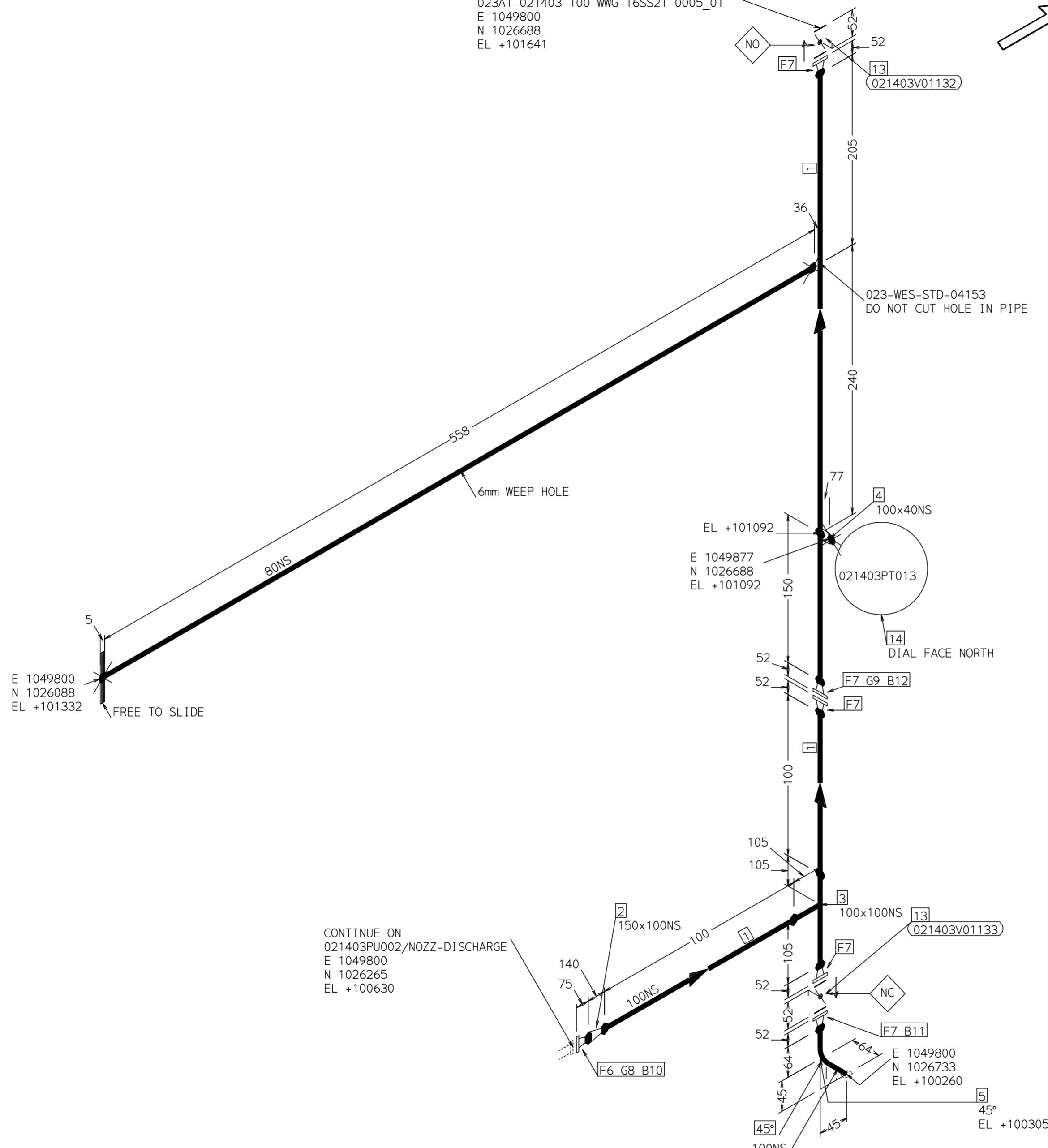


ISOMETRIC IFC - CHECK LIST

Line Number	021403WWG0006	Stress CN / Level	Nº -	Level: I	Cargill		TechnipFMC – Butterfly Project		
Isometric Number	023A1021403WWG0006_01	Process Approval Required	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>					
Information to be attached:					Intrumentation Approval Required (N/A)	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>		
Master Copy of PID:	YES <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>	Nº	800124-024-PID-0021-008	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		Rev.				
Instrument Dwg. :	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Nº		Rev.				
Project By-Pass ^[4] :	YES <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>	Nº	Pendiente por By-Pass	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:				
A VERIFICAR / TO BE CHECKED					"N/A" NO APPLICA / NOT APPLICABLE				
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									
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								
	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)								
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 checked="" type="checkbox"/> 3 <input 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 plazo Vendor / Rating and diameter of nozzles according to vendor drawing								
	Posición y elevación de tubuladuras según plazo 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					<input checked="" type="checkbox"/>			
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 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					<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"/>				
Ventos y drenajes / 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"/>				
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									
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 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					<input checked="" type="checkbox"/>				
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					<input checked="" type="checkbox"/>				
Numeración correcta de los soportes / Supports correctly numbered					<input checked="" type="checkbox"/>				
Código de soportes correctamente indicados (STD - SPC - COM - MRS - PRF) / Support code correctly indicated (STD - SPC - COM - MRS - PRF)					<input checked="" type="checkbox"/>				
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									
La Linea pertenece a alguna o varias categorías de Criticidad. La Linea esta 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					<input checked="" type="checkbox"/>				
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)					N/A				
Nº de identificación de válvulas manuales (según PID) / Identification number of manual valve (according to PID)					<input checked="" type="checkbox"/>				
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)					<input checked="" type="checkbox"/>				
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					<input checked="" type="checkbox"/>				
Revision By : (CHK) Issuer									
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					<input checked="" type="checkbox"/>				
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					<input checked="" type="checkbox"/>				
SIGNATURES (Name and date)									
DESIGN LEADER (LD)	REVIEWED By rvasquezhu at 11:02 am, Dec 16, 2020		REVIEWED By oscar at 4:11 pm, Jan 20, 2021	SUPPORTS LEADER (LSP)	REVIEWED By Sergio Zamora at 8:09 am, Jan 21, 2021	ISSUER (CHK)	REVIEWED By jrlblanco at 5:25 pm, Jan 21, 2021		
STRESS LEADER (LST)			MATERIALS (M)	REVIEWED By Jose G. Suarez at 4:37 pm, Jan 07, 2021	REVIEWED By Jose G. Suarez at 4:33 pm, Jan 21, 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.									

CONTINUE ON
023A1-021403-100-WWG-16SS21-0005_01
E 1049800
N 1026688
EL +101641



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	100	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2.6MM EN 10217-7 Gr.X2CrNi19-11,	C1KV25CN	0.8M
2	150 x 100	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1NFELS0	1
3	100 x 100	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER99	1
4	100 x 40	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94W	1
5	100	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2, /2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1POSATW	1
6	150	WN Flg, EN 1092-1, RF/BW End, PN 40, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1MSERA	1
7	100	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /3.6MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMW	5

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
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	100	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,	C1NKU6DV	1
10	24	135 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,	C3JHBDE3	8
11	16	160 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,	C3JHBD8B	8
12	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
13	100	But Waf,PN 16,RF or FF,Datasheet: 6102/ Ductile Iron,	C1UYHNWF	2
14	40	GENERIC TRANSMITTER SCREWED 021403PT013	- -	1

PIPING DPT.
ISSUER
CHECKED

Brightness at 532 nm - Jan 21, 2021

REF	DATE	DWN	CHK	APP	DESCRIPTION
0	21/01/21	APN	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.

NOTES:

For pipes $< dn_{50}$ 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	16SS21
SYMBOLS	
Insulated Pipe	Insulated and Traced Pipe
	

PROJECT DESCRIPTION/LOCATION

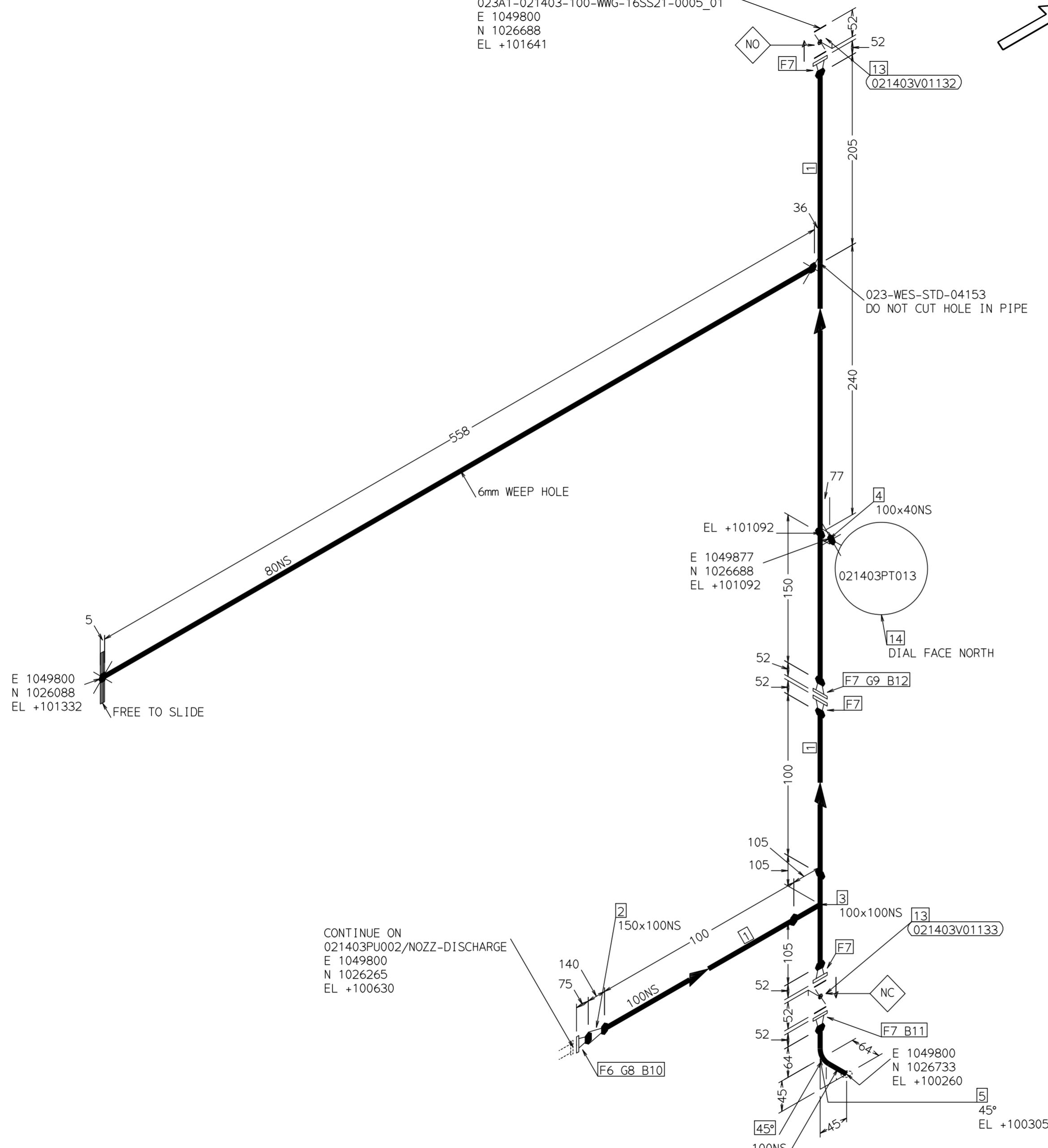
BUTTERFLY PROJECT/KREFELD



ANSWER

SC04A1-SC1402-100-JWIC-116SC01-0001-0

CONTINUE ON
023A1-021403-100-WWG-16SS21-0005_01
E 1049800
N 1026688
EL +101641



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	100	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2.6MM EN 10217-7 Gr.X2CrNi19-11,	C1KV25CN	0.8M
2	150 x 100	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1NFELS0	1
3	100 x 100	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER99	1
4	100 x 40	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94W	1
5	100	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2, /2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1POSATW	1
6	150	WN Flg, EN 1092-1, RF/BW End, PN 40, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1MSERA	1
7	100	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /3.6MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMW	5

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
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	100	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,	C1NKU6DV	1
10	24	135 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,	C3JHBDE3	8
11	16	160 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,	C3JHBD8B	8
12	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
13	100	But Waf,PN 16,RF or FF,Datasheet: 6102/ Ductile Iron,	C1UYHNWF	2
14	40	GENERIC TRANSMITTER.SCREWED 021403PT013	- -	1

PIPING DPT.
MATERIALS
CHECKED

By: Jose G. Suarez at 4:33 pm - Jan 21, 2021

0	21/01/21	APN	LPD	OMC	IFC-ISSUED FOR CONSTRUCTION
RFV	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 $< dn_{50}$ 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	16SS21
SYMBOLS	
Insulated Pipe	Insulated and Traced
 	

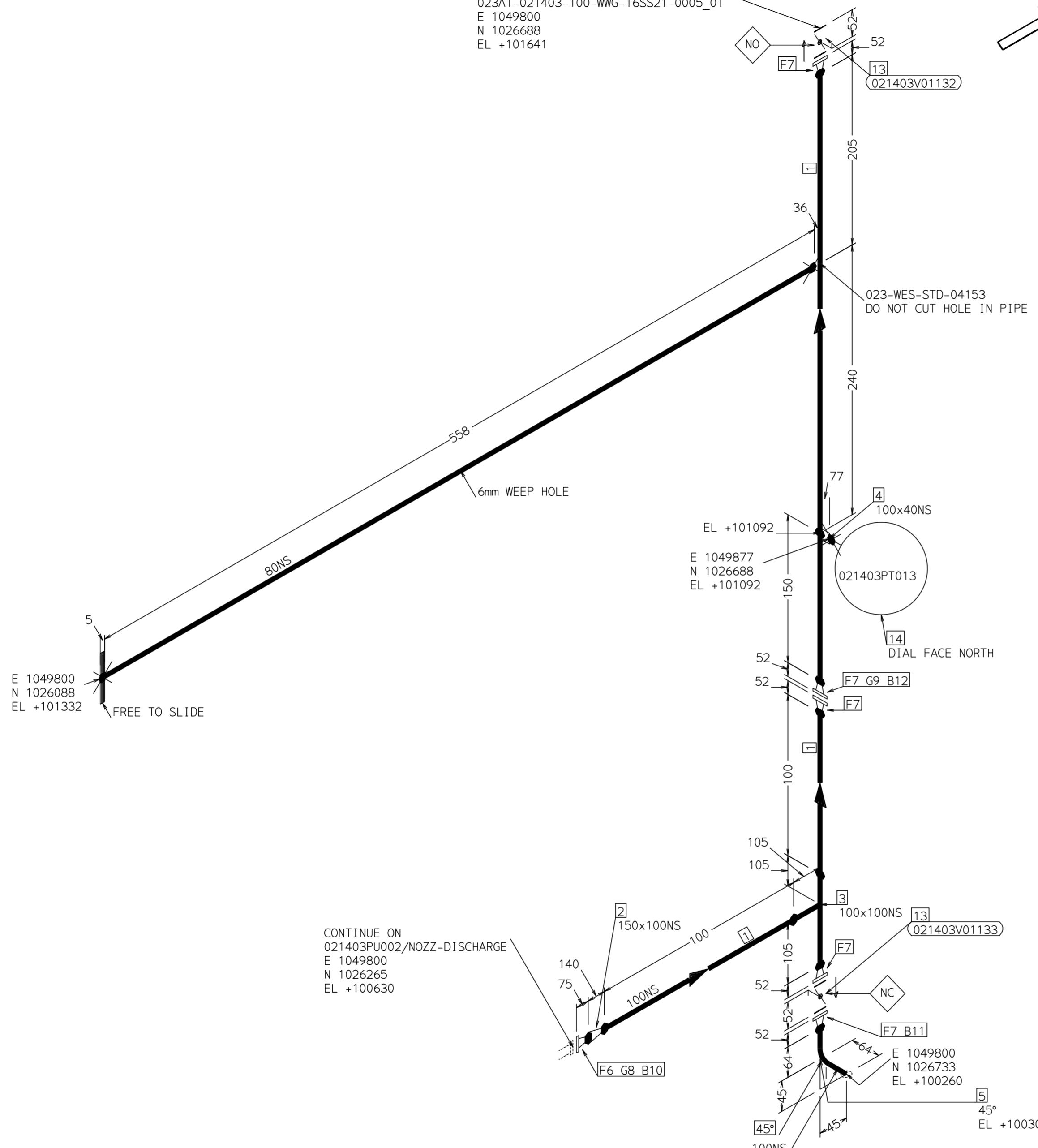
PROJECT DESCRIPTION/LOCATION

BUTTERBEI Y PROJECT / KREEFI



SC04A1-SC1402-100-JWIC-116SC01-0001-0

CONTINUE ON
023A1-021403-100-WWG-16SS21-0005_01
E 1049800
N 1026688
EL +101641



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	100	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2.6MM EN 10217-7 Gr.X2CrNi19-11,	C1KV25CN	0.8M
2	150 x 100	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1NFELS0	1
3	100 x 100	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER99	1
4	100 x 40	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94W	1
5	100	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2, /2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1POSATW	1
6	150	WN Flg, EN 1092-1, RF/BW End, PN 40, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1MSERA	1
7	100	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /3.6MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMW	5

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
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	100	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,	C1NKU6DV	1
10	24	135 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,	C3JHBDE3	8
11	16	160 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,	C3JHBD8B	8
12	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
13	100	But Waf,PN 16,RF or FF,Datasheet: 6102/ Ductile Iron,	C1UYHNWF	2
14	40	GENERIC TRANSMITTER.SCREWED 021403PT013	- -	1

**PIPING DPT.
DESIGNED**

By apereznyne at 4:12 pm, Jan 21, 2021

0	21/01/21	APN	LPD	OMC	IFC-ISSUED FOR CONSTRUCTION
RFV	DATE	DWN	CHK	APP	DESCRIPTION

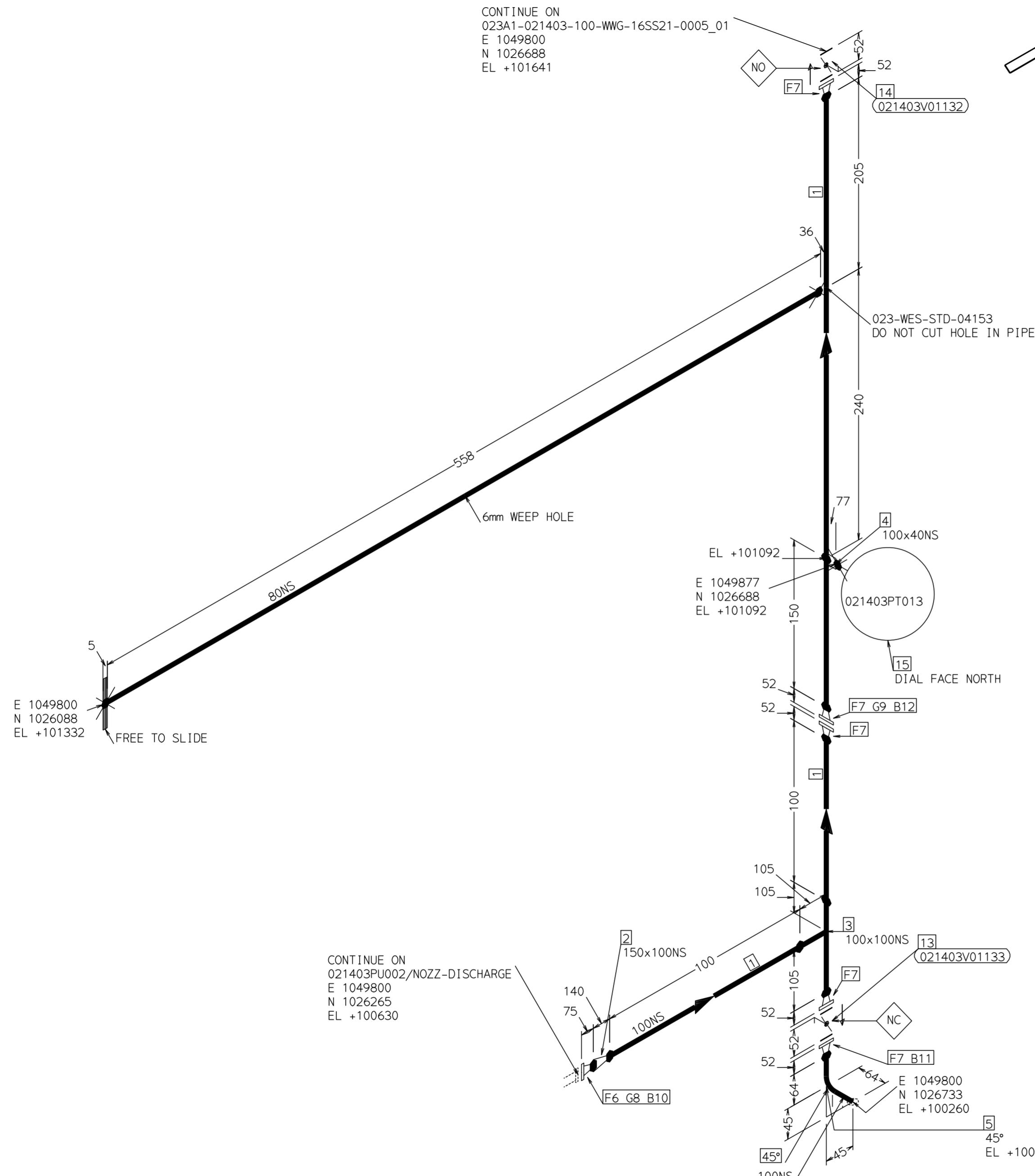
ALL dimensions to be checked in field prior to construction. Dimensions and routing shall be field adjusted, it is the piping contractors responsibility to check and verify all closing dimensions to equipment and make adjustments as required in field. All dimensions, elevations and coordinates are in 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 $< dn_{50}$ supporting to be studied and defined by construction contractor before line fabrication and installation.

REFERENCES / DOCUMENTS

fore	REFERENCES / DOCUMENTS		SPEC	16SS21	PROJECT DESCRIPTION/LOCATION BUTTERFLY PROJECT/KREFELD			 TechnipFMC	 Cargill													
			SYMBOLS																			
	LINE LIST		30201-042-001000-001		Insulated Pipe	Insulated and Traced Pipe	LINE NUMBER		TRAIN		SHEET		REV									
	ISOMETRIC INDEX		30303-042-023000-200																			
	PIPING SUPPORT		30207-042-021300-001																			
								024	023A1	021403-100-WWG-16SS21-0006	01	1 OF 1	0									



MATERIAL LIST - FABRICATION					
PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY	
1	100	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2.6MM EN 10217-7 Gr.X2CrNi19-11,	C1KV25CN	0.8M	
2	150 x 100	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1NFELSO	1	
3	100 x 100	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER99	1	
4	100 x 40	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94W	1	
5	100	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2, /2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1P0SATW	1	
6	150	WN Flg, EN 1092-1, RF/BW End, PN 40, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1MSERA	1	
7	100	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /3.6MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMW	5	

MATERIAL LIST - ERECTION					
PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY	
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	100	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,	C1NKU6DV	1	
10	24	135 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,	C3JHBDE3	8	
11	16	160 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,	C3JHBD8B	8	
12	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	
13	100	But Waf,PN 16,Lug-type RF,Datasheet: 6105/ Ductile Iron,	C1UMDY6C	1	
14	100	But Waf,PN 16,RF or FF,Datasheet: 6102/ Ductile Iron,	C1UYHNWF	1	
15	40	GENERIC TRANSMITTER SCREWED 021403PT013	- -	1	

PIPING DPT.
SUPPORTS
CHECKED

PIPING DPT.
SUPPORTED

By mfernandez1 at 4:44 pm, Jan 20, 2021

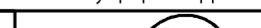
PIPING DPT.
DESIGN
CHECKED

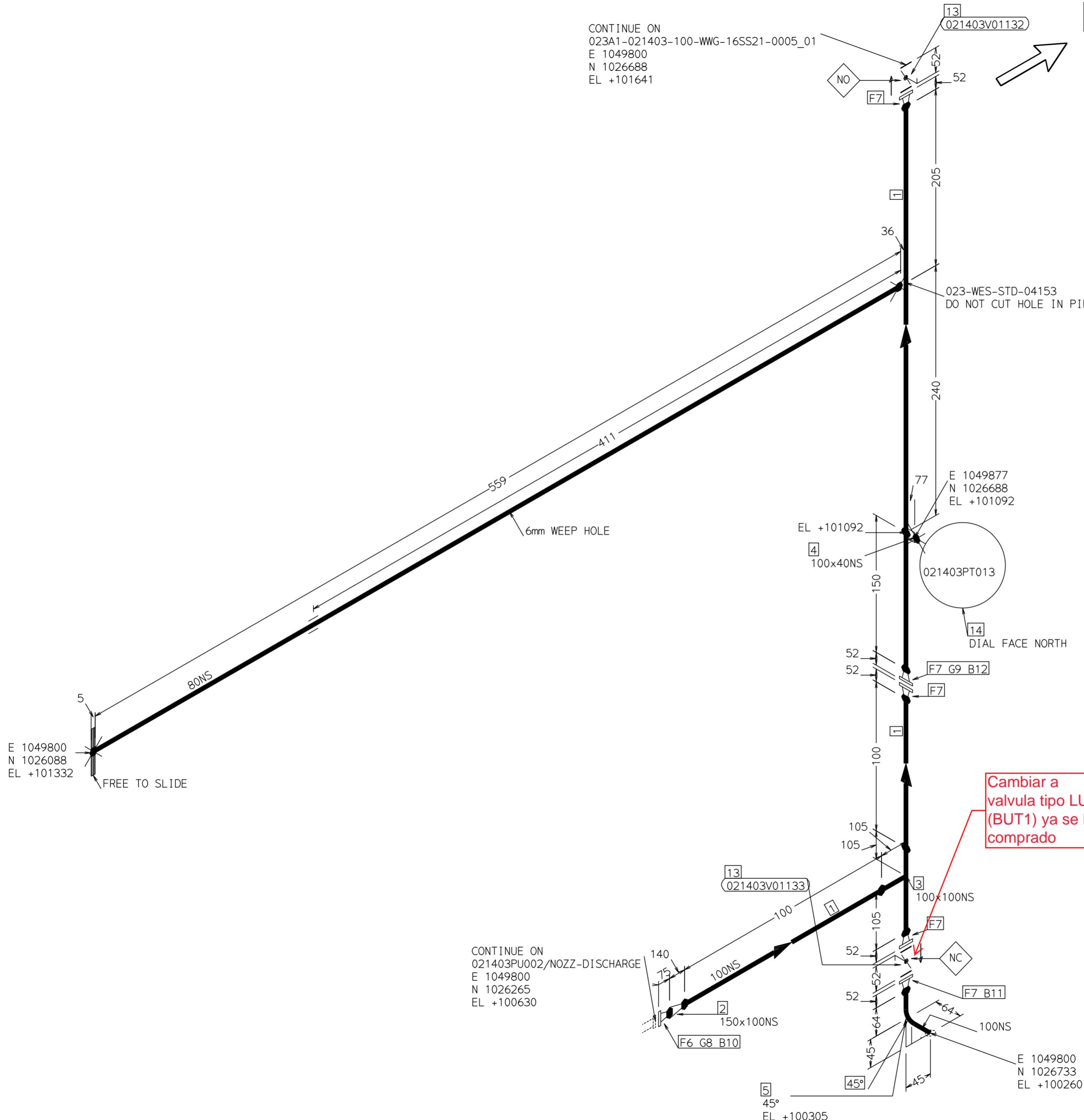
**PIPING DPT.
DESIGNED**

By apereznune at 9:23 am, Jan 20, 2021

By Appliance at 01:15 am, Sun 26, 2021					
0	20/01/21	APN	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 SYMBOLIC	16SS21	PROJECT DESCRIPTION/LOCATION BUTTERFLY PROJECT/KREFELD		 TechnipFMC	 Cargill			
		LINE LIST		30201-042-001000-001		Insulated Pipe		Insulated and Traced Pipe				
		ISOMETRIC INDEX		30303-042-023000-200								
		PIPING SUPPORT		30207-042-021300-001		LINE NUMBER		TRAIN	SHEET	REV		
				024		023A1		021403-100-WWG-16SS21-0006		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_043_001000_001

LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	20203 042 023000 200

ISOMETRIC INDEX	SUSUS-042-023000-200
BIRING SUPPORT	20203-042-021200-001

SPEC	16SS21
SYMBOLS	
Insulated Pipe	Insulated and Traced Pipe
	

MATERIAL LIST – FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	100	Pipes (Length), EN 10220, BE, EFW + 100% RT, - ,/2.6MM EN 10217-7 Gr.X2CrNi19-11,	C1KV25CN	0.8M
2	150 x 100	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, - ,/2.6MM/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1NFELS0	1
3	100 x 100	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, - ,/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER99	1
4	100 x 40	Half Coup, Prj Std, BSPPF End, 40 Bar, - , - ,/ EN 10216-5 Gr.X2CrNi19-11,	C3CLV94W	1
5	100	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2,/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1P0SATW	1
6	150	WN Flg, EN 1092-1, RF/BW End, PN 40, - ,/4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1MSERA	1
7	100	WN Flg, EN 1092-1, RF/BW End, PN 16, - ,/3.6MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMW	5

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	C1NKU6DX	IDENT	QTY
8	150	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,		C1NKU6DJ	1
9	100	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 16, IBC Type, Thk=3.2mm, Klingersil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,		C1NKU6DV	1
10	24	135 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,		C3JHBDE3	8
11	16	160 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,		C3JHBD8B	8
12	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
13	100	But Waf,PN 16,RF or FF,Datasheet: 6102/ Ductile Iron,		C1UYHNWF	2
14	40	GENERIC TRANSMITTER SCREWED 021403PT013		--	1

PIPING DPT.

MATERIALS

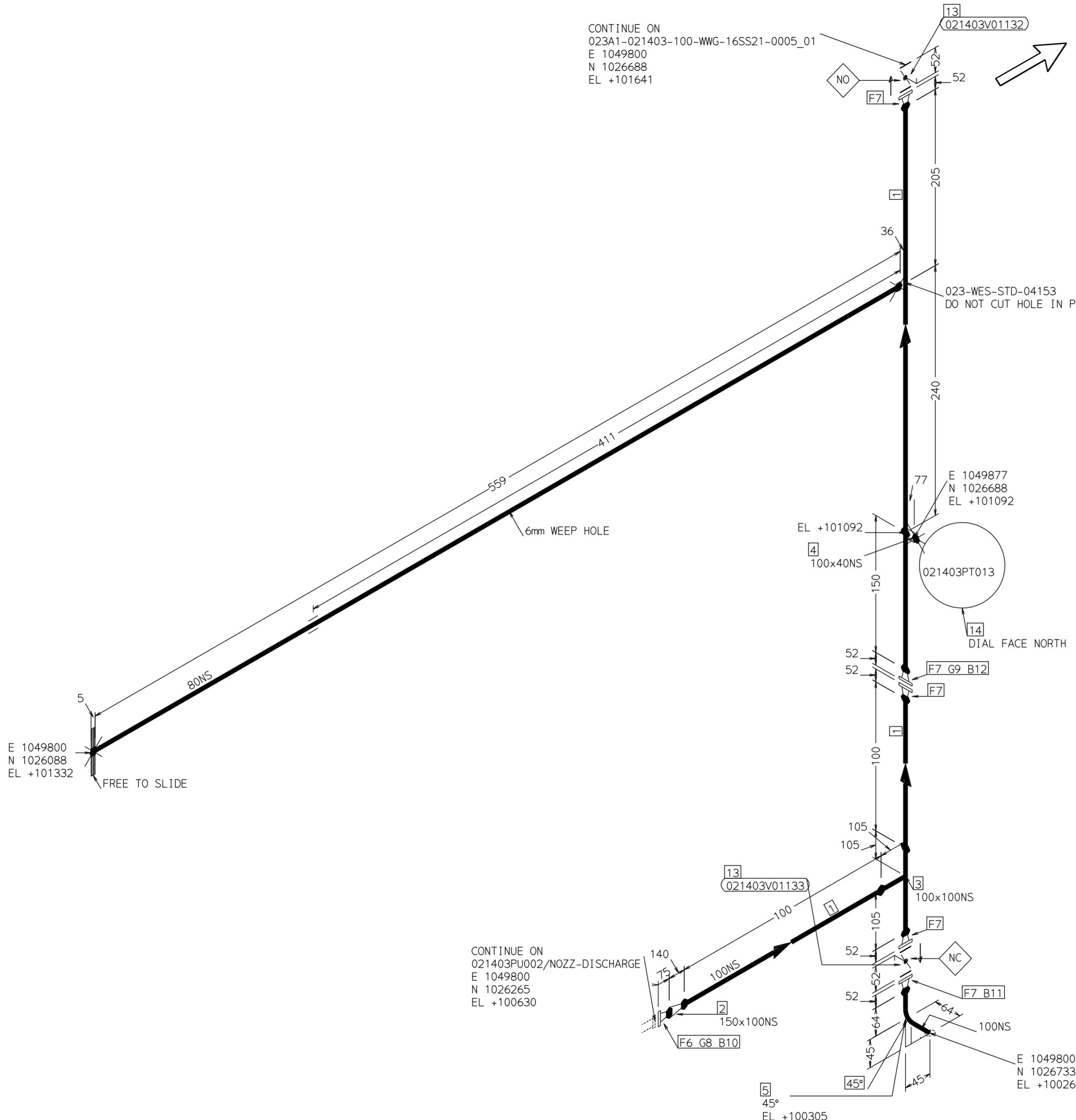
WITH COMMENTS

By Jose G. Suarez at 4:36 pm - Jan 07, 2021

0	14/12/20	APN	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.

PROJECT DESCRIPTION/LOCATION BUTTERFLY PROJECT/KREFELD		 TechnipFMC			
PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
024	023A1	021403-100-WWG-16SS21-0006	01	1 OF 1	0



MATERIAL LIST - FABRICATION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
1	100	Pipes (Length), EN 10220, BE, EFW + 100% RT, - ,/2.6MM EN 10217-7 Gr.X2CrNi19-11,	C1KV25CN	0.8M
2	150 x 100	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, - ,/2.6MM/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1NFELS0	1
3	100 x 100	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, - ,/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER99	1
4	100 x 40	Half Coup, Prj Std, BSPPF End, 40 Bar, - , - ,/ EN 10216-5 Gr.X2CrNi19-11,	C3CLV94W	1
5	100	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2,/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1POSATW	1
6	150	WN Flg, EN 1092-1, RF/BW End, PN 40, - ,/4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1MSERA	1
7	100	WN Flg, EN 1092-1, RF/BW End, PN 16, - ,/3.6MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMW	5

MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
8	150	NM FFlat 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,	C1NKU6DJ	1
9	100	NM FFlat 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,	C1NKU6DV	1
10	24	135 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,	C3JHBDE3	8
11	16	160 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,	C3JHBD8B	8
12	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
13	100	But Waf,PN 16,RF or FF,Datasheet: 6102/ Ductile Iron,	C1UYHNWF	2
14	40	GENERIC TRANSMITTER SCREWED 021403PT013	- -	1

PIPING DPT.
SUPPORTED

By mfernandez1 at 1:37 pm, Dec 18, 2020

PIPING DPT.
SUPPORTS
CHECKED

P. 9 / 15 - 11.12.2020

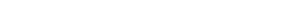
0	14/12/20	APN	LPD	OMC	IFC-ISSUED FOR CONSTRUCTION
REV.	PAGE	PWN	CHM	APP	DESCRIPTION

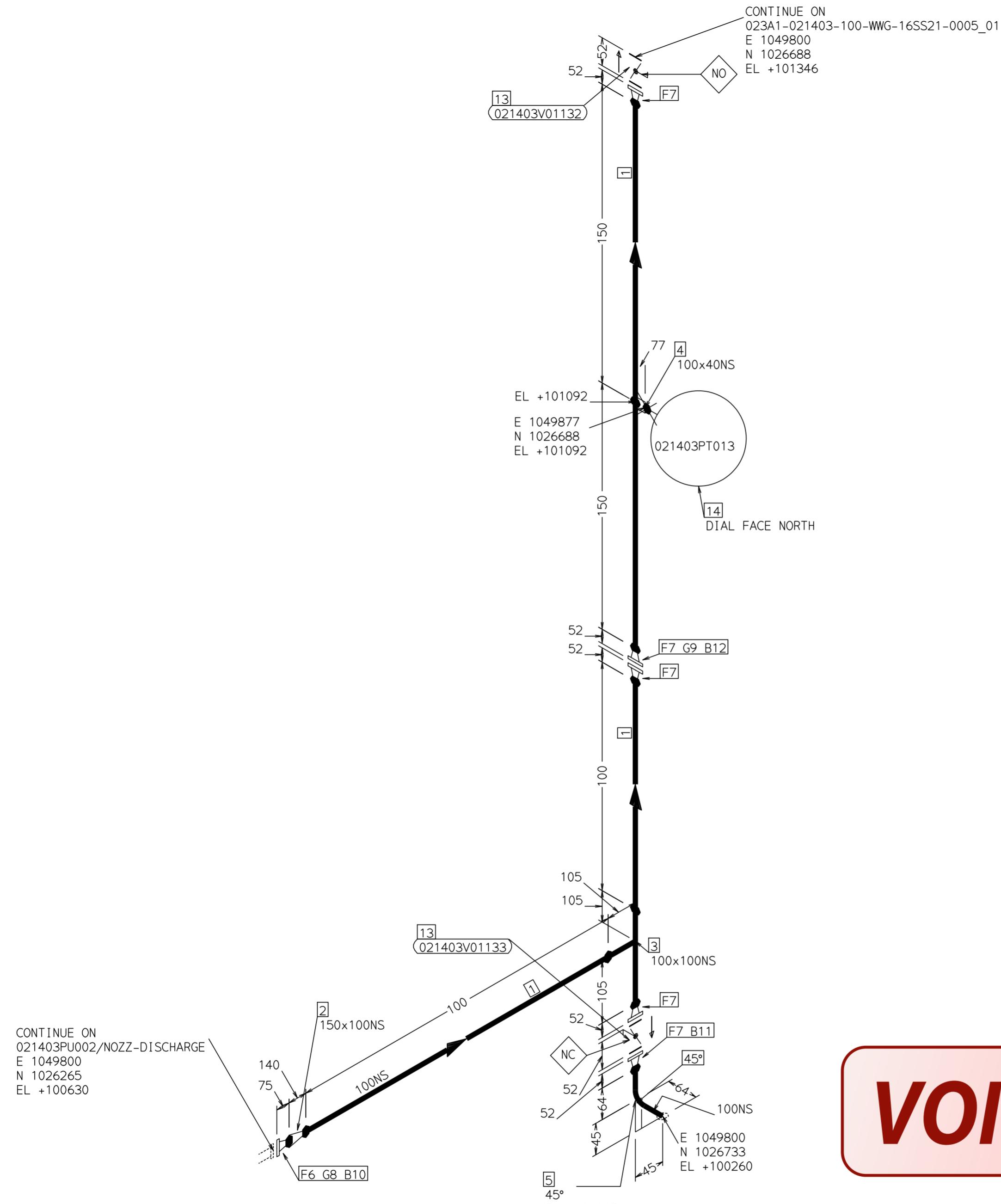
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Type	PROJECT DESCRIPTION/LOCATION		 TechnipFMC					
	BUTTERFLY PROJECT/KREFELD							
	PROCESS UNIT	DESIGN AREA	LINE NUMBER			TRAIN	SHEET	REV
	024	023A1	021403-100-WWG-16SS21-0006			01	1 OF 1	0

NOTES

REFERENCES / DOCUMENTS

		SYMBOLS	
		LINE LIST	ISOMETRIC INDEX
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.	30201-042-001000-001	Insulated Pipe	Insulated and Traced Pipe
	30303-042-023000-200		
	30207-042-021300-001		



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	100	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2.6MM EN 10217-7 Gr.X2CrNi19-11,	C1KV25CN	0.5M
2	150 x 100	Conc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM/2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1NFELSO	1
3	100 x 100	Eq Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1MSER99	1
4	100 x 40	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94W	1
5	100	45° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2, /2.6MM EN 10253-4 Gr.X2CrNi19-11,	C1P0SATW	1
6	150	WN Flg, EN 1092-1, RF/BW End, PN 40, -, /4.5MM EN 10222-5 Gr.X2CrNi18-9,	C1MSERA	1
7	100	WN Flg, EN 1092-1, RF/BW End, PN 16, -, /3.6MM EN 10222-5 Gr.X2CrNi18-9,	C1KU0MMW	5

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
8	150	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,	C1NKU6DJ	1
9	100	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,	C1NKU6DV	1
10	24	135 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,	C3JHBDE3	8
11	16	160 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,	C3JHBD8B	8
12	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
13	100	But Waf, PN 16, RF or FF, Datasheet: 6102/ Ductile Iron, GENERIC TRANSMITTER SCREWED 021403PT013	C1UYHNWF	2
14	40	- -	- -	1

VOID

PIPING DPT.
DESIGNED

By apereznune at 4:48 pm, Dec 14, 2020

PIPING DPT.
**DESIGN
CHECKED**

By rvasquez at 11:02 am, Dec 16, 2020

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

16SS21

SYMBOLIC

PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	sheet	REV
024	023A1	021403-100-WWG-16SS21-0006	01	1 OF 1	0

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TechnipFMC

Cargill