

Line Number	021402WWG0032	Stress CN / Level	Nº N/A	Level: I
Isometric Number	023A1021402WWG0032_01	Process Approval Required	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
		Intrumentation Approval Required (N/A)	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
<b>Information to be attached:</b>				
Master Copy of PID:	YES <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>	Nº 800124-024-PID-0021-007 / 008	Rev.
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 checked="" type="checkbox"/>	Nº BFLY-BYP-STU-ISOS-028	Rev.
SPO Approved Isometric:	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Rev.	Extraction Date:
SIT Approved Isometric:	YES <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>	Rev.	Extraction Date:



TechnipFMC – Butterfly Project

HOLDS		
Nº	SHORT DESCRIPTION	RESOLVED (✓)

**A VERIFICAR / TO BE CHECKED**

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

IFC	REV 0	REV 1	REV 2
✓	X <sup>(1)</sup>	1st-Chk <sup>(2)</sup>	2nd-Chk <sup>(3)</sup>

Revision By : (D) Designer / (LDG) Design Leader	
Iso information	Nº de linea según PID y lista de líneas / Line Nbr. according to PID and line list Datos de la linea según lista de líneas / Line data according to line list Clase de tubería según PID y Lista de Lineas / 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) Diámetro de la linea indicado en número de linea en el cajetín / Line diameter indicated in the line number in the title block
Equipment	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"/> 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

IFC	REV 0	REV 1	REV 2
✓	X <sup>(1)</sup>	1st-Chk <sup>(2)</sup>	2nd-Chk <sup>(3)</sup>
By: D		By: LDG	
✓		✓	✓
✓		✓	✓
✓		✓	✓
✓		✓	✓
✓		✓	✓
✓		✓	✓
✓		✓	✓
✗		✗	✓
✓		✓	✓
✓		✓	✓
✓		✓	✓

	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 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
	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
	N/A

	Revision By : (ST) Stress Specialist / (LST) Stress Leader
Stress	El cálculo de stress disponible no está pendiente de revisión en curso / <i>Available stress calculation is not awaiting for revision</i>
	Los requisitos según el cálculo de stress están incorporados (si son aplicables) / <i>Stress calculation requirements have been added (if applicable)</i>

By: ST	By: LST

Revision By : (SP) Supports Specialist / (LSP) Supports leader	
Supports	<p>La línea está soportada por completo y la lista de soportes rellenada / Line is completely supported and support list updated</p> <p>Concepto de soporte y separación máxima entre soportes / Support concept and support spans</p> <p>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</p> <p>Numeración correcta de los soportes / Supports correctly numbered</p> <p>Código de soportes correctamente indicados (STD - SPC - COM - MRS - PRF) / Support code correctly indicated (STD - SPC - COM - MRS - PRF)</p> <p>Marcado de elementos soldados de los soportes en Iso Spool preliminar correspondiente / Mark-up of welded supports components in the correspondent preliminary Iso Spool</p>
	<input checked="" type="checkbox"/>
	N/A

By: SP	By: LSP
✓	
✓	
	✓
	✓
✓	
✓	
	✓
	✓
.....	.....

Revision By : (M) Materials	
Materials	La Línea pertenece a alguna o varias categorías de Criticidad. 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
Válvulas colocadas según PID y Piping Class / Valves placed according PID an Piping Class	

By: M			
✗	✓		
✓	✓		

Revision By : (CHK) Issuer	
Final Check	
	La isométrica verificada por Procesos (SPO) se corresponde a la última revisión / <i>The isometric verified by Process (SPO) corresponds to its last revision</i>
	La isométrica verificada por Instrumentación (SIT) se corresponde a la última revisión / <i>The isometric verified by Instrumentation (SIT) corresponds to its last revision</i>
	Las notas a mano están incorporadas en las isométricas / <i>The hand-made annotation is included</i>
	La revisión de los documentos para la verificación siguen siendo las actuales / <i>Current revision of documents for checking are still the latest available</i>
	El número de revisión y la fecha son correctos / <i>The revision number and the date are correct</i>
	Todos los comentarios se han revisado para se incluidos o descartados / <i>All comments have been checked to be included or discarded</i>
	Holds resuelto o en su defecto By-Pass aprobado / <i>Holds resolved or instead By-Pass approved</i>

**SIGNATURES (Name and date)**

DESIGN LEADER (LD)	<b>REVIEWED</b> By rvasquezhu at 4:08 pm, Nov 23, 2020	<b>REVIEWED</b> By Laura Parra at 6:21 pm, Dec 16, 2020	SUPPORTS LEADER (LSP)	<b>REVIEWED</b> By Sergio Zamora at 5:45 pm, Dec 02, 2020	ISSUER (CHK)	<b>REVIEWED</b> By oscar at 11:11 am, Dec 22, 2020	<b>REVIEWED</b> By oscar at 3:51 pm, Feb 12, 2021
STRESS LEADER (LST)		MATERIALS (M)	<b>REVIEWED</b> By oscar at 10:15 pm, Dec 03, 2020	<b>REVIEWED</b> By oscar at 10:15 pm, Dec 03, 2020	DISCIPLINE LEAD (L)		

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**NOTES:**

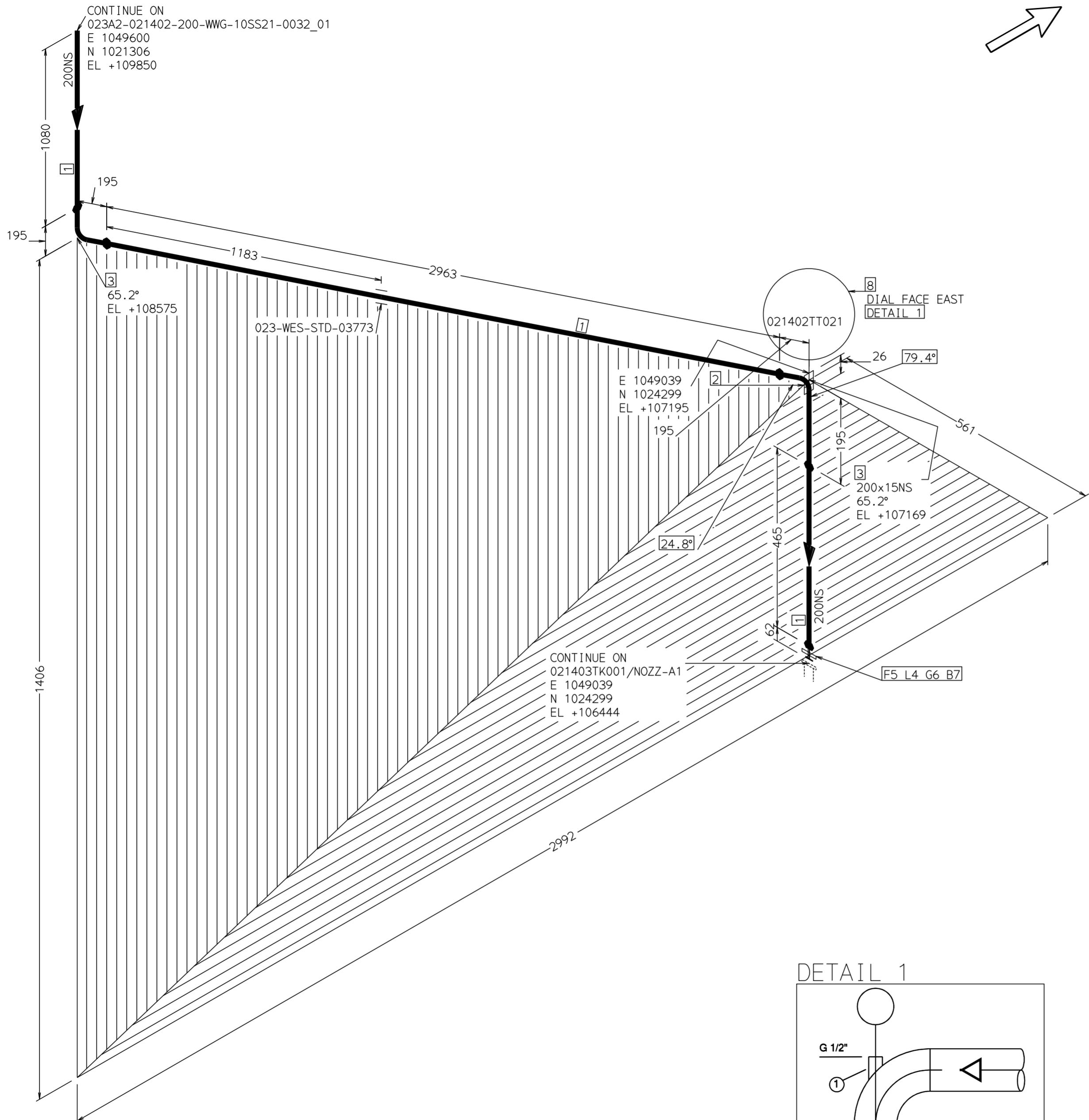
**NOTES:** [1] If "X" is marked, a "HOLD" note should be included in the Holds area for justification.

[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 (✗) confirming or not Designer verification. A (✓) or a (✗) should also be placed to confirm or reject any (✗) mark placed by the Designer confirming or not the implicit HOLD.

[3] 1st checking round: Checker to place a (✓) or a (✗) confirming or not Designer verification. A (✓) or a (✗) should also be placed to confirm or reject any [3]

[4] If an isometric with HOLD is approved by IFC Leader for issuance, the correspondent By-Pass should be attached.

Digitized by srujanika@gmail.com



MATERIAL LIST - FABRICATION					
PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY	
1	200	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPG0	4.6M	
2	200 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1	
3	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKG	2	
4	200	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZC	1	
5	200	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY8	1	

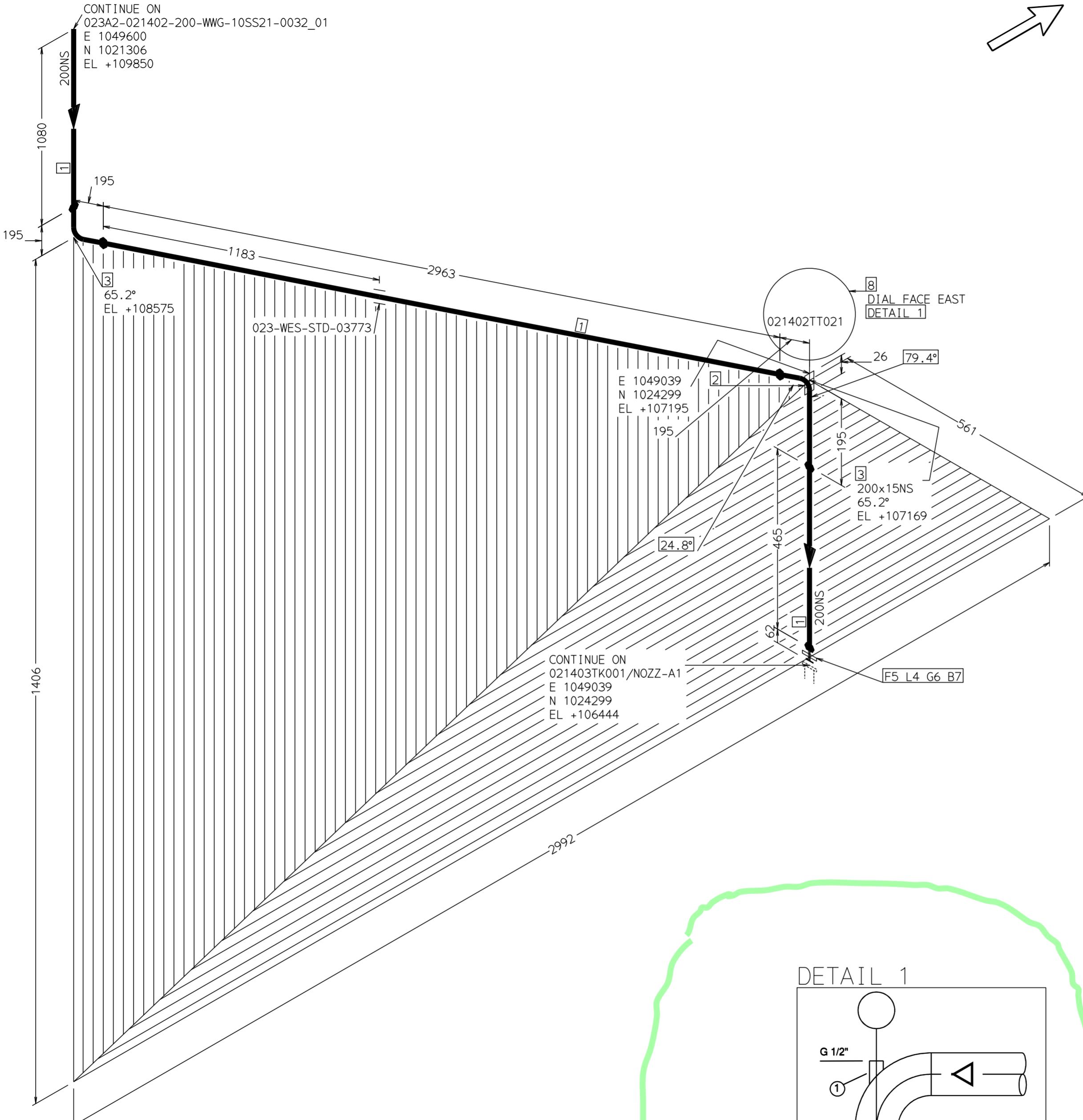
MATERIAL LIST - ERECTION				
PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
6	200	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 10, IBC Type, Thk=3.2mm, Klingsersil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1MSERAY	1
7	20	125 SBLt 2 HHx N&2W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDAZ	8
8	15	GENERIC TRANSMITTER SCREWED 021402TT021	- -	1

**PIPING DPT.  
ISSUER  
CHECKED**

By escar at 3:50 pm, Feb 12, 2021

0	18/12/20	AF	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.


**MATERIAL LIST - FABRICATION**

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	200	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPG0	4.6M
2	200 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1
3	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEKG M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	2	
4	200	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs./3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZC	1
5	200	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY8	1

**MATERIAL LIST - ERECTION**

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
6	200	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 10, IBC Type, Thk=3.2mm, Klingsil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1MSERAY	1
7	20	125 SBLT 2 HHx N&W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDAZ	8
8	15	GENERIC TRANSMITTER SCREWED 021402TT021	--	1

**PIPING DPT.  
MATERIALS  
CHECKED**

**PIPING DPT.  
DESIGNED**

By Andrea Ferranti at 9:01 am, Jan 07, 2021

**PIPING DPT.  
DESIGN  
CHECKED**

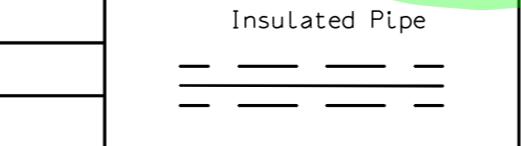
By oscar at 1:48 pm, Feb 09, 2021

**NOTES:**

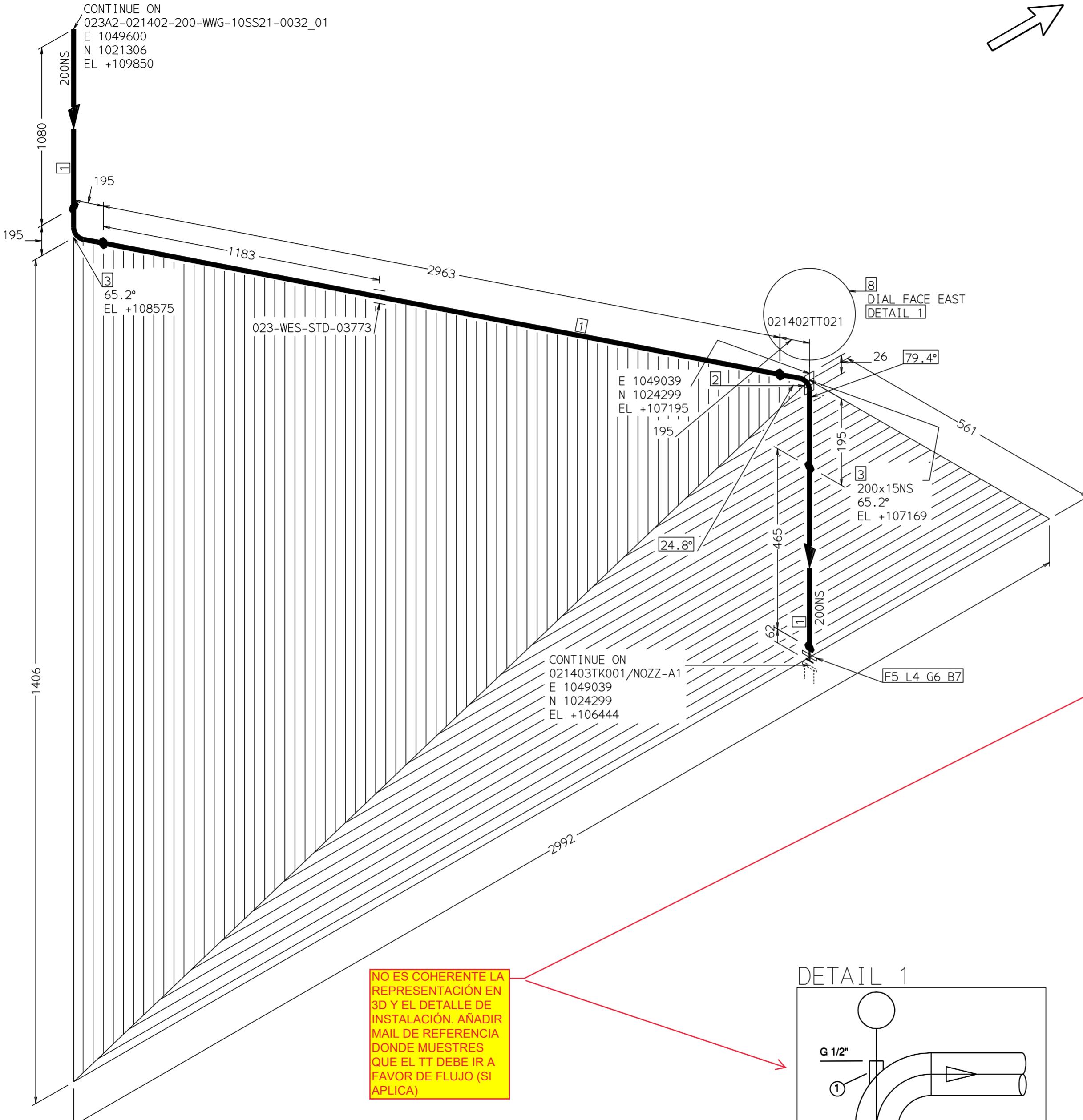
For pipes < dn50 supporting to be studied and defined by construction contractor before line fabrication and installation.

**REFERENCES / DOCUMENTS**

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

**SPEC**
**SYMBOLS**

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

PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	sheet	REV
024	023A1	021402-200-WWG-10SS21-0032	01	1 OF 1	0

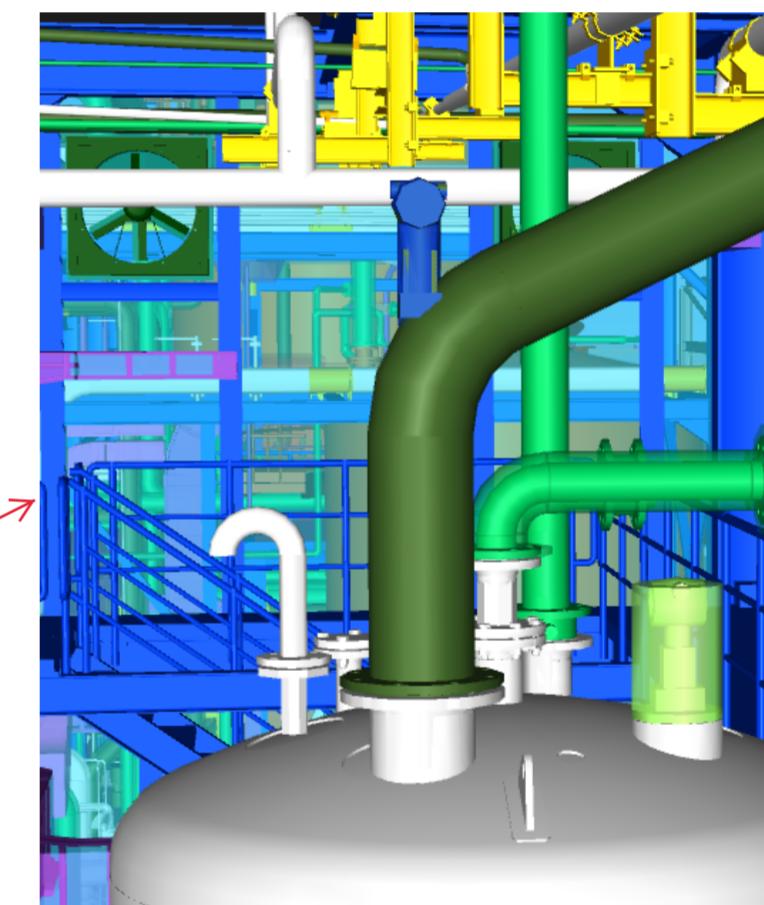


#### MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	200	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPG0	4.6M
2	200 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1
3	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEKG M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	2	
4	200	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZC	1
5	200	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY8	1

#### MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
6	200	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 10, IBC Type, Thk=3.2mm, Klingsil C-4430, TA-Luft & EC1935 (D.S. 5101) / CNAF,	C1MSERAY	1
7	20	125 SBLT 2 HHx N&W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDAZ	8
8	15	GENERIC TRANSMITTER SCREWED 021402TT021	--	1



**PIPING DPT.  
MATERIALS  
CHECKED**  
By Jose G. Suarez at 12:51 pm, Dec 18, 2020

0	18/12/20	AF	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

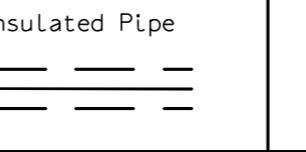
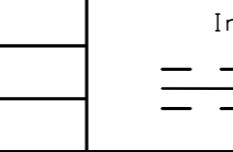
LINE LIST	30201-042-001000-001
ISOMETRIC INDEX	30303-042-023000-200
PIPING SUPPORT	30207-042-021300-001

#### SPEC

#### SYMBOLIC

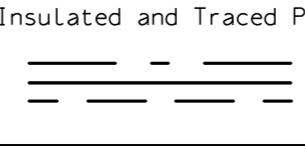
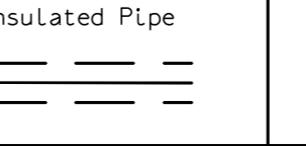
#### 10SS21

#### SYMBOLIC



#### PROJECT DESCRIPTION/LOCATION

#### BUTTERFLY PROJECT/KREFELD



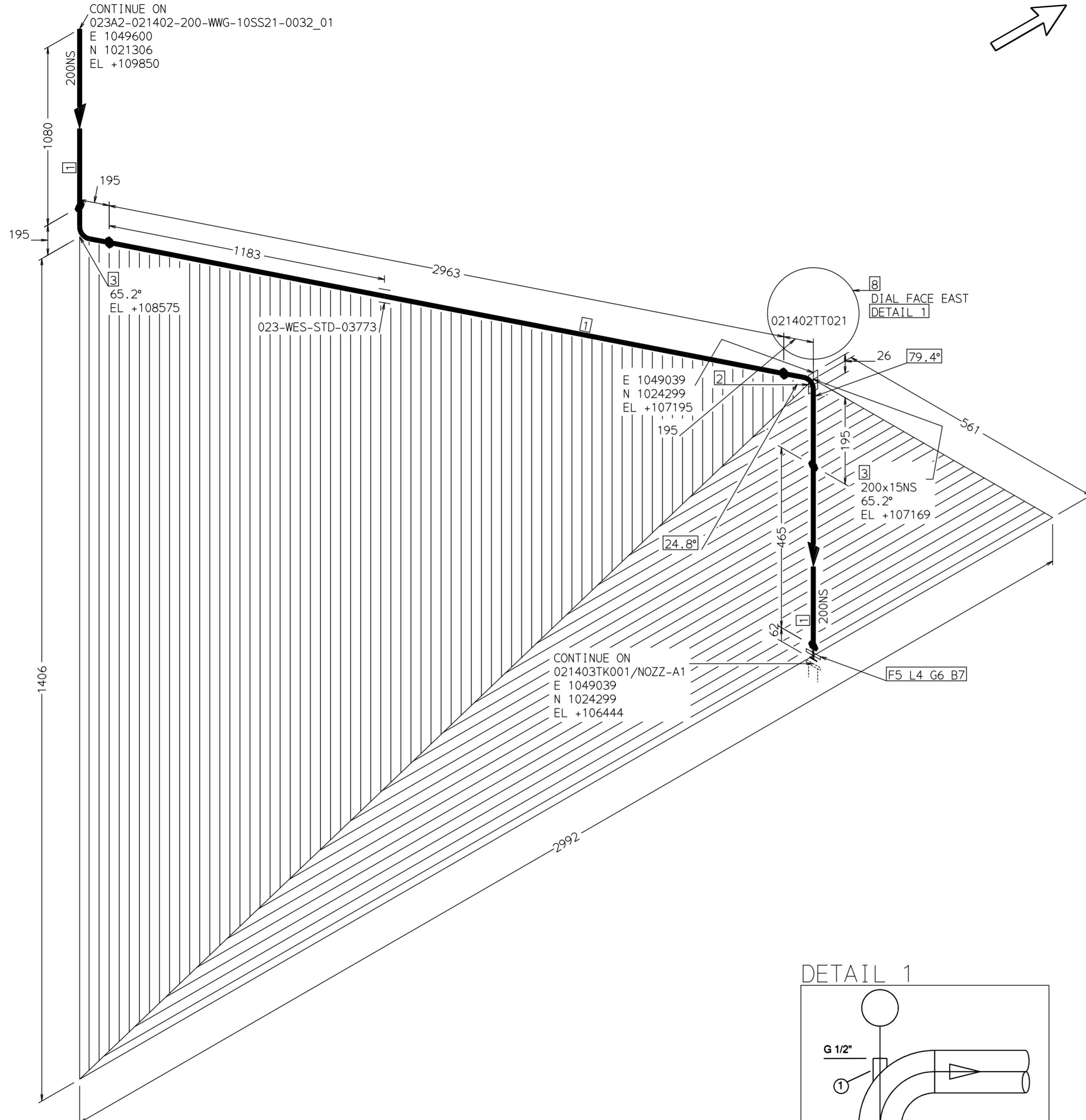
#### LINE NUMBER

#### TRAIN

#### SHEET

#### REV

024	023A1	021402-200-WWG-10SS21-0032	01	1 OF 1	0
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## MATERIAL LIST - FABRICATION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
1	200	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FFG0	4.6M
2	200 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1
3	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKG	2
4	200	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZC	1
5	200	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY8	1

MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
6	200	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 10, IBC Type, Thk=3.2mm, Klingsersil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1MSERAY	1
7	20	125 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,	C3JHBDAZ	8
8	15	GENERIC TRANSMITTER SCREWED 021402TT021	- -	1

**PIPING DPT.  
SUPPORTED**

By mfernandez1 at 10:11 am, Dec 17, 2020

**PIPING DPT.**  
**SUPPORTS**  
**CHECKED**

By Sergio Zamora at 10:18 am, Dec 17, 2020

**PIPING DPT.  
DESIGNED**

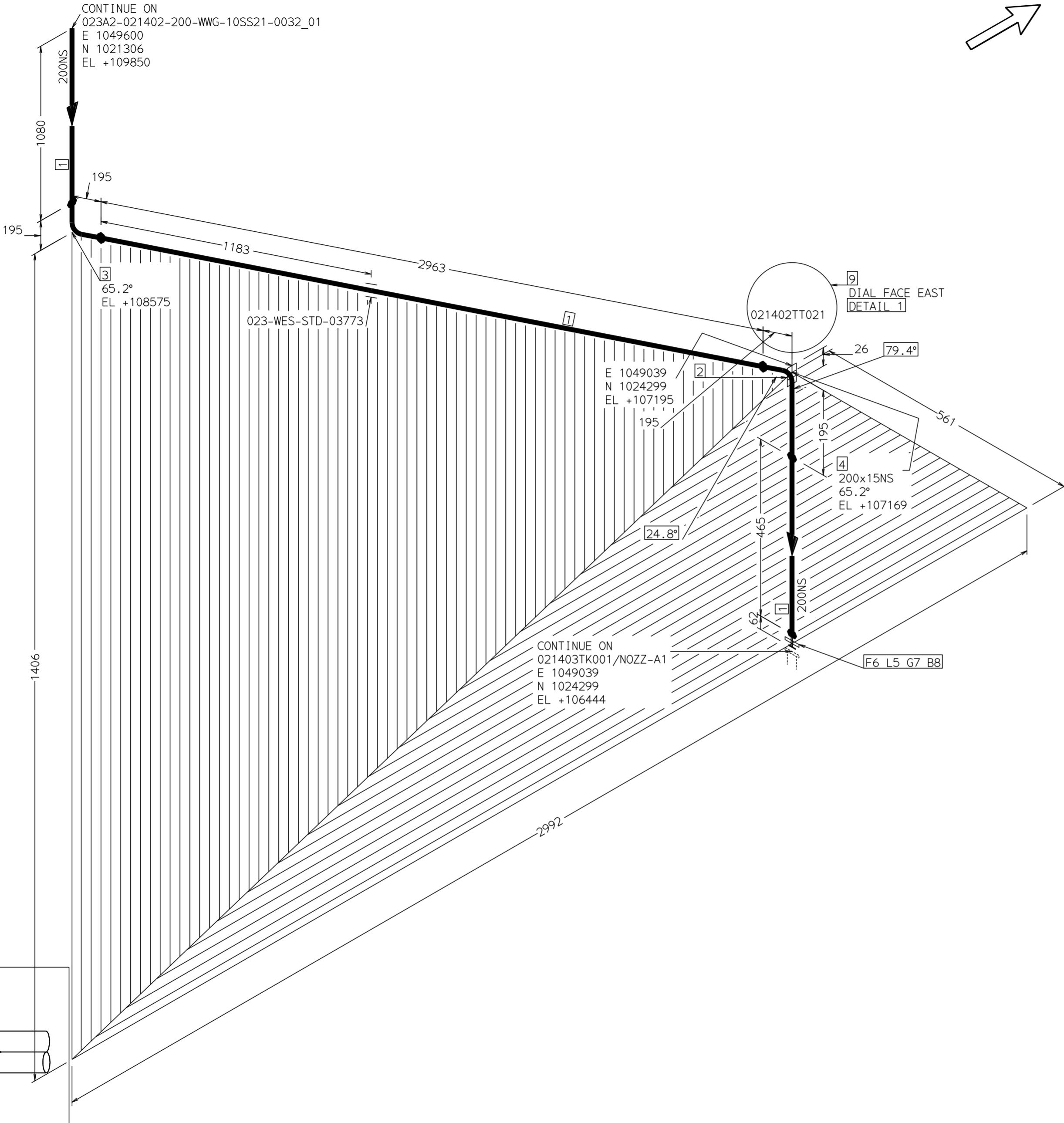
By Andrea Ferrenti at 8:53 am - Dec 14, 2020

**PIPING DPT.**  
**DESIGN**  
**CHECKED**

By Laura Barro at 6:33 pm, Dec 16, 2020

<b>By Andrea Ferranti at 8:05 am, Dec 14, 2020</b>	<b>By Eduard Pana at 8:22 pm, Dec 16, 2020</b>				
0	18/12/20	AF	LP	OMC	IFC - ISSUED FOR CONSTRUCTION
REF	DATE	PWN	CHK	APP	DESCRIPTION

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MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
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2	200 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1
3	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKG	1
4	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKG	1
5	200	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZC	1
6	200	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY8	1

MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
7	200	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 10, IBC Type, Thk=3.2mm, KLingersil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1MSERAY	1
8	20	125 SBLT 2 HHx N&W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDAZ	8
9	15	GENERIC TRANSMITTER SCREWED 021402TT021	--	1

**VOID**

**PIPING DPT.  
MATERIALS  
WITH COMMENTS**

By Jose G. Suarez at 10:19 am, Dec 03, 2020

0	20/11/20	AF	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

SYMBOLIC

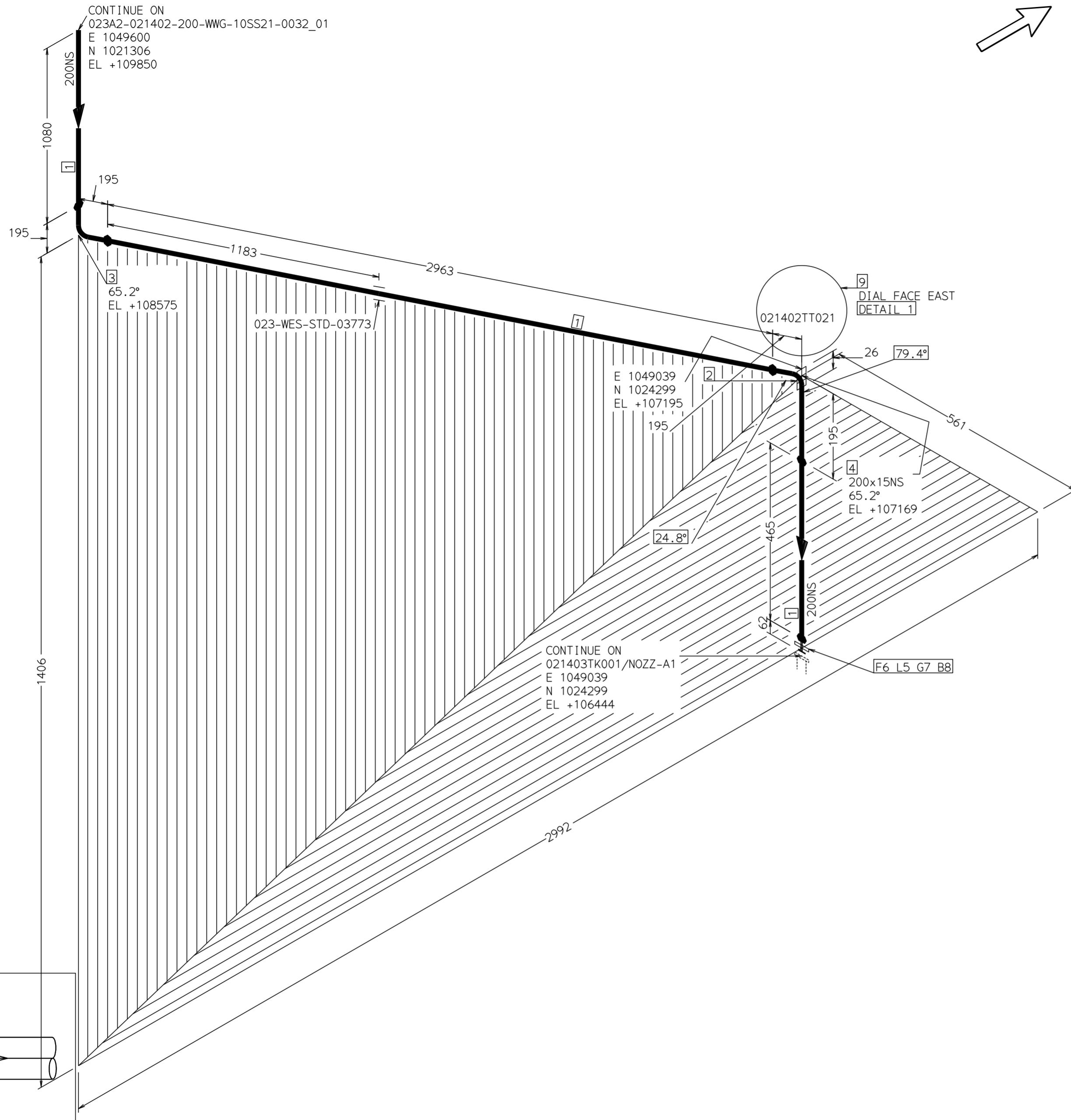
Insulated Pipe	Insulated and Traced Pipe
— — — —	— — — —

PROJECT DESCRIPTION/LOCATION

BUTTERFLY PROJECT/KREFELD



PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
024	023A1	021402-200-WWG-10SS21-0032	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	200	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPG0	4.6M
2	200 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1
3	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEKG M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,		1
4	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, -- M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,		1
5	200	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZC	1
6	200	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY8	1

MATERIAL LIST - ERECTION

<u>PT NO</u>	<u>N.S. (MM)</u>	<u>DESCRIPTION</u>	<u>IDENT</u>	<u>QTY</u>
7	200	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 10, IBC Type, Thk=3.2mm, Klingsil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1MSERAY	1
8	20	125 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,	C3JHBDAZ	8
9	15	GENERIC TRANSMITTER SCREWED 021402TT021	- -	1

**PIPING DPT.**  
**SUPPORTED**

By mfernandez1 at 9:47 am, Nov 30, 2020

**PIPING DPT.**  
**SUPPORTS**  
**CHECKED**

by Sergio Zamora at 5:44 pm, Dec 02, 2020

0	20/11/20	AF	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.

pe	PROJECT DESCRIPTION/LOCATION BUTTERFLY PROJECT/KREFELD	 TechnipFMC			
			PROCESS UNIT	DESIGN AREA	LINE NUMBER
	024	023A1	021402-200-WWG-10SS21-0032	01	1 OF 1
					0

## NOTES:

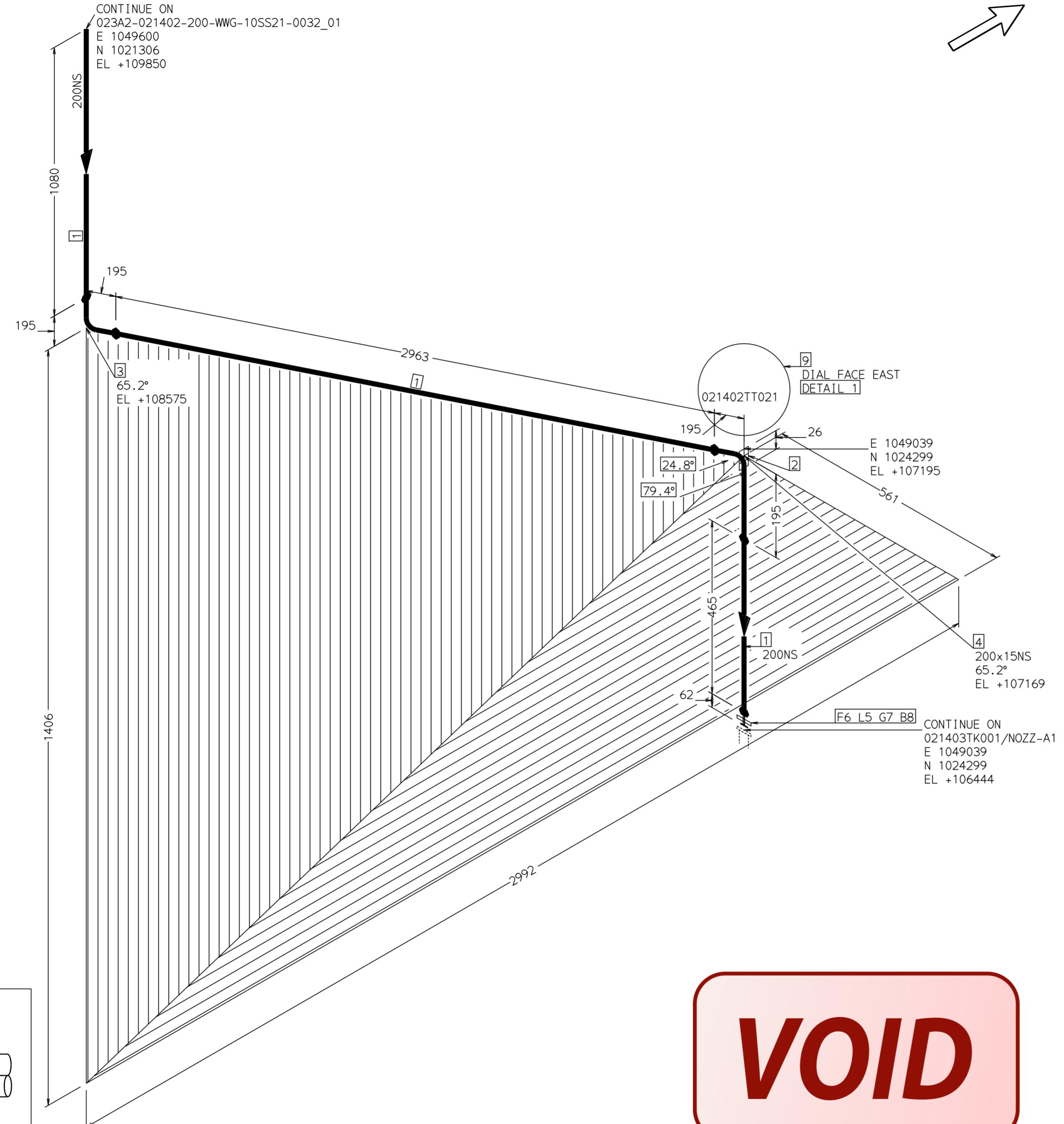
For pipes  $< dn_{50}$  supporting to be studied and defined by construction contractor before line fabrication and installation.

## REFERENCES / DOCUMENTS

SF

EC




**MATERIAL LIST - FABRICATION**

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	200	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPG0	4.6M
2	200 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1
3	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	C1KXKEKG	1
4	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	--	1
5	200	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs, /3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZC	1
6	200	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY8	1

**MATERIAL LIST - ERECTION**

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
7	200	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 10, IBC Type, Thk=3.2mm, Klingsersil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1MSERAY	1
8	20	125 SBLt 2 HHx N&W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDAZ	8
9	15	GENERIC TRANSMITTER SCREWED 021402TT021	--	1

**PIPING DPT.  
DESIGNED**  
By Andrea Ferranti at 2:25 pm, Nov 20, 2020

**PIPING DPT.  
DESIGN CHECKED**  
By rvasquezhu at 4:08 pm, Nov 23, 2020

**NOTES:**

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

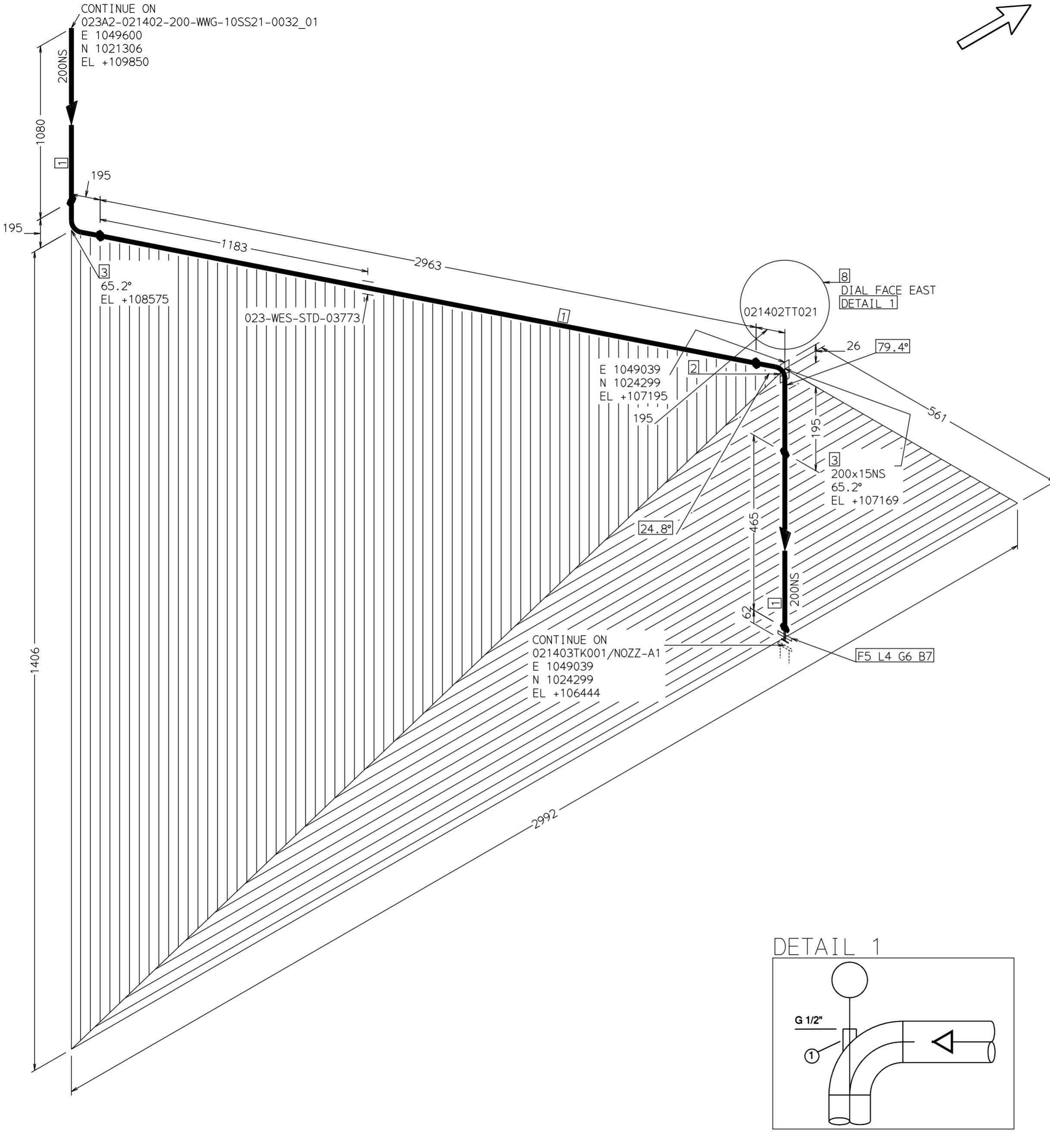
**REFERENCES / DOCUMENTS**

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

**SPEC**
**SYMBOLIC**
**10SS21**
**PROJECT DESCRIPTION/LOCATION**
**BUTTERFLY PROJECT/KREFELD**


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

PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	SHEET	REV
024	023A1	021402-200-WWG-10SS21-0032	01	1 OF 1	0



#### MATERIAL LIST - FABRICATION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
1	200	Pipes (Length), EN 10220, BE, EFW + 100% RT, -, /2MM EN 10217-7 Gr.X2CrNi19-11,	C1P0FPG0	4.6M
2	200 x 15	Half Coup, Prj Std, BSPPF End, 40 Bar, -, -, / EN 10216-5 Gr.X2CrNi19-11,	C3CLV94S	1
3	200	90° Elb LR, EN 10253-4 Type A, BW Ends, Welded + 100% RT, C1KXKEKG M.3D, Serie 1, /2MM EN 10253-4 Gr.X2CrNi19-11,	2	
4	200	Stub LP, EN 1092-1 Type 36, BW Ends, Seamless, PN10 Flgs./3.2MM EN 10216-5 Gr.X2CrNi19-11,	C3J5USZC	1
5	200	LJ Flg, EN 1092-1 Type 02, FF, PN 10, -, / EN 10222-2 Gr. P245GH Galv. as per EN 10240,	C1KXSGY8	1

#### MATERIAL LIST - ERECTION

PT NO	N.S. (MM)	DESCRIPTION	IDENT	QTY
6	200	NM Flat Gk, EN 1514-1, RF as per EN 1092-1, PN 10, IBC Type, Thk=3.2mm, Klingsil C-4430, TA-Luft & EC1935 (D.S. 5101)/ CNAF,	C1MSERAY	1
7	20	125 SBUT 2 HHx N&W, ISO 261/ISO 4032, Full Length Threaded, F.Wash. EN ISO 887, A2, EN ISO 7089 ISO 3506-1 Gr.A2-70,	C3JHBDAZ	8
8	15	GENERIC TRANSMITTER SCREWED 021402TT021	--	1

0	18/12/20	AF	LP	OMC	IFC - ISSUED FOR CONSTRUCTION
REV	DATE	DWN	CHK	APP	DESCRIPTION

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#### 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

#### SYMBOLS

#### 10SS21

#### SYMBOLS

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

#### PROJECT DESCRIPTION/LOCATION

#### BUTTERFLY PROJECT/KREFELD



PROCESS UNIT	DESIGN AREA	LINE NUMBER	TRAIN	sheet	REV
024	023A1	021402-200-WWG-10SS21-0032	01	1 OF 1	0