

Part 1 General

1.1 ADMINISTRATIVE

- .1 Submit to Contract Administrator submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable. Review submittals prior to submission to Contract Administrator. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .5 Notify Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Verify field measurements and affected adjacent Work are co-ordinated.
- .7 Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
- .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator review.
- .9 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 The Contractor shall arrange for the preparation of clearly identified Shop Drawings as specified or as the Contract Administrator may reasonably request. Shop Drawings are to clearly indicate materials, weights, dimensions, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of the Work. Where articles or equipment attach or connect to other articles or equipment, clearly indicate that all such attachments and connections have been properly coordinated, regardless of the trade under which the adjacent articles or equipment will be supplied and installed. Shop Drawings are to indicate their relationship to design Drawings and Specifications. Notify the Contract Administrator in writing of any deviations in Shop Drawings from the requirements of the Contract Documents.

- .3 The Contractor shall examine all Shop Drawings prior to submission to the Contract Administrator to ensure that all necessary requirements have been determined and verified and that each Shop Drawing has been checked and coordinated with the requirements of the Work and the Contract Documents. Examination of each Shop Drawing shall be indicated by stamp, date and signature of a responsible person of the sub-contractor for supplied items and of the General Contractor for fabricated items. Shop Drawings not stamped, signed and dated will be returned without being reviewed and stamped "Re-submit".
- .4 The Contractor shall submit a Shop Drawings delivery schedule and provide Shop Drawings in an orderly sequence so as to cause no delay in the Work. Failure to submit Shop Drawings in ample time is not to be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed. Jointly prepare a schedule fixing the dates for submission and return of Shop Drawings.
- .5 The Contract Administrator will review and return Shop Drawings in accordance with the schedule agreed upon or otherwise with reasonable promptness so as to cause no delay in the Work.
- .6 Submit three (3) copies of white prints, plus one (1) copy of reproducibles, and three (3) copies of all fixture cuts and brochures.
- .7 Shop Drawing reviews by the Contract Administrator is solely to ascertain conformance with the general design concept. Responsibility for approval of detail design inherent in Shop Drawings rests with the Contractor and review by the Contract Administrator shall not imply such approval.
- .8 Shop Drawings will be returned to the Contractor with one of the following notations:
 - .1 When stamped "REVIEWED" or "NO EXCEPTIONS TAKEN", distribute additional copies as required for execution of the Work.
 - .2 When stamped "REVIEWED AS MODIFIED" or "MAKE NOTED CORRECTIONS", ensure that all copies for use are modified and distributed, same as specified for "REVIEWED".
 - .3 When stamped "REVISE AND RESUBMIT", make the necessary revisions, as indicated, consistent with the Contract Documents and submit again for review.
 - .4 When stamped "NOT REVIEWED" or "REJECTED", submit other Drawings, brochures, etc., for review consistent with the Contract Documents.
 - .5 Only Shop Drawings bearing "REVIEWED", "NO EXCEPTIONS TAKEN", "MAKE NOTED CORRECTIONS", or "REVIEWED AS MODIFIED" shall be used on the Work unless otherwise authorized by the Contract Administrator.
- .9 After submittals are stamped "REVIEWED", "NO EXCEPTIONS TAKEN", "MAKE NOTED CORRECTIONS" or "REVIEWED AS MODIFIED", no further revisions are permitted unless re-submitted to the Contract Administrator for further review.
- .10 Any adjustments made on Shop Drawings by the Contract Administrator are not intended to change the Contract Price. If it is deemed that such adjustments affect the Contract Price, clearly state as such in writing prior to proceeding with fabrication and installation of Work.

- .11 Make changes in Shop Drawings, which the Contract Administrator may require, consistent with Contract Documents. When re-submitting, notify the Contract Administrator in writing of any revisions other than those requested by the Contract Administrator.
- .12 Shop Drawings indicating design requirements not included in the Contract Documents require the seal of a qualified Professional Engineer, registered in the Province of Manitoba. Calculations shall be submitted for review, if requested, and sealed by a qualified Professional Engineer.
- .13 Only two (2) reviews of Shop Drawings will be made by the Contract Administrator at no cost. Each additional review will be charged to the Contractor at the Contract Administrator's scheduled rates. The Contract Administrator's charges for the additional Work will be deducted from the Contractor's Progress Certificates.
- .14 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.

1.3 PROCEDURES

- .1 The Contractor shall, if required by the Contract Administrator, submit for the review of the Contract Administrator method statements which describe in detail, supplement with Drawings where necessary, the methods to be adopted for executing any portion of Work.
- .2 These statements shall also include details of constructional plant and labour to be employed. Acceptance by the Contract Administrator shall not relieve the Contractor of any of his responsibilities, nor shall reasonable refusal to approve entitle the Contractor to extra payment or an extension of time.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Within the text of the specifications, reference may be made to the following standards:
 - .1 ANSI - American National Standards Institute
 - .2 ASTM - American Society for Testing and Materials International
 - .3 CEC - Canadian Electrical Code (published by CSA)
 - .4 CEMA - Canadian Electrical Manufacturer's Association
 - .5 CISC - Canadian Institute of Steel Construction
 - .6 CPMA - Canadian Paint Manufacturer's Association
 - .7 CGSB - Canadian General Standards Board
 - .8 CSA - Canadian Standards Association
 - .9 ICEA - Insulated Cable Engineers Association
 - .10 IEEE - Institute of Electrical and Electronic Engineers
 - .11 MPI – Master Painters Institute
 - .12 NBC - National Building Code
 - .13 NEMA - National Electrical Manufacturers Association
 - .14 NETA – InterNational Electrical Testing Association
 - .15 SSPC - The Society for Protective Coatings
 - .16 ULC - Underwriters' Laboratories of Canada

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INSPECTION

- .1 Allow Contract Administrator access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Contract Administrator instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 The Contract Administrator will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, the City shall pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies may be engaged by the City for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by the City. Costs of additional tests required due to defective Work shall be paid by the Contractor.
- .2 All equipment required for executing inspection and testing will be provided by the respective agencies.
- .3 Employment of inspection/testing agencies does not relieve or relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by the Contract Administrator at no cost to the City. Pay costs for retesting and reinspection.

1.3 ACCESS TO WORK

- .1 The City, the Contract Administrator, and other authorities having jurisdiction shall have access to the work.

1.4 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by the Contract Administrator as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of the Contract Administrator it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, the City will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Contract Administrator.

1.5 REPORTS

- .1 Submit 4 copies of inspection and test reports to Contract Administrator.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.

1.2 CONTRACTOR'S OFFICE

- .1 Accommodation for the Contractor's office, plant, tools, equipment, and materials (including fuel) shall be the responsibility of the Contractor. Such accommodation at the Site shall be located after consultation with the Contract Administrator. The Contractor shall be responsible for the protection of its plant, tools, equipment, and materials stored on-site. Materials stored on the City's premises shall be neatly stacked and protected from the weather.
- .2 The Contractor shall confine their activities to the minimum area necessary for undertaking and completing the Work. Material and equipment storage areas shall be at locations acceptable to the Contract Administrator.
- .3 The Contractor's construction activities shall not encroach or enter onto private property without written consent from the owner of the property concerned. The Contractor shall provide the Contract Administrator with a copy of the written agreement with the property owner.

1.3 LAYDOWN AND STORAGE

- .1 All construction materials shall be stored at designated Site laydown and storage areas. Stored combustible materials shall be separated by clear space to prevent fire spread and allow access for manual fire fighting equipment, including fire hoses, extinguishers, hydrants, etc.
- .2 Designated areas shall be used for storage of flammable and combustible liquids and gases, which shall be properly equipped for grounding and bonding when refueling vehicles and equipment. Spills shall be contained as required by Provincial Regulations.
- .3 Pressurized dry chemical fire extinguishers of suitable capacity or equally effective extinguishers as per NFPA 10 shall be provided where:
 - .1 Flammable liquids are stored or handled.
 - .2 Temporary oil or gas fire equipment is used.
 - .3 Welding or flame cutting is performed.

1.4 TEMPORARY CONSTRUCTION MATERIALS

- .1 Tarpaulins and plastic coverings shall consist of fire retardant materials, which are UL or FM listed or approved, or which have passed the Large Scale Test specified in NFPA-701.

1.5 TOILETS AND WASHROOMS

- .1 Washroom facilities are available at the SEWPCC for the Contractor's use. Contractor is to ensure that washrooms are kept clean.

1.6 DISPOSAL OF WASTE MATERIALS

- .1 Spoiled and waste materials shall not be dumped, under any circumstances, in any locations other than those approved by the local authorities. Any cost for permits and fees for disposing of waste materials shall be at the Contractor's expense.
- .2 Disposal of all excavated and waste materials shall be in accordance with the requirements of the appropriate provincial regulatory agencies.
- .3 When working anywhere within the Works the Contractor shall at the end of each working day remove the rubbish and leave the Site in a clean and tidy state, to the satisfaction of the Contract Administrator. If this is not done, the City will clean the Site and charge the Contractor.

1.7 PARKING

- .1 The Contractor parking shall be as designated by the Contract Administrator. The parking shall be arranged and maintained so that it does not disrupt the plant's operation and access for the City's operations and maintenance staff.

1.8 USE OF PERMANENT WATER SUPPLY, HEAT, POWER LIGHT, AND TELEPHONE

- .1 The Contractor shall not make use of permanent water supply, heat, power, or telephone inside the SEWPCC without permission from the Contract Administrator.

1.9 SITE SECURITY

- .1 The exterior of the SEWPCC facility is not secure. The City does not normally provide security forces to the plant Site. Contractor is responsible for all material and equipment stored on the site.

1.10 SCAFFOLDING

- .1 Provide and maintain adequate scaffolding as required. Scaffolding is to be rigid, secure, and constructed to ensure adequate safety for workers. Erect without damage to the building or finishes.
- .2 Scaffolding in accordance with CAN/CSA-S269.2.

1.11 HOISTING

- .1 Use of the City's hoist to lower material into the dry well will be permitted. Coordinate with Site personnel and meet all Site safety requirements.

1.12 FACILITY ELECTRICAL SUPPLY AND DISTRIBUTION

- .1 If service interruptions are necessary, such interruptions shall be made only at times approved by the Contract Administrator.

1.13 ACCESS TO WORK

- .1 Access to the facility will be during the period between 7:45 a.m. and 3:45 p.m., Monday to Friday, except holidays.
- .2 The Contract Administrator shall be informed at least 24 hours in advance where the Contractor intends to carry out Work outside normal working hours and no such Work shall be done without the Contract Administrator's approval except when the Work is unavoidable or absolutely necessary for:
 - .1 Preventing injury to any person or saving the life of any person; or
 - .2 Preventing damage to property where the circumstances placing the property in danger could not reasonably have been foreseen and where the immediate carrying out of such Work is necessary in order to prevent damage to that property; in which case the Contractor shall immediately advise the Contract Administrator in writing that such Work outside the normal working hours is necessary and of the reasons for this. He shall also state the nature and extent of Work to be carried out.
- .3 The Contractor is to coordinate activities with City personnel and any other contractors that may be working concurrently on the Site.

1.14 WARNINGS AND TRAFFIC SIGNS

- .1 When Work is performed within public areas, provide and erect adequate warning signs as necessary to give proper warning. Place signs sufficiently in advance to enable public to respond to directions.

1.15 Provide and maintain signs and other devices required to indicate construction activities or other temporary or unusual conditions resulting from the Work.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.2 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around open shafts, and open edges of floors.
- .2 Ensure that access to City of Winnipeg equipment is not impeded for SEWPCC maintenance or operations personnel, except as approved by the Contract Administrator.

1.3 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Be responsible for damage incurred due to lack of or improper protection.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Conform to reference standards, in whole or in part as specifically requested in specifications.
- .2 If there is question as to whether products or systems are in conformance with applicable standards, the Contract Administrator reserves the right to have such products or systems tested to prove or disprove conformance.
- .3 Cost for such testing will be born by the City in event of conformance with Contract Documents or by the Contractor in event of non-conformance.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection. Should disputes arise as to quality or fitness of products, decision rests strictly with the Contract Administrator based upon requirements of Contract Documents.
- .3 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .4 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 METRIC PROJECT

- .1 Unless otherwise noted, this project has been designed and is to be constructed in the International System (SI) of Units metric system of measurements.
- .2 During construction, when specified metric elements are unattainable at the time they are required to meet the construction schedule, the Contractor shall notify the Contract Administrator in writing and suggest alternative substitutions. Costs due to these substitutions shall be borne by the Contractor.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber, etc. on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Remove and replace damaged products at own expense and to satisfaction of the Contract Administrator.
- .8 Touch-up damaged factory finished surfaces to Contract Administrator's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify the Contract Administrator in writing, of conflicts between specifications and manufacturer's instructions, so that the Contract Administrator will establish the course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Contract Administrator to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.8 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.9 LOCATION OF FIXTURES

- .1 Inform the Contract Administrator of conflicting installation. Install as directed.

1.10 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .4 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .5 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.11 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of the Contract Administrator.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 WORKMANSHIP

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify the Contract Administrator if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. The Contract Administrator reserves the right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with the Contract Administrator, whose decision is final.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of the City or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of the City or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.3 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.

- .3 Remove and replace defective and non-conforming Work.
- .4 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .5 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .6 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .7 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .8 Restore work with new products in accordance with requirements of Contract Documents.
- .9 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .10 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material to the full thickness of the construction element.
- .11 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by the City or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by the Contract Administrator. Do not burn waste materials on site.
- .3 Provide on-site containers for collection of waste materials and debris.
- .4 Dispose of waste materials and debris off site.
- .5 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .8 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .9 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .3 Copy will be returned after final inspection, with Contract Administrator's comments.
- .4 Revise content of documents as required prior to final submittal.
- .5 Two (2) advance copies of the manuals shall be submitted prior to Substantial Performance of the Work for review and comments. After review, four (4) copies of the final manuals shall be submitted. Each copy shall be clearly titled to show all of the information required by the Specifications as well as operational information including: the item of Work concerned, a City's Contract number, the name and address of the Contractor, the issue date, operational information on equipment, cleaning and lubrication schedules, filters, overhaul and adjustment schedules.
- .6 Furnish evidence, if requested, for type, source and quality of products provided.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.

1.2 OPERATING AND MAINTENANCE MANUALS

- .1 Prepare using personnel experienced in maintenance and operation of described products.
- .2 For the guidance of the City's operating and maintenance personnel, the Contractor shall prepare O&M Manuals for the Work, describing in detail the construction of each part of the Work and the recommended procedure for operation, servicing and maintenance.
- .3 All instructions in these manuals shall be in simple language to guide the City in the proper operating and maintenance of this installation.
- .4 In addition to information called for in the Specifications, include the following:
 - .1 Title sheet, labelled "Operation and Maintenance Instructions", and containing project name and date.
 - .2 List of contents.
 - .1 Brochures/catalogue excerpts of all components of the Work.
 - .2 Complete set of equipment and assembly drawings
 - .3 Installation, start-up, O&M Manuals
 - .4 Any specific product or maintenance manual requirements from the Specifications
- .5 Reviewed Shop Drawings of all equipment.

- .6 As-Constructed Drawings of all installations.
- .7 Names, addresses, and telephone numbers of all major sub-contractors and suppliers.
- .8 The Contractor shall modify and supplement the manual as required by the Contract Administrator.
- .9 Format to be as follows:
 - .1 Organize data as instructional manual.
 - .2 Binders: vinyl, hard covered, 3 'D' ring, with spine and face pockets.
 - .3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.
 - .4 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.3 RECORD DRAWINGS

- .1 After award of Contract, the Contract Administrator will provide a complete set of Drawings for the purpose of maintaining Project Record Drawings. Accurately record significant deviations from Contract Documents caused by Site conditions and changes ordered by the Contract Administrator. Update daily.
- .2 Record locations of concealed elements of mechanical and electrical services.
- .3 Identify Drawings as "Project Record Copy". Maintain in good condition and make available for inspection on-site by Contract Administrator at all times.
- .4 On completion of the Work, two weeks prior to final inspection, submit Record Drawings to Contract Administrator for review.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN3 A165 SERIES-94(R2000), CSA Standards on Concrete Masonry Units covers: A165.1, A165.2, A165.3.
 - .2 CSA A179-94(R1999), Mortar and Grout for Unit Masonry.
 - .3 CSA-A370-94(C1999), Connectors for Masonry.
 - .4 CSA-A371-94(R1999), Masonry Construction for Buildings.
 - .5 CSA G30.14-M1983(R1998), Deformed Steel Wire For Concrete Reinforcement.
 - .6 CAN/CSA G30.18-M92, Billet-Steel Bars for Concrete Reinforcement.
 - .7 CSA-S304.1-94(R2001), Masonry Design for Buildings.
 - .8 CAN/CSA A82.1-M87(R1999), Burned Clay Brick (Solid Masonry Units Made From Clay or Shale).

1.2 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Sections 01 33 00 - Submittal Procedures.
- .2 Shop Drawings :
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Shop drawings consist of bar bending details, lists and placing drawings.
 - .3 On placing drawings, indicate sizes, spacing, location and quantities of reinforcement and connectors.

Part 2 Products

2.1 MASONRY UNITS

- .1 Standard concrete block units: to CAN3-A165 Series (CAN3-A165.1).
 - .1 Classification: S/15/A/M for load bearing walls.
 - .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.
- .2 Special fire resistant concrete block units: to CAN3-A165 Series (CAN3-A165.1) as modified below.
 - .1 Classification: H/15/B/M except as modified by fire resistance requirements specified below.
 - .2 Fire resistant characteristics: aggregate used in units and equivalent thickness of units to the Supplement to the National Building Code of Canada, Chapter 2 for fire-resistance ratings indicated.

- .3 Size: modular.

2.2 REINFORCEMENT AND CONNECTORS

- .1 Bar reinforcement: to CSA-A371 and CAN/CSA G30.18, Grade 400.
- .2 Wire reinforcement: to CSA-A371 and CSA G30.14, truss type.
- .3 Connectors shall be corrosion resistant: to CSA-A370 and CSA-S304.

2.3 MORTAR AND GROUT

- .1 Mortar: to CSA A179.
 - .1 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.
 - .2 Colour: ground coloured natural aggregates or metallic oxide pigments.
- .2 Mortar Type: S 25 MPa strength,
- .3 Grout: to CSA A179, Table 3.

2.4 ACCESSORIES

- .1 Weep hole vents: purpose-made PVC, where required.
- .2 Nailing Inserts: 0.5 mm minimum thickness, galvanized.
- .3 Bolts: 12 mm diameter x 150 mm long with ends bent 50 mm at 90 degrees.

Part 3 Execution

3.1 INSTALLATION

- .1 Do masonry work in accordance with CSA-A371 except where specified otherwise.
 - .1 Bond: running stretcher bond with vertical joints in perpendicular alignment and centred on adjacent stretchers above and below.
 - .2 Coursing height: 200 mm, for one block and one joint, for three bricks and three joints. Jointing: tool where exposed or where paint or other finish coating is specified to provide smooth compressed concave surface.
- .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.

3.2 CONSTRUCTION

- .1 Exposed masonry:
 - .1 Remove chipped, cracked, and otherwise damaged units, in exposed masonry and replace with undamaged units.
 - .2 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects. Make cuts straight, clean, and free from uneven edges.
- .2 Building-In:
 - .1 Install masonry connectors and reinforcement where indicated on drawings.
 - .2 Build in items required to be built into masonry.
 - .3 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
 - .4 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.
 - .5 Install loose steel lintels over openings where indicated.
- .3 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.
- .4 Support of loads:
 - .1 Use 25 MPa concrete, where concrete fill is used in lieu of solid units.
 - .2 Use grout to CSA A179 where grout is used in lieu of solid units.
 - .3 Install building paper below voids to be filled with concrete; keep paper 25 mm back from faces of units.
- .5 Provision for movement:
 - .1 Leave 3 mm space below shelf angles.
 - .2 Leave 6 mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.
 - .3 Built masonry to tie in with stabilizers, with provision for vertical movement.
- .6 Interface with other work:
 - .1 Cut openings in existing work as indicated.
 - .2 Openings in walls: as reviewed by the Contract Administrator.
 - .3 Make good existing work. Use materials to match existing.
- .7 Build in flashings in masonry in accordance with CSA-A371.
 - .1 Install flashings under exterior masonry bearing on foundation walls, slabs, shelf angles, and steel angles over openings. Install flashings under weep hole courses and as indicated.
 - .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, and as follows:
 - .1 For masonry backing embed flashing 25 mm in joint.

- .2 For concrete backing, insert flashing into reglets.
- .3 For wood frame backing, staple flashing to walls behind sheathing paper.
- .4 For gypsum board backing, bond to wall using manufacturer's recommended adhesive.
- .3 Lap joints 150 mm and seal with adhesive.
- .8 Install weep hole vents in vertical joints immediately over flashings, in exterior wythes of cavity wall and masonry veneer wall construction, at maximum horizontal spacing of 600 mm on centre.

3.3 REINFORCING AND CONNECTING

- .1 Install masonry connectors and reinforcement in accordance with CSA-A370, CSA-A371 and CSA-S304.1 unless indicated otherwise.
- .2 Prior to placing concrete, obtain Contract Administrator's approval of placement of reinforcement and connectors.

3.4 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-S304.1, CSA-A371 and as indicated.

3.5 REINFORCED LINTELS AND BOND BEAMS

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

3.6 GROUTING

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

3.7 ANCHORS

- .1 Supply and install metal anchors as indicated.

3.8 LATERAL SUPPORT AND ANCHORAGE

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

3.9 SITE TOLERANCES

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

3.10 FIELD QUALITY CONTROL

- .1 Inspection and testing will be carried out by Testing Laboratory designated by the Contract Administrator.

3.11 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.12 PROTECTION

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

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes and standards referenced in this section refer to the latest edition thereof.
- .2 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A36/A36M Specification for Structural Steel.
 - .2 ASTM A193/A193M Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.
 - .3 ASTM A307 Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - .4 ASTM A325 Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - .5 ASTM A325M Specification for High-Strength Bolts for Structural Steel Joints Metric.
 - .6 ASTM A490M Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric).
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-85.10 Protective Coatings for Metals.
- .4 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturer's Association (CPMA).
 - .1 CISC/CPMA 1 Quick-Drying, One-Coat Paint for Use on Structural Steel.
 - .2 CISC/CPMA 2 Quick-Drying, Primer for use on Structural Steel.
- .5 Canadian Standards Association (CSA International)
 - .1 CAN/CSA G40.20/G40.21 General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA-S16 Limit States Design of Steel Structures.
 - .4 CAN/CSA-S136 Cold Formed Steel Structural Members.
 - .5 CSA-S136.1 Commentary on CSA Standard S136.
 - .6 CSA W47.1 Certification of Companies for Fusion Welding of Steel Structures.
 - .7 CSA W48 Filler Metals and Allied Materials for Metal Arc Welding.
 - .8 CSA W55.3 Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
 - .9 CSA W59 Welded Steel Construction (Metal Arc Welding)
- .6 Master Painters Institute
 - .1 MPI-INT 5.1 Structural Steel and Metal Fabrications.
- .7 The Society for Protective Coatings (SSPC)

- .1 SSPC SP-6/NACE No. 3 Commercial Blast Cleaning.

1.2 DESIGN REQUIREMENTS

- .1 Design details and connections in accordance with requirements of CAN/CSA-S16 to resist forces, moments, shears and allow for movements indicated.
- .2 Shear connections:
 - .1 Select framed beam shear connections from an industry accepted publication such as "Handbook of the Canadian Institute of Steel Construction" when connection for shear only (standard connection) is required.
 - .2 Select or design connections to support reaction from maximum uniformly distributed load that can be safely supported by beam in bending, provided no point loads act on beam, when shears are not indicated.
- .3 Submit sketches and design calculations stamped and signed by qualified professional engineer licensed in Province of Manitoba, Canada for non standard connections.

1.3 SHOP DRAWINGS

- .1 Submit shop drawings including fabrication and erection documents and materials list in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Erection drawings: indicate details and information necessary for assembly and erection purposes including:
 - .1 Description of methods.
 - .2 Sequence of erection.
 - .3 Type of equipment used in erection.
 - .4 Temporary bracings.
- .3 Ensure Fabricator drawings showing designed assemblies, components and connections are stamped and signed by qualified professional engineer licensed in the province of Manitoba, Canada.

1.4 QUALITY ASSURANCE

- .1 Provide structural steel Fabricator's affidavit stating that materials and products used in fabrication conform to applicable material and products standards specified and indicated.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials.
- .2 Divert unused metal materials from landfill to a metal recycling facility.
- .3 Divert unused paint material from landfill to official hazardous material collections site.
- .4 Do not dispose of unused paint materials into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

- .1 Structural steel shapes, plates and bars: to CAN/CSA-G40.21 Grade 350W.
- .2 Bolts, nuts and washers: to ASTM A325.
- .3 Concrete Anchor Bolts, Nuts and Washers: HAS –R-304 anchor rods with HVU adhesive capsules or Stainless Steel Kwik Bolt 3 Expansion Anchor bolts and nuts, manufactured by Hilti (Canada) Ltd., where specified.
- .4 Welding materials: to CSA W59 and certified by Canadian Welding Bureau.
- .5 Shop paint primer: to CISC/CPMA2-75.
- .6 Hot dip galvanizing: galvanize steel, where indicated, to CAN/CSA-G164, minimum zinc coating of 610 g/m².

2.2 FABRICATION

- .1 Fabricate structural steel in accordance with CAN/CSA-S16 and in accordance with reviewed shop drawings.
- .2 Verify all dimensions on site before preparing shop drawings or proceeding with shop work.
- .3 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .4 The general dimensions and details of the metal fabrications are shown on the drawings where practical. Such details and designs are suggested concepts of design.
- .5 Where possible, fit and shop assemble work in largest possible section, ready for erection.
- .6 Thoroughly clean all surfaces of rust, scale, grease and foreign matter prior to prime painting or galvanizing.
- .7 Continuously seal members by continuous welds where indicated. Grind smooth.

2.3 SHOP PAINTING

- .1 Clean, prepare surfaces and shop prime structural steel in accordance with CAN/CSA-S16 and MPI INT 5.1, except where members to be encased in concrete.
- .2 Clean members, remove loose mill scale, rust, oil, dirt and other foreign matter. Prepare surface according to SSPC-SP-6.
- .3 Apply one coat of primer in shop to steel surfaces, except:
 - .1 Surfaces to be encased in concrete.
 - .2 Surfaces and edges to be field welded.

- .3 Faying surfaces of friction-type connections.
- .4 Below grade surfaces in contact with soil.
- .4 Apply paint under cover, on dry surfaces when surface and air temperatures are above 5 degrees C.
- .5 Maintain dry condition and 5 degrees C minimum temperature until paint is thoroughly dry.
- .6 Strip paint from bolts, nuts, sharp edges and corners before prime coat is dry.

Part 3 Execution

3.1 GENERAL

- .1 Structural steel work: in accordance with CAN/CSA-S16.
- .2 Welding: in accordance with CSA W59.
- .3 Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.
- .4 Touch-up galvanizing with minimum 2 coats of zinc rich primer.

3.2 CONNECTION TO EXISTING WORK

- .1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Contract Administrator for direction before commencing fabrication.

3.3 MARKING

- .1 Mark materials in accordance with CAN/CSA G40.20/G40.21. Do not use die stamping. If steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection.
- .2 Match marking: shop mark bearing assemblies and splices for fit and match.

3.4 ERECTION

- .1 Erect structural steel, as indicated and in accordance with CAN/CSA-S16-01 and in accordance with reviewed erection drawings.
- .2 Make adequate provision for all erection loads, and for sufficient temporary bracing to maintain structure safe, plumb and in true alignment until completion of erection and installation of necessary permanent bracing.
- .3 Field connections are to be bolted wherever possible.
- .4 Field cutting or altering structural members: to approval of Contract Administrator.

- .5 Clean with mechanical brush and touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.
- .6 Continuously seal members by continuous welds where indicated. Grind smooth.

3.5 FIELD QUALITY CONTROL

- .1 Inspection and testing of materials and workmanship will be carried out by testing laboratory designated by the Contract Administrator and paid for by the City.
- .2 Provide safe access and working areas for testing on site, as required by testing agency.
- .3 Submit test reports to Contract Administrator within two weeks of completion of inspection.

3.6 FIELD PAINTING

- .1 Paint in accordance with Section 09 91 23 - Painting.
- .2 Colour to match existing, including:
 - .1 Lifting structures – International Safety Yellow
 - .2 Handrails – Galvanized & Stainless Steel as noted on drawings
 - .3 Platforms – Galvanized
 - .4 Davit Bases – Stainless Steel as noted on drawings
 - .5 Doors – Gloss Blue to match existing
 - .1 Touch up damaged surfaces and surfaces without shop coat with primer to SSPC-SP-6 except as specified otherwise. Apply in accordance with CAN/CGSB 85.10.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes and standards referenced in this section refer to the latest edition thereof.
- .2 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A53/A53M-02, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A269, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A270 Specifications for Stainless Steel Bars and shapes .
 - .4 ASTM A307-02, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.40 Anti-corrosive Structural Steel Alkyd Primer.
 - .2 CAN/CGSB-1.181 Ready-Mixed, Organic Zinc-Rich Coating.
- .4 Canadian Standards Association (CSA International)
 - .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 CAN/CSA-S16.1, Limit States Design of Steel Structures.
 - .4 CSA W48, Filler Metals and Allied Materials for Metal Arc Welding
 - .5 CSA W59 Welded Steel Construction (Metal Arc Welding).
 - .6 CSA 47.1 Classification of Companies for Fusion Welding of Steel

1.2 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
 - .1 For finishes, coatings, primers and paints.
- .2 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
 - .3 Include erection drawings, elevations, and details where applicable.
 - .4 Indicate welded connections using CISC standard welding symbols. Clearly indicate net weld lengths.

- .5 Shop drawings and design briefs are to be signed and sealed by a professional engineer registered in the Province of Manitoba.

1.3 QUALITY ASSURANCE

- .1 Test Reports: Submit Certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: Submit Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Storage and Protection:
 - .1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.
 - .2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Divert unused metal materials from landfill to metal recycling facility..

Part 2 Products

2.1 MATERIALS

- .1 Stainless steel plates, sheets and strips: to ASTM A167 Standard Specifications for Stainless and Heat-Resistant Chromium-Nickel Steel Plate, Sheet, and Strip.
- .2 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W.
- .3 Steel pipe: to ASTM A53/A53M standard weight galvanized finish.
- .4 Welding materials: to CSA W59.
- .5 Welding electrodes: to CSA W48 Series.
- .6 Bolts, Nuts and Washers : to ASTM A 320 Standard Specification for Alloy Steel and Stainless Steel Bolting Materials for Low temperature Service

- .7 Concrete Anchor Bolts, Nuts and Washers: HAS –R-304 anchor rods with HVU adhesive capsules or Stainless Steel Kwik Bolt 3 Expansion Anchor bolts and nuts, manufactured by Hilti (Canada) Ltd where specified.
- .8 Stainless Steel Bolts : to ASTM F 738 Stainless Steel Metric Bolts, Screws and Studs.
- .9 Stainless Steel Nuts: to ASTM F594 Standard Specifications for Stainless Steel Nuts.
- .10 Stainless steel tubing: to ASTM A269, Type 302 Seamless welded with AISI No. 4 finish.
- .11 Davit Bases: Stainless steel wall mount channels and wall mount sleeves by Hilti (Canada) Ltd.
- .12 Davit Base Anchors: Hilti HAS – R- 304 anchor rods with HVU adhesive capsules by Hilti (Canada) Ltd.
- .13 Grout: non-shrink, non-metallic cementitious SIKKA 212 or MASTERFLOW 713, flowable.

2.2 FABRICATION

- .1 Verify all dimensions on site before preparing shop drawings or proceeding with shop work.
- .2 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .3 The general dimensions and details of the metal fabrications are shown on the drawings where practical. Such details and designs are suggested concepts of design.
- .4 Where possible, fit and shop assemble work in largest possible section, ready for erection.
- .5 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- .6 Thoroughly clean all surfaces of rust, scale, grease and foreign matter prior to prime painting or galvanizing.
- .7 Galvanize and prime paint items as shown. Do not shop prime surfaces in contact with or embedded in concrete or requiring field welding.
- .8 Stainless steel grain direction: one direction throughout.

2.3 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 610g/m² to CAN/CSA-G164.
- .2 SPEC NOTE ENVIRONMENT: Solvent borne paints contain volatile organic compounds (VOCs) such as petroleum distillates. Every year thousands of tonnes of VOCs are released into the atmosphere. These VOCs react with nitrogen oxides in the presence of sunlight to produce ground level ozone and photochemical smog. The use of

paints with reduced levels of VOCs will reduce these emissions thereby helping to reduce source emissions and possible adverse health effects. The Environmental Choice guideline CCD-47a and CCD-048 provides acceptable standards for products that provide reduced environmental impacts.

- .3 Shop coat primer: to CAN/CGSB-1.40.
- .4 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.
- .5 Remove rust and postweld discoloration from stainless steel by grinding, using only stainless steel tools.
- .6 Passivate stainless steel, which was cleaned by grinding, with a solution of 12-15 percent nitric acid and 3 percent hydrofluoric acid.

2.4 SHOP PAINTING

- .1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 5 degrees C.
- .3 Clean surfaces to be field welded; do not paint.

Part 3 Execution

3.1 ERECTION

- .1 Obtain Contract Administrator's permission prior to Site cutting or making adjustments which are not part of the scheduled Work.
- .2 Install work of this Section using skilled craftsmen and in accordance with manufacturer's recommendations where applicable.
- .3 Perform welding work in accordance with CSA W59 unless specified otherwise.
- .4 Welding work to be performed by a firm certified by the Canadian Welding Bureau to the requirements of CSA W47.1 in Division 1 or 2.
- .5 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .6 Provide suitable means of anchorage acceptable to Contract Administrator such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .7 Make provisions for erection stresses and temporary bracing. Keep work in alignment at all times.
- .8 Replace items damaged in course of installation.

- .9 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .10 Provide components for building by other sections in accordance with shop drawings and schedule.
- .11 Make field connections with bolts to CAN/CSA-S16.1, or weld.
- .12 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
- .13 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .14 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM A653/A653M-01a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM B29-92(1997), Specification for Refined Lead.
 - .3 ASTM B749-97, Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
 - .2 CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.
- .3 Canadian Standards Association (CSA International)
 - .1 G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA W59-M1989(R2001), Welded Steel Construction (Metal Arc Welding) (Metric Version).
- .4 Canadian Steel Door Manufacturers' Association, (CSDMA).
 - .1 CSDMA, Specifications for Commercial Steel Doors and Frames, 1990.
 - .2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 1990.
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA 80-99, Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252-99, Standard Methods of Fire Tests of Door Assemblies.
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN4-S104-80(R1985), Fire Tests of Door Assemblies.
 - .2 CAN4-S105-85(R1992), Fire Door Frames Meeting the Performance Required by CAN4-S104.
- .7 CAN/ULC-S701-01, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
- .8 CAN/ULC-S702-97, Thermal Insulation, Mineral Fibre, for Buildings.
- .9 CAN/ULC-S704-01, Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.2 DESIGN REQUIREMENTS

- .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35°C to 35°C.

- .2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

1.3 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, arrangement of hardware and fire rating and finishes.
- .3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing, fire rating and finishes.

1.4 REQUIREMENTS

- .1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104M, NFPA 252 for ratings specified or indicated.
- .2 Provide fire labelled frame products for those openings requiring fire protection ratings, as scheduled. Test products in strict conformance with CAN4-S104M, ASTM E152 or NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

Part 2 Products

2.1 MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A653M, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Minimum base steel thickness (gauge) in accordance with CSDFMA Table 1, except as follows:
 - .1 Door face sheets: 1.2 mm (18 gauge).
 - .2 Frames: 1.6 mm (16 gauge).
 - .3 Astragals: 1.9 mm (14 gauge).
 - .4 Floor anchors: 1.6 mm (16 gauge).
 - .5 Jamb anchors: "T" strap type 1.6 mm (16 gauge); "L" type 1.2 mm (18 gauge); stirrup-strap type 15 x 250 x 1.6 mm (16 gauge); stud type 1.2 mm (18 gauge); wire type 4.0 mm (9 gauge).
 - .6 Reinforcing steel: locks, strikes, 1.6 mm (16 gauge); butts, hinges 3.4 mm (10 gauge); surface mounted hardware 2.7 mm (12 gauge).
 - .7 Flush bolts: 3.4 mm (10 gauge).
 - .8 Channel reinforcement for openings: 0.9 mm (20 gauge).
 - .9 Mortar guard boxes: 0.8 mm (22 gauge).
 - .10 Jamb spreaders: 1.2 mm (18 gauge).

- .3 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.

2.2 DOOR CORE MATERIALS

- .1 Honeycomb construction:
 - .1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m³ minimum sanded to required thickness.
 - .2 Stiffened: face sheets laminated insulated core.
 - .1 Fibreglass: to CAN/ULC-S702, semi-rigid Type 1 density 24 kg/m³.
 - .3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250°C at 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, ASTM E152 or NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.3 ADHESIVES

- .1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

2.4 PRIMER

- .1 Touch-up prime CAN/CGSB-1.181.

2.5 PAINT

- .1 Field paint steel doors and frames in accordance with Section 09 91 23 - Interior Painting. Protect weatherstrips from paint. Provide final finish shall be free of scratches or other blemishes.

2.6 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Exterior and interior top and bottom caps: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19M.
- .3 Door bottom seal: Neoprene
- .4 Metallic paste filler: to manufacturer's standard.
- .5 Fire labels: metal rivited.

2.7 FRAMES FABRICATION GENERAL

- .1 Fabricate frames in accordance with CSDMA specifications.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.

- .3 Interior frames: 1.6 mm welded or knocked-down type construction.
- .4 Blank, reinforce, drill and tap frames for mortised, templated hardware, using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .5 Protect mortised cutouts with steel guard boxes.
- .6 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
- .7 Manufacturer's nameplates on frames and screens are not permitted.
- .8 Conceal fastenings except where exposed fastenings are indicated.
- .9 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- .10 Insulate exterior frame components with polyurethane insulation.

2.8 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.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm o.c. maximum.

2.9 FRAMES: WELDED TYPE

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.
- .7 Fabricate frame products for rough openings specified on the project drawings and as measured in the field in sections suitable for field assembly.

- .8 Securely attach lead to inside of frame profile from return to jamb soffit (inclusive) on door side of frame only.

2.10 FRAMES: KNOCKED-DOWN TYPE

- .1 Ship knocked-down type frames unassembled.
- .2 Provide frames with mechanical joints which inter-lock securely and provide functionally satisfactory performance when assembled and installed in accordance with CSDMA Recommended Installation Guide for Steel Doors and Frames.
- .3 Securely attach floor anchors to inside of each jamb profile.

2.11 DOOR FABRICATION GENERAL

- .1 Doors: swing type, flush.
- .2 Interior doors: honeycomb construction.
- .3 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.
- .4 Blank, reinforce, drill doors and tap for mortised, templated hardware.
- .5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- .6 Reinforce doors where required, for surface mounted hardware.
- .7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .8 Provide fire labelled doors for those openings requiring fire protection ratings.
- .9 Manufacturer's nameplates on doors permitted on hinge side of door concealed from

2.12 DOORS: HONEYCOMB CORE CONSTRUCTION

- .1 Form each face sheet for interior doors from 1.6 mm sheet steel with honeycomb core laminated under pressure to face sheets.

Part 3 Execution

3.1 INSTALLATION GENERAL

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .2 Install doors and frames to CSDMA Installation Guide.

3.2 FRAME INSTALLATION

- .1 Set frames plumb, square, level and at correct elevation.
- .2 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 Caulk perimeter of frames between frame and adjacent material.
- .6 Maintain continuity of air barrier.

3.3 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 10 - Door Hardware - General.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
 - .1 Hinge side: 1.0 mm.
 - .2 Latchside and head: 1.5 mm.
 - .3 Finished floor and thresholds: 13 mm , except where doors are fitted with exit rod devices margin shall be 6 mm.
- .3 Adjust operable parts for correct function.

3.4 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).
 - .1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-69.17-M86(R1993), Bored and Preassembled Locks and Latches.
 - .2 CAN/CGSB-69.18-M90/ANSI/BHMA A156.1-1981, Butts and Hinges.
 - .3 CAN/CGSB-69.19-93/ANSI/BHMA A156.3-1984, Exit Devices.
 - .4 CAN/CGSB-69.20-M90/ANSI/BHMA A156.4-1986, Door Controls (Closers).
 - .5 CAN/CGSB-69.21-M90/ANSI/BHMA A156.5-1984, Auxiliary Locks and Associated Products.
 - .6 CAN/CGSB-69.29-93/ANSI/BHMA A156.13-1987, Mortise Locks and Latches.
 - .7 CAN/CGSB-69.31-M89/ANSI/BHMA A156.15-1981, Closer/Holder Release Device.
 - .8 CAN/CGSB-69.32-M90/ANSI/BHMA A156.16-1981, Auxiliary Hardware.
 - .9 CAN/CGSB-69.33-M90/ANSI/BHMA A156.17-1987, Self-closing Hinges and Pivots.
 - .10 CAN/CGSB-69.34-93/ANSI/BHMA A156.18-1987, Materials and Finishes.

1.2 SUBMITTALS

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

1.3 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

1.4 HARDWARE LIST

- .1 Submit contract hardware list in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Indicate specified hardware, including make, model material, function, size, finish and other pertinent information.

1.5 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data for door closers, locksets, door holders and fire exit hardware for incorporation into Operations and Maintenance manuals.
- .2 Instruct maintenance staff regarding proper care, cleaning and general maintenance on door hardware.

Part 2 Products

2.1 HARDWARE ITEMS

- .1 Use one manufacturer's products only for similar items.
- .2 Only door locksets and latch sets listed on CGSB Qualified Products List are acceptable for use on this project.
- .3 Use one Manufacturer's products for all similar items.

2.2 DOOR HARDWARE

- .1 Locks and latches:
 - .1 Bored and preassembled locks and latches: to CAN/CGSB-69.17, series 2000 preassembled lock, grade 1 designed for function and keyed in accordance with the City's facility standards.
 - .2 Lever handles: plain design.
 - .3 Normal strikes: box type, lip projection not beyond the jamb.
 - .4 Cylinders: key into keying system as instructed by the Contract Administrator.
 - .5 Finished: to match existing facility standards.
- .2 Butts and hinges:
 - .1 Butts and hinges: to CAN/CGSB-69.20, designated by letter A and numeral identifiers, followed by size and finish.
- .3 Exit devices: to CAN/CGSB-69.19, type modern design.
- .4 Door Closers and Accessories:
 - .1 Door controls (closers): to CAN/CGSB-69.20.
- .5 Door bottom seal: heavy duty, door seal of extruded aluminum frame and solid closed cell neoprene weather seal, recessed in door bottom.
- .6 Thresholds: full width of door opening, extruded aluminium.
- .7 Weatherstripping:
 - .1 Head and jamb seal: Neoprene
 - .2 Door bottom seal: Neoprene

- .8 Smoke Seals: Neoprene bulb, fire resistant, adhesive backed, set in doorframe rabbet.

2.3 FASTENINGS

- .1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .2 Exposed fastening devices to match finish of hardware.
- .3 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.
- .4 Use fasteners compatible with material through which they pass.

2.4 KEYING

- .1 Key Secondary Clarifier Electrical Room door to match existing door.
- .2 Provide keys in duplicate for every lock in this Contract.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

- .1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.
- .2 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .3 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

3.3 ADJUSTING

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Lubricate hardware, operating equipment and other moving parts.

- .3 Adjust door hardware to provide tight fit at contact points with frames.

3.4 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.
- .3 Remove protective material from hardware items where present.

3.5 SCHEDULE

- .1 Secondary Clarifier Electrical Room Door:
 - .1 1-1/2 pr butts A8111, 114 x 101 mm 646 hinges.
 - .2 1 locksets 301D, MK and KD 630 3 wall stops L01D 619.
 - .3 1 kickplates 203 mm high 630.
 - .4 1 door sweep
 - .5 1 closer
 - .6 1 wall stop.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Master Painters Institute (MPI)
 - .1 MPI Architectural Painting Specifications Manual, 2004.

1.2 QUALITY ASSURANCE

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit product data and instructions for each paint and coating product to be used.

1.4 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 °C for 24 hours before, during and after paint application until paint has cured sufficiently.
 - .2 Perform no painting work when the maximum moisture content of the substrate exceeds:
 - .1 12% for concrete and masonry (clay and concrete brick/block).
 - .3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".

Part 2 Products

2.1 MATERIALS

- .1 Provide paint materials for paint systems from single manufacturer.
- .2 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI Architectural Painting Specification Manual "Approved Product" listing.
- .3 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.
- .4 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids:
 - .1 Water-based, water soluble, water clean-up.
 - .2 Non-flammable, biodegradable.

- .3 Manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
- .4 Manufactured without compounds which contribute to smog in the lower atmosphere.
- .5 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.

2.2 COLOURS

- .1 Colours to match existing Site conditions.
- .2 Submit proposed Colour Schedule to Contract Administrator for review.

2.3 INTERIOR PAINTING SYSTEMS

- .1 Concrete masonry units: smooth and split face block and brick:
 - .1 INT 4.2C – Alkyd, gloss finish for wet environments.
- .2 Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
- .3 Stainless steel: unpolished:

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

3.2 GENERAL

- .1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 PREPARATION

- .1 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 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 building occupants in and about the building.
- .2 Surface Preparation:

- .1 Remove electrical cover plates, light fixtures, surface hardware on doors and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
- .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
- .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Contract Administrator.
- .3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
 - .1 Remove dust, dirt, and other surface debris by wiping with dry, clean cloths.
 - .2 Wash surfaces with a biodegradable detergent and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
 - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 - .4 Allow surfaces to drain completely and allow to dry thoroughly.
 - .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
 - .6 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.
- .5 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.
- .6 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 by brushing with clean brushes.
- .7 Touch up of shop primers with primer as specified.
- .8 Do not apply paint until prepared surfaces have been accepted by Contract Administrator.

3.4 APPLICATION

- .1 Method of application to be as approved by Contract Administrator.
- .2 Brush and Roller Application:
 - .1 Apply paint in uniform layer using brush and/or roller type suitable for application.
 - .2 Work paint into cracks, crevices and corners.

- .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
- .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
- .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Spray application:
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
 - .3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
 - .4 Brush out immediately all runs and sags.
 - .5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.
- .5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .7 Sand and dust between coats to remove visible defects.
- .8 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.5 FIELD QUALITY CONTROL

- .1 Standard of Acceptance:
 - .1 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM A53/A53M-02, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A90/A90M-01, Standard Test Method for Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
 - .3 ASTM A121-99, Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.
 - .4 A653/A653M-03, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .5 ASTM C618-03, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
 - .6 ASTM F1664-01, Standard Specification for Poly(Vinyl Chloride) (PVC)-Coated Steel Tension Wire Used with Chain-Link Fence.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-138.1-96, Fabric for Chain Link Fence.
 - .2 CAN/CGSB-138.2-96, Steel Framework for Chain Link Fence.
 - .3 CAN/CGSB-138.3-96, Installation of Chain Link Fence.
 - .4 CAN/CGSB-138.4-96, Gates for Chain Link Fence.
 - .5 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International).
 - .1 CAN/CSA-A23.1/A23.2-00(August 2001), Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
 - .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA-A3000-98(R2002), Cementitious Materials Compendium. Includes:
 - .1 CAN/CSA-A23.5-98, Supplementary Cementing Materials
- .4 Department of Justice Canada (Jus).
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .6 The Master Painters Institute (MPI) - Architectural Painting Specification Manual - [March 1998].
 - .1 MPI # 18, Organic Zinc Rich Primer.
- .7 Transport Canada (TC).
 - .1 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

1.2 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit product data sheets the following:
 - .1 exterior gate exit panic hardware including back plate and gate latch protector in galvanized finish.
 - .2 attachment hardware, including post fasteners, latch strikes and receiving brackets in galvanized finish.

Part 2 Products

2.1 MATERIALS

- .1 Chain-link fence fabric: to CAN/CGSB-138.1.
 - .1 Type 1 ClassA heavy style, Grade 1.
 - .2 Height of fabric: as shown on drawings or required to match existing.
- .2 Posts, braces and rails: to CAN/CGSB-138.2, galvanized steel pipe. Dimensions as indicated on drawings or required to match existing.
- .3 Top and bottom tension wire: to CAN/CGSB-138.2, single strand, galvanized steel wire.
- .4 Tie wire fasteners: galvanized steel wire
- .5 Tension bar: to ASTM A653/A653M, 5 x 20 mm minimum galvanized steel.
- .6 Gates: to CAN/CGSB-138.4.
- .7 Gate frames: to ASTM A53/A53M, galvanized steel pipe, standard weight 45 mm outside diameter pipe for outside frame, 35 mm outside diameter pipe for interior bracing.
 - .1 Fabricate gates as indicated with electrically welded joints, and hot-dip galvanized after welding.
 - .2 Fasten fence fabric to gate with twisted selvage at top.
 - .3 Furnish gates with galvanized malleable iron hinges, latch and latch catch with provision for padlock which can be attached and operated from either side of installed gate.
- .8 Fittings and hardware: to CAN/CGSB-138.2, galvanized steel.
 - .1 Tension bar bands: 3 x 20 mm minimum galvanized steel or 5 x 20 mm minimum aluminum.
 - .2 Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail.
 - .3 Overhang tops to provide waterproof fit, to hold tops.
 - .4 Turnbuckles to be drop forged.

2.2 FINISHES

- .1 Galvanizing:
 - .1 For chain link fabric: to CAN/CGSB-138.1 Grade 2.
 - .2 For pipe: 550 g/m² minimum to ASTM A90.
 - .3 For other fittings: to CAN/CSA-G164.

Part 3 Execution

3.1 INSTALLATION OF GATES AND HARDWARE

- .1 Install gates in locations as indicated.

Install gate exit panic hardware including back plate and gate latch protector in accordance with manufactures written instructions where called for on the drawings.

3.2 TOUCH UP

- .1 Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas.
 - .1 Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

3.3 CLEANING

- .1 Clean and trim areas disturbed by operations.

END OF SECTION