



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 A - ARCHITECTURE

A-1 ARCHITECTURE – PROJECT AND DEFINITIONS

1. SCOPE	1
2. PROGRAM REQUIREMENTS	1
3. STYLE AND MATERIALS	1
4. COST	1
5. DEFINITIONS	1

A-2 ARCHITECTURE – BUILDING CONSTRUCTION

1. SCOPE	3
2. RELATED SECTIONS.....	3
3. CONSTRUCTION GUIDELINES	3
4. PERFORMANCE REQUIREMENTS FOR SECURE CONSTRUCTION	3

A-3 ARCHITECTURE – GRILLES MESH AND SCREENS

1. SCOPE	9
2. RELATED SECTIONS.....	9
3. DEFINITIONS	9
4. GRILLES AND MESH	10
5. INSECT SCREENS AND PASS THROUGH RESTRICTORS	11

A-4 ARCHITECTURE – GLAZING, WINDOWS AND ASSEMBLIES

1. SCOPE	17
2. RELATED SECTIONS.....	17
3. DEFINITIONS	18
4. PERFORMANCE CRITERIA.....	18
5. WINDOW TYPES	20
6. WINDOWS SELECTION	23

A-5 ARCHITECTURE – DOORS & FRAMES

1. SCOPE	29
2. RELATED SECTIONS.....	29
3. DOOR CLASSIFICATIONS	30
4. DOOR STYLE	30
5. DOOR FUNCTIONS	31
6. TECHNICAL REQUIREMENTS.....	32
7. DOOR SELECTION	36
8. DOOR CONTROL	37

A-6 ARCHITECTURE - HARDWARE

1. SCOPE	51
2. RELATED SECTIONS.....	51
3. DEFINITIONS	51
4. BUILDER HARDWARE.....	51
5. DETENTION HARDWARE	52
6. HARDWARE SCHEDULE	54

A-7 ARCHITECTURE – FINISHES AND MODESTY SCREENS

1. SCOPE	55
2. RELATED SECTIONS.....	55
3. PERFORMANCE CRITERIA.....	55
4. DESIGN GUIDELINES	55
5. MODESTY SCREENS	56

A-8 ARCHITECTURE – BUILDING ACOUSTICS

1. SCOPE	59
2. RELATED SECTIONS.....	59
3. DEFINITIONS	59
4. PERFORMANCE CRITERIA.....	59
5. DESIGN GUIDELINES	60

A-9 ARCHITECTURE – INTERIOR SIGNAGE

1. SCOPE	61
2. GENERAL REQUIREMENTS	61
3. DESIGN REQUIREMENTS	61
4. PROCUREMENT OF SIGNAGE	61

A-10 ARCHITECTURE – CONTRABAND AND BANNED SUBSTANCE CONTROL

1. SCOPE	63
2. RELATED SECTIONS.....	63
3. PERFORMANCE CRITERIA.....	63
4. DESIGN GUIDELINES	64

A-11 ARCHITECTURE – INMATE CELLS

1. SCOPE	67
2. RELATED SECTIONS.....	67
3. DEFINITION OF TERMS.....	67
4. SECURITY REQUIREMENTS.....	67
5. PERFORMANCE REQUIREMENTS.....	67
6. DESIGN REQUIREMENTS	69

A-12 ARCHITECTURE – SPECIAL OBSERVATION CELLS

1. SCOPE	77
2. RELATED SECTIONS.....	77
3. PERFORMANCE CRITERIA.....	77

A-13 ARCHITECTURE – SECURITY CONTROL POSTS, GALLERIES & ROUTES

1. SCOPE	79
2. RELATED SECTIONS.....	79
3. DEFINITIONS	79
4. TYPE & LOCATION OF SECURITY CONTROL POSTS.....	80
5. CLASSIFICATION OF PROTECTION LEVELS	80
6. CONTROL POST DESIGN CRITERIA	82
7. DESIGN CRITERIA FOR OTHER SECURITY AREAS	87

A-14 ARCHITECTURE – ARMOURY

1. SCOPE	93
2. RELATED SECTIONS.....	93
3. DEFINITIONS	93
4. ARMOURY SECURITY AND DESIGN REQUIREMENTS.....	93

A-1 ARCHITECTURE – PROJECT ARCHITECTURE AND DEFINITIONS

1. SCOPE

This section outlines the key considerations for the design of correctional projects.

2. PROGRAM REQUIREMENTS

A detailed program of requirements for the functional areas contained in a correctional project will be provided by CSC. The program contains the problem statement, the objective(s) to be realized, a budget and schedule for such work. The architect shall adhere to the program requirements and the stated objectives.

3. STYLE AND MATERIALS

New buildings or additions shall be compatible in scale and modest in form. The building shall be designed with the users well being in mind and be environmentally sustainable by employing current “green” best practices.

4. COST

The solution shall fulfill all program requirements and objectives in a cost efficient manner. If at any time it is apparent that there is a discrepancy between the program requirements, objectives and the approved budget, the matter shall be referred to CSC for resolution.

5. DEFINITIONS

Inmate Areas: Areas in an institution intended for inmate circulation and activities. These areas are periodically supervised by visual or virtual means and traffic to these areas may be scheduled and controlled by group size. Examples are: Inmate cell/bedroom, ranges, and program rooms.

Inmate Controlled Access Areas: Areas in an institution intended for limited inmate circulation and movement may be under escort. This also includes areas to which access is permitted for specific groups of inmates but denied for others. Examples are: Administration office areas, and aboriginal sacred ground.

Inmate Restricted Areas: Areas in an institution where inmate presence and circulation are prohibited. Examples are: Security posts, galleries, refuge areas and utility equipment spaces.

A-2 ARCHITECTURE – BUILDING CONSTRUCTION

1. SCOPE

This section outlines envelope requirements for correctional institutions and identifies specific functions requiring secure construction.

2. RELATED SECTIONS

A-3 – Grilles, Mesh and Screens

A-4 – Glazing, Windows and Assemblies

A-5 – Doors and Frames

A-6 – Detention Hardware

A-10 – Finishes and Modesty Screens

A-13 – Security Control Posts, Galleries & Routes

A-11 – Inmate Cells

3. CONSTRUCTION GUIDELINES

3.1 *Standard*

Where confinement and/or protection are not critical, building shall be constructed in accordance with normal practices and the National Building Code (NBC)¹ for the appropriate use and occupancy. Offices within inmate controlled access areas may use standard office partition systems. For openings, standard commercial windows, doors and hardware are used unless otherwise specified.

3.2 *Secure*

Where confinement and/or protection are critical, the building envelope shall be constructed to resist penetration by physical force. The type of envelope construction is outlined below and the locations for each are identified in Table A-2-1.

Note: Where there is any question concerning the suitability of materials for a specific use, the approval of CSC issuing authority shall be obtained.

4. PERFORMANCE REQUIREMENTS FOR SECURE CONSTRUCTION

4.1 Secure construction is designed to resist-penetration and serves to frustrate attempts at breach with the use of impact and other instruments by means of either covert or overt assault. The construction type provides for a varying degree of resistance related to the risk of assault and the gravity of the outcome.

4.2 Materials used for walls, floors and ceilings shall provide equal resistance to doors and windows where these elements in combination form a secure enclosure.

4.3 Exterior wall materials of a façade of a building where security is at issue shall not facilitate climbing.

4.4 The façade design of a building where security is at issue shall not offer any opportunity for concealment from normal observation. Alcoves and recesses shall be avoided.

4.5 Joints of surface materials and the material itself shall not offer any opportunity for hiding of contraband for later retrieval.

4.6 Materials selected shall provide a relatively high level of resistance to vandalism and dismantling.

¹ National Building Code of Canada 2010, National Research Council, 2010, ISBN 0-660-19976-4
<http://www.nrc-cnrc.gc.ca/eng/ibp/irc/codes/2010-national-building-code.html>

- 4.7** Specific areas of an institution requiring secure construction are listed in Table A-2.1. The type of secure construction typically differs by institutional security level or by degree of threat risk and is identified as secure construction 1, 2, or 3 with increased performance in ascending order. Walls, floors, and ceilings are described below while matching envelope elements such as doors, windows, and hardware follow in Table A-2-

2. Secure Construction 1 – Commercial Enhanced

For walls and partitions, higher performance is required than offered by simple gypsum board on stud construction.

- 4.7.1.1 Expanded metal mesh, woven wire mesh or plywood used as a substrate to gypsum board and fastened to the studs are acceptable materials. Alternately, standard concrete masonry of 150mm width may be used with hollow core and no vertical reinforcing other than what is required to meet the NBC or structural requirements.
- 4.7.1.2 Partitions shall extend and be secured to the structural ceiling or be capped under the joists with an equally secure ceiling.
- 4.7.1.3 Exterior stud wall construction using masonry cladding or pre-formed metal cladding of thickness no less than 0.635mm (24 ga) do not require added security within the stud wall.
- 4.7.1.4 Floors and ceilings due to structural requirements provide for acceptable protection on combustible or non-combustible construction.

4.7.2 Secure Construction 2

Walls and partitions require 200 mm hollow concrete block, vertically reinforced at 800 mm centres with all hollows concrete filled. Alternate construction may be acceptable providing equal performance and economies can be met. Floors and ceilings require reinforced cast in place slab, pre-cast concrete (e.g. hollow core slab) or a metal deck concrete filled. Where gaps in joints are exposed, these shall be caulked with epoxy grout to eliminate direct through passage.

4.7.3 Secure Construction 3

Walls and partitions are fully reinforced cast in place or pre-cast concrete of 150 mm thickness with vertical reinforcing at 300 mm on centre. Masonry construction may also be used comprising 200 mm hollow concrete block having all hollows concrete filled and vertically reinforced at 400 mm. An 'H' cast block offers generally a better performance to that of a standard block and shall be specified similarly reinforced if locally available. Steel blocks may be integrated with masonry construction at specific points to facilitate welding steel furniture and other appurtenances. Floors and ceilings are made of reinforced cast in place slab, pre-cast concrete (e.g. hollow core slab) or metal deck concrete filled. Any exposed gaps in joints and honeycombs in poured concrete shall be appropriately filled to eliminate direct through passage.

TABLE A-2-1 – Specific Areas of an Institution Requiring Secure Construction

On exterior and interior contiguous with inmate accessible areas NA = Not applicable

For construction security requirements of Control posts refer to Chapter A-13

DEPARTMENT / FUNCTION		INSTITUTION SECURITY CLASSIF.		
		MIN	MED	MAX
A1	Management Centre	NA	1	2
A2	Finance	NA	1	2
	– Vault	1	2	2
A3	Staff Services and Training	NA	1	2
A4	Administration & Central Registry	NA	1	2
	– Central File Storage Room	1	2	2
A5	Case and Sentence Management	NA	1	2
A6	Parole Board Hearing	NA	1	2
	– Inmate Waiting Room	NA	1	2
B1	External Control (Gatehouse)	NA	2	2
	– Perimeter Line, Vestibules & Interior Partitions	NA	2	2
	– Main Communication Control Post (MCCP)	NA	3	3
	– Search/Holding /Interview Room	1	2	2
B2	Emergency Response Team	NA	2	2
	– Security Equipment Room	1	1	1
B2	Armoury	NA	3	3
B3	Security Administration	NA	2	2
	– Interior Partitions	NA	1	1
	– Key Room	NA	2	2
B4	Admissions & Discharge	NA	2	2
	– Waiting/Holding Rooms	1	2	2
	– Inmate Effects Storage	1	1	1
C1	Social Programs & Leisure Activities	NA	NA	2
	– Multi-Purpose Rooms	NA	NA	2
	– Canteen	1	2	2
C2	Arts & Crafts	NA	NA	2
	– Workshops	NA	NA	2
	– Raw and Finished Material Storage	1	2	2
C3	Private Family Visiting	NA	NA	NA
C4	Visits & Correspondence	NA	1	2
	– Open Contact Visits	NA	1	2
	– Restricted Visits (Inmate side only)	NA	2	2
	– Office	NA	1	2
C5	Recreation	NA	NA	2
	– Interior Partitions	NA	NA	2
D1	Chaplaincy	NA	1	2
D2	Aboriginal Services	NA	NA	2
E1&E2	Small Group Accommodation and Minimum Security Units	NA	NA	NA

DEPARTMENT / FUNCTION		INSTITUTION SECURITY CLASSIF.		
		MIN	MED	MAX
E3	Responsibility Units (medium security only)	NA	2	NA
	– Apartment Envelope	NA	2	NA
	– Apartment Interior Partitions	NA	NA	NA
	– Entry Vestibule and Circulation Core Partitions	NA	2	NA
	– Staff Office Area Envelope	NA	1	NA
E4	Direct Observation Units (medium security only)	NA	2	NA
	–Range & Central Circulation Area Envelopes	NA	2	NA
	–Cell, Shower and Entry Vestibule Partitions	NA	2	NA
	– Staff Office Area Envelope	NA	1	NA
E5	Maximum Security Units	NA	NA	3
	– Range, Common Area & Circulation Core Envelopes	NA	NA	3
	– Cell, Shower and Entry Vestibule Partitions	NA	NA	3
	– Staff Office and Program Area Envelope	NA	NA	2
	– Program Area Interior Partitions	NA	NA	1
E6	Segregation Unit	NA	3	3
	– Cell, Shower and Circulation Area Partitions	NA	3	3
	– Entry Vestibule Envelope	NA	2	2
	– Staff Office and Program Area Envelope	NA	2	2
F1	Health Care Centre	NA	2	2
	– Clinical Treatment and Staff Support Area Interior Partitions	NA	NA	2
	– In-Patient Area Interior Partitions	NA	1	2
	– Entry Vestibule	NA	1	2
	– Medication Room, Dispensary, Medical and File Storage	1	2	2
F2	Mental Health	NA	1	2
	–Interior Partitions	NA	NA	1
	–File Storage Room	1	2	2
G1	Maintenance	NA	NA	1
	–Volatile Material, Tool and Equipment Storage Rooms	1	2	2
G2	Food Services	NA	1	2
	– Food Storage Areas (Bulk, Coolers, Freezers)	1	2	2
	– Cafeterias/Dining Halls	NA	1	NA
G3&G4	Institutional Services and Material Management	NA	1	1
	–Volatile Materials and attractive items Storage Areas	1	2	2
H1	Occupational Development Programs/CORCAN	NA	NA	1
	– Raw, Finished and Volatile Material, Tool & Equip. Storage	1	2	2
J1,J2&J3	Education; Correctional Programs; and Library	NA	NA	2
	– Multi-Purpose Room Partitions	NA	NA	1
	Circulation separating restricted and inmate controlled access	NA	2	2
	Storage of volatile or other hazardous material or equipment	1	2	2
	Building service areas to be reviewed by CSC issuing authority			

TABLE A-2-2 – Envelope Elements

SECURE CONSTRUCTION	DOOR	WINDOW	HARDWARE
1	CD*	CW3**	BH
2	DD1, DD1p	DW1, DWb	DH1
3	DD2, DD2s, GL	DW2	DH2, DH2sl

* Glazing in doors upgraded from monolithic to laminated glass

**Windows where added security is required may be fitted with exterior grilles or mesh

See Chapter A-4, section 5 (A-3:5) for windows type definition.

See Chapter A-5, section 6 (A-5:6) for door type definition.

See Chapter A-6, section 3 (A-6:3) for hardware type definition.

A-3 ARCHITECTURE – GRILLES MESH AND SCREENS

1. SCOPE

This section identifies the requirements for all grilles, mesh, and screen types used in correctional institutions.

2. RELATED SECTIONS

2.1 *Technical Criteria Document sections:*

A-4 – Glazing, Windows and Assemblies

A-5 – Doors and Frames

A-6 – Hardware

A-11 – Inmate Cells

A-13 – Security Control Posts, Galleries and Routes

2.2 *Standards*

2.2.1 ANSI/BHMA – American National Standard

- A156.4-2008 – Doors Controls – Closers, Oct. 2008
- A156.14-2007 – Sliding and Folding Door Hardware, Sept. 2007

2.2.2 ASTM Standards

- A627-03 – Test Methods for Tool-Resisting Steel Bars, Flats, and Shapes for Detention and Correctional Facilities
- F2322-03 – Test Methods for Physical Assault on Vertical Fixed Barriers for Detention and Correctional Facilities

2.2.3 NAAMM DEMA – Detention Equipment

- 111900-09 – Guide Specification for Basic Detention Equipment Requirements, 11, Dec. 2009

3. DEFINITIONS

Tool Resistant Homogenous and Composite Steel: Grade 3 Homogenous or composite Tool-Resisting Steel as described in *ASTM A627-03*. Tool resistant steel is mild steel which had been subjected to having its total surface heat tempered to achieve a greater resistance to cutting by approximately 6X over that of mild steel. Inserts of tungsten carbide in mild steel surface form a composite steel which render it rod saw resistant increasing its cutting resistance by approximately 72X over that of mild steel. Both steels have equal resistance to impact and bending as the mild steel core is left unchanged. Tempering or hardening serves to render the mild steel more brittle. Once hardened steel is welded, the welded area loses its resistance to cutting.

Structural Quality Steel (mild steel): Steel rods, flats and shapes, including tubing, conforming to *CAN/CSA G40.20-04/G40.21-04 (R2009)*¹, Grade 300W or to *ASTM A36/A36M-08*². A subgroup, hollow structural section (HSS) steel tubing is typically used for window bars as it provides not only structural stiffness (square HSS is efficient for multiple-axis loading) but also a hollow interior for inserting a bar of tool resistant homogenous steel or composite rod saw resistant steel as specified.

¹ CAN/CSA G40.20-04/G40.21-04 (R2009) – General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel

² ASTM A36/A36M-08 – Standard Specification for Carbon Structural Steel

4. GRILLES AND MESH

Grilles and mesh are used for containment and protection in windows and to control traffic in corridors and other specified areas (See A-5) where unobstructed visibility is paramount.

4.1 *Window Grille and Mesh*

Steel grilles or mesh are mounted on the exterior wall over a conventional window to resist forced entry or egress.

4.1.1 Light weight security mesh for moderate resistance

This type of window protection provides a moderate resistance to attack but allows for clear evidence of any deliberate tampering. Mesh must be securely anchored preferably to the window opening face of the wall in solid material to better resist prying. Mesh may be of galvanized steel as in fence fabric using a woven or welded wire of 4.88mm (6 ga) typically 50mm X 50mm or of stainless steel; using finer and closer strands typically 12 X12 wires per 25mm squared and of 0.6mm wire diameter. The latter option is better suited for air conditioned areas with fixed windows since for operable windows the screen will significantly reduce air flow to 52%.

4.1.2 Structural steel grille for confinement and intrusion protection

Plates A-3-1 and A-3-2 illustrate two examples of steel grilles to be mounted on the exterior wall over a conventional window to resist attack and maintain confinement. The combination of a well anchored steel grille with a window unit satisfies Detention Level 1 (DW1) requirements (A-4:5.4.8).

Other designs with different opening shapes are possible provided that no opening is larger than 125mm in one direction and 610mm in the other direction. Another acceptable design is a square or near square clear opening of a maximum of 250mm by 250mm. No other dimension is permissible without the approval of the TCD issuing authority.

4.1.2.1 The use of this type of grille for inmate cell windows is acceptable as a replacement for similar existing grilles in older institutions where existing windows are to be retained.

4.1.2.2 For other than cells, this type of grille is suitable for windows in supervised areas where containment and intrusion protection is at issue.

4.2 *Movement Control Grille Barrier*

Movement Control Grille Barriers are used in corridors for separating functional zones or for limiting group size. Grille barriers may also be used for containment in specified areas listed in chapter A-5. Grille barriers are located close to Control Posts to facilitate observation of movement and for control of the barrier gate as well as to allow long views down the corridor.

4.2.1 Grille Barriers are fabricated using Structural steel either of hollow steel sections (HSS) or rods and flats welded together.

4.2.2 Grille Barriers combine fixed grilles and grille gates which slide or are hinged designed to similar configuration and quality of steel. Grilled swing gates are provided with closers while sliding grille gates have a maximum force set by the manufacturer. When moving in either direction and at any point in travel the

force is 133 N (30 lbf)³. This indicates that the grille gate could be stopped when in motion and forced in the opposite direction.

4.3 Grilles Test

Grilles shall be resistant to deformation and fracture by screw jack or by impact. Tests shall conform to the following:

4.3.1 Screw Jack Test – Resistant to 30 mm screw jack turned by a 350 mm wrench.

4.3.2 Impact test – ASTM A673/A673M-07⁴.

5. INSECT SCREENS AND PASS THROUGH RESTRICTORS

Insect screens shall be of commercial grade with standards regulated by the Screen Manufacturer Association (SMA) conforming to *SMA 6001-2002*⁵.

5.1 All insect screens for windows are commercial grade applied over the operable portion of the window. In the case of their use in minimum housing where restrictions for egress apply but grilles or mesh are not permitted, they shall be screwed to the frame with security screws to facilitate detection of tampering.

5.2 For Detention Level 1 (DW1) windows, insect screens are commercial grade heavy duty applied over the operable part of the window. Screens are of aluminum using 18 X 16 mesh with frames secured to the window or bars to facilitate detection of deliberate tampering. A pass through restrictor to prevent 'fishing' shall not be used at the medium security level without the approval of the TCD issuing authority. It is critical that materials and components used reflect a gradation of severity consistent with the level of security.

5.3 For Detention Level 2 (DW2) windows in addition to the insect screen, the operable part of the window shall be fitted with a pass through restrictor either of perforated steel plate or of a type which pivots and forms the operable part of the window. The restrictor shall be robust enough to prevent damage by physical attack or dismantling (see chapter A-4 for cell window assemblies).

³ ANSI/BHMA A156.10-2005 – Power Operated Pedestrian Doors

⁴ CAN/CSA-C22.2 NO. 247-92 (R2008) – Operators and Systems of Doors, Gates, Draperies and Louvres;

⁵ ASTM A673/A673M-07 – Standard Specification for Sampling Procedure for Impact Testing of Structural Steel

SMA 6001-2002 – Specifications for Metal Protection Screens

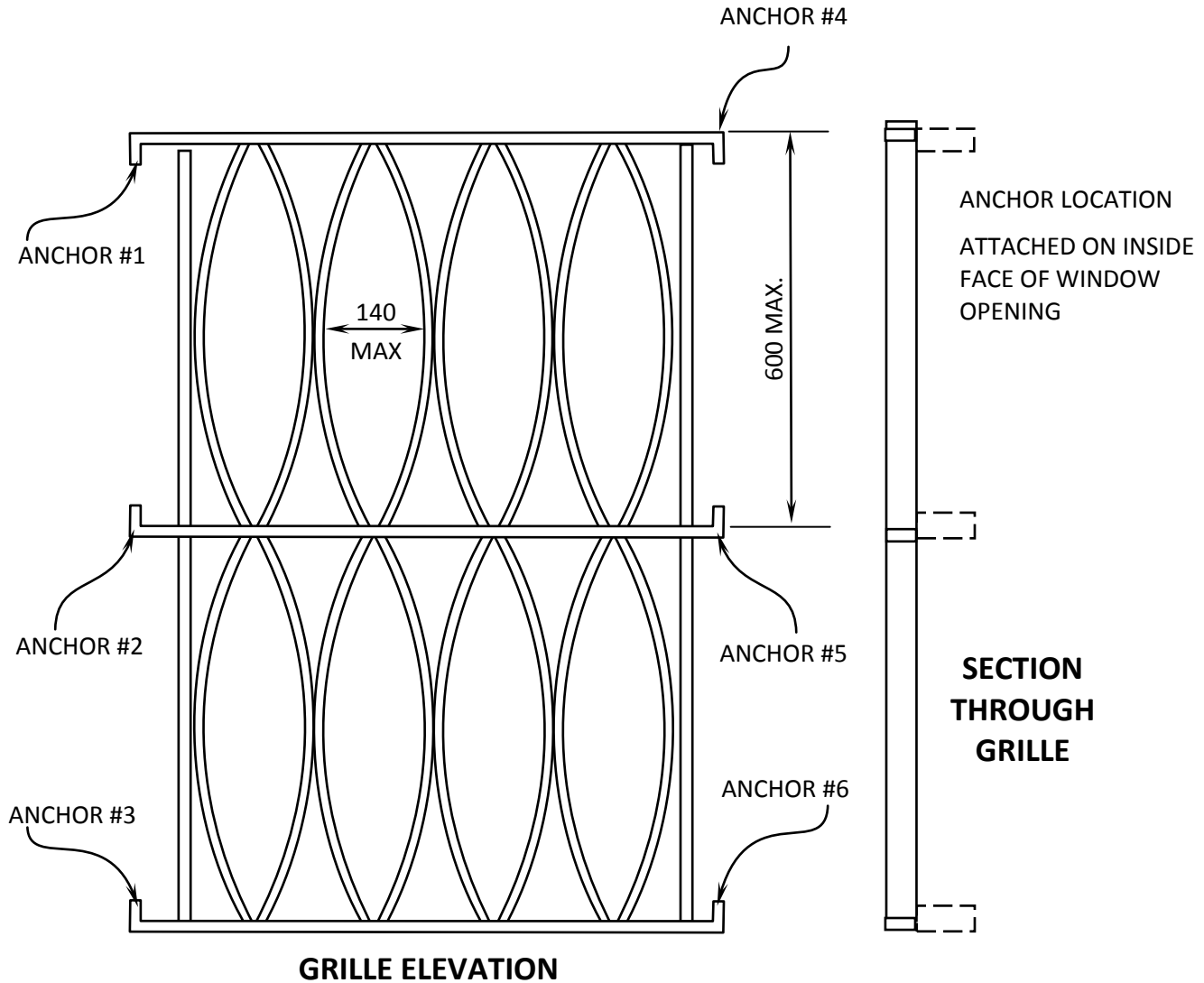
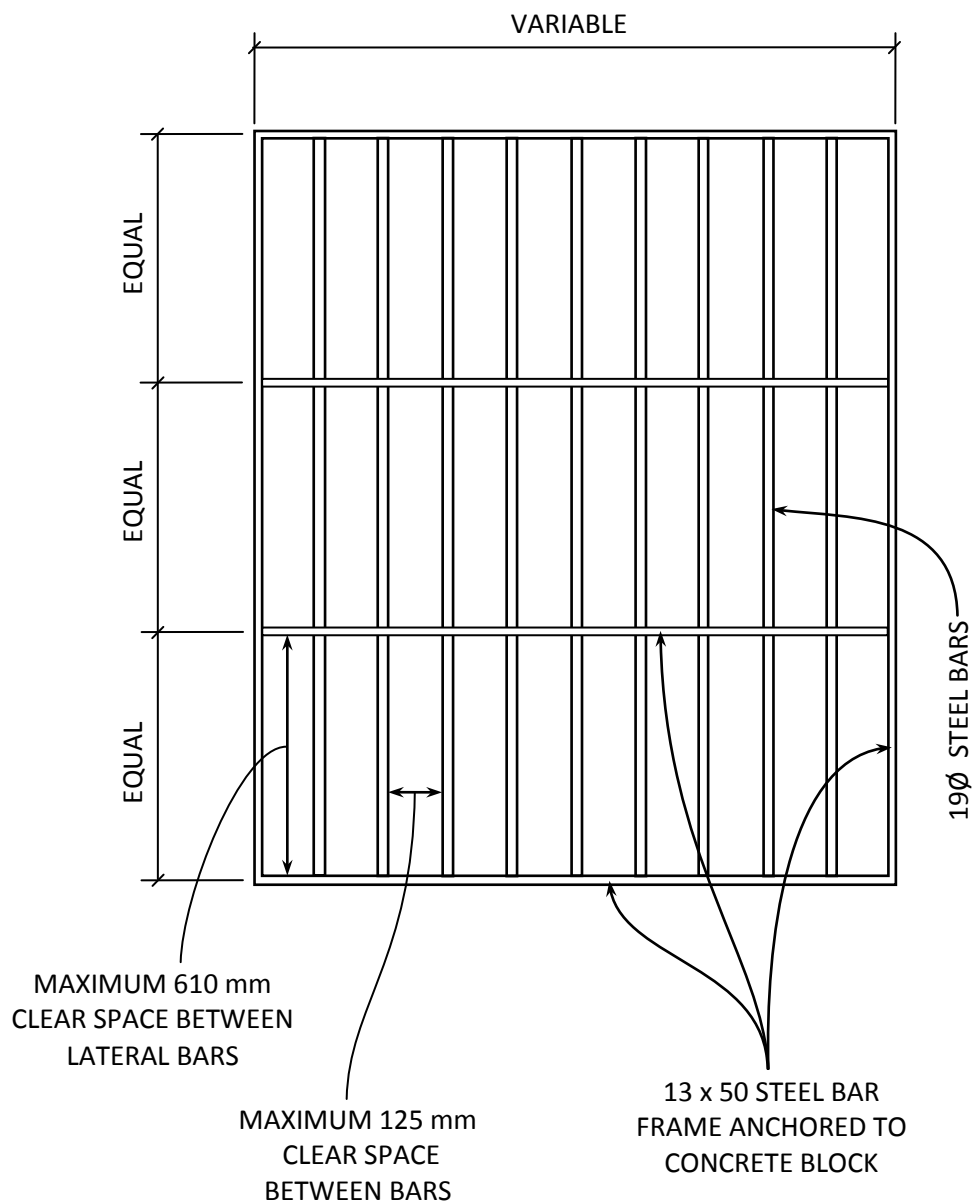
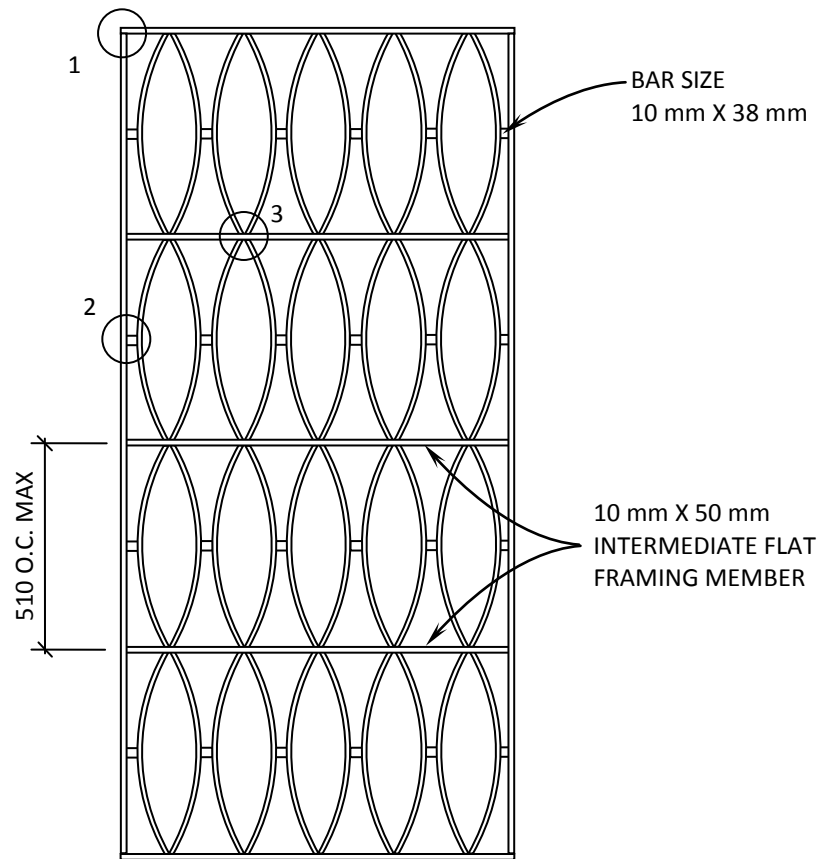
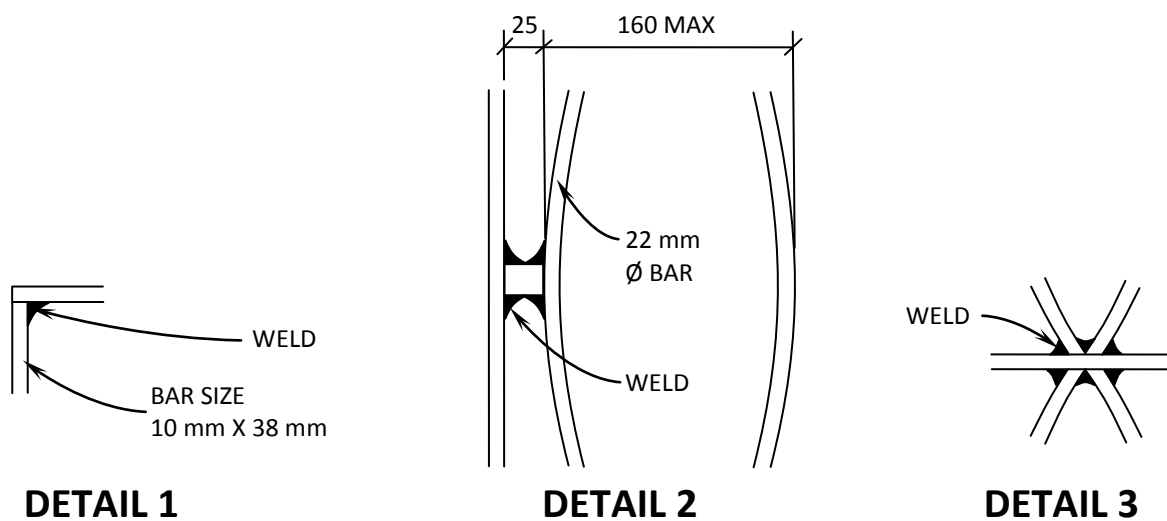


PLATE A-3-1 – GRILLE WINDOW DESIGN AND DETAILS

**PLATE A-3-2 – GRILLE WINDOW DESIGN ALTERNATIVE**

**ELEVATION****PLATE A-3-3 – DOOR AND FIXED GRILLE**



A-4 ARCHITECTURE – GLAZING, WINDOWS AND ASSEMBLIES

1. SCOPE

This section defines the various types of windows for CSC institutions on the exterior and interior except for Control Posts and Weapons Dedicated Routes which are covered in section A-13. Whereas the previous section A-3 dealt with steel grilles and mesh which may be superimposed on exterior of windows, this section deals with a total window assembly designed to achieve a required level of security.

2. RELATED SECTIONS

2.1 *Technical Criteria Document sections:*

A-2 – Building Construction
 A-3 – Grilles, Mesh and Screens
 A-5 – Doors and Frames
 A-11 – Inmate Cells
 A-13 – Security Control Posts, Galleries and Routes
 ST-1 – Guard Towers

2.2 *CSC/NMS Specifications (NMS–CSC Masterformat 2010 Sections)*

08 56 63 Detention windows (Prior to 2004: 08581 – Detention windows)
 08 88 53 Detention and Security glazing
 11 19 00 Detention equipment

2.3 *Standards*

2.3.1 ASTM Standards

- A627-03 – Test Methods for Tool-Resisting Steel Bars, Flats, and Shapes for Detention and Correctional Facilities
- A673/A673M-07 – Standard Specification for Sampling Procedure for Impact Testing of Structural Steel
- F1592-05 – Std. Test Methods for Detention Hollow Metal Vision Systems
- F1915-05 – Standard Test Methods for Glazing for Detention Facilities

2.3.2 NAAMM DEMA – Detention Equipment

- 111900-09 – National Association of Architectural Metal Manufacturers – NAAMM – Guide Specifications for Basic Detention Equipment Requirements
- 111950-09 – National Association of Architectural Metal Manufacturers – NAAMM – Guide Specifications for Detention Fixed Exterior Windows

2.3.3 Canadian Standards Association (CAN/CSA)

- A440-00/A440.1-00 (R2005) - CAN/CSA-A440-00, Windows
- A440.1-00, User Selection Guide to CSA Standard CAN/CSA-A440-00, Windows
- A440S1-09 – Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440
- A440.4-07 – Window, Door, and Skylight Installation
- A440.2-09/A440.3-09 – Fenestration energy performance + User guide
- AAMA/WDMA/CSA 101/I.S.2/A440-08 NAFS - North American Fenestration Standard / Specification for Windows, Doors, and Skylights

2.3.4 Canadian General Standards Board (CAN/CGSB)

- 12.1-M90 – Tempered or Laminated Safety Glass
- 12.2-M91 – Flat, Clear Sheet Glass
- 12.3-M91 – Flat, Clear Float Glass
- 12.4-M91 – Heat Absorbing Glass
- 12.8-97 – Insulating Glass Units & 12.8-97 AMEND – Insulating Glass Units
- 12.10-M76 – Glass, Light and Heat Reflecting
- 12.11-M90 – Wired Safety Glass
- 12.12-M90 – Plastic Safety Glazing Sheets

3. DEFINITIONS

Tempered glass: Glass that has been processed by controlled heat or chemical treatment to increase its strength compared to float and untreated glass. Heat tempered glass if fractured breaks into rounded grains rather than sharp shards. This glass is approximately three times more resistant to impact than untreated glass for a thickness of 6mm but less for thinner sheets. It is also more resistant to breakage than chemically tempered glass though the latter if fractured breaks up into shards. Heat tempered glass however due to its heat treatment and resulting surface tension is vulnerable to fracture when impacted by a pointed object or struck at the edge or scratched by a harder mineral such as quartz or a 'precious' stone. Heat tempered glass cannot be cut.

Safety glass: A laminate of two or more sheets of glass adhered to one another with the use of a plastic interlayer. The type of glass used in laminates can differ but if fractured it remains secured to the plastic interlayer (typically PVB or polyurethane minimally 0.78mm thick (30mil) or multiples of this thickness). Depending on the glass type, the breakage pattern will differ but sharp shards are unlikely to be obtained since by impacting the fractured area, the glass will progressively break up into smaller pieces.

Plastic Polycarbonate and Acrylic sheet: Plastic materials which are clear, tough, and shatterproof but are more affected by UV rays than glass. Polycarbonate, a thermoplastic polymer (commonly known by the trademark 'Lexan'), is the softer of the two materials, more resistant to impact but less to abrasion though it could be hard coated to improve abrasion resistance. Acrylic (commonly known by the trademark 'Plexiglass') is harder and therefore more apt to crack under impact but is more resistant to abrasion. This material, commonly used for light diffusers, is not normally found in detention application due to its inferior performance against physical attack. Sheets of polycarbonate can be laminated together using polyurethane as an interlayer to enhance their performance against physical or ballistic attack. Polycarbonate will burn when exposed to continuous flame but if the flame is withdrawn, it chars and rapidly extinguishes itself.

Composite translucent material: Glass combined with polycarbonate in multiple layers to improve performance against physical or ballistic attack while achieving enhanced resistance to chemicals, fire or abrasion. Glass is typically applied on the exposed sides but may be only on 1 side if a threat from ballistics requires that the protected side be spall free. The interlayer used in composite glazing is typically polyurethane due to the two materials having a different coefficient of expansion.

Fire resistant applications: Glass in fire separations is usually comprised of wired glass, tempered glass or glass blocks subject to area and location limitations. Ceramic glass technology is also becoming increasingly popular. Other usages of glass in fire separations consist of combinations with window sprinkler treatments and include specific framing restrictions.

4. PERFORMANCE CRITERIA

The following applies to the use of windows in correctional environments:

- 4.1** Glazed windows for exterior and interior locations are used in combination with other measures or components to achieve the required security. The measures may include restricted openings, attack resistant glazing or security bars / grilles / or mesh.
- 4.2** The extent of the exterior window clear glass opening to be provided in all bedrooms and cells shall be 5% of the net room area.

- 4.3** Windows in bedrooms and cells shall have an operable sash to allow for fresh air controlled by the inmate. The unobstructed ventilation area¹ of the window shall be sized minimally at 125mm in the narrow dimension.
- 4.4** Windows on a given project shall be of equal size to the extent possible in order to reduce manufacturing costs and to simplify the stocking of glazing materials.
- 4.5** Glass in windows in minimum security institutions including that which is used in interior areas does not need to be treated to prevent shards when broken except where required by the NBC. Glass in windows in medium and maximum institutions including that which is used in interior spaces shall be heat tempered or safety (laminated) type to prevent shards when broken.
- 4.6** Tinting films for one way viewing shall not be used on glazing except as indicated in Chapters A-13 and ST-1 for Observation galleries and Guard towers respectively.
- 4.7** Curtains (and blinds at minimum security institutions) may be used on exterior windows for reasons of comfort and upon request. Curtains in windows at medium and maximum may be attached using 'Velcro'.
- 4.8** Skylights, where provided, shall meet the same level of performance as that required in wall openings except where they are inaccessible and located in supervised areas.
- 4.9** For medium and maximum security institutions bars or grilles shall be used on windows to achieve confinement or intrusion protection. The bars shall be spaced to form a clear opening between bars of 125 mm and shall be designed to minimize the effect of "tunnel vision". Bars shall be located on the interior side of the window to be protected from exposure to weather and to assure adequate anchoring to the interior side wall material which typically is reinforced masonry or monolithic concrete. A grille fabricated from mild steel or screens of galvanized steel mesh or stainless steel generally applied on the exterior of the window, do not achieve the security performance of that of a bar.
- 4.10** Windows used along with bars may have varied configurations to respond to suspension point concerns. For medium security cells, the fixed window sash may span the full opening and be set away from the bars. Bars in this case must be set on the vertical and have no intermediate horizontal members in order to lower the height of potential suspension points to the window sill. For maximum security cells and for segregation and observation cells, the bars shall be in contact with the window glass or window mullions. The window mullion or glass shall be sealed or caulked to each bar to prevent feeding a line behind the bar to achieve a suspension point. As such, windows for maximums and segregation units can have bars set in either vertical or horizontal direction. It should be recognized that suspension prevention is only achieved when the glass is intact. An inmate intent on committing suicide can break the glass on each side of a bar to allow wrapping a ligature around the exposed bar. Closed and secure control posts contribute to sound attenuation preventing hearing glass breaking within a cell.
- 4.11** Openings for natural ventilation by means of operable sashes or pass through restrictors shall be equipped with insect screens.
- 4.12** Glazed partitions or wall assemblies for interiors where Security Construction 2 or 3 is required, shall use glass which does not break into shards in combination with grilles or mesh or alternately polycarbonate or composite glazing without the use of grilles or mesh. For secure construction 1, laminated glass may be used to offer a degree of

¹ National Building Code of Canada 2010, 13th Edition 2010, National Research Council, Vol. 2, Section 9.32.2.2

protection. Where fire rated construction is required, NBC compliance shall dictate the choice of materials.

- 4.13** Window accessories shall not be easily removable or dismantled. The use of vertical sliders in other than minimum security must not incorporate sash balances; instead, sash bolts shall be used.

- 4.14** Glass used in required fire separations:

4.14.1 Glass used in fire separations must be carefully selected for its use, size, location, type as well as security requirements to ensure that there are no conflicting requirements.

4.14.2 Wired glass and glass blocks shall conform to the requirements of the NBCC with respect to testing, size and area.

4.14.3 Ceramic glass products shall conform to the requirements of CAN4-S106-M “Fire Test of Window and Glass Block Assemblies” for the required rating of the assembly.

4.14.4 Where ceramic glass products are used, these shall be subject to the same area limitations of the NBCC for wired glass unless the material is also tested to limit temperature rise (exposure to radiant heat) at which point the product’s listing shall govern.

4.14.5 Window sprinkler applications (protection of glazing using listed sprinklers) shall only be permitted if a specific listed assembly is selected and installed based on ULC/ORD-C263.1-99.

4.14.5.1 A window sprinkler protected glazed wall assembly shall not be installed in:

4.14.5.1.1 Fire separations requiring a fire resistance rating of more than 2 hours,

4.14.5.1.2 A firewall,

4.14.5.1.3 A high hazard industrial occupancy, or

4.14.5.1.4 Any part of an exit serving a high building, a care and detention occupancy (Group B), or a residential occupancy.

5. WINDOW TYPES

General

Window design may be subject to an examination of a mock-up and / or certification of compliance to standards for critical components by an independent laboratory.

5.1 Commercial Level 1 (CW1) – Applicable at Minimum Institutions only

Conventional window conforming to medium duty standards outlined in *CSA A440-8*². This window is not intended to resist forced passage. The thermal unit glazing is medium duty float glass. All windows in housing units shall provide for detection of unauthorized egress or deliberate tampering. This is achieved by using stops on the operable sash to limit the opening to 125 mm or by affixing the screens with security screws to the window frames.

² AAMA/WDMA/CSA 101/I.S.2/A440-08 – NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights

5.2 Commercial Level 2 (CW2) – Applicable at Medium and Maximum Institutions

Conventional window conforming to medium duty standards outlined in CSA A440-8³ but with a glazing type which does not form shards when broken. The thermal unit glazing is medium duty heat tempered glass. For secure applications, this window is used in combination with grilles, mesh or bars which provide for containment or intrusion protection.

5.3 Commercial Level 3 (CW3) – For Secure Construction 1 application

Conventional window conforming to medium duty standards outlined in CSA A440-8 (see footnote 2) but having safety glass as one layer of the thermal unit, the other being heat tempered. This window is intended to delay and frustrate a breach attempt and to provide evidence of breach attempts (e.g. broken glass). Window comes with the outside glass of the thermal unit made of two layers of 6 mm float glass held by minimally a 0.78mm (30mil) interlayer of polyvinyl butyral (PVB).

5.3.1 For window retrofits, security films are acceptable provided they are installed on the interior glass covering the entire glass area below the bite or covering the glass and returned and anchored onto the frame.

5.3.2 This type of window may not be appropriate for non-supervised areas where heightened security is required. In this case a combined CW2 window with exterior grilles or mesh should be considered.

5.4 Detention Level 1 (DW1) – For Secure Construction 2 application

This refers to a combination CW2 window combined with bars which limit the opening between bars to a maximum, in one dimension, of 125 mm (5") to achieve containment. Plate A-4-1 illustrates an example of a security window meeting the requirements of a Detention Level 1 (DW1) window. This window has the following characteristics:

5.4.1 Resistance to bending, jacking, impact and cutting achieved by the steel bars (as defined in ASTM A627-03⁴) using Hollow Structural Steel Section with an interior tool resistant steel rod. The rod may be mounted freely to enable rotation using dimples at both ends and a spacer ring to keep from leaning. See Partial Plan View of Plate A-4-1 and Plate A-4-2.

5.4.2 The bar assembly is cast into the adjacent masonry, welded to a rod or a bracket (wall anchor⁵) cast in masonry or fabricated off site with a precast concrete surround which is anchored to the masonry wall. Bars shall always be set on the interior side of the window.

5.4.3 Sashes are to be removable from the exterior side on account of the interior bars obstructing access.

5.4.4 Window assembly is not intended to prevent suspension points hence is only acceptable for medium security cells other than segregation.

5.5 Bar-less Detention Window (DWb) – For Secure Construction 2 application

A bar-less detention window (DWb) is a security window which maintains forced entry or penetration resistance achieved by a security glazing held in a secure frame assembly.

³ AAMA/WDMA/CSA 101/I.S.2/A440-08 – NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights

⁴ ASTM A627-03 – Standard Test Methods for Tool-Resisting Steel Bars, Flats, and Shaped for Detention and Correctional Facilities

⁵ See the wall anchors as shown on figure 1b of ASTM F1592-05 – Standard Test Methods for Detention Hollow Metal Vision Systems and on figure 4 of ASTM F1450-05 – Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention and Correctional Facilities

This window type is used primarily for control posts or within glazed panels such as for sidelights and doors separating areas requiring containment or intrusion protection and unobstructed vision.

- 5.5.1 The frame is hollow metal conforming to *ASTM F1592-05*⁶ Grade 3 anchored to the wall system or a detention door.
- 5.5.2 The glazing type used for windows and large glazed panels in doors in supervised areas or for control posts is described in the Control post Chapter A-13. Conforming glazing is a monolithic polycarbonate of 12.7 mm thickness protected by tempered glass or Georgian wired glass.
- 5.5.3 For applications where inmates are only periodically supervised as for cell windows or glazing in door panels as for Observation cells, a higher performing glazing is required in order to withstand a surreptitious or sustained brute force attack as per criteria set out in Chapter A-11. Conforming glazing shall meet physical attack standards ASTM 1915 Grade 2 or HP White level II. Glazing type meeting these performance standards is a multi-layered polycarbonate glazing with a trademark name 'Lexgard MPC-500'. This glazing is protected by abrasion resistant film on the cell side and tempered glass on the corridor side. See Chapter A-12 for Observation cells.
- 5.5.4 For exterior windows, the security glazing set in its own steel frame shall be used in combination with a separate thermal unit type CW2 to be located on the weather side.
- 5.5.5 For optimal security, exterior DWb windows shall not have any openings (e.g. for ventilation) and as such they are suitable for air-conditioned environments.

5.6 Detention Level 2 (DW2) – For Secure Construction 3 application

This refers to a combination CW2 window along with bars which limit the opening between bars to a maximum, in one dimension, of 125 mm (5") to achieve containment. Plate A-4-3 illustrates an example of security window meeting the requirements of a Detention Level 2 (DW2) window.

As illustrated, the mullion locations mimic the bars and are sealed to the bars to prevent the bars from being used as a suspension point. As such these windows are prescribed only for cells at maximum and all segregation units where the threat of suicide is at the highest. Given that the glass of the thermal unit can be broken; this window cannot achieve absolute prevention of suicide.

- 5.6.1 Forced Entry resistance by bending, jacking, impact and cutting with homogenous tool resistant steel or composite steel (as defined in *ASTM A627-03*, see footnote 3). See 5.4.2 for a typical bar design. In addition, the ventilation opening is covered with a perforated steel plate front with a movable vent sash. A non-removable vent sash controller protrudes without offering a suspension point. See Plates A-4-3 and A-4-4.
- 5.6.2 The window frame is cast into the adjacent masonry or welded to a rod or a bracket (wall anchor, see footnote 4) cast in masonry.
- 5.6.3 Fixed sashes are to be replaceable in situ with glazing stops affixed with security screws.

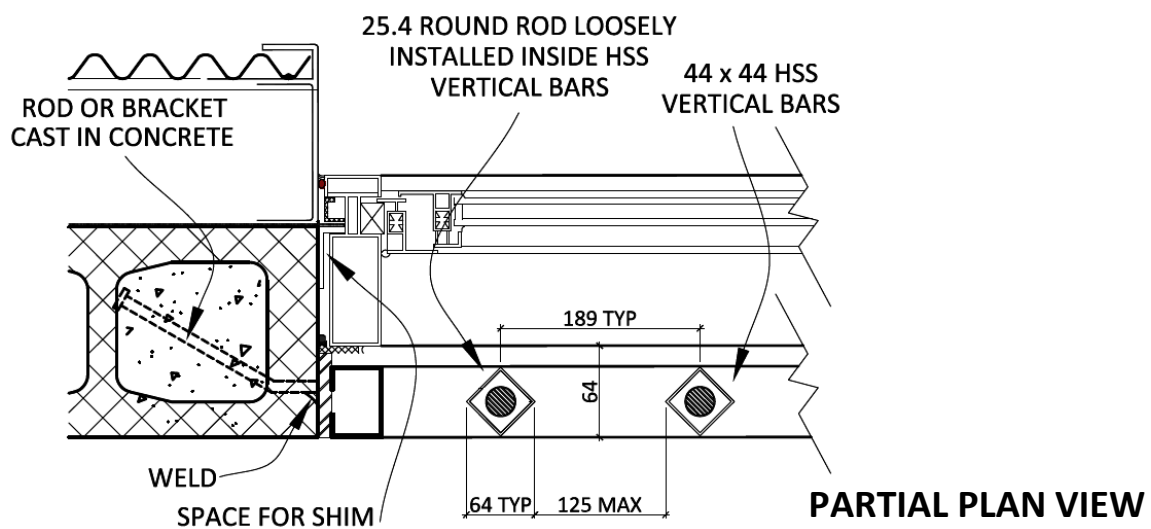
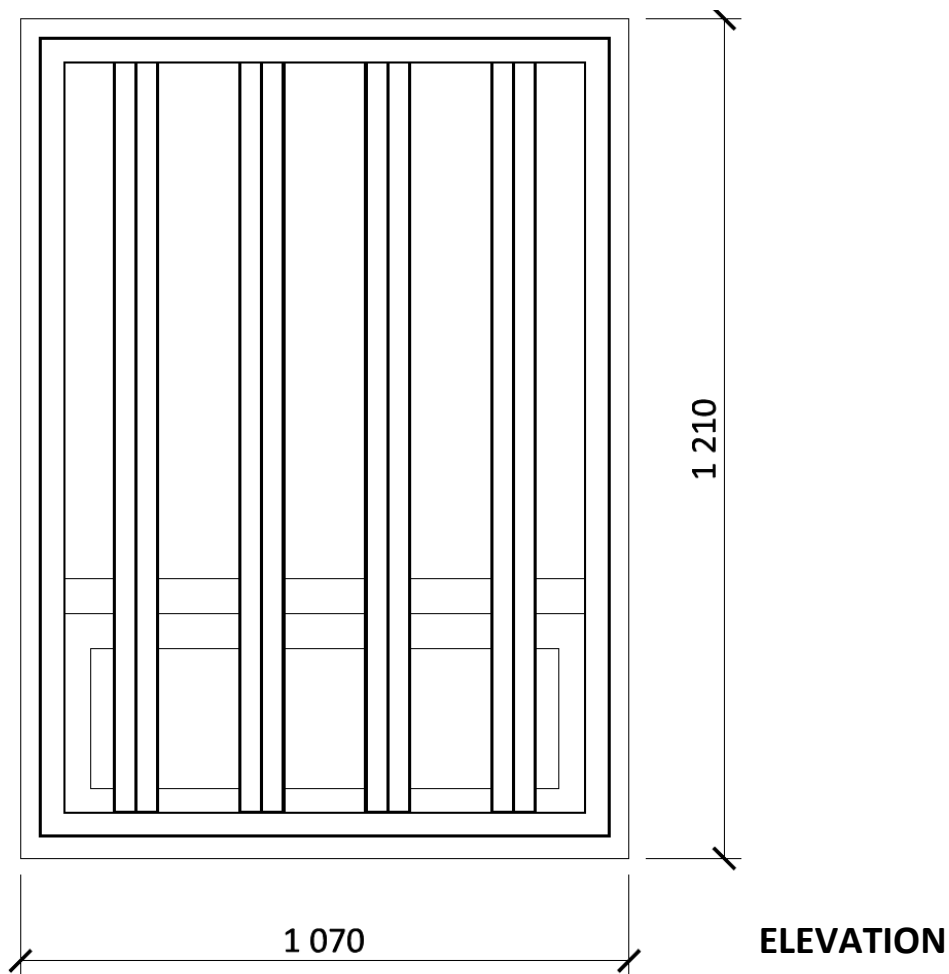
⁶ ASTM F1592-05 – Standard Test Methods for Detention Hollow Metal Vision Systems

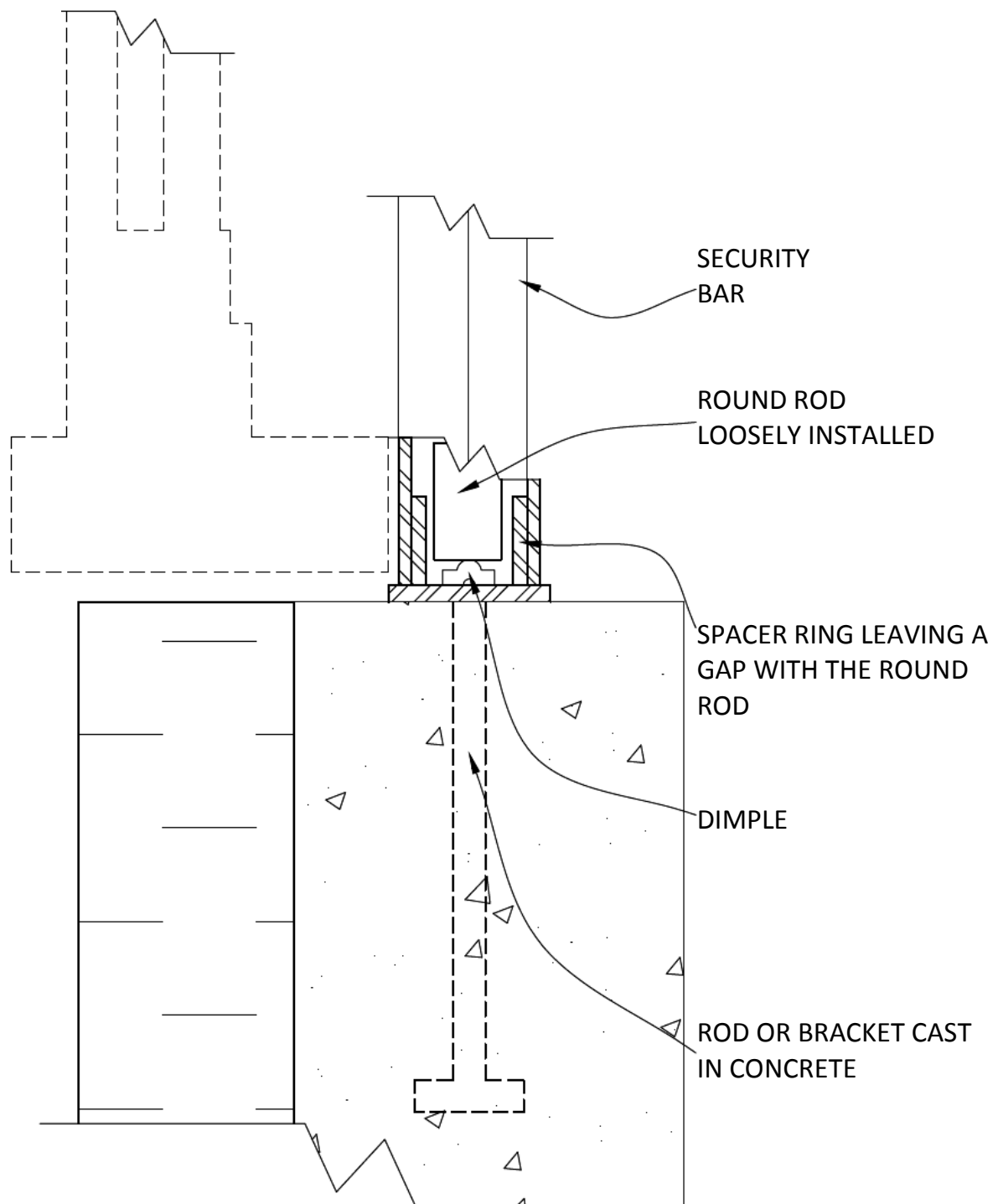
6. WINDOWS SELECTION

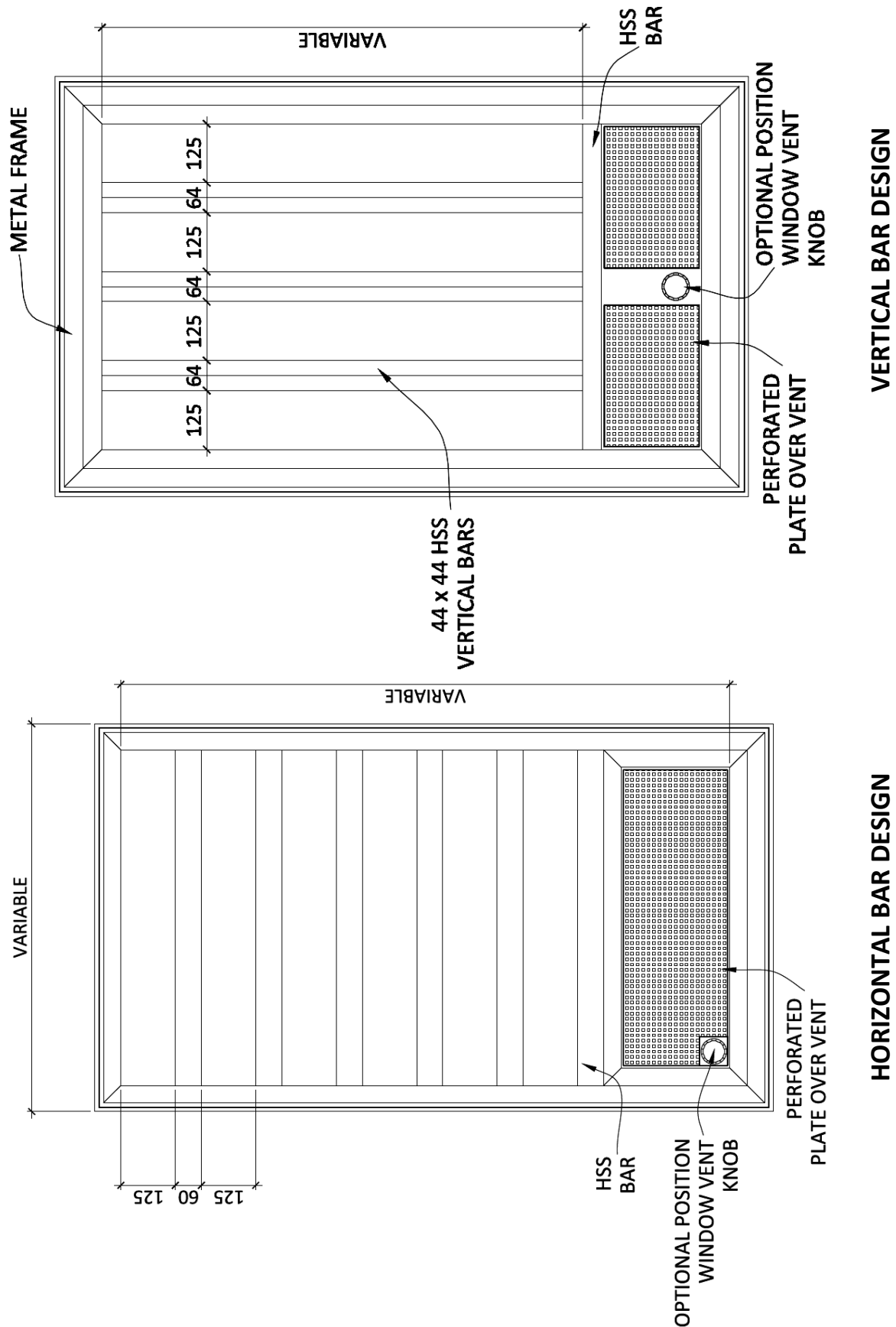
6.1 See Section A-2, Table A-2-2 for windows selection.

6.2 ***Multi-Level institutions***

For housing units where medium and maximum classified inmates share the same housing unit but are in separate ranges, follow Table A-2-2 for the areas intended for the specific security level. For other than housing units, follow the Medium security level for the respective functions as maximum classified inmates will be more restricted in their movement and access to programs.

**PLATE A-4-1 – TYPICAL DW-1 WINDOW**

**PLATE A-4-2 –INTERNAL ROD DETAIL**

**PLATE A-4-3 – DW-2 WINDOW**

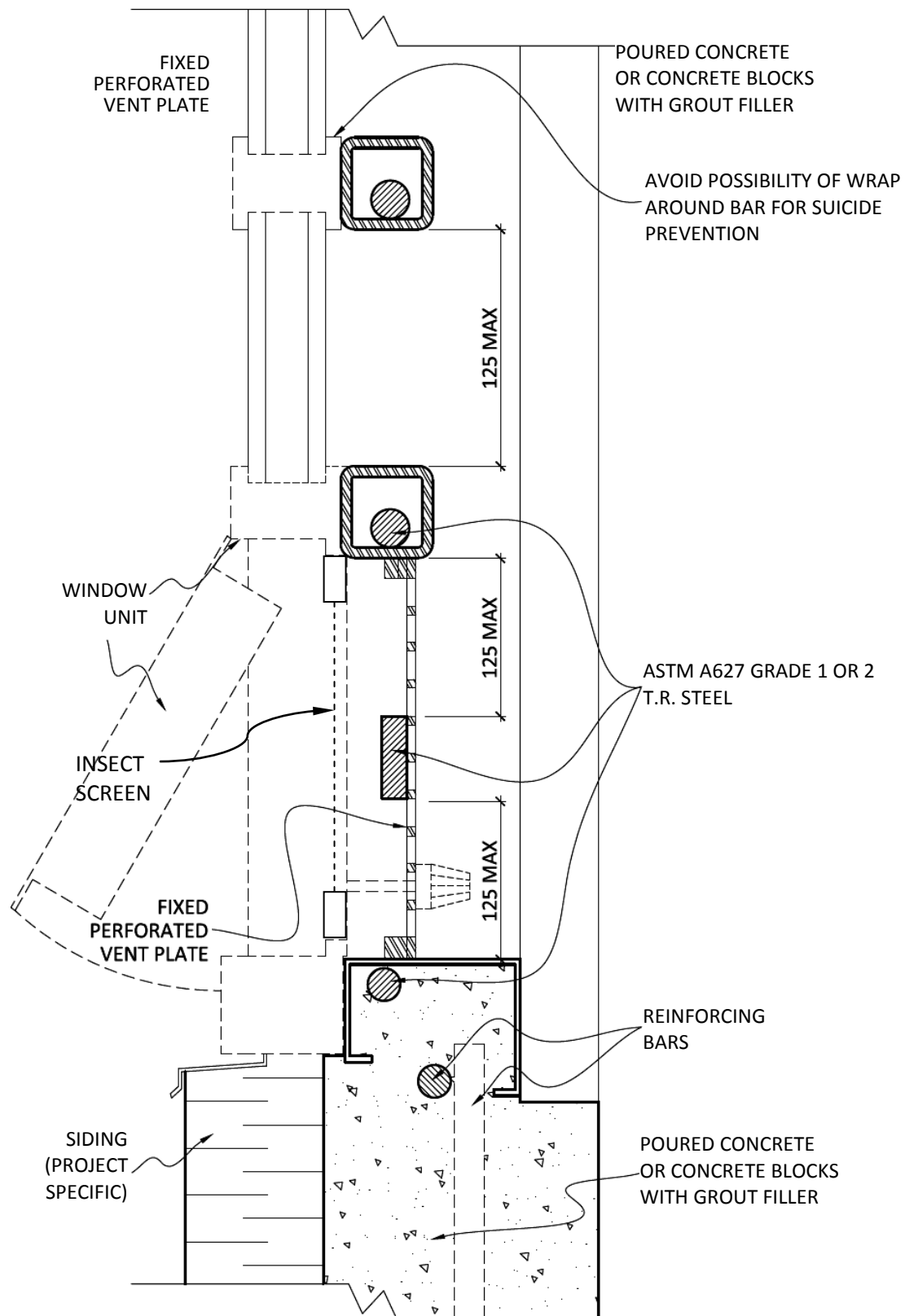


PLATE A-4-4 – DW-2 WINDOW – HORIZONTAL BAR DESIGN – DETAIL

A-5 ARCHITECTURE – DOORS & FRAMES

1. SCOPE

This section identifies the requirements for all doors and frames used in correctional institutions.

2. RELATED SECTIONS

2.1 *Technical Criteria Document sections:*

A-2 – Architecture – Building Construction
 A-3 – Grilles, Mesh and Screens
 A-4 – Glazing, Windows and Assemblies
 A-6 – Hardware
 A-11 – Inmate Cells
 A-13 – Security Control Posts, Galleries and Routes

2.2 *CSC/PWC Specifications*

08 34 63 Detention hollow metal frames, doors, and door frames (11193 before 2004)
 08 34 63.13 Steel Detention Doors and Frames
 08 34 63.16 Steel Plate Detention Doors and Frames
 08 34 63.33 Detention Door Frame Protection
 08 71 63 Detention Door Hardware (11192 before 2004)
 11 19 13 Detention Pass-Through Doors

2.3 *Standards*

2.3.1 ANSI/BHMA – American National Standard

- A156.4-2008–Doors Controls – Closers, Oct. 2008
- A156.14-2007–Sliding and Folding Door Hardware, Sept. 2007

2.3.2 NAAMM HMMA – National Association of Architectural Metal Manufacturers

- 801-05–Glossary of Terms for Hollow Metal Doors & Frames, 8d, 2005
- 802-07–Manufacturing of Hollow Metal Doors & Frames, 8d, May 2007
- 803-08–Steel Tables, 8d, December 2008
- 805-10–Recommended Selection and Usage Guide for Hollow Metal Doors & Frames, 8d
- 810-09–Hollow Metal Doors, 8d
- 820-08–Hollow Metal Frames, 8d
- 830-02–Hardware Selection for Hollow Metal Doors & Frames, 8d, Jan. 2002
- 831-97–Hardware Locations for Hollow Metal Doors & Frames, 8d, May 1997
- 841-07–Tolerances and Clearances for Commercial Hollow Metal Doors & Frames, 8d, June 12, 2007
- 850-00–Fire-Rated Hollow Metal Doors & Frames, 3rd Edition, 8d, Feb. 2000
- 861-06–Guide Specifications for Commercial Hollow Metal Doors & Frames, 6th Edition, 8d, December 5, 2006
- 862-03–Guide Specifications for Commercial Security Hollow Metal Doors & Frames, 8d, August 26, 2003
- 863-04–Guide Specifications for Detention Security Hollow Metal Doors & Frames, 8d, January 26, 2005
- 867-06–Guide Specifications for Commercial Laminated Core Hollow Metal Doors & Frames, 8d, March 27, 2006
- 890-06–Technical Summary Hollow Metal

2.3.3 ASTM Standards

- F1450-05–Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities (*under revision - 2011*)
- F1577-05–Test Methods for Detention Locks for Swinging Doors

- F1592-05–Test Methods for Detention Hollow Metal Vision Systems
 - F1643-05–Test Methods for Detention Sliding Door Locking Device Assembly
 - F1758-05–Test Methods for Detention Hinges Used on Detention-Grade Swinging Doors
 - F1915-05–Test Methods for Glazing for Detention Facilities
- 2.3.4 NAAMM DEMA – Detention Equipment
- 111900-09–Guide Specification for Basic Detention Equipment Requirements, 11, Dec. 2009

3. DOOR CLASSIFICATIONS

3.1 **Commercial Doors and Frames (CD)**

Commercial doors and frames are of heavy duty commercial grade and have no special detention requirements. Interior doors used in S-2 and S-3 inmate apartment suites shall be of lighter construction. Commercial doors on exterior or interior exits from a suite of spaces generally denote free egress occupancy. Interior commercial doors may however be used within an impeded egress occupancy as for offices, classrooms and other occupational or group activity areas.

3.2 **Detention Doors and Frames (DD)**

Detention doors and frames exceed heavy duty commercial grade construction and are used to restrict or control the movement of persons for security reasons. Detention doors are used generally on the envelope of areas requiring containment and impeded egress. There are four types of Detention Doors, namely:

- 3.2.1 DD1–Detention Door Medium Swing
- 3.2.2 DD1p–Detention Door Pivot (for special application)
- 3.2.3 DD2 sliding–Detention Door Maximum
- 3.2.4 DD2 swing–Detention Door Maximum

3.3 **Grilles (GL) Swing or Sliding**

Grilles are metal lattice screens used to control movement of persons while permitting visual surveillance. See Section A-3.

4. DOOR STYLE

TABLE A-5-1 – DOOR STYLES

(as illustrated on Plates A-3-3 and A-3-4 for grilles, A-5-1 and A-5-2 for doors)¹:

Style	Name	Location examples
A	Two Half Lights	<ul style="list-style-type: none"> • Main Entrance • Observation cells (suicide watch)
B	Half Light	<ul style="list-style-type: none"> • Offices (Alternative 1) • Corridors • Control Post • Health Care
B2	Sidelight Frame Flush	<ul style="list-style-type: none"> • Offices (Alternative 2)
C	Narrow Light	<ul style="list-style-type: none"> • Inmate cells and bedrooms • Rooms requiring visual checks i.e. utility and storage rooms
D	Two Narrow Lights	<ul style="list-style-type: none"> • Security exterior entrances

¹ Using terminology from NAAMM HMMA 810-09, 8d, Hollow Metal Doors

Style	Name	Location examples
		<ul style="list-style-type: none"> • Stairways
E	Flush	<ul style="list-style-type: none"> • Service shafts • Washrooms • Mechanical rooms • Armoury
F	Dutch Door	<ul style="list-style-type: none"> • Counter service²
G	Grille	<ul style="list-style-type: none"> • Security Barrier in corridors or showers in segregation and maximum security ranges.
H	Overhead	<ul style="list-style-type: none"> • Shipping/Receiving, shop supply, areas requiring high openings for clearance

4.1 Door Light

- 4.1.1 For all security levels, all offices and areas of inmate/staff contact other than locations requiring an E style door must be observable from the adjacent circulation space through either a window in a door or an adjacent sidelight. The maximum height for the bottom edge of any light is 1300 mm from the floor (not accounting for the undercut which shall be 12 +/- mm).
- 4.1.2 Curtains, draperies and other decorative materials including textiles and films (i.e. reflective films) are not permitted in door lights except for :
- 4.1.2.1 Observation Cells (A) where it may be required to cover the extent of glass in the door to allow the cell to be used for other than observation purposes. In this case, a fabric could be held in place by 'Velcro'. Other glass covering options may be considered.
- 4.1.2.2 Bedroom doors in Women's minimum and medium security housing units. In this case privacy curtains on the corridor side of the door that allow control of the curtain by staff during security patrols and counts, and are made of fire resistant fabric held in place by 'Velcro' are permitted due to long standing practice at Women's Institutions that is in accordance with *Creating Choices*.

5. DOOR FUNCTIONS

5.1 Movement

- 5.1.1 A swing (**SG**) movement is achieved with the use of hinges or pins. The swing of doors shall be in accordance with good architectural practice when security is not a consideration. Cell doors shall swing outward into the corridor with a 180° swing. For free egress bedrooms, doors swing into the bedroom.
- 5.1.2 A pivot (**PV**) movement allows a door to rotate on a vertical axis at the centre line of the wall width. Under routine operations, the door swings into the room with a 90° swing, but can be made to swing into the corridor with a 90° swing by removing the door movement blocker. A door with this movement is not recommended for cell use since it does not sit within a frame and as such has gaps on both jambs and head. These gaps contribute to excessive light and sound penetration and potentially allow objects or liquids to pass to the

² Fire resistance rating of the room is to be considered in terms of latching and locking.

outside. It also poses certain problems when used with standard cell locks as the latch bolt is exposed on the cell side and any tampering is not readily visible.

- 5.1.3 A slide (**SL**) movement allows a door to slide to one side of its opening along the face of the wall. Sliding doors are moved by an electric motor and chain drive or by a pneumatic system.

- 5.1.4 Refer to *NAAMM/HMMA 801-05*³ for further terminology.

5.2 Locking

- 5.2.1 A Manual Lock (**LM**) operates mechanically by key one lock at the time.
- 5.2.2 A Remote Controlled Lock (**LR**) operates electromechanically or pneumatically from a control post. Locks are also mechanically keyed at the door and may be equipped with a local electric unlock when activated at the control post console.
- 5.2.3 There is no requirement for any locks or locking devices to have a mechanical gang release.

5.3 Operation

- 5.3.1 Manual (**M**) operation indicates that the opening or closing of a door is manually executed by staff or inmates.
- 5.3.2 Motorized (**MO**) operation indicates that the opening and closing of a door is achieved by a remote electric (or pneumatic) system.

6. TECHNICAL REQUIREMENTS

6.1 Commercial Doors (CD)

- 6.1.1 Commercial doors shall be of aluminum, solid core wood or composite, or hollow metal. All pressed steel hollow core metal doors and frames shall be of a minimum of 1.27mm (18ga) steel.
- 6.1.2 Glazing on doors or sidelights shall meet NBC requirements except for doors in medium and maximum security institutions where glazing shall be 6 mm tempered glass.
- 6.1.3 Door frames shall be compatible with the door for which they are intended. Reference is made to the *NAAMM/HMMA 820-08*⁴ – Hollow Metal Frame regarding frames for hollow metal door.
- 6.1.4 Commercial doors and frames shall have a minimum clear opening (door or hardware cannot interfere) of 810 mm x 2100 mm, unless specified otherwise⁵.

6.2 Detention Doors – Swing (DD1)

- 6.2.1 DD1 doors and frames shall have a minimum clear opening (door frame element or hardware cannot interfere with the clear opening) of 810 mm x 2100 mm, unless specified otherwise⁵.
- 6.2.2 DD1 doors shall be constructed of 2.0 mm (14ga) sheet steel both sides with total thickness of 50 mm. See standard *NAAMM/HMMA 863-04*⁶, specification CSI 08 34 63.13 – Steel Detention Doors and Frames (NMS 08 34 63)⁷ for additional details.

³ ANSI/NAAMM HMMA 801-05 – Glossary of Terms for Hollow Metal Doors and Frames

⁴ NAAMM/HMMA 820-08 – Hollow Metal Frame

⁵ Examples: Doorways in a public corridor or access to exit may be required to have a clear width 850 mm for detention or care occupancies (NBCC 3.3.3.4.(1)). Doorways through which it is necessary to move patients in bed shall have a clear width of at least 1050 mm (NBCC 3.3.3.4.(2)).

⁶ ANSI/NAAMM HMMA 863-04 – Guide Specifications for Detention Security Hollow Metal Doors and Frames, Fifth Edition, 8d January 2005. This standard has an Appendix with a thickness conversion table (page A-1). Measurement in the present document are all in mm, use this table for Imperial conversion.

⁷ Specifications 08000, 11190 & 11193 before 2004

- 6.2.3 DD1 doors of type C or D using narrow lights shall have 6 mm clear tempered glass. For larger glazing panels on detention doors, follow Section A-13 Control Post, Level B.
- 6.2.4 DD1 doors and frames are to be constructed as required in standard *NAAMM/HMMA 863-04* (see footnote 6) and specification CSI 08 34 63.13 – Steel Detention Doors and Frames (NMS 08 34 63). In addition, test reports shall be submitted from an independent testing laboratory certifying the following minimum performance of a typical Detention door, 860 x 2100 mm. Doors certified under *ASTM F1450-05*⁸ are acceptable. The following tests are applicable to DD1 and DD2 doors with minor differences in deflection as noted:
- 6.2.4.1 **Static Load:** Centrally apply load of 4000 kg at quarter points on door. Maximum deflection must not exceed 30 mm (15 mm for DD2). Permanent set not to exceed 10.0 mm (2 mm for DD2) after release of load (see Plate A-5-9).
- 6.2.4.2 **Rack Test:** Concentrate load of 2645 kg on one unsupported corner of door. Door must not fail. Deflection must not exceed 50 mm (35 mm for DD2) (see Plate A-5-10).
- 6.2.4.3 **Impact Load Test:** The door is mounted in a frame as in a normal cell setting. The door is subjected to a series of impact loads of 271 Joules following a pattern of targets from a pendulum ram (see Plate A-5-11). Impacts are delivered on the push side of the door⁹. The number of impacts for a DD-1 and DD-2 doors are:
- 200 lock or strike impacts (target 1)
 - 75 hinge impacts (targets 2, 3 & 4)
 - 100 corner panel impacts (target 5)
- 6.2.4.4 The door must remain operable after the test.
- 6.2.5 Plate A-5-3 illustrates typical DD1 swing door details.
- 6.3 Detention Doors – Pivot (DD1p) [Not recommended for cell use]**
- 6.3.1 DD1p door size must account for pivot and 90° swing as well as the removable door stopper to achieve a minimum clear opening of 810 mm x 2100 mm.
- 6.3.2 DD1p doors shall be constructed of 2.0 mm (14ga) sheet steel both sides. See standard *NAAMM/HMMA 863-04*¹⁰, specification CSI 08 34 63.13 – Steel Detention Doors and Frames (NMS 08 34 63)¹¹ for additional details¹².
- 6.3.3 DD1p doors shall be type C as illustrated on Plate A-5-1. Narrow light glazing shall be 6 mm clear tempered glass.
- 6.3.4 DD1p pivot hardware is a pin/rod extending at both ends of the door. Bottom receiver is inserted in the floor during the pour of the slab. Top receiver is inserted in the door sill and has a removable housing to allow the door to be removed. Assembly must ensure rigidity of door (see note 10).

⁸ ASTM F1450 – 05 Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities

⁹ Procedure as with section 7.2.4 of ASTM F1450-05 Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities

¹⁰ ANSI/NAAMM HMMA 863-04 – Guide Specifications for Detention Security Hollow Metal Doors and Frames, Fifth Edition, 8d January 2005. This standard has an Appendix with a thickness conversion table (page A-1). Measurement in the present document are all in mm, use this table for Imperial conversion.

¹¹ Specifications 08000, 11190 & 11193 before 2004.

¹² There is no provision relating to pivot hardware in the NAAMM/HMMA standards.

- 6.3.5 DD1p doors are constructed in accordance with DD1 door requirements as noted in 6.2.4
- 6.3.6 Plate A-5-4 illustrates typical DD1p pivot door.

6.4 Detention Doors Maximum Slide (DD2)

- 6.4.1 The minimum clear opening for DD2 doors is 810 mm x 2100 mm. Door frame element or hardware must not infringe on the clear opening.
- 6.4.2 DD2 doors shall be constructed of 2.8 mm (12ga) sheet steel both sides with total thickness of 50 mm (see standard *NAAMM/HMMA 863-04* [see footnote 9]), specification CSI 08 34 63.13 – Steel Detention Doors and Frames (NMS 08 34 63) for additional details.
- 6.4.3 DD2 doors type C or D as illustrated on Plates A-5-1 and A-5-2 shall have narrow lights of 9 mm clear tempered glass. For larger glazed panels refer to Sections A-4 and A-12, Special Observation Cells, for glazing requirements where sized to enable passage.
- 6.4.4 DD2 cell doors have Food Pass/Cuff Port installed (see Plate A-5-8 for details).
- 6.4.5 DD2 doors and frames are to be constructed as required in standard *HMMA 863-04*¹³ and specification CSI 08 34 63.13 – Steel Detention Doors and Frames (NMS 08 34 63) and specification CSI 11 19 13 – Detention pass-through doors. In addition, test reports shall be submitted from an independent testing laboratory certifying the conformity to the tests outlined in section 6.2.4 for DD2 doors sized at 860 x 2130 mm. Manufacturer certified performance in accordance with ASTM F1643-05¹⁴ is also acceptable.
- 6.4.6 A 50 mm notch shall be provided in the door frame of sliding doors for emergency pry bar use. See Plates A-5-5 and A-5-7. The depth of the notch shall be sufficient to expose the edge of the door to allow the insertion of a pry bar to force the door open in the case of an emergency.
- 6.4.7 Plates A-5-5 illustrates typical DD2 sliding door and corridor arrangement and Plates A-5-6 and A-5-7 illustrate sliding door details.

6.5 Detention Doors Maximum Swing (DD2) [not for cells]

- 6.5.1 Swing DD2 doors and frames shall have a minimum clear opening of 810 mm x 2100 mm unless specified otherwise¹⁵.
- 6.5.2 Swing DD2 doors shall be constructed of 2.8 mm (12 ga) sheet steel both sides with total thickness of 50 mm. See standard *HMMA 863-04*¹⁶, specification CSI 08 34 63.13 – Steel Detention Doors and Frames (NMS 08 34 63)¹⁷ for additional details.
- 6.5.3 Swing DD2 doors type C or D as illustrated on Plates A-5-1 and A-5-2 shall have narrow lights of 9 mm clear tempered glass. For larger glazed panels as in doors

¹³ ANSI/NAAMM HMMA 863-04 – Guide Specifications for Detention Security Hollow Metal Doors and Frames, Fifth Edition, 8d January 2005. This standard has an Appendix with a thickness conversion table (page A-1). Measurement in the present document are all in mm, use this table for Imperial conversion.

¹⁴ ASTM F1643 – 05 Standard Test Methods for Detention Sliding Door Locking Device Assembly

¹⁵ Examples: Doorways in a public corridor or access to exit may be required to have a clear width 850 mm for detention or care occupancies (NBCC 3.3.3.4.(1)). Doorways through which it is necessary to move patients in bed shall have a clear width of at least 1050 mm (NBCC 3.3.3.4.(2)).

¹⁶ ANSI/NAAMM HMMA 863-04 – Guide Specifications for Detention Security Hollow Metal Doors and Frames, Fifth Edition, 8d January 2005. This standard has an Appendix with a thickness conversion table (page A-1). Measurement in the present document are all in mm, use this table for Imperial conversion.

¹⁷ Specifications 08000, 11190 & 11193 before 2004

for level 'A' control posts, glazing shall match that of the control post envelope as outlined in Section A-13 Security Control Posts.

- 6.5.4 Swing DD2s doors and frames are to be constructed as required in standard *HMMA 863-04* (see footnote 15), specification CSI 08 34 63.13 – Steel Detention Doors and Frames (NMS 08 34 63) and specification CSI 11 19 13 – Detention pass-through doors. In addition, test reports shall be submitted from an independent testing laboratory certifying the conformity to the tests outlined in section 6.2.4 for DD2 doors sized at 860 x 2130 mm. Manufacturer certified performance in accordance with ASTM F1643–05¹⁸ is also acceptable.

6.6 Grilles (GL) Swing or Sliding

See section A-3.

6.7 Control Post Doors

See Section A-13–Security Control Posts, Galleries and Routes: Level A and B Control Post doors.

6.8 Service Chase Access Doors between cells

All access doors for service shafts between cells shall be DD1 sized at 900 mm X 2100 mm to facilitate repair and maintenance.

¹⁸ ASTM F1643 – 05 Standard Test Methods for Detention Sliding Door Locking Device Assembly

7. DOOR SELECTION

Table A-5-1 coding is defined in Legend following table.

Inmate bedroom doors in S2 and S3 housing units swing into the room. All cell doors swing out.

TABLE A-5-1 – DOOR SELECTION

LOCATION	MEDIUM	MAXIMUM
Inmate Cell (Not applicable to free egress bedrooms where doors are CD)	DD1-SG-LE-M	DD2-SL-LE ¹⁹ -MO
Apartment entry and fire exit doors	DD1-SG-LE-M	N/A
Service chase doors	DD1-SG-LM-M	DD1-SG-LM-M
Housing Unit and Segregation Entrance and fire exit doors	DD1-SG-LE-M	DD2-SG-LE-M
Housing Unit Office Suite Entry and fire exit doors	DD1-SG-LE-M	DD2-SG-LE-M
Segregation cell doors	DD2-SL-LE-MO	DD2-SL-LE-MO
Health Unit Entrance and fire exit	DD1-SG-LE-M	DD1-SG-LE-M
Pharmacy / Dispensary	DD1-SG-LE-M	DD1-SG-LE-M
Nursing Station	CD-SG-LM-M	DD1-SG-LE-M
Patient room doors	CD-SG-LM-M	DD1-SG-LE-M
Partitions, Corridors	GL-SG-LM-M GL-SL-LE-MO	GL-SG-LM-M GL-SL-LE-MO
Inmate Program rooms and offices	CD-SG-LM-M	CD-SG-LM-M
Program and Admin Area Entrance	DD1-SG-LE-M	DD1-SG-LE-M
V & C Entry	CD-SG-LM-M DD1-SG-LE-M	CD-SG-LM-M DD1-SG-LE-M
Gatehouse: Vestibule Doors on both ends. Exterior door on outside of institution may be commercial type.	DD1-SG-LE-M	DD1-SG-LE-M

LEGEND FOR TABLE A-5-1

Classification

CD – Commercial Doors

DD1 – Detention Doors Swing

DD2 – Detention Doors Maximum Sliding or Swing

GL – Grilles Sliding or Swing

Movement

SG – Swing

PV – Pivot

SL – Slide

Locking

LM – Manual Lock

LE – Electric Lock

Operation

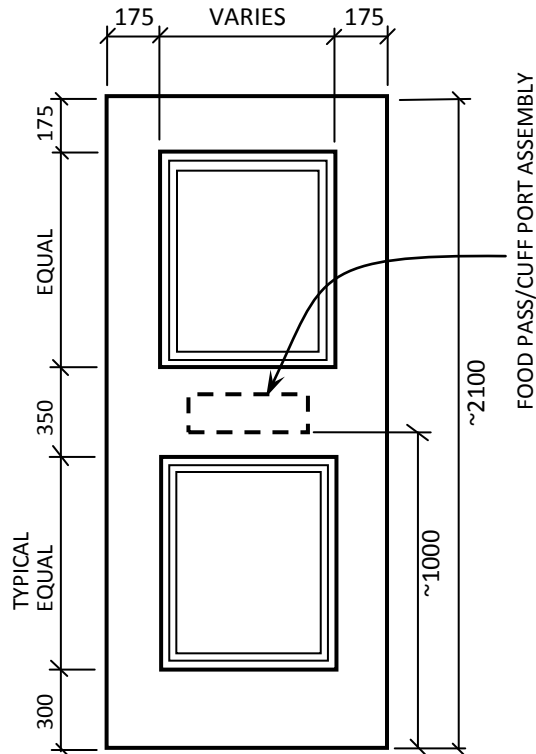
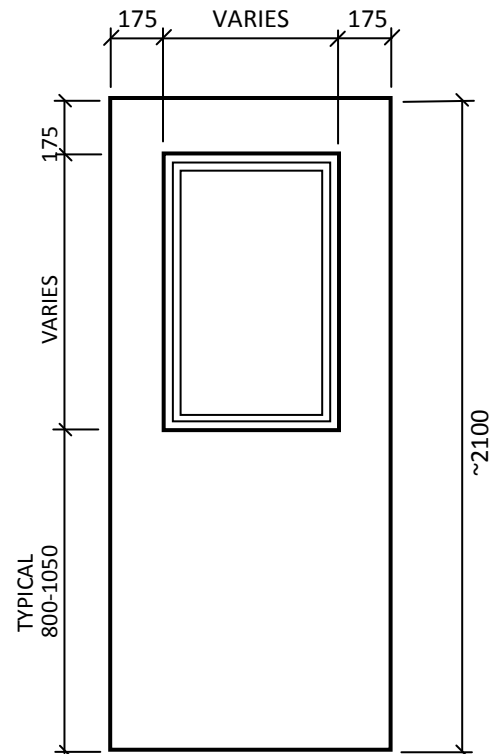
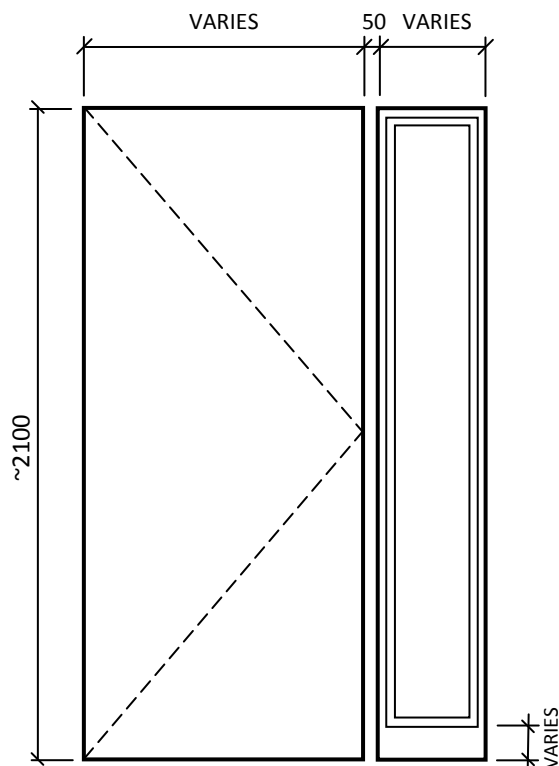
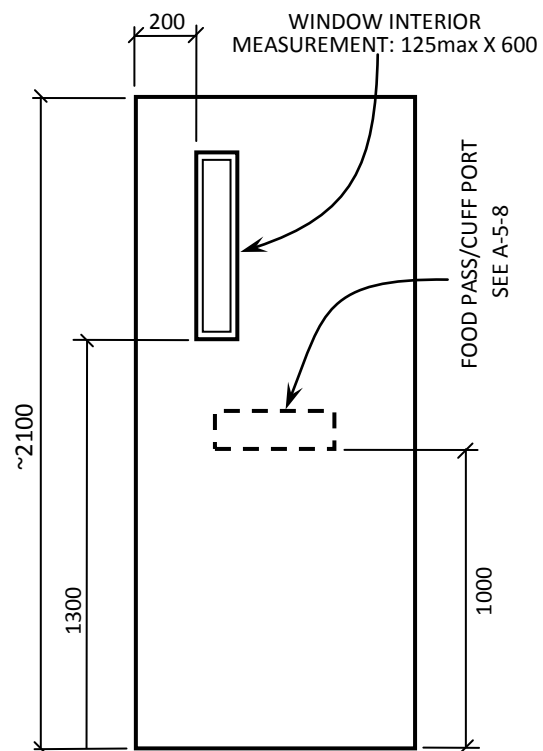
MO – Motorized

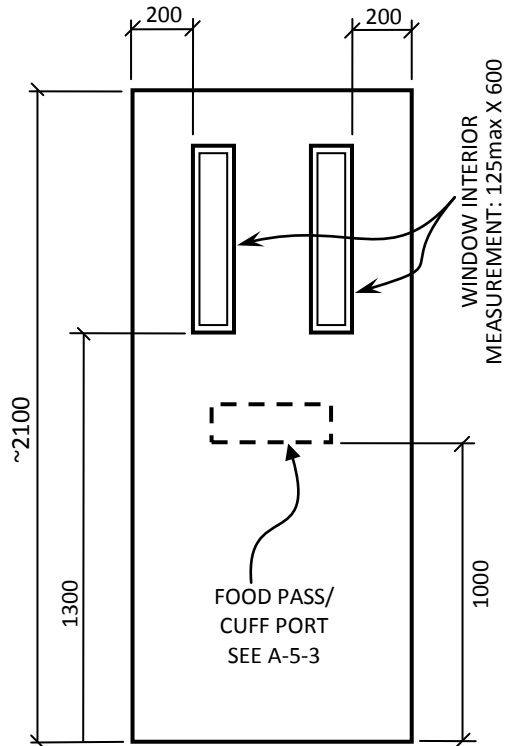
M – Manual

¹⁹ Doors are locked locally mechanically or by remote control of selected cell/cells. Doors lock in closed or open position

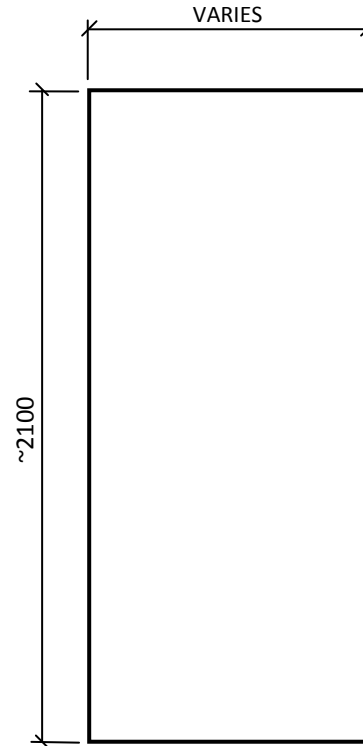
8. DOOR CONTROL

- 8.1** Door control for living unit doors may be integrated with other functions to be displayed graphically showing a representational floor plan on a touch screen type monitor in the control post. The design of the console /monitors and its functions is part of the security electronics specification and will be made available to the consultant as part of the Project Brief where applicable. Assistance by CSC experts will also be available during the development of these systems. Plates A-5-12 and A-5-13 are included only for illustration purposes to be tailored for a given project.

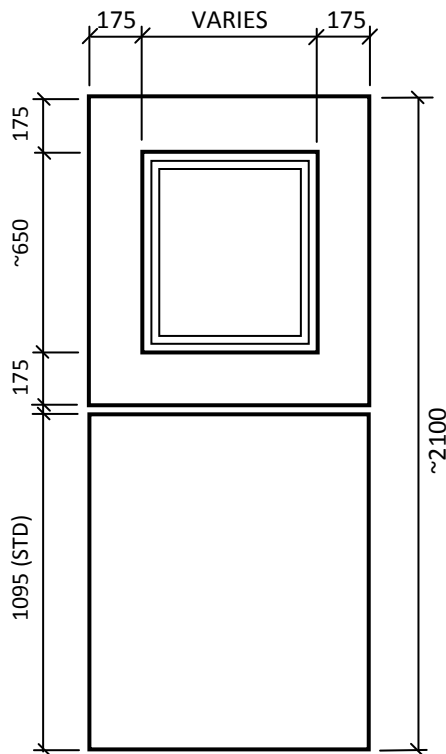
**STYLE A – TWO HALF LIGHTS****STYLE B – HALF LIGHT****STYLE B2 – SIDELIGHT FRAME FLUSH****STYLE C – NARROW LIGHT****PLATE A-5-1 – DOOR STYLES – EXAMPLES OF APPLICATION PART 1**



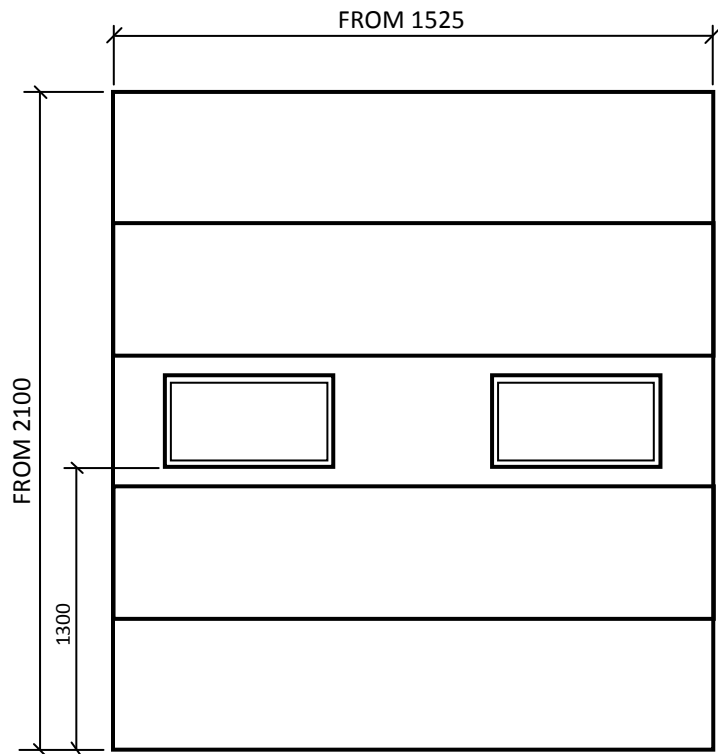
STYLE D – TWO NARROW LIGHTS



STYLE E – FLUSH

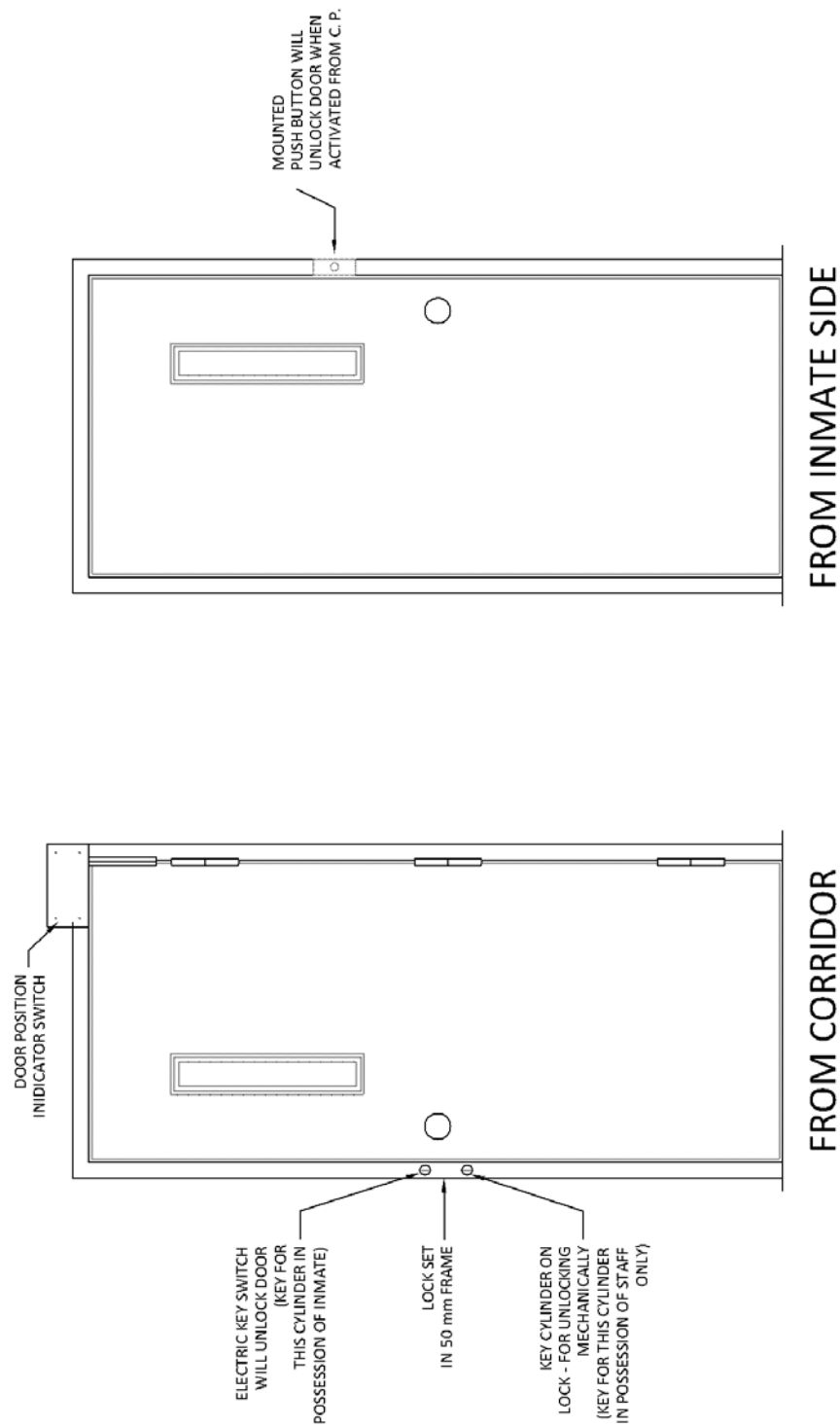


STYLE F – DUTCH DOOR

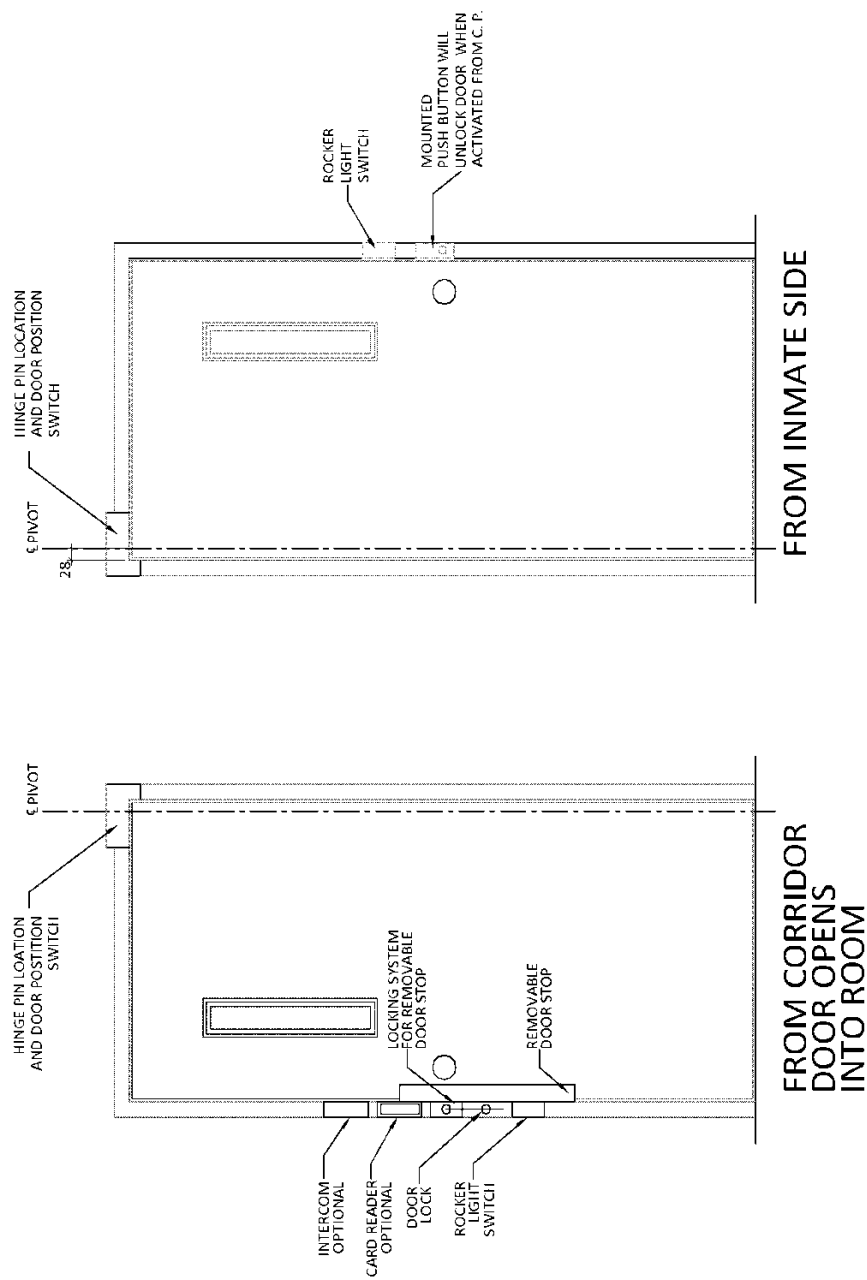


STYLE H – OVERHEAD

PLATE A-5-2 – DOOR STYLES – EXAMPLES OF APPLICATION PART 2



A-5-3 – ELEVATION OF DD1 SWING DOOR



A-5-4 – ELEVATION OF DD1p PIVOT DOOR

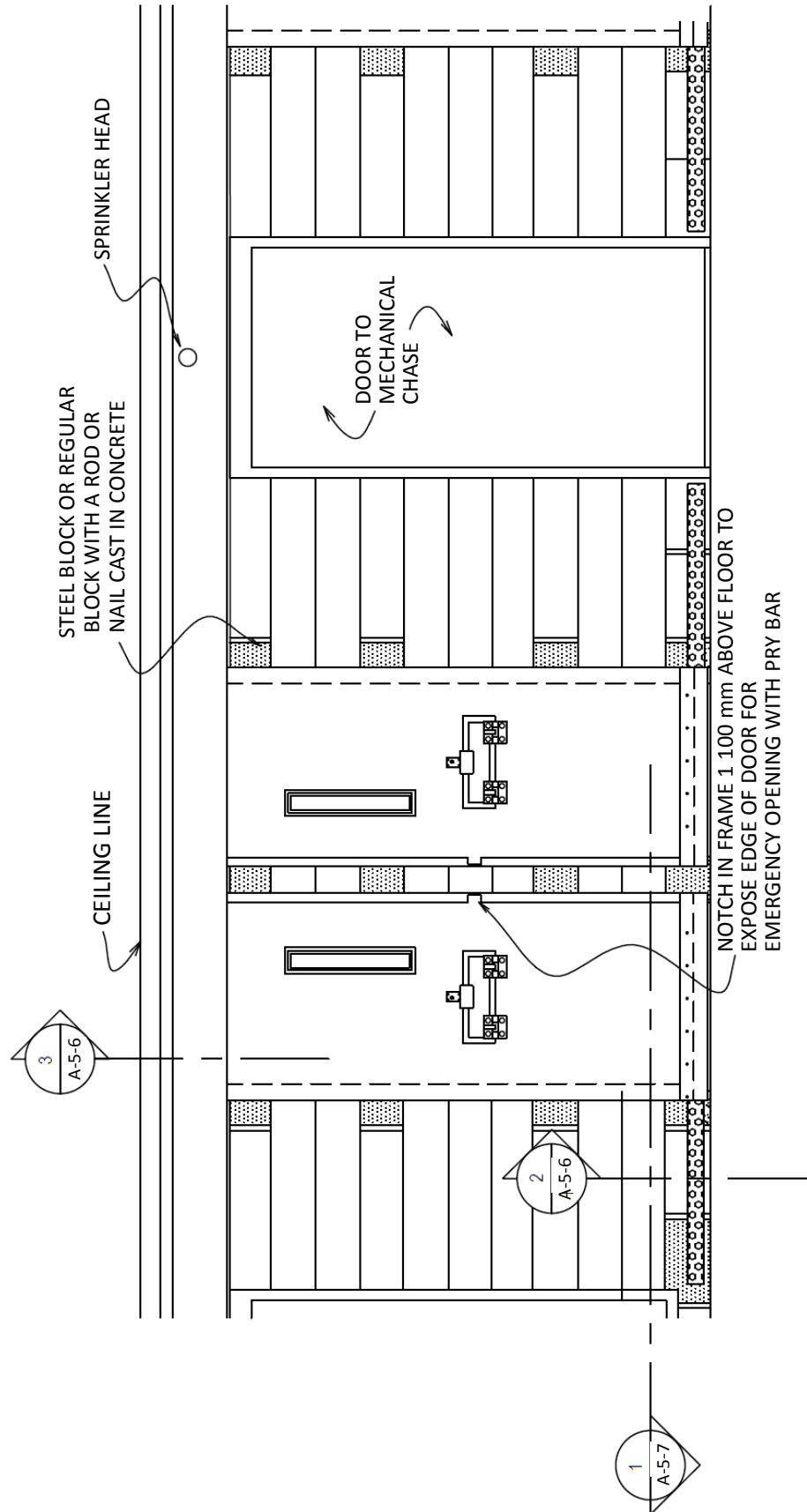
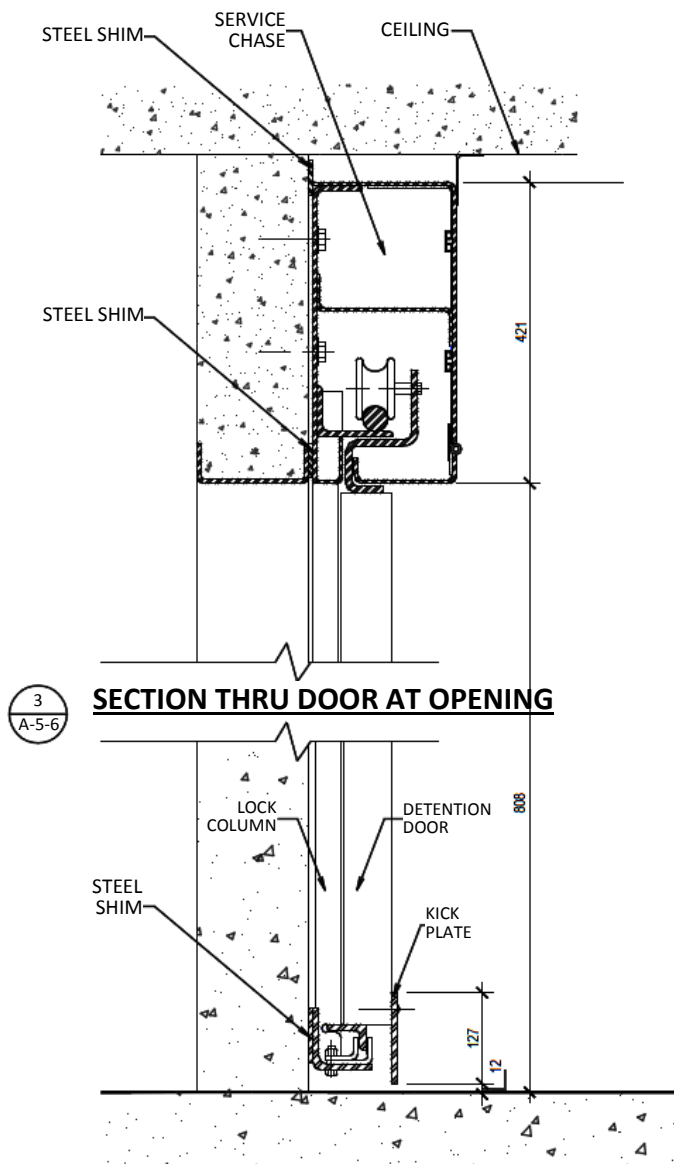
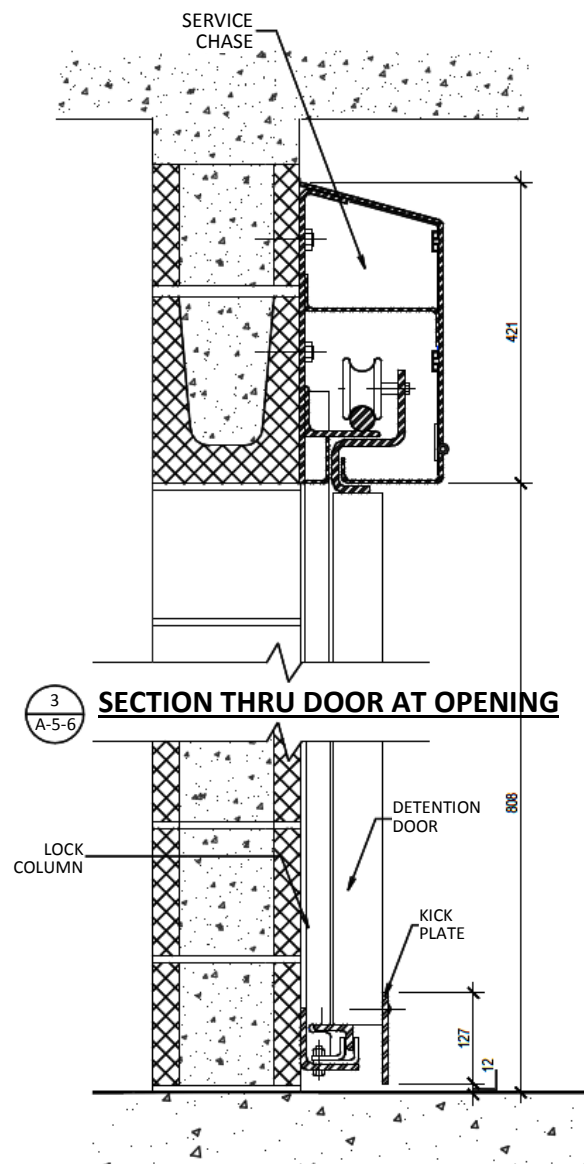


PLATE A-5-5 – CORRIDOR ELEVATION OF TYPICAL DD2 SLIDING CELL DOOR



SECTION THRU DOOR AT OPENING

SECTION THRU DOOR BEYOND OPENING
SLIDING DOOR MOUNTED ON
150mm REINFORCED CONCRETE WALL
WITH LOW CEILING CONDITION



SECTION THRU DOOR AT OPENING

SECTION THRU DOOR BEYOND OPENING
SLIDING DOOR MOUNTED ON
200mm REINFORCED CONCRETE
BLOCK WITH STEEL BLOCKS @
SELECTED LOCATIONS

PLATE A-5-6 – TYPICAL DD2 SLIDING CELL DOOR – DETAILS 1

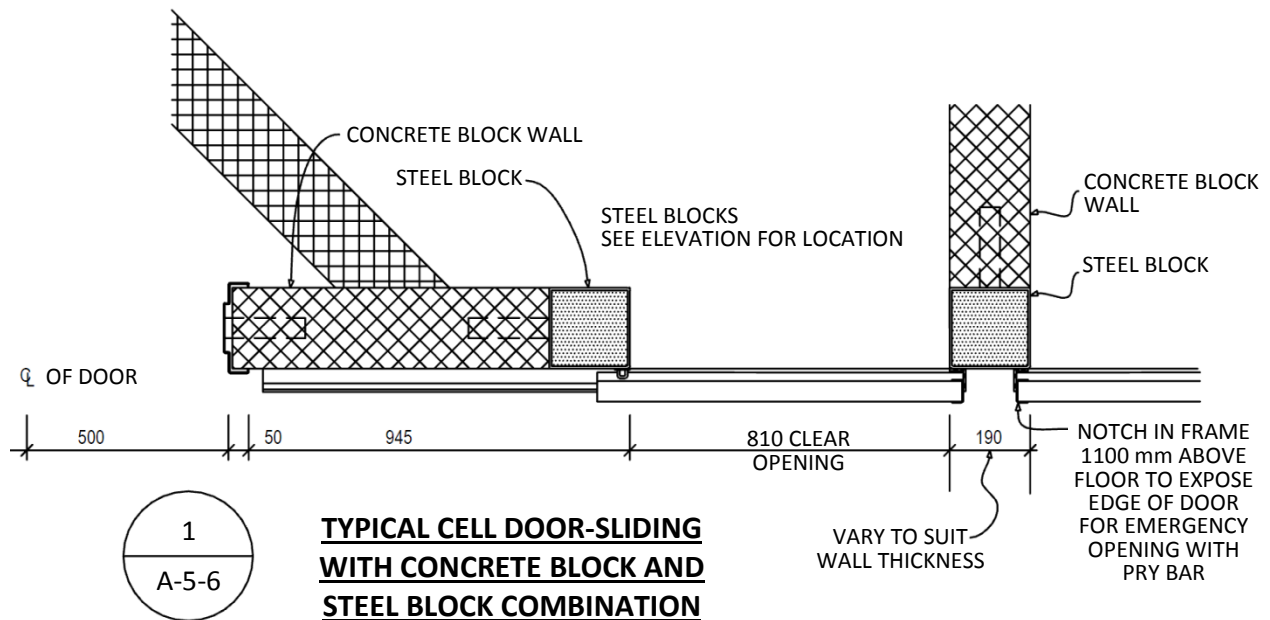
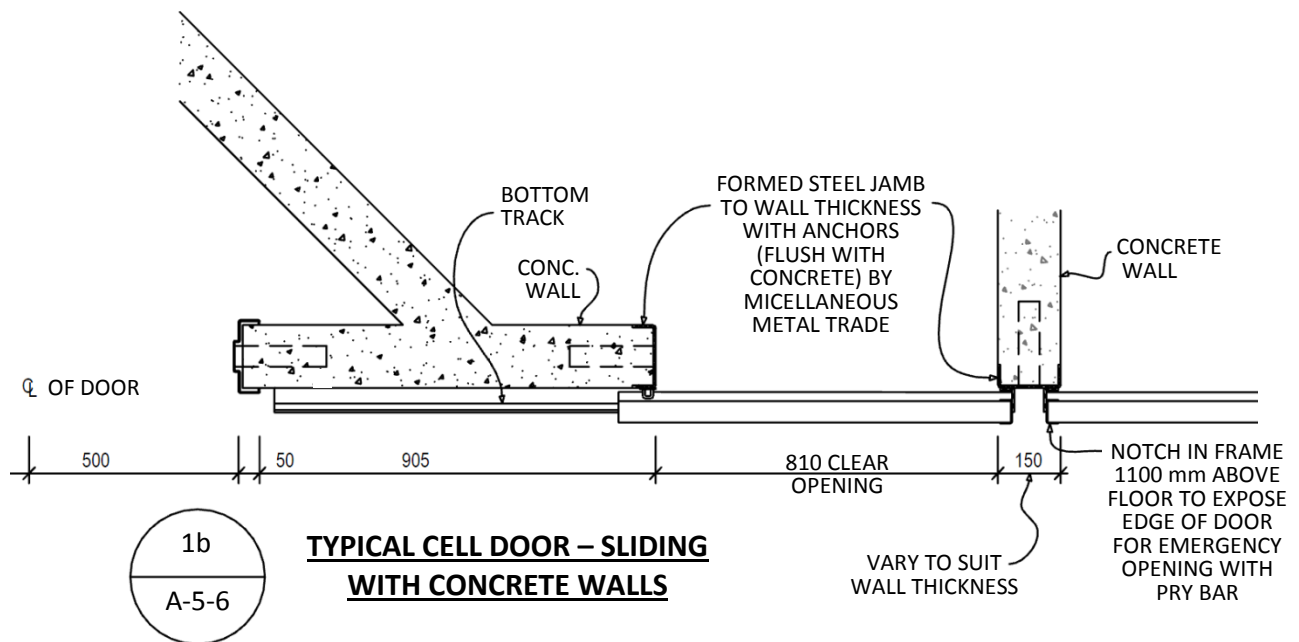
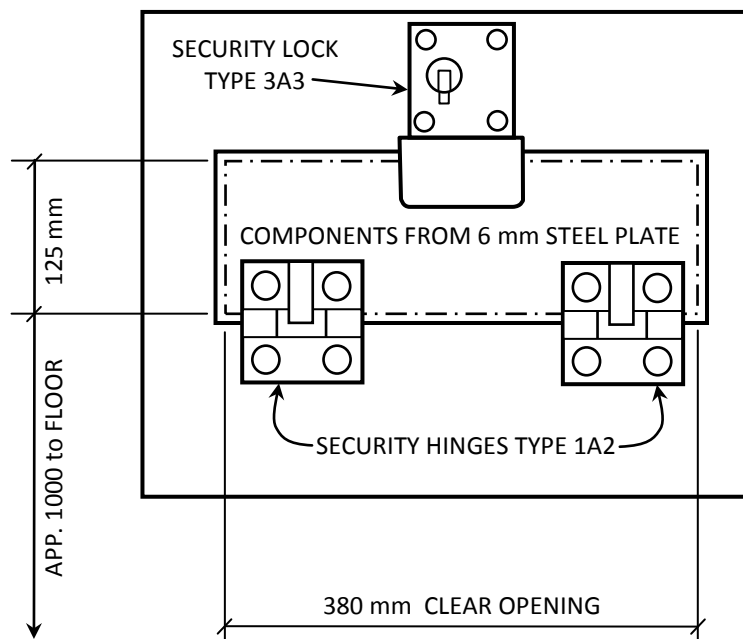
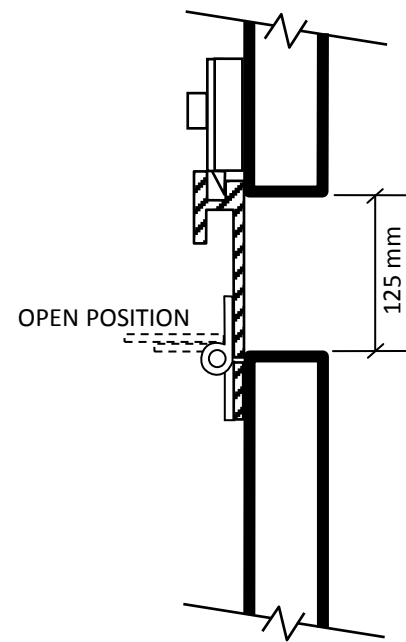


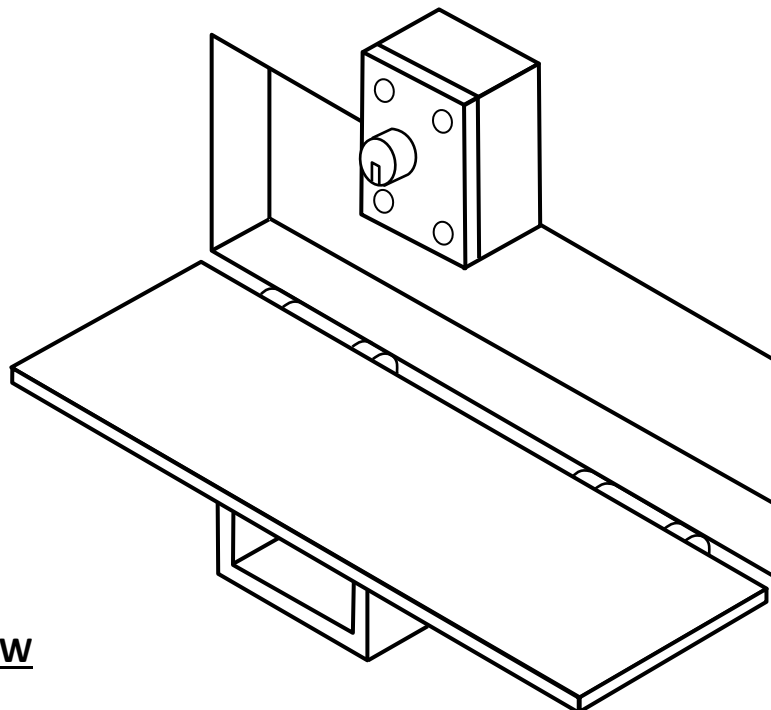
PLATE A-5-7 – TYPICAL DD2 SLIDING CELL DOOR – DETAILS 2



ELEVATION

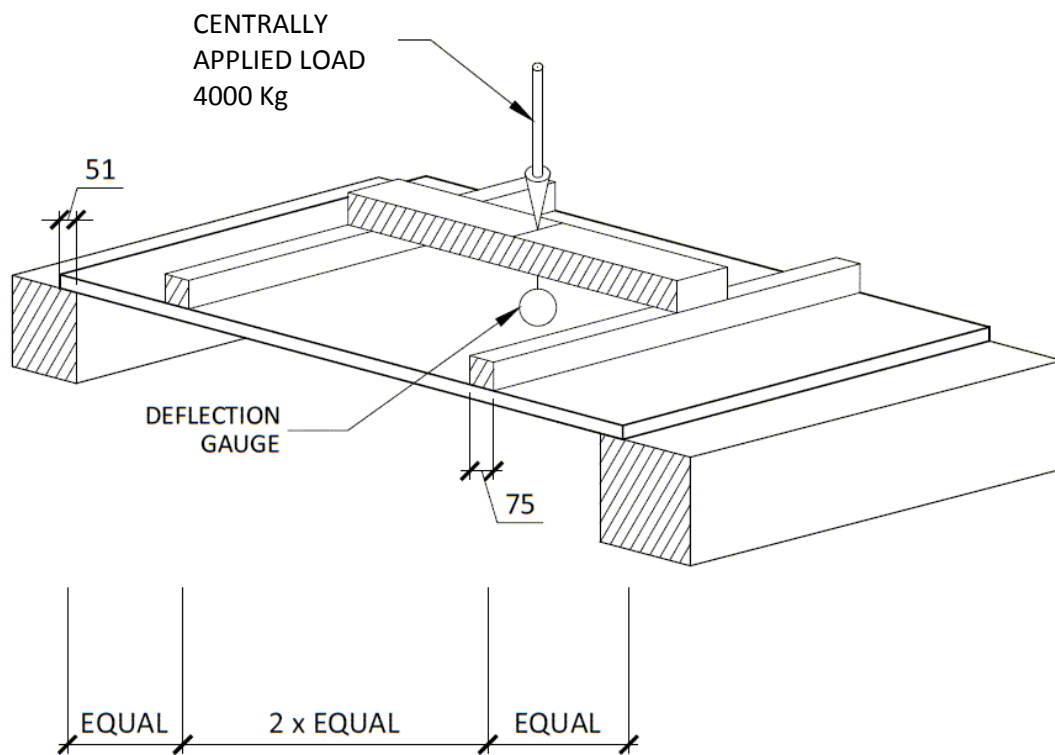


SECTION

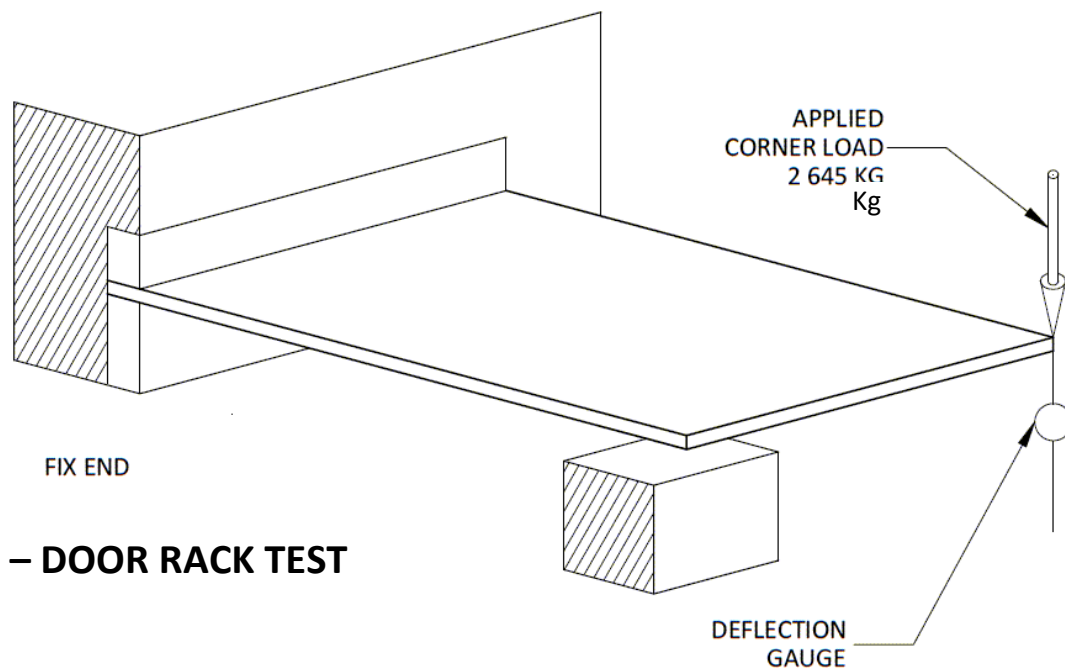


ISOMETRIC VIEW

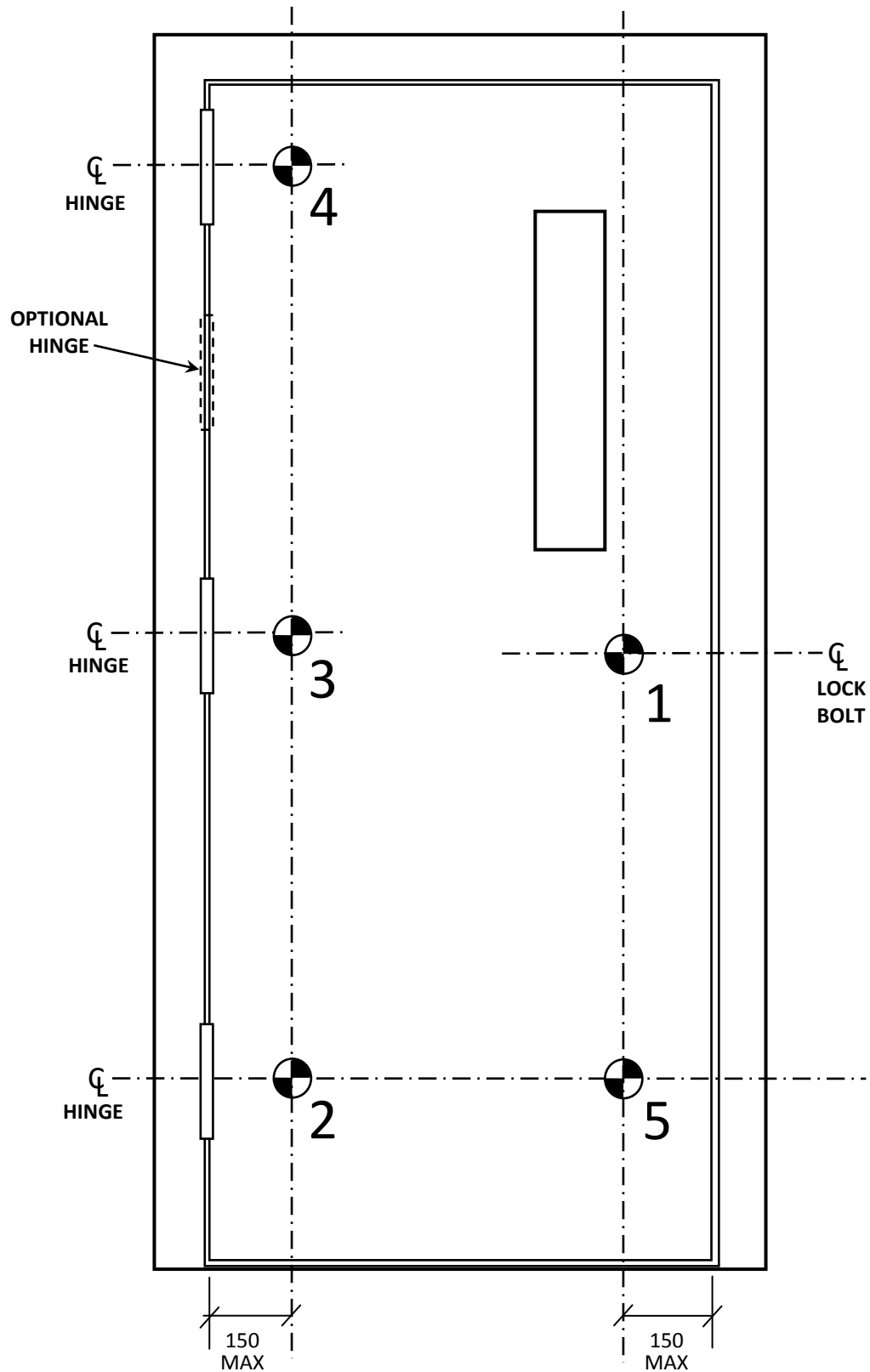
A-5-8 – FOOD PASS/CUFF PORT ASSEMBLY FOR DD2 DOOR



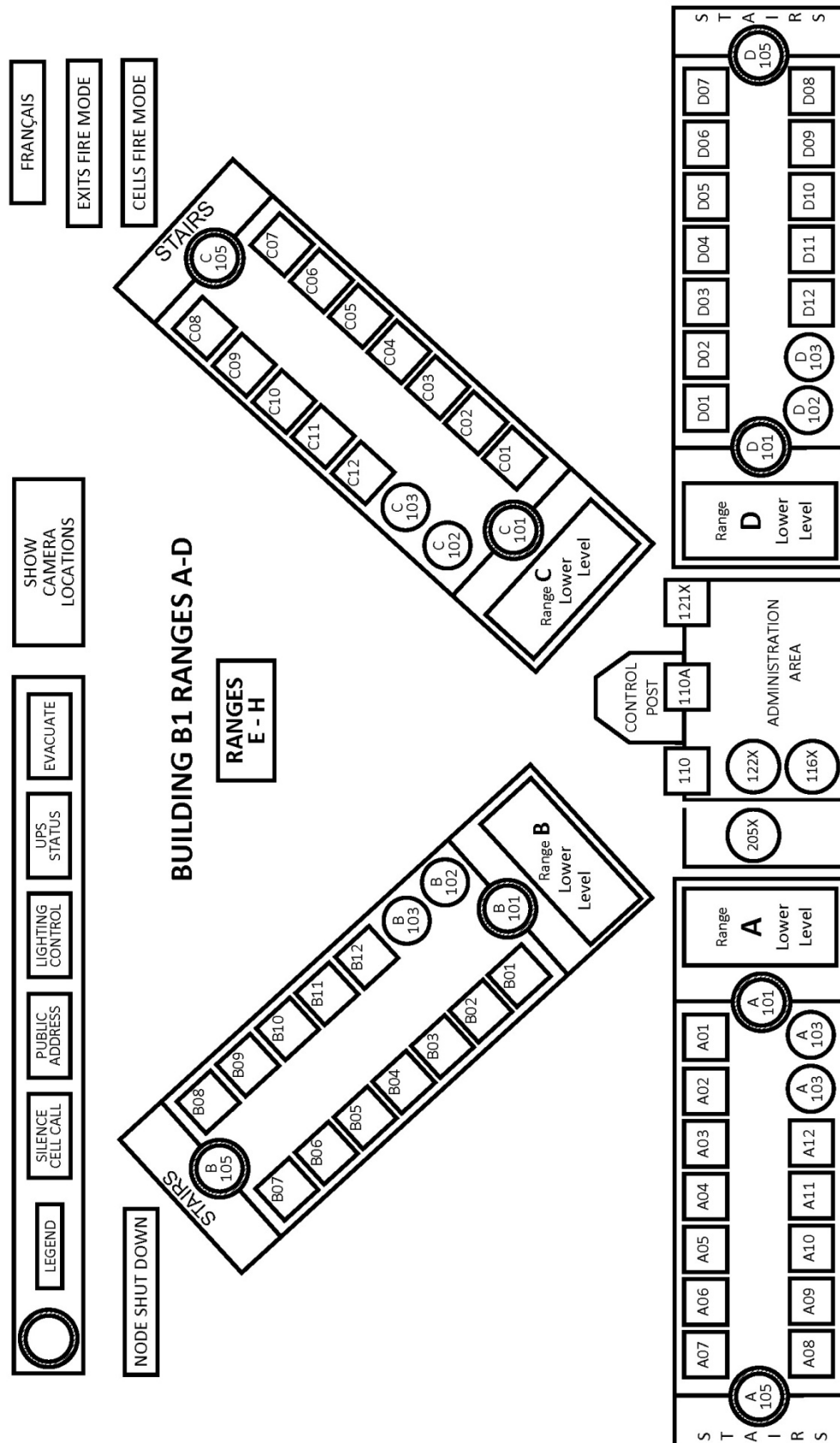
A-5-9 – DOOR STATIC LOAD TEST



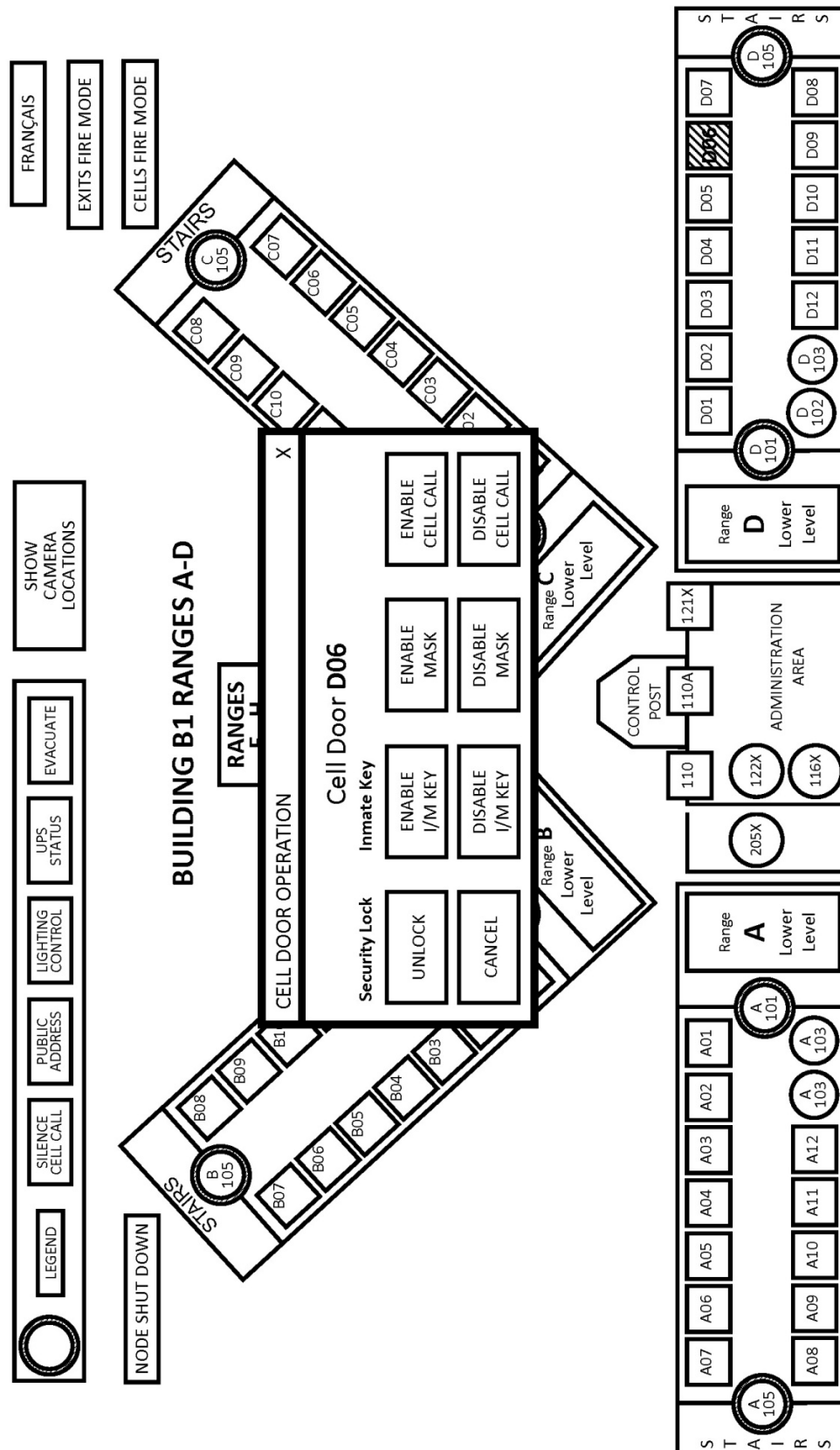
A-5-10 – DOOR RACK TEST



A-5-11 – DOOR ASSEMBLY IMPACT TEST



A-5-12 – CONSOLE – HOME



A-5-13 – CONSOLE – SINGLE DOOR CONTROL

A-6 ARCHITECTURE - HARDWARE

1. SCOPE

This section is a guide for the selection and specification of all hardware for correctional institutions.

2. RELATED SECTIONS

2.1 *Technical Criteria Document*

A-5 – Doors and Frames

A-13 – Security Control Posts, Galleries and Routes

2.2 *CSC/PWGSC Specifications (NMS-CSC Masterformat 2010 Sections)*

08 34 63 – Detention hollow metal frames, doors, and door frames¹

08 34 63.13 – Steel Detention Doors and Frames

08 34 63.16 – Steel Plate Detention Doors and Frames

08 34 63.33 – Detention Door Frame Protection

08 71 63 – Detention Door Hardware²

2.3 *Detention Hardware Testing Standards*

ASTM F1450-05 – Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities

ASTM F1577-05 – Test Methods for Detention Locks for Swinging Doors

ASTM F1643-05 – Test Methods for Detention Sliding Door Locking Device Assembly

ASTM F1758-05 – Test Methods for Detention Hinges Used on Detention-Grade Swinging Doors

3. DEFINITIONS

3.1 *Builder Hardware (BH):* Heavy duty commercial Grade 1 hardware which is used to provide a degree of security and long use. It includes, but is not limited to: latch and lock sets, hinges, door pulls, door closers, door stops, silencers, kick plates etc. Hardware used for bedrooms and other rooms within free egress small group living suites do not require the same level of performance. Residential type shall be used. Lock functions for specific rooms shall comply with Builder hardware standard.

3.2 *Detention Hardware (DH):* Hardware used for containment and to withstand sustained and surreptitious forced intrusion at medium and maximum institutions. Such hardware is fabricated, supplied, and installed by specialty detention equipment manufacturers and contractors and meets applicable standards. Detention hardware shall be used with detention doors and grilles. Detention Hardware is categorized as:

DH1 – for swing doors at medium security institutions

DH2 – for swing doors at maximum security institutions and mediums in specific locations

DH2sl – for sliding doors or grilles at maximum security institutions and mediums in specific locations.

4. BUILDER HARDWARE

4.1 *Standards*

All finish hardware shall conform to the following ANSI/BHMA Standards³:

¹ Previous version (<2004): Section 11193 – Detention Doors, Panels and Frames

² Previous version (<2004): Section 11192 – Detention Hardware

- ANSI/BHMA A156.1–2006 – Standard for Butts and Hinge
- ANSI/BHMA A156.4–2000 – Standard for Door Controls – Closers
- ANSI/BHMA A156.14–2002 – Standard for Sliding and Folding Door Hardware
- ANSI/BHMA A156.13–2005 – Standard for Mortise Locks & Latches

4.2 Staff Controlled Doors

Doors equipped with locks and locksets controlled by staff shall be heavy duty cylindrical or mortise type and shall have a latch or bolt of no less than 19 mm. Power locksets used for fire exit doors shall be **fail-safe** on power outages and be linked to the fire alarm system to permit emergency egress.

4.3 Door Alarms

Exterior doors used in free egress facilities and in particular living units, are equipped with contact alarms to signal unauthorized egress. These alarms are activated during curfew hours from a 24 hour duty station. The contact alarms shall be triple bias type meeting UL-634 Level 1 and 2 high security switches.

4.4 Inmate Controlled Doors

Interior doors for free egress living units with locks controlled by both staff and inmates such as for bedrooms and main entrance doors to apartments shall be residential cylindrical type.

4.5 Keying

All builder locks shall be under a master key system. Key cylinders for use by staff shall be 7 pin type or alternates offering equivalent security. Where keying is permitted to inmates, key cylinders shall be 5 pin type. Two keys shall be provided for each lock and for each master key system.

4.6 Finish

All latch and lock sets, handles, pulls, kick plates and other door hardware shall be dull stainless steel (C32D), or dull chrome plate (C260).

5. DETENTION HARDWARE

5.1 Door Hardware

Door hardware except Finish hardware as noted above, shall be detention type selected to match the door type. As an example, hinges for DD2 doors shall be heavier duty than those for DD1 doors. Three hinges shall be used per door.

5.2 Mechanical Lock types

Detention Locks are available for hollow metal doors, grilles and flat plate in openings such as for food passes in cell doors. For hollow metal doors, locks are inset in the door as in a mortise mount. For plate openings they are surface mounted as is the bolt keeper. Locks come either with a latch which slam locks upon closure or with a deadbolt which requires to be retracted on closure and extended to lock. Slam locks are generally used in corridors, entry to program areas and for emergency egress doors often with doors equipped with closers. Deadlocks are used for storerooms, mechanical rooms and service chases where it may be desirable to leave the door ajar. These doors are not equipped with closers. Either lock requires to be opened locally by key and keys cannot be retracted until the latch or deadbolt is fully extended.

³

The following standards have all been replaced by the ANSI/BHMA standards in the list: CGSB 69-GP-1M, CGSB 69-GP-2M, CGSB 69-GP-6M, 69-GP-9M, 69-GP-10M & 69-GP-11M, CGSB 69-GP-13M

5.3 **Remote Controlled Lock Types**

Remote controlled locks or locking devices are equipped with door indication switches to signal status of door. One switch is located at the head of the frame to monitor door position, the other switch is in the lock to monitor if latch bolt is extended or retracted. When door is fully closed and the latch bolt fully extended, the latch bolt is deadlocked triggering a secure status mode on the console. All locks are **fail-secure** on power outages and are not linked to the fire alarm system. The remote controlled lock types are as follows:

- 5.3.1 **DH1** locks used on swing doors (DD1) at medium security institutions shall be slim line which fit within a standard 50mm wide door frame. Locks are either electromechanically or pneumatically remote operated by motor or solenoid as well as mechanically and locally by key. Motorized locks are favoured for cells due to their quiet operation. Locks used for cell doors shall provide a separate keyway for use by the occupant to operate the door by electric switch when this function is activated from the housing unit control post. Key cylinders used for mechanical unlock shall be heavy duty commercial. Key cylinders used by inmates shall be light duty commercial / residential.
- 5.3.2 **DH2** locks used on swing doors (DD2) at maximum security institutions and (DD1) doors at specific locations as for exit doors at mediums, shall be of a higher security grade requiring a 150mm wide pocket within the frame. Locks are either electromechanically or pneumatically remote operated by motor or solenoid as well as mechanically and locally by key. Solenoid locks are effective for corridor doors as the bolt retraction clicks to alert persons to pass. Key cylinders used for mechanical unlock shall be mogul type. These locks do not normally come equipped with local electric switch unlock function.
- 5.3.3 **DH2sl** locking devices for sliding doors (DD2) at maximum security institutions are integrated within the sliding door assembly which incorporates tracks and guides, wheels, motorized drive and door locking mechanism and housing to protect all moving parts. Installation of sliding doors and assembly require plumb surfaces necessitating extra care during construction. Doors are chain driven moved by a motor or by a pneumatic system. They are locked at top and bottom of door either in open or closed position by remote control. Doors may be mechanically released and opened with the use of a special tool at an overhead location or by electrical switch operated by key. Mechanical gang unlock shall not be provided. Sliding door devices shall not be made to stop mid stream to allow for cuffing of inmates, instead, food/cuff passes shall be used for this purpose. A door when ajar subjects an officer to potential assault by ejected objects or liquids on all body parts.

5.4 **Lock Mounting**

Lock mountings shall be used for all Detention locks as recommended by the manufacturer. Key cylinders are set near flush to the lock face plate or shielded by a solid threaded ring. Where they protrude by more than 8 mm, they may be at risk of compromise enabling cylinder removal and manipulation of internal parts. Therefore in the case of excessive protrusion, key cylinders must be protected by a pipe collar attached to the lock face plate by a continuous weld.

5.5 Pneumatic Locks

Pneumatic locks and locking devices require power as well as air to secure or release the lock. Air tubing, compressors, dryers must be integrated with the installation. Compressors and dryers require secure locations and noise separation. These systems must be engineered by the lock supplier even though described within the mechanical specification and not the lock specification on project contract documents.

5.6 Keying

All locks shall be keyed individually and shall have a maximum of three keys supplied for each lock. Each key shall be stamped with a code number and date; all keys for Detention hardware locks shall be delivered in a sealed container to the designated CSC representative – typically the Security Maintenance Officer. Separate construction key cylinders shall be used by the contractor until substantial completion of the building.

5.7 Fastening Devices

Fastening devices used in inmate areas shall include security screws, security nuts, rivets, spanner screws or other equally secure devices, depending on the particular installation or level of security required.

5.8 Finish Hardware for Detention Doors

5.8.1 Detention doors equipped with Detention hardware may be supplemented by finish hardware items such as door closers, silencers, kick plates etc. All such hardware shall minimally be heavy duty commercial grade.

5.8.2 Door closers shall be installed in a manner which will prevent dismantling.

5.8.3 All double doors to have astragals and/or lock guard plates to prevent saw blades from being used on latches or deadbolts.

5.9 Key Cabinet

5.9.1 One key cabinet in each Control Post shall be provided to hold keys used in any functional area to be controlled by a security guard.

5.9.2 One key cabinet for a duplicate set of all keys shall be located with the Deputy Warden operations or designated staff member.

5.9.3 One key cabinet for a reserve duplicate set of all keys shall be located in a secure area at Security Administration.

5.9.4 Electronic key cabinets with tracking capability are used for all other staff keys to access their respective work areas. These doors are commercial grade equipped with commercial grade locks and cylinders. The key cabinet shall be located close to the main entrance of the institution and directly accessible to staff.

6. HARDWARE SCHEDULE

A proposed hardware schedule shall be submitted for review by CSC at the 66% working drawing stage.

A-7 ARCHITECTURE – FINISHES AND MODESTY SCREENS

1. SCOPE

This section provides performance criteria and guidelines for interior finishes for buildings at correctional institutions. Included in this section are modesty screens used in washrooms, cells and search areas.

2. RELATED SECTIONS

2.1 *Technical Criteria Document*

G-2 – Fire Authorities and Classification

A-2 – Building Construction

A-8 – Building Acoustics

2.2 *Manuals and Standards*

- Architectural Painting Specification Manual, Master Painter Institute, March 2006
- CAN/CGSB 85.100-93 Painting

3. PERFORMANCE CRITERIA

- 3.1** Interior finishes shall contribute to the need to provide safe institutions. Commensurate with the security level of the institution, interior finishes should minimize the opportunities available to the inmate to hide contraband and to transform building materials into weapons.
- 3.2** Interior finishes should be cost effective while being durable, easy to maintain and repair. Finishes should not exceed the level of quality used at public funded community facilities.
- 3.3** Although safety and cost effectiveness have priority, interior finishes shall contribute to a visually pleasing environment which may serve to influence the well-being and a harmonious interaction of inmates and staff.

4. DESIGN GUIDELINES

- 4.1** The choice of finish corresponds to the security requirements of a space usage, and the degree of staff supervision of that space. In general, areas of minimal staff supervision should not have finishes which allow concealment, while areas of frequent supervision allow for more latitude. Finishes used to cover overhead structural members and service lines may be avoided in supervised areas provided other relevant criteria are met.
- 4.2** Finishes for cells shall contribute to achieving a softer environment. Flooring for example shall be tiled as opposed to an epoxy sealed concrete even though the latter may be better from the standpoint of longevity, maintenance and security but harsher and harder than tile. The cove base at a concrete block wall however could be of epoxy for a clean non-removable finish. For coves on drywall, consider glued down wood trim and caulking.
- 4.3** Finishes for kitchens shall be selected based on longevity and ease of maintenance and sanitation. Although specific finishes are identified in the tables which follow, alternates such as seamless flooring which are commonly used in commercial kitchens and which are cost effective and have a proven performance shall also be considered.
- 4.4** Colour schemes should be such that they offer good visibility for effective security surveillance. Observation is greatly improved by providing light background colours; while this is less critical at close range, it is more important at a longer range, and becomes critical for the end walls of corridors. Colour schedules shall be approved by CSC.

- 4.5** Dark colours on screens and grilles enhance observation through these elements.
- 4.6** Spaces can be enhanced with the use of inmate wall graphics or paintings.
- 4.7** A suggested summary of interior finishes for various areas follows in Table A-7-2; and A-7-3. The designer may suggest alternate finishes for CSC approval. Designations FL, CL, and WL refer to finishes identified in Table A-7-1.

5 MODESTY SCREENS

- 5.1** Modesty screens aim to provide limited privacy to inmates during their use in areas such as toilets, showers, cells, and for strip search.
- 5.2** In areas other than cells, modesty screens may be standard steel toilet partitions with a clearance of 300 mm from the floor.
- 5.3** For cells, screens may be used to limit views of the use of toilet through the viewing port in the cell door. Space permitting, screens may be integrated with the furniture or be stand-alone. For this use, partitions may be fixed or curtain type as described below. Screens shall not obstruct views of the occupant beyond the toilet area.
- 5.4** Showers shall have canvas type curtains with clear vinyl tops and bottoms measured 1400 mm and 450 mm from the floor respectively. Military National Stock Number 7230 21 868 6585¹ – CURTAIN, SHOWER – gives details of such curtains.
- 5.5** Strip search areas shall be provided with tracks and enclosure curtains as stated for showers.
- 5.6** For existing institutions with grille front cells, modesty screens or curtains shall be installed at the inmate's request.
- 5.7** Both modesty screens and shower curtains must be made of fire resistant material. The Fire Safety Manual² – Section 8 – Paragraphs 54 and 55 reflect flammability requirements of the National Fire Code of Canada.

TABLE A-7-1 – LIST OF SUGGESTED FINISHES

AREA	ELEMENT
Floor/Base	FL-1 - Carpeting (glue-down nylon, low pile textured loop) FL-2 - Resilient tile flooring (rubber base) FL-3 - Painting over Concrete, gloss enamel FL-4 - Resilient sheet flooring (vinyl) with rubber base FL-5 - Concrete floor finish (shake non-metallic hardener into finish and apply acrylic cure and seal) FL-6 - Porcelain/quarry tile with tile base
Ceilings	CL-1 - Acoustical Panels and Tiles (suspended lay-in system) CL-2 - Painting of suspended gypsum board CL-3 - Acoustical Panels and Tiles (concealed non-accessible system) CL-4 - Painting on Exposed Structure, primed ferrous metal surfaces: Semi-gloss enamel. Galvanized and zinc coated metal: semi-gloss enamel; Zinc coated metal decking; flat paint CL-5 - No finish CL-6 - Painting of underside of concrete, semi-gloss enamel

¹ <http://7230.iso-group.com/NSNDetail/7230-21-868-6585/7230218686585.aspx>

² 345 - FIRE SAFETY MANUAL, Issued under the authority of the Assistant Commissioner, 2005-12-01

AREA	ELEMENT
Walls	CL-7 - Acoustical Panels and Tiles (glued to suspended gypsum board)
	WL-1 - Gypsum or wood panel mounted on stud-type partitions
	WL-2 - Gypsum or wood panel mounted on concrete block/concrete (fire-rated and exterior walls)
	WL-3 - Painting on concrete block/concrete, semi-gloss enamel
	WL-4 - Gypsum over wood panel or expanded steel mesh on stud-type partitions
	WL-5 - Ceramic Tile (dado to 1800 mm)
	WL-6 - High build glazed coating, high gloss on concrete block/concrete
	WL-7 - Painting on concrete block/concrete gloss enamel
Doors/Frames	WL-8 - Semi-gloss enamel with cellular wood fibre cementitious composition boards applied on upper half of wall (out of reach where possible)
	DL-1 - Painting, semi-gloss enamel
	O1- Painting, high gloss enamel
Other Elements (miscellaneous metalwork, grills, etc.)	

TABLE A-7-2 – SUGGESTED SUMMARY OF INTERIOR FINISHES

DEPARTMENT	Floor FL	Ceiling CL	Walls WL
<u>Group A Administration</u>			
A1 Management Centre	FL-1/FL-2	CL-1	WL-1/WL-2
A2 Finance	FL-1/FL-2	CL-1	WL-1/WL-2
A3 Staff Services and Training	FL-1/FL-2	CL-1	WL-1/WL-2
A4 Administration & Central Registry	FL-1/FL-2	CL-1	WL-1/WL-2
A5 Case and Sentence Management	FL-1/FL-2	CL-1	WL-1/WL-2
A6 Parole Board Hearing	FL-1/FL-2	CL-1	WL-1/WL-2
<u>Group B Security</u>			
B1 External Security	FL-2	CL-2	WL-3
B2 Emergency Response & Armoury	FL-2	CL-2	WL-3
B3 Security Administration	FL-1/FL-2	CL-1	WL-1/WL-2
B4 Admissions & Discharge	FL-1/FL-2	CL-2	WL-3
<u>Group C Socialization</u>			
C1 Social Programs & Leisure Activities	FL-2	CL-3	WL-3
C2 Arts & Crafts	FL-3	CL-4	WL-3
C3 Private Family Visiting	FL-2	CL-3	WL-3
C4 Visits & Correspondence	FL-2	CL-3	WL-3
C5 Recreation	FL-2	CL-4	WL-3
<u>Group D Spirituality</u>			
D1 Chaplaincy	FL-2	CL-3	WL-3
D2 Aboriginal Services	FL-2	CL-3	WL-3

DEPARTMENT	Floor FL	Ceiling CL	Walls WL
<u>Group E Housing</u>			
E1 Small Group Accommodation	FL-2	CL-2	WL-1
E2 Minimum Security Unit	FL-2	CL-2	WL-1
E3 Responsibility Unit	FL-2	CL-2	WL-1
E3 Direct Observation Unit	FL-2	CL-4	WL-3
E5 Maximum Security Unit	FL-2	CL-4	WL-3
E6 Segregation Unit	FL-2	CL-4	WL-3
<u>Group F Health Services</u>			
F1 Health Care Centre	FL-2	CL-2	WL-1/WL-2
F2 Mental Health Care	FL-2	CL-2	WL-1/WL-2
<u>Group G Technical Services</u>			
G1 Maintenance	FL-5	CL-5	WL-4
G2 Food Services	FL-6	CL-2	WL-5/WL-6
G3 Institutional Services	FL-4	CL-6	WL-7
G4 Material Management	FL-5	CL-5	WL-4
<u>Group H Occupational Development</u>			
F1 Occupational Development/CORCAN	FL-5	CL-5	WL-4
<u>Group J Education & Personal Development</u>			
G1 Education	FL-2	CL-3	WL-3
G2 Correctional Programs	FL-2	CL-3	WL-3
G3 Library	FL-2	CL-3	WL-3
<u>Circulation</u>	FL-2	CL-2	WL-3

TABLE A-7-3 – SUMMARY OF INTERIOR FINISHES IN SPECIFIC SPACES

SPACE	Floor FL	Ceiling CL	Walls WL
Vault, secure storage, terminal equipment rooms, telecommunications equipment, inmate rooms, segregation cells, armoury	FL-2	CL-6	WL-3
Washrooms (staff, inmate and public), bathing laundry	FL-3	CL-6	WL-6
Entrance / Vestibules	FL-6	CL-2/CL-6	WL-2/WL-3
Storage spaces type 3, loading dock, compressor rooms, receiving/issuing, training rooms	FL-5	CL-5	WL-4
Offices, dining rooms, tailoring room	FL-2	CL-3	WL-3
Maintenance closets	FL-3	CL-5	WL-3
Music room	FL-1/FL-2	CL-7	WL-8

A-8 ARCHITECTURE – BUILDING ACOUSTICS

1. SCOPE

This section outlines acoustic considerations unique to correctional facilities.

2. RELATED SECTIONS

2.1 *Technical Criteria Document*

A-7 – Finishes and Modesty Screens

2.2

Mechanical design requirements referring to noise and vibration control are outlined in the Mechanical sections of this Technical Criteria Document. These sections are:

M-1 – General Mechanical Requirements

M-2 – Plumbing Requirements

M-3 – Fire Protection Requirements

M-4 – Heating, Ventilating & Air Conditioning Requirements

2.3 *Other references*

- National Building Code of Canada 2010, National Research Council, 2010, ISBN 0-660-19976-4, Division B – Section 9.11 Sound Control
<http://www.nrc-cnrc.gc.ca/eng/ibp/irc/codes/2010-national-building-code.html>
- CSA Z107.10-06 – Guide for the use of Acoustical Standards in Canada
- CSA Z107.58-02, Noise Emission Declaration for Machinery
- ASTM E90-09 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E336-10 Standard Test Method for Measurement of Airborne Sound Attenuation between Rooms in Buildings
- ASTM E413-10 Classification for Rating Sound Insulation
- The Acoustics Design Guide for Corrections, Advisory Council on Corrections and Acoustics, 1993

3. DEFINITIONS

The following criteria are used to define the acoustic requirements of a given space and are useful here in interpreting the ratings in table A-8-1 which follows:

- 3.1** The **Noise Criterion (NC) number** – indicates the recommended maximum permissible background noise level in dBA in the important 1200 – 2400 Hz frequency band.
- 3.2** The **Sound Transmission Class (STC) number** – determines the sound transmission loss through a construction assembly considering the frequency range audible to the human ear. This indicates the required noise insulation for a closed space.
- 3.3** The **Reverberation Time (RT) rate** – is a measure of the reverberation time at which the reverberant sound dies away. This is defined as the time required for the reverberant sound to diminish by 60 dB. The RT depends on the absorptive area and the volume of the space.

4. PERFORMANCE CRITERIA

- 4.1** Acoustical treatment shall be considered in the design of spaces as an integral element.
- 4.2** Building sub systems shall consider the acoustic implications on the surrounding areas.
- 4.3** All acoustic assemblies shall be compatible with the security requirements of the institution. Special attention should therefore be paid to finishes such as sound reflectors, suspended ceilings, etc., within inmate areas which are only periodically

supervised. To control concealment, acoustical panelling shall be set high from the floor and / or allow for ease of detection if tampered with.

5. DESIGN GUIDELINES

- 5.1** Ceilings and walls in group areas such as a library, classrooms, chapel, common dining rooms and visits rooms may be provided with acoustical panels applied to solid structure or other monolithic finish.
- 5.2** For inmate areas, suspended lay-in tile acoustical ceilings are acceptable for high ceiling application or for areas under the presence of staff.
- 5.3** Noise reducing acoustic treatment is not required in recreational or shop occupational areas. The location of these relatively noisy areas within the correctional complex must be considered so that conflicts do not develop between noisy and quiet spaces.
- 5.4** The acoustical requirements of administration offices within a correctional institution will correspond to those of similar facilities located in any public office building¹.
- 5.5** Interview rooms and enclosed offices shall have no other treatment than standard office partitions with appropriate insulation and solid core office doors but assuring viewing capability from the corridor. Ceilings shall be either lay-in acoustical tile or drywall.
- 5.6** Boardrooms and classrooms shall have their partitions extend to the underside of the floor or roof above to achieve a higher sound transmission barrier.
- 5.7** Cells and bedrooms shall have their partitions extend to the underside of the floor or roof above.
- 5.8** The table below provides general guidelines with ratings assumed to be achievable using conventional construction materials and methods. Testing for results accomplished is not intended.

Table A-8-1 – General Building Acoustics (Basic Design Guide)

SPACE	NC(dB)	STC(dB)	RT(SEC)
Chapel, Library, Classrooms, and boardrooms	30	40-45	0.3-0.5
Administration Offices and interview rooms	35-40	35-40	0.3-0.5
Dining Rooms,	35-40	40-45	1.0-1.2
Parole Hearing Room + Deliberation Room	35-40	45	0.3-0.5
Inmate Cells + Bedrooms	40	35-40	0.3-0.5
Living unit common areas	35-40	35-40	1.0-1.2
Visit & Correspondence at Medium & Maximum Levels	<i>Provide acoustical treatment to the room to enhance monitoring of conversations with listening devices</i>		
Mechanical noise-generating devices	<i>Provide isolation and absorption in order to meet the above</i>		

¹ CSA-Z412-00 (R2005) – Guideline on Office Ergonomics, Section 6.3 The acoustical environment Public Works and Government Services Canada, An Architect's Guide for Sustainable Design of Office Buildings, Section 2.9 Improving Acoustic Quality, <http://www.tpsgc-pwgsc.gc.ca/biens-property/archtct/page-2-eng.html#a2> Public Works and Government Services Canada, Fit-up Standards: Technical Reference Manual <http://www.tpsgc-pwgsc.gc.ca/biens-property/documents/pubs-am9-eng.pdf>

A-9 ARCHITECTURE – INTERIOR SIGNAGE

1. SCOPE

This section outlines requirements for interior signage in correctional institutions other than contained in the Treasury Board of Canada (TB) procedural manual Signage: System Overview and Implementation. The TB manual provides standard requirements for government buildings, including correctional facilities.

2. GENERAL REQUIREMENTS

- 2.1** Signs required by an institution fall into four (4) categories:
- Outdoor Path Finding/Directional Signs required in public areas,
 - Building Identification Signs,
 - Room/Door Identification Signs which include the building number,
 - Interior signs necessary for operational reasons.

The room and door numbering system which is required shall form part of the building construction package in order to allow the early identification of door locations at the commissioning stage.

- 2.2** The need for signage is limited in many areas which are not open to the public or in which access is restricted and movement is controlled; in such cases, a door numbering system is adequate. Where staff offices and work stations are located, name plates may be required; corporate identity signs shall be used to meet requirements in such cases.

3 DESIGN REQUIREMENTS

- 3.1** All buildings and rooms shall be supplied with alphanumeric identification in accordance with established regionally approved system.
- 3.2** The building shall have all signage in place before it is occupied. For this the contract documents shall have the rooms numbered as per the numbers in use at that institution.
- 3.3** The conventions to be followed are: the building has a number which is the next number that follows existing buildings. Rooms within the building are by floor 001, 002... for the basement; 101, 102... for the ground floor, 201, 202... for the 2nd floor, and etc. Rooms accessible from another room but not from the corridor have a letter ending ie 101A is accessible from 101 and 101B is accessible from 101A.
- 3.4** All signs shall be sized and labeled in accordance with the above TB manual and signs shall be surface mounted and follow the location used at that institution.
- 3.5** Signs shall be affixed so that they are not easily removable. For higher security institutions, security type fasteners shall be used.

4 PROCUREMENT OF SIGNAGE

Signage shall be procured from a federally approved supplier (standing offer with a signage company). Procurement shall comply with normal CSC established procedures or form part of the construction project.

A-10 ARCHITECTURE – CONTRABAND AND BANNED SUBSTANCE CONTROL

1. SCOPE

This section establishes building construction requirements for the areas whose purpose involves screening of persons for contraband and banned substances.

2. RELATED SECTIONS

2.1 *Technical Criteria Document*

SP-3 – Gates/Sally Ports

A-11 – Inmate Cells

A-13 – Security Control Posts, Galleries & Routes

A-14 – Special Observation Cells

3. PERFORMANCE CRITERIA

3.1 *Contraband and Banned Substance Control*

3.1.1 The Gatehouse provides for the control and screening of all visitors with the aid of walk-through metal scanners, ion scanners and x-ray luggage scanners. Other areas where walk-through scanners may be located are along inmate traffic areas originating from workshops. Package scanners may also be used in Admissions and discharge area for all effects purchased by inmates. For other than the Gatehouse, need and location for contraband control equipment shall be established on a project specific basis.

3.1.2 Location of equipment shall consider potential interference from:

- Electric Cables
- Electric Motors
- Moving Metal Objects: metal doors, conveyors, carts, moving signs, metal chains
- Stationary Metal Objects: heating pipes, ventilation ducts, steel beams, and metal barriers.

3.1.3 In connection with contraband control at the main entrance, small lockers are required to provide for storage of handbags and possessions which are not permitted inside the institution. The lockers shall be located such that they are accessible to visitors prior to being screened and cleared for entry. Locker location shall also consider the need to observe what is being placed in the lockers. Smaller lockers for keys or cell phones belonging to officials may be located close to screening.

3.1.4 In addition to the use of contraband control equipment, screening is supplemented by the use of a trained drug detection dogs. This procedure requires a clearly identified spot on the floor for the person to stand.

3.1.5 A search room is provided adjacent to the screening area to allow for a search to be conducted on a suspected person in accordance with directives.

3.2 *Contraband and Banned Substances Recovery*

3.2.1 *Holding Dry Cell*

This cell provides for a safe and sanitary collection of fecal specimen. An inmate is placed in the cell when suspected of harbouring drugs in his body. Inmates are placed in this cell under supervision for up to 3 days . The cell is minimally furnished comprising a bed and a dry toilet, known by its proprietary name as

“Drugloo”. Similarly performing equipment when available shall be acceptable as alternate. The “Drugloo” requires an adjacent secure room for the collection of the specimen. The said suite which is limited to this specific use is typically situated in the segregation unit. The cell shall be constructed and equipped to minimize suspension points as a measure for suicide prevention.

Surveillance of the inmate, when locked in the cell, is performed by an infrared wide angle camera monitored from the Segregation Control Post or in person by staff from outside of the cell.

3.2.2 Banned Substances Recovery Room

The recovery room located adjacent to the dry cell with a dedicated access is used for the retrieval of banned substance from the “Drugloo” recovery port. A sink for hand washing is provided as well as a counter with a cabinet below for the officer to package and identify the specimen and store the specimen ready to be sent to a lab.

3.2.3 Urinalysis Room

This room is used for the collection of urine specimen from inmates who may be suspected of drug use or as part of a random testing procedure to ensure that inmates are free of drug use. This room is an oversized washroom where the inmate is given a container used over a toilet. An officer is typically present to observe the inmate and collect the container. The officer stands behind a glass panel located to enable viewing. A sink for hand washing is located convenient for both parties and a counter with a cabinet below is provided for the officer to identify the container and store the specimen ready to be sent to a lab.

4. DESIGN GUIDELINES

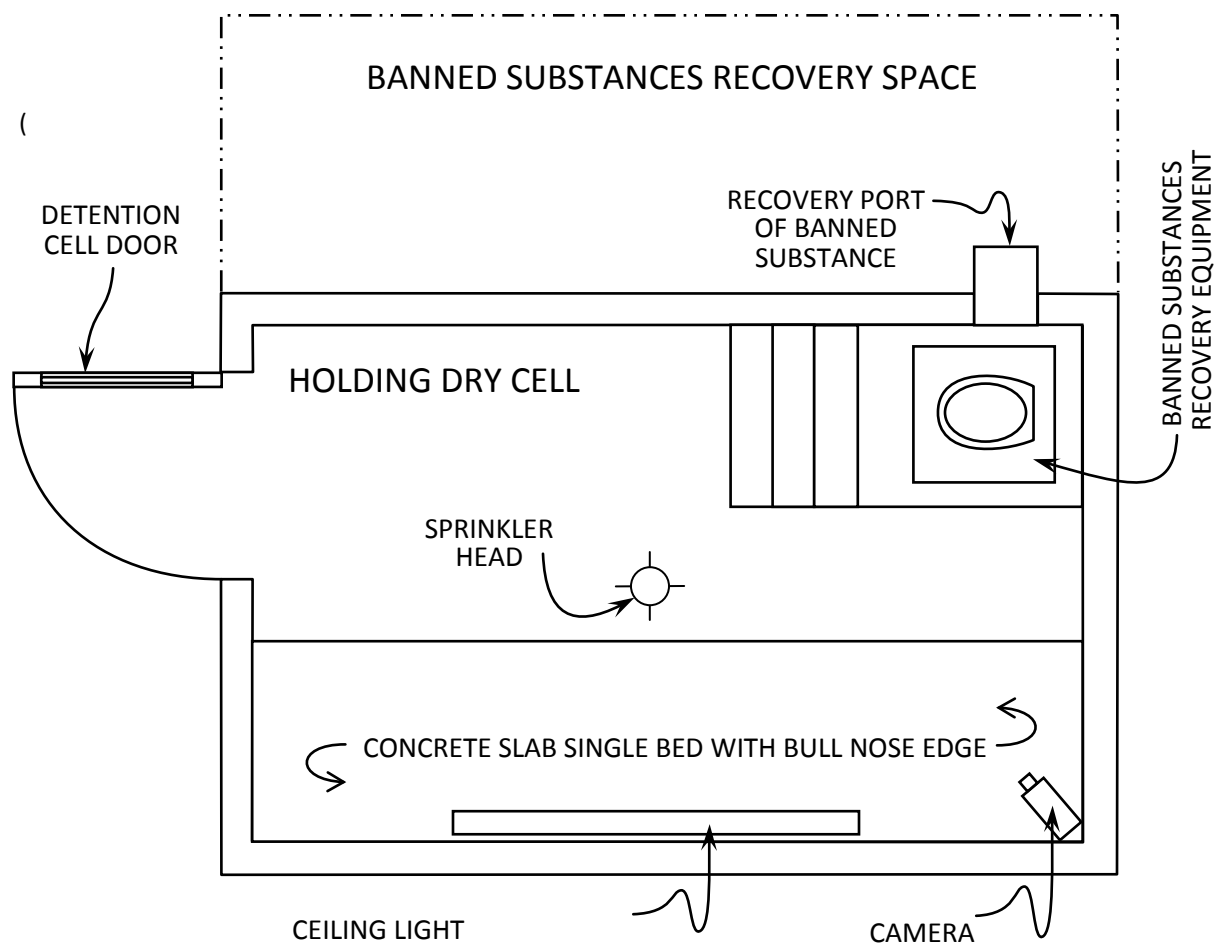
4.1 Location of Dry Cell and Recovery Room

The suite should be located close to the Segregation control post and separate from segregation inmate traffic as inmates move to showers and yards. This suite would ideally be integrated with the Special Observation cell both of which require in person surveillance with camera back-up from the exterior of the cells.

4.2 Dry Cell and Recovery Room Technical Features

Both rooms shall be designed to the same requirements as a cell: the dry cell and the recovery room each sized at 6m². These, being short term use spaces, windows are not required. Both rooms shall be equipped with floor drains and the cell with a concealed water bib. Ventilation and heating shall be as per cell requirements and light switch on the corridor side. Doors shall be style A with double half lights with a food/cuff port as for the Special observation cell. Because the Drugloo is elevated by 3 steps to reach the platform with the toilet, the height from the platform to the ceiling should be a minimum of 1900 mm.

PLATE A-10-1 – DRY HOLDING CELL & BANNED SUBSTANCES RECOVERY EQUIPMENT



A-11 ARCHITECTURE – INMATE CELLS

1. SCOPE

This section outlines performance and design requirements for inmate bedrooms and cells for Minimum to Maximum Institutions, for both “Regular” and “Special” inmate populations.

2. RELATED SECTIONS

2.1 Technical Criteria Document

A-2 – Building Construction
A-3 – Grilles, Screens and Mesh
A-4 – Glazing, Windows and Assemblies
A-5 – Doors & Frames
A-6 – Hardware
A-14 – Special Observation Cells
All Mechanical Sections
E-4 – Interior Lighting & Cell Lighting Fixtures

3. DEFINITION OF TERMS

3.1 Regular Inmate Population refers to inmates who have general access to program areas in the institution. Within the Regular populations there are sub-classifications reflecting differences in the Custody rating scale and corresponding behavioural expectations.

3.2 Special Inmate Population refers to inmates who are isolated from the regular population for specific reasons; these include inmates in Segregation, Treatment and Care, Reception, Temporary detention and the Special Handling Unit. Generally, these populations form a smaller subgroup within a larger institution and they have limited access to program areas of the Institution.

4. SECURITY REQUIREMENTS

4.1 Inmate bedrooms in Minimum security living units (S-2) are free egress with the exception that unauthorized egress to the outdoors shall be capable of being detected. This is typically achieved by the bedroom window openings being restricted to a maximum of 125 mm or by affixing window insect screens so that they would need to be ripped or damaged to allow egress.

4.2 Inmate bedrooms within S-3 living units in Medium Institutions though free-egress are located in apartments which have impeded egress and as such the exterior envelope of bedrooms and all other spaces within the suite shall provide for confinement. This is achieved by the exterior walls being constructed of concrete block reinforced and core filled and the for the bedroom windows to have a restricted opening to a maximum of 125 mm. There is no security requirement for any of the interior walls or openings of the bedrooms; drywall shall be used.

4.3 Cells in S-4 to S-7 living units in Medium and Maximum Institutions shall be designed to provide secure and safe confinement of the inmate.

4.4 Given a ban in the use of tobacco, matches or lighters are no longer permitted other than for aboriginal ceremonial purposes and therefore the threat of cell fires are mitigated.

5. PERFORMANCE REQUIREMENTS

5.1 All inmate bedrooms and cells shall meet the following requirements:

- 5.1.1 Single occupancy, unless sanctioned for double bunking by the Commissioner of CSC¹ under conditions of population pressures. This is seen to be a temporary measure;
 - 5.1.2 Natural light via an in bedroom / cell window; the size of the glazed opening shall be a minimum of 5% of the floor area of the cell;
 - 5.1.3 Natural ventilation operated by the occupant;
 - 5.1.4 Continuous access to a toilet and wash basin equipped with hot and cold running water; in S-2 and S-3 living units in Minimum and Medium Institutions, toilets and wash basins shall be outside of the bedrooms within the suite;
 - 5.1.5 An artificial lighting level adequate for reading and for personal grooming;
 - 5.1.6 A provision for electrical equipment plug in;
 - 5.1.7 Capability for unobstructed observation by staff for the purpose of counts and safety checks;
 - 5.1.8 Ambient room temperature appropriate to a winter comfort zone;
 - 5.1.9 Ambient background noise levels (NC) according to Section A-8 Building Acoustics;
 - 5.1.10 Smoke detection with annunciation in a 24/7 occupied control post and sprinkler protection within each bedroom and cell;
 - 5.1.11 Quality of construction materials, fittings, and furnishings to be commensurate with the expectations of inmate behavior and the trust accorded to inmates. S-2 and S-3 bedrooms in living units shall be designed with the least harshness and hardness.
- 5.2** Cells at Medium and Maximum Institutions, for all populations, shall satisfy the general conditions in item 5.1 and shall also provide:
- 5.2.1 Adequate mechanical ventilation of re-circulated filtered air recognizing the provision of an in cell toilet;
 - 5.2.2 A cell call system with annunciation in a 24/7 occupied control post;
 - 5.2.3 Construction materials, fittings and furniture which curtail the following:
 - 5.2.3.1 Self mutilation and suicide;
 - 5.2.3.2 Barraging of doors;
 - 5.2.3.3 Hiding of contraband;
 - 5.2.3.4 Passing of contraband;
 - 5.2.3.5 Escape;
 - 5.2.3.6 Intrusion from outside the cell;
 - 5.2.3.7 Dismantling or smash up;
 - 5.2.3.8 Easy voice communications between cells.
- Note: The degree to which this condition is to be satisfied varies with the type of inmate classification. Typically disruptive activities for “regular” populations in Medium Institutions are moderate, they are high in Maximums and they vary for “Special” populations depending on security classification.

¹ Commissioner’s Directive (CD) 550 – Inmate Accommodation and Policy Bulletin 315 (2010-08-11)

6. DESIGN REQUIREMENTS

6.1 *Spatial*²

- 6.1.1 S-2 and S-3 bedrooms at Minimum and Medium Institutions are not equipped with a toilet and wash basin. Toilet and wash basin are shared in the residential unit. The net living area of the bedroom is 6.5 m² minimum.
- 6.1.2 S-4 to S-7 cells at Medium and Maximum Institution for “Regular” and “Special” populations are equipped with a toilet and wash basin. The net living area of the cell (except for Health Care and handicapped cells) is 7.0 m² minimum.
- 6.1.3 Health Care Cells at all institutions require a larger area for manoeuvrability of a hospital bed and patient care. The net living area is 10.2 m² minimum.
- 6.1.4 Barrier free cells are intended for mechanical wheel chair use and are sized at 10m². These cells may not be suitable for motorized chairs and hence may require a furniture refit to suit. Percentage of cells dedicated for handicapped use is a maximum of 2% per housing unit but 1% of the institutional capacity given older housing units cannot be practicably retrofitted to accommodate handicapped inmates.
- 6.1.5 A utility chase accessible from a cell corridor is typically shared between two cells each equipped with a toilet and wash basin. Whether a chase serves two cells or one cell, it shall have a net area of no less than 0.5 m².
- 6.1.6 Minimum floor to ceiling height for all bedrooms and cells shall be 2400 mm.

6.2 *Floors and Ceilings*

For detailed information refer to TCD section A-2, Building Construction.

6.3 *Walls*

For detailed information refer to TCD section A-2, Building Construction.

6.4 *Ventilation Grilles*

Ventilation Grilles must not allow suspension (“ligature resistant”) and comply with the ASTM F2542–05³ physical assault test. For more detail see Section M-4. This requirement is critical for S-6 and S-7 and Segregation cells.

6.5 *Doors*

Refer to TCD section A-5, Doors and Frames, and to TCD section A-6, Hardware.

6.6 *Windows*

Refer to TCD section A-4, Windows.

6.7 *Mechanical*

Pipes located close to the ceiling shall not be exposed but encased in a housing so as not to offer a suspension point. Refer to TCD sections related to Mechanical.

6.8 *Electrical*

Conduit located close to the ceiling shall not be exposed but encased in a housing so as not to offer a suspension point. Refer to TCD sections related to Electrical.

² Commissioner’s Directive 550 – Inmate Accommodation, February, 2013,

³ ASTM F2542–05 Test Methods for Physical Assault on Ventilation Grilles for Detention & Correctional Facilities.

6.9 Furniture

- 6.9.1 With the exception of hospital type beds required in Health Care Units, CORCAN is given an opportunity to manufacture and supply furniture on a first refusal basis. The first refusal depends on price competitiveness with equivalent furniture and on an acceptable delivery schedule for the project.
- 6.9.2 Furniture at S-4 to S-7 cells at Medium and Maximum Institutions shall be metal and secured in place with the appropriate anchoring clearly specified in the construction contract documents. Furniture in S-2 and S-3 bedrooms shall be loose and of wood.
- 6.9.3 Hooks in all cells shall be a type with a pin and ball in socket to rotate down with weight and to prevent snagging or catching a line.
- 6.9.4 Cork boards for pinning pictures are permitted but must be of light and attached to the wall with 'Velcro' to facilitate removal for checking for contraband.
- 6.9.5 Furniture for bedrooms and cells is outlined in the table which follows.

6.10 Curtains and Blinds

Window curtains and blinds including textiles and films that are provided or permitted in locked detention and correctional buildings shall conform to requirements of the Fire Safety Manual – Section 8 – Paragraphs 54 and 55⁴.

6.11 Double Bunking

Double bunking is a temporary measure used during times of population pressures. CD 550 outlines requirements and conditions for the use of double bunking. In the design of double bunks, the height of the upper bunk shall be such that it does not impede viewing of the sleeping inmates during cell checks. To allow this, the mattress height should be approximately 1500 mm. Safety rails shall only be used at the location of the ladder or steps as a hold for safe access. The clear spacing between the two bunks shall be 900 mm. Space permitting; additional furniture and a modesty screen may be supplemented for convenience and dignity. For all installations, provision for the safe storage of personal belongings is required. Metal lockers or durable fabric bags are typically used and stored under the lower bunk.

⁴ 345 - FIRE SAFETY MANUAL, Issued under the authority of the Assistant Commissioner, 2005-12-01

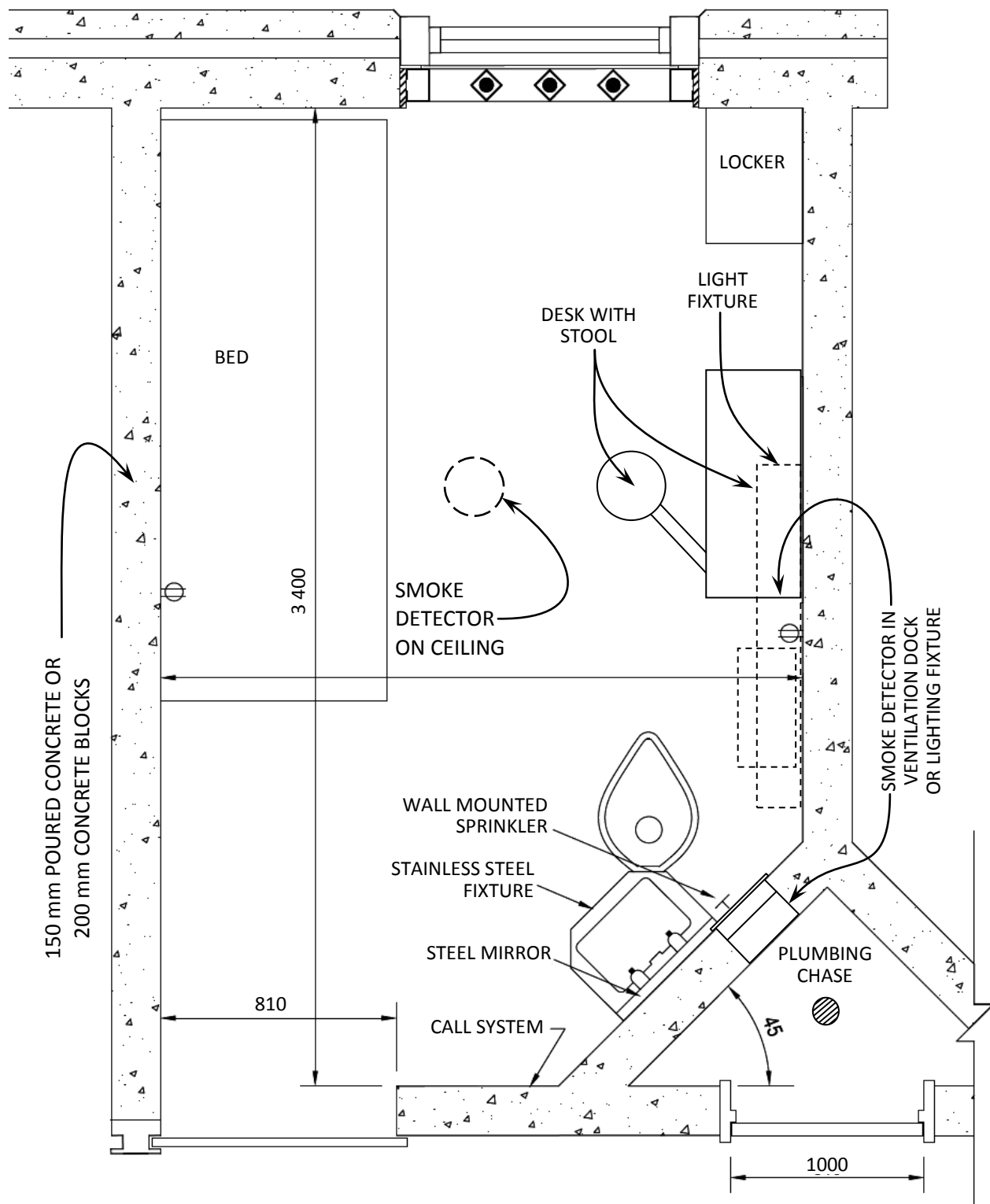
TABLE A-11-1 – BEDROOM/CELL FURNITURE

	MINIMUM BEDROOM S-2	MEDIUM BEDROOM S-3	MEDIUM CELLS S-4	MEDIUM CELLS S-5	MAXIMUM CELLS S-6 & S-7	HEALTH CARE CELLS	SEGREG. CELLS	OTHER SPECIAL CELLS
Bed, free standing	W	W						
Bed, secured			M	M				M
Bed, wall unit					M		M	
Bed, hospital						M		
Desk (free standing) + chair	W	W				M		
Desk (secured) + chair			M	M				
Tack boards (cork)	X	X	X	X	X			X
Desk-stool unit					M		M	M
Open lockers	W	W	M	M	M	M		M
Single shelf & collapsible hooks						M	M	M
Double shelf & collapsible hooks			M	M	M			
T.V. shelf	W	W	M	M	M	M		M
Window Curtain & blinds	X	X	X	X	X	X	X	X

M= Metal

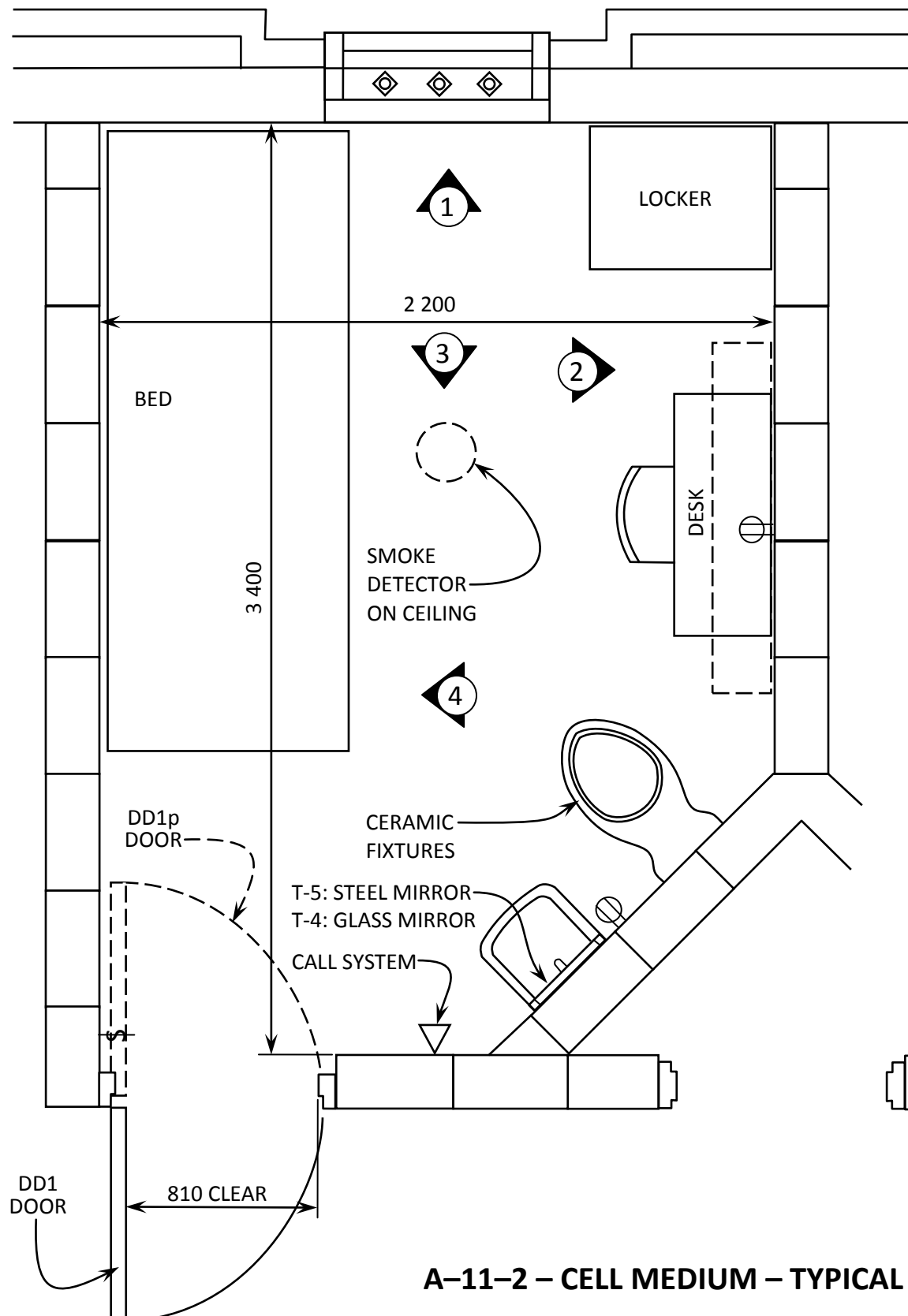
W= Wood

X= Permitted

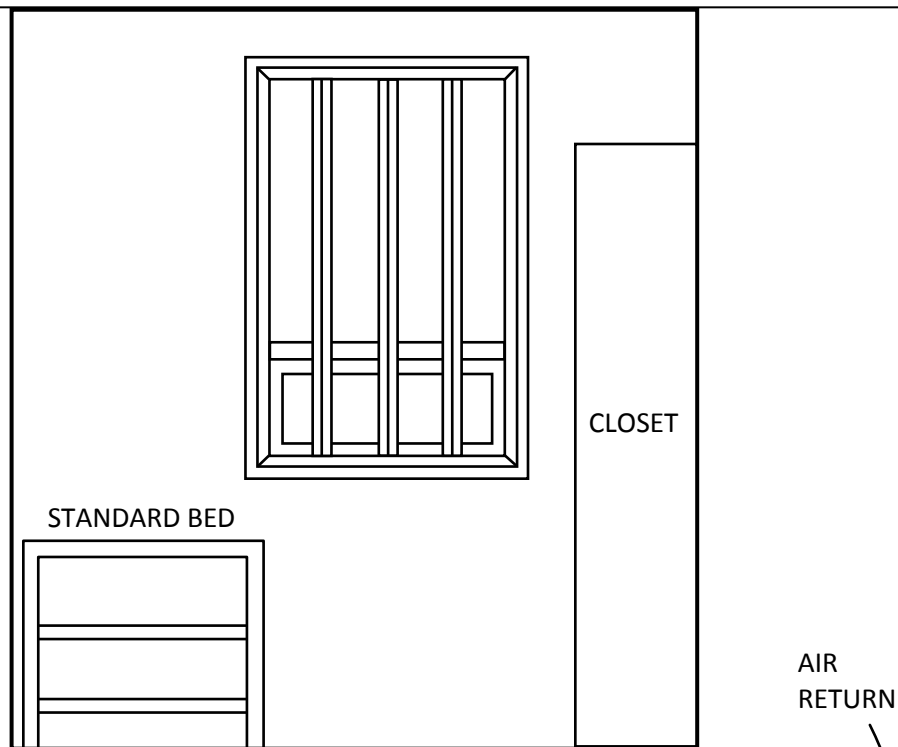
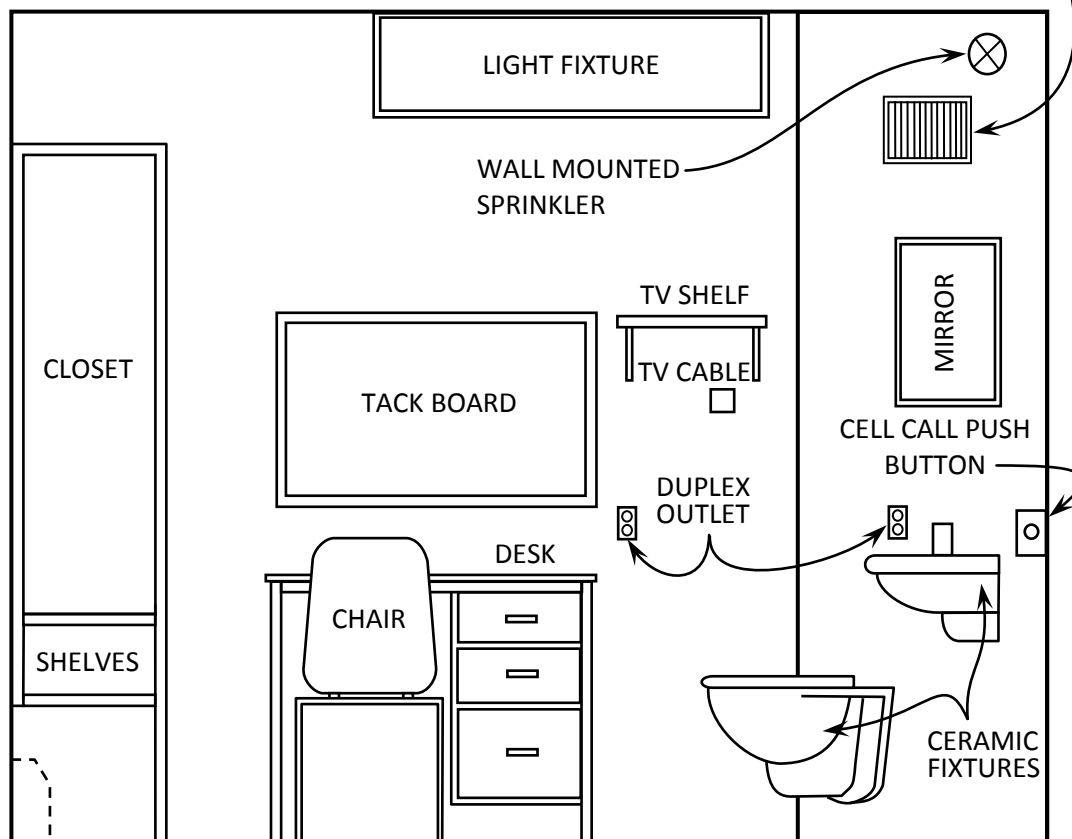


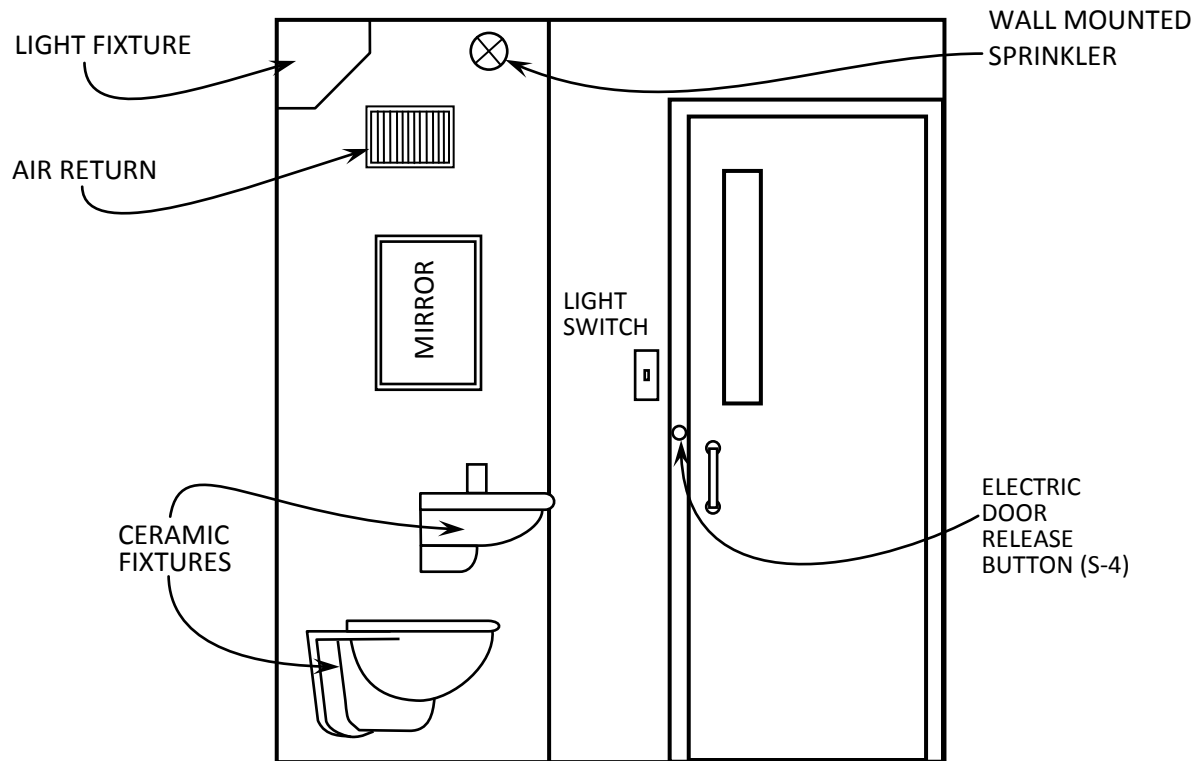
A-11-1 – CELL MAXIMUM – TYPICAL PLAN

- 1– For window details see section A-4 2– Anchor furnishing in place
 3– Weld furnishings. to plate anchors 4– Room dimensions may vary depending on building grid used

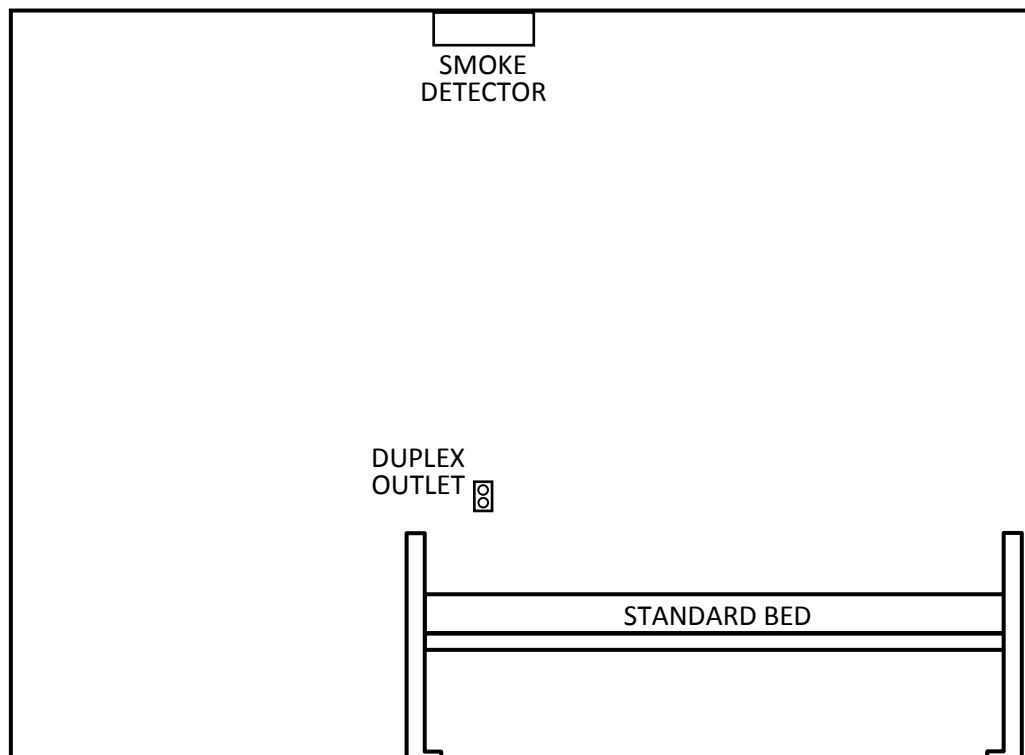


A-11-2 – CELL MEDIUM – TYPICAL PLAN

**A-11-3 – CELL MEDIUM – ELEVATION 1****A-11-4 – CELL MEDIUM – ELEVATION 2**



A-11-5 – CELL MEDIUM – ELEVATION 3



-11-6 – CELL MEDIUM – ELEVATION 4

A-12 ARCHITECTURE – SPECIAL OBSERVATION CELLS

1. SCOPE

This section outlines performance criteria for special observation cells for Medium, Maximum and multi-level Institutions in accordance with CD 843¹.

2. RELATED SECTIONS

2.1 This section should be read in conjunction with the following TCD sections as applicable:

A-5 – Doors and Frames

A-7 – Finishes and Modesty Screens

A-11 – Inmate Cells

M-3 – Fire Protection Requirements

3. PERFORMANCE CRITERIA

The categories for special observation cells and conditions of use are listed in Cases 1 and 2 below. Furniture, fixtures, fittings and finishes shall be based on the needs of each of the cases as follows:

Case 1 – Mental Health Monitoring

This may be met either by the use of a regular cell with standard furniture and fixtures, or, by placing an inmate in the Health Care Unit's inpatient room. In the event that an inmate has been assessed as requiring Pinel restraints, a Health care inpatient room shall be used by converting a hospital bed for this purpose. This is accomplished by anchoring the bed to the floor so that it is immovable. The bed and floor provisions are in place to allow for a rapid conversion. Observation may be carried out by:

- a) Frequent viewing through standard cell door light by an officer, or
- b) Frequent viewing by a nurse in the Health care unit through a half light of a hospital door. This room will also be equipped with a CCTV monitored in the Nursing station.

Case 2 - High Watch

This is a cell equipped to reduce the risk of self-harm and located in the Segregation Unit which is staffed at all times. Observation of the cell occupant is continuous via glazed panels in the cell door. Because this cell may at times be used to house segregated inmates, the glazing must be highly resistant to prevent surreptitious or sustained physical attack. See Chapter A-4 for Bar-less Detention Window and Plate A-12-1. Technical requirements for this cell are as follows:

- Door Glazing shall be laminated polycarbonate 12.7mm thick comprising 3 layers. Conforming product is Lexguard MPC 500 or equivalent. The glazing shall have an engagement of 25mm and be affixed using 9.6mm screws starting 50mm from each corner spaced at 200 mm or less on centre.
- Special observation cells shall conform to the prescriptions stated in section A-11 Inmate Cells and furnished as per a segregation cell.
- Cell shall be capable of being also monitored by CCTV from the Segregation control post.

¹ Commissioner's Directive #843 – Prevention, Management and Response to Suicide and Self-Injuries, 2009-06-03

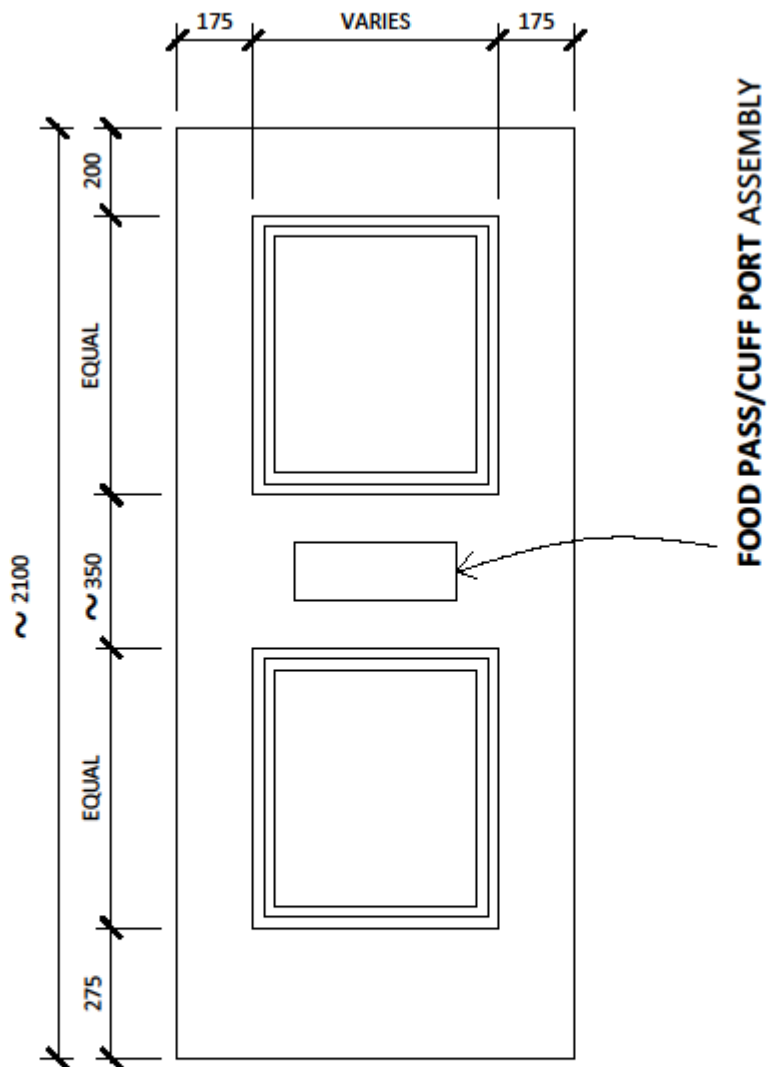


PLATE A-12-1 - OBSERVATION CELL DOOR
EXAMPLE 1 - STYLE A - TWO HALF LIGHTS

**A DETENTION STYLE DOOR WITH
 SPECIAL OBSERVATION WINDOWS**

A-13 ARCHITECTURE – SECURITY CONTROL POSTS, GALLERIES & ROUTES

1. SCOPE

This section outlines design requirements for all security control posts, observation galleries, dedicated security routes and special work stations located within inmate areas.

2. RELATED SECTIONS

2.1 This section should be read in conjunction with the following TCD sections as applicable:

A-2 – Building Construction

A-3 – Grilles, Screens and Mesh

A-4 – Glazing, Windows and Assemblies

A-5 – Doors & Frames

A-6 – Hardware

E-6 – Emergency Electrical

M-3 – Fire Protection Requirements

M-4 – Heating, Ventilating and Air Conditioning Requirements

2.2 Other CSC Documents:

CSC Electronic Security Systems (ESS)

3. DEFINITIONS

3.1 Security Control Post

A security control post is an enclosed or defined space which is staffed by designated personnel and is designed to provide for at least one of the following functions:

3.1.1 Visual surveillance,

3.1.2 Control of movement through specific doors and grilles,

3.1.3 Monitoring of: detection, surveillance, safety and communications equipment,

3.1.4 Intervention when required by means of firearm or gas.

3.2 Observation Gallery

An observation Gallery is an enclosed walkway, separated from inmate areas, where security staff:

3.2.1 Carry out surveillance of adjacent inmate areas, and

3.2.2 Warn or intervene with the use of sirens and weapons during emergency situations.

3.3 Dedicated Security Route

A Dedicated Security Route is an enclosed and secured corridor which links all Armed Security Control Posts and Observation Galleries. Its principal purpose is to provide safe movement of weapons. Observation Galleries may serve as a section of a Dedicated Security Route.

3.4 Special Work Stations

A special Work Station is an enclosed area providing one or more functions of a control post but may be staffed by other than security staff. This includes the Visits and Correspondence Office and Control (V & C office control) and the Nursing Station. Design requirements for special Work Stations follow those for control posts.

4. TYPE & LOCATION OF SECURITY CONTROL POSTS

4.1 *Principal Entrance Control Post*

The Principal Entrance Control Post (PECP) is an armed post serving as a sub-armoury, from where staff monitors arrivals and departures to and from an institution. It is located in the Gatehouse or in the Entrance Building where it forms part of the perimeter of the institution. Where pedestrian and vehicular movement are combined at the Gatehouse, it monitors both movements. Where a separate service entry exists, vehicular movement is monitored from a separate Control Post or Tower. Mobile patrol exchange their weapons at the PECP.

4.2 *Main Communications Control Post*

The Main Communications Control Post (MCCP) monitors the security systems comprising: Personal Portable Alarm, Inmate Cell Call, Perimeter Intrusion Detection, Alarm Response Log, Fire/Smoke Alarm, Fixed Point Security Alarm. This post shall be located in the Gatehouse where feasible and adjacent to/or form part of the Principal Entrance Control Post. The Central Equipment room (CER) is located adjacent to the MCCP and serves as the hub for terminal equipment in support of the MCCP as well as the Uninterrupted Power Supply batteries. Where feasible, the MCCP and the CER shall each be located in a room having a 2-hour fire resistance rating.

4.3 *Main Control Post*

The Main Control Post (MCP), where it exists, monitors all pedestrian movement from the Gatehouse into the body of the institutions. In closed movement institutions, it is located such that it is the last point of control for movement to the Gatehouse.

4.4 *Area Control Post*

The Area Control Post (ACP) monitors movement through gates which separate inmate main activity areas such as a daytime occupational zone. There are generally a limited number of Area Control posts within an institution.

4.5 *Living Unit Control Post*

Living Unit Control Post (UCP) provides surveillance of housing areas and for the control of remote operated doors. These posts are located in inmate housing units and in segregation or other special population units.

4.6 *Observation Control Post*

Observation Control Post (OCP) provides for surveillance and intervention for inmate areas where observation galleries are not present. The requirement for Observation Control Posts shall be determined on a project specific basis.

5. CLASSIFICATION OF PROTECTION LEVELS

The Rooms and Areas covered in this chapter require varying levels of protection from physical attack and/or ballistics. This protection level varies with the security classification of an institution and with the degree of risk associated with the location of the post.

Classification of protection levels and performance requirements established for areas covered in this section are listed below in order of decreasing level of security.

5.1 *Level A*

This level applies to armed control posts which provide for the safekeeping of weapons. The enclosure is constructed to resist ballistics of up to a 44 Magnum hand gun and physical attack with hand tools for 60 minutes. In addition, where two armed posts face

one another being potentially subject to cross fire from the opposing post, each post will have specific glazing panels capable of resisting the ballistics from the approved firing weapon of a control post. All Level A posts are accessed from a network of protected routes to safeguard the movement of weapons and to provide a safe egress for staff. Access to the post from inmate areas is via a secure vestibule.

5.2 **Level B**

This post is not intended for the keeping of firearms. Its enclosure is constructed to resist physical attack with hand tools for 15 minutes. A safe egress route is provided for staff and access to the post from inmate areas is via a single door.

5.3 **Level C**

Enclosed post not intended to resist a physical attack but to provide a degree of privacy and sound control from inmate activity areas.

5.4 **Level D**

Non enclosed area defined by counter intended to allow sound and sight of inmate areas such as housing units. For medium and maximum institutions, a safe egress route is provided for staff and access to the post from inmate areas is via a counter height door.

5.5 **Post Schedule**

The S categories are applicable to the housing type located within each of the institutional classifications: minimum, medium and maximum.

TABLE A-13-1 – POST SCHEDULE

	MIN	MEDIUM			MAXIMUM	
	<u>S-2</u>	<u>S-3</u>	<u>S-4</u>	<u>S-5</u>	<u>S-6</u>	<u>S-7</u>
Principal Entrance	D	A	A	A	A	A
Main Communication Control Post	n/a	A	A	A	A	A
Main Control	n/a	B+B	B+B	B+B	A	A
Area Control	n/a	D	D	D	A	A
Unit Control	n/a	D+B	D+B	B+B	A	A
Segregation	n/a	B+B	B+B	B+B	A	A
Observation Control	n/a	n/a	n/a	n/a	A	A
V & C Office & Control	n/a	C	C	C	B+B	B+B
Nursing Station	n/a	C	C	C	B+B	B+B
Observation Gallery/ Dedicated Security Route	n/a	n/a	n/a	n/a	*	*

n/a - not applicable

D+B – An open post with an adjacent safe egress route leading to the exterior

B+B – Class B Post with an adjacent safe egress route leading to the exterior

* Requirements for these areas are outlined under section 7.1.

6. CONTROL POST DESIGN CRITERIA

6.1 Location and Layout Requirements

- 6.1.1 Control Posts are located along main corridors and entranceways where secondary corridors emanate which give access to various functional departments or program spaces.
- 6.1.2 For maximum security institutions, where a network of control posts exists, each post shall be located at a distance not to exceed 90 m from the next control post or posts and shall have visual contact with these posts.
- 6.1.3 Where control posts are equipped with consoles for control of remote barriers and doors, these barriers and doors and movement through them shall be visible from that post.
- 6.1.4 The control post equipment placement shall be laid out to allow for effective viewing and console control from a sitting or standing position.
- 6.1.5 Level A control post shall be laid out to facilitate effective intervention through gun ports.
- 6.1.6 Level A Control Posts shall have a dedicated toilet or direct access to one.
- 6.1.7 Level A, B, and D (in living units) posts require secondary means of egress to safety.

6.2 Enclosure Requirements

- 6.2.1 The enclosure of the control post shall have sufficient glazing to allow for effective surveillance. Mullion and structural member locations shall be designed in order to minimize obstruction to field of vision.
- 6.2.2 The exterior enclosure of level A & B control posts shall have a consistent level of protection throughout.
- 6.2.3 Glazing used in control posts shall be a type which, if broken, will not form shards or be easily dismantled to become a potential weapon.
- 6.2.4 Glazing which is required to be ballistic resistant shall be no spall type.
- 6.2.5 Where a control post envelope forms an exterior wall, appropriate thermal breaks shall be provided.
- 6.2.6 Glazing panels shall be to a uniform size and to manufacturer standards to the extent possible.

6.3 Glare Reduction

Visibility from within a control post is critical to the operations. Control post conditions both interior and exterior, must ensure that glare is reduced to the minimum.

- 6.3.1 Exterior windows exposed to sun shall have glare reducing glass. Exposure to extended direct sunlight is to be reduced by shading devices (canopies, roof overhang, etc.). Similar shading devices must be used to reduce glare from exterior overhead flood lights. Shading devices should be of dark matte colour.
- 6.3.2 Refer to Section E-5 Interior lighting for details of fixtures, controls and lighting levels.
- 6.3.3 Rooms and corridors under view from the control post should be finished with low reflectance (20% - 40%) colours.
- 6.3.4 Walls opposite post window should be finished one tone darker than other walls.

- 6.3.5 Post interior surfaces, including fixtures should have low reflectance (20% - 40%) colours achieved by use of darker colours and matte surface finish. To the extent possible, slope control panel tops and avoid use of polished metal.

6.4 Building Material Requirements by Level of Post

6.4.1 For Level A Protection:

6.4.1.1 Glazing system:

- a) Level A glazing shall meet the equivalent H.P. WHITE¹ rating of Level C Ballistics and Level III Forced Entry. A glazing meeting Class/Level HG4 Ballistics (Table 1) and Class IV Forced Entry (Table 2, Sequence 31) in ASTM F1233-08² is also acceptable. 32 mm polycarbonate laminated (SP 1250) as tested and approved by HP WHITE meets this requirement.
- b) This material shall be protected by a sacrificial layer of 6 mm tempered glass with an air space between it and the 32 mm laminated polycarbonate. The sacrificial layer shall be set on the attack side. Interior side of the polycarbonate shall be treated to enhance its abrasion resistance;
- c) Glazing in panels which face similar control posts must be capable of withstanding multiple shots from stray bullets. As such, single layer tempered glass cannot be used as this will fracture upon the first shot. Acceptable glass type is safety glass of 2X6mm float glass with a 0.75mm (30mil) PVB interlayer. This glass will remain intact to resist multiple shots and when fractured will not mar vision from the control post;
- d) Glazing assembly shall consist of 3.12 mm (0.123") rolled steel frame where the frame is formed or it shall be of 4.0 mm thick steel flats where a built up assembly is provided;
- e) Glazing stops shall be a minimum of 4.24 mm (0.167") thick angle steel or solid bar with an engagement of 25 mm minimum. Stops shall be removable from the attack side. Removable stops shall be held by minimum 9.6 mm Ø security screws set at 150 mm on centre. End screws shall be 50 mm from each corner.
- f) For exterior windows in level A posts, the thermal break required by item 6.2.5 of this section, shall be provided by a separate weather window applied over the secured frame. This weather window will also serve as the sacrificial layer.

6.4.1.2 Walls:

- a) Reinforced concrete, 150 mm thick, with 15 mm bars at 150 mm on centre two ways; or,
- b) Concrete block solid or core filled 150 mm thick faced with minimum 4.67 mm (0.184") steel plate anchored to the structure; or,

¹ H.P. White Laboratory, Inc., TEST PROCEDURE, Transparent Materials for Use in Forced Entry or Containment Barriers, HPW-TP-0500.03 (March 2003): <http://www.hpwhite.com/uploads/file/500-03.pdf>

² ASTM F 1233-08, Standard Test Method for Security Glazing Materials and Systems

- c) Steel structure faced with minimum 3.12 mm steel on each side, spaced a minimum of 50 mm and filled with insulation for sound deadening; or
- d) Single steel sheet minimum 9.52 mm (3/8" or 0.375") thick with an interior wall board facing.
- e) Welded construction is preferred. If bolts are used they shall be a minimum of 9.6 mm diameter. Any bolt work exposed to the inmate side shall be security type or welded when bolted.
- f) Other configurations will be accepted provided equal performance and economies can be demonstrated.

6.4.1.3 Doors, Frames and Hardware:

- a) Entry into the control post from a public or inmate areas shall be through a vestibule constructed to level A protection. Locks for doors in vestibule shall be DH2: jamb mounted maximum security electromechanical locks interlocked.
- b) Entry into a dedicated security route shall be from level A protection area, excluding the vestibule referred to in a) above, and through a detention door with a mechanical lock keyed from two sides.
- c) The doors are DD2 Swing type with the two doors or in combination of a wall of the vestibule providing ballistic resistance. Glazing is as per section 6.4.1.1. Doors shall swing out into the corridor for maximum resistance against ramming.
- d) Door frames shall be of 2.8 mm rolled steel.

6.4.2 For Level B Protection

6.4.2.1 Glazing System:

- a) Level B glazing shall meet the equivalent H.P. WHITE rating of Level I Forced Entry (see footnote 1) and need not meet any ballistic rating. A glazing meeting Class II Forced Entry (Table 2, Sequence 6) in *ASTM F1233-98 (2004)* (see footnote 2) is also acceptable. 12.7 mm monolithic polycarbonate as tested and approved by H.P. White meets this requirement.
- b) This material shall be protected by a sacrificial layer of 6 mm tempered glass or polycarbonate with an air space between it and the 12.7 mm polycarbonate. The sacrificial layer shall be set on the attack side;
- c) Glazing assembly shall consist of 2.36 mm (0.093") rolled steel frame;
- d) Glazing stops shall be of 4.0 mm thick angle or channel steel or solid bar with an engagement of 25 mm minimum. Stops shall be removable from the attack side. Removable stops shall be held by 9.6 mm security screws set at 200 mm on centre;
- e) For exterior windows follow criteria specified for level A glazing.

6.4.2.2 Walls:

- a) Core filled concrete block, 150 mm thick minimum and reinforced. Horizontal reinforcing to be provided at every course. Vertical reinforcing to be 15 mm steel rods 400 mm o/c; or

- b) Steel structure faced with minimum 2.36 mm (0.093”) steel on each side, spaced a minimum of 50 mm and filled with insulation for sound deadening; or
- c) Single steel sheet minimum 4.24 mm (0.167”) thick with an interior wall board facing.
- d) As for level A, welded construction is preferred. If bolts are used they shall be a minimum of 9.6 mm diameter;

6.4.2.3 Doors, Frames & Hardware

- a) Access into a post is through a Detention Door Swing type (DD1).
- b) A secondary egress into an inmate restricted area shall be provided. All doors, including hatch, if provided, are Detention Door Swing type (DD1). Minimum Hatch dimension is 914 X 914 (36” X 36”).
- c) Frame for Detention Door (DD1) is made with rolled steel having the same thickness as the door panels (2.36 mm [0.093”]);
- d) Lock for door into control post shall be DH2: jamb mounted maximum security electromechanical lock, keyed both ways;
- e) Locks for secondary exit doors or hatch shall be detention mechanical type.

6.4.2.4 Class B refuge may incorporate:

- a) 1 or 2 workstation(s) for correctional officers
- b) Lockers for correctional officers
- c) Radios, emergency equipment for correctional officers
- d) Electrical panels/breakers for the living unit
- e) “Kill switch” for the control panel / computer in the D or B post
- f) Door controls computer with its printer
- g) Secondary means of safe egress
- h) Monitors for evidentiary cameras if provided

6.4.3 For Level C and D Protection

6.4.3.1 Glazing shall not form shards when broken.

6.4.3.2 No other special envelope features are required for Level C and D Protection posts.

6.5 Control Post Equipment and fitting

- 6.5.1 Some or all of the equipment and fittings below are required in a control post in the performance of duties. Preliminary design layouts of control posts shall show all equipment and fittings for design approval by C.S.C.
- 6.5.2 Post Equipment Schedule

TABLE A-13-2 – POST EQUIPMENT SCHEDULE

ITEM	PROTECTION LEVEL			
	A	B	C	D
Console / Computer	R	R	R	N
Key Pass	R	R	N	N
Speak Ports	R	R	N	N
Weapons Vault	R	N	N	N
Fire Extinguishers	R	R	R	R

Key Cabinets	R	R	P	P
Water Supply Valves	P	P	N	N
Gun Ports	R	N	N	N
Breathing Apparatus	R	R	P	P

R= Required

N= Not Required

P= Project specific basis only

- 6.5.3 Pertinent information with respect to each of the above items (1) through (9) follows:

6.5.3.1 Console / Computer

Console houses communication and alarm systems, door control and power switches. The design of the console and its controls shall be executed in close collaboration with CSC Electronic Security Systems (ESS) Key Pass

Key/Parcel construction shall be equal to that of the envelope performance for that post. See plate A-13-3 for acceptable design solutions.

6.5.3.2 Speak Ports

See plate A-13-4 for acceptable design solutions for speak ports and intercoms.

- 6.5.3.3 Weapons Vault (cabinet type) is required as the post may be used as sub-armoury. Vault shall meet detention equipment standards and be sized to meet the CSC approved arsenal for a particular post.

6.5.3.4 Fire Extinguishers

Fire extinguishers shall be provided as detailed in section M-3 Fire Protection Requirements.

6.5.3.5 Key Cabinets

Key cabinets will be sized for the keys under the control of that control post. The cabinet for the Main Control Post will be sized to hold one set of security lock keys required for the institution.

6.5.3.6 Water Supply Valves

Water supply valves for hose cabinets will control the flow to cabinets which are in sight of the respective control post.

6.5.3.7 Gun ports

- Gun ports shall be sized to accommodate a Colt C8 and a 40 mm multi launcher and shall permit a 90 ° arc of fire. Gun port design shall not permit a weapon to be pulled through.
- Gun ports shall be strategically placed around the Control Post enclosure to allow coverage of critical areas. Blind spots around the immediate location of the Control Post shall be tolerated.
- Gun ports shall be located at a height suited for rifle firing while standing and shall accommodate varying officer heights. Where control posts cover two tiers of cells, gun ports shall be located to suit the site specific conditions. A compromise to the shooting position shall be tolerated.
- Gun ports shall remain closed at all times to prevent objects from being injected except when required to intervene. Covers shall be

hinged to swing in rather than slide so that they cannot be wedged shut.

- e) An acceptable solution for new or retrofit gun ports consists of a vertical slot sized 75 mm by 150 mm cut out from a 32 mm polycarbonate glazing panel sized as per a typical window light. The slot shall have bevelled vertical sides from a 6 mm perpendicular distance from the inner face of the glazing at 45° to the outer face. Protective glazing on the threat side shall be cut at the edge of the gun port frame. It should be noted that the bevelled edge of the polycarbonate has an opaque surface, therefore, impeding visibility. A hinged door of 6 mm steel shall be framed and bolted through the glazing using through bolts. Existing gun ports needing to accommodate new firearms shall be examined for acceptable retrofit in order to avoid costly replacement. Plate A-13-6 illustrates a suggested retrofit of an existing gun port.

6.5.3.8 Breathing Apparatus

Breathing apparatus and rescue equipment shall be determined on a project specific basis for each control post.

7. DESIGN CRITERIA FOR OTHER SECURITY AREAS

7.1 *Observation Gallery/Dedicated Security Route*

7.1.1 Location, Layout and Equipment Requirements

- 7.1.1.1 Location shall be efficiently planned to minimize excessive runs. Follow Accommodation Guidelines for areas where supervision is required.
- 7.1.1.2 Minimum unobstructed width shall be 1.5 m and unobstructed height 2.1 m.
- 7.1.1.3 Observation Galleries shall be combined with dedicated security routes where possible.
- 7.1.1.4 Entrances shall be from Level A posts and from inmate restricted areas.
- 7.1.1.5 Galleries are to be laid out to reduce the number of required exists.
- 7.1.1.6 Access to water closets shall be provided from Observation Gallery. Use of control post water closets will meet this requirement.
- 7.1.1.7 The design of observation openings shall use grilles to resist forced entry by inmates.
- 7.1.1.8 Window locations overlooking large activity areas or long corridors may be equipped with a buzzer or horn to give first warning to inmates involved in violent incidents.

7.1.2 Enclosure Requirements

- 7.1.2.1 Construction shall be of fire resistant materials. Polycarbonate glazing is permitted as it does not support combustion.
- 7.1.2.2 Walls and glazing shall be to Level B Protection.
- 7.1.2.3 Glazing shall permit 1 way viewing to allow security officers to observe areas without being observed themselves. Gallery lighting shall conform to 1 way glazing requirements.

7.1.3 Observation/Intervention Gallery Windows

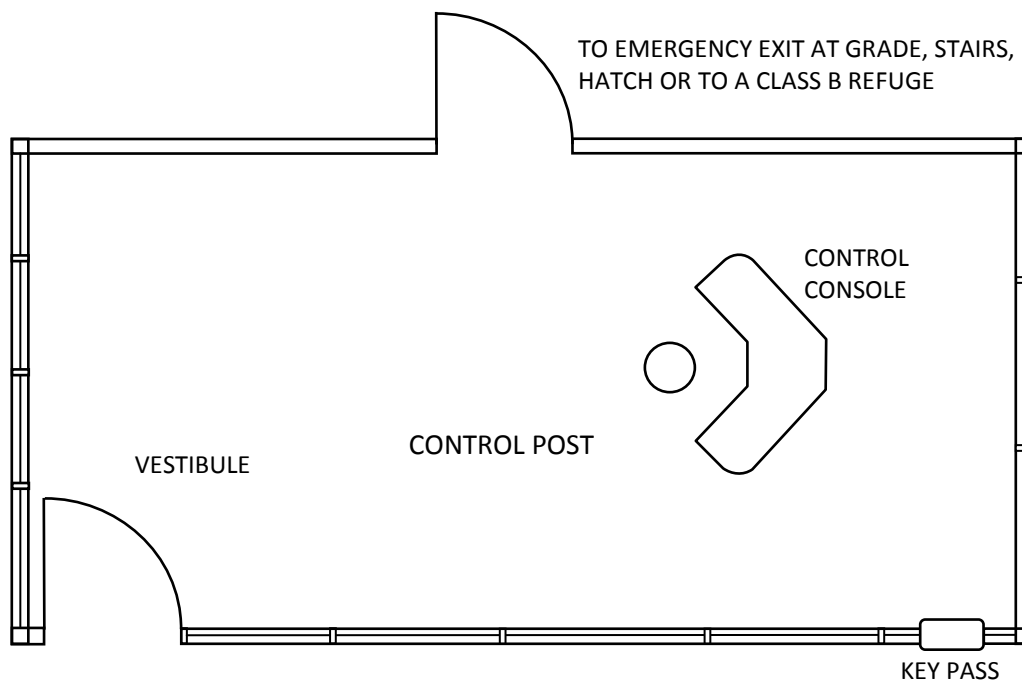
- 7.1.3.1 Observation/Intervention gallery windows shall allow for unobstructed field of fire. To minimize the number of windows yet provide maximum

firearm coverage, openings shall be formed by a framed operable window supplemented by a grille on the threat side. Given that the use of a weapon requires it to be attached to a body security harness, the risk of its removal or it being dropped is mitigated.

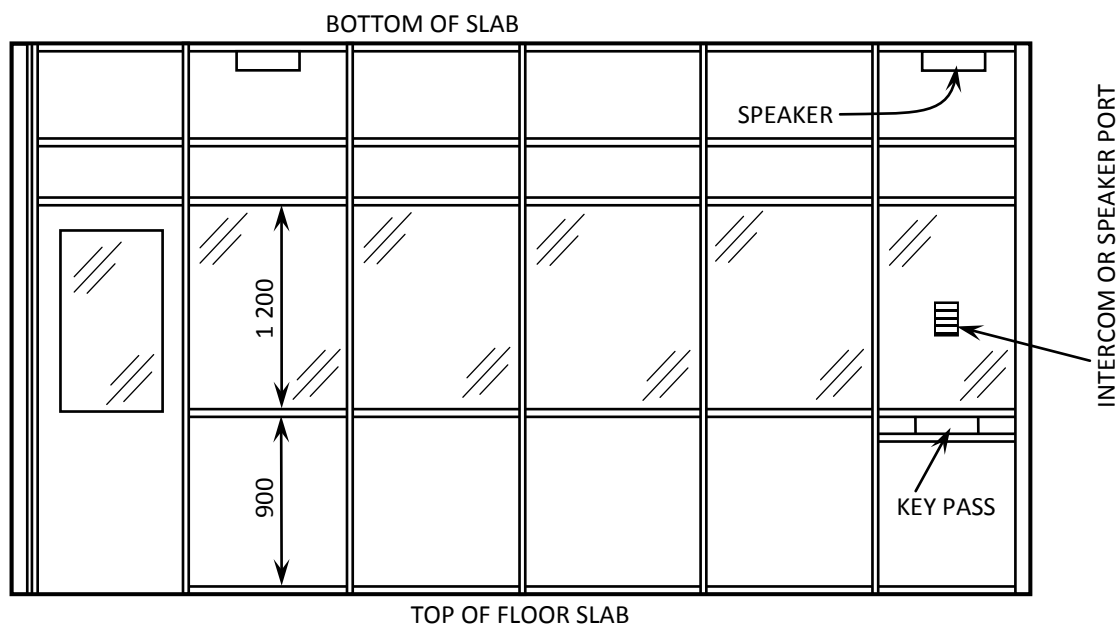
- 7.1.3.2 To permit optimal observation and provide protection from thrown objects, the gallery window should be a horizontal slider to allow the officer to stand out of the way if required. The exterior grille should be set away from the face of the window to permit downward observation/intervention. The window glazing shall be of 12.7 mm monolithic polycarbonate set in a steel frame. Commercially applied glazing film is used to enable one-way viewing of the inmate activity area.

7.2 V & C Office and Control and Nursing Station

- 7.2.1 Follow layout and location requirements shown in the Accommodation Guidelines.
- 7.2.2 Follow Post Schedule 5.5 for level of Enclosure for varying classification of Institutions.



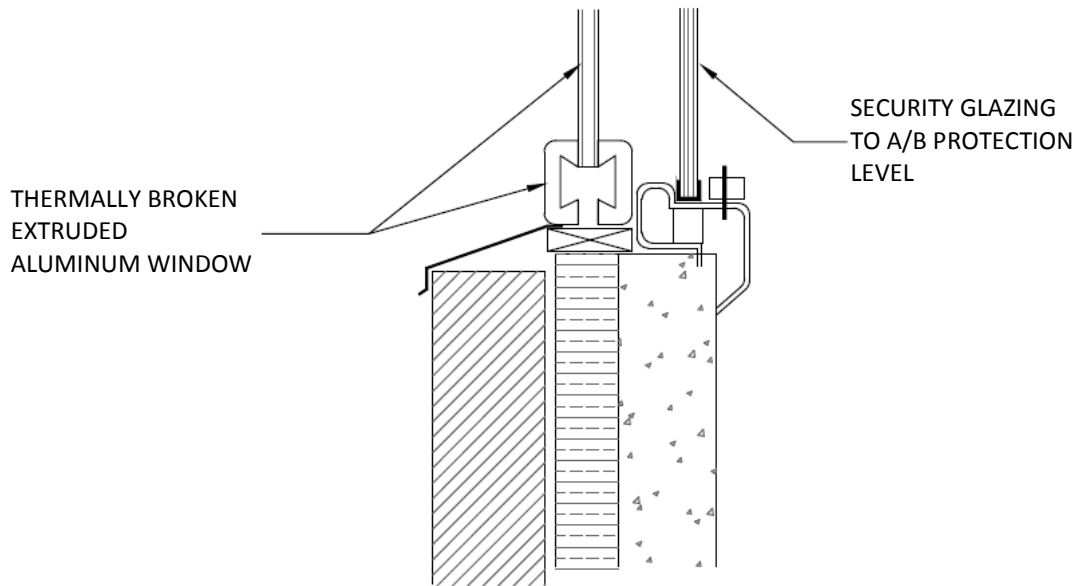
PLAN LAYOUT



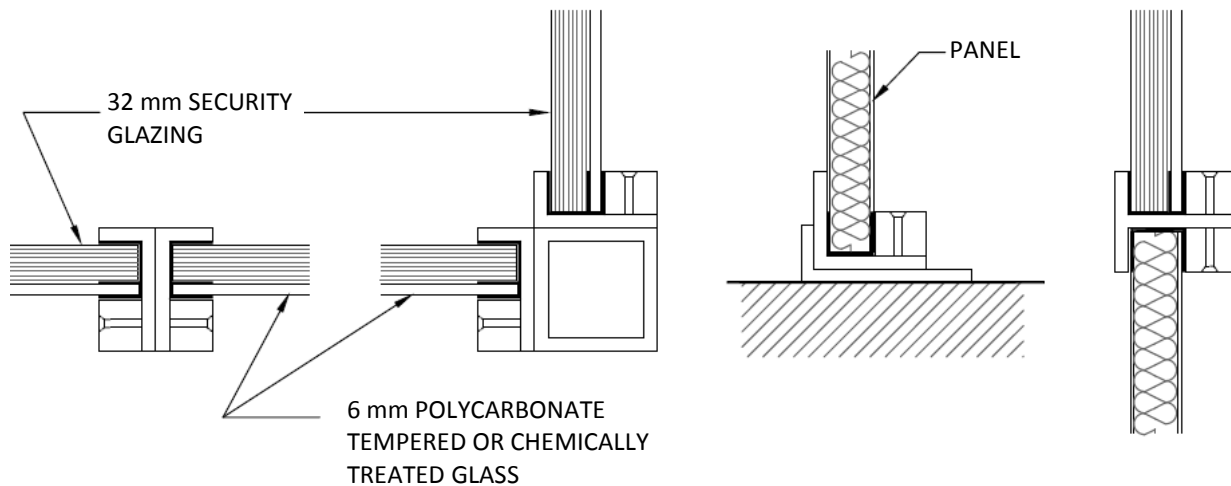
ELEVATION

PLATE A-13-2 – DIAGRAMATIC LEVEL B POST ILLUSTRATION

- 1- Post size and shape as required by location
- 2- Door control console(s) located to suit traffic viewing
- 3- Ports to suit location
- 4- Other consoles located to suit operational needs
- 5- Framing and panel system of strength to meet specified resistance to attack and building conditions



EXTERIOR LEVEL A/B CONSTRUCTION DETAILS



- FRAMING – 10 mm STRUCTURAL SHAPES
- STOPS – 25 mm SOLID BARS FIXED BY 96 mm
SCREWS @ 150 mm O.C.
- PANELS – 3.2 mm STEEL PANELS

INTERIOR LEVEL 'A' CONSTRUCTION DETAILS (STEEL PARTITION)

PLATE A-13-3 – CONTROL POST – DETAILS

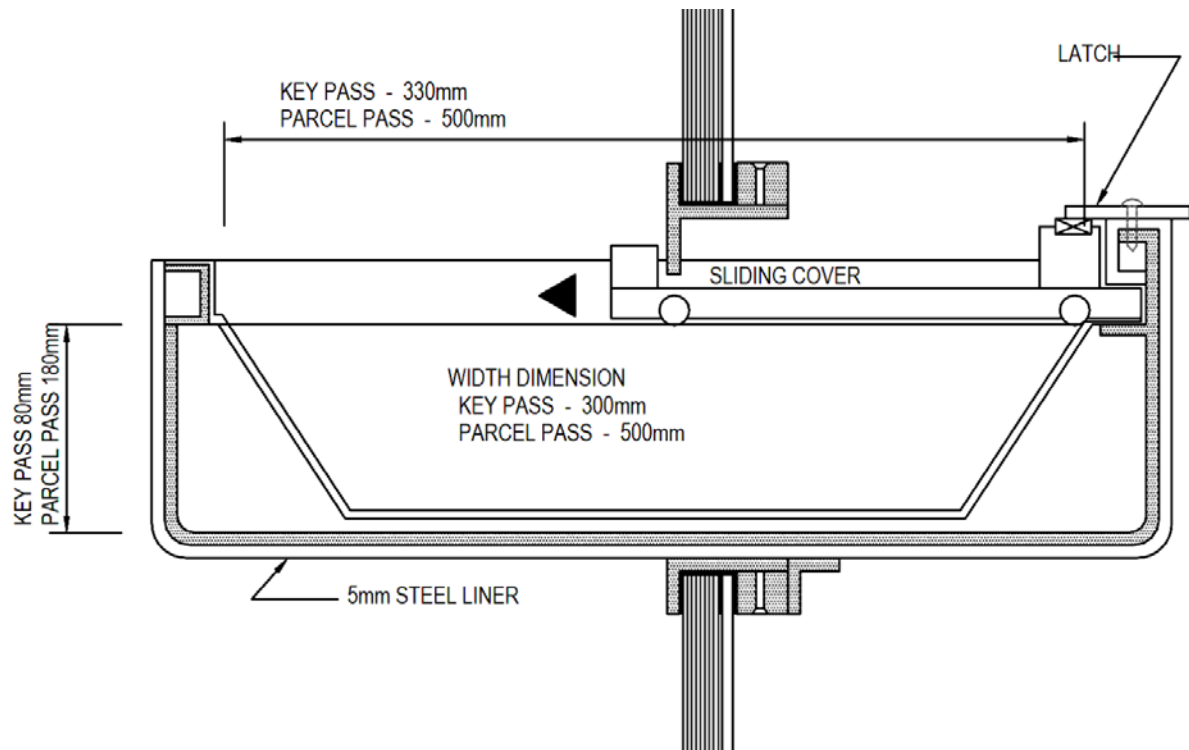


PLATE A-13-4 – KEY PASS THROUGH/PARCEL PASS

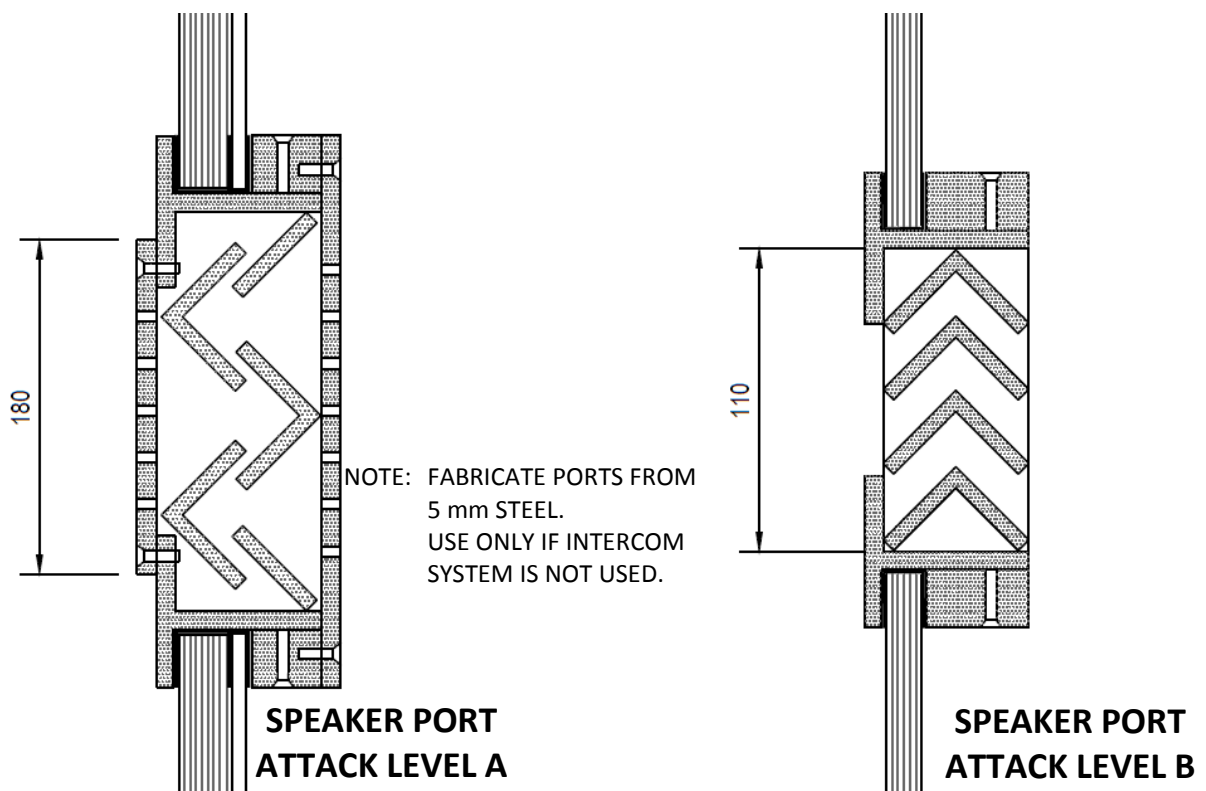


PLATE A-13-5 – SPEAKING PORT

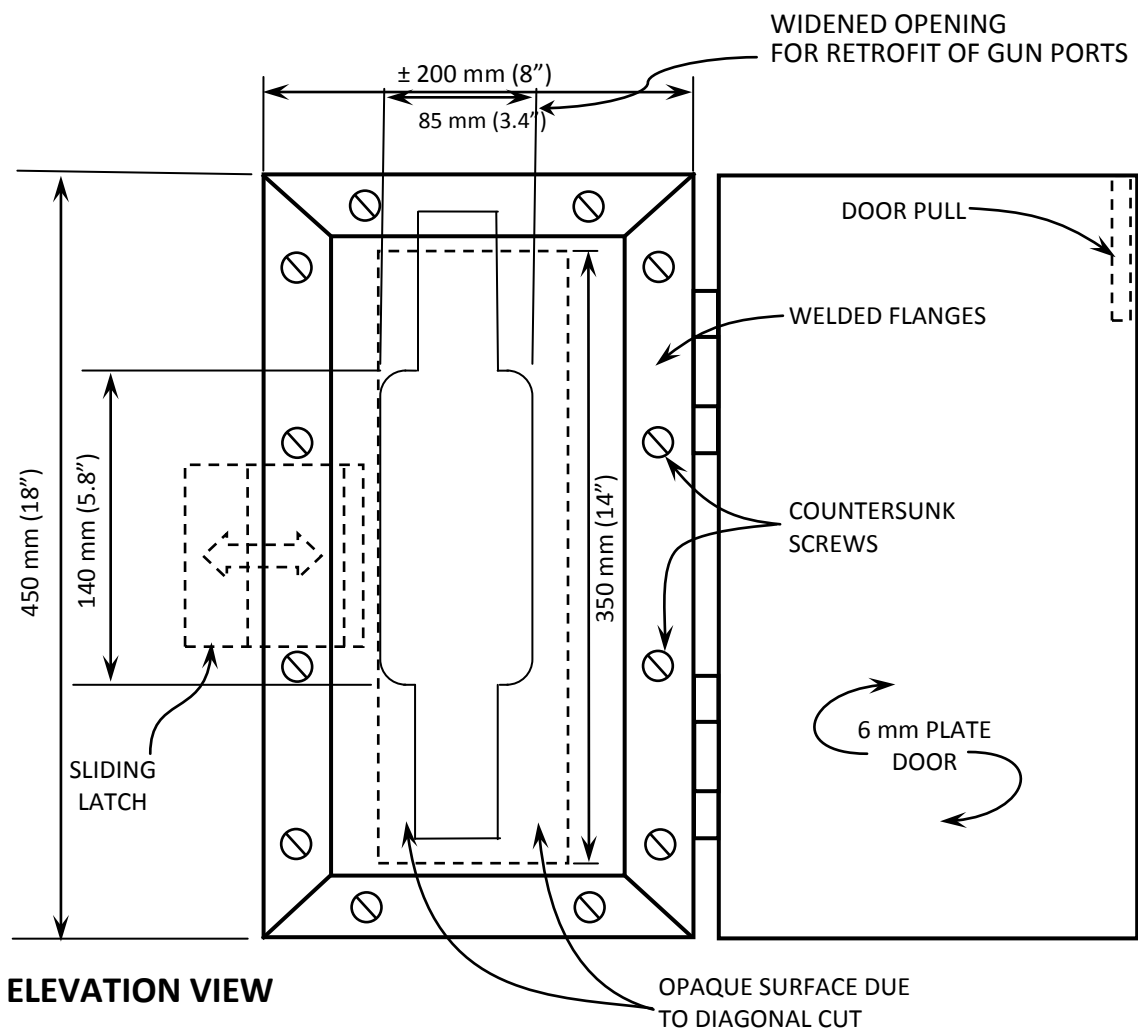
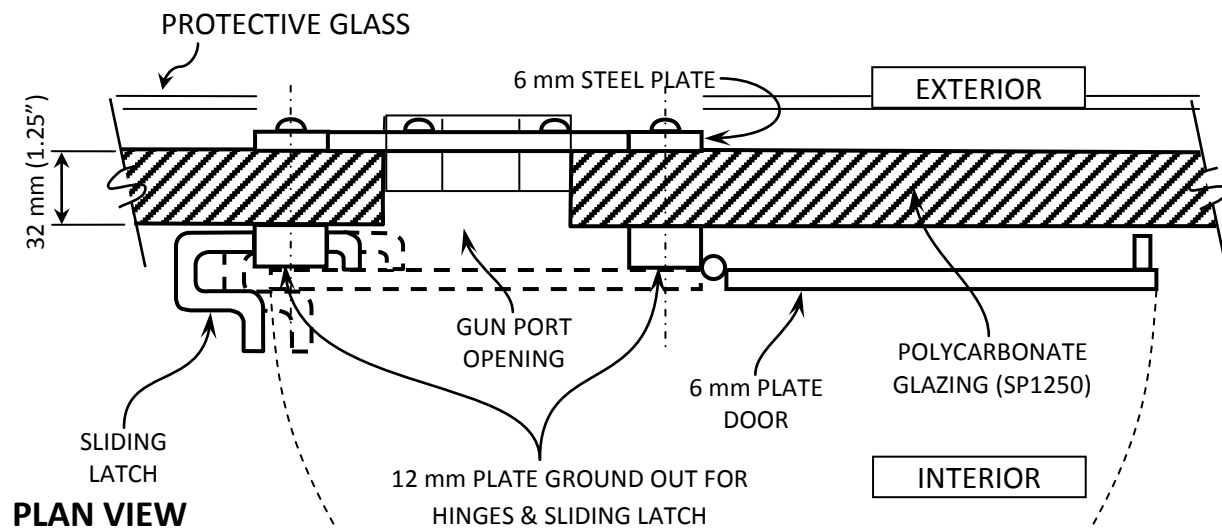


PLATE A-13-6 – GUN PORT – VERTICAL OPENING

A-14 ARCHITECTURE – ARMOURY

1. SCOPE

This section outlines the construction and location requirements for an Armoury used in Medium and Maximum Institutions.

2. RELATED SECTIONS

2.1 This section should be read in conjunction with the following TCD sections as applicable:

A-3 – Grilles, Screens & Modesty Barriers

A-5 – Doors & Frames

A-6 – Hardware

M-3 – Fire Protection Requirements

M-4 – Heating, Ventilating, and Air Conditioning Requirements

2.2 Other CSC Documents:

Scale of Issue for Firearms and Security Equipment (CSC)

3. DEFINITIONS

3.1 Armouries are CSC institutional arsenals required to store weapons, ammunition, riot control agents and emergency and rescue equipment of an explosive or toxic nature that are on inventory as specified in the Security Equipment Manual, issued by NHQ Operations. The armoury is used for the maintenance of weapons as required. Key storage and key cutting may be combined with the Armoury.

3.2 Normal security equipment, not of an explosive or toxic nature, including riot control equipment of the Emergency Response Team does not require Armoury Storage space.

4. ARMOURY SECURITY AND DESIGN REQUIREMENTS

4.1 *Location and Size*

4.1.1 The Armoury shall be located in the Gatehouse since the Gatehouse is supervised 24 hours a day and is the most secure location in the institution being remote from inmate areas. The Gatehouse also provides ready access to staff reporting for duty in the event of an emergency.

4.1.2 Level 'A' control posts may be used as sub-armouries. In this case they will be equipped with an approved weapons vault cabinet. This requirement will be identified on a project specific basis.

4.1.3 An area of 15m² will suffice for the needs of an armoury.

4.2 *Design and Fit up Requirements*

4.2.1 The armoury shall be designed to provide for the following:

- a) Weapons racks with a pull through steel cable, chain or locking bar and a lock to prevent unauthorized removal of rifles or other weapons.
- b) Lockers for hand weapons, tools and spare parts.
- c) Counter with solvent fume hood above for weapon cleaning.
- d) Sink for hand washing.
- e) A metal munitions and gas cabinet sized to meet specific needs approved by NHQ Operations. Direct exhaust shall be provided from this cabinet to prevent gas leakage into the armoury.

4.2.2 Material and Construction

- 4.2.2.1 The Armoury shall be designed to be secure against forced entry and shall have a Fire Separation with a Fire Resistance Rating of two hours.
- 4.2.2.2 The Armoury shall be constructed of cast in place reinforced concrete or precast concrete. Walls and ceilings shall have a minimum thickness of 200 mm.
- 4.2.2.3 There shall be no windows. Ventilation openings where required will have tool resistant steel bars spaced to limit one dimension of the opening to a maximum of 125 mm (5").
- 4.2.3 Doors
 - 4.2.3.1 Door to armoury shall be style E, Detention Door Maximum Swing classification (DD2s) as detailed in Section A-5 – Doors and Frames.
- 4.2.4 Hardware
 - Hardware will be maximum security type with a mechanical deadbolt lock keyed both sides.
- 4.2.5 Security and Communications
 - 4.2.5.1 During use of armoury, a corridor light will illuminate activated by switching on lights of the armoury.
 - 4.2.5.2 An intercom phone will be provided connected to the Principle entrance controls post.
 - 4.2.5.3 A door position switch shall be provided to indicate status of door at the Principle entrance control post.
- 4.2.6 Environmental Requirements
 - See section M-4:11 Armoury.