

PART 1- GENERAL

Note 1:

All applicable clauses mentioned in the sections GENERAL CONDITIONS and SPECIFIC or SPECIAL CONDITIONS form an integral part of the present specification. Contractors or other users must make themselves familiar with these sections, comply with them, and take them into account both in the bidding stage and when executing the contract.

Note 2:

The present specification constitutes a *SYSTEM* and therefore any alternative to any component of the *SYSTEM* must receive written approval from both the system's manufacturer and the architect. A written addendum from the system's manufacturer should accompany the system's warranty. Every request for component equivalence in this system should be approved at least 15 days before the close of bidding.

Note 3:

The specifications contained herein are presented in good faith. Due to the wide variation in construction, related products and application methods, the specifications and recommendations contained herein must be fully evaluated by the Owner's Consultant to verify the suitability of the design specification for a given structure, before using them in whole or in part. The system manufacturer assumes no liability, expressed or implied, with regard to the architecture, engineering or workmanship on any project. The system manufacturer reserves the right to modify these specifications without any prior notice and without assuming any obligation to incorporate such changes in products which have already been manufactured. Contact the system manufacturer to ensure that you are using the latest, most complete specification.

1.1 SUMMARY

This specification is intended for use by specification writers, architects, contractors, promoters, or any other person involved in the installation of the UNIFIX SYSTEM™. It provides a basic view of the proper method to employ when installing this system.

1.2 DESCRIPTION OF THE SYSTEM

The UNIFIX SYSTEM™ consists of the installation of lightweight cement boards to obtain a rain screen system. The boards are attached to furrings and coated with acrylic finish. Specific accessories, such as screws, tape, trims and coatings are mandatory in the system.

1.3 QUALITY CONTROL

A- Qualifications

- 1- The applicator shall provide written confirmation to the owner's representative attesting to his qualifications to install all the components of the said system, from substrate to finish coat.
- 2- The contractor shall supply the labour required for complete and flawless execution of the works in full compliance with the spirit of the project, with all accepted procedures and with the system manufacturer's latest specifications and recommendations.

B- Materials and applicable codes

- 1- Contractor shall supply material, tools, equipment, articles, procedures, operations, applicable permits, etc. as stipulated in this section and in accordance with the manufacturers' latest written procedures or as otherwise specified.
- 2- If one or more component of the system was substituted by the contractor or anybody involved in the project, the system guarantee will be voided. The system manufacturer will then not accept any future responsibility. Any future consequence will be the contractor's responsibility.

1.4 SAMPLES

Provide 2 samples (approx. 250 x 250mm), as required by the architect, of each material, color or texture to be used. One of each sample is to remain on the construction site.

1.5 DELIVERY, STORAGE AND HANDLING

A- Delivery

- 1- All materials shall be delivered to the site in original packaging, with the manufacturer's labels intact.
- 2- Upon arrival, materials shall be inspected for any damage, and the manufacturer shall be notified in the case of any irregularity.
- 3- Any suspect, damaged or deteriorated materials shall be removed from the site and shall not be used.

B- Storage

- 1- Materials shall be stored in a closed space, and protected from exposure to water, excessive humidity or any other damage due to inclement weather.
- 2- Containers shall not be exposed to freezing, direct sunshine or any other potentially damaging environmental condition.
- 3- Cement boards shall be stored on a flat, horizontal surface, free of any protrusions.
- 4- In the case of liquid products, ambient and material temperatures shall be maintained between a minimum of 8°C (45°F) and a maximum of 40°C (105°F).

C- Handling

Materials shall be handled in accordance with the manufacturer's written directives, and in such a way as to prevent any damage or loss of performance.

1.6 ENVIRONMENTAL CONDITIONS

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A- Temperature and humidity

- 1- Ambient temperature, and temperature of the substrate and products shall be maintained between 8°C (45°F) and 40°C (105°F) during application, and for 48 hours before and after.
- 2- Relative ambient humidity shall not exceed 60%.

B- Conditioning

- 1- Protect all works against inclement weather or any other condition which could harm the installed products.
- 2- Do not install wet cement boards. Make sure they are dry before putting them in place.
- 3- Once the boards are screwed in place, before starting the jointing operation, make sure that they have attained the temperature and humidity conditions they will encounter during their service life.
- 4- Joints, surfaces and texture compounds shall be protected from inclement weather during and after application, until completely set and cured.

1.7 WARRANTY

Contractor shall provide a written 10 year warranty from the system's manufacturer. This all-inclusive warranty shall cover all components of the system, from support to finish coat.

1.8 MAINTENANCE

Once the project has been completed, provide the Owner with a copy of the most recent maintenance guide for the installed system. Refer to General Section 1 for requirements with regards to the supply of maintenance directives.

PART 2- PRODUCTS

2.1 PRODUCT DESCRIPTION

A- Steel framing

- 1- Metal thickness shall not be less than 20 gauge, and flange width not less than 32 mm (1.25") for fastening boards. Maximum lengths possible shall be used to conform with dimensions indicated on drawings. Deflection of assembly shall not exceed L/360.
- 2- Metal shall be hot-dip galvanised, in conformity with ASTM-A525 (G90)
- 3- Shall be manufactured in accordance with local or national building codes in force at the site location.
- 4- Obtained from an authorised distributor.

B- Fasteners

Shall be UNIVIS from Unifix inc., self-tapping, wafer-head screw with the following minimal requirements:

- a- Diameter of head: 10.1 mm (0.40")
- b- Without ribs under head
- c- Underside of head flat or with maximum angle of 15°
- d- "NOCOROD" chromate-based anti-corrosion treatment, with 3 mil thickness electro-plating

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- e- Salt spray resistance (ASTM B117): 500 hours
 - f- SO₂ resistance (Kesternich test) : 5 cycles

C- Trims

Shall be UNITRIM from Unifix Systems, virgin PVC trims with the following minimal performance requirements:

- a- Free of lead or plastifying agents
- b- Resistant to ultraviolet rays
- c- Resistant to calcium salts
- d- Interior and exterior grade
- e- Minimum 6mm (0.23") dia holes, maximum spacing 9.5mm (0.375") o.c.
- f- Conforms to ASTM D1784 norm.

D- Lightweight cement board

Shall be UNIPAN, UNIFLEX or PermaBase from Unifix inc., with dimensions as specified on the drawings, and made of Portland cement, sand, and expanded polystyrene beads, with a fully embedded alkali resistant glass fiber mesh facing. The board shall have the following minimum performance characteristics:

- a- Conforms to ANSI A118.9
- b- Free of asbestos, gypsum, organic fibers or cellulose
- c- Ends shall be square cut
- d- Tapered longitudinal edges
- e- Water absorption (ASTM C948): less than 10% by weight
- f- Humidified deflection (CSA A82.20.3) : 0 mm
- g- Weight: 14.2 kg/m² (2.9 lbs/sq.ft.)
- h- Thermal expansion coefficient: 0.013 mm/C/m (8.6 x10⁻⁵ in/F/ft)
- i- Linear variation in humid conditions (ASTM D1037): ≤0.05%
- j- Resistance to bacteria (ASTM G22) : 0 (zero growth)
- k- Resistance to fungi (ASTM G21): 0 (zero growth)
- l- Resistance to wind gusts (ASTM E330) : 3.6 KPa (75 psf)
- m- Energy contribution (CAN/ULC S-102) : 0
- n- Flame spread CAN/ULC S-102) : 0
- o- Smoke developed (CAN/ULC S-102) : 0
- p- Impact resistance (ASTM D 1037, falling weight) : no damage
- q- Fasteners pull strength (ASTM D 1037) 849 N (191 lbs)
- r- Flexural strength (ASTM C947) : 6.8 Mpa (986 psi).
- s- Maximum thickness: 12,7 mm (1/2 ")

Note to specification writer :

- Make sure that iboard identification, backerboard thickness and the application surface are shown on the drawings
- UNIPAN cannot be bent to a radius shorter than 1.5 m (5 ft.). For tighter curves, use UNIFLEX.
- When used as an intermediate backerboard for a vapour barrier type membrane, specify a thickness of 9.5mm (3/8"), unless otherwise indicated

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E- Fiberglass mesh and tape

Shall be UNITAPE or UNIROLL from Unifix Systems, with the following performance requirements:

- a- Made of glass fiber with alkali resistant coating, according to EIMA 105.01
- b- Minimum coating weight: 14%
- c- 75mm (3") wide for UNITAPE or 1m (3.28 ft.) for UNIROLL
- d- Conforms to ASTM D-76 and ASTM D-5035 and MIL-Y-1140
- e- Minimum tensile strength of 210 dn/5 cm (463 lbf/2 po.)
- f- Minimum tensile strength after EIMA 105.01: 105 dn/5 cm (240 lbf/2 po.)
- g- Minimum weight of 145 g/m² (4.5 oz/sq.yd.)
- h- Unitape is self-adhesive
- i- Maximum dry elongation: 3.9%

F- Joint finishing compound

Shall be ACRYJOINT from Unifix Systems, acrylic-based mortar compound, compatible with alkaline concrete surfaces and to be mixed with type 10 Portland cement, in accordance with manufacturer's printed instructions. Performance requirements:

- a- Flame spread (CAN/ULC S102): 5
- b- Smoke developed (CAN/ULC S102): 0
- c- Freeze/Thaw resistance (ASTM C666-A, 50 cycles) : pass
- d- Adhesive strength (UEAtc 3.2.1.3) : 0.23 Mpa (34 psi)
- e- Impermeability (UEAtc 3.3.1.1) : pass
- f- Water absorption (UEAtc 3.3.1.2) : 17%

Note to specification writer :

- In case of concrete or masonry surfaces, specify Acryjoint to obtain a smooth surface. Then continue with textured coatings. Refer to section 3.2 D & E for execution.

G- Portland cement

Shall be type 10 Portland cement, in accordance with CAN/CSA –A5-M or ASTM-C150

H- Surface primer

Shall be Acryroll from Unifix Systems, acrylic based with specific plasticizers

I- Textured coatings

Shall be ACRYFIX, ACRY SAND, ACRYGRAIN, ACRYROC or ACRYPAINT, acrylic-based coatings, from Unifix Systems with following performance requirements :

- a- Water permeability (UEAtc Directives for EIFS, Art 3.3.1.1) : pass
- b- Water absorption (UEAtc Directives for EIFS, Art 3.3.1.1) < 20%
- c- Salt spray resistance (ASTM B 117) : pass
- d- Accelerated weathering (ASTM G 53, 2000 hours) : pass
- e- Mildew & Fungus (MIL-STD-810E) : no growth

PART 3- EXECUTION

3.01 VERIFICATION

- A- Make sure that requirements of "ENVIRONMENTAL CONDITIONS" Section have been met.
- B- Make sure that all materials are acceptable with regards to the Unifix System warranty.
- C- Examine the site and existing works for compatibility with works under this section.
Commencement of work shall be considered as acceptance of conditions.
- D- Prepare surfaces to be covered in accordance with the system manufacturer's most recent specifications. Surfaces must be free of any substances that could interfere with adhesion, such as wax, oil, grease, efflorescence, etc. Brush the surface well before applying any compounds. Remove any labels or stickers from the surface to be covered. Submit a written report immediately to the Architect and/or General Contractor regarding any defects or abnormal conditions. Work should not start before conditions are rectified.
- E- Ensure the edges of surface to be covered are horizontally and vertically true. All pipe outlets, electrical boxes, conduits and cables are to be protected before starting work.
- F- Ensure that adequate heating and ventilation are available and properly controlled for efficient drying of boards and compounds. Avoid irregular heating, overheating, and freezing during drying period.
- G- Lightweight cement boards shall be allowed to adapt to the temperature and humidity conditions in which they will spend their service life, before joint finishing is done. After screwing boards in place, allow the time required for them to properly adapt.
- H- The board is not affected by water or humidity, but is not waterproof. An appropriate water-tight membrane should be installed between the board and any space to be protected, in accordance with local building code requirements.
- I- Caulking or flashing shall be immediately applied at temporary ends of system, so as to prevent water infiltration during system installation. The same precaution applies to door, window or other openings.
- J- Immediately protect top of walls so as to prevent water infiltration.
- K- All aluminium architectural elements (window frames, decorative mouldings, etc.) shall be protected against oxidation caused by alkaline agents such as the board itself, jointing compound, or any other cement-based material.

3.2 CONSTRUCTION PROCEDURE

A- Frame installation

- 1- Construction of walls with lightweight concrete board cladding will be as indicated on the drawings and in accordance with the composition indicated in the list of walls. Framing members (studs, channels, furring) shall be true and straight and must not deviate more than 3 mm (1/8") in 2400 mm (8 ft). Ensure that the total completed system deflection will not exceed L/360.

Note to specification writers

For UNIFLEX, add the following clause to the specification :

For UNIFLEX, the spacing between adjacent studs and/or furrings to which concrete board is to be fastened shall not exceed 203mm (8"). UNIFLEX shall be fastener at right angles to furring, so that it is the long side of the board which is subjected to any bending stresses. The rough side of the board should face outwards.

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- 2- For ceilings or soffits, ensure that the dead weight applied to the board (its own weight plus insulation, finishing, etc) does not exceed 48 kg/m² (10 lb/sq.ft.) and that ventilation is adequate to prevent any condensation inside the panel. Minimum board thickness shall be 12.7mm (1/2").
 - 3- Do not fasten boards directly to studs or main framing. Install metal furring (Z or U channels) vertically on the surface to be covered. Ensure that there is adequate ventilation at the base of walls. Spacing between furring members shall not exceed 400mm (16"), 300 mm (12") on soffits; they should line up with each other with a maximum deviation of 3mm (1/8") on 2400 mm (8 ft). Furrings must be discontinuous at any control or expansion joint. Maximum deflection of any part of the built system (including furring) shall be L/360.
 - 4- Contractor shall obtain Architect's approval of the support frames before installing lightweight concrete boards.
- B- Lightweight cement board
- 1- Make sure that requirements of "ENVIRONMENTAL CONDITIONS" Section have been met. Position boards horizontally, perpendicularly to the furring. The rough surface and tapered edges shall face outwards. Edges shall be fully supported by furring and/or studs. Boards shall fit tight and true with adjacent boards, and no space shall show between them. Avoid jointing boards at corners of openings. Vertical joints shall be offset a minimum of 300 mm (12") from those in adjacent panels.
Each and every board or piece of board shall straddle a minimum of 3 furrings.
 - 2- Remove all foreign material from the board surface, such as labels, dirt, grease in order to facilitate adhesion of the materials to be applied in further steps.
 - 3- Fasten cement boards to support structure with appropriate screws at every 200 mm (8"), and at a minimum edge distance of 10 mm (3/8"). Screw heads shall be flush with the surface of board; they must not damage the fibreglass mesh facing. Ensure that the boards are well attached and that they are in continuous contact with the support.
 - 4- A 50 mm x 50 mm (2" x 2") 20 gauge galvanised steel corner bead shall be installed at all interior & exterior corners, to provide a good line and support. It shall be fastened behind the board but not through the substrate.
 - 5- Do not attach any accessories (hand-rails, lights, plumbing, etc.) directly to cement boards. They must always be securely attached through the board to the support frame behind.
 - 6- Do not close or obstruct the base of the wall so as to not impede drainage of the system, and create water back-ups.
- C- Trim installation
- 1- Fasten mouldings with the same Unifix screws used for installing boards, at a maximum spacing of 400 mm (16"). Stainless steel staples can also be used at a spacing of 200 mm (8"). Use full length pieces wherever possible. Joints shall be well aligned and adjusted.
 - 2- Trims shall be securely attached , well aligned and level in the desired plane. Continuous contact between board and trims is important. To minimise thermal expansion of trims, do not install them more than 48 hours before they will be covered with joint compound.
 - 3- Junctions between trims shall be sealed with an acrylic polymer-based caulking, conforming with CGSB 19 GP5 or QPL #60301-E norms, or a product approved by the Architect.
 - 4- A control joint shall be installed at, but not limited to, the following locations, making sure that there is no continuity in the furrings:

- Where expansion joints occur in the frame or building.
- Where walls meet with columns or vertical pipes protruding beyond the face of wall.
- Where a change occurs in substrate.
- Where framing materials change.
- Where cladding materials change.
- At floor lines, ensuring that furrings are not attached to the floor
- At changes in roof line, building shape or system. Place control joints to line up with sides of openings (door, window, etc.), or as indicated on drawings.

Depth of the joint cavity and maximum width when moulding is fully extended shall be 12.7mm (0.5"). Ensure that the joint cavity completely crosses concrete panel and supports, but does not interfere with the waterproofing membrane. The cavity must be kept free of any coating or other material. Distance between joints must not exceed 4572mm (16 ft). Total surface between control joints shall not exceed 32m² (350 sq.ft).

- 5- Mouldings can be painted with ACRYROLL finish coating. Light sanding is recommended.

D- Joint finishing

- 1- Make sure that requirements of "ENVIRONMENTAL CONDITIONS" Section have been met. Ensure that the surface is clean and free of any matter that could affect the adhesion of the joint finishing compound. Ensure that fasteners are properly inserted in the board and that trims are correctly installed.
- 2- Apply Unitape self adhesive tape on all joints.
- 3- In a clean container, gradually mix the joint compound in accordance with manufacturer's printed instructions, until a uniform, lump free consistency is obtained.
- 4- Using a suitable trowel, fully cover tapered edge joints and ends of boards, as well as sides of expansion joints, mouldings, trim and other accessories, with joint finishing compound: maximum thickness 6 mm (1/4") per application. Make sure the compound completely fills the gap between panels. Cover fasteners and mouldings. At corners of openings, embed a tape of 230 mm (9") width, at 45° at each corner. Allow to cure for a minimum of 24 hours.
- 5- Apply a second layer of compound over the entire surface of panels, embedding Uniroll mesh in the full surface. Uniroll strips shall be vertical and overlap a minimum of 50 mm (2"). Make sure that the surface is level and smooth, free of any trowel or other marks, and that joints are fully concealed. Allow to cure again for a minimum of 24 hours. Repeat when necessary to obtain a perfect surface.
- 6- To prevent water infiltration, install architect approved caulking and/or sealants as soon as possible, around windows and other openings, or elsewhere as indicated on drawings, after joint finishing compound application and before applying textural finishes.

E- Textured finish application

- 1- Make sure that requirements of "ENVIRONMENTAL CONDITIONS" Section have been met. Surface to be coated must be free of any matter which could interfere with adhesion of finish coats.
- 2- Surfaces to be texture coated shall be primed with Acryroll, tinted to the same colour as the textured coating. Apply Acryroll with a paint roller without leaving roller tracks. Let dry until dry to touch before applying textured coatings.
- 3- Prepare finishing compounds in accordance with manufacturer's printed directives. Make sure that colours and textures correspond with specifications.

Note to specification writer:

- Leave out this section in the case of finishing with tiles (granite, ceramic, marble, etc.).
- Only indicate the selected coating, and ensure that the same product is identified on the drawings.

- 4- Apply one coat of acrylic finishing compound, to a thickness that matches the maximum size of aggregate, using sufficient pressure to ensure good adhesion. Allow to set for 5 to 15 minutes, then use a plastic trowel to texture the surface in the specified style. The surface shall be of uniform thickness, free of holes, over-thicknesses, demarcation lines or other defects. Allow to dry a minimum of 24 hours.
- 5- Do not apply coatings on a horizontal surface wider than 12.7mm (1/2"). A minimum 30 degree angle leading to the outer face of wall should be used to prevent any water build-up.

3.3 CLEANING

- A- Carefully clean the site progressively and at completion of works, removing from the site any rejected or excess material covered by this specification.

End of section 07240