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**SUMMARY OF WORK**

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**Part 1            General**

**1.1                WORK BY OTHERS**

- .1        Co-operate with other Contractors, specifically Eimco, the Clarifier Mechanism Supplier, in carrying out their respective works.
- .2        Co-ordinate work with that of Eimco. If any part of Work under this Contract depends for its proper execution or result upon work of Eimco, report promptly to the Contract Administrator in writing, any defects which may interfere with proper execution of Work.

**1.2                CONTRACTOR USE OF PREMISES**

- .1        Limit use of premises for Work, for storage, and for access, to allow:
  - .1        The City occupancy.
  - .2        Work by other contractors.
- .2        There will be other contractors working on the NEWPCC site. Co-ordinate use of the site with the Contract Administrator.
- .3        Obtain and pay for use of appropriate additional storage or work areas needed for operations under this Contract.
- .4        Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .5        Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Contract Administrator.

**1.3                SITE OCCUPANCY**

- .1        The City will occupy premises during entire construction period for execution of normal operations.
- .2        Co-operate with The City in scheduling operations to minimize conflict and to facilitate The City usage.

**1.4                CITY FURNISHED ITEMS**

- .1        City's Responsibilities:
  - .1        Arrange for delivery of Eimco shop drawings, product data, samples, manufacturer's instructions, and certificates to Contract Administrator.
  - .2        Deliver Eimco's bill of materials to Contractor.
  - .3        Arrange and pay for delivery to site in accordance with Progress Schedule.
  - .4        Inspect deliveries jointly with Contractor and Eimco.
  - .5        Submit claims for transportation damage.
  - .6        Arrange for replacement of damaged, defective or missing items.
  - .7        Arrange for Eimco's field services during equipment inspection and commissioning.

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**SUMMARY OF WORK**

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- .2 Contractor Responsibilities:
  - .1 Designate submittals and delivery date for each product in progress schedule.
  - .2 Review shop drawings, product data, samples, and other submittals. Submit to Contract Administrator notification of observed discrepancies or problems anticipated due to non-conformance with Contract Documents.
  - .3 Receive and accept responsibility for The City supplied Eimco materials, and unload products at site.
  - .4 Inspect deliveries jointly with Contract Administrator; record shortages, and damaged or defective items.
  - .5 Handle products at site, including uncrating and storage.
  - .6 Protect products from damage, and from exposure to elements as required.
  - .7 Assemble, install, connect, adjust, and finish products.
  - .8 Repair or replace items damaged by Contractor or subcontractor on site (under his control).
  - .9 Coordinate work specified in these documents with Eimco shop drawings, assembly instructions and other information as required to incorporate their material into the project.
  - .10 All communications with Eimco shall be copied to the Contract Administrator.

**1.5 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to building operations, and normal use of premises. Arrange with Contract Administrator to facilitate execution of work.

**1.6 EXISTING SERVICES**

- .1 Notify Contract Administrator of intended interruption of any service required in order to complete work, either electrical, hot water system, electrical room ventilation or other services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Contract Administrator 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions.
- .3 Provide alternative routes for personnel and vehicular traffic if normal traffic flows are interrupted in order to perform project work.
- .4 Submit schedule to and obtain approval from Contract Administrator for any shut-down or closure of active service or facility including power services. Adhere to approved schedule and provide notice to Contract Administrator.
- .5 Provide temporary services to maintain critical building and tenant systems if required.

**1.7 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy of each document as follows:
  - .1 Contract Drawings.
  - .2 Specifications.

**SUMMARY OF WORK**

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- .3 Addenda.
- .4 Reviewed Shop Drawings.
- .5 List of Outstanding Shop Drawings.
- .6 Change Notices and Change Orders.
- .7 Field Test Reports.
- .8 Copy of Approved Work Schedule.
- .9 Health and Safety Plan and Other Safety Related Documents. Other documents as specified.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

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**WORK RESTRICTIONS**

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**Part 1**

**General**

**1.1 ACCESS AND EGRESS**

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

**1.2 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Contract Administrator to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Closures: protect work temporarily until permanent enclosures are completed.

**1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to building operations and normal use of premises. Arrange with Contract Administrator to facilitate execution of work.

**1.4 PARKING REQUIREMENTS**

- .1 Parking of Contractor vehicles at site is limited to the lot designated on the drawings. Use of the parking lot at the front of the main plant building will not be permitted.
- .2 Keep within limits of construction shown on the drawings and avenues of ingress and egress.

**1.5 DANGEROUS WORK CONDITIONS**

- .1 Further to clause GC 6.26 of the General Conditions, the Contractor shall be aware of the potential hazards that can be encountered in the NEWPCC, manholes and sewers such as explosive gases, toxic gases and oxygen deficiency.
- .2 The air in a confined space must be tested before entry and continuously during the time that personnel are inside the space. Equipment for continuous monitoring of gases must be explosion-proof and equipped with a visible and audible alarm. The principal tests are for oxygen deficiency, explosion range and toxic gases. Testing equipment must be calibrated in accordance with manufacturer's specifications.
- .3 The Contractor shall ventilate all confined spaces including underground chambers, tunnels, pipes and shafts as required and approved by the Manitoba Workplace Safety and Health Act (the "Act"). If no ventilation is supplied, a Worker must wear a respirator or supplied air to enter the confined space.

**WORK RESTRICTIONS**

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- .4 Workers must wear a respirator or supplied air at all times when entering a chamber, manhole or sewer where live sewage is present.
  
- .5 The Contractor shall provide a photoionization detector (PID) on Site at all times to monitor potential hydrocarbon vapours in the confined spaces. The gas detector and safety equipment conforming to the Act shall be made available to the Contract Administrator for his use during inspections. In addition, the Contract Administrator shall collect discrete air samples for laboratory analysis.

**1.6 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions. Smoking is not allowed in any City buildings.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

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**ENVIRONMENTAL PROCEDURES**

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**Part 1            General**

**1.1                DEFINITIONS**

- .1        Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

**1.2                SUBMITTALS**

- .1        Submittals: in accordance with CWSCS.
- .2        Prior to commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Contract Administrator. Environmental Protection Plan is to present comprehensive overview of known or potential environmental issues which must be addressed during construction.
- .3        Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .4        Environmental protection plan shall include:
  - .1        Names of persons responsible for ensuring adherence to Environmental Protection Plan.
  - .2        Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
  - .3        Names and qualifications of persons responsible for training site personnel.
  - .4        Descriptions of environmental protection personnel training program.
  - .5        Erosion and sediment control plan which identifies type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
  - .6        Drawings showing locations of proposed temporary excavations, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
  - .7        Traffic control plans including measures to minimize amount of mud transported onto paved public roads by vehicles or runoff.
  - .8        Waste water management plan that identifies methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

**1.3                FIRES**

- .1        Fires and burning of rubbish on site not permitted.

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**ENVIRONMENTAL PROCEDURES**

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**1.4 DISPOSAL OF WASTES**

- .1 Do not bury rubbish and waste materials on site..
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

**1.5 DRAINAGE**

- .1 Provide erosion and sediment control plan that identifies type and location of erosion and sediment controls to be provided. Plan: include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
- .2 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .3 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

**1.6 POLLUTION CONTROL**

- .1 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

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**CONSTRUCTION FACILITIES**

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**Part 1            General**

**1.1                OFFICES**

- .1            Subcontractors to provide their own offices as necessary.
- .2            A Contract Administrator's Site office is not required. The City will provide this office and the related necessary services.

**Part 2            Products not Used**

- .1            Not Used.

**Part 3            Execution**

**3.1**

- .1            Not Used.

**END OF SECTION**

**CONSTRUCTION/DEMOLITION WASTE DISPOSAL**

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**Part 1            General**

**1.1                DEMOLITION AND WASTE DISPOSAL**

- .1        Unless specified otherwise, all material no longer required at the site, including electrical MCCs, cabling, mechanical and civil/structural steel and other materials shall become the Contractor's property. Contractor may retain them for salvage value or dispose of them at an acceptable licensed disposal facility.

**Part 2            Execution**

**2.1                CLEANING**

- .1        Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.
- .2        Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .3        Clean-up work area as work progresses.

**END OF SECTION**

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**CLOSEOUT SUBMITTALS**

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**Part 1            General**

**1.1                SUBMITTALS**

- .1        Submittals: in accordance with CWSCS .
- .2        Copy will be returned after final inspection, with Contract Administrator's comments.
- .3        Revise content of documents as required prior to final submittal.
- .4        No later than two weeks prior to Substantial Performance of the Work, submit to the Contract Administrator, 2 final complete PDF soft copies as described below on CDs, and 2 hard copies of operating and maintenance manuals in English.
- .5        Ensure spare parts, maintenance materials and special tools provided are new, undamaged, and of same quality and manufacture as products provided in Work.
- .6        Furnish evidence, if requested, for type, source and quality of products provided.
- .7        Defective products will be rejected, regardless of previous inspections.
- .8        Pay costs of transportation.

**1.2                FORMAT**

- .1        Organize data as instructional manual.
- .2        Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm 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        Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5        Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6        Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7        Text: manufacturer's printed data, or typewritten data.
- .8        Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .9        Provide 1:1 scaled CAD files in dwg format on CD or DVD.
- .10      Provide all shop drawings, data sheets, test reports, certificates, manufacturer's instructions, manufacturer's field reports and operation and maintenance data in

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**CLOSEOUT SUBMITTALS**

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electronic pdf and/or dwg format on CD or DVD. Other electronic formats may be included if approved by the Contract Administrator.

**1.3 CONTENTS - EACH VOLUME**

- .1 Table of Contents: provide title of project; Date of submission; names.
  - .1 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
  - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

**1.4 AS-BUILTS AND SAMPLES**

- .1 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .2 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .3 Keep record documents available for inspection by Contract Administrator.

**1.5 RECORDING ACTUAL SITE CONDITIONS**

- .1 Record information on set of black line opaque drawings, provided by Contract Administrator.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Field changes of dimension and detail.
  - .2 Changes made by change orders.
  - .3 Details not on original Contract Drawings.

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**CLOSEOUT SUBMITTALS**

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- .5 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

**1.6 EQUIPMENT AND SYSTEMS**

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports.
- .15 Additional requirements: as specified in individual specification sections.

**CLOSEOUT SUBMITTALS**

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**1.7 MAINTENANCE MATERIALS**

- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to location as directed; place and store.
- .4 Receive and catalogue items. Submit inventory listing to Contract Administrator. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

**1.8 SPECIAL TOOLS**

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to location as directed; place and store. Receive and catalogue items. Submit inventory listing to Contract Administrator. Include approved listings in Maintenance Manual.

**1.9 STORAGE, HANDLING AND PROTECTION**

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Remove and replace damaged products at own expense and to satisfaction of 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**

## TRAINING

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### **Part 1        General**

#### **1.1            TRAINEES**

- .1        Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

#### **1.2            INSTRUCTORS**

- .1        Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:
  - .1        Start-Up, operation, shut-down of equipment, components and systems.
  - .2        Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.
  - .3        Instructions on servicing, maintenance and adjustment of systems, equipment and components.
- .2        Contractor and equipment manufacturer to provide instruction on:
  - .1        Start-up, operation, maintenance and shut-down of commissioned equipment.

#### **1.3            TRAINING OBJECTIVES**

- .1        Training to be detailed and duration to ensure:
  - .1        Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.
  - .2        Effective on-going inspection, measurements of system performance.
  - .3        Proper preventive maintenance, diagnosis and trouble-shooting.
  - .4        Ability to update documentation.
  - .5        Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

#### **1.4            TRAINING MATERIALS**

- .1        Instructors to be responsible for content and quality.
- .2        Training materials to include:
  - .1        "As-Built" Contract Documents.
  - .2        Operating Manual.
  - .3        Maintenance Manual.

#### **1.5            SCHEDULING**

- .1        Include in Commissioning Schedule time for training.
- .2        Deliver training during regular working hours. Provide separate training sessions for each of 3 separate shift groups of operations and maintenance personnel.

**TRAINING**

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.3 Training to be completed prior to acceptance of facility.

**Part 2 Products**

**2.1 NOT USED**

.1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

.1 Not Used.

**END OF SECTION**