RODGERS & COMPANY

Axis Well Installation Submittal Information
EW-005, EW-006, and IW-636R
Well Casing - Carbon Steel

Date:	December 12, 2014
Submitted by:	Rodgers & Company, Inc.
Spec. Reference:	SECTION 2680 2.01

2.01 BLANK WELL CASING

A. Blank carbon steel casing will be used for sections of the well that are above screen intervals. Ten and three quarter inch outside diameter (OD), schedule 40, ASTM A53 carbon steel pipe shall be used from plus about 2-feet above the ground surface to elevation shown in project drawings. All blank casing sections shall have a machined bevel on each end to allow for welding the casings sections together such that the casings will be aligned and plumb when placed in the well bore.

GRAVEL FEED TUBE

B. Black steel pipe 1-1/2-in. diameter will be supplied and installed for gravel feed line. Plain end pipe will be welded and installed prior to running well screen and casing. Pipe meets ASTM A53 specifications.

CERTIFICATE NO.(성적서 번호) : 4702109

DATE OF ISSUE(발행일자) : 2014-07-24

CONTRACT(P/O) NO.(계약번호) : 10P11618

PR NO.(주문서 번호) : 200108156

COMMODITY(제품명) : H.F.W. STEEL PIPE

SPECIFICATION(제품규격) : API 5L X42 PSL1/5LB PSL1/ASTM A53B/ASME SA53B

검 사 증 명 서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사) : KELLY PIPE

HYUNDAI HYSCO 현대하이스코주식회사 HYUNDAI HYSCO

본사·공장 (ULSAN PLANT) : 울산광역시 북구 염포로 706 (우)683-711
706, Yeompo-ro, Buk-gu, Ulsan, Korea
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573, Gangnam-daero, Seocho-gu, Seoul, Korea
TEL:82-2-2112-9114, FAX:82-2-775-7095

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA × THICK × LENGTH (외경 × 두께 × 길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (Ft)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. Max.	※2	Tensile Properties (Gage length : 2 inch) Tensile Strength Base Mpa	Tensile Strength Weld Mpa	Yield Strength Mpa	Y/R Rate %	E.L %	※3	Hardness Test HV	※2	CVN Impact Test (℃) Specimen size	Absorbed Energy (Joule) 1	2	3	Avg	Shear Area(%)	D.W.T Test Shear Area 1	2	Avg
									Min.		415	415	290		30												
									Max.											Criteria : In the case of 10X10							
1	EB BE	3-1/2" X 0.216" X 42.000F	21	3,043	882	4353026	2970	5		L	485	5[illegible]	334		32	B	146										
2																H	145										
3																W	142										
4	EB BE	10-3/4" X 0.365" X 21.000F	35	13,553	735	681652	2424	5		T	502	536	379		34	B	156										
5																H	165										
6																W	158										
7	EB BE	4-1/2" X 0.188" X 42.000F	492	81,789	20,706	145503	2130	5		L	480		415		33	B	145										
8																H	147										
9																W	148										
10	EB BE	10-3/4" X 0.365" X 42.000F	88	68,154	3,696	490179	2424	5		T	474	507	343		35	B	147										
11																H	148										
12																W	144										

No.	Heat No.	Spec.		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	CEQ ※5	PCM ※6	Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				x100			x1000		x100								x10000	x1000		g/m²			psi	%	%	%	
		Min.																									
		Max.	※4	26		130	30	30	50	50	50	15					10										
1	4353026		H	15	1	74	25	4																			
2			P	15	2	75	26	5	2	1	1	1	TR	TR	TR		TR										
3			P	15	1	73	25	4	2	1	1	1	TR	TR	TR		2										
4	681652		H	16	1	85	15	1																			
5			P	17	2	84	15	2	2	1	1	1	TR	TR	TR		2										
6			P	16	1	85	14	1	2	1	1	1	TR	TR	TR		2										
7	J45503		H	5	TR	55	7	4																			
8			P	6	TR	54	8	3	30	1	2	1	TR	TR	TR		1										
9			P	4	TR	54	7	5	30	1	2	1	TR	TR	TR		2										
10	490179		H	16	1	81	20	2																			
11			P	15	1	82	19	2	2	1	1	1	TR	TR	TR		2										
12			P	15	2	82	21	3	2	1	1	1	TR	TR	TR		1										

Heat Treatment	Non-Destructive Test (E.C.T, U.T)	Flattening/Bending/ Guide Bend Test	Visual & Dimension	Reverse Flattening Test	Flange Test	Flaring Test	Crush Test	Residual Magnetism (Gauss)	Drift Test
GOOD	GOOD	GOOD	GOOD					GOOD	

Remark

※1) Type of pipe end(관종)
EB:ERW후판(일반) BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※5 CEQ=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 (If, C > 0.12)
※6 PCM=C+Si/30+(Mn+Cu+Cr)/20+Ni/60+Mo/15+V/10+5B (If, C ≤ 0.12)
※7) For each reduction of 0.01% below the specified max. for C, an increase of 0.05% above the specified max. for Mn is permissible, up to a max. of 1.65%
※ HARDNESS TO NACE MR 0175
※ SPEC YEAR - API 5L(2013)/ASTM A53(2012)/ASME SA53(2013)

SURVEYOR

본 제품은 관련 규격에 합격되었음을 보증합니다.
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HEREIN HAS BEEN ACCEPTED IN ACCORDANCE WITH THE PRESCRIBED SPECIFICATION AND ORDER.
* 본 검사증명서에 명기된 규격용도외 사용시 안전상 문제가 발생할 수 있으며, 검사증명서 위.변조시 사문서 위조로 불이익을 당하실 수 있습니다.

H.K. CHOI
Q.A Manager

HYS - B301 - 631 - 1 - QLT

A4(210x297)

CERTIFICATE NO.(성적서 번호) : 4702109

DATE OF ISSUE(발행일자) : 2014-07-24

CONTRACT(P/O) NO.(계약번호) : 10P11618

PR NO.(주문서 번호) : 200108156

COMMODITY(제품명) : H.F.W. STEEL PIPE

SPECIFICATION(제품규격) : API 5L X42 PSL1/5LB PSL1/ASTM A53B/ASME SA53B

검 사 증 명 서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

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573, Gangnam-daero, Seocho-gu, Seoul, Korea
TEL:82-2-2112-9114, FAX:82-2-775-7095

CUSTOMER(고객사): KELLY PIPE

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA x THICK x LENGTH (외경 × 두께 × 길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (Ft)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. Max.	※2	Tensile Properties (Gage length : 2 inch) Tensile Strength Base Mpa	Tensile Strength Weld Mpa	Yield Strength Mpa	Y/R Rate %	E.L %	※3	Hardness Test & CVN Impact Test Hardness Test HV	※2	CVN Impact Test (℃) Specimen size	Absorbed Energy (Joule) 1	2	3	Avg	Shear Area(%)	D.W.T Test Shear Area 1	2	Avg
									Min.		415	415	290		30												
									Max.										Criteria : In the case of 10X10								
13	EB BE	10-3/4" X 0.365" X 21.000F	164	63,507	3,444	682377	2424	5		T	473	505	348		35	B	149										
14																H	153										
15																W	144										
16	EB BE	3-1/2" X 0.188" X 42.000F	280	35,633	11,760	SB07435	2730	5		L	472		346		33	B	153										
17																H	146										
18																W	137										
19	EB BE	18" X 0.250" X 21.000F	4	1,821	84	G50126	1010	5		T	496	526	341		37	B	161										
20																H	163										
21																W	153										
		TOTAL →	1,085	267,500	41,307																						

No.	Heat No.	Spec.	※4	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	CEQ ※5	PCM ※6	Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				x100			x1000		x100								x10000	x1000		g/m²			psi	%	%	%	
		Min.																									
		Max.		26		130	30	30	50	50	50	15					10										
13	682377		H	16	2	82	13	3																			
14			P	16	3	81	12	4	2	1	1	1	TR	TR	TR		1										
15			P	16	2	81	12	2	2	1	1	1	TR	TR	TR		1										
16	SB07435		H	13	TR	70	13	6																			
17			P	14	TR	70	13	7	2	1	1	1	TR	TR	TR		TR										
18			P	13	TR	70	14	6	2	1	1	1	TR	TR	TR		TR										
19	G50126		H	18	2	80	19	5	1																		
20			P	17	3	79	18	6	2	1	1	1	TR	TR	TR		2										
21			P	19	3	79	19	6	2	1	1	1	TR	TR	TR		2										

Remark

※1) Type of pipe end(관종)
EB:ERW후판(일반) BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※5 CEQ=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 (If, C > 0.12)
※6 PCM=C+Si/30+(Mn+Cu+Cr)/20+Ni/60+Mo/15+V/10+5B (If, C ≤ 0.12)
※7) For each reduction of 0.01% below the specified max. for C, an increase of 0.05% above the specified max. for Mn is permissible, up to a max. of 1.65%
※ HARDNESS TO NACE MR 0175
※ SPEC YEAR - API 5L(2013)/ASTM A53(2012)/ASME SA53(2013)

Heat Treatment	Non-Destructive Test (E.C.T, U.T)	Flattening/Bending/ Guide Bend Test	Visual & Dimension	Reverse Flattening Test	Flange Test	Flaring Test	Crush Test	Residual Magnetism (Gauss)	Drift Test
GOOD	GOOD	GOOD	GOOD					GOOD	

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SURVEYOR

H.K. CHOI
Q.A Manager

HYS - B301 - 631 - 1 - QLT

A4(210x297)

CERTIFICATE NO.(성적서 번호) : 4801656

DATE OF ISSUE(발행일자) : 2014-09-04

CONTRACT(P/O) NO.(계약번호) : 10P12449

PR NO.(주문서 번호) : 200108328

COMMODITY(제품명) : H.F.W. STEEL PIPE

SPECIFICATION(제품규격) : API 5L X42 PSL1/5LB PSL1/ASTM A53B/ASME SA53B

검 사 증 명 서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

HYUNDAI HYSCO

현대하이스코주식회사
HYUNDAI HYSCO

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CUSTOMER(고객사): KELLY PIPE

No.	TYPE OF PIPE END ※1	SIZE OUT-DIA × THICK × LENGTH (외경 × 두께 × 길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (Ft)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. Max.	※2	Tensile Properties (Gage length : 2 Inch) Tensile Strength Base Mpa	Tensile Strength Weld Mpa	Yield Strength Mpa	Y/R Rate %	E.L %	※3	Hardness Test & CVN Impact Test Hardness Test HV	※2 Specimen size	CVN Impact Test (℃) Absorbed Energy (Joule) 1	2	3	Avg	Shear Area(%)	D.W.T Test Shear Area 1	2	Avg
							PSI	SEC			Mpa	Mpa	Mpa	%	%		HV									
											415	415	290		30											
																			Criteria : In the case of 10X10							
1	EB BE	24" X 0.375" X 21,000F	1	900	21	N07363	1190	10		T	546	585	487		39	B	166									
2																H	168									
3																W	166									
4	EB BE	10-3/4" X 0.365" X 21,000F	6	2,323	126	N04048	2424	5		T	482	520	384		35	B	147									
5																H	145									
6																W	145									
7	EB BE	10-3/4" X 0.500" X 42,000F	16	16,706	672	N13085	2970	5		T	489	528	394		36	B	152									
8																H	149									
9																W	138									
10	EB BE	12-3/4" X 0.250" X 42,000F	116	74,395	4,872	4641413	1420	5		T	495	534	371		37	B	159									
11																H	160									
12																W	151									

No.	Heat No.	Spec.	※4	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	CEQ ※5	PCM ※6
				x100			x1000		x100								x10000	x1000	
		Min.																	
		Max.		26		130	30	30	50	50	50	15					10		
1	N07363		H	7	16	100	16	2											
2			P	6	16	99	16	3	2	1	3	1	TR	TR	TR		4		
3			P	8	16	101	16	1	2	1	3	1	TR	TR	TR		5		
4	N04048		H	6	1	75	13	6											
5			P	6	1	74	13	5	2	1	2	1	TR	TR	TR		1		
6			P	6	1	75	12	6	2	1	2	1	TR	TR	TR		2		
7	N13085		H	6	1	75	14	5											
8			P	6	1	74	13	5	2	1	3	1	TR	TR	TR		1		
9			P	7	1	74	14	5	2	1	3	1	TR	TR	TR		1		
10	4641413		H	15	2	81	16	2											
11			P	16	3	82	15	2	2	1	1	1	TR	TR	TR		TR		
12			P	15	2	80	15	1	2	1	1	1	TR	TR	TR		2		

No.	Zn-Coating Test Zn Coating g/m²	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure psi	H.I.C Test CLR %	CTR %	CSR %	S.S.C.C Test
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

Remark

※1) Type of pipe end(단종)
EB:ERW축관(일반) BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※5 CEQ=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 (If, C > 0.12)
※6 PCM=C+Si/30+(Mn+Cu+Cr)/20+Ni/60+Mo/15+V/10+5B (If, C ≤ 0.12)
※7) For each reduction of 0.01% below the specified max. for C, an increase of 0.05% above the specified max. for Mn is permissible, up to a max. of 1.65%
※ HARDNESS TO NACE MR 0175
※ SPEC YEAR - API 5L(2013)/ASTM A53(2012)/ASME SA53(2013)

Heat Treatment	Non-Destructive Test (U.T)	Flattening/Bending/ Guide Bend Test	Visual & Dimension	Reverse Flattening Test	Flange Test	Flaring Test	Crush Test	Residual Magnetism (Gauss)	Drift Test
GOOD	GOOD	GOOD	GOOD					GOOD	

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SURVEYOR

H.K. CHOI
Q.A Manager

CERTIFICATE NO.(성적서 번호) : 4801656

DATE OF ISSUE(발행일자) : 2014-09-04

CONTRACT(P/O) NO.(계약번호) : 10P12449

PR NO.(주문서 번호) : 200108328

COMMODITY(제품명) : H.F.W. STEEL PIPE

SPECIFICATION(제품규격) : API 5L X42 PSL1/SLB PSL1/ASTM A53B/ASME SA53B

검 사 증 명 서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

CUSTOMER(고객사) : KELLY PIPE

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No.	TYPE OF PIPE END ※1	SIZE OUT-DIA × THICK × LENGTH (외경 × 두께 × 길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (Ft)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. Max.	※2	Tensile Properties (Gage length : 2 inch) Tensile Strength Base Mpa	Tensile Strength Weld Mpa	Yield Strength Mpa	Y/R Rate %	E.L %	Hardness Test ※3	Hardness Test HV	※2	CVN Impact Test (℃) Specimen size	Absorbed Energy (Joule) 1	2	3	Avg	Shear Area(%)	D.W.T Test Shear Area 1	2	Avg
											415	415	290		30												
											Criteria : In the case of 10X10																
13	EB BE	12-3/4" X 0.250" X 21.000F	105	33,670	2,205	4641414	1420	5		T	495	529	379		36	B	165										
14																H	157										
15																W	146										
16	EB BE	24" X 0.375" X 21.000F	5	4,502	105	NI3223	1190	10		T	540	580	480		41	B	173										
17																H	165										
18																W	155										
19	EB BE	10-3/4" X 0.365" X 21.000F	225	87,129	4,725	490659	2424	5		T	483	521	340		36	B	146										
20																H	155										
21																W	141										
22	EB BE	10-3/4" X 0.365" X 42.000F	96	74,350	4,032	596671	2424	5		T	514	552	379		35	B	158										
23																H	155										
24																W	156										

No.	Heat No.	Spec.		Chemical Composition C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	CEQ ※5	PCM ※6	Zn-Coating Test Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				x100			x1000		x100								x10000	x1000		g/m²			psi	%	%	%	
		Min.																									
		Max.	※4	26		130	30	30	50	50	50	15					10										
13	4641414		H	15	2	81	16	2																			
14			P	16	2	80	16	1	2	1	1	1	TR	TR	TR		TR										
15			P	15	3	80	16	3	2	1	1	1	TR	TR	TR		TR										
16	NI3223		H	6	17	103	14	2																			
17			P	7	16	104	14	1	2	1	2	1	TR	TR	TR		2										
18			P	5	18	104	14	3	2	1	2	1	TR	TR	TR		1										
19	490659		H	16	1	85	13	2																			
20			P	16	2	84	13	1	2	1	1	1	TR	TR	TR		TR										
21			P	16	2	86	13	1	2	1	1	1	TR	TR	TR		2										
22	596671		H	17	1	86	19	2																			
23			P	17	1	87	20	1	2	1	1	1	TR	TR	TR		1										
24			P	17	1	87	20	2	2	1	1	1	TR	TR	TR		TR										

Heat Treatment	Non-Destructive Test (U.T)	Flattening/Bending/ Guide Bend Test	Visual & Dimension	Reverse Flattening Test	Flange Test	Flaring Test	Crush Test	Residual Magnetism (Gauss)	Drift Test
GOOD	GOOD	GOOD	GOOD					GOOD	

Remark

※1) Type of pipe end(원관)
EB:ERW폭관(원반) BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※5 CEQ=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 (If, C > 0.12)
※6 PCM=C+Si/30+(Mn+Cu+Cr)/20+Ni/60+Mo/15+V/10+5B (If, C ≤ 0.12)
※7) For each reduction of 0.01% below the specified max. for C, an increase of 0.05% above the specified max. for Mn is permissible, up to a max. of 1.65%
※ HARDNESS TO NACE MR 0175
※ SPEC YEAR - API 5L(2013)/ASTM A53(2012)/ASME SA53(2013)

본 제품은 관련 규격에 합격되었음을 보증합니다.
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HEREIN HAS BEEN ACCEPTED IN ACCORDANCE WITH THE PRESCRIBED SPECIFICATION AND ORDER.
• 본 검사증명서에 명기된 규격용도의 사용시 안전상 문제가 발생할 수 있으며, 검사증명서 위·변조시 사문서 위조로 불이익을 받아질 수 있습니다.

SURVEYOR

H.K CHOI
Q.A Manager

CERTIFICATE NO.(성적서 번호) : 4801656

DATE OF ISSUE(발행일자) : 2014-09-04

CONTRACT(P/O) NO.(계약번호) : 10P12449

PR NO.(주문서 번호) : 200108328

COMMODITY(제품명) : H.F.W. STEEL PIPE

SPECIFICATION(제품규격) : API 5L X42 PSL1/5L.B PSL1/ASTM A53B/AS ME SA53B

검 사 증 명 서
MILL TEST CERTIFICATE
EN 10204 TYPE 3.1 - 2004

HYUNDAI HYSCO 현대하이스코주식회사 HYUNDAI HYSCO

본사 · 공장 (ULSAN PLANT) : 울산광역시 북구 염포로 706 (우)683-711
706, Yeompo-ro, Buk-gu, Ulsan, Korea
TEL:82-52-280-0114, FAX:82-52-287-8916

서울사무소 (SEOUL OFFICE) : 서울특별시 서초구 강남대로 573 (우)137-904
573, Gangnam-daero, Seocho-gu, Seoul, Korea
TEL:82-2-2112-9114, FAX:82-2-775-7095

CUSTOMER(고객사) : KELLY PIPE

No.	TYPE OF PIPE END ※1)	SIZE OUT-DIA × THICK × LENGTH (외경 × 두께 × 길이)	PCS (본)	WEIGHT (KG)	TOTAL LENGTH (Ft)	HEAT No.	Hydrostatic Test Pressure PSI	Hydrostatic Test Time SEC	Spec. Min. / Max.	Tensile Properties (Gage length : 2 inch) Tensile Strength Base Mpa	Tensile Strength Weld Mpa	Yield Strength Mpa	Y/R Rate %	E.L. %	Hardness Test & CVN Impact Test Hardness Test HV	CVN Impact Test (℃) Specimen size	Absorbed Energy (Joule) 1	2	3	Avg	Shear Area(%)	D.W.T Test Shear Area 1	2	Avg
									※2 Min.	415	415	290		30	※3	※2	Criteria : In the case of 10X10							
		TOTAL →	570	293,975	16,758																			

No.	Heat No.	Spec.		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Ti	Nb	Al	B	CEQ ※5	PCM ※6	Zn-Coating Test Zn Coating	Copper Sulfate Test Time	Copper Sulfate Test Result	HC-Test Collapse Pressure	H.I.C Test CLR	CTR	CSR	S.S.C.C Test
				x100			x1000		x100								x10000	x1000		g/m²			psi	%	%	%	
		Min.																									
		Max.	※4	26		130	30	30	50	50	50	15					10										

Remark

※1) Type of pipe end(단종)
EB:ERW후판(원판) BE:Bevel End
※2) L: Longitudinal, T: Transverse
※3) B: Base, W: Weld Line, H: Heat Affected Zone
※4) H: Heat(Ladle) Analysis, P: Product Analysis
※5 CEQ=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 (If, C > 0.12)
※6 PCM=C+Si/30+(Mn+Cu+Cr)/20+Ni/60+Mo/15+V/10+5B (If, C ≤ 0.12)
※7) For each reduction of 0.01% below the specified max. for C, an increase of 0.05% above the specified max. for Mn is permissible, up to a max. of 1.65%
※ HARDNESS TO NACE MR 0175
※ SPEC YEAR - API 5L(2013)/ASTM A53(2012)/ASME SA53(2013)

Heat Treatment	Non-Destructive Test (U.T)	Flattening/Bending/ Guide Bend Test	Visual & Dimension	Reverse Flattening Test	Flange Test	Flaring Test	Crush Test	Residual Magnetism (Gauss)	Drift Test
GOOD	GOOD	GOOD	GOOD					GOOD	

본 제품은 관련 규격에 합격되었음을 보증합니다.
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• 본 검사증명서에 명기된 규격위도의 사용시 안전상 문제가 발생할 수 있으며, 검사증명서 위.변조시 서류서 위조로 처벌받을 수 있습니다.

SURVEYOR

H.K. CHOI
Q.A Manager

VILLACERO

MILL TEST REPORT

PRODUCT: 1 1/2" STD API 5L A - PSL-1 / ASTM A-53-A

FINISHING: BLACK PLAIN END PIPE

CUSTOMER:

SHIPPING DATE: 11/02/14

TRANSPORT PLATAFORM: FRANZONI - 48

INVOICE: FX-8140

MANUFACTURER/ PLANTA : LAMINA Y PLACA COMERCIAL S.A DE C.V.
DIEGO DIAZ DE BERLANGA, NO. 1002 SUR
SAN NICOLAS DE LOS GARZA, NUEVO LEON, MEXICO

I HEREBY CERTIFY THAT THE PRODUCT ACCOMPILSHED WITH THE SPECIFICATION TO THE INVOICE AND/ OR REMISSION (DATABASE OF SYSTEM) .
ESTE PRODUCTO FUE FABRICADO BAJO LA NORMA QUE SE DESCRIBE HACIENDO CUMPLIR LOS REQUERIMIENTOS DE LA ESPECIFICACION (BASE DE DATOS DEL SISTEMA).

PROCESS: HFW / HOT STRECHT REDUCTION MILL/ STEEL GRADE 1008

MANUFACTURING INFORMATION/ INFORMACION DE MANUFACTURA							DIMENSIONS (DIMENSIONES)		
DATE	SHIFT	OPER	ORDER OP #	GRADE	MANUFACT PROCESS	HEAT TREATMENT	OUTSIDE DIAMETER (In)	Thickness (In)	LENGTH (Ft)
07/02/14	1	COM	5	A	E	NO	1.900	0.145	21

ONLINE TESTS (PRUEBAS DE CAMPO)									
HEAT NUMBER (COLADA)	HYDROSTATIC TEST (PSI)	DELIVERY CONDITION	TIME (Sec.)	NON-DESTRUCTIVE TEST	(PND)	METALLOGRAPHY TEST	BENDING TEST	FLATTENING TEST	VISUAL INSPECTION
367932011	1000	AS ROLLED	5	OK		OK	N/A	OK	OK

CHEMICAL ANALYSYS (ANALISIS QUIMICOS)/ MECHANICAL PROPERTIES (PROPIEDADES MECANICAS)									
HEAT NUMBER (COLADA)	%C	%Mn	%P	%S	%Si	%Cr	%Mo	%Ni	%Cu
367932011	0.0660	0.2300	0.0100	0.0200	0.0100	0.0000	0.0000	0.0000	0.0000
%Nb	%Sn	%Ti	%V		YIELD ST (PSI)	UT (PSI)	% ELONG	HARDNESS (HRb)	CARBON EQUIVALENT %
0.0020	0.0000	0.0010	0.0010		53200	59870	26.30	74	N/A

CHARPY TEST (PRUEBA CHARPY)					
HEAT IDENT NUM	ABSORBED ENERGY (FT-LB)			AVERAGE	TEMPERATURE TEST °C
	1	2	3		
367932011	N/A	N/A	N/A	N/A	N/A

NOTE: THE SUM OF THE NIOBIUM, VANADIUM AND TITANIUM CONCENTRATIONS SHALL BE $\leq$ 0.15%
NOTA: LA SUMA DE LA CONCENTRACION DE NIOBIO, VANADIO Y TITANIO NO DEBE SER $\leq$ 0.15%

I HAVE PERSONAL KNOWLEDGE AS TO ACCURACY OF THE ABOVE INFORMATION, AND HAVE AUTHORITY TO SIGN ON BEHALF OF THE COMPANY.
TENGO EL CONOCIMIENTO Y AUTORIZACION EN NOMBRE DE LA COMPAÑÍA PARA AVALAR ESTA INFORMACIÓN.

SINCERELY

ING. DAVID ANGEL MOLINA PEREZ
QUALITY ASSURANCE MANAGER

CC-FC11
Rev 0

VILLACERO

MILL TEST REPORT

PRODUCT: **1 1/2" STD API 5L A - PSL-1 / ASTM A-53-A**

FINISHING: **BLACK PLAIN END PIPE**

CUSTOMER: **S&P STEEL PRODUCTS AND SERVICES , INC.** SHIPPING DATE: **21/03/14**

TRANSPORT PLATAFORM: **FRANZONI - 47** INVOICE: **FX-8355**

TRANSPORT/ TRANSPORTE:

MANUFACTURER/ PLANTA : LAMINA Y PLACA COMERCIAL S.A DE C.V.
DIEGO DIAZ DE BERLANGA, NO. 1002 SUR
SAN NICOLAS DE LOS GARZA, NUEVO LEON, MEXICO

I HEREBY CERTIFY THAT THE PRODUCT ACCOMPILSHED WITH THE SPECIFICATION TO THE INVOICE AND/ OR REMISSION (DATABASE OF SYSTEM) .
ESTE PRODUCTO FUE FABRICADO BAJO LA NORMA QUE SE DESCRIBE HACIENDO CUMPLIR LOS REQUERIMIENTOS DE LA ESPECIFICACION (BASE DE DATOS DEL SISTEMA).

PROCESS: HFW / STEEL GRADE 1008

MANUFACTURING INFORMATION/ INFORMACION DE MANUFACTURA							DIMENSIONS (DIMENSIONES)		
DATE	SHIFT	OPER	ORDER OP #	GRADE	MANUFACT PROCESS	HEAT TREATMENT	OUTSIDE DIAMETER (In)	Thickness (In)	LENGTH (Ft)
07/02/14	1	COM	34	A	E	NO	1.900	0.145	21

ONLINE TESTS (PRUEBAS DE CAMPO)								
HEAT NUMBER (COLADA)	HYDROSTATIC TEST (PSI)	DELIVERY CONDITION	TIME (Sec.)	NON-DESTRUCTIVE TEST (PND)	METALLOGRAPHY TEST	BENDING TEST	FLATTENING TEST	VISUAL INSPECTION
340838027	1000	AS ROLLED	5	OK	OK	N/A	OK	OK

CHEMICAL ANALYSYS (ANALISIS QUIMICOS)/ MECHANICAL PROPERTIES (PROPIEDADES MECANICAS)									
HEAT NUMBER (COLADA)	%C	%Mn	%P	%S	%Si	%Cr	%Mo	%Ni	%Cu
340838027	0.0580	0.1800	0.0110	0.0160	0.0070	0.0250	0.0050	0.0530	0.0170
%Nb	%Sn	%Ti	%V		YIELD ST (PSI)	UT (PSI)	% ELONG	HARDNESS (HRb)	CARBON EQUIVALENT %
0.0050	0.0000	0.0020	0.0020		51700	60220	27.80	74	N/A

CHARPY TEST (PRUEBA CHARPY)					
HEAT IDENT NUM	ABSORBED ENERGY (FT-LB)			AVERAGE	TEMPERATURE TEST °C
	1	2	3		
340838027	N/A	N/A	N/A	N/A	N/A

NOTE: THE SUM OF THE NIOBIUM, VANADIUM AND TITANIUM CONCENTRATIONS SHALL BE ≤ 0.15%
NOTA: LA SUMA DE LA CONCENTRACION DE NIOBIO, VANADIO Y TITANIO NO DEBE SER ≤ 0.15%

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TENGO EL CONOCIMIENTO Y AUTORIZACION EN NOMBRE DE LA COMPAÑÍA PARA AVALAR ESTA INFORMACIÓN.

SINCERELY

ING. DAVID ANGEL MOLINA PEREZ
QUALITY ASSURANCE MANAGER

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