

**ISOMETRIC IFC - CHECK LIST**

Line Number	971101N0004	Stress CN / Level	Nº -	Level: I	<b>Cargill®</b> <b>TechnipFMC – Butterfly Project</b>				
Isometric Number	021A1971101N0004_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 800124-000-PID-1931-005 / 211460-A0103-A-01	Rev. 2/ 5					
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 EXISTING EQUIPMENT	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"/> <b>PLANO DE EQUIPO EXISTENTE</b>								
	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 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								
	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									
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									
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 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 preliminary 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 Lineas 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								
	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)								
	Extensión de volante de válvula modelada y reflejada en lista de materiales de la isométrica / Valves axis extension modelled and reflected in Isometric BOM								
	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								
	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 se 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								

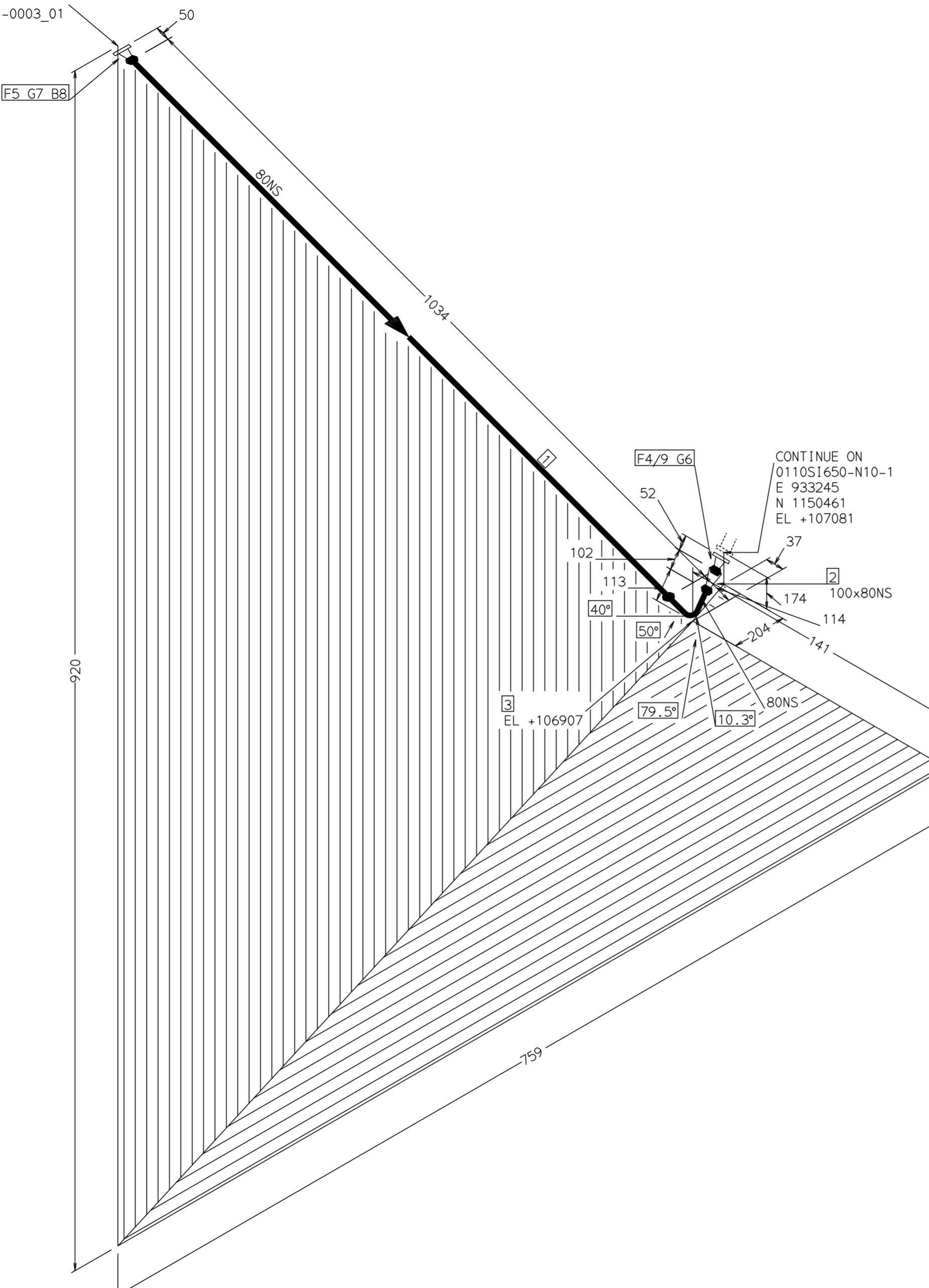
**SIGNATURES (Name and date)**

DESIGN LEADER (LD)		SUPPORTS LEADER (LSP)		ISSUER (CHK)				
STRESS LEADER (LST)		MATERIALS (M)		DISCIPLINE LEAD (L)				

**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.

CONTINUE ON  
021A1-971101-150-N-16SS21-0003\_01  
E 933424  
N 1149498  
EL +107828



N

MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	80	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2.3MM EN 10217-7 Gr.X2CrNi19-11,	C1KV25BC	1.1M
2	100 x 80	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM/2.3MM EN 10253-4 Gr.X2CrNi19-11,	C1NF9VRK	1
3	80	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1P0SBDV M.3D, Serie 2, /2.3MM EN 10253-4 Gr.X2CrNi19-11,	1	
4	100	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /3.6MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMW	1
5	80	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /3.2MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMV	1

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
6	100	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 16, IBC Type, Thk=3mm, Gore-Gr style R, TA-Luft & EC1935 (D.S. 5103)/ Modified PTFE,	C1NKU6DG	1
7	80	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 40, IBC Type, Thk=3mm, Gore-Gr style R, TA-Luft & EC1935 (D.S. 5103)/ Modified PTFE,	C1NKU6D7	1
8	16	95 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,	C3JHBDAT	8
9	80	1 Set 8 unit x M16 x 55 MM Heavy Hex Machine Bolt w/ Washer, Full Length Threaded, ISO 4017, ISO 3506-1 Gr.A2-70, -, F.Wash. EN ISO 887, A2, EN ISO 7089	C4BFFNPA	1

PIPING DPT.  
**DESIGNED**

By J.Extremera at 8:52 am, Feb 04, 2021

0	16/12/20	JEX	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

SPEC 16SS21

SYMBOLS

LINE LIST 30201-042-001000-001

Insulated Pipe

Insulated and Traced Pipe

ISOMETRIC INDEX 30303-042-022000-200

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— — — —

PIPING SUPPORT 30207-042-021200-001

— — — —

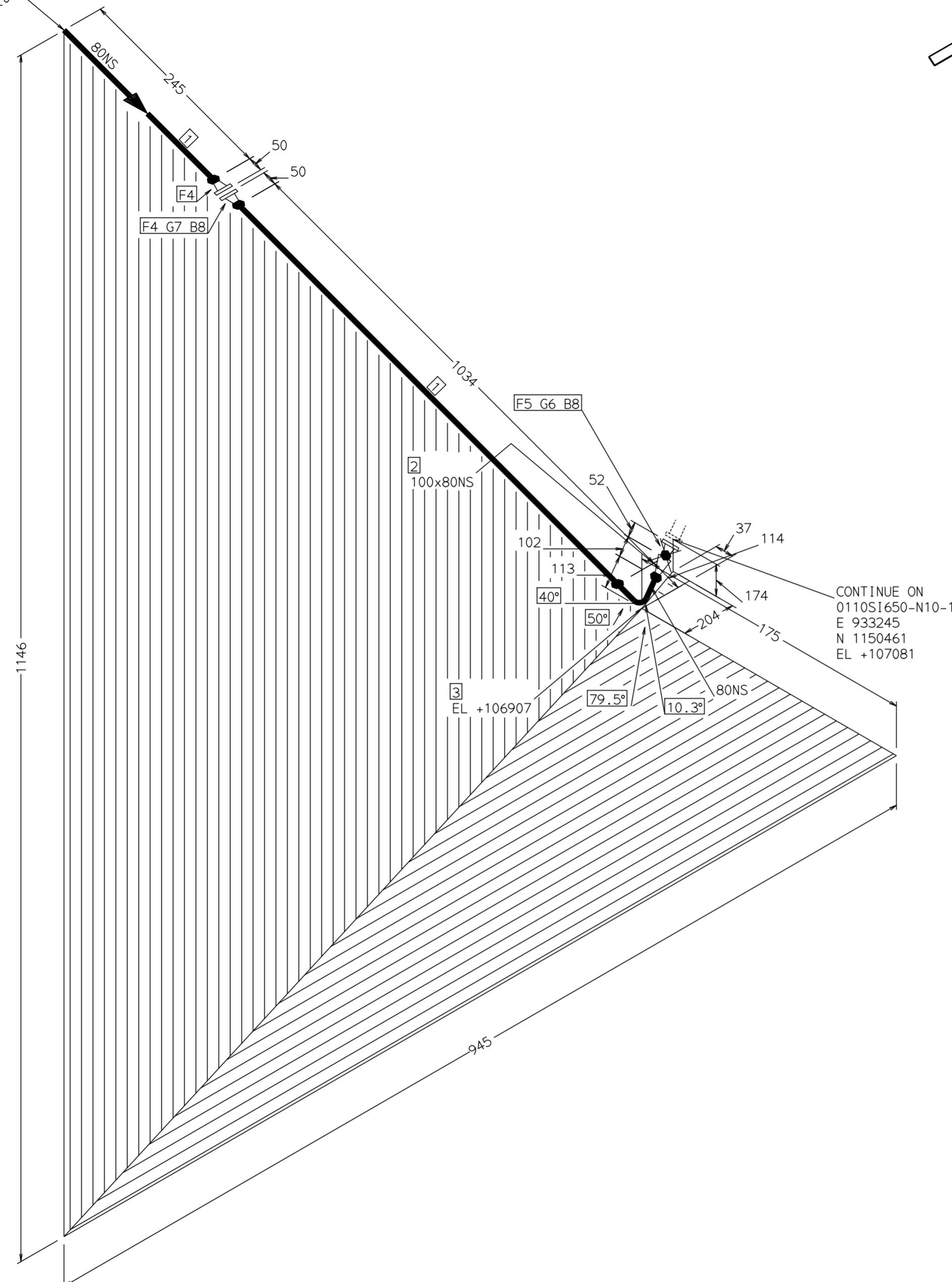
PROJECT DESCRIPTION/LOCATION

BUTTERFLY PROJECT/KREFELD



PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
021	021A1	971101-80-N-16SS21-0004	01	1 OF 1	0

CONTINUE ON  
021A1-971101-150-N-16SS21-0003\_0  
E 933458  
N 1149312  
EL +108053



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	80	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2.3MM EN 10217-7 Gr.X2CrNi19-11,	C1KV25BC	1.3M
2	100 x 80	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM/2.3MM EN 10253-4 Gr.X2CrNi19-11,	C1NF9VRK	1
3	80	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1P0SBDV M.3D, Serie 2, /2.3MM EN 10253-4 Gr.X2CrNi19-11,	1	
4	80	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /3.2MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMV	2

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
5	100	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /3.6MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMW	1
6	100	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 16, IBC Type, Thk=3mm, Gore-Gr style R, TA-Luft & EC1935 (D.S. 5103)/ Modified PTFE,	C1NKU6DG	1
7	80	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 40, IBC Type, Thk=3mm, Gore-Gr style R, TA-Luft & EC1935 (D.S. 5103)/ Modified PTFE,	C1NKU6D7	1
8	16	95 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,	C3JHBDAT	16

PIPING DPT.  
**DESIGNED**

By J.Extremera at 10:15 am, Dec 17, 2020

0	16/12/20	JEX	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.

HOLD 1: MAT; BOLTS FOR NOZZLE CONNECTION TO BE REQUESTED VIA CADPMC

NOTES:

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

REFERENCES / DOCUMENTS

SPEC

SYMBOLIC

16SS21

SYMBOLIC

LINE LIST 30201-042-001000-001

ISOMETRIC INDEX 30303-042-022000-200

PIPING SUPPORT 30207-042-021200-001

Insulated Pipe

Insulated and Traced Pipe

PROJECT DESCRIPTION/LOCATION

BUTTERFLY PROJECT/KREFELD

 TechnipFMC

 Cargill

PROCESS UNIT

DESIGN AREA

LINE NUMBER

TRAIN

SHEET

REV

021 021A1 971101-80-N-16SS21-0004

01 1 OF 1 0