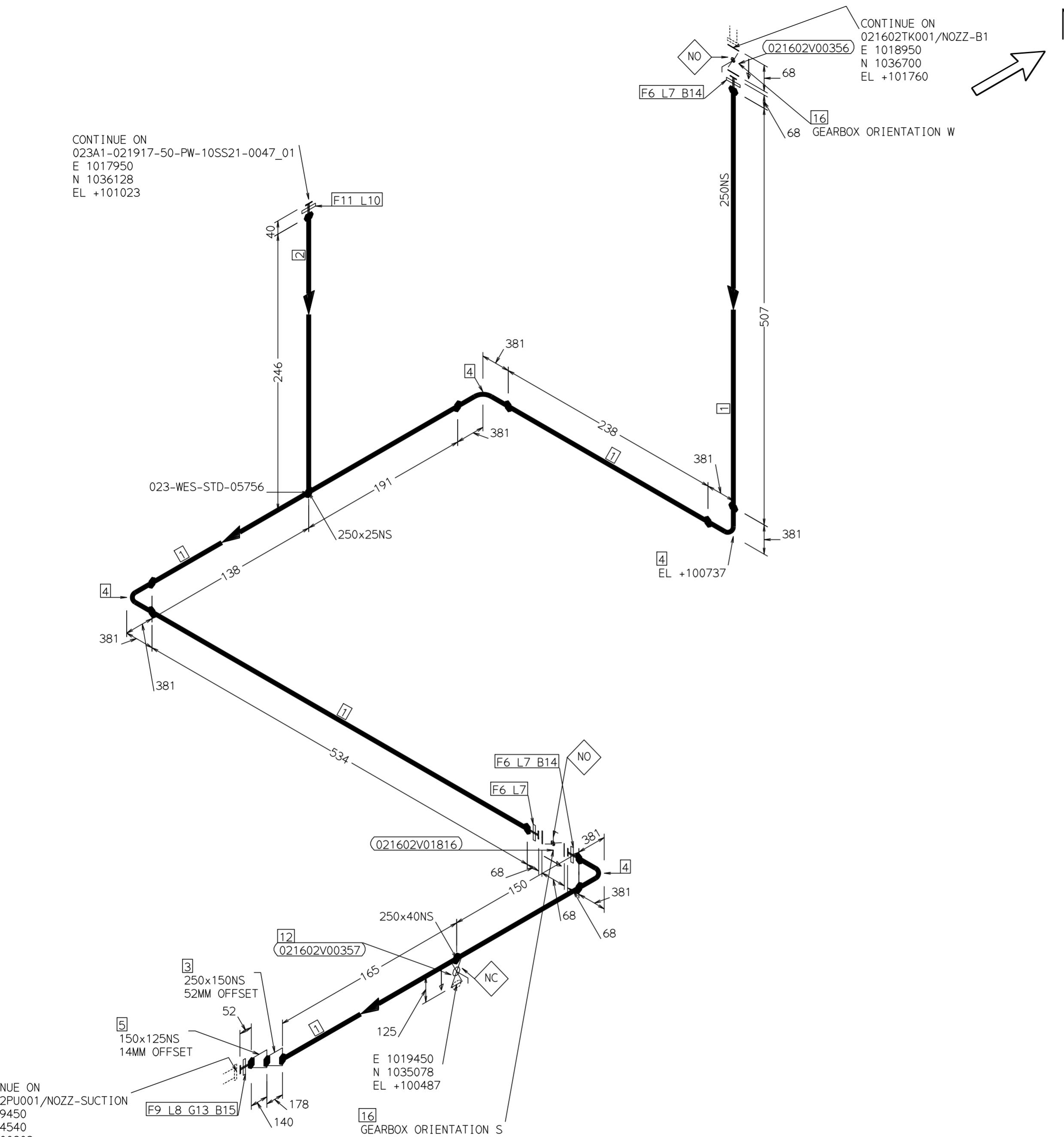


## ISOMETRIC IFC - CHECK LIST

Line Number	021602WSS0004	Stress CN / Level	Nº 029	Level: II	 TechnipFMC – Butterfly Project		
Isometric Number	023A1021602WSS0004_01	Process Approval Required	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>			
		Intrumentation 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 800124-026-PID-0021-001	Rev. 1 IFC			
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	Rev.			
Instrument Dwg. :	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Nº	Rev.			
Project By-Pass <sup>(4)</sup> :	YES <input checked="" type="checkbox"/>	N/A <input 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> 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					* N/A = NO APPLICA / NOT APPLICABLE		
Revision By : (D) Designer / (LDG) Design Leader							
Iso Information	Nº de linea según PID y lista de lineas / Line Nbr. according to PID and line list						
	Datos de la linea según lista de lineas / 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)						
	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 Código / Code : 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 021602TK001					N/A	
	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"/> 021602PU001					N/A	
	Nombre de tubuladuras según PID y plano Vendor / Name of nozzle according to PID and Vendor drawing					N/A	
	Rating y diámetro de tubuladuras según plano Vendor / Rating and diameter of nozzles according to vendor drawing					N/A	
	Posición y elevación de tubuladuras según plano Vendor / Position and elevation of nozzles according to Vendor drawing					N/A	
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					N/A	
	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 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 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					N/A	
	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	
	Verificación contra Planos de Vendor o Hook-up Instrumentation / 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					N/A	
	Picajes según tabla de picajes correspondiente / Branch configuration according to correspondent branch table						
	Ventilos 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					N/A		
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						
	La linea está soportada por completo y la lista de soportes rellena / Line is completely supported and support list updated						
	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						
Materials	La Línea pertenece a alguna o varias categorías de Crítica. La Línea está lista 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						
	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						
	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							
<b>SIGNATURES (Name and date)</b>							
DESIGN LEADER (LD)		REVIEWED By rvasquezhu at 2:52 pm, Feb 22, 2021	SUPPORTS LEADER (LSP)	REVIEWED By Sergio Zamora at 3:05 pm, Feb 22, 2021	ISSUER (CHK)	REVIEWED By Oscar at 5:15 pm, Mar 05, 2021	
STRESS LEADER (LST)		REVIEWED By J. LL at 10:29 am, Feb 24, 2021	MATERIALS (M)	REVIEWED By Jose G. Suarez at 3:42 pm, Feb 24, 2021	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.							


**MATERIAL LIST - FABRICATION**

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	250	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FP1U	2.0M
2	25	Pipes (Length), EN 10220, PE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV24YT	0.2M
3	250 x 150	Ecc Reducer, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1,/2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF5C4	1
4	250	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEK5 4 M.3D, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEK5	4
5	150 x 125	Ecc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1UGWWKF	1
6	250	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY1	3
7	250	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs./3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZ8	3
8	125	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs./3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3R946EF	1
9	125	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1LD2SS0	1
10	25	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs./2.6MM EN 10216-5 Gr.X2CrNi19-11,	C1LD5M7J	1
11	25	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYB	1
12	40	Bal BW,FB,SP,PN 63,BW Ends,Datasheet: 6005/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3J	1

**MATERIAL LIST - ERECTION**

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
13	125	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,	C2NRP065	1
14	20	230 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,	C3JHBDL	24
15	16	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,	C3JHBD81	8
16	250	But Waf,PN 10,RF or FF,Datasheet: 6100/ Ductile Iron,	C1RCOM6G	2

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

*By oscar at 5:13 pm, Mar 05, 2021*

0	19/02/21	XFO	LP	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**

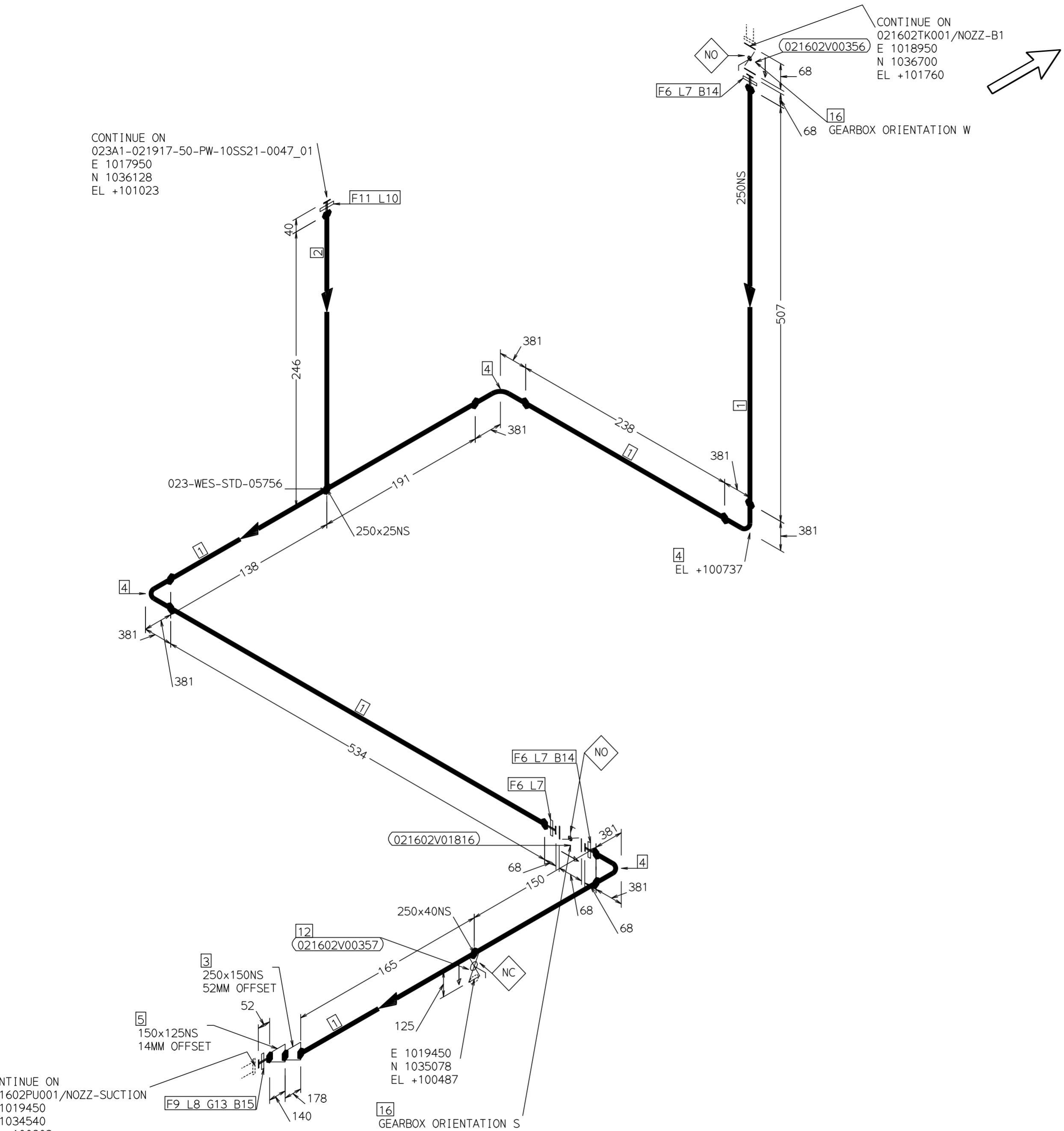
LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-023000-200
PIPING SUPPORT	30207-042-021300-001

**SPEC**
**SYMBOLIC**

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

**PROJECT DESCRIPTION/LOCATION**
**BUTTERFLY PROJECT/KREFELD**


PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	sheet	REV
026	023A1	021602-250-WSS-10SS21-0004	01	1 OF 1	0



#### MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	250	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FP1U	2.0M
2	25	Pipes (Length), EN 10220, PE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV24YT	0.2M
3	250 x 150	Ecc Reducer, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1,/2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF5C4	1
4	250	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEK5 4 M.3D, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEK5	4
5	150 x 125	Ecc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1UGWWKF	1
6	250	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY1	3
7	250	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs./3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZ8	3
8	125	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs./3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3R946EF	1
9	125	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1LD2SS0	1
10	25	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs./2.6MM EN 10216-5 Gr.X2CrNi19-11,	C1LD5M7J	1
11	25	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYB	1
12	40	Bal BW,FB,SP,PN 63,BW Ends,Datasheet: 6005/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3J	1

#### MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
13	125	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,	C2NRP065	1
14	20	230 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,	C3JHBDL	24
15	16	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,	C3JHBD81	8
16	250	But Waf,PN 10,RF or FF,Datasheet: 6100/ Ductile Iron,	C1RC0M6G	2

**PIPING DPT.  
MATERIALS  
CHECKED**

By Jose G. Suarez at 3:42 pm, Feb 24, 2021

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

PROCESS UNIT	DESIGN AREA	LINE NUMBER			TRAIN	SHEET	REV
		026	023A1	021602-250-WSS-10SS21-0004			
					01	1 OF 1	0

#### NOTES:

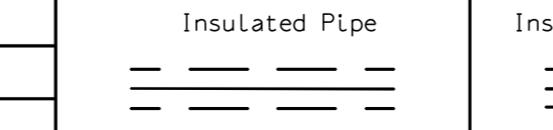
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

#### REFERENCES / DOCUMENTS

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

#### SPEC

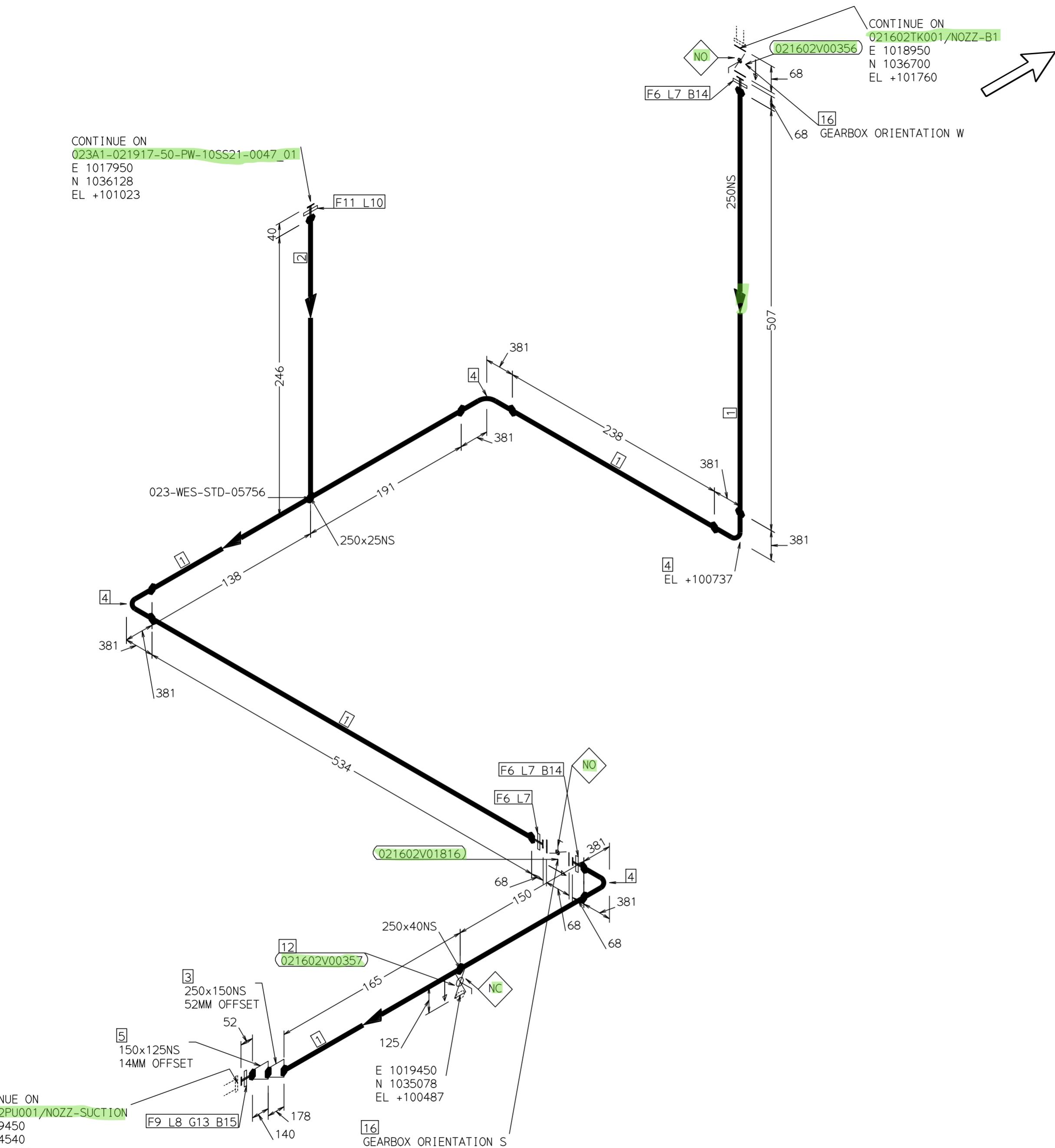
#### SYMBOLIC



#### PROJECT DESCRIPTION/LOCATION

#### BUTTERFLY PROJECT/KREFELD




**MATERIAL LIST - FABRICATION**

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	250	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FP1U	2.0M
2	25	Pipes (Length), EN 10220, PE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV24YT	0.2M
3	250 x 150	Ecc Reducer, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF5C4	1
4	250	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEK5 4 M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEK5	4
5	150 x 125	Ecc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1UGWWKF	1
6	250	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY1	3
7	250	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZ8	3
8	125	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3R946EF	1
9	125	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1LD2SS0	1
10	25	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs, /2.6MM EN 10216-5 Gr.X2CrNi19-11,	C1LD5M7J	1
11	25	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYB	1
12	40	Bal BW,FB,SP,PN 63,BW Ends,Datasheet: 6005/2MM EN 10213 Gr.GX5CrNLMo19-11-2,	C3HDWU3J	1

**MATERIAL LIST - ERECTION**

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
13	125	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,	C2NRP065	1
14	20	230 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,	C3JHBDL	24
15	16	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,	C3JHBD81	8
16	250	But Waf,PN 10,RF or FF,Datasheet: 6100/ Ductile Iron,	C1RC0M6G	2

**PIPING DPT.  
STRESS  
CHECKED**

By J. LL at 10:25 am, Feb 24, 2021

**PIPING DPT.  
SUPPORTS  
CHECKED**

By Sergio Zamora at 9:07 am, Feb 23, 2021

**PIPING DPT.  
SUPPORTED**

By D. Navarro at 12:52 pm, Feb 22, 2021

**PIPING DPT.  
DESIGN  
CHECKED**

By rvasquezhu at 2:53 pm, Feb 22, 2021

0 19/02/21 XFO LP 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:**

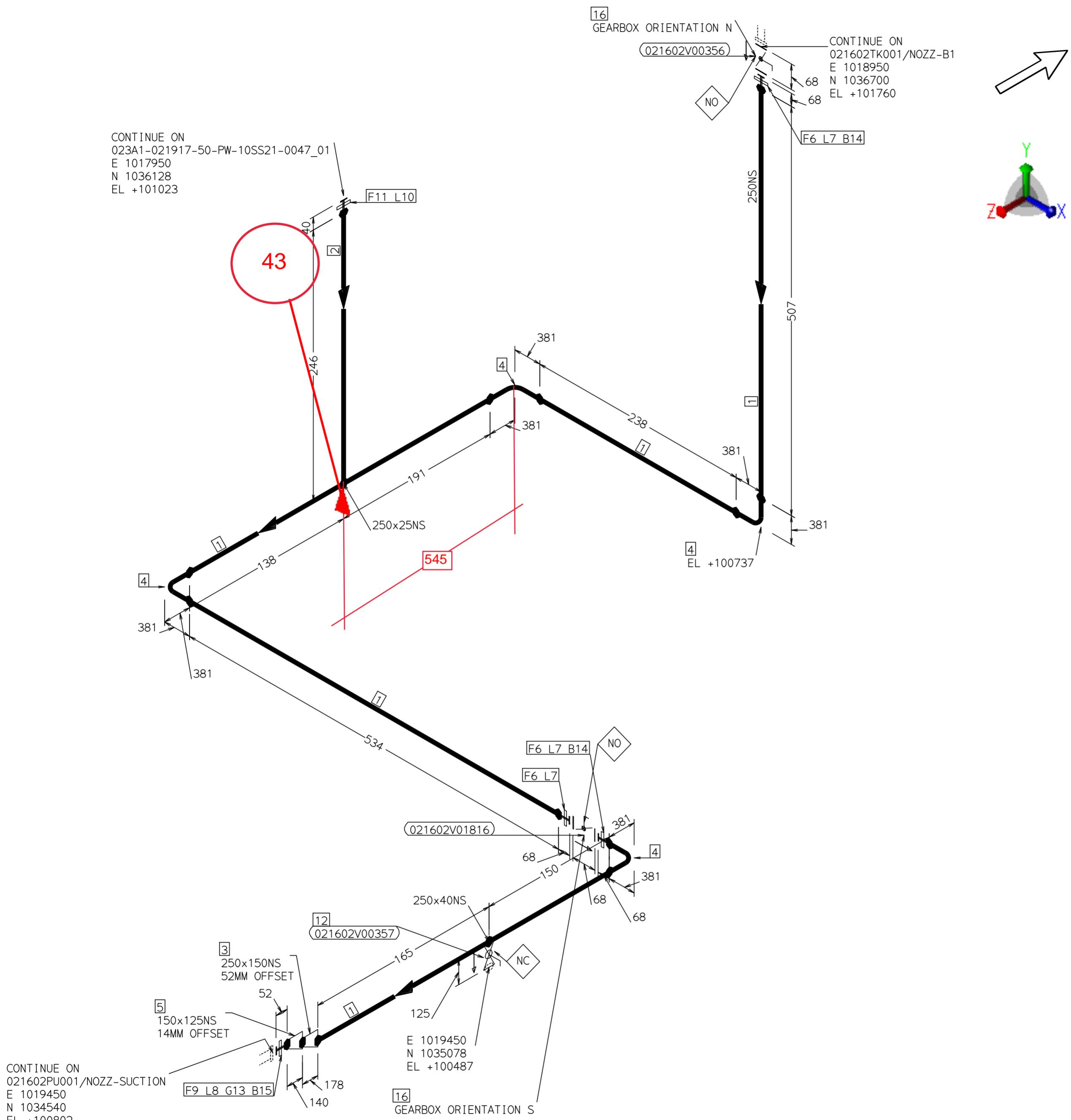
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

**REFERENCES / DOCUMENTS**

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

**SPEC**
**SYMBOLIC**
**10SS21**
**BUTTERFLY PROJECT/KREFELD**
**Insulated Pipe**
**Insulated and Traced Pipe**
**PROCESS UNIT**
**DESIGN AREA**
**LINE NUMBER**
**TRAIN**
**SCHEET**
**REV**

026 023A1 021602-250-WSS-10SS21-0004 01 1 OF 1 0



## MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	250	Pipes (Length), EN 10220, BE, EFW + 100% RT, -./2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FP1U	2.0M
2	25	Pipes (Length), EN 10220, PE, EFW + 100% RT, -./2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV24YT	0.2M
3	250 x 150	Ecc Reducer, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1./2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF5C4	1
4	250	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1./2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEK5	4
5	150 x 125	Ecc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -./2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1UGWWKF	1
6	250	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -./ EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY1	3
7	250	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs./3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZ8	3
8	125	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs./3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3R946EF	1
9	125	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -./ EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1LD2SS0	1
10	25	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs./2.6MM EN 10216-5 Gr.X2CrNi19-11,	C1LD5M7J	1
11	25	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -./ EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYB	1
12	40	Bal BW,FB,SP,PN 63,BW Ends,Datasheet: 6005/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3J	1

## MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
13	125	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,	C2NRP065	1
14	20	230 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,	C3JHBDBL	24
15	16	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,	C3JHBD81	8
16	250	But Waf.PN 10.RF or FF.Datasheet: 6100/ Ductile Iron.	C1RC0M6G	2

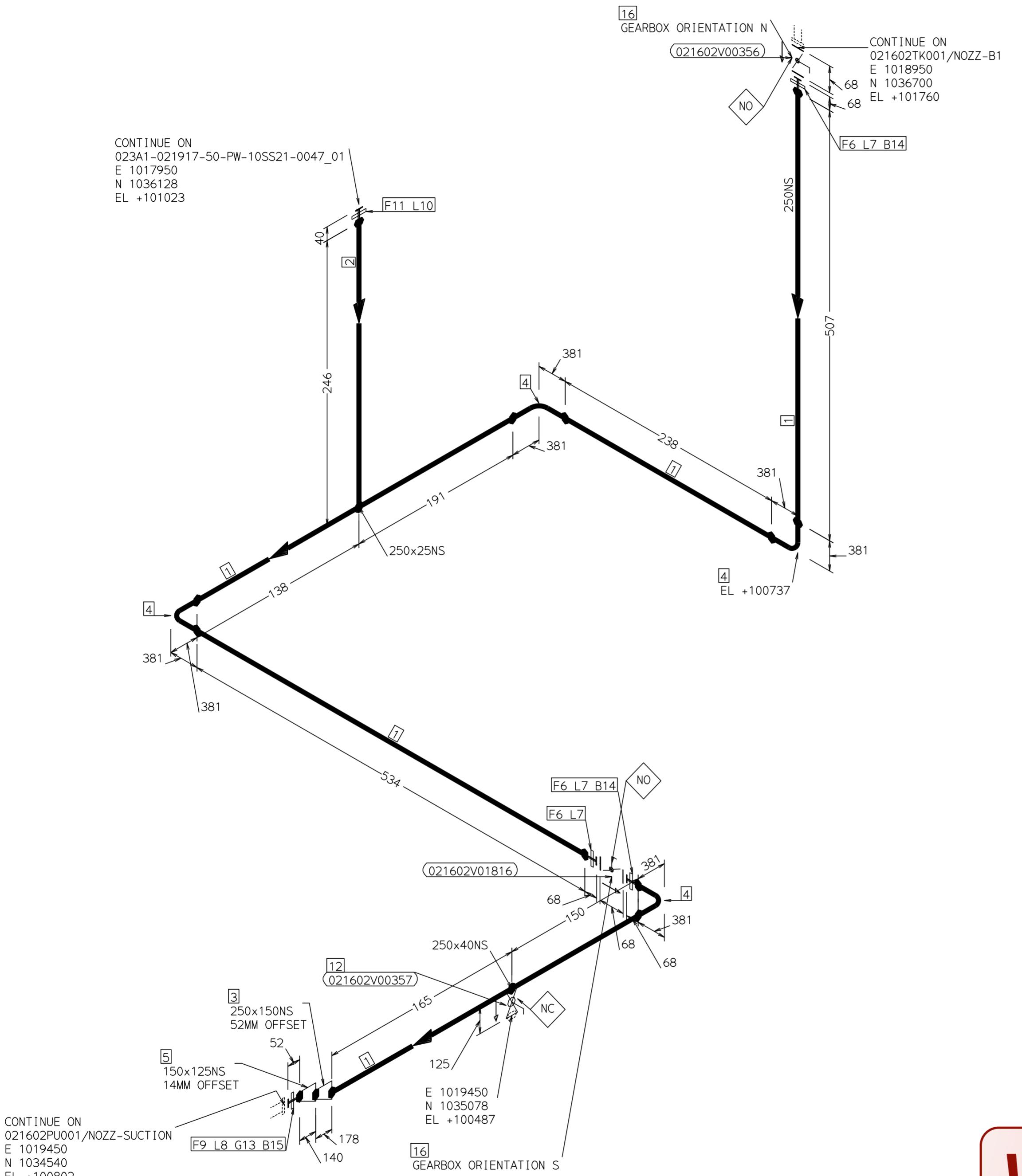
PIPING DPT.  
STRESS  
MASTER

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REV	DATE	DWN	CHK	APP	DESCRIPTION
0	19/02/21	XFO	LP	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.

NOTES:  For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.	REFERENCES / DOCUMENTS		SPEC SYMBOLIC	10SS21	PROJECT DESCRIPTION/LOCATION		horizontal and vertical centerline unless shown otherwise. Contractor will provide all necessary pipe supports.			
	LINE LIST		BUTTERFLY PROJECT/KREFELD				 <b>TechnipFMC</b>	 <b>Cargill</b>		
	ISOMETRIC INDEX									
	PIPING SUPPORT									
			Insulated Pipe	Insulated and Traced Pipe	PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
			— — — —	— — — —	026	023A1	021602-250-WSS-10SS21-0004	01	1 OF 1	0


**MATERIAL LIST - FABRICATION**

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	250	Pipes (Length), EN 10220, BE, EFW + 100% RT, -,/2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FP1U	2.0M
2	25	Pipes (Length), EN 10220, PE, EFW + 100% RT, -,/2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV24YT	0.2M
3	250 x 150	Ecc Reducer, EN 10253-4 Type B, BW Ends, Welded + 100% RT, Serie 1,/2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1TJF5C4	1
4	250	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEK5 4 M.3D, Serie 1,/2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEK5	4
5	150 x 125	Ecc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -,/2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1UGWWKF	1
6	250	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -,/ EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY1	3
7	250	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs./3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZ8	3
8	125	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs./3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3R946EF	1
9	125	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -,/ EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1LD2SS0	1
10	25	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs./2.6MM EN 10216-5 Gr.X2CrNi19-11,	C1LD5M7J	1
11	25	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -,/ EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYB	1
12	40	Bal BW,FB,SP,PN 63,BW Ends,Datasheet: 6005/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3J	1

**MATERIAL LIST - ERECTION**

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
13	125	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,	C2NRP065	1
14	20	230 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,	C3JHBDL	24
15	16	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,	C3JHBD81	8
16	250	But Waf,PN 10,RF or FF,Datasheet: 6100/ Ductile Iron,	C1RC0M6G	2

**PIPING DPT.  
DESIGNED**

By xavier foz at 9:02 am, Feb 10, 2021

**PIPING DPT.  
DESIGNED**

By Andrea Ferranti at 3:03 pm, Feb 10, 2021

**VOID**

0	19/02/21	XFO	LP	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.					
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.					