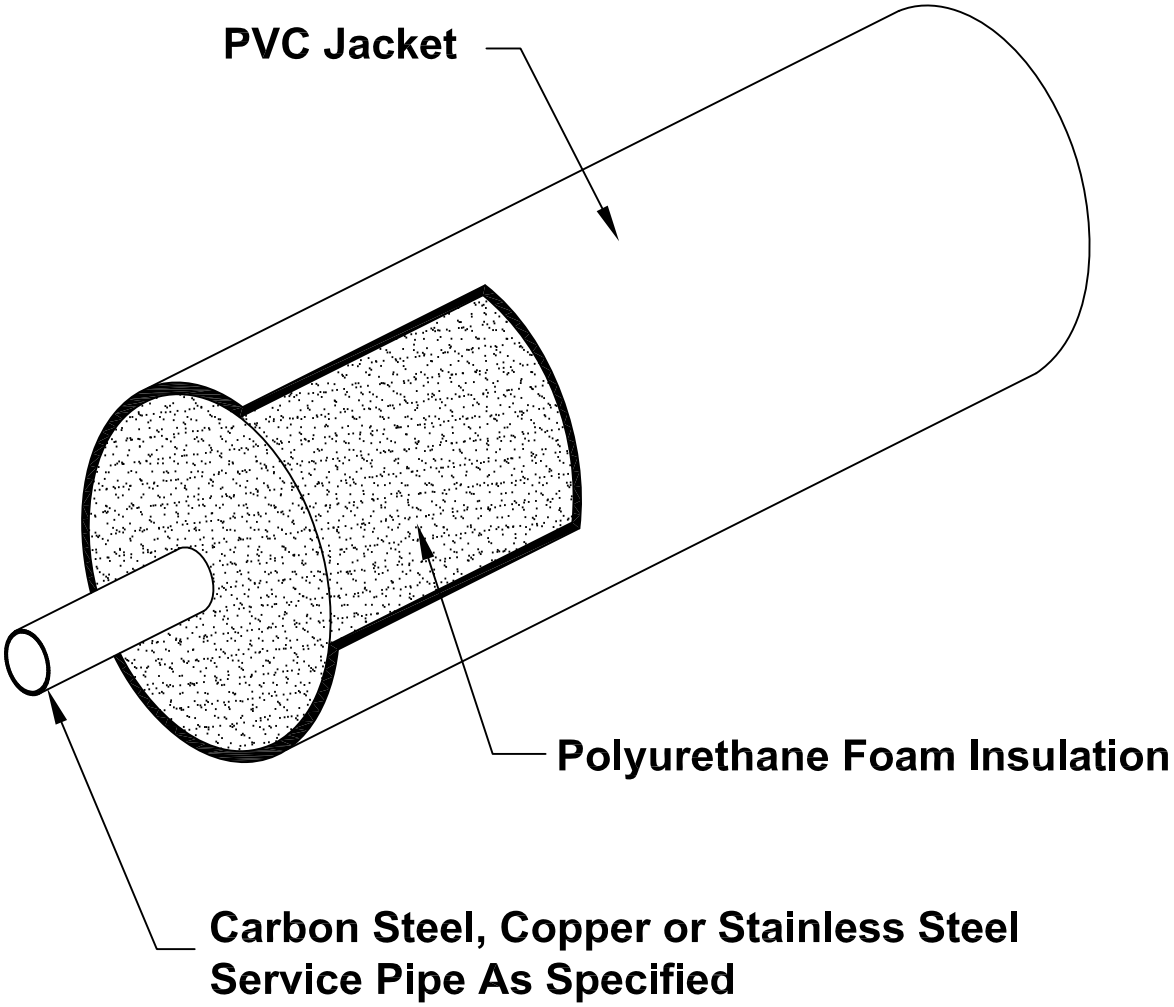
SUB-ZERO PIPE SYSTEM

For Applications down to -350°F for Above Ground

☐ **Cryogenic**



TRICON FORCE
PIPING SOLUTIONS
tfpiping.com

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Phone: 904-687-2874

Texas
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SUB-ZERO PIPE SYSTEM

System Specifications

TABLE 1

Pipe Size	Minimum Insulation Thickness	PVC Jacket O.D.	PVC Jacket Wall
½"	2.68"	6.12"	.070"
¾"	2.56"	6.12"	.070"
1"	3.43"	8.16"	.070"
1¼"	3.31"	8.16"	.070"
1½"	2.94"	8.16"	.070"
2"	2.94"	8.16"	.070"
2½"	3.69"	10.20"	.070"
3"	3.44"	10.20"	.070"
4"	3.94"	12.24"	.080"
6"	3.94"	14.32"	.100"

TABLE 2

Pipe Size	Minimum Insulation Thickness	PVC Jacket O.D.	PVC Jacket Wall
½" + ½"	2.25"	8.16"	.080"
¾" + ¾"	2.08"	8.16"	.080"
1" + 1"	2.58"	10.20"	.100"
1¼" +1¼"	2.42"	10.20"	.100"
1½" + ¾"	2.50"	10.20"	.100"
1½" + 1"	2.42"	10.20"	.100"
1½" + 1½"	2.92"	12.24"	.120"
2" + 1"	2.92"	12.24"	.120"
2" + 1½"	2.75"	12.24"	.120"
2" + 2"	3.25"	14.32"	.140"
2½" + 1½"	3.25"	14.32"	.140"

Service Pipe:

Carbon steel service pipe shall be standard weight A333 welded or seamless beveled for welding. Copper service pipe shall be Type "K", hard drawn copper tubing to ASTM B-88 and WWT-799. Straight lengths of piping will be supplied in 20 ft. lengths. Straight lengths of piping will be supplied with 6" of piping exposed at each end for field joint fabrication.

Insulation:

The insulation shall be a foamed in place closed cell polyurethane which completely fills the annular space between the carrier pipe and the exterior casing. The insulation shall have the following physical properties:

Minimum Density (lb./cu. ft.) 2.0	ASTM D-1621,
90-95 % Closed Cell	ASTM D-2856
"K" Factor BTU/Hr. sq. ft. °F/in. 147	ASTM C-177

Exterior Casing:*

The exterior casing shall be seamless, extruded white PVC Type 1, Grade 1, Class 12454-B per ASTM D-1784

Sub-Assemblies:

All fittings, end seals, other sub-assemblies shall be prefabricated or field fabricated dependant upon engineer's option and/or site conditions.

Field Joints:

After soldering/welding and hydrostatic testing, PVC jacketed straight field joints shall be insulated with polyurethane foam to the thickness specified, PVC sleeve and pressure sensitive tape.

Installation:

The installing contractor shall handle the piping system in accordance with the directions furnished by the manufacturer and as approved by the architect and engineer. The carrier piping shall be hydrostatically tested to 1-1/2 times the operating pressure or as specified in the contract documents. The test shall be maintained for a minimum time of 1 hour.

EXERCISE DUE CARE WHEN INSTALLING AND TESTING THE PIPING SYSTEM

System Options:

- Contact your Tricon representative for available sizes and system options.

* Optional metallic casings for above ground applications include, Spiral Lockseam in Galvanized, Aluminum or Stainless Steel.

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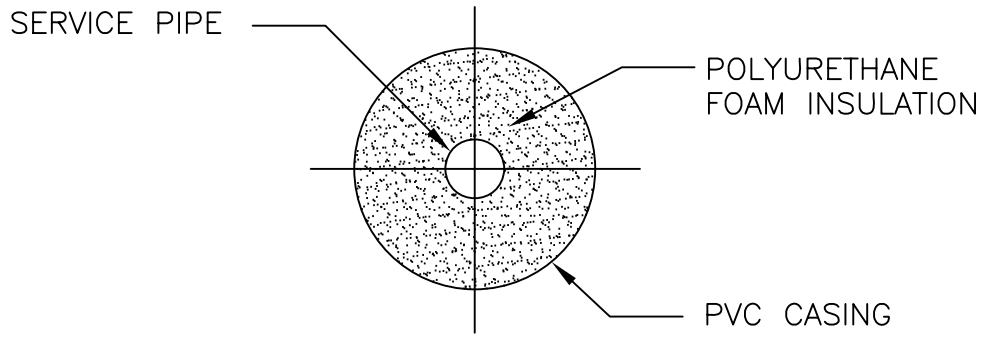
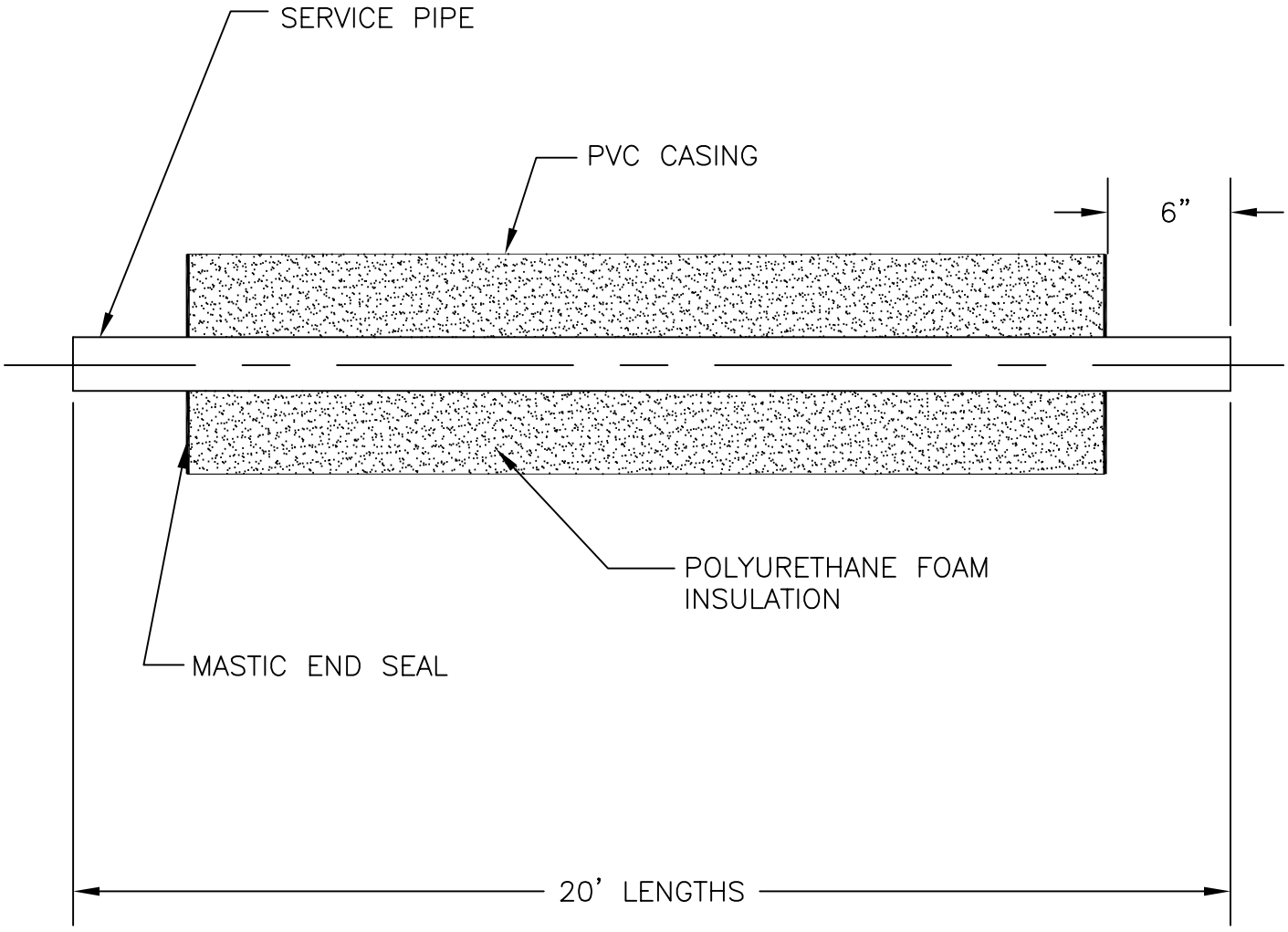


END VIEW
NOT TO SCALE



STRAIGHT PIPE DETAIL

SUB-ZERO

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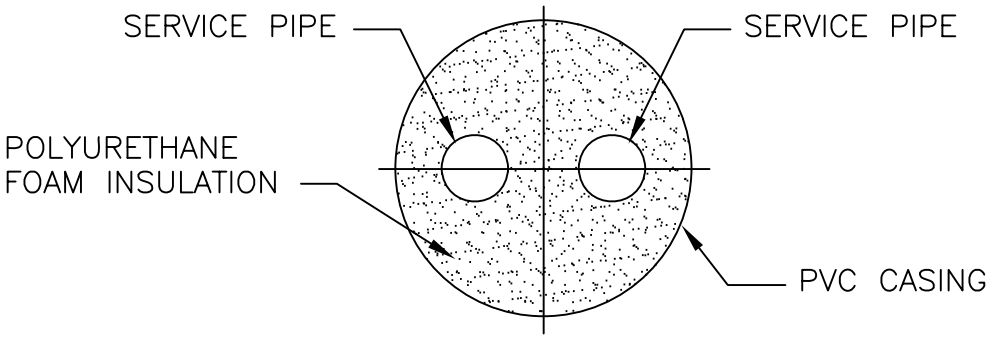

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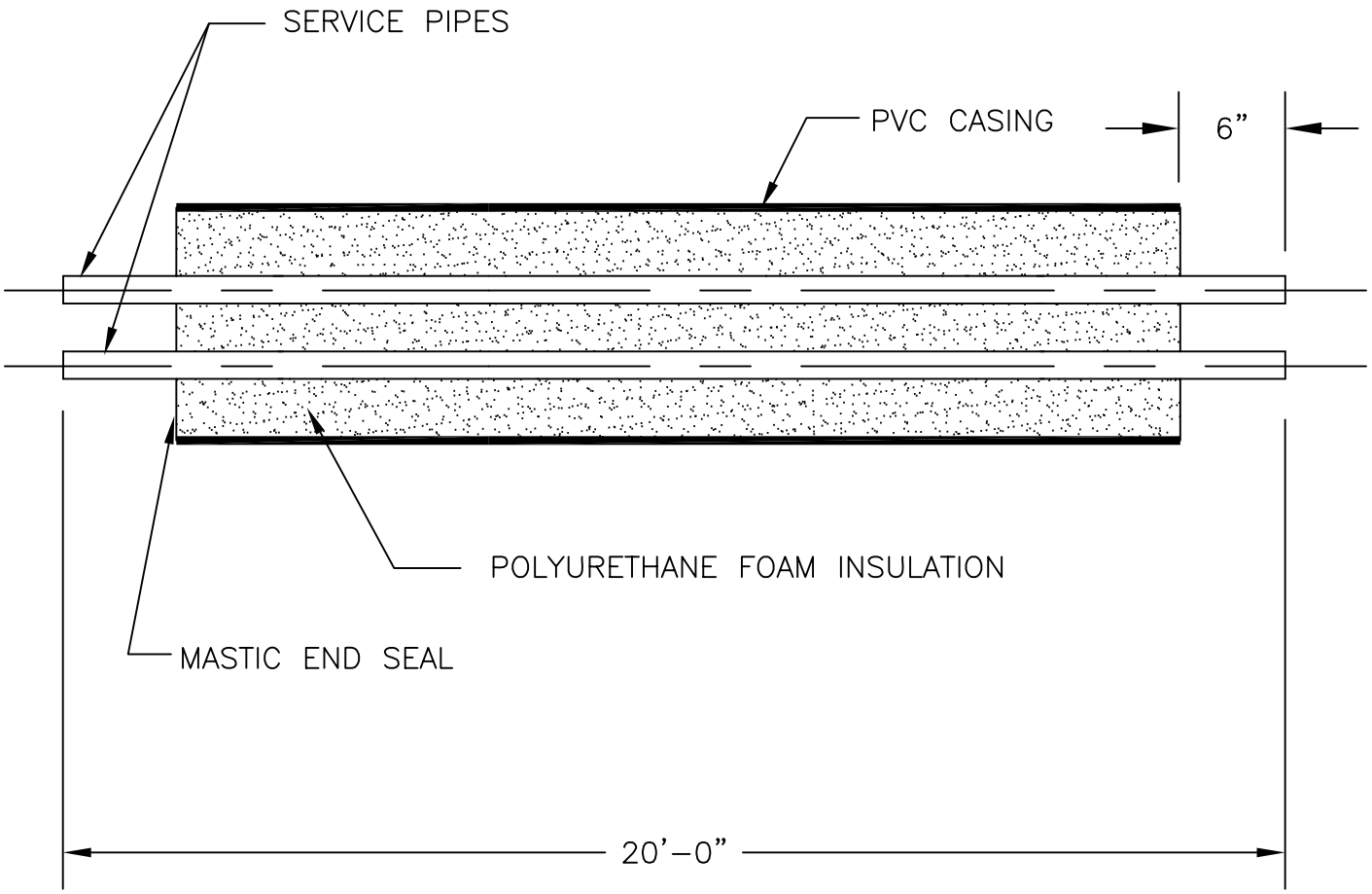

* OPTIONAL METAL JACKET AVAILABLE FOR ABOVE GRADE APPLICATION.

DOUBLE PIPE STRAIGHT LENGTH DETAIL

SUB-ZERO

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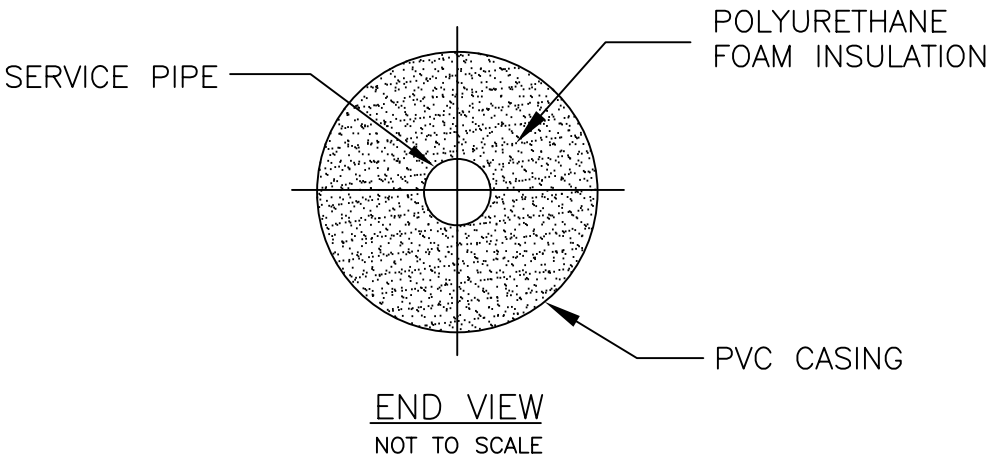

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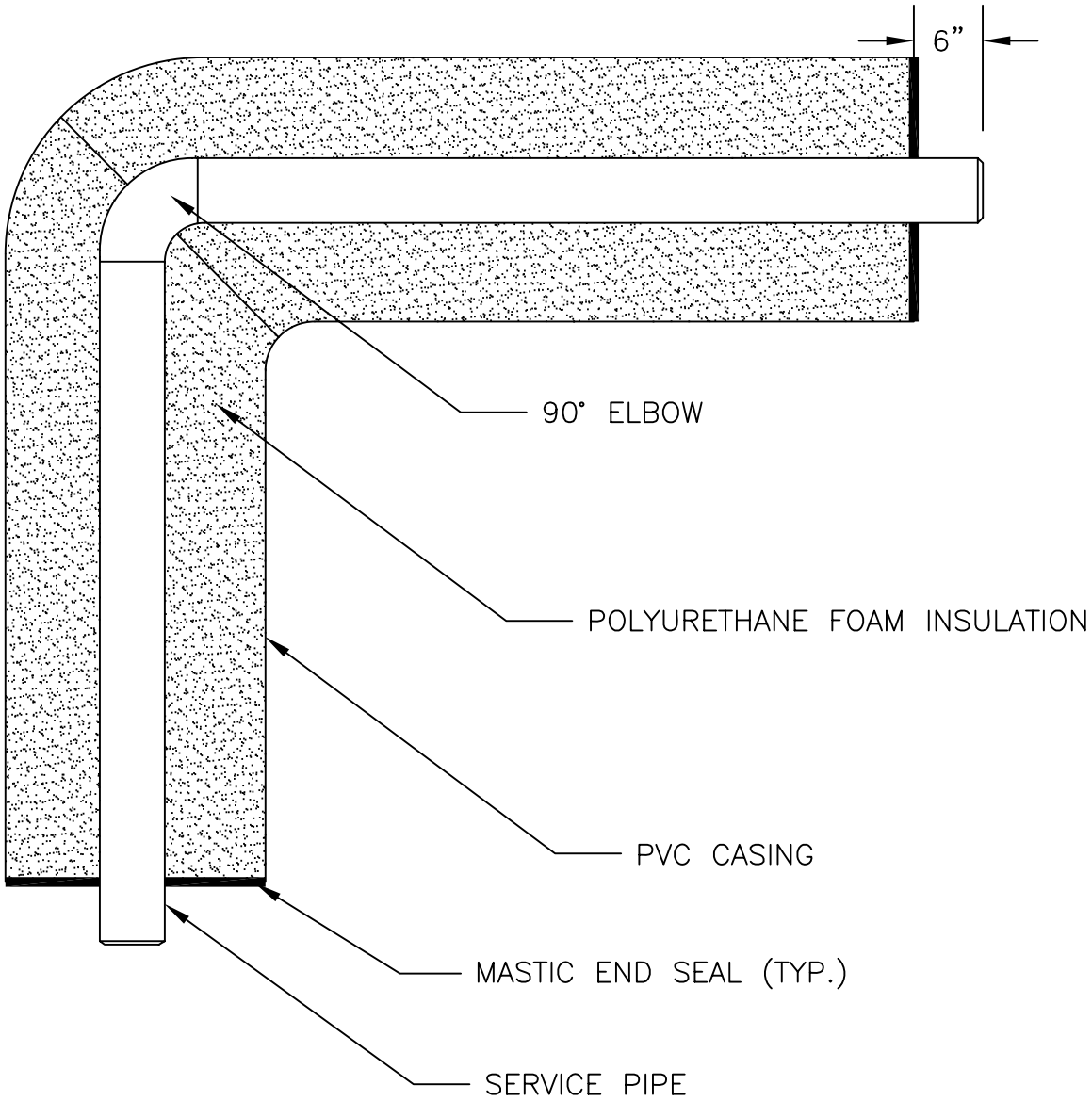

90° ELBOW DETAIL

SUB-ZERO

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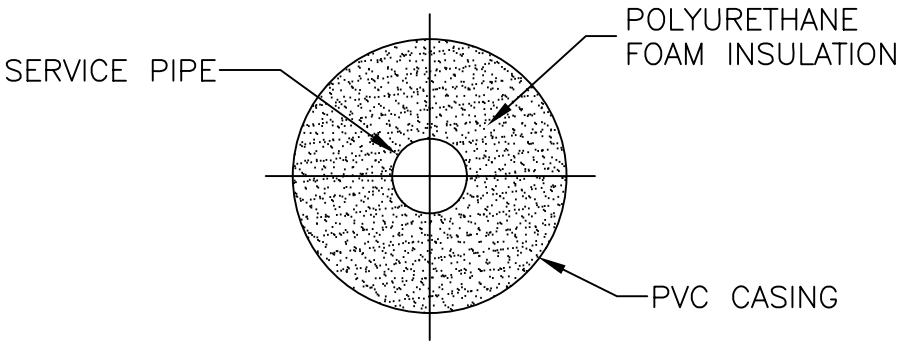

END VIEW
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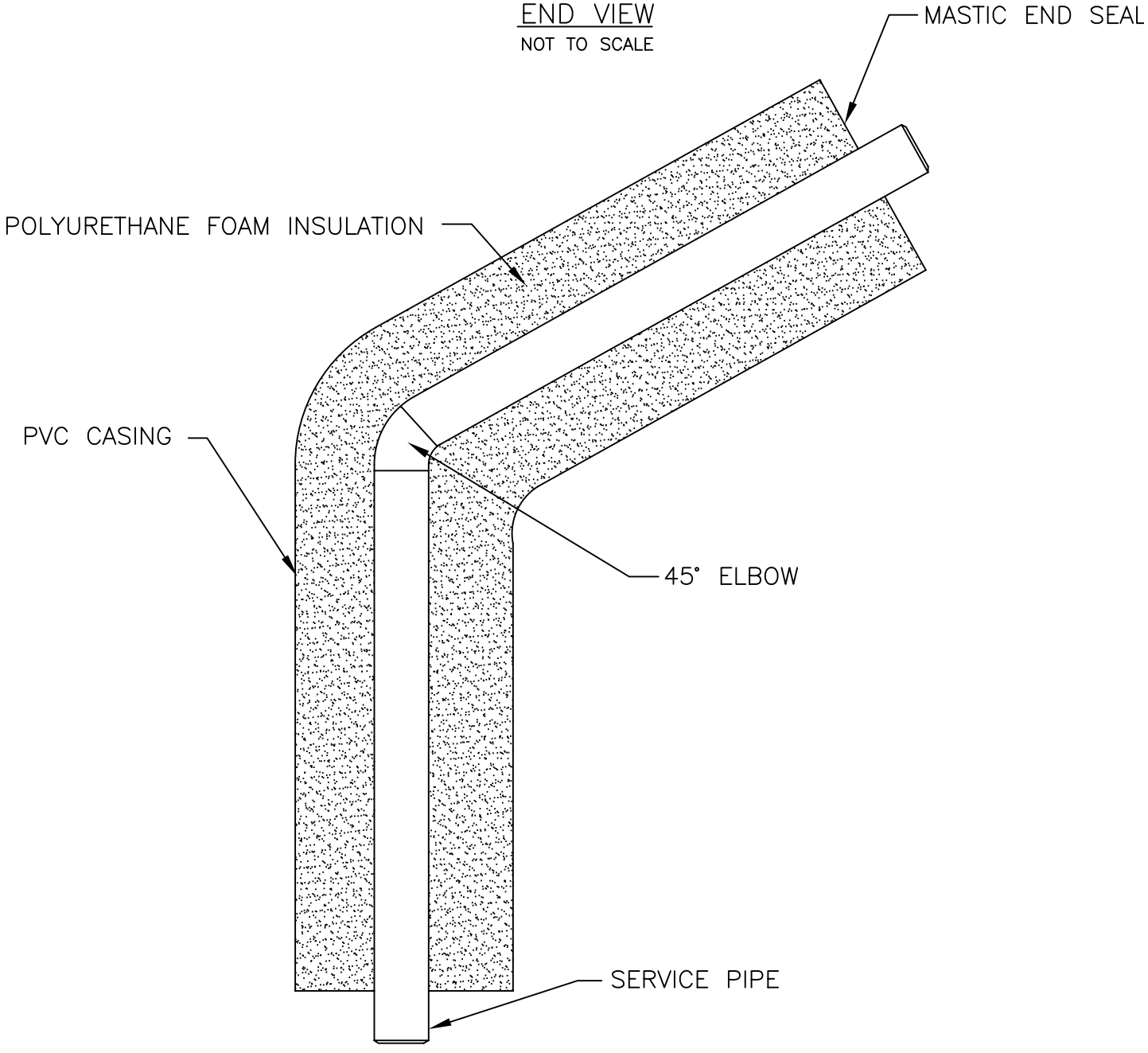

45° ELBOW DETAIL

SUB-ZERO

Date: 03/06/06	Dwg. No.: SZ-4
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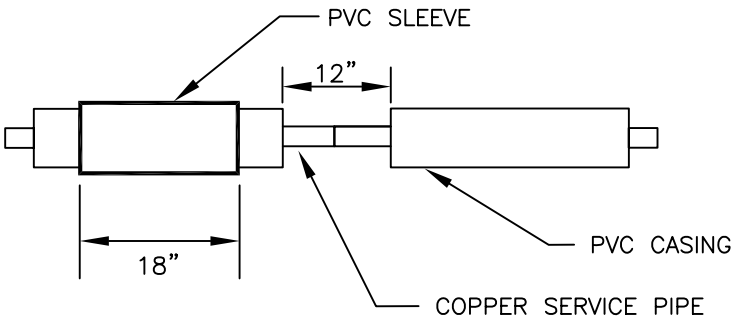
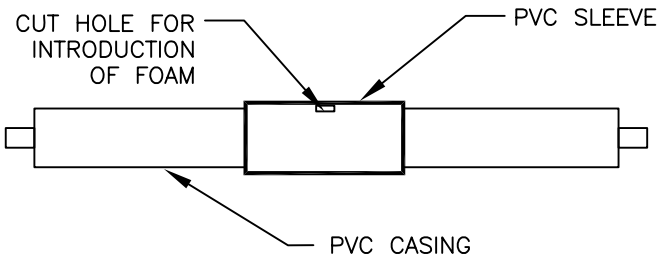
STEP 1



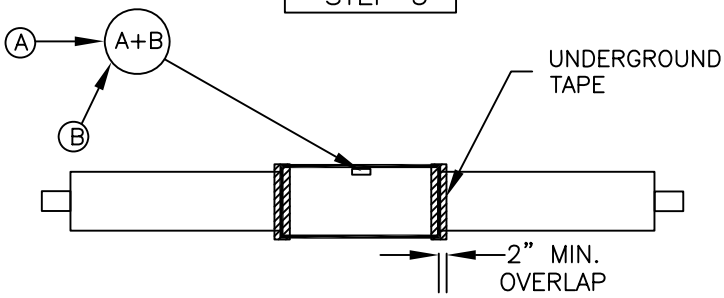
SLIDE SPLIT PVC SLEEVE OVER END OF PIPE CASING. TEST ALL SILVER BRAZED JOINTS AS REQUIRED.

STEP 2



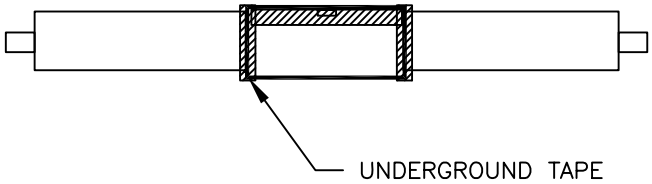
CENTER PVC SLEEVE OVER JOINT AND SECURE IN PLACE. CUT HOLE IN TOP OF PVC SLEEVE FOR INTRODUCTION OF POLYURETHANE FOAM MIXTURE.

STEP 3



APPLY UNDERGROUND TAPE WHERE PVC SLEEVE AND CASING MEET. PROVIDE FOR A MINIMUM OVERLAP OF 2”. REFER TO CHART BELOW FOR FOAM AMOUNT BASED ON JACKET SIZE. POUR FOAM INTO OPENING.
WHEN FOAM REACTS, TEMPORARILY SEAL THE OPENING WITH DUCT TAPE TO MAXIMIZE INSULATION IN CAVITY.

STEP 4



TRIM OFF EXCESS MATERIAL AFTER CURING IS COMPLETE. APPLY ADDITIONAL UNDERGROUND TAPE TO HOLE IN PVC SLEEVE.

POLYURETHANE FOAM MIXTURE CHART

JACKET SIZE	FIELD JOINT
3	6
4	8
5	8
6	10
8	14
10	20
12	32

CHART INDICATES THE PROPORTIONS OF EACH COMPONENT (NAMELY ”A” & ”B”) TO BE MIXED PRIOR TO INTRODUCTION INTO PIPE CAVITY. EXAMPLE: FOR AN 8 INCH JACKET, 14 OUNCES OF ”A” AND 14 OUNCES OF ”B” ARE REQUIRED. REQUIRED PROPORTIONS MAY VARY AS A RESULT OF CHANGES IN WEATHER CONDITIONS. NOTE THAT CHEMICAL REACTION WILL TAKE LONGER IN COLDER WEATHER. CONTACT TRICON FOR ADVICE DURING INCLEMENT WEATHER.

IN COLDER WEATHER, TAPE MUST BE KEPT WARM UNTIL TIME OF USE.

FIELD JOINT KIT DETAIL

SUB-ZERO

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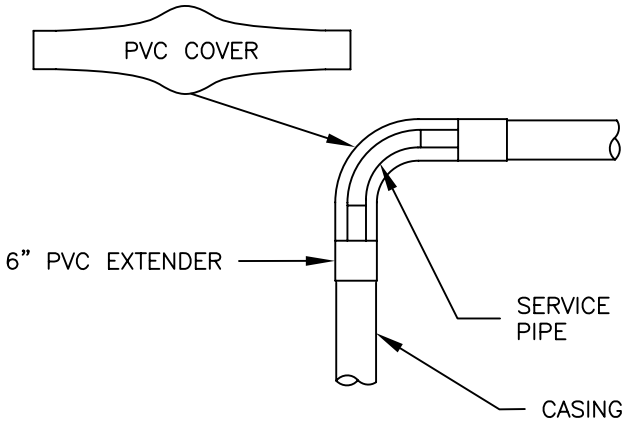
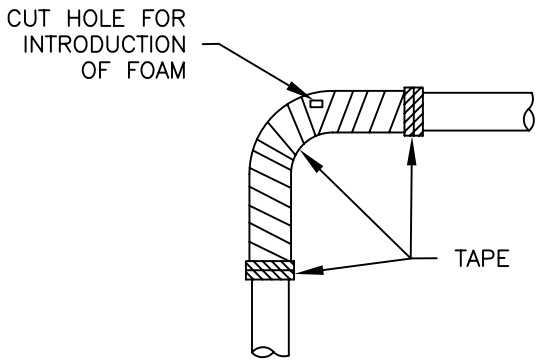
STEP 1



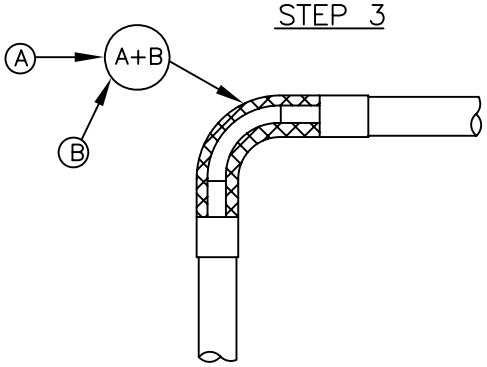
IF REQUIRED, SLIDE PVC EXTENDERS OVER END OF PIPE PRIOR TO ELBOW BEING WELDED INTO POSITION.

STEP 2



TEST ALL JOINTS AS REQUIRED. POSITION AND SECURE PVC ELBOW COVER. CUT SMALL OPENING IN COVER FOR INTRODUCTION OF FOAM.

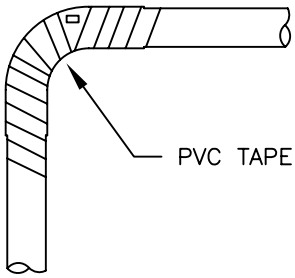
STEP 3



REFER TO CHART BELOW FOR FOAM AMOUNT BASED ON JACKET SIZE. POUR FOAM INTO OPENING.

WHEN FOAM REACTS, TEMPORARILY SEAL THE OPENING WITH DUCT TAPE TO MAXIMIZE INSULATION VOLUME IN CAVITY.

STEP 4



TRIM OFF EXCESS MATERIAL AFTER CURING IS COMPLETE. WRAP FITTING WITH PVC TAPE AS SHOWN.

(Contractor, at their discretion may seal only the PVC cover seams and not the whole fitting cover)

POLYURETHANE FOAM MIXTURE CHART

JACKET SIZE	ELBOW
3	6
4	8
5	8
6	10
8	14
10	20
12	32

IN COLDER WEATHER, TAPE MUST BE KEPT WARM UNTIL TIME OF USE.

CHART INDICATES THE PROPORTIONS OF EACH COMPONENT (NAMELY "A" & "B") TO BE MIXED PRIOR TO INTRODUCTION INTO PIPE CAVITY. EXAMPLE: FOR AN 8 INCH JACKET, 14 OUNCES OF "A" AND 14 OUNCES OF "B" ARE REQUIRED. REQUIRED PROPORTIONS MAY VARY AS A RESULT OF CHANGES IN WEATHER CONDITIONS. NOTE THAT CHEMICAL REACTION WILL TAKE LONGER IN COLDER WEATHER. CONTACT TRICON FOR ADVICE DURING INCLEMENT WEATHER.

90° ELBOW POUR IN PLACE FOAM KIT DETAIL

SUB-ZERO

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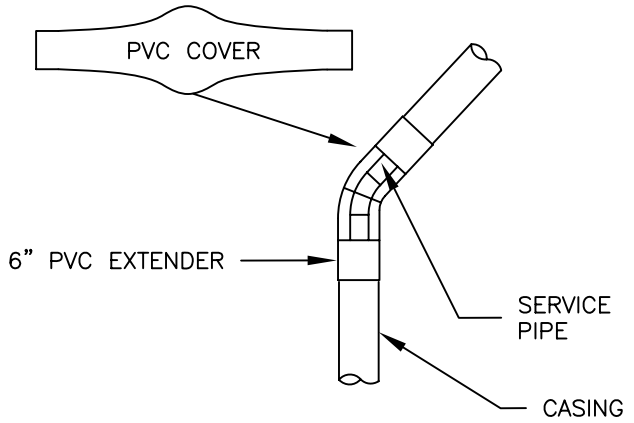
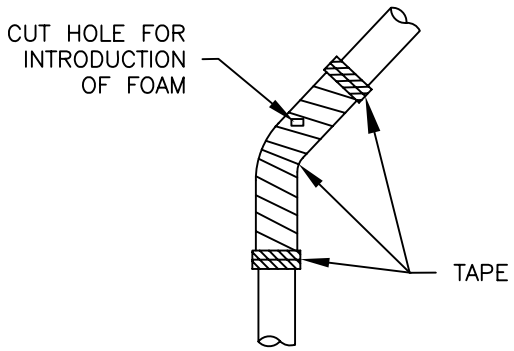
STEP 1



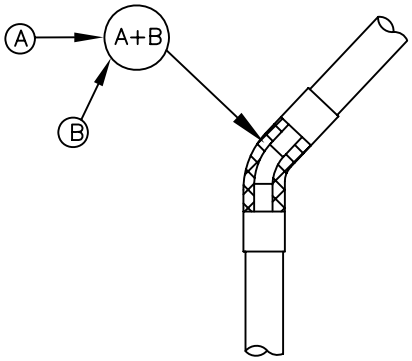
IF REQUIRED, SLIDE PVC EXTENDERS OVER END OF PIPE PRIOR TO ELBOW BEING WELDED INTO POSITION.

STEP 2



TEST ALL JOINTS AS REQUIRED. POSITION AND SECURE PVC ELBOW COVER. CUT SMALL OPENING IN COVER FOR INTRODUCTION OF FOAM.

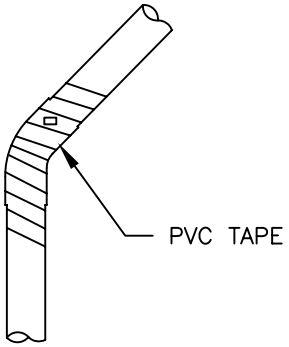
STEP 3



REFER TO CHART BELOW FOR FOAM AMOUNT BASED ON JACKET SIZE. POUR FOAM INTO OPENING.

WHEN FOAM REACTS, TEMPORARILY SEAL THE OPENING WITH DUCT TAPE TO MAXIMIZE INSULATION VOLUME IN CAVITY.

STEP 4



TRIM OFF EXCESS MATERIAL AFTER CURING IS COMPLETE. WRAP FITTING WITH PVC TAPE AS SHOWN.

(Contractor, at their discretion may seal only the PVC cover seams and not the whole fitting cover)

POLYURETHANE FOAM MIXTURE CHART

JACKET SIZE	ELBOW
3	6
4	8
5	8
6	10
8	14
10	20
12	32

IN COLDER WEATHER, TAPE MUST BE KEPT WARM UNTIL TIME OF USE.

CHART INDICATES THE PROPORTIONS OF EACH COMPONENT (NAMELY "A" & "B") TO BE MIXED PRIOR TO INTRODUCTION INTO PIPE CAVITY. EXAMPLE: FOR AN 8 INCH JACKET, 16 OUNCES OF "A" AND 16 OUNCES OF "B" ARE REQUIRED. REQUIRED PROPORTIONS MAY VARY AS A RESULT OF CHANGES IN WEATHER CONDITIONS. NOTE THAT CHEMICAL REACTION WILL TAKE LONGER IN COLDER WEATHER. CONTACT TRICON FOR ADVICE DURING INCLEMENT WEATHER.

45° ELBOW POUR IN PLACE FOAM KIT DETAIL

SUB-ZERO

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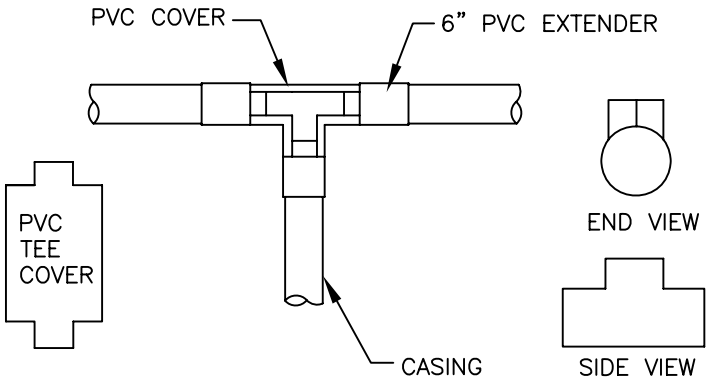
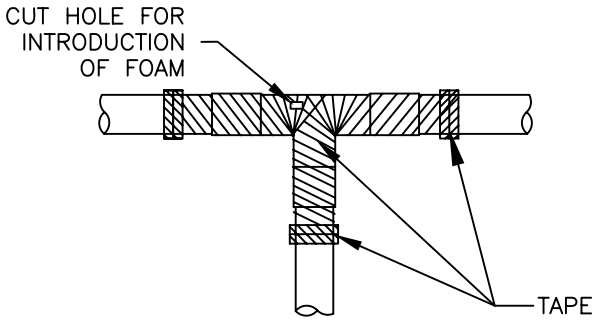
STEP 1



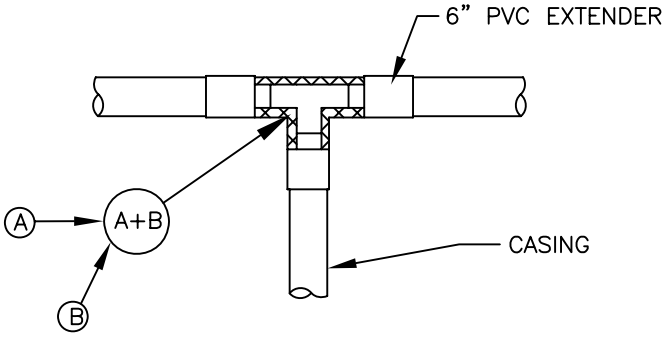
IF REQUIRED, SLIDE PVC EXTENDERS OVER END OF PIPE PRIOR TO TEE BEING WELDED INTO POSITION.

STEP 2



TEST ALL JOINTS AS REQUIRED. POSITION AND SECURE PVC COVER. CUT SMALL OPENING IN COVER FOR INTRODUCTION OF FOAM.

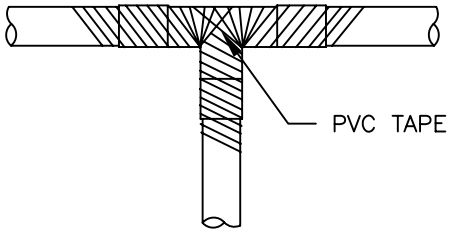
STEP 3



REFER TO CHART BELOW FOR FOAM AMOUNT BASED ON JACKET SIZE. POUR FOAM INTO OPENING.

WHEN FOAM REACTS, TEMPORARILY SEAL THE OPENING WITH DUCT TAPE TO MAXIMIZE INSULATION VOLUME IN CAVITY.

STEP 4



TRIM OFF EXCESS MATERIAL AFTER CURING IS COMPLETE. WRAP FITTING WITH PVC TAPE AS SHOWN.

(Contractor, at their discretion may seal only the PVC cover seams and not the whole fitting cover)

POLYURETHANE FOAM MIXTURE CHART

JACKET SIZE	TEE
3	8
4	10
5	10
6	12
8	16
10	22
12	34

IN COLDER WEATHER, TAPE MUST BE KEPT WARM UNTIL TIME OF USE.

CHART INDICATES THE PROPORTIONS OF EACH COMPONENT (NAMELY "A" & "B") TO BE MIXED PRIOR TO INTRODUCTION INTO PIPE CAVITY. EXAMPLE: FOR AN 8 INCH JACKET, 14 OUNCES OF "A" AND 14 OUNCES OF "B" ARE REQUIRED. REQUIRED PROPORTIONS MAY VARY AS A RESULT OF CHANGES IN WEATHER CONDITIONS. NOTE THAT CHEMICAL REACTION WILL TAKE LONGER IN COLDER WEATHER. CONTACT TRICON FOR ADVICE DURING INCLEMENT WEATHER.

TEE POUR IN PLACE FOAM KIT DETAIL

SUB-ZERO

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