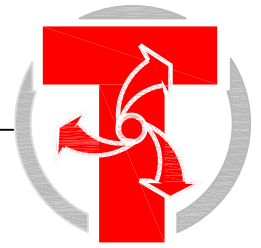
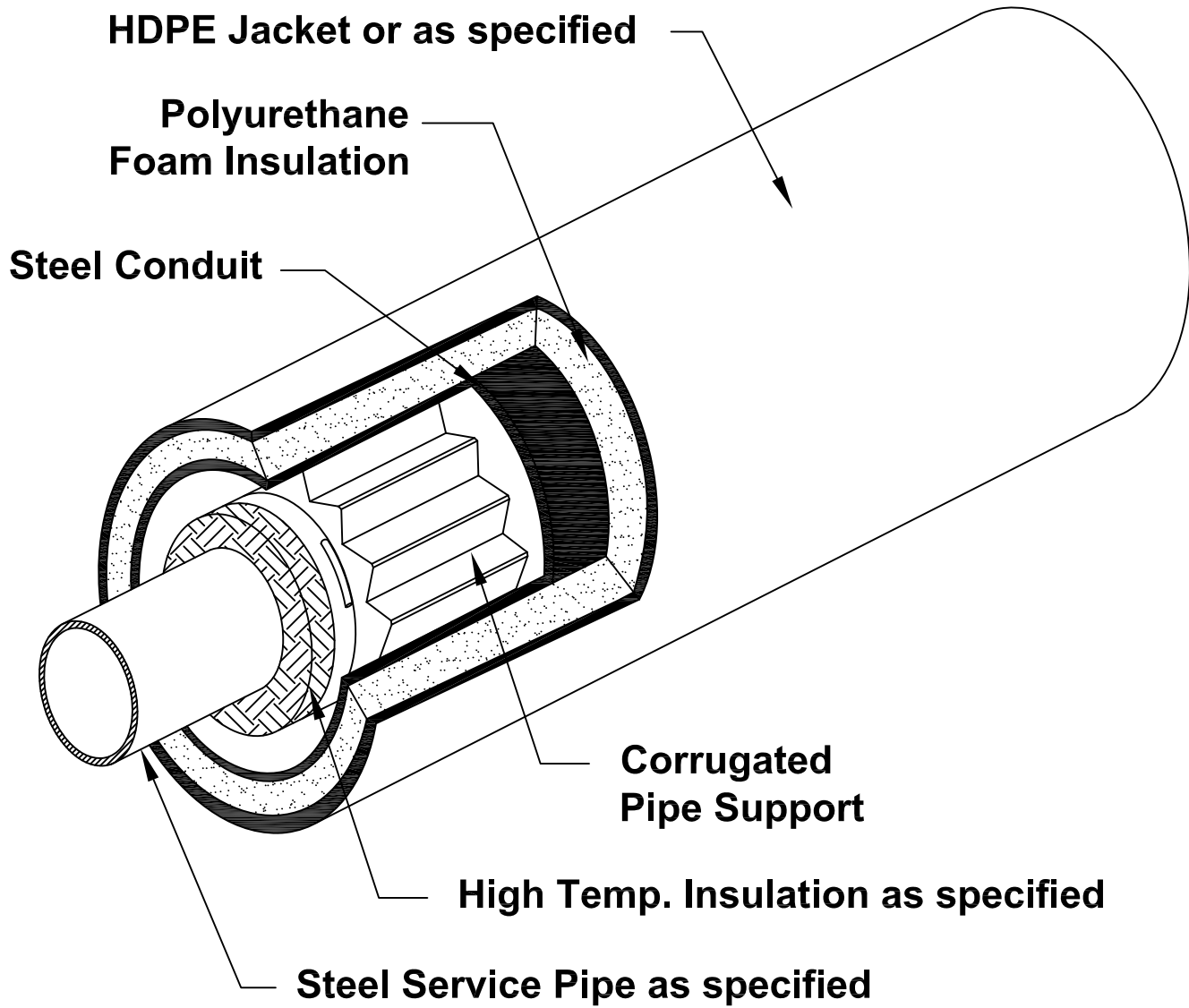


# TRICON STEEL-CON PLUS PIPE SYSTEM



Class "A" System For Applications Up To 450° F  
Below And Above Ground

- Condensate
- Fuel Oil
- Heating Hot Water
- High Temp. Hot Water
- Process Piping
- Steam



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| Pipe Size | Insulation Thickness (Inches)* | Steel Conduit O.D. (Inches) | Outer Insulation (Inches)* | HDPE Jacket O.D. (Inches) | System Temperature   |
|-----------|--------------------------------|-----------------------------|----------------------------|---------------------------|--|
| 1"        | 1"                             | 6.63"                       | 1"                         | 10.00"                    | Based on a minimum 3'-6" burial depth. 353° operating temperature, 50°F ground temperature and soil conductivity of 15 BTU-IN/HR-F <sup>2</sup> -°F and mineral wool Insulation. |
| 2"        | 1"                             | 6.63"                       | 1"                         | 10.00"                    |  |
| 3"        | 1½"                            | 8.63"                       | 1½"                        | 12.43"                    |  |
| 4"        | 1½"                            | 10.75"                      | 1½"                        | 14.06"                    |  |
| 5"        | 1½"                            | 10.75"                      | 1½"                        | 14.06"                    |  |
| 6"        | 1½"                            | 12.75"                      | 1½"                        | 15.87"                    |  |
| 8"        | 2"                             | 16.00"                      | 1½"                        | 19.80"                    |  |
| 10"       | 2"                             | 18.00"                      | 1½"                        | 22.17"                    |  |
| 12"       | 2"                             | 20.00"                      | 1½"                        | 24.00"                    |  |

### Service Pipe:

Carbon steel service pipe shall be standard weight A53 ERW or A106 seamless beveled for welding. Stainless Steel piping shall be type 304L or 316L, Sch. 40 or Sch. 80, welded or seamless, to ASTM A312/A312M. Condensate return piping shall be Schedule 80. All joints for pipe 2½" and larger in size shall be butt-welded. Sizes 2" and smaller shall be socket welded. Straight lengths of piping will be supplied with 6" of piping exposed at each end for field joint fabrication. Pipe lengths shall be supplied in 21-42 ft. lengths.

### Insulation (Inner Layer): \*

The service pipe insulation shall be fiberglass, mineral wool, calcium silicate, cellular glass, or aerogel®. The insulation will be held in place by stainless steel bands on 18-inch centers. The insulation shall be applied to a thickness as specified on the contract drawings.

### Service Pipe Supports:

The service pipe within the inner-conduit shall be supported at not more than 10-foot intervals. The supports shall be designed to allow for continuous airflow and draining of the conduit system. The insulated service pipe shall not bear directly on the steel support and shall be insulated throughout.

### Inner Conduit: \*\*

The outer conduit shall be a smooth wall, spiral welded or electric resistance welded steel pipe conforming to ASTM Specification A-139/A-135. The conduit shall be of thickness as listed below.

| Conduit Size | Conduit Thickness |
|--------------|-------------------|
| 6" – 26"     | 10 Gauge          |
| 28" – 36"    | 06 Gauge          |
| 38" - 42"    | 04 Gauge          |

### Insulation (Outer Layer): \*

The outer layer of insulation shall be foamed in place closed cell polyurethane, completely filling the annular space between the service pipe and the exterior casing. The insulation shall have the following physical properties:

|                                   |     |             |
|-----------------------------------|-----|-------------|
| Minimum Density (lb./cu. ft.)     | 2.0 | ASTM D-1622 |
| 90-95% Closed Cell                |     | ASTM D-6226 |
| "K" Factor BTU/Hr. sq. ft F/in... | .16 | ASTM C-591  |
| Compressive Strength              |     | ASTM D-1621 |

### Exterior Casing: \*\*\*

The exterior casing shall be seamless, extruded High Density Polyethylene (H.D.P.E.) to ASTM D-3350-12, with the following physical properties:

|                |  |
|----------------|--|
| ASTM D-3350... | Minimum Cell Classification Grade PE 334363C |
| ASTM D-638...  | Ultimate Elongation 200%                     |
| ASTM D-638...  | Tensile Yield Strength 2500 psi              |

**No polyethylene tape casings will be allowed.**

### Field Joint Closures:

Field joint closures shall consist of the specified inner insulation, a cylindrical 10-gauge sleeve having two (2) horizontal splits, an outer insulation layer of polyurethane foam, a heat shrinkable sleeve, and a rockshield.

### Sub-Assemblies:

All fittings, anchors, end seals, and other accessories shall be prefabricated to prevent the ingress of moisture into the system, allowing for complete draining, drying, and testing of the conduit system. No field fabrication of fittings, anchors or end seals will be allowed. Fittings 2½" and larger to be butt weld conforming to ASTM A234 WPB & ASME B 16.9. Fittings 2" and smaller to be socket weld conforming to ASTM B 16.11. All factory prefabricated fittings shall be welded to ANSI B 31.1.

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Canastota, NY 13032                      [www.triconpiping.com](http://www.triconpiping.com)

### Expansion Compensation:

Expansion and contraction within the piping system shall be accommodated with factory prefabricated internal expansion elbows, z-bends, expansion loops, and anchors specifically designed for each application. Internal expansion shall be designed to permit thermal movement of the service pipe without damage to the insulation.

### Installation:

**No Piping shall be installed in standing water. Trenches shall be maintained dry until final field closure is complete.** 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 service piping shall be hydrostatically tested to 1-1/2 times the operating pressure, or as specified in the contract documents. The inner conduit shall be air tested at 15 psig. The test shall be maintained for a minimum time of 1 hour. Holiday testing of the conduit coating shall be the responsibility of the installing contractor and will be done in accordance with directions furnished by the manufacturer. All holidays shall be repaired and retested. **EXERCISE DUE CARE WHEN INSTALLING AND TESTING THE PIPING SYSTEM.**

**DO NOT TEST SERVICE PIPE WITH AIR OR GAS.**

### Backfill:

A 6-inch layer of sand or fine gravel, less than 1/2" in diameter, shall be placed and tamped in the trench to provide uniform bedding for the **Steel-Con Plus** system. Once the system is in place, the trenches shall be carefully backfilled with similar material and hand tamped in 6" layers until a minimum of 12" above the top of the preinsulated pipe has been achieved. The remainder of the backfill shall be void of rocks, frozen earth and foreign material. The trench shall be compacted to comply with H-20 Highway loading.

### Accessories:

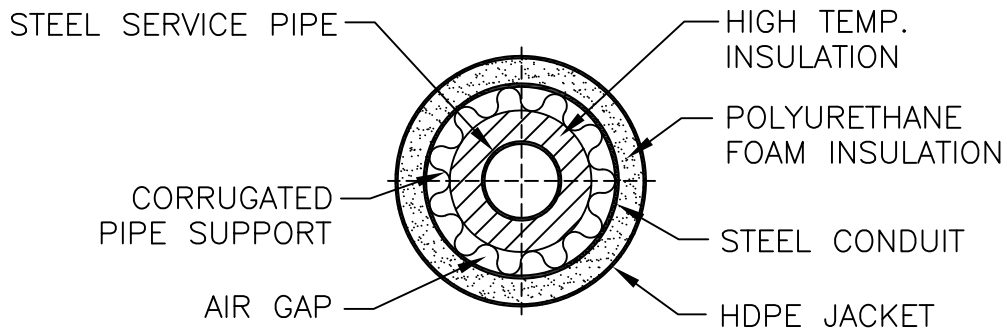
- Heat Tracing
- Leak Detection

### System Options:

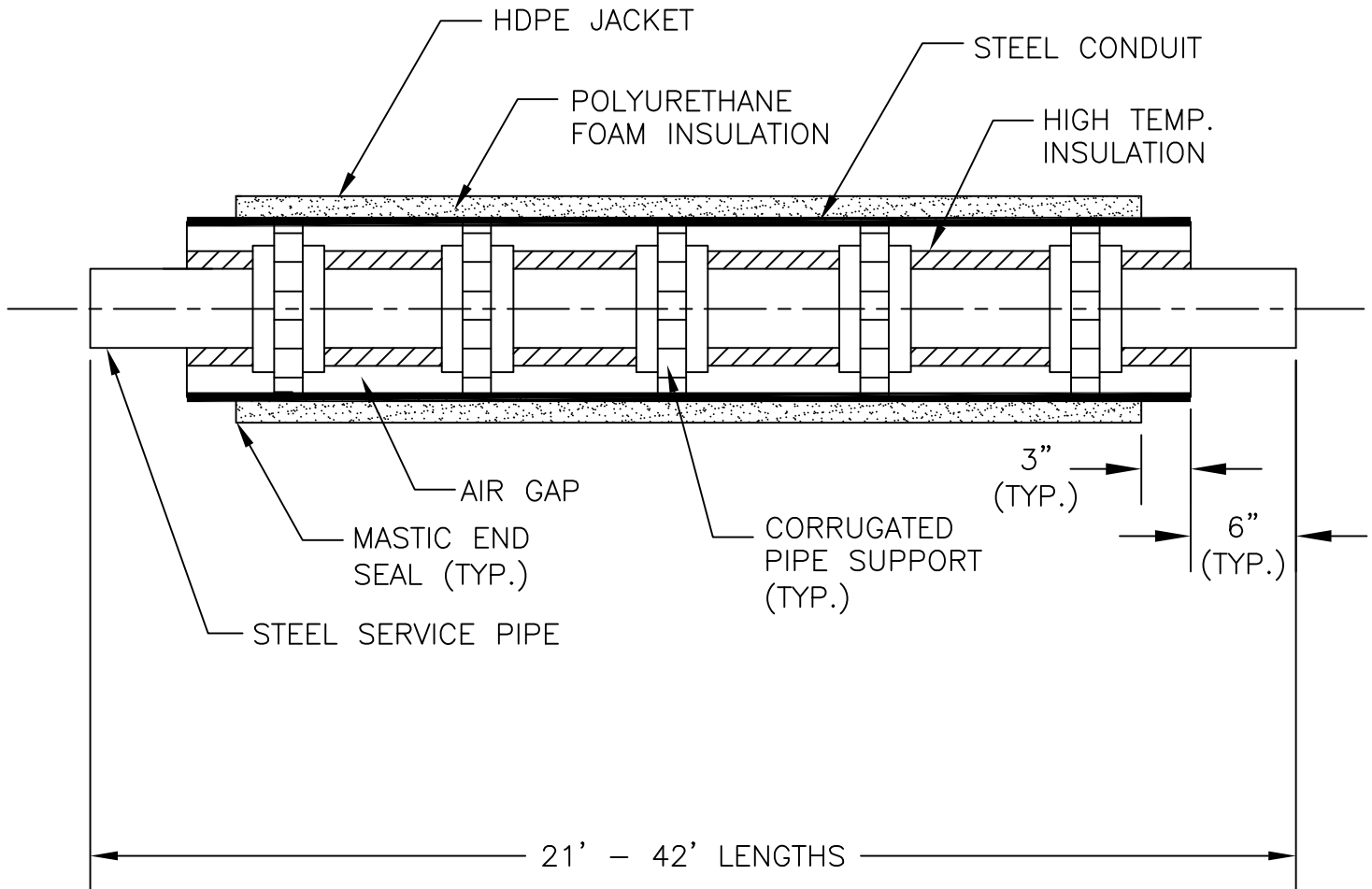
- \* Insulation thickness will vary depending on the operating temperature and type of insulation specified.
- \*\* Optional Fusion Bonded Epoxy or Hot Dipped Galvanized coatings available for the 10-Ga. steel conduit
- \*\*\* Optional non-metallic casings for below grade include Filament Wound FRP.
  - Contact your Tricon representative for further available sizes and system options.

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END VIEW  
NOT TO SCALE



**STRAIGHT LENGTH DETAIL**

TRICON STEEL-CON PLUS

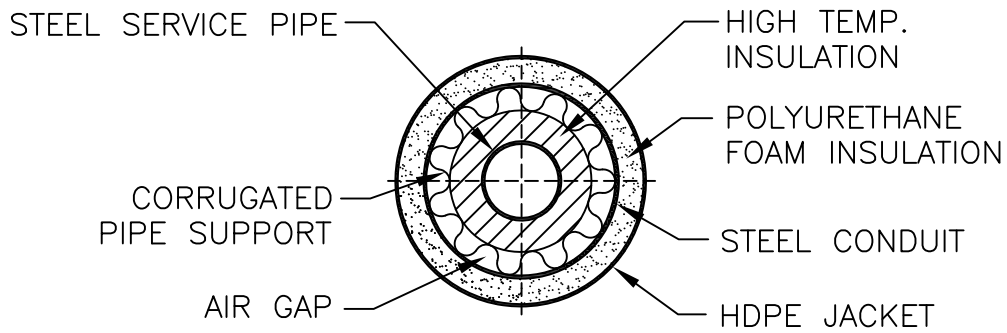
Date: 04/01/18  
Rev.:

Dwg. No.: SCP-1

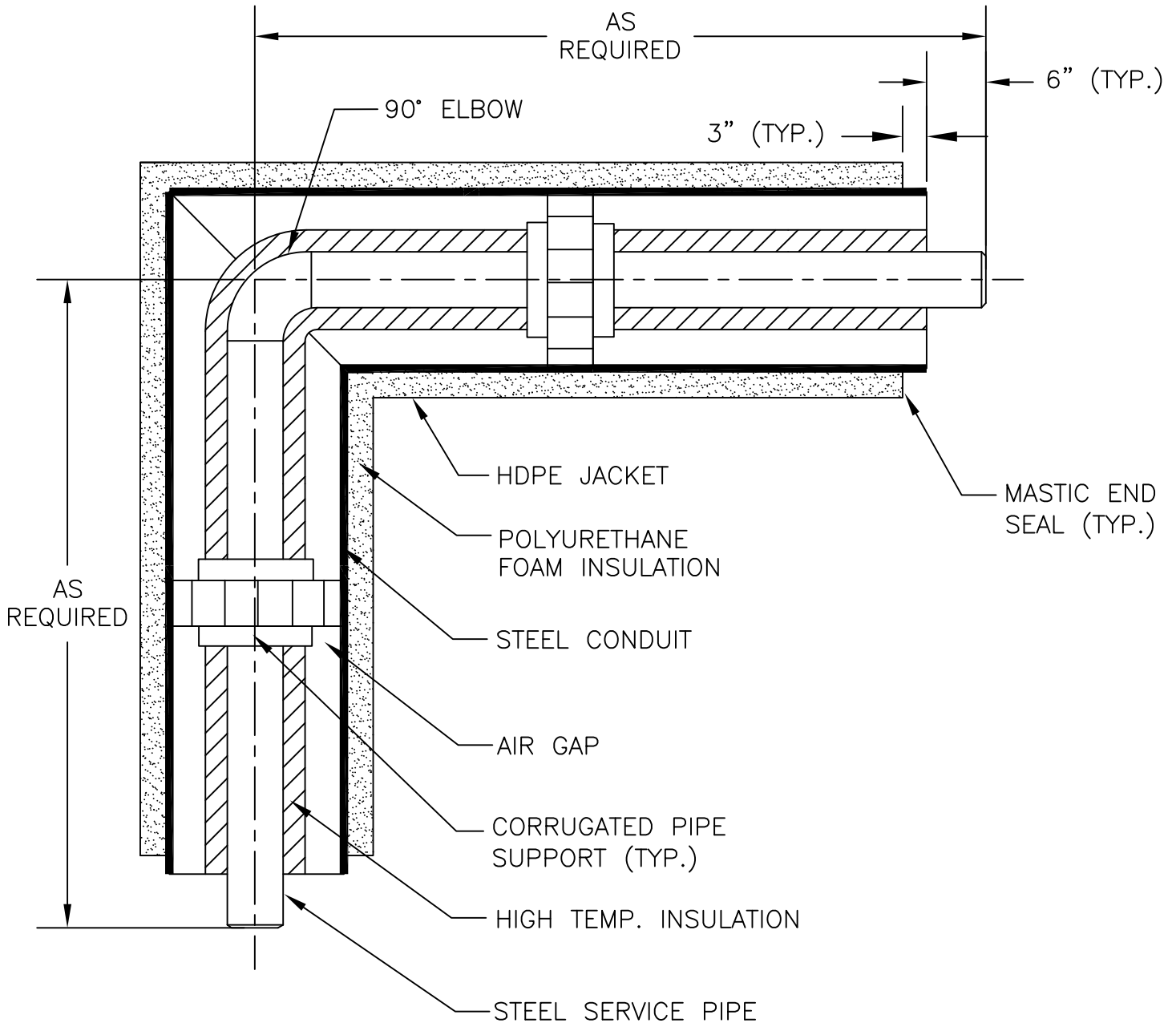


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END VIEW  
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**PREFABRICATED 90° ELBOW DETAIL**

TRICON STEEL-CON PLUS

Date: 04/01/18

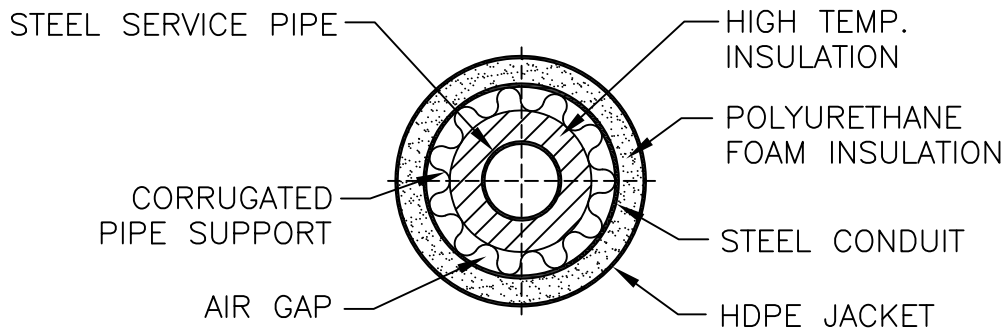
Dwg. No.: SCP-2

Rev.:

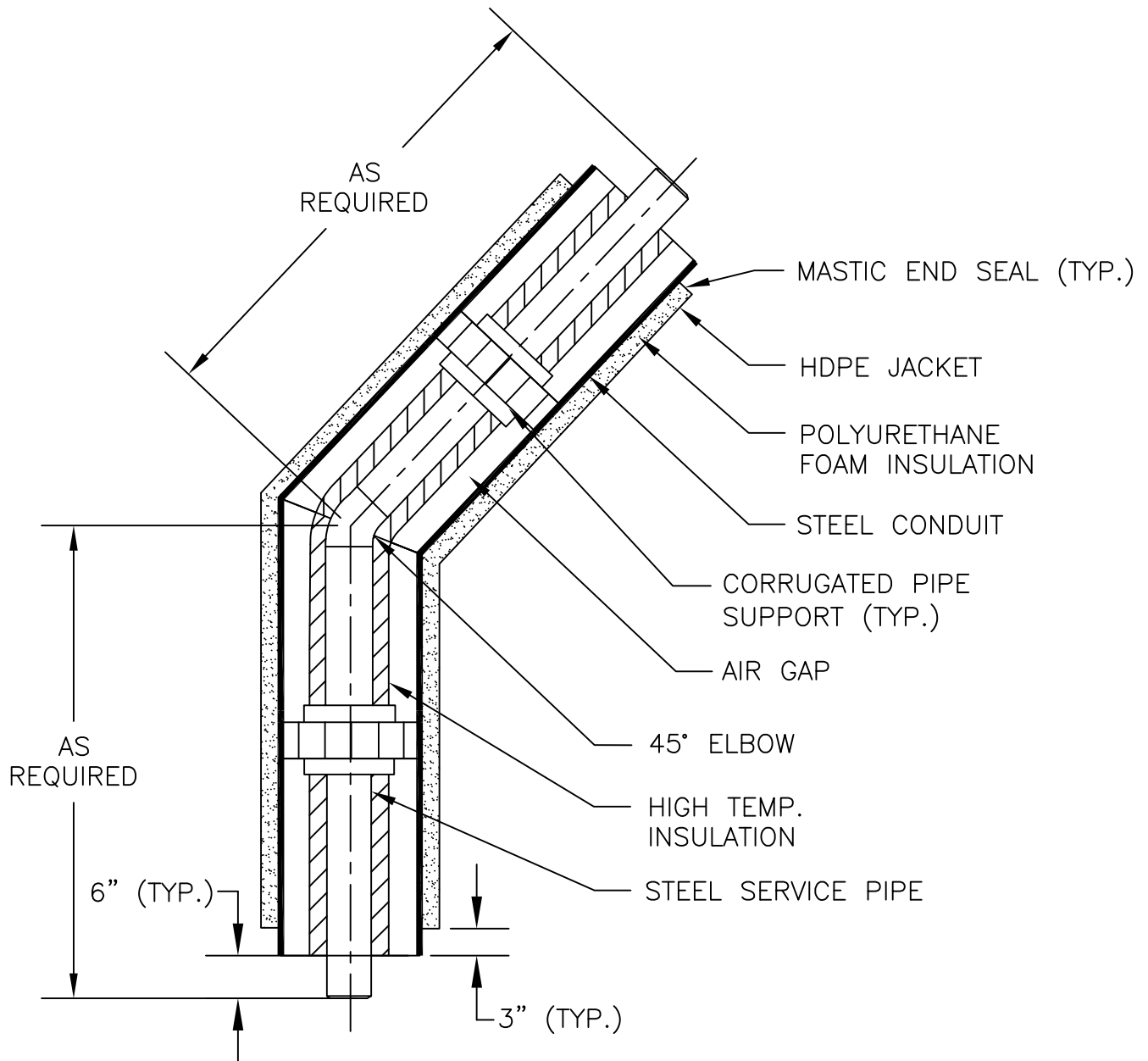


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**PREFABRICATED 45° ELBOW DETAIL**

TRICON STEEL-CON PLUS

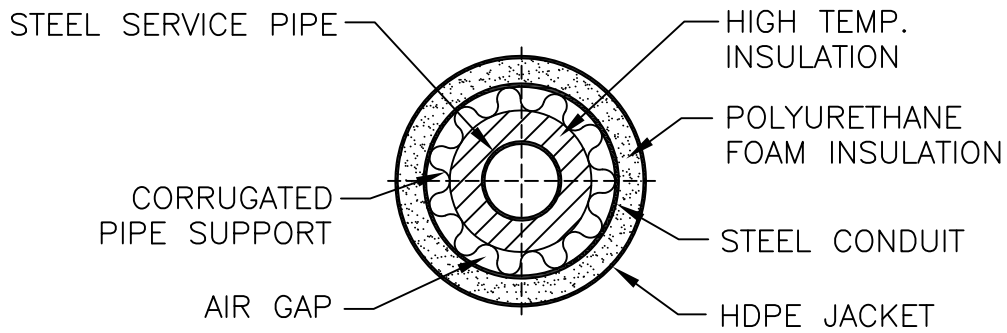
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Rev.:

Dwg. No.: SCP-3

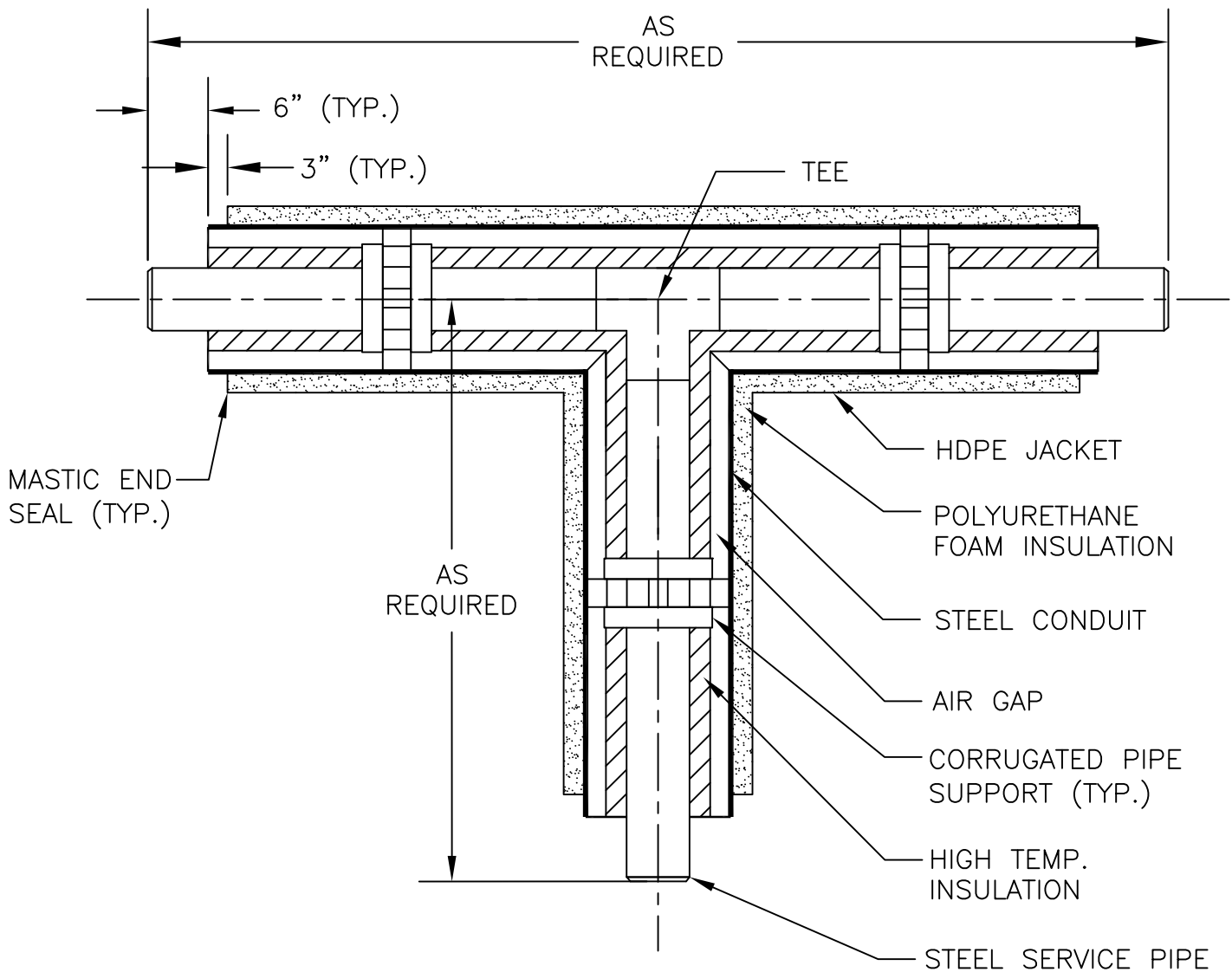


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END VIEW  
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**PREFABRICATED TEE DETAIL**

TRICON STEEL-CON PLUS

Date: 04/01/18

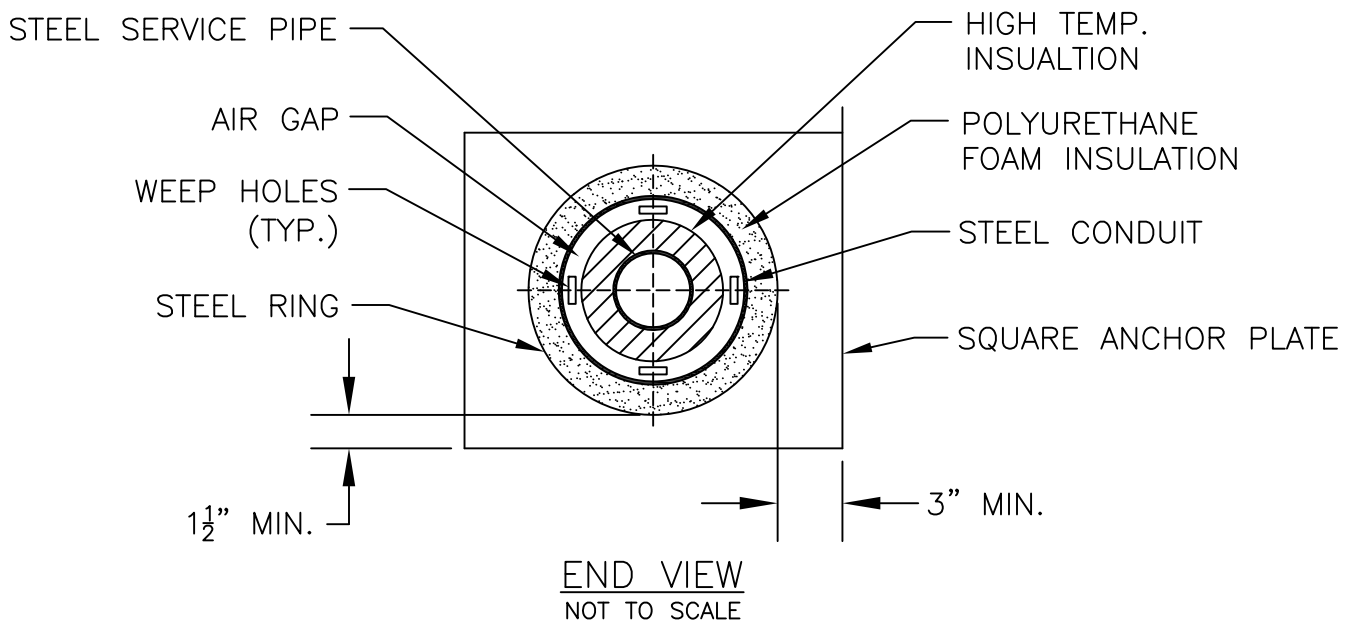
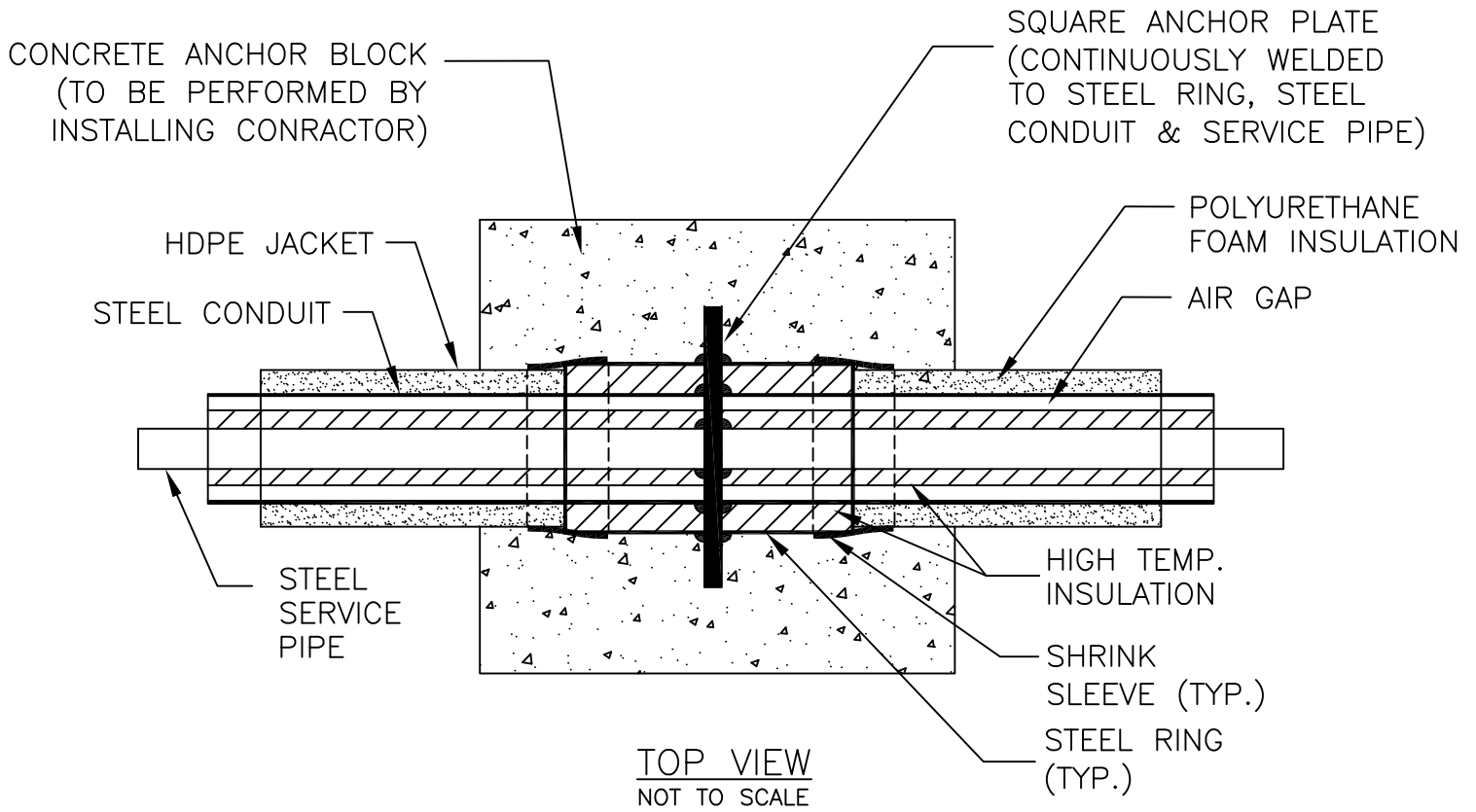
Dwg. No.: SCP-4

Rev.:



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NOTE: CONCRETE ANCHOR BLOCK MUST  
BE KEYED INTO UNDISTURBED EARTH.

## SQUARE ANCHOR DETAIL

TRICON STEEL-CON PLUS

Date: 04/01/18

Dwg. No.: SCP-5

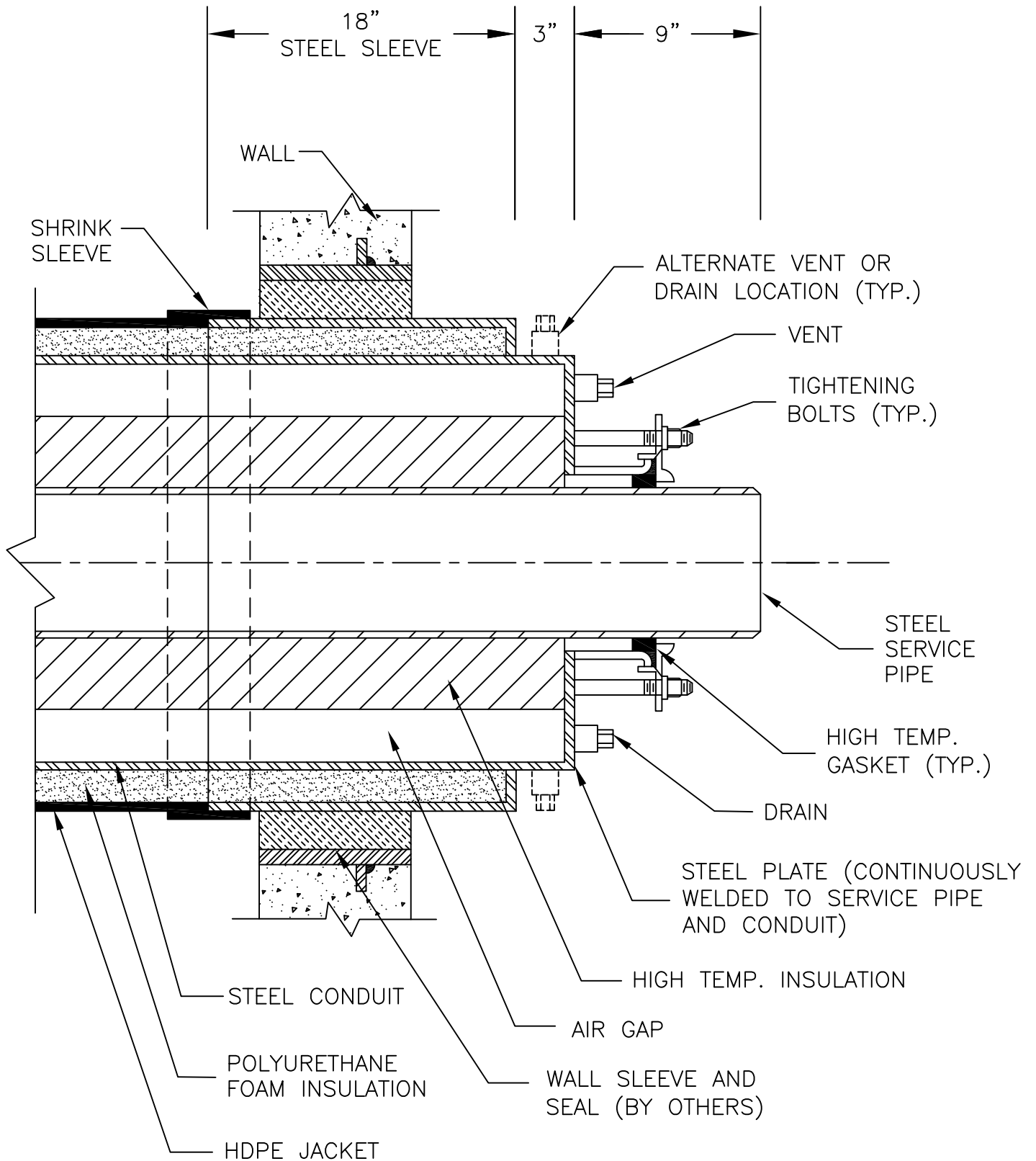
Rev.:



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### GLAND END SEAL DETAIL

TRICON STEEL-CON PLUS

Date: 04/01/18

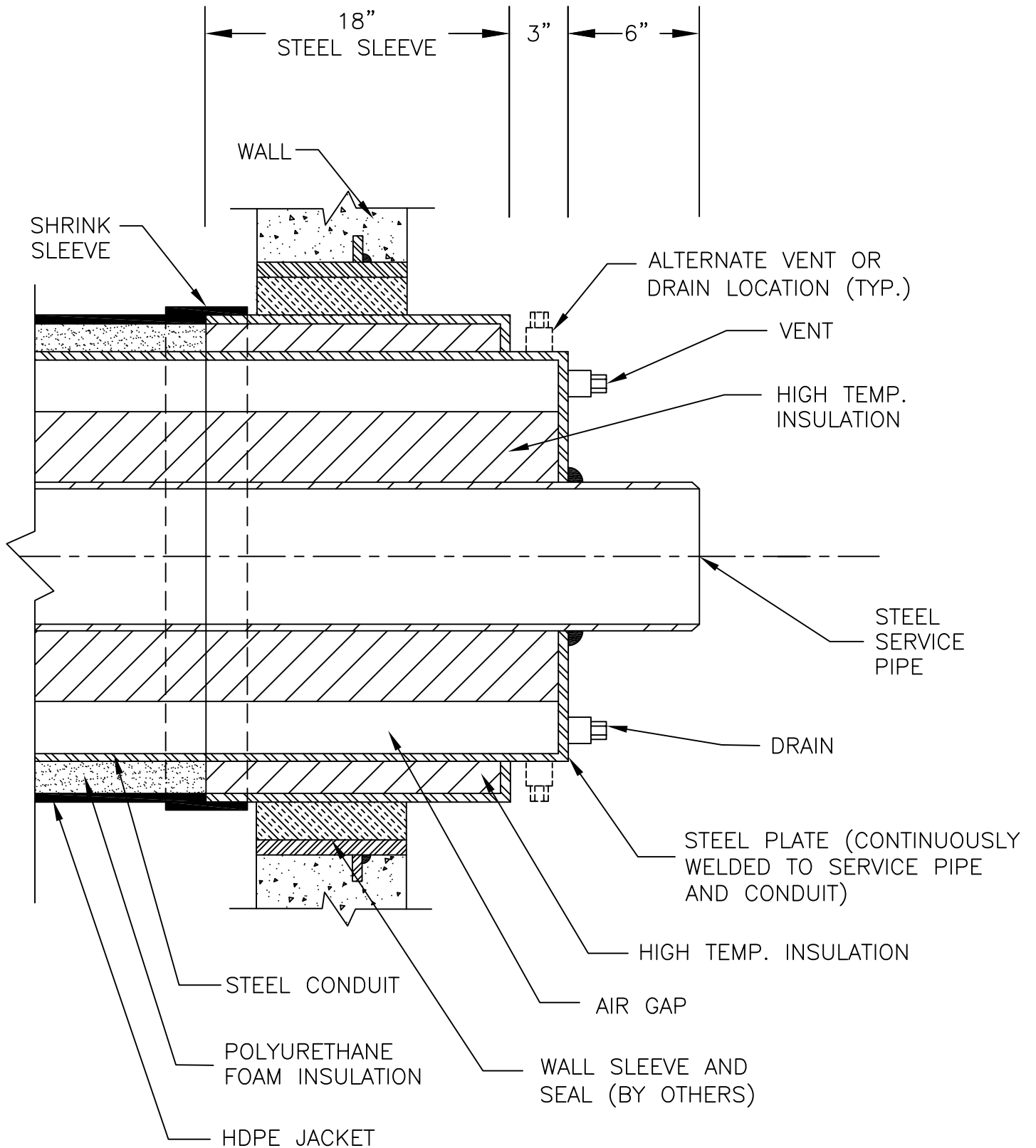
Dwg. No.: SCP-6

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## WELD END SEAL DETAIL

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Date: 04/01/18

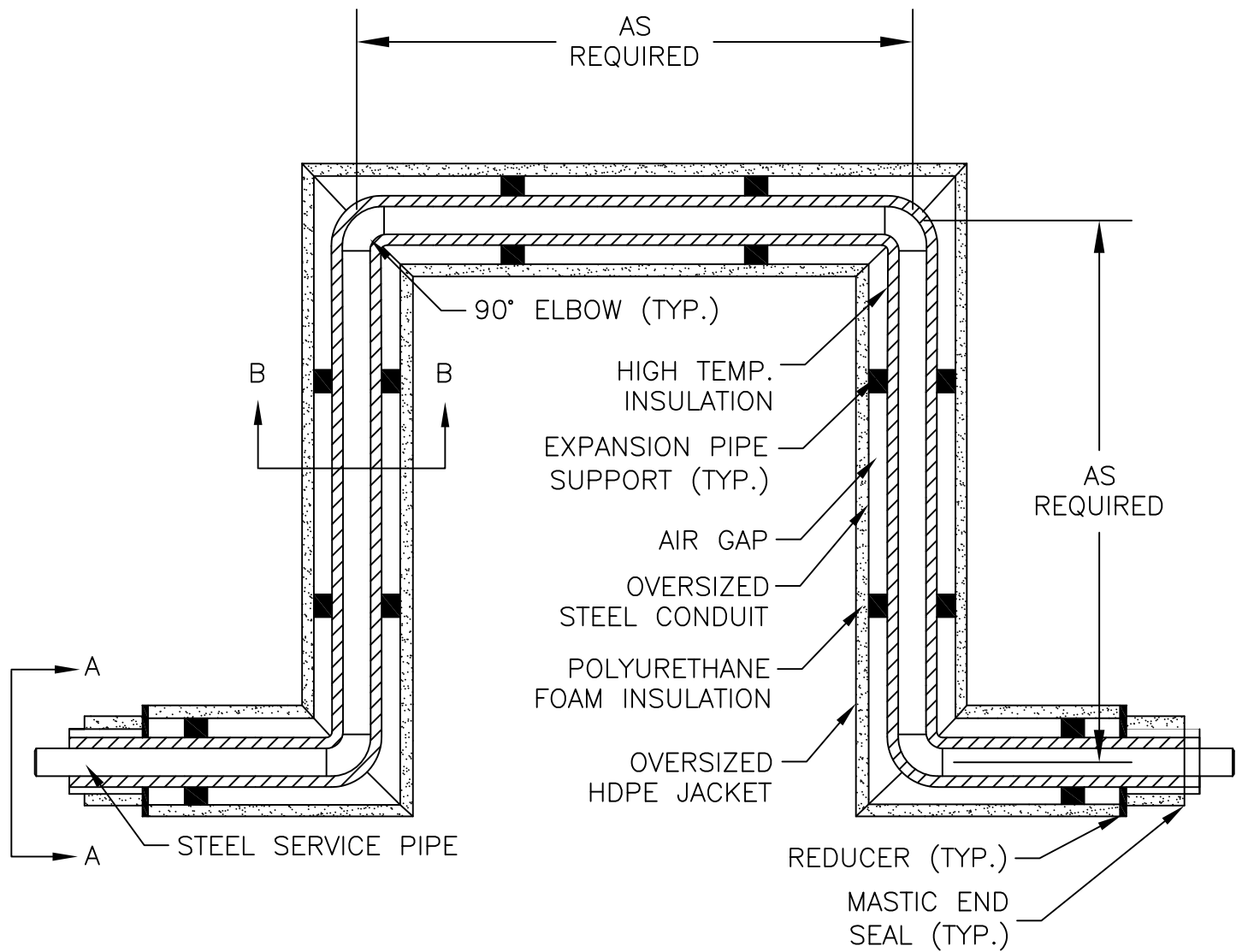
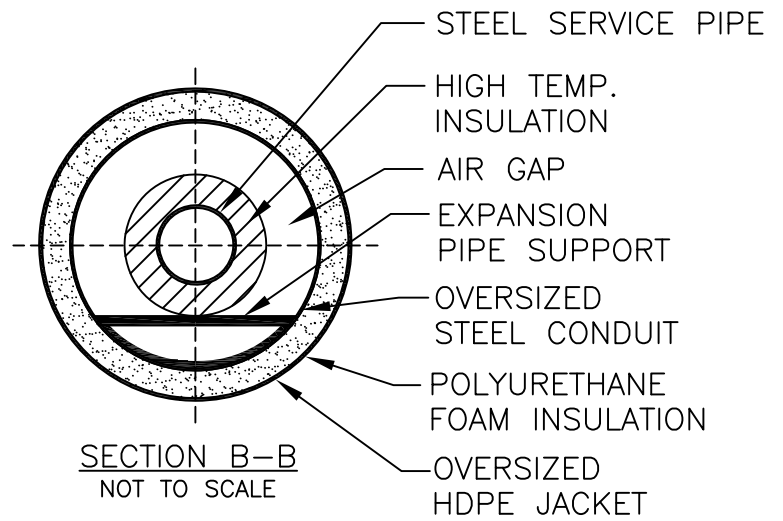
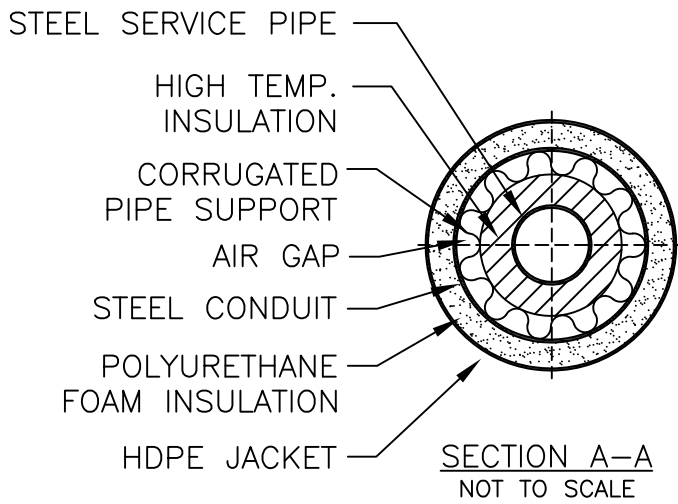
Dwg. No.: SCP-7

Rev.:



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## EXPANSION LOOP DETAIL

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Date: 04/01/18

Dwg. No.: SCP-8

Rev.:



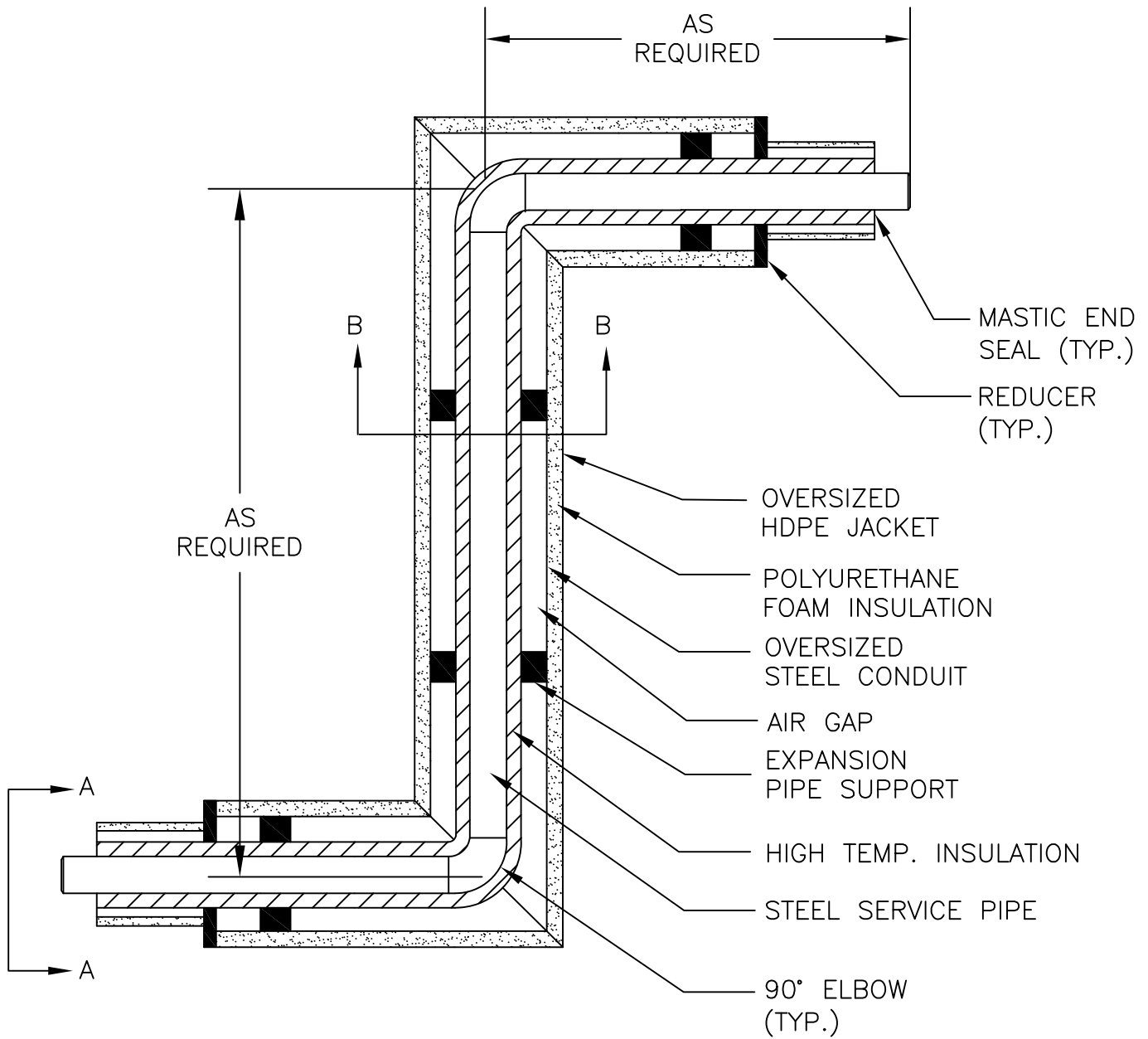
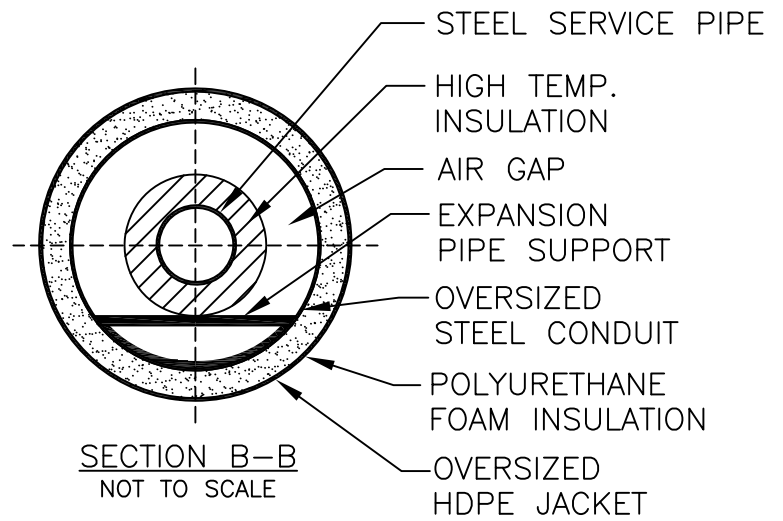
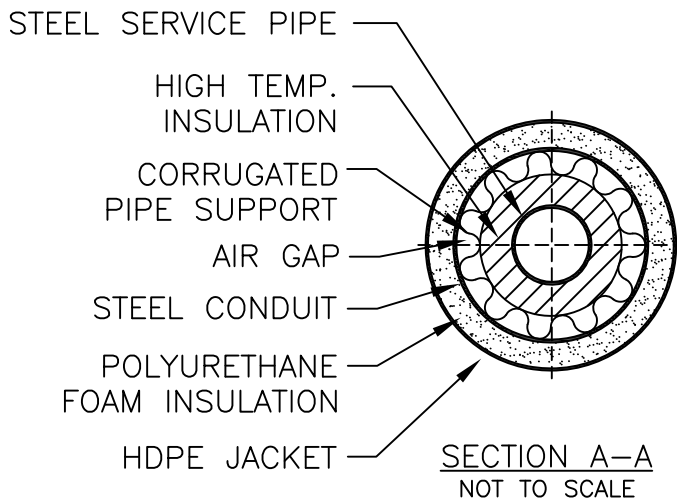
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### EXPANSION "Z" BEND DETAIL

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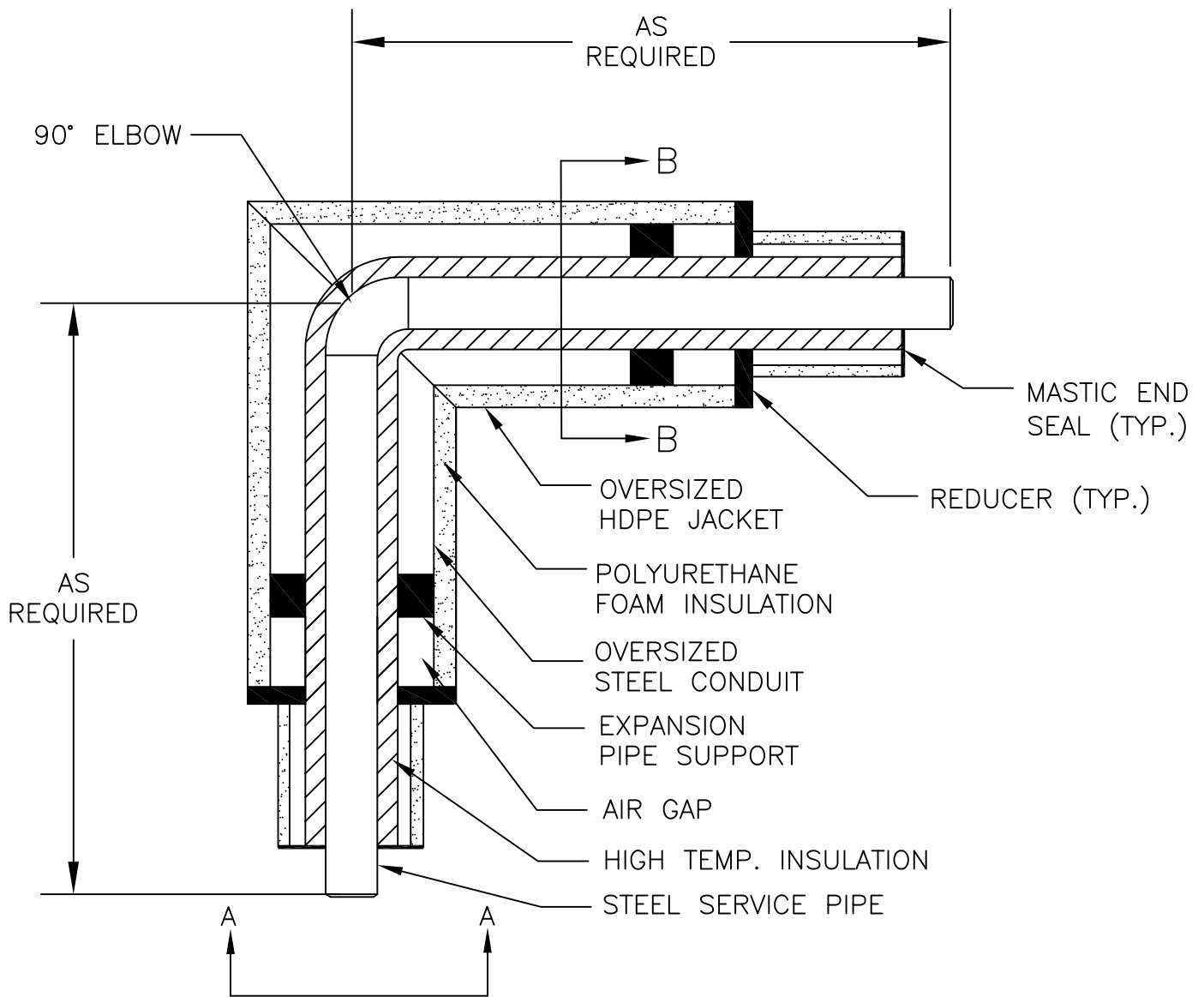
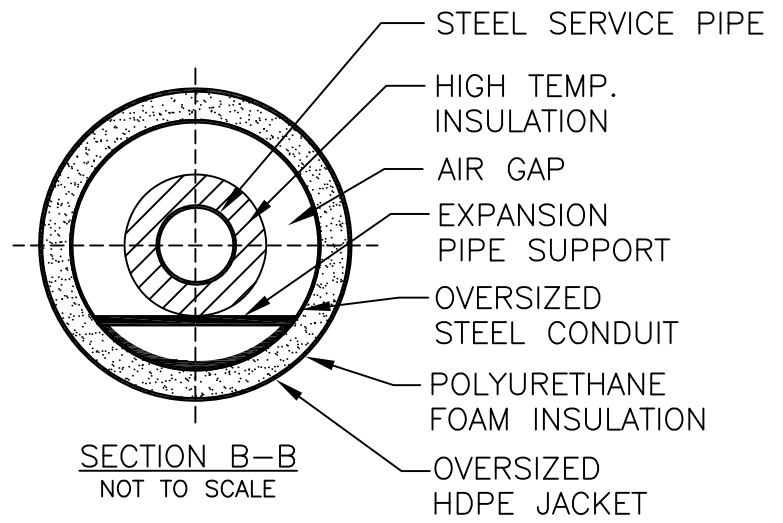
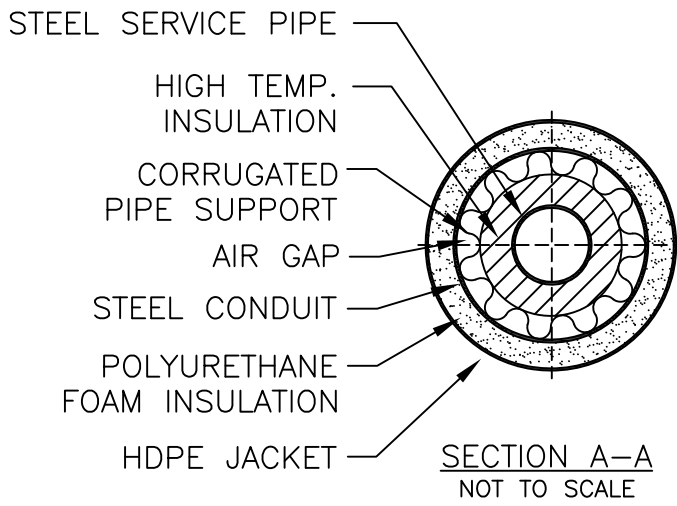
Date: 04/01/18  
Rev.:

Dwg. No.: SCP-9



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**EXPANSION 90° ELBOW DETAIL**

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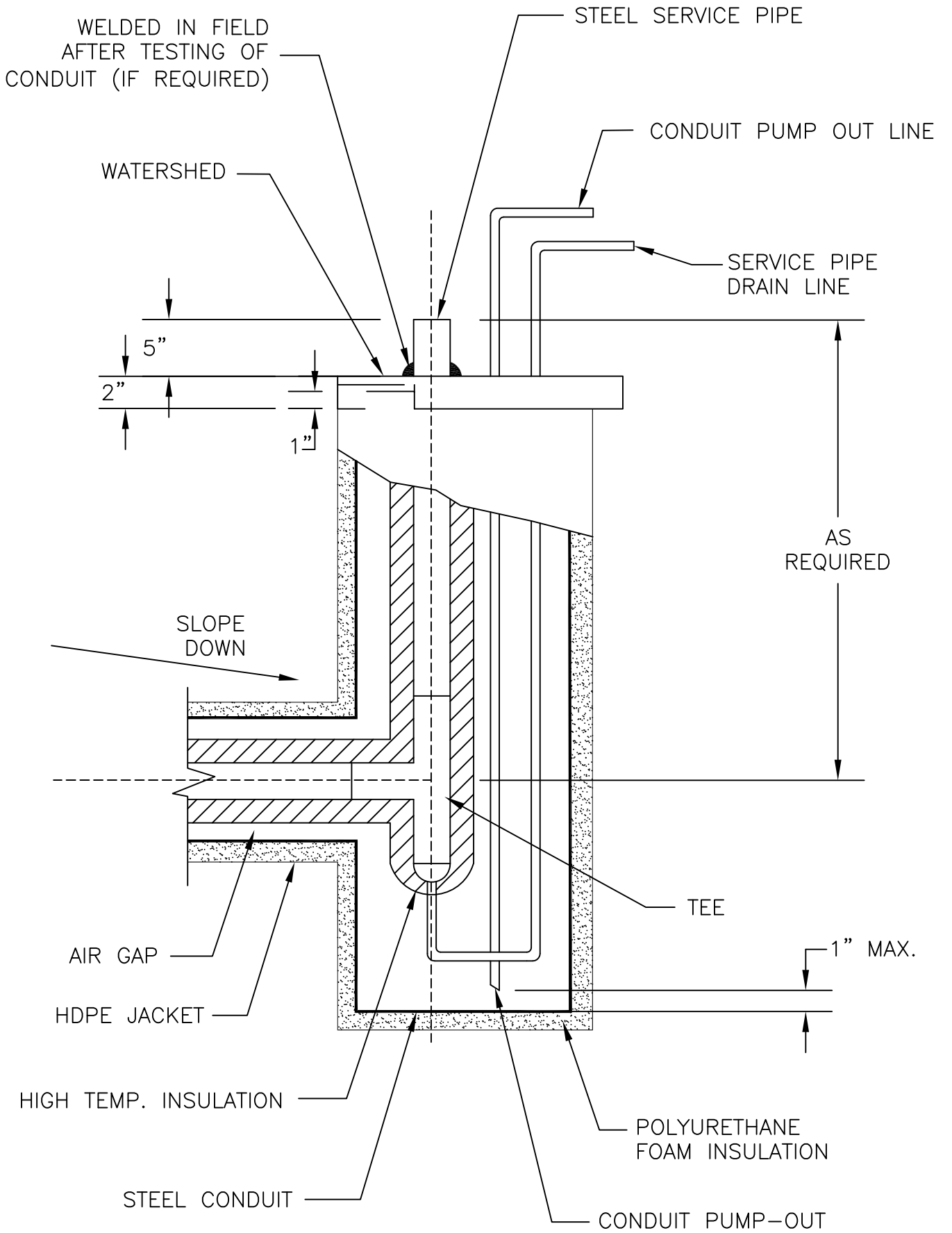
Date: 04/01/18  
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**DRIP TEE ASSEMBLY WITH WATERSHED DETAIL**

TRICON STEEL-CON PLUS

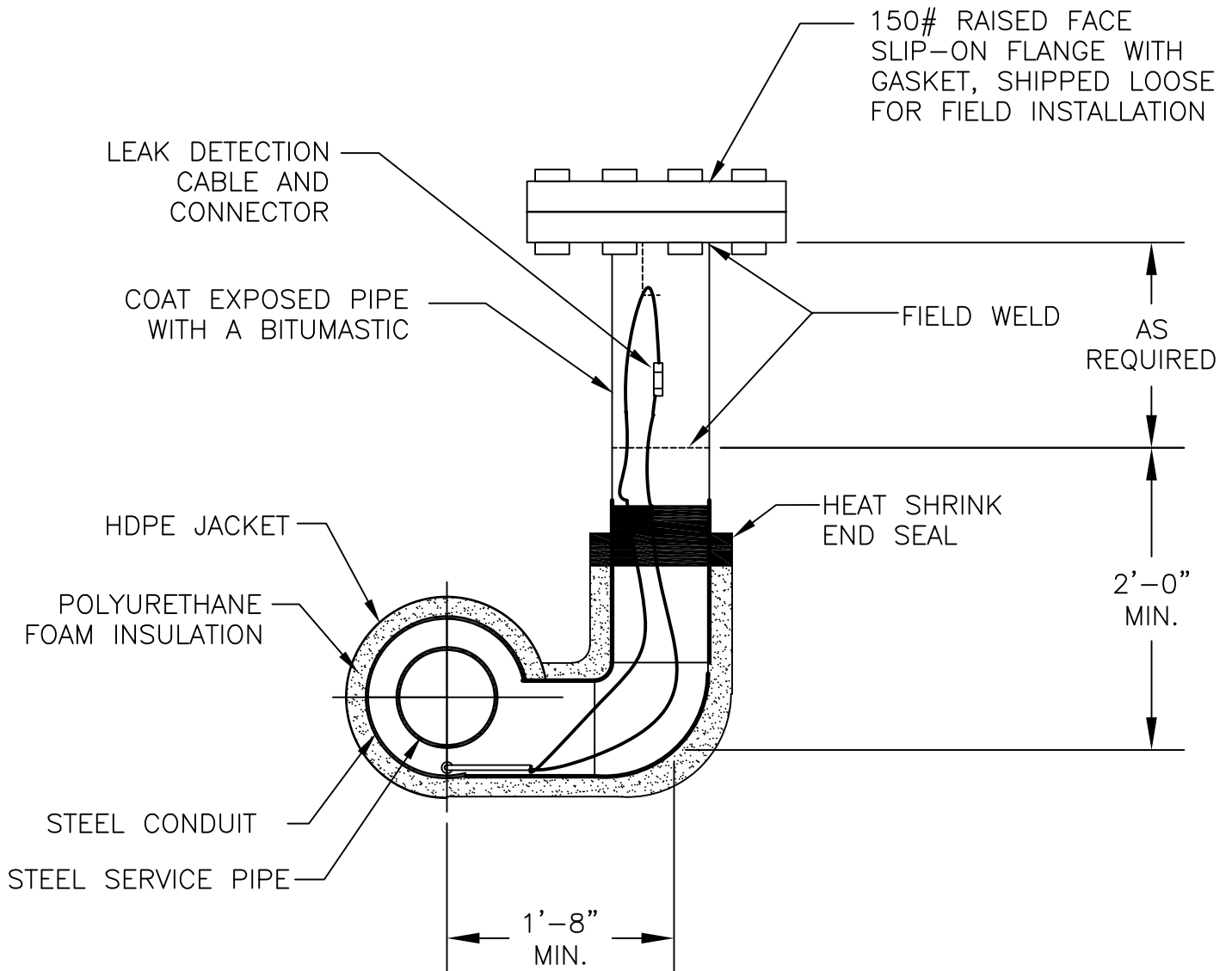
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Rev.:

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### LEAK DETECTION PULLPORT DETAIL

TRICON STEEL-CON PLUS

Date: 04/01/18

Dwg. No.: SCP-12

Rev.:



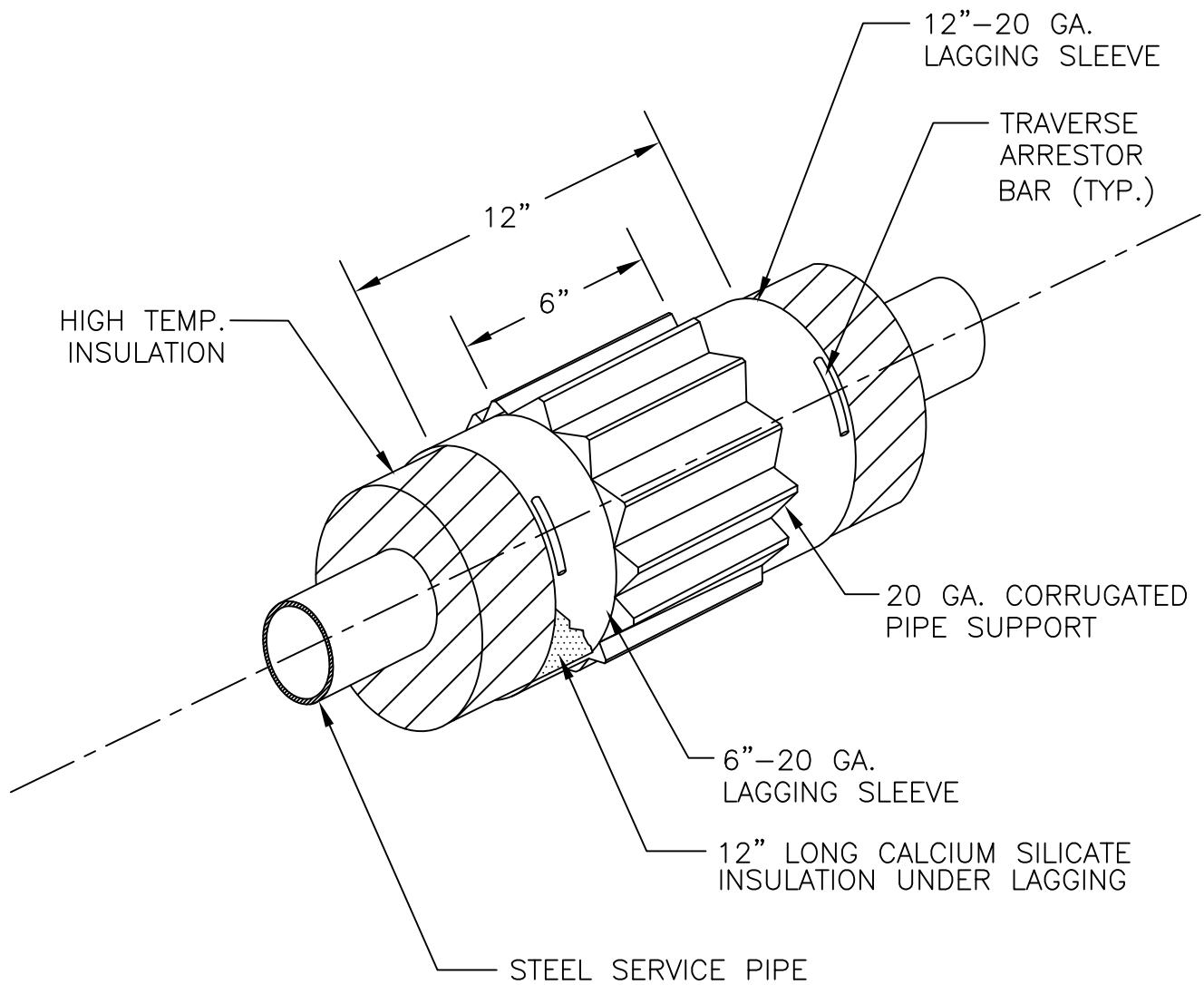
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NOTE: CORRUGATED PIPE SUPPORT NOT USED FOR EXPANSION SUPPORTS.

## CORRUGATED PIPE SUPPORT DETAIL

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Date: 04/01/18

Dwg. No.: SCP-13

Rev.:



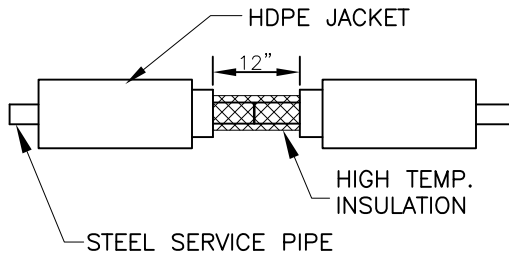
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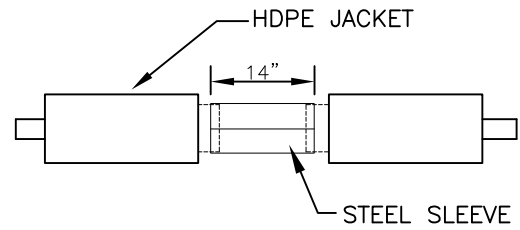
P.O. Box 361, Canastota, New York 13032

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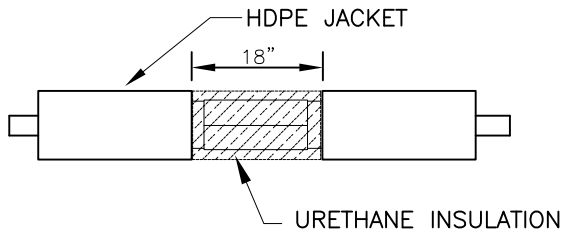


**STEP 1**

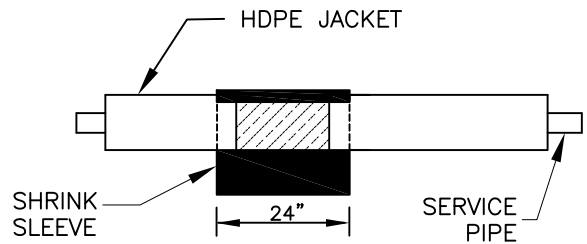
JOIN SERVICE PIPES TOGETHER AND WELD IN PLACE. WHEN WELDS ARE COOL TO TOUCH, CHECK/TEST ALL WELDS AS REQUIRED. ONCE WELDING IS COMPLETE, PLACE HIGH TEMPERATURE INSULATION OVER JOINT AND SECURE IN PLACE.

**STEP 2**

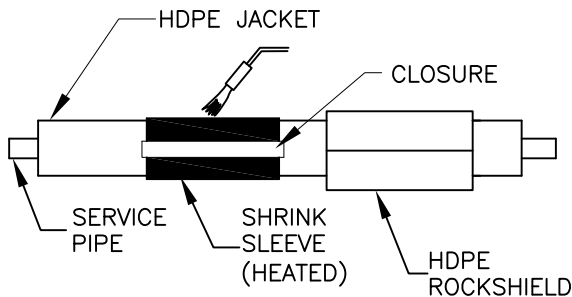
FIT BOTH HALVES OF SPLIT STEEL SLEEVE ONTO CONDUIT AND WELD IN PLACE WITH TWO HORIZONTAL AND TWO CIRCUMFERENTIAL WELDS. TEST ALL WELDS ON THE STEEL CONDUIT AS REQUIRED.

**STEP 3**

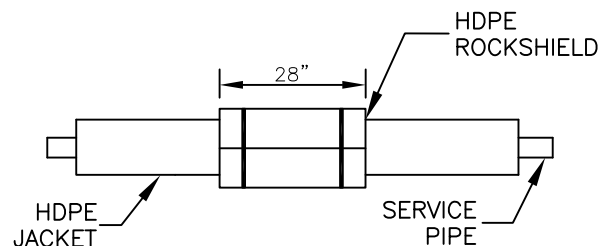
AFTER SLEEVE IS COOL TO THE TOUCH, APPLY URETHANE INSULATION COVERING IN PLACE AND SECURE IN PLACE. SOME TRIMMING MAY BE REQUIRED FOR A SNUG FIT OVER JOINT.

**STEP 4**

REMOVE RELEASE LINER OF SHRINK SLEEVE AND CENTER AROUND JOINT AND PIPE INSULATION. OVERLAP THE SLEEVE AT THE 10 TO 12 O'CLOCK POSITION. GENTLY HEAT BACKING SLEEVE & CLOSURE. PRESS THE CLOSURE FIRMLY INTO PLACE. GENTLY HEAT CLOSURE & PAT DOWN.

**STEP 5**

WITH LOW YELLOW FLAME, HEAT SHRINK SLEEVE FROM THE MIDDLE TOWARD EACH SIDE OF THE SLEEVE UNTIL RECOVERY IS COMPLETE. SHRINKING HAS BEEN COMPLETED WHEN ADHESIVE OOZES FROM SIDES. AVOID EXCESSIVE HEAT TO OVERLAP AREA.

**STEP 6**

AFTER SHRINK SLEEVE HAS COOLED, INSPECT THE SLEEVE TO ENSURE FULL CONTACT WITH JACKET AND THAT ADHESIVE HAS FLOWED BEYOND BOTH SLEEVE EDGES. MAKE SURE THAT NO CRACKS OR HOLES ARE IN SLEEVE. INSTALL HDPE ROCKSHIELD OVER SHRINK SLEEVE WITH A MINIMUM 2" OVERLAP OF SLEEVE AND SECURE IN PLACE WITH NYLON STAPS (ZIP TIES).

**FIELD JOINT KIT DETAIL FOR HDPE JACKET**

TRICON STEEL-CON PLUS

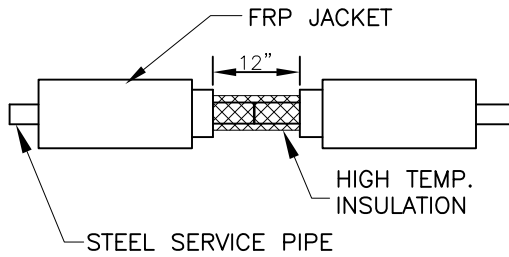
Date: 04/01/18 Dwg. No. SCP-14A

Rev.:

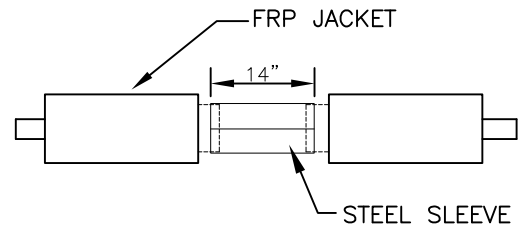


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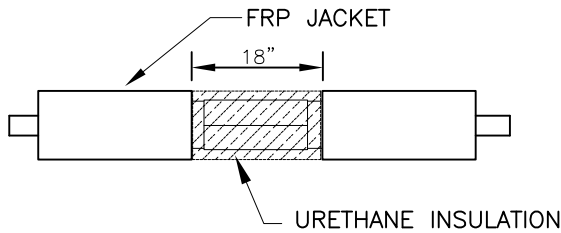
P.O. Box 361, Canastota, New York 13032  
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**STEP 1**

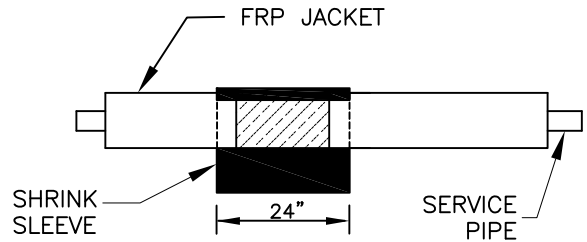
JOIN SERVICE PIPES TOGETHER AND WELD IN PLACE. WHEN WELDS ARE COOL TO TOUCH, CHECK/TEST ALL WELDS AS REQUIRED. ONCE WELDING IS COMPLETE, PLACE HIGH TEMPERATURE INSULATION OVER JOINT AND SECURE IN PLACE.

**STEP 2**

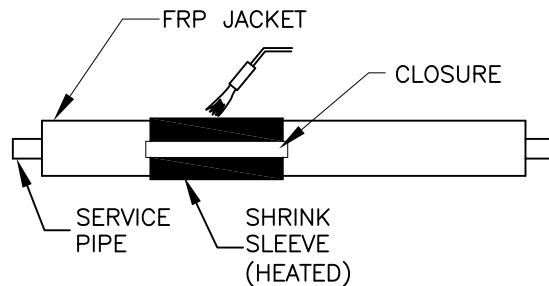
FIT BOTH HALVES OF SPLIT STEEL SLEEVE ONTO CONDUIT AND WELD IN PLACE WITH TWO HORIZONTAL AND TWO CIRCUMFERENTIAL WELDS. TEST ALL WELDS ON THE STEEL CONDUIT AS REQUIRED.

**STEP 3**

AFTER SLEEVE IS COOL TO THE TOUCH, APPLY URETHANE PIPE COVERING IN PLACE AND SECURE IN PLACE. SOME TRIMMING MAY BE REQUIRED FOR A SNUG FIT OVER JOINT.

**STEP 4**

REMOVE RELEASE LINER OF SHRINK SLEEVE AND CENTER AROUND JOINT AND PIPE INSULATION. OVERLAP THE SLEEVE AT THE 10 TO 12 O'CLOCK POSITION. GENTLY HEAT BACKING SLEEVE & CLOSURE. PRESS THE CLOSURE FIRMLY INTO PLACE. GENTLY HEAT CLOSURE & PAT DOWN.

**STEP 5**

WITH LOW YELLOW FLAME, HEAT SHRINK SLEEVE FROM THE MIDDLE TOWARD EACH SIDE OF THE SLEEVE UNTIL RECOVERY IS COMPLETE. SHRINKING HAS BEEN COMPLETED WHEN ADHESIVE OOOZES FROM SIDES. AVOID EXCESSIVE HEAT TO OVERLAP AREA. AFTER SHRINK SLEEVE HAS COOLED, INSPECT THE SLEEVE TO ENSURE FULL CONTACT WITH JACKET AND THAT ADHESIVE HAS FLOWED BEYOND BOTH SLEEVE EDGES. MAKE SURE THAT NO CRACKS OR HOLES ARE IN SLEEVE BEFORE BEGINNING BACKFILL.

**FIELD JOINT KIT DETAIL FOR FRP JACKET**

TRICON STEEL-CON PLUS

Date: 04/01/18

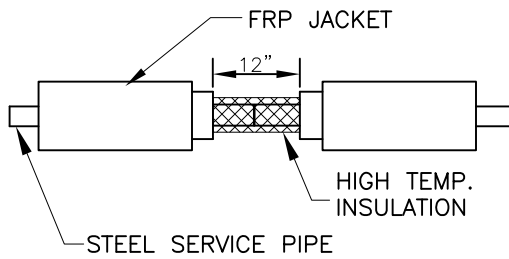
Dwg. No. SCP-14B

Rev.:

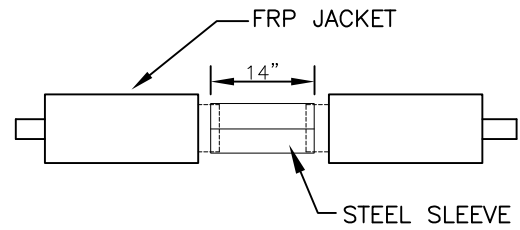
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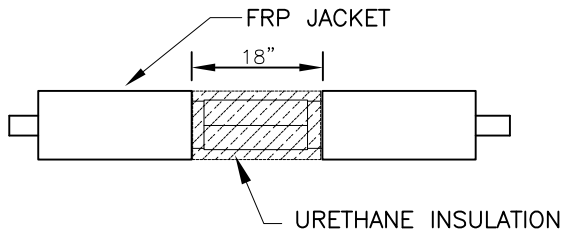
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Tel: 315.697.8787 Fax: 315.697.8788

**STEP 1**

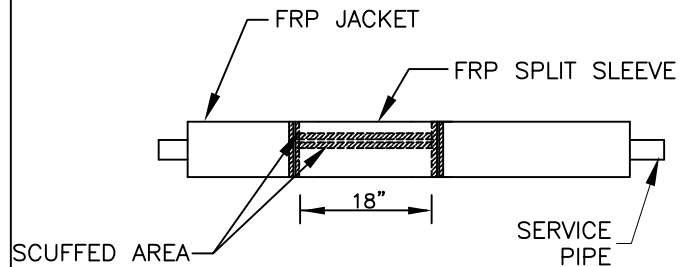
JOIN SERVICE PIPES TOGETHER AND WELD IN PLACE. WHEN WELDS ARE COOL TO TOUCH, CHECK/TEST ALL WELDS AS REQUIRED. ONCE WELDING IS COMPLETE, PLACE HIGH TEMPERATURE INSULATION OVER JOINT AND SECURE IN PLACE.

**STEP 2**

FIT BOTH HALVES OF SPLIT STEEL SLEEVE ONTO CONDUIT AND WELD IN PLACE WITH TWO HORIZONTAL AND TWO CIRCUMFERENTIAL WELDS. TEST ALL WELDS ON THE STEEL CONDUIT AS REQUIRED.

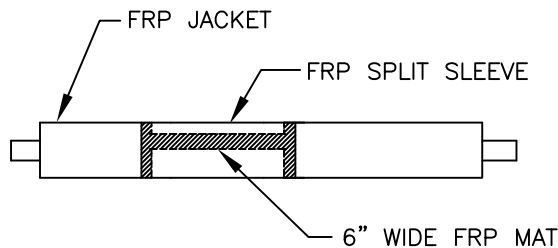
**STEP 3**

AFTER SLEEVE IS COOL TO THE TOUCH, APPLY URETHANE PIPE COVERING IN PLACE AND SECURE IN PLACE. SOME TRIMMING MAY BE REQUIRED FOR A SNUG FIT OVER JOINT.

**STEP 4**

PLACE SPLIT FRP SLEEVE AROUND INSULATION WITH THE HORIZONTAL SPLIT AT THE 10 O'CLOCK POSITION. CREATE A GOOD BINDING SURFACE FOR THE HAND LAY-UP BY SCUFFING THE ENDS OF FRP SPLIT SLEEVE AND JACKET.

NOTE: IN COLDER WEATHER, FRP MATERIALS & RESIN MUST REMAIN WARM UNTIL TIME OF USE AND MUST NOT FREEZE. COLDER TEMPERATURES MAY CAUSE A LONGER CURING TIME.

**STEP 5**

TAKE 3 LAYERS OF PRECUT 6" WIDE FIBERGLASS MAT AND SATURATE WITH FRP RESIN. (MIX 1/2 GAL. OF FRP RESIN WITH 1/2 OZ. OF CATALYST AND STIR. IT IS IMPERATIVE THAT THERE'S A GOOD MIX BETWEEN RESIN AND CATALYST.) PICK UP THE THREE (3) STRIPS OF SATURATED MAT AND PLACE ONE END AT THE 12 O'CLOCK POSITION AND THE OTHER AT THE 6 O'CLOCK POSITION. ROLL INTO PLACE WITH FRP ROLLER UNTIL MAT LIES FLAT AND AIR BUBBLES ARE OUT. REPEAT FOR OTHER SIDE AND FOR OTHER CIRCUMFERENTIAL JOINT. FOR HORIZONTAL JOINT, REPEAT PREVIOUS PROCEDURE EXCEPT LAY MATERIAL IN HORIZONTAL POSITION AND ROLL., MAKE SURE MAT AND RESIN ARE DRY AND CREATE A STRONG SEALANT BEFORE BEGINNING BACKFILL.

## FIELD JOINT KIT DETAIL FOR FRP JACKET WITH FRP HAND LAY-UP

TRICON STEEL-CON PLUS

Date: 04/01/18

Dwg. No. SCP-14C

Rev.:



**TRICON**  
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