1. GENERAL

1.1 RELATED WORK

.1 Section 31 24 13 – Roadway Excavation, Embankment and Compaction.

.2 Section 32 91 00 – Topsoil, Seeding and Sodding.

1.2 MEASUREMENT AND PAYMENT

.1 The supply and installation of chain link fence will be measured in lineal metres of chain link fence installed, removable panels, and other incidental work, for each height category, as specified within the Bid Forms. The unit price shall include the materials, equipment, tools, labour and supervision require to excavate, dispose of all waste/excess material, prepare the foundation, concrete works and temporary braces, as well as the supply and installation of all posts, fabric, braces, rails, fasteners, hardware, and all other tasks deemed incidental to the erecting of chain link fence.

.2 The supply and installation of chain link gates will be measured in unit installed for each type and size of gate, as specified within the Bid Forms. The unit price shall include the materials, equipment, tools, labour and supervision require to excavate, dispose of all waste/excess material, prepare the foundation, concrete works and temporary braces, as well as the supply and installation of all posts, fabric, braces, rails, fasteners, hardware, and all other tasks deemed incidental to the erecting of chain link gates.

2. PRODUCTS

2.1 MATERIAL

.1 Concrete Mix
- .1 Portland Cement: to CSA A3000, Type HS high sulphate-resistant cement.
- .2 Water shall conform to CSA standard A23.1. Water shall be clean and free from injurious amounts of oil, acid, alkali, organic material or other deleterious substances.
- .3 Aggregates: to CSA-A23.1.
- .4 Air Entraining Admixture: to CSA-A23.1.
- .5 Chemical Admixtures: to CSA-A23.1.
- .6 Calcium Chloride: to CSA-A23.1.
- .7 Pozzolonic-Mineral Admixtures: not permitted for use in concrete.
- .8 Fly ash: to CAN/CSA-A3000, A3001 pozzolan type C.
- .9 Minimum compressive strength of 20MPa at twenty-eight (28) Days.
- .10 Maximum aggregate size of 25mm.

.2 Chain link fence fabric is to be 50mm diamond mesh, interwoven nine gauge wire, top selvage knuckle end closed, bottom selvage knuckle end closed, vinyl coated if specified and to the heights specified.

.3 Posts, braces, and rails to be Schedule 40.

.4 Material outside diameters as follows:
- .1 Line posts:
  - .1 48.3mm for fences 1.5m in height and under and 73mm for fences over 1.5m.

.2 Terminal, corner and straining posts:
.1 73.0mm for fences 1.5m in height and under and 88.9mm for fences over 1.5m.
.3 Top and brace rails:
.1 42.2mm

.4 Gate posts as follows:

Gate Width (Span)	Gate Post Diameter
< 3.5m	89mm
3.5m to 4.9m	114mm
> 4.9m	168mm

.5 Post caps are to be cast aluminum dome caps, sized to the post diameter, and set screw retained.

.6 Line post eye tops and rail ends are to be cast aluminum.

.7 Fittings: sleeves, bands, clips, tension bards, fasteners and fittings are to be galvanized steel or epoxy powder coated black if specified.

.8 Bottom tension wire is to be 9 gauge single strand galvanized steel.

.9 Double gate hardware: Cane bolt centre rest, three piece drop latch and latch catch with drop bolt. Gate hinge 180° male and female. Chain hold open.

.10 Single gate hardware: 3 piece drop latch and latch catch with drop bolt. Gate hinge 180° male and female. Chain hold open.

.11 Barbed Wire Arms: Pressed steel, cast aluminum alloy fitted with clips or slots for attaching three strands of barbed wire. Arms shall be set outward on a 45° angle and be capable of supporting a 113kg (250 pound) load at the outer barbed wire connecting point without causing permanent deflection.

.12 Barbed Wire: If specified, commercial quality steel, 12 ½ gauge, two strand twisted line wire with 4-point barbs at 125mm spacing.

3. EXECUTION

3.1 GRADING

.1 Remove debris and correct ground undulations along the fence line to obtain a smooth uniform gradient between posts. Provide a clearance between the bottom of the fence and the ground surface of 50mm.

3.2 ERECTION OF FENCE

.1 Erect the fence along the lines as indicated on the Drawing or as directed by the Engineer.

.2 Excavate post holes to the dimensions shown on the Drawings.

.3 Space line posts 3m apart, measured parallel to the ground surface.

.4 Space straining posts at equal intervals, not exceeding 150m, if the distance between the end or corner posts on straight continuous lengths, over reasonably smooth grade, is greater than 150m.

.5 Install additional straining posts at sharp changes in grade and where directed to by the Engineer.

.6 Install corner posts where a change in alignment exceeds 10º.

.7 Install end posts at the end of the fence and at buildings. Install gateposts on both sides of gate openings.

.8 Place concrete in postholes, embed posts into the concrete to the depths indicated on the Drawings. Brace to hold posts in plumb position and true to alignment and elevation until the concrete has set.

.9 Do not install the fence fabric until the concrete has cured for a minimum of five (5) Days.

.10 Install the brace between the end and gateposts and nearest the line post parallel to the ground surface. Install braces on both sides of the corner and straining posts in a similar manner. Brace rails are to be attached using brace bands and rail ends. No brace rails are required where the fabric height is 1.8m or less.

.11 Install caps and overhang tops. Overhang tops are to face outwards.

.12 Install the top rail between the posts and fasten securely to the posts with brace bands and rail ends. Secure waterproof caps and overhang tops.

.13 Install the bottom tension wire, stretch tightly, and fasten securely to end, corner, gate, and straining posts with turnbuckles and tension bar bands.

.14 Lay out the fence fabric. Stretch tightly to the tension recommended by the manufacturer and fasten to end, corner, gate, and straining posts with a tension bar secured to the post with tension bar bands spaced at 300mm intervals. Knuckled tie wire at bottom. Twisted tie wire at top.

.15 Secure the fabric to the top rails, line posts and bottom tension wire with tie wires at 450mm intervals. Give tie wires a minimum of two (2) twists.

.16 Install barbed wire strands and clip securely to the lugs of each projection.

.17 Installation of grounding rods shall be as indicated.

3.3 INSTALLATION OF GATES

.1 Install gates in the locations indicated on the Drawings or as directed by the Engineer.

.2 Level ground between gateposts and set the gate bottom approximately 50mm above the proposed finished ground surface.

.3 Install gate rests where indicated. Determine the position of the centre gate rest for a double gate. Cast the gate rest in concrete. Dome the concrete above ground to shed water.

.4 Install gate stops where indicated.

3.4 TOUCH UP

.1 Clean damaged surfaces with a wire brush, removing loose and cracked coatings. Apply two (2) coats of zinc-rich paint to damaged areas. Pre-treat damaged surfaces according to the manufacturers' instructions for zinc-rich paint.

3.5 SITE CLEANUP

.1 Clean and trim any areas disturbed by operations. Dispose of surplus material.

END OF SECTION