
MANUFACTURER'S GUIDE SPECIFICATIONS

SECTION 03 15 13.21 MIRASTOP™ IW INJECTABLE WATERSTOP



MiraSTOP™ IW – Injectable Waterstop

PART I - GENERAL

1.1 DESCRIPTION

Carlisle Coatings & Waterproofing utilizes the MiraSTOP™ IW for cast in place concrete control joints and non-moving construction joints. This injectable waterstop is supplied as a kit and includes the injection hose, connectors, fastening clips and fill tubing, and is intended to be injected with CCW MiraSTOP Chemical Grouts upon concrete curing or in response to water infiltration.

1.2 RELATED SECTIONS - Include, but not limited to the following

- A. Section 03 10 00 – Concrete Forming and Accessories
- B. Section 03 30 00 – Cast-In-Place Concrete
- C. Section 03 64 00 – Injection Grouting

1.3 QUALITY ASSURANCE

- A. MiraSTOP IW must be installed by a Carlisle Coatings & Waterproofing Inc. Approved Applicator in compliance with shop drawings approved by Carlisle Coatings & Waterproofing Inc. There must be no deviations made from Carlisle's specifications or the approved drawings without the prior approval from Carlisle Coatings & Waterproofing Inc.
- B. A pre-installation meeting should be coordinated by the General Contractor and attended by an Owner's Representative, Consultant, the applicator and injection hose waterstop manufacturer's representative. Any trade having relevant work to the injection hose waterstop before, during and after installation should also be present and properly represented by a Project Manager and Job Foreman. The purpose of this meeting is to discuss the necessity of ensuring proper protection during all phases of installation and to review other applicable requirements or unusual field conditions.
- C. Applicator shall have a minimum of 2 years of experience in installing injection hose waterstops and shall be approved to perform work by injection hose waterstop manufacturer. The Field Superintendent or Foreman shall have direct involvement from the beginning to the end of the waterstop installation.
- D. Upon request by the Approved Applicator, an inspection will be conducted by a Carlisle Coatings & Waterproofing Inc. representative to ensure that the waterstop has been installed according to Carlisle Coatings & Waterproofing Inc. specifications and details. This inspection shall be coordinated in between concrete pours so that access to the waterstop is not impaired.

1.4 SUBMITTALS

- A. General: Submit in accordance with Section 01 33 00.
- B. Product Data: Submit manufacturer's product literature and installation instructions.
- C. Subcontractor's approval by manufacturer: Submit document stating manufacturer's acceptance of subcontractor as an Approved Applicator for the specified materials.

1.5 PROJECT CONDITIONS

- A. Coordination between various trades is essential to prevent damage to the injection hose waterstop.
- B. Coordinate waterstop work with other trades. The applicator shall have sole right of access to the specified areas for the time needed to complete the installation.
- C. Wear applicable protective clothing.

- D. Maintain work area in a neat and orderly condition, removing empty containers, rags, and rubbish daily from the site.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to project site in original, factory-sealed, unopened containers bearing manufacturer's name and label intact and legible with the following information:
 - 1. Name of material
 - 2. Manufacturer's stock number and date of manufacture
 - 3. Material's Safety Data Sheet
- B. Always store injection hose waterstop kit in a protected and dry location in original, unopened containers between 50-86°F (10-30°C). Do not store in direct sunlight. Protect from rain, physical damage and construction traffic.
- C. Unused injection hose waterstop should be carded as unregulated trash but confirm with local, state, and federal regulations.
- D. Uncured chemical grouts are considered hazardous materials and must be handled and disposed as such, in accordance with local, state, and federal regulations.

PART II PRODUCTS

2.1 GENERAL

- A. Provide products manufactured and supplied by Carlisle Coatings & Waterproofing Inc. ("CCW"), 900 Hensley Lane, Wylie Texas 75098, phone (800) 527-7098, fax (972) 442-0076.
- B. The components of this injection hose waterstop are to be products of Carlisle Coatings & Waterproofing Inc. The installation, performance or integrity of products by others is not the responsibility of Carlisle Coatings & Waterproofing Inc.

2.2 MATERIALS

- A. Injection Hose: Shall be CCW MiraSTOP IW injection hose constructed of the following:
 - 1. A high-strength wire coil that prevents damage from concrete placement
 - 2. A filter fabric that prevents clogging from concrete placement
 - 3. A protective mesh sleeve that allows grout to permeate from the injection hose and into the surrounding concrete.
- B. Fastening Clips: Shall be CCW MiraSTOP IW fastening clips used to secure the injection waterstop hose to the concrete substrate.
- C. Connectors: Shall be CCW MiraSTOP IW connectors used to join the injection hose waterstop to the fill tubing.
- D. Fill Tubing: Shall be CCW MiraSTOP IW PVC tubing used to provide a connection for future chemical grouting operations.
- E. Chemical grout: Shall be MiraSTOP CG-F; a low viscosity, solvent-free, flexible polyurethane chemical grout used to inject the MiraSTOP IW.
- F. Pump Flush: Shall be MiraSTOP PF; a pump flush or cleaning agent used to flush, clean, and prime polyurethane injection pumps.

2.3 RELATED ACCESSORY PRODUCTS

- A. Waterstop Adhesive: Shall be MiraSTOP SS; a swellable sealant used as an adhesive for installing CCW MiraSTOP IW injection hose against rough concrete surface profiles.
- B. Self-Adhering Tape: Shall be MiraPLY™ Seam Tape; a double-sided adhesive tape used to secure the MiraSTOP IW injection hose waterstop for installations directly against a waterproofing system.
- C. Junction Boxes: Shall be conventional electrical junction boxes constructed of metal or plastic and shall be sized accordingly to receive the fill tubing ends providing both protection and future access.
- D. Junction Box Covers: Shall be a solid or "blank" cover plate and shall be sized to match junction box.

PART III EXECUTION

3.1 GENERAL

- A. Before any waterstop work is started the waterstop applicator shall thoroughly examine all substrates to receive the waterstop for any deficiencies. Should any deficiencies exist, the architect, owner, or general contractor shall be notified in writing and corrections made.
- B. All work shall be performed in accordance with CCW application instructions.

3.2 SUBSTRATE REQUIREMENTS

- A. The substrate must be relatively smooth and free of protrusions, dirt, oil, grease, debris, sharp edges or foreign materials and must be free of accumulated water, ice and snow.
- B. In addition to section 3.2.A above, rough concrete and pipe penetrations shall be dry during application of the MiraSTOP SS.

3.3 INSTALLATION: INJECTION HOSE WATERSTOP

- A. Refer to the applicable manufacturer's literature for cautions and warnings.
- B. Install MiraSTOP IW injection hose onto a smooth surface. If the surface is rough, fill any gaps between the surface and the hose with MiraSTOP SS.
- C. For joints, lay a 25-ft. maximum length of injection hose in the joint area ensuring there will be a minimum of 3" concrete cover. Install connectors (see section 3.4) at the ends of the injection hose waterstop. Secure the hose by fastening the clips at a minimum of 12 in. on-center or as needed, within 1-2" of any change in direction and within 2-3" of any connectors. Install fill tubing (see section 3.5).
- D. For pipe penetrations, cut injection hose waterstop to desired length. Apply a min. 3/8" bead of MiraSTOP SS around the penetration where the injection hose waterstop shall be located. Install connectors (see section 3.4) at the ends of the injection hose waterstop. Embed the injection hose waterstop into the uncured waterstop adhesive and using tie wire, secure the connectors and injection hose to the penetration. Install fill tubing (see section 3.5). Ensure there will be a minimum of 3" concrete cover.
- E. For waterproofing membrane, cut injection hose waterstop to desired length. Install connectors (see section 3.4) at the ends of the injection hose waterstop. Lay the injection hose onto the waterproofing membrane. Secure the hose by applying 1-2" wide strips of MiraPLY Seam Tape at a minimum of 6 in. on-center or as needed, within 1-2" of any change in direction and within 2-3" of any connectors. Install fill tubing (see section 3.5). Ensure there will be a minimum of 3" concrete cover.

3.4 INSTALLATION: CONNECTORS

- A. Refer to the applicable manufacturer's literature for cautions and warnings.
- B. Attach a connector at both ends of the injection hose waterstop. Ensure the injection hose fits snug inside of the connector; the nipped end of the connector is for the fill tubing.
- C. Connectors between neighboring runs of injection hose waterstop should be separated by 2-3 in.; do not allow injection hoses to come in contact with one another to prevent "leap-frogging" or cross-contamination during chemical grout injection operations.
- D. Secure the injection hose waterstop with a fastening clip within 2-3" of any connector.

3.5 INSTALLATION: FILL TUBING

- A. Refer to the applicable manufacturer's literature for cautions and warnings.
- B. Attach the PVC tubing to the nipped end of both connectors for each run of injection hose.
- C. For chemical grout injection performed after minimum concrete cure of 28 days, the tubing should be cut to length such that it extends beyond the concrete pour or formwork to allow future connection for grouting operations. Ensure the exposed ends of all tubing are protected from

- physical damage by other trades.
- D. For future chemical grout injection in case of water intrusion, the tubing should be cut to length such that it extends beyond the concrete pour or formwork and placed inside of the junction box.
 - 1. Mark, label or apply color-coded tape at the end of each fill tube for ease of identifying which tube goes with which injection hose run as needed.
 - 2. Secure cover plate onto junction box prior to concrete placement.
 - E. Secure the fill tubing with a fastening clip within 2-3" of any connector and as needed with tie wire to the structural steel reinforcement.

3.6 INSTALLATION: GROUT INJECTION

- A. Refer to the applicable manufacturer's literature for cautions and warnings.
- B. Ensure that the fill tubing is accessible and identified for the intended injection hose run to be grout injected.
- C. Using a single-component pump specifically dedicated to water, connect the pump to the fill tube and pump water into the injection hose until water comes out of the opposite end fill tube. Note: pump up to 2-gallons of water at low pump pressure settings.
- D. Prime a single-component pump specifically dedicated to MiraSTOP Chemical Grouts using MiraSTOP PF to not only prime and lubricate the pump, fittings and hoses, but to also assist with purging any residual moisture in the pump.
- E. Add MiraSTOP CG-F Catalyst to the MiraSTOP CG-F Resin and mix as per manufacturer's recommendations. Refer to the MiraSTOP CG-F Technical Data Sheet's "Reaction Time" chart to determine catalyst dosage recommendations.
- F. Connect the chemical grout pump to the fill tube and slowly pump the grout until residual water is purged and chemical grout comes out of the opposite end fill tube.
- G. Shut off the chemical grout pump and clamp the opposite end fill tube.
- H. Restart the chemical grout pump and slowly increase pressure until the injection hose is filled with grout. This is often confirmed when there is significant resistance (i.e. significant spike in pump pressure reading). A normal, tight construction joint typically takes 1-gal of chemical grout for a 20 ft. length of injection hose. This can increase depending on the quality of the concrete consolidation.

3.7 PROTECTION

- A. Protect injection hose waterstop as per manufacturer's recommendations prior to and during concrete placement.
- B. Care should be taken not to damage the waterstop from concrete consolidation equipment.
- C. Inspect waterstop just prior to concrete placement and repair as per manufacturer's recommendations.

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