

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- .1 Conform to requirements of General Conditions and Division 1.

1.2 SCOPE OF WORK

- .1 Provide all labour, materials and necessary equipment to supply and install **Durex "Quantum Select"** pressure-equalized rainscreen exterior insulation and finish system where shown on the Architectural drawings and as specified.

1.3 RELATED WORK SPECIFIED ELSEWHERE

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|----|--|---------------|
| .1 | Concrete walls: | Section 03300 |
| .2 | Masonry walls: | Section 04200 |
| .3 | Wind load bearing studs: | Section 05400 |
| .4 | Air barrier: (other than air barrier specified in this Section): | Section 07196 |
| .5 | Flashing: | Section 07600 |
| .6 | Caulking: (other than caulking specified in this Section): | Section 07900 |
| .7 | Cement board/glass mat coated gypsum board sheathing: | Section 09200 |

NOTE: Add or delete Trades related to Durex "Quantum Select" System work.

1.4 DESIGN CRITERIA

- .1 All materials used shall conform to the requirements of applicable CSA and CGSB standards and the governing building codes and local by-laws.
- .2 Design system to meet the following standards:
- .1 ASTM E283-84, Test Method for Rate of Air Leakage Through Exterior Window, Curtain Walls and Doors.
 - .2 ASTM E330-84, Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
 - .3 CAN/ULC-S101-M89, Standard Methods of Fire Endurance Tests of Building Construction and Materials.
 - .4 CAN4-S114-M80 (R1985), Standard Method of Test for Determination of Non-Combustibility in Building Materials.
- .3 Maximum design deflection of the substrate shall not exceed L/240.
- .4 Design and locate compartment boundaries to divide the building façade of each elevation into areas as appropriate to obtain the pressure equalization performance required according to the distribution of pressures created by wind.
- .5 Design, locate and caulk all required control joints in accordance with the project specific details, as addressed in this specification or as recommended by **Durabond Products Limited**.
Expansion joints shall be located at all dissimilar substrates and where possible substrate expansion may occur.

- .6 Design system terminations and roof-wall intersections with flashing (by others) to divert water away from the system.
- .7 Design, fabricate and install all prefabricated foamed insulation trim units. Top of window sills, architectural mouldings and other protruding details, shall a slope of not less than 10%.

1.5 QUALITY ASSURANCE

- .1 The manufacturer shall be a member in good standing of the EIFS Council of Canada
- .2 The System specified shall have current listing in the CCMC Evaluation Guide for EIFS.
- .3 The System specified shall meet the requirements of the Ontario Association of Architects (OAA) Rain Penetration Control Guide.
- .4 Periodic inspections shall be performed by a qualified third party.

1.6 SAMPLES

- .1 (Prior to application of mock-up), submit duplicate 600 mm x 600 mm (24" x 24") representative samples of the Durex "Quantum Select" System. Include the air barrier and/or vapour barrier as may be applicable, adhesive, insulation, reinforcing mesh, base coat and the coloured finish texture in accordance with requirements in Division 1.

1.7 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with requirements specified in Division 1.
- .2 Clearly indicate dimensions, tolerances and materials in large-scale details for terminations, drainage/venting, description of related and abutting components and elevations of units with locations of expansion joints, control joints, and reveals.

1.8 TEST CERTIFICATES

- .1 Submit copies of certificates showing conformance to the following requirements and local authorities having jurisdiction for the approval of the installation of the specified **Durex "Quantum Select"** System.
- .2 Fire Endurance Test conforming to CAN/ULC-S101-1989. The composite panel, subjected to the test and the non-combustible cladding material will remain in place for not less than 15 minutes.
- .3 Non-Combustibility Test conforming to CAN4-S114 (R1985) "Standard Method Test for Determination of Non-Combustibility in Building Materials". The base coat and/or finish coat of the EIFS subjected to tests for non-combustible cladding.

1.9 DATA SHEETS

- .1 Submit product data sheets verifying that the Durex "Quantum Select" System applied to the substrate as constructed on the project will meet or exceed the Specification requirements.

1.10 MAINTENANCE DATA

- .1 Provide maintenance data for the Durex "Quantum Select" System for incorporation into Maintenance Manual specified in Division 1.

1.11 QUALIFICATIONS OF APPLICATOR

- .1 Work of this Trade shall be executed by a qualified applicator approved by Durabond Products Limited. Applicator shall have been trained in the most recent application procedures and shall have a minimum of 5 years of proven satisfactory experience in this type of work, having proper equipment and skilled personnel to expediently complete work of this Trade in an efficient and very best workmanlike manner.

1.12 MANUFACTURER'S APPLICATION REVIEW

- .1 Arrange for Durabond Products Limited to have a qualified technical representative visit the site prior to commencement of work to discuss with General Contractor, Applicator and Architect, the application procedures to be used and to analyse conditions of surfaces to be faced with the Durex "Quantum Select" System, in order that alternative recommendations may be made to Architect should adverse conditions exist.
- .2 Arrange for a qualified technical representative to visit the site at periodically during the installation and upon completion of work to review the application quality of work.

1.13 JOB MOCK-UP

- .1 Construct on site where directed, a mock-up system approximately 1200 mm x 1800 mm (4'-0" x 6'-0") in order to identify and solve any installation and interfacing problems which may be encountered under site conditions. To resolve any problems that may occur, correct or remove and rebuild as directed by Architect.
- .2 Construct the mock-up in the presence of Architect, General Contractor and Durabond's representative. Construct the mock-up using correct materials and details required.
- .3 Maintain the mock-up until completion of work. Approved mock-up shall serve as a standard for similar work throughout project. Refinish work that does not match approved mock-up.

1.14 DELIVERY

- .1 Deliver all required materials to the job site in original unopened containers with all identifying labels and markers clearly visible and intact. Upon delivery inspect materials for damages and advise Durabond Products Limited in writing of any unacceptable materials.

1.15 SPECIAL STORAGE AND PROTECTION

- .1 Store materials in a dry, vented, waterproof location, stacked off the ground, out of direct sunlight and other

detrimental conditions. Store liquid materials at ambient temperatures above 5°C and below 35°C. Protect all materials from freezing.

- .2 If coatings have been applied, provide protective coverings to protect freshly applied coatings from damage due to inclement weather until coatings have fully set and cured.
- .3 Ensure that all capping and flashing by others have been immediately and properly installed in co-ordination with the application of the **Durex "Quantum Select"** System, unless temporary protection by others has been provided. If capping and flashing or temporary protection have not been provided advise Architect and General Contractor in writing.

1.16 ENVIRONMENTAL CONDITIONS

- .1 Do not proceed with applications of base coat and/or finish coat at ambient air temperatures below 5°C, or above 35°C. Avoid coating surfaces directly exposed to hot sun or on surfaces where condensation has or will form due to presence of high humidity and lack of proper ventilation.
- .2 When necessary, provide temporary enclosures for exterior work and ensure that temporary heat is provided in the area of work to maintain the required ambient air temperature prior to, during application and for a minimum of 24 hours after application of coating.

NOTE: *As the above work can be costly, carefully co-ordinate to determine whether or not the General Contractor is to provide temporary enclosure and heat.*

- .3 Do not apply materials to wet, frozen or frosted surfaces.
- .4 Do not proceed with application of materials immediately prior to, during, or immediately after inclement conditions, nor if adverse weather is anticipated within 24 hours after application.
- .5 Do not apply finish coat in areas where dust is being generated.
- .6 Proceed with work only when surfaces and conditions are satisfactory for production of a first class application.
- .7 Protect applied coating from rapid evaporation during dry and hot weather. Consult **Durabond Products Limited** for recommendations should adverse conditions exist.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 All components of the **Durex "Quantum Select"** System shall be manufactured/supplied by **Durabond Products Limited**, 55 Underwriters Road, Scarborough, Ontario, Canada, M1R 3B4. Tel.(416) 759-4474, unless otherwise approved in writing by **Durabond Products Limited**.
- .2 **Air Moisture Barrier:**
 - .1 **DUREX Flexcrete**, a two component, polymer modified cementitious Class III air barrier.

- .2 **DUREX Flex-Seal Wall Flashing**, a self-adhering, cold applied composite sheet air/vapour membrane, minimum 1.02 mm (40 mils) thick. Include the **DUREX Flex-Seal Primer** for appropriate substrates.

OR

DUREX EIFS Tape, a self-adhering, cold applied composite sheet air/vapour membrane, minimum 0.76 mm (30mils) thick. Include DUREX Flex-Seal Primer for appropriate substrates.

- .3 **Insulation Adhesive:**

- .1 Insulation adhesive for concrete, masonry, cementitious board and water resistant gypsum board substrates:

DUREX Flexcrete mixed with **DUREX Flexcrete 'B'** in strict accordance with Durabond's printed instructions.

- .3 **Insulation:**

- .1 **DUREX Quantum Select Insulation Board**; Type I expanded polystyrene to CAN/CGSB-51.20-M87, minimum "RSI" value of 0.65 per 25 mm thickness ("R" value of 3.75 per inch), measuring 1.2 m (4'-0") by 0.6 m (2'-0") and a minimum thickness of 50 mm (2"), total thickness as indicated on drawings. The board shall be pre-machined with 50mm (2") wide by minimum 4mm (3/16") deep rectangular channels alternating at 50mm (2") intervals.

NOTE: *Standard pre-machined rectangular channels are 4mm (3/16"). Consult your Durabond representative for availabilities of Durex "Quantum Select" insulation boards with channels depths up to 12mm (1/2") .*

- .2 **DUREX Quantum Select Insulation Boundary Board**; Type I expanded polystyrene to CAN/CGSB-51.20-M87, minimum "RSI" value of 0.65 per 25 mm thickness ("R" value of 3.75 per inch), measuring 0.6 m (2'-0") by 1.2 m (4'-0") and a minimum thickness of 50 mm (2"), total thickness as indicated on drawings. The board shall be cut to a minimum width of 152 mm (6").

- .3 **DUREX Quantum Select Starter Strip**; Type I expanded polystyrene to CAN/CGSB-51.20-M87, minimum "RSI" value of 0.65 per 25 mm thickness ("R" value of 3.75 per inch), measuring 0.3 m (1'-0") by 1.2 m (4'-0") and a minimum thickness of 50 mm (2"), total thickness as indicated on drawings. The prefabricated board is supplied complete with pre-machined channels and it is pre-back wrapped with base coat and reinforcing fabric.

- .4 **Reinforcing Fabric:**

- .1 Standard reinforcing fabric, open weave, glass fibre mesh, weighing 168 g/m² (6 oz/yd²). **DUREX 039** Mesh in 1 m by 50 m (38" x 150') rolls.
- .2 Detail reinforcing fabric, standard duty, open weave, glass fibre mesh, weighing 152 g/m² (4.5 oz/yd²). **DUREX 040** detail mesh in 25 cm by 50 m (10" x 150') or **DUREX Adhesive Back** detail mesh in 30 cm by 50 m (12" x 150') rolls.
- .3 High impact fabric, open weave, glass fibre mesh, weighing 509 g/m² (15 oz/yd²). **DUREX 330** mesh in 1 m by 22.8 m (38" x 75') rolls.

- .5 **Base Coat: DUREX Uniplast Grey Medium** mixed with **DUREX Acrybond "S"** in strict accordance with Durabond's printed instructions.

- .6 Finish Primer Coat: Primer coat shall be **DUREX Brush Coat** colour number _____.
NOTE: DUREX Brush Coat shall be the same colour number as the DUREX Architectural Coating finish.

- .7 Finish Coat: Finish coat shall be **DUREX Architectural Coating** _____, colour number _____.

NOTE: Refer to the DUREX Architectural Coatings Colour Chart Index for selection of finish coat desired for the project. Choose from a selection of standard colours or a custom colour sample.

- .8 Sealant: a low modulus sealant, as recommended and approved in writing by sealant manufacturer. Standard colour selected by Architect.
- .9 Foamed-in-place Insulation: Class 1, single or two component, polyurethane foam with flame spread rating of 25, fuel contributed 0 and smoke developed 20. Must be ozone friendly and containing no fluorocarbons and have a density of 27.2 kg/m³ (1.75 lbs/ft³) and a minimum "RSI" value of 0.91 per 25mm ("R" value of 5 per inch) thickness.

2.2 MIXES

- .1 Perform all mixing under conditions as set forth in Article 1.14 Environmental Conditions.
- .2 Prepare and mix primer, scratch coat, base coat, and finish coat in strict accordance with Durabond's written instructions to obtain a homogeneous consistent mixture. Other than those specified by Durabond, do not add any other additives, rapid binders, antifreeze, accelerators, fillers or pigments to the mixtures without written approval from Durabond Products Limited.
- .3 Mix the air barrier and the insulation adhesive in accordance with the following formula by weight:

DUREX Flexcrete	1 pail
DUREX Flexcrete 'B'	1 bag

Pour the **DUREX Flexcrete** into an empty clean mixing container. While under slow mixing action add the **DUREX Flexcrete 'B'** in the required mixing proportions. Mix well until the mixture is free of lumps. Do not over mix or use excessive mixing speed. Allow the mixed materials to stand for a few minutes until they begin initial stiffening. Mix only enough materials that can be used within 45 minutes. Re-temper the mix and use. Discard all materials that have begun to stiffen for a second time.

- .4 Mix both the base coat in accordance with the following formula by weight:

DUREX Uniplast Fine	1 bag
DUREX Acrybond "S"	5 litres

Pour the **DUREX Acrybond "S"** into an empty clean mixing container. While under slow mixing action add the **DUREX Uniplast Fine** in the required mixing proportions. Mix well until the mixture is free of lumps. Do not over mix or use excessive mixing speed. Allow the mixed materials to stand for a few minutes until they begin initial stiffening. Mix only enough material that can be used within 45 minutes. Re-temper the mix and use. Discard all materials that have begun to stiffen for a second time.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine surfaces to receive the Durex "Quantum Select" System for defects that will adversely affect execution and quality of work.
- .2 Ensure substrate surfaces, including each applied scratch coat and base coat, are dry, solid and sound, free of weak and powdery surfaces, free from ice, snow and frost, oil, grease, releasing agents and other deleterious materials detrimental to a positive bond.

NOTE: *Deteriorating, weak, powdering or flaking surfaces may require further preparation work prior to installation of the Durex "Quantum Select" System. Check with Durabond Products Limited for questionable substrate materials and conditions.*

- .3 Ensure substrate tolerance is within 3.2 mm in 2,430 mm (1/8" in 8'-0").
- .4 Ensure that flashing at all openings, roof-wall intersections, terminations and other areas as required, have been installed to divert water away from the Durex "Quantum Select" System.
- .5 Report in writing to Architect all adverse conditions, which will be detrimental to work of this Trade.
- .6 Do not start work until unsatisfactory conditions have been corrected.
- .7 Commencement of work shall indicate acceptance of substrate conditions

3.2 PREPARATION

- .1 Thoroughly clean and wash (existing) surfaces, including each applied scratch coat and base coat, (and including existing coated surfaces) by wire brushing or other approved methods to remove all dirt, dust, grease, oil, latent, loose coatings and other contaminants detrimental to newly applied system.
- .2 Where necessary, mask all surrounding surfaces to provide neat, clean, true juncture lines with no over-spray of the coatings on surrounding surfaces.
- .3 Co-operate and co-ordinate with other trades penetrating or abutting to the work of this Trade. Ensure that components by other trades are in position before application of the Durex "Quantum Select" System.

3.3 APPLICATION

.1 General:

- .1 Install the Durex "Quantum Select" System in strict accordance with the approved mock-up and Durabond Products Limited's printed instructions (and reviewed shop drawings).

NOTE: *Correlate requirements for shop drawings with Article 1.6.*

.2 Air Moisture Barrier:

- .1 Apply DUREX Adhesive Back detail mesh at all vertical and horizontal sheathing board joints.
- .2 Apply a 1.5 mm (60 mils) thick coat of **DUREX Flexcrete** over the entire substrate surface, applying sufficient pressure in the trowelling process to ensure full contact with the substrate.
- .3 Allow a minimum of 24 hours for drying and curing.
- .4 At all locations where the substrate material changes install a 30 mm (12") strip of **DUREX Flex-Seal Wall Flashing** or **DUREX EIFS Tape** in strict accordance with **Durabond Products Ltd.**'s printed instructions, to maintain continuity of the air barrier.

.3 Detail Reinforcing:

- .1 Provide detail reinforcing fabric and wrap around and reinforce edge of insulation board (and decorative trim) at all terminations of the system and along both edges of all expansion/control joints.
- .2 Install the detail reinforcing fabric to the substrate with adhesive prior to installation of the insulation board.
- .3 Place the pre-measured and cut strip of detail reinforcing fabric over a ribbon of adhesive, 50 mm wide by 19 mm thick (2" by 3/4"). Press fabric into place and smooth out ensuring that the fabric is well embedded into the adhesive.
- .4 Install the detail reinforcing fabric so that a minimum of 100 mm (4") will be embedded under the insulation board and the remainder returned onto the edge and then onto the face board.

.4 Insulation and Adhesive:

- .1 Utilizing a steel trowel apply the adhesive evenly to the substrate and immediately following install the insulation boards into the fresh adhesive with firm pressure so the board's surface embeds itself into the adhesive. Apply the adhesive so as to avoid excess material in the channels.
- .2 Install the **DUREX Quantum Select Starter Strip** at system termination at grade, at terminations to large openings and where horizontal joints are required.
- .3 Install the insulation boards to the substrate in running bond pattern and with joints offset with respect to joints in the substrate by a minimum of 150 mm (6") and with the pre-machined vertical channels in alignment.
- .4 Install the **DUREX Quantum Select Insulation Boundary Board** at all corners and at the top and sides of each compartment as indicated on the architectural drawings.
- .5 Interlock board joints at all corners.
- .6 Pre-cut insulation boards to fit around openings, penetrations, etc. Use L-shaped boards to avoid aligning the insulation board edges with the corners of openings.

- .7 Immediately after applying the insulation adhesive, before initial set begins, firmly press the insulation board into place. Begin installation at one end, from a baseline, to form an uninterrupted surface.
- .8 Butt the insulation boards to moderate tight fit. Ensure a full thermal barrier throughout.
- .9 Gaps occurring in or between the insulation boards shall be filled with foamed-in-place insulation.
- .10 Provide all reveals in insulation boards in accurate alignment over the entire wall surfaces as indicated on architectural drawings. Ensure reveals are true to size, straight, plumb and level throughout.
- .11 Rasp the entire insulation surface and edges to a tolerance of not more than 3 mm (1/8") in 3 m (10').

.5 Base Coat and Reinforcing Fabric:

- .1 Ensure that the insulation boards have been rasped and the surface is dry and free of loose insulation, dirt, yellowing from UV exposure, etc. and that detail work has been completed.
- .2 At all areas where detail reinforcing fabric has been installed, apply a layer of base coat to the exposed edges and face of the insulation boards. Pull the detail reinforcing fabric into the scratch coat so that it is fully embedded. Using an edging tool, smooth the corner to render it square.
- .3 Reinforce all corners of openings where no control joints are detailed with an additional strip of reinforcing fabric, 230 mm by 305 mm (9" by 12") installed diagonally across the corners.
- .4 Apply a layer of base coat over the insulation surface, not less than 2 mm, applying sufficient pressure in the trowelling process to ensure full contact with the insulation. Immediately place the reinforcing fabric onto the wet base coat and trowel the fabric from the centre to the edges, filling all voids in the fabric until the mesh is completely embedded.
- .5 Provide high impact reinforcing fabric where indicated on drawings. Tightly abut the edges; do not lap high impact fabric. Embed the fabric into wet base coat and trowel the fabric from the centre to the edges, filling all voids in the fabric until the mesh is completely embedded. Allow the high impact base coat to dry before applying the standard reinforcing fabric.
- .6 Install the reinforcing fabric tight, straight and free of wrinkles, ripples and waves.
- .7 Embed the standard reinforcing fabric into the base coat with joints overlapped a minimum of 63 mm (2 1/2") and double wrapping inside and outside corners a minimum of 203 mm (8").
- .8 Overlap detail reinforcing fabric with standard reinforcing fabric 100 mm (4") at all locations where detail reinforcing fabric has been installed.

.6 Final Base Coat:

- .1 In hot, dry weather, if the scratch coat surface is exceptionally dry, lightly dampen the surface with a fog mist of clean potable water. Do not over-saturate with water, as it will impair the bonding of the base coat.
- .2 Trowel apply the base coat, applying sufficient pressure to ensure full bond with the base coat.

- .3 Use a straight edge tool to darby the surface and bring it to a straight, even and true surface.
- .4 Total thickness of both the scratch and base coats shall be achieved at an application rate not less than 7.2 kg/m² (1.5 lbs/ft²).
- .5 When the base coat has taken initial set, use a wood or sponge float and work the surface with light circular motions to remove all high points and to fill low points.
- .6 Final surface shall be smooth, straight and true to a tolerance of not more than 3.2 mm in 3 m (1/8" in 10'-0"). Surface shall be free of trowel marks, irregularities and visible mesh pattern.
- .7 Allow a minimum of 3 days for curing and drying.
- .7 **Finish Coat Primer:**
 - .1 Evenly apply the primer throughout with a high pile roller at a rate of 2.8 m²/litre (600 ft²/pail). Substrate shall not be visible through the applied primer.
 - .2 Avoid excessive build-up in any one area.
 - .3 Allow minimum 4 hours for curing prior to application of finish coat.
- .8 **Finish Coat:**
 - .1 Apply final texture coat within 3 days after application of primer coat. Longer periods may be scheduled between operations provided that the primed surface is kept clean and in good condition.
 - .2 Apply final texture coat in strict accordance with Durabond's printed instructions for the selected finish.
 - .3 Finish texture and colour shall match the approved site mock-up.
 - .4 Do not apply primer and/or finish texture onto surfaces that will be caulked.

3.4 JOINTS

- .1 Provide expansion joints in alignment with building expansion joints.
- .2 Install expansion joints at all locations where dissimilar substrates meet.
- .3 Install expansion joints at all locations of maximum stress, in the direction as shown on drawings.
- .4 Install control joints and/or reveals horizontally and vertically so to divide the wall surface into panels of not more than 20 m² (215 ft²). Neither dimension within the panel should be greater than 2.5 times the other.
- .5 All horizontal joints shall be vented by means of the prefabricated DUREX Insulation Vent Board and located and spaced at intervals not greater than three stories.
- .6 Unless otherwise noted, provide all joints 12.7 mm (1/2") wide.

NOTE: As a rule of thumb, fulfil requirements 1 and 2 and then arrange the other requirements to best suit the intended aesthetics of the building.

3.5 CAULKING

- .1 Caulk all expansion joints within the Durex "Quantum Select" System.
- .2 Caulk all expansion joints between the Durex "Quantum Select" System and abutting building components.
- .3 Apply sealant and/or sealant primer in strict accordance with the sealant manufacturers printed instructions.

NOTE: Apply sealant and/or sealant primer to base coat only.

3.6 SPECIAL CLEANING

- .1 Clean off all spotting and blemishes from work not intended to receive Durex "Quantum Select" System and leave work in clean condition.
- .2 Entirely reinstate at this Trades own expense, any surface not to be coated, but soiled and attributable to this Trade due to spillage, mixing of material or any other cause.