


## ISOMETRIC IFC - CHECK LIST

Line Number	021908A0034	Stress CN / Level	N°	Level:	 <b>TechnipFMC – Butterfly Project</b>	
Isometric Number	021A1021908A0034_01	Process Approval Required	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>		
		Instrumentation Approval Required (N/A)	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>		
<b>Information to be attached:</b>					<b>HOLDS</b>	
Master Copy of PID:	YES <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>	N°	800124-029-PID-0031-029	Rev. 1	
PID Modification Sheet:	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	N°		Rev.	
Equipment Vendor Dwg.:	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	N°		Rev.	
Instrument Dwg.:	YES <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>	N°	800124-000-STD-1576-003	Rev. 0	
Project By-Pass <sup>(1)</sup> :	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	N°		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 APLICABLE / NOT APPLICABLE	IFC	REV 0	REV 1	REV 2
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			✓	X <sup>(1)</sup>	1st-Chk <sup>(2)</sup>	2nd-Chk <sup>(3)</sup>
Revision By : (D) Designer / (LDG) Design Leader			By: D		By: LDG	
Iso Information	N° 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		✓		✓	✓
	Vínculo E3D con Diagrams (Process Unit, Temp Operación, Numeración 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 3					
	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	✓				
Revision By : (D) Designer / (LDG) Design Leader			By: D		By: LDG	
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 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 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 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		✓		✓	✓
	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		✓		✓	✓
Revision By : (ST) Stress Specialist / (LST) Stress Leader			By: ST		By: LST	
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			By: SP		By: LSP	
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 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)		✓		✓	✓
Revision By : (M) Materials			By: M			
Materials	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		✓	✓		
	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)	N/A				
	N° de identificación de válvulas manuales (según PID) / Identification number of manual valve (according to PID)		✓	✓		
	Todas las juntas y pernos colocados según tipo requerido (RF, FF, Bolts, Machine Bolts) / All gaskets and bolts placed according required type (RF, FF, Bolts, Machine Bolts)		✗	✓		
Revision By : (CHK) Issuer			By: CHK			
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	✓	✓	X	✓	X
	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 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)	<div>REVIEWED</div> <div>By Laura Parra at 2:45 pm, Sep 17, 2020</div>	<div>REVIEWED</div> <div>By Laura Parra at 6:23 pm, Nov 03, 2020</div>	SUPPORTS LEADER (LSP)	<div>REVIEWED</div> <div>By Sergio Ramirez at 11:55 am, Sep 25, 2020</div>	<div>REVIEWED</div> <div>By Sergio Ramirez at 10:21 am, Nov 04, 2020</div>	ISSUER (CHK)	<div>REVIEWED</div> <div>By Oscar at 8:17 am, Oct 30, 2020</div>	<div>REVIEWED</div> <div>By Oscar at 2:19 pm, Nov 06, 2020</div>
STRESS LEADER (LST)			MATERIALS (M)	<div>REVIEWED</div> <div>By Jose G. Sotomayor at 2:37 pm, Sep 28, 2020</div>	<div>REVIEWED</div> <div>By Jose G. Sotomayor at 10:18 am, Oct 28, 2020</div>	DISCIPLINE LEAD (L)		
<div>REVIEWED</div> <div>By Jose G. Sotomayor at 5:15 pm, Nov 04, 2020</div>								

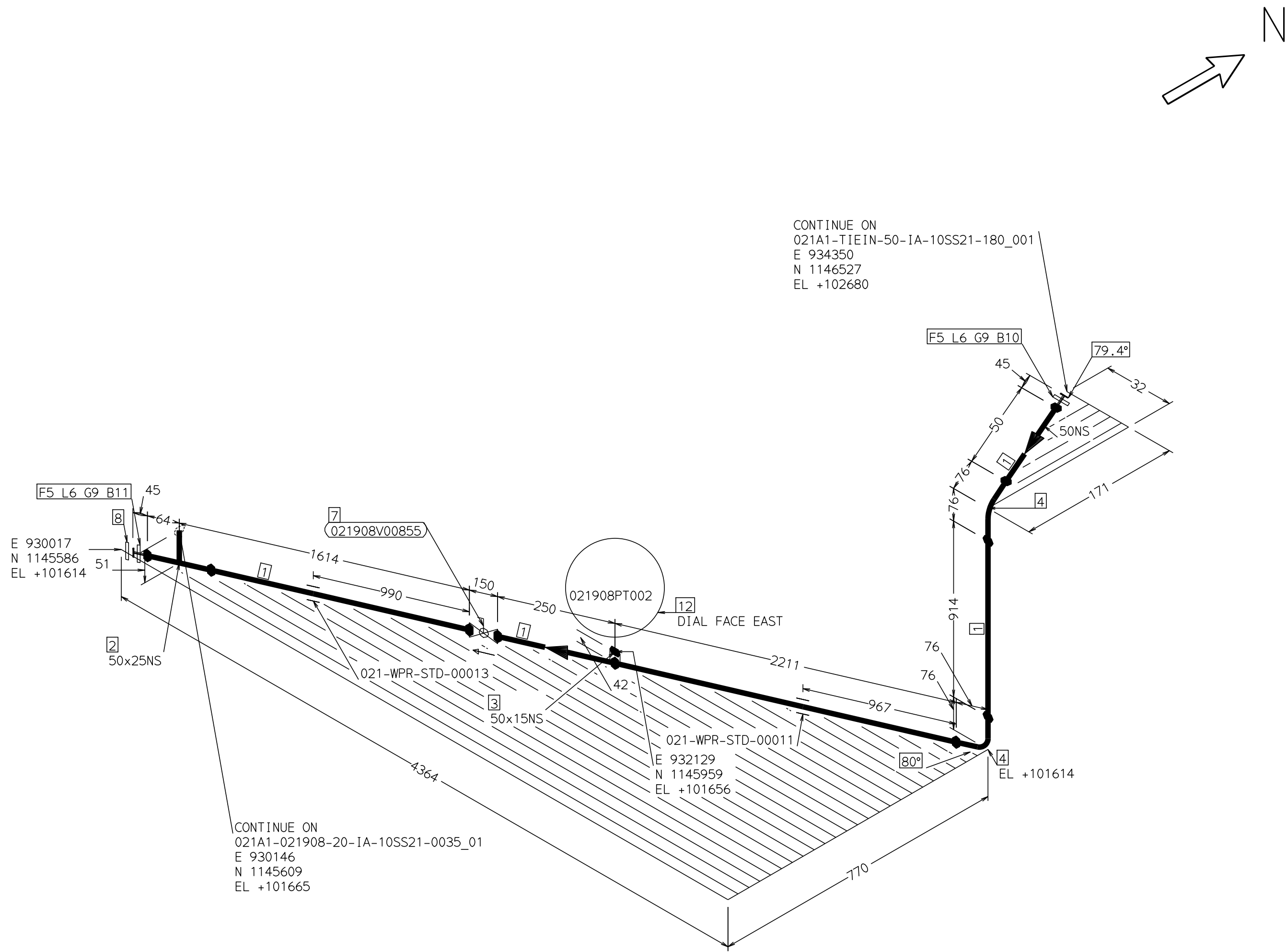
**NOTES:**

[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	50	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV256V	5.0M
2	50 x 25	Red Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1NF9WJF	1
3	50 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1
4	50	90A° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1P0J0PL	2
5	50	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYE	2
6	50	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USTY	2
7	50	Bal BW, RB, SP, PN 63, BW Ends, Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3Z	1

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
8	50	Bld Flg, EN 1092-1, RF, PN 16, / EN 10222-5 Gr.X2CrNi18-9,	C1KU0N03	1
9	50	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 40, IBC Type, Thk=3.2mm, Klingspil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1MSERAK	2
10	16	105 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,	C3JHBD80	4
11	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	4
12	15	GENERIC TRANSMITTER.SCREWED 021908PT002	- -	1

PIPING DPT.

ISSUER

CHECKED

0	30/10/20	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.

NOTES:

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

REFERENCES / DOCUMENTS

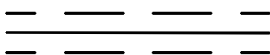
LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-022000-200
PIPING SUPPORT	30207-042-021200-001

SPEC

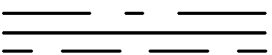
10SS21

SYMBOLOLOGY

Insulated Pipe



Insulated and Traced Pipe

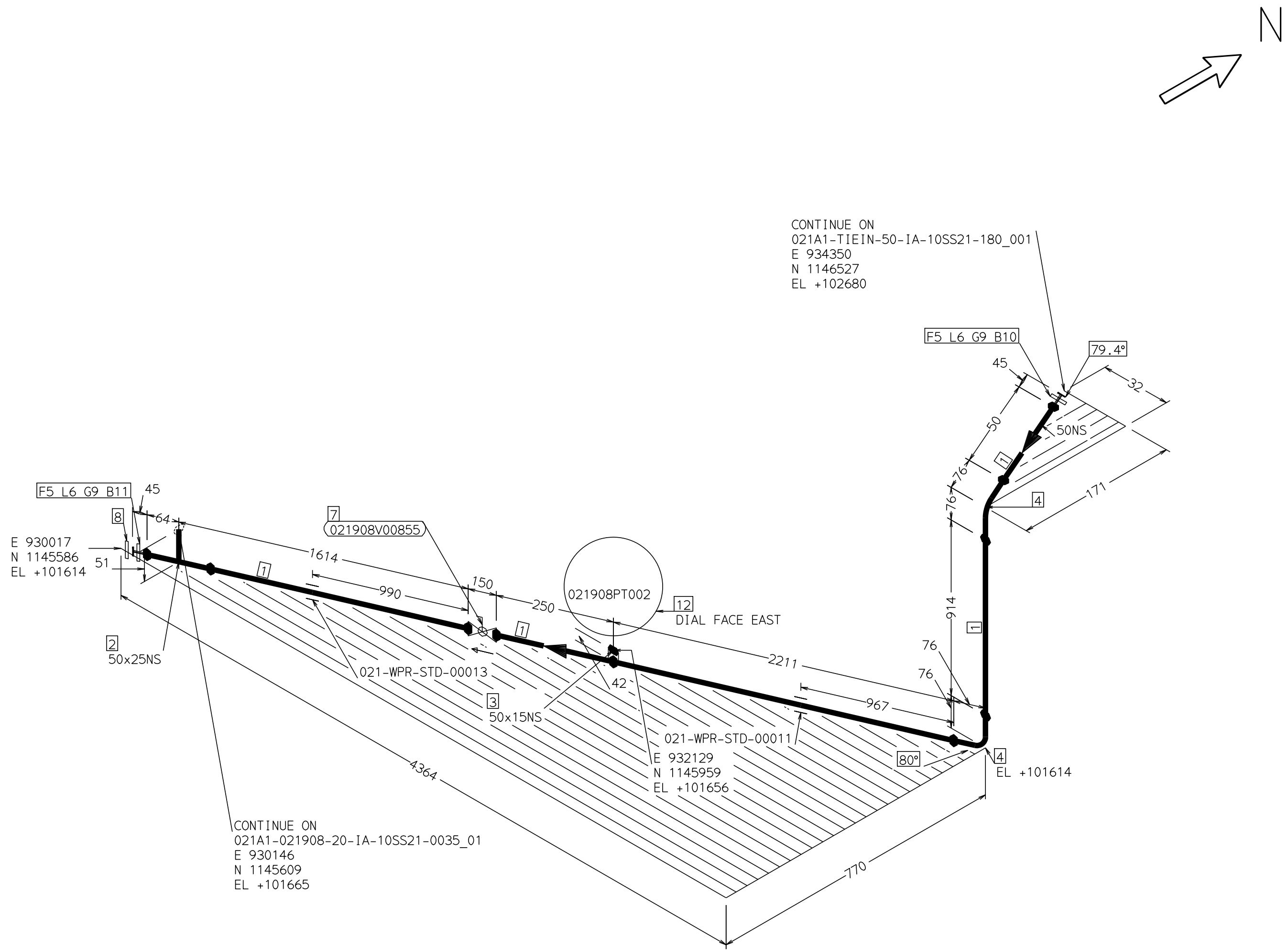


PROJECT DESCRIPTION/LOCATION

BUTTERFLY PROJECT/KREFELD



PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
029	021A1	021908-50-IA-10SS21-0034	01	1 OF 1	0



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	50	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV256V	5.0M
2	50 x 25	Red Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1NF9WJF	1
3	50 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1
4	50	90A° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1P0J0PL	2
5	50	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYE	2
6	50	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USTY	2
7	50	Bal BW, RB, SP, PN 63, BW Ends, Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3Z	1



MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
8	50	Bld Flg, EN 1092-1, RF, PN 16, / EN 10222-5 Gr.X2CrNi18-9,	C1KU0N03	1
9	50	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 40, IBC Type, Thk=3.2mm, Klingersil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1MSERAK	2
10	16	105 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,	C3JHBD80	4
11	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	4
12	15	GENERIC TRANSMITTER.SCREWED 021908PT002	- -	1

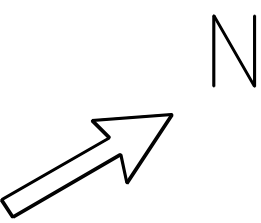
PIPING DPT.  
**MATERIALS  
CHECKED**  
By Jose G. Suarez at 5:15 pm, Nov 04, 2020

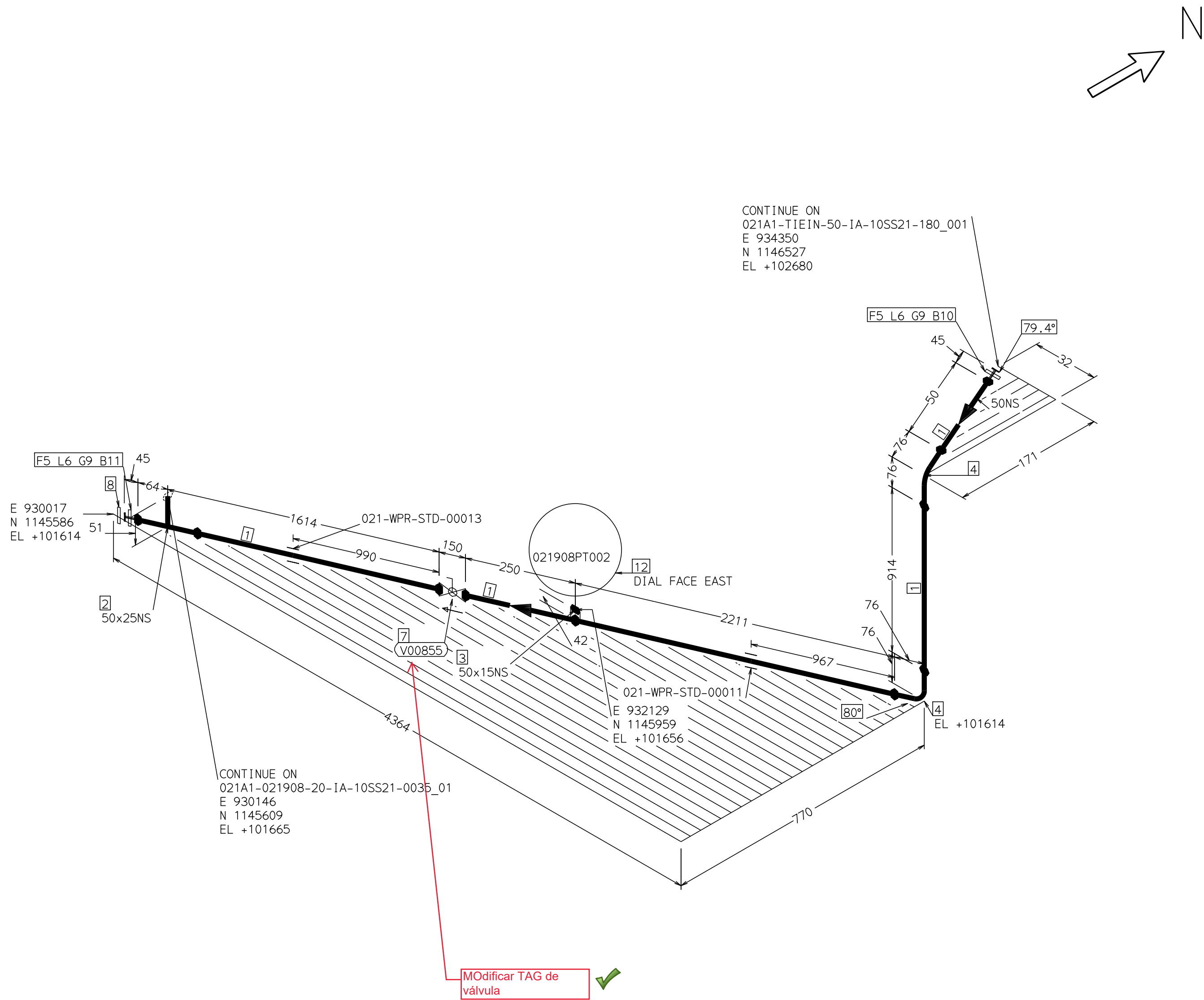
0	30/10/20	APN	LPD	OMC	IFC - ISSUED FOR CONSTRUCTION
REV	DATE	DWN	CHK	APP	DESCRIPTION

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.

NOTES:  For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.	REFERENCES / DOCUMENTS		SPEC		10SS21		PROJECT DESCRIPTION/LOCATION							
			SYMBOLGY				BUTTERFLY PROJECT/KREFELD							
	LINE LIST	30201-042-001000-001	Insulated Pipe		Insulated and Traced Pipe		PROCESS UNIT	DESIGN AREA	LINE NUMBER			TRAIN	SHEET	REV
	ISOMETRIC INDEX	30303-042-022000-200	— — — —		— — — —									
	PIPING SUPPORT	30207-042-021200-001	— — — —		— — — —		029	021A1	021908-50-IA-10SS21-0034			01	1 OF 1	0







MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
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3	50 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1
4	50	90A° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1P0J0PL	2
5	50	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYE	2
6	50	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USTY	2
7	50	Bal BW, RB, SP, PN 63, BW Ends, Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3Z	1



MATERIAL LIST - ERECTION

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10	16	105 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,	C3JHBD80	4
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12	15	GENERIC TRANSMITTER.SCREWED 021908PT002	- -	1

PIPING DPT.  
MATERIALS  
CHECKED  
By Jose G. Suarez at 10:56 am, Oct 28, 2020

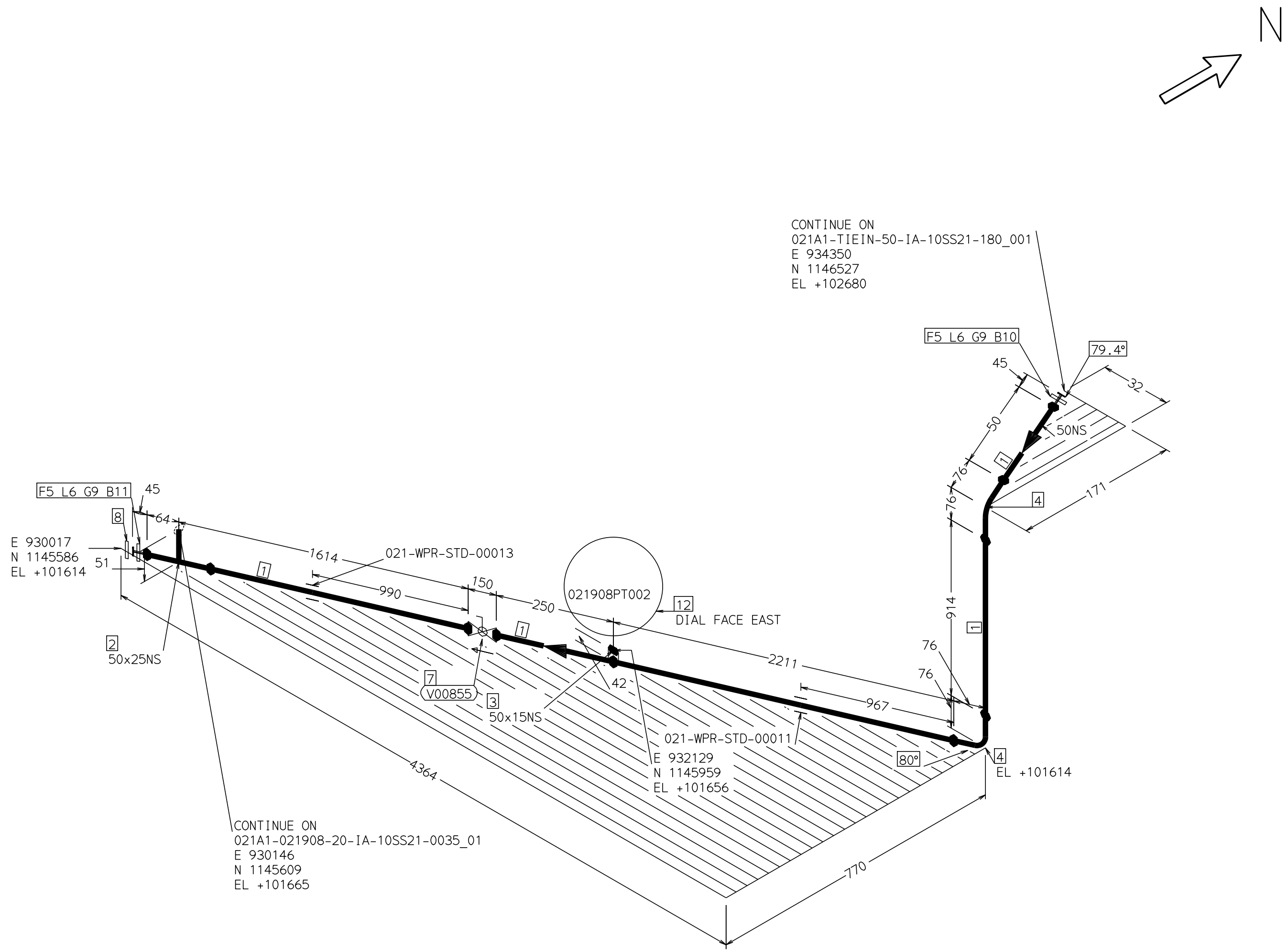
0	08/10/20	APN	LPD	OMC	IFC - ISSUED FOR CONSTRUCTION
REV	DATE	DWN	CHK	APP	DESCRIPTION

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PROJECT DESCRIPTION/LOCATION						
BUTTERFLY PROJECT/KREFELD						
PROCESS UNIT	DESIGN AREA	LINE NUMBER			TRAIN	SHEET
029	021A1	021908-50-IA-10SS21-0034			01	1 OF 1

NOTES:	REFERENCES / DOCUMENTS		SPEC	10SS21
			SYMBOLGY	
	LINE LIST	30201-042-001000-001	Insulated Pipe	Insulated and Traced Pipe
	ISOMETRIC INDEX	30303-042-022000-200		
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.		PIPING SUPPORT	30207-042-021200-001	





MATERIAL LIST - FABRICATION

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5	50	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYE	2
6	50	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USTY	2
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MATERIAL LIST - ERECTION



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10	16	105 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,	C3JHBD80	4
11	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	4
12	15	GENERIC TRANSMITTER.SCREWED 021908PT002	- -	1

PIPING DPT.  
DESIGNED  
By apereznune at 3:38 pm, Oct 08, 2020

PIPING DPT.  
DESIGN  
CHECKED  
By rvasquezhu at 9:20 am, Oct 22, 2020

0	08/10/20	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						
PROCESS UNIT	DESIGN AREA	LINE NUMBER			TRAIN	SHEET
029	021A1	021908-50-IA-10SS21-0034			01	1 OF 1
					REV	0

NOTES:

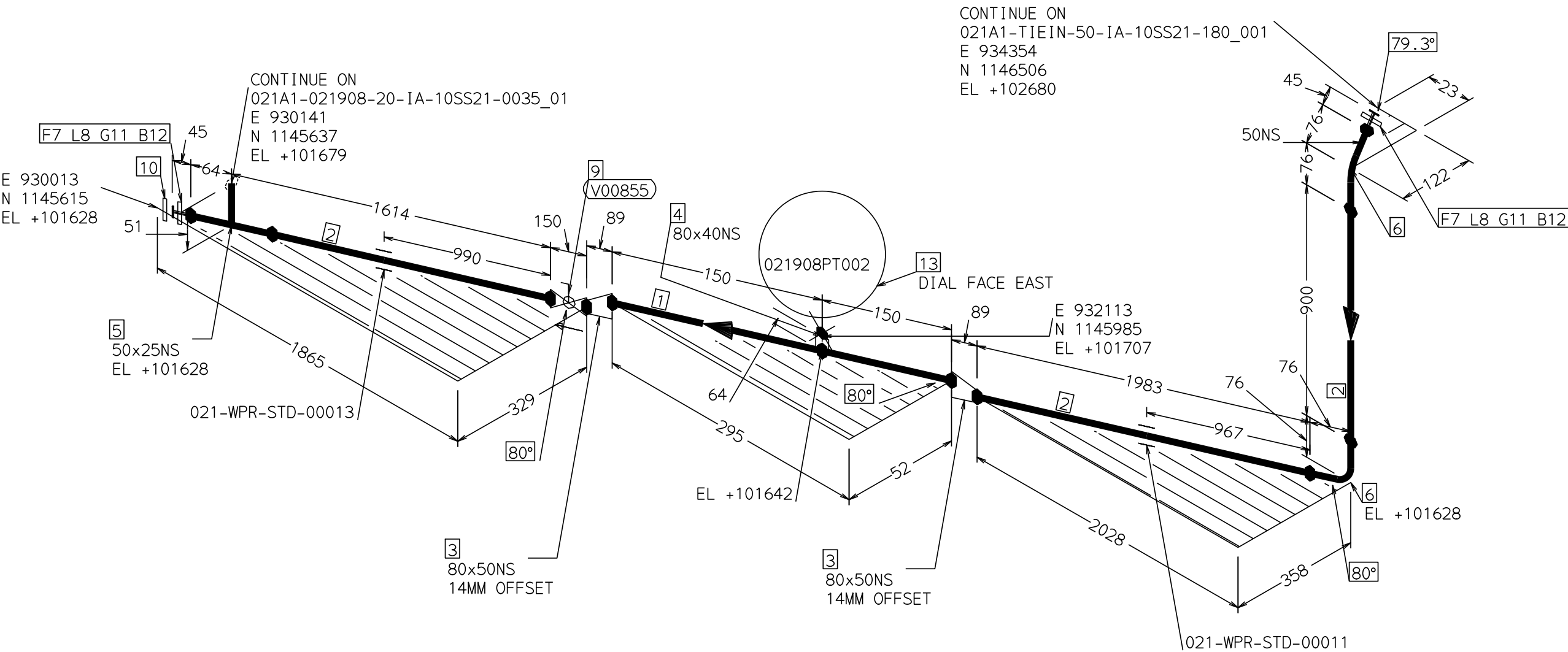
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

REFERENCES / DOCUMENTS

LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-022000-200
PIPING SUPPORT	30207-042-021200-001

SPEC	10SS21
SYMBOLOLOGY	
Insulated Pipe	Insulated and Traced Pipe
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VOID



MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	80	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPBW	0.3M
2	50	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV256V	4.5M
3	80 x 50	Ecc Reducer, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2.3MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1NF9W81	2
4	80 x 40	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94W	1
5	50 x 25	Red Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1NF9WJF	1
6	50	90A° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1P0J0PL	2
7	50	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYE	2
8	50	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USTY	2
9	50	Bal BW, RB, SP, PN 63, BW Ends, Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3Z	1



MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
10	50	Bld Flg, EN 1092-1, RF, PN 16, / EN 10222-5 Gr.X2CrNi18-9,	C1KU0N03	1
11	50	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,	C1NKU6D5	2
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	40	GENERIC TRANSMITTER.SCREWED 021908PT002	- -	1

PIPING DPT.  
MATERIALS  
WITH COMMENTS  
By Jose G. Suarez at 2:31 pm, Sep 29, 2020

0	17/09/20	ECC	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.

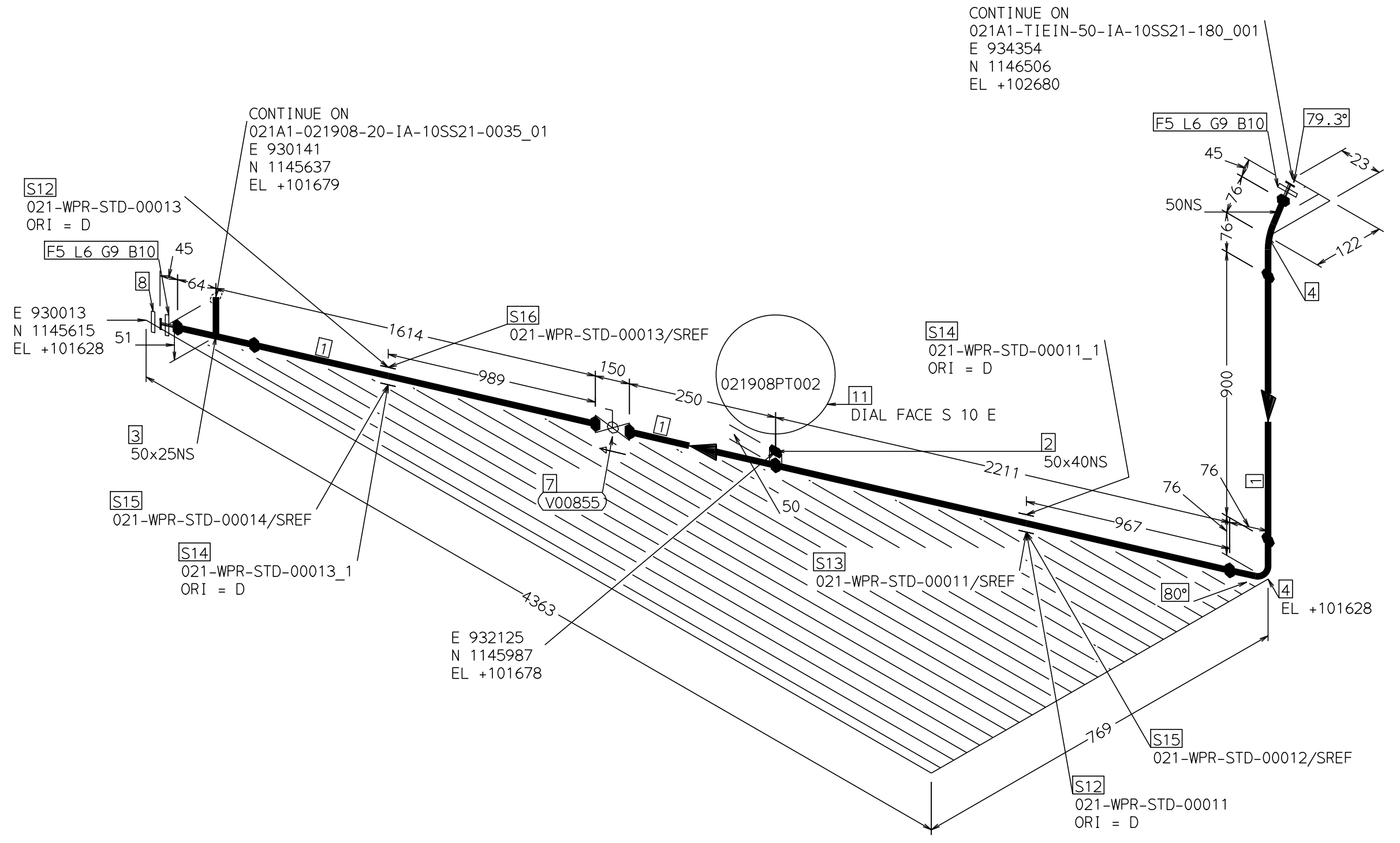
PROJECT DESCRIPTION/LOCATION						
BUTTERFLY PROJECT/KREFELD						
PROCESS UNIT	DESIGN AREA	LINE NUMBER			TRAIN	SHEET
029	021A1	021908-50-IA-10SS21-0034			01	1 OF 1

NOTES:	REFERENCES / DOCUMENTS		SPEC	10SS21
			SYMBOLOLOGY	
	LINE LIST	30201-042-001000-001	Insulated Pipe	Insulated and Traced Pipe
	ISOMETRIC INDEX	30303-042-022000-200		
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.		PIPING SUPPORT	30207-042-021200-001	









MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	50	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1KV256V	5.0M
2	50 x 40	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94W	1
3	50 x 25	Red Te, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -, /2MM/2MM EN 10253-4 Gr.X2CrNi19-11,	C1NF9WJF	1
4	50	90A° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 2, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1P0J0PL	2
5	50	LJ Flg, EN 1092-1 Type 02, FF, PN 16, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGYE	2
6	50	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN16 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USTY	2
7	50	Bal BW, RB, SP, PN 63, BW Ends, Datasheet: 6006/2MM EN 10213 Gr.GX5CrNiMo19-11-2,	C3HDWU3Z	1

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
8	50	Bld Flg, EN 1092-1, RF, PN 16, / EN 10222-5 Gr.X2CrNi18-9,	C1KU0N03	1
9	50	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,	C1NKG6D5	2
10	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
11	40	GENERIC TRANSMITTER.SCREWED 021908PT002	- -	1
SUPPORT				
12	50	CG105-50-B--SS 101628	- -	2
13	50	SB104-A-H12--200-457-1935 101596-S 10 E	- -	1
14	50	SC-50---300-SS 0	- -	2
15	50	SP02-300 101597	- -	2
16	50	SB104-A-H12--200-457-1945 101596-S 10 E	- -	1

-Eliminar lista de soportes  
-Actualizar con Hook up comentado por Cargill: cambiar reductores concéntricos por excéntricos

INSTRUMENT STD TYPE: P004 / P009	HCP-1000	1- HALF COUPLING BSPTF (ISO 228-1)	G 1-1/2"	1	

reductores excéntricos

VOID

PIPING DPT.  
DESIGNED  
By mmportero at 2:42 pm, Aug 31, 2020

PIPING DPT.  
DESIGN  
WITH COMMENTS  
By Laura Parra at 6:32 pm, Sep 08, 2020

NOTES:	REFERENCES / DOCUMENTS		SPEC		10SS21		PROJECT DESCRIPTION/LOCATION		TechnipFMC		Cargill	
			SYMBOLOLOGY				BUTTERFLY PROJECT/KREFELD					
	LINE LIST	30201-042-001000-001	Insulated Pipe		Insulated and Traced Pipe		PROCESS UNIT	DESIGN AREA	LINE NUMBER		TRAIN	SHEET
	ISOMETRIC INDEX	30015-042-021200-001					021	021A1	021908-50-IA-10SS21-0034		01	1 OF 1
	PIPING SUPPORT	30207-042-021200-001										0