BRYAN LABORATORY, INC.

METALLURGICAL CONSULTATION - INSPECTION - TESTING
ANALYTICAL SERVICES - FAILURE ANALYSIS
6919 ALMEDA ROAD (77021)
P. O. BOX 300366
HOUSTON, TX 77230-0366
TELEPHONE 713/747-7470 800/922-7470 FAX 713/747-7477

ACCREDITED CERT #7387.01

REPORT

Lab. No. B2L6-0395A **August 28, 2026**

ON: Steel Pipe

TO: J. D. Fields & Company, Inc.
P. O. Box 134401
Houston, Texas 77219-4401
Attention: Mr. Tom Biggs

IDENTITY: Purchase Order Number 61-84933; A sample identified as a 30" O.D, 0.500" W.T., Grade X70M PSL 2, DSAW pipe, SěAH Steel Heat Number ZSB49203

CHEMICAL ANALYSIS

Carbon, %	-	0.07
Manganese, %	-	1.50
Phosphorus, %	-	0.012
Sulfur, %	-	0.006
Silicon, %	-	0.24
Chromium, %	-	0.09
Nickel, %	-	0.13
Molybdenum, %	-	<0.01
Copper, %	-	0.07
Aluminum, %	-	0.03
Vanadium, %	-	<0.01
Titanium, %	-	0.01
Niobium, %	-	0.04
Boron, %	-	<0.001
Carbon Equivalent, CE_{Pcm}	-	0.16

TENSION TESTS

Specimens	-	Transverse, 1-1/2" wide reduced sections, 180° from the weld (Body) and across the Weld	
Specimen	-	Body	Weld
Yield Strength, psi			
At 0.2% offset	-	81,500	-
At 0.5% total extension	-	80,600	-
Tensile Strength, psi	-	96,000	93,500
Elongation in 2", %	-	31.3	-
Fracture Location,	-	-	Body

VICKERS HARDNESS, HV10

Traverse	-	Near External Surface	Near Mid-thickness	Near Internal Surface
Pipe	-	224	212	221
HAZ*	-	194	189	201
Weld	-	207	199	222
HAZ*	-	188	202	209
Pipe	-	198	202	206

*Heat-Affected Zone

IMPACT TESTS

Specimen Type - Transverse, Full Size, Charpy V-notch, 90° from the weld (Body), Heat-Affected Zone (HAZ) and in the weld (Weld)

Test Temperature - 32°F

Specimen		Absorbed Energy, ft·lb	Percent Shear
Body - 1	-	173	100*
Body - 2	-	175	95
Body - 3	-	173	80
HAZ - 1	-	327	100*
HAZ - 2	-	328	100*
HAZ - 3	-	327	100*
Weld - 1	-	140	90
Weld - 2	-	142	95
Weld - 3	-	145	95

*Assumed, specimen did not break

Respectfully submitted,
BRYAN LABORATORY, INC.

Signature on original only

Sam A. Bryan

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METALLURGICAL CONSULTATION - INSPECTION - TESTING
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ACCREDITED CERT #7387.01

REPORT

Lab. No. B2L6-0395B **August 28, 2026**

ON: Steel Pipe

TO: J. D. Fields & Company, Inc.
P. O. Box 134401
Houston, Texas 77219-4401
Attention: Mr. Tom Biggs

IDENTITY: Purchase Order Number 61-84933; A sample identified as a 30" O.D, 0.500" W.T., Grade X70M PSL 2, SAWL pipe, SĕAH Steel Heat Number ZSB49204

CHEMICAL ANALYSIS

Carbon, %	-	0.07
Manganese, %	-	1.52
Phosphorus, %	-	0.010
Sulfur, %	-	0.006
Silicon, %	-	0.25
Chromium, %	-	0.08
Nickel, %	-	0.12
Molybdenum, %	-	<0.01
Copper, %	-	0.07
Aluminum, %	-	0.03
Vanadium, %	-	<0.01
Titanium, %	-	0.01
Niobium, %	-	0.04
Boron, %	-	<0.001
Carbon Equivalent, CE_{Pcm}	-	0.16

TENSION TESTS

Specimens	-	Transverse, 1-1/2" wide reduced sections, 180° from the weld (Body) and across the Weld	
Specimen	-	Body	Weld
Yield Strength, psi			
At 0.2% offset	-	89,200	-
At 0.5% total extension	-	87,400	-
Tensile Strength, psi	-	102,200	97,300
Elongation in 2", %	-	25.8	-
Fracture Location,	-	-	Body

VICKERS HARDNESS, HV10

Traverse		Near External Surface	Near Mid-thickness	Near Internal Surface
Pipe	-	216	205	222
HAZ*	-	187	198	221
Weld	-	205	206	227
HAZ*	-	187	189	205
Pipe	-	238	224	235

*Heat-Affected Zone

IMPACT TESTS

Specimen Type - Transverse, Full Size, Charpy V-notch, 90° from the weld (Body), Heat-Affected Zone (HAZ) and in the weld (Weld)

Test Temperature - 32°F

Specimen		Absorbed Energy, ft·lb	Percent Shear
Body - 1	-	198	85
Body - 2	-	213	85
Body - 3	-	186	80
HAZ - 1	-	191	85
HAZ - 2	-	165	75
HAZ - 3	-	91	60*
Weld - 1	-	128	85
Weld - 2	-	107	80
Weld - 3	-	133	85

*Assumed, specimen did not break

Respectfully submitted,
BRYAN LABORATORY, INC.

Signature on original only

Sam A. Bryan

/ka