

CCW Blindside Waterproofing – “Best Practices” and Jobsite Requirements

This Technical Bulletin is a supplement to CCW Technical Data Sheets, Specifications and Detail drawings and is intended to provide additional information to support the installation of the CCW MiraCLAY™, CCW MiraPLY™ and CCW MiraWELD™ Blindside Waterproofing Systems.

Quality Assurance – Proper sequencing and coordination with the General Contractor, Waterproofing Contractor and relevant Trades are critical for the success of any blindside waterproofing system. Field inspections are recommended to confirm proper installation and detailing for the CCW Blindside Systems and at critical stages of relevant work by other Trades. These “Hold Points” should be clearly understood and coordinated with the party responsible for inspections, the General Contractor, the Waterproofing Contractor, and the relevant Trades. CCW recommends that the 1st Hold Point for each specific condition or sequence (aka “First Point of Verification”) is allotted ample time to review and make any necessary corrections for any unforeseen challenges.

Repairs – Ample time regardless of which Hold Point or inspection stage should be provided to both the party responsible for correcting/resolving any non-conformance and to the party responsible for inspecting the repair to review and report that a non-conformance was corrected/resolved. Repair procedures for the CCW Blindside Systems are as follows:

- Damage to MiraCLAY – Repair slices, cuts, and small punctures ($\frac{1}{2}$ " or less) with MiraCLAY Sealant and extend onto the MiraCLAY membrane a min. of 1". Repair larger areas (i.e. $> \frac{1}{2}$ ") with a new piece of MiraCLAY membrane (i.e. patch) extending beyond damaged area by approximately 6" in all directions. Seal all edges of the repair patch with MiraCLAY Sealant.
- Pre-hydrated MiraCLAY – Replace or cover pre-hydrated (i.e. pre-swelled) MiraCLAY with new MiraCLAY membrane that extends a minimum of 6" from the pre-hydrated area in all directions. Apply MiraCLAY Sealant around the perimeter of the new MiraCLAY membrane.
- Small damage to MiraPLY or MiraWELD – Clean the membrane with a cloth dampened with Weathered Membrane Cleaner and allow to dry. Repair slices, cuts and small punctures ($\frac{1}{2}$ " or less) with MiraPLY Detail Tape. Center the MiraPLY Detail Tape over damaged area and roll tape with hard rubber roller using firm hand pressure.
- Large damage to MiraPLY – Repair larger areas (i.e. $> \frac{1}{2}$ ") with a new piece of MiraPLY membrane (i.e. patch) extending beyond damaged area by approximately 6" in all directions. Clean the existing MiraPLY membrane beyond the patch with a cloth dampened with Weathered Membrane Cleaner and allow to dry.
 - Option-1: Apply MiraPLY Seam Tape to the underside of the patch. Remove release liner of MiraPLY Seam Tape; then position patch over damaged area and roll patch with a hard rubber roller using firm hand pressure.
 - Option-2: Position patch over damaged area; then apply MiraPLY Detail Tape around all edges of patch and roll tape with hard rubber roller using firm hand pressure.
- Large damage to MiraWELD – Remove the damaged section of membrane. Weld the perimeter of the cutout in the existing, surrounding membrane of the damaged section to CCW TPO Flashing ensuring a minimum $1\frac{1}{2}$ " wide continuous weld is achieved. Weld a repair patch of MiraWELD membrane to the exposed edge of the CCW TPO Flashing. Proceed to weld the seam ensuring a minimum $1\frac{1}{2}$ " wide continuous weld is achieved. NOTE: leave $\frac{1}{2}$ " of exposed TPO between the existing, surrounding membrane and the new repair patch. Probe all welded seams to ensure welding integrity and continuity. Apply MiraPLY Detail Tape centered along the

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½” exposed TPO. Seal the tape to the existing, surrounding membrane, the exposed TPO of the CCW TPO Flashing, and the repair patch by using a hard rubber roller with firm hand pressure.

- Unconventional repairs – when standard repair procedures as described above are not feasible due to lack of access or not enough existing, surrounding membrane to tie-in to, the use of MiraSTOP™ IW (Injectable Waterstop) may be required in the damaged area.

Site Preparation – Proper preparation not only allows an opportunity to optimize installation time but more importantly, allows an opportunity to maximize workmanship quality. Support of excavation, site dewatering, substrate prep and anticipated future tie-ins all have a significant impact on the overall quality of a blindside waterproofing system.

- **Support of Excavation (S.O.E.)** – Various types of shoring systems are acceptable for CCW Blindside Systems provided they provide a relatively even and regular surface. Walers, rakers, struts, bracing and soil anchors (i.e. tiebacks) often used with shoring systems can all be easily addressed with CCW Blindside Systems provided that work is properly sequenced and coordinated with relevant Trades.
- **Site Dewatering** – Water, ice, snow, etc. may compromise the installation and detailing of any blindside waterproofing system and therefore, adequate site dewatering is required and must remain in-place at minimum until after concrete placement. When site dewatering as-designed is not adequate, the use of additional or temporary dewatering may be required and also remain in-place at minimum until after concrete placement. Any dewatering plan should be reviewed and approved by the Engineer of Record or similar.
- **Horizontal Surface Prep** – CCW Blindside Systems may be installed directly against a concrete mud slab or a gravel/earth subbase. The concrete mudslab should be relatively smooth and regular without any sharp protrusions or significant unconsolidated concrete. When installing CCW Blindside Systems without MiraDRAIN® or rigid insulation, the concrete mudslab should be screeded, floated, troweled, etc. to provide an ICRI¹ Concrete Surface Profile of PC1 - PC6 and the gravel/earth subbase must be ¾" or smaller aggregate, level and compacted to a minimum of 85% Proctor density. Sand, pea gravel, etc. that may be displaced after compaction requires additional surface prep that may include MiraDRAIN, rigid insulation or similar. MiraDRAIN may be installed over a concrete mudslab or gravel/earth subbase as part of the overall as-designed drainage system. The concrete mudslab should be screeded, floated, troweled, etc. to provide an ICRI¹ Concrete Surface Profile of PC1 – PC8 and the gravel/earth subbase must be ¾" or smaller aggregate, level and compacted to a minimum of 85% Proctor density.
- **Crane Pads, Elevator Pits, Block-Outs, etc.** – Areas where CCW Blindside Systems are installed in advance of or after normal installation sequencing and production typically require additional attention in preparation, coordination, and protection. CCW recommends that any CCW Blindside Systems not intended to receive concrete placement within 60 days are protected from both physical damage and ultraviolet exposure to allow for proper tie-in.
- **Vertical Surface Prep** – CCW Blindside Systems may be installed directly against most shoring systems or concrete formwork (see below). Shoring systems such as secant piles, diaphragm walls or sheet piles may require additional surface preparation of a leveling material or facing material. When installing CCW Blindside Systems without MiraDRAIN® or rigid insulation, the vertical surface should be relatively smooth and regular without any sharp protrusions, or gaps/voids larger than 1". MiraDRAIN may be installed directly onto shoring systems with gaps/voids up to 2".

Membrane Installation – As with any blindside waterproofing system, the installation and detailing of CCW Blindside Systems are pre-applied and therefore, subject to traffic and subsequent work by other Trades. The CCW Blindside Systems shall be protected from this adjacent and relevant work to prevent damage. Once substrate prep is complete, the installation area should be limited to the Waterproofing Contractor or any pertinent work by other Trades necessary to complete the CCW Blindside System installation. Upon completion of the CCW Blindside System in a given installation area, no other Trade should have access to this area until the party responsible for inspection has “released” the area. For any unavoidable high-traffic areas where other Trades and construction personnel are required to walk on or above the CCW Blindside System, the CCW Blindside System in those areas should have temporary protection to prevent physical damage and contamination.

Steel Reinforcement Bar (Rebar) – Various types of rebar supports are compatible with the CCW Blindside Systems. The CCW Blindside Systems should be protected from physical damage during the installation of the steel reinforcement bar.

- **Reinforcing Bar Supports** – Common acceptable rebar supports are concrete bar supports (e.g. pavers, dobies, etc.), fiber-reinforced bar supports and all-plastic bar supports provided the support’s base is flat and smooth. Wire bar supports (e.g. bolsters, chairs, etc.) even if plastic coated or epoxy coated are generally not compatible with a blindside waterproofing system. When feasible, the spacing or location of rebar supports should be positioned such that they are not directly on a CCW Blindside System’s seam or other waterproofing detail area. A general rule of thumb is to keep all rebar supports 6” away from any seams or detailed areas.
- **Reinforcing Bar Placement** – The delivery, handling and placement of rebar should be done in a manner so as not to cause any physical damage to the CCW Blindside System. The rebar should not be stockpiled or temporarily stored on the CCW Blindside System without proper protection, coordination, and approval from the Waterproofing Contractor. Paint should not be applied to the CCW Blindside Systems; the use of a chalk line, lumber crayon, keel, and Sharpie® marker for markings, layouts, etc. are acceptable.
- **Reinforcing Bar Anchoring** – Penetrations thru a blindside waterproofing system to assist with the installation and securing of the rebar should be limited. The use of anchors or mechanical fasteners should be coordinated with and accepted by the Waterproofing Contractor whether penetrating the CCW Blindside System post membrane installation or installed prior to membrane installation.

Mechanical, Electrical & Plumbing – The delivery, handling and placement of utility work should be done in a manner so as not to cause any physical damage to the CCW Blindside System. Any pipe, sleeve, conduit, etc. that the CCW Blindside System needs to tie-in to shall have a smooth surface (i.e. outer wall), be properly secured and stable prior to the CCW Blindside System installation and detailing, and be free of any fittings, connections, bracing, anchoring, etc. for minimum 9” off the face of the CCW Blindside System membrane. Duct banks, penetration clusters, etc. shall require review and approval for each project specific condition to determine proper waterproofing detailing. The utility work should be properly sequenced and coordinated with the Waterproofing Contractor.

Concrete Forms – A conventional two-sided form is not acceptable for use with the CCW Blindside Systems. Formwork for wall construction should be of the one-sided type thus limiting penetrations through the blindside waterproofing. Headers, edge forms, pour-stops, bulkheads, etc. should be externally braced to prevent penetrations through the CCW Blindside System in the adjacent areas. For

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edge of slab, footings, top of wall, etc. where the backside of CCW Blindside System will be exposed for tie-in to post-applied waterproofing:

- The formwork should remain in-place a minimum of 3 days after concrete placement and/or until a minimum of 3,000 psi concrete compressive strength is achieved.
- CCW approved protection course or MiraDRAIN is required prior to backfill operations

NOTE: “Earth forms” and leave-in-place forms (e.g. stay-form) are not acceptable for use with CCW Blindside Systems without prior approval by CCW.

Concrete Placement – The concrete should be placed as per ACI² guidelines to provide properly consolidated concrete. CCW recommends that any internal vibrating equipment uses a rubber coated vibrator head to protect the blindside waterproofing from damage. Adjacent areas of the CCW Blindside System outside of any given concrete pour, should be protected from concrete over-splash. For shotcrete applications, shotcrete should be placed as per ACI guidelines by an ACI-certified Shotcrete Nozzleman. Refer to CCW Technical Bulletin *CCW Blindside Waterproofing Systems – Use with Shotcrete Foundation Walls*.

Special Conditions – Additional attention in preparation, coordination, and protection for conditions outside of normal waterproofing installation is often required on most projects. The Pre-Installation Conference dedicated to waterproofing is often a good start for this preparation and planning, but often times there are unforeseen challenges that may arise on a given project.

- **Transition or Termination at Grade** – If the shoring system will be exposed and removed near top of grade, the CCW Blindside System should be protected in advance from excavation, burning/cutting operations, etc. Install a fire-resistant protection board/sheathing between the waterproofing system including the drainage system and the shoring system from minimum 2 ft. below the anticipated excavation grade and extend to top of grade.
- **Block-Outs** – The CCW Blindside System should extend into any block-out area a minimum of 6” beyond any rebar to provide clearance and allow proper tie-in or detailing. The CCW Blindside System should be protected from uv, physical damage and burning/cutting operations. When space between the edge of the block-out and a dewatering well, column, penetration, tieback head, etc. may be limiting the Waterproofing Contractor enough space and access to allow proper detailing, consider the use of rebar couplers to provide the 6” clearance. It is both common and best practice to include MiraSTOP IW as part of the overall waterproofing detail design for this condition.
- **Tieback De-Tension** – If tiebacks (soil anchors) will be removed, the blindside waterproofing system must be protected from burning/cutting operations.

Footnotes:

1. “ICRI” refers to the International Concrete Repair Institute, Inc.
Website: www.icri.org Phone: (651) 366-6095
2. “ACI” refers to the American Concrete Institute
Website: www.concrete.org Phone: (248) 848-3700

Contact CCW Technical Services for more information at ccwtech@carlisleccm.com or 888-229-2199.

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