

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Conduct a pre-dismantling meeting with Departmental Representative to verify project requirements, equipment, procedures and assigned storage areas.

1.2 PERFORMANCE REQUIREMENTS

- .1 Removal of historic stone masonry and roughing-in of new openings for doorways and services is to be performed with hand tools only. Use of saws for removal is not permitted.
- .2 For concrete slab to be removed, saw cut approximately 300 mm from stone walls. Demolish remainder with hand tools, exercising caution to minimize disturbance of structural stone walls.
- .3 Provide scaled photographic imaging of existing stone work, for record purposes and to provide visual guidance in installation of new stone.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Manitoba.
 - .2 Provide drawings for shoring, bracing, temporary framing work.
- .3 Site Quality Control Submittals:
 - .1 Provide up-to-date copies of stone location recording system chart or card index, as well as chronological information concerning each numbered unit (individual cards of units), when requested.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals. Include:
 - .1 Complete photographic record of stonework to be dismantled and rebuilt.
 - .2 Record drawings of layout of stored stones.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Protect and store stones to facilitate their resetting.
 - .1 Store dismantled masonry units on wood platforms, protected from exposure to water, elements, and potential mechanical damage fully covered under polyethylene.
 - .2 Submit storage and identification system to Departmental Representative for review.

1.6 AMBIENT CONDITIONS

- .1 Loosen wet masonry only when temperature is above 5°C.
- .2 In temperature 5°C and below:
 - .1 Keep stones dry.
 - .2 Protect wet stones from freezing.

Part 2 Products

Not Used.

Part 3 Execution

3.1 EXAMINATION

- .1 Examine masonry, staging and storage areas and notify Departmental Representative in writing of conditions detrimental to acceptable and timely completion of Work.

3.2 SITE VERIFICATION OF CONDITIONS

- .1 Report in writing, to Departmental Representative, areas of deteriorated stone not identified in the documents. Obtain approval and instructions for repair of stone before proceeding.
- .2 Stop work in that area and report to Departmental Representative immediately evidence of hazardous materials.

3.3 PREPARATION

- .1 Take detailed photographs of existing stone wall, showing scales for sizing of stone and jointing. Ensure photographs document existing installation in entirety.
- .2 Remove deteriorated portions of stones using low impact removal methods until sound surface is reached.
- .3 Remove deteriorated portions of stones by scraping.
- .4 Obtain Departmental Representative's approval for alternative methodology and tools to be employed before commencing the work.
- .5 Clean stone surface of dust and stone chips.

3.4 PROTECTION

- .1 Prevent damage to building, fencing, trees, landscaping, and natural features which are to remain. Make good damage incurred.
- .2 Protect surrounding components from damage during work.
- .3 Make good damage to historic fabric. Obtain Departmental Representative's approval for repair methodology.

3.5 SPECIAL TECHNIQUES

- .1 Before dismantling stones, indicate dimensions of each stone in removal area on a drawing.
- .2 Temporary Marking and Recording:
 - .1 Mark stone, on face, before removal using marking product which can be completely erased when required without damaging masonry unit:
 - .1 Ball-point pen on diachylon, attached to stone.
 - .2 Waxless chalk directly on stone.
 - .2 Tracking relocated stones and other masonry units:
 - .1 Use numbering, marking, and positioning system as approved by Departmental Representative.
 - .3 Mark/Identify:
 - .1 Stones and other elements or components to show identity and position.
 - .2 Wood platforms or other equipment used to transport and store stones.
 - .3 Work and storage areas.
 - .4 Location from which stones are removed, on drawings and photographs.
 - .4 Stone location recording system.
 - .1 Prepare chart or card index to:
 - .1 Help locate stones or units when necessary.
 - .2 To manage availability of platforms.
 - .3 To manage work and storage areas.
 - .2 Keep chart or card index up-to-date and, if required, produce copy every day.
 - .3 Prepare chart or card index or drawing to contain relevant information.
 - .5 Ensure that temporary marking will remain in use resistant to weather, handling and cleaning until final marking of stones.
 - .6 Remove markings and adhesive without damaging units:
 - .1 Brush with vegetable fibre brush, either dry or with water.
 - .2 Use no solvent, acid, nor other harsh chemical products.

3.6 STRUCTURAL SUPPORT

- .1 Construct shoring and cradling, and other temporary framing work needed to support structure, or parts of it, during removal operations and in anticipation of resetting, if structure is not to be completely dismantled, according to approved shop drawings.

3.7 METHOD FOR LOOSENING STONES

- .1 Use approved methods to loosen stones, causing no damage to stones and other architectural elements.

- .2 Use hand tools only.

3.8 DISMANTLING AND MOVING STONES

- .1 Avoid damaging arrises of stone when removing mortar and freeing up.
- .2 Remove excess mortar using hand tools.
- .3 Use wood wedges where required to remove or dislocate stone.
 - .1 Use flat pry bars protected with impact absorbing protection (burlap, cardboard).
- .4 Use nylon hoisting belts. Use minimum 2 belts per stone.
- .5 Protect stone from damage when hoisting and lifting from position.
 - .1 Use separators to isolate units from hoisting belts.
- .6 Where damage occurs to stone, report to Departmental Representative and repair stone in accordance with specified procedures.
- .7 Make good damage incurred at no additional cost to Contract.
- .8 Obtain review of repaired damage by Departmental Representative.

3.9 HANDLING

- .1 Place detached stones on wood surfaces during handling. Prevent contact with metal.
- .2 When stones are lowered to ground, place directly on wooden platform used for transport or storage.
- .3 Transport and keep stones on wooden platforms.
- .4 Ensure that sharp edges of stones do not come into contact with hard objects.

3.10 TEMPORARY STORAGE STAGING AREA

- .1 Place stones in designated area of site for cleaning, detailed inspection and for final marking, before storage.
- .2 Make stones accessible and retrievable when required.

3.11 CLEANING

- .1 Perform cleaning operations at above freezing temperature.
 - .1 After cleaning, protect wet stones against freezing until dry.
- .2 Clean stones by wet scrubbing with vegetable fibre brush unless otherwise instructed by Departmental Representative.
 - .1 Do not use high pressure water jet.

3.12 FINAL MARKING

- .1 Perform final marking after cleaning, on surface that supports good adhesion and legibility and will not be visible after resetting.
- .2 Perform marking in colour. Dimensions to be legible from distance of 2 metres.

- .3 Ensure marking product will not affect mortar to stone adhesion when resetting.
- .4 Ensure marking product used will survive storage until resetting of stone.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 ASTM A167-99(2004) - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- .2 ASTM C119-11, Standard Terminology Relating to Dimension Stone.
- .3 ASTM C568-08, Limestone Dimension Stone.
- .4 CSA A179-04 - Mortar and Grout for Unit Masonry.
- .5 CSA A370-04 (R2014), Connectors for Masonry.
- .6 CSA A371-04 - Masonry Construction for Buildings.

1.2 PERFORMANCE REQUIREMENTS

- .1 Provide installation to closely resemble previously installed stone wall, in spacing and jointing pattern. Use photographic documentation of previous installation as specified in Section 04 03 43 – Historic - Stone Masonry Removal.

1.3 SUBMITTALS

- .1 Section 01 33 00: Submittal Procedures.
- .2 Shop drawings:
 - .1 Indicate layout, pertinent dimensions, anchorages, reinforcement.
 - .2 Indicate sill and jamb details for doorway installations.
- .3 Samples: Submit two (2) samples for each type of stone to be installed, illustrating minimum and maximum stone sizes, colour and texture, mortar colour, and markings.
 - .1 Samples will be returned for inclusion in work.

1.4 MOCK-UP

- .1 Construct 1 metre long x full height stone wall mock-up, including stone anchor accessories, sill and head flashings, corner condition.
- .2 Locate where directed by Departmental Representative.
- .3 Show reinforcement, masonry connectors, jointing, coursing, mortar, masonry pattern, and texture and colour of stone to be used in the project.
- .4 Mock-up will be used to judge quality of work, substrate preparation, material application, and aesthetic resemblance to original stone installation.
- .5 Approved mock-up may remain as part of the Work.

1.5 ENVIRONMENTAL REQUIREMENTS

- .1 Cold and Hot Weather Requirements: CSA A371 - Masonry Construction for Buildings.

Part 2 Products

2.1 STONE

- .1 Stone: To ASTM C568 and ASTM C119, Tyndall stone, quarried, medium density, light coloured, mottled dolomitic limestone; non-pitched edges.
 - .1 Wall: Golden buff colour, bushhammered surface finish; free of defects.
 - .1 Nominal Thickness: 90 mm.
 - .2 Nominal Face Size: 190 mm height.
 - .3 Length: Random, range 500 to 700 mm.
 - .2 Sill cap: Golden buff colour, sized for 25 mm overhang, rubbed surface finish; free of defects, profile as shown on drawings.
 - .3 Threshold and lintel: Golden buff colour, rubbed surface finish; free of defects.

2.2 MORTAR MIXES

- .1 Proportion requirements:
 - .1 Portland cement-lime mortar:
 - .1 For bedding stones and masonry repairs: Type N, proportion:
 - .1 1 part white Portland cement.
 - .2 1 part air-entraining mason's lime.
 - .3 6 parts sand.
 - .2 For repointing: Type O, proportion:
 - .1 White Portland cement.
 - .2 Slaked lime putty, minimum 3 months old.
 - .3 Sand blend: Equal parts stucco sand and masonry sand.
 - .4 Refer to Part 3 - Execution for mixture.
 - .2 Water: Clean and potable.

2.3 ACCESSORIES

- .1 Ties and Dowels: To CSA A370, stainless steel to ASTM A167, Type 304; of sizes and configurations required for support of stone and applicable superimposed loads.
 - .1 Anchors: Rod adjustable slotted plate tie.
 - .1 Vertically oriented L-shaped steel plate with slots for screw attachment to structure. Plate thickness minimum 1.37 mm (16 gauge), stainless steel. Length to suit installation.

- .2 V-shaped steel wire masonry tie, 4.76 mm diameter stainless steel.
- .3 Insulation retainer: Polyethylene, pressed over outboard end of L-shaped plate to lock insulation in place.
- .2 Dowels: 10 mm diameter, stainless steel.
- .2 Bolts, Washers and Nuts: Stainless steel to ASTM A167, Type 304.
- .3 Flashing: 0.5 mm thick galvanized steel, prefinished.
- .1 Colour: Grey.
- .4 Cavity vents: Open-weave free-draining polymer mesh; full height and width of vertical stone joint; depth 3 mm less than depth of installed stone; colour off-white matched to mortar.
- .5 Mortar net: Open-weave polymer mesh mortar dropping collection strips; with dovetail-shaped notches, minimum 175 mm deep to prevent clogging of wall cavity and weep vents with mortar droppings; thickness to full depth of cavity.

2.4 STONE FABRICATION

- .1 Slope exposed top surfaces of horizontal sill surfaces to shedding water.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify existing conditions before starting work.
- .2 Verify that support work and site conditions are ready to receive work of this section.
- .3 Verify that built-in items are properly located and sized.
- .4 Inform Departmental Representative of unacceptable conditions.
- .5 Proceed with installation only after unacceptable conditions have been remedied.

3.2 PREPARATION

- .1 Establish lines, levels, and coursing. Protect from disturbance.
- .2 Clean stone prior to installation. Do not use wire brushes or implements that mark or damage exposed surfaces.

3.3 REPOINTING MORTAR PREPARATION

- .1 Mix 45.4 litres slaked lime in mixer with 159 litres sand blend.
- .2 Mix 22.7 litres of the resultant lime and sand mixture with 4 litres of white Portland cement, using mixing blade mounted to 12 mm drill.

3.4 INSTALLATION

- .1 Install flashings of longest practical length and seal water tight to back-up. Butt join and seal joints. Back-up joint with same material extending minimum 100 mm on both sides of joint.
- .2 Size stone units to fit opening dimensions and perimeter conditions.
- .3 Dampen stone slightly in preparation for placement to minimize moisture suction from mortar.
- .4 Install mortar in accordance with CSA A179.
- .5 Fill dowel holes in stone units with mortar.
- .6 Set stone in full mortar setting bed to fully support stone over bearing surface.
- .7 Remove splashed mortar from stone faces with sponge and water immediately to prevent staining.
- .8 Shore up units until setting bed will maintain panel in position without movement.
- .9 Rake out mortar joints 20 mm and brush joints clean to accommodate pointing mortar.
- .10 Fill joints with pointing mortar. Pack and work into voids. Neatly tool surface to concave joint.
- .11 Install mortar nets as recommended by manufacturer.
- .12 Install cavity vents in vertical stone joints, at top and bottom of walls, coordinated with mortar nets. Do not permit mortar accumulation in cavity space.

3.5 CLEANING

- .1 Section 01 74 00: Cleaning installed work.
- .2 Brush completed stonework clean daily, with dry fibre bristle brushes.
- .3 Do not use wire brushes, acids, nor acidic or alkaline cleaning compounds.

END OF SECTION