

**Part 1 General**

**1.1 REFERENCES**

- .1 City of Winnipeg *General Conditions for Construction* (Revision 2019-09-01)

**1.2 INSPECTION AND DECLARATION**

- .1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
  - .1 Notify Contract Administrator in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
  - .2 Request Contract Administrator's Inspection.
- .2 Contract Administrator's Inspection: Contract Administrator and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
- .3 Completion: submit written certificate that following have been performed:
  - .1 Work has been completed and inspected for compliance with Contract Documents.
  - .2 Defects have been corrected and deficiencies have been completed.
  - .3 Work is complete and ready for final inspection.
- .4 Final Inspection: when items noted above are completed, request final inspection of Work by Consultant. If Work is deemed incomplete by Contract Administrator, complete outstanding items and request re-inspection.
- .5 Declaration of Substantial Performance: when Contract Administrator considers deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance. Refer to *General Conditions for Construction* for specifics to application.
- .6 Commencement of Lien and Warranty Periods: date of City of Winnipeg's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
- .7 Final Payment: when Contract Administrator considers final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. If Work is deemed incomplete by Contract Administrator, complete outstanding items and request re-inspection.
- .8 Payment of Holdback: after issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback amount in accordance with *General Conditions for Construction*.

**1.3 CLEAN UP**

- .1 The Contractor shall maintain the Work in a safe and tidy condition and free from the accumulation of waste products and debris, other than that caused by the City of Winnipeg, other contractors or their employees.
- .2 Before applying for Substantial Performance of the Work, the Contractor shall remove waste products and debris, other than that resulting from the work of the City of

Winnipeg, other contractors or their employees, and shall leave the Site clean and suitable for use or occupancy by the City of Winnipeg. The Contractor shall remove products, tools, construction equipment, and temporary work not required for the performance of the remaining work.

- .3 Prior to application for the final payment, the Contractor shall remove any remaining products, tools, construction equipment, temporary work, and waste products and debris, other than those resulting from the work of the City of Winnipeg, other contractors or their employees.

**END OF SECTION**

## **Part 1 General**

### **1.1 SECTION INCLUDES**

- .1 Signage of the following types:
  - 1. Backlit monument facility sign;
  - 2. Programmable LED electronic message boards;
  - 3. Backlit channel letter signage.

### **1.2 REFERENCES**

- .1 Americans with Disabilities Act (ADA)1.ATBCB ADAAG – Americans with Disabilities Act Accessibility Guidelines
- .2 Canadian Standards Association CAN/CSA B651-18 Accessible Design for Built Environment
- .3 City of Winnipeg Accessibility Design Standard – Third Edition, 2015
- .4 City of Winnipeg Brand Manual
- .5 Underwriters Laboratory (UL)1.UL94 – Tests for flammability of Plastic Materials2.UL723 – Surface Burning characteristics of Interior finish materials and systems

### **1.3 SUBMITTALS**

- .1 Product Data: Manufacturer's illustrated product literature and specifications to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- .2 Shop Drawings: Submit detailed drawings of products and assemblies.
- .3 Selection Samples: For each finish product specified, two complete sets of colour chips representing manufacturer's full range of available colours and patterns.
- .4 Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, colour, and patterns.

### **1.4 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: All sign fabrication within this section to be performed by a manufacturer with a minimum experience of producing 10,000 compliant signs as specified in the Americans with Disabilities Act Accessibility Guidelines (ADAAG).
- .2 Sourcing: All signage shall be manufactured by one manufacturer.

- .3 Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  1. Finish areas designated by Contract Administrator.
  2. Do not proceed on remaining work until workmanship is approved by Contract Administrator.
  3. Rework mock-up area as required to produce acceptable work.
- .4 Signage shall comply with the City of Winnipeg Accessibility Design Standards where applicable. Characters and graphics, including but not limited to, copy height, letter stroke, symbols, materials, and finishes indicated on the Drawings are intended as guidelines for compliance. Implement each applicable standard. Should conflicts arise, notify the Contract Administrator before proceeding.

### **1.5 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver and store products, away from direct sunlight, in manufacturer's unopened packaging until surfaces are ready for installation.
- .2 Inspect materials at delivery to verify.

### **1.6 PROJECT CONDITIONS**

- .1 Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

### **1.7 SEQUENCING**

- .1 Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

### **1.8 WARRANTY**

- .1 Manufacturer's Warranty: Signage is guaranteed for the Life of the Property against defects in materials and workmanship.

## **PART 2 Products**

### **2.2 BACKLIT MONUMENT FACILITY SIGN**

- .1 Free-standing cabinet of aluminum sheeting on concrete base with wording router-cut on Lexan backing, with internal structure of three (3) 6" x 6" (150 x 150) hollow structural section (HSS) posts and base plates anchored to cast-in-place concrete piles.
- .2 LED illumination on interior of cabinet.
- .3 Raised vinyl lettering and arrows for directional wayfinding on bottom half of sign structure.
- .4 Digital artwork to be provided by Contract Administrator.

- .5 Colours as indicated on Drawings.
- .6 Signage must comply with all requirements outlined in Winnipeg Zoning By-Law No. 200/2006 (July 18, 2019 consolidation) and the City of Winnipeg Accessibility Design Standard Third Edition (2015).

### **2.3 PROGRAMMABLE LED ELECTRONIC MESSAGE BOARD**

- .1 Two (2) light-emitting diode (LED) message board cabinets integrated into monument sign as indicated on Drawings, complete with programmable hardware and software, commissioning and in-person training of software and operations.
- .2 Message board must:
  - 1. be single- or double-sided;
  - 2. have a 20-mm resolution or better;
  - 3. have the ability to hold displayed message for minimum of sixty (60) seconds with a maximum transition time of 0.25 seconds;
  - 4. not exceed a brightness level of 0.3 foot-candles above ambient light conditions;
  - 5. utilize automatic dimming;
  - 6. allow for pre-programming of messages;
  - 7. have time-based automatic shut-off;
  - 8. have the ability to display one (1) to four (4) lines of red text on a black background;
  - 9. have the ability to display graphics;
  - 10. have a clear cover of a durable material (such as Lexan) to protect LED matrix;
  - 11. have a wireless data connection;
  - 12. utilize premium 100,000 hour LEDs; and
  - 13. comply with all requirements outlined in Winnipeg Zoning By-Law No. 200/2006 (July 18, 2019 consolidation) and the City of Winnipeg Accessibility Design Standards Third Edition (2015).

### **2.4 BACKLIT CHANNEL LETTER SIGNAGE**

- .1 Channel lettering complete with LED illumination to sizes indicated on Drawings to be mounted to building facades.
- .2 Digital artwork to be provided by Contract Administrator.
- .3 Colours as indicated on Drawings.
- .4 Signage must comply with all requirements outlined in Winnipeg Zoning By-Law No. 200/2006 (July 18, 2019 consolidation) and the City of Winnipeg Accessibility Design Standard Third Edition (2015).

## **PART 3 Execution**

### **3.1 EXAMINATION**

- .1 Do not begin installation until substrates have been properly prepared.
- .2 If substrate preparation is the responsibility of another installer, notify Contract Administrator of unsatisfactory preparation before proceeding.
- .3 Complete all finishing operations, including paint curing, before beginning installation of signage systems

### **3.2 PREPARATION**

- .1 Clean surfaces thoroughly prior to installation.
- .2 Verify mounting heights and comply with referenced standards

### **3.3 INSTALLATION**

- .1 Install in accordance with manufacturer's instructions and in proper relationship to adjacent construction.
- .2 Locate the signage system as indicated on drawings for the appropriate substrate and in accordance with manufacturer's installation instructions and in proper relationship to adjacent construction.
- .3 Install signs level, plumb and at heights indicated, with sign surfaces free from distortion. Where otherwise not dimensioned, install signs where best suited to provide a consistent appearance throughout the Project. When exact position, angle, height or location is in doubt, contact the Contract Administrator for clarification.
- .4 At completion of installation, clean exposed sign surfaces and adjoining surfaces.

### **3.4 PROTECTION**

- .1 Protect installed products until completion of project.
- .2 Signs shall be free of glue, fingerprints, dirt, grease and any other imperfections
- .3 Touch-up, repair or replace damaged products before Substantial Performance.

### **3.5 MAINTENANCE**

- .1 Sign manufacturer shall provide maintenance for a period of five (5) years from

date of acceptance. Cost of maintenance is to be included in Bid Price.

**END OF SECTION**

## **26 00 00 GENERAL REQUIREMENTS**

1. The specification covering the General Conditions of the Contract, Supplementary Conditions, General and Safety Requirements, Instructions to Bidders, and all sections form an integral part of this specification and shall be read in conjunction herewith.

### **1.1 SCOPE**

1. Provide all materials, labour, plant and equipment required for a complete and working installation as herein specified and as shown on the drawings.
2. The installation shall be in accordance with the current edition of the Provincial and Municipal codes and regulations.
3. All equipment supplied under this Contract shall be new and C.S.A. approved.
4. Arrange for, and coordinate, rough-in and final inspections with inspection authority and Contract Administrator.
5. In the event of conflict between contract documents and Codes, the more stringent requirement shall be adhered to at no additional cost.
6. Engineering Site Reviews: Contractor's work shall be periodically reviewed by the Contract Administrator for determining general quality of installation. Guidance will be offered as to interpretation of contract documents and to assist in performing the installation. Inspections, reviews and directives issued in no way relieve the Contractor, his agents, employees or subtrades from contractual obligations, conformance to codes or safe and recognized practices.
7. Apply for and pay for all required permits, licenses, inspections and fees.
8. Indicate all permit numbers on all progress draws.
9. Co-ordinate all telephone and cablevision conduit runs with Internet Service Provider before installation begins.

### **1.2 SHOP DRAWINGS**

1. Submit electronic shop drawings for review by the Contract Administrator prior to ordering equipment and commencing work. Shop drawings shall be specific to the equipment and materials for this project. Changes to location and arrangement shall be reviewed prior to installation. Review of shop drawings by the Contract Administrator is for the sole purpose of ascertaining conformance to design intent. Contractor retains responsibility for all aspects of installation, performance and coordination.
2. Shop Drawing Procedures are as follows:
  1. General Contractor and Sub-Contractor shall review, approve and stamp submittals prior to sending to Contract Administrators for review. Submittals without contractor stamps will be rejected.
  2. A transmittal listing each item of equipment shall accompany each submission.
  3. Equipment must be labeled appropriately. Each item of equipment must bear the identifier used on the drawings.
  4. Data sheets must clearly indicate model and options being utilized. All information that does not apply must be crossed off.
  5. Allow Contract Administrators Ltd. five (5) full working days to review all shop drawings.
  6. Send electronic shop drawing submittals (.PDF only) to Contract Administrator.
  7. All deviations from specified equipment shall be highlighted by contractor.



### 1.3 ACCURACY OF DATA

1. Drawings are schematic; exact locations, distances, levels and other dimensions shall be governed by the architectural and/or interior design drawings.
2. Devices or equipment shall be moved to any point within a 3m (10'-0") radius for coordination purposes or when the Contract Administrator requests relocation before the work has been substantially completed, without additional cost.
3. Provide a typical mock-up of one area, if requested.
4. Drawings and specifications establish scope of work only and are not detailed installation instructions. Follow manufacturer's recommendations and adhere to all current and applicable Codes.
5. The Contract Administrator shall have the final say in matters of interpretation.
6. Branch circuit wiring shall be installed with circuits arranged exactly as shown on the drawings. Conduit and cable runs shall be modified to suit the installation.

### 1.4 EXAMINATION

1. Examine entire contract document package to ensure that the work under this Contract can be satisfactorily carried out. Report any discrepancies to the Contract Administrator prior to submission of Tender.
2. Examine the site, local conditions and all existing apparatus if any to be re-used and verify that the condition of this equipment is suitable for its intended use in the new construction.

### 1.5 WORKMANSHIP

1. Install equipment in a workmanlike manner to present a neat appearance to the satisfaction of the Contract Administrator. Install equipment parallel and perpendicular to building lines. Install neatly and group to present a tidy appearance.
2. Install equipment and apparatus including but not limited to junction boxes, adjustment or eventual replacement with adequate clearances and accessibility for same. Accessibility is deemed to be within 600mm (24") of accessible drywall ceiling opening and no more than 1m (39") above ACT.
3. Include in the work, all requirements shown on the shop drawings or manufacturers' installation instructions.
4. Replace work unsatisfactory to the Contract Administrator without extra cost.
5. Equipment exposed to exterior weather and / or moisture shall be corrosion and UV protected.
6. Only skilled and qualified licensed tradesperson shall perform the work. Tradesperson shall provide proof of registered status when requested.
7. Contractor is responsible to carefully examine conditions at the intended place of work. Verify all services, connection points, and all access openings to permit installation of new equipment.
8. All conduits shall be clipped to structure by means of anchors or supported by unistrut hangers as close to underside of structure as possible. Tie wraps for wire hanging and fastening or perforated strapping is not acceptable.
9. All support material for all luminaires, outlet boxes, junction boxes, etc. in a non-combustible building shall be of non-combustible material. Wood is not acceptable.

### 1.6 COORDINATION

1. Contractor shall co-ordinate all aspects of the installation with all other trades. There shall be no change notices issued nor changes to the building design (i.e. lowering ceiling heights) due to routing conflicts amongst trades or lack of coordination. When required, discuss the proposed routing with the Contract Administrator prior to installation. Final responsibility remains with the Contractor.

2. Connect to equipment specified in other sections, installed by other Contractors or the City of Winnipeg.
3. Supply access doors or rated doors to match fire rating, at all service points for equipment. Indicate on project record documents the location of all access doors.
4. Openings shall be coordinated with the General Contractor. Opening sizes shall be kept to a minimum
5. Contractor shall pay for professional trade to patch openings and install all finishing materials (i.e. drywall, brick, etc.). Openings with potential to compromise the structure shall be approved by a licensed Structural Engineer prior to starting the opening. The contractor shall contact the structural Contract Administrator for instructions prior to cutting or coring. Contractor is to scan structure before making openings and advise General Contractor and Contract Administrator of any obstructions found prior to cutting or coring.

#### **1.7 SUPERVISION**

1. Supervise the work at all times through a responsible and competent qualified tradesperson.
2. Full co-operation shall be shown with other trades to facilitate installations and to avoid delays in carrying out the work.
3. Replace site supervisor and/or foreman when requested by Contract Administrator.

#### **1.8 CHANGE TO CONTRACT**

1. Contractor change pricing shall include a complete breakdown of items of material, labour hours, labour rates and markups. This review period will start when all information indicated above is received.
2. General Contractor shall review and approve all contractor change pricing and credits prior to submitting to Contract Administrator. Submission to the Contract Administrator indicates General Contractor believes the pricing is fair and reasonable.

#### **1.9 PROGRESS CLAIMS**

1. Contractor progress claims will only be reviewed if they provide a complete breakdown by trade and sub trade and list all major equipment and labour completewith costs.

#### **1.10 PROJECT CLOSE OUT**

1. PROJECT RECORD DOCUMENTS
  1. Maintain accurate Project Record Documents and current on site and same shall be present for review at each site review. Submit these Project Record Documents in electronic format of same program and version of original contract documents and PDF for review at the completion of the project. Note that changes to architectural, and structural and civil floor plans must be included.
  2. Transfer changes to electronic disc AutoCAD file. Submit disc and hard copy for final review and submission to Contract Administrator.
  3. After acceptance of Project Record Documents by the Contract Administrator, provide one (1) complete set of AutoCAD and PDF Project Record Documents on three (3) CD-ROM and one (1) set of hard copy design prints and one (1) set of hard copy red line contractor markups.
    1. Electrical shall include:
      1. Circuiting of all new and existing equipment to remain;
      2. Accurate dimensions of all underground or in slab conduit or feeders;
      3. Identify all feeder / branch circuits and conduit routing and size including major junction box locations; and
      4. Any relocated or added equipment shall be identified.

4. The use of white out (liquid or tape) shall be used for correcting contractor red line errors ONLY.
  5. DO NOT use white out to delete original contract drawings deleted items shall be crossed out in red ink.
2. OPERATION AND MAINTENANCE MANUALS
1. Prior to requesting any Substantial Performance site review, all aspects of the installed system shall be complete and operational. Testing shall be complete along with device and equipment identification, equipment startups.
  2. At the completion of work submit three (3) electronic media storage devices and one (1) hard covered loose leaf binder showing all major components and divided by trade sections. Manuals shall be complete with all warranty information, instructions for operation, maintenance and replacement parts as required. Include copies of reviewed shop drawings, Contract Administrator contact information, Contractor and Sub-contractor information. Include copies of valve tag lists, all inspection certificates, and balancing reports. The Contract Administrator may not perform final inspections nor certify for occupancy until the O&M Manuals are received, reviewed and approved.
    1. Provide manufacturers start-up reports and letters of certification that the following equipment and systems are started, commissioned and working correctly:
      1. Submit a Certificate of Inspection from the local Inspection Authority upon completion of work and include with Project Record Documents.
    3. Each of the Contractors shall instruct the City Operating Staff on the operation, maintenance, and adjustment of equipment and/or system that they have installed or set. Provide sign off sheets for training indicating who was trained and number of hours of training.
3. CERTIFICATION REQUIREMENTS
1. The installation shall be completely tested demonstrating that the equipment and systems installed perform in the manner intended.
  2. Prior to electrical final inspection or certification provide the following:
    1. Fire Alarm Verification Report;
    2. Copies of manufacturer's startup or certification reports;
    3. Training sign off sheets; and
    4. Copy of the Electrical Permit

#### **1.11 WARRANTY**

1. The satisfactory operation of all work and equipment shall be warranted for a minimum of twelve (12) calendar months after substantial completion, unless otherwise noted.

#### **1.12 WORK IN EXISTING BUILDING**

1. The building shall remain open and in normal operation during the construction period of this contract.
2. Where existing services such as power, fire alarm, HVAC, plumbing or fire protection are required to be disrupted and/or shutdown coordinate the shut-downs with the City of Winnipeg and carry out the work at a time and in a manner acceptable to them. Carefully schedule all disruptions and/or shutdowns and ensure that the duration of same is kept to a minimum. Submit for approval, a written schedule of each disruption at least 72 hours in advance of performing work and obtain City of Winnipeg written consent prior to implementing.
3. Should any connections be required to maintain services during work in the existing building, supply and install all necessary material and equipment and provide all labour at no extra cost. Should any existing system be damaged, make full repairs without extra cost, and to the satisfaction of the City of Winnipeg.

4. Contractor shall ensure that any coring of holes through the deck floors, walls and grade beams, etc. will not penetrate existing conduits, cables or mechanical equipment in or under the concrete. Contractor shall be responsible to take any and all action as deemed necessary by the Building Engineer to correct any such penetrations at his cost. No coring shall be undertaken unless permission is given by the Building Engineer.
5. When painting is to commence, existing devices are to be temporary removed and reinstalled upon completion of painting unless otherwise noted.
6. The drawings indicate major items of equipment to be deleted or relocated but do not indicate every item of equipment to be deleted or relocated. Be responsible for determining which existing equipment is to be deleted or relocated by examining the site and Construction Documents. Reflect information on project record documents.
7. Where existing devices (receptacles, switches) mounted on a wall which will be covered with a new finish, provide an extension ring, coverplate, etc. as required to mount the device to the new wall.
8. Existing junction boxes shall remain accessible.
9. Refer to contract documents for phasing and staging of work and adhere to that program. Comply with instructions regarding working hours necessary to maintain the building in operation.
10. All existing cables and conduits required to remain in an area of renovation must be repaired, re-secured or clipped to meet specification and CEC standards.
11. Confirm time frame with the City for all jack hammering or coring of slab

**END OF SECTION**

## **26 00 10 BASIC MATERIAL AND METHODS**

### **1.1 GROUNDING**

1. The entire installation shall be grounded in accordance with the Canadian Electrical Code.

### **1.2 TEST**

1. The electrical installation shall be completely tested demonstrating that the equipment and systems installed perform in the manner intended.

### **1.3 IDENTIFICATION OF EQUIPMENT**

1. All equipment shall be identified with engraved lamacoid nameplates secured with self-adhesive backing. Lamacoid shall identify equipment designation, voltage, phasing and fed from.
2. The utilization of Dynamo Rhino Industrial 6000, P-Touch is acceptable for receptacles.
3. Wording for coverplates shall be confirmed by Contract Administrator.
4. All coverplates and junction boxes shall be identified with system and/or Panel/Voltage on cover.

### **1.4 USE OF EQUIPMENT BEFORE OCCUPANCY BY THE CITY**

1. The Contractor may operate equipment for testing and balancing only. The use of equipment for any other purpose must be approved by the City of Winnipeg in writing prior to use. Approval must indicate who is paying for utilities used.
2. Any equipment that is placed in use for any reason prior to the beginning of the guarantee period shall be cleaned and provided with maintenance and repairs as required, to ensure conditions are equal to that of new equipment, or shall be replaced, at no cost to the City of Winnipeg.

### **1.5 WIRING METHODS**

1. Unless otherwise shown on the drawings, all wires shall be copper, minimum #12 AWG with 90°C x-link insulation. Wiring shall be installed in conduit.
2. Wiring in concrete or masonry construction shall be in steel electrical metallic tubing (EMT). Provide a separate grounding conductor in EMT conduit runs embedded in concrete slabs. Conduits installed in areas exposed to moisture shall have watertight fittings.
3. All wiring in finished areas shall be concealed. Conduits shall be run at right angles to the building lines.
4. Conduit and wiring shall be grouped where possible and clipped in a neat and workmanlike manner.
5. AC-90 cable to be used for drops from conduit systems to recessed lighting fixtures in accessible ceilings or outlet boxes in steel stud walls only. Home runs shall be in conduit. Maximum run of AC-90 in accessible ceiling space shall be 5'-0".
6. Existing AC-90 runs to base building panels shall be removed and replaced with conduit and wire within this Contract.
7. Liquid tight flexible metal conduit or Teck cable shall be utilized for all motor and transformer connections with approved Teck connectors.
8. All unused communication and power wiring in ceiling space shall be removed.
9. Each circuit for computer equipment shall have a separate neutral conductor.
10. Conduit runs shall be installed and inspected before AC-90 runs are installed to ensure conformance with Item 5 herein.

11. Soft wiring NMD-7 may be utilized in all wood construction where same meets Code.  
Conduit shall be installed to central junction box for NMD-7 cable termination.
12. All wiring in health care facilities shall be run in conduit.
13. The use of electrical non-metallic tubing (ENT) shall be limited to in-slab installations only.

1.6 MOUNTING

- .1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicate otherwise.
- .2 Mounting height of equipment shall be as per Architectural clarifications.

**END OF SECTION**

## **26 05 35 OUTLET BOXES**

1. Outlet, junction and switch boxes shall be galvanized pressed steel of size and type to suit each individual application.
2. All outlet boxes exposed to damp locations shall be sealed FS/FD or RAB style.
3. Sectional boxes shall not be utilized.
4. Surface mounted outlet boxes accessible to public spaces shall be completely sealed free of knock outs.

**END OF SECTION**

## **26 06 22 MISCELLANEOUS APPARATUS AND APPLIANCES**

### **1.1 GENERAL**

1. Provide all required electrical devices, components, conduits, fittings, wiring, disconnects, and miscellaneous equipment to make all connections to equipment.
2. Be familiar with the apparatus being supplied and carefully coordinate and cooperate with the supplier/installer to ensure a proper and complete installation.

### **1.2 ILLUMINATED SIGNS**

1. Wire and connect all illuminated signs. Provide a disconnect at each sign.
2. Utilize water-tight wiring methods.

**END OF SECTION**



## **26 27 26 WIRING DEVICES**

1. Colours of receptacles, switches, outlets and coverplates shall be confirmed with Contract Administrator.
2. Receptacles shall be 15 ampere, 125 VAC, ivory, parallel slot, U-ground, side and back wiring screw terminate. Approved manufacturers are: Hubbell No. 5262, Arrow Hart No. 5262, Bryant No. 5262 or equal.
3. Wet location covers shall be equal to Cooper, Metal WeatherBox While-In-Use protective covers, WIUMV-1 for vertical mounting and WIUMH-1 for horizontal mounting. Plastic covers will not be accepted.

**END OF SECTION**

**26 50 00 LIGHTING**

1. Supply and install all luminaires complete with lamps. All new luminaires shall be provided with Driver, Manitoba Hydro Lighting program approved.
2. Install luminaires supplied by the City of Winnipeg, as indicated.
3. Clean and Re-lamp all fixtures to be re-used.
4. Any unused fixtures above the ceiling must be removed and circuits terminated. Turn fixtures over to the building City of Winnipeg.
5. Lighting shall adhere to the Manitoba Hydro Lighting Program.

**END OF SECTION**

## **26 50 10 LIGHTING CONTROLS**

1. Switches shall be totally enclosed in moulded housing, 15AC1 or 20AC1 series, 15 amps or 20 amps, 125 VAC as indicated equal to Hubbell No. 1201, P & S No. 15AC1, or Bryant No. 4801.
2. Screw in LED lamp dimmer controls shall be Lutron or Leviton and shall be rated to meet the requirement of the lamp.
3. Hard wired dimmable LED luminaires shall be provided with 0-10V driver with compatible dimmer control. Approved dimmers are Lutron or Leviton.
4. Provide a dedicated neutral for all electronic dimming and driver controls.
5. Provide line voltage and control wiring in independent conduit systems as necessary for operational systems. Refer to Manufacturer's wiring diagrams.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Protection of existing trees within the limits of the construction site. Special care is required to protect the foliage, branches, trunk and roots from damage that could result from construction operations.
  
- .2        The Contractor shall be responsible for preventing the following types of damage.
  - .1        Compaction in root zone caused by foot and vehicular traffic or material storage.
  - .2        Trunk damage and branch damage caused by equipment operations, material storage, or nailing and bolting.
  - .3        Trunk and branch damage caused by ropes or guy wires.
  - .4        Root poisoning from spilled solvents, gasoline, paint, and other noxious materials.
  - .5        Branch damage due to improper pruning or trimming.
  - .6        Damage from alteration of soil pH factor caused by depositing lime, concrete, plaster, or other waste materials near roots.

**1.2                RELATED SECTIONS**

- .1        Section 31 11 01 – Sitework Demolition

**1.3                DAMAGE ASSESSMENT**

- .1        Trees Below 100 mm Caliper and 3m Height.
  - .1        Deciduous trees below 100 mm caliper and coniferous trees below 3m height destroyed or badly damaged as a result of construction operations shall be removed and replaced with trees of the same size, species, and variety. Replacement trees are to be reviewed and approved by the Contract Administrator prior to installation.
  
- .2        Trees Over 100 mm Caliper and 3m Height.
  - .1        Deciduous trees over 100 mm caliper and coniferous trees over 3m height badly damaged or destroyed by construction operations will be appraised according to the current International Society of Arboriculture evaluation procedure presently in use by the City of Winnipeg Urban Forestry Branch. It will be at the Contract Administrator's discretion to apply this appraised value toward the landscape development or to deduct it from the Contract amount.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Burlap fabric.
- .2 Dimension lumber for strapping: 19 x 140 x 2400 mm.
- .3 Steel wire, 9 to 12 gauge.

**Part 3 Execution**

**3.1 GENERAL**

- .1 All tree protection is to be in place prior to start of site works and stay in place until construction completion.
- .4 All trees within the project area are to remain and be protected from damage, except for trees designated to be removed.
- .5 Obtain approval from Contract Administrator of all proposed protection materials, methods and locations prior to construction commencement.
- .6 Ensure that all construction activity, including but not limited to the storage of materials and equipment, disposal of debris and the parking, maintenance and re-fuelling of all vehicles, shall not be carried out within the drip line of trees designated to remain or inside of any barrier erected for the protection of vegetation.
- .7 Where damage to a tree does occur, the Contractor shall notify the Contract Administrator and arrange for a certified arborist to prune and dress the wound(s). More substantial damage to trees not designated for removal will invoke the conditions under Item 1.3 Damage Assessment.

**3.2 STRAPPING**

- .1 Apply timber strapping to tree trunks in close proximity to moving equipment and construction work. Timber strapping may be required for trees protected only by temporary barriers as directed by Contract Administrator.
- .2 Wrap trunk with a layer of burlap.
- .3 Install 19 x 140x 2400 or approved alternate dimensioned lumber, placed vertically, spaced 50 mm apart around the circumference of the mature tree trunks. Smaller trees shall be strapped with appropriately sized lumber.
- .4 Secure with steel wire.

**END OF SECTION**

**Part 1 General**

**1.1 DESCRIPTION**

- .1 This Specification shall supplement CW 3010, CW 3110, CW 3235, and CW 3240 and shall cover the requirements for demolition, salvage, removal and disposal wholly or in part of various items designated to be removed or partially removed and for backfilling resulting trenches, holes and pits.
- .2 The Work under this Specification shall include the following items as shown within the limit of Work on the Drawings or otherwise directed by the Contract Administrator:
  - (a) Removal of existing pylon facility signage (to be turned over to City of Winnipeg);
  - (b) Removal of sod and topsoil at new monument sign location;
  - (c) Excavation for piles for monument sign;
  - (d) Trenching for electrical connections and rough-ins.
- .3 Work will occur on City of Winnipeg property.

**1.2 STORAGE AND PROTECTION**

- .1 Perform all work in accordance with Section 01 00 10 - General Requirements.
- .2 Existing buried utilities and structures:
  - (a) Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
  - (b) Prior to commencing any excavation work, notify City of Winnipeg or authorities having jurisdiction, establish location and state of use of buried utilities and structures. Clearly mark such locations to prevent disturbance during work.
  - (c) Confirm locations of buried utilities by careful test excavations.
  - (d) Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered or as indicated. Fibre optic lines shall be protected in accordance with requirements of Bell MTS.
  - (e) Where utility lines or structures exist in area of excavation, obtain direction of utility company.
  - (f) Record location of maintained, re-routed and abandoned underground lines.
- .3 Protect existing surface features that may be affected by the work. In event of damage to such items, immediately replace or make repairs to approval of Contract Administrator at no cost to City of Winnipeg.
- .4 In all circumstances ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.

- .5 Do not dispose of waste or volatile materials such as mineral spirits, oil, petroleum-based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout the project.
- .6 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.
- .7 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.
- .8 Protect trees, plants and foliage on site and adjacent properties where indicated.

## **Part 2 Products**

### **2.1 EQUIPMENT**

- .1 Equipment and heavy machinery used to meet or exceed all applicable emission requirements and operate in compliance with MVSA.
- .2 The size, weight, and destructive capabilities of the equipment shall be matched to the type of removal to be done.

### **2.2 MATERIALS**

- .1 Backfill Material: in accordance with CW 2030 – R7, Class 1.
- .2 Sub-base material: in accordance with CW 3110, clay borrow or approved alternate. Crushed limestone will not be accepted.

## **Part 3 Execution**

### **3.1 FEES AND PERMITS**

- .1 The Contractor shall obtain and pay for all licenses and permits necessary for the demolition work.

### **3.2 SAFETY PRECAUTIONS**

- .1 The Contractor shall provide flagpersons, barricades, railings, and whenever necessary, warning signs at excavation holes, plywood access ramps and /or other construction necessary to secure the safety of workers, the public, and personnel alike and shall comply with all Provincial Statutes applicable to the Work of this nature. The Contractor shall provide all other protective measures as may be required by any law in force in Manitoba.

### **3.3 PREPARATION OF SITE**

- .1 Inspect Site and verify with Contract Administrator items designated for removal, disposal, salvage and items to remain.

- .2 Locate and protect utility lines. Preserve in operating condition active utilities traversing site.
- .3 Notify utility companies before starting demolition. Utilities to provide clearance before any excavation is done.
- .4 **Notify Geomatics Service Branch at (204) 986-4826 to obtain clearance and mark survey infrastructure minimum of 72 hours before any excavation.**

### **3.4 REMOVALS**

- .1 Remove items as indicated on the Drawings and as directed by the Contract Administrator. Do not disturb adjacent items designated to remain in place.
- .2 Remove miscellaneous concrete slabs and structures in accordance with CW 3235.
- .3 In removal of pavements:
  - (a) curbs designated for replacement shall be removed to the nearest control or construction joint;
  - (b) square up adjacent surface to remain in place by saw-cutting or other method approved by Contract Administrator;
  - (c) protect adjacent joints and load transfer devices; and
  - (d) protect underlying granular materials.

### **3.5 DISPOSAL OF MATERIALS**

- .1 The Contractor shall promptly dispose of materials not designated for salvage or re-use in Work, off-site.
- .2 Trim disposal areas to approval of Contract Administrator.

### **3.6 BACKFILL**

- .1 Backfill in areas as indicated in accordance with Excavation Bedding and Backfill - CW 2030.

### **3.7 RESTORATION**

- .1 Restore areas and existing works outside areas of demolition to match condition of adjacent, undisturbed areas.

### **3.8 CLEANUP**

- .1 Upon completion of work, remove debris, trim surfaces and leave work site clean.
- .2 Use only cleaning solutions and procedures that are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or groundwater.

**END OF SECTION**



**Part 1            General**

**1.1                REFERENCES**

- .1      City of Winnipeg Standard Construction Specification: CW 3110-R13 Sub-Grade, Sub-Base & Base Course Construction; most recent edition.
- .2      American Society for Testing and Materials (ASTM)
  - .1      ASTM C117-95, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
  - .2      ASTM C131-96, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .3      ASTM C136-96a, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .4      ASTM D422-63(1998), Standard Test Method for Particle-Size Analysis of Soils.
  - .5      ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft<sup>3</sup>) (600kN-m/m<sup>3</sup>).
  - .6      ASTM D1557-00, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft<sup>3</sup>) (2,700kN-m/m<sup>3</sup>).
  - .7      ASTM D1883-99, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
  - .8      ASTM D4318-[00], Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .3      Canadian General Standards Board (CGSB)
  - .1      CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
  - .2      CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

**1.2                WASTE MANAGEMENT AND DISPOSAL**

- .1      Separate and recycle waste materials in accordance the requirements of authorities having jurisdiction.
- .2      Divert unused granular material from landfill to local facility as approved Contract Administrator.

**Part 2            Products**

**2.1                GRANULAR MATERIALS**

- .1      Sub-base: Class C aggregate, in accordance with City of Winnipeg standard construction specifications.
- .2      Base: Class A aggregate, in accordance with City of Winnipeg standard construction specifications.

**Part 3 Execution**

**3.1 PLACING**

- .1 Place geotextile over approved subgrade if required.
- .2 Place granular sub-base after subgrade and geotextile is inspected and approved by Contract Administrator.
- .3 Construct granular sub-base and base to depth and grade in areas indicated.
- .4 Ensure no frozen material is placed.
- .5 Place material only on clean, unfrozen surface, free from snow or ice.
- .6 Begin spreading base material on crown line or high side of one-way slope.
- .7 Place granular sub-base, base and sand materials using methods which do not lead to segregation or degradation.
- .8 For spreading and shaping material, use spreader boxes having adjustable templates or screeds which will place material in uniform layers of required thickness.
- .9 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Contract Administrator may authorize thicker lifts (layers) if specified compaction can be achieved.
- .10 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .11 Remove and replace portion of layer in which material has become segregated during spreading.
- .12 Rake finished sand court and remove all debris.

**3.2 COMPACTION**

- .1 Compact granular sub-base to density of not less than 98% corrected maximum dry density.
- .2 Compact granular base to density of not less than 100% corrected maximum dry density.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
- .4 Apply water as necessary during compaction to obtain specified density.
- .5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Contract Administrator.
- .6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

**3.3 SITE TOLERANCES**

- .1 Finished base surface to be within 10 mm of elevation as indicated but not uniformly high or low.

**3.4 PROTECTION**

- .1 Maintain finished base in condition conforming to this section until succeeding base is constructed, or until granular base is accepted by Contract Administrator.

**END OF SECTION**

## **General**

### **1.1 DESCRIPTION**

- .1 This Specification shall cover the supply and installation of geotextile filter fabric, bedding material, and granite boulder and field stone mulch.

### **1.2 RELATED SECTIONS**

- .1 Section 32 91 19 – Planting Medium and Finish Grading
- .2 Section 32 93 00 – Trees, Shrubs and Groundcovers

### **1.3 SAMPLES**

- .1 Submit to Contract Administrator samples of stone mulch at least 2 weeks prior to commencing work.

## **Part 2 Products**

### **2.1 GENERAL**

- .1 Decorative mulch materials shall be free of organic matter and accepted by the Contract Administrator prior to placement.

### **2.2 MATERIALS**

- .1 Planting Medium: to Section 32 91 21 – Planting Medium & Finish Grading.
- .2 Field Stone Mulch: Hard, unbroken 300 – 500 diameter round washed field stone. Material is to match as closely as possible stone mulch materials already on site.
- .3 Pea Gravel: Clean, washed stone, 4.75 – 9.5 mm diameter, free of excess fines, dirt, and other foreign matter.
- .4 Geotextile Filter Fabric: woven separation/reinforcement fabric to CW 3130.

## **Part 3 Execution**

### **3.1 PREPARATION**

- .1 Prepare subgrade in accordance with Section 32 91 21 – Planting Medium & Finish Grading.
- .2 Obtain Contract Administrator's approval of subgrade and spread planting medium in accordance with Section 32 91 21 – Planting Medium & Finish Grading to depth indicated on the Drawings.

**3.2 PLACEMENT OF GEOTEXTILE FILTER FABRIC**

- .1 The Contractor shall ensure the area to receive filter fabric is clean and free of any sharp objects or debris prior to placing the filter fabric. Install a single continuous piece unless otherwise directed by Contract Administrator. Extend fabric 50mm up sides of the block out. Trim edges neatly, ensuring fabric will be completely hidden by mulch and pea gravel.

**3.3 PLACEMENT OF FIELD STONE OR GRANITE BOULDER MULCH**

- .1 Install stone to grades and depths indicated on the Drawings, using approved placement methods. Work around planting pocket locations.
- .2 Set stone into pea gravel bedding course, and arrange so that larger stones are uniformly distributed, smaller stones fill voids. Sufficient handwork shall be undertaken to ensure a neat and consistent appearance, to the satisfaction of the Contract Administrator.

**END OF SECTION**

## **Part 1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 31 15 51 – Stone Mulch
- .2 Section 32 93 00 – Trees, Shrubs and Groundcover

### **1.2 REFERENCES**

- .1 Agriculture and Agri-Food Canada
  - .1 The Canadian System of Soil Classification, Third Edition, 1998.
- .2 Canadian Council of Ministers of the environment (CCME) Guidelines.

### **1.3 SUBMITTALS**

- .1 Quality control submittals:
  - .1 Soil testing: submit certified test reports showing compliance with or recommended amendments in accordance with the performance characteristics and physical properties as described in Item 1.6 - Quality Assurance.
  - .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

### **1.4 QUALITY ASSURANCE**

- .1 This project shall use locally produced planting medium amended as required.
- .2 Obtain approval of proposed planting medium source from Contract Administrator prior to placing order.
- .3 Prepare and ship planting medium samples to approved laboratory in accordance with Provincial regulations and laboratory requirements, indicating intended use on each sample.
- .4 Inspection and testing of planting medium will be carried out by a Testing Laboratory appointed by the Contractor. Testing laboratory to be certified in accordance with CSA A283.
- .5 A minimum of (3) three tests are required for planting medium preparation:
  - .1 Test 1- Planting medium.
  - .2 Test 2 – Amended planting medium based on test 1 results.
  - .3 Test 3 – Re-testing if required to meet specifications.
- .6 Additional testing of planting medium to meet specifications shall be the responsibility of the Contractor at no additional cost to the City of Winnipeg.
- .7 Test planting medium for nutrients N, P, K, micronutrients, soluble salt content, pH value and OM (organic matter).

- .8 Submit copy of planting medium analysis and recommendations for corrections to Contract Administrator.
- .9 Acceptance of planting medium is subject to inspection of material and confirmation of test results. Do not commence work until Contract Administrator has accepted planting medium.

## **1.5 DELIVERY STORAGE AND HANDLING**

- .1 Store materials in a dry area, protected from freezing, sedimentation and contamination.
- .2 Deliver and store fertilizer in waterproof bags labelled with weight, analysis and name of manufacturer.

## **1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for disposal or recycling in accordance with local ordinances.

## **Part 2 Products**

### **2.1 TOPSOIL**

- .1 All topsoil shall meet the following requirements:
- .2 Screened clay-textured or loam-textured dark naturally occurring topsoil, fertile, friable material neither of heavy clay nor of very light sandy nature.
- .3 Topsoil shall be free of subsoil contamination, roots, stones or clay lumps over 25mm in diameter and other extraneous matter. Salinity rating less than 2.5 dS/m and a pH range of 6.5-8.0. Topsoil shall be sterilized and shall not contain quack grass rhizomes, Canada thistle roots or other noxious weeds.
- .4 Topsoil shall not be blown dirt deposited in ditches along wind erosion sites.
- .5 Topsoil shall not be taken from fields abandoned to corn production where such soil may contain soil-incorporated herbicides with lasting residual effects such as Eradicane and Atrazine.
- .6 Inform Contract Administrator of proposed source of topsoil to be supplied. Topsoil to be imported from a facility within 50km of site. The Contract Administrator shall reject topsoil not conforming to this Specification.

### **2.2 PEATMOSS**

- .1 Derived from partially decomposed fibrous or cellular stems and leaves of species of sphagnum mosses.

- .2 Elastic and homogeneous, brown in colour.
- .3 Free of wood and deleterious material that could prohibit growth.
- .4 Shredded particle minimum size: 5 mm.

### 2.3 COMPOST

- .1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.
- .2 Compost shall be dark brown in colour, with no objectionable odour.
- .3 Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss On Ignition (LOI) test.
- .4 Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below 25:1) and contain no toxic or growth inhibiting contaminants.
- .5 Composted bio-solids to: CCME Guidelines for Compost Quality, Category A.
- .6 Provide a two litre sample with manufacturers literature and material certification that the product meets the CCME guidelines.

### 2.4 SAND

- .1 Coarse Sand: Clean, hard fine silica sand, well washed and free of impurities, chemical or organic matter. Coarse texture, and to the following gradation:

<u>Particle Size (mm)</u>	<u>% Passing through Screen</u>
2.0	100%
1.0	95 to 100%
0.5	80 to 100%
0.25	0 to 30%
0.15	0 to 8%
0.075	0 to 1%

### 2.5 PLANTING MEDIUM

- .1 All planting media shall be a thorough blend of the materials noted above in the proportions and to the fertility parameters noted below.
- .2 Keep all materials moist during blending stage to facilitate uniform mixing and to minimize peat, soil and sand separation.
- .3 Final mix shall have a pH of between 6.5 and 8 unless otherwise noted.



- .4 Provide a two-gallon sample of each type of planting medium for soil testing to the Contract Administrator.
- .5 Planting medium for shrub beds, tree pits, and sodded areas to contain (by volume):
  - .1 45% Topsoil
  - .2 35% Peat
  - .3 5% Compost
  - .4 15% Coarse Sand

## **2.6 FERTILITY ADDITIVES**

- .1 Fertility - major soil nutrients present in following amounts:
  - .1 Nitrogen N: 20 to 40 micrograms of available N per gram of topsoil.
  - .2 Phosphorus P: 40 to 50 micrograms of phosphate per gram of topsoil.
  - .3 Potassium K: 75 to 110 micrograms of potassium per gram of topsoil.
  - .4 Calcium magnesium, sulphur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.

## **Part 3 Execution**

### **3.1 PREPARATION PLANTING BEDS**

- .1 Do not commence planting medium placement and finish grading until all hard landscape works have been completed.
- .2 Confirm rough grades conform to the drawings and that rough grading operations have been reviewed and approved by the Contract Administrator prior to proceeding.
- .3 Report any discrepancies in sub-grade conditions to the Contract Administrator immediately upon discovery.
- .4 Fine grade sub-grade, eliminating uneven areas and low spots, sloped to drain as indicated on the drawings. Remove debris, roots, branches, stones in excess of 50mm diameter and building materials that may have accumulated since rough grading was completed.
- .5 Remove subsoil that has been contaminated with oil or gasoline.
- .6 Remove stones, roots, grass, weeds, construction materials, debris and foreign non-organic objects from planting medium.
- .7 Protect bottom of all excavations against freezing. Remove water that enters excavations prior to planting. Ensure source of water is not groundwater.
- .8 Scarify bottom of planting bed excavations to a depth of 150mm.
- .9 Cover bottom of each planting bed excavation with bone meal fertilizer per

manufacturers written specifications and application rate for each type of application.

- .10 Do not backfill planting bed with planting medium until the Contract Administrator has approved planting bed preparations.

### **3.2 PLACING AND SPREADING OF PLANTING MEDIUM**

- .1 Place planting medium after Contract Administrator has accepted sub-grade for planting beds and sod areas.
- .2 Spread planting medium in uniform layers not exceeding 150mm.
- .3 Spread planting medium as indicated to follow minimum depths after settlement.
  - .1 100mm for sodded areas.
  - .2 300mm for planting beds to 75mm below finished grade to allow for wood chip mulch per Section 32 92 10 - Trees, Shrubs & Groundcover Planting.
  - .3 1000mm for tree pits.
- .4 Tamp down or roll soil with manual or mechanized equipment until it forms a firm solid surface that lightly takes a foot imprint.

### **3.3 APPLICATION OF FERTILIZER**

- .1 Prior to planting and sodding, spread fertilizer over entire area at rate and ratio determined by soil test, or as specified above.
- .2 Mix fertilizer thoroughly into upper 50mm of planting medium.
- .3 Contractor to conduct a final soil test and provide results to the Contract Administrator.
- .4 Installation of plant material will not be accepted until soil meets all composition and fertility requirements.
- .5 Amendments to soil and continued testing to achieve acceptance after test no. 1 will be paid for by the Contractor at no additional cost to the City of Winnipeg.

### **3.4 ACCEPTANCE**

- .1 Leave surfaces smooth, uniform and firm against foot printing with a fine loose texture.
- .2 Leave surfaces to within 10mm of design grades uniformly sloping and maintaining positive drainage as indicated on the drawings.
- .3 Amend all low spots and creases prior to proceeding with planting and seeding operations.

- .4 The Contract Administrator reserves the right to spot test the planting medium installed throughout the site should the finished product look, smell, feel or appear in any way different from the approved tested samples provided in any location.
- .5 Surfaces will be accepted when finished grading and soil quality meet all the standards and quality of workmanship noted within this section and when all adjacent hard surfaces have been cleaned to the Contract Administrator's satisfaction.

### **3.5 SURPLUS MATERIAL**

- .1 Dispose of excess planting medium to a topsoil supply facility within 25 km of the site.

### **3.6 CLEANING**

- .1 Upon completion of installation, remove construction and accumulated environmental dirt, surplus materials, rubbish, tools and equipment barriers from site.

**END OF SECTION**

**Part 1        General**

**1.1        SECTION INCLUDES**

- .1        Supply and installation of trees, shrubs and groundcovers.

**1.2        RELATED SECTIONS**

- .1        Section 32 91 21 – Planting Medium & Finish Grading

**1.3        SOURCE QUALITY CONTROL**

- .1        Obtain approval of plant material at source.
- .2        Notify Contract Administrator of source of material at least seven (7) days in advance of shipment. No work under this section is to proceed without approval.
- .3        Acceptance of plant material at its source does not prevent rejection on site prior to or after planting operation.
- .4        Imported plant material must be accompanied with necessary permits and import licenses. Conform to federal and provincial regulations.

**1.4        SHIPMENT AND PRE-PLANTING CARE**

- .1        Coordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
- .2        Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire that would damage bark, break branches or destroy natural shape of plant. Give full support to rootball of large trees during lifting.
- .3        Cover plant 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 cut and cover cuts over 20 mm (3/4") diameter with wound dressing.
- .5        Keep roots moist and protect from sun and wind. Heel-in trees and shrubs that cannot be planted immediately in shaded areas and water well.

**1.5        GUARANTEE OF NURSERY STOCK**

- .1        Provide a written guarantee, stating that the plant material as itemized on plant list is guaranteed against defects for a period of two (2) years from the date of the Substantial Performance of the Work for all deciduous trees over 75 mm (3") caliper and all coniferous trees over 3 m (10') height and for one (1) year for all other nursery stock.

- .2 The Contractor shall replace and replant any nursery stock found dead and/or in poor condition one (1) year from date of Substantial Performance of the Work, without cost to the City of Winnipeg. "Poor Condition" shall be interpreted as meaning nursery stock on which branches are dead or dying, or have not shown satisfactory growth in leaves. Exempted is nursery stock damaged by accidental causes or vandalism, which stock shall be replaced at the cost of the City of Winnipeg.
- .3 End-of-Warranty inspection will be conducted.
- .4 The Contract Administrator may extend the Contractor's warranty responsibilities for an additional one (1) year if, at the end of the initial warranty period, leaf development and growth is not sufficient to ensure future survival.

## **1.6 REPLACEMENTS**

- .1 During warranty period, remove from site any plant material that has died or failed to grow satisfactorily as determined by the Contract Administrator.
- .2 Replace any plant material in the next planting season.
- .3 Extend warranty on replacement plant material for a period equal to the original warranty period.
- .4 Continue such replacement and warranty until plant material is accepted.
- .5 All required replacements shall be by plants of at least the same size and species as specified, and shall be supplied and planted in accordance with the original Drawings and Specifications, and the replaced material shall carry an additional one (1) year guarantee. Should the replaced plant material not survive, the Contractor will be responsible to replace it a third time and guarantee it for one (1) year unless it is determined that unique site conditions or inadequate maintenance causes the death of plants.

## **Part 2 Products**

### **2.1 PLANT MATERIAL**

- .1 Quality and source: comply with Guide Specifications for Nursery Stock, latest edition of Canadian Nursery Trades Association referring to size and development of plant material and rootball. Measure plant material and rootball. Measure plants when branches are in their natural position. Height and spread dimensions refer to main body of plant and not from branch tip to branch tip. Measure caliper for trees minimum 300 mm (12") above grade for trees 100 mm (4") caliper and larger and 150 mm (6") above grade for trees up to 100 mm (4") caliper.
- .2 Additional plant material qualifications:
  - .1 Bare root plant material or plant material obtained from areas with milder climatic conditions from those of site are acceptable only when moved to

- site prior to the breaking of buds in their original location and heeled-in in a protected area until conditions are suitable for planting.
- .2 Plant material that has come out of dormant stage and is too far advanced will not be accepted for bare root planting unless prior approval is obtained.
  - .3 Use trees with strong fibrous root system free of disease, insects, defects or injuries and structurally sound. Use trees with straight trunks, well and characteristically branched for species. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.
  - .3 Cold storage: approval is required for plant material that has been held in cold storage.
  - .4 Container grown stock: acceptable if containers are large enough for root development. Trees must have grown in container for minimum of one growing season but not longer than two. Root system must be able to "hold" soil when removed from container. Plants that have become root bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.
  - .5 Balled and burlapped: coniferous and broad leaf evergreens over 500 mm (1'-8") tall must be dug with soil ball. Deciduous trees in excess of 3 m (10') height must have been dug with large firm ball. Rootballs must include 75% of fibrous and feeder root system. This excludes use of native trees grown in light sandy or rocky soil. Secure rootballs with burlap, heavy twine and rope. For large trees wrap rootball in double layer of burlap and drum lace with minimum 10 mm (1/2") diameter rope. Protect rootballs against sudden changes in temperature and exposure to heavy rainfall.
  - .6 Tree spade dug material: dig plant material with mechanized digging equipment of hydraulic spade or clam-shell type. Rootballs to satisfy CNTA standards. Lift rootball from hole, place in wire basket designed for purpose and line with burlap. Replace rootball and tie basket to ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope.
  - .7 Collected or native plant material: use only native trees indigenous to area into which they are to be transplanted. Select trees from reasonably open stands. Trees must have well-developed crown and must be characteristically branched. Not more than 40% of overall tree height may be free of branches.
  - .8 Substitutions to plant material as indicated on planting plan are not permitted.
  - .9 Refer to Plant Specification List on the Drawings for species, size and quality of plant materials.

## **2.2 OTHER MATERIALS**

- .1 Water: potable and free of minerals which may be detrimental to plant growth.
- .2 Backfill mix as specified in Section 32 91 21 – Planting Medium & Finish Grading.
- .3 Anti-desiccant: wax-like emulsion to provide film over surfaces reducing evaporation but permeable enough to permit transpiration.

- .4 Wound dressing: horticulturally accepted non-toxic, non-hardening emulsion.
- .5 Horticultural bonemeal: raw bonemeal finely ground with minimum analysis of 3% nitrogen and 10% phosphoric acid.
- .6 Wood Mulch: Shredded wood mulch, varying in size from 25 to 125 mm in length, uniform in colour and texture, free of CCA or creosote. Colour: charcoal. Provide sample for approval prior to installation.
- .7 Filter Fabric: Non-woven geotextile conforming to the requirements for separation geotextile fabric, City of Winnipeg Standard Specification CW-3130-R2. Acceptable product: BW315 supplied by Brock White, 879 Keewatin Street, Winnipeg, Phone 694-3600, or approved alternate.

### **Part 3 Execution**

#### **3.1 PLANTING TIME AND WORKMANSHIP**

- .1 When planting deciduous plant material after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.
- .2 Trees, shrubs and groundcovers growing in containers may be planted throughout growing season.
- .3 Plant only under conditions that are conducive to health and physical conditions of plants.
- .4 Provide planting schedule. Extending planting operations over long period using limited crew will not be accepted.

#### **3.2 EXCAVATION**

- .1 Shrub beds: excavate to minimum depth of 300 mm (12").
- .2 Trees: excavate holes to depth and width to accommodate rootball and shown on Drawings.
- .3 Provide drainage for planting holes in heavy soil if natural drainage does not exist. Have method approved.
- .4 Protect bottom of excavations against freezing.
- .5 Remove water that enters excavations prior to planting. Ensure source of water is not groundwater.

#### **3.3 PLANTING**

- .1 Loosen bottom of planting hole to depth of 150 mm (6"). Cover bottom of each excavation with bonemeal in amount recommended by manufacturer.
- .2 Plant trees and shrubs vertically with roots placed straight out in hole. Orient plant material to give best appearance in relation to structure, roads and walks.

- .3 Place plant material to depth equal to depth they were originally growing in nursery.
- .4 With balled and burlapped rootballs, loosen burlap and cut away top 1/3 without disturbing rootball. Do not pull burlap or rope from under rootball. With container stock, remove entire container without disturbing rootball. Non-biodegradable wrappings must be removed.
- .5 Tamp planting soil around root system in layers of 150 mm (6") 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.
- .6 With frozen ball material, mulch planting pit to prevent freezing.
- .7 Build 100 mm (4") depth saucer around outer edge of hole to assist with maintenance watering. No saucer is required for trees planted in concrete planters.
- .8 When planting is completed, give surface of planting tree saucer dressing of slow release 12:36:15 fertilizer at rate recommended by manufacturer, or approved equal. Mix fertilizer thoroughly with top layer of planting soil and water in well.

### **3.4 MULCHING**

- .1 Obtain approval of planting before mulching material is applied. Loosen soil in planting beds and pits and remove debris and weeds. Spread mulch to minimum thickness of 75 mm (3") or as indicated on drawing. Mulch material susceptible to blowing must be moistened and mixed with topsoil before applying. When mulching is placed in fall, place immediately after planting. When mulch is placed in spring, wait until soil has warmed up.

### **3.5 MAINTENANCE**

- .1 Ensure all plant material is watered in immediately after installation. Maintain all planted areas from time of installation to the time they are accepted to start warranty (min. 30 days).

**END OF SECTION**