WSP-2 SITE - FENCES

1. SCOPE

This section provides performance criteria and conforming specifications for all fences related to Women's institutions with a secure perimeter. This section does not apply to an open Healing Lodge.

2. RELATED SECTIONS

2.1 Women's Technical Reference Guideline sections:

WSP–1 – Site Planning and Development
WSP–3 – Gates/Sallyport
WSP-4 - Exterior Lighting
WSP–5 – Traffic Circulation and Parking
& any sub-section referring to the Perimeter Intrusion Detection System (P.I.D.S.)

2.2 National Master Specification Section

01 35 13.16 – Special Project Procedures for Detention Facilities
28 01 10 – Operation & Maintenance of Electronic Access Control & Intrusion Detection
28 16 00 (13705) – Intrusion Detection
32 31 13 – Chain Link Fences and Gates
32 31 13.53 – High-Security Chain Link Fences and Gates

3. EXTERNAL BOUNDARY FENCE

External boundary (property) lines shall not be fenced unless specific site conditions warrant it. The type of fence in such locations will be project specific.

4. PERIMETER SECURITY FENCE

4.1 Performance Criteria

4.1.1 The institution will be enclosed by a single chain link fence perimeter supported by a fence detection system and CCTV which shall be located on the interior of the institution mounted high enough to optimize viewing of the fence line. The perimeter fence forms the last physical obstacle to escape from the institution. The design of the fence system shall deter inmates from attempting to breach the perimeter.

4.1.2 The fence shall be erected in a straight line to the extent possible from corner to corner to allow for direct long views. The corners of the perimeter may be truncated or be at right angle contingent on the property lines and the proximity to that line.

4.1.3 To render climbing more difficult, the fence fabric shall be installed on the institution side of the fence posts.

4.1.4 The fence shall be equipped with a Fence Detection System (FDS) and its fabric tensioned to ensure vibration travel across posts while not causing excessive false alarms. Fabric vibration terminates at strain post locations where the fence fabric ends thus allowing zone separations for the PIDS.

4.1.5 Special attention shall be paid to sloped sites to ensure that gaps do not develop between the ground surface and the lower fence rail. Where necessary, due to severe ground slope longitudinally, fencing may be stepped, but the minimum height of the fence shall be maintained at all times. Ground slope across the fence line shall be minimized to prevent erosion under the perimeter fence.

4.1.6 Barbed tape concertina (BTC) coils shall be installed on top of the fence in such a manner that it prevents the passage of a person across the barbed coils. (See plate WSP-2-2).

4.1.7 Where interior fences intersect the perimeter fence, the interior fence shall be designed to prevent it from being used to aid in crossing the perimeter fence. To achieve this, the interior fence shall be equipped with:

- a Fence detection system (FDS) for a length of 2.5 meters. The fence fabric shall extend for that length and be connected to a strain post so that the vibration does not travel beyond.
- and BTC on both sides on the fence No gap between posts or fabric shall exceed 125 mm.

4.1.8 To inhibit tunnelling under the Perimeter Fence, a ground barrier shall consist of a footpath on the interior side. This could be of concrete or asphalt and shall be engineered to prevent heaving. (See Plate WSP-2-1). Roadways crossing the perimeter fence line shall be topped with asphalt which also serves as a ground barrier.

4.1.9 The fence system comprising foundation, line, strain, corner and gate posts shall meet local environmental conditions. Fence systems shall be engineered to resist local wind and snow conditions.

4.1.10 Where a building or other structure interrupts the perimeter fence run, the design to ensure perimeter integrity shall be approved by the issuing authority.

4.1.11 Where a perimeter comprises or integrates a wall, the design to ensure perimeter integrity shall be approved by the issuing authority.

4.2 Conforming Specifications

4.2.1 The perimeter fence shall be 2.4 m to the top of the chain link fabric with an overhang arm to support the BTC above.

4.2.2 No structure, with the exception of the Principle entrance building, shall be closer than 5 m to the Perimeter fence.

4.2.3 All chain link fencing shall be installed in accordance with the *National Master Specification (NMS) 32 31 13* [6] and *CAN/CGSB-138.3-96* standard[7]. Where there is a conflict between the NMS and this criterion, the TCD shall prevail.

4.2.4 Chain link fence fabric shall conform to the following specifications[8]:

[6] National Master Specification 32 31 13 – Chain Link Fences and Gates (2004/12/31), there is also specifically Master format reference number 32 31 13.53 for High-Security Chain Link Fences And Gates

[7] CAN/CGSB-138.3-96 – Installation of Chain Link Fence

[8] Refer also to: CAN/CGSB-138.1-96 – Fabric for Chain Link Fence

4.2.4.1 Wire Size: 4.8 mm (min) (6 Gauge)

4.2.4.2 Size of mesh: 50.8 mm

4.2.4.3 Height of fence fabric: 2400 mm

4.2.4.4 Barbed edges top and bottom

4.2.4.5 Average mass of zinc coating to be not less than 610 g/m^2 of uncoated wire

4.2.4.6 Breaking tensile strength to be 10,000 N·min.

4.2.5 Wire mesh shall be continuous from top to bottom and shall be applied on the institutional compound side of the posts.

4.2.6 Fence fabric shall be pulled taut before fixing in place. Tautness, when fixed in place, is to be established by pull tests. The application of a 12 kg perpendicular pull at the midpoint of the mesh panel (midpoint of posts/rails) shall show a displacement of no more than 30 mm from the fence at rest plane.

4.2.7 Posts, (corner, gate, strain, line) shall conform to *CAN/CGSB-138.2-96* [9], galvanized steel pipe.

4.2.7.1 Posts shall be spaced a maximum of 2.5 m apart.

4.2.7.2 Line post minimal size shall be 73 mm O.D. 8.6 kg/m.

4.2.7.3 Strain post minimum size shall be 114.3 mm O.D. 15.92 kg/m. Strain posts shall be spaced not more than 60 m apart.

4.2.7.4 Corner and gate post minimum size shall be 143.3 mm O.D. 21.0 kg/m.

4.2.8 Galvanized steel arms shall be provided on all posts where barbed concertina is to be installed, as shown on Plate SP-2-2.

4.2.9 Bottom and top rails shall be 42.2 mm O.D. minimum, 3.4 kg/m.

4.2.10 Tie wires shall be 3.7 mm diameter (9 gauge) galvanized steel wire to secure chain link fabric to bottom rail, top rail and line posts at 300 mm spacing.

4.2.11 Intermediate rails shall not be used.

4.2.12 Tension bars used for holding the ends of the fence fabric at the location of strain posts and corner posts shall be 5 mm x 20 mm minimum x 2400 mm galvanized steel.

4.2.13 Tension bar bands shall be 3 mm x 20 mm minimum galvanized steel and spaced vertically at 300 mm o.c.

4.2.14 Where nuts and bolts are required for fastening, nuts shall face compound exterior and be torqued tight.

4.2.15 Where tension cables are used at corner, end, gate, strain posts, and fittings shall be of galvanized steel.

4.2.16 Barbed tape concertina (B.T.C.) shall be galvanized tape 20 x 0.5 mm clenched around a 2.5 mm diameter spring steel galvanized core wire to form a concertina coil with a nominal exterior coil diameter of 710 mm. The coil, when

[9] CAN/CGSB-138.2-96 -- Steel Framework for Chain Link Fence

installed, shall have a minimum diameter of 635 mm. The barbed concertina shall have 20 mm long blade type barbs measured from tip to tip of the blade, and barb clusters shall be spaced approximately 45 mm on centre (see Plate SP-2-3). The concertina shall be formed by clipping adjacent loops of single helical coils together at a minimum of three (3) points on the circumference. Clips shall be galvanized. The resulting coil, when stretched, shall form a cylindrical pattern. The loop spacing shall not exceed 230 mm.

4.2.17 For concertina coil support at fence top, two barbed wires stretched and fixed to post arms shall be provided. Barbed wire shall consist of two strands of 12 gauge wire with 4 point barbs at 130 mm spacing, all galvanized.

4.2.18 Concertina coils are to be turned onto an internal intersecting fence for a distance of 2.5 m (See plate SP-2-6). Where the threat of breach exists from either side of the intersecting fence, concertina coil shall be installed on each side.

4.2.19 The Concertina coils shall be supported and tied at 230 mm spacing onto each of the two barbed wires.

5. INTERIOR FENCES

5.1 Area Fences

5.1.1 Performance Criteria

5.1.1.1 Interior fences separating vehicle service functions from the main institution and those enclosing yards of the Secure Unit shall be a maximum of 2.4 m in height topped with steel arms, barbed wire, and BTC. Any other fenced area shall not be topped with BTC.

5.1.1.2 Where interior fences intersect the Perimeter Fence, refer to item 4.1.18 above and plate WSP-2-6.

5.1.1.3 Tunnelling barriers are not required on interior fences except where they are topped with BTC. Barrier type shall be compacted gravel to 300 mm in depth and extending 600 mm on either side.

5.1.1.4 See chapter WSP-1 Site Planning and Development, item 10.3 for yard ground surface and anti-tunnelling protection.

5.1.1.5 Fences shall not be used to demarcate the buffer zone.

5.1.2 Conforming Specifications

5.1.2.1 Materials shall be similar to those specified for the perimeter fences (see item 4.2).

5.1.2.2 For fences where post steel arms are not provided, posts shall have galvanized post caps.

5.1.2.3 For secure unit yards where visibility and contact is at issue, fencing shall be provided with appropriate masking. A flat solid wall may be integrated with the yard fence given approval by the issuing authority.

6. EXTERIOR SERVICE COMPOUND FENCE

6.1 Performance Criteria

Where bulk fuel storage (propane and gasoline) is provided, the storage area shall be fenced (see section WSP-5, Traffic Circulation and Parking).

6.2 Conforming Specifications

7.2.1 Materials will be similar to those specified for the perimeter fences (item 4).

7.2.2 Fence height shall be 2.4 m.

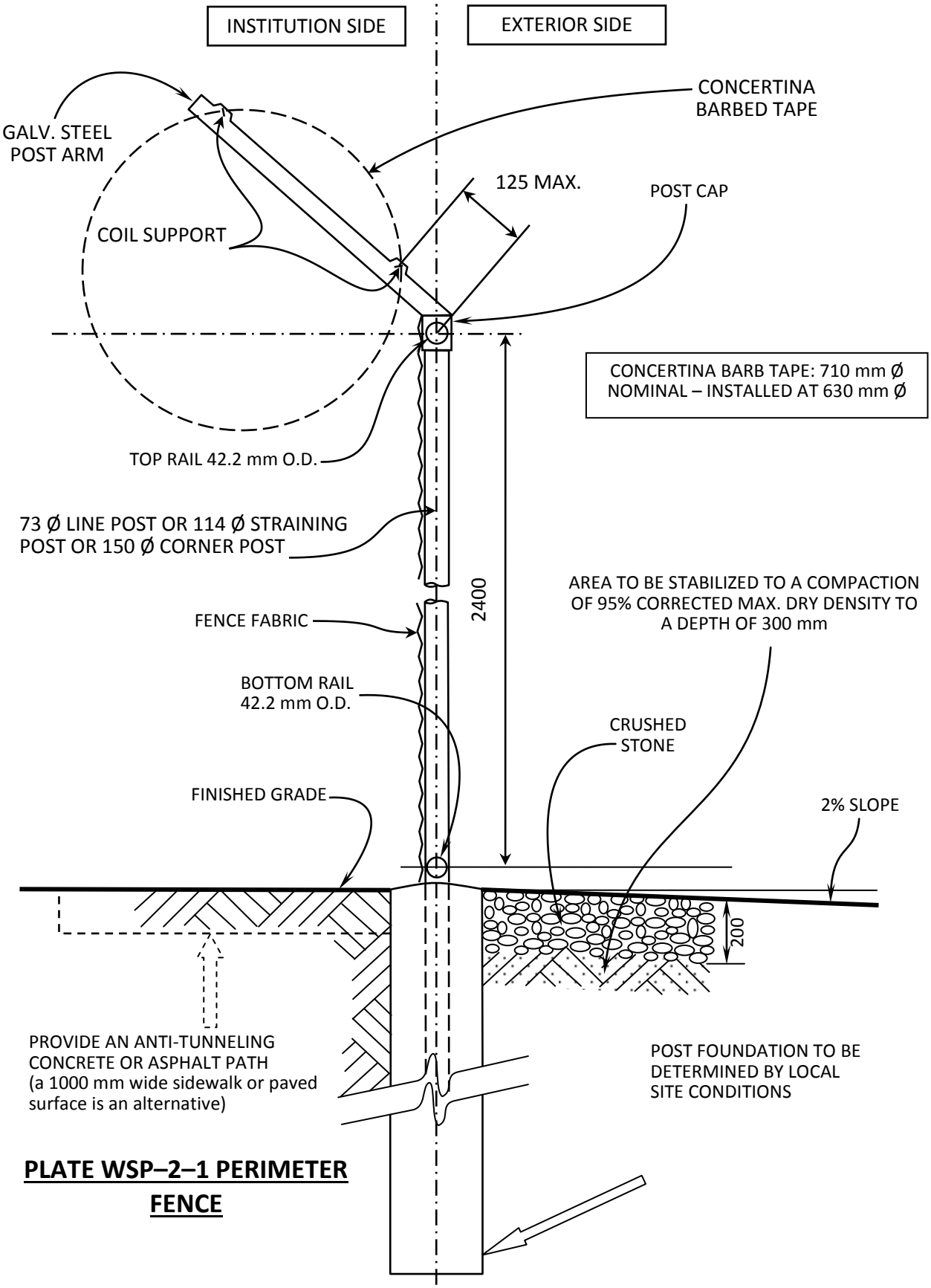

PLATE WSP–2–1 PERIMETER FENCE