

GENERAL SPECIFICATIONS

THIS SECTION CONTAINS LAURENCO SYSTEMS & PRODUCTS SPECIFICATIONS WHICH INCLUDE: THE SCOPE OF WORK, APPLICATIONS & FIELD INSTRUCTIONS.

THIS INFORMATION IS ONLY FOR USE WITH LAURENCO SYSTEMS & PRODUCTS. LAURENCO INCORPORATED ITS SUCCESSORS AND AGENTS CAN NOT BE HELD LIABLE IF THE INFORMATION CONTAINED HEREIN IS USED WITH ANOTHER PRODUCT(S) OR SYSTEM WITHOUT LAURENCO'S WRITTEN CONSENT.

TO CONTINUE CLICK ON THE HIGHLIGHTED WORD(S) OR SCROLL TO THE NEXT PAGE.

LAURENCO SYSTEMS TABLE OF CONTENTS

For Waterproofing Applications and Specifications

LAURENCO SYSTEMS presents the following specifications and details to the Architect, Engineer, Specification Writer, Owner and Contractor as a guide for the recommended application of Laurenco Products and Systems. **The following specifications and “SUGGESTED DETAILS” have been used successfully for over 45 years.**

LAURENCO’S MATERIALS DO NOT NEED OR REQUIRE:

1. 7, 14 or 28 day concrete cure times (Laurenco only needs concrete that can sustain foot or its’ equivalent plus a surface dry condition only).
2. Fillets, cants, curbs, rounded or chamfered corners, nailers or other like items.

Items 1 and 2 are additional job progress and hidden concrete design cost factors to the Owner, Architect, Engineer and General Contractor. There are none of these in the Laurenco Systems.

SCOPE OF WATERPROOFING BARRIERS SYSTEMS	3 - 7
GENERAL APPLICATION AND FIELD INSTRUCTIONS	9 - 21
N-1 SPECIFICATION for NON-INSULATED HORIZONTAL WORK (Includes Roofing Specifications)	23 - 27
V-1 SPECIFICATION for VERTICAL AND/OR WALL WORK	29 - 35
SPECIFICATIONS for INSULATED DECKS USING HIGH DENSITY EXTRUDED POLYSTYRENE, POLYISOCYANURATES OR FOAMGLAS (Includes Roofing Specifications)	37 - 44
V-2 SPECIFICATION for VERTICAL APPLICATIONS ON LAGGING, ETC.	45 - 49
LIQUID WATERPROOFING MEMBRANE	51 - 54
ARCHITECTURAL/ENGINEERING DIVISION 7 (07 ___)	55 - 69

Technical and design assistance are available at no charge.
Call 800-321-3337 (Plant) or 800-320-3337 (Sales)
Fax No. 800-543-3338

**LAURENCO’S SPECIFICATIONS, DETAILS AND MATERIALS HAVE BEEN PROVEN
IN USE FOR OVER 45 YEARS**

LAURENCO WATERPROOFING SYSTEMS

SCOPE

The type of barrier system, whether a two part consisting of membrane and adhesive or a one part liquid, necessary to solve various water exposure problems is offered in the following information as a generally applicable guide. It is a requirement of Laurenco Systems that all specifications and details requiring guarantees for a project be approved by Laurenco's Technical Department. This prior approval shall also include the usage of any ancillary materials, as well as, the sub-contractor providing the application expertise and labor.

It shall be further understood that geological conditions and building use shall dictate the type of specification, the required details and approval of the ancillary materials used to meet the project's waterproofing requirements.

1. NON-INSULATED HORIZONTAL WORK: (Specification N-1)

MUD MATS (concrete: 3 inches plus or minus 1/2 inch, non-reinforced) on or below grade:

A. Intermittent Waterhead not to exceed 50 feet:

(A single source guarantee is available from Laurenco Systems)

1. One (1) ply of Laurenco Sheet plus 4 gallons per 100 square feet of Laurenco Adhesive with an 1/8 inch asphalt/felt protection board applied "dutch" or overlap fashion using a two (2) to three (3) inch side and end lap. Polyethylene film shall be removed before sealing these laps. See Application Detail No. 2-A in "Suggested Details" section of Volume I.
2. Two (2) plies of Laurenco Sheet plus 3 gallons per 100 square feet of Laurenco Adhesive to adhere. The second ply is not top coated and is used as a protective cover instead of the asphalt/felt protection board. Platform or ribbon type rebar chairs are required for this installation.

B. Standing Waterhead to 100 ft.:

(A single source guarantee is available from Laurenco Systems)

1. Two plies of Laurenco Sheet applied with three gallons per 100 sq. ft. of Laurenco Adhesive. The second ply of Laurenco Sheet shall act as the protective course.
2. Two plies of Laurenco Sheet applied with five gallons per 100 sq.ft. of Laurenco Adhesive. The protection course shall be a minimum 1/8 inch asphalt protection boards.

3. Three plies of Laurenco Sheet adhered with four gallons of Laurenco Adhesive per 100 sq.ft. The third ply shall act as the protective course.

- NOTE:**
1. Do not top coat the Laurenco Sheet where it is used as a protective course unless required by Laurenco's Technical Department.
 2. All use of the Laurenco Sheet as a protective course shall be approved by Laurenco's Technical Department in writing.

C. Standing waterheads of 100 sq.ft. or more:
(A single source guarantee is available from Laurenco Systems)

1. Three plies of the Laurenco Sheet applied with six gallons of Laurenco Adhesive per 100 sq. feet and 1/8 inch minimum asphalt/felt protection board. Remove the polyethylene parting film before installing the rebar chairs and rebar.
2. *ALTERNATE:* Four plies of the Laurenco Sheet applied with four gallons per 100 sq.ft. of Laurenco Adhesive. The fourth ply of waterproofing sheet shall be used as a protective course. Do not top coat final ply of sheet!

2. STRUCTURAL AND/OR ROOF SLABS: (plazas, dock areas, tunnels, basements)
(Specifications N-1, I-1 & I-2)

A. Intermittent Waterhead to 100 feet:
(A single source guarantee is available from Laurenco Systems)

1. Two plies of the Laurenco Sheet applied with five gallons per 100 sq.ft. of Laurenco Adhesive plus either a 60 mil, 1/8 or 1/4 inch asphalt/felt protection board.
2. An insulation board may be installed by adhering it in the Laurenco Adhesive at the rate of 1-1/2 gallons per 100 square feet, see Specifications I-1 or I-2 to adhere to either the top ply of the Laurenco Sheet or to the asphalt/felt protection after the polyethylene parting film is removed.
3. An *alternative* is to install the asphalt/felt protection board to the top surface of the insulation board. In this instance, pre-coat the asphalt/felt protection board with the Laurenco Adhesive at the rate of one (1) to 1-1/2 gallons per 100 square feet. Allow the Adhesive to "tack" before applying the protection board to the insulation.

B. Waterheads of 100 feet or more:
(A single source guarantee is available from Laurenco Systems)

Three plies of the Laurengo Sheet applied with six gallons per 100 sq.ft. of Laurengo Adhesive and either 1/8 or 1/4 inch asphalt/felt protection board adhered in the Adhesive using tight butt joints.

C. Cutting Room Floors: (Packing Houses, Kitchens, Hospital Utility Rooms etc.)

(A single source guarantee is available from Laurengo Systems)

1. Two plies of the Laurengo Sheet applied in five gallons per 100 sq.ft. of Laurengo Adhesive with an adhered protection course of either 1/8 or 1/4 inch asphalt/felt protection board.
2. Insulation: Use extruded polystyrene insulation board adhered to asphalt/felt protection board *after* removing polyethylene parting film. Use three-quarter(3/4) to one (1) gallon (maximum) per 100 sq. ft. of Laurengo Adhesive to adhere the insulation.

D. Waste Water Treatment Plants:

Three plies of the Laurengo Sheet applied in five (5) to five and one-half(5-1/2) gallons per 100 sq. ft. of Laurengo Adhesive with 1/4 asphalt/felt protection board. (See Laurengo's Technical Department for full specification and details and to obtain guarantee approval).

E. Black Top: (Wear Surface for Parking and Pedestrian Areas)

(A single source guarantee is available from Laurengo Systems)

1. Two plies of the Laurengo Sheet applied in four (4) gallons per 100 sq. ft. of Laurengo Adhesive. Use one grade lighter viscosity for thinner applications of the Adhesive, i.e. for Summer work, use Winter Grade Laurengo Adhesive.
2. Protection board shall be W.R. Meadows Co. Type:PC-1, asphalt/felt protection board. This board shall be used as a fully adhered protection course with the polyethylene parting film removed before installing the black-top.
3. Keep the protection board clean and free of dirt and debris. Do not prime the protection board before installing the black top. (The free oils in the hot asphalt binder should provide sufficient priming activity.)

3. VERTICAL INSTALLATIONS: (Wall and high Parapet Work, V-1 and V-2 Specifications)

The geological conditions including any contamination of soils and water to be encountered, as well as the ultimate use of the building design, shall be the determining factors as to number of plies of sheet and quantities of adhesive for the appropriate total thickness of the specified waterproofing barrier system for all below grade installations.

A. Intermittent water heads and water heads not to exceed 50 ft.:

(A single source guarantee is available from Laurengo Systems)

1. Liquid Waterproofing membrane: see page 51 of this Specification Section for suggested applications and materials. (Use for benign water and soil conditions. Laurengo offers a materials warranty only for this specification.)
2. One ply of the Laurengo Sheet applied in four gallons Laurengo Adhesive. The protection Board shall be a one pound density polystyrene bead board, 1 in. x 2 ft. x 4 ft. panels. Specification V-1.
3. Two plies of the Laurengo Sheet applied in three gallons maximum of Laurengo Adhesive per 100 sq.ft. The second ply is used as a protective course when system is applied to sheet piling and shall have a reinforced concrete pour against it. See Specification V-2.

B. Water heads to 50 to 100 feet:

(A single source guarantee is available from Laurengo Systems)

1. Two plies of the Laurengo Sheet applied in five gallons of Laurengo Adhesive per 100 square feet. Protection Board shall be a minimum of one pound density polystyrene bead board, 1 in. x 2 ft. x 4 ft. panels or better.
2. Three plies of the Laurengo Sheet applied in six gallons per 100 square feet of Laurengo Adhesive. Protection board shall be a minimum of a one pound density polystyrene bead board, 1 in. (or thicker) x 2 ft. x 4 ft. panels.
3. Lagging/Sheet Piling: Use three plies of the Laurengo Sheet adhered in four gallons per 100 sq. ft. of Laurengo Adhesive. Do not top coat when using the third ply as a protection course to receive reinforced concrete cast against it.
4. Two plies of the Laurengo Sheet applied in three gallons of Laurengo Adhesive with a three gallon brush/trowel coat of Roof Flashing Coating Trowel Grade per 100 square feet. System can be used for waterproofing without protection board when exposed to SPRING-FED ONLY lakes and ponds that can freeze. To verify specifications for this and other similar requirements, call Laurengo's Technical Department.

C. Waterheads of 100 feet or more:

(A single source guarantee is available from Laurengo Systems)

Three plies of the Laurengo Sheet applied in six gallons per 100 square feet of Laurengo Adhesive. Protection board shall be a minimum one pound density polystyrene bead board, 2 in. x 2 ft. x 4 ft. panels or better.

4. SHEET PILING: (LAGGING)

See Specification V-2, page 45 and Suggested Details, Below Grade Seismic 12-BG and Below Grade Sump and Elevator Pit Detail 14-BG.

- A. Lagging: Use four plies of the Laurengo Sheet adhered in five gallons per 100 square feet of Laurengo Adhesive. This System shall be used for installations on sheet piling or lagging walls with reinforced concrete cast directly against it. Do not top coat the final ply of the Laurengo Sheet.
- B. Footings including Spread Footers: Use two (2) or three (3) plies of the Laurengo Sheet adhered in 3 gallons per 100 square feet of Laurengo Adhesive for the two (2) ply application, or 3 gallons per 100 square feet of Laurengo Adhesive for the three (3) ply. Do not top coat the final ply of the Laurengo Sheet.

NOTE: 3. Please call Laurengo's Technical Department as to additional information concerning this Specification and any modifications, the guarantees offered, plus the Details applicable to your particular design.

OUR TECHNICAL DEPARTMENT IS AVAILABLE FOR MORE INFORMATION.

Call our toll free telephone number:

(800) 321-3337 or

Our toll free fax number:

(800) 543-3338.

GENERAL APPLICATION AND FIELD INSTRUCTIONS

We are presenting the following as guide lines to insure proper installation of the Laurenco Waterproofing System to obtain a watertight, waterproof structure. These guide lines are presented as additional information and instructions for our following specifications.

N-1 and 2: Non-insulated substrates, including mud slabs.

V-1 and 2: Vertical installation (wall work).

I -1 and 2: Insulated areas to be waterproofed.

We strongly recommend that this information be made available to all concerned, i.e. the persons in charge of design, installation and inspection.

1. Caveats and Terminology:

- A. The term "tack" means the adhesive is to string out like taffy.
- B. "Wet" means freshly or reasonably freshly applied coats of adhesive.
- C. Quantities of adhesive are not to exceed those stated. If an even specified coverage seems to require greater quantities, call the Laurenco Technical Department before proceeding.
- D. Normal concrete finishes should equal that of a good wood screed or sidewalk.
- E. Avoid steel trowel or mirror finishes of the concrete surfaces to be treated wherever possible. Wood form boards are fine. If the concrete surfaces are very smooth with little or no porosity, it is necessary that adhesive shall be allowed to "tack" before embedding the waterproofing sheet. This will minimize blistering and eliminate any slippage of the waterproofing sheet.
- F. Concrete shall be surface dry and capable of at least supporting foot traffic. The concrete is technically "green."
- G. Grouting materials should only be surface dry before waterproofing. The entrapped moisture will create a tighter bond of the corrective grout procedures to the existing concrete.
- H. Use of cure agents should be approved by Laurenco's Technical Department. See Volume II, Papers on "Concrete Cure Agents and Form Board Releases", Sections 3, 4 and 7. Because Laurenco Products use an aliphatic solvent with a minimal solvating liquefying ability to meet V.O.C. standards, most resin type such alkyds, acrylics and certainly sodium silicates (water glass) are not appropriate and will place a barrier at the interface of the concrete and the waterproofing materials. This barrier usually has to be removed via sand or shot blasting which is an added cost.

- I. Form board release agents containing animal fats (tallow) must not be used. The adhesive contains only an aliphatic solvent which does not solvate fats, etc. See Volume II, Papers on “Concrete Cure Agents, etc.”, Sections 3, 4 and 7.
- J. Clarification of specifications referred to, as well as, the recommended procedures and instructions contained hereinafter, should be directed to us at our corporate offices.
- K. Durability of the Laurengo Systems, in various conditions, is predicated on material thicknesses obtained in its’ specifications. Laurengo’s Technicians have ascertained that installed thicknesses (using multiple sheet and adhesive plies) coupled with the various component raw materials comprising our waterproofing barrier does determine the effective longevity of each system; hence, the various lengths of each Laurengo Guarantee offered.

To conclude: The Laurengo Prefabricated Sheet and Adhesive Systems are, basically, a two (2) part system which is inter-reactive through the use of uncured synthetic rubbers and an aliphatic solvent. The Laurengo Sheet contains the curing materials. The Laurengo Adhesive is the catalyst to fuse both the prefabricated Sheet and the Adhesive into one homogenous, glass reinforced mass which will take about 25 years to cure (most concrete ultimately cures in about 23 years) to between 55 and 60 hardness factor.

2. MATERIALS STORAGE (Job Site or Warehouse):

- A. The shipping cartons are to be stored flat (on long side) never on end.
- B. The shipping cartons are to be stored no more than five rows high on wood pallets or on a platform sufficiently high enough to keep the cartons out of the mud and debris.
- C. The shipping cartons should be kept in a cool, shaded area. Inside storage (building or trailer) is preferred for storage.
- D. Rolls of Laurengo Sheet are to be removed from their shipping cartons only when ready to use. Remnants (shorts) of rolls should be returned to their cartons so that they can be used later.
- E. Temporary outside storage:
 - 1: Rolls:
 - a. Cover only with a light colored canvas tarpaulin.
 - b. Never use polyethylene film or any other non breathing cover material.

- c. Do not cover with asphalt/felt protection board which is black and absorbs heat.
 - d. Panels of insulation can be used when they are weighted or tied down.
 - e. Trailer Storage For Rolls:
 - 1. Summer Grade: Use well ventilated Trailer or Trailer that can be air-conditioned to no lower than 68° F or higher than 85° F (20⁰ to 30⁰ C).
 - 2. Winter Grade: Use trailer heated no higher than 68° F (20⁰ C).
- 2: Adhesive: (Pails & Drums)
- a. Store containers on pallets off the ground away from construction activities.
 - b. Store away from any potential fire hazard.
 - c. If containers have been dented or stored longer than one (1) month outside, examine them before use for a tight seal.
 - d. *Primer only:* To mix without opening containers, up-end containers 24 hours before using. This will use the variances in the various materials' specific gravity to re-mix. Use a rocker-type drum rack to up-end for mixing plus ease of pail supply.
 - e. Do not change the viscosity, etc. of any Laurenco Product without prior written approval by the Laurenco Technical Department. If any Product is tampered with, it will void any guarantees expressed or implied.

3. LAURENCO ADHESIVE:

- A. The Adhesive is used to adhere the Laurenco Sheet and specified protection boards. Do not exceed those quantities specified. At all times use a thin, even coat. Excessive quantities will cause the Sheet and the protection board to slip. Excessive quantities will not “tack” quickly slowing production.
- B. The Adhesive is a semi-viscous liquid composed of three synthetic rubbers (chloroprene, butyl and NBR) to modify the asphalt base which contains an aliphatic solvent (V.O.C. compliant) with appropriate ultra-violet ray inhibitors only. The Laurenco Adhesive is supplied asbestos **free** and not only meets , but exceeds, ASTM D4479.

- C. The Adhesive must not be thinned. If there are any problems, call the Laurengo Technical Department. Unauthorized changes in the viscosity and chemical composition, etc. of the Adhesive will void all guarantees and warranties either expressed or implied.
- D. Approximate shipping weight of Laurengo Adhesive is 9 lbs. (4.08 kg) per gallon. Trowel Grade is 10 lbs. (4.54 kg) per gallon.
- E. Container Size:
 - 1: Adhesive: 5 gallons or 18.9 liter sized pails and/or, 55 gallon or 208 liter sized drums with open tops with two bungs (2" & 3/4").
 - 2: Trowel grade adhesive: 5 gallon (18.9 liter) pail size only.

4. LAURENCO SHEET:

- A. Laurengo Sheet is packaged:
 - 1: 36" x 73' 4" (0.914 m by 22.5 m) rolls; 220 sq ft (20.46 sq meters).
 - 2: One roll per carton at 68 lbs (31.0 kg); 20 cartons per pallet.
 - 3: Each roll is wound on heavy paper cores, talc dusted, with 1.5 mil polyethylene film release sheet in labeled white cartons.
- B. Laurengo Sheet is a Prefabricated (Pre-Filmed) Membrane consisting of:
 - 1: Woven glass fabric (20 x 10 weave count) as the reinforcement. See ASTM D 1668.
 - 2: Filmed to 50 mils. thick plus or minus 10% with chloroprene and butyl modified asphalt using appropriate Ultra Violet Ray resistant fillers with slow curing agents. This is an uncured material that gradually cures through age, heat and solvent release when combined with Laurengo Adhesive, Rubberized Flashing Coating or Neoluminum.
 - 3: Laurengo Sheet coverage for "Cap Sheet" Installation:
 - a. All laps, side and end, are to be 4 inches (10.16 CM) plus or minus one(1) inch (2.54 CM).
 - b. Stagger all side laps.

- c. Horizontal Laps: estimate an add on of 10% of net area for horizontal areas.
 - d. Vertical Laps: estimate an add on of 2% (10% allowance in roll size plus 2%) for the first two lifts; an appropriate 10 ft (3.05 m), wall height. Wall heights to 25 ft. (8.0 m) estimate 15% (10% roll allowance plus 5%). Additional heights estimate 17% (10% roll allowance plus 7%).
 - e. Flashing widths for interior and exterior corners are normally 9 inches (22.86 cm) wide and cut from the length of the Laurenco Sheet. A 36 inch (0.91 m) yields four widths, 9 inch (22.86 cm) wide flashing strip.
- 4: Cutting Board for Flashings and Vertical Sheets: Use 5/8 inch (1.58 cm) to 3/4 inch (1.91 cm) thick plywood mounted on two (2) saw horses to pre-cut the Laurenco Sheet for flashings and lengths to accommodate height of each lift of waterproofing application. Usual length for each lift height is 5 or 6 feet (1.52 m to 1.83 m) plus width of flashing turn-out onto footers including allowance for multiple 2 inch (5.08 cm) increments for each sealed tie-off. See details for Below Grade Waterproofing in “Suggested Details.”
- 5: Unrolling the Laurenco Sheet:
- a. Each roll of Laurenco Sheet comes with a 1.5 mil polyethylene parting film which is to be removed before installation.
 - b. After removing roll from the shipping carton, snap paper tape and peel film off roll to point where the Sheet begins.
 - c. With polyethylene film on top of Sheet, position roll on the deck for horizontal roll-out or to position roll on cutting board.

NOTE: 4. Always keep poly-film on top of Sheet with the Sheet only down on working surface whether it is the deck (slab) or cutting board. This makes easy handling, i.e. to kick out on a deck either with film in place or removed prior to setting in place.
 - d. Protect pre-cut Sheets with panels of polystyrene bead board on top of cutting board or store in shade under cutting table.
 - e. Do not pre-cut more Sheet material than can be used in four (4) hours.
 - f. Always store the Laurenco sheet in rolls in their cartons and cut widths and lengths flat with polyethylene film as a barrier between pre-cut lengths. Raw Cut edges will stick to everything!

NOTE: 5. The Laurenco Sheet contains raw, uncured synthetic rubbers and is very sticky; ESPECIALLY SO when the talc dusting is disturbed.

5. PROTECTION BOARDS: (ASPHALT/FELT, POLYSTYRENE BEAD BOARD AND CERTAIN INSULATION SUCH AS EXTRUDED POLYSTYRENE)

A. Store all protective boards off ground on pallets and covered with canvas tarpaulins. Allow for a circulation of air to resist entrapping moisture beneath the canvas.

B. All protection boards are to be fully adhered in Laurenco's Adhesive or mastics. No protection board is to be loose-laid unless specifically specified and authorized in writing by Laurenco's Technical Department.

C. Horizontal Work - Protection Board:

1: Use 1/8 inch (0.32 cm) which is the usual size and where approved use 60 mil (0.22 cm) or 1/4 inch (0.65 cm) thick asphalt/felt protection board. These thicknesses can be supplied by W.R. Meadows Co., Skokie, Illinois, all from their local plants. For information as to approved alternates, call Laurenco's Technical Department.

2: Install the asphalt/felt protection board polyethylene film side up. Remove this film after installation of the board and before the installation of black-top, insulation boards, adhered pavers, etc. The polyethylene parting film should be left in place underneath all direct installations of concrete wear slabs as a friction barrier at the interface of the concrete slab and the waterproofing system.

3: Use of sand (granular) release materials for the asphalt/felt protection board is permitted. Where necessary remove (brooming) of excessive applications of granular release materials before installing this protection board.

4: Use rounded or plastic footed rebar chairs with the asphalt/felt protection board.

5: Laurenco Sheet may be used instead of an asphalt/felt protection board.

a. Use only platform or ribbon type rebar chairs.

b. Concrete block, etc. can be used as a platform interface with wire, etc. rebar chairs.

NOTE: 6. See *Scope*, pages 3 through 7 of this *Specification Section*. Also see the individual appropriate specifications in this following information.

D. Vertical Work - Protection Board:

- 1: Use polystyrene bead board one inch thick, 2' x 4' panels, one (1) lb. density minimum.
 - a. Provides an indicator of potentially damaged areas; this board is white and the Laurencos Products are black. (Except for Neoluminum)
 - b. Provides a cushion against backfill operations, and because it will split within itself, prevents a transference of the drag from compacting to the Laurencos Products.
 - c. Transmits water and moisture through the board thereby acting as an inexpensive drainage field that is difficult to displace during backfill operations.
- 2: Insulations may be applied in lieu of polystyrene bead board. Use Laurencos recommended insulations only. However, it is wise to adhere the polystyrene bead board to the outside face of the insulation to provide the drainage field mentioned item 1.C. of the foregoing.

E. Protection Board Application:

- 1: Horizontal use only for asphalt/felt protection board; 1/8", 1/4", and 1/2" (0.32, 0.65 and 1.27 cm) thicknesses.
 - a. Asphalt/felt protection board shall be embedded in a squeegee coat of Laurencos Adhesive. Apply Adhesive at the rate of 1-1/2 gallons (5.68 liters) to a maximum of 2 gallons (7.57 liters) per 100 square feet (9.3 sq. meters) Allow the Adhesive to become "tacky" to almost dry.
 - b. Slope work:(See Detail No. 3-S, "Suggested Details.") Embed the length of the asphalt/felt board parallel (like wall paper) to slope in a brick type pattern with no vertical joint on vertical joint.
 - c. Void Forms: Install 1/8 inch asphalt/felt board in an overlapped pattern (see Detail No. 2-A in "Suggested Details") or 2 plies of 1/8 inch (0.32 cm) protection board using staggered joints. Adhere with Laurencos Adhesive all protection board to the Void Form and where two (2) plies are being installed, interply adhere. Install three (3) ply N-1 Specification. Do not coat third ply of Laurencos Sheet unless the concrete cannot attain a cure (hydration) temperature of 100⁰ F (32⁰ C) minimum.
 - d. Exception - Filler and Barrier Interface Use: Asphalt/felt protection board will be used in our Laurencos Details in thicknesses of 1/8 and 1/4 inch (0.32 and 0.65 cm) as a barrier at the interface between our Products and any later casting of concrete:

1. At cold joints between concrete vertical faces which may appear as caulk joints, or;
 2. At the interface between metal counter flashings and the Laurengo Sheet Flashing Materials, or;
 3. Any place where a construction item can heat or will be heated sufficiently to bond to the Laurengo Products originally applied to a cold surface.
2. Vertical use only for polystyrene bead board; recommended size, 1" x 2' x 4' (2.54 cm by 0.61 m by 1.22 m). This size is quicker, easier and more economical to install and gives less wastage when cutting and fitting. It does not make a sail in the wind" for those handling these materials. A big safety factor.
- a. Polystyrene bead board shall be embedded in a roller coat of Laurengo Adhesives at the rate of 2 gallons (7.57 liters) per 100 sq. ft. (9.3 sq. m) minimum. Use only 1/4 inch (0.64 cm) nap, a "mohair" type nap, solvent resistant, roller sleeve.
 - b. Slide polystyrene bead board panels into position while adhesive is still wet. This type of application will disturb and coat the dry face of the board permitting it to adhere quickly. Usual slide pattern offset to wipe the board into place is 3 to 4 inches (7.6 cm to 10.16 cm) both horizontally and vertically from the final, desired position.
 - c. Install the board in a brick pattern using a tight butt joint, staggered, with no vertical joint on vertical joint.
 - d. Score outside face of board for wall conformance using a utility knife. Use a cross-hatched pattern for vertical and horizontal scoring.
 - e. For expansive soils, i.e. Dolomite, etc., use 2" (5.08 cm) to 4" (10.16 cm) board thicknesses with a one lb.(0.454 kg) to two lb. (0.90 kg) density.

6. TOOLS FOR INSTALLING THE WATERPROOFING MATERIALS:

(Basic required tools for all work are a utility knife, scissors and brooms)

A. Horizontal Work Tools and Equipment:

1. Drum rack with 2 inch (5.08 cm) O.D. molasses valve.
2. Wood headed squeegee 12 inches (30.48 cm) or 18 inches (45.7 cm) wide with a Neoprene rubber blade with a 5/8 inch (1.6 cm) deep blade. Wider or saw toothed (serrated) are too flexible and the saw-toothed type cannot thinly and evenly coat the adhesive.

3. 4" (10.16 cm) wide paint roller with 1/4" (0.64 cm) or mohair type nap and a long handle is preferred to Adhesive coat and seal horizontal laps.
4. White wash brush may be used for top coating terminations and tie-offs. Shorten bristles by 1/2 its' length to stiffen.
5. 5 gallon (18.93 liter) size pails to distribute the adhesive in long, narrow ribbons or beads for the man on the squeegee to distribute evenly and smoothly.

B. Vertical (Wall) Work Tools and equipment:

1. 8 inch (20.32 cm) wide paint roller with a 1/4 inch (0.65 cm) nap and a solvent resistant core (for use in 5 gallon [18.93 liter] pail) to transfer the Laurencio Adhesive from pail to vertical (wall) surfaces.
2. 10 inch (25.4 cm) to 14 inch (35.56 cm) wide squeegees with a narrow window washing type blade to smoothly coat vertical and horizontal surfaces. An attached two (2) foot wood handle works well. Use these same squeegees to firmly embed the Laurencio Sheet: use the squeegee to embed sheet (like a wallpaper brush in wallpapering).
3. 2 inch by 4 inch by 8 inch wood block as an embedding tool. Provides a better and a more even pressure than the installer's hands. The Laurencio Sheet is tough and always has taken the abuse.
4. 6" squeegee is preferred or a stiff bristle, paint brush can be used for laps and corners and otherwise in accessible places for rollers, trowels and floats. The small squeegee provides thinner and very even Adhesive distribution.
5. An 8 inch long with a 1/4 inch (mohair type) nap roller is used to apply the Adhesive in the proper quantity to install/embed the polystyrene bead board.

C. Flashing Tools:

1. A smooth edge metal float should be used to obtain thin, even flashing applications.
2. 6" wide Neoprene rubber blade window washer squeegee. Squeegee is useful to firmly embed flashing Sheet widths to Adhesive for an even, uniform pressure.
3. Trowel (a rectangular mason type) or smooth edged float for laps and corners and terminations.

4. Cutting Table consisting of a 4 ft. wide by 8 ft long, 3/4 inch thick exterior grade plywood (for weathering purposes) be set on saw horses for maneuverability.
 - a. Set this cutting table as close as possible to work area for ease of handling cut lengths of wall Sheets and flashing widths and lengths.
 - b. Store cut widths and lengths flat on top of cutting table with polystyrene bead board cover or place under table flat or rolled up on the shipping cores for the Sheet. Always keep the polyethylene film in place. The cut edges of the Laurengo Sheet will soften faster in hot weather or in sunlight.

7. **LABOR:** (A normal crew size is four (4) men for both Horizontal and Vertical Work and is utilized as follows)
 - A. Horizontal Work:
 1. One man squeegeeing the Laurengo Adhesive out about five minutes minimum ahead (depending on temperatures, etc.). Allow "tack time" to dry time.
 2. Two men following placing the Laurengo Sheet side lap to side lap.
 - a. "Picture Frame" Sheet and Adhesive applications between the horizontal slab terminations of the already completed, flashing installation and the subsequent field Laurengo Sheet installation to provide a clean walk/service way.
 - b. Laurengo Sheet and Adhesive can be installed as the "Frame" to cover the horizontal flashings and lap the already installed field sheets. The Laurengo Sheets are multi-directional for this use.
 - c. Do not topcoat with Laurengo Adhesive until after flood testing.
 - d. Top coat with Laurengo Adhesive to adhere protection board only after the installation has passed the flood test.
 3. One man (a "Gofer") to:
 - a. Supply the pails of Laurengo Adhesive and rolls of Laurengo Sheet.
 - b. Seal all laps and terminations.

B. Vertical (Wall) Work:

1. One man to squeegee the Laurengo Adhesive on the vertical (walls) areas.
2. One man to cut Laurengo Sheet in lengths of 5, 5-1/2, or 6 ft. (1.52, 1.68. or 1.83 m) whichever field length seems easiest and best for the installers to hang for vertical (wall) work. He also cuts the flashing widths from the lengths of the Laurengo Sheet and pre-folds to widths necessary.
3. One man to hang the Laurengo Sheet, smoothing into place with a squeegee, embedding like wall paper; working down from the center of the Sheet. This is to keep out wrinkles and obtain total bond to substrate and sub-plyies of Sheet. It is recommended that a four inch (10.16 cm) wide band of Laurengo Adhesive on top end of the Laurengo Sheet.
4. One man to coat laps, corners, projections, etc. and supply pails of Laurengo Adhesive or heat seal all top terminations using:
 - a. A hot air gun and heated metal float with smooth edges to soften and iron in.
 - b. A one (1) inch (2,54 cm) diameter propane torch supplied from a 5 gallon (18.93 liter) sized portable tank or a multi-directional self-igniting, hand-held propane torch to only soften and iron the materials smooth and tight, i.e. a Burnz-O-Matic

NOTE: 7. Heat trowel or metal float before softening the Laurengo Sheet. Iron in terminations or any wrinkles as soon as sheet starts to turn “shiny” or it will slide. Top coat with Laurengo Adhesive, after Sheet has cooled, as a protective coat and to restore the uncured condition of the rubbers in the sheet.

8. SURFACE FINISH REQUIREMENTS:

A. Metal:

1. Scrape off all loose existing materials to obtain a tightly bonded surface as a substrate.
2. Remove all shipping and storage protection oils. Any silicone protection shall be sand blasted.
3. Surface dry any wet or moist surfaces. Squeegee off all water/moisture possible. A propane weed burner is sometimes helpful, if carefully used. Other drying equipment can be a leaf blower or a hot air gun.

B. Concrete and Concrete Block: References can be obtained from the re-write of A.C.I. Guide 515 in Volume II, Section No. 7.

1. Concrete surface shall have all "bug" holes, larger and thicker than a U.S. Nickel, grouted.
2. "Honeycombs" shall be grouted smooth: a sidewalk type finish is preferred.
3. All surfaces shall be surface dry, clean and free of dirt, debris and contaminants such as concrete cure agents, silicones, form board release agents other than petroleum distillates. Those agents which contain tallow (animal fats), silicones and sodium silicates (water-glass) will require sand blasting to remove these barriers from the concrete surfaces.
4. Remove all fins, latices and effects of form board "kick outs" by scraping or sandblasting. Concrete irregularities may also be removed by bush-hammering. Avoid grinding the concrete. Grinding makes a dusty barrier at the interface of the concrete surfaces and the waterproofing system.
5. Depressions such as foot prints shall be grouted smooth.
6. All interior and exterior angles shall be grouted smooth to repair voids. Remove excess concrete. Flashings are to be pre-folded to set into, or onto, each corner angle.
7. All concrete surfaces shall be a good wood screed finish (a good "sidewalk" finish is preferred). If possible, do not "mirror" finish concrete which eliminates the pores in the concrete surfaces. Some surface porosity is good for the adhesive to penetrate. Do not overwork the concrete surfaces when finishing as it will weaken the concrete surface causing it to spall when cured.
8. Concrete Block: Flush-finish all mortar joints smooth with face of the block.
9. Do not use chamfered or rounded corners.
10. Do not use cants, curbs or fillets.
11. Do not use nailers.

9. AREA CLEAN-UP: (Call Laurencó's Technical Department)

- A. Remove smears of adhesive by first freezing with a CO₂ extinguisher and carefully peel smear.
- B. Remove residual stain by carefully wire brushing or by lightly sand blasting.

C. Sometimes “Fuller’s Earth” is appropriate to use.

D. Never try to solvate the smear or stain, unless directed to by Laurenco Technical Department.

10. APPLICATOR’S CLEAN-UP:

A. Use a lanolin and solvent cleaner manufactured *without sand or a grit*.

1. Abrasives roughen skin.
2. Abrasives make the skin vulnerable to sun and wind burn.
3. Abrasives render the skin solvent absorptive.

B. Use charcoal lighter fluid only, if a solvent is necessary to clean tools and excessive amounts on skin. ***Do Not use gasoline or any aromatic solvent***, i.e. toluene/toluol, xylene/xylol, mineral spirits, etc. ***These solvents are skin absorptive!***

C. Neutralize solvent on skin with cold tea ***Immediately!***

1. It is always wise to bring tea in large containers and store in cool place during Summer months or to make “Sun Tea.”
2. Sluice solvent, etc. attacked skin areas with multiple pours of tea.
3. Remove tea each time using the workman’s hand.
4. If a stinging and/or burning sensation persists, ***Apply ice and see a doctor.***
5. Gloves: Use cheap cotton gloves that can be disposed of readily and easily.

11. APPROXIMATE PRODUCTION PER MAN PER DAY:

A. Vertical (Wall) Work:

1. 300 sq.ft. (27.9 sq. m) per man/day for two ply specification, including installation of protection board as a minimum.
2. 800 sq. ft. (74.3 sq. m) per man/day usual minimum for single ply and protection board.

- B. Horizontal-900 sq.ft. (83.6 sq. m) per man/day for two ply specifications including protection board installation.
- C. Two ply flashing: minimum average is 150 sq.ft. (14.0 sq. m) per man/day; usual 200 to 300 sq. ft. (18.6 to 28 sq. m) per man/day.

NOTE: 8. The foregoing production figures are averages based on experience with all types of projects.

- 9. Straight vertical and horizontal, easily accessed, pre-cleaned installations with simple details (i.e minimal or no penetrations, etc.) Allow much faster production and greater coverage per man/day (usually one-half again) than those stated in the foregoing.**

END OF GENERAL APPLICATION AND FIELD INSTRUCTIONS.

SPECIFICATION N-1 (NON-INSULATED DECK)

1. SCOPE: Reference Pages 3-7, Specification Section

2. MATERIALS TO BE USED:

A. Laurenco Sheet

B. Laurenco Adhesive

C. Additional materials that may be required:

1. A 0.60 mil (0.23 cm), 1/8 inch (0.32 cm) or 1/4 inch (0.65 cm) asphalt/felt protection board with polyethylene film on one side and usual size of 4 ft. (1.21 m) wide by 8 ft. (2.44 m) long is recommended.
2. Laurenco Primer (ASTM D-41-73) to be used only to stabilize excessively granular and powdery surfaces.
3. 4, 6 or 9 inch wide (10.16, 15.24 or 22.86 cm), asphalt treated, woven glass fabric (ASTM D-1668, Type 1) 20 x 10.
4. Laurenco Butyl Sealant Tape or equal (as approved by Laurenco).

3. PREPARATION FOR WORK TO BE PERFORMED:

- A. Surfaces to be waterproofed shall be at least surface dry, clean and free of dirt, and debris, with no objectionable projections or depressions. (wood float finish is preferred, a good screed [sidewalk] finish is acceptable as a minimum).
- B. Do not use cants, fillets, curbs, chamfered or rounded corners. All corners should be clean, neat and smooth.
- C. Do not use nailers.
- D. All objectionable projections (1/8 inch [0.32 cm] or more) shall be scraped or lightly ground, depressions and voids grouted to a presentable finish.
- E. Ventilation should be provided for all confined areas.

4. GENERAL CONDITIONS AND INFORMATION:

- A. Any quantities of materials referred to, hereinafter, shall be understood to mean per 100 sq. ft. (9.3 sq. m) and gallonage is to be as close as possible to those indicated.
- B. All laps shall be 4 inches(10.16 cm) plus or minus 1 inch (2.54 cm).
- C. Laureco Adhesive shall be applied by means of a smooth-edge squeegee with a narrow 5/8 inch (1.59 cm) deep blade, 12 to 18 inches (30.48 by 45.72 cm) wide unless otherwise indicated for special applications.
- D. Laureco Sheet shall be applied in "Cap Sheet" fashion using staggered placement of laps for multiple plies. See Application Detail No. 1-A for single ply and Page No. 4-A, Details No. 2 and No. 3 in "Suggested Detail" section, Volume I.

5. APPLICATION:

- A. Flashings: Install all flashing details first *before* installing the field waterproofing.
 - 1. All flashings shall be two plies of the Laureco System unless otherwise noted on the drawings and in the specifications.
 - 2. *Projections (Window Washer Bolts, Pipes, Railings and Duct Work , Etc.:*See Penetration Flashing Details 20-F1 through 25-F 3 plus Penetration Flashing Details 18-F1 through 19-F for H-Beam columns in the "Suggested Details" section.
 - 3. Pre-cut and pre-fold all flashings for height of design with a minimum 4 inch (10.16 cm), first ply, and 5 to 6 inch(12.7 to 15.2 cm) second ply lap minimum on horizontal.

NOTE: 10. Standard footer flashing width is 9 inch (22.86 cm) wide, folded 4 inches (10.16 cm) and 5 inches 12.7 cm).

- 4. Install footer flashings as 5 inches (12.7 cm) on wall and 4 inches 10.16 cm) on footer; reverse for second ply.
- 5. Each flashing ply of Laureco Sheet shall be uniformly embedded in Laureco Adhesive at the rate of 1-1/2 gallons (5.86 liters) per 100 sq. ft. (9.3 sq. m) for the first ply and 3/4 gallon (2.84 liters) per 100 sq. ft. (9.3 sq. m) for the second ply. See details in Below Grade section (Details 1 -BG through 17-BG of "Suggested Details" section, Volume I.
- 6. Perform all flood testing required before top coating final plies of flashing and field sheet.

7. Top coat evenly at the rate of 1-3/4 gallons (6.62 liters) per 100 sq. ft. (9.3 sq. m) of adhesive all flashings and horizontal field work before installing the specified protection board, joint fillers and insulations. See specification for "Insulated Decks," Pages 37 through 44.

B. Drain flashings: (See Drain Details 1-D thru 5-D, "Suggested Details" section, Volume I)

1. One ply of Laurengo Sheet 36" x 36" firmly embedded in Laurengo Adhesive applied at the rate of 1-1/2 gallons per 100 sq. ft.
2. Install the rest of the specified Laurengo System over this drain flashing (DO NOT TOP COAT).
3. Immediately cross cut at the drain all horizontal field Laurengo Sheet(s) and locate bolts. Use clamping ring as a template to trim the Laurengo System Flush to interior circumference of the clamping ring.
4. Top coat with Laurengo Adhesive the Laurengo System before installing clamping ring.
5. Firmly tighten all clamping ring bolts to properly seal the drain to the Laurengo System.
6. *Do not install any protection board under clamping rings. Protection board is to be cut and fitted around the outside edge or periphery of the clamping ring.*

C. Horizontal or Field Application:

1. Uniformly coat with Laurengo Adhesive the concrete surface at the rate of 1-1/4 to 1-1/2 gallons (4.7 to 5.7 liters) maximum per 100 sq. ft. (9.3 sq. m).
2. Allow the Adhesive to "tack" to almost dry.
3. Smoothly embed the Laurengo Sheet "Cap Sheet" fashion sealing all laps. Continue all sheets 2 to 3 inches (5.08 to 7.62 cm) up any vertical areas that are already flashed with the Laurengo System, unless otherwise indicated. Place the Sheets with special attention to angles so that total contact with substrate is maintained (no bridging).

NOTE: 11. If this is a multiple ply specification proceed to 4-M. next and omit 4-S.

- 4-S Single ply application; uniformly top coat the Laurengo Sheet at the rate of 1-1/2 gallons (5.7 liters) and firmly embed the asphalt/felt protection board overlapped pattern. See Application Detail 2-A in "Suggested Detail" section and proceed to 10.

- 4-M Coat 1st ply of Laurenco Sheet at the rate of 3/4 gallon (2.84 liters) per 100 sq.ft. (9.3 sq. m) Allow to "tack" to almost dry.
 5. Smoothly embed second ply of Laurenco Sheet; centering the laps over first ply of Sheet.
 6. For 3 plies, stagger 2nd and 3rd plies of the Laurenco Sheets so that there is no side lap over a previous side lap. Stagger end laps at least 4 inches for each ply (10.16 cm).
 7. Coat second ply with Laurenco Adhesive at the rate of 3/4 gallon (2.84 liters) per 100 sq. ft. (9.3 sq. m).
 8. Firmly embed 3rd ply of Laurenco Sheet.
 9. Uniformly seal all laps at the rate of 1/2 gallons(1.9 liters) per 100 sq. ft. (9.3 sq. m).
 10. Perform all flood testing before applying the Laurenco Adhesive top coat to adhere the protection board or granulated roofing sheet. See **Item D, this page, Roofing** following.
 11. Uniformly top coat with Laurenco Adhesive the final plies of horizontal (field) Laurenco Sheet and Flashing at the rate of 1-1/2 to 1-3/4 gallon (5.7 to 6.62 liters) per 100 sq. ft. (9.3 sq. m).
 12. Firmly embed the specified protective cover tight butt joint. If possible, install all boards or panels from the periphery to the center areas to minimize cutting and fitting.
- D. ROOFING: (Omit items 11 and 12 of the Horizontal Field Application and proceed to the following)
1. Roof Surfacing Materials: Use a ceramic or metallic granulated glass or polyester felt, walk boards such as CAREY-TRED, etc. The Specifier should call the Laurenco Technical Department (800) 321-3337) for written approval of their selection.
 2. Application Procedures for Roofing Felts:
 - a. Unroll granulated felt and permit it to relax and flatten before installing.
 - b. Top coat final ply of the Laurenco System with Laurenco Adhesive at the rate of 2-1/2 to 3 gallons per 100 sq. ft. Allow to "tack" to almost dry.
 - c. Use the lap specified by the felt manufacturer as the felts are embedded into the Laurenco Adhesive. Use linoleum rollers to embed the felts; all as recommended by the felt manufacturer.

- d. Pre-coat preceding felt on all side and end laps before installing next felt roll.
- e. Firmly roller the laps to seal. Remove excess lap Adhesive.
- f. Cut all “fish mouths” and seal.
- g. Use the granules furnished by felt manufacturer to cover all exposed Laurengo Adhesive.
- h. Smoothly and evenly top coat all exposed Laurengo System flashings with Laurengo Rubberized Flashing Coating Trowel Grade the rate of 2 gallons per 100 sq. ft.
- i. Check all areas 24 hours after installing granulated roofing to correct any potential problems.

Note to Specifier: This is a 45 year old roofing treatment capable of being renewed without removing the originally installed Laurengo System. When the granules loosen and the surface becomes unsightly, remove all loose granules, dirt and debris, etc. Re-coat the existing felts with Laurengo Adhesive and install new roofing felts in the same manner and quantities as the foregoing in this ROOFING section of the N-1 Specification. This specification is excellent for hard to access roof areas on high-rise buildings.

6. Laurengo Neoluminum Coating:

The following covers the application of Laurengo’s rubberized, asphalt based aluminum coating which contains over 4.36 pounds of aluminum pigment paste per gallon. This aliphatic solvent based coating exceeds the A.S.T.M. D 2824-94, Type III Standard.

- A. Omit items 11 and 12 of the Horizontal (Field) Application (page 26).
- B. Wait 3 to 10 days for the materials to cure.
- C. Apply the Neoluminum to the final ply of Laurengo Waterproofing Sheet at the rate of 2 gallons per 100 sq. ft. Use a roller with a 1/4 inch nap and solvent resistant core or a wood head squeegee.
- D. Apply evenly and smoothly. If in doubt, reference A.S.T.M. Standard Practice D 3805.

End of N-1 Specification

SPECIFICATION V-1
(WALL WORK- VERTICAL APPLICATIONS ONLY)

1. **SCOPE:** See Pages 3 - 7, Specification Section

2. **MATERIALS TO BE USED:**

A. Laurenco Sheet

B. Laurenco Adhesive

C. Protection Board: One inch polystyrene bead board (2 ft. x 4 ft. Panels)

D. Termination Bar: One (1) inch (2.54 cm) wide, 16 gauge and no less than 20 gauge, stainless steel preferred, and drilled on 8 inch (20.32 cm) minimum to 12 inch (30.48 cm) maximum.

E. Laurenco Butyl Sealant Tape:

1. Termination Bar: 1/4 inch (0.635 cm) by one (1) inch (2.54 cm).

2. Control Joints: One (1) inch (2.54 cm) by one (1) inch (2.54 cm).

3. Projections and Dowels: 3/8 inch (0.9525 cm) by 3-1/2 inch (8.89 cm). See patterns for installation in Application Detail 6-A located in "Suggested Detail" section of Volume I.

4. Other sizes and uses as specified.

3. **PREPARATION FOR WORK TO BE PERFORMED:**

As soon as form boards are stripped from the walls, perform any repairs immediately to the surfaces. Proceed with Laurenco System installation immediately. Concrete is usually considered as "green."

A. Surfaces to be waterproofed shall be at least surface dry, clean, and free of dirt, and debris (tie wires, nails, etc.).

B. All projections more than 1/16 inch (0.1587 cm) shall be scraped or lightly ground smooth and all depressions deeper than 1/16 inch (0.1587 cm) shall be grouted to present a smooth surface similar to a wood float finish.

C. Grout all tie wire holes.

- D. All corners are to be square and smooth. Do not use rounded or chamfered corners, cants, curbs, fillets or nailers.
- E. Ventilation is to be provided for all confined areas; i.e. pits, etc.

4. GENERAL CONDITIONS AND INFORMATION:

See “General Application and Field Instructions” as to specifics for the following:

- A. Any quantities of materials referred to hereinafter shall be understood to mean per 100 sq. ft. and gallonage is to be as close as possible to those indicated.
- B. All laps shall be 4 inches (10.16 cm) plus or minus 1 inch (2.54 cm).
- C. Laurenco Adhesive shall be applied by means of a squeegee, unless other indicated for special application.
- D. Laurenco Sheet shall be applied "Cap Sheet" fashion using staggered placement of laps for multiple plies. (See “Suggested Details,” Application Details 3-A and 4-A). Sheets are to be hung vertically from top to bottom (a wallpaper pattern). Do not install horizontally unless permitted by a Laurenco Field Technician.
- E. Top and bottom terminations may be heat sealed using a propane torch with a torch fitting that is one (1) inch (2.54 cm) diameter maximum and a heated smooth edged Metal float or mason’s trowel.. “Iron-in” these terminations.
- F. One (1) inch (2.54 cm) by 2 ft. (0.61 m) by 4 ft. (1.22 m), one (1) pound (0.454 kilogram) density, polystyrene bead board shall be used as back fill protection course. This board shall be embedded into the “wet” Laurenco Adhesive. Use a brick pattern with a tight butt joint.
- G. Extruded polystyrene, polyisocyanurate or fiberglass insulation may be used instead of Protection Board. A protection course of expanded polystyrene bead board spot adhered to the insulation, is recommended to protect the insulation against backfill operations.

5. APPLICATION OF MATERIALS:

See “General Application and Field Instructions” in this “Specifications” section for job site production set up.

- A. Flashings: Install all flashing details first before installing the general or field waterproofing specification.
 - 1. All flashings shall be a minimum two (2) plies of Laurenco Sheet.

2. Pre-cut all vertical interior and exterior corner using 9 inch (22.86 cm) wide widths cut from the length of the Laurenco Sheet and pre-fold to 4 inches (10.16 cm) and 5 inches (12.7 cm) for a staggered placement.
 3. First uniformly coat concrete surfaces with Laurenco Adhesive at the rate of 1-1/4 to 1-1/2 gallons (4.731 liters to 5.677 liters) per 100 sq. ft. (9.3 sq. Meters).
 4. Firmly embed first ply of Laurenco Sheet flashing 5 inches (12.7 cm) up the verticals (walls) and 4 inches (10.16 cm) onto horizontals or footers. Interior and exterior vertical corners are to be the same staggered pattern.
 5. Smoothly coat the first ply of flashing sheet with Laurenco Adhesive at the rate of 3/4 gallon (2.84 liters) per 100 sq. ft. (9.3 sq. Meters).
 6. Firmly embed second ply of pre-cut Laurenco Sheet flashing, pre-folded 9 inch (22.86 cm) flashing strip in the manner with a reverse pattern from item no. 4 aforementioned.
- B. Pipe and Duct Flashings: All of these items (pipe sleeves, etc.) must be installed before the verticals or wall field Laurenco System is installed in that area. See Flashing Details 20-F1 through 20-F3, Volume I, "Suggested Details" section.
1. *Families of Pipes* must have a minimum of 6 inches (15.24 cm) between pipe positions for a full Laurenco Sheet and Adhesive collar.
 2. *Families of Pipes* that are less than 6 inches (15.24 cm) must never be less than 3 inches (7.62 cm) to accommodate a staggered double wrap of butyl sealant tape over a 2 ply Laurenco Sheet flashing applied to the walls which has been first cut to tightly fit around the pipes.
 - a. Use Laurenco Butyl Sealant Tape 3/8 inch (0.9525 cm) thick by 3-1/2 inch (8.89 cm) wide by the length to accommodate the outside circumference of the plus a one inch (2.54 cm) lap.
 - b. Thinly coat both pipe and wall Laurenco Sheet flashing with adhesive to immediately adhere the Laurenco Butyl Sealant Tape.
 - c. Tie-in with a 4 and 6 inch (10.16 and 15.24 cm) over lap of the field Laurenco System onto the 2 ply pipe wall flashing Laurenco Sheets.

C. Pipe and Duct Stubs: Should protrude out from the walls a minimum of 8 inches (20.32 cm).

1. First flashing sheet cut as a pre-cut collar using a 9 inch (22.86 cm) wide Laureco Sheet and pre-folded to 6 and 3 inches (15.24 and 7.62 cm). All lengths must allow for a minimum 2 inch (5.08 cm) collar sheet overlap around the pipe.
2. Pig-ear the 3 inch (7.62 cm) width a minimum of 1 inch widths (use 2 to 3 inch [5.08 cm to 7.62 cm] widths for larger pipes); flare pig-ears onto wall.
3. Firmly embed collar in a thin coat of Laureco Adhesive uniformly applied to both the pipes and the walls. Seal collar overlap.
4. Second ply of flashing sheet should be from 9 inch (22.86 cm) wide pre-cut from the Laureco Sheet and pre-folded to 5 and 4 inches (12.7 and 10.16 cm). All lengths must allow for a 2 inch (5.08 cm) minimum overlap of the collar around the pipe.
5. Pig-ear the 4 inch (10.16 cm) width of pre-folded collar in same pattern as first ply.
6. Tightly cinch wrap with 4 inch (10.16 cm) wide woven glass fabric embedded in a thin even coat of Laureco Rubberized Flashing Coating Trowel Grade and top coat until the fabric does not show.
7. Top coat all pig-eared collar material adhered to the walls with Laureco Rubberized Flashing Coating Trowel Grade until the pig-ears do not show.

D. Pipes using a Thermo-Link seal:

1. Pipe sleeve: The outside edge of the pipe sleeve shall be flush with the wall.
2. The Thermo-Link shall be slightly recessed into the pipe sleeve.
3. Cover Thermo-Link edge with butyl sealant or Laureco Rubberized Flashing Coating Trowel Grade to provide the initial seal.
4. Proceed to C. of the foregoing Pipes and Duct Stubs.
5. Pipe Insulation: See Laureco's Technical Department.

E. Expansion and Isolation Joints: Install all expansion and isolation joints before installing the vertical or wall field Laureco System. Consult Joint Details 3-JT and 4-JT Details, Volume I, "Suggested Details" section.

F. Control Joints: See Joint Details 14-JT through 16-JT-JT located in Volume I, section called "Suggested Details."

1. Thinly and smoothly coat all control joints with Laurengo Adhesive and allow to dry. Firmly embed one inch by one inch (2.54 cm by 2.54 cm) butyl sealant tape either single or double ply allowing ½ of the installed volume of tape to protrude beyond concrete surface.
2. Use a 6 inch (15.24 cm) wide batten strip of Laurengo Sheet cut from the length of the Sheet and firmly embed in a thin coat of Laurengo Adhesive applied at the rate of 1 gallon (3.78 liters) per 100 sq. ft. (9.3 sq. Meters).
3. Coat thinly vertical edges of installed batten strip of Laurengo Sheet with Laurengo Adhesive.
4. Seal top termination of each lift of the control joint installation by pushing the top edges of materials into the joint to seal by sloping to the exterior. This provides an angle for tie-off or an overlap configuration to accept a continued installation for the next lift.

G. Vertical (Wall) field Application:

1. Uniformly coat the surface with Laurengo Adhesive at the rate of 1-1/2 gallons (5.677 Liters) per 100 sq.ft. (9.3 sq. Meters) and allow to "tack".
2. Use 5 ft. to 7 ft. (1.524 m to 2.134 m) pre-cut lengths of Laurengo Sheet coated across the top edge of the sheet with a 4 inch (10.16 cm) band of Laurengo Adhesive. Allow band to "tack" before smoothly embedding in already applied Adhesive.
3. Extend each sheet side lap over preceding sheet to maintain a 4 inch (10.16 cm) side lap plus or minus 1 inch (2.54 cm). Laurengo Sheet shall be placed 4 inches (10.16 cm) onto top surface of footer or as shown on details.
4. All Laurengo Sheets shall be placed to extend approximately 2 inches (5.08 cm) beyond the bottom termination of the footer flashings on footer to seal off.
5. For one ply Laurengo System applications:
 - a. Top coat with Laurengo Adhesive applied at the rate of 1-1/2 to 2 gallons (5.67 to 7.57 liters) per 100 sq. ft. (9.3 sq. meters).
 - b. Firmly embed one inch polystyrene bead board, 1 inch (2.54 cm) by 2 ft by 4 ft., (0.61 m by 1.22 m) in a brick pattern with staggered vertical joints.
 - c. Slide (wipe) board into place to upset the dry surfaces of the board.

6. For two or three ply Laurenco System applications:
 - a. Check for adhesion setup of each ply by hand pressure test on each ply of Laurenco Sheet. If applied Sheet moves wait before application of next ply.
 - b. Apply a uniform coat of Laurenco Adhesive at the rate of one gallon (3.785 liters) per 100 sq.ft. (9.3 sq. m) over the first ply.
 - c. Embed second ply of Laurenco Sheet in the same manner as the first ply staggering the laps so that no lap shall be over a preceding lap. See Application Detail no. 4-A, "Suggested Details," Volume I.
 - d. If third ply of Laurenco Sheet is used, repeat steps 6.a. through 6.c. staggering laps so that no lap is on lap.
7. Seal all laps with Laurenco Adhesive.
8. Final top terminations are to be heat sealed and protected with a 6 to 9 inch (16.24 to 22.86 cm) wide coating of Laurenco Rubberized Flashing Coating Trowel Grade at the rate of 2 gallons (7.57 liters) per 100 sq. ft. (9.3 sq. meters). See "General Application and Field Instructions" of this "Specification" section, Volume I.
9. Install stainless steel or acceptable alternate metal termination bars:
 - a. Pre-drill these bars on 8 to 12 inch (20.32 to 30.48 cm) centers.
 - b. Adhere 1/4 by 1 inch (0.635 cm by 2.54 cm) butyl sealant to the sheet side of the bar.
 - c. Top coat bar with a smooth, even coat of Laurenco Rubberized Flashing Coating Trowel Grade as protection.
10. Uniformly top coat with Laurenco Adhesive the final ply of Laurenco Sheet at the rate of 1-3/4 to 2 gallons (6.62 to 7.57 liters) per 100 sq.ft. (9.3 sq. meters).
11. Embed polystyrene bead board into wet Laurenco Adhesive, using a "brick" pattern with a butt joint so that there is no vertical joint on vertical joint.
NOTE: 12. All protection board used must be clean, dry, free of dirt, and dust.
12. Repeat the preceding steps until the Laurenco System is complete to the height necessary.
13. *Backfill:* It is recommended that backfill be used in lieu of scaffolding to accomplish installations above 8 ft. (2.44 m). This presents greater ease of access for the workmen and protection against job site damage to waterproofing system.

- CAVEATS:**
1. Never nail protection board or any part of the Laurengo System.
 2. Store all protection board, Laurengo Sheet in their shipping cartons and Adhesive containers on shipping pallets.
 3. Keep rolls in cartons and protection boards flat, dry and off the ground. See General Application and Field Instructions located in this “Specification” section for more information.
 4. Call Laurengo’s Technical Department to obtain approval for any substitutions of materials, special details, etc. Phone: (800) 321-3337.

END OF V-1 SPECIFICATION

SPECIFICATION FOR INSULATED DECKS, USING HIGH DENSITY EXTRUDED POLYSTYRENE, POLYISOCYANURATE (60 p.s.i plus) OR FOAMGLAS BOARDS

- 1. SCOPE:** Insulated Plaza and Vehicular Traffic Decks. Also see N-1 Specification as the base installation before the installation of the abovementioned insulation. Insulated plaza and vehicular traffic decks should always be 2 plies of the Laurenco Sheet installed with 5 gallons (18.93 liters) of Laurenco Adhesive. *This specification includes roofing in an "IRMA" configuration.*

Applicable Details which are to be found in "Suggested Details" section See Drain Details 2-D through 4-D, Flashing Detail 1-F, Joint Details 8-JT through 10-JT, 12-JT, Plaza Design 1-PZ through 6-PZ, Parking Deck Details 1-PD and 2-PD along with Flashing Detail 14-F.

1. Where "No-Fines" Concrete or drainage fields are shown in the Laurenco Details, insert the desired insulation.
2. Plaza Detail 2-PZ, 3-PZ and 6-PZ should be used only in geographical areas where there is minimal freeze-thaw.
3. Plaza Detail 4-PZ, Parking Deck Detail 2-PD and Flashing Detail 14-F are most applicable to geographical areas where freeze-thaw is to be expected.
4. Drainage fields should be kept at the deck level and immediately on top of the Laurenco System to utilize the heat drift from the building which will prevent freezing water/moisture and maintain good drainage to and through the drain system.
5. Where gravel and, *only if approved*, pre-fabricated drainage materials are used, it is extremely important to protect the vertical flashings from gravel migration and the sharp and/or rough edges of alternative drainage materials by installing an 1/8 inch or 1/4 inch asphalt/felt protection board or a prefabricated filler cut to height of flashings less one inch to accommodate backer rod and caulk.
6. Where the asphalt/felt protection board is located over the insulation, an additional staggered 9 inch wide flashing detail should be installed from the top surface of the protection board and tied-offs to the vertical flashings.
7. All insulation should first be installed tight butt joint against the peripheries.
8. Final dimensional adjustments should be in the center of the insulated deck.

2. MATERIALS TO BE USED:

- A. Laurenco Sheet (Use the Season Grade appropriate to time of installation and for ease of installing).
- B. Laurenco Adhesive (Use Season Grade Appropriate to time of installation).available size and is easier to handle).
- C. High Density Polyisocyanurate or Extruded Styrofoam Insulation Boards.
- D. 1/8" (0.32 cm) or 1/4" (0.64 cm) Asphalt/Felt Protection Board, 4 ft. (1.22 m) wide by 8 ft. (2.44 m) long is the usual size.
- E. Alternates and/or additional materials that may be required:
 - 1. Laurenco Primer (ASTM D-41)--must be approved for use by Laurenco's Technical Department. Primer will change viscosities of Laurenco Sheet and Adhesive.
 - 2. Laurenco Butyl Sealant Tapes.

3. PREPARATION FOR WORK TO BE PERFORMED: See "General Application and Field Instructions" located at the beginning of this "Specification" section.

- A. Surfaces to be waterproofed shall be at least surface dry, clean and free of dirt and debris with no objectionable projections or depressions (wood float finish is preferred or a good screed finish is acceptable as a minimum).
- B. Do not use cants, fillets, curbs, chamfered or rounded corners.
- C. All corners must be clean and neat angles.
- D. Do not use nailers.
- E. All objectionable projections, more than 1/16 inch (0.16 cm), shall be scraped or lightly ground with depressions and voids grouted to an even finish.
- F. Ventilation should be provided for all confined areas.

4. GENERAL CONDITIONS AND INFORMATION:

- A. Any quantities of materials referred to hereinafter shall be understood to mean 100 sq. ft. (9.3 sq.

m) and the adhesive, including other specified liquid material, quantities are to be as close as possible to those indicated.

- B. All laps shall be 4 inches (10.16 cm) for laps plus or minus 1 inch (2.54 cm).
- C. Laureco Adhesive shall be applied by means of wood head squeegee. Use 12 inches (30,5 cm) to 18 inches (45.7 cm) wide with a 5/8 inch (1.59 cm) deep blade unless otherwise indicated for special applications.
- D. Laureco Sheet shall be applied "Cap Sheet" fashion using staggered placement of laps for multiple plies.

5. FLASHING INSTALLATIONS: Install all flashing details first before proceeding to the main field application. Flashings shall be a minimum two (2) plies of Laureco Sheet adhered and coated with Laureco Adhesive in the following manner:

- A. FLASHINGS: Install all flashing details first before installing the general or field waterproofing specification.
 - 1. All flashings shall be a minimum two (2) plies of Laureco Sheet.
 - 2. Pre-cut all vertical interior and exterior corner using 9 inch(22.86 cm) wide widths cut from the length of the Laureco Sheet and pre-fold to 4 inches (10.16 cm) and 5 inches (12.7 cm) for a staggered placement.
 - 3. First coat concrete surfaces with Laureco Adhesive at the rate of 1-1/4 to 1-1/2 gallons (4.731 liters to 5.677 liters) per 100 sq. ft. (9.3 sq. Meters).
 - 4. Firmly embed first ply of Laureco Sheet flashing 5 inches (12.7 cm) up the verticals (walls) and 4 inches (10.16 cm) onto horizontalis or footers. Interior and exterior vertical corners are to be the same staggered pattern.
 - 5. Smoothly coat the first ply of flashing sheet with Laureco Adhesive at the rate of 3/4 gallon(2.84 liters) per 100 sq. ft. (9.3 sq. Meters).
 - 6. Firmly embed second ply of pre-cut Laureco Sheet flashing, pre-folded 9 inch (22.86 cm) flashing strip in the manner with a reverse pattern from item no. 4 aforementioned.
 - 7. Check all flashing sheets to assure all folds of the pre-folded flashing sheets are tightly embedded in and around the corners. Do not bridge.

B. DRAIN FLASHINGS: A recommended drain type is the Wade, W3100 Series with a “V” bowl. This drain is shown in the Laurengo Drain details; see Details 2-D, 3-D, and 4-D.

1. Single or Bottom Drain Collar:

- a. Use one ply of Laurengo Sheet pre-cut to a usual 36" x 36" (91.4 cm by 91.4 cm) dimension. Use the clamping ring as a template to pre-cut and remove the sheet from the interior circumference of the ring.
- b. Smoothly and firmly embed this Sheet into the Laurengo Adhesive already applied to the horizontal slab at the rate of 1-1/2 gallons (5.68 liters) per 100 sq. ft.(9.3 sq. m).
- c. Install the 2 ply main horizontal field Laurengo System over the drain flashing. Be sure to mark the drains. Use the clamping ring as a template to remove the Laurengo System from the interior circumference of the clamping ring.
- d. Coat clamping ring area with Laurengo Adhesive or Laurengo Rubberized Flashing Coating Trowel Grade, firmly embed and bolt down the clamping ring for a tight seal.
- e. After flood testing is completed, install protection board pre-cut to the exterior circumference of the clamping ring. Never install the protection board or insulation under the clamping rings at this horizontal structural slab base level.

2. Double Collar Drain: This collar is located at the level of the top surface of the insulation and asphalt/felt protection board and is to attain drainage both below the wear slab materials and from the wear slab top surfaces.

- a. Pre-cut 2 plies of 36 inch by 36 inch Laurengo Sheet and adhere in 2 (base and interply) thin coats of Laurengo Adhesive. Stagger the placement of the drain flashing sheets to attain a 8 point “star” pattern.
- b. Pre-cut and remove the Laurengo Sheet from interior circumference of the clamping ring. Use the clamping ring as a template.
- c. After removing polyethylene parting film from the protection board, pre-cut the asphalt/felt protection board to the interior circumference of the clamping ring. Be sure to properly align this second ring with the first or base ring and the drain extension containing the weeps.
- d. Coat asphalt/felt protection board with Laurengo Adhesive applied at the rate of 1 gallon (3.785 liters) per 100 sq. ft. (9.3 sq. m).

- e. Coat asphalt/felt protection board for the first drain flashing ply with Laurencio Adhesive at the rate of 3/4 gallon (2.84 liters) per 100 sq. ft. (9.3 sq. m).
- f. Install first drain flashing ply of 36 inch by 36 inch (91.44 cm by 91.44 cm) Laurencio Sheet. Thinly coat with Laurencio Adhesive at the rate of 3/4 gallon (2.84 liters) this first Sheet ply.
- g. Install second drain flashing ply of 36 inch by 36 inch (91.44 cm by 91.44 cm) Laurencio Sheet staggered to make an eight point “star” pattern.
- h. Top coat with Laurencio Rubberized Flashing Coating Trowel Grade at the rate of 1-1/2 gallons (5.68 liters) per 100 sq.ft. (9.3 sq. m).
- i. Seal all edges smoothly and evenly.

C. PROJECTIONS (i.e. window washer bolts, pipes, etc.):

1. Metal Pitch Pockets: (require maintenance warranties & guarantees are limited in these areas)
 - a. Pitch pockets are to be flashed to the height of the pitch pockets and with sufficient horizontal width to extend beyond the flange 4 inches (10.16 cm) onto deck for the first ply.
 - b. Adhere first ply of Laurencio Sheet flashing in Laurencio Adhesive applied at the rate of one gallon (3.785 liters) per 100 sq. ft. (9.3 sq. m).
 - c. Coat first ply of Laurencio Sheet flashing with Laurencio Adhesive applied at the rate of 3/4 gallon (2.84 liters) per 100 sq. ft. (9.3 sq. m).
 - d. Firmly embed the second ply of Laurencio Sheet flashing to height of pitch pocket and onto deck an additional 6 inches (15.24 cm).
 - e. Uniformly top coat and seal all edges with Laurencio Rubberized Flashing Coating Trowel Grade applied at the rate of 1-1/2 to 1-3/4 gallons (5.68 to 6.6 liters) per 100 sq. ft. (9.3 sq. m).
2. Formed In-Place Pitch Pockets: (see Flashing Detail 23-F). Formed in-place pitch pockets consist of several plies of 1/8 inch (0.32 cm) and/or 1/4 inch (6.6 cm) asphalt/felt protection board stacked to height necessary and each ply adhered together in adhesive. These formed-in-place pitch pockets are to be tightly filled in and around the projections (pipes and hangers for single and double “T”s) with Laurencio Butyl Sealant Tape.

3. Butyl Sealant Tape Wrap: Pipes may also be wrapped with a staggered placement of two plies of 3/8 inch (0.95 cm) by 3-1/2 inch (8.9 cm) Laurenco Butyl Sealant Tape adhered in and coated with thin coats of Laurenco Adhesive. Tape should be tightly molded to seal around the pipes. Top coat to finish the seal using a thick coat of Laurenco Rubberized Flashing Coating Trowel Grade.

6. HORIZONTAL (FIELD) WATERPROOFING INSTALLATION:

- A. Using Laurenco Adhesive at the rate of 1-1/4 to 1-1/2 gallons (4.76 to 5.68 liters) per 100 sq.ft. (9.3 sq. m), uniformly coat the concrete surface.
- B. Allow the adhesive to "tack" to almost dry.
- C. Smoothly embed Laurenco Sheet cap sheet fashion and coating all laps evenly with Laurenco Adhesive. Continue all horizontal field sheets at least 3 inches (7.62 cm) up the vertical, unless otherwise indicated. Place special attention to angles so that total contact with the substrate is maintained (no bridging).
- D. Coat first ply of Laurenco Sheet with Laurenco Adhesive at the rate of 3/4 gallon (2.84 liters) per 100 sq.ft. (9.3 sq. m). Allow adhesive to "tack" to almost dry.
- E. Smoothly embed second ply of Laurenco Sheet while staggering or centering laps in middle of first sheet.
- F. Seal all laps with Laurenco Adhesive at the rate of 1/2 gallon (1.9 liters) per 100 sq. ft. (9.3 sq. m).
- G. Uniformly coat the final ply of Laurenco Sheet at the rate of 2 gallons (7.5 liters) per 100 sq.ft. (9.3 sq. m).
- H. Firmly embed the asphalt/felt protection board in to "tacky" Laurenco Adhesive.
- I. Remove polyethylene parting film.
- J. Strip or spot stick insulation using the Laurenco Adhesive. Note: In areas of severe winds, fully coat the asphalt/felt protection board with Adhesive applied at the rate of 1-1/2 gallons (5.67 liters) per 100 sq. ft. (9.3 sq. m).
- K. Install the insulation with tight butt joints starting at the outside (the peripheries) to maintain a tight joint between the vertical faces of the insulation and the periphery walls (vertical).

- L. Install geotech blanket over the insulation with strip-offs (tie-offs) to all flashed vertical; minimum turn-up at vertical should be 3 inches (7.62 cm). These strip-offs are to be fully adhered to the flashings with Laurencos Rubberized Flashing Coating Trowel Grade applied at the rate of 2 gallons (7.5 liters) per 100 sq. ft. (9.3 sq. m). The geotech blanket is to contain the gravel ballast.

ALTERNATIVE No. 1: Beginning at item G aforementioned.

- M. Uniformly coat the final ply of Laurencos Sheet with Laurencos Adhesive at the rate of 1-1/2 gallons (5.6 liters) per 100 sq. ft. (9.3 sq. m).
- N. Firmly embed the insulation tight butt joint into the wet to “tacky” Laurencos Adhesive. If insulation has drainage channels, pattern the placement of the insulation to the drains.
- O. Pre-coat the asphalt/felt protection board on side without the polyethylene film applying the Laurencos Adhesive at the rate of 2 gallons (7.5 liters) per 100 sq. ft. (9.3 sq. m). Allow the Adhesive to tack to almost dry to permit the solvent to “flash-off” (escape).
- P. Place the asphalt/felt protection board polyethylene film side up and coated side down. Use tight butt joints.
- Q. Remove polyethylene parting film before installing the flashings.
- R. Install the additional flashings from the protection board to the vertical, from the board to all projections and from the board around the top collars of the drains. See section 5.1. FLASHINGS of this specification.
- S. Install gravel and pavers combination plus landscaping (turf) all with a geotech blanket, concrete wear slab, etc. as designed. Check this and your specification and design with Laurencos Technical Department.

Alternative No. 2 - Foamglas: Beginning at item G aforementioned. This insulation requires that it be encapsulated to prevent freeze-thaw action from moisture/water infiltration.

- T. Uniformly coat the final ply of Laurencos Sheet with Laurencos Adhesive at the rate of 1-3/4 gallons (5.6 liters) per 100 sq. ft. (9.3 sq. m).
- U. Firmly embed Foamglas insulation panel. Installing panel paper side down. Use tight butt joints.
- V. Coat the Foamglas insulation with Laurencos Adhesive at the rate of 3 to 3-1/2 gallons (11.35 to 13.24 liters) per 100 sq. ft. (9.3 sq. m).

- W. Embed 40 or 45lb organic felt (ASTM D) to board-out the surface and seal the insulation joints.
- X. Coat the 40 or 45 lb. (18 kg or 20 kg) felts with Laureco Adhesive at the rate of 1-1/2 gallons (5.6 liters) per 100 sq. ft.(9.3 sq. m).
- Y. Smoothly embed the Laureco Sheet using 4 inch (10.16 cm) side and end laps.
- Z. Install additional flashings from the combination of organic felt and Laureco Sheet. See section 5.A. FLASHINGS of this specification.
- AA. Top coat this Laureco Sheet with Laureco Adhesive at the rate of 1-1/2 to 1-3/4 gallons (5,6 to 6.6 liters) per 100 sq. ft. (9.3 sq. m).
- BB. Embed asphalt/felt protection board using tight butt joints and polyethylene side up.
- CC. Remove polyethylene parting film from this protection board and install the additional flashings from the protection board to the vertical flashings, from this board to all projections and from the board to the drains. Use two (2) plies of pre-cut and pre-folded nine inch wide, Laureco Sheet. Install and adhere in the same manner as described in FLASHINGS, section 5.A. of this specification.
- DD. Install gravel and pavers with a geotech blanket, concrete wear slab, turf, etc. as designed.

ROOFING: If this specification using Foamglas is to be a roof, omit the foregoing items W. through DD. of *Alternative No.2* and substitute either a granulated glass felt or a granulated polyester felt.

- FF. Top coat the Laureco Sheet with Laureco Rubberized Roof Coating at the rate of 2 to 2-1/2 gallons (7.52 to 9.5 liters) per 100 sq. ft. (9.3 sq. m).
- GG. Firmly embed the granulated felt in either shingle or cap-sheet pattern as specified by the felt manufacturer, i.e Owens-Corning Fiberglass, Manville Corp, etc.
- HH. Seal all laps and cover with extra granules the exposed lap adhesive to blend.

SPECIFIER, Please Note Well: To be sure that this specification and its' alternatives are appropriate for the use intended, contact the Laureco Technical Department either via telephone at 800-321-3337 or Fax. at 800-543-3338.

END OF LAURENCO INSULATED PLAZA AND ROOF DECKS

LAURENCO SPECIFICATION V-2 for VERTICAL (Wall) WATERPROOFING ON LAGGING, ETC.

1. **SCOPE:** Waterproofing for sheet piling and plywood Earth Retainage or approved equal. Wherever possible, all sheet piling and retainage shall be braced and tied together from the earth (positive) side to minimize interference with the application and adherence of the waterproofing material.
 - A. Two plies of Laurenco Sheet using the second ply as a protection course. Waterheads to 50 ft. (15.25 m).
 - B. Three plies of Laurenco Sheet using the third ply as a protection course. Water heads to 100 ft. (30.48 m).
 - C. Four plies of Laurenco Sheet using the fourth ply as a protection course. Waterheads over 100 ft. (30.48 m).

NOTE: 13. Top or final ply of Laurenco Sheet shall not be top coated with Laurenco Adhesive unless specifically requested by Laurenco's Technical Director. The heat from the concrete curing creates the bond of the Laurenco System to the concrete pour. See Note 14 in the following.
 - D. See Below Grade Seismic Detail 12-BG and Below Grade Sump and Elevator Pit Detail 14-BG.

2. MATERIALS TO BE USED:

- A. Laurenco Sheet.
- B. Laurenco Adhesive.
- C. Laurenco Woven Glass Fabric: 20 x 20 x 10 (ASTM D-1668 Type 1) or approved equal.
- D. Laurenco Butyl Sealant Tape (where specified for penetrations and joints) or approved equal.
- E. Laurenco C.V.R. - Mastic Grade.
- F. Laurenco Rubberized Flashing Coating Trowel Grade.

3. SURFACE PREPARATION:

- A. Surfaces to be waterproofed shall be surface dry; clean and free of dirt, excess oils, with no animal fats, silicates or silicones present; and shall have no sharp projections or depressions.

- B. All projections shall be cut-off and depression filled or treated with butyl sealant tape and mastic present a reasonably flat surface.
- C. Ventilation shall be provided for all confined areas.

4. GENERAL CONDITIONS AND INFORMATION:

- A. All quantities of materials in this specification shall be understood to mean per 100 sq. ft. (9.3 sq. m) and gallonage shall be as close as possible to quantities stated.
- B. All laps shall be four inches plus or minus one inch.
- C. Laurenco Adhesive shall be applied using a roofer's brush/squeegee, window washer or wood head squeegees in widths of 6, 8, 12, or 18 inches (15.24, 20.32, 30.48 or 45.72 cm) white wash brush and/or roller with mohair nap sleeve.
- D. Laurenco Sheet shall be hung like wallpaper (vertically only), Cap Sheet fashion (never shingle), with staggered vertical and horizontal laps.

5. APPLICATION OF WATERPROOFING MATERIALS:

(SEE GENERAL INFORMATION AND FIELD INSTRUCTIONS, pp 1-14, this section)

A. Flashing: Install all flashings first before proceeding to main field waterproofing.

1. All retaining anchors, etc. which cannot be removed shall have the Laurenco Sheet cut to accommodate them. The "cut and cover" method is as follows:
 1. Use multiple plies of Butyl Sealant Tape in a thickness and width of 3/8" x 3 1/2" x length and height necessary to cover (0.95 cm by 8.9 cm) split 2/3 of length worked around and to height of these proportions. All embedded in Laurenco Adhesive.
 2. Cover with two plies of the Laurenco Sheet; first ply extending onto the main field of waterproofing two inches (5.08 cm) all sides, second ply extending beyond first ply two inches (5.08 cm) on all sides.
 3. Interior corners:
 1. Coat corner and both sides in 6 inch (15.2 cm) widths and to height of lift.
 2. Embed 1" x 1" (2.54 cm by 2.54 cm) Laurenco Butyl Sealant Tape to height of lift pressing tightly into corner.

3. Pre-cut two 9" (22.9 cm) widths of Laurengo Sheet to height of lift and pre-fold these flashing strips to the 4 inch and 5 inch (10.16 cm and 12.7 cm) dimensions before installing.
 4. Install first ply 4 inches and 5 inches (10.16 cm and 12.7 cm). Reverse (stagger) the second ply.
 5. Embed first flashing ply of Laurengo Sheet in Laurengo Adhesive at the rate of 1-3/4 gallons per 100 sq. ft. (6.6 liters per 9.3 sq. m).
 6. Coat the first ply of Laurengo Sheet flashing with Laurengo Adhesive at the rate of 3/4 gallon per 100 sq. ft. (2.8 liters per 9.3 sq. m).
 7. Embed firmly the second ply of Laurengo Sheet flashing.
 8. Seal all laps and thinly coat all edges with Laurengo Adhesive.
4. Exterior Corners:
1. Coat corner and both sides with Laurengo Adhesive. If corner joint is open, press in one inch by one inch (2.54 cm by 2.5 cm) Laurengo Butyl Sealant Tape to height of lift.
 2. Pre-cut two 9 inch (22.9 cm) wide strips of Laurengo Sheet with length to cover height of lift and pre-fold to 4 inches and 5 inches (10.16 cm and 12.7 cm).
 3. Install first ply 4 inches (10.16 cm) onto first side of corner and five inches (10.16 cm and 12.9 cm) on second or reverse side. Second ply is to be installed reverse (staggered) of the first side.
 4. Embed first flashing ply of Laurengo Sheet flashing in 1-3/4 gallons of Laurengo Adhesive per 100 sq. ft (6.6 liters per 9.3 sq. m).
 5. Coat first flashing ply of Laurengo Sheet with Laurengo Adhesive at the rate of 3/4 gallon per 100 sq. ft.(2.86 liters per 9.3 sq. m).
 6. Firmly embed the second ply of Laurengo Sheet flashing reverse (staggered) to first ply.
 7. Seal all laps and thinly coat all edges with Laurengo Adhesive.
 8. Apply main field Laurengo System.

B. Main (Field) Waterproofing Installation:

1. Coat surface uniformly with Laureco Adhesive at the rate of 1 to 1-1/2 gallons per 100 sq. ft. maximum(3.8 liters to 5.7 liters per sq. m). Allow for tack time.
2. Hang pre-cut lengths of Laureco Sheet 5 to 6-1/2 feet (1.5 to 2.0 m) high per lift. Top termination of Laureco Sheet shall be strip coated with Laureco Adhesive (strip approximately 4 inches (10.16 cm) wide and full width of sheet). Embed firmly by squeegee or wood block. Maintain side and end laps of 4 inches (10.16 cm) plus or minus 1 inch (2.54 cm).
3. Seal all laps with Laureco Adhesive. Heat seal top and bottom terminations.
4. Continue installing first ply to length of area available for first lift.
5. Before hanging next plies of sheet, always check previously installed ply by exerting hand pressure to detect movement in Laureco Sheet. Wait additional 4 to 12 hours to allow for initial cure. Check quantities of Laureco Adhesive used. Excessive quantities of Laureco Adhesive will cause the Laureco Sheet to slip (more is not better in this case). Check amount of tack time which will vary as to humidity, wind and temperature.
6. Coat first ply (and all subsequent plies) with an interply coat of Laureco Adhesive at the rate of 3/4 gallon per 100 sq.ft. (2.8 liters per 9.3 sq. m). Allow for tack time.
7. Hang each ply 2 inches (5.08 cm) below the previous ply's top termination and to extend 2 inches (5.08 cm) beyond bottom termination of the previous ply or beyond the previous ply's termination onto the horizontal.
8. Embed all Laureco Sheets firmly.
9. Seal all laps with Laureco Adhesive thinly and evenly.
10. Repeat for additional plies specified by repeating items 6 through 9.
11. Heat seal all final top terminations of Laureco Sheets after total height of design is complete.
12. Coat the final top termination with a 9 inch (22.8 cm) wide band of Laureco Rubberized Flashing Coating Trowel Grade at the rate of 2-1/2 gallons per 100 sq.ft. (9.4 liters per 9.3 sq. m). Spread the coating beyond the top of the Laureco Sheet termination to seal thoroughly.

13. **DO NOT TOP COAT FINAL PLY OF LAURENCO SHEET.** This final ply is the protection course for this specification.

NOTE: 14. *HOWEVER*, an Adhesive top coat, thinly applied at the rate of 1 gallon per 100 sq. ft., may be necessary to attain a uniformly tight adhesion to the newly cast concrete, and is used only if this waterproofing installation has been, or is to be, left exposed for more than a week to 10 days to weather temperatures in excess of 55°F. (13°C). This application is to maintain an exposed surface of uncured rubber in the exposed modified asphalt.

14. Set re-bars and form boards.

15. Direct concrete pour against form boards to minimize drag on the Laurenco System installation.

END OF V-2 SPECIFICATION

To The Specifier: This Laurenco specification and its' usage dates from 1958 and is a variation on the originals of hot bitumen and four plies of felt and fabric long used in the industry.

LIQUID MEMBRANE WATERPROOFING

1. Scope:

- A. Intermittent water heads to 30 ft. (9.0 m) where water/soils contamination is minor; usually no more than 6 on the acid side and 8 on the alkaline.
- B. For vertical (wall) use and applied to concrete, concrete block with flush mortar joints, metal, etc. This specification is not recommended for roofs, plazas or similar areas. Pedestrian bridges with no inhabited space below are an acceptable installation. Also see section 6 of this specification.

2. Materials to be used:

- A. Laureco Rubberized Coating for Dampproofing/Waterproofing, Type: W-60-LA, is available in Brush grade consistency to meet or exceed A.S.T.M. D 4479, Type 1.
- B. Laureco Glass, A.S.T.M. D 1668, Type 1, Weave Count 20 x 10, Widths: 4, 6, 9, 12, 18 and 36 inch by 150 ft. (10.16, 15.2, 22.9, 30.48, 45.7 and 91.4 cm by 45.7 m).
- C. Laureco Rubberized Primer: A.S.T.M. D 41 (asphalt) for use on concrete block or dusty surfaces.
- D. Protection Board:
 - 1. Vertical Use: 1" (2.54 cm) thick, 2' x 4' (0.6 m by 1.22 m) panels of one pound (0.454 kg) expanded polystyrene bead board.
 - 2. Horizontal Use: Asphalt/Felt Protection Board; 60 mil, 1/8 and 1/4 inch (0.15, 0.32 and 0.64 cm) thicknesses by 4 ft. by 8 ft. (1.22 m by 2.44 m).

3. SURFACE PREPARATION:

- A. Surfaces to be dampproofed/waterproofed shall be at least surface dry, clean and free of dirt, debris and contaminants such as silicones, heavy resin applications, etc. derived from cure agents and form board releases.
- B. All projections shall be scraped smooth, and all depressions, honeycombs, etc. shall be grouted. The surfaces shall present a good wood screed, bull-float and/or bush-hammered appearance.
- C. Ventilation shall be provided for all confined areas.

4. GENERAL CONDITIONS AND INFORMATION:

- A. Any quantities of materials referred to hereinafter shall be understood to mean per 100 sq.ft. (9.3 sq. m) and the gallonage shall be as close as possible to those indicated to yield desired dry mil. thickness.
- B. Laureco W60LA Dampproofing/Waterproofing Coating is normally supplied in brush grade only to be applied by means of squeegee, trowel, metal float, or roller.

5. APPLICATION OF DAMPPROOFING MATERIALS:

A. Flashings: Install all flashings first.

- 1. All cold joints, interior angles at the junctures of walls and footers, etc., interior angles of walls shall be stripped and sealed prior to dampproofing with a minimum 2 plies of Laureco-Glass in 6,9 or 12 widths adhered in the Laureco W-60-LA coating at the rate of 2 gallons (7.57 liters) per 100 sq. ft. (9.3 sq. m)per each ply of fabric.
- 2. A three (3) ply flashing installation will give greater longevity.
- 3. Do not use fillets, cants, curbs rounded or chamfered corners, etc..

B. Main (Field) Dampproofing:

- 1. Coat areas with Laureco Primer (if necessary) at the rate of 1 gallon (3.78 liters) per 100 sq.ft. (9.3 sq. m). Do not exceed this quantity.
- 2. Apply the Type W-60-LA as follows:
 - a. First coat at the rate of 2-1/2 gallons (9.5 liters) per 100 sq. ft. (9.3 sq. m).
 - b. Allow to dry.
 - c. Second coat at the rate of 3 gallons (11.4 liters) per 100 sq. ft. (9.3 sq. m).
 - d. *Alternate:*
 - 1. Install one ply of Laureco-Glass by unrolling horizontally and 18 inch(45.7 cm) wide for the wall or 36 inch wide (91.4 cm) for the horizontal slab.

2. Adhere the fabric in the first brush coat of Laureco W60LA at the rate of 2-1/2 gallons per 100 sq. ft. (9.5 liters per 9.3 sq. m).
 3. Top coat this fabric and coating ply with Laureco W60LA at the rate of 3 gallons per 100 sq. ft. (11.4 liters per 9.3 sq. m).
 4. Install proper protection board in the pattern following (item no. 3 next).
3. Protection Boards:
- a. Horizontal Application:
 1. Use 1/8 inch (0.32 cm) thick asphalt/felt protection board in a "dutch" lapped (overlapped) pattern. See Application Detail 2-A in "Suggested Detail" section of Volume I.
 2. Seal all overlaps with thinly applied coating. Remove polyethylene parting film before sealing the laps.
 3. *Alternate:* Install the asphalt/felt protection board tight but joint with a 4 inch (10.16 cm) wide glass fabric adhered in and coated with the Laureco W60LA Coating at the rate of 3 gallons per 100 sq. ft.(11.4 liters per 9.3 sq. m).
 4. If an Asphalt/Felt protection is supplied with a polyethylene parting film, apply felt side down with polyethylene side exposed.
 5. See Application Detail 2-A in "Suggested Details" section of Volume I.
 - b. Vertical Applications:
 1. Use a one pound (0.454 kg) density, 1" (2.54 cm) thick, 2' x 4' (0.61 m by 1.22 m) panels of polystyrene bead board laid tight butt joint in a brick pattern (no vertical joint on vertical joint)and pressed firmly into the wet coating.
 2. Do not allow the Laureco W60LA to "tack" or dry before application of polystyrene board.
 3. If the Laureco W60LA does lose its tack and becomes surface dry, thinly re-coat with another application of W60LA and immediately press in the board.

6. LIMITATIONS (CAVEATS):

- A. Horizontal applications of this system shall be limited to use on mud slabs (mats), pedestrian bridges, etc. Do not use over inhabited areas. Roof and Plaza areas shall use applicable "N-1" and "Insulated Deck" Specifications.
- B. Materials Warranties are available for this system. The fabric reinforced alternate has a limited guarantee.
- C. Laurenc0, Inc.'s Technical Department is available for assistance.

END OF LIQUID MEMBRANE WATERPROOFING SPECIFICATION

PART 1- GENERAL

1.01 SUMMARY

- A. Related Documents: Provisions of the drawings and Division 1- General Section
- B. Description: Cold applied rubber modified asphalt waterproofing is indicated by Contract Documents and shall include work necessary and incidental to completion and performance of the work.
- C. Included: Cold applied rubber modified asphalt waterproofing includes, but is not limited to the following:
 - 1. Cold applied rubber modified asphalt adhesive formulated to job site weather conditions.
 - 2. Cold applied rubber modified asphalt flashing coating.
 - 3. Rubber modified asphalt membrane waterproofing, vertical and horizontal applications adhered in and coated with cold applied adhesive.
 - 4. Protection course:
 - a. Vertical (walls), 1 inch x 2 ft. x 4 ft. panels, polystyrene bead board.
 - b. Horizontal slabs, asphalt/felt protection board .62 mil and 1/8 inch thicknesses.
 - 5. Pavers and supports
 - 6. Water. flood test of horizontal applications, ASTM D5957-96.

Below: DELETE IF NOT REQUIRED. COORDINATE WITH USE OF SCHEDULE IN PART 3.

- D. Schedule: Required type and application of cold process rubber modified asphalt waterproofing include, but may not be limited to, materials and application locations specified on Article Cold Applied Rubber Modified Asphalt Waterproofing Schedule (Section 3.10), at end of this Specification.

BELOW: DELETE RELATED WORK EXCEPT FOR DIFFICULT ISSUES OF COORDINATION. LIST ONLY PRODUCTS AND WORK READER MIGHT EXPECT TO FIND IN THIS SECTION BUT ARE SPECIFIED ELSEWHERE. VERIFY PRODUCTS AND WORK ARE SPECIFIED ELSEWHERE.

COLD APPLIED RUBBER MODIFIED ASPHALT WATERPROOFING

E. Related Work:

1. Paving system over waterproof membrane.
2. Concrete work.
3. Insulation over waterproof membrane
4. Metal counter flashing adjacent to waterproofing
5. Cold rooms for meat packing and food storage, etc. and includes various other critical types of cold (refrigerated) storage areas.

1.02 SYSTEM DESCRIPTION

A. Codes and Standards: Meet requirements of following, except to extent of most stringent requirements of Contract Documents and of codes and regulations of public authorities bearing on performance of the work.

1. American Concrete Institute, Guide 515.1R.79.
2. NRCA-Roofing and Waterproofing Manual
3. American Society for Testing and Materials (ASTM).

B. Design Basics:

1. General: Description and requirements indicated by Contract Documents establish basic arrangements, function, performance and like requirements. Within these limitations, work shall meet design criteria and like requirements indicated by Contract Documents, and include components not indicated but necessary for performance and function, and to be a complete system. Perform modifications only as necessary to meet requirements of Contract Documents and to coordinate the work, subject to acceptance of Architect. Provide complete drawings and data of proposed modification.
2. Certification: Shop drawings shall be submitted by installer and certified, reviewed and inspected by waterproofing manufacturer.

C. Design Criteria: Waterproofing shall meet and perform under following design criteria requirements:

1. General: Not fail within specified limits.

BELOW: ESTABLISH WATERPROOFING WATERHEAD REQUIREMENTS FOR THE FOLLOWING PARAGRAPH. COORDINATE WITH FIELD TEST IN PART 3. 100 FEET IS EXAMPLE.

2. Water tightness: Watertight when the assembly of waterproofing materials are subjected to a waterhead to the required depth of the building design and is appropriate to the site conditions. The range of assembly variations is from intermittent to 30 ft. waterhead to a constant of 150 feet plus with pressure applied to bonded surface waterproofing.
3. Resistance: Exposed parts of waterproofing system resistant to ozone and ultra-violet rays.
4. Compatibility: Compatible with materials to which waterproofing and each accessory is in contact.

1.03 QUALITY ASSURANCE

- A. Single Responsibility: work shall be performed by a single installer having undivided responsibility for providing complete work, including all components and related work, and for performance and quality of waterproofing.
- B. Product Qualifications: Limit primary waterproofing materials only to manufacturer and types specified in Part 2 of this section. Secondary materials for use with waterproofing shall be as instructed or recommended by primary waterproofing materials manufacturer.
- C. Manufacturer Qualifications: Submit certified evidence proving specified materials have been manufactured by same source and successfully installed on a yearly basis for a minimum of ten years on projects of similar extent and complexity.
- D. Installer Qualifications: Installer for waterproofing system shall be trained and certified (approved) or licensed by the waterproofing manufacturer in the use of the materials and equipment to be employed in the work. Submit the following:
 1. Certification (letter of approval) or license by waterproofing manufacturer as applicator of the proposed products/system.
 2. List of minimum of five projects using specified system and of similar scope and complexity completed with the past five years.
- E. Contractor Responsibilities: Contractor is solely responsible for quality assurance and control of the waterproofing work.
- F. Quality Control:
 1. General:
 - a. Owner may employ a knowledgeable Quality Control Service familiar with waterproofing materials and installation procedures to perform quality assurance and control evaluations of materials use in the work, and field quality control work during construction.
 - b. Materials and installed work may require testing and retesting as directed by the Architect at anytime during progress of the work.

- c. Tests, not specifically indicated to be performed at Owner expense, including retesting of rejected materials and installed work, will be performed at Contractor expense, at no addition to Contract Sum.
- 2. Materials Inspection: Inspect random samples of waterproofing materials and test materials as necessary to verify compliance with required physical characteristics.

- G. Pre-Installation Meeting: Conduct a pre-installation meeting at project site prior to delivery of products to review conditions associated with performing the work under this Section. Meeting shall include review of construction conditions, environmental conditions, substrate construction and coordination required for proper installation of the work. Meeting participants shall include Architect, representative of manufacturer, installer of work and installers of related work. Proceed with installation only when everyone concerned agrees required conditions can be provided and maintained.

- H. Manufacturer Representative: Provide services of a trained technical representative of manufacturer to advise on every phase of work and to perform other like services at first two work days; once each week thereafter for two consecutive hours; and required technical assistance. Representative shall give preparation and installation instructions, examine substrate before installation, witness flood tests and examine completed installation before covering.

1.04 SUBMITTALS

- A. Product Data: Submit product specifications, technical data and installation instructions of manufacturer for each product to be used in work. Include published data, certified conformance report or certified laboratory test report of manufacturer substantiating proposed products and systems meet specified requirements. Include a material list with technical data documenting location and primary function, quality and performance of each material components or system proposed for the work.

- B. Shop Drawings: Submit shop drawings for fabrication and installation of work. Indicate each material, show details of edge terminations and flashings, and treatment of joints, projections and penetrations.

- C. Manufacturer Certification: Submit certification signed by waterproofing manufacturer, stipulating which waterproofing and flashing systems are proposed for use in the work, and stating installer is approved as an experience applicator or waterproofing system.

- D. Manufacturer Review Statement: Submit statement in form acceptable to Architect, signed by Contractor and installer, stating Contract Documents, product data and shop drawings have been reviewed with qualified representatives of materials manufacturers, and are in agreement that selected materials and systems are proper and adequate for applications required, including compatibility with adjacent systems and materials.

- E. Application Statement: Submit statement in form acceptable to Architect, signed by contractor and installer, stating work was provided in compliance with Contract Documents and installation was proper for conditions of application and use.

1.05 PRODUCT HANDLING

- A. General: Deliver and store materials in manufacturer original packaging, labeled to show name, brand, date produced, type and grade. Store materials in protected location off ground or in a location meeting manufacture instructions.
- B. Protection: Do not allow materials to become wet, soiled, and covered with ice and snow. Meet manufacturer precautions and recommendations to protect materials from deterioration.

1.06 PROJECT CONDITIONS

- A. Weather Conditions: proceed with work only when weather conditions meet instruction of manufacturer and work can proceed in accordance with requirements.
- B. Coordination and Sequencing:
 - 1. Proceed with waterproofing only after substrate construction and penetrating work through substrates have been completed. No phased construction will be permitted, including associated detail work. Complete installation as rapidly as possible in each area of work.
 - 2. Schedule installation to minimize period of exposure prior to covering with permanent construction.

BELOW: LAURENCO GUARANTEES:

5 AND 10 YEAR WATER TIGHTNESS FOR LIQUID MEMBRANE Type W60LA SYSTEM (VERTICAL APPLICATIONS ONLY).

10, 15, 20 AND 25 YEAR WATER TIGHTNESS FOR REINFORCED MEMBRANE DEPENDING ON NUMBER OF PLIES OF WATERPROOFING SHEET AND ADHESIVE.

REVIEW GUARANTEE REQUIREMENTS WITH MANUFACTURER.

1.07 GUARANTEE

- A. General: guarantee work meeting provisions of Conditions of the Contract, except guarantee shall include the additional provisions of the Article.
- B. Coverage:
 - 1. Guarantee shall extend to repair and replacement of waterproofing work which leaks water and otherwise fails to perform as required within guarantee time period due to failure of materials and workmanship. Guarantee shall include removal and replacement of other materials and work covering waterproofing, to extent required to repair and replace waterproofing work, which shall be responsibility of Contractor. Guarantee shall limit responsibility to total original cost of providing materials.
 - 2. Manufacturer approved insulation shall retain at least 80 percent of its thermal value. Any change of insulation type shall be approved by the manufacturer in writing.
 - 3. Guarantee shall be signed by Contractor, installer and waterproofing manufacturer.
- C. Time Period: Basic guarantee time period shall be 10 years (see Section 1.06, Item B.2.).

PART 2-PRODUCTS

2.01 MEMBRANE MATERIALS

- A. System: A rubber modified asphalt to form the various 1, 2 or 3 ply waterproofing sheet) and adhesive systems/assemblies (mil thicknesses of 90, 150 and 220 as minimums) which ever is appropriate for the site waterhead and soils.
 - 1. Acceptable product/system: Laureco Waterproofing Sheet.
 - 2. Acceptable alternate product/system:
- B. Cold Adhered Woven Glass Fabric Reinforced Waterproofing Sheet, Type 101:
Composed of woven glass fabric (ASTM D 1668-97), filmed to 52 mils plus or minus 10 percent with neoprene, butyl and other appropriate rubbers, ultra-violet ray inhibitors and rubber cure agent to modify ASTM D 312, Type 2 asphalt to form a prefabricated waterproofing sheet which together with appropriate formulations permit installations in temperature ranging from 20 to 125 degrees F.
- C. Modified Asphalt Adhesive:
 - 1. Description: Neoprene/butyl rubber modified asphalt liquified with V. M. & P. Rule 66 Naphtha with appropriate fillers for Ultra-Violet Ray resistance and bulking capabilities to meet and/or exceed ASTM D 4479, Type 1 and required V.O.C. and E.P.A. requirements to be used to adhere the specified insulations and protection boards and to adhere and coat

- the Laurenco Waterproofing Sheet for a cold application with
2. Acceptable Products: Laurenco Adhesive
- D. Cold Applied Liquid Membrane with Woven Glass Fabric Reinforcement of all corners, cold joints and concrete cracks 1/8 inch or more and to be used to vertical (walls) only:
1. Description: Trowel or roller grade viscosity neoprene/butyl rubber modified asphalt coating liquefied with V. M. & P. Rule 66 Naphtha and with Ultra-Violet Ray inhibitor with appropriate talc fillers which meet and exceed ASTM D4479, Type 1 and the required V.O.C. and E.P.A. rules and regulations; this coating is to adhere specified protection board and/or insulations.
 2. Acceptable Product: Laurenco Liquid Membrane Type W60LA
- E. Cold Applied Rubberized Flashing Coating for use as a top protective coating for flashings, tie-offs and other terminations; trowel grade viscosity.
1. Description: Neoprene/butyl rubber modified asphalt liquefied with V. M. & P. Rule 66 Naphtha with Ultra-violet Ray inhibitor and appropriate talc fillers which meet and exceed ASTM D 4479, Type 1 and the required V.O.C. and E.P.A. rules and regulations.
 2. Acceptable Product: Laurenco Rubberized Flashing Coating.
- F. Cold Applied Butyl Sealant Tape as a Flexible Joint Seal for Control, Shrinkage Joints and as a component part of the Laurenco Styled Expansion Joints, etc. Assemblies.
1. Description: Color; black and supplied in ribbon or square design in rolls with silicone coated release paper and consisting of butyl rubber modified with Ultra-Violet Ray inhibitor, etc. with talc as a filler. Application areas are to be prime coated with Laurenco Adhesive. Meets requirements of A.C.I. 504 and ASTM E 1783.
 2. Acceptable Product: Laurenco Butyl Sealant Tapes.
- G. Woven Glass Fabric for Termination Tie-off and Stripping Use.
1. Description: Supplied in incremental widths of 4 inches to 36 inches and meets ASTM D1668-97, Type 1 (asphalt coated), Style 20 x 10.
 2. Acceptable Product: LaurencoGlas.

2.02 ACCESSORY MATERIALS

- A. Expansion Joint Filler Rod:
1. Description: closed-cell expanded (sponge) neoprene or expanded polyethylene rod, as recommended by waterproofing manufacturer for conditions of the installation. Provide in size 1 inch than maximum possible joint opening width and to fit with 25 percent compression into joint of median width.
 2. Acceptable Products:
 - a. Laurenco Styled Mushroom and Bulb Sponge Rubber Joint Fillers.
 - b. Williams Products Inc.: Neoprene Everlasting Joint Seals.

- B. Protection Course (Sheet) for Horizontal Use:
1. Description: Asphalt/felt protection board (panels 4 ft. X 8 ft.) thicknesses 62 mils, 1/8 inch and 1/4 inch. ASTM Standard is pending.
 2. Acceptable Products: W. R. Meadows Company, Elgin, Illinois.
- C. Protection Course (Panels) for Vertical (Wall) Use:
1. Description: One (1) inch x 2 ft x 4 ft. panels, one (1) pound density, expanded polystyrene bead board.
- D. Drainage Course: Pea-sized gravel in thicknesses of 1-1/2 to 2 inches is preferred to any of the prefabricated drainage mats
- BELOW: REVIEW THE FOLLOWING FOR INSULATION TYPE AND CONFIGURATION.**
- E. Insulation: Extruded Polystyrene specified in Section 07210-Building Insulation.

PART 3-EXECUTION

3.01 EXAMINATION

- A. General: Examine areas and conditions under which work is to be installed for compliance with requirements of Contract Documents and to determine of conditions affecting performance of work are satisfactory. Do not proceed with work until unsatisfactory conditions have been resolved.
- B. Special: meet coordination and sequencing requirements in Article-Project Conditions of this Section.
- C. Substrate Conditions:
1. Substrate shall be surface dry only, free of dirt and debris and capable of supporting foot traffic
 2. Concrete surfaces shall have the equivalent of a wood float finish and shall be free of concrete curing compounds and form release agents containing animal fats (tallow) which shall meet the requirements of waterproofing manufacturer. Use of water cure is recommended. Concrete does not need to be fully cured. A usual cure duration of 3 to 10 days is normally sufficient.
 3. Concrete should have a minimum 1/4 inch per foot slope to the drains. All drains shall have the clamping rings located (finished level) 1/2 inch to 3/4 inch below top surface of the finished concrete slab.

4. All penetrations shall be set into the concrete and grouted to a smooth and tight surface configuration.
- D. All interior and exterior corners shall be smooth angles. Do not use chamfers or rounded treatments for the corners. Do not use corner fillers of consisting of fillets, cants or curbs. The waterproofing sheet can be pre-folded to the structural concrete angles.
- E. Placing of waterproofing constitutes acceptance of substrate conditions of installer.

3.02 PREPARATION

- A. Protection: Protect building form damage resulting from spillage and dropping of materials. Do not allow materials to enter and clog drains and associated piping. Prevent spillage and migration onto other surfaces of the work by masking or otherwise protecting such work.
- B. Substrates:
1. Clean substrates to remove dirt, loose particles and deleterious matter which would impair adhesion to the substrate.
 2. Patch cracks and voids in accordance with requirements of waterproofing manufacturer to obtain a smooth, structurally sound surface.
 3. Dry substrate as required due to inclement weather and adjacent wet construction in accordance with instructions of waterproofing manufacturer.
 4. Thoroughly sweep substrate followed by blow clean using an air compressor to remove remaining loose debris.
 5. Repair all holes more than the size and depth of a U.S. Quarter, any honeycombs, cracks more than 1/16 inch wide, foot prints, etc. Remove fins by scraping. Avoid grinding the concrete surfaces.
 6. Apply a 3 ft x 3 ft. patch test assembly consisting of one coat of adhesive and one ply of waterproofing sheet to test for adhesion. Test duration: 24 hours.
See materials/system manufacturer for corrective procedures.

3.03 INSTALLATION-GENERAL

- A. General:
1. Provide waterproofing system meeting requirements of Contract Documents, as indicated by final reviewed submittals for work, and meeting instruction and recommendations of manufacturer. Consult with manufacturer for conditions not covered by printed instructions.
 2. Store materials off ground and covered with canvas tarpaulins. Do not use non-breathing films or black protection board panels.
 3. Do not use the primer unless manufacturer recommends it as a corrective procedure for concrete surface. The adhesive is self-priming.

- B. Flashing and Reinforcement: Install all flashings and reinforcements prior to application of waterproofing to meet details and instructions of manufacturer for each condition, and not less than indicated on Drawings and following. Each flashing and reinforcement condition shall be 2 plies of waterproofing adhered and coated with adhesive (total adhesive required per sq.: 5 gallons.) with an asphalt/felt protection course cut to fit height of design less width of any termination bar used. The top coat to adhere protection can be Rubberized Flashing Coating applied at the rate of 1-1/2 gallons per sq.
1. Cold (Construction) Joints and Cracks over 1/16 inch wide, cover with 2 plies of Woven Glass Fabric (20 x 10) 4 inches wide install with adhesive at the total rate of 3 gallons per 100 sq. ft. Total of 2 plies shall be centered over the joint or crack in a staggered pattern (3 inch center overlap).
 2. Control and Shrinkage Joints 1/2 to one (1) inch wide: Use 1 inch x 1 inch butyl sealant tape inserting a corner into 1/2 inch wide joints and two (2) ply stack into one (10 wide) joints. Cover with 6 inch wide waterproofing sheet cut from the length of the sheet and centered over joint.
 3. Expansion Joints to 2 inches Wide: remove any loose matter to obtain smooth vertical faces of the concrete jaws.. Provide heavy duty neoprene rubber (for parking decks) or butyl rubber sheet 45 mils minimum as a backer sheet looped into joint a distance two (2) times joint width and extended 6 inches minimum on either side. Insert 1/8 inch x 2 inch butyl sealant tape adhered with adhesive at bottom of loop. Insert one (1) ply of waterproofing sheet strip cut to the same width as the rubber sheet backer and adhered in with a uniform thin coat of adhesive. Insert expansion joint filler rod into loop. Cover joint with 3/8 inch x 3-1/2 butyl sealant tape adhered in a thin coat of adhesive. Cover butyl sealant tape with two strip of waterproofing to extend 4 and 6 inches each side and adhere in thin coat of adhesive each ply. Top coat thinly with adhesive the entire exposed assembly and embed either the neoprene or butyl rubber sheet cut to extend 8 inches each side.
 4. Drains: Apply adhesive 18 inches around drain and embed a 36 inch x 36 inch sized waterproofing sheet plus horizontal 2 ply field waterproofing sheets to inside of drain bowl clamping flange. Install drain clamping ring in Rubberized Flashing Coating. Cut-out center of waterproofing to expose drain bowl.
 5. Penetrations: Pipe, duct, etc. penetrations cover juncture of vertical pipe and concrete slab surface with two (2) plies of waterproofing sheet cut to height of design as a collar and pig-eared to extend 6 inches first ply and 8 inches second ply onto substrate. Smoothly adhere the 2 plies in 2 thin uniform adhesive coats. Top coat with 1-1/2 gallons of Rubberized Flashing Coating. Place all field sheets cut to fit over the pig-ears and to snugly fit around each penetration. Adhesive seal coat all of these junctures between the field surfaces and the penetrations.
 6. Transitions:
 - a. Interior Corners: At intersection of the horizontal and both vertical surfaces forming an interior corner, provide 2 - 9 inch wide strips of waterproofing sheet staggered 4 inches and 5 inches then 5 inches and 4 inches onto each vertical face of the interior corner each to height of flashing design. Extend these flashing strips onto the horizontal

concrete surface 6 inches minimum and 8 inches maximum. Pre-fold to conform to the vertical and horizontal corners. Third 9 inch wide ply shall be installed as a cap seal and is pre-folded to 4-1/2 inches and 4-1/2 inches over the juncture of the main installations of wall flashings to horizontal surfaces which are terminated tightly into each corner.

- b. Exterior Corners: At intersection of horizontal and both vertical surfaces forming an exterior corner, provide 2 - 9 inch in the same pattern as interior corners using a 9 inch x 9 inch square target patch slashed from center of patch to a corner to cover and seal the void in the sheet turn-out onto the horizontal surfaces. Install the corner cap seal at the end of the main flashing design 4-1/2 inch and 4-1/2 inches with a horizontal turn-out of 6 inches and 8 inches minimum. Target patch the void (split) in the horizontal turn-out to seal. Adhere all of the waterproofing flashing sheets in thin uniform coats of adhesive.
 - c. Top coat all exposed flashings with Rubberized Flashing Coating at the rate of 2 minimum to 2-1/2 gallons maximum per 100 sq. ft.
7. Terminations:
- a. Typical: Thinly brush coat with adhesive all termination including those to receive termination bars. Terminations may be heat sealed using an electric heat gun and heated mason's trowel to firmly smooth into wall or reglet except as otherwise required.
 - b. Top terminations of vertical surfaces at perimeter of waterproofing areas to be exposed into completed work and elsewhere as required by waterproofing manufacturer with Rubberized Flashing Coating.
 - c. Termination Bars (1 inch wide stainless steel strips) are to be set into a strip of 1/8 inch x 2 wide butyl sealant tape folded in half to obtain a 1/4 inch thickness and installed over the top termination of the waterproofing flashing sheets and affixed with fasteners set at 8, 10 or 12 inch centers.

C. Cold Applied Glass Fabric Reinforced Prefabricated Rubber Modified Asphalt Waterproofing Sheet and Adhesive:

1. Horizontal Normal Weight Cast-in Place Concrete Suspended Slab and Concrete Mud Slab (Under Floor) Substrate: Apply adhesive smoothly and uniformly to concrete surfaces at the rate of 1-1/2 gallons per 100 sq. ft. Embed first ply of waterproofing sheet cap sheet pattern using 4 inch side and end laps adhered in adhesive at the rate of 1/2 gallon per 100 sq. ft. Adhesive coat first waterproofing sheet at the rate of 3/4 gallon per 100 sq. ft. Embed second ply of waterproofing as first ply. After flood testing, finish with a final adhesive top coat at the rate of 1-3/4 gallons per 100 sq. ft. and embed firmly the asphalt/felt protection board, polyethylene film side up.
2. Vertical (Walls): Number of plies of waterproofing sheet specified and installed shall depend on the height of the waterhead and soil water pollution. Adhesive coat vertical surfaces and footers smoothly and uniformly at the rate of 1-1/2 gallons per 100 sq. ft. using five to six foot lifts. Pre-cut sheet lengths to height of lift plus any turn-out onto the

footer. Embed first ply smoothly and firmly into adhesive. Adhesive coat first ply at the rate of 3/4 gallon per 100 sq. ft. Center second sheet ply over first sheet. Coat side laps of sheets thinly at the rate of 1/2 gallon per 100 sq. ft. and press in firmly to seal. Adhesive top coat the second ply of waterproofing sheet at the rate of 1-1/2 to 1-3/4 gallons per 100 sq. ft. Embed firmly 1 inch x 2 ft. x 4 ft. expanded polystyrene bead board panels into wet adhesive, brick pattern with tight butt joint. Score outside face of polystyrene bead board panels.

- D. Horizontal Protection Course: Cover entire cold applied rubber modified asphalt sheet and adhesive assembly with appropriate type protection course for application areas.
1. Application: Apply in practicable sizes to obtain maximum conformity for all horizontal surfaces as per manufacture's recommended pattern.
 2. Embed horizontal asphalt/felt protection layer into tacky to almost dry adhesive using tight butt joints.
 3. Do not remove polyethylene parting film until ready to install insulation

3.04 INSTALLATION-TOPPING MATERIALS

- A. Examine waterproofing area receiving topping materials to ensure areas have received membrane. Membrane is free of damage, properly protected, and flashing properly installed before placing topping materials.
- B. Place topping materials as soon as possible after successful field quality control water testing.

3.05 INSULATION PLACEMENT

- A. Adhere all insulation to the top surface of the asphalt/felt protection board after removing the polyethylene parting film. Apply adhesive at the rate of one (1) gallon per 100 sq. ft. and allow to tack. Install insulation with a tight butt joint. Areas with parapet wall start at the periphery with the cut and fit adjustments to be located at the center. Install insulation to tightly fit around all projections and penetrations.

BELOW: REVIEW TYPE OF POLYSTYRENE INSULATION. NOT ALL APPLICATIONS REQUIRE GROOVES AND BONDED FILTER FABRIC. REVIEW REQUIREMENTS WITH WATERPROOF MEMBRANE MANUFACTURER.

- B. Install top layer of insulation with grooves and bonded filter fabric sheet facing up. Overlap edges of filter fabric sheet and bond to adjacent filter fabric sheet to ensure filter fabric sheet integrity. This assembly shall provide all normally required drainage.

BELOW: FILTER FABRIC MAY BE USED OVER INSULATION WHEN NO FABRIC IS BONDED TO INSULATION. SEE DRAINAGE LAYER BELOW.

- C. Filter Fabric: Install over entire area of polystyrene insulation board. Lap edges and ends of fabric a minimum of 4 inch as adjoining sheets.

3.06 DRAINAGE LAYER

BELOW: DRAINAGE LAYER WOULD GO OVER INSULATION WHEN “AIR LAYER” IS REQUIRED BETWEEN INSULATION AND CONCRETE SLAB ABOVE INSULATION TO PREVENT DETERIORATION OF CONCRETE SLAB ABOVE. EDIT AS REQUIRED.

- A. Install drainage layer over protection course on horizontal and vertical (on indicated) surfaces. A drainage field consisting of pea-sized, triple washed gravel is recommended by the manufacturer with a geotech blanket as an overlayment.
- B. Install meeting instructions and recommendations of manufacturer.
- C. Layout drainage course assembly as designed and has been approved by the waterproofing systems manufacturer.

3.07 FIELD QUALITY CONTROL

- A. A Water Flood Test Perform water testing of entire waterproofing membrane on horizontal surfaces on an area-by-area basis so that areas may be quickly protected as the work progresses. Perform test before installation of top coat of adhesive and before installation of protection course, as applicable. Flood areas by temporarily plugging drains and impounding water according to ASTM D 5957-96. When leaks occur, use the manufacturer's recommended repair procedures to eliminate causes and sources of leaks.

3.08 PROTECTION

- A. Until waterproofing membrane is protected, keep area free from traffic and other work operations. Provide necessary temporary protection to prevent damage and deterioration including, but not limited to, that caused by traffic, falling objects, gouging, scraping, spillage of deleterious substances, excessive heat and other occurrences. See manufacturer for any required repair procedures.
- B. Protect completed work from damage and deterioration until project completion.

IN THE FOLLOWING SCHEDULE LIST ASSEMBLY TYPES AND COMPONENTS. WHEN NOT SHOWN ON DRAWINGS. PROVIDE SPACE NUMBERS AND NAMES.

3.09 LAGGING WALL WATERPROOFING (Installation of Cold Process Adhesive and Prefabricated Waterproofing Sheet Reinforced):

- A. General: Provide waterproofing system meeting the requirements of Contract Documents, as indicated by final reviewed submittals for work, and meeting instruction and recommendations of manufacturer. Consult with manufacturer for conditions not covered by printed instructions contained in Laurencos's V-2 Specification.

- B. Lagging Wall Assembly and Preparation:
 - 1. Lagging walls shall be surfaced with 5/8 inch standard plywood panels installed tight butt joint only and mechanically affixed to wood lagging or soldier beams.
 - 4. Install soldier beams and lagging in straight wall lines to maintain the tight butt joints for plywood panels.
 - 5. Place termination cones for tie backs in such a manner that the plywood can be installed in a tight butt joint surround.

- C. Flashings and Reinforcement: Install the flashings for all interior and exterior corners and penetrations (i.e. pipes and tie-back cones) before the installation of the main wall waterproofing. Tightly fit all flashing materials including any butyl sealant tape to eliminate any bridging and voids. If bridging occurs, cut the bridged areas, lightly heat to seal and recap with adhesive and waterproofing sheet cut to fit.
 - 1. Corners (Interior and Exterior): All corners including horizontal and vertical both interior and exterior shall be reinforced with two (2) plies of waterproofing sheet adhered in adhesive. Horizontal flashing at the base of the lagging wall shall use two (2) plies of 18 inch wide waterproofing sheet set into adhesive to extend 9 inches up the lagging wall and 12 inches onto mud mat slab and to cover the pre-installed 1 inch x 1 inch butyl sealant tape. All other flashings shall be nine (9) inches wide as follows:
 - a. Into a thin prime coat of adhesive, first press in firmly a 1 inch x 1 inch strip of butyl sealant tape to pre-seal all corner joints and cover with:
 - b. Two nine (9) inch wide strips of waterproofing sheet cut from the length of the roll, prefold to 4 inches and 5 inches and adhere in adhesive in a staggered pattern of 4 inches and 5 inches then 5 inches and 4 inches. First adherence coat of adhesive shall be 1-1/2 gallons per 100 sq. ft. of adhesive, the second adherence coat of adhesive shall be 1 gallon per 100 sq. ft.
 - c. Firmly press in to eliminate any voids or bridging.
 - 2. Tie-back Cones shall be coated with a thin coat of adhesive into which two (2) or three (3) plies of 3/3 inch x 3-1/2 inch wide butyl sealant tapes shall be used to cover the joints

between the plywood and the cones and to cover the surface of each cone.

- a. After treating each cone with the sealant tape, cover with 2 plies of waterproofing sheet cut to fit over the butyl sealant covered cones plus extend a minimum 6 inches all sides onto the plywood lagging surround.
- b. Set each ply of waterproofing sheet in a thin coat of adhesive to firmly adhere. Slightly soften this assembly and press in using a heated mason's metal trowel to conform the materials tightly.
- c. Uniformly top coat with rubberized flashing coating at the rate of 2 gallons per 100 sq. ft.

D. Vertical (Lagging Wall) Waterproofing Assembly:

1. The wall waterproofing assembly shall consist of three plies of waterproofing sheet reinforced with woven glass fabric adhered in a total of 4-1/2 minimum to 5 gallons maximum per 100 sq. ft. of adhesive in the following manner.
 - a. First ply of waterproofing sheet shall be adhered in adhesive applied at the rate of 1-1/2 gallons to 2 gallons per 100 sq. ft. maximum of adhesive.
 - b. Second and third plies of waterproofing sheet shall each be adhered in adhesive applied at the rate of one (1) gallon per 100 sq. ft.
 - c. Thinly seal all laps.
 - d. Do not top coat the third ply of waterproofing sheet with adhesive. This third ply is to be used as a protective course instead of a protection board or any drainage field assemblies.

E. Set all rebar taking care not to puncture the waterproofing membrane assembly.

F. Install concrete in short lifts taking care to vibrate each lift to present a uniformly solid wall face to the waterproofing materials. The concrete shall have a minimum 115 degrees F. heat of hydration.

END OF SPECIFICATION 07___