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APPENDIX III  
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Enclosure 26

TSI Technical Note 80181

THERMO-LAG 330-1 Subliming Coating Envelope System Application  
Procedures

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TSI TECHNICAL NOTE 80181

THERMO-LAG 330-1

SUBLIMING COATING ENVELOPE SYSTEM

APPLICATION PROCEDURES

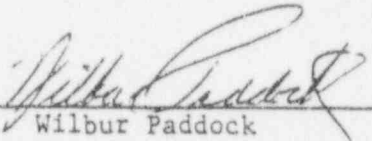
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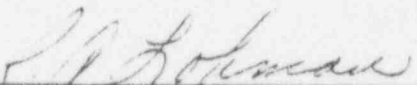
TSI TECHNICAL NOTE 80181

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PREPARED BY:

  
\_\_\_\_\_  
Wilbur Paddock  
Manager of Production

REVIEWED BY:

  
\_\_\_\_\_  
R. A. Lohman  
Manager, Quality Assurance

APPROVED BY:

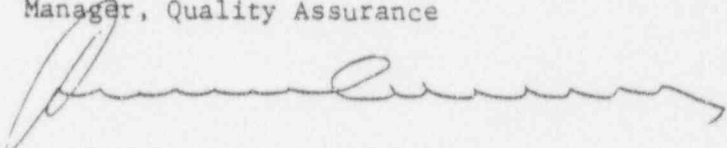
  
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R. Feldman  
President



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TSI TECHNICAL NOTE 80181

THERMO-LAG 330-1

SUBLIMING COATING ENVELOPE SYSTEM

APPLICATION PROCEDURES

1.0 INTRODUCTION

This procedure sets forth the sequential steps involved in applying THERMO-LAG 330-1 Subliming Coating Envelope System to cable trays, cable drops, conduit, junction box assemblies, and structural steel.

The THERMO-LAG 330-1 Subliming Envelope System consists of THERMO-LAG Stress Skin Type 330-69, THERMO-LAG 330-1 Subliming Coating, Fiberglass Armoring, and where required, THERMO-LAG 330-70 Conformable Ceramic Blanket and THERMO-LAG 350 Two Part Spill Resistant Topcoat.

2.0 PRE-APPLICATION PRACTICES

2.1 Qualifications of Contractor

The application shall be performed by a qualified contractor who has had prior training in applying the material and who has the equipment required to perform the application.

2.2 Safety Precautions

The contractor shall follow standard industrial safety practices established for the handling of chemical coatings and shall conform to applicable OSHA and owner safety rules in all respects.

2.3 Delivery

The coating materials shall be delivered to the job site in original, unopened containers which show the product name, batch number, color, name of the manufacturer, the expiration date, and where applicable, an Underwriters' Laboratories label.

2.4 Storage

The coating materials shall be stored off the ground when not in use in an area provided for that purpose. The materials in storage shall be protected against freezing and from temperatures above 100°F.

2.5 Temperature and Precipitation

The coating materials shall be applied only to dry surfaces. The temperature of the coating material and surfaces to be coated shall be above 40°F during the material application and curing periods. The contractor shall furnish and install any protective covers required to protect the newly applied coating from rainfall or hard freeze during its initial curing period.

2.6 Protection of Adjacent Surfaces

The contractor shall mask off or otherwise protect all adjacent areas and in place equipment from receiving any material overspray during the coating application. Any spilled material and overspray shall be removed promptly using water, wet rags or sponges before the material has dried.

3.0 FABRICATION OF STRESS SKIN ENVELOPE

3.1 Cable Trays (Figures 1.0.1, 1.0.2, & 1.0.3)

3.1.1 Cut a piece of material large enough to form the bottom section from a roll of Stress Skin. The width of the bottom section shall be equal to the sum of the base (W) and both sides (H) of the cable tray plus 3½ inches, as shown in Figure 1.0.1. The length of the bottom piece of material shall not exceed 10 feet since longer sections are unwieldy and are difficult to install.

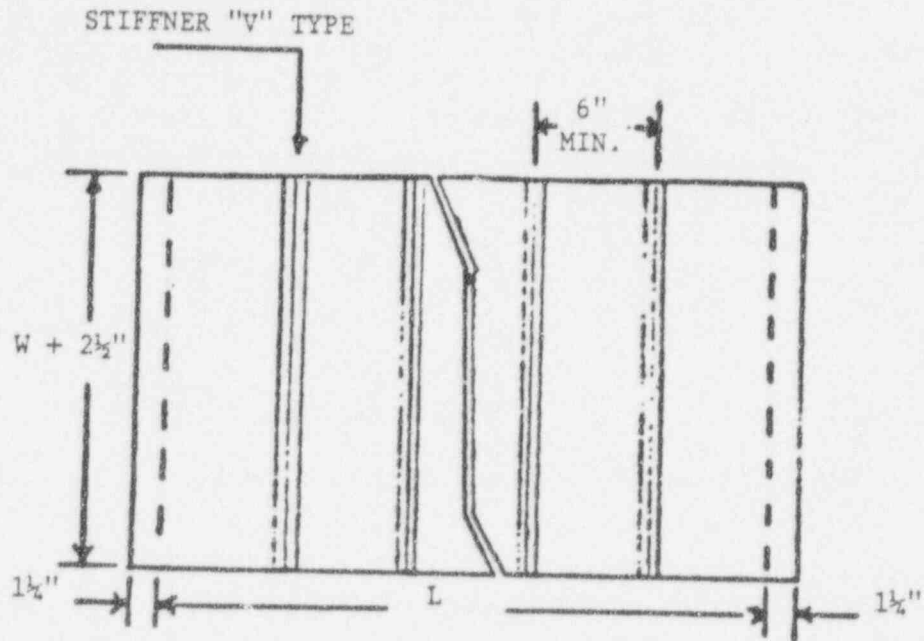
3.1.2 Cut a square 1½ inch piece from each corner of the bottom section of the Stress Skin.

3.1.3 Form a "U" shaped section by making two 90° bends along the dotted lines which are located at each end of the  $W + \frac{1}{2}$ " dimension line shown in Figure 1.0.1.

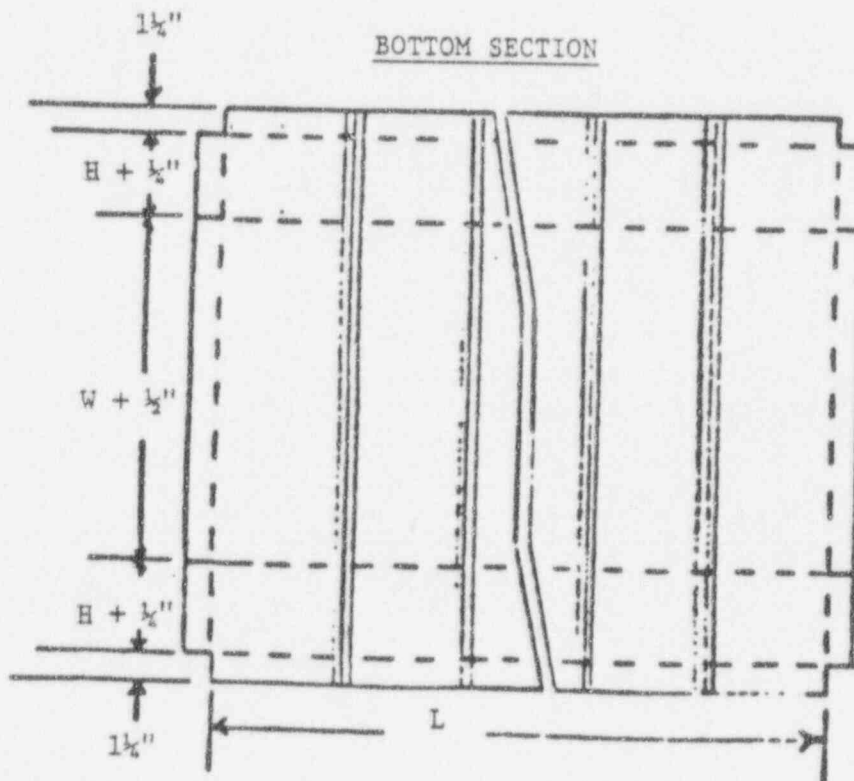
FIGURE 1.0.1

THERMO-LAG STRESS SKIN TYPE 330-69  
TYPICAL LAYOUT FOR CABLE TRAY SECTIONS

TOP SECTION



BOTTOM SECTION



- 3.1.4 Form a  $1\frac{1}{4}$ " flange on each side of the bottom section by making a  $90^\circ$  bend along the dotted lines as shown in Figure 1.0.1.
- 3.1.5 Cut a piece of material large enough to form the top section from a roll of Stress Skin. The width of the top section shall be equal to the base (W) of the cable plus  $2\frac{1}{2}$ ".
- 3.1.6 Form a  $1\frac{1}{4}$ " flange at each end of the top section by making  $90^\circ$  bends along the dotted lines shown in Figure 1.0.1.
- 3.1.7 Drill holes for fastening the bottom and top sections together as required in the flanges of both sections as shown in Figure 1.0.2.
- 3.1.8 Mount the bottom and top sections of Stress Skin on the cable tray and fasten the two sections together at a maximum of six inch intervals using mechanical fasteners, staples or 18 ga. galvanized tie wire.
- 3.1.9 Attach additional bottom and top sections of Stress Skin to a previously installed section by fastening them together at the end flanges using mechanical fasteners, staples or 18 ga. galvanized tie wire.
- 3.1.10 Coat the bottom and top sections of Stress Skin with THERMO-LAG 330-1 Subliming Coating as shown in Figure 1.0.3. The coating shall be applied with Fiberglass Armoring in accordance with the instructions given in Section 4.0 of this procedure.

OR WHEN COATING PRIOR TO MOUNTING

- 3.1.11 Coat the bottom and top sections of Stress Skin with THERMO-LAG 330-1 Subliming Coating prior to mounting on the cable tray. The coating shall be applied with Fiberglass Armoring in accordance with instructions given in Section 4.0 of this procedure.
- 3.1.12 Drill holes for fastening the bottom and top sections together as required in the flanges of both sections as shown in Figure 1.0.2.

FIGURE 1.0.2

THERMO-LAG STRESS SKIN TYPE 330-69

INSTALLATION SCHEMATIC PRIOR TO

THERMO-LAG 330-1 SUBLIMING COATING APPLICATION

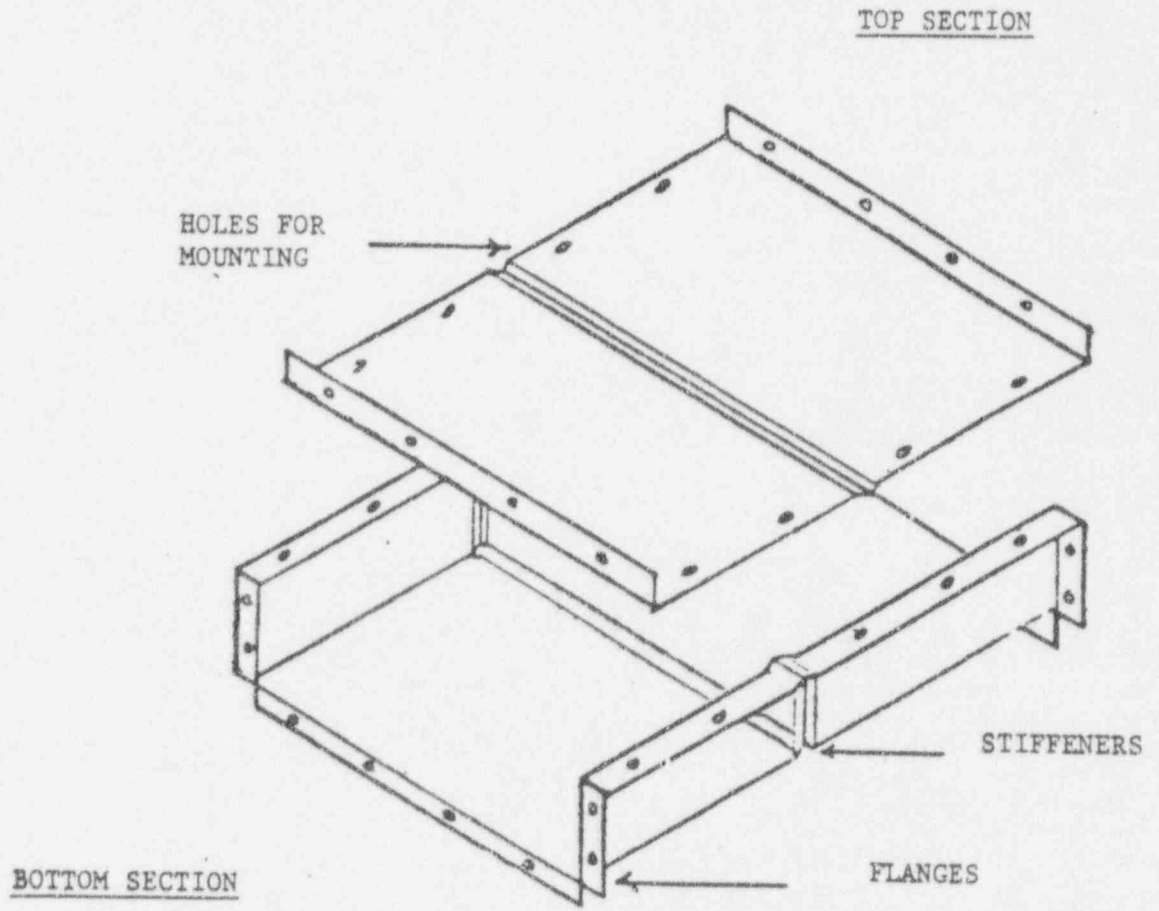
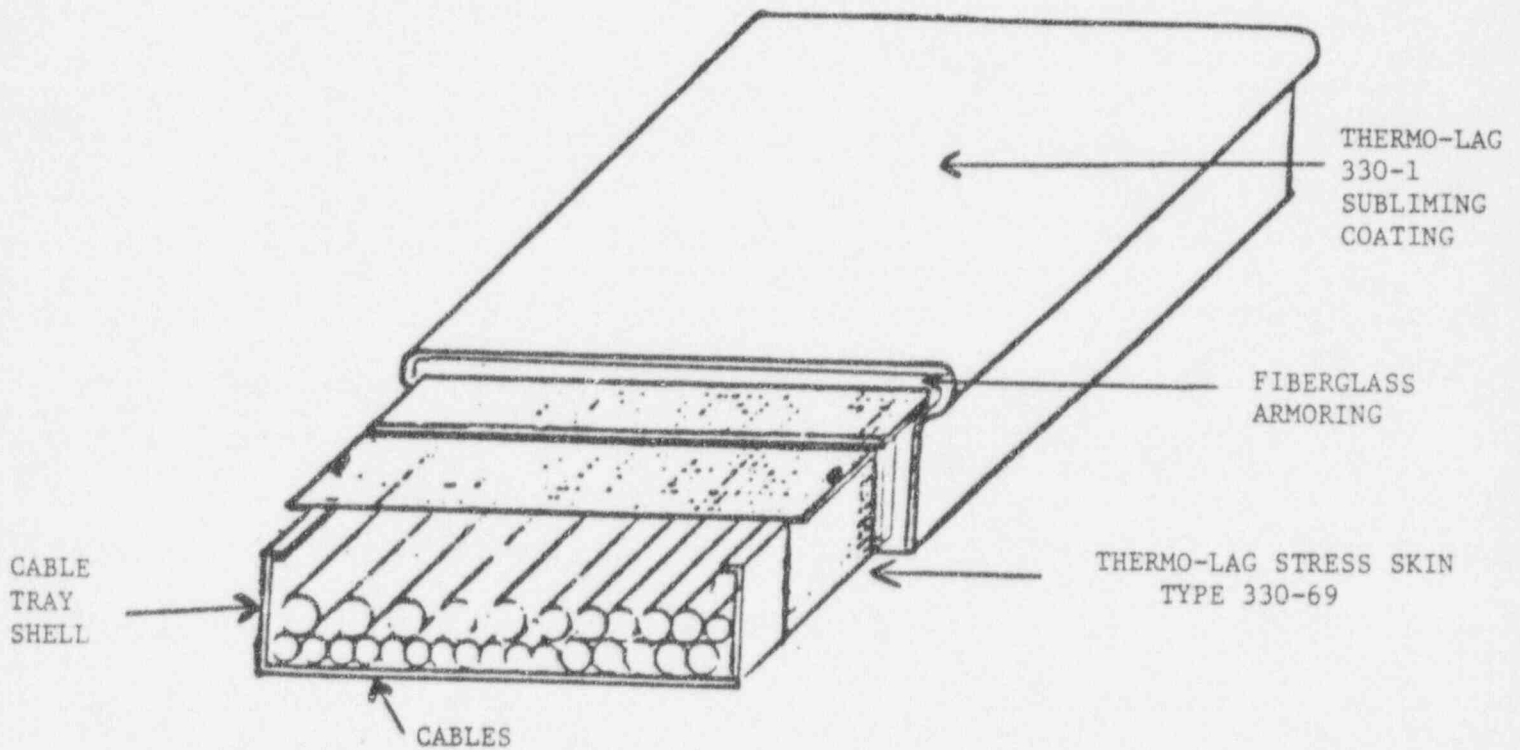


FIGURE 1.0.3

CROSS SECTIONAL VIEW OF  
THERMO-LAG 330-1 SUBLIMING COATING ENVELOPE SYSTEM  
APPLIED TO A TYPICAL CABLE TRAY



- 3.1.13 Mount the bottom and top sections of the precoated Stress Skin on the cable tray and fasten the two sections together at a maximum of six inch intervals using mechanical fasteners, staples or 18 ga. galvanized tie wire.
- 3.1.14 Attach additional precoated bottom and top sections of Stress Skin to a previously installed section by fastening them together at the end flanges using mechanical fasteners, staples or 18 ga. galvanized tie wire.
- 3.1.15 Apply a coating of THERMO-LAG 330-1 Subliming Coating in the specified wet film thickness to the edges and joints of the precoated sections of Stress Skin using a trowel or stiff bristle brush to fill in any gaps or fastening holes.

### 3.2 Conduit (Figure 1.0.4)

- 3.2.1 Cut two pieces of Stress Skin large enough to form a top and a bottom section for the conduit. The width of each piece shall be equal to  $\frac{1}{2}$ " of the circumference of the conduit plus 1". The length of the piece of Stress Skin shall not exceed 10 feet since longer sections are unwieldy and more difficult to install.
- 3.2.2 Form a semi-circular section with edge flanges from each of the two pieces by making two 90° bends at a distance of 1/2 inches from each edge of the width dimensions as shown in Figure 1.0.4a.  
  
For sharp radius bends, the procedure delineated in Section 3.0 for the fabrication of Stress Skin Envelope utilizing a design as shown in Figure 1.0.2 shall apply for conduit when sharp radius bends must be coated.
- 3.2.3 Form a  $\frac{1}{2}$ " flange on the length edges of each of the two pieces, where required, by making 90° bends.
- 3.2.4 Drill holes for fastening the bottom and top sections together at a maximum of six inch intervals in the flanges of both sections when required.
- 3.2.5 Mount the bottom and top sections of Stress Skin on the conduit and fasten the two sections together at a maximum of six inch intervals using mechanical fasteners, staples or 18 ga. galvanized tie wire.

3.2.6 Attach additional bottom and top sections of Stress Skin to a previously installed bottom and top sections as shown in Figure 1.0.4b.

- a) Overlapping the bottom and top sections by a maximum of 2", or
- b) Fastening them together at the end flanges using mechanical fasteners, staples or 18. ga. galvanized tie wire.

3.2.7 Coat the bottom and top sections of Stress Skin with THERMO-LAG 330-1 Subliming Coating. The coating shall be applied with Fiberglass Armoring in accordance with instructions given in Section 4.0 of this procedure.

OR WHEN COATING PRIOR TO MOUNTING

3.2.8 Coat the bottom and top sections of Stress Skin with THERMO-LAG 330-1 Subliming Coating prior to mounting on the conduit. The coating shall be applied with Fiberglass Armoring in accordance with instructions given in Section 4.0 of this procedure.

3.2.9 Drill holes for fastening the bottom and top sections together as required in the flanges of both sections.

3.2.10 Mount the bottom and tops sections of the precoated Stress Skin on the conduit and fasten the two sections together at a maximum of six inch intervals using mechanical fasteners, staples or 18 ga. galvanized tie wire.

3.2.11 Attach additional precoated bottom and top sections of Stress Skin to a previously installed section by fastening them together at the end flanges using mechanical fasteners, staples or 18 ga. galvanized tie wire as shown in Figure 1.0.4b.

3.2.12 Apply a coating of THERMO-LAG 330-1 Subliming Coating in the specified wet film thickness to the edges and joints of the precoated sections of Stress Skin using a trowel or stiff bristle brush to fill in any gaps or fastening holes.

FIGURE 1.0.4a

THERMO-LAG STRESS SKIN TYPE 330-69

INSTALLATION SCHEMATIC PRIOR TO

THERMO-LAG 330-1 SUBLIMING COATING APPLICATION

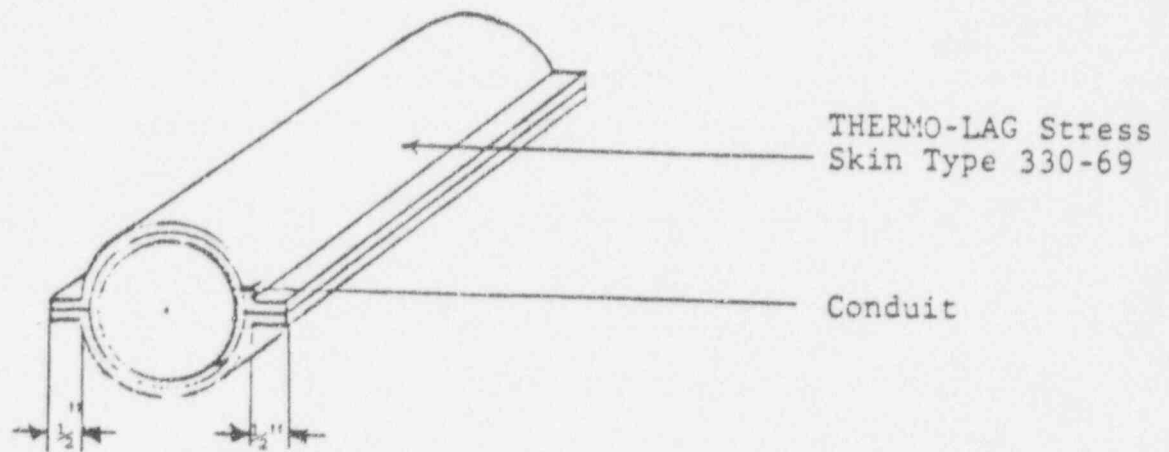
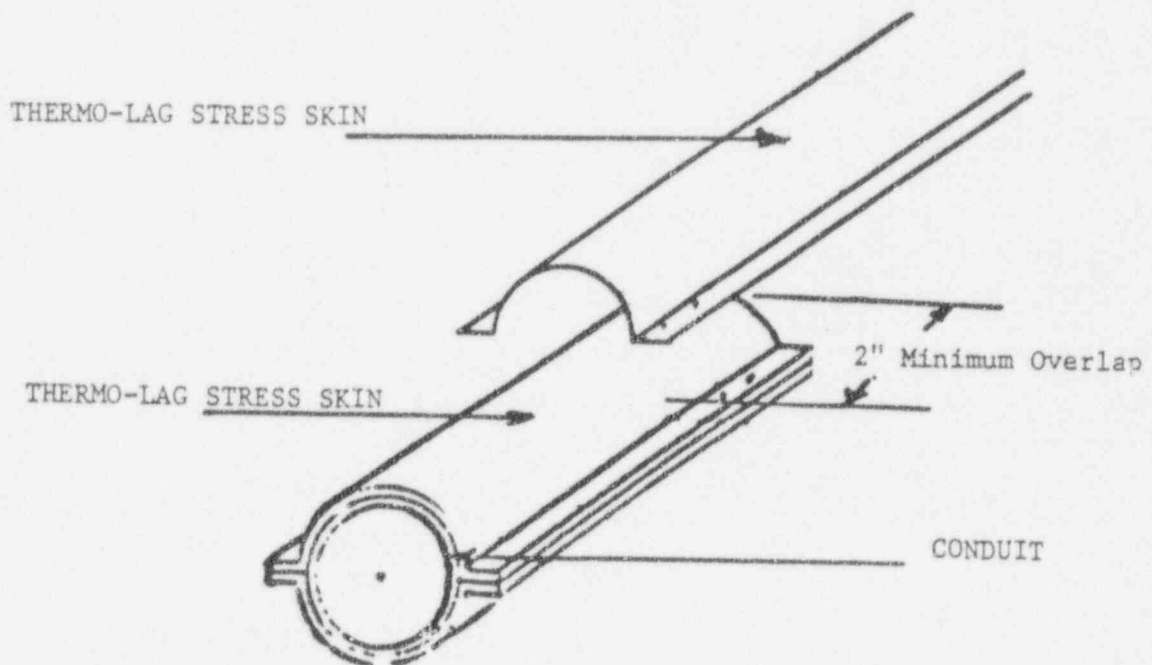
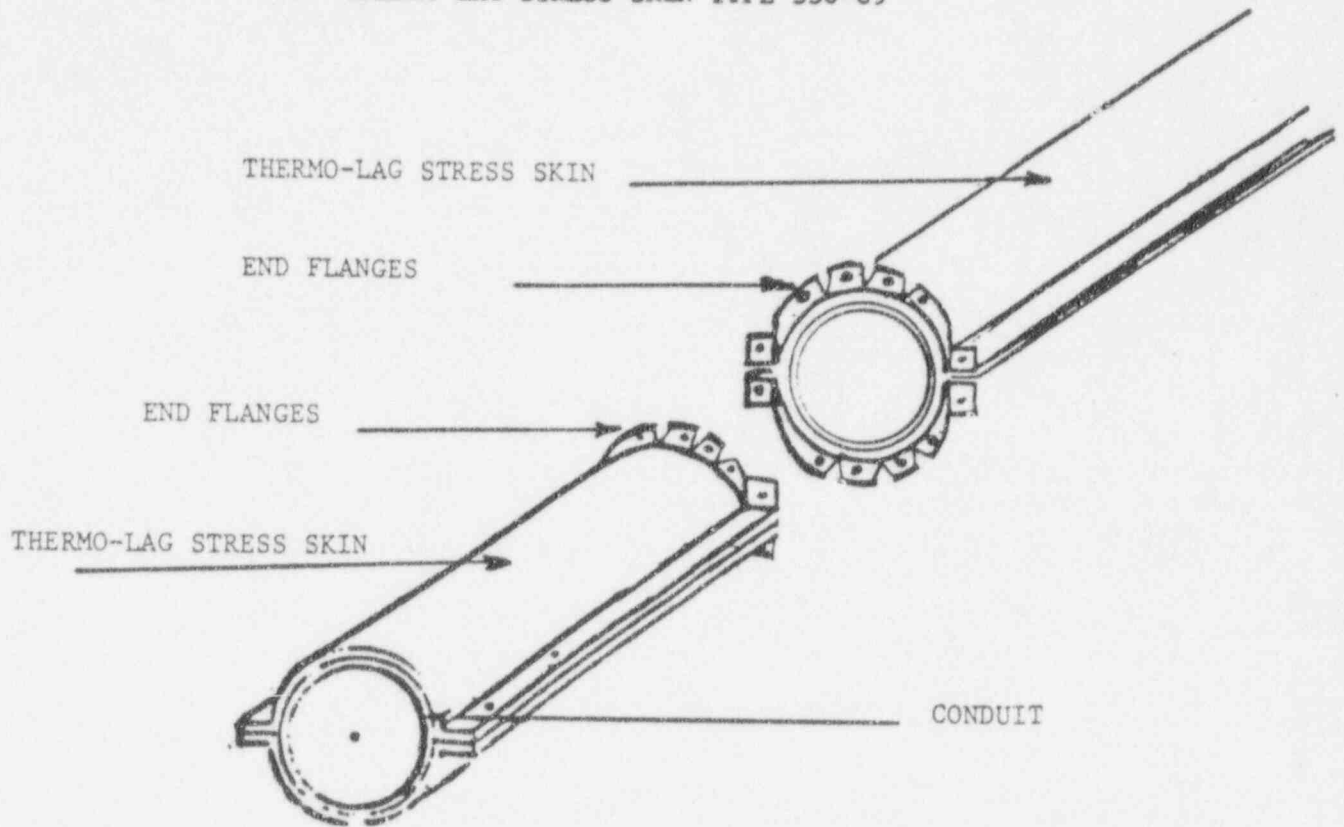


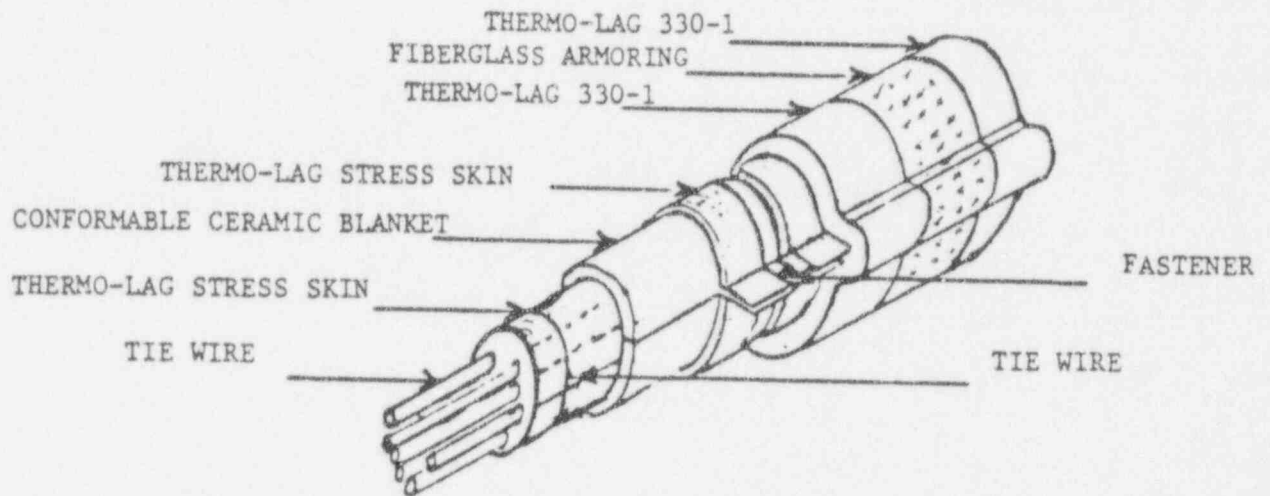
FIGURE 1.0.4b

INSTALLATION SCHEMATICS FOR ATTACHING ADDITIONAL SECTIONS OF  
THERMO-LAG STRESS SKIN TYPE 330-69 TO PREVIOUSLY INSTALLED  
THERMO-LAG STRESS SKIN TYPE 330-69



- 3.3 Cable Drops (Figure 1.0.5a)
- 3.3.1 Cut a piece of Stress Skin large enough to wrap around the circumference of a single or multiple number of cable drops. The width of the piece should be equal to the circumference of the single or group of cable drops plus an additional 3/4" minimum to provide for the overlap. The length of the piece of material shall not exceed 10 feet since longer sections are unwieldy and more difficult to handle.
- 3.3.2 Wrap the piece of Stress Skin around the single or group of cable drops and secure at a maximum of six inch intervals with 18 ga. galvanized tie wire. Attach additional pieces of Stress Skin to a previously wrapped piece by overlapping by a minimum of six inches and secure with 18 ga. galvanized tie wire.
- 3.3.3 Cut a piece of THERMO-LAG 330-70 Conformable Ceramic Blanket large enough to wrap around the circumference of the installed Stress Skin. The width of the piece should be equal to the circumference of the installed Stress Skin plus 1/2" minimum to provide for a tight abutment of the edges. The length of the piece of material shall not exceed 10 feet in order to minimize the handling problems during installation.
- 3.3.4 Wrap the piece of Conformable Ceramic Blanket around the installed piece of Stress Skin and secure at a maximum of six inch intervals with 18 ga. galvanized tie wire. Attach additional pieces as required of the Conformable Ceramic Blanket to a previously installed piece by tightly abutting the pieces together. Care should be exercised to ensure that the wrapping of the Conformable Ceramic Blanket is continuous with no gaps or holes in the material surfaces.
- 3.3.5 Cut two pieces of Stress Skin large enough to form a top and a bottom section. The width of each piece shall be equal to one half of the circumference of the installed Conformable Ceramic Blanket plus 2 1/2" minimum. The length of the piece of material shall not exceed 10 feet since longer sections are unwieldy and more difficult to handle.
- 3.3.6 Form a semi-circular section with edge flanges from each of the top pieces by making two 90° bends at a distance of 1 1/4" minimum from each edge of the width dimension.

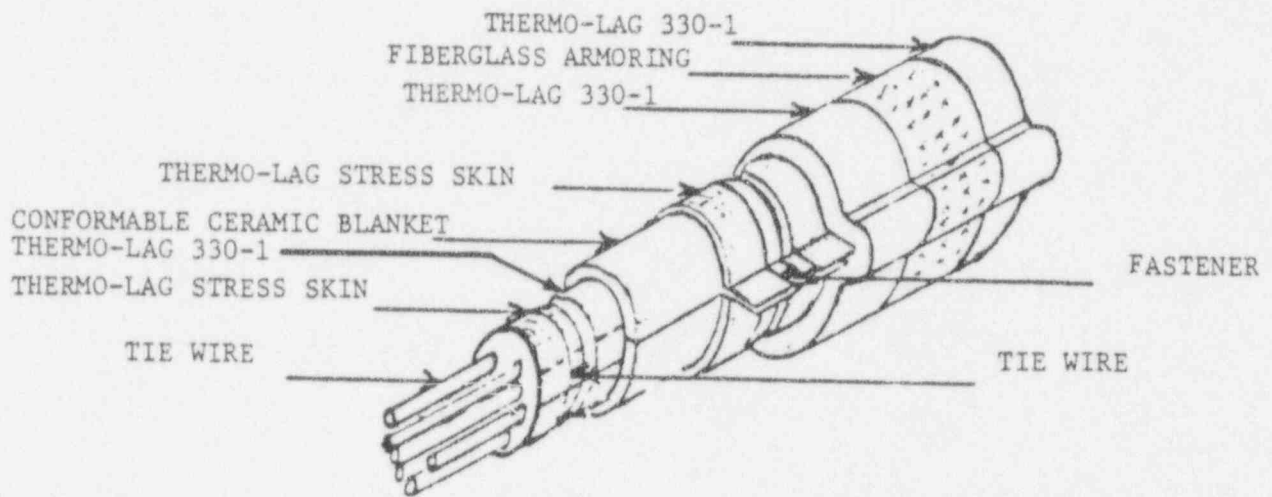
FIGURE 1.0.5a  
CROSS SECTIONAL VIEW OF  
THERMO-LAG 330-1 SUBLIMING COATING ENVELOPE SYSTEM  
APPLIED TO CABLE DROPS



- 3.3.7 Form a 1½" flange on the length edges of each of the two pieces, when required, by making 90° bends.
- 3.3.8 Cut holes for fastening the bottom and top sections together at a maximum of six inch intervals in the flanges of both sections.
- 3.3.9 Mount the bottom and top sections of Stress Skin on the Conformable Ceramic Blanket and fasten the two sections together at a maximum of six inch intervals using mechanical fasteners, staples or 18 ga. galvanized tie wire.
- 3.3.10 Attach additional bottom and top sections of Stress Skin to a previously installed bottom and top section by fastening them together at the end flanges using mechanical fasteners, staples or 18 ga. galvanized tie wire.
- 3.3.11 Coat the bottom and top sections of Stress Skin with THERMO-LAG 330-1 Subliming Coating as shown in Figure 1.0.5a. The coating shall be applied with Fiberglass Armoring in accordance with the instructions given in Section 4.0 of this procedure.
- 3.3.12 Cable Drops (Figure 1.0.5b)
- 3.3.12.1 Cut a piece of Stress Skin large enough to wrap around the circumference of a single or multiple number of cables. The width of the piece should be equal to the circumference of the single or group of cable drops plus an additional ¾" minimum to provide for the overlap. The length of the piece shall not exceed 10 feet since longer sections are unwieldy and more difficult to handle.
- 3.3.12.2 Wrap the piece of Stress Skin around the single or group of cable drops and secure at a maximum of six inch intervals with 18 ga. galvanized tie wire. Attach additional pieces of Stress Skin to a previously wrapped piece by overlapping by a minimum of six inches and secure with 18 ga. galvanized tie wire.

- 3.3.12.3 Coat the section of Stress Skin with THERMO-LAG 330-1 Subliming Coating as shown in Figure 1.0.5b. The coating shall be applied with Fiberglass Armoring in accordance with instructions given in Section 4.0 of this procedure.
- 3.3.12.4 Cut a piece of THERMO-LAG 330-70 Conformable Ceramic Blanket large enough to wrap around the circumference of the installed Stress Skin. The width of the piece should be equal to the circumference of the installed Stress Skin plus  $\frac{1}{4}$ " minimum to provide for a tight abutment of the edges. The length of the piece of material shall not exceed 10 feet in order to minimize the handling problems during installation.
- 3.3.12.5 Wrap the piece of Conformable Ceramic Blanket around the installed piece of Stress Skin and secure at a maximum of six inch intervals with 18 ga. galvanized tie wire. Attach additional pieces as required of the Conformable Ceramic Blanket to a previously installed piece by tightly abutting the pieces together. Care should be exercised to ensure that the wrapping of the Conformable Ceramic Blanket is continuous with no gaps or holes in the material surfaces.
- 3.3.12.6 Cut two pieces of Stress Skin large enough to form a top and a bottom section. The width of each piece shall be equal to one half of the circumference of the installed Conformable Ceramic Blanket plus  $2\frac{1}{2}$ " minimum. The length of the piece of material shall not exceed 10 feet since longer sections are unwieldy and more difficult to handle.
- 3.3.12.7 Form a semi-circular section with edge flanges from each of the top pieces by making two  $90^\circ$  bends at a distance of  $1\frac{1}{4}$ " minimum from each edge of the width dimension.

FIGURE 1.0.5b  
CROSS SECTIONAL VIEW OF  
THERMO-LAG 330-1 SUBLIMING COATING ENVELOPE SYSTEM  
APPLIED TO CABLE DROPS

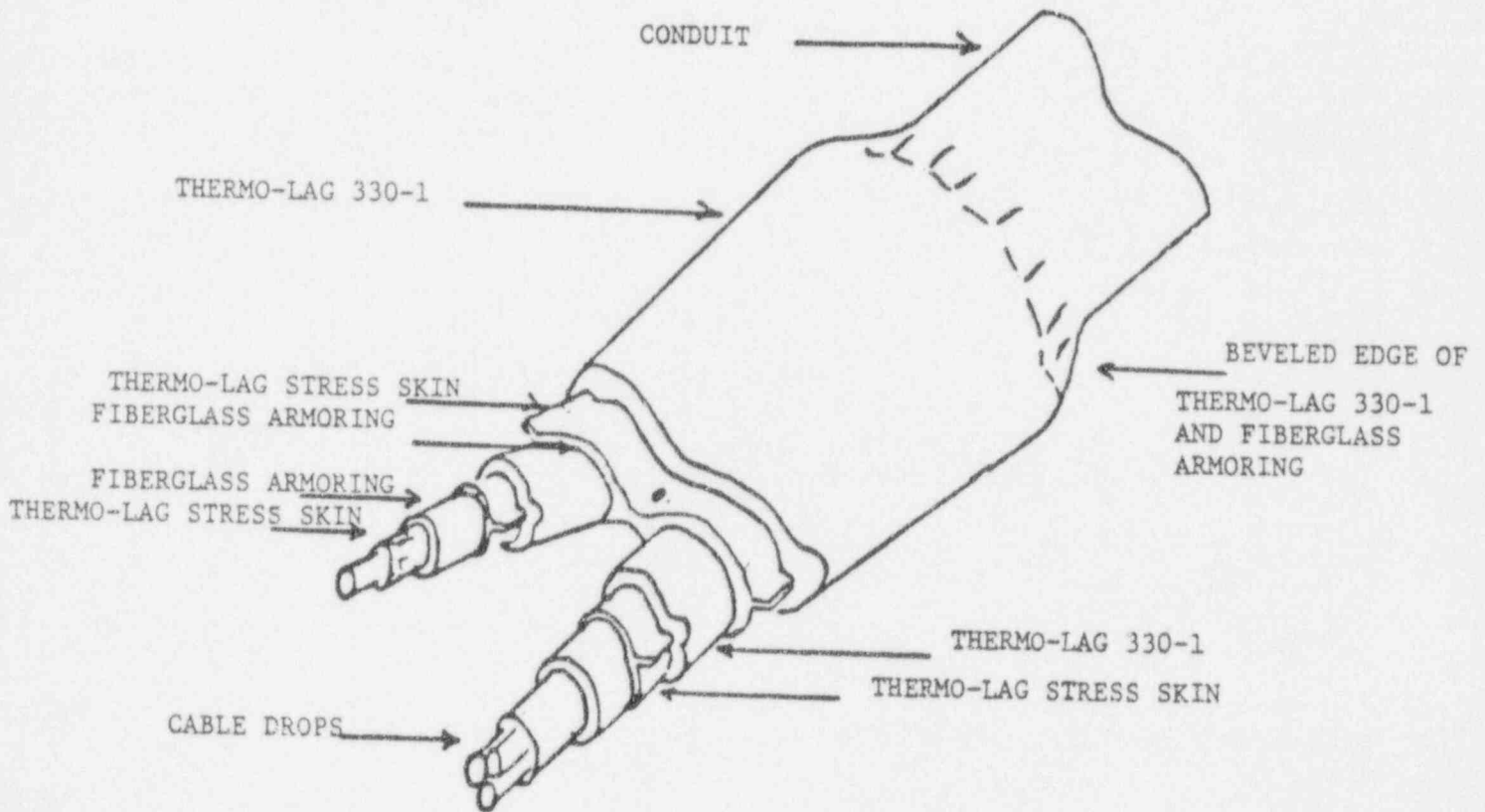


- 3.3.12.8 Form a 1½" flange on the length edges of each of the two pieces, when required, by making 90° bends.
- 3.3.12.9 Cut holes for fastening the bottom and top sections together at a maximum of six inch intervals in the flanges of both sections.
- 3.3.12.10 Mount the bottom and top sections of Stress Skin on the Conformable Ceramic Blanket and fasten the two sections together at a maximum of six inch intervals using mechanical fasteners, staples or 18 ga. galvanized tie wire.
- 3.3.12.11 Attach additional bottom and top sections of Stress Skin to a previously installed bottom and top section by fastening them together at the end flanges using mechanical fasteners, staples or 18 ga. galvanized tie wire.
- 3.3.12.12 Coat the bottom and top sections of Stress Skin with THERMO-LAG 330-1 Subliming Coating as shown in Figure 1.0.5b. The coating shall be applied with Fiberglass Armoring in accordance with the instructions given in Section 4.0 of this procedure.

#### 3.4 Conduit and Cable Drop Junction (Figure 1.0.6)

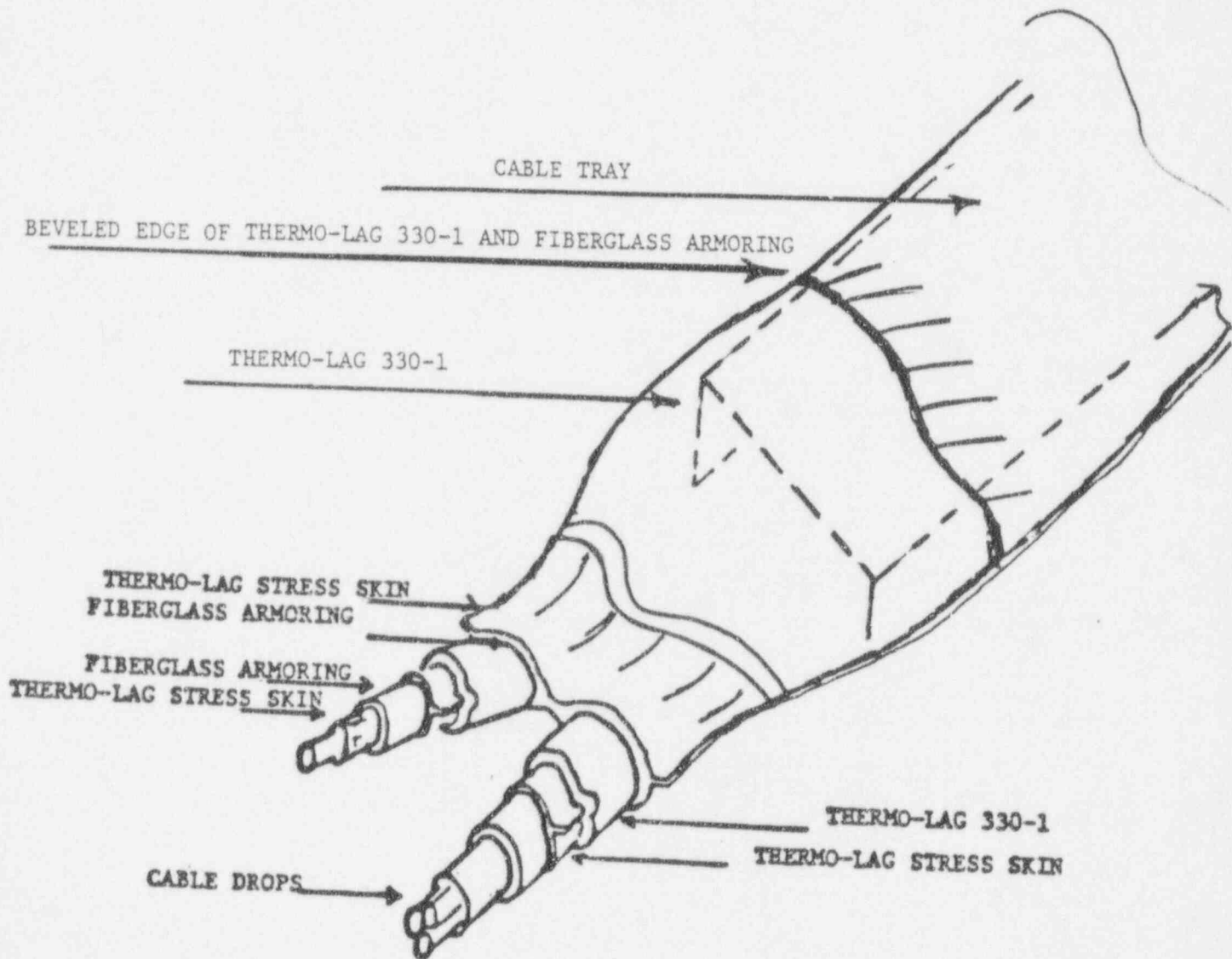
- 3.4.1 Apply the THERMO-LAG 330-1 Subliming Coating Envelope System to the conduit and the single or multiple cable drops following the instructions given in Section 3.2 or 3.3 of this procedure.
- 3.4.2 Cut a piece of Stress Skin of sufficient size to wrap around the circumference of the conduit. The width of the piece should be equal to the outside circumference of the conduit plus an additional ¾ inch to provide for an overlap. The length of the piece shall be 12 inches minimum.
- 3.4.3 Wrap the piece of Stress Skin around the outside circumference of the conduit in such a manner that it covers six inches of the conduit. Secure the piece of Stress Skin to the conduit with two 18 ga. galvanized tie wires mounted approximately 5 inches apart.

FIGURE 1.0.6 a  
CROSS SECTIONAL VIEW OF  
THERMO-LAG 330-1 SUBLIMING COATING ENVELOPE SYSTEM  
APPLIED TO CONDUIT AND CABLE DROP



- 3.4.4 Cut a required number of small pieces of THERMO-LAG 330-70 Conformable Ceramic Blanket from a roll of this material.
- 3.4.5 Insert the small pieces of Conformable Ceramic Blanket inside the open end of the installed piece of Stress Skin and around and between the cable drops in such a manner that the open end is relatively sealed. Then secure the piece of Stress Skin to the cable drops with 18 ga. galvanized tie wires.
- 3.4.6 Coat the installed piece of Stress Skin with THERMO-LAG 330-1 Subliming Coating as shown in Figure 1.0.6. The coating shall be applied with Fiberglass Armoring in accordance with the instructions given in Section 4.0 of this procedure.
- 3.5 Cable Tray and Cable Drop Junction at Open End of Cable Tray
- 3.5.1 Apply the THERMO-LAG 330-1 Subliming Coating Envelope System to the cable tray at the single or multiple cable drops following the instructions given in Sections 3.1 and 3.3 of this procedure.
- 3.5.2 Cut a piece of Stress Skin of sufficient size to wrap around the outside parameters of the cable tray. The width of the piece should be equal to the outside parameter of the cable tray plus an additional 3/4" to provide for an overlap. The length of the piece shall be 24 inches minimum.
- 3.5.3 Wrap the piece of Stress Skin around the parameter of the cable tray in such a manner that it covers six inches of the conduit. Secure the piece of Stress Skin to the conduit with two 18 ga. galvanized tie wires mounted approximately 5 inches apart.
- 3.5.4 Cut a required number of small pieces of the THERMO-LAG 330-70 Conformable Ceramic Blanket from a roll of this material.
- 3.5.5 Cut slots approximately 12 inches in length at each corner of the open end of the piece of Stress Skin.

FIGURE 1.0.6b  
CROSS SECTIONAL VIEW OF  
THERMO-LAG 330-1 SUBLIMING COATING ENVELOPE SYSTEM  
APPLIED TO CABLE TRAY AND CABLE DROP

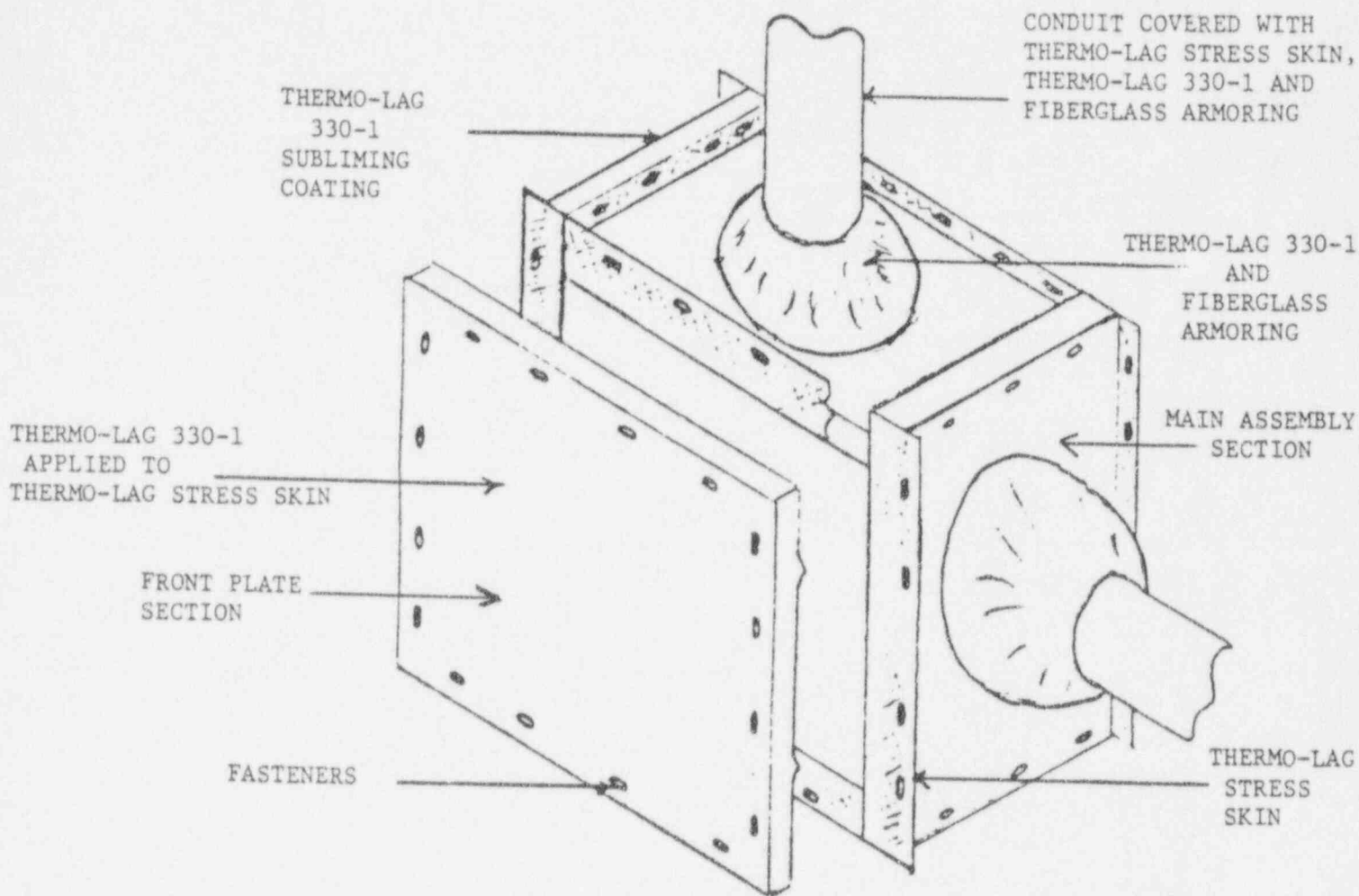


- 3.5.6 Insert the small pieces of Conformable Ceramic Blanket inside the installed piece of Stress Skin and around and between the cable drops in such a manner that when the slit open end of the piece of Stress Skin is tightened around the cable drops, the open end is effectively sealed. Then secure the piece of Stress Skin to the cable drops with 18 ga. galvanized tie wires.
- 3.5.7 Coat the installed piece of Stress Skin with THERMO-LAG 330-1 Subliming Coating in the required thickness. The coating shall be applied with Fiberglass Armoring in accordance with the instructions given in Section 4.0 of this procedure.
- 3.6 Cable Tray and Cable Drop Junction at Top or Bottom of Cable Tray
- 3.6.1 Apply the THERMO-LAG 330-1 Subliming Coating Envelope System to the cable tray and the single or multiple cable drops following the instructions given in Section 3.1 and 3.3.
- 3.6.2 Cut a piece of Stress Skin of sufficient size to form a truncated cone shape which has one end that is equal to the circumference of the cable drops plus 3/4 inch to provide for overlaps. The other end should be approximately four times the circumference of the cable drops plus 3/4 inch to provide for overlaps. The length of the piece should be 6 inches minimum.
- 3.6.3 Form a 1" flange at the large end of the piece of Stress Skin by making a 90° bend along a line which is 1" up and parallel to the large end. Drill holes for fastening the flange to the cable tray as required in the flange.
- 3.6.4 Cut a required number of small pieces of THERMO-LAG 330-70 Conformable Ceramic Blanket from a roll of this material.
- 3.6.5 Form a cone out of the piece of Stress Skin taking care to overlap the sides by 3/4 inch.

- 3.6.6 Insert the small pieces of Conformable Ceramic Blanket inside the small end of the cone in such a manner that the small end is sealed when it is wrapped around the cable drops. Then secure the small end of the piece of Stress Skin to the cable drops with 18 ga. galvanized tie wires.
- 3.6.7 Secure the flanged end of the piece of Stress Skin to the cable tray using mechanical fasteners, staples or 18 ga. galvanized tie wires.
- 3.6.8 Coat the installed piece of Stress Skin with THERMO-LAG 330-1 Subliming Coating. The coating shall be applied with Fiberglass Armoring in accordance with the instructions given in Section 4.0 of this procedure.
- 3.7 Cable Tray or Conduit Junction With Fire Wall
- 3.7.1 Attach the Stress Skin Envelope of the cable tray or conduit at each junction with a fire wall by fastening the butt flange of the Stress Skin to the fire wall using mechanical fasteners.
- 3.7.2 Apply the THERMO-LAG 330-1 Subliming Coating to the butt flanges, overlapping the flange joints with the coating by a minimum of 3 inches. The coating shall be applied with Fiberglass Armoring in accordance with the instructions given in Section 4.0 of this procedure.
- 3.8 Junction Box Assembly (Figure 1.0.7)
- 3.8.1 Cut two pieces of Stress Skin large enough to form the top and bottom sections of the main assembly section of the junction box assembly as shown in Figure 1.0.7. The width of each piece of material shall be equal to the width of the junction box plus 5 inches and the length of each piece shall be equal to the depth of the junction box plus 3 inches. The additional 5 inches provides for  $1\frac{1}{2}$ " flanges and  $1\frac{1}{2}$ " clearance from the side edges of the junction box. The additional 3 inches provides for  $1\frac{1}{2}$ " flanges and  $1\frac{1}{2}$ " clearance along the sides of the junction box.

FIGURE 1.0.7

CROSS SECTIONAL VIEW OF  
THERMO-LAG 330-1 SUBLIMING COATING ENVELOPE SYSTEM  
APPLIED TO A JUNCTION BOX ASSEMBLY



- 3.8.2 Cut any required holes for cable drops in the top and bottom sections.
- 3.8.3 Form a  $1\frac{1}{4}$ " flange on each of the four sides of the top and bottom section of Stress Skin by making the required number of  $90^\circ$  bends.
- 3.8.4 Drill holes for fastening the top and bottom sections at a maximum of 6 inch intervals in the flanges as shown in Figure 1.0.7.
- 3.8.5 Cut two pieces of Stress Skin large enough to form the two side sections of the main assembly section. The width of each piece of Stress Skin shall be equal to the height of the junction box plus 5 inches and the length of each piece shall be equal to the depth of the junction box plus 3 inches. The additional 5 inches provides for  $1\frac{1}{4}$ " flanges and  $1\frac{1}{4}$ " clearance from the top and bottom edges of the junction box. The additional 3 inches provides for  $1\frac{1}{4}$ " flanges and  $\frac{1}{4}$ " clearance along the sides of the junction box.
- 3.8.6 Drill any required holes for cable drops in the two side sections.
- 3.8.7 Form a  $1\frac{1}{4}$ " flange on each of the four sides of the two side sections of Stress Skin by making the required number of  $90^\circ$  bends.
- 3.8.8 Drill holes for fastening the two side sections at a maximum of 6 inch intervals in the flanges as shown in Figure 1.0.7.
- 3.8.9 Cut a piece of Stress Skin large enough to form the front plate section. The width of the front plate section shall be equal to the width of the top and bottom sections plus  $2\frac{1}{2}$ " required to cover the flanges. The length of the front plate section shall be equal to the height of the side sections plus  $2\frac{1}{2}$ " required to cover the flanges.
- 3.8.10 Drill holes for fastening the front plate section to the main assembly section as shown in Figure 1.0.7.
- 3.8.11 Mount the main assembly section around the junction box by connecting the top and bottom sections to the two side sections and attaching the main assembly section to the wall on which the junction box is mounted using mechanical fasteners, staples or 18 ga. galvanized tie wires.

- 3.8.12 Mount the front plate section on the main assembly section using mechanical fasteners, staples or 18 ga. galvanized tie wire.
- 3.8.13 Coat the assembled front plate and main assembly sections of Stress Skin with THERMO-LAG 330-1 Subliming Coating. The coating shall be applied with Fiberglass Armoring in accordance with the instructions given in Section 4.0 of this procedure.

### 3.9 Structural Steel Supports

- 3.9.1 See Appendix C of this procedure for application instructions.

## 4.0 COATING APPLICATION TECHNIQUES

### 4.1 Spray Application

- 4.1.1 Apply the THERMO-LAG 330-1 Subliming Coating over a properly prepared surface. Make sure that the surface to be coated is clean, dry, above 40°F and free from scale, rust or other contaminants.
- 4.1.2 Apply the material in as many passes as required to provide the required film build of coating thickness, taking care to avoid slumping or sagging of the coating. Normally, a required 0.500 inch dry coating thickness is accomplished by applying three wet coats of 0.225 inches. However, the thickness which can be safely applied in a single pass will depend on the temperature, humidity, and other factors that are best determined on the job site.
- 4.1.3 Apply the material in smooth even passes, taking care to keep the spray gun fan pattern at a 90° angle whenever possible. Reaching with a spray gun will cause the spray pattern to vary from the 90° angle and will result in a rougher surface than normal.
- 4.1.4 Take frequent wet thickness measurements during the application using a penetration measuring device such as those shown in Appendix A to ensure that the coating is being applied uniformly and at the required wet film thickness. These wet thickness checks shall be made every five square feet or every two running feet of coated surface area. (Note: When taking measurements allow for a shrinkage rate of 25% between the wet and the desired dry film coating thickness.

- 4.1.5 Remove excess build up of coating material at edges and joints by brushing or rolling the surface with a damp sponge roller.
- 4.1.6 Spray edges of the substrate from each side to cause the material to wrap around the edge. If the edge coating is not completely closed, use a wet roller or trowel to seal the edge surface.
- 4.1.7 Apply Fiberglass Armoring to the wet surface after the final pass and use a roller to flatten out any wrinkles and to embed the fiberglass securely. Then apply sufficient material to cover the embedded fiberglass.
- 4.1.8 Remove all runs, sags, drips or other surface imperfections before the material cures using wet sponge rollers, brushes or hand trowels.

#### 4.2 Hand Applications

- 4.2.1 Trowel the material to a uniform thickness using moderate pressure and avoid overworking the material. The trowel should be wetted with water when a smooth finish is required.
- 4.2.2 Glove the material to cables and small pipe using standard work gloves. Work small areas and keep the gloves wet to insure a relatively uniform thickness.

#### 4.3 Dry Film Thickness Measurements

- 4.3.1 Take dry film thickness measurements after the applied material has cured. Measurements shall be made using electrical, penetrating or magnetic measuring instruments.

4.4 Repair Procedure - Damage

- 4.4.1 Remove damaged and loose material using a knife and scrapper. Cut back until sound adhering material is reached.
- 4.4.2 The edge should be undercut to form a beveled edge as in plaster repair.
- 4.4.3 Remove all foreign matter from the substrate using a wire brush.
- 4.4.4 Spray or trowel THERMO-LAG 330-1 onto patch area. Several coat of the material can be applied to achieve the desired film thickness. Be sure to allow for shrinkage of repair patch by building up a slight dome shape with the patch.

4.5 Cable Replacement - Repair

- 4.5.1 Remove sections by cutting away material at the side and butt flanges.
- 4.5.2 Remove fasteners from flanges and carefully remove coated sections.
- 4.5.3 After work is completed, reattach envelope system using mechanical fasteners, staples or 18 ga. galvanized tie wires.
- 4.5.4 Apply a coating of THERMO-LAG 330-1 Subliming Coating in the specified wet thickness to the edges and joints of the reinstalled sections using a trowel or stiff bristle brush to fill in any uncoated areas.

5.0 TOPCOAT APPLICATION

5.1 Spray Application

5.1.1 Pour Part B into Part A and thoroughly mix using a mechanical mixer. Mix a minimum of 5 minutes and allow a "sweat in" period of 20 minutes before commencing the application.

5.1.2 Insure that the area to be topcoated is free from loose and foreign matter.

5.1.3 Take moisture meter readings of the applied subliming coated surface using a Delmhorst Moisture Meter (Model DP) or equivalent. Obtain a reading of 20 or less before applying the topcoat.

5.1.4 Place mixed material into spray rig.

5.1.5 Apply topcoat in a smooth even pattern, making sure to criss-cross the area in a continuous film.

5.2 Hand Application

5.2.1 Apply a full smooth coat of topcoating using a long nap mohair roller. Avoid excessive buildup of topcoat in corners and always work to a wet edge of applied topcoat.

6.0 POST APPLICATION PRACTICES

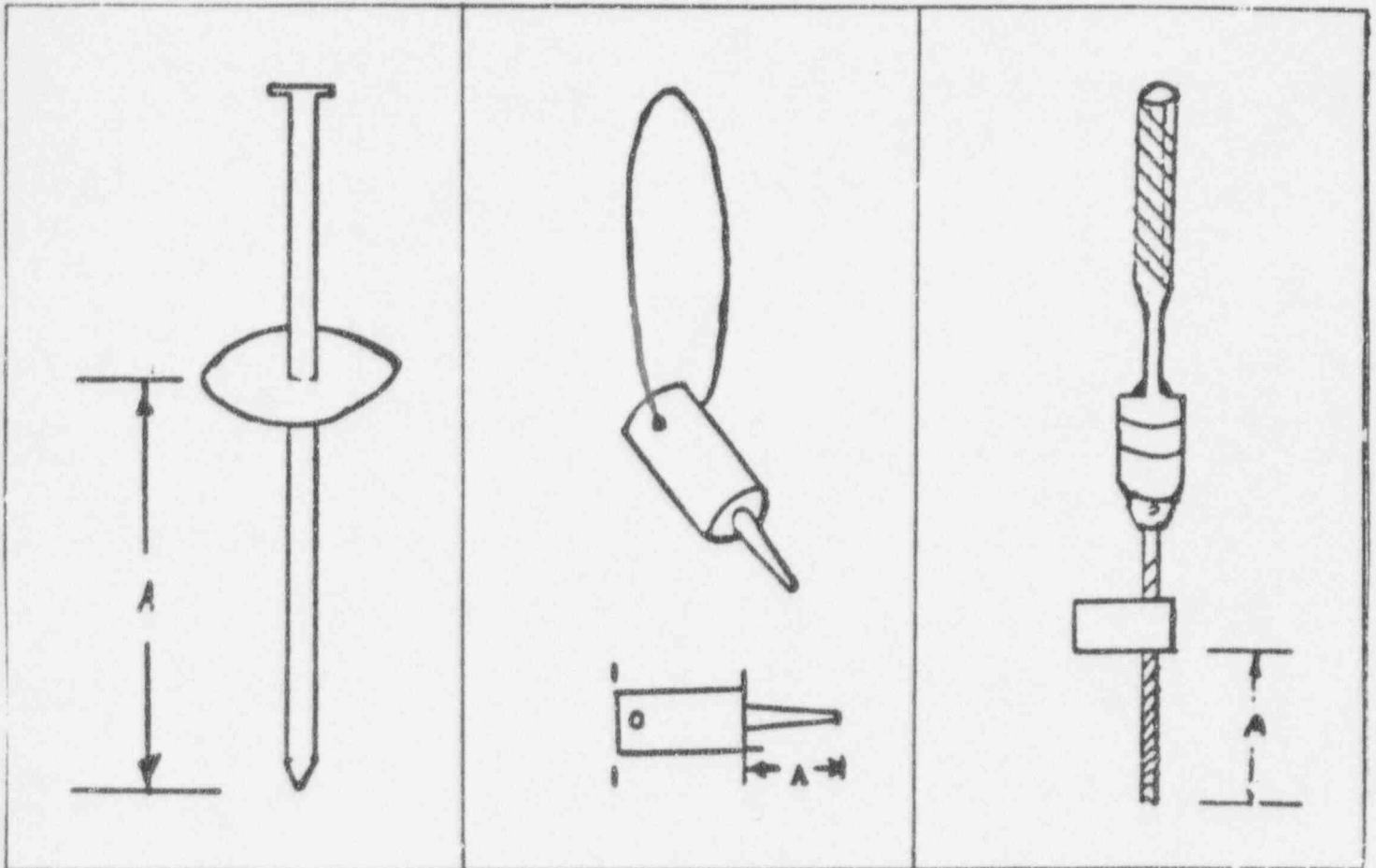
6.1 A clean and orderly condition shall be maintained in the application area. Following the application, all overspray, debris and equipment shall be removed and the area left in a condition acceptable to the owner.

7.0 EQUIPMENT SUGGESTIONS

- 7.1 The most economical and satisfactory method of applying THERMO-LAG 330-1 Subliming Coating is by either airless or air type spray equipment.
- 7.1.1 Air type spray equipment is recommended for use in spraying cable drops and conduit in order to minimize overspray.
- 7.1.2 Airless spray equipment is recommended for use in spraying larger sections such as cable trays and large I beams.
- 7.1.3 Suggested complement of spray equipment for both types are shown in Appendix B.

APPENDIX A

SCHEMATIC OF SUGGESTED PENETRATING  
MEASURING DEVICES



"A" is equal to the desired thickness of the coating.

On measurement - the pin portion of the gauge must sink completely into the layer of the applied coating. Take several readings for each thickness. Fill the hole created by the gauge after measurement is completed.

APPENDIX B

SUGGESTED COMPLEMENT OF REQUIRED SPRAY EQUIPMENT  
FOR THERMO-LAG 330-1 SUBLIMING COATING APPLICATION

AIRLESS SPRAY EQUIPMENT

<u>QUANTITY</u>	<u>DESCRIPTION OF EQUIPMENT</u>
1 Each	Hydra Spray Pump 45:1
1 Each	Air Powered Ram
1 Each	Hydra Mastic Spray Gun
1 Each	Special Dump Valve
2 Each	RAC III with 0.55 Tips
1 Each	Air Agitator
1 Each	Air Regulator Kit
1 Each	Air Regulator Only with Gauge
1 Each	Air Line Filter
1 Each	Air Line Lubricator
5 Each	Pump Repair Parts Kits
6 Each	Extra Tips with Seals
100 Feet	1 Inch I.D. Hi Pressure Fluid Hose
75 Feet	1/2 Inch I.D. Hi Pressure Fluid Hose
25 Feet	3/8 Inch I.D. Hi Pressure Fluid Hose

APPENDIX B

(CONTINUED)

AIR TYPE SPRAY EQUIPMENT

<u>QUANTITY</u>	<u>DESCRIPTION OF EQUIPMENT</u>
1 Each	10:1 President Spray Pump
1 Each	Air Powered Ram
1 Each	Heavy Mastic Spray Gun
1 Each	Special Dump Valve
2 Each	1/4 Inch or 1/4 Inch "E" Spray Tip
1 Each	Air Agitator
1 Each	Air Regulator Kit
1 Each	Air Regulator Only with Gauge
1 Each	Air Line Lubricator
1 Each	Air Line Filter
5 Each	Pump Repair Parts Kits
75 Feet	1/2 Inch I.D. Hi-Pressure Fluid Hose
25 Feet	3/8 Inch I.D. Hi-Pressure Fluid Hose

## APPENDIX C

### APPLICATION PROCEDURES STRUCTURAL STEEL ENTITIES

#### 1.0 INTRODUCTION

This procedure sets for the sequential steps involved in applying THERMO-LAG 330-1 Subliming Coating System to structural steel entities and steel storage tanks.

The THERMO-LAG 330-1 Subliming Coating System consists of THERMO-LAG Primer, THERMO-LAG 330-1 Subliming Coating, and where applicable, THERMO-LAG Topcoat.

#### 2.0 SURFACE PREPARATION

- 2.1 All surfaces to be coated are to be clean, dry, above 40°F, and free from scale, rust and other contaminants.
- 2.2 Prepare non-compatible surfaces for coating by applying a barrier coat of THERMO-LAG 351 or THERMO-LAG 351-2 Primer. Never apply the primer directly over a surface previously primed with a zinc based primer without installing a barrier coat. Never apply the primer directly over any hard or glossy paint without roughening the surface in accordance with standard, good painting, practice procedures and make sure that the cleaned substrate is compatible with the THERMO-LAG 330-1 Subliming Coating by making cross hatch adhesion tests.
- 2.3 Blast clean doubtful surfaces to an SSPC-SP6 finish and reprime immediately.

3.0 PRIMER APPLICATION

- 3.1 Apply the primer to a properly prepared steel surface in one continuous coat using spray equipment or a roller. The minimum acceptable dry primer thickness should be 0.002 inches which is normally achieved by applying at a rate of 200 square feet per gallon.
- 3.2 Measure primer thickness using an approved magnetic direct reading gauge.
- 3.3 Make cross hatch adhesion tests, as per Federal Standard 141A, on the primed surface to assure proper adhesion between the primer and the steel substrate prior to proceeding with the application of the THERMO-LAG 330-1 Subliming Coating.
- 3.4 Make at least one cross hatch adhesion test every twenty (20) square feet of primed surface area. Any primed surface area which fails the cross hatch adhesion test shall be sandblasted to an SSPC-SPC6 commercial blast finish and then shall be reprimed with THERMO-LAG 351 or THERMO-LAG 351-2 Primer.

4.0 THERMO-LAG 330-1 SUBLIMING COATING

- 4.1 Apply the material in as many passes as required to provide the required film build or thickness, taking care to avoid slumping or sagging of the coating. The thickness which can be safely applied in a single pass will depend upon the temperature, humidity, application technique, and other factors and should be determined at the job site.
- 4.2 Apply the material in smooth even passes, taking care to keep the spray gun fan pattern at a 90° angle whenever possible. Reaching with a spray gun will cause the spray pattern to vary from the 90° angle and will result in a rougher surface than normal.

- 4.3 Take frequent wet thickness measurements during the application using a penetration measuring device such as those shown in Appendix A to ensure that the coating is being applied uniformly and at the required wet film thickness. These wet thickness checks shall be made very five square feet or every two running feet of coated surface area. (Note: When taking measurements allow for a shrinkage rate of 25% between the wet and the desired dry film coating thickness.
- 4.4 Remove excess build up of coating material at edges and joints by brushing or rolling the surface with a damp sponge roller.
- 4.5 Spray edges of the substrate from each side to cause the material to wrap around the edge. If the edge coating is not completely closed, use a wet roller or trowel to seal the edge surface.
- 4.6 Apply Fiberglass Armoring, where required, to the wet surface after the final pass and use a roller to flatten out any wrinkles and to embed the fiberglass securely. Then apply sufficient coating material to cover the embedded fiberglass.
- 4.7 Remove all runs, sags, drips or other surface imperfections before the material cures using wet sponge rollers, brushes or hand trowels.
- 4.8 Take dry film thickness measurements after the applied material has cured. Measurements shall be made using electrical, penetrating or magnetic measuring instruments.

5.0 TOPCOAT APPLICATION

- 5.1 Insure that the area to be topcoated is free from loose and foreign matter.
- 5.2 Take moisture meter readings of the applied subliming coated surface using a Delmhorst Moisture Meter (Model DP) or equivalent. Obtain a reading of 20 or less before applying the topcoat.

5.3 Place mixed material into spray rig.

5.4 Apply topcoat in two continuous coats at a minimum spread rate of 50 square feet per gallon in a smooth even pattern, making sure to criss-cross the area in a continuous film.

6.0 CLEAN UP

6.1 A clean and orderly condition shall be maintained in the application area. Following the application, all overspray, debris and equipment shall be removed and the area left in a condition acceptable to the owner.