

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Shop Drawings, Product Data and Samples.
- .2 Section 01 74 19 – Waste Management and Disposal.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM D693-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-ob/ft³ (600 kN-m/m³)).
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.5 – M91 (March 1999), Low Flash Petroleum Spirits Thinner.
 - .2 CAN/CSGB-1.74 – 2001, Alkyd Traffic Paint.
- .3 Master Municipal Construction Documents Association (MMCD), Platinum Edition (2009).

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 – Shop Drawings, Product Data and Samples.
- .2 Submit to Department Representative, samples of material for sieve analysis at least 2 weeks before beginning Work.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 19 –Waste Management and Disposal.
 - .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
 - .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
 - .4 Place materials defined as hazardous or toxic in designated containers.
 - .5 Divert unused aggregate materials from landfill to facility for reuse as approved by Department Representative.
 - .6 Dispose of unused paint and paint thinner materials at official hazardous material collections site as approved by Department Representative.
 - .7 Fold up metal banding, flatten and place in designated area for recycling.
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- .8 Do not dispose of unused paint thinner material into sewer system, into streams, lakes, onto ground or in other location where it will pose health environmental hazard.
- .9 Divert unused asphalt from landfill to facility capable of recycling materials.

Part 2 Products

2.1 MATERIALS

- .1 Prime coat: N/A
- .2 Tack coat: CAN/CGCB – 16.2, Grade SS-1
- .3 Asphalt cement: CGSB – 16.3-M 90, Grade 80-100
- .4 Asphalt concrete bottom course: MMCD Lower Course #2
- .5 Asphalt concrete top course: MMCD Upper Course #2
- .6 Traffic paint: yellow and white to CAN/CGSB-1.74.
- .7 Paint thinner: to CAN/CGSB-1.5.

Part 3 Execution

3.1 FOUNDATIONS

- .1 Foundations for roadways and parking lots comprise:
 - .1 250mm compacted thickness of granular subbase.
 - .2 100mm compacted thickness of granular base.
- .2 Compaction: compact each lift of granular material to 100% maximum density to ASTM D698. Maximum lift thickness: 300 mm.

3.2 PAVEMENT THICKNESS

- .1 Pavements for roadways and parking lots.
 - .1 Base course: 40mm, MMCD Lower Course #2
 - .2 Wear course: 40mm, MMCD Upper Course #2

3.3 PAVEMENT CONSTRUCTION

- .1 Construction of asphalt concrete: MMCD
 - .2 Surface preparation: MMCD
 - .3 Construction of asphalt concrete: MMCD
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3.4

TRAFFIC MARKINGS

- .1 Paint parking space divisions and other pavement markings in accordance with manufacturer's recommendations and as indicated.
- .2 Use paint thinner in accordance with manufacturer's requirements.

END OF SECTION

- Part 1 General**
- 1.1 RELATED REQUIREMENTS**
- .1 Not used
- 1.2 MEASUREMENT AND PAYMENT**
- .1 Measure supply and erection of chain link fence in metres erected including gates.
- .2 Measure supply and erection of chain link fence gates as units of each size erected.
- 1.3 REFERENCES**
- .1 ASTM International
- .1 ASTM A53/A53M-10, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- .2 ASTM A90/A90M-09, Standard Test Method for Weight Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
- .3 ASTM A123/A123M-09, Standard Specification for Zinc (Hot Dip Galvanized) coatings on Iron and Steel Products.
- .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 Master Painters Institute (MPI)
- .1 Architectural Painting Specification Manual.
- .4 U.S. Environmental Protection Agency (EPA) / Office of Water
- .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.
- 1.4 ACTION AND INFORMATIONAL SUBMITTALS**
- .1 Submit in accordance with Section 01 33 00 - Shop Drawings, Product Data and Samples..
- .2 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for concrete mixes, fences, posts and gates and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Construction Waste Management:
- .1 Submit project Waste Management Plan Waste Reduction Workplan highlighting recycling and salvage requirements.
- .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 50 75% of construction wastes were recycled or salvaged.
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- .3 General Contractor to provide signed and sealed drawings for the design of the fence and gate by professional engineer registered in British Columbia. Submit signed and sealed drawings to the Department Representative or Consultant.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations.
 - .2 Store and protect fence and gate materials from damage.
 - .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

- .1 Chain-link fence fabric: to CAN/CGSB-138.1.
 - .1 Type 1, Class A, heavy style, Grade 1.
 - .2 Height of fabric: as indicated.
 - .2 Posts, braces and rails: to CAN/CGSB-138.2, galvanized steel pipe. Dimensions as indicated.
 - .3 Bottom tension wire: to CAN/CGSB-138.2, single strand, 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 60 mm outside diameter pipe for outside frame.
 - .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 outside of installed gate.
 - .4 Furnish double gates with chain hook to hold gates open and centre rest with drop bolt for closed position.
 - .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 top rails.
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- .4 Turnbuckles to be drop forged.
- .9 Organic zinc rich coating: to CAN/CGSB-1.181.

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 ASTM A123/A123M.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for fence and gate installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative or Consultant.
 - .2 Inform Departmental Representative or Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative or Consultant.

3.2 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- .2 Grading:
 - .1 Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts.
 - .1 Provide clearance between bottom of fence and ground surface of 30 mm to 50 mm.

3.3 ERECTION OF FENCE

- .1 Erect fence along lines as indicated to CAN/CGSB-138.3.
 - .2 Excavate post holes.
 - .3 Space line posts as indicated on drawings.
 - .4 Install end posts at end of fence and at buildings.
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- .1 Install gate posts on both sides of gate openings.
- .5 Place concrete in post holes then embed posts into concrete.
 - .1 Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.
- .6 Install fence fabric after concrete has cured, minimum of 5 days.
- .7 Install brace between end and gate posts and nearest line post, placed in centre of panel and parallel to ground surface.
 - .1 Install braces on both sides of corner and straining posts in similar manner.
- .8 Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.
- .9 Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with turnbuckles and tension bar bands.
- .10 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner, gate and straining posts with tension bar secured to post with tension bar bands.
 - .1 Knuckled selvedge at bottom.
 - .2 Twisted selvedge at top.
- .11 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450 mm intervals.
 - .1 Give tie wires minimum two twists.

3.4 INSTALLATION OF GATES

- .1 Install gates in locations as indicated.
- .2 Level ground between gate posts and set gate bottom approximately 40 mm above ground surface.
- .3 Determine position of centre gate rest for double gate.
 - .1 Cast gate rest in concrete as directed.
 - .2 Dome concrete above ground level to shed water.
- .4 Install gate stops where indicated.

3.5 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 in accordance with Section 09 91 13 - Exterior Painting.
 - .1 Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
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- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION