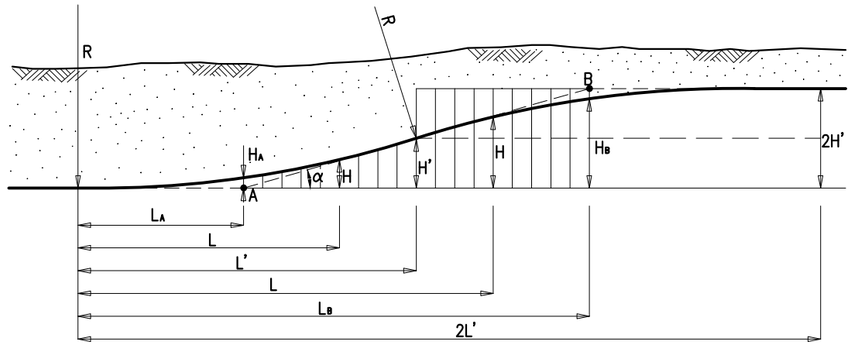
36" Gas Pipeline								
Rmin = 690 m (See note 2)								
2H'	H'	HA	HB	L'	2L'	a	LA	LB
[m]	[m]	[m]	[m]	[m]	[m]	[deg]	[m]	[m]
0.3	0.15	0.04	0.26	14.39	28.77	1.2	7.19	21.58
0.5	0.25	0.06	0.44	18.57	37.14	1.5	9.29	27.86
1.0	0.50	0.13	0.87	26.26	52.53	2.2	13.14	39.39
1.5	0.75	0.19	1.31	32.16	64.33	2.7	16.09	48.24
1.8	0.90	0.23	1.57	35.23	70.46	2.9	17.63	52.83
2.0	1.00	0.25	1.75	37.13	74.27	3.1	18.58	55.69
2.5	1.25	0.31	2.19	41.51	83.03	3.4	20.78	62.25
3.0	1.50	0.38	2.62	45.47	90.95	3.8	22.76	68.18

VERTICAL ELASTIC BEND WITH REVERSE BEND
LONGITUDINAL SECTION



LEGEND:
H =TRENCH BOTTOM ORDINATE.
L =TRENCH BOTTOM ABSCISSA.
H' =TRENCH BOTTOM ORDINATE OF THE TANGENT POINT.
L' =TRENCH BOTTOM ABSCISSA OF THE TANGENT POINT BETWEEN BEND AND REVERSE BEND.
L_A =TRENCH BOTTOM ABSCISSA OF VERTEX 'A' (ELASTIC BEND MIDPOINT).
L_B =TRENCH BOTTOM ABSCISSA OF VERTEX 'B' (REVERSE ELASTIC BEND MIDPOINT).
α =DEVIATION ANGLE.

NOTES:

1. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
2. FOR CALCULATION SEE DOC. IPL00-C5522-100-M-TCS-0002 "PIPELINE MECHANICAL CALCULATION REPORT".

TRENCH BOTTOM ORDINATES (H) OF ALL 'L' ARE DEFINED BY THE FOLLOWING FORMULAS WHICH ARE USED ALSO FOR SIMPLE ELASTIC BEND:

WHEN L < L' $H=R-\sqrt{R^2-L^2}$ KNOWN H: $L=\sqrt{2RH-H^2}$

WHEN L > L' $H=2H'-R+\sqrt{R^2-(2L'-L)^2}$

WHERE L' AND H' ARE THE COORDINATES OF THE TANGENT POINTS BETWEEN BEND AND REVERSE BEND:

KNOWN H': $L'=\sqrt{2H'R-H'^2}$

TRENCH BOTTOM ABSCISSA OF VERTEX 'A' (L_A) IS DEFINED BY THE FOLLOWING FORMULA:

$L_A=R\ tg(\alpha/2)$ WITH $L_A < L'$

Trans Adriatic Pipeline

SUPPLIER DOCUMENT NUMBER	REV. NO.
P15IT03157-PPL-DW-000-008	1

MAX STREICHER S.p.A.

EnerecO

REV.	DESCRIPTION		PREP	VFY	APPR	
1	RE-ISSUED FOR CONSTRUCTION	IFC	EMANUELE PLOINI	ALESSANDRO GIANVINCENZI	MARCO NARDO	10/01/17
0	ISSUED FOR CONSTRUCTION	IFC	EMANUELE PLOINI	ALESSANDRO GIANVINCENZI	MARCO NARDO	21/12/16
B	RE-ISSUED FOR REVIEW	IFR	EMANUELE PLOINI	ALESSANDRO GIANVINCENZI	ALBERTO FANINA	14/09/16
A	ISSUED FOR REVIEW	IFR	EMANUELE PLOINI	ALESSANDRO GIANVINCENZI	ALBERTO FANINA	30/08/16

PROJECT TITLE
Trans Adriatic Pipeline Project/Onshore Pipeline Italy (OPLI)

DRAWING TITLE
TYPICAL FOR ELASTIC BEND
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TAG NUMBERS
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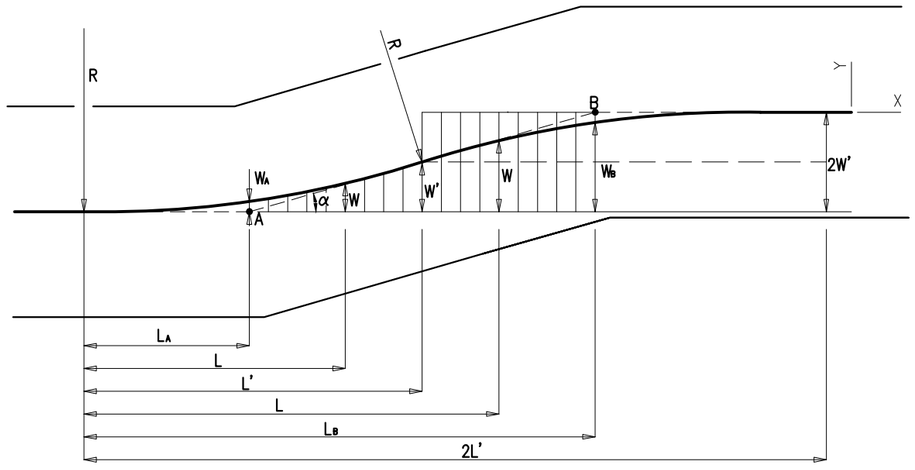
FORMAT	SCALE	FACILITY CODE	SYSTEM NO.	RD CODE	REVISION NO.
A3	N.T.S.		– –		1

DRAWING NO.
IPL00-C5522-100-F-DFT-0008-01

CTB NAME: Monochrome.ctb FILE NAME: IPL00-C5522-100-F-DFT-0008-01_1_IFC_20170110_EN;IT.dwg

	36" Gas Pipeline							
	Rmin = 610 m (See note 2)							
a	W'	2W'	L'	2L'	LA	WA	LB	WB
[deg]	[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
1	0.09	0.19	10.65	21.29	5.32	0.02	15.97	0.16
2	0.37	0.74	21.29	42.58	10.65	0.09	31.93	0.65
3	0.84	1.67	31.92	63.85	15.97	0.21	47.88	1.46
4	1.49	2.97	42.55	85.10	21.30	0.37	63.80	2.60
5	2.32	4.64	53.17	106.33	26.63	0.58	79.70	4.06
6	3.34	6.68	63.76	127.52	31.97	0.84	95.56	5.85
7	4.55	9.09	74.34	148.68	37.31	1.14	111.37	7.95
8	5.94	11.87	84.90	169.79	42.66	1.49	127.14	10.38

HORIZONTAL ELASTIC BEND WITH REVERSE BEND
PLANIMETRIC VIEW



LEGEND:
W =TRENCH AXIS ORDINATE.
L =TRENCH AXIS ABSCISSA.
W' =TRENCH AXIS ORDINATE OF THE TANGENT POINT.
L' =TRENCH AXIS ABSCISSA OF THE TANGENT POINT BETWEEN BEND AND REVERSE BEND.
L_A =TRENCH AXIS ABSCISSA OF VERTEX 'A' (ELASTIC BEND MIDPOINT).
L_B =TRENCH AXIS ABSCISSA OF VERTEX 'B' (REVERSE ELASTIC BEND MIDPOINT).
α =DEVIATION ANGLE.

NOTES:

1. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
2. FOR CALCULATION SEE DOC. IPL00-C5522-100-M-TCS-0002 "PIPELINE MECHANICAL CALCULATION REPORT".

TRENCH AXIS ORDINATES (W) OF ALL 'L' ARE DEFINED BY THE FOLLOWING FORMULAS WHICH ARE USED ALSO FOR SIMPLE ELASTIC BEND:

WHEN L < L' $W=R-\sqrt{R^2-L^2}$ KNOWN W: $L=\sqrt{2RW-H^2}$

WHEN L > L' $W=2W'-R+\sqrt{R^2-(2L'-L)^2}$

WHERE L' AND W' ARE THE COORDINATES OF THE TANGENT POINTS BETWEEN BEND AND REVERSE BEND:

KNOWN W': $L'=\sqrt{2W'R-W'^2}$

TRENCH AXIS ABSCISSA OF VERTEX 'A' (L_A) IS DEFINED BY THE FOLLOWING FORMULA:

$L_A=R\ tg(\alpha/2)$ WITH $L_A < L'$

Trans Adriatic Pipeline

SUPPLIER DOCUMENT NUMBER	REV. NO.
P15IT03157-PPL-DW-000-008	1

MAX STREICHER S.p.A.

EnerecO

REV.	DESCRIPTION					DATE
1	RE-ISSUED FOR CONSTRUCTION	IFC	EMANUELE PLONI	ALESSANDRO BENVENUTI	MARCO NARDO	10/01/17
0	ISSUED FOR CONSTRUCTION	IFC	EMANUELE PLONI	ALESSANDRO BENVENUTI	MARCO NARDO	21/12/16
B	RE-ISSUED FOR REVIEW	IFR	EMANUELE PLONI	ALESSANDRO BENVENUTI	ALBERTO FAGNA	14/09/16
A	ISSUED FOR REVIEW	IFR	EMANUELE PLONI	ALESSANDRO BENVENUTI	ALBERTO FAGNA	30/08/16

PROJECT TITLE
Trans Adriatic Pipeline Project/Onshore Pipeline Italy (OPLI)

DRAWING TITLE
TYPICAL FOR ELASTIC BEND
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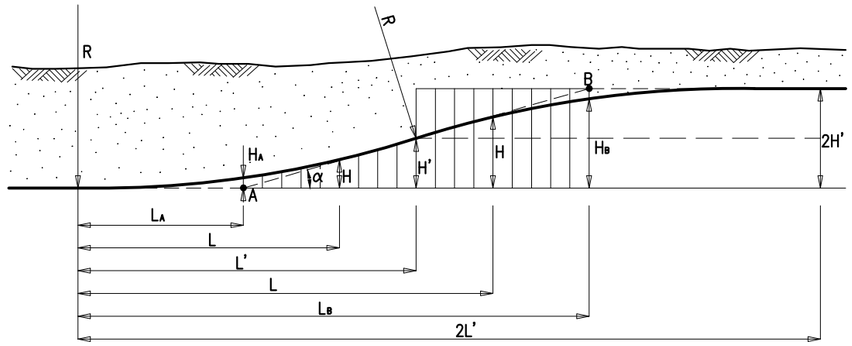
FORMAT	SCALE	FACILITY CODE	SYSTEM NO.	RD CODE	REVISION NO.
A3	N.T.S.		– –		1

DRAWING NO.
IPL00-C5522-100-F-DFT-0008-01

CTB NAME: Monochrome.ctb FILE NAME: IPL00-C5522-100-F-DFT-0008-01_1_IFC_20170110_EN;IT.dwg

36" Gas Pipeline								
Rmin = 690 m (See note 2)								
2H'	H'	HA	HB	L'	2L'	a	LA	LB
[m]	[m]	[m]	[m]	[m]	[m]	[deg]	[m]	[m]
0.3	0.15	0.04	0.26	14.39	28.77	1.2	7.19	21.58
0.5	0.25	0.06	0.44	18.57	37.14	1.5	9.29	27.86
1.0	0.50	0.13	0.87	26.26	52.53	2.2	13.14	39.39
1.5	0.75	0.19	1.31	32.16	64.33	2.7	16.09	48.24
1.8	0.90	0.23	1.57	35.23	70.46	2.9	17.63	52.83
2.0	1.00	0.25	1.75	37.13	74.27	3.1	18.58	55.69
2.5	1.25	0.31	2.19	41.51	83.03	3.4	20.78	62.25
3.0	1.50	0.38	2.62	45.47	90.95	3.8	22.76	68.18

CURVA ELASTICA VERTICALE CON CONTRO CURVA
SEZIONE LONGITUDINALE



LEGENDA:

H =ORDINATA DI FONDO SCAVO.
L =ASCISSA DI FONDO SCAVO
H' =ORDINATA DI FONDO SCAVO DEL PUNTO DI TANGENZA.
L' =ASCISSA DI FONDO SCAVO DEL PUNTO DI TANGENZA TRA LA CURVA E LA CONTRO CURVA.
L_A =ORDINATA DI FONDO SCAVO DEL VERTICE 'A'(PUNTO CENTRALE DELLA CURVA ELASTICA).
L_B =ORDINATA DI FONDO SCAVO DEL VERTICE 'B'(PUNTO CENTRALE DELLA CONTRO CURVA ELASTICA)
α =DEVIAZIONE ANGOLARE.

NOTE:

1. TUTTE LE MISURE SONO ESPRESSE IN METRI SE NON DIVERSAMENTE INDICATO.
2. PER I DETTAGLI DEI CALCOLI SI VEDA IL DOC. IPL00-C5522-100-M-TCS-0002 "PIPELINE MECHANICAL CALCULATION REPORT".

LE ORDINATE DI FONDO SCAVO (H) DI TUTTE LE 'L' SONO DEFINITE DALLE SEGUENTI FORMULE CHE VENGONO UTILIZZATE ANCHE PER LA CURVA ELASTICA SEMPLICE:

PER L < L' $H=R-\sqrt{R^2-L^2}$ NOTO H: $L=\sqrt{2RH-H^2}$

PER L > L' $H=2H'-R+\sqrt{R^2-(2L'-L)^2}$

DOVE L' E H' SONO LE COORDINATE DEL PUNTO DI TANGENZA TRA LA CURVA E LA CONTRO CURVA:

NOTO H': $L'=\sqrt{2H'R-H'^2}$

L'ASCISSA DI FONDO SCAVO DEL VERTICE 'A'(L_A) E' DEFINITA DALLA SEGUENTE FORMULA :

$L_A=R\ tg(\alpha/2)$ CON $L_A < L'$

Trans Adriatic Pipeline

SUPPLIER DOCUMENT NUMBER	REV. NO.
P15IT03157-PPL-DW-000-008	1

MAX STREICHER S.p.A.

Enereco

REV.	DESCRIPTION					DATE
1	RE-ISSUED FOR CONSTRUCTION	IFC	EMANUELE PLOINI	ALESSANDRO GENTILUCCI	MARCO NARDO	10/01/17
0	ISSUED FOR CONSTRUCTION	IFC	EMANUELE PLOINI	ALESSANDRO GENTILUCCI	MARCO NARDO	21/12/16
B	RE-ISSUED FOR REVIEW	IFR	EMANUELE PLOINI	ALESSANDRO GENTILUCCI	ALBERTO PANNA	14/09/16
A	ISSUED FOR REVIEW	IFR	EMANUELE PLOINI	ALESSANDRO GENTILUCCI	ALBERTO PANNA	30/08/16

PROJECT TITLE
Trans Adriatic Pipeline Project/Onshore Pipeline Italy (OPLI)

DRAWING TITLE
TIPICO PER CURVA ELASTICA
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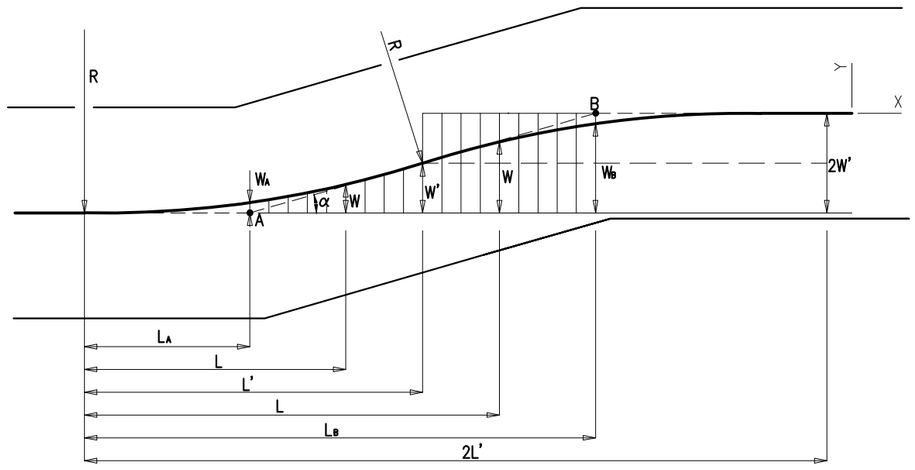
FORMAT	SCALE	FACILITY CODE	SYSTEM NO.	RD CODE	REVISION NO.
A3	N.T.S.		– –		1

DRAWING NO.
IPL00-C5522-100-F-DFT-0008-01

CTB NAME: Monochrome.ctb FILE NAME: IPL00-C5522-100-F-DFT-0008-01_1_IFC_20170110_EN;IT.dwg

	36" Gas Pipeline							
	Rmin = 610 m (See note 2)							
a	W'	2W'	L'	2L'	LA	WA	LB	WB
[deg]	[m]	[m]	[m]	[m]	[m]	[m]	[m]	[m]
1	0.09	0.19	10.65	21.29	5.32	0.02	15.97	0.16
2	0.37	0.74	21.29	42.58	10.65	0.09	31.93	0.65
3	0.84	1.67	31.92	63.85	15.97	0.21	47.88	1.46
4	1.49	2.97	42.55	85.10	21.30	0.37	63.80	2.60
5	2.32	4.64	53.17	106.33	26.63	0.58	79.70	4.06
6	3.34	6.68	63.76	127.52	31.97	0.84	95.56	5.85
7	4.55	9.09	74.34	148.68	37.31	1.14	111.37	7.95
8	5.94	11.87	84.90	169.79	42.66	1.49	127.14	10.38

CURVA ELASTICA ORIZZONTALE CON CONTRO CURVA
VISTA PLANIMETRICA



LEGENDA:

W =ORDINATA DELL'ASSE DELLO SCAVO.
L =ASCISSA DELL' ASSE DELLO SCAVO
W' =ORDINATA DELL' ASSE DELLO SCAVO DEL PUNTO DI TANGENZA.
L' =ASCISSA DELL' ASSE DELLO SCAVO DEL PUNTO DI TANGENZA TRA LA CURVA E LA CONTRO CURVA.
L_A =ORDINATA DELL' ASSE DELLO SCAVO DEL VERTICE 'A'(PUNTO CENTRALE DELLA CURVA ELASTICA).
L_B =ORDINATA DELL' ASSE DELLO SCAVO DEL VERTICE 'B'(PUNTO CENTRALE DELLA CONTRO CURVA ELASTICA)
α =DEVIAZIONE ANGOLARE.

NOTE:

1. TUTTE LE MISURE SONO ESPRESSE IN METRI SE NON DIVERSAMENTE INDICATO.
2. PER I DETTAGLI DEI CALCOLI SI VEDA IL DOC. IPL00-C5522-100-M-TCS-0002 "PIPELINE MECHANICAL CALCULATION REPORT".

LE ORDINATE DELL' ASSE DELLO SCAVO (W) DI TUTTE LE 'L' SONO DEFINITE DALLE SEGUENTI FORMULE CHE VENGONO UTILIZZATE ANCHE PER LA CURVA ELASTICA SEMPLICE:

PER L < L' $W=R-\sqrt{R^2-L^2}$ NOTO W: $L=\sqrt{2RW-W^2}$

PER L > L' $W=2W'-R+\sqrt{R^2-(2L'-L)^2}$

DOVE L' E W' SONO LE COORDINATE DEL PUNTO DI TANGENZA TRA LA CURVA E LA CONTRO CURVA:

NOTO W': $L'=\sqrt{2W'R-W'^2}$

L'ASCISSA DELL' ASSE DELLO SCAVO DEL VERTICE 'A'(L_A) E' DEFINITA DALLA SEGUENTE FORMULA :

$L_A=R\ tg(\alpha/2)$ CON $L_A < L'$

Trans Adriatic Pipeline

SUPPLIER DOCUMENT NUMBER	REV. NO.
P15IT03157-PPL-DW-000-008	1

MAX STREICHER S.p.A.

EnerecO

REV.	DESCRIPTION					DATE
1	RE-ISSUED FOR CONSTRUCTION	IFC	EMANUELE PISONI	ALESSANDRO BENVENUTI	MARCO NARDO	10/01/17
0	ISSUED FOR CONSTRUCTION	IFC	EMANUELE PISONI	ALESSANDRO BENVENUTI	MARCO NARDO	21/12/16
B	RE-ISSUED FOR REVIEW	IFR	EMANUELE PISONI	ALESSANDRO BENVENUTI	ALBERTO PAGINA	14/09/16
A	ISSUED FOR REVIEW	IFR	EMANUELE PISONI	ALESSANDRO BENVENUTI	ALBERTO PAGINA	30/08/16

PROJECT TITLE
Trans Adriatic Pipeline Project/Onshore Pipeline Italy (OPLI)

DRAWING TITLE
TIPICO PER CURVA ELASTICA
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TAG NUMBERS
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FORMAT	SCALE	FACILITY CODE	SYSTEM NO.	RD CODE	REVISION NO.
A3	N.T.S.		– –		1

DRAWING NO.
IPL00-C5522-100-F-DFT-0008-01

CTB NAME: Monochrome.ctb FILE NAME: IPL00-C5522-100-F-DFT-0008-01_1_IFC_20170110_EN;IT.dwg