



Correctional Service  
Canada

Service correctionnel  
Canada



SAFETY, RESPECT  
AND DIGNITY  
FOR ALL

LA SÉCURITÉ,  
LA DIGNITÉ  
ET LE RESPECT  
POUR TOUS

Technical Criteria for  
Correctional Institutions

# SECTION ST – SPECIAL STRUCTURES

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## ST-1 SPECIAL STRUCTURE – GUARD TOWERS

### 1. SCOPE

This section outlines design and location requirements for guard towers.

### 2. RELATED SECTIONS

SP-1 – Site Development

SP-2 – Fences

SP-3 – Gates and Sally Ports

SP-4 – Lighting

SP-5 – Traffic Circulation and Parking

A-5 – Doors, Frames, Grilles and Modesty Screens

A-6 – Hardware

Electronic Security Systems Standards for Perimeter Intrusion Detection System (PIDS)

### 3. PURPOSE FOR TOWERS

#### 3.1 Guard Tower Primary Use

Guard towers are not intended to supplement the perimeter surveillance function accomplished by perimeter mobile patrol and the fence system combined with PIDS. Historically, subsequent to the introduction of PIDS, guard towers have provided surveillance of large playfields at medium and maximum institutions. The current approach for Maximums however is to integrate small yards with the living units thus requiring multiple guard towers which is just not feasible. As for Mediums, playfields are often located centrally away from the perimeter, which also renders towers non-effective. Therefore the need for new and retrofit of existing towers is not a given and shall require the approval of the issuing authority.

#### 3.2 Other uses for Towers

Towers cannot be viewed as being capable or helpful in providing banned substance interdiction as multiple towers would have to be used and continually deployed which is just not feasible. Towers are currently used to provide control of gates either used for vehicles or persons and to provide protection for staff performing vehicle inspections. Their extended use for these functions must be weighed against more commonly used movement control through the perimeter.

### 4. TOWER LOCATION

#### 4.1 Recreation Towers

Where existing towers can be justified for continued use to provide surveillance of yards and to warn other staff of suspicious activity, a single tower shall be considered located on the outside of the perimeter closest to the yard. The tower of choice, if several exist, is the one which is closest to vulnerable areas such as Health Care and 'Special' population housing units. New towers which meet the above considerations shall conform to the following requirements.

## **5. DESIGN REQUIREMENTS**

### **5.1 Tower Shaft**

- 5.1.1 The height of the tower shall ensure that it does not interfere with the perimeter fence lighting system and cause impediments to viewing by eye or cameras.
- 5.1.2 The access door at the ground level of the tower shall be a swing security detention type located on the side of the tower facing the perimeter road.
- 5.1.3 The tower shaft shall be unheated.
- 5.1.4 Door locking hardware shall be maximum security type with a mechanical deadbolt lock keyed both sides.
- 5.1.5 Spiral steel stairs with a handrail shall be located inside the tower shaft; the stair radius shall not be less than 900 mm.
- 5.1.6 No flammable material shall be used in the construction of the tower shaft.

### **5.2 Cupola**

- 5.2.1 The cupola shall be insulated for staff comfort and for energy conservation. A roof overhang is required with matte black soffit finish to limit reflection and to improve visibility.
- 5.2.2 The cupola shall be enclosed by glazing on all sides. Each glazing panel shall be as per Plate ST-1-1: double glazed with a safety glass interior pane and an exterior pane of 6 mm polycarbonate or of safety glass: 2 layers of float glass laminated together. The inner face of the glazing shall be clad with mirror membrane to reduce viewing from the exterior. All glazing shall be angled inward 10° at the panel bottom to permit downward vision. Sash track rollers to ease sliding action for one sliding section shall be provided on each side of the cupola; sliding insect screens shall also be provided as windows may remain open to allow for natural ventilation.
- 5.2.3 Shelving shall be installed under the window sill on one side of the cupola.
- 5.2.4 Lightning protection shall be provided.
- 5.2.5 Minimum clear height within the cupola shall be 2100 mm.

Ballistic Protection of glazed areas of towers shall not be provided in order to match the conditions available to the mobile patrols. The glazing film does however obscure the tower officer from view when lights are down. Floor and wall sections on the other hand shall have 6 mm (0.23") steel or equivalent protection.

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**5.3 Mechanical****5.3.1 Heating**

The heating system shall be capable of maintaining a temperature of 20°C (68°F). Air circulation shall be provided at windows in order to prevent condensation.

**5.3.2 Plumbing Fixtures**

Cupolas shall be provided with a water closet and hand wash basin which are to be located on the side of the cupola away from the activity area. The water closet shall be located so that observation functions by the staff are not interrupted. Cold water service only is required.

**5.3.3 Sewage Disposal**

Sewage lines shall be connected to the institution system, except where individual septic tanks prove to be more economical.

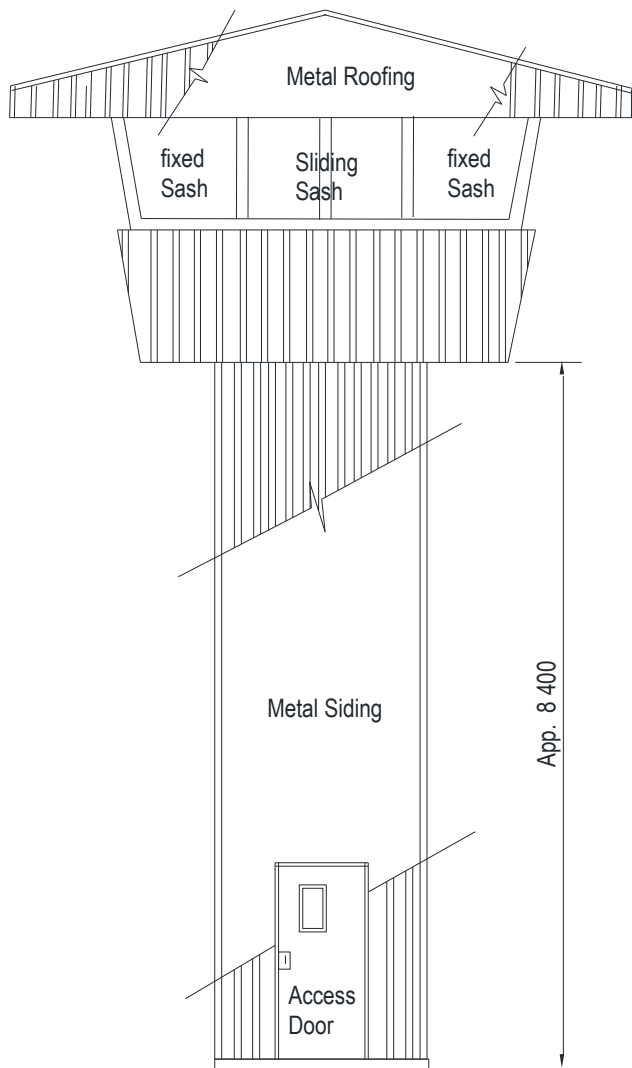
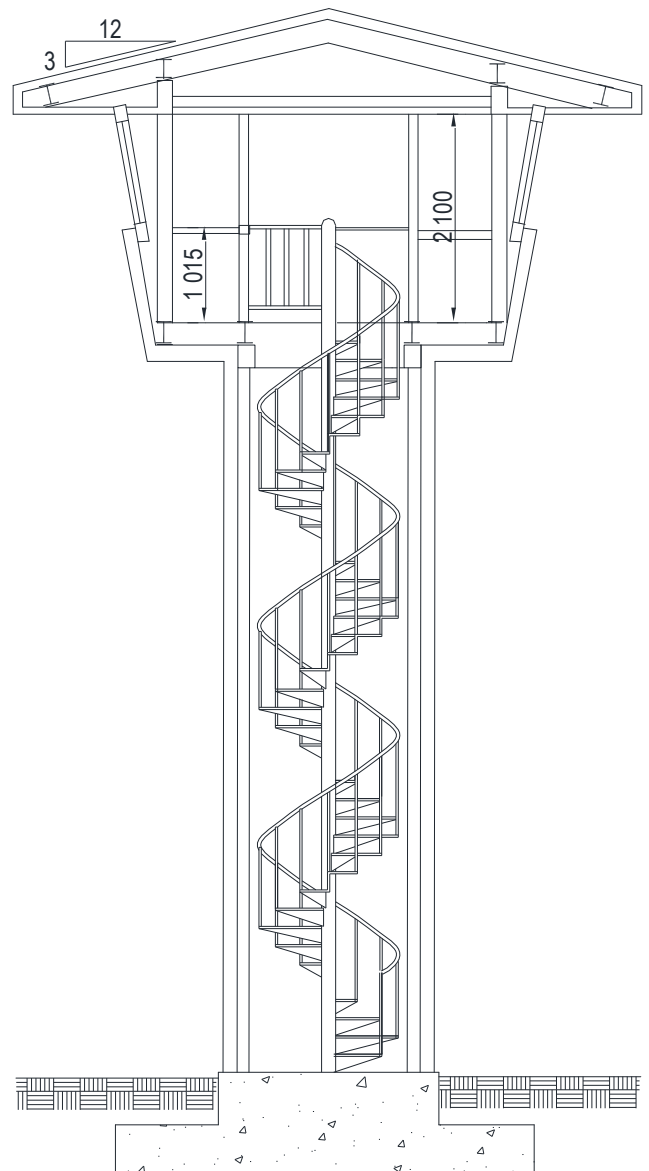
All drainage and supply lines located within the guard tower and shaft shall be protected against freezing by the use of insulation and electric heating cables.

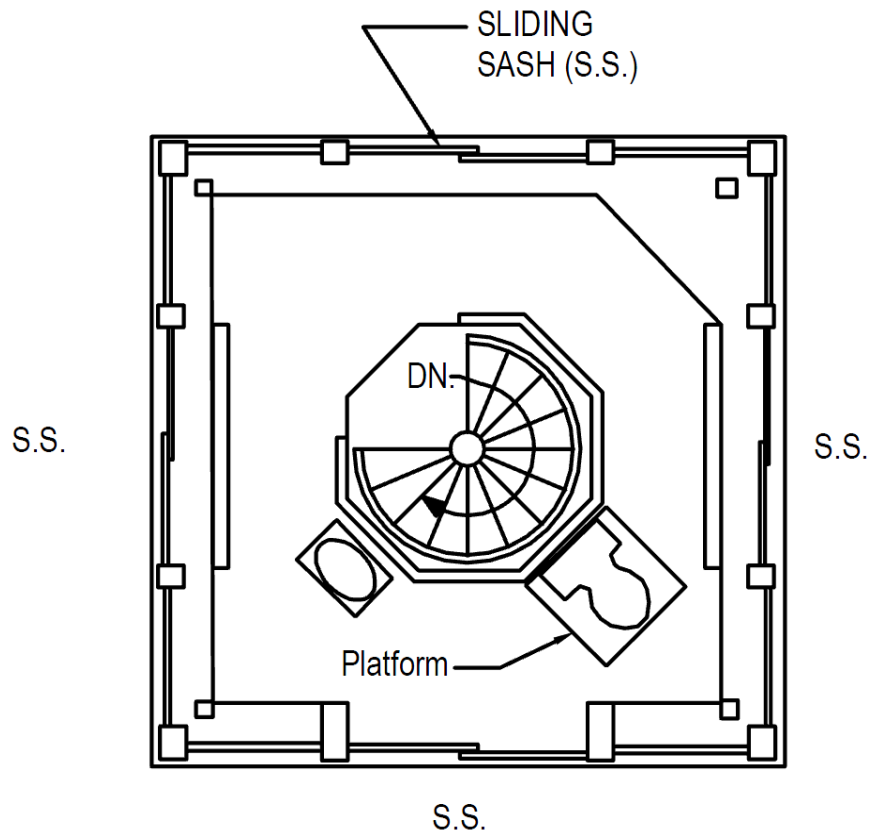
**5.4 Electrical**

In order to avoid loss of vision at night, lights within the cupola shall be provided with a dimmer control. A shelf with duplex receptacle and shaded task light shall be provided, as well as electric outlets for each side of the cupola. Lighting fixtures which illuminate the tower shaft and the ground below shall be provided beneath the cupola and controlled from the cupola.

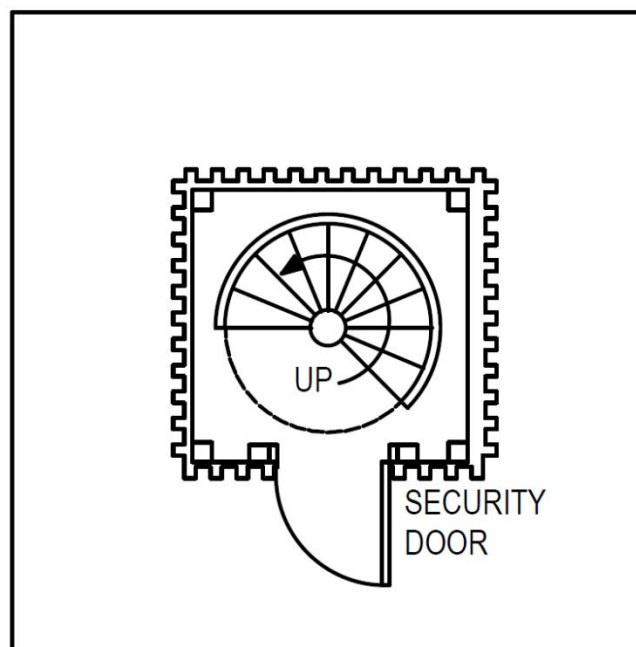
**5.5 Communications**

An intra mural telephone shall be installed in the cupola to provide communication with the MCCP. The officer in the tower is also equipped with a portable two way radio.

ELEVATION**ELEVATION**SECTION**SECTION****PLATE ST-1-1 – TOWER ELEVATION/SECTION**



**PLAN – CUPOLA**



**PLAN - SHAFT**

**PLATE ST-1-2 – TOWER PLANS**





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## ST-2 SPECIAL STRUCTURE – SHOOTING RANGES

### 1 SCOPE

This document outlines the requirements for partially weather protected outdoor shooting range for use by Correctional Service Canada.

### 2 PURPOSE

A shooting range forms part of Correctional officer training and provides for the upkeep of skills in the use of rifles, revolvers and other approved firearms. Each Region has shooting ranges located on institutional reserves; the number of which would be dictated by the number of staff having access to it within a maximum of 50 kilometer travel distance. Remote institutional sites require dedicated ranges. Use of a range is scheduled to ensure equitability.

### 3 PERFORMANCE CRITERIA

- Safety of personnel
- Effective ventilation – particularly of harmful lead dust and gaseous combustion products
- Effective backstop
- Effective natural lighting – no direct sunlight facing shooter
- Year round usage
- Safety of public outside of the shooting range
- Low cost to operate and maintain
- Minimal area footprint
- Environmental stewardship: ensures minimal impact on wildlife and natural habitat.

### 4. DESIGN REQUIREMENTS

- 4.1 Design shall meet the requirements set out in the RCMP Canadian Firearms Centre Range Design and Construction Guidelines, 2007 for an open structure 'zero blue sky' range.
- 4.2 The range shall be located on the Correctional reserve and accessible by an existing maintained road which may as an example provide access to a utility plant. It should be remote from the institution, property permitting, and be out of sight where possible.
- 4.3 The range shall be designed to fully contain bullets and projectiles from the CSC approved weapons including:
  - 4.3.1° C-8 .223 calibre rifle
  - 4.3.2 9mm pistol
  - 4.3.3 40mm multi-launcher
- 4.4 Range shall be confined on all sides by concrete walls 2.7 m high with the target end configured and fitted to catch bullets and projectiles.
- 4.5 The number of firing lanes shall be based on use frequency and number of users. Centralized firing ranges shall have more lanes than those at single institutions in remote locations. Typically, 6 to 12 lanes are provided. Each firing lane shall be 1 m wide. In addition, a 1 m aisle shall be located on the side with the exit / service door.

There shall be no equipment kept in this aisle. Maintenance equipment such as a snow blower or lawn mower will be brought in from the main institution as required.

- 4.6 The distance from the firing line to the end target shall be 50 m.
- 4.7 Firing points shall accommodate standing, kneeling and prone firing positions and shall be covered and protected from weather. Included in this protected area shall be a lockable cabinet which provides for items such as rubber floor rolled mats, eye and ear protectors, and an emergency first aid kit. There shall be no provision for cleaning of weapons in the Range. Cleaning shall be done off-site.
- 4.8 The floor accommodating the firing points and the cabinet area shall be sized to be the width of the lane X the number of lanes plus the side aisle by 3.5 m deep and shall be of concrete.
- 4.9 There shall be 2 doors for access to the firing range. Each door type and hardware shall be of commercial grade. One door shall be the main access person door behind the firing points. The rear door located in line with the targets shall be a double door with the second leaf used for maintenance equipment. This door shall be the secondary exit door and may also be used for target setting. A strobe light shall be located above the door activated by contacts when door is being opened. Audible alarms are less effective as shooters wear ear protectors.
- 4.10 Targets shall be located under weather covered backstop. Targets shall be supported on wooden racks which will be changed as required. Racks shall be moveable to allow for a closer target for pistol training.
- 4.11 Bullet trap and lead collection system shall meet Canadian Firearms center Range Design and Construction Guidelines and applicable regulations.
- 4.12 The ground cover of the range exposed to the weather shall be of grass. To assure good drainage and based on local conditions, a drain tile connected to an outside tile and sloped to a retention pond or to a lower elevation on the outside may be required. At minimum, the sub-base shall be of sand topped with Geo-textile fabric, topsoil and sod. The area will not be used until the sod has taken root. The lane alongside the wall with the door and the target protected end will be of compacted stone and stone dust separated from the sod by a lawn edging.
- 4.13 The roof is designed to allow the weather in but to block views of the sky from the firing point at any position – standing to prone. To achieve this, the roof shall have baffles free spanning across the width of the range. The bottom of the baffles shall be set above the 2.7 m concrete wall height. Baffles closest to the shooter will have closer spacing. As the angle from the eye of the shooter to the bottom of the baffle is reduced, the spacing of the baffles down range can progressively widen. A cross section of the 50 m length will determine the appropriate baffle spacing.
- 4.14 The construction of each baffle shall be a covered truss set at a steep angle so that it sheds water and snow and prevents dripping. As well, the baffles block views of the sky from the firing position but allow daylight to reach the floor of the range. The wall supporting the baffles should be as high as the top of the baffle and equally opaque. The combined side wall and the baffles shall be solid to withstand lateral forces. Shadow

lines, apparent but somewhat muted, do not hinder shooting. The objective is to prevent direct sunlight facing the shooter.

- 4.15 The baffle shall be designed and constructed to prevent a stray bullet from an approved weapon to penetrate the baffle and potentially endanger anyone outside of the range. This may mean that the baffles closest to the shooter require to be reinforced with bullet proof material. Alternately, a single wider baffle located at some juncture along the cross section may address this requirement. This provision should compare to the height of an earth berm of an outdoor range and the degree to which it offers the required protection.
- 4.16 Electrical service in the form of lighting are required for the weather protected front area and for the rear area at the target. In between areas shall not be lit which may limit the use of pistols needing a closer target to daytime use. The lighting closest to the target location shall be outdoor type and set behind the end baffle for its protection and to prevent direct light from obstructing the shooter. The lights shall be wired to two separate dimmer switches. The strobe and contact on the rear door will also be connected to the service. Bringing a power line to the range location should be weighed against the use of photo voltaic solar collectors with a battery pack.
- 4.17 Parking will be provided for as many vehicles as there are firing lanes plus 2 spare spaces for overflow at times of user changes. Parking lot shall be lit to 10 lx level.
- 4.18 Several 'zero blue sky' shooting ranges have been constructed at CSC and plans and specifications are available for review as are assessments by users.