

PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 04 05 13 - Masonry Mortaring
- .2 Section 04 05 23 - Masonry Accessories
- .3 Section 05 50 00 - Metal Fabrications
- .4 Section 07 92 00 - Joint Sealers

1.2 REFERENCES

- .1 Canadian Standards Association (CSA) latest edition
 - .1 CSA A179, Mortar and Grout for Unit Masonry
 - .2 CSA-A371, Masonry Construction for Buildings

1.3 SAMPLES

- .1 Upon request, submit samples in accordance with Section 01 33 00, of the following:
 - .1 Two of each type of masonry unit specified.
 - .2 One of each type of masonry accessory specified.
 - .3 One of each type of masonry reinforcement, tie and connector proposed for use.

1.4 JOB MOCK-UP

- .1 Construct mock-ups in accordance with Section 01 45 00.
- .2 Construct mock-up panel of exterior masonry wall construction, minimum 1200 x 1800mm, showing all masonry colours and textures specified, use of reinforcement, ties, flashing, weep holes, jointing, coursing, mortaring, and workmanship.
- .3 Allow for 48 hours notice for review by Contract Administrator. Upon review, make adjustments to mock-up or another mock-up panel as necessary, to the Contract Administrator's satisfaction.
- .4 If carefully placed in a minor location and if accepted by the Contract Administrator, the mock-up can remain as part of finished Work.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store, handle and protect materials in accordance with Section 01 60 00.
- .2 Deliver materials to the Site in dry condition.
- .3 Keep materials dry until use except where wetting of bricks is specified.
- .4 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Cold weather requirements

.1 Supplemental Clause 5.15.2 of CSA-A371 with the following requirements:

.1 Maintain temperature of mortar between 5°C and 50°C until batch is used.

.2 Hot weather requirements

.1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.

.2 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until the Work is completed and protected by flashings or other permanent construction.

.3 Protect masonry and other work from marking and other damage. Protect completed Work from mortar droppings. Use non-staining coverings.

.4 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Refer to other Sections in Division 4.

PART 3 EXECUTION

3.1 INSTALLATION

.1 Do Work in accordance with CSA-A371 (latest edition), except where specified otherwise.

.2 Build Work plumb, level, and true to line, with vertical joints in alignment.

.3 Layout coursing and bonding to achieve correct coursing heights, and continuity of bond above and below openings, with the minimum of cutting.

3.2 CONSTRUCTION

.1 Exposed masonry

.1 Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

.2 Jointing

.1 Allow joints to set just enough to remove excess water, then tool with a round jointer to provide true, smooth, compressed, and uniform concave joints typically, unless otherwise indicated.

.2 Where raked joints are indicated, allow joints to set just enough to remove excess water, then rake joints uniformly to 6 mm depth and compress with a square tool to provide smooth, compressed, and uniform raked joints.

- .3 Strike flush all joints concealed in walls and joints in walls to receive plaster, tile, insulation, or other applied material except paint or similar thin finish coating.
- .3 Cutting
 - .1 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects.
 - .2 Make cuts straight, clean, and free from uneven edges.
- .4 Building-In
 - .1 Build in items required to be built into masonry.
 - .2 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as Work progresses.
 - .3 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.
- .5 Support of loads
 - .1 Use grout to CSA A179 where grout is used in lieu of solid units.
 - .2 Install building paper below voids to be filled with grout; keep paper 25 mm back from faces of units.
- .6 Provision for movement
 - .1 Leave 3 mm space below shelf angles.
 - .2 Leave 6 mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.
 - .3 Built masonry to tie in with stabilizers, with provision for vertical movement.
- .7 Loose steel lintels
 - .1 Install loose steel lintels. Centre over opening width.
- .8 Control joints
 - .1 Install control joints in masonry wall areas typically at 6 meters (20') o.c. vertically, and at each floor level horizontally, and where indicated on drawings.
- .9 Masonry flashing
 - .1 In masonry veneer cavity walls, provide through-wall flashing in accordance with CAN3-CSA-S304-M84 and as follows:
 - .1 Typically provide flashing at: each floor level, top of foundation walls, slabs, support shelf angles, steel lintels over openings, bottom coursing where weep holes occur, and where indicated on the drawings.
 - .2 Extend flashings vertically up exterior wall backing substrate by 200mm (8") minimum and out under the masonry veneer (with a positive slope outwards) to the front of the masonry veneer face. Extend a flap of air/vapour barrier behind the vertical leg of this flashing and fully seal to substrate. Fully adhere the vertical leg of this flashing over the air/vapour barrier flap. Lap any joints 150mm (6") typically and fully seal with manufacturer's recommended adhesive.

- .10 Expansion joints
 - .1 Build-in continuous expansion joints as indicated.
- .11 Weep Holes
 - .1 Typically provide weep holes at bottom 2 courses of masonry veneer @ 600 o.c.; stagger second course ones from first course ones, for unobstructed air circulation.
 - .2 Where masonry wall areas exceed 1800mm (6') high, also provide additional weep holes at top course for additional ventilation.
- 3.3 SITE TOLERANCES
 - .1 Tolerances in notes to Clause 5.3 of CSA-A371, latest edition.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 04 05 00 - Masonry Procedures
- .2 Section 04 05 23 – Masonry Accessories

1.2 REFERENCES

- .1 Canadian Standards Association (CSA), latest edition.
 - .1 CSA A179, Mortar and Grout for Unit Masonry

1.3 SAMPLES

- .1 Upon request, submit samples in accordance with Section 01 33 00; two samples of mortar and colored mortar.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Use same brands of materials and source of aggregate for entire project.
- .2 Mortar and grout to CSA A179.
- .3 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.
- .4 Colour: ground coloured natural aggregates or metallic oxide pigments.
- .5 Mortar for masonry above grade:
 - .1 Loadbearing- exterior and interior: Type S
 - .2 Non-loadbearing interior: Type N
 - .3 Non-loadbearing exterior: Type S
- .6 Following applies regardless of mortar types and uses specified above:
 - .1 Mortar for stonework: Type S mortar typical for all exterior stone, brick and masonry veneer.
- .7 Coloured mortar: use colouring admixture not exceeding 10% of cement content by mass, or integrally coloured masonry cement, to produce coloured mortar to match approved sample. Interstar colours mixed at 1 bag color to 1 bag masonry cement.
 - .1 At Type 'B' brick veneer to match to existing: Interstar colour 'CM 221 Ruby'.
 - .2 At terrazzo block: Final colour to be selected by the Contract Administrator from full colour range available.
- .8 Non-staining mortar: use non-staining masonry cement for cementitious portion of specified mortar type.
- .9 Grout: to CSA A179, Table 3.

- .10 Parging mortar: to CSA A179
- 2.2 MIXES
- .1 Colour: Mix grout to semi-fluid consistency.
 - .2 Pointing mortar: Prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into ball. Allow to stand for not less than 1 hour nor more than 2 hours then remix with sufficient water to produce mortar of proper consistency for pointing.
- PART 3 EXECUTION**
- 3.1 CONSTRUCTION
- .1 Do masonry mortar and grout work in accordance with CSA A179, except where specified otherwise.
 - .2 Apply parging in uniform coating not less than total 10 mm thick, where indicated.

END OF SECTION

Part 1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 Division One – General Requirements is a part of this Section and shall apply.

1.2 WORK INCLUDED

- .1 The Work included under this section shall conform to the industry standard and be accepted by the local construction and trade associations.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- .1 Section 04 05 00 - Masonry Procedures
- .2 Section 04 05 13 – Masonry Mortaring
- .3 Section 04 21 10 – Brick Masonry
- .4 Section 04 22 00 – Concrete Masonry Units
- .5 Section 07 25 00 – Air / Vapour Barriers
- .6 Section 07 21 13 – Board Insulation
- .7 Section 07 21 16 – Batt Insulation
- .8 Section 07 62 00 – Sheet Metal Flashing and Trim
- .9 Section 01 47 15 – Sustainable Requirements

Part 2 PRODUCTS

2.1 MATERIALS

- .1 Masonry Joint Reinforcing/Wall Ties:
 - .1 Exterior masonry veneer cavity wall system: Hot dip galvanized to CSA CAN3-A370, type to suit wall substrate and length to suit cavity/insulation thickness. Acceptable products for concrete block substrate: Fero Block Shear Connector with insulation support and V-Tie. Acceptable products for stud wall/sheathing substrate: Fero Slotted Rap Tie with insulation support and V-Tie, Blok-Lok BL-407 and BL-507 with Wedge-Lok insulation support and Flex-O-Lok ties.
 - .2 Interior masonry walls: 9 gauge (3.9mm), class 3 truss joint reinforcement, mill galvanized finish, to ASTM-A641 or latest. Acceptable manufacturers: Dur-O-Wal, Blok-Lok.
 - .3 Lengths: 2" (50mm) less than wall thickness.
 - .4 Provide prefabricated tees and corners at all locations.
- .2 Reinforcing Bars: to CSA G30.18-M or latest.
- .3 Anchors:
 - .1 Plate type: minimum 3mm galvanized steel, of shapes and sizes to suit purpose.
 - .2 Wire type: 4mm galvanized wire of shapes and sizes shown.
 - .3 Anchor bolts: including nuts, washers, studs, ferrules and related items, galvanized steel as detailed.
- .4 All Metal Flashings to ASTM A525, Z275 zinc coating or latest.: same as specified in Section 07 62 00.
- .5 Membrane Reinforced Flashing: Install at all the following locations: base flashing, below window sills, and over top of all metal flashings.
- .6 Flexible membrane flashing: modified bituminous reinforced pre-fabricated sheet membrane 1.5 mm thick:
 - .1 Grace "Bituthene 3000"
 - .2 Henry Blueskin TWF c/w Air Blok 21
 - .3 Soprema Sopraseal Self Adhesive, Colphene
 - .4 Carlisle QC 701

- .7 Air / Vapour barriers: as specified in Section 07 25 00.
- .8 Weep hole inserts to CSA A93 or latest: rectangular plastic (clear butyrate) with recycled content and stainless steel screen insert. Acceptable product: Sandell (Hohmann & Barnard, Inc.) Model #342 S.
- .9 Nailing Inserts: 0.6 mm (24 ga.) galvanized steel inserts for setting into mortar joints.
- .10 Bent Metal Closures: sheet metal cavity closures to dimensions and profiles as detailed and to match that specified in Section 07 62 00.

Part 3 EXECUTION

3.1 INSTALLATION OF ACCESSORIES

- .1 Refer to Section 04 05 00 for installation.

END OF SECTION

Part 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 04 05 00 – Masonry Procedures
- .2 Section 04 05 13 - Masonry Mortaring
- .3 Section 04 05 23 - Masonry Accessories
- .4 Section 07 25 00 – Air/Vapour barriers
- .5 Section 07 21 13 – Board Insulation
- .6 Section 07 62 00 – Sheet Metal Flashing and Trim

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM) – latest edition.
 - .1 ASTM C216-07 Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)
 - .2 ASTM C – 1405 Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units
 - .3 ASTM C73-14 Calcium Silicate (Sand-Lime) Brick
- .2 Brick Industry Association (BIA) – latest edition.
 - .1 Technical Notes on Brick Construction, No. 20-2006, Cleaning Brickwork
- .3 Canadian Standards Association (CSA International) – latest edition.
 - .1 CAN/CSA A82-06, Fired Masonry Brick Made from Clay or Shale
 - .2 CSA-A165 Series-04, CSA Standards on Concrete Masonry Units

1.3 SUBMITTALS

- .1 Product Data.
 - .1 Submit manufacturer's printed product literature, specifications, and data sheets in accordance with Section 01 33 00.

1.4 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Samples: provide a 2400x2400mm (8' x 8') mock-up sample area to adequately demonstrate the brick colours, patterns, and proportions specified, for the Contract Administrator's final review and approval before installation.
- .4 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21.

- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.

Part 2 PRODUCTS

2.1 MANUFACTURED UNITS

- .1 All new face brick to CAN/CSA A82-06, latest edition, for extruded brick, Grade EG, Type S.
- .2 Ship all masonry products specified by rail typically, when manufactured within a 2400km radius of the project site, to help achieve the LEED Regional Credit. Provide documentation to the Contract Administrator.

2.2 BRICK TYPES: (refer to drawings for areas, locations, and quantities)

- .1 **A: Existing Brick Veneer Salvaged:**
Carefully remove, salvage, store, and reuse any existing brick veneer in good condition from the existing demolition, as much as possible. Clean off existing mortar for reuse. Locations: For infill and tothing-in at Interior south wall of Reception 103 and Office 104.
- .2 **B: New Brick Veneer to match to existing size and colours:**
 - .1 Modular size: 90mm (3 5/8") deep x 90mm (3 5/8") high x 190 (7 5/8") long, to match to existing exterior brick size and colours (near front entry). Matte or grain texture. 2 colour options for 'field blending' to match existing as follows:
 - .1 Lakewood Brick: 40% Iron Mountain Dimple and 60% Harvest Brown Dimple OR,
 - .2 Yankee Hill: 40% Capital Ironspot Velour and 60% Light Smoke Bronze Velour.
 - .2 Locations: at exterior walls of Reception 103 and Office 104, and where indicated on drawings.
 - .3 Ship all masonry products specified by rail typically, when manufactured within a 2400km radius of the project site, to help achieve the LEED Regional Credit. Provide documentation to the Contract Administrator.

2.3 COATINGS:

- .1 Clear, penetrating sealer and liquid repellent to protect masonry surfaces against both water ingress and graffiti application (paint and marker) on exposed concrete and masonry surfaces, to MPI EXT 3.2K (non-slip, chemical resistant, anti-graffiti, water vapour permeable, and non-yellowing); one reduced coat plus one full strength final coat in a Gloss level G1 matte finish; applied according to manufacturer's instructions. Acceptable products: 'Fabrishield PR-61' (clay brick and tile).
- .2 On all building elevations, extend coating to elevation 102 200 above main floor, or as indicated on the drawings. Provide a test area for the Contract Administrator's review, not on the building directly.
- .3 Supply 2x1 gallon containers of Fabrikem PR Cleaner for The City for future use to clean off graffiti.

Part 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Comply with manufacturer's written data, including technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

- .1 Bond pattern at Modular brick: Running bond pattern to match existing brick veneer.
- .2 Coursing height: 200mm (8") for three bricks and three mortar joints (modular size).
- .2 Tooling: Tool exposed mortar joints when "thumb-print" hard with a round jointer, slightly larger than the width of the joint, to create a round, compacted, concave joint.
- .3 Mixing and blending: mix units within each pallet and with other pallets to ensure uniform blend of the colours and textures specified.
- .4 Jointing: concave typically where exposed.

3.3 CLEANING

- .1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- .2 Clean a 10 m² area of masonry wall as noted below and leave for one week. If no harmful effects appear and after mortar has set and cured, protect windows, sills, doors, trim and other work, and clean brick masonry as follows.
 - .1 Remove large particles with wood paddles without damaging surface. Saturate masonry with clean water and flush off loose mortar and dirt.
 - .2 Scrub with solution of 25 mL trisodium phosphate and 25 mL household detergent dissolved in 1 L of clean water using stiff fibre brushes, then clean off immediately with clean water using hose. Alternatively, use proprietary compound recommended by brick masonry manufacturer in accordance with manufacturer's directions.
 - .3 Repeat cleaning process as often as necessary to remove mortar and other stains.
 - .4 Use acid solution treatment for difficult to clean masonry as described in Technical Note No.20 by the Brick Industry Association.
- .3 Clean masonry as the Work progresses using soft, clean cloths, within few minutes after laying. Upon completion, when mortar has set, so that it will not be damaged by cleaning. Clean with soft sponge or brush, and clean water. Polish with soft, clean cloths.
- .4 Clean concrete brick masonry as the Work progresses.
 - .1 Allow mortar droppings on masonry to partially dry, then remove with a trowel, followed by rubbing lightly with small piece of brick and finally by brushing.
- .5 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 04 05 00 - Masonry Procedures
- .2 Section 04 05 13 - Masonry Mortaring
- .3 Section 04 05 23 - Masonry Accessories
- .4 Section 05 50 00 - Metal Fabrications
- .5 Section 09 90 00 - Painting

1.2 REFERENCES

- .1 CAN3-A165 Series (CAN3-A165.1) (CAN3-A165.3) (CAN3-A165.4)-M85 CSA Standards on Concrete Masonry Units, latest edition

1.3 QUALITY ASSURANCE

- .1 Installation of Masonry Work: CAN3-A371M and CAN3-S304M, latest edition.

1.4 SAMPLES

- .1 Upon request, submit samples to requirements of Section 01 33 00 and provide a sample of each masonry unit type specified, to illustrate texture and colour.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 CB1: Standard smooth face, hollow concrete block units by CCI Tallcrete, and as follows:
 - .1 Solid or Hollow Loadbearing Units (including exterior walls): CSA A165M, Type H/15/A/M typical, except for loadbearing walls to be H/30/A/M, unless otherwise noted and where loadbearing walls are shown on Structural drawings.
 - .2 Hollow Non-Loadbearing Bearing Units: CSA A165M, Type H/15/A/M or latest.
 - .3 Classification of body of unit: to CAN3-A165.1 or latest.
 - .4 Modular metric sizes and profiles: 140 wide x 190 high x 390 long, 190 wide x 190 high x 390 long, 290 wide x 390 high x 190 long, and other standard sizes/profiles as indicated on drawings and details, including lintel blocks.
 - .5 Provide special shapes where required for lintels, jambs, corners, sash, control joints, headers bonding, and other special conditions.
 - .6 Colour: Natural grey
 - .7 Concrete type: to suit fire resistance ratings as noted on the drawings.
 - .8 Lightweight block with a 43db sound rating and a 2-hour fire rating, where rated wall assemblies are indicated on drawings.
 - .9 Mortar: refer to Section 04 05 13.
- .2 TB: Terrazzo block concrete masonry units to CSAA 165.1.
 - .1 Burnished face exposed side(s) and standard smooth coloured face other side. 90mm high x 88mm deep x 390mm long size and standard profiles in modular metric sizes to suit. Refer to drawings for locations. Acceptable products: CCI Expocrete 'Pietra Antica 591' colour, OR Richvale York Block Inc. Cambridge Series, "Simcoe" colour (ground face). Submit actual samples for final colour confirmation by Contract Administrator.
 - .2 Bond: 1/4 running bond, unless otherwise noted, with concave shape jointing.
- .3 Ship all masonry products specified by rail typically, when manufactured within a 2400km radius of the Site, to help achieve the LEED Regional Credit. Provide documentation to the Contract Administrator.

- 2.2 COATINGS:
- .1 Clear, penetrating sealer and liquid repellent to protect Terrazzo block masonry surfaces against both water ingress and graffiti application (paint and marker) on exposed concrete and masonry surfaces, to MPI EXT 3.2K (non-slip, chemical resistant, anti-graffiti, water vapour permeable, and non-yellowing); one reduced coat plus one full strength final coat in a Gloss level G1 matte finish; applied according to manufacturer's instructions. Acceptable products: 'Fabrishield PR-63' (concrete block).
 - .2 On all building elevations, extend coating typically to Elevation 102 200 above main floor, or as indicated on drawings. Provide a test area for the Contract Administrator's review, not on the building directly.
 - .3 Supply 2x1 gallon containers of Fabrikem PR Cleaner to The City for future use to clean off graffiti.
- 2.3 LINTELS (refer to Structural Drawings)
- PART 3 EXECUTION**
- 3.1 INSPECTION
- .1 Verify field dimensions and that site conditions are ready to receive work.
 - .2 Beginning of installation means acceptance of site conditions.
- 3.2 PREPARATION
- .1 Verify items provided by other sections of Work are properly sized and located.
 - .2 Established lines, levels, and coursing; protect from disturbance.
 - .3 Provide temporary bracing during erection of Work. Maintain in place until building structure provides permanent bracing.
- 3.3 INSTALLATION
- .1 Install masonry units in accordance with Section 04 05 00.
 - .2 Standard concrete block units typical, unless otherwise noted:
 - .1 Bond: running bond (except as noted for terrazzo block)
 - .2 Coursing height: 200mm for one block and one joint typical.
 - .3 Jointing: concave shape unless otherwise noted, and as per Masonry Procedures, Section 04 05 00.
 - .2 Mixing and blending: mix units from one pallet with three or more other pallets of the same dye lot colour and texture to ensure a uniform blend for each wall area.
 - .3 Where one colour area changes to another colour area, provide a typical vertical control joint to define this break cleanly.
- 3.4 CLEANING
- .1 Allow mortar droppings on masonry to partially dry, then remove by means of trowel, followed by rubbing lightly with small piece of block and finally by brushing.
 - .2 Protect adjacent building finishes from cleaning agents, subject to stains or corrosion.
 - .3 Soak wall areas thoroughly with clean water and flush off loose dirt and mortar.
 - .3 Apply specified cleaning agent in accordance with the manufacturer's directions, working from top to bottom. Test specified cleaning agent and procedures on a small, sample area first. Do not proceed with cleaning until sample area is approved.
 - .4 Rinse areas thoroughly with clean water to remove cleaning solutions, dirt, and residue.
 - .5 On completion of masonry, fill holes and cracks, remove loose mortar and repair defective work.
 - .6 Remove debris resulting from Work of this Section.

END OF SECTION

PART 1 GENERAL

1.1 WORK INCLUDED

- .1 All Work associated with stonework as indicated on the drawings, including the furnishing of all materials, labour, equipment, tools, supplies and incidentals required for the satisfactory performance and completion of all Work as hereinafter specified.

1.2 RELATED SECTIONS (City of Winnipeg Standard Construction Specifications)

- .1 CW3110
- .2 CW3170
- .3 CW3130

PART 2 PRODUCTS

2.1 FLAGSTONE

- .1 Flagstone shall consist of hard, dense, durable 'Colonial Black Stone and Owen Sound Ledgerock' in equal quantities, available at Mariash Quarry, Tel. 204.344.5115.
- .2 Flagstone shall be dense, sound and free from cracks, seams and other defects that would tend to reduce resistance to destruction by water and frost action.
- .3 Shapes shall be square and angular. Stone sizes may vary from 600mm (24") minimum to 900mm (36") maximum.

2.2 WEED BARRIER

- .1 Weed barrier shall be non-woven, 'Geotex 401' weed barrier by Propex.

2.3 STONE BOULDERS

- .1 Stone for riprap shall be consist of hard, dense, durable black, 'Kenora basalt' as available at Mariash Quarry, Tel. 204.344.5115, in accordance with B7 of City of Winnipeg Bid Opportunity.
- .2 Stone Boulders shall be dense, sound and free from cracks, seams and other defects that would tend to reduce resistance to destruction by water and frost action.
- .3 Stone Boulder shapes to be square and angular. Boulder sizes shall be approximately 900mm minimum x 1800mm maximum x 500mm maximum.

PART 3 EXECUTION

3.1 BEDDING AND COMPACTED AGGREGATE SUB-BASE

- .1 The subgrade and compacted aggregate sub-base for all stonework shall be prepared to the depths and slopes as shown on the drawings or as stated in the field by the Contract Administrator, prior to the placement. No stone shall be placed until the bed has been approved.
- .2 Aggregate sub-base, where applicable, shall be compacted in accordance with CW3110. Refer to drawings and details for locations of compacted aggregate base.

3.2 STONE BOULDER PLACEMENT

- .1 Prior to placing any boulders, cut non-woven geotextile fabric to suit and place tightly onto the subgrade. Overlap a minimum 100mm along seams. Pin in place.
- .2 Place aggregate over the non-woven geotextile and compact in 150mm lifts.
- .3 Site confirm final boulder placement with Contract Administrator. Contractor to layout placement of boulders using stakes or marking paint.

3.3 FLAGSTONE PLACEMENT

- .1 Prior to placing flagstone, cut non-woven geotextile fabric to suit and place tightly onto the subgrade. Overlap a minimum 100mm along seams. Pin in place.
- .2 Place clean 19 (3/4") aggregate over the non-woven geotextile to a minimum depth of 150mm (6"); refer to details on drawings.
- .3 Place a minimum 50 (2") sand bedding course over the aggregate, and to achieve the overlapping flagstone profile as detailed on drawings.
- .4 Place flagstone carefully to achieve the overlapping profiles and elevations as detailed.
- .5 Infill joints between flagstones with ¼ down black granite
- .6 Contractor shall provide a 2440 x 2440mm mock up area for review by the Contract Administrator, prior to proceeding with the Work, to sufficiently demonstrate the two types of flagstone and the overlapping pattern indicated.

END OF SECTION