
Final Check	Verificación contra P&ID y Lista de Líneas / 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 linea 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 linea incluidos, secuencia de picas, 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							
Final Check	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					✓		n/a
Final Check	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							
Final Check	Ventos 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							
Final Check	Notas explicativas adicionales incorporadas / Additional clarification notes added					✓		
	Revision By : (ST) Stress Specialist / (LST) Stress Leader							
Final Check	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								
Final Check	La línea está soportada por completo y la lista de soportes está actualizada en el excel extraido 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							
Final Check	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							
Final Check	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								
Final Check	La Línea pertenece a alguna o varias categorías de Criticidad. La Línea está listada en la Lista de Líneas Críticas de Materiales. Sus isométricas 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							
Final Check	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)							
Final Check	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		
Final Check	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					✓		
	La isométrica verificada por Instrumentación (SIT) se corresponde a la última revisión / The isometric verified by Instrumentation (SIT) corresponds to its last revision					✓		
Final Check	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							
Final Check	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 Andrea Ferranti at 3:34 pm, Feb 25, 2021	SUPPORTS LEADER (LSP)		ISSUER (CHK)	REVIEWED By rvasquezhu at 3:53 pm, Feb 26, 2021			
STRESS LEADER (LST)		MATERIALS (M)	REVIEWED By Jose G. Suarez at 3:59 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	8.2M
2	25 x 15	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, - ,/2.3MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1NF9VR0	1
3	15 x 15	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, - ,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER92	2
4	15	Union, Prj Std, BSPPF Ends, 40 Bar, 3-piece union fitting/ EN 10216-5 Gr.X2CrNi19-11,	C46GHUD1	1
5	15	Nip, Mnf Std, PE/BSPTM End, Seamless, L = 75mm, - ,/2.9MM EN 10216-5 Gr.X2CrNi19-11,	C3PDPWVA	2
6	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,	C1P0J0PF	7
7	15	Bal Fem,FB,PN 63,BSPTF Ends,Datasheet: 6000/ EN 10213 Gr.GX5CrNiMo19-11-2,	C1YMLP29	1
8	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>
9	15	021501A014 Flexible Hose as per 30205-042-001000-001	C46GRC2M	1

PIPING DPT.
ISSUER
CHECKED

By nyasawozhu at 3:53 pm, Feb 26, 2021

0	18/02/21	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.

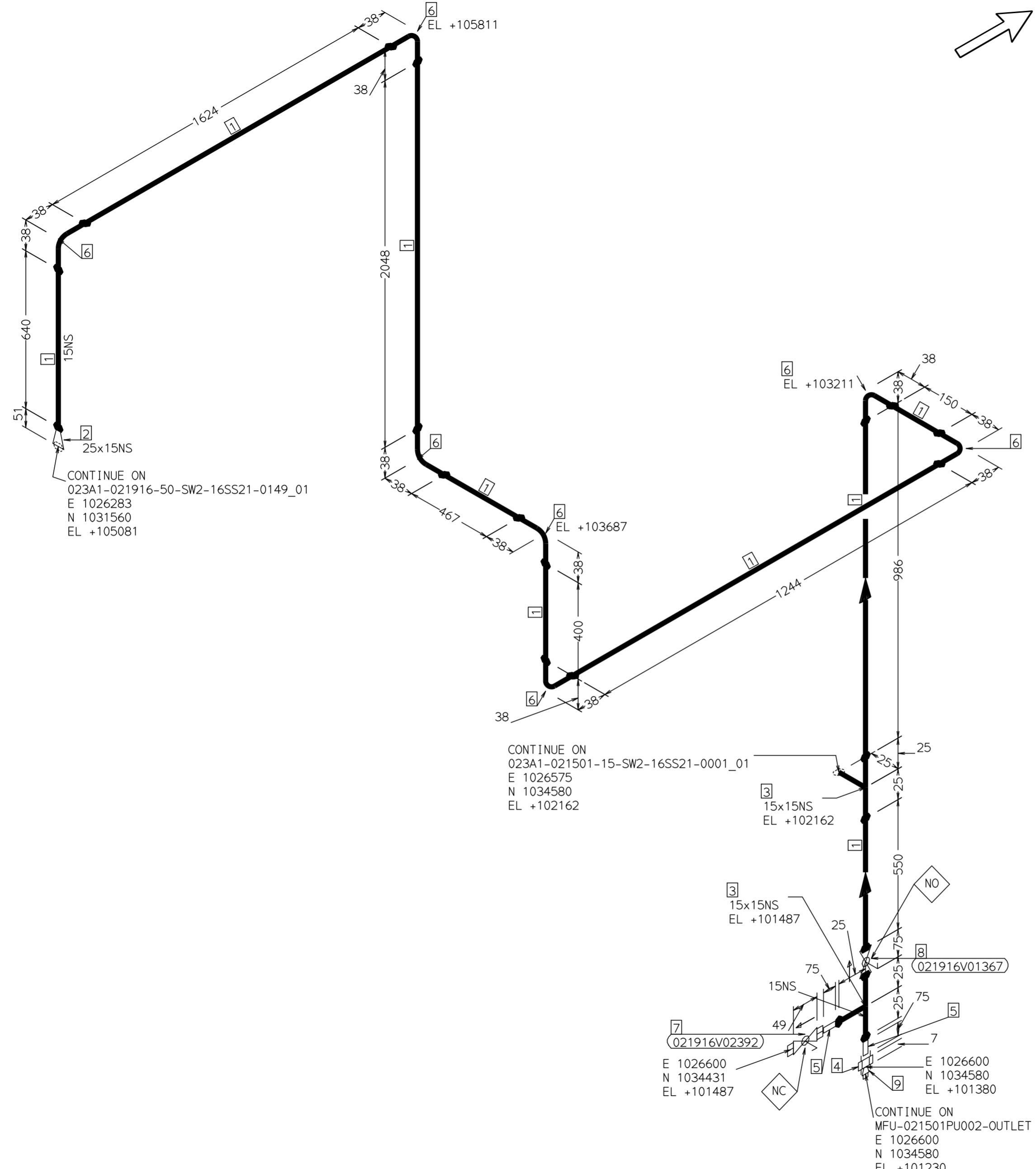
REFERENCES / DOCUMENTS

SF

PEC

16SS21

Horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.								
pe	PROJECT DESCRIPTION/LOCATION			 TechnipFMC	 Cargill®			
	BUTTERFLY PROJECT/KREFELD							
PROCESS UNIT	DESIGN AREA	LINE NUMBER			TRAIN	SHEET	REV	
025	023A1	021501-15-SW2-16SS21-0002			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	8.2M
2	25 x 15	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.3MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1NF9VR0	1
3	15 x 15	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER92	2
4	15	Union, Prj Std, BSPPF Ends, 40 Bar, 3-piece union fitting/ EN 10216-5 Gr.X2CrNi19-11,	C46HUD1	1
5	15	Nip, Mnf Std, PE/BSPFM End, Seamless, L = 75mm, -, /2.9MM EN 10216-5 Gr.X2CrNi19-11,	C3PDPWHA	2
6	15	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1P0JOPF 7 M.3D, Serie 4, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1P0JOPF	7
7	15	Bal Fem,FB,PN 63,BSPTF Ends,Datasheet: 6000/ EN 10213 Gr.GX5CrNiMo19-11-2,	C1YMLP29	1
8	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
9	15	021501A014 Flexible Hose as per 30205-042-001000-001	C46GRC2M	1

**PIPING DPT.
MATERIALS
CHECKED**

By Jose G. Suarez at 3:59 pm, Feb 25, 2021

0	18/02/21	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

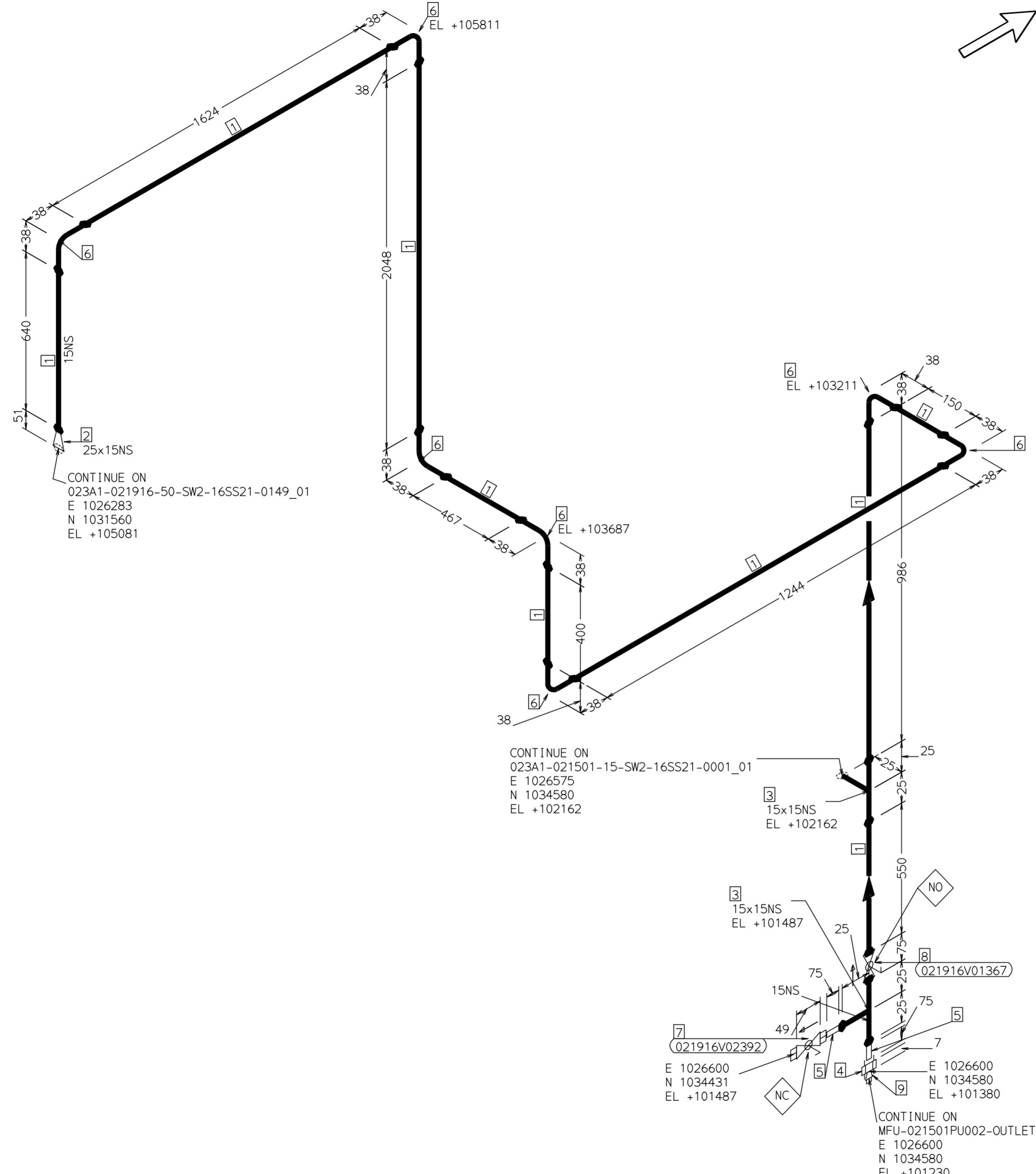
LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-023000-200
PIPING SUPPORT	30207-042-021300-001

SPEC
SYMBOLIC

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

PROJECT DESCRIPTION/LOCATION
BUTTERFLY PROJECT/KREFELD


PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
025	023A1	021501-15-SW2-16SS21-0002	01	1 OF 1	0



PROJECT DESCRIPTION/LOCATION						TechnipFMC	Cargill
BUTTERFLY PROJECT/KREFELD							
PROCESS UNIT	DESIGN AREA	LINE NUMBER			TRAIN	SHEET	REV
025	023A1	021501-15-SW2-16SS21-0002			01	1 OF 1	0