PART E

SPECIFICATIONS

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE DRAWINGS

E1.1 The following Drawings are applicable to the Work:

Drawing No.	Drawing
	Cover Page
LD-3015	Galt Flood Pumping Station Redevelopment – Index Sheet
LD-3016	Galt Flood Pumping Station Redevelopment – Demolition and Floor Plan
LD-3017	Galt Flood Pumping Station Redevelopment – Elevations
LD-3018	Galt Flood Pumping Station Redevelopment – Wall and Building Sections
LD-3019	Galt Flood Pumping Station Redevelopment – Details and Schedules
LD-3020	Galt Flood Pumping Station Redevelopment – Details and Schedules
LD-3021	Galt Flood Pumping Station Redevelopment – Floor Plans
LD-3022	Galt Flood Pumping Station Redevelopment – Plans, Sections and Details
LD-3023	Galt Flood Pumping Station Redevelopment – Elevations
LD-3024	Galt Flood Pumping Station Redevelopment – Ventilation Layout
LD-3025	Galt Flood Pumping Station Redevelopment – General Electrical and Installation Details
LD-3025A	Galt Flood Pumping Station Redevelopment – Landscape Plan
LD-3026B	Galt Flood Pumping Station Redevelopment – Landscape Details

E2. SALVAGE AND DEMOLITION

E2.1 All salvage material and equipment as determined by the Contract Administrator prior to demolition shall remain the property of the City unless specifically noted otherwise. The Contractor shall deliver salvaged material to the Greater Winnipeg Water District Railway Terminal, 598 Plinguet Street and unload the material as directed at the Terminal.

E2.2 The Contractor shall notify the Contract Administrator at least 48 hours prior to delivery of salvaged material.

E2.3 All demolition material and equipment as determined by the Contract Administrator shall be removed from the construction site, hauled and legally disposed of at no additional cost to the City.

E3. TEMPORARY USE OF CITY EQUIPMENT

E3.1 City systems and equipment shall not be used during construction without the Contract Administrator's written permission. The Contract Administrator reserves the right to withdraw said permission if, in his opinion, proper care and maintenance are not provided.

E4. DANGEROUS WORK CONDITIONS

E4.1 Further to Clause GC 6.26 of the General Conditions, the Contractor shall be aware that pumping stations, underground chambers, manholes, and sewers are considered a confined space and shall follow the "Guidelines for confined Entry Work" as published by the Manitoba Workplace Safety and Health Division.

E4.2 The Contractor shall provide the necessary precautions to safeguard against any confined entry hazard during construction and shall provide adequate safety protection for personnel engaged in this work and for all others who are exposed to the work environment under this Contract.

E4.3 The Contractor shall be aware of the potential hazards which can be encountered in a flood pumping station, such as explosive gases, toxic gases and oxygen deficiency.

E4.4 The air in a confined space must be tested before entry and continuously during the time that personnel are inside the space. Equipment for continuous monitoring of gases must be explosion-proof and equipped with a visible and audible alarm. The principal tests are for oxygen deficiency, explosion range and toxic gases. Testing equipment must be calibrated in accordance with manufacturer's specifications.

E4.5 Ventilation must be provided for at least 15 minutes prior to entry and continue while the confined space is occupied. If no ventilation is supplied, a worker must wear a respirator to enter the confined space.

E4.6 The Contract Administrator may shut down the Contractor if he determines the above guidelines are not being followed. The Contractor shall not resume his operations until the Contract Administrator is satisfied the Contractor is following the appropriate procedures. The Contractor shall have no claim for extra time or costs due to shut down for not following these safety guidelines.

E5. CITY ASSISTANCE AND CALLOUTS

E5.1 Water and Waste Department Collection System personnel will be available to provide assistance to the Contractor for the station isolation and/or shutdown.

THE FOLLOWING SPECIFICATIONS ARE ATTACHED AS ARCHITECHURAL SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

DIVISION 3 - CONCRETE

DIVISION 4 - MASONRY

DIVISION 5 - METALS

DIVISION 6 - WOOD AND PLASTICS

DIVISION 7 - THERMAL & MOSITURE PROTECTION

DIVISION 8 - DOORS & WINDOWS

DIVISION 9 - FINISHES

SECTION NO. / TITLE **NO. OF PAGES**

1.1 Applicable Specifications, Standard Details and Drawings

.1 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.

.2 *The City of Winnipeg Standard Construction Specifications* is available in Adobe Acrobat (.pdf) format on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at http://www.winnipeg.ca/matmgt.

.3 The version in effect three (3) Business Days before the Submission Deadline shall apply.

.4 Further to GC:2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.

1.2 Codes and Standards

.1 Execute work in accordance with the Manitoba Building Code (MBC) and supplements; the editions current at time of bid closing.

.2 Wherever codes, standards, regulations are referenced herein they shall mean the latest editions including amendments, supplements and revisions as of the date of bid closing.

.3 In no instance shall the standard of quality of materials, products and workmanship established by these specifications and drawings be reduced by any of the codes, standards, or regulations.

1.3 Temporary Power

.1 Owner will allow Contractor to use a reasonable amount of building power required during the work for temporary lighting and operating of power tools.

1.4 Sanitary Facilities

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances. Keep area and premises in sanitary conditions.

1.5 Water Supply

.1 Provide own water supply.

1.6 Hoarding and Site Fencing

.1 Provide and erect hoarding to protect the public, workers and public and private property from injury or damage, in accordance with local governing authorities or By-Laws.

.2 Provide and erect temporary site fencing to enclose construction area around building. Maintain fence in good condition until completion of project.

.3 Site fencing shall be 2.1 m (7’-0”) high chain link or wire mesh fencing with posts at no more than 2.4 m (8’-0”) on centre.

1.7 Weather Enclosures

.1 Provide temporary weather-tight enclosures and protection to existing equipment and building interior until permanently enclosed.

.2 Erect enclosures to allow access for installation of materials and working inside enclosure.

.3 Design enclosures to withstand wind pressure and snow loading.

1.8 Protection of Building Finishes and Equipment

.1 Provide adequate protection for finished and partially finished building finishes and equipment during the performance of work. Provide necessary screens, covers, hoardings as may be required. Be responsible for all damages incurred due to improper or lack of protection.

1.9 Fire Protection

.1 Provide and maintain adequate temporary fire protection equipment during performance of Work, as required by insurance companies having jurisdiction and governing Codes, regulations and By-Laws.

.2 Handle gasoline and like combustible materials with good safe practice.

.3 Remove combustible debris from site daily.

1.10 Temporary Bracing

.1 Provide temporary bracing for interior wood stud walls until permanently braced and secured to new masonry walls.

PART 1 - GENERAL

1.1 This Specification shall cover the supply and installation of unit pavers and bedding course of sand for areas as indicated on the Drawing. This Specification supplements CW3335.

PART 2 - PRODUCTS

2.1 Materials

.1 Concrete Pavers

.1 Holland Stone

.1 Double Holland Stone, colour to be Natural, Sizes to be 200mm x 200mm x 60mm depth

PART 3 - EXECUTION

3.1 Submittals

.1 Contractor to submit sufficient samples of pavers to the Contract Administrator to show texture, finish and anticipated range of colour to be supplied for each type of paver specified below.

.2 Contractor to submit shop drawings for all limestone paving ares for review and approval by Contract Administrator. Drawings to show layout, dimensions and identifying number of each piece of tyndall stone where required for unique sizes and cuts. No final sizing or finishing shall be done until the shop drawings for that part of the work have been approved.

3.2 Removal of Asphalt

.1 Sections of asphalt to be removed shall be saw cut in locations as shown on the drawings. Asphalt topping to be removed, granular base to remain. Ensure granular base is compacted to densities as specified in CW 3335. Supplement granular as required in accordance with CW3335, maintain grades and slopes as shown in drawings.

3.3 Installation

.1 All joints to be tight and not to be wider than 4mm unless otherwise noted on the drawings.

3.4 Shipping and Handling

.1 Packing and Loading

.1 No material which may cause staining or discoloration shall be used for blocking or packing.

.2 Site Storage

.1 Upon receipt at the building site or storage yard, the pavers shall be stacked on timber or platforms at least 75mm above the ground, and extreme care shall be taken to prevent staining during storage. If storage is to be for a prolonged period, polyethylene or other suitable plastic film shall be placed between any wood and finished surfaces, and shall be used also as an overall protective covering.

PART 4 - MEASUREMENT AND PAYMENT

4.1 The supplying and placing of Unit Pavers will be measured on an area basis. The area to be paid for shall be the total number of square metres of Unit Pavers installed in accordance with this Specification, accepted by the Contract Administrator, as computed from the layout shown on the accepted shop drawings.

.1 The supply and placement of sand bedding and infill material for Unit Pavers is incidental to the works and no separate measurement and payment will be made.

~ END ~

PART 1 - GENERAL

1.1 References

.1 CW 3170-R3 Earthwork and Grading

.2 CW 3540 Topsoil and Finish Grading

PART 2 - PRODUCTS

2.1 General

.1 All materials supplied under this specification shall be of a type approved by the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.

2.2 Submittals

.1 Contractor to submit samples of each product used in the work prior to construction.

2.3 Materials

.1 Limestone Flagstone

.1 All Limestone shall be Manitoba Tyndall limestone, blasted rock, as quarried and supplied by Bison Quarries, Stonewall, Manitoba. Material shall be free of clay pockets. Limestone shall be supplied in varying sizes as shown on the drawings.

.2 Limestone is to match the existing limestone used for the roadside planters along Waterfront Drive. Source of material and samples to be approved by Contract Administrator prior to delivery to site.

.3 Face finish to be “rustic”

.4 Random shapes shall be suitable for a “Web” or “Flagstone” pattern as approved by the Contract Administrator

.5 Dimensions from edge to edge any direction not to exceed 900mm and not to be less than 150mm. Thickness of stone shall be 90mm.

.2 Sand

.1 Sand shall be in accordance with CW 3335 ‘Installation of Interlocking Paving Stones on a Lean Concrete Base’.

.3 Soil Mix

.1 Refer to E 9 Tree Well and Planting Bed Preparation for soil mix.

PART 3 - EXECUTION

3.1 General

.1 The Contractor shall build a sample Limestone Flagstone area 600mm high x 3000mm long for review by the Contract Administrator prior to construction. The sample area shall be considered incidental to the work and no payment will be made.

.2 Verify that layout dimensions are correct and subgrade is in proper condition for installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 Excavation and Fill

.1 Excavate or fill to the lines and grades shown on the construction drawings. Obtain the Contract Administrators approval of excavation and fill prior to placement of materials. Proof roll foundation area as directed to determine if remedial work is required.

.2 Notify the Contract Administrator immediately upon discovery of any silt pockets or other deleterious material. Over-excavation of any deleterious material and replacement with suitable fill, only upon approval by the Contract Administrator.

.3 Be careful not to disturb embankment and foundation materials beyond lines shown.

3.3 Soil Mix

.1 Place, spread, and firmly compact soil mix in such a manner that ensures shape, grades, and slopes to areas as indicated on the Drawings.

.2 Place and compact soil mix in lifts not to exceed 150 mm where hand compaction is used, 200mm where heavy compaction equipment is used. Decrease lift thickness where necessary to achieve required density.

3.4 Limestone Flagstone

.1 Place first course of stones on soil mix and check alignment and level. Ensure that all stones are in full contact with soil mix base and firmly seated.

.2 Placement of stones shall be tight and firmly set. Gaps between stones shall be consistent with Limestone Flagstone treatment on existing roadside planters and as directed by Contract Administrator.

.3 Set elevations and slope of limestone flagstone treatment as shown on the drawings and as directed on site by Contract Administrator.

PART 4 - MEASUREMENT AND PAYMENT

4.1 The supplying and installation of Limestone Flagstone Treatment will be measured on a square metre basis. The area to be paid for shall be the total number of square metres of Limestone Flagstone Treatment installed in accordance with this Specification, accepted by the Contract Administrator, as computed in the field by the Contract Administrator.

~ END ~

1. LANDSCAPE MAINTENANCE

Part 1 GENERAL

11.1 This specification shall cover the maintenance of trees from the time of installation and for a period of two years from the date of Total Performance. The Contractor shall furnish all labour, materials, equipment and services necessary to perform the work according to the drawings and specifications. In general, work shall include:

(a) Spring cleaning

(b) Fertilizing

(c) Watering

(d) Weed Control

(e) Pest and disease control

(f) Tree support repair and adjustment

(g) Tree pruning

(h) Winter preparation

21.1 Protection

(a) Prevent damage by maintenance equipment to fencing, other trees, landscaping, benches, buildings, pavement, surface and underground utility facilities.

31.1 Maintenance Schedule

(a) The Contractor shall provide a complete written Maintenance Schedule to the Contract Administrator prior to the issuing of the Certificate of Total Performance.

(b) The Maintenance Schedule shall indicate when the maintenance will be performed for random inspection by Contract Administrator, as well as what practice will be performed on a weekly/monthly/seasonal basis.

(c) All maintenance of trees and shrubs to be supervised by a Manitoba Certified Arborist.

41.1 Documentation and Reporting

(a) All maintenance personnel they shall record in a logbook the operations carried out and any conditions that require attention or monitoring. The arborist shall submit a summary of the information as a Monthly Report to the Contract Administrator. Conditions requiring attention should be brought to the Contract Administrator's attention immediately.

(b) The contractor should review the site regularly and adjust maintenance operations to suit observed conditions. A Site Maintenance Inspection Form (supplied by the Contract Administrator) should be used to record each site visit. Completed copies of these forms shall be sent to the Contract Administrator biweekly.

(c) Report in writing any major maintenance procedures intended, minimum one week in advance.

(d) If any damage, dangerous or potentially dangerous situations related to landscape works are observed the Contractor shall notify the Contract Administrator immediately.

51.1 Failure to Document and Submit

(a) If the Contractor fails to submit a monthly report it shall be assumed the work was not performed for that time period. Payment for Landscape Maintenance shall be reduced by $1/6^{th}$ for every month a report is not submitted.

61.1 Qualifications

(a) All landscape maintenance personnel shall be skilled in the tasks assigned to them.

71.1 Certificate of Acceptance

(a) The Certificate of Acceptance will be issued upon completion of the two (2) year Maintenance Period, provided that trees are well established and rooted, properly pruned and showing vigorous growth satisfactory to the Contract Administrator.

(b) Unacceptable trees or shrubs shall be removed and replaced according to the required specifications. Maintenance of replacement items shall be extended for a period equal to the original Maintenance Period as specified herein. The Contract Administrator shall make further inspection after the additional Maintenance Period.

(c) Replacement and maintenance requirements shall continue until the material is accepted.

Part 1 MATERIALS

11.2 General

(a) Materials are to conform to the requirements of related Specification sections.

21.2 Fertilizer

(a) Fertilizer shall be complete synthetic slow release fertilizer with maximum 35% water soluble nitrogen.

31.2 Condition of Equipment

(a) Prior to the Award of the Contract, the Bidder will be required to arrange to have the equipment inspected by the Contract Administrator to verify that the equipment is in good operating condition and meets the requirements of the Specifications, if any is required.

(b) The supply of replacement equipment of equal or larger size, if regular units are under repair, will be the responsibility of the Contractor.

Part 1 CONSTRUCTION METHODS

11.3 General

(a) Program timing of operations to growth, weather conditions and use of Site.

(b) Each operation shall be done continuously and complete within reasonable time period.

(c) Store equipment and materials off site.

(d) Collect and dispose of debris or excess material on daily basis.

21.3 Spring Cleaning

(a) Any dead vegetation, leaves and debris shall be removed. Heavy raking shall be done with a flexible grass rake on areas with "snow mold". Roll lightly areas where grass plants have lifted due to frost action.

31.3 Fertilizing

(a) Soil testing shall be carried out by a recognized testing facility prior to fertilizer application to ensure a properly formulated program.

(b) Fertilizer shall be spread evenly at frequency, ratio and rates as recommended by Manufacturer. Use approved mechanical spreading equipment. Check calibration to ensure specified rate is spread evenly. Water immediately after fertilizing. Rectify uneven spreading as soon as it becomes apparent.

41.3 Watering - General

(a) Water shall be applied as required to supplement rainfall and to maintain optimum growing conditions. In general, water once a week to achieve rates as indicated. Allow soil to adequately dry between watering to prevent over saturation without creating water stress.

(b) Water shall be applied in a soft spray to avoid packing of soil.

(c) Use of the installed irrigation system is prohibited unless approved by the Contract Administrator.

(d) Do not impede use of sidewalk and other paved areas.

51.3 Watering of Trees

(a) Water every third day for first and second month after planting. Thereafter, water once per week between May 1 and October 15.

(b) A complete record is to be kept of each series of watering for all planted trees noting: 1) location, and 2) date of watering. This record is to be given to the Contract Administrator when requested.

(c) Apply 40 litres of water per 25mm calliper per application using deep root feeder or low-pressure open flow nozzle and hose. The water stream must not gouge out a hole in the soil and mulch.

61.3 Weed Control of Trees

(a) Surface of tree planters shall be maintained free of weeds. Do not allow weeds to establish for a period longer than one (1 week).

(b) Obtain written approval of Contract Administrator prior to using any herbicides.

(c) Do not use dicamba and picloram solutions near trees.

71.3 Pests and Disease Control

(a) Obtain written approval of Contract Administrator prior to using any pesticide.

(b) Control pests and disease through pruning or application of pesticides. Use species specific pesticides where possible. Use only pesticides of low mammalian toxicity. Strictly follow manufacturer's written instructions.

81.3 Cultivating Planting Beds

(a) Cultivate whenever required to keep top layer of soil, loose, friable and free from weeds. Any operation must be continuous without interruption.

(b) Cultivate surface of planting bed, and soil areas around trees.

(c) Remove weeds including their roots.

(d) Take care not to damage roots of shrubs or flowers. Use small hand tools for areas of closely planted shrubs and/or perennials.

(e) Collect and dispose of paper and refuse. Remove dead plants, leaves, branches, dead flowers and seed pods.

(f) Clean, by hand, areas that are covered with mulch. Loosen top layer of mulch without mixing it with soil underneath.

(g) Add mulch as required to maintain specified thickness.

91.3 Tree Supports and Tie Adjustments

(a) Maintain tree supports and ties in proper repair.

(b) Remove supports and ties as directed by Contract Administrator.

(c) Straighten any tree which is leaning.

101.3 Tree and Shrub Pruning

(a) The Contractor shall provide a person with a valid Manitoba Arborist's License for each Work crew or Work Site.

(b) Prune trees as required to remove dead, broken or damaged limbs. Prune back to healthy growth while maintaining balanced crown shape.

(c) Employ clean sharp tools. Make cuts co-incident with the branch collar near the main stem or branch. Cuts must be smooth and sloping to prevent accumulation of water on cut. Do not leave little stumps ("horns") on trunks or main branches.

111.3 Winter Preparation

(a) Rake and assemble leaves after they have been shed by trees. Remove from site.

(b) Protect trees from rodent damage using fine wire mesh or approved plastic protector beyond snow line or by applying rodent repellent sprays.

(c) Ensure adequate moisture in root zones of trees material prior to freeze-up.

(d) Apply anti-desiccant to evergreen trees susceptible to winter desiccation.

Part 1 MEASUREMENT AND PAYMENT

(a) No measurement will be made for this work. Landscape Maintenance shall be paid at the Contract Unit Price for All Work which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this specification.

~ END ~

PART 1 - GENERAL

1.1 This specification shall cover the supply and installation of trees, shrubs and groundcovers. The Contractor shall furnish all labour, materials, equipment and services necessary to complete the work as shown on the drawings and specified herein.

.1 Source Quality Control

.1 The Contract Administrator will randomly inspect all plant material at the source upon request to do so.

.2 Trees are to be grown in nurseries under proper cultural practices as recommended by the Canadian Nursery Trades Association.

.3 Only those trees which have been grown for at least the four (4) previous years in local Manitoba nurseries located in an Agriculture Canada Plant Hardiness Zone designation of 2(a or b) or 3(a or b) and within a 250 kilometre radius of Winnipeg will be accepted. Trees that have grown in plant hardiness zones 1 and 4 or greater will be rejected.

.2 Maintenance

.1 The Contractor shall be responsible for the maintenance of the planted material for a period of 2 years from the date of the Certificate of Total Performance. For any areas planted after September 15th, the maintenance period will commence on May 15th of the following year or such date as mutually agreed upon by all parties. The Contractor shall replace Defective plants within three (3) days of notification to the Contract Administrator.

.3 Warranty

.1 Further to GC 13.2 of the General Conditions, the Contractor shall, at their expense, maintain the Work against any and all defects or deficiencies resulting from insect infestation, disease and mechanical damage due to improper handling, installation or maintenance, for a period of two (2) years from the date of the Certificate of Total Performance. Nursery stock damaged by vandalism or reasons beyond the control of the Contractor shall be replaced by the client.

.2 End-of-Warranty inspection will be conducted by the Contract Administrator.

.3 The Contract Administrator reserves the right to request material replacement or extend the Contractor's Maintenance responsibilities for an additional one (1) year if, at the end of the two (2) year Warranty Period, leaf development and growth are not sufficient to ensure future survival of the tree or shrub.

.4 Replacements

.1 During the Maintenance Period, the Contractor shall remove from Site any plant material that has died or failed to grow satisfactorily as determined by the Contract Administrator and replace the same as per Specifications within a maximum ten (10) day period from notification.

.2 The Contractor shall extend Maintenance and Warranty on replacement tree for a period equal to the original Maintenance and Warranty Periods.

.3 The Contractor shall continue such replacement, Maintenance and Warranty until tree is acceptable.

PART 2 - PRODUCTS

2.1 Materials

.1 Water

.1 Water is to be potable and free of minerals which may be detrimental to plant growth.

.2 Bark Mulch

.1 Bark Mulch shall be no larger than 150mm in any one dimension.

.1 Bark Mulch shall be locally supplied from tree specimens free from disease and fungus.

.2 Bark Mulch shall not contain soil, stone or any other deleterious material.

.3 Planting Soil

.1 As per City of Winnipeg Specification CW 3540-R2

.4 Sod

.1 As per City of Winnipeg Specification CW 3510-R7

.5 Root Ball Burlap

.1 Root ball burlap is to be 150 g Hessian burlap, biodegradable.

.6 Wire Baskets

.1 Wire baskets are to be a horticulturally accepted product designed to carry the weight and to contain a burlap-covered root ball. Minimum diameter basket size is to conform to the same minimum diameter of the tree root ball for the respective minimum tree calliper sizes.

.7 Fertilizer

.1 Fertilizer is to be a slow release formulation of low nitrogen and high phosphorus e.g. 10-50-12. Apply quantities at rates stated by product manufacturer.

.8 Tree Material

.1 Nomenclature of specified trees is to conform to the International Code of Nomenclature for Cultivated Plants and is to be in accordance with the approved scientific names given in the latest edition of the Standardized Plant Names.

.2 All trees are to be supplied in accordance with the Work of this Contract and shall be inspected by the Contract Administrator at the nursery site. At the time of inspection, the Contractor shall permanently tag a suitable branch of each tree with a distinct code clearly indicating that the City of Winnipeg Water and Waste Department will be the intended recipient of that tree. The tag and code must be approved at least two (2) weeks in advance of their use by the Contract Administrator.

.3 The tag must be kept on the tree at the time of planting, and removed only when authorized in writing by the Contract Administrator.

.4 The Contract Administrator will reject trees that are delivered without their tags intact at the planting site.

.5 Each tag will identify the species of the tree and its calliper at the time when the tag is placed permanently on the tree.

.6 All tree tagging operations will be conducted after Award of Contract to the Bidder.

.7 The use of trees requiring treatments as ordered by Agriculture Canada is prohibited.

.8 Trees are to be characteristically developed for their species and structurally sound, well branched, healthy and vigorous and densely foliated when in leaf. The tree is to have a healthy, well developed, fibrous root system which may be verified through a testing procedure that destructively samples one or more randomly selected root balls.

.9 Trees are to have been root pruned regularly, but not later than one growing season prior to arrival on Site. The Contractor may be required to furnish documentation to the client on their root-pruning program. Trees in excess of 75 mm calliper are to have been half root pruned during each of two successive growing seasons, the latter at least, one growing season prior to arrival on Site.

.10 All parts of the trees, especially the lower branches, are to be moist and show live, green cambium tissue when cut.

.11 Trees are to have only one, sturdy, generally straight and vertical trunk, and a well balanced crown with fully developed leader.

.12 Trees are to be free of disease, insect infestation, rodent damage, sun scald, frost cracks, abrasions, unhealed scars, scars exceeding 5 cm in diameter, major forks or crooks in the trunk, broken branches, or angled leaders. Trees having the above defects will not be accepted.

.13 Trees having a leader which has developed at a sharp angle to the trunk as a result of pruning or trunk damage will not be accepted.

.14 Trees exhibiting suppressed, weakly developed branches due to competition from other closely spaced trees in the nursery and trees exhibiting dead branches will not be accepted.

.15 Any tree that has come out of dormant stage and is too far advanced will not be accepted unless prior approval obtained. Approval is required for any tree which has been held in cold storage.

.16 Balled and burlapped trees in excess of a 3 m height must have been dug with large firm ball. Roots in root balls must be comprised of 75% fibrous and feeder root systems. Secure root balls with burlap, heavy twine and rope. For trees 75 mm or more in calliper, wrap ball in double layer of burlap and drum lace with minimum 10 mm diameter rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.

.17 Tree spade dug trees are to be dug with mechanized digging equipment with hydraulic spade. Lift root ball from hole, place in wire basket designed for purpose and lined with burlap. Tie basket to ball with minimum 10mm diameter rope. Tree trunks injured by this process will not be accepted.

.18 Use of collected or native trees is not permitted.

.9 Tree Quantity and Size

.1 Trees are to be planted at the quantities and callipers listed on the Plant Lists in table 8.2.9. Any variations to species, size or calliper of specified trees will require a request for approval from the Contract Administrator.

.2 Any changes in planting locations will be determined on-site by the Contract Administrator.

.3 Trees are to conform to the measurements specified in the PLANT LISTS, except that trees larger than specified may be used if approved by the Contract Administrator.

.4 Trees are to be measured when the branches are in their normal position. Height dimensions specified refer to the main body of the tree, not from branch tip to root base. Where trees have been measured by calliper or diameter, reference is to be made to the diameter of the trunk measured 15 cm above the ground as the tree stands in the nursery prior to lifting. Calliper of tree shall be appropriately designated on a permanently fixed tag on one of the lower branches.

TABLE 8.2.9 PLANT LIST

QUANTITY	COMMON NAME / *BOTANICAL NAME*	SIZE AND REMARKS
DECIDUOUS TREES		
2	Selkirk Rosybloom Crabapple / *Malus x adstringens 'Selkirk'*	50mm caliper, min. 2500mm ht.,min. 900mm wide rootball, single straight stem, balanced head.
SHRUBS		
13	Dwarf Meyer Lilac / *Syringa meyerii 'Palibin'*	Min. 400mm ht., min. 5 major basal stems, dense bushy plants, container.
18	Adelaide Hoodless Shrub Rose / *Rosa x 'Adelaide Hoodless'*	Min. 400mm ht., min. 5 major basal stems, dense bushy plants, container.
11	Prince of Wales Juniper / *Juniperus horizontalis 'Prince of Wales'*	Min. 500mm spread, dense bushy plants, container, strong green colouration, no yellowing.
12	Hughes Juniper / *Juniperus horizontalis 'Hughes'*	Min. 500mm spread, dense bushy plants, container, strong green colouration, no yellowing.

.10 Shipment and Pre-Planting Care

.1 Coordinate shipping of trees and excavation of holes to ensure a maximum ten (10) days time lapse between digging and planting.

.2 Tie branches of trees securely, and protect trees against abrasion, exposure and extreme temperature change during transit. Avoid binding of trees with rope or wire which would damage bark, break branches or destroy natural shape of tree. Give full support to root ball of trees during lifting.

.3 Cover tree foliage with tarpaulin, and protect bare roots by means of dampened straw, peat moss, saw dust or other acceptable material to prevent loss of moisture during transit and storage.

.4 Remove broken and damaged roots with sharp pruning shears. Make clean cuts, and cover cuts over 10 mm diameter with a tree wound dressing.

.5 Keep roots moist and protected from sun and wind. Heel-in trees which cannot be planted immediately in shaded areas and water well.

PART 3 - EXECUTION

3.1 Workmanship

.1 Location of trees will be staked out or painted on Site in accordance with the landscape drawings by the Contractor. Locations shall be approved by the Contract Administrator prior to installation.

.2 Keep Site clean and planting holes drained. Immediately remove soil or debris spilled onto street pavement, grass or sidewalk.

3.2 Planting Time

.1 Plant deciduous trees during dormant period before buds have broken.

.2 Plant only under conditions that are conducive to health and physical conditions of trees.

.3 Provide planting schedule to Contract Administrator. Extending planting operations over long period using limited crew will not be accepted.

.4 The Contractor must obtain all above and below ground clearances from all utilities in a timely manner so as not to jeopardize the schedule of the complete tree planting Contract.

3.3 Excavation

.1 Excavate planting pits as indicated by stakes or paint marks.

.2 Protect bottom of excavations against freezing.

.3 Remove water which enters excavations prior to planting. Ensure source of water is not ground water or from broken City water main pipe.

3.4 Installation

.1 Planting shall be done in accordance with locally accepted practice.

.2 Trees are to be planted within forty eight (48) hours of excavation from the nursery.

.3 No tree pit is to be left open at the end of the Contractor's Work Day. Planting program is to be planned to ensure that all approved trees delivered to the Site at designated planting locations are installed and thoroughly watered the same day as delivery.

.4 Loosen bottom and sides of planting hole to depth of 100 - 150 mm.

.5 Plant trees vertically. Orient trees to give best appearance in relation to structure, roads and sidewalks.

.6 Place trees to depth equal to depth they were originally growing in nursery.

.7 With balled and burlapped root balls and root balls in wire baskets, loosen burlap and cut away the top 1/3 without disturbing root ball. Do not pull burlap or rope from under root ball. Non-biodegradable wrapping must be removed.

.8 Tamp planting soil around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has completely penetrated into soil, complete backfilling.

.9 Each tree is to have an earth saucer at its base having a diameter as large as the excavation with a 100 mm lip formed at the perimeter of the saucer to retain water.

3.5 Fertilizing

.1 When planting is completed, give surface of planting saucer a dressing of fertilizer with an N-P-K ratio of 15-30-15 or approved equal. Mix fertilizer thoroughly with top layer of planting soil and water in well as per manufacturers specifications for new plantings.

3.6 Pruning

.1 The Contractor shall provide a person with a Manitoba Certified Arborists Licence for each Work crew or Work Site.

.2 Prune trees after planting to compensate for loss of roots suffered during transplanting. Postpone pruning of those trees where heavy bleeding may occur, until in full leaf. Employ clean sharp tools and make cuts flush with main and secondary branch collars, smooth and sloping to prevent accumulation of water.

.3 Remove projecting stumps on trunks or main branches. Remove dead and injured branches and branches that rub causing damage to bark. Trim out crown of trees without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.

3.7 Watering

.1 Trees are to be watered during the planting procedure as described previously, and once a week thereafter, or more frequently if required, during the growing season.

.2 A complete record is to be kept of each series of waterings for all planted trees noting: 1) location, and 2) date of watering. This record shall be sent bi-weekly to the Contract Administrator.

.3 Apply 40 litres of water per 25 mm calliper per application using deep root feeder or low/pressure nozzle and hose. The water stream must not gouge out a hole in the soil and mulch.

PART 4 - METHOD OF MEASUREMENT

.1 Trees, Shrubs and Groundcovers - Supply and Installation will be measured on a per unit basis. The amount to be paid for shall be the total number of trees, shrubs and groundcovers supplied and installed in accordance with this specification, the drawings and as accepted by the Contract Administrator.

.2 Planting Bed Preparation, Sod and Bark Mulch – Supply and Installation will be measured on a square metre basis. The amount to be paid for shall be the total area of planting bed and bark mulch supplied and installed in accordance with this specification, the drawings and as accepted by the Contract Administrator.

PART 5 - BASIS OF PAYMENT

5.1 Payment for Planting Bed Preparation, Bark Mulch, Sod, Trees, Shrubs and Groundcovers shall be paid for at the contract unit price for the "Items of Work" listed below, which price shall include all costs of labour and material supply, and all other items incidental to the work included in this specification.

Items of Work:

(i) Planting Bed Preparation
(ii) Sod
(iii) Selkirk Rosybloom Crabapple
(iv) Adelaide Hoodless Shrub Rose
(v) Meyer Dwarf Lilac
(vi) Hughes Juniper
(vii) Prince of Wales Juniper

~ END ~

PART 1 - GENERAL

1.1 This specification shall cover planting bed preparation.

PART 2 - PRODUCTS

2.1 General

.1 All materials supplied under this Specification shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.

.2 The Contractor shall be responsible for the supply, safe storage and handling of all materials as set forth in this Specification. All materials shall be handled in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

.3 Planting Soil for planting beds

.1 Planting Soil shall consist of black top soil, a fertile friable natural loam containing by volume not less than 4% and no more than 25% of organic matter for clay loams, and not less than 2% and no more than 25% for sandy loams, with an acidity value ranging from pH 6.0 to 8.0 and capable of sustaining vigorous plant growth. Topsoil is to be free of any mixture of subsoil, clay lumps and free of stones and other extraneous matter. It is not to contain couch or crab grass rhizomes.

.4 Planting soil for top 300mm of planting beds

.1 Planting soil shall consist of 40% black top soil, 40% peat, 10% compost and 10% sand.

PART 3 - EXECUTION

3.1 The Contractor shall co-ordinate the installation in accordance with the Drawings and as specified herein.

3.2 Planting Bed Preparation

.1 Contractor shall excavate and fill for planting beds as shown on the drawings. All areas to be filled shall be in locations and to the depths shown on the drawings.

.2 Planting bed areas, shall be filled with soil mixture. After filling top of bed shall be set to levels shown on drawings. Soil should be lightly compacted and indicated soil depths shall be depths after light compaction.

.3 All existing roadside planters have soil mix in place. Additional fill as required to ensure planting is set to top of planter elevation.

PART 4 - MEASUREMENT AND PAYMENT

4.1 The supplying and installation of Tree Wells will be measured on a unit price basis and shall be paid for at the Contract Unit Price for Tree Wells, installed in accordance with this Specification, accepted by the Contract Administrator, as computed in the field by the Contract Administrator.

.1 The supplying and installation of Planting Bed Preparation will be measured on a square metre basis and shall be paid for at the Contract Unit Price, installed in accordance with this Specification, accepted by the Contract Administrator, as computed in the field by the Contract Administrator.

~ END ~

PART 1 - GENERAL

1.1 References

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C260, Specification for Air-Entrained Admixtures for Concrete.

.2 ASTM C494, Specification for Chemical Admixtures for Concrete.

.2 Canadian Standards Association (CSA)

.1 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.

.2 CAN3-A23.3, Design of Concrete Structures for Buildings.

.3 CAN3-A23.4, Precast Concrete-Materials and Construction.

.4 CSA A251, Qualification Code for Manufacturers of Architectural and Structural Precast Concrete.

.5 CAN/CSA-G40.21, Structural Quality Steels.

.6 CAN/CSA G164, Hot Dip Galvanizing of Irregularly Shaped Articles.

.7 CSA W48.1, Carbon Steel Covered Electrodes for Shielded Metal Arc Welding.

.8 CSA W59, Welded Steel Construction (Metal Arc Welding).

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 1.181M, Coating, Zinc-Rich, Organic, Ready Mixed.

1.2 Qualifications of Manufacturer

.1 Precast concrete elements to be fabricated and erected by manufacturing plant certified by Canadian Standards Association in appropriate categoryies according to CSA A251. Precast concrete manufacturer to be certified in accordance with CSA's certification procedures for precast concrete plants prior to submitting tender and to specifically verify as part of tender that plant is currently certified in appropriate categoryies,

.1 Architectural.

.2 Only precast elements fabricated in such certified plants to be acceptable to Owner, and plant certification to be maintained for duration of fabrication, erection until warranty expires.

1.3 Design Criteria

.1 Design precast elements to CAN3-A23.4 and to carry handling stresses.

1.4 Tolerances

.1 Tolerance of precast elements to CAN3-A23.4, Section 10.

1.5 Source Quality Control

.1 Provide Contract Administrator with certified copies of quality control tests related to this project as specified in CAN3-A23.4 and CSA A251.

.2 Provide records from in-house quality control programme based upon plant certification requirements to Contract Administrator for inspection and review.

.3 Upon request, provide Contract Administrator with certified copy of mill test report of reinforcing steel supplied, showing physical and chemical analysis.

.4 Precast plants should keep complete records of supply source of concrete material, steel reinforcement, prestressing steel and provide to Contract Administrator for review upon request.

1.6 Samples

.1 Produce samples of specified colour, finish and quality of exposed faces for Contract Administrator review prior to commencement of full production.

.2 Allow for submittal of several degrees of sandblast finish textures to Contractor Administrator's approval.

1.7 Shop Drawings

.1 Submit six copies of shop drawings to Contract Administrator.

.2 Submit shop drawings in accordance with CAN3-A23.4 and CAN3-A23.3. Include the following items:

.1 Design calculations for items designated by manufacturer.

.2 Tables and bending diagrams of reinforcing steel.

.3 Camber.

.4 Finishing schedules.

.5 Methods of handling and erection.

.6 Openings, sleeves, inserts and related reinforcement.

.3 Each drawing submitted shall bear stamp and signature of qualified professional engineer registered or licensed in province of Manitoba, Canada.

PART 2 - PRODUCTS

2.1 Materials

.1 Cement, white cement, aggregates, water, admixtures: to CAN3-A23.4 and CAN/CSA-A23.1.

.2 Use same brands and source of cement and aggregate for entire project to ensure uniformity of colouration and other mix characteristics.

.3 Reinforcing steel: to CSA A23.4.

.4 Forms: to CAN3-A23.4.

.5 Hardware and miscellaneous materials: to CAN/CSA-A23.1.

.6 Anchors and supports: to CAN/CSA-G40.21, Type 400W, galvanized.

.7 Welding materials: to CSA W48.1.

.8 Galvanizing: hot dipped galvanizing with minimum zinc coating of 610 g/m² to CSA G164.

.9 Air entraining admixture: to ASTM C260.

.10 Bearing pads: smooth, high impact plastic, steel.

.11 Shims: plastic, steel.

.12 Zinc-rich primer: to CAN/CGSB 1.181M.

.13 Weephole tubes: purpose made galvanized steel or plastic.

.14 Curing compound: not permitted without prior approval of Contract Administrator.

2.2 Concrete Mixes

.1 Proportion density concrete in accordance with CAN/CSA-A23.1, to give following properties:

.1 Cement: use Type 10. Use white cement for facing matrix.

.2 Minimum compressive strength at 28 days: 35 MPa.

.3 Minimum water/cement ratio to CSA A23.4

.4 Air content: refer to CSA A23.4.

.5 Calcium chloride not permitted.

2.3 Manufacture

.1 Manufacture units in accordance with CAN3-A23.4.

.2 Mark each precast unit to correspond to identification mark on shop drawings for location with date cast on part of unit which will not be exposed.

.3 Design and attach anchors and inserts to precast concrete elements to carry design loads.

.4 Galvanize anchors, steel embedments after fabrication and touch up with zinc-rich primer after welding.

2.4 Finishes

.1 Finish and colour of precast units to match Contract Administrator's sample.

.2 Light sandblast finish to remove imperfections and provide slight texture without excessive exposure of aggregate face.

PART 3 - EXECUTION

3.1 Erection

.1 Do precast concrete work in accordance with CAN3-A23.4.

.2 Erect precast elements within allowable tolerances as specified.

.3 Non-cumulative erection tolerances in accordance with CAN3-A23.4, Section 10.

.4 Set elevations and alignment between units to within allowable tolerances before connecting units.

.5 Fasten precast panels in place as indicated on reviewed shop drawings.

.6 Secure bolts with lockwashers or tack-weld nut to bolt.

.7 Uniformly tighten bolted connections with torque indicated.

.8 Do not weld or secure bearing plates at sliding joints.

.9 Set units dry, without mortar, attaining specified joint dimension with plastic shims.

.10 Clean field welds with wire brush and touch-up galvanized finish with zinc-rich primer.

.11 Remove shims and spacers from joints of non- load bearing panels after fastening but before sealant is applied.

.12 Apply sealant to precast panels to manufacturer's recommendations unless specified otherwise.

3.2 Welding

.1 Do welding in accordance with CSA W59 for welding to steel structures and CSA W186 for welding of reinforcement.

3.3 Cleaning

.1 Obtain approval of cleaning methods from Contract Administrator before cleaning soiled precast concrete surfaces.

PART 1 - GENERAL

1.1 References

.1 Canadian Standards Association (CSA)

.1 CSA A179 Mortar and Grout for Unit Masonry.

.2 CSA A371 Masonry Construction for Buildings.

1.2 Delivery, Storage and Handling

.1 Deliver materials to job site in dry condition. Keep materials dry until use, except where wetting of bricks is specified.

.2 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

1.3 Environmental Requirements

.1 Hot Weather Requirements: potect 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 masonry work is completed and protected by flashing 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 As specified in related section in Division 4 – Masonry.

.2 Use same brands of materials and source of aggregate for entire project.

PART 3 - EXECUTION

3.1 Installation

.1 Do masonry work in accordance with CSA A371 except where indicated otherwise.

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

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

.4 Make masonry courses uniform in height with both vertical and horizontal joints of equal and uniform thickness.

.5 Keep air space in cavities and weep holes free of mortar droppings and other debris to allow free air movement and positive moisture drainage to exterior.

.6 Lay masonry units in full mortar bed. Do not shift or tap units after mortar has taken initial set. Where adjustments must be made, remove mortar and replace with fresh supply.

.7 Bed joints evenly and fill solidly with mortar. Rock masonry into place at closures with head joints thrown against adjacent masonry units.

.8 Where new masonry abuts set masonry, clean existing surfaces and dampen if necessary to obtain bond.

3.2 Construction

.1 Clean unglazed clay masonry as work progresses.

.2 Exposed masonry:

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

.3 Jointing:

.1 Allow joints to set just enough to remove excess water, then tool with jointer to provide smooth, compressed, uniform joints.

.2 Use round jointer to provide concave joints where concave joints are indicated.

.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.

.4 Cutting:

.1 Cut out neatly for electrical switches, outlet boxes, and other recessed or built-in objects.

.2 Make cuts straight, clean, and free from uneven edges.

.3 Use masonry saw where necessary.

.5 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.

.6 Wetting of Bricks

.1 Except in cold weather, wet clay bricks having an initial rate of absorption exceeding 1 g/min/1000 mm^2: wet to uniform degree of saturation, 3 to 24 h before laying, and do not lay until surface dry.

.2 Wet tops of walls built of bricks qualifying for wetting, when recommencing work on such walls.

.7 Support of loads:

.1 Use 20 MPa concrete where concrete fill is used in lieu of solid units.

.2 Install building paper below voids to be filled with concrete; keep paper 25 mm back from faces of units.

.8 Provision for movement:

.1 Built masonry to tie in with stabilizers, with provision for vertical movement.

.9 Provisions for other trades:

.1 Provide openings in masonry walls where required or indicated. Accurately locate chases and openings and neatly finish to the required sizes.

.2 Where masonry encloses conduit or piping, bring to proper level indicated and as directed.

.3 Do not cover pipe or conduit chases or enclosures until advised that work has been inspected and tested.

.10 Loose steel lintels:

.1 Install loose steel lintels. Centre over opening width.

.11 Control joints:

.1 Construct continuous control joints as indicated.

.2 Provide continuous vertical control joints in exterior masonry veneer as indicated, but at no more than 6 m on centre maximum spacing.

.3 Fill control joints with expansion joint filler and joint sealants as specified in Section 07900 - Joint Sealants.

3.3 Site Tolerances

.1 Tolerances in notes to Clause 5.3 of CSA A371 apply.

PART 1 - GENERAL

1.1 References

.1 Canadian Standards Association (CSA)

.1 CSA A179 Mortar and Grout For Unit Masonry.

PART 2 - PRODUCTS

2.1 Materials

.1 Mortar: CSA A179, Type S for loadbearing masonry, Type N for non-loadbearing masonry, based on Property specifications.

PART 3 - EXECUTION

3.1 Construction

.1 Do masonry mortar work in accordance with CSA A179.

PART 1 - GENERAL

1.1 References

.1 Canadian Standards Association (CSA)

- .1 CSA A23.1 Concrete Materials and Methods of Concrete Construction.
- .2 CSA A370 Connectors for Masonry.
- .3 CSA A371 Masonry Construction for Buildings.
- .4 CSA G30.18 Billet-Steel Bars for Concrete Reinforcement.
- .5 CSA S304.1 Masonry Design for Buildings.
- .6 CSA W186 Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .7 CSA A179 Mortar and Grout For Unit Masonry.

.2 National Building Code (NBC)

PART 2 - PRODUCTS

2.1 Materials

.1 Bar reinforcement: to CSA A371 and CSA G30.18, Grade 400.

.2 Wire reinforcement: to CSA A371 and CSA G30.14, truss type. Prefabricated corners and intersections.

.3 Connectors: to CSA A370 and CSA S304.

.4 Corrosion protection: to CSA S304, galvanized to CSA S304 and CSA A370.

2.2 Fabrication

.1 Fabricate reinforcing in accordance with CSA A23.1 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Ontario.

.2 Fabricate connectors in accordance with CSA A370.

.3 Obtain Contract Administrator's approval for locations of reinforcement splices other than shown on placing drawings.

.4 Upon approval of Contract Administrator, weld reinforcement in accordance with CSA W186.

.5 Ship reinforcement and connectors, clearly identified in accordance with drawings.

PART 3 - EXECUTION

3.1 General

.1 Supply and install masonry connectors and reinforcement in accordance with CSA A370, CSA A371, CSA A23.1 and CSA S304.1 unless indicated otherwise.

.2 Prior to placing concrete, notify Contract Administrator for review of placement of reinforcement and connectors.

3.2 Bonding and Tying

.1 Bond walls of two or more wythes using metal connectors in accordance with CSA S304, CSA A371 and as indicated.

.2 Tie masonry veneer to backing in accordance with NBC, CSA S304, CSA A371 and as indicated.

3.3 Reinforced Lintels and Bond Beams

.1 Reinforce masonry lintels and bond beams as indicated. Place and grout reinforcement in accordance with CSA S304, CSA-A371, and CSA-A179.

3.4 Grouting

.1 Grout masonry in accordance with CSA S304, CSA-A371, and CSA-A179 and as indicated.

3.5 Anchors

.1 Supply and install metal anchors as indicated.

3.6 Lateral Support and Anchorage

.1 Supply and install lateral support and anchorage in accordance with CSA S304.1 and as indicated.

3.7 Field Bending

.1 Do not field bend reinforcement and connectors except where indicated or authorized by Contract Administrator.

.2 When field bending is authorized, bend without heat, applying a slow and steady pressure.

.3 Replace bars and connectors that develop cracks or splits.

3.8 Field Touch-up

.1 Touch up damaged and cut ends of galvanized reinforcement steel and connectors with compatible finish to provide continuous coating.

PART 1 - GENERAL

1.1 References

.1 American Society for Testing and Materials (ASTM)

.1 ASTM A 653/ A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 Canadian Standards Association (CSA)

.1 CSA A371, Masonry Construction for Buildings.

PART 2 - PRODUCTS

2.1 Materials

.1 Control joint fillers and joint sealants: as specified in Section 07900 - Joint Sealants.

.2 Masonry flashing: self-adhesive modified bitumen sheet membrane: minimum 1.0 mm thick. Use primers recommended by manufacturer. Acceptable products: Bakelite Blueskin SA, WR Grace Perm-A-Barrier, Soprema Colphene 1500.

.3 Metal drip edge: brake formed of 0.6 mm galvanized sheet steel commercial quality to ASTM A653 with Z275 designation zinc coating. Prefinished with Stelcolor 8000 Series coil coating. Colour selected by Contract Administrator. Form drip edge to extend 100 mm under base course, with 6 - 9 mm formed drip at front edge.

PART 3 - EXECUTION

3.1 Installation

.1 Install continuous control joint fillers in control joints at locations indicated.

.2 Install weep hole vents in vertical joints immediately over flashings in masonry veneer wall construction, at maximum horizontal spacing of 600 mm on centre. Leave out the bottom 50 mm of mortar from vertical joints. Keep weep holes free from mortar droppings and debris to allow free air movement and positive drainage of moisture.

3.2 Construction

.1 Building flashings in masonry in accordance with CSA A371 and as follows.

.1 Install flashings under exterior masonry bearing on foundation walls, slabs, shelf angles, angle lintels over openings and elsewhere indicated. Install flashings under weep hole courses.

.2 In cavity walls and veneered walls carry flashings from front edge of masonry, under outer wythe, then up backing not less than 150 mm, bond to backup wall and seal top edge water tight.

.3 Lap joints 150 mm and seal.

.2 In addition to masonry flashing provide metal drip edge at angle lintels over openings. Align drip edge straight and even. Overlap joints minimum 20 mm.

PART 1 - GENERAL

1.1 References

.1 Canadian Standards Association (CSA)

.1 CSA A82.1, Burned Clay Brick (Solid Masonry Units Made From Clay or Shale).

PART 2 - PRODUCTS

2.1 Manufactured Units

.1 Face Brick: burned clay brick: to CSA A82.1, Type FBS, Grade SW, Size 90 x 90 x 390 mm. Provide units with finished ends where exposed in final assembly.

.1 Acceptable material: IXL 116 Montego Smooth.

PART 3 - EXECUTION

3.1 Installation

.1 Bond: running stretcher.

.2 Coursing height: 200 mm for two bricks and two joints.

.3 Jointing: concave where exposed or where paint or similar thin finish coating is specified.

.4 Mixing and blending: mix units within each pallet and with other pallets to ensure uniform blend of colour and texture.

.5 Clean unglazed clay masonry as work progresses.

3.2 Cleaning

.1 Clean unglazed clay masonry: 10 m^2 area of wall designated by Contract Administrator as directed 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 published by Brick Institute of America.

PART 1 - GENERAL

1.1 References

.1 Canadian Standards Association (CSA)

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

PART 2 - PRODUCTS

2.1 Materials

.1 Standard concrete masonry units: to CSA A165 Series (CSA A165.1).

.1 Classification: H/15/A /M.

.2 Size: modular

.3 Special shapes: provide square units for exposed corners. Provide purpose made shapes for lintels and bond beams. Provide additional special shapes as indicated.

PART 3 - EXECUTION

3.1 Installation

.1 Concrete block units.

.1 Bond: running stretcher.

.2 Coursing height: 200 mm for one block and one joint.

.3 Jointing: concave where exposed or where paint or other finish coating is specified.

.2 Concrete block lintels.

.1 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.

.2 End bearing: not less than 200 mm.

3.2 Cleaning

.1 Standard block: 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.

PART 1 - GENERAL

1.1 References

.1 American Society for Testing and Materials (ASTM)

.1 ASTM A307 - Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.181 - Ready-Mixed, Organic Zinc-Rich Coating.

.3 Canadian Standards Association (CSA)

.1 CAN/CSA-G40.20/G40.21 - General Requirements for Rolled or Welded Structural Quality Steel.

.2 CAN/CSA-G164 - Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CSA W59 - Welded Steel Construction (Metal Arc Welding).

1.2 Shop Drawings

.1 Submit six copies of shop drawings to Contract Administrator. Indicate materials, core thickness, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and accessories. Indicate field measurements on shop drawings.

PART 2 - PRODUCTS

2.1 Materials

.1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 300W.

.2 Welding materials: to CSA W59.

.3 Bolts and anchor bolts: to ASTM A307.

2.2 Fabrication

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Where possible, fit work and shop assemble, ready for erection.

.3 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

.4 Provide exposed fastenings of the same material and finish as the metal to which applied unless indicated otherwise.

.5 Supply all items complete with all anchors and fastenings.

2.3 Finishes

.1 Galvanizing: hot dipped galvanizing with minimum zinc coating 600 g/m^2 to CAN/CSA-G164.

.2 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.

2.4 Angle Lintels

.1 Steel angles: sizes indicated for openings. Provide minimum 150 mm bearing at ends. Galvanized finish.

2.5 Corner Guards

.1 Steel angle 55 x 55 x 3 x 2000 mm high, predrilled with countersunk holes at 400 mm on centre for attachment with flat headed screws. Galvanized finish.

2.6 Existing Guard Rail

.1 Remove existing guard rail inside pump house. Salvage and store for reinstallation.

2.7 Lift Gate Cover

.1 New aluminum cover to replace wood plank cover on lift gate device (exterior).

.2 Cover of 6 mm thick aluminum checkerplate welded to 32 x 32 mm aluminum tube frame and stiffeners. Fabricate in two pieces allowing for removal.

.3 Provide two hold down straps as indicated of 6 mm thick aluminum checkerplate.

2.8 Pit Cover and Frame

.1 New aluminum cover to replace plywood cover over pit on inside of building.

.2 Cover of 6 mm thick aluminum checkerplate with aluminum angle stiffeners welded to underside. Construct cover in two pieces to sizes and profiles indicated. Provide drop handles of 6 mm diameter aluminum rods for each piece. Provide each cover with aluminum stay bar to hold covers open at least 90º angle.

.3 Hinges: weld on hinges of 6063 aluminum with half-round heads and welding nose foe easy weld on installation. Intercon Weld On Hinges, 3-3/16” long.

.4 Frame: aluminum angles of sizes indicated.

PART 3 - EXECUTION

3.1 Erection

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork, square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Contract Administrator such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Make field connections with bolts to CAN/CSA-S16.1, or weld.

.5 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

.6 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

.7 Touch-up galvanized surfaces with zinc primer where burned by field welding.

.8 Isolate aluminum from concrete and dissimilar metals with isolation coating.

3.2 Existing Guard Rail

.1 Reinstall guard rail to original location. Provide new fasteners as may be required.

3.3 Lift Gate Cover

.1 Remove existing wood plank cover from lift gate device pit.

.2 Install aluminum cover over pit without anchors or fasteners, allowing for future removal. Install aluminum hold down straps with aluminum bolts and expansion anchors set into concrete pit.

3.4 Corner Guards

.1 Install corner guards with 1” long flat head screws into solid backing.

3.5 Pit Cover and Frame

.1 Install aluminum angle frame around opening, setting into concrete with aluminum bolts and expansion anchors.

PART 1 - GENERAL

1.1 References

.1 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-11.3, Hardboard.

.2 Canadian Standards Association (CSA)
- .1 CSA B111 - Wire Nails, spikes and Staples.
- .2 CSA O80 - Wood Preservation.
- .3 CAN/CSA O141 - Softwood Lumber.
- .4 CSA O151 - Canadian Softwood Plywood.

.3 National Lumber Grades Authority (NLGA)
- .1 Standard Grading Rules for Canadian Lumber.

1.2 Quality Assurance

.1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

PART 2 - PRODUCTS

2.1 Materials

.1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% (S-dry) or less in accordance with CAN/CSA-O141, Spruce, Pine or Fir NLGA No. 2 or better grade. Glued end-jointed (finger-jointed) lumber is not acceptable

.2 Canadian softwood plywood (CSP): to CSA 0151, standard construction, square edge. Standard sheathing grade.

.3 Hardboard paneling: to CAN/CGSB-11.3, smooth, tempered, 1219 x 2438 x 3 mm thick panels.

.4 Nails, spikes and staples: to CSA B111 and NBC requirements. Galvanized.

.5 Bolts: steel, of sizes required, complete with nuts and washers. Galvanized.

.6 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead plugs, recommended for purpose by manufacturer.

.7 Surface-applied wood preservative: copper napthenate or pentachlorophenol base water repellent preservative. Use clear for materials exposed in final assembly, coloured elsewhere.

2.2 Pressure Preservative Treated Wood

.1 Provide lumber materials pressure preservative treated for:
- .1 Rough bucks at openings.
- .2 Wood strapping.
- .3 Lumber used on exterior of building, above or below grade.

.2 Treat material to CAN/CSA-O80 using Type-C (copper chromate arsenate) preservative to obtain a minimum net retention level of 6.4 kg/m^3) of wood.

.3 Materials shall be dried after treatment to a moisture content of 19% or less.

.4 Each piece of treated material shall be identified with a tag or ink mark bearing the Canadian Wood Preservers' Bureau quality mark.

.5 Apply surface applied wood preservative to heartwood exposed from ripping, end cutting or boring.

PART 3 - EXECUTION

3.1 Installation

.1 Comply with requirements of NBC, Part 9 supplemented by following paragraphs.

.2 Install members true to line, levels and elevations. Space uniformly.

.3 Construct continuous members from pieces of longest practical length.

.4 Install spanning members with "crown-edge" up.

.5 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.6 Countersink bolts where necessary to provide clearance for other work.

.7 Use fastenings of following types, except where specific type is indicated or specified:

.1 To hollow masonry, plaster and panel surfaces use toggle bolt.

.2 To solid masonry and concrete use expansion shield with lag screw, lead plug with wood screw.

.3 To structural steel use bolts through drilled hole, or welded stud-bolts or power driven self-drilling screws, or welded stud-bolts or explosive actuated stud-bolts.

.8 Install furring and blocking as required to space-out and support surface wall and ceiling finishes, facings, fascia, soffit, siding and other work as indicated. Align and plumb faces of furring and blocking to tolerance of 1:600.

.9 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work. Except where indicated otherwise, use material at least 38 mm thick.

.10 Install fascia backing, nailers and other wood supports as required and secure using galvanized fasteners.

.11 Install hardboard paneling with finishing nails.

1.1 References

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-37.5 - Cement, Plastic, Cutback Asphalt.

.2 CGSB 37-GP-6 - Asphalt, Cutback, Unfilled, for Dampproofing.

.3 CGSB 37-GP-11 - Application of Cutback Asphalt Plastic Cement.

.4 CGSB 37-GP-12 - Application of Unfilled Cutback Asphalt for Dampproofing.

1.2 Project/Site Environmental Requirements

.1 Temperature, relative humidity, moisture content.

.1 Apply dampproofing materials only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

.2 Do not apply dampproofing in wet weather.

.2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of asphalt, sealing compounds, primers and caulking materials.

PART 2 - PRODUCTS

2.1 Materials

.1 Asphalt: CGSB 37-GP-6M .

.2 Sealing compound: plastic cutback asphalt cement to CAN/CGSB-37.5.

PART 3 - EXECUTION

3.1 Application

.1 Protect surfaces that are not to be dampproofed from soiling, spillage, over spray or other causes in connection with the work of this section.

.2 Make good damage caused by the dampproofing application at no additional cost to the Contract.

.3 Keep hot asphalt:

.1 below its flash point.

.2 at or below its final blowing temperature.

.3 within its equiviscous temperature range at place of application.

.4 Before applying dampproofing:

.1 Ensure concrete surfaces are fully cured and dry, clean and free from scale, frost, dirt, dust, oil, grease and other foreign matter.

.2 Seal exterior joints and around penetrations through dampproofing with sealing compound.

.5 Do dampproofing in accordance with CGSB 37-GP-12. Apply as continuous uniform coating at application rate of approximately 1 litre/1.5 – 2.0 m^2 per coat.

.6 Do sealing work in accordance with CGSB 37-GP-11 except where specified otherwise.

PART 1 - GENERAL

1.1 Related Work

.1 Masonry ties, Section 04080.

.2 Air barrier membrane, Section 07270.

1.2 References

.1 Canadian General Standards Board (CGSB)

.1 CGSB 71-GP-24 - Adhesive, Flexible, for Bonding Cellular Polystyrene Insulation.

.2 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S701 - Thermal Insulation, Polystrene, Boards and Pipe Coverings.

PART 2 - PRODUCTS

2.1 Materials

.1 Board insulation – exterior walls: rigid cellular polystyrene: to CAN/ULC-S701, type 3, compressive strength 170 kPa, thickness indicated, shiplapped edges.

.2 Board insulation – roof deck: rigid cellular polystyrene to CAN/ULC S701, Type 2, compressive strength 110 kPa, thickness indicated, square edges, board size to suit girt spacing.

.3 Adhesive (for polystyrene): to CGSB 71-GP-24, Bakor 230-21 or equal.

PART 3 - EXECUTION

3.1 Examination

.1 Examine substrates and immediately inform Contract Administrator in writing of defects.

.2 Prior to commencement of work ensure substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust, debris, oil, grease, or foreign materials.

3.2 Installation: General

.1 Install insulation after building substrate materials are cured and dry.

.2 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.3 Coordinate installation with work of other trades.

.4 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.

.5 Cut and trim insulation neatly to fit spaces.

.6 Install insulation boards in parallel rows. Butt joints tightly, offset vertical joints.

.7 Offset both vertical and horizontal joints in multiple layer applications.

.8 Interlock boards at corners.

.9 Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.10 Do not enclose insulation until installation has been reviewed by Contract Administrator.

3.3 Exterior Wall Insulation

.1 Install insulation boards behind masonry veneer using plastic insulation clips over masonry ties to hold insulation tight to backup walls. Install boards horizontally between masonry ties, with horizontal joints centred on ties.

.2 Install insulation boards behind metal wall panels, soffits and metal flashings using insulation adhesive. Install boards between metal furring.

.1 Clean and prepare substrate and apply adhesives in accordance with manufacturer's instructions, using proper trowels and tools.

.2 Bead method: apply adhesive in 12 mm diameter beads at 150 mm on centre serpentine pattern.

.3 Notched trowel method: apply adhesive using notched trowel having 4.5 mm notches. Spread adhesive full coverage of insulation board.

.4 Press insulation boards onto substrate with firm hand pressure to ensure full bond.

3.4 Roofing Insulation

.1 Install insulation boards between metal subgirts, in two layers perpendicular to each other. Offset joints in each layer.

.2 Place insulation boards in firm contact with one another and with sub-girts.

.3 Provide uniform, uninterrupted layer over entire roof deck between sub-girts.

PART 1 - GENERAL

1.1 References

.1 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S702 - Standard for Mineral Fibre Thermal Insulation for Building.

PART 2 - PRODUCTS

2.1 Materials

.1 Batt and blanket mineral fibre insulation: to CAN/ULC-S702, Type 1 – no membrane. Thickness indicated.

PART 3 - EXECUTION

3.1 Installation

.1 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.3 Fill all voids completely. Cut and trim insulation neatly to fill voids; leave no gaps.

.4 Do not compress insulation to fit into spaces.

.5 Do not enclose insulation until installation has been reviewed by Consultant.

PART 1 - GENERAL

1.1 References

.1 Underwriters Laboratories of Canada, (ULC)

.1 CAN/ULC-S705.1 - Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.

.2 CAN/ULC-S705.2 - Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Installer's Responsibilities – Specification.

1.2 Protection

.1 Ventilate area to receive insulation by introducing fresh air and exhausting air continuously during and 24 hours after application to maintain non-toxic, unpolluted, safe working conditions.

.2 Provide temporary enclosures to prevent spray and noxious vapours from contaminating air beyond application area.

.3 Protect workers as recommended by insulation manufacturer.

.4 Protect adjacent surfaces and equipment from damage by over spray, fall-out, and dusting of insulation materials.

.5 Dispose of waste foam daily in location designated by Contract Administrator and decontaminate empty drums in accordance with foam manufacturer's instructions.

1.3 Environmental Requirements

.1 Apply insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

PART 2 - PRODUCTS

2.1 Materials

.1 Insulation: spray polyurethane to CAN/ULC-S705.1.

.2 Primers: in accordance with manufacturer’s recommendations for surface conditions.

PART 3 - EXECUTION

3.1 Application

.1 Apply insulation to clean surfaces in accordance with CAN/ULC-S705.2 and manufacturer's printed instructions.

.2 Use primer where recommended by manufacturer.

.3 Apply sprayed foam insulation in thickness to provide total thermal resistance value of minimum R20.

PART 1 - GENERAL

1.1 Quality Assurance

.1 Coordinate installation of air barrier materials with work of other trades to minimize exposure of membrane to elements or damage, and to

.2 Overlap and seal air barrier with air and vapour barrier membranes installed by other trades to ensure continuity of building air/vapour barrier system over entire building.

1.2 Environmental Conditions

.1 Apply primers and membranes in dry weather and only when air and surface temperature are within manufacturer's recommended limits.

.2 For applications below recommended temperature consult manufacturer and do not proceed until approved by manufacturer or his representative.

PART 2 - PRODUCTS

2.1 Materials

.1 Self-adhesive air barrier membrane: modified bitumen on high-density polyethylene film, with silicone release paper on adhesive side, minimum 1.0 mm thick.

.1 Acceptable material – exterior walls: Soprema Sopraseal Stick 1100, Bakor Blueskin SA, WR Grace Perm-A-Barrier, IKO Aquabarrier AVB.

.2 Acceptable material – roof deck: IKO Armour Gard Ice and Water Protector, W.R. Grace Ice and Water Shield; Domtar Eaveshield; Nordshield Water Stopper; Bakor Eave Guard; BPCO ProGard; EMCO Gripgard.

.2 Primers: as recommended by manufacturer and suitable for substrate.

.3 Mastics and sealants: as recommended by manufacturer, suitable for substrate.

.4 Flashing and stripping membranes: as recommended by air barrier membrane manufacturer.

PART 3 - EXECUTION

3.1 Examination

.1 Verify that surfaces and conditions are cured, dry and acceptable for installation of air barrier membranes.

.2 Notify Contract Administrator in writing of unsuitable surfaces or working conditions and await remedial measures. Commencement of work shall imply acceptance of surfaces and working conditions.

3.2 Preparation

.1 Clean substrates of all snow, ice, loose particles, oil, grease, dirt, curing compounds, or other foreign matter detrimental to installation and bonding of air barrier membrane.

.2 Repair defects in concrete and masonry surfaces such as mortar droppings spalled or poorly consolidated areas, honeycombing. Patch rough areas with a well-adhered parge coat to provide smooth surface. Allow to fully cure and dry.

.3 Remove sharp protrusions, form lines and rough edges.

3.3 Priming

.1 Prime all surfaces and substrates to receive self-adhesive air barrier membranes.

.2 Apply primers in accordance with manufacturer's instructions, at recommended rate of application.

.3 Do not apply to frozen or damp surfaces. Apply in dry weather when air and surface temperatures are within manufacturer's recommended limits.

.4 Avoid pooling of primer and allow to cure until tack-free.

.5 Prime only an area that can be covered in a working day. Re-prime areas which over dry or become soiled or dusty.

3.4 Workmanship

.1 Install materials in accordance with manufacturer's instructions using only materials approved for use with their products.

.2 Apply with good construction practice to maintain continuity of air barrier membrane over building elements.

.3 Do not commence work until all other work penetrating substrates has been completed, and reviewed by Contract Administrator.

.4 Use largest lengths possible to minimize joints. Overlap side and end laps minimum 50 mm. Stagger end laps minimum 300 mm in adjacent rows.

.5 Locate end joints minimum 300 mm from internal and external corners.

.6 Masonry cavity walls:

.1 Install sheets horizontally between masonry ties penetrating membrane.

.2 Overlap horizontal joints minimum 50 mm. Slit membrane at each tie and seal making air tight.

.7 Roof deck:

.1 Install sheets starting at low point parallel to roof eave. Overlap succeeding sheets minimum 50 mm to shed water.

.8 Place membrane in position without stretching, taking care to avoid trapped air, creases or fishmouths. As installation progresses roll membrane with hand roller to ensure full contact and bond to substrates.

.9 Flash and seal around all penetrations and protrusions such as pipes, conduits, steel angle supports, masonry ties, anchors. Cut and fit membrane neatly and snug fitting, leave no gaps. Seal and make airtight.

.10 Seal with mastic all difficult detail areas that do not allow easy installation of membrane. Make airtight.

.11 At rough openings cut air barrier membrane to form opening. Return membrane into opening and seal to rough bucks. Reinforce corners with additional piece of membrane cut and formed to seal corners.

.12 Overlap and seal air barrier membrane to air and vapour barriers installed by other trades. Maintain continuity of building air/vapour barrier system over entire building.

3.5 Installation Self-Adhesive Air Barrier

.1 Apply membrane in accordance with manufacturer's instructions.

.2 Roll out sheets and press firmly to substrate. As installation progresses roll with hand roller to ensure positive bond.

.3 At all internal corners, both vertical and horizontal, provide a fillet strip formed of liquid mastic. Do not use fibre or wood cants.

.4 Flash and seal around all penetrations and protrusions such as pipes, conduits, steel angle supports, masonry ties and anchors. Cut and fit membrane neatly and snug fitting, leave no gaps. Seal around all protrusions with mastic sealant. Make airtight.

3.6 Patching and Repairing

.1 Inspect membrane for defects and poor workmanship before covering and make corrections immediately.

.2 Ensure full contact and bond to substrates. Patch and repair loose or poorly bonded areas.

.3 Patch and repair misaligned or inadequately lapped seams, tears, punctures or fishmouths to the satisfaction of the Contract Administrator.

.4 Patch cuts, tears, and punctures by bonding an additional layer of air barrier membrane over damaged area. Patch shall extending minimum 150 mm in all directions from fault. Seal and make airtight.

PART 1 - GENERAL

1.1 References

.1 American Society for Testing and Materials (ASTM)

- .1 ASTM A 653/A 653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM A 792/A 792M, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- .3 ASTM C 1177, Specification for Glass Mat Gypsum Substrate Used as Sheathing.

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-51.32, Sheathing, Membrane, Breather Type.

.3 Underwriters Laboratory Canada (ULC).

- .1 CAN/ULC-S701, Thermal Insulation, Polystrene, Boards and Pipe Coverings.

.4 National Building Code (NBC)

1.2 Design Criteria

.1 Design metal panel roof and wall systems to provide for thermal movement of component materials caused by ambient temperature range of -35°C to 75°C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.

.2 Include expansion joints to accommodate movement in panel systems and between panel systems and building structure, caused by structural movements, without permanent distortion, damage to infills, racking of joints, breakage of seals, or water penetration.

.3 Design members to withstand dead load, snow loads and build-up, wind loads including uplift, calculated in accordance with NBC and applicable local regulations, to maximum allowable deflection of 1/180th of span.

.4 Provide for positive drainage of condensation occurring behind panels and water entering at joints, to exterior face of panels.

1.3 Shop Drawings

.1 Submit six copies of shop drawings to Contract Administrator.

.2 Indicate sizes and dimensions of components, panel types, materials and finish, sub-framing components, anchor details, compliance with design criteria and requirements of related work. Indicate details and flashings at wall and roof openings.

1.4 Samples

.1 Submit colour samples of prefinished steel sheet on actual base metal in specified finishes and colours to Contract Administrator.

PART 2 - PRODUCTS

2.1 Materials

.1 Zinc coated steel sheet: commercial quality to ASTM A 653/A 653M, with Z275 designation zinc coating, Grade A or B.

.2 Aluminum-zinc alloy coated steel sheet: to ASTM A 792/A 792M, commercial quality, with AZ150 coating, Grade A or B, regular spangle surface, chemically treated for unpainted finish and not chemically treated for paint finish.

.3 Prefinished steel sheet: zinc coated or aluminum-zinc alloy coated steel sheet, prefinished with factory applied silicone modified polyester Stelco Stelcolor 8000 Series Coil Coating. Colour selected by Contract Administrator.

.4 Roof covering: glass mat faced gypsum board to ASTM C 1177, thickness indicated.

.1 Acceptable material: G-P Gypsum DensDeck Roof Guard.

.5 Roof insulation: as specified in Section 07212 – Board Insulation.

.6 Air barrier membrane: as specified in Section 07270 – Air Barriers

.7 Sheathing paper: to CAN/CGSB-51.32, spunbound olefin type. Tyvek Commercial Wrap.

.8 Fasteners:

.1 Deck covering to steel deck: No. 10 flat head, self tapping, Type A or AB, zinc plated screws to CSA B35.3. Drywall screws not acceptable.

.2 Sub-girts to steel deck, sub-girt to sub-girt, and roof clips to roof deck: type, size and spacing as recommended by roof system manufacturer, self-drilling, corrosion-resistant fasteners.

.3 Roof system components: stainless steel exposed fasteners, designed to accommodate full thermal expansion and contraction of materials, and as recommended by panel system manufacturer, complete with neoprene washer under head of fastener. Head colour to match materials being fastened.

.9 Sealants: as specified in Section 07900 – Joint Sealants.

.10 Closures and gaskets: closed cell polyurethane foam, adhesive on two sides, release paper protected.

.11 Touch-up paint: as recommended by panel manufacturer.

.12 Isolation coating: alkali resistant, bituminous paint or epoxy resin solution.

2.2 Components

.1 Wall Panels:

.1 Factory preformed of aluminum-zinc alloy coated metal, 22 mm deep corrugated profile at 68 mm on centre, 878 mm wide sheets, overlapping edges,

.2 Base metal thickness: 0.79 mm (22 gauge)

.3 Finish: unpainted– Galvalume.

.4 Acceptable material: VicWest Steel 2-2/3” x 7/8”, Flynn Roofing P-11M, Behlen Industries 7/8” x 2-2/3” Corrugated, Agway Metal 7/8” Corrugated, Mercury Metals Mercury Corrugated”.

.2 Roof Panels:

.1 Factory preformed of aluminum-zinc alloy or zinc coated metal, 38 mm deep ribbed profile, 914 mm wide sheet. Curved to radii indicate with matching straight sections.

.2 Base metal thickness: 0.79 mm (22 gauge).

.3 Finish: prefinished.

.4 Acceptable material: Canadian Metal Rolling Mills Curve Clad.

.3 Exposed joint (perpendicular to profile): ends of siding sheet shop cut clean and square, backed with tight fitting filler lapping back of joint, exposed components colour matched to siding.

.4 Cap flashings, drip flashings, internal corner flashings, copings and closures for head, jamb, sill and corners, of same material, base metal thickness and finish as adjacent panels, brake formed to shape.

.5 Sub-girts and alignment bars: galvanized steel sheet to ASTM A 653/A 653M with Z275 zinc coating, profile to accept preformed panels with structural attachment to building frame. Base metal thickness as recommended by manufacturer to meet design requirements.

PART 3 - EXECUTION

3.1 Installation

.1 Protect metal surfaces in contact with concrete, masonry mortar, plaster or other cementitious surface with isolation coating.

.2 Mechanically fasten deck covering to steel deck with screws spaced 400 mm on centre each way. Place with long axis of each sheet transverse to steel deck ribs, with end joints staggered and fully supported on ribs.

.3 Install air barrier membranes in accordance with Section 07270 – Air Barriers.

.4 Install board insulation in accordance with Section 07212 – Board Insulation.

.5 Install sheathing paper between insulation and wall and roof panels. Overlap sheets to shed water. Overlap ends.

.6 Install roof and wall panel support systems and components using fasteners of type and size recommended by manufacturer to resist uplift forces and thermal expansion and contraction. Exposed fasteners head colour to match panels.

.7 Install components true to line and plane, free of dents.

.8 Provide alignment bars, brackets, clips, inserts, shims as required to securely and permanently fasten wall and roof systems to building structure.

.9 Install head, jamb and sill flashings, closures, and trims pieces as required for complete installation.

.10 Install wall panels over sill flashings, install cap flashings and ensure completed installation is continuously sealed at perimeter.

.11 Provide formed top closures, and flashing sealed against weather penetration, at ridges, changes in pitch, and vertical walls.

.12 Flash roof penetrations with material matching roof panels, and make watertight.

.13 Form seams in direction of water-flow and make watertight.

.14 Clean exposed exterior surfaces using solution of mild domestic detergent in warm water, applied with soft clean wiping cloths.

PART 1 - GENERAL

1.1 Design Requirements

.1 Roof hatches to withstand snow load of 40 psf (195 kg/m^2) with maximum deflection of 1/150th of span, and wind uplift of 20 psf (97 kg/m^2), and temperature range of 80 °C without damage to unit or permanent deformation to seals.

1.2 Shop Drawings

.1 Submit six copies of shop drawings to Contract Administrator. Indicate size and description of components, materials, attachment devices, description of frame and finish, and construction details.

PART 2 - PRODUCTS

2.1 Roof Hatch

.1 Roof hatch: double leaf, pre-manufactured, custom sizes as indicated.

.2 Cover:

.1 11 gauge aluminum with a 3" beaded flange with formed reinforcing members.

.2 Cover insulated sandwich construction with 1” fibreglass insulation protected by metal liner of 18 gauge aluminum.

.3 Curbed Frame:

.1 Preformed metal curb, 11 gauge aluminum sheet, 12” high.

.2 Formed flange, 3½” wide, predrilled holes for securing to roof deck. integral metal cap flashing of the same gauge and material as the curb, fully welded at the corners.

.3 Insulated with rigid, high-density fiberboard, 1” thick on outside of curb.

.4 Lifting mechanisms:

.1 Compression spring operators enclosed in telescopic tubes. Inner tube telescoping inside upper tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly.

.2 The lower tube shall interlock with a flanged support shoe and welded to curb assembly.

.5 Hardware

.1 Hinges: heavy duty pintle type.

.2 Latch: spring latch with latch strike bolted to curb assembly. Interior turn handle. Exterior handle removable with threaded cover plug.

.3 Padlock lugs welded to cover and frame for locking from exterior only. Padlock by others.

.4 Cover shall automatically lock in the open position with a rigid hold open arm equipped with a vinyl grip handle to permit easy release for closing.

.5 Cover hardware bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.

.6 Finishes:

.1 Cover and frame: mill finish aluminum.

.2 Hardware: zinc plated and chromate sealed.

.3 Springs: electrocoated acrylic finish for corrosion resistance.

.4 Compression spring tubes: anti-corrosive composite material and all other hardware

2.2 Fabrication

.1 Fabricate components free of twists, bends, or visual distortion and insulated. Weld corners and joints. Ensure continuity of weather-tight seal. Design extrusions to collect and lead off condensation accumulated.

PART 3 - EXECUTION

3.1 Installation

.1 Erect components plumb, level and in proper alignment.

.2 Ensure continuity of building envelope air barrier and vapour retarder systems.

.3 Adjust and seal assembly with provision for expansion and contraction of components.

.4 Secure prefabricated curb assembly to structure.

.5 Isolate aluminum in contact with dissimilar materials with isolation coating.

.6 Secure and seal frame to curb.

PART 1 - GENERAL

1.1 References

.1 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-19.13, Sealing Compound, One-component, Elastomeric, Chemical Curing.

1.2 Environmental and Safety Requirements

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

PART 2 - PRODUCTS

2.1 Sealant Materials

.1 Urethanes, One Part, Self-Leveling.

.1 To CAN/CGSB-19.13, Type 1.

.2 Acceptable material: Sikaflex 1cSL, Bostik Chem-Calk 950.

.2 Urethanes, One Part, Non-Sag.

.1 To CAN/CGSB-19.13, Type 2.

.2 Acceptable products: Sikaflex 1a, Tremco DyMonic, Bostik Chem-Calk 900.

.3 Sealant colours: selected by Consultant from manufacturer’s standard colour selection.

.4 Foam backer rods: extruded polyethylene foam, compressible, oversized 30 to 50%.

.1 Acceptable material: Tremco Tundra Foam.

.5 Bond breaker tape: polyethylene bond breaker tape that will not bond to sealants.

.6 Expanding foam sealant: high-density open cell polyurethane foam, pre-compressed, impregnated with water-based, stablilized acrylic, self-adhesive. Secondary seal requiring primary seal of wet sealant.

.1 Acceptable material: Emseal Greyflex.

.7 Adhesives: type recommended by expanding foam sealant manufacturer.

.8 Primers: type recommended by sealant manufacturer, for appropriate sealant and corresponding substrate.

.9 Joint cleaner: non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

2.2 Sealant Selection

.1 Perimeters of exterior openings where frames meet exterior facade of building: Urethanes One Part, Non-Sag.

.2 Expansion and control joints in exterior surfaces of precast, architectural wall panels: Urethanes One Part, Non-Sag.

.3 Expansion and control joints in exterior surfaces of unit masonry walls: Urethanes One Part, Non-Sag.

.4 Coping joints and coping-to-facade joints: Sealant type: Urethanes One Part, Non-Sag.

.5 Cornice and wash (or horizontal surface joints): Sealant type: Urethanes One Part, Self-leveling.

.6 Exterior joints in horizontal wearing surfaces (as itemized): Sealant type: Urethanes One Part, Self-leveling.

.7 Perimeters of interior frames where frames meet interior finishes: Urethanes One Part, Non-Sag.

.8 Interior masonry vertical control joints (block-to-block, block-to-concrete, and intersecting masonry walls): Sealant type: Urethanes One Part, Non-Sag.

.9 Under thresholds at exterior doors. Sealant type: Urethanes, One Part, Non-Sag.

.10 As itemized in other sections.

PART 3 - EXECUTION

3.1 Protection

.1 Protect installed work of other trades from staining or contamination.

3.2 Preparation of Joint Surfaces

.1 Before commencing application of sealants test materials for indications of staining or poor adhesion.

.2 Ascertain that sealers and coatings applied to sealant substrates are compatible with sealant used and that full bond between the sealant and substrate is attained. Request samples of the sealed or coated substrate from their fabricators for testing of compatibility and bond, if necessary.

.3 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.4 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter that may impair work.

.5 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.6 Ensure joint surfaces are dry and frost free.

.7 Prepare surfaces in accordance with manufacturer's directions.

3.3 Priming

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 Backup Material

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install foam backer rod to achieve correct joint depth and shape, with approximately 30% compression.

3.5 Expanding Foam Sealants

.1 Install expanding foam sealants in accordance with manufacturer's instructions.

.2 Coordinate installation with work of other trades to ensure foam sealants are installed before building joints are covered.

.3 For expansion and control joints above grade in exterior walls install as secondary seal with wet caulking as primary seal.

.4 Where used as a secondary seal together with field applied wet caulking provide bond breaker tape or backer rod between foam sealant and caulking.

.5 Size preformed foam sealant to suit joint depth and width allowing for proper compression of the material.

.6 Use adhesives recommended by manufacturer, suitable for substrate and application.

.7 Install in longest possible lengths. Keep number of joints to a minimum. Join individual strips by means of scarfe joint, cut at approximately 30°.

3.6 Application

.1 Sealant:

.1 Apply sealant in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing:

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

.3 Cleanup:

.1 Clean adjacent surfaces immediately and leave work neat and clean.

.2 Remove excess and droppings, using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

PART 1 - GENERAL

1.1 References

.1 American Society for Testing and Materials (ASTM).

.1 ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.181 - Ready-Mixed Organic Zinc-Rich Coating.

.2 CGSB 41-GP-19 - Rigid Vinyl Extrusions for Windows and Doors.

.3 Canadian Standards Association (CSA).

.1 CSA W59 - Welded Steel Construction (Metal Arc Welding).

.4 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA):

.1 CSDFMA Specifications for Commercial Steel Doors and Frames.

.2 CSDFMA Recommended Selection and Usage Guide for Commercial Steel Doors.

1.2 Shop Drawings

.1 Submit six copies of shop drawings to Contract Administrator. Indicate each type door and frame, materials, core thickness, mortises, reinforcements, arrangement of hardware, location and methods of anchors, exposed fastenings and reinforcing, and finishes. Indicate details of jamb and head, frame types.

1.3 Delivery, Storage and Handling

.1 Store frames in dry location, above ground to prevent corrosion. Protect by suitable means until installation. Brace and stack to prevent wracking, bending, twisting and other damage. Replace or make good materials that become damaged or defective as directed by Contract Administrator.

PART 2 - PRODUCTS

2.1 Materials

.1 Hot dipped galvanized steel sheet: to ASTM A 653 coating designation Z275 (G90).

.2 Minimum base steel thicknesses for components in accordance with CSDFMA Table 1, except as follows:

.1 Doors: 1.2 mm (18 gauge).

.2 Frames: 1.6 mm (16 gauge).

.3 Door core materials: polyurethane core bonded to face sheets with heat resistant, epoxy resin based, low viscosity, contact cement.

.4 Primer: to CAN/CGSB-1.181.

.5 Door silencers: single stud rubber/neoprene type.

.6 Top and bottom caps: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19M

.7 Sealant (caulking): as specified in Section 07900 – Joint Sealants.

.8 Foam sealant: spray-applied polyurethane foam sealant, CFC and urea formaldehyde free, non-shrinking after cure. Ener-Foam, Insta-Seal or equal.

.9 Metallic paste filler: to manufacturer's standard.

2.2 Door Hardware

.1 Hardware Items

.1	Hinges	CB1960 114 x 102 NRP	630	Stanley
.2	Exist Device	2000 Series x 207	626	Yale
.3	Deadbolt	B660L	626	Schlage
.4	Weatherstrip	W50		Crowder
.5	Sweep seals	W13S		Crowder
.6	Threshold	CT10		Crowder
.7	Door stop/holder	100H Series	630	Glynn Johnson

.2 Provide deadbolt and exit device with Medeco cylinder keyed to City of Winnipeg requirements. Owner will provide lock number before keying.

.3 Provide keys in triplicate for each lock.

2.3 Frames Fabrication

.1 Fabricate frames in accordance with CSDFMA specifications, welded, thermally broken type construction.

.2 Blank, mortise, reinforce, drill and tap frames and reinforcements to receive hardware using templates provided by door hardware supplier. Reinforce internally for surface mounted hardware.

.3 Weld in top hinge reinforcement with 20 mm leg to hinge reinforcement, 25 mm leg to frame. Reinforce head of frames wider than 1200 mm.

.4 Protect mortised cutouts with steel guard boxes for frames installed in masonry and concrete walls.

.5 Prepare frame for door silencers.

.6 Welding in accordance with CSA W59. Accurately mitre or mechanically joint frame product and securely weld on inside of profile. Spot welding not acceptable.

.7 Grind welded joints and corners to a flat plane, fill with metallic paste and sane to uniform smooth finish.

.8 Securely attach floor anchors to inside of each jamb profile.

.9 Weld in two temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.4 Frame Anchorage

.1 Provide appropriate anchorage to floor and wall construction.

.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.3 Provide two anchors for rebate opening heights up to 1520 mm and one additional anchor for each additional 760 mm of height or fraction thereof.

2.5 Door Fabrication

.1 Doors: swing type, flush, steel stiffened, insulated core construction.

.2 Fabricate doors with longitudinal edges welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

.3 Blank, reinforce, drill doors and tap for mortised, templated hardware. Reinforce doors for surface mounted hardware.

.4 Reinforce doors with vertical stiffeners, securely laminated to each face sheet at 150 mm on centre maximum. Fill voids between stiffeners with polyurethane core.

2.6 Shop Priming

.1 Provide touch-up primer at areas where zinc coating has been removed during fabrication or installation.

.2 Apply in factory one coat of zinc-rich primer CAN/CGSB-1.181 to all exposed surfaces. Properly pre-treat and prepare surfaces before application of primer to ensure good primer adhesion.

PART 3 - EXECUTION

3.1 Installation

.1 Install doors and frames to CSDFMA Installation Guide.

.2 Set frames plumb, square, level and at correct elevation. Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Install doors and hardware in accordance with hardware templates and manufacturer's instructions. Adjust operable parts for correct function.

.6 Touch up with primer finishes damaged during installation.

3.2 Caulking and Sealing

.1 Fill head and jamb frame sections with spray foam sealant. Fill shim space around perimeter of frames with spray foam sealant.

.2 Seal joint between frames and adjacent construction with sealant (caulking). Apply sealant around full perimeter of frames, on both sides of opening. Provide foam backer rod or bond breaker tape behind sealant. Apply sealants in accordance with Section 07900 – Joint Sealants.

PART 1 - GENERAL

1.1 Shop Drawings

.1 Submit six copies of shop drawings to Contract Administrator. Indicate sizes and locations of each type of access panel and door, rough openings, materials, finishes, accessories, installation details and relationship to adjacent construction.

PART 2 - PRODUCTS

2.1 Materials

.1 Aluminum extrusions: Aluminum Association alloy AA6063-T5/T6 anodizing quality.

.2 Sheet aluminum: Aluminum Association alloy AA1100-H14 or AA5005-H32/H34 anodizing quality.

.3 Isolation coating: alkali resistant bituminous paint.

2.2 Wall Access Panels –Insulated.

.1 Standard of acceptance: Nystrom XT-Exterior.

.2 Access doors from other manufacturers meeting or exceeding specifications are acceptable.

.3 Door panels: 0.060” aluminum, sandwich type construction, insulated with 50 mm thick fiberglass insulated core.

.4 Frame: extruded aluminum of configuration to suit material application, nominal 32 mm exterior flange.

.5 Hinge: zinc plated continuous piano hinge.

.6 Latch: dual acting handles both sides.

.7 Gasket: extruded santoprene.

PART 3 - PRODUCTS

3.1 Installation

.1 Install access panels in accordance with reviewed shop drawings and manufacturer's instructions.

.2 Coordinate with other trades for rough openings, perimeter framing and blocking.

.3 Isolate aluminum from following components, by means of isolation coating:

- .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
- .2 Concrete, mortar and masonry.
- .3 Wood.

.4 Adjust operating components to ensure smooth, trouble-free operation.

PART 1 - GENERAL

1.1 Design Criteria

.1 Design and install linear metal soffit to resist wind up-lift forces.

1.2 Shop Drawings

.1 Submit six copies of shop drawings to Contract Administrator. Indicate manufacturer, beam sizes and profiles, accessories, materials and finishes.

1.3 Samples

.1 Submit colour samples to Contract Administrator of manufacturer's complete colour range for colour selection by Contract Administrator.

PART 2 - PRODUCTS

.1 Basic materials:

.1 Aluminum sheet, Aluminum Association Alloy AA1100.

.2 Linear strips: 30 mm deep channel shaped strips of minimum 0.056 mm thick, aluminum sheet, to suit 100 mm module. Edge square.

.1 Snapped on, and securely retained on carriers without separate fasteners.

.2 Face plain.

.3 Space between strips to be closed with recessed matching coloured inserts perforated with 1 mm diameter holes over approximately 20% of surface area.

.4 Finish: baked enamel.

.3 Carrier: manufacturer's standard exterior carrier with integral clips for snap-on installation of linear strips to 100 mm module, fabricated from aluminum with black baked enamel finish.

.4 Edge trim and seal: manufacturer's standard wall moulding colour to match strips.

.5 Accessories: clips, end closers, side closers as recommended by system manufacturer, colour to match strips.

2.2 Finishes

.1 Baked enamel: manufacturer's standard 2 coat matte finish in standard colours as later selected.

PART 3 - EXECUTION

3.1 Erection

.1 Do not erect soffit until work above soffit is complete.

.2 Secure hangers to overhead structure using attachment methods recommended by manufacturer.

.3 Suspend hangers from building structural members plumb and free from contact with insulation or other objects.

.4 Secure hangers in manner to prevent deterioration or failure due to age, corrosion or elevated temperatures.

.5 Maximum spacing of hangers or supports: 1200 mm on centre along carrier and 300 mm from ends. Maximum spacing of carriers: 900 mm on centre and 150 mm from ends of linear strips. Support each strip on at least 3 carriers. Stagger end joints.

.6 Lay out linear strips perpendicular to exterior walls.

.7 Scribe and cut metal panel units for accurate fit at borders and other penetrations.

.8 Provide hanger at each corner of openings of fixtures.

.9 Terminate strip ends 25 mm from walls and other vertical surfaces. Use factory made closed end units where ends are exposed to view.

.10 Install edge trim at perimeter, and penetrations.

.11 Use manufacturer's field cut-off device for 90° and 45° end cuts.

.12 Install inserts between linear strips.

3.2 Cleaning and Touch Up

.1 Clean any dirty of discoloured surfaces of linear metal units in accordance with manufacturer's written recommendations.

.2 Ensure units are free from defects.

.3 Remove and replace any damaged or improperly installed units.

PART 1 - GENERAL

1.1 Related Work

.1 Structural steel, steel joists, metal fabrications.

.2 Plywood paneling, Section 06100.

.3 Steel doors and frames, Section 08100.

.4 Graffiti resistant coatings, Section 09965

1.2 References

.1 Master Painters Institute (MPI)

.1 Architectural Painting Specifications Manual.

.2 Society for Protective Coatings (SSPC)

.1 Systems and Specifications Manual, SSPC Painting Manual, Volume Two.

.3 National Fire Code of Canada

1.3 Quality Assurance

.1 Conform to latest MPI requirements for painting work including preparation and priming.

1.4 Delivery, Handling and Storage

.1 Deliver, store materials in original containers with labels intact. Observe manufacturer's recommendations for storage and handling.

.2 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

1.5 Site Requirements

.1 Unless specifically pre-approved by product manufacturer, perform no painting work when:

.1 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.

.2 Rain or snow is forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

.3 The maximum moisture content of the substrate exceeds MPI or paint manufacturer’s prescribed limits

.2 Apply paint finish only:

.1 In areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

.2 Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.

.3 Apply paint only when previous coat of paint is dry or adequately cured.

PART 2 - PRODUCTS

2.1 Materials

.1 Only paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Paint materials for paint systems shall be products of a single manufacturer.

.3 Contract Administrator will select colours and determine total number of colours to be used on project and their locations.

2.2 Gloss/Sheen Ratings

.1 Paint gloss shall be as defined in MPI Architectural Painting Specifications Manual.

.2 Gloss level ratings of painted surfaces shall be as specified herein.

2.3 Painting Systems

.1 Shop primed steel:

.1 EXT 5.1D - Alkyd semi-gloss finish premium grade.

.2 Galvanized metal:

.1 EXT 5.3B - Alkyd semi-gloss finish premium grade.

.3 Plywood paneling:

.1 EXT 6.4B - Alkyd semi-gloss finish premium grade.

.4 Repainting previously painted steel:

.1 REX 5.1C – W.B. Light Industrial Coating (over alkyd metal primer), semi-gloss premium grade.

PART 3 - EXECUTION

3.1 General

.1 Perform preparation and operations for painting in accordance with MPI Painting Specifications Manual except where specified otherwise.

.2 Do repainting of previously painted surfaces in accordance with MPI Maintenance Repainting Manual, except where specified otherwise.

.3 Apply paint materials in accordance with paint manufacturers' written application instructions.

.4 Paint all new work, except prefinished items or where indicated otherwise.

.5 Do not paint structural steel and roof decking, mechanical and electrical equipment.

3.2 Existing Conditions

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report damages, defects, unsatisfactory or unfavourable conditions to Contract Administrator before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter and report findings to Contract Administrator. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.3 Protection

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Contract Administrator.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.4 Protect passing pedestrians and general public in and about the building.

.5 Remove electrical cover plates, light fixtures, surface hardware on doors, and other surface mounted equipment, fittings and fastenings prior to undertaking any painting operations. Store securely store items and re-installed after painting is completed.

3.4 Cleaning and Preparation

.1 Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements.

.2 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.3 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted.

.4 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

.5 Lift gate mechanism:

.1 Degrease lift gate mechanism by steam cleaning or pressure washing and solvent cleaning to remove oil and grease soiling from gear mechanism.

.2 Remove flaked paint and rust by wire brushing and power tool cleaning.

3.5 Application

.1 Apply paint by brush, roller, airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.

.2 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.3 Painting coats specified are intended to cover surface completely. If necessary apply additional coats until satisfactory coverage is obtained. Provide additional coats at not additional cost to Contract.

.4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.5 Sand and dust between coats to remove visible defects.

.6 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.

.7 Do not paint door and miscellaneous hardware, unless indicated otherwise.

.8 Do not paint nameplates, signage, fire labels, or other markers or signs indicated to remain.

.9 Do not paint copper, bronze, chromium plate, nickel, stainless steel, aluminum, lead and other bright metals, unless specified otherwise.

.10 Clean shop applied paint surfaces that become marked. Touch up with primer and paint as required.

3.6 Mechanical/Electrical Equipment

.1 Do not paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment. Leave in original finish.

3.7 Restoration

.1 Clean and re-install all hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition.

PART 1 - GENERAL

1.1 Product Data

.1 Submit manufacturer's printed product literature, specifications and application instructions to Contract Administrator before commencing application.

1.2 Environmental Conditions

.1 Maintain ambient and structural base temperature at installation area within limits specified by coating manufacturer. Apply coating during dry weather. Do not apply coating to wet or damp surfaces.

1.3 Protection

.1 Protect plants and vegetation that might be damaged by coating. Protect surfaces not intended to have application of 1coatings. Provide adequate ventilation or isolation measures to protect against toxic fumes.

PART 2 - PRODUCTS

2.1 Materials

.1 Graffiti-resistant coating: one component, water based, non-sacrificial, clear penetrating sealer and liquid repellent.

.1 Acceptable products: Fabrikem Fabrishield Paint Repellent PR-60 for precast concrete and PR-61 for clay brick.

PART 3 - EXECUTION

3.1 Preparation

.1 Prepare and clean substrate surfaces in accordance with coating manufacturer's instructions.

.2 Mix and prepare coatings to manufacturer’s instructions.

.3 Take moisture tests on substrates to receive coating to ensure moisture levels are within limits specified by coating manufacturer.

3.2 Application

.1 Apply coating using low pressure spraying apparatus, at recommended coverage rate for product and substrate.

.2 Apply in uniform, even coat to fully wet substrate, without flooding or rundowns.

.3 Allow area to dry completely before applying additional coats.

3.3 Schedule

.1 Apply graffiti-resistant coating to clay brick and architectural precast concrete units.