1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal procedures

.2 Section 01 35 13 – Special project procedures for Correctional Service Canada

.3 Section 01 35 29.06 - Health and safety requirements

1.2 MEASUREMENT AND PAYMENT

.1 The supply and installation of barriers and fences shall be measured on a flat rate for each type of barrier installed. The price includes, but is not limited to, the removal and off-site disposition of all existing barrier and fence elements that are not reused, including existing poles, bases and anti-tumor walls, modifications to the existing barrier or fence where required, the supply and installation of the new fence or fence including posts and bases and all accessories, connection to existing facilities, modifications to concertina wires if required, restoration of premises, and all incidental expenses.

.2 Site restoration includes repairs to the pavement structure in excavated areas as indicated on the plans. Tenderers must take this into account in determining their price.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).

.1 ASTM A 90/A 90M-07, Standard Test Method for Weight Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.

.2 ASTM A 121-07, Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.

.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.

.3 Correctionnel Service Canada (CSC)

.1 Technical criteria in correctional Facilities – July 2014

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit required documents and samples in accordance with Section 01 33 00 – Submittals.

1.5 HEALTH AND SAFETY

.1 Observe occupational health and safety rules under construction in accordance with Section 01 35 29.06 - Health and Safety.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Evacuate all packaging materials from site and route to appropriate recycling facilities.

.2 Route unused metal parts and wiring to an appropriate metal recycling facility.

.3 Route unused concrete material to appropriate local installation.

.4 Unused paint or renderings must be routed to an appropriate hazardous waste collection site.

.5 Unused paint products may not be discharged into drains, watercourses, lakes, the ground or any other place where there is a risk to health or the environment**.**

2 Products

2.1 FENCES

.1 All fence elements shall comply with the conformance specifications listed in CSC section SP-2 section 4.2 **available** for consultation in **appendix C** to this document as a result of Section **32 92 23**.

.2 Concrete Mixes and Concrete Materials: Complies with CAN / CSA-A23.1

.1 Compressive strength: at least 30 MPa at 28 days.

.3 The barbed wire should not be painted.

2.2 SLIDING BARRIERS

.1 Slide gate must be retained, uninstalled, protected, moved and reinstalled at its new location.

.2 Safety hardware must conform to Section 01 35 13 - Special project procedures for Correctional Service Canada.

2.3 SWING DOORS FOR PEDESTRIANS

.1 Pedestrian swing door must be retained, uninstalled, protected, relocated and relocated to its new location.

.2 The direction of pivoting of the barriers shall be determined after consideration of operating conditions and snow conditions.

.3 Space between bottom barrier cross member and floor shall not exceed 115 mm (4.53 in.).

.4 Barrier fencing shall be at the fence on which it is mounted.

3 Execution

3.1 LEVELING

.1 Remove debris and level the terrain along the fence line to be installed to achieve a smooth slope between the posts.

.1 Allow clearance of 30 mm (1.18 in.) between the bottom of the fence and the floor surface.

3.2 INSTALLATION OF THE CLOSURE

.1 Erect fence along existing track for barrier replacement, or as indicated on drawings for barrier relocation and in accordance with CAN / CGSB-138.3.

.2 For posts, drill holes of dimensions as shown in the drawings.

.3 Pour concrete into pole holes, then push in pole holes to specified depth.

.1 Bring concrete to above ground level and spread in dome shape to prevent build-up of water around support.

.2 Support columns to maintain proper alignment and level until the concrete cured.

.4 .Install spacers between end and barrier posts and nearest intermediate post.

.1 Install spacers identically on each side of corner and reinforcement posts.

.5 Install overhang connections and post caps.

.6 Place the top rail between the posts and secure it securely to the posts; Attach overhang fittings and hats.

.7 Install bottom tension wire, tighten it tightly and secure securely to end, corner, barrier and reinforcement posts by means of tensioners and tension flanges.

.8 Extend the fence wire, tighten it strongly to the manufacturer's recommended tension and attach it to the end, corner, barrier and reinforcement posts, with a tension bar attached to each post by of flanges installed at intervals of 300 mm (11.81 in.).

.1 The folded edge shall be at the bottom;

.2 The twisted edge at the top.

.9 Attach wire mesh to top rail, intermediate post, and bottom tension wire with wire laid at 450 mm (17.72 in.) Intervals.

.1 Tie wire must be twisted for at least two turns.

.10 Install barbed wire and securely fasten to each extension.

.11 Install required grounding rods.

3.3 INSTALLING THE BARRIERS

.1 Install barriers at designated locations.

.2 Barriers shall be fitted to the minimum clearances indicated.

.3 Barrier fencing must be fenced.

.4 Level the ground between the barrier posts and place the lower end of the barrier approximately 50 mm from the ground.

3.4 CLEANING

.1 Clean and regale surfaces where soil has been stirred during work.

.1 Dispose of surplus materials and replace lawn areas damaged with grass patches, rehabilitate areas of gravel or asphalt affected by work.

END OF SECTION

PART 1 : GENERAL

1.1 REFERENCES

1.1.1 Security code for construction works.

1.1.2 Health and Safety at Work Act.

1.1.3 NQ regulations:

.1 NQ 0605-100 – Landscaping development with vegetation.

.2 NQ 0605-200 – Arboreal and horticulture maintenance.

.3 NQ 0605-300 – Nursery and grass products.

1.1.4 Government of Quebec/Ministry of Transportation/ Specification and general specifications (CCDG-2016).

1.2 WORK EXTENT

1.2.1 This section focuses mainly on the topsoil, the soil amendement products and topsoil removal works. Also, it focuses on the topsoil installation and the final grading which will allow the completion of the grass work, wood mulch installation and other plantation works.

1.3 WORK SCHEDULE

1.3.1 Establish the topsoil installation schedule with respect to the hydraulic seeding installation.

1.3.2 If the seeding cannot be done before the winter because of the weather and would have to be installed in the next spring, the installation of the topsoil must be done at the same time.

1.4 DOCUMENTS AND SAMPLES TO BE SUBMITTED

1.4.1 Required documents and samples must comply with the regulation NQ 0605-100.

1.4.2 Documents must be submitted to the Ministry's Representative at least two (2) weeks prior to the beginning of the works, for approval and quality control purposes:

.1 Soil analysis: Submit the test reports certifying that the products and materials would satisfy the requirements with respect to the physical characteristics and performance criteria, in accordance with the regulation NQ 0605-100.

.2 Certificates: Submit the documents signed by the manufacturer, certifying that the products and materials would satisfy the requirements with respect to the physical characteristics and performance criteria of the NQ 0605-100 standard.

1.5 DELIVERY

1.5.1 All loadings delivered outside the work site must be accompanied by a delivery note showing the origin, the mix type, the quantity and the delivery destination.

1.5.2 For verification purposes, the delivery notes must be kept until the end of the project.

1.6 WASTE MANAGEMENT AND DISPOSAL

1.6.1 Sort out the waste for the purposes of reusage and recycling, in accordance with the regional regulation.

1.6.2 Send the unused amendment products to a certified hazardous waste site.

1.6.3 It is prohibited to reject unused amendment products into the sewers, a river, a lake, on the ground or any other location that can cause harmful consequences for the health and environment.

PART 2 : PRODUCTS

2.1 CHEMICAL PROPERTIES OF THE MINERAL COMPOSTS

2.1.1 Topsoil for the grass surfaces :

Organic material on a dry base, %	≥ 3
pH of water	De 6 à 7
Cationic exchange (CEC), meq/100 g	≥ 7
Electrical conductivity, mS/cm	< 3,5

2.2 SOIL AMENDMENT PRODUCTS

2.2.1 With respect to the supplier’s recommendations.

2.3 QUALITY CONTROL AT THE SOURCE

2.3.1 Topsoil recovered from the site has to be analyzed and approved. A soil amendment has to be performed if needed, according to the assigned laboratory.

2.3.2 A soil analysis has to be provided at least two (2) weeks prior to the beginning of the works. The latter analysis has to be performed by a soil laboratory, which has to be independent from the supplier and approved by the Ministry’s Representative. The laboratory fees are the Contractor’s responsibility. If needed, this analysis has to be accompanied by a report demonstrating the agronomic recommendations.

2.3.3 The Ministry's Representative has to be notified of the topsoil suppliers and the analysis on the material has to be provided at least two (2) weeks prior to beginning of the works in order to be approved.

2.3.4 The Contractor is responsible to evaluate the needs in amendment products in order to provide the required amount of topsoil, while complying with the requirements.

2.3.5 Provide a soil analysis performed by a laboratory that is known and approved by the Ministry's Representative. This analysis must cover the pH and the amount of phosphorus, potassium, organic material, and any other element stated in the NQ 0605 standard.

2.3.6 Provide a soil analysis performed by a laboratory that is independent from the supplier and approved by the Ministry's Representative. The soil sampling, tests and analysis has to comply with the NQ 0605 standard.

2.3.7 If necessary, perform an analysis after the amendment at the Contractor's expense.

PART 3 : EXECUTION

3.1 TOPSOIL REMOVAL

3.1.1 Topsoil removal has to comply with the section 31 23 00 – Excavation and Fill of the structural works specifications.

3.2 MOYENS TEMPORAIRES DE CONTRÔLE DE L'ÉROSION ET DES SÉDIMENTS

3.2.1 Put in place temporary measures in order to counter the erosion effects and sediments' settlement, which are intended to prevent soil loss caused by stormwater runoffs or wind erosion and soil movements towards adjacent properties and pedestrian walkways.

3.2.2 Inspect the measures put in place, ensure their maintenance and repair them if needed until the permanent vegetation is well established.

3.2.3 Remove the latter measures at the appropriate moment then rehabilitate and stabilize the disturbed surfaces.

3.2.4 For the embankments and ditches impacted by the work as well as when specified in the plans, the Contractor must include in his submitted price, the seeding of the stripped surface.

3.3 EXISTING BASE SOIL PREPARATION

3.3.1 Validate the soil level in order to ensure its adequacy. Otherwise, notify the Ministry's Representative and the works must be stopped until the latter authorises to proceed.

3.3.2 Level the soil in order to eliminate soil depressions and roughness, then create a slope that will allow a smooth water runoff.

3.3.3 Remove debris, roots, limbs, rocks over than 50 mm in diameter and any other damaging substances:

.1 Remove debris that are over 75 mm in diameter from the soil surface.

.2 Reject outside the construction site all removed materials.

3.3.4 Till the soil that is supposed to receive topsoil, up to a depth of at least 150 mm. Repeat the process perpendicularly to the first passes on the surfaces where the transportation and spreading materials have compacted the soil.

3.4 TOPSOIL AND COMPOST SPREADING AND INSTALLATION

3.4.1 Once the Ministry's Representative has accepted the existing base soil, the topsoil can be installed.

3.4.2 Topsoil must be spread in even layers that does not exceed a depth of 150 mm each.

3.4.3 In areas where grass is to be installed, the level of the topsoil layer must be brought to 15 mm under the final soil level.

3.4.4 Spread the topsoil by following the given instructions, in layers of a minimum thickness after settling of:

.1 150 mm for areas where grass is to be installed.

3.4.5 Hand-spread the topsoil and the compost around trees, bushes and obstacles.

3.5 FINAL GRADING

3.5.1 Level the soil in order to eliminate soil depressions and roughness and to create a slope that will allow a smooth water runoff

.1 Achieve a friable soil layer by tilling and raking the soil.

3.5.2 Strengthen the topsoil layer in order to obtain the prescribed density, using the material that was approved by the Ministry's Representative.

.1 The surfaces must be left smooth, uniform and firm in a way that no deep marks will appear due to a person's weight.

3.6 WORK ACCEPTANCE

3.6.1 The Ministry's Representative will examine, analyse the installed topsoil and determine if the material, its thickness and its final grade are acceptable.

3.7 SURPLUS MATERIALS

3.7.1 Reject all surplus material outside the construction site.

3.8 CLEANING

3.8.1 Perform the cleaning tasks.

3.8.2 Once the works are completed, evacuate all surplus material, waste material, tools and security barriers outside the construction site.

END OF SECTION

PART 1 : GENERAL

1.1 REFERENCES

1.1.1 Security code for construction works.

1.1.2 Health and Safety at Work Act.

1.1.3 NQ regulations:

.1 NQ 0605-100 – Landscaping development with vegetation.

.2 NQ 0605-200 – Arboreal and horticulture maintenance.

.3 NQ 0605-300 – Nursery and grass products.

1.1.4 Government of Quebec/Ministry of Transportation/ Specification and general specifications (CCDG-2016).

1.2 WORK EXTENT

1.2.1 Hydraulic seeding will be installed in accordance to the locations indicated on the plans.

1.2.2 All existing grassed surfaces that were damaged by the Contractor's work throughout the project must be repaired at his expense. By repairs, it means seeding the damaged surfaces. It includes scrapping existing grass, the installation of new compost and then, finally, the seeding, complying with the instructions of the present section.

1.3 WORK SCHEDULE

1.3.1 Establish the seeding schedule to coincide with the surfaces preparation.

1.3.2 Establish the schedule in a way that the seeding is done after the soil has defrosted.

1.3.3 Establish the schedule in a way that it respects the sodding period recommended by the CCDG.

1.4 WASTE MANAGEMENT AND DISPOSAL

1.4.1 Sort out and recycle all wastes to comply with the municipal regulations.

1.4.2 Send the unused amendment products (fertilizers) to a certified hazardous waste site approved by the Ministry's Representative.

1.4.3 It is prohibited to reject unused amendment products (fertilizers) into the sewers, a river, a lake, on the ground or any other location that can cause harmful consequences for the health and environment.

PART 2 : PRODUCTS

2.1 MATÉRIAUX

2.1.1 For the embankments and ditches impacted by the work as well as when specified in the plans, the Contractor must include in his submitted price, the seeding type H-1 of the stripped surface.

PART 3 : EXECUTION

3.1 PRELIMINARY WORK

3.1.1 Ensure that the soil shape is adequate and that the surfaces to be grassed are prepared with respect to the section 32 91 19.13 – Topsoil Placement and Grading. Inform the Ministry's Representative of any change on the drawings and wait his instructions to proceed.

3.1.2 Do not execute the works when the environmental conditions are unfavorable, such as when the soil is frosted or tempered, or when the soil is covered with snow, ice or stagnant water.

3.1.3 Perform the final grading in a way to obtain a mild and uniform slope, exempted from depressions and roughness, with respect to the curves and rating levels, within 8 mm precision when the grass is cultivated.

3.1.4 Remove weeds, debris, rocks over than 50 mm in diameter, contaminated soil (from oil, fuel, or any other harmful substances) and reject them outside the construction site.

3.1.5 Till the leveled surfaces approved by the Ministry's Representative up to a depth of 25 mm, immediately before the seeding process.

3.2 SEEDING INSTALLATION

3.2.1 Complete the seeding process with respect to the present section.

3.3 MAINTENANCE THROUGHOUT THE PERIOD OF ESTABLISHMENT

3.3.1 Perform the maintenance works hereinafter starting from the date the grass is installed until the date the final work is accepted.

3.3.2 Water the grassed surfaces in sufficient quantity and frequency to maintain an optimal moisture content in the lawn, up to a depth of 75 to 100 mm.

3.3.3 Mow the lawn that is 60 to 80 mm of height when it grows up to 90 to 100 mm or before and remove the mowing debris that can choke the grassed surfaces. During a heatwave, the grass should not be cut shorter than 80 mm.

3.3.4 Never cut the grass more than one third of its height. If the grass is too high, mow it in two (2) steps within one week timeframe.

3.4 WORK ACCEPTANCE

3.4.1 Seeded surfaces will be accepted by the Ministry's Representative when the following conditions are met:

.1 Seeded surfaces are adequately established.

.2 The degree of visibility of the soil after mowing the lawn at a height of 60 mm is acceptable.

.3 Seeded surfaces are free from dead grass and stripped areas and the amount of visible weeds is acceptable.

.4 Seeded embankments have not endure erosion and do not have stripped areas.

3.4.2 Surfaces seeded during the fall season will be accepted in the next spring, one month prior to the growth period, if the above-mentioned conditions are all met.

3.5 MAINTENANCE DURING THE WARRANTY PERIOD

3.5.1 Perform the maintenance works hereinafter starting from the date the final work is accepted until the end of the warranty period.

3.5.2 Water the seeded surfaces on a weekly basis in order to maintain an optimal moisture content in the lawn, up to a depth of 100 mm.

3.5.3 It is required to seed and repair the new stripped areas as well as the dead grass areas, to the satisfaction of the Ministry's Representative.

3.5.4 Mow the lawn to the following height:

.1 Mow to a height of 60 to 80 mm during the normal growth period.

.2 The interval between each mowing has to allow the reduction in height by about one third the grass height after each cut.

3.5.5 Eliminate weeds using a chemical process while complying with the current regulations.

3.6 CLEANING

3.6.1 Once the works are completed, evacuate all surplus material, waste material, tools and security barriers outside the construction site.

3.7 WARRANTY

3.7.1 The Contractor has to guarantee for one year starting from the date the Ministry's Representative has accepted the works, the complete restoration of the grass that will not be judged as in " a perfect condition " by the Ministry's Representative.

END OF SECTION

APPENDIX C

CSC – Technical criteria in correctional Facilities

SP-2 SITE - FENCE

1. SCOPE

This section provides performance criteria and conforming specifications for all fences related to institutions of security levels medium, maximum and multi-level inclusive. There are no special requirements for fences at minimum institutions.

2. RELATED SECTIONS

2.1 Technical Criteria Document sections:

SP–1 – Site Planning and Development
SP–3 – Gates/Sallyports
SP-4 - Exterior Lighting
SP–5 – Traffic Circulation and Parking
ST–1 – Guard Towers
& 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 FENCES

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 FENCES

4.1 Performance Criteria

4.1.1 The institution will be enclosed by a double chain link fence perimeter supported by intrusion detection and camera system, and mobile patrol on the exterior of the perimeter. The perimeter fences form the last physical obstacle to escape from the institution. The design of the fence system shall be such that an escapee shall not be able to breach the perimeter in less than 45 seconds. This time duration is based on a maximum time for the perimeter security mobile patrol to respond after the first signal following a detected disturbance of the fence at the Main communication control post (MCCP). The optimal reaction time for the mobile patrol is 30 seconds.

4.1.2 Fences shall be erected in straight lines from corner to corner for direct viewing by camera. The corners of the perimeter shall be truncated at 45° to allow suitable placement of camera poles and cameras to afford optimal viewing

between the fences and on the interior of the Inner Perimeter Fence. In addition, the truncated corners allow for a gentler curve of the patrol road.

4.1.3 To render climbing more difficult, the fence fabric shall be installed on the institution side of the fence posts. Sharp corners of less than 120°, shall be avoided except where fences intersect.

4.1.4 For fences equipped with a Fence Detection System (FDS), the fence shall balance fabric tension to ensure fabric 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 fences.

4.1.6 Water shall be prevented from pooling between the perimeter fences, as this could affect the operation of the Motion Detection System (MDS). For special underground drainage requirements relating to perimeter fences, see sections SU-1 Storm and Sanitary Sewers.

4.1.7 Barbed tape concertina (BTC) wire shall be installed in such a manner that it prevents the passage of a person across the barbed coils. (See plates SP-2-2 and SP-2-3).

4.1.8 Where interior fences intersect the Inner Perimeter Fence, the interior fence shall be designed to prevent it from being used to aid in crossing the Inner 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.

4.1.9 To inhibit tunnelling under the Inner Perimeter Fence, a ground barrier shall be provided by installing either a continuous concrete footing or a concrete or asphalt sidewalk on the institution side. (See Plate SP-2-1). Roadways crossing perimeter fence lines shall be topped with asphalt which also serves as a ground barrier.

4.1.10 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.

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

4.1.12 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 Perimeter fences shall consist of two (2) parallel fences, erected in straight lines, with a 7.5-m gravel strip between the fence lines. For retrofit installations, where it has been proven that a lesser separation has been effective, the existing spacing shall be maintained. Height of both fences, excluding overhang arms, shall be 3.6 m. Corners shall be truncated and the maximum length of the interior fence on the truncated line shall be 25 m.

4.2.2 No structure, with the exception of the Gatehouse and guard towers, shall be closer than 12 m to the Inner Perimeter Fence.

4.2.3 The area between the perimeter security fences shall be free of topsoil and be graded to a slope of 2% from the interior to the Outer Perimeter Fence. The surface will then be covered with a filter fabric and topped with a mix no larger than 20 mm crushed stone to a depth of 200 mm. For the Outer Perimeter Fence an area of 500 mm on each side of the fence shall be stabilized to a depth of 300 mm with a compaction of 95% corrected maximum dry density to hinder run off erosion and tunnelling by inmates.

4.2.4 All chain link fencing shall be installed in accordance with the *National Master Specification (NMS) 32 31 13* [1] and *CAN/CGSB-138.3-96* standard[2]. Where there is a conflict between the NMS and this criterion, the TCD shall prevail.

4.2.5 Chain link fence fabric shall conform to the following specifications[3]:

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

4.2.5.2 Size of mesh: 50.8 mm

4.2.5.3 Height of fence fabric: 3600 mm

4.2.5.4 Barbed edges top and bottom

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

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

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

4.2.7 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.

4.2.8 Posts, (corner, gate, strain, line) shall conform to *CAN/CGSB-138.2-96* [4], galvanized steel pipe.

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

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1 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

2 CAN/CGSB-138.3-96 – Installation of Chain Link Fence

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

4 CAN/CGSB-138.2-96 -- Steel Framework for Chain Link Fence

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

4.2.8.3 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.

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

4.2.9 Galvanized steel arms shall be provided on all posts where barbed concertina is to be installed, as shown on Plate SP-2-2 and SP-2-3.

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

4.2.11 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.

4.2.12 An intermediate galvanized anchor shall be used to secure the bottom rail to the ground barrier, where such a barrier is installed. This anchor shall limit vertical movement of the bottom rail to a maximum of 125 mm.

4.2.13 Intermediate rails shall not be used.

4.2.14 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 3600 mm galvanized steel.

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

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

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

4.2.18 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 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.

4.2.19 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.

4.2.20 Concertina coils are to be turned onto a secondary internal fence for a distance of 2.5 m when such a fence meets the perimeter fence. (See plate SP-2-6).

4.2.21 Installation of barbed tape coils shall be as follows:

4.2.21.1 The barbed tape concertina is to be supported and tied at 230 mm spacing onto each of the barbed wire. Additional coils that are required on fences are to be tied as shown on Plate SP-2-3.

4.2.21.2 A second row of BTC may be installed on fence tops at existing sites due to local conditions with the approval of the issuing authority (see plate SP-2-3)

5. INTERIOR FENCES

5.1 Area and Yard Fences

5.1.1 Performance Criteria

5.1.1.1 Interior fences located at Maximum security institutions and those defining segregation yards at Mediums and Maximums shall be a maximum of 3.6 m in height topped with steel arms, barbed wire, and BTC. Other fenced areas at Medium Institutions may be topped with BTC where the fence separates inmate high activity from vehicle circulation areas and loading bays.

5.1.1.2 The use of fences and those topped with BTC for refuge corridors for staff evacuating housing units will be evaluated based on a Threat Risk Assessment. Proposed works must be submitted for approval to the issuing authority.

5.1.1.3 The use of fences and those topped with BTC for separation of housing unit types in mediums such as S-3, S-4 and S-5 will be evaluated based on a Threat Risk Assessment. Proposed works must be submitted for approval to the issuing authority. See item 6 for Separation of distinct populations as in multi-level

5.1.1.4 Where interior fences intersect the Inner Perimeter Fence, refer to item 4.1.8 above and plate SP-2-6.

5.1.1.5 Tunnelling barriers are not required on interior fences except where they are topped with BTC. Barrier type shall be compacted gravel to 300 mm on either side extending 900 mm.

5.1.1.6 See chapter SP-1 Site Planning and Development, item 12.3 for mini yard ground surface and anti-tunnelling protection.

5.1.1.7 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 or outriggers are not provided, posts shall be provided with galvanized post caps.

5.1.2.3 Two coils of BTC shall be installed on the top of Segregation exercise yard fence as indicated on Plate SP-2-3. A flat solid wall shall be

provided where visibility and contact is at issue with approval of the issuing authority.

6. SEPARATION OF DISTINCT POPULATIONS IN ONE INSTITUTION (MULTI-LEVEL)

Types of Multi-level and Fencing Needs

Multi-level institutions vary in the type of populations they accommodate. Two populations such as minimum and medium may be fully integrated with no physical separation or fencing required. Control and supervision is managed through operational means.

A second type of multi-level institution accommodates several populations, short term and assigned to a specialized program. Inmates here have limited access to the institution at large and have restricted movement. The housing units accommodating these populations are generally self-contained integrating staff and related program areas including mini yards. These units do not require fenced separation as movement outside of the units are under escort and limited to individual or small groups. Yards for these units are fenced and topped with BTC.

A third type of multi-level is where a distinct smaller population as part of a specialized program remains largely in their unit and does not mix with the general population which has normal movement to program and activity areas. The specialized program unit is also self-contained which includes mini yards. The mini yards of this unit are fenced and topped with BTC while the complete unit is separated from the rest of the institution by a fence but without BTC topping. The fenced mini yards here do not form part of the separation fence.

7. EXTERIOR SERVICE COMPOUND FENCE

7.1 Performance Criteria

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

7.2 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 2.5 m.

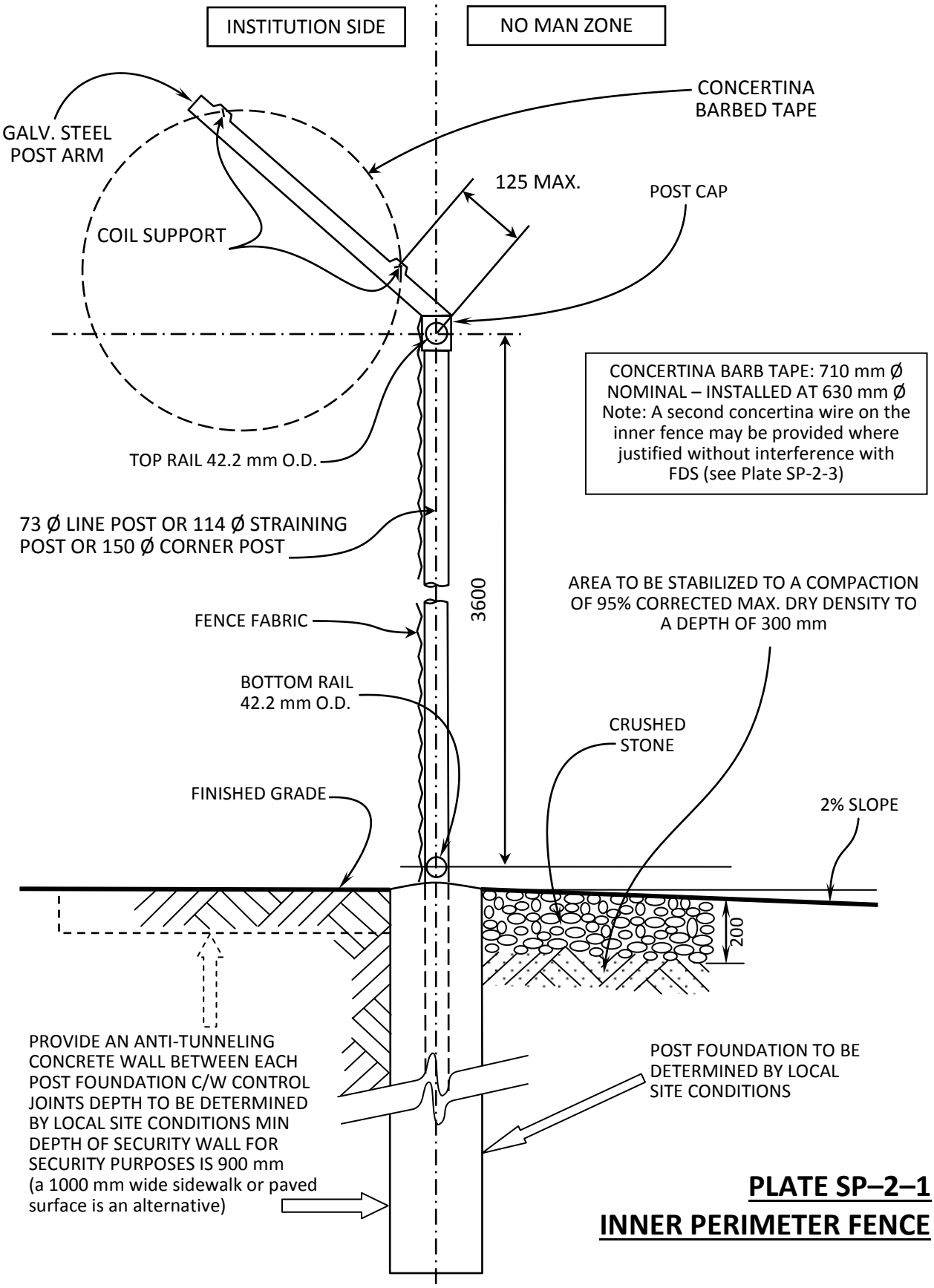


PLATE SP–2–1
INNER PERIMETER FENCE

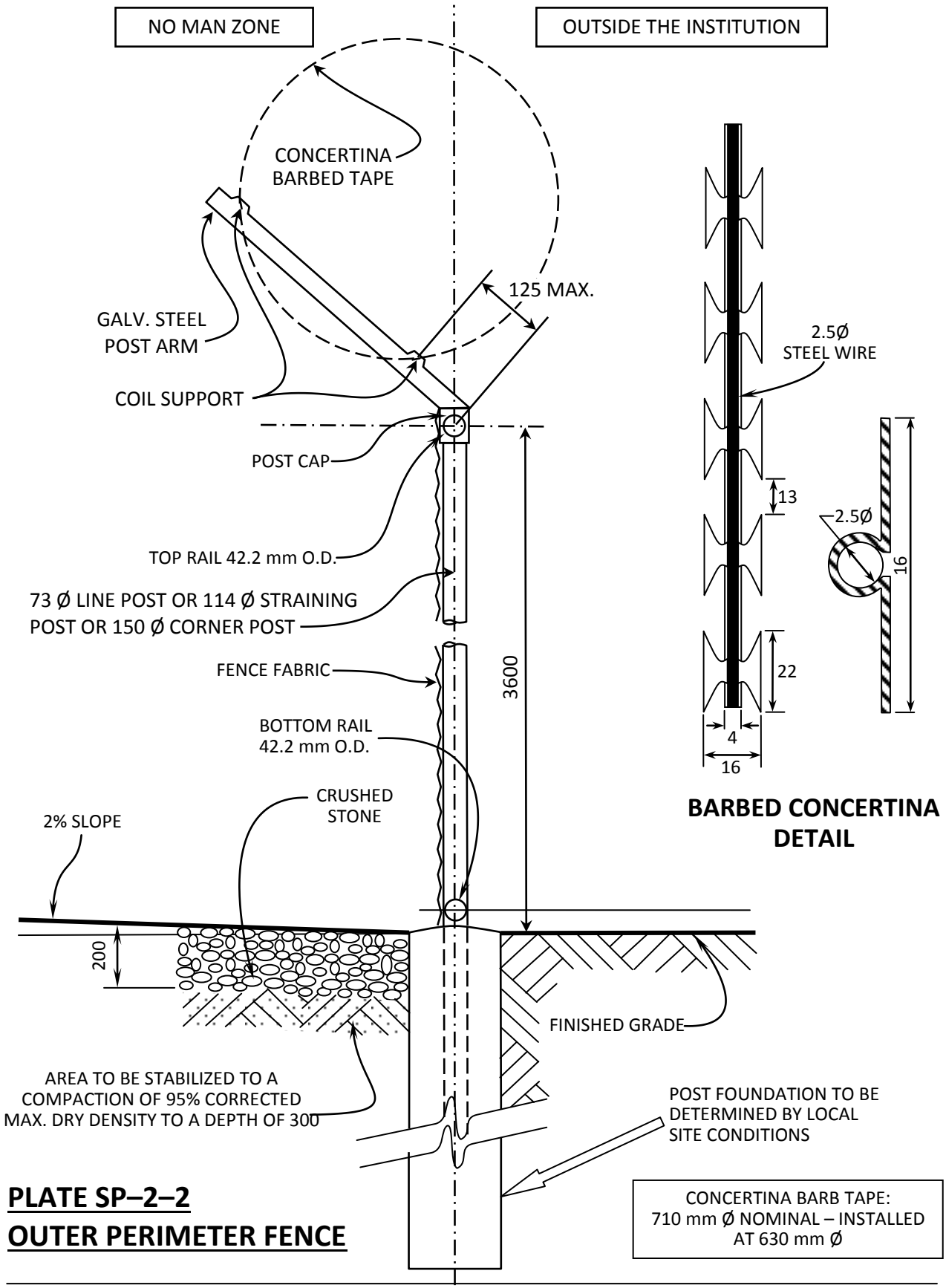
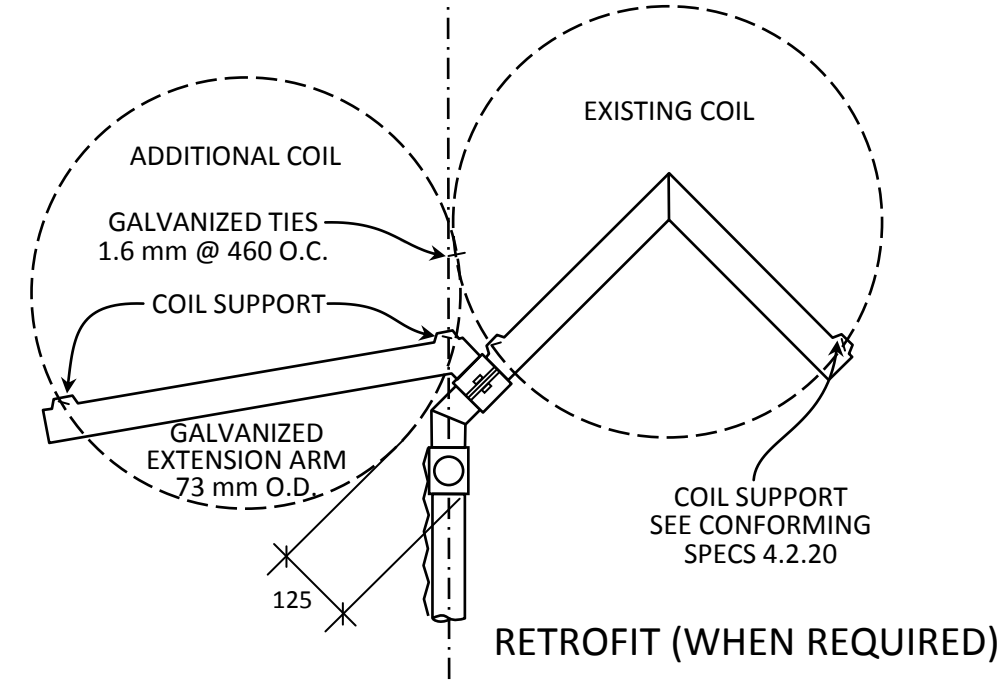


PLATE SP–2–2
OUTER PERIMETER FENCE



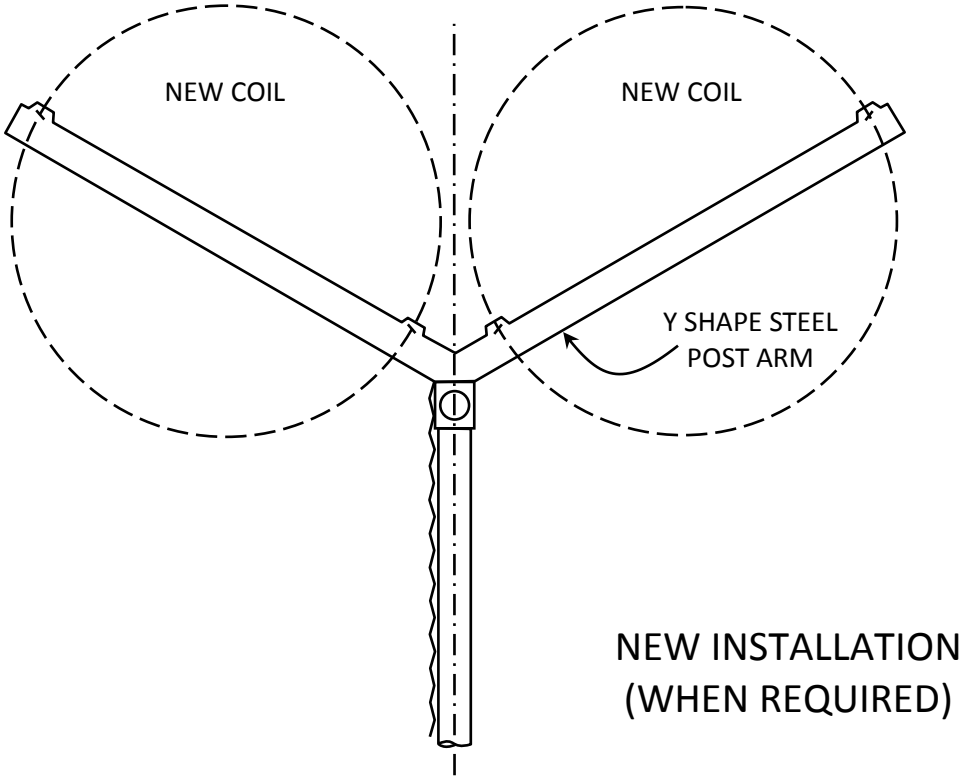


PLATE SP–2–3 – INNER FENCE WITH A SECOND CONCERTINA TAPE

CONCERTINA BARB TAPE: 710 mm Ø NOMINAL – INSTALLED AT 630 mm Ø

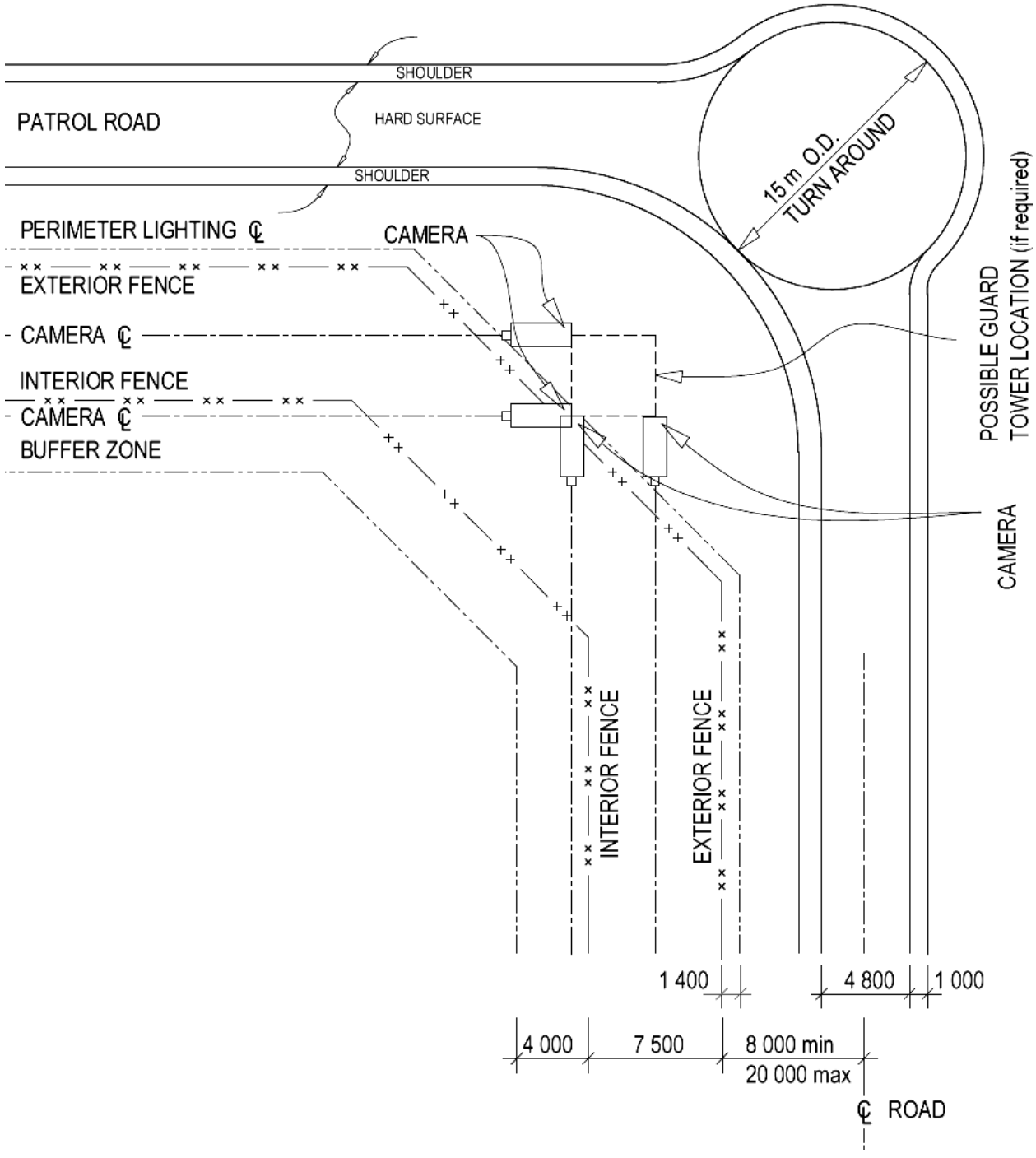


PLATE SP–2–4 – TYPICAL PERIMETER FENCE CORNER WITH TOWER

Note: Camera lines are for information purpose only

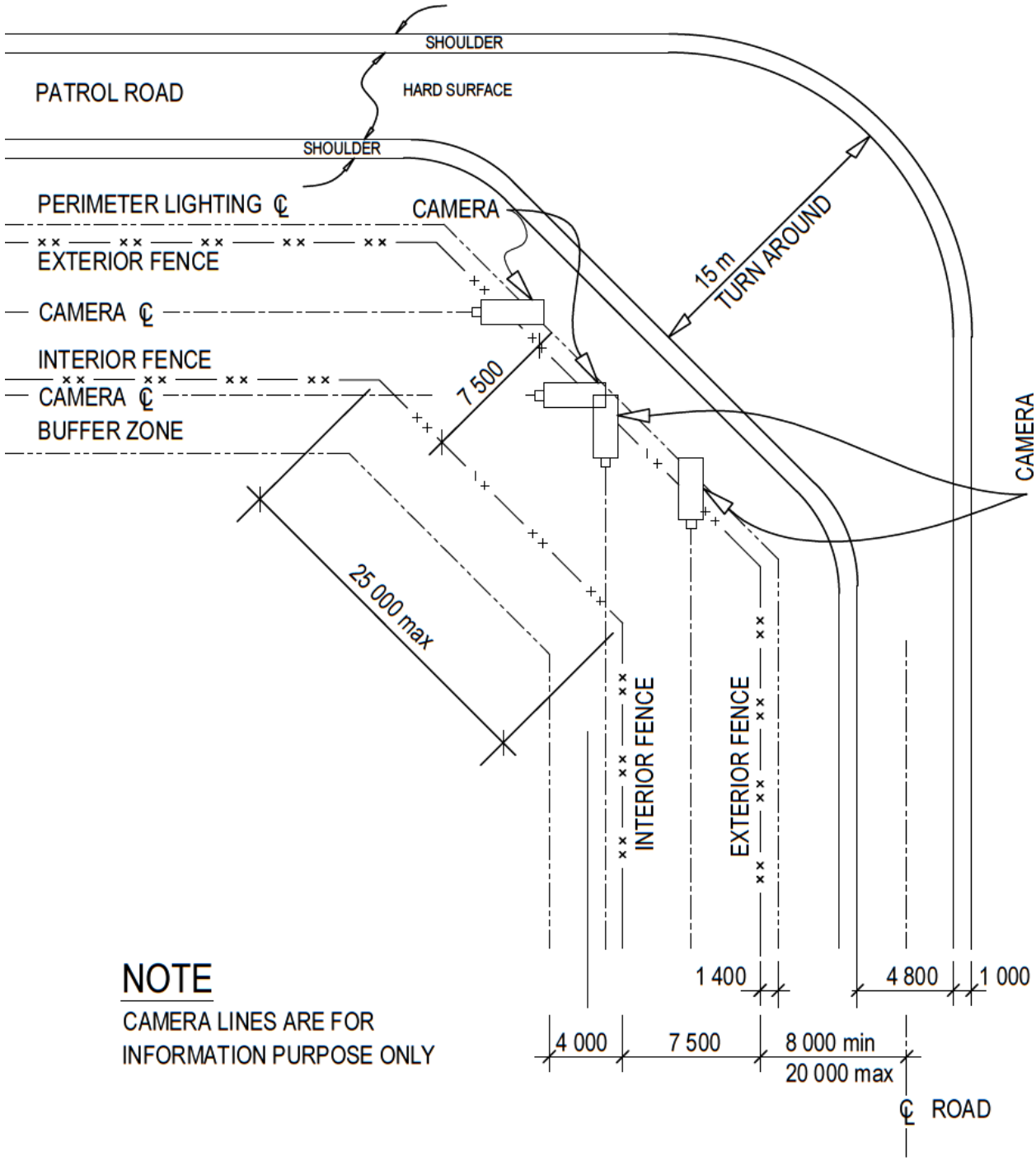


PLATE SP–2–5 – TYPICAL PERIMETER FENCE CORNER WITHOUT TOWER

CAMERAS ARE MOUNTED ON OUTRIGGERS OVER THE CONCERTINA

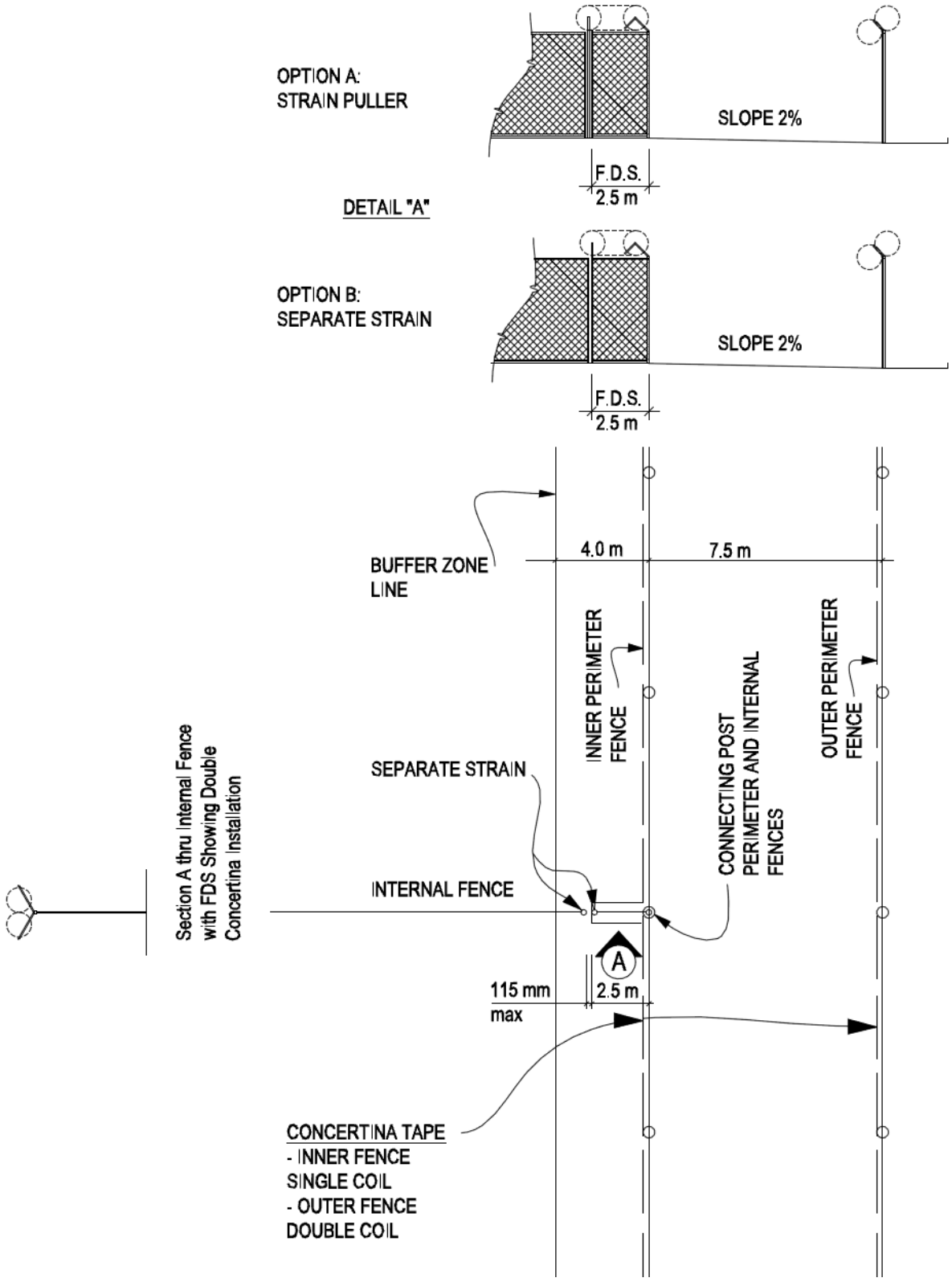


PLATE SP–2–6 – INTERNAL FENCES INTERSECTING THE INNER PERIMETER FENCE – DETAILS