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PART 1 – GENERAL

1.1 GENERAL CONDITIONS

- .1 All applicable sections of the 2010 National Building Code with Manitoba amendments, requirements of the Worker's Compensation Board, Manitoba Building Code, local by-laws, are hereby made a part of this specification notwithstanding anything to the contrary which may be contained herein.

1.2 SCOPE OF WORK

Work under this Contract includes all labour, materials, equipment, services, safety requirements and full time supervision necessary for and incidental to the completion of all demolition activities. It is the Contractor's responsibility and discretion as to which trade performs any specific item of demolition; no extras will be allowed for failure of any such trades to include the respective demolition or overlapping decisions regarding work necessary for completion of this Contract. The demolition work includes, but is not limited to the following:

- .1 Saw cutting and removing designated areas of structural concrete and steel frames around selected "pits".
- .2 All other demolition required to complete the Contract.

PART 2 – PRODUCTS Not applicable.

PART 3 – EXECUTION

3.1 PROTECTION AND SAFEGUARDS

- .1 Notwithstanding protection requirements set out in the General Instructions, etc. the Contractor shall be responsible for and take every precaution to protect workmen, public, users, etc. from work under the scope of this Contract.
- .2 Do not allow hazards to Contract forces, users of the building, public, etc. and do not permit dust and debris to pollute area.
- .3 Provide fencing, barricades, directional signs, lighting, etc.
- .4 No salvaged material shall be re-used in new construction unless so designated.
- .5 As applicable provide all necessary dust-proof barriers and hoardings to allow continued safe and clean operation of the premises.

3.2 SHORING AND STRUTTING

- .1 Provide temporary shoring and strutting where required to properly support work during demolition, after and until it is made safe by virtue of following trades so that it does not create a structural hazard or hazard from weather, wind, or any other cause. All such protective devices, etc., shall be left in place until Contractor advises that permanent work is completed and the building and Site safe from all such hazards.
- .2 Co-ordinate demolition work with related work required by other trades.

3.3 REMOVAL OR MODIFICATION OF SERVICES

- .1 Where demolition work is affected by, or affects existing services, equipment, etc. the necessary modifications shall be made after consultation with the Contractor, utility company and The City. If necessary, special provisions of a temporary nature shall be made to accommodate City's requirements, all at no additional cost to the Contract.

3.4 DEMOLITION WORK

- .1 Locate all underground or concealed services which may be affected by demolition activities.
- .2 Demolitions shall be executed in such a manner as to cause a minimum public nuisance. Maintain proper lighting and warning barriers, etc. at all times and where necessary for specific items, station guards continuously and erect such temporary rails, etc., as are required inside or outside the building when work creating a possible danger is being done or hazardous conditions exist.
- .3 All demolished materials shall be removed to legal tip or disposal area as work proceeds. Debris shall be placed directly into containers or trucks and shall not be stockpiled on Site.
- .4 No "jack hammering" of concrete shall be done without first segregating the work by saw cutting or diamond drilling. Before commencing saw cutting, "pilot" holes of appropriate diameter shall first be drilled at the corners or ends of intended cuts to prevent over cutting into concrete which is to remain. Any concrete spalling which results from inadequate preparation or poor workmanship shall be repaired to City's satisfaction at the Contractor's cost. Only light "chipping" hammers shall be used!

3.5 CLEAN UP

- .1 On completion of demolition work, the affected area shall be left clean and safe ready for the following trades.

END OF SECTION

PART 1 – GENERAL

1.1 REFERENCES

- .1 CAN3-A23.1-M09 and CAN3-A23.2-M09 – Specification for Concrete and Concrete Structures Design.

1.2 GENERAL CONDITIONS

- .1 The General Conditions of the Contract, General Instructions, etc. including all modifications thereto shall be read in conjunction with and form an integral part of this specification.
- .2 CSA Standard CAN3-A23.1, .2 – M09 shall be considered an integral part of these specifications and shall apply to all relevant matters.

1.3 SCOPE OF WORK

Work under this section includes all labour, materials, equipment, services and supervision necessary for and incidental to completion of the concrete work. This shall include, but is not limited to the following:

- .1 Construction of replacement slabs and pit walls including forming and rebar.

PART 2 – PRODUCTS

2.1 MATERIALS

- .1 Cement shall be sulphate resistant cement (MS) conforming to CSA Standard A3000-08.
- .2 Aggregates shall be clean crushed stone, gravel or sand free of deleterious materials and shall conform to CSA Standard CAN3-A23.2-M09.
- .3 Reinforcing “steel” shall be new deformed bars, # 10 M and smaller Grade 300, #15 M and larger – Grade 400.
- .4 Mixing water shall be clean and free from deleterious amounts of oil, acid, alkali, organic matter, sediment, or other deleterious substances. Generally, potable water shall be considered suitable for mixing water.
- .5 Concrete additives and admixtures are only permitted when mentioned under 3.5 – Ready Mix Concrete – “Concrete proportioning” or approved in accordance with B6.
- .6 Air entraining admixture to CAN3-A266.1 – M78.

- .7 Curing compound CPD – Cure and Seal, or approved equal in accordance with B6.
- .8 Migrating Corrosion Inhibitor: “Cortex” MCI 2000.
- .9 Formwork Lumber: plywood and wood forming materials to CAN3-A23.1 – M09.
- .10 Form release agents shall be non-staining and capable of imparting a waterproof film to the formwork to prevent adhesion of the concrete.
- .11 Void form shall be “Frost-Cushion”.
- .12 Caulking shall be equivalent to “Euco-lastic: by Euclid Chemicals as supplied by Specialty Construction Products.

Note: all products must be installed according to manufacturers' directions.

PART 3 – EXECUTION

3.1 FORMWORK FABRICATION

- .1 Formwork shall be constructed to conform to the shapes, lines and levels indicated on the drawings and/or as required by Site conditions.
- .2 Form faces shall be formed smooth with tight joints to prevent leakage of cement grout and be free from adhering grout, projecting nails, etc.
- .3 The maximum deflection of facing materials reflected in concrete surfaces shall be 1/240 of the span between structural members.

3.2 DETAILING & FABRICATION OF REINFORCING STEEL

- .1 The fabrication and detailing of reinforcing steel shall be in accordance with the requirements of the accompanying drawing, the Manitoba Building Code, and ACI Standard 318 except as otherwise specifically mentioned.
- .2 The Contractor shall verify all dimensions shown or otherwise required prior to the fabrication of reinforcing steel.

3.3 STORAGE AND HANDLING

- .1 Reinforcing steel shall be stored on Site at least 300 mm above grade to prevent damage or distortion and to prevent the accumulation of dirt.

3.4 PLACING

- .1 The reinforcing steel shall be placed in accordance with the placement drawings, the structural drawings and the Building Code, to maintain required clearances.

- .2 Reinforcing shall not be re-bent on Site.
- .3 Unless shown on the drawings, reinforcing steel shall be protected by a clear cover of concrete as follows:
 - 1. Where the concrete is deposited against the ground without the use of forms, not less than 75 mm.
 - 2. Where the concrete placed against forms is to be exposed to the weather, or to be in contact with the ground, concrete cover shall be not less than 40 mm for bars # 10 and smaller.
- .4 All reinforcing steel shall be adequately supported on plastic chairs and be securely tied to prevent displacement during concreting in accordance with tolerances in ACI Standard 318.

3.5 READY MIX CONCRETE

All concrete shall be transit or pre-mixed and shall be proportioned in accordance with CSA Standard CAN-A23.1-M09, with the following specific requirements being incorporated.

- .1 The minimum concrete strength at 28 days (f'c) shall be 35 MPa. All concrete shall be Type MS.
- .2 The maximum aggregate size shall be 20 mm.
- .3 The maximum water-cement ratio shall be .40.
- .4 **Maximum** slump to be 100 mm.
- .5 All delivery slips shall indicate the pertinent data related to the concrete mix and shall state the air content. Deliver slips to City's representative.
- .6 No admixtures shall be used unless specified herein and/or first approved by the Contract Administrator.
- .7 Entrained air: between 5% and 8%.
- .8 Migrating Corrosion Inhibitor: "Cortex" MCI 2000 shall be incorporated in all mixes.

3.6 CLEANING

- .1 All rebar materials shall be clean and free of form oil or other deleterious materials.
- .2 Any deleterious material shall be removed from the surface of the reinforcing in a manner acceptable to the Contract Administrator.

3.7 CONCRETE HAULING

- .1 The Contractor shall provide sufficient runways and protection for the transportation of concrete to its final location in such a manner as to prevent separation of the concrete materials.

3.8 PLACING CONCRETE

- .1 Concrete shall be placed in the form and compacted before initial set and within 30 minutes of being removed from the mixer. Any concrete trucks standing at the Site for more than 45 minutes or in excess of 2 hours from batching time shall have their contents inspected and, if required by the Contract Administrator, or testing agency may be rejected at no cost to the Contract.
- .2 Before use, all equipment used to handle concrete shall be cleaned of hardened concrete and shall be cleaned from time to time during operations to prevent any accumulation of hardened concrete.
- .3 No water in addition to that specified for the mix design shall be added to the concrete. If water is added at the Site, the concrete in the truck or in place will automatically be rejected and be replaced at the Contractor's cost.
- .4 Concrete shall be deposited as near as practical in its final position. It shall be deposited in one continuous operation in a manner to prevent "segregation" of materials.
- .5 Concrete shall not be allowed to fall freely from a height greater than 1.5 M. When concrete is to be deposited in a deep form, or in a heavily reinforced area, an "elephant trunk" or similar air shall be used.
- .6 Concrete shall be poured in horizontal lifts not exceeding 180 mm, at such a rate as to ensure satisfactory compaction without forming voids or honeycombing.
- .7 Concrete shall be compacted during and after placing. It shall be internally and externally mechanically vibrated with high frequency poker vibrators to ensure compaction without voids or honeycombing. Care must be taken to prevent displacement of the reinforcing. On completion give walkway a cross-broom finish and use pre-formed edging tool \pm 200 mm wide.

3.9 CONCRETE CURING

- .1 All concrete surfaces shall be covered and protected with polyethylene and shall be kept moist and above 15°C for a minimum of five (5) days.

3.10 REMOVAL OF FORMS

- .1 Formwork and supporting members shall only be removed with the Contract Administrator's permission, providing the concrete has attained a strength of at least $\frac{2}{3}$ design requirement and is capable of supporting construction loads, all subject to Contract Administrator's final approval.

3.11 CONCRETE PATCHING

- .1 Upon removal of the forms, all exposed concrete surfaces shall be carefully inspected and projecting form ties, etc., shall be cut off well back from the surface.
- .2 Projections caused by misalignment or bleeding, etc., shall be ground smooth to the Contract Administrator's satisfaction.
- .3 While concrete is still green, all voids and honeycombed areas shall be cleaned out, undercut and patched with epoxy grout.

3.12 TESTING

- .1 All concrete shall be tested by a testing agency approved by the Contract Administrator. This concrete Subcontractor shall allow in his price for taking cylinders, transporting them to the testing laboratory and having the tests performed. A set of test cylinders shall be taken for each 5m³ of concrete placed on a daily basis.
- .2 Concrete for cylinders shall be taken as concrete is being delivered to point of final deposit. Cylinders shall be marked and stored on Site for the first 24 hours. After this time, two cylinders shall be removed to the laboratory to be stored, cured and tested at age of 7 and 28 days respectively. The third cylinder shall be stored on Site as a Site control specimen.
- .3 Cylinders shall be made, stored, cured and tested in accordance with the requirements of CSA Standard CAN3-A23.2-M09.

3.13 FIELD REVIEW

- .1 The Contract Administrator may make visits to the Site to ensure execution of the design and to give field guidance for the benefit of the Contractor
- .2 At no time shall these visits relieve the Contractor of any responsibilities for the work; correction of errors shall be at the Contractor's expense and after corrections have been made the work shall be re-inspected. Repetitive visits by the Contract Administrator to review deficiencies shall be paid for by the Contractor.

3.14 CLEAN UP

- .1 Do not clean out concrete trucks on City's or adjacent property.
- .2 Do not leave deposits of spilled concrete on or at the Site.

END OF SECTION

PART 1 – GENERAL

1.1 REFERENCE STANDARDS

- .1 Do welding work in accordance with CSA W59-03 (R2008) unless specified otherwise.

1.2 WORK INCLUDED

Provide all labour, materials, equipment and services necessary to supply, fabricate, erect and install any and all miscellaneous metal items. This shall include, but is not limited to the following:

- .1 Provision and installation of new galvanized frame systems and attached anchors

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Steel sections and plates: to CAN3-S16.1, G40.21 – 04 (R2009), Grade 350 W – galvanized HSS Tubular sections 50- KSI. H
- .2 Welding materials: to CSA W59 – 03 R2008).
- .3 Bolts and anchor bolts: to ASTM A307-84a – stainless steel, or equivalent in accordance with B6.
- .4 Shop coat primer: to CGSB 1-GP-40M.
- .5 Zinc Paint: zinc rich, ready mix “Zinga”.

2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use welded connections for all metal work unless otherwise approved in accordance with B6.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. Grind exposed welds smooth and flush. Seal steel fabrications to provide corrosion protection in accordance with CAN3-S16.1-01.

2.3 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 7°C.
- .3 Clean surfaces to be field welded; do not paint.

PART 3 – EXECUTION

3.1 ERECTION

- .1 Erect/install metal work square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .2 Touch-up galvanized surfaces with “Zinga” where burned by field welding, scratched or otherwise damaged.

END OF SECTION