

ETF WEST LLC
Division of Energy Task Force LLC

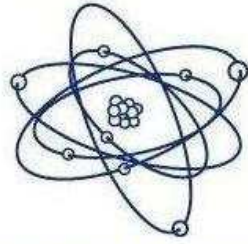
Pre-insulated pipe

7700 W Olive Ave - Peoria, AZ - 85345 - 407-523-3770 - 407-523-2722

ETF-MT Product Specification

Pre-insulated piping system designed for above ground or direct buried Chilled Water, Hot Water and all other 45° to 250° medium temperature systems.

- Carrier Pipe:** Schedule 40 A53B ERW Steel.
- Insulation:** Polyurethane foam: K Factor 0.14, Density 2.0 to 3.0 PCF, 90-95% closed cell conforming to mil spec –1-24172 and ASTM-C-591 completely filling the annular space between carrier pipe and jacket. Maximum service temperature of 250°
- Jacketing Material:** High Density Polyethylene (HDPE) casing Type III, Category 5, Class C conforming to ASTM D-1248 or as specified. For jacket thickness see attached schedule
- End Seal:** Mastic end seals, factory applied to insulation ends.
- Insulation of Straight Joints:** Prior to joining carrier pipe an HDPE sleeve is slid onto jacketing on either side of joint. After welding and hydro testing, the HDPE sleeve is slid in place and sealed with heat shrink tape. Polyurethane foam is then mixed and poured into the annular space and sealed watertight.
- Fittings:** All fittings are field welded and insulated utilizing ETF West fitting insulation kits. Fitting kits consist of hard shell mitered HDPE matching the thickness of jacket, polyurethane foam and heat shrink tape.
- Backfilling:** Underground systems shall be buried in a trench of not less than 24 inches deeper than the top of the pipe jacket and not less than 18 inches wider than the combined O.D. of all piping systems. Backfill should be tamped compactly in place. No rock shall be used in the first foot of the backfill. To meet H-20 highway loadings, there must be 24 inches from top of jacket to grade of the compacted fill.



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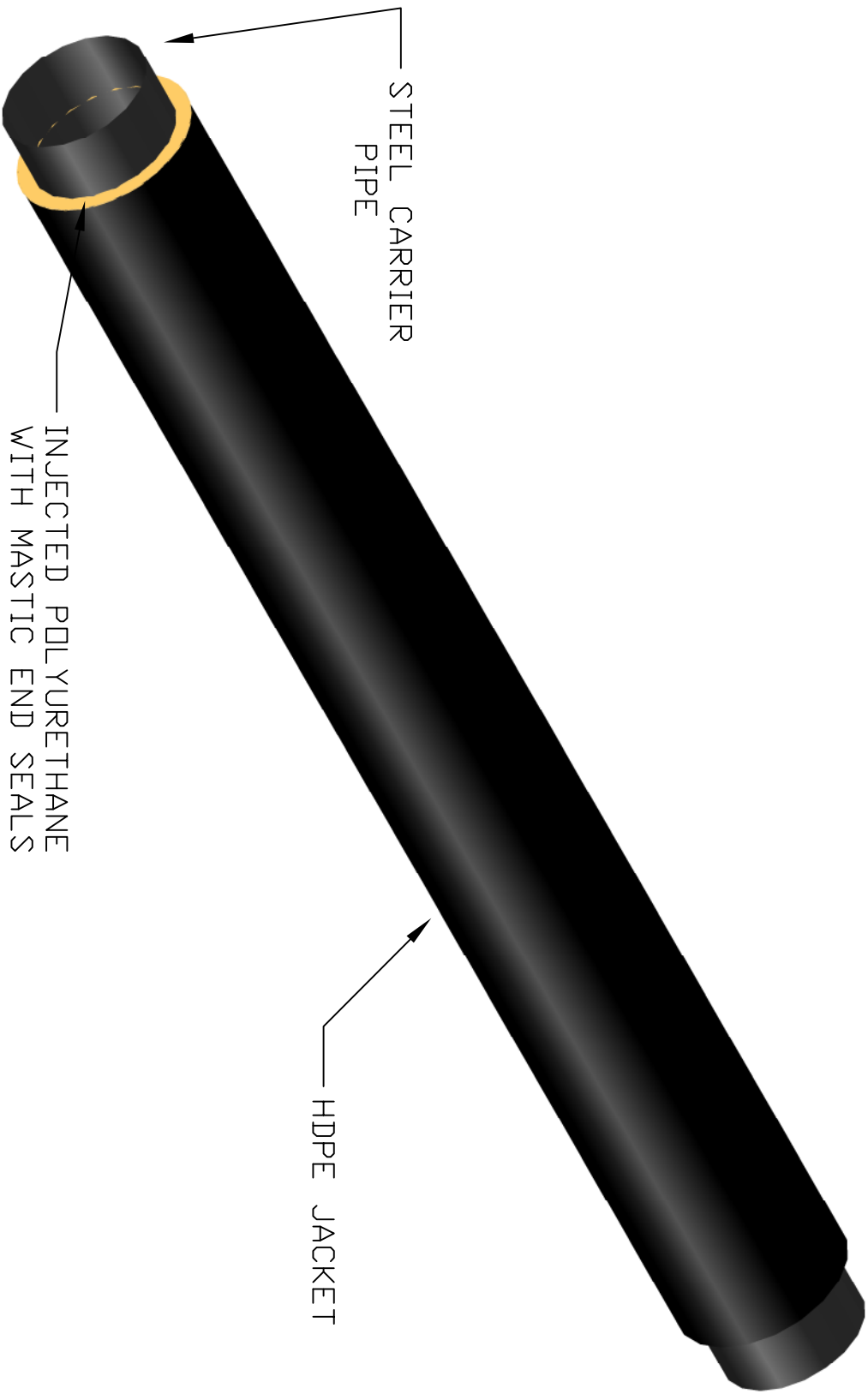
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Table 1: Specified Carrier Pipe / HDPE Jacket

Nominal Pipe Size	Minimum Insulation Thickness	Nominal Jacket Size	Nominal Jacket Size
1/2"	1.83	4.50	150 mils
3/4"	1.73	4.50	150 mils
1"	1.59	4.50	150 mils
1 1/4"	1.42	4.50	150 mils
1 1/2"	2.30	6.63	150 mils
2"	2.13	6.63	150 mils
2 1/2"	1.88	6.63	150 mils
3"	1.57	6.63	150 mils
4"	1.80	8.00	175 mils
5"	2.22	10.00	175 mils
6"	1.69	10.00	175 mils
8"	1.90	12.43	175 mils
10"	1.66	14.06	175 mils
12"	1.56	15.87	175 mils
14"	1.92	17.83	200 mils
16"	1.90	19.80	200 mils
18"	1.95	22.17	225 mils
20"	1.85	24.00	250 mils
24"	1.85	28.07	275 mils
30"	2.85	36.00	275 mils

ETF WEST LLC WARRANTY

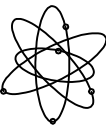
ETF West LLC warrants its products only to the extent that it will replace those proved to have manufactured defects, within a one-year period from date of delivery. ETF West must be provided an opportunity to inspect an alleged defective product and the installation application. This warranty does not provide for the expenses incurred for removal, re-installation or consequential damages arising from the defective material. There is no warranty other than that described above, and no one is authorized to issue any other warranty related to ETF West LLC products.



STEEL CARRIER
PIPE

INJECTED POLYURETHANE
WITH MASTIC END SEALS

HDPE JACKET



ETF WEST LLC
PRE-INSULATED PIPE

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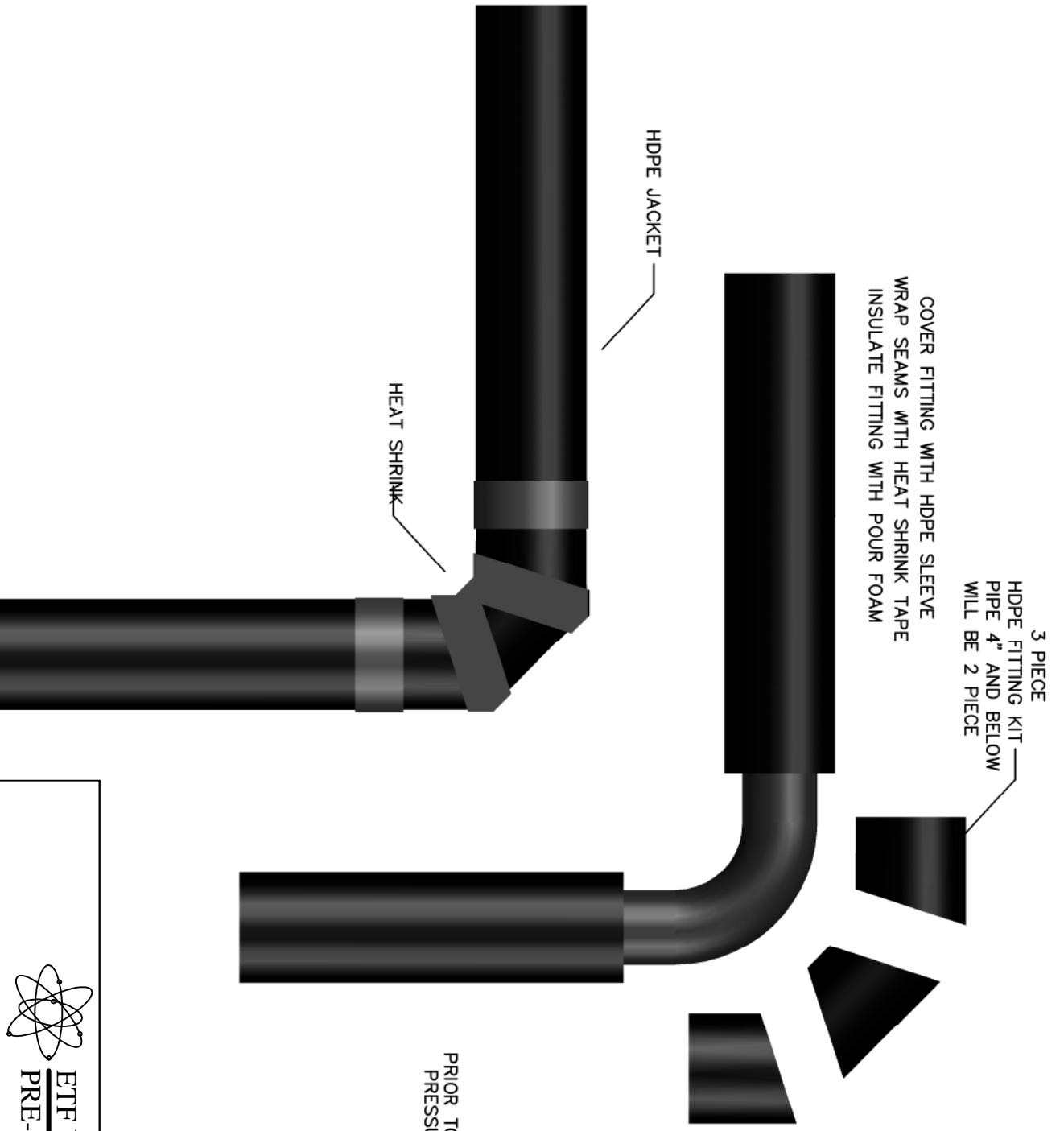
SCALE
NTS

DATE 4/22/16

STEEL X HDPE JACKET

DRAWN BY
LG

DWG #



COVER FITTING WITH HDPE SLEEVE
 WRAP SEAMS WITH HEAT SHRINK TAPE
 INSULATE FITTING WITH POUR FOAM

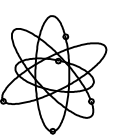
3 PIECE
 HDPE FITTING KIT
 PIPE 4" AND BELOW
 WILL BE 2 PIECE

HDPE JACKET

HEAT SHRINK

PRIOR TO INSULATING FITTING
 PRESSURE TEST SYSTEM

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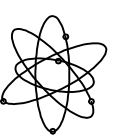
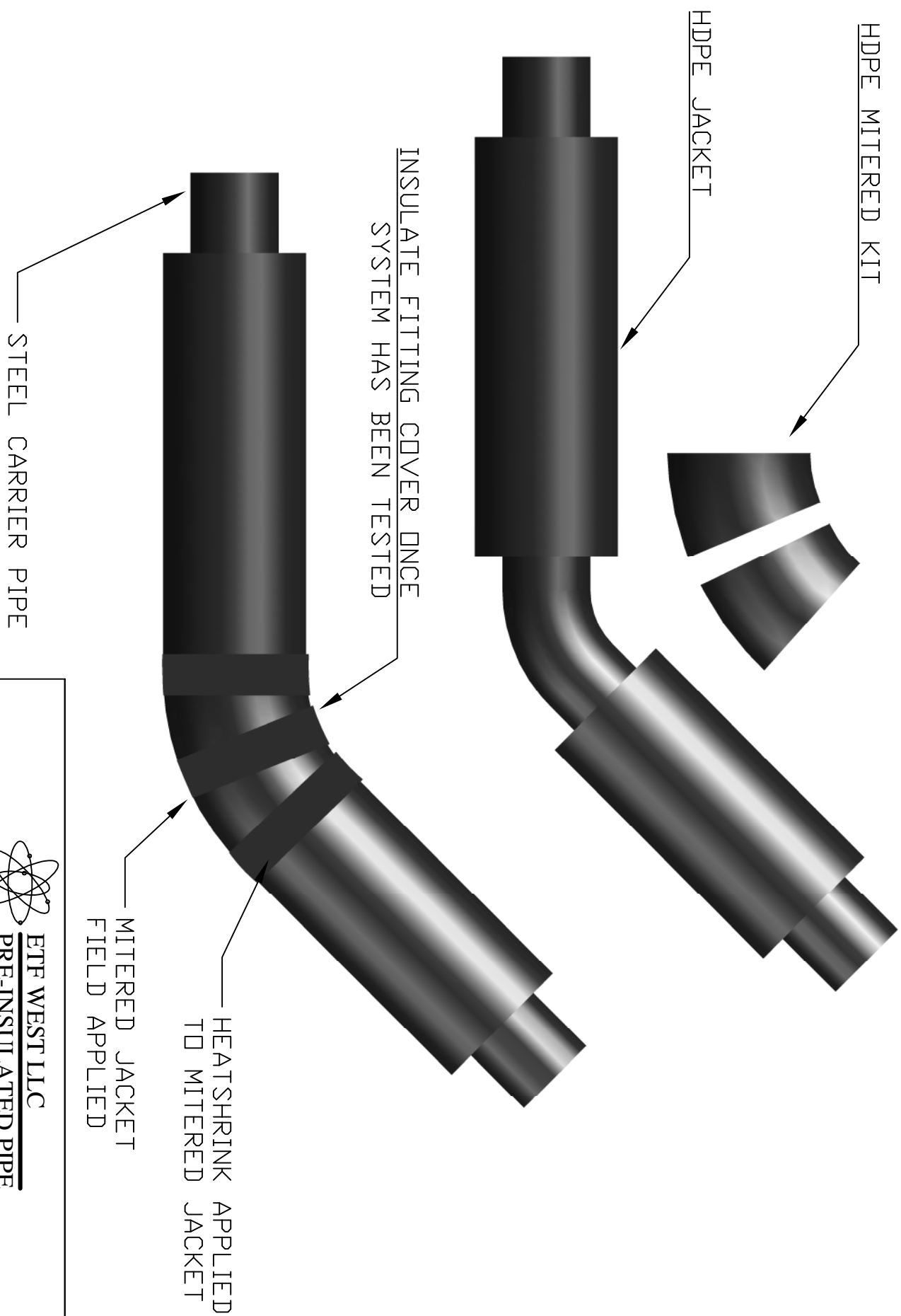


ETF WEST LLC
PRE-INSULATED PIPE

SCALE
 NTS
 DATE 8/2/04

STEEL WELD FITTING KIT

DRAWN BY
 LG
 DWG #

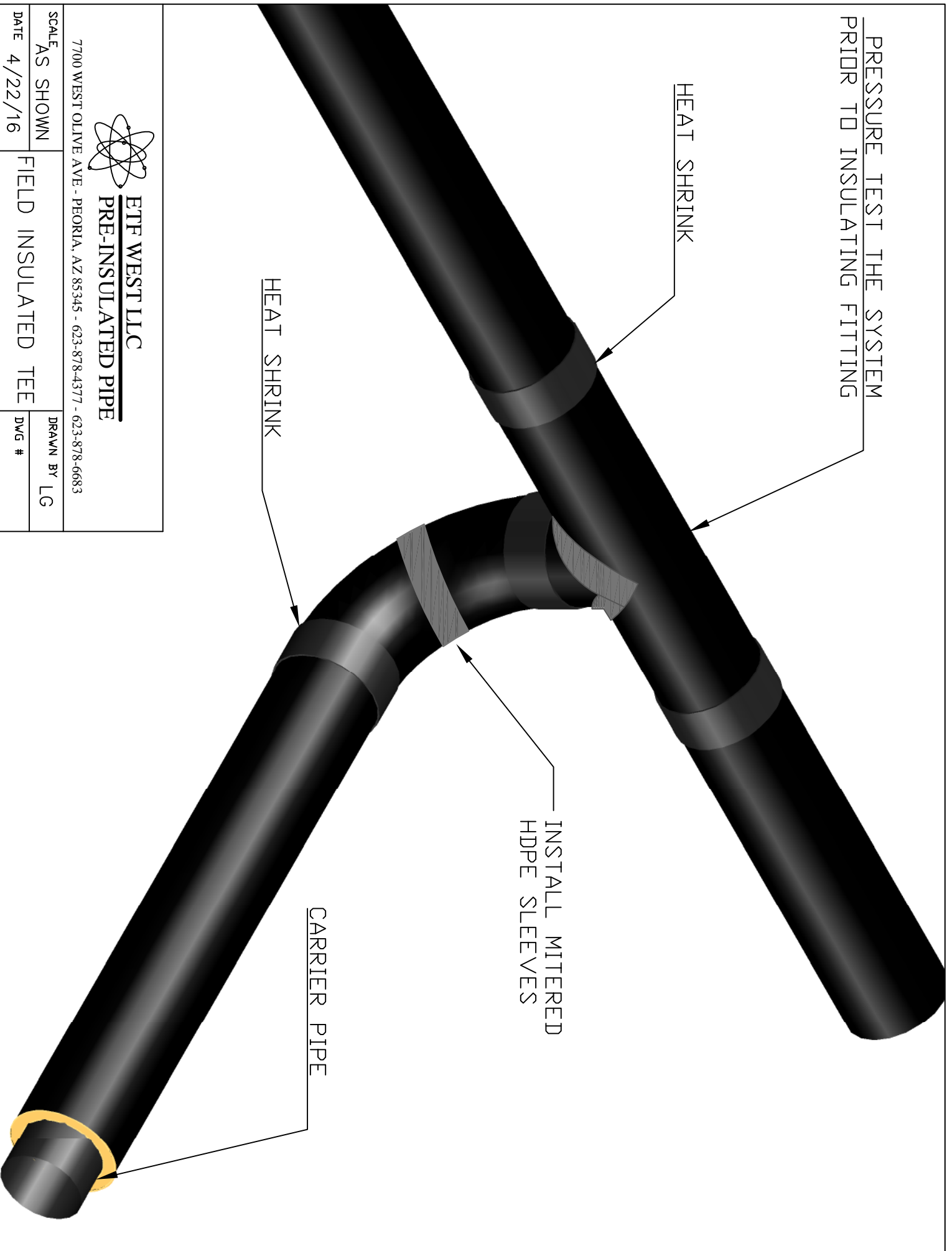


ETF WEST LLC
PRE-INSULATED PIPE

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SCALE NTS	FIELD INSULATED 45	DRAWN BY LG
DATE 4/22/16	STEEL X HDPE JACKET	DWG #

PRESSURE TEST THE SYSTEM
PRIOR TO INSULATING FITTING

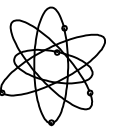


HEAT SHRINK

HEAT SHRINK

INSTALL MITERED
HDPE SLEEVES

CARRIER PIPE



ETF WEST LLC
PRE-INSULATED PIPE

7700 WEST OLIVE AVE - PEORIA, AZ 85345 - 623-878-4377 - 623-878-6683

SCALE
AS SHOWN

FIELD INSULATED TEE

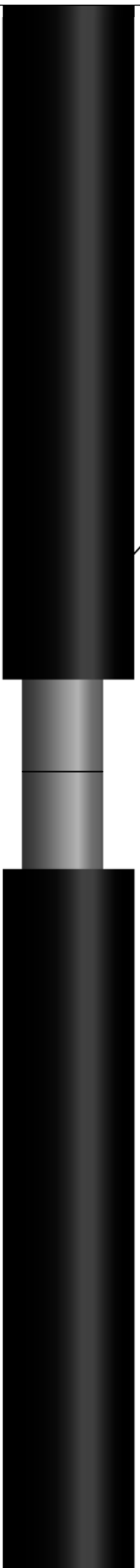
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DWG #

DATE 4/22/16

HDPE SLEEVE
PRIOR TO INSULATING JOINT
PRESSURE TEST SYSTEM



HDPE JACKET

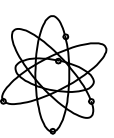


HDPE SLEEVE

HEAT SHRINK



COVER JOINT WITH HDPE SLEEVE
WRAP SEAMS WITH HEAT SHRINK TAPE
INSULATE JOINT WITH POUR FOAM



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PRE-INSULATED PIPE

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SCALE
NTS

DATE
8/2/04

FIELD JOINT DETAIL

DRAWN BY
LG

DWG #