AIRPORT CIVIL ENGINEERING
STANDARD DRAWINGS

ASG-23

Public Works Canada
Architectural and Engineering Services
Air Transportation

Travaux Publics Canada
Services d'architecture et de génie
Transports aériens

JULY/JUILLET 1993

1.0 INTRODUCTION

This manual presents Public Works Canada's airport civil engineering standard drawings and supersedes part of subsection 401 "Standard Drawing - Civil" in AK-70-06-400. These Standard Drawings are prepared and distributed by the Architectural and Engineering Services - Air Transportation. A complete list of drawings included in this manual is shown in Table 1.

~~The CAD files for these drawings are available in Microstation format and can be downloaded using a modem from the A&ES-Air Transportation Electronic Bulletin Board by calling (613) 990-3776.~~

A print of each drawing is included for reference purposes.

2.0 APPLICATION

The Airport Civil Engineering Standard Drawings are used as guidance material for the designer. They should be used on Transport Canada airport projects in order to maintain national standards.

These Standard Drawings are mainly used for insertion in construction contract documents.

3.0 MODIFICATIONS

Modifications to these standard drawings shall only be made upon review and approval by Architectural and Engineering Services Headquarters. Modified drawings shall bear its own regional number and not the officially published Standard Drawing number.

Should necessary modifications be made to these drawings to better suit local needs advise A&ES-Air Transportation of those modifications.

~~The Standard Drawings will be reviewed and updated annually by A&ES-Air Transportation every month of July. A listing of approved drawings will be compiled, updated and distributed at the same time. Amended listings will include only prints of those drawings prepared or amended since the previous issue.~~

Forward any questions or comments regarding this document to:

~~Public Works Canada~~
~~Architectural and Engineering Services~~
~~Air Transportation HQ~~
~~Place de Ville, Tower A~~
~~320 Queen Street~~
~~8th Floor, Area A~~
~~Ottawa, Ont.~~
~~K1A 0N8~~

Public Works and Government Services Canada
Airport Engineering Division
Place du Portage, Phase III, 8B3-1
11 Laurier St.
Hull, Quebec
K1A 0S5
CANADA

TABLE 1: LIST OF CIVIL STANDARD DRAWINGS

DRAWING NUMBER	DRAWING DESCRIPTION	LATEST ISSUE
0000H208C001	CONCRETE JOINTS CONSTRUCTION DETAILS	93/07/07
0000H208C002	CONCRETE JOINTS CONSTRUCTION DETAILS	93/07/07
0000H208C003	CONCRETE JOINTS CONSTRUCTION DETAILS	93/07/07
0000H208C004	THEODOLITE ANCHOR BASE	93/07/07
0000H208C005	GLIDE PATH ANTENNA BASE	93/07/07
0000H208C006	CONCRETE SLAB REINFORCEMENT AROUND INTERIOR MANHOLES AND CATCH BASINS	93/07/07
0000H210C003	CHAIN LINK FENCE	93/07/07
0000H210C004	WOODEN SECURITY FENCE	93/07/07
0000H210C005	FENCING DETAILS - WOOD POST	93/07/07
0000H210C006	FENCING DETAILS - STEEL POST	93/07/07
0000H210C010	STANDARD FENCING LAYOUT FOR POWER STRUCTURES	93/07/07
0000H212C001	RUNWAY IDENTIFICATION - NUMBERS AND LETTERS	93/07/07
0000H212C002	RUNWAY THRESHOLD MARKINGS	93/07/07
0000H212C003	RUNWAY EXIT, HOLDING AND TAXIWAY MARKINGS	93/07/07
0000H212C004	RUNWAY MARKINGS	93/07/07
0000H212C006	DISPLACED RUNWAY THRESHOLD MARKINGS	93/07/07
0000H212C012	STOLPORT PAVEMENT MARKINGS	93/07/07
0000H212C013	TYPICAL TAKE-OFF/LANDING AREA MARKINGS (HELIPORT)	93/07/07
0000H212C014	TYPE 2,3,4 AIRCRAFT TIE-DOWN ANCHORS - UNPAVED AREAS	93/07/07
0000H212C018	TYPICAL STOP BAR	93/07/07

DRAWING NUMBER	DRAWING DESCRIPTION	LATEST ISSUE
0000H223C002	STORM SEWER MANHOLE TYPE D (900mm X 1800mm)	93/07/07
0000H223C003	STORM SEWER MANHOLE TYPE F (900mm X 900mm)	93/07/07
0000H223C004	STORM SEWER MANHOLE TYPE L (900mm X 900mm)	93/07/07
0000H223C005	STORM SEWER MANHOLE TYPE P (900mm X 1800mm)	93/07/07
0000H223C006	STORM SEWER MANHOLE TYPE R (900mm X 1800mm)	93/07/07
0000H223C007	STANDARD GRATING AND FASTENING DEVICE DETAILS	93/07/07
0000H223C008	STORM SEWER CATCH BASIN TYPE A	93/07/07
0000H223C009	STORM SEWER CATCH BASIN TYPE B	93/07/07
0000H223C010	DETAILS OF COMBINED CURB & GUTTER AT MANHOLE OR CATCHBASIN	93/07/07
0000H223C011	GRATING AND FASTENING DEVICES FOR TYPE L AND TYPE P MANHOLES	93/07/07
0000H223C012	STORM SEWER MANHOLE TYPE E (1500mm X 1800mm)	93/07/07
0000H223C016	HAND PLACED RIP-RAP FOR DRAINAGE INLET/OUTLET	93/07/07
0000H223C017	CONCRETE HEADWALL DETAILS	93/07/07
0000H223C018	STORM SEWER CONNECTION CONCRETE BEDDING & RUNG DETAILS	93/07/07
0000H223C019	TYPICAL SUBGRADE DRAINAGE	93/07/07
0000H231C001	DETAILS OF STANDARD AND DROP MANHOLES	93/07/07
0000H231C002	HYDRANT INSTALLATION	93/07/07
0000H261C001	BASIC TEST HOLE SYMBOLS	93/07/07
0000H264C001	SURVEY MARKERS	93/07/07
0000H264C002	NRC TYPE DEEP BENCH MARK	93/07/07
0000H264C003	SURVEY MARKERS	93/07/07

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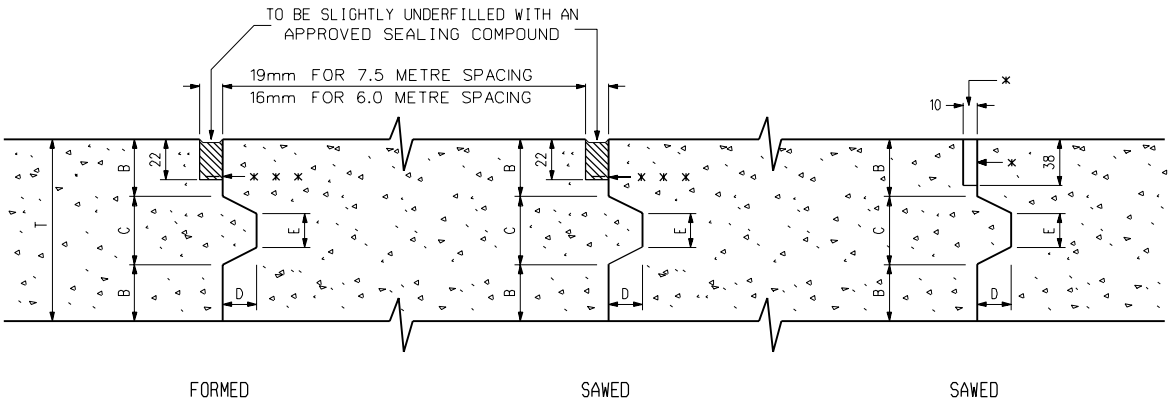
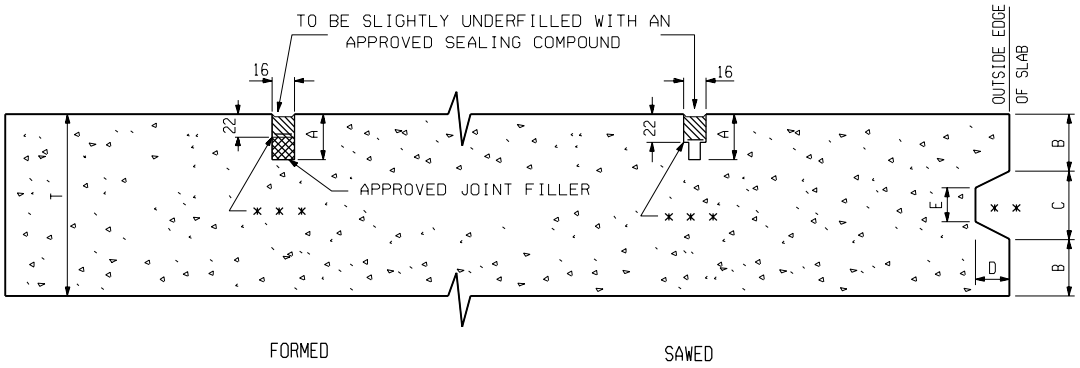


CONSTRUCTION JOINTS



CONTRACTION JOINTS

* PREFORMED NEOPRENE SEAL, LUBRICANT ADHESIVE AND METHOD OF INSTALLATION SUBJECT TO PRIOR APPROVAL OF THE ENGINEER.

* * A MALE OR FEMALE KEYWAY SHALL BE FORMED ALONG THE OUTSIDE OF ALL EXTERIOR SLABS.

* * * SUITABLE BACK-UP TAPE TO BE APPROVED BY ENGINEER PRIOR TO USE

NOTE: ALL DIMENSIONS IN MILLIMETRES

JOINT DIMENSIONS					
T	A	B	C	D	E
150	44	B=0.40 T	C=0.20 T	D=0.10 T	E=0.15 T
175	50				
200	57				
225	64				
250	70				
275	75				
300	82				
325	89				
350	95				
375	100				
400	108				
425	115				

NO.	INIT.	DATE:	REVISIONS
DRAWN:		DESIGNED:	APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

CONCRETE DETAILS
CONSTRUCTION DETAILS

SHEET 1 OF 1 | FILE: 208C001.DGN

0000H208C001

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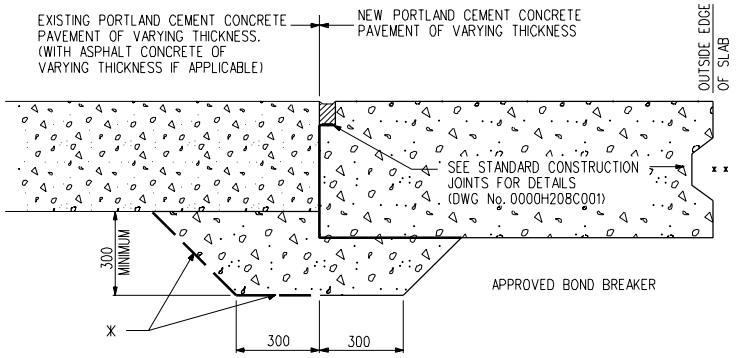
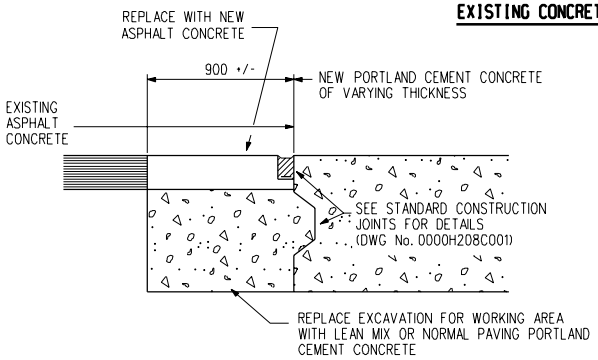
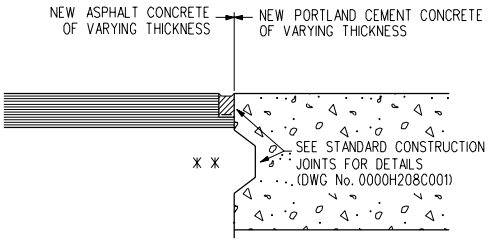


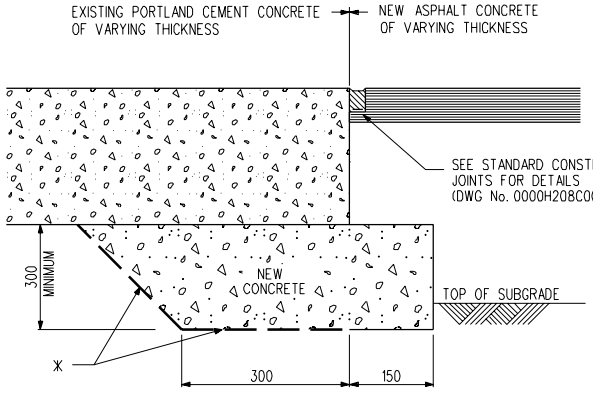
EXISTING CONCRETE/NEW CONCRETE



EXISTING ASPHALT/NEW CONCRETE



NEW ASPHALT/NEW CONCRETE

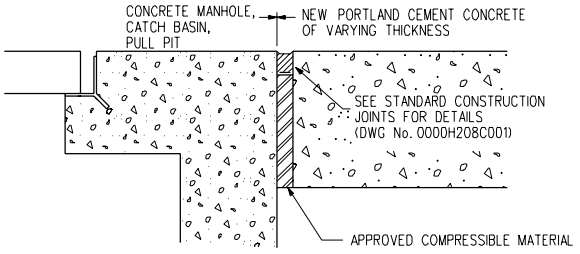


EXISTING CONCRETE/NEW ASPHALT

* EXACT GEOMETRY TO BE DETERMINED BASED ON EXTENT OF UNDERMINING DURING EXCAVATION.

* * A MALE OR FEMALE KEYWAY SHALL BE FORMED ALONG THE OUTSIDE EDGE OF ALL EXTERIOR SLABS

NOTE: ALL DIMENSIONS IN MILLIMETRES



MANHOLE / CATCH BASIN / PULL PIT — NEW CONCRETE

NO.	INIT.	DATE:	REVISIONS
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CONCRETE JOINTS CONSTRUCTION DETAILS

SHEET 1 OF 1 | FILE: 208C002.DGN

0000H208C002

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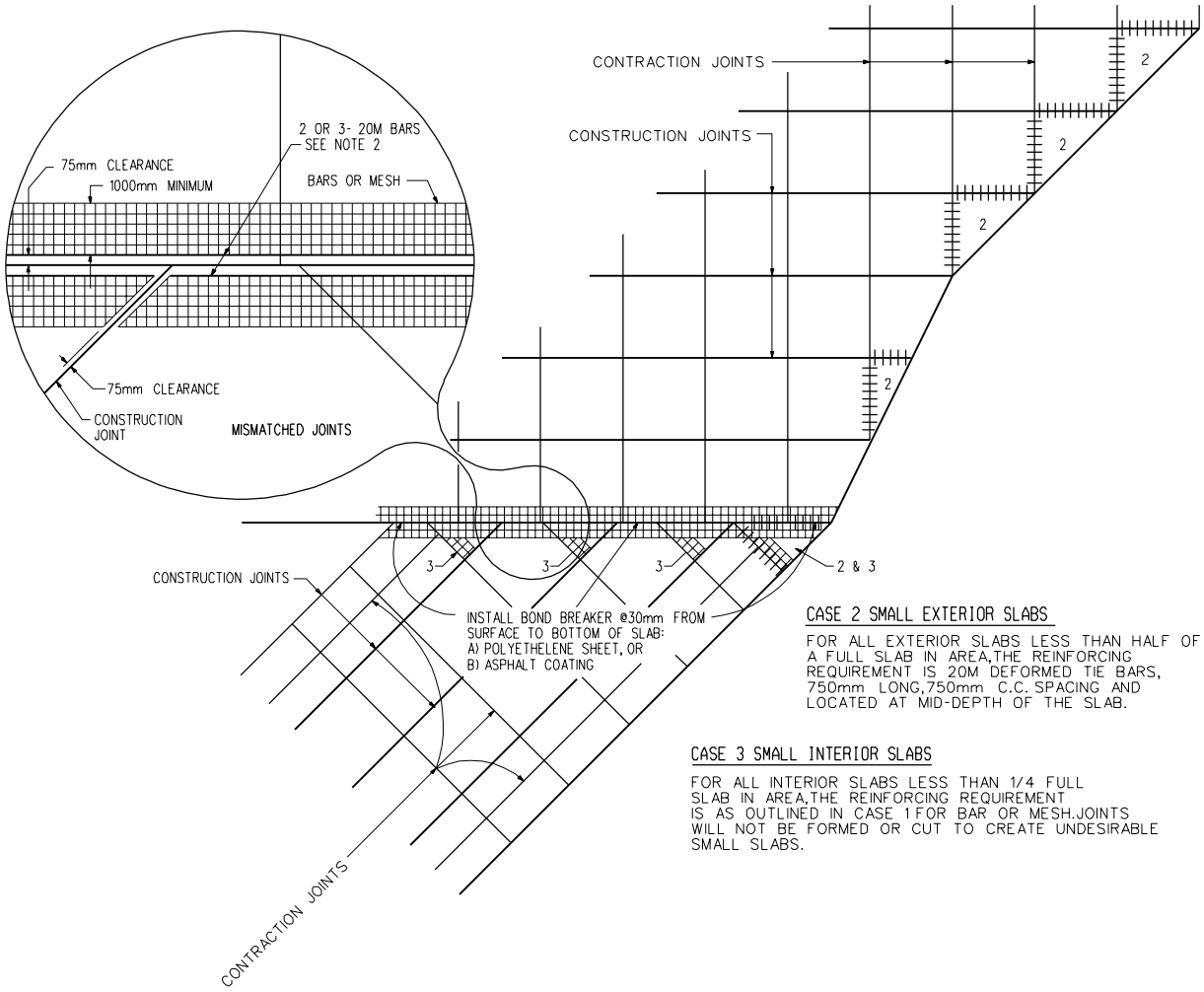
CASE 1 MISMATCHED JOINTS

FOR MISMATCHED JOINTS,THE REINFORCING REQUIREMENTS ARE:(1) 10M BARS OR #00 GUAGE WIRE MESH,AT BAR OR WIRE SPACING OF 150mm BOTH DIRECTIONS PROVIDING A 1000mm WIDTH OF REINFORCING WITH A 75mm CLEARANCE TO THE SLAB EDGE.BAR MAT OR MESH TO BE PLACED @ DEPTH 1/3 OR 1/2 SLAB THICKNESS.(2) 3-20M BARS,PROVIDING 75mm CLEARANCE TO THE SLAB EDGE & 50mm CONCRETE COVERAGE. SEE NOTE 2.



CASE 2 SMALL EXTERIOR SLABS

FOR ALL EXTERIOR SLABS LESS THAN HALF OF A FULL SLAB IN AREA,THE REINFORCING REQUIREMENT IS 20M DEFORMED TIE BARS, 750mm LONG,750mm C.C. SPACING AND LOCATED AT MID-DEPTH OF THE SLAB.

CASE 3 SMALL INTERIOR SLABS

FOR ALL INTERIOR SLABS LESS THAN 1/4 FULL SLAB IN AREA,THE REINFORCING REQUIREMENT IS AS OUTLINED IN CASE 1 FOR BAR OR MESH.JOINTS WILL NOT BE FORMED OR CUT TO CREATE UNDESIRABLE SMALL SLABS.

NOTE: 1. ALL DIMENSIONS IN MILLIMETRES
2. USE 2-20M BARS FOR SLAB THICKNESS 30cm OR LESS.

NO.	INIT.	DATE:	REVISIONS

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CONCRETE JOINTS CONSTRUCTION DETAILS

SHEET 1 OF 1 | FILE: 208C003.DGN

0000H208C003

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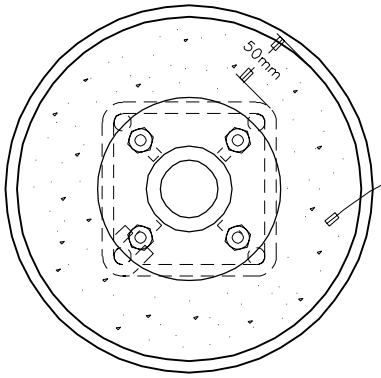
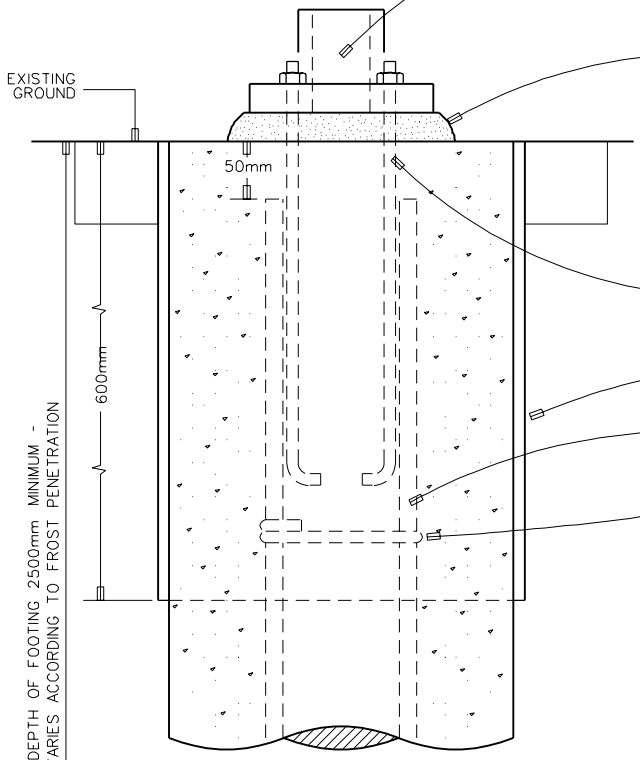


CONSTRUCT 300mm DIA REINFORCED CONCRETE FOOTING

PLAN

INSTALL STANDARD PIPE FLANGE (SUPPLIED BY OWNER) (SEE NOTE 2)

25mm OF GROUT UNDER PIPE FLANGE



SUPPLY & INSTALL 4 GALVANIZED 10mm DIAMETER ANCHOR BOLTS TO SECURE PIPE FLANGE. MIN LENGTH 300mm

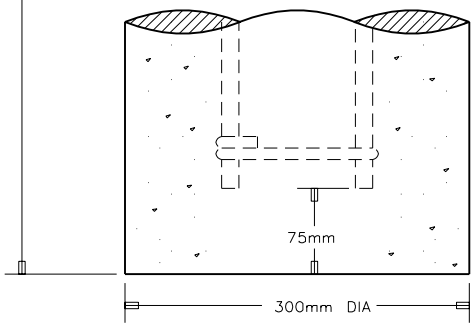
300mm DIAMETER PERMATUBE FOR CONCRETE

4-15M VERTICAL BARS

10M HORIZONTAL TIE BARS AT 600mm C.C.

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. PIPE FLANGE MUST BE INSTALLED LEVEL ON GROUT.



SECTION

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

THEODOLITE ANCHOR BASE

SHEET 1 OF 1 | FILE: 208C004.DGN

0000H208C004

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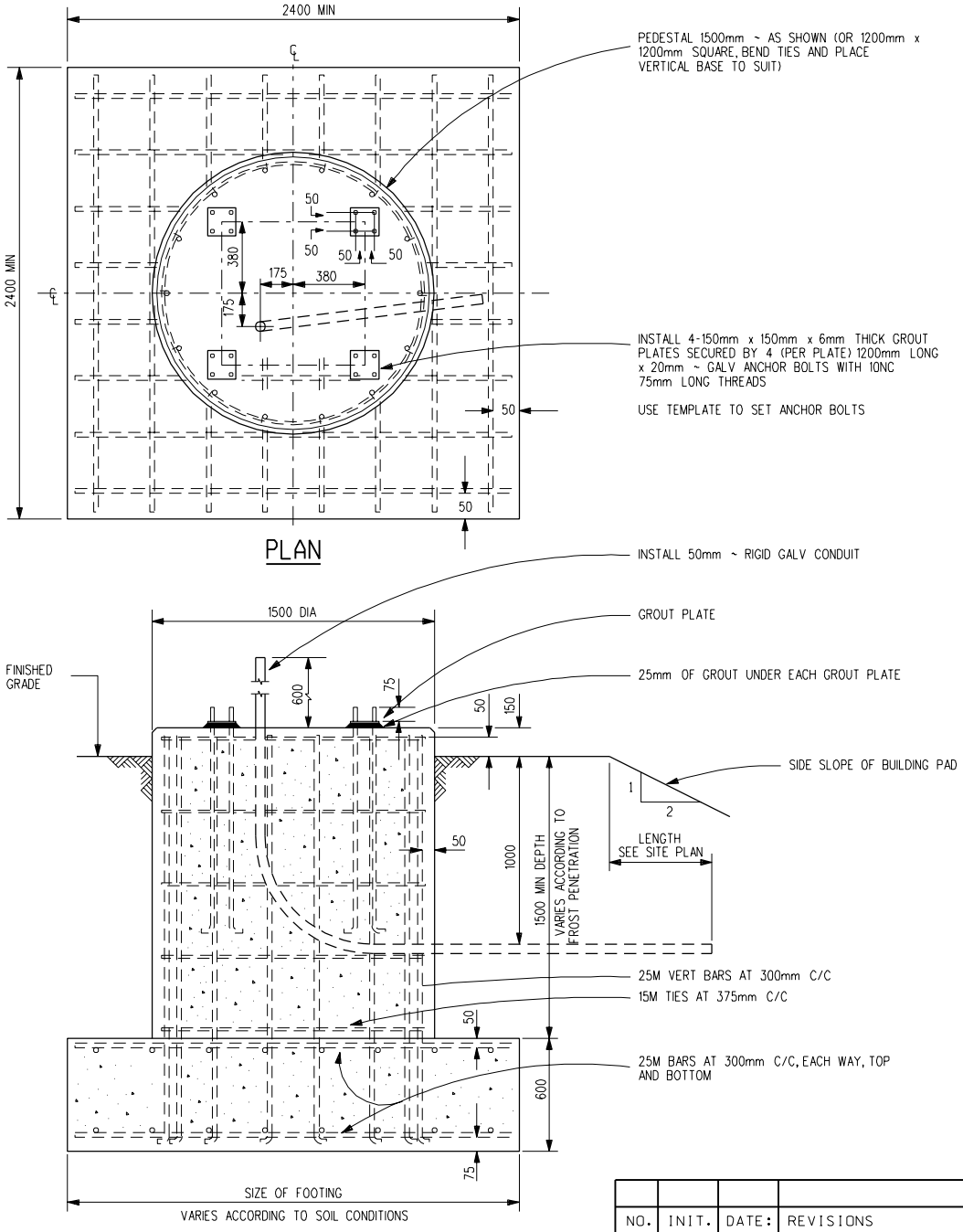

SCALE: NTS

NOTE:
ALL DIMENSIONS ARE IN MILLIMETRES

NO.	INIT.	DATE:	REVISIONS

DRAWN:	DESIGNED:	APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

GLIDE PATH ANTENNA BASE

SHEET 1 OF 1 | FILE: 208C005.DGN

0000H208C005

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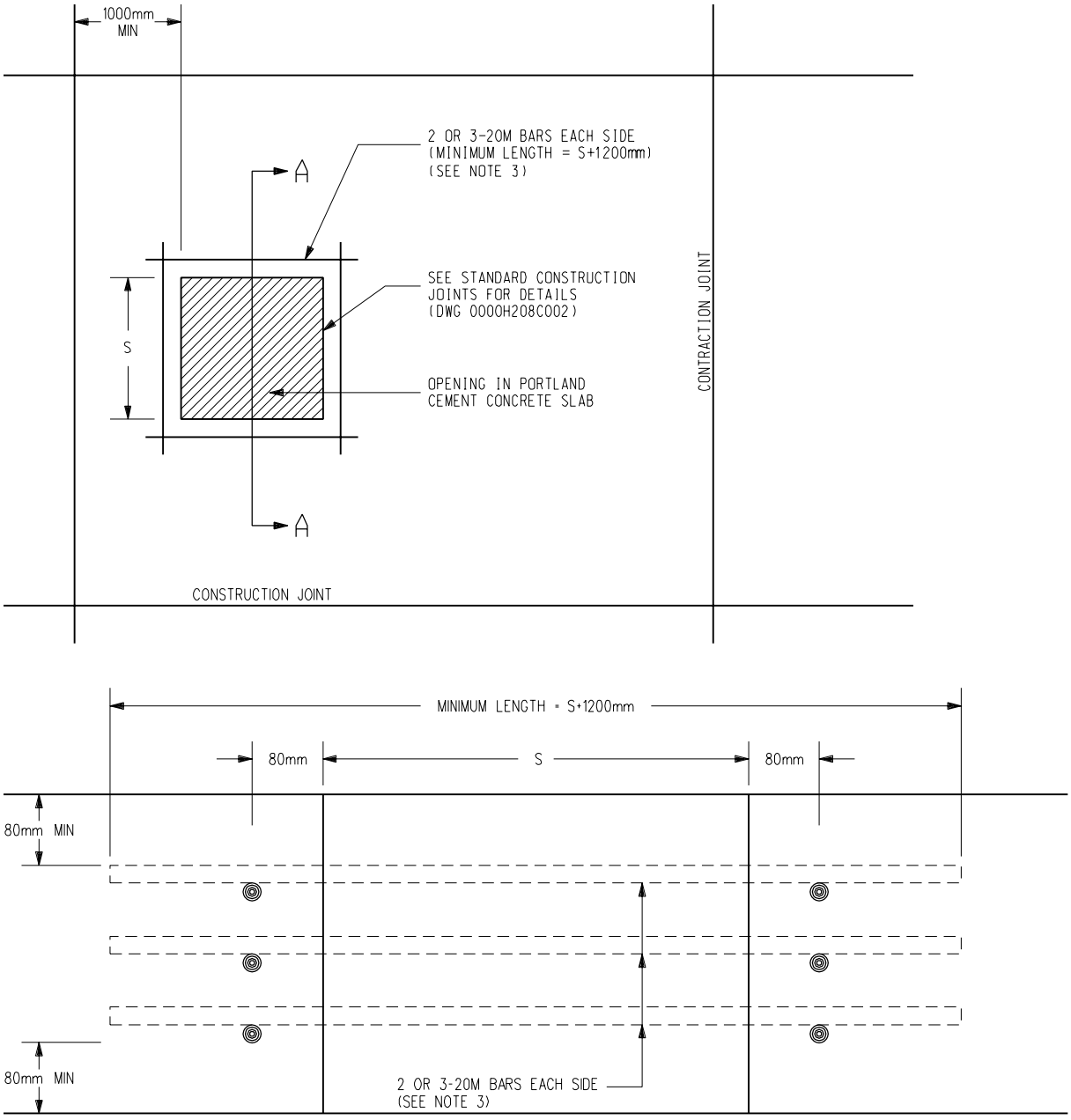

SECTION A-A

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. THIS DETAIL APPLIES WHEN LOCATING OF MANHOLES ADD CATCHBASINS IN INTERIOR OF SLAB CANNOT BE AVOIDED. PREFERRED LOCATION AT SLAB CORNER.
3. USE 2-20M BARS FOR SLAB THICKNESS 30CM OR LESS.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

CONCRETE SLAB REINFORCEMENT AROUND INTERIOR MANHOLES AND CATCH BASINS

SHEET 1 OF 1 | FILE: 208C006.DGN

0000H208C006

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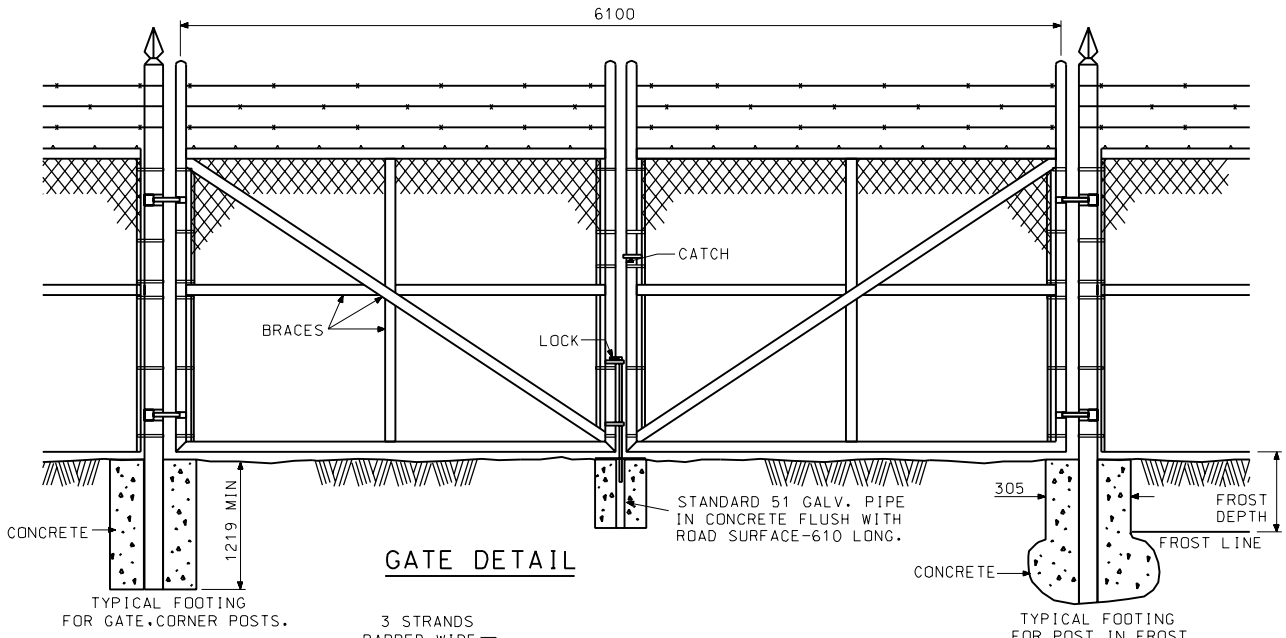
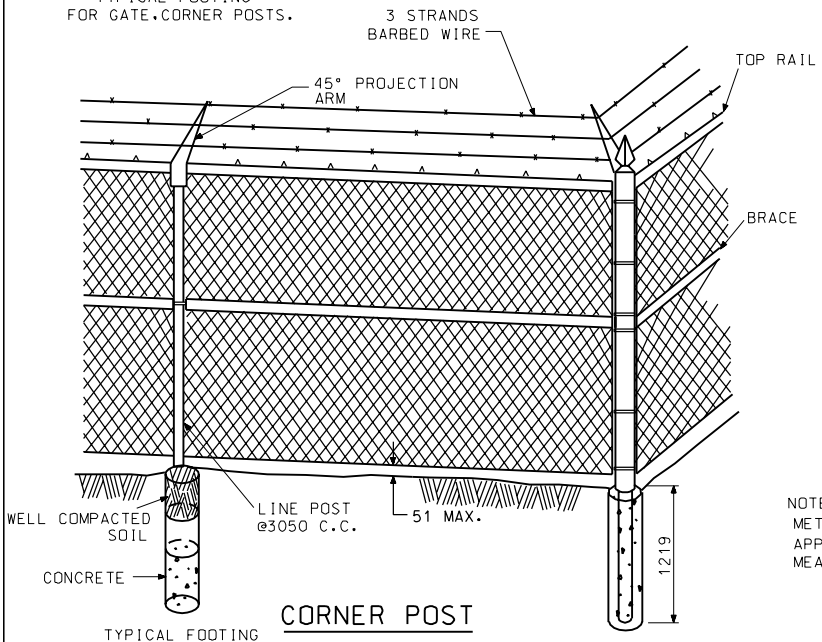
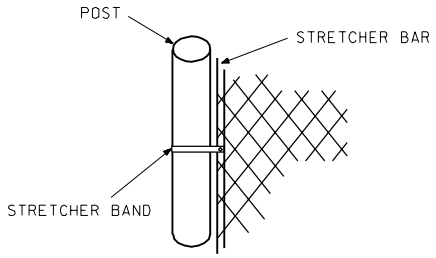


GATE DETAIL

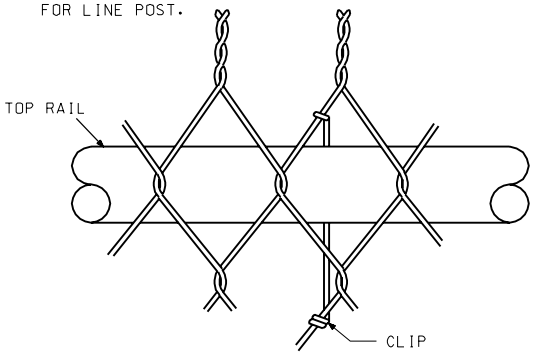


CORNER POST



STRETCHER BAR DETAIL

NOTE:
METRIC VALUES, SHOWN IN MILLIMETRES, ARE IN APPROXIMATE CONVERSION OF IMPERIAL MEASUREMENT.



TOP RAIL DETAIL

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

CHAIN LINK FENCE

SHEET 1 OF 1 | FILE: 210C003.DGN

0000H210C003

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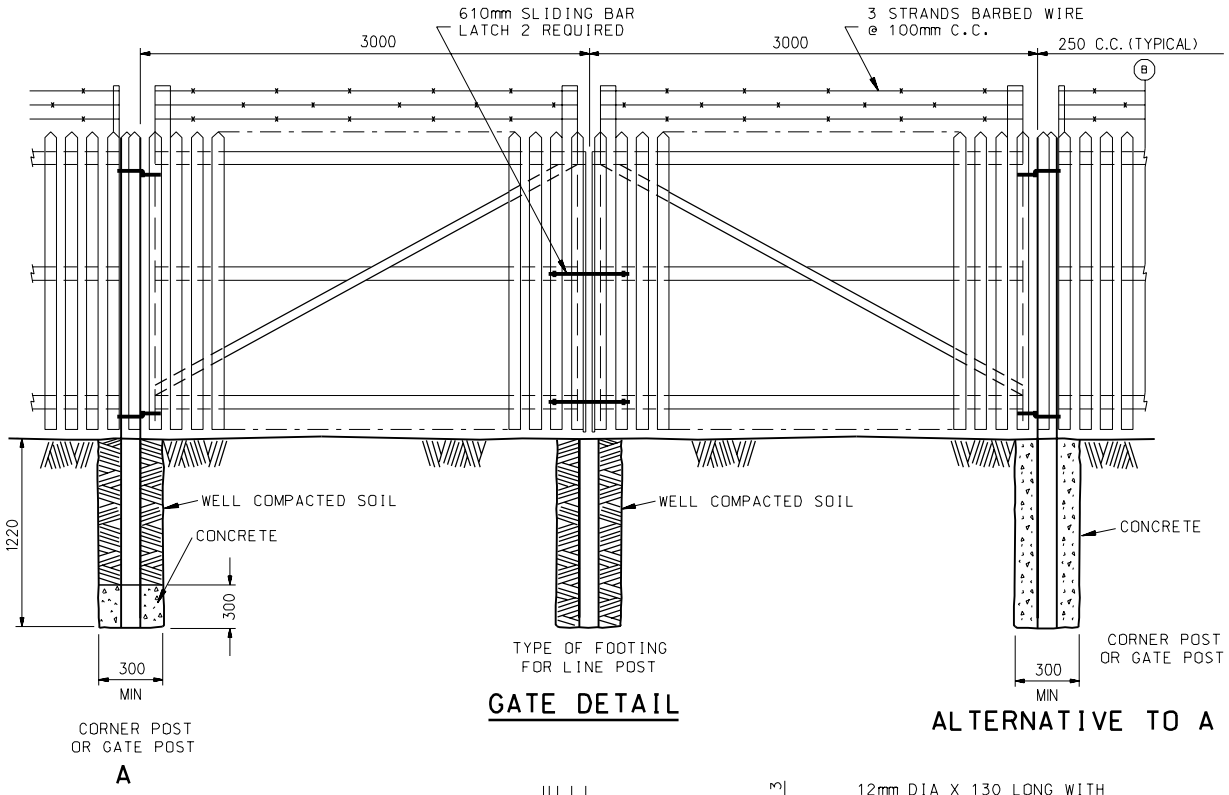
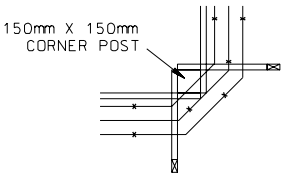
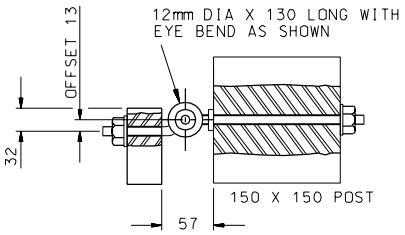
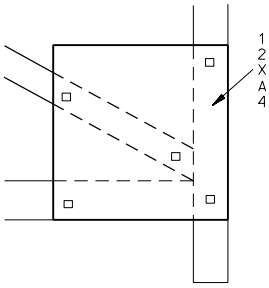




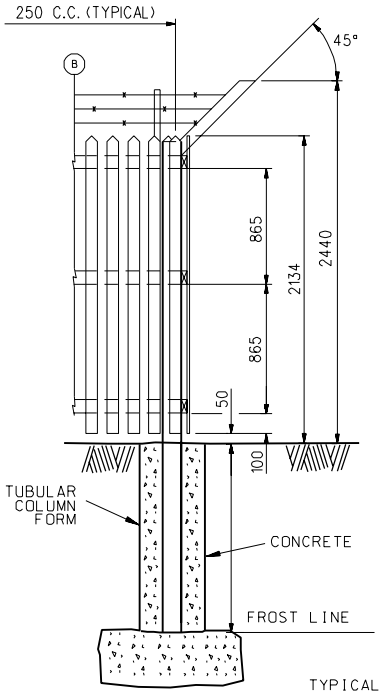
CORNER DETAIL



HINGE DETAIL



GUSSET DETAIL



TYPICAL FOOTING
FOR FROST SUSCEPTIBLE
SOIL

CORNER POST

NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. CONSTRUCTION MATERIAL:
   -RAILS, BRACES, EXTENSIONS 50 X 100
   -PICKETS 25 X 100
   -POSTS 150 X 150

NO.	INIT.	DATE:	REVISIONS
DRAWN:		DESIGNED:	APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

WOODEN SECURITY FENCE

SHEET 1 OF 1 | FILE: 210C004.DGN

0000H210C004

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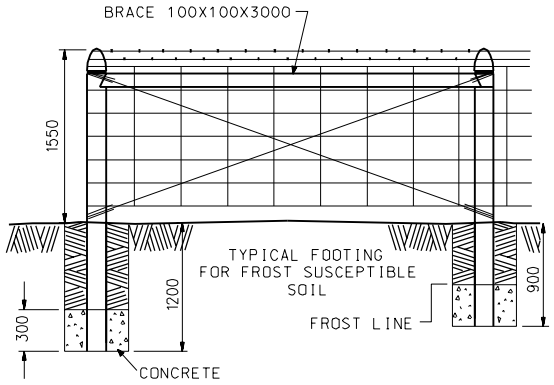
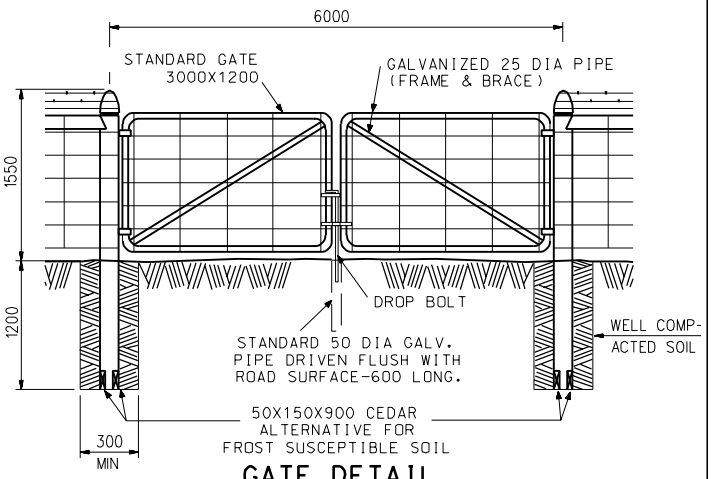
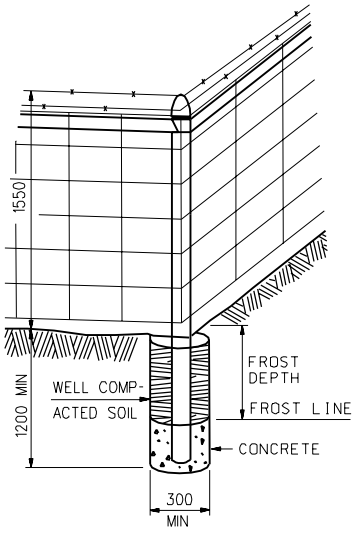


END OR GATE POST



GATE DETAIL



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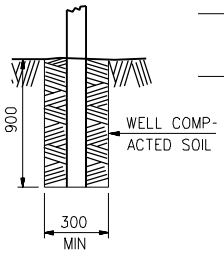
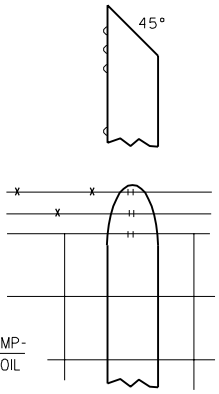
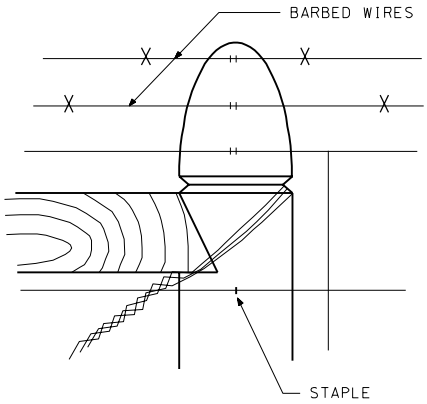
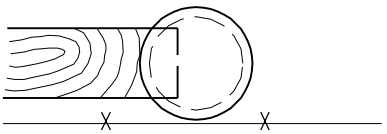


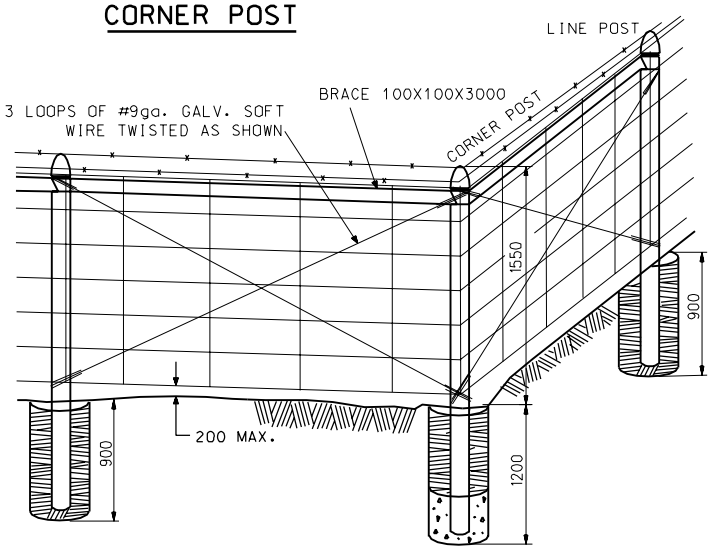
LINE POST







DETAILS



CORNER PANEL

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. SIZES OF POSTS, BRACES AND GATE FRAMES ARE NOMINAL.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

WOODEN POST FENCING DETAILS

SHEET 1 OF 1 | FILE: 210C005.DGN

0000H210C005

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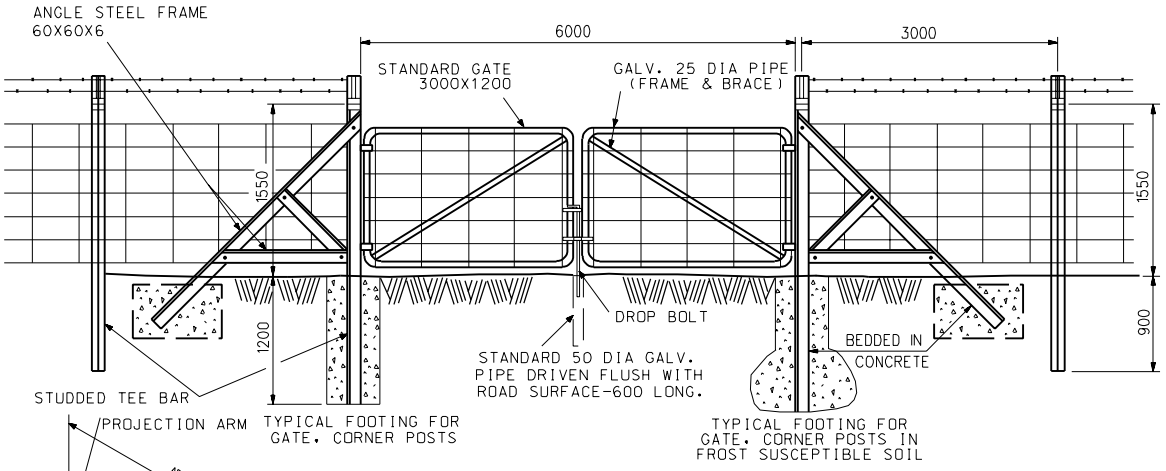
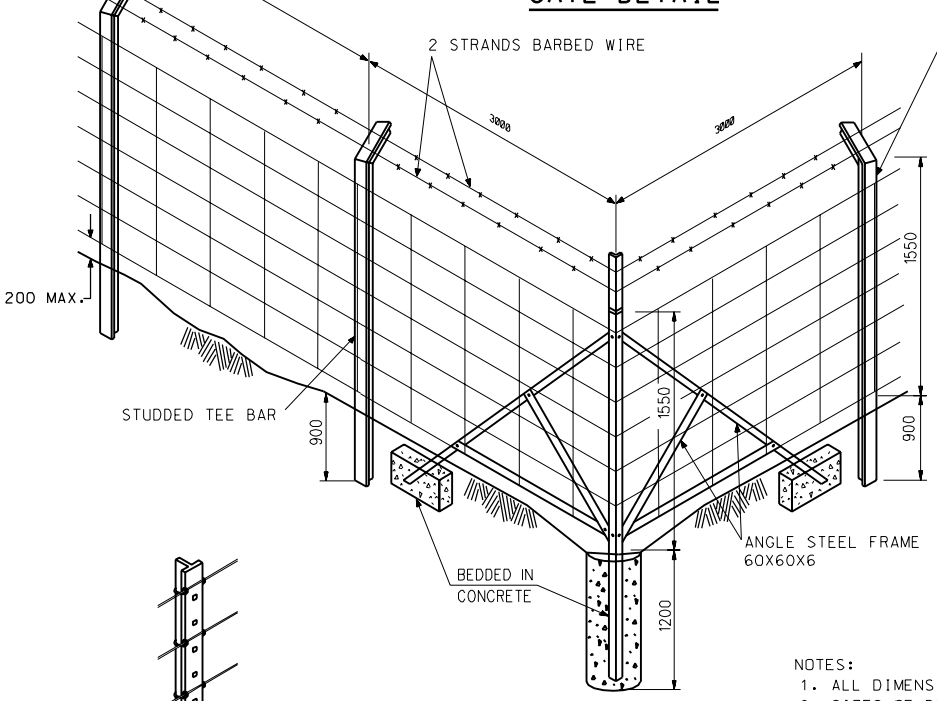
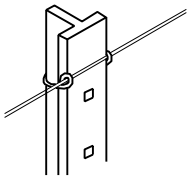


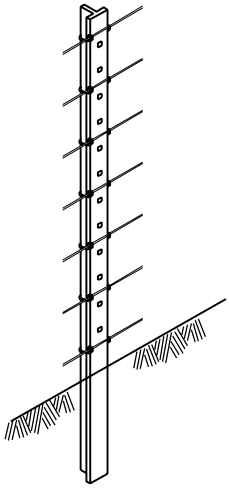
GATE DETAIL



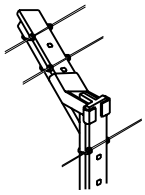
CORNER POST



WIRE CLIP DETAIL



INTERMEDIATE POST



PROJECTION ARM DETAIL

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. SIZES OF POSTS, BRACES AND GATE FRAMES ARE NOMINAL.

NO.	INIT.	DATE:	REVISIONS
DRAWN:		DESIGNED:	APPROVED:

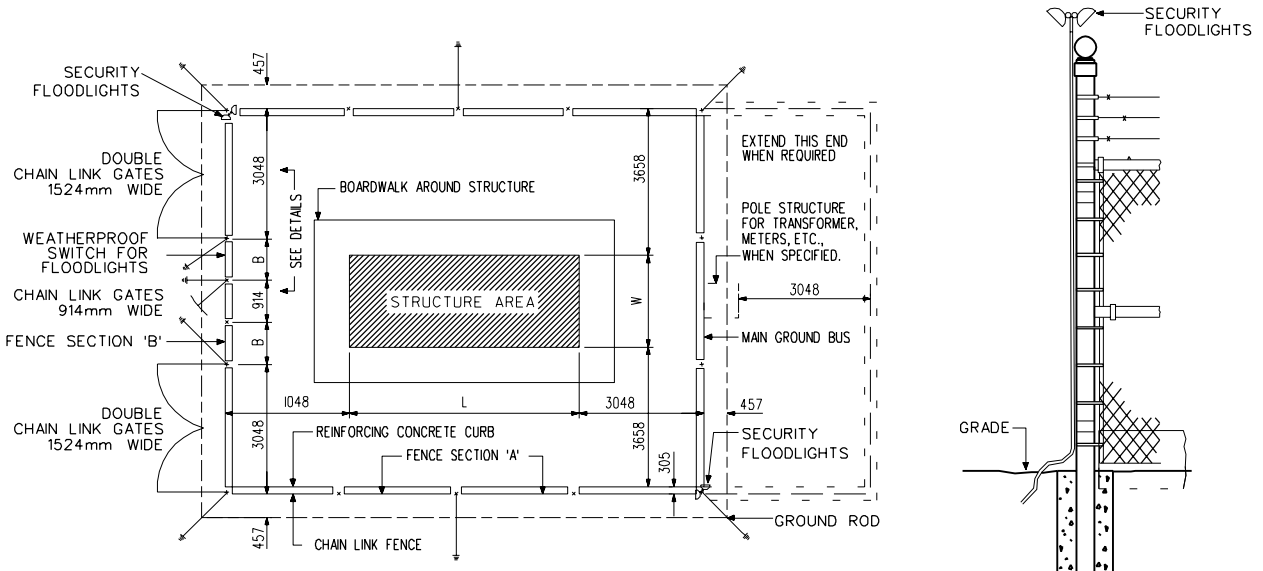
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STEEL POST FENCING DETAILS

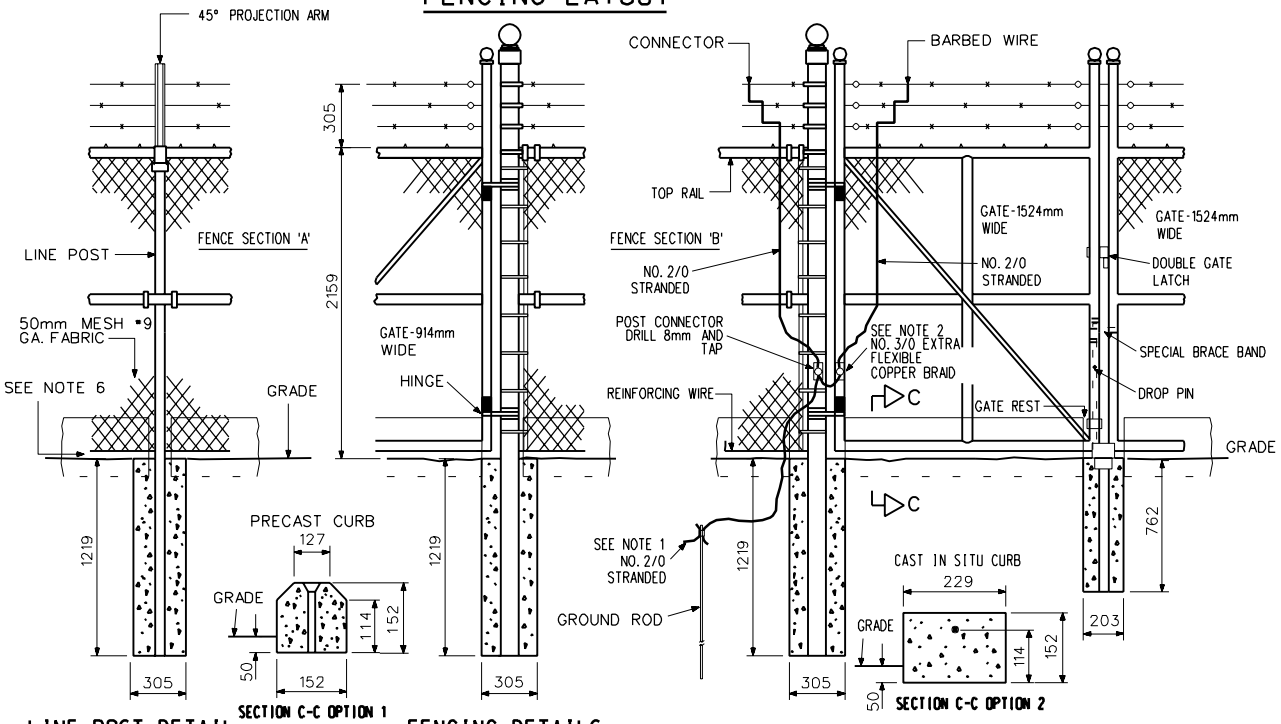
SHEET 1 OF 1 | FILE: 210C006.DGN

0000H210C006

PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



FENCING LAYOUT



LINE POST DETAIL

FENCING DETAILS

NOTES:

1. FOR MAIN GROUND BUS USE 2/0 COPPER CONDUCTOR BURIED NOT MORE THAN 457mm OUTSIDE THE FENCE AND PARALLELING THE ENTIRE FENCE.THE FENCE SHALL BE GROUNDED AT EVERY CORNER POST,ALL GATE POSTS AND POSTS ON EACH SIDE OF ALL REMOVABLE SECTIONS,USING 2/0 STRANDED COPPER WIRE.
2. FLEXIBLE COPPER BRAID SHALL BE MOUNTED SO THAT IT WILL NOT BE SUBJECTED TO DAMAGING STRAIN WHEN GATE IS FULLY OPEN IN EITHER DIRECTION.
3. THE 2.0 GROUND WIRE RISER FROM GROUND ROD SHALL BE CONNECTED TO THE REINFORCING WIRE,FABRIC FENCE POST,TOP RAIL,AND BARBED WIRE BY MECHANICAL CONNECTORS.
4. A 76mm LAYER OF CRUSHED STONE SHALL BE PROVIDED INSIDE THE SECURITY FENCE.
5. DIMENSIONS B,L AND W MAY VARY FOR INDIVIDUAL STRUCTURES.
6. CLEARANCE OF CHAIN LINK FABRIC TO GRADE SHALL NOT BE MORE THAN 25mm.
7. HEIGHT OF FENCE 2438mm,HEIGHT OF FABRIC 2133mm,UNLESS SPECIFIED IN SITE SPECIFICATION.
8. LINE POST SPACING FOR CAST IN SITU CURB TO BE 3048mm C/C.
9. POST SPACING FOR PRECAST CURBS TO MATCH LENGTH OF CURB WITH ALLOWANCE FOR WIDTH OF FOOTING, AND NOT GREATER THAN 3048mm C/C.
10. PRECAST CURB TO BE SPIKED IN PLACE.

NO.	INIT.	DATE:	REVISIONS
DRAWN:		DESIGNED:	APPROVED:

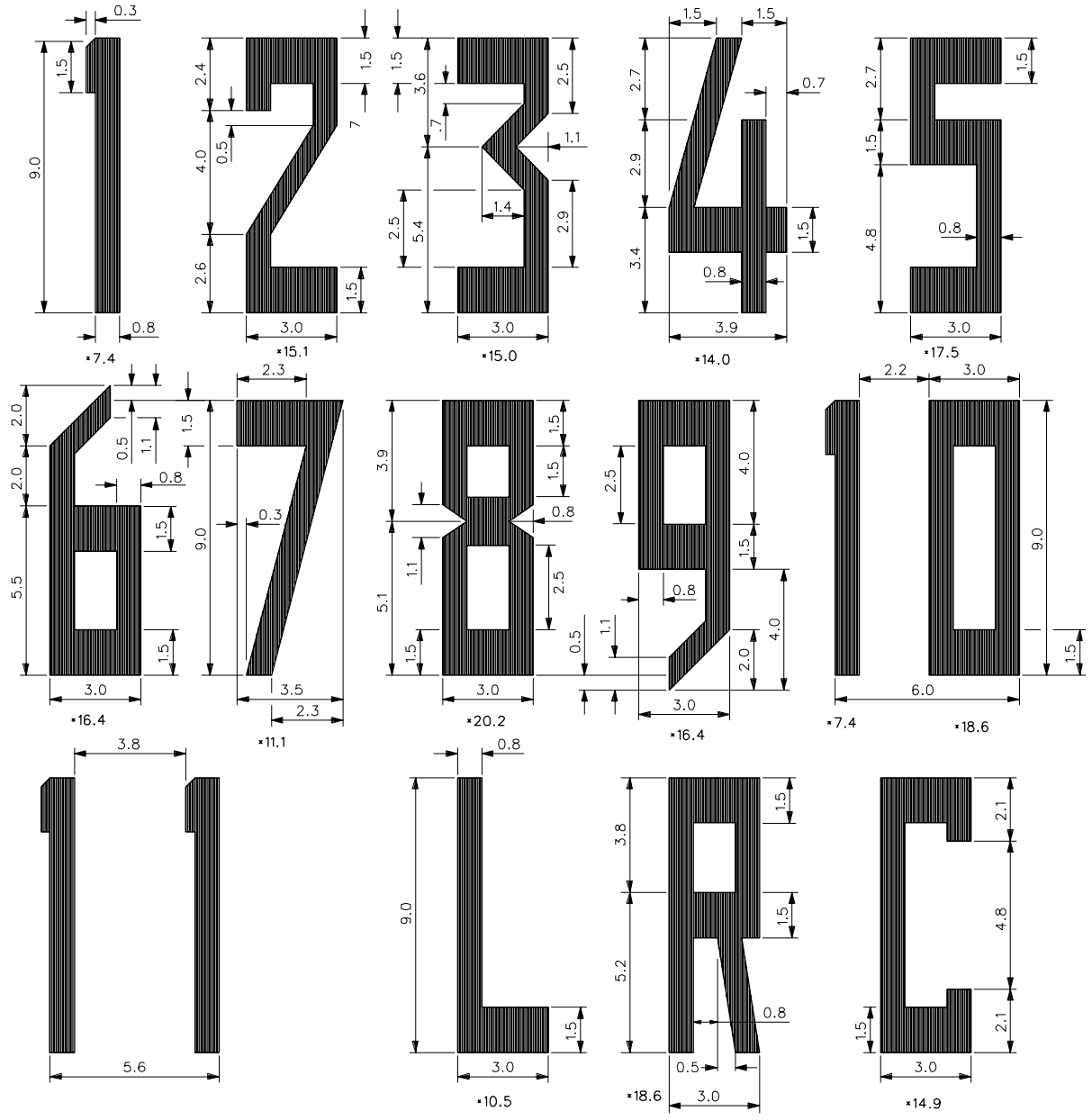
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STANDARD FENCING LAYOUT FOR POWER STRUCTURES

SHEET 1 OF 1 | FILE: 210C010.DGN

0000H210C010

PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



NOTES:

1. RUNWAYS SHALL BE NUMBERED WITH A TWO-DIGIT NUMBER ASSOCIATED WITH EACH THRESHOLD.
2. RUNWAY CENTRELINE IN CENTRE OF NUMBER BLOCK (OMIT TIP ON THE ONE FOR CENTERING CALCULATIONS)
3. ALL DIMENSIONS SHOWN ARE IN METRES AND TENTHS OF METRES.

× PAINT AREA SHOWN IN SQUARE METRES.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

RUNWAY DESIGNATION NUMBERS AND LETTERS

SHEET 1 OF 1 | FILE: 212C001.DGN

0000H212C001

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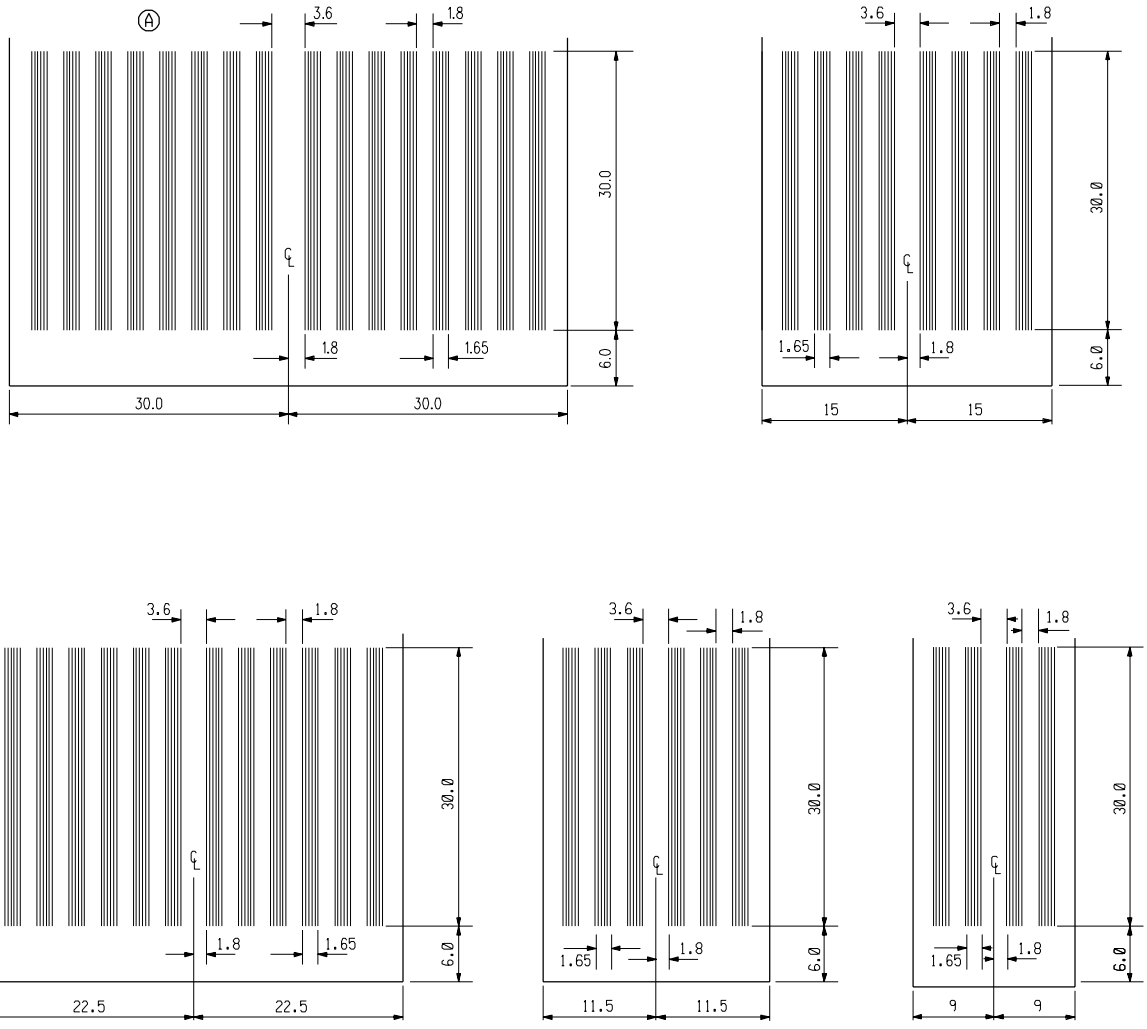

Ⓐ THRESHOLD MARKINGS:

BLOCKS OF LINES, CONSISTING OF 6 LINES, 150mm WIDE AT 300mm CENTRES. WIDTH OF EACH BLOCK 1.65M, GAP BETWEEN BLOCKS 1.80M, LENGTH 30.0M.

NOTE:

ALL DIMENSIONS SHOWN IN METRES UNLESS OTHERWISE INDICATED.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

RUNWAY THRESHOLD MARKINGS

SHEET 1 OF 1 | FILE: 212C002.DGN

0000H212C002

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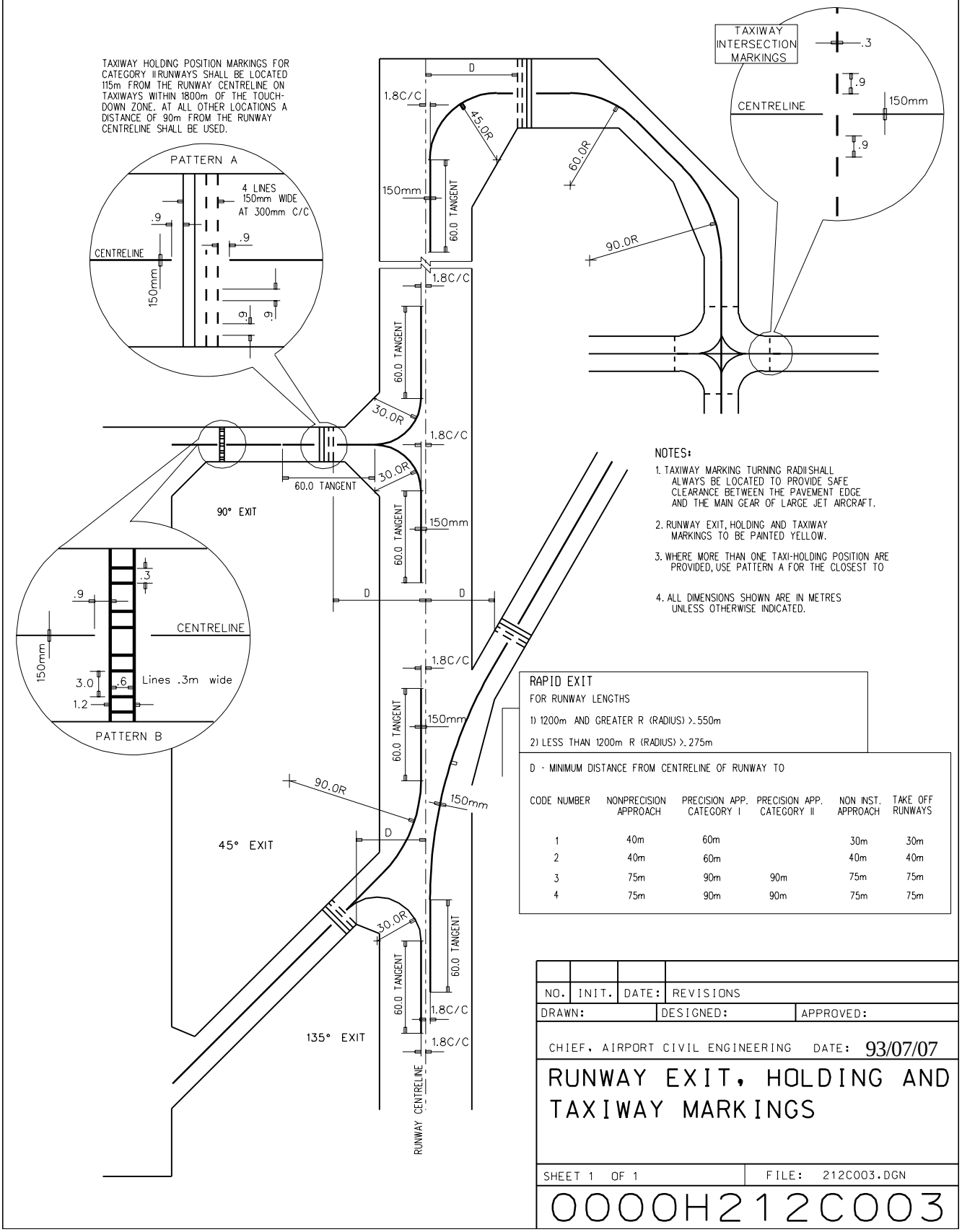


RAPID EXIT

FOR RUNWAY LENGTHS

1) 1200m AND GREATER R (RADIUS) ≥ 550m

2) LESS THAN 1200m R (RADIUS) ≥ 275m

D - MINIMUM DISTANCE FROM CENTRELINE OF RUNWAY TO

CODE NUMBER	NONPRECISION APPROACH	PRECISION APP. CATEGORY I	PRECISION APP. CATEGORY II	NON INST. APPROACH	TAKE OFF RUNWAYS
1	40m	60m		30m	30m
2	40m	60m		40m	40m
3	75m	90m	90m	75m	75m
4	75m	90m	90m	75m	75m

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

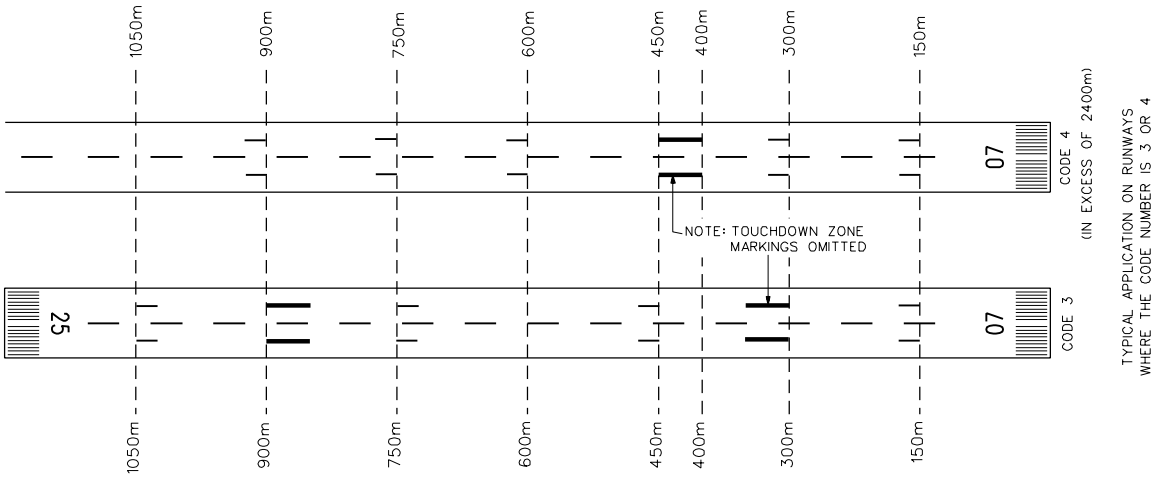
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

RUNWAY EXIT, HOLDING AND TAXIWAY MARKINGS

SHEET 1 OF 1 | FILE: 212C003.DGN

0000H212C003

PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



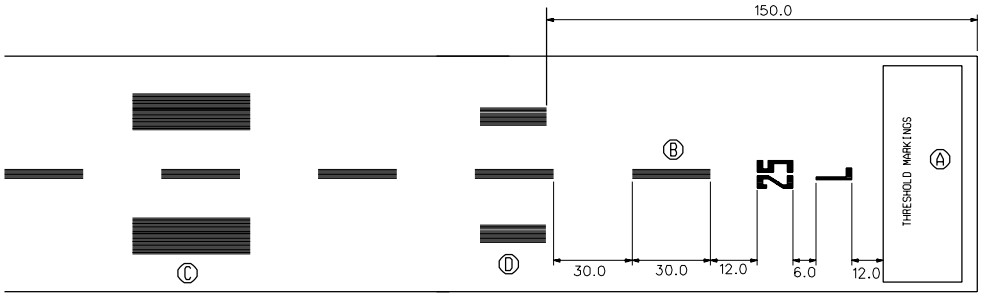


TABLE: LOCATION AND DIMENSIONS OF THE AIMING POINT MARKING

LOCATION AND DIMENSIONS	CODE NUMBER/RUNWAY WIDTH			
	1	2	3	4
	UP TO 23m	23-30m	30-45m	45-60m
DISTANCE FROM THRESHOLD TO BEGINNING OF MARKING	150m	250m	300m	400m
LENGTH OF STRIPE	45m	45m	45m	45m
WIDTH OF STRIPE	4m	6m	6m	10m
LATERAL SPACING BETWEEN INNER SIDES OF STRIPES	6m	9m	18-22.5m	18-22.5m

Ⓐ THRESHOLD MARKINGS:
SEE DRAWING 0000H212C002

Ⓑ CENTRELINE MARKINGS:
BLOCKS OF LINES, CONSISTING OF 8 LINES (OR 4 LINES FOR RUNWAYS LESS THAN 30m IN WIDTH), 150mm WIDE AT 300mm CENTRES. MARKING AT 30.0m INTERVALS, LENGTH 30.0m AND WIDTH 2.25m (OR 1.05m FOR R/W LESS THAN 30m IN WIDTH).

Ⓒ AMING POINT MARKINGS:
SEE TABLE

Ⓓ TOUCHDOWN ZONE MARKINGS:

RUNWAY LENGTH	PAIR(S) OF MARKINGS
<900m	1
900-1200m	2
1200-1500m	3
1500-2400m	4
>2400m	6

BLOCKS OF LINES, CONSISTING OF 12 LINES, 150mm WIDE AT 300mm CENTRES, LENGTH 22.5m. DELETE PAIR(S) OF MARKING(S) WHERE COINCIDENT WITH OR LOCATED WITHIN 50m OF AN AMING POINT MARKING.

NOTE: ALL DIMENSIONS SHOWN IN METRES UNLESS OTHERWISE INDICATED.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

RUNWAY MARKINGS

SHEET 1 OF 1 | FILE: 212C004.DGN

0000H212C004

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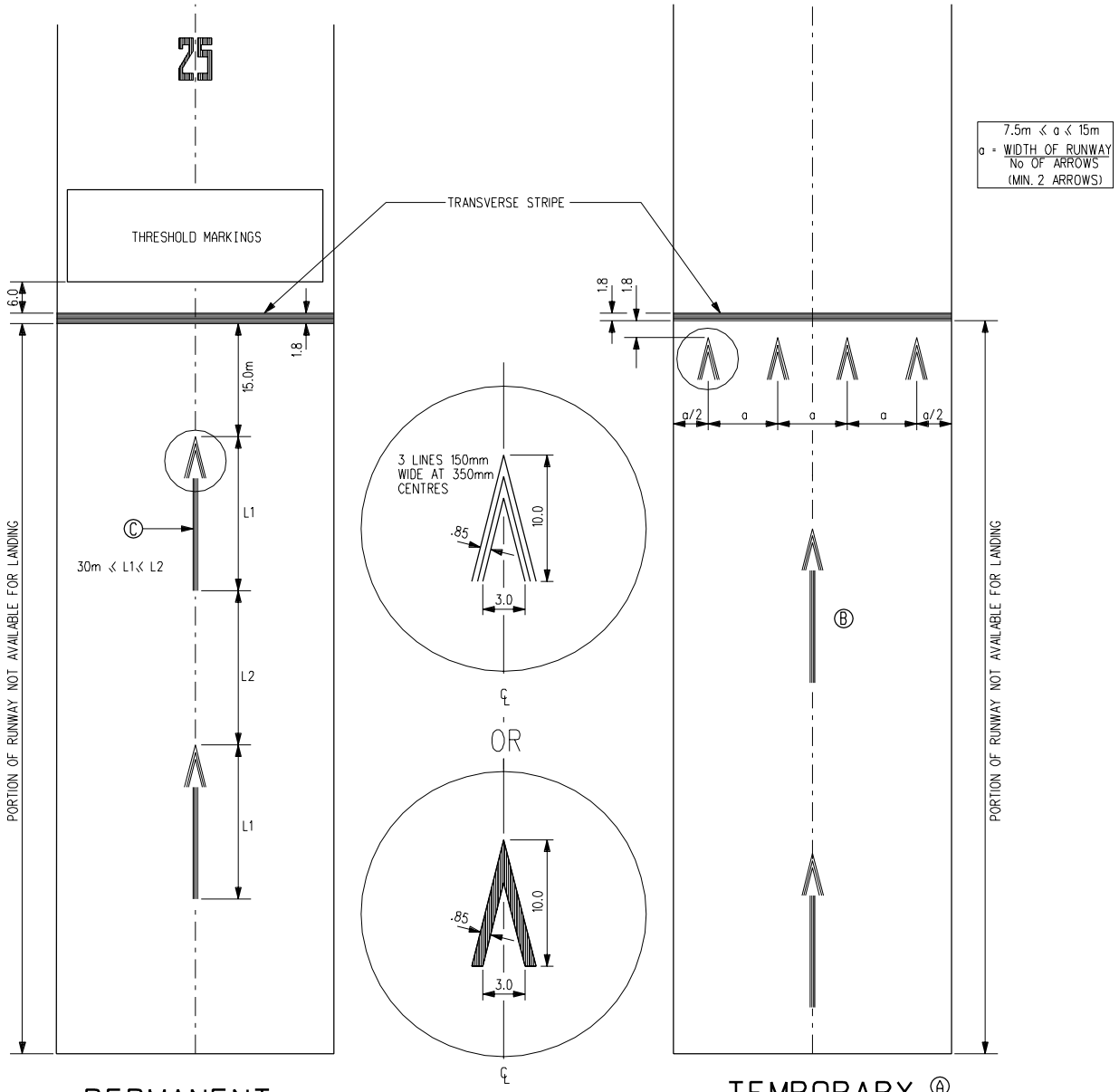

PERMANENT

TEMPORARY Ⓐ

Ⓐ ALL MARKING PRIOR TO THE TEMPORARY DISPLACED THRESHOLD SHALL BE OBSCURED.

Ⓑ EXISTING CENTRE LINE MARKING CONVERTED TO ARROW

Ⓒ SHAFTS:
SHAFTS OF ARROWS TO CONSIST OF 4 LINES, 150mm WIDE AT 350mm CENTRES.

NOTE:

ALL DIMENSIONS SHOWN IN METRES UNLESS OTHERWISE INDICATED.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

DISPLACED RUNWAY THRESHOLD MARKINGS

SHEET 1 OF 1 | FILE: 212C006.DGN

0000H212C006

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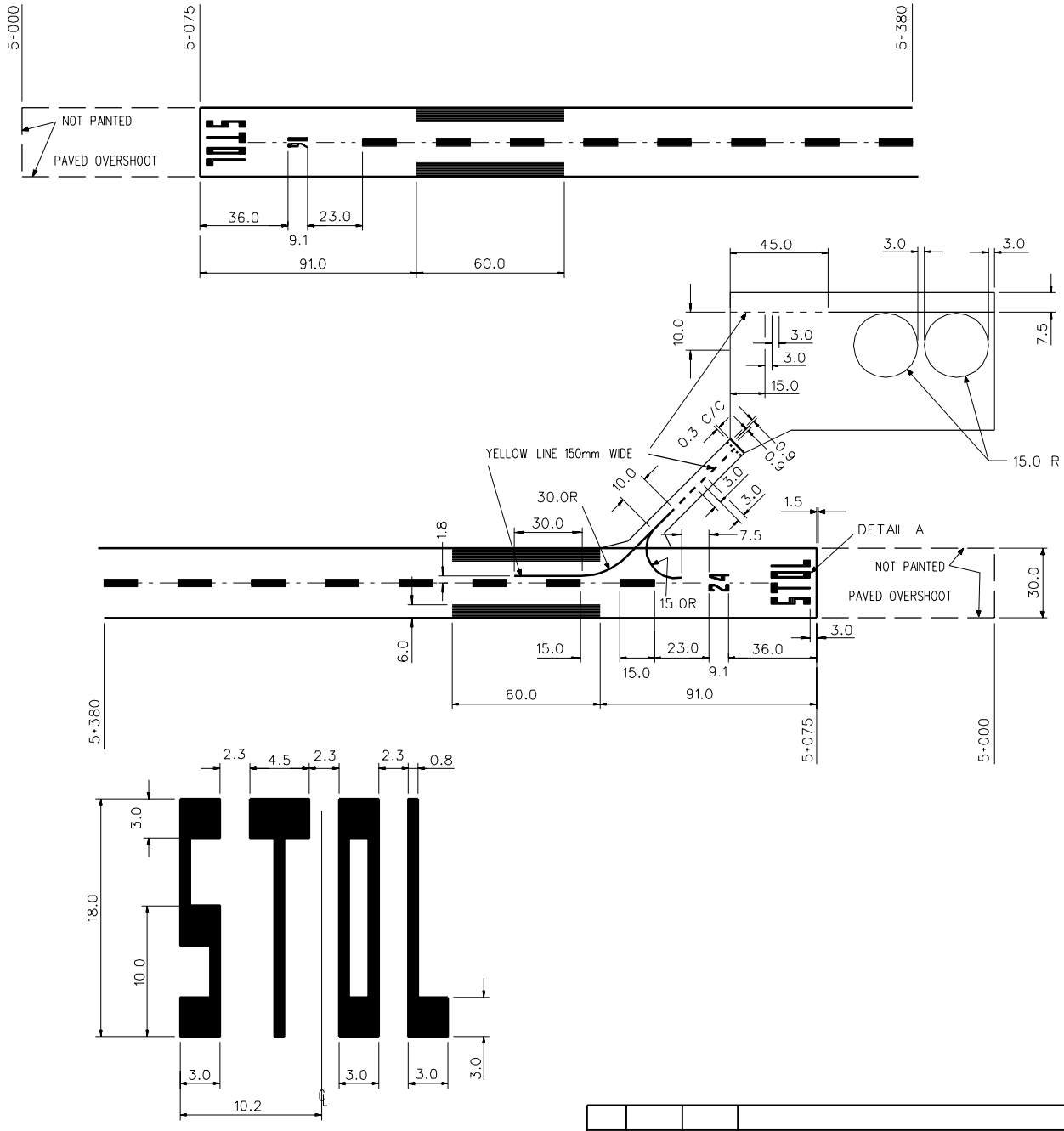


DETAIL 'A'

NOTES:

CENTER LINE MARKINGS- BLOCKS OF LINES CONSISTING OF 8 LINES, 150mm WIDE AT 300mm CENTRES, WIDTH 2250mm LENGTH 15.0M AT 15.0M INTERVALS. 750mm BORDER ALONG BOTH SIDES OF STOL RUNWAY, 1500mm AT THRESHOLDS.

FIXED DISTANCE MARKINGS-SOLID BLOCKS 60.0M LONG 6.0M WIDE.

FOR RUNWAY DESIGNATION HUMBERS REFER TO DRAWING 0000H212C001.

ALL DIMENSIONS SHOWN IN METRES UNLESS OTHERWISE INDICATED.

NO.	INIT.	DATE:	REVISIONS

DRAWN:	DESIGNED:	APPROVED:

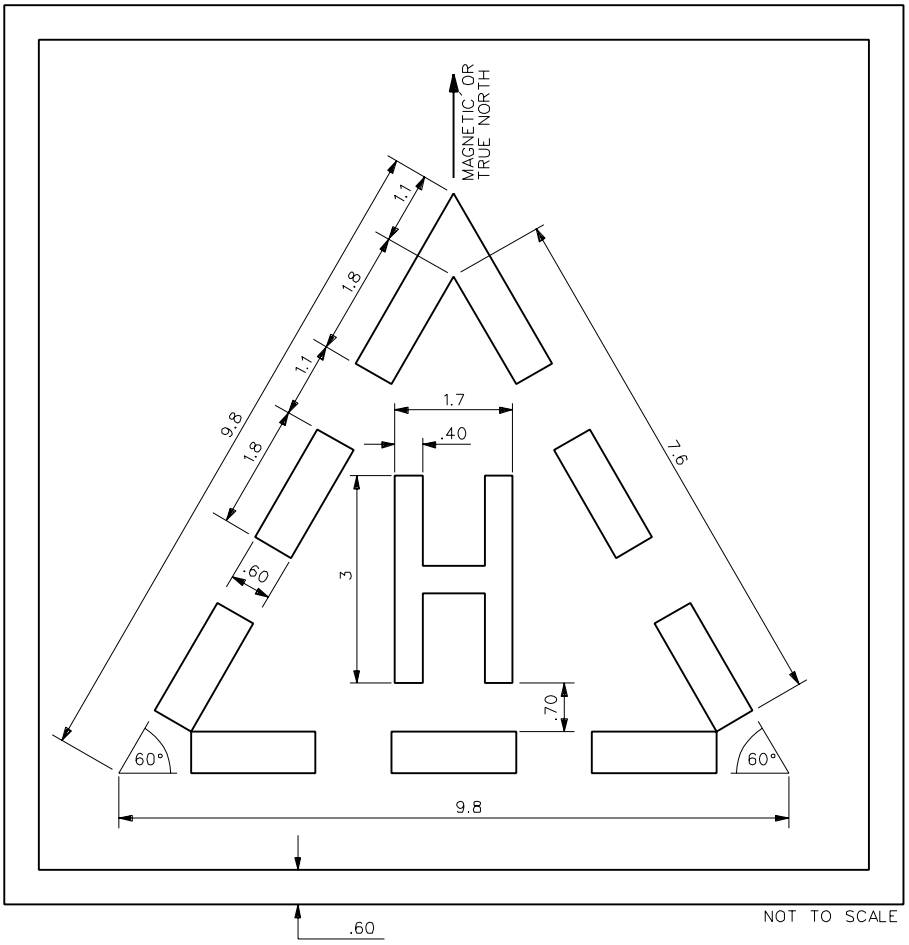
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STOLPORT PAVEMENT MARKINGS

SHEET 1 OF 1 | FILE: 212C012.DGN

0000H212C012

PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



NOTES:

1. THE TRIANGLE, LETTER "H", AND BOUNDARY MARKINGS ARE WHITE AND MAY BE EDGED WITH A 15cm BLACK BORDER TO IMPROVE CONTRAST.
2. DIMENSIONS SHOWN ARE APPROPRIATE FOR TAKE-OFF AND LANDING AREAS 18m OR LARGER. DIMENSIONS SHOULD BE REDUCED PROPORTIONALLY FOR SMALLER TAKE-OFF AND LANDING AREAS.
3. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE INDICATED.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

TYPICAL TAKE-OFF/LANDING AREA MARKINGS (HELIPORT)

SHEET 1 OF 1 | FILE: 212C013.DGN

0000H212C013

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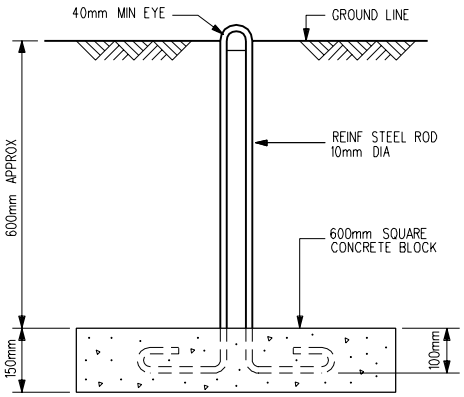
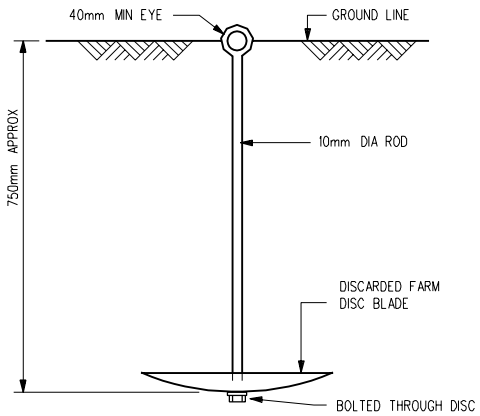


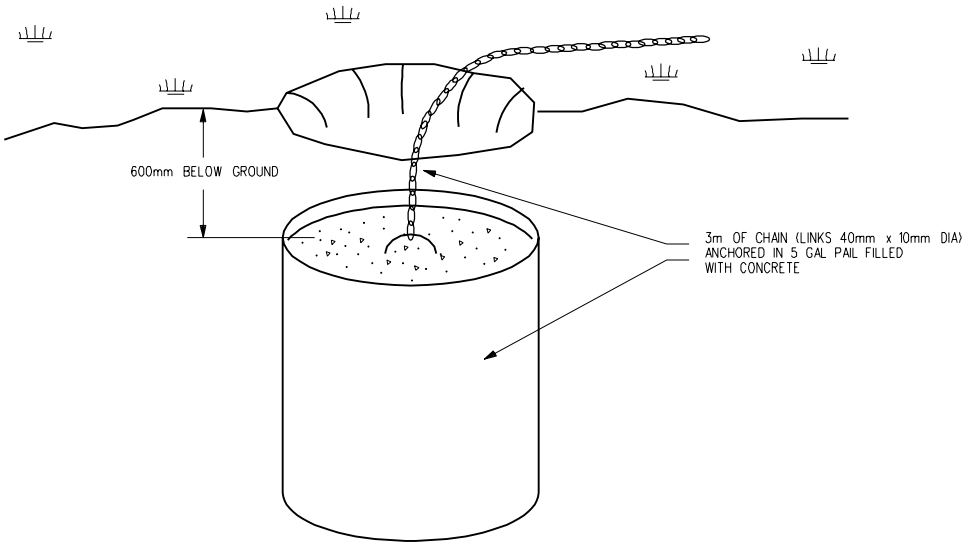
ROD AND BLOCK ANCHOR

TYPE 2



ROD AND BLOCK ANCHOR

TYPE 3



TYPE 4

NOTE:
ALL DIMENSIONS IN METRES UNLESS OTHERWISE INDICATED

NO.	INIT.	DATE:	REVISIONS

DRAWN:	DESIGNED:	APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

TYPE 2, 3, 4 AIRCRAFT TIE-DOWN ANCHOR FOR UNPAVED AREAS

SHEET 1 OF 1 | FILE: 212C0142.DGN

0000H212C014

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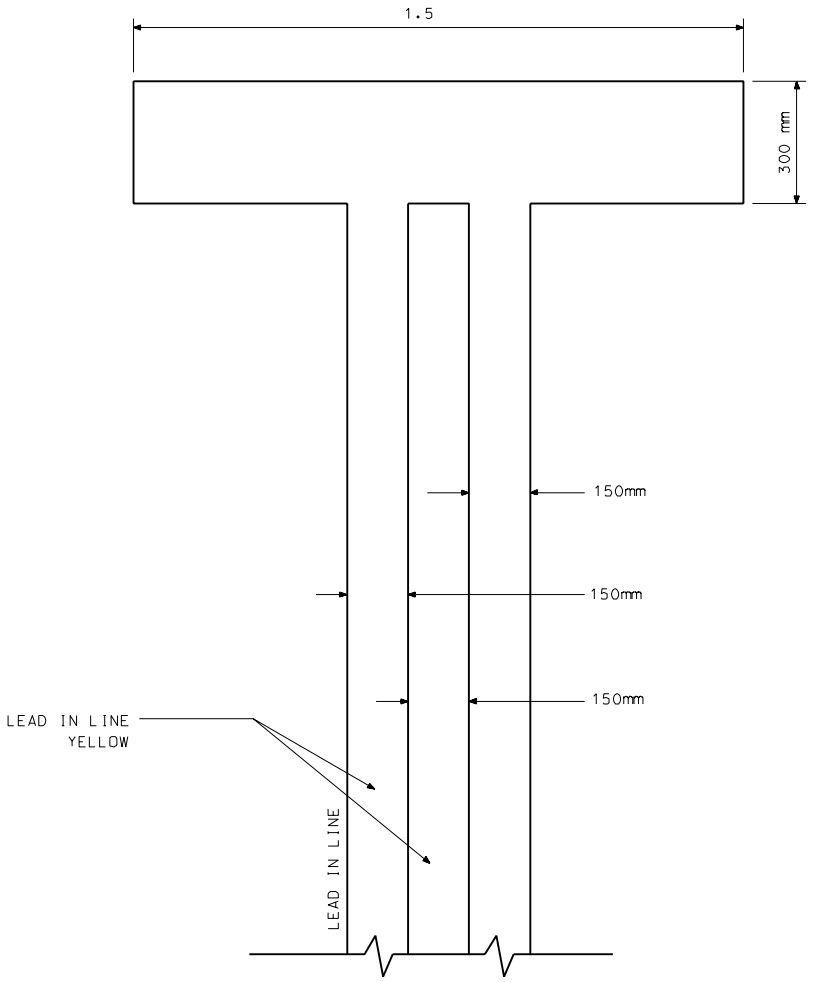


NOTE:
1-ALL DIMENSIONS IN METERS UNLESS OTHERWISE INDICATED

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

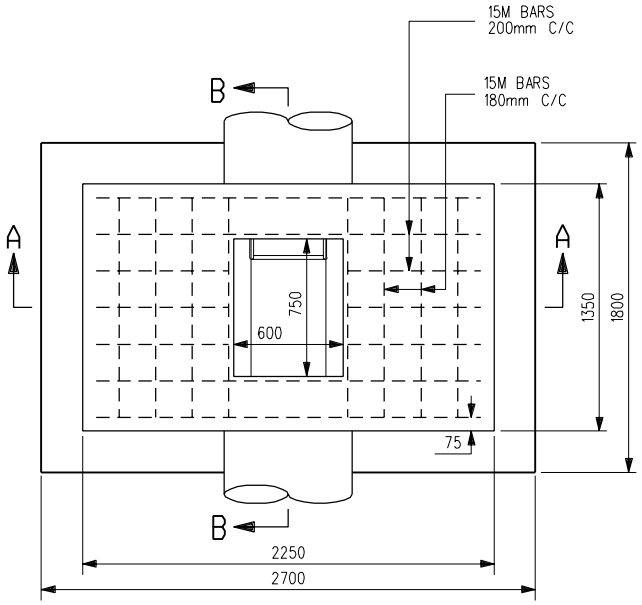
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

TYPICAL STOP BAR

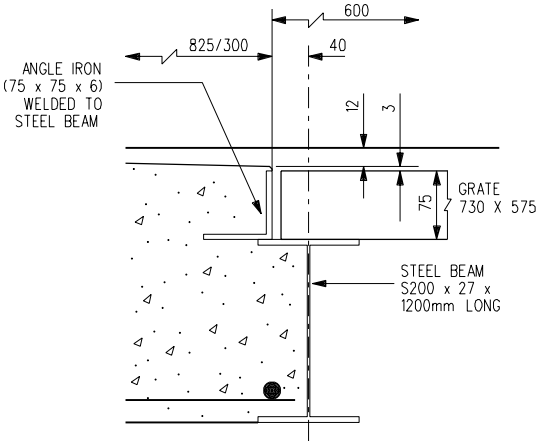
SHEET 1 OF 1 | FILE: 212C018.DGN

0000H212C018

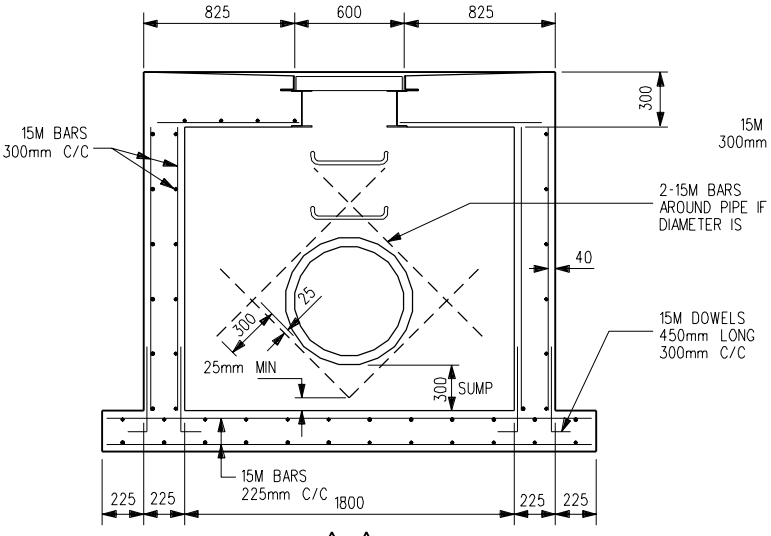
PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



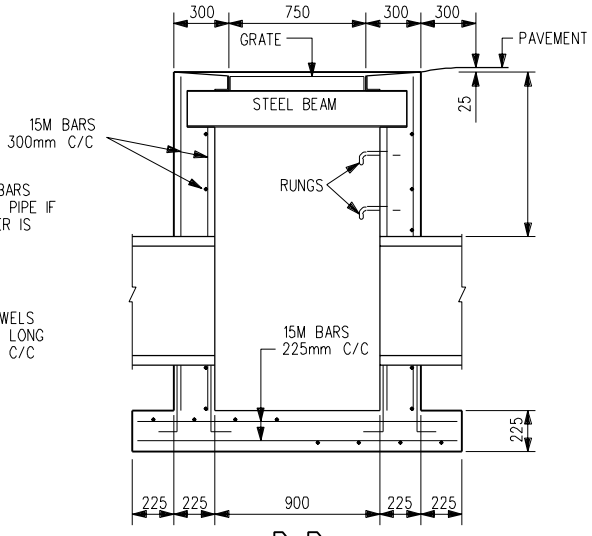
PLAN VIEW



DETAIL OF OPENING



A-A



B-B

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. MAXIMUM DEPTH OF MANHOLE 5500mm.
3. IN TURF AREAS, PLACE TOP OF MANHOLE 150mm BELOW FINISHED GRADE. FROM THE EDGE OF MANHOLE UP TO FINISHED GRADE SLOPE TURF AT 3:1.
4. FOR GRATING AND FASTENING DETAILS SEE DRAWING 0000H223C007.
5. FOR PIPE CONNECTION AND RUNG DETAILS SEE DRAWING 0000H223C018.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STORM SEWER MANHOLE TYPE D (900mm x 1800mm)

SHEET 1 OF 1 | FILE: 223C002.DGN

0000H223C002

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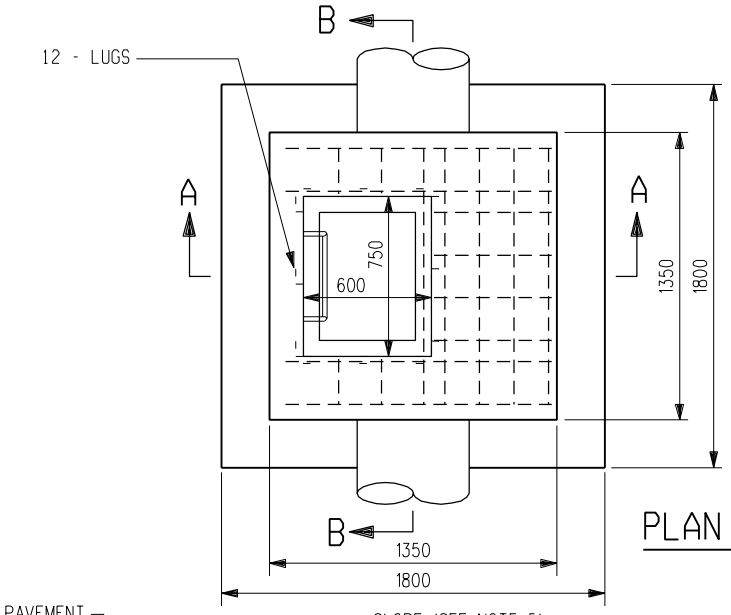
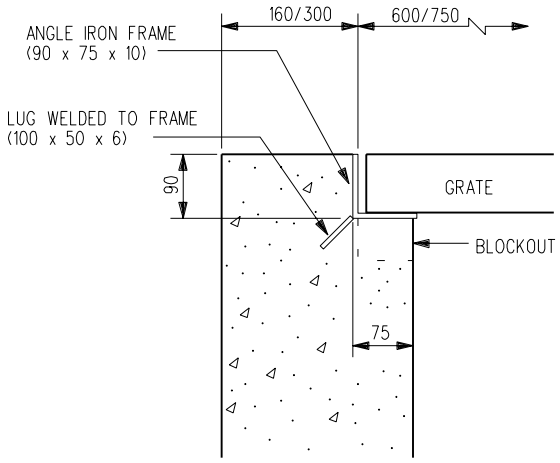
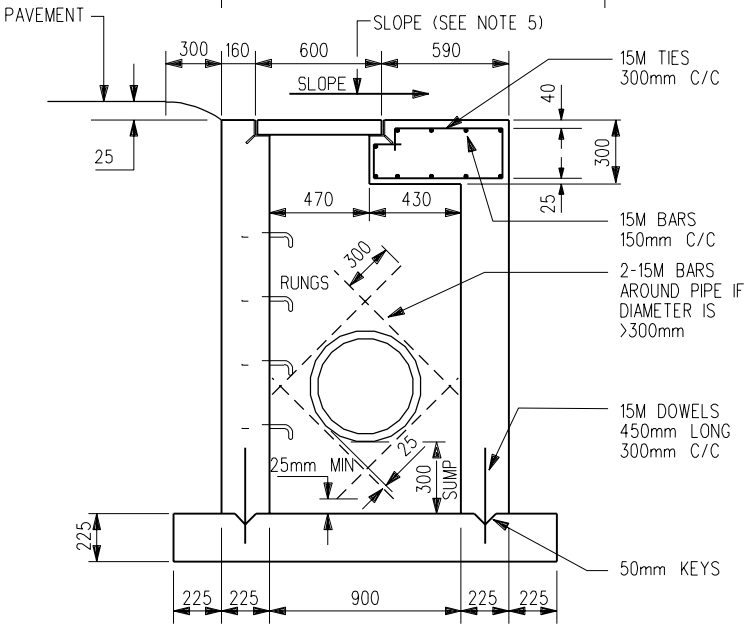


PLAN VIEW

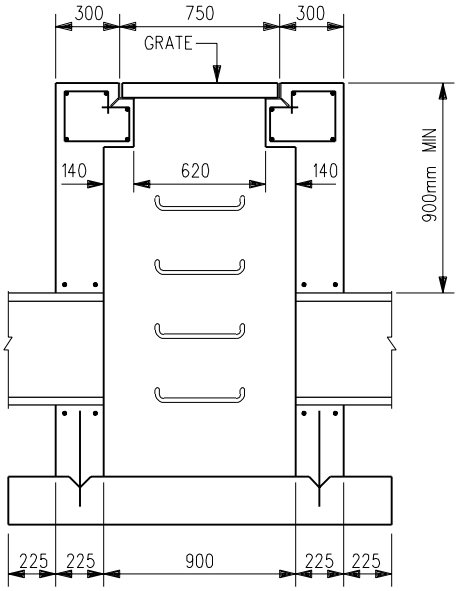


FOR LOCATION OF FASTENING DEVICE BLOCKOUTS SEE GRATING DWG 0000H223C007

DETAIL OF OPENING



A-A



B-B

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. MAXIMUM DEPTH OF MANHOLE 5500mm, BELOW 3500mm INCREASE WALL THICKNESS TO 300mm.
3. FOR GRATING AND FASTENING DETAILS SEE DRAWING 0000H223C007.
4. FOR PIPE CONNECTION AND RUNG DETAILS SEE DRAWING 0000H223C018.
5. SLOPE TO MATCH SHOULDER GRADES.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STORM SEWER MANHOLE TYPE F (900mm x 900mm)

SHEET 1 OF 1 | FILE: 223C003.DGN

0000H223C003

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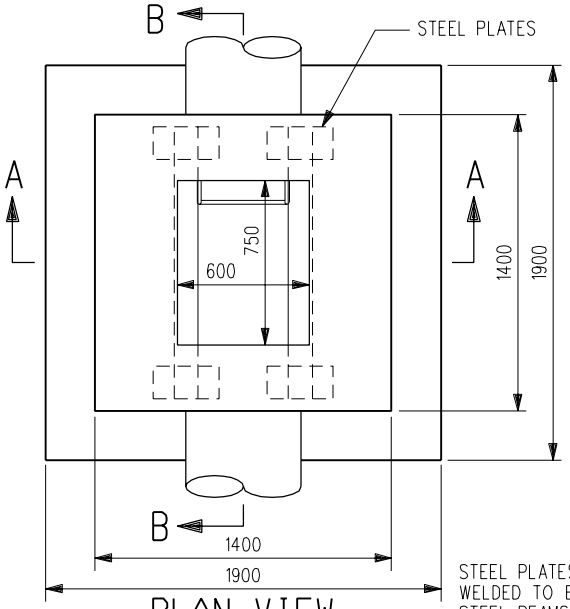
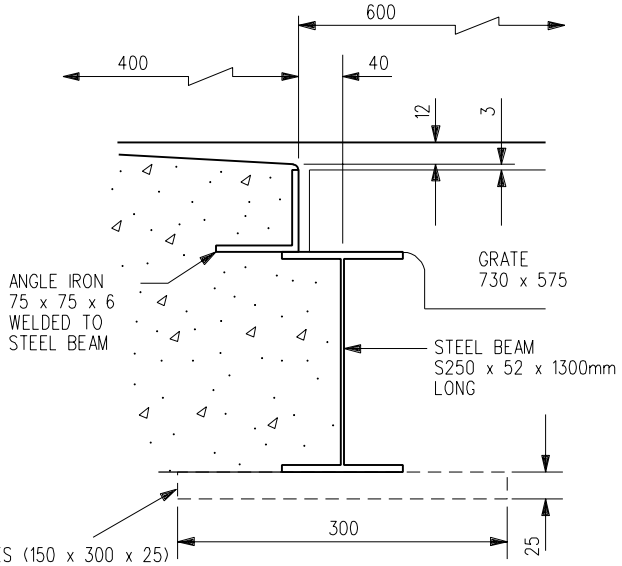
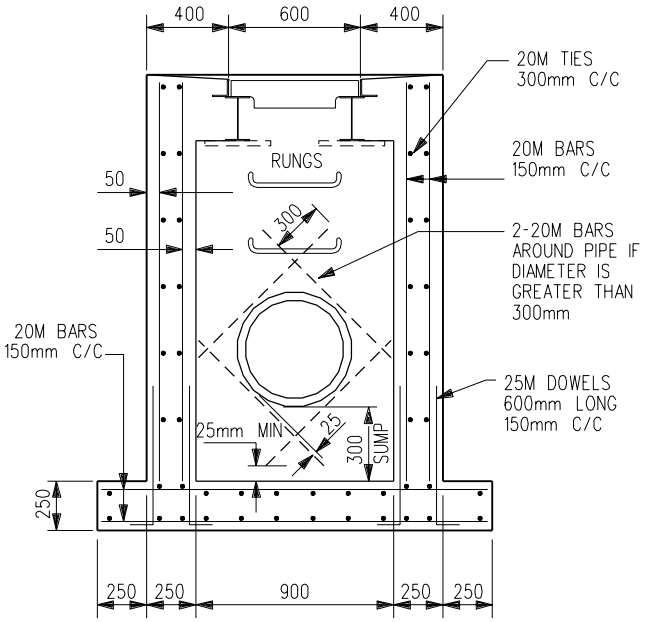


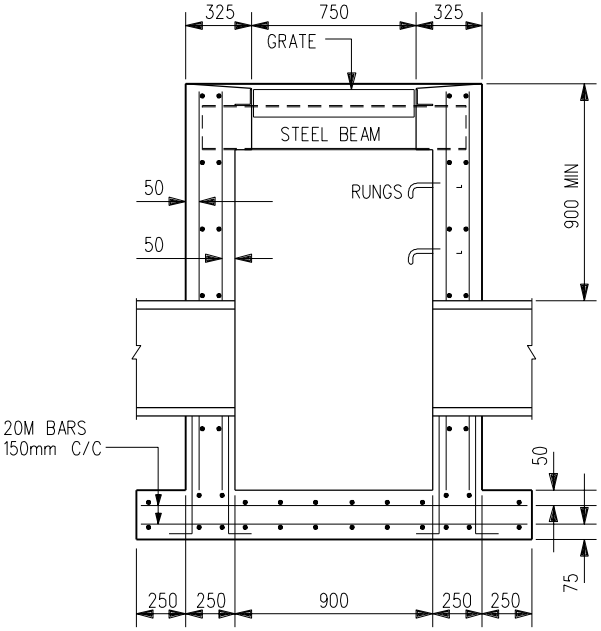
PLAN VIEW



DETAILS OF OPENING



A-A



B-B

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. FOR GRATING AND FASTENING DETAILS SEE DRAWING 0000H223C011.
3. FOR PIPE CONNECTION AND RUNG DETAILS SEE DRAWING 0000H223C018.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

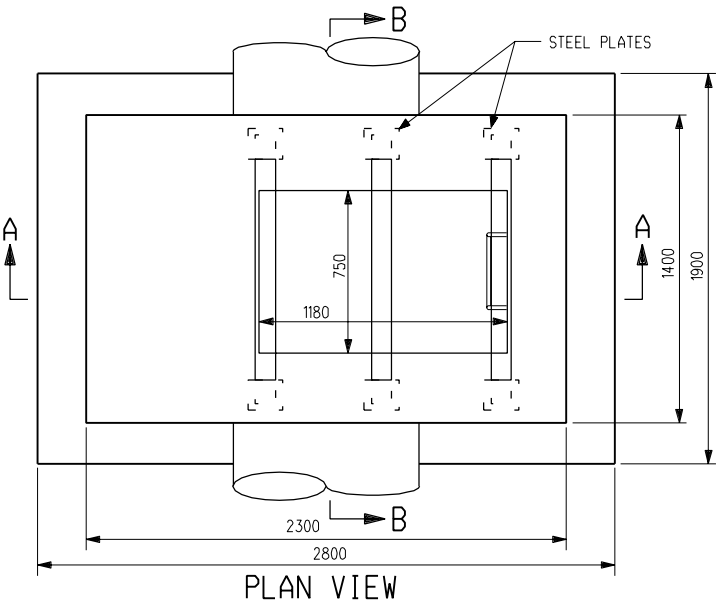
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STORM SEWER MANHOLE TYPE L (900mm X 900mm)

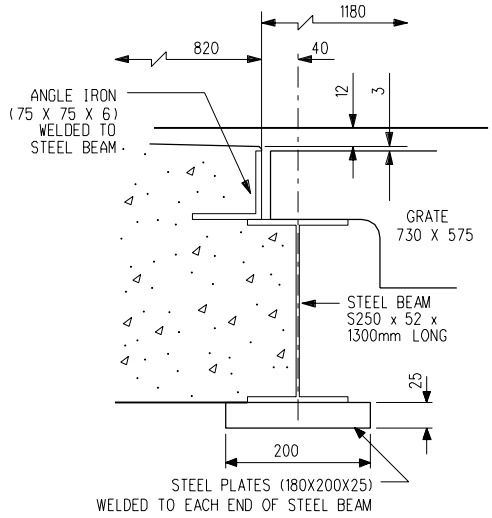
SHEET 1 OF 1 | FILE: 223C004.DGN

0000H223C004

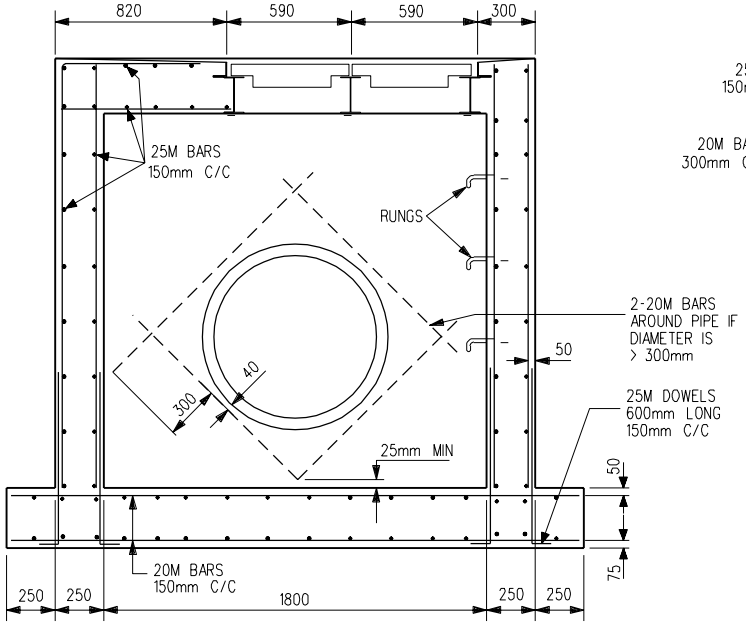
PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



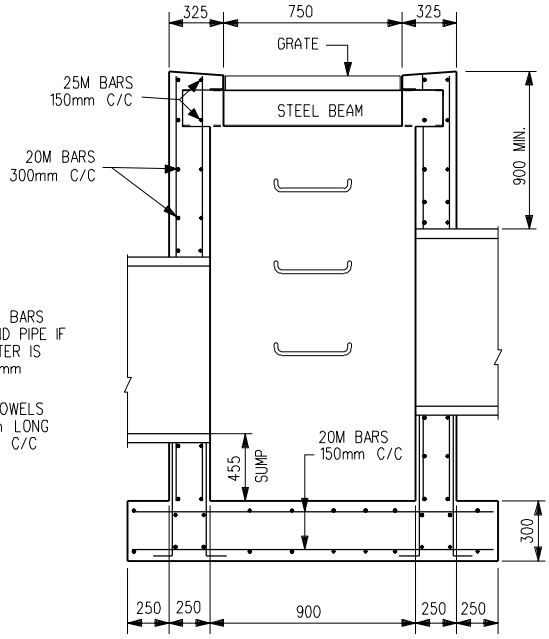
PLAN VIEW



DETAIL OF OPENING



A-A



B-B

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. FOR GRATING AND FASTENING DETAILS SEE DRAWING 0000H223C011.
3. FOR PIPE CONNECTION AND RUNG DETAILS SEE DRAWING 0000H223C018.

NO.	INIT.	DATE:	REVISIONS

DRAWN:	DESIGNED:	APPROVED:

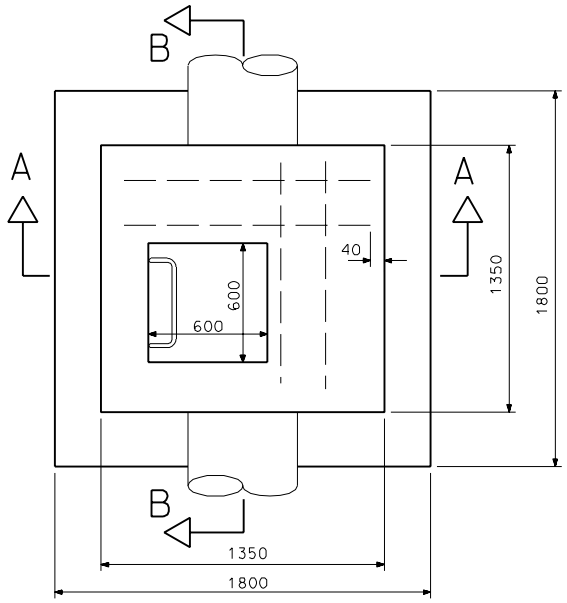
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STORM SEWER MANHOLE TYPE P (900mm x 1800mm)

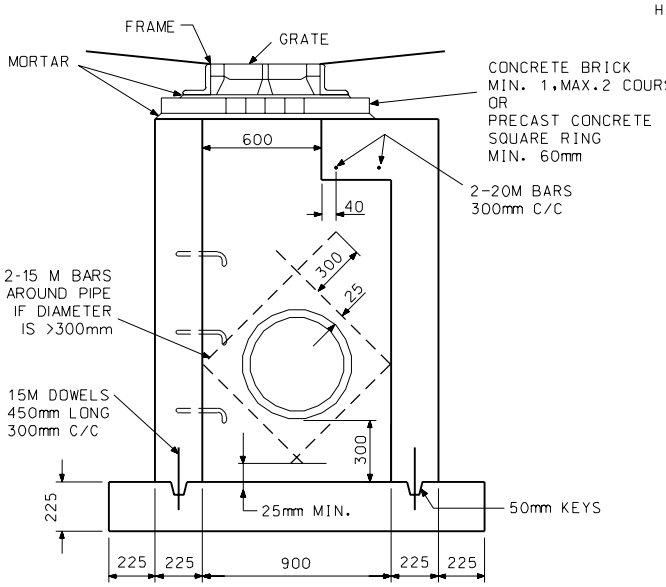
SHEET 1 OF 1 | FILE: 223C005.DGN

0000H223C005

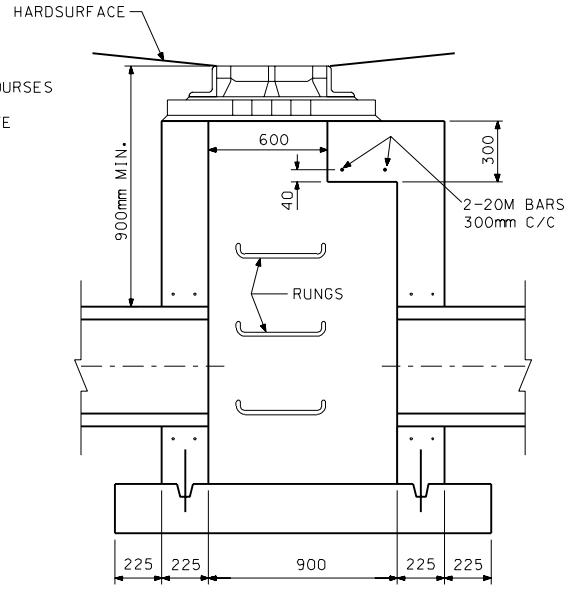
PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



PLAN VIEW



A-A



B-B

NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. MAXIMUM DEPTH OF MANHOLE 5500mm, BELOW 3500mm INCREASE WALL THICKNESS TO 300mm.
3. FOR GRATING,CURB AND GUTTER DETAILS SEE DRAWING 00H223C010.
4. FOR PIPING CONNECTION SEE DRAWING 00H223C018.

2E	J.A.	8/79	METRIC ISSUE
NO.	INIT.	DATE:	REVISIONS
DRAWN:		DESIGNED:	APPROVED:

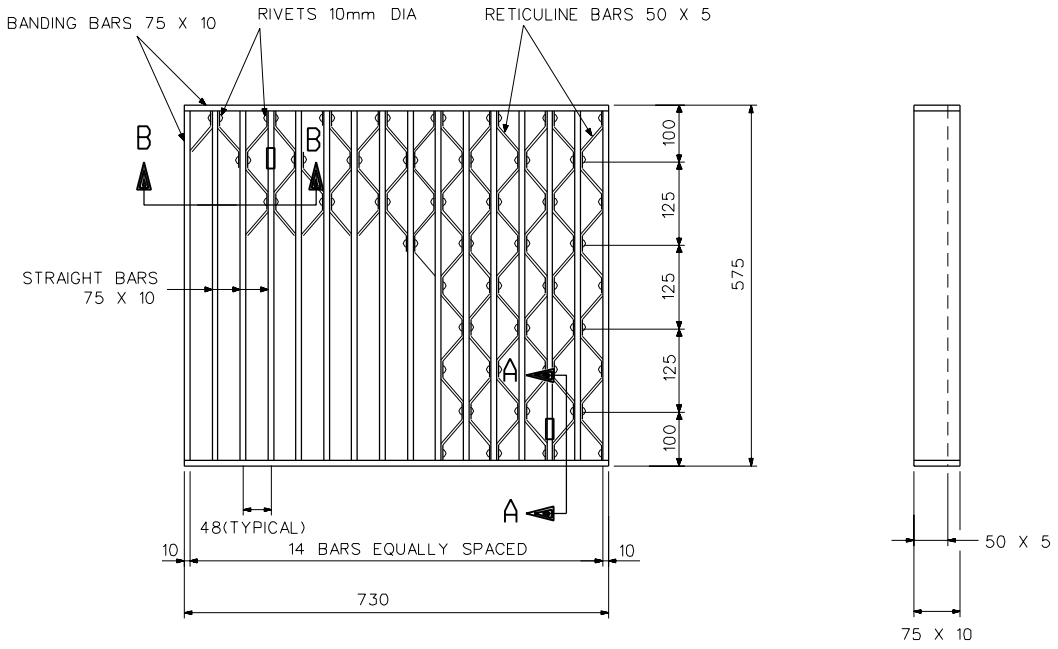
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STORM SEWER MANHOLE TYPE R (900mm X 900mm)

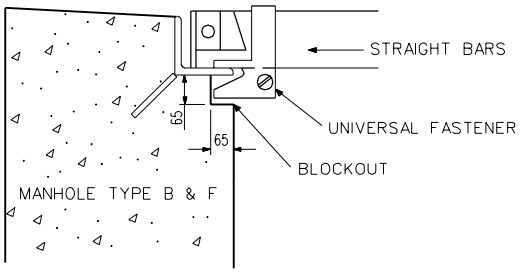
SHEET 1 OF 1 | FILE: 223C006.DGN

00OOH223C006

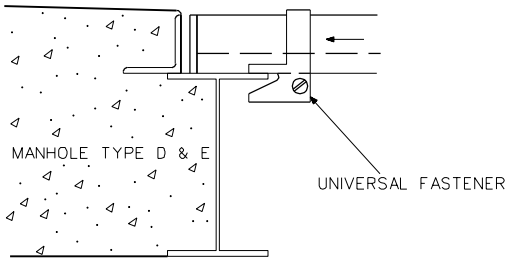
PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



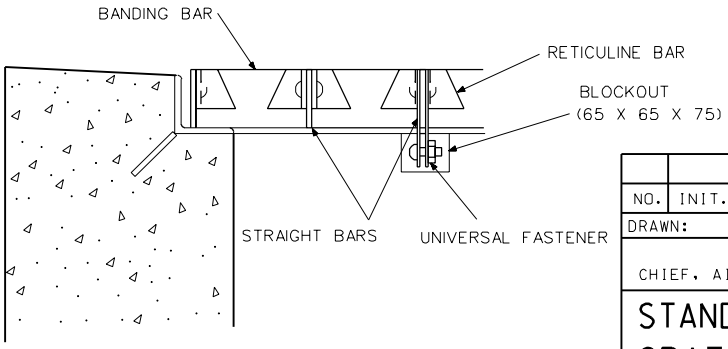
PLAN VIEW



A-A



A-A



B-B

NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETRES.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

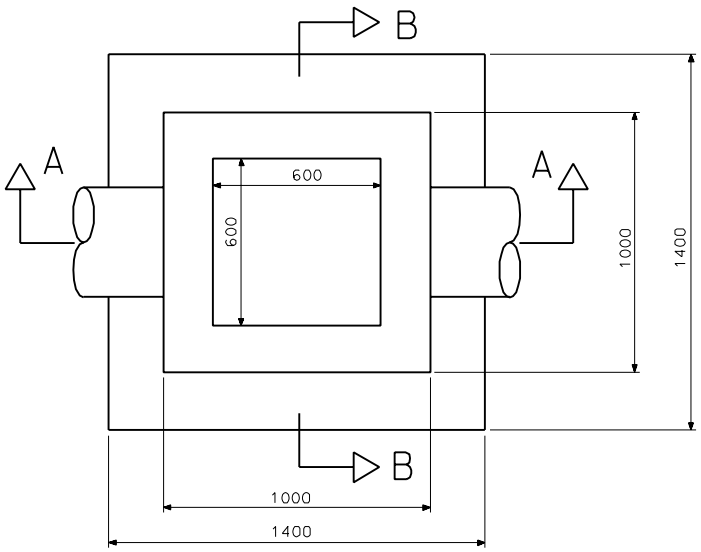
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STANDARD GRATING AND FASTENING DEVICE DETAILS

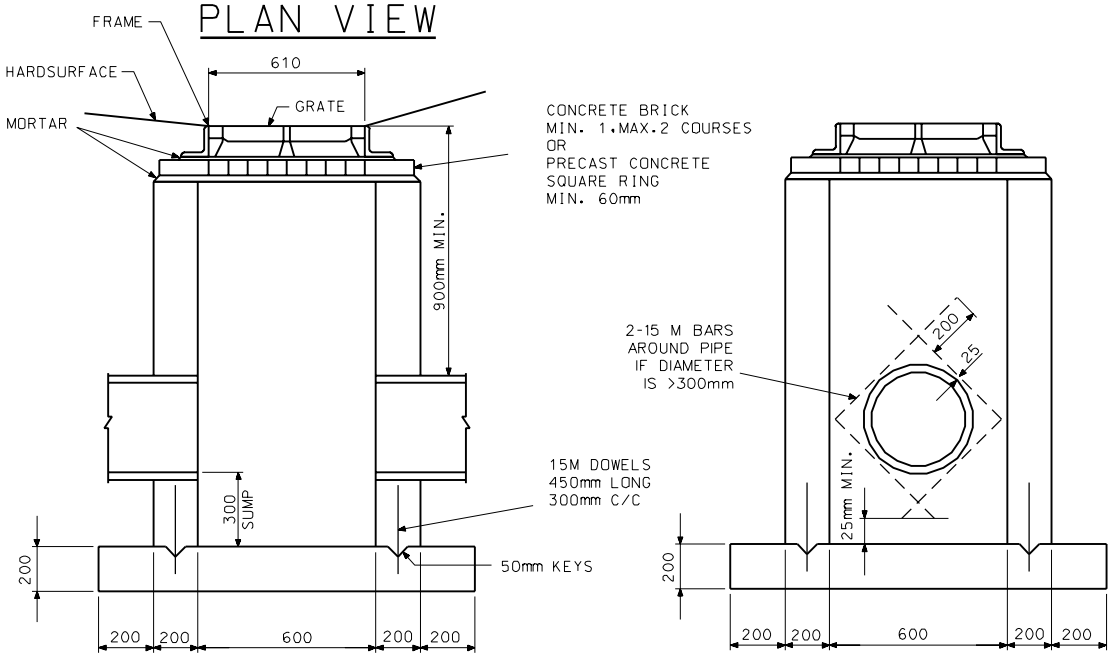
SHEET 1 OF 1 | FILE: 223C007.DGN

0000H223C007

PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



PLAN VIEW



A–A

B–B

NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. MAXIMUM DEPTH OF CATCH BASIN 3500mm.
3. FOR GRATING, CURB AND GUTTER DETAILS SEE DRAWING 00H223C010.
4. FOR PIPING CONNECTION SEE DRAWING 00H223C018.

2E	J.A.	8/79	METRIC ISSUE
NO.	INIT.	DATE:	REVISIONS
DRAWN:		DESIGNED:	APPROVED:

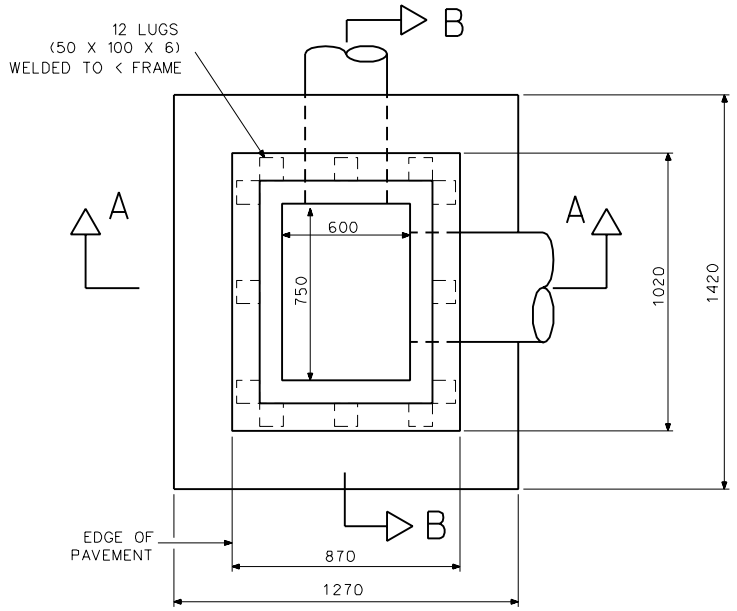
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STORM SEWER CATCH BASIN TYPE A (600mm X 600mm)

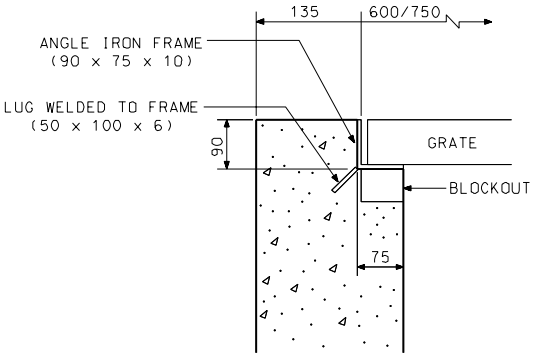
SHEET 1 OF 1 | FILE: 223C008.DGN

00OOH223C008

PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada

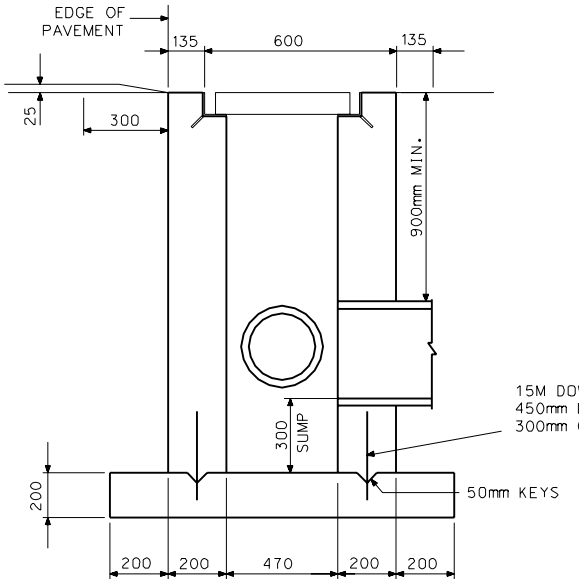


PLAN VIEW

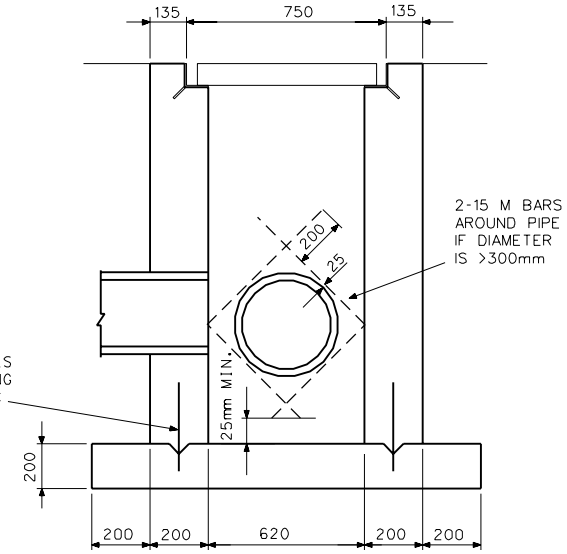


FOR LOCATION OF FASTENING DEVICE BLOCKOUTS SEE GRATING DWG 0000H223C007

DETAIL OF OPENING



A-A



B-B

NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. MAXIMUM DEPTH OF CATCH BASIN 3500mm.
3. FOR GRATING AND FASTENING DETAILS SEE DRAWING 0000H223C007.
4. FOR PIPING CONNECTION SEE DRAWING 00H223C018.
5. SLOPE TO MATCH SHOULDER GRADES.

NO.	INIT.	DATE:	REVISIONS
DRAWN:		DESIGNED:	APPROVED:

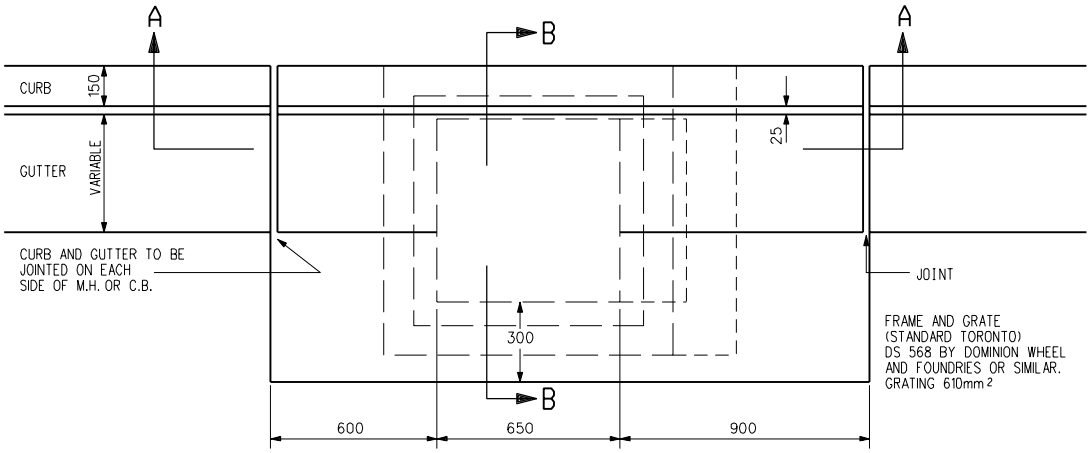
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STORM SEWER CATCH BASIN TYPE B (470mm X 620mm)

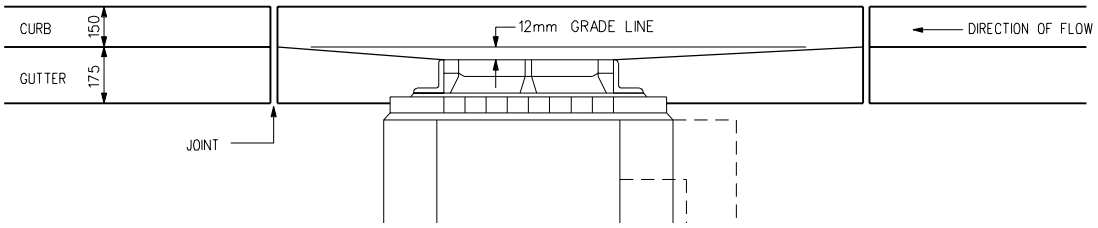
SHEET 1 OF 1 | FILE: 223C009.DGN

0000H223C009

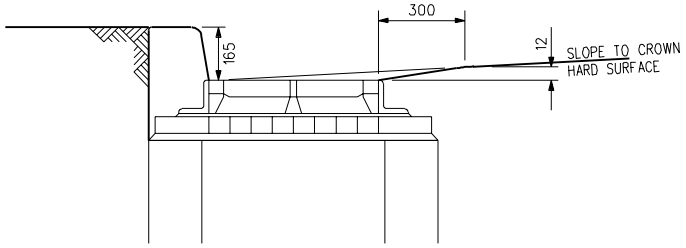
PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



PLAN VIEW

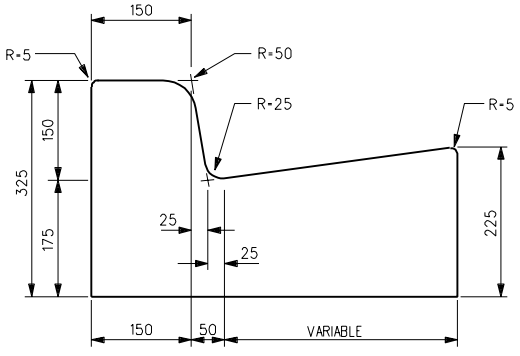


A-A



B-B

NOTE:
ALL DIMENSIONS ARE IN MILLIMETERS



CURB AND GUTTER DETAIL

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

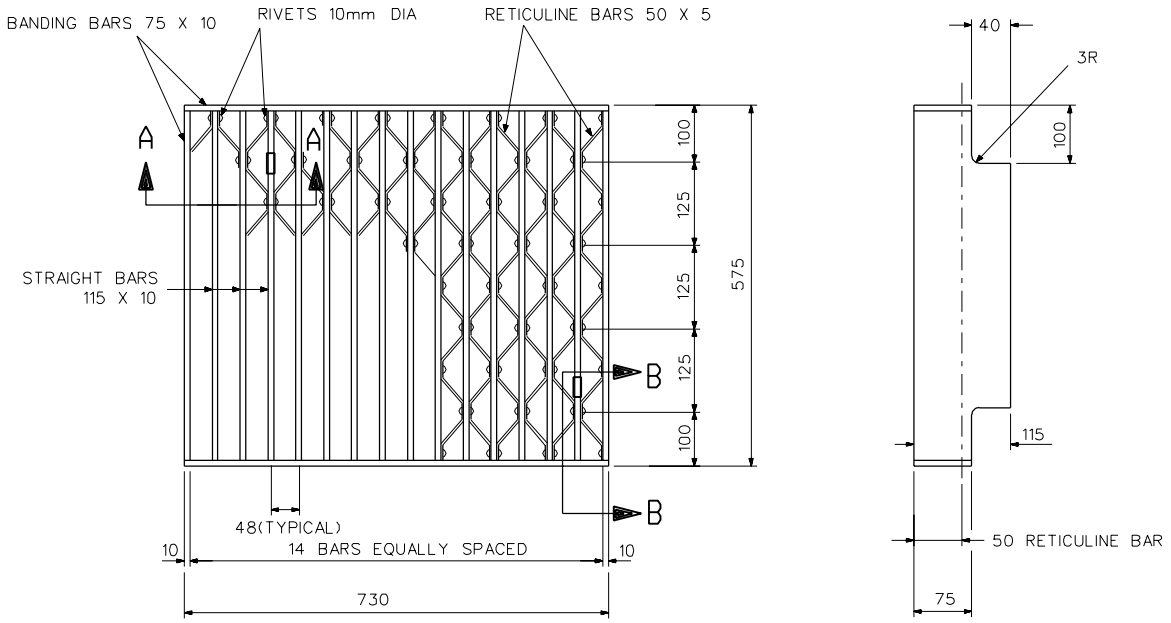
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

DETAILS OF COMBINED CURB AND GUTTER AT MANHOLE OR CATCH BASIN

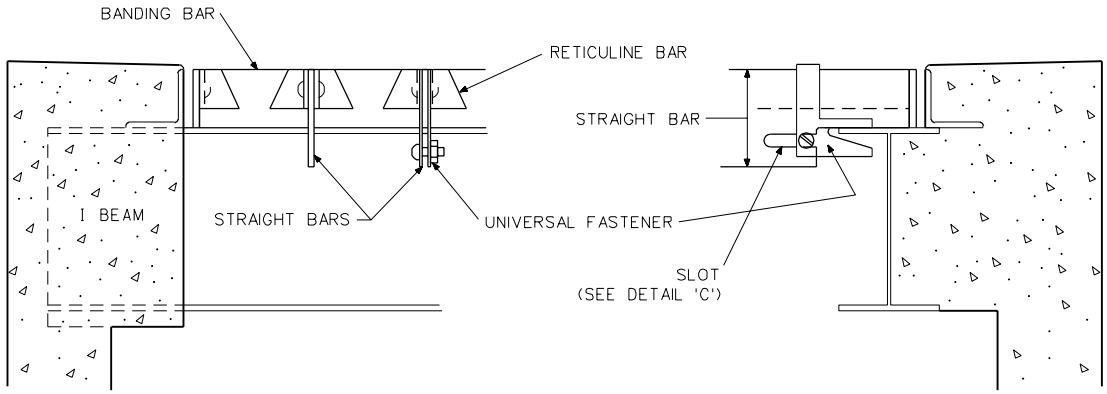
SHEET 1 OF 1 | FILE: 223C010.DGN

0000H223C010

PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada

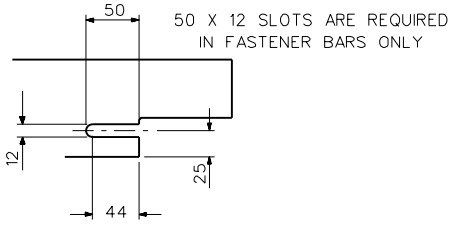


PLAN VIEW



A-A

B-B



DETAIL 'C'

NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETRES.

NO.	INIT.	DATE:	REVISIONS
DRAWN:		DESIGNED:	APPROVED:

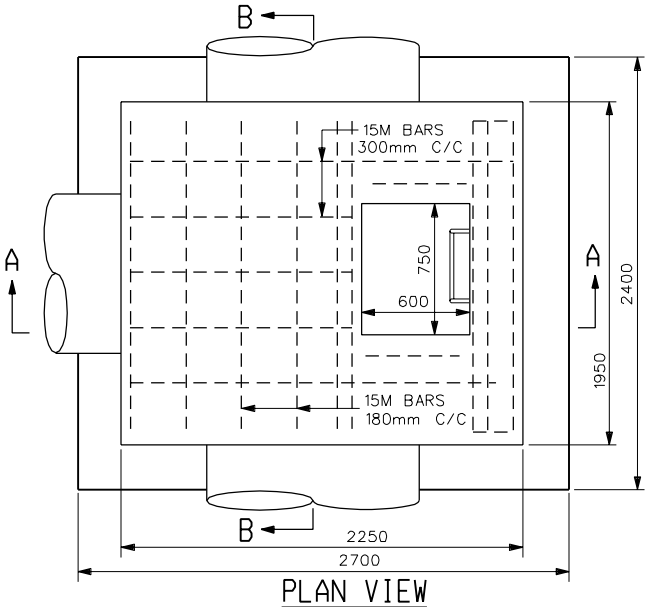
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

GRATING AND FASTENING DEVICE FOR TYPE 'L' AND TYPE 'B' MANHOLES

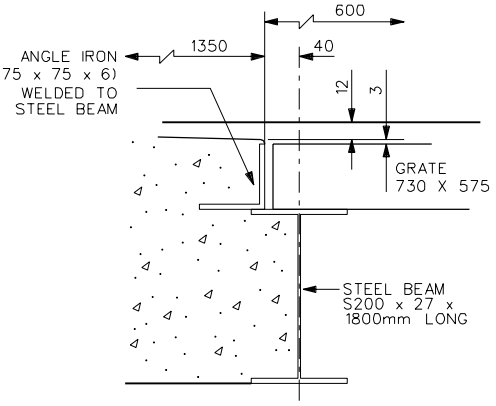
SHEET 1 OF 1 | FILE: 223C011.DGN

0000H223C011

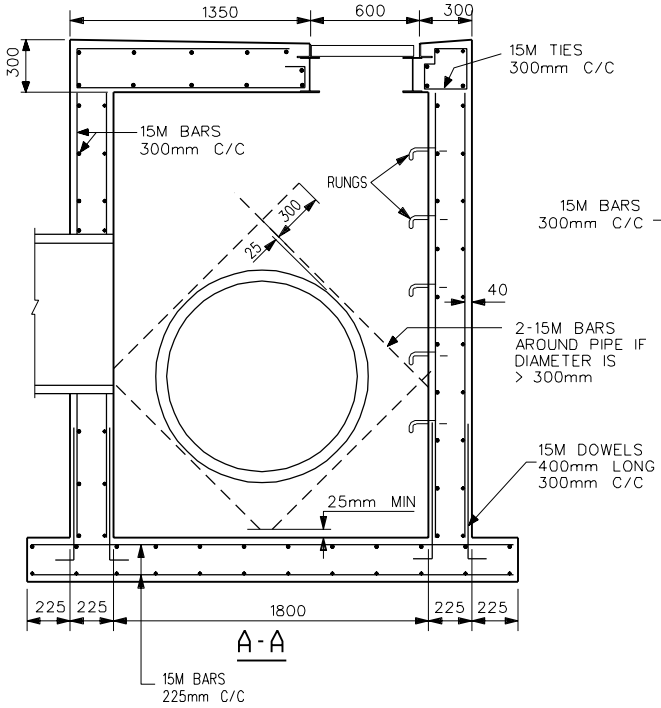
PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



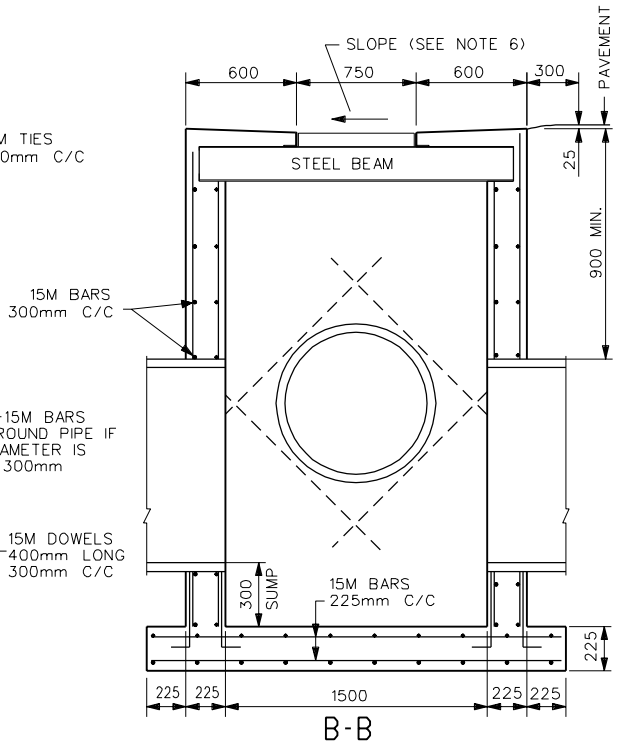
PLAN VIEW



DETAIL OF OPENING



A-A



B-B

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. MAXIMUM DEPTH OF MANHOLE 5500mm.
3. IN TURF AREAS, PLACE TOP OF MANHOLE 150mm BELOW FINISHED GRADE. FROM THE EDGE OF MANHOLE UP TO FINISHED GRADE SLOPE TURF AT 3:1
4. FOR GRATING AND FASTENING DETAILS SEE DRAWING 0000H223C007.
5. FOR PIPE CONNECTION AND RUNG DETAILS SEE DRAWING 0000H223C018.
6. SLOPE TO MATCH SHOULDER GRADES.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

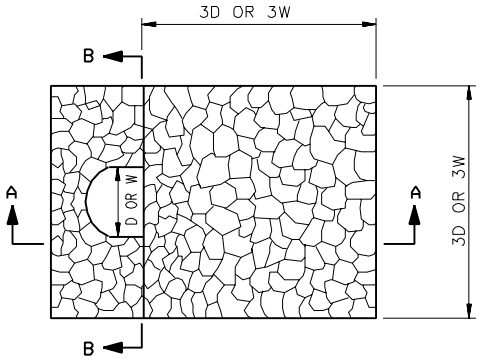
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STORM SEWER MANHOLE TYPE E (1500mm X 1800mm)

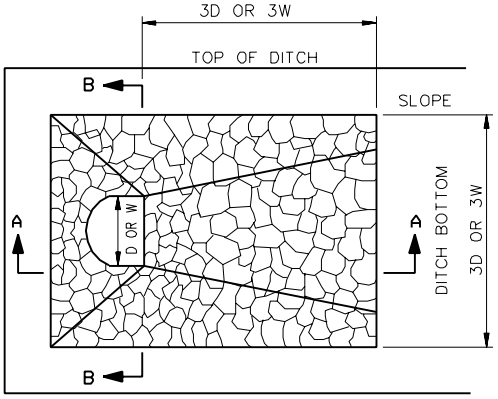
SHEET 1 OF 1 | FILE: 223C012.DGN

0000H223C012

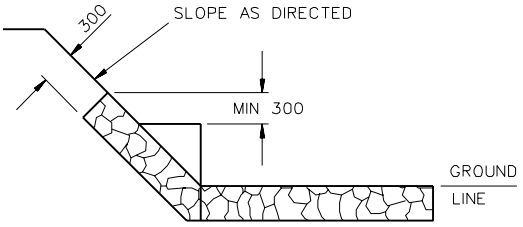
PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



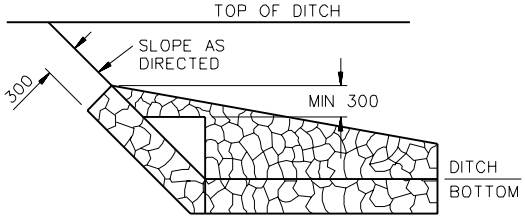
PLAN VIEW



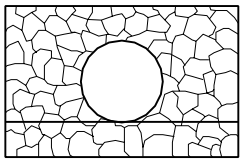
PLAN VIEW



A-A

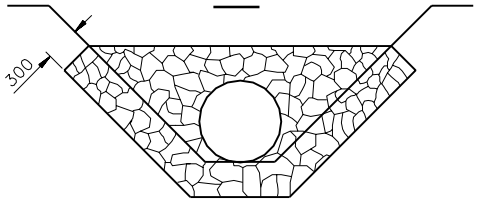


A-A



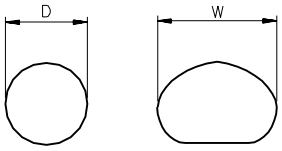
B-B

RIP RAP WHERE PIPE IS AT GROUND LEVEL



B-B

RIP RAP IN COMBINATION WITH DITCH



ROUND PIPE ARCH PIPE

D OR W	450 600 750 900	1050 1200 1350 1500	1700 1800
APRON DEPTH	450	600	750

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. IN LOCATIONS OTHER THAN INLETS AND OUTLETS WHERE RIP RAP IS SPECIFIED, THE THICKNESS SHALL BE A MINIMUM OF 300mm AND THE LENGTH, WIDTH AND DISTANCE AS DIRECTED BY THE ENGINEER.
3. APPLY CEMENT MORTAR AS REQUIRED TO PRODUCE A TIGHT FINISHED SURFACE.

NO.	INIT.	DATE:	REVISIONS
DRAWN:		DESIGNED:	APPROVED:

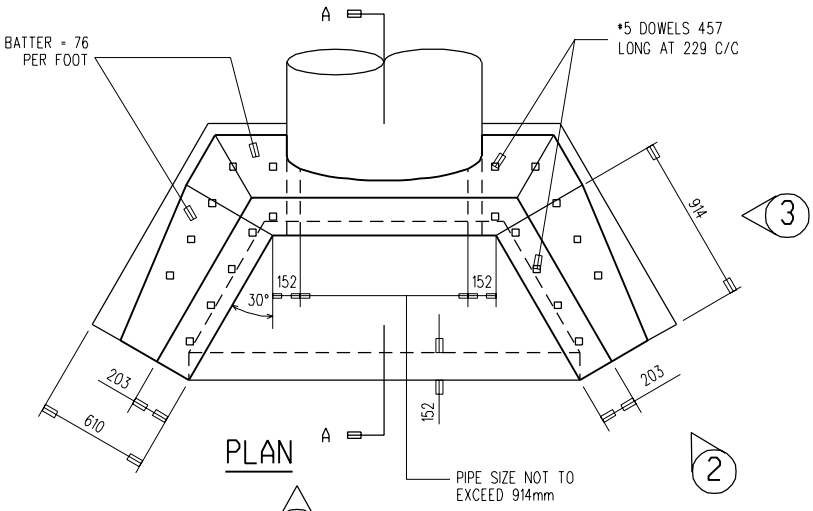
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

HAND PLACED RIP RAP FOR DRAINAGE INLET/OUTLET

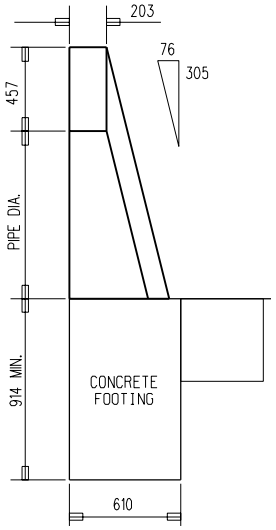
SHEET 1 OF 1 | FILE: 223C016.DGN

0000H223C016

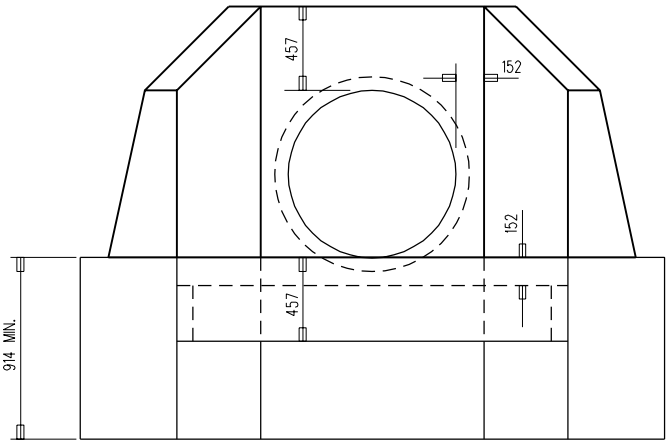
PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



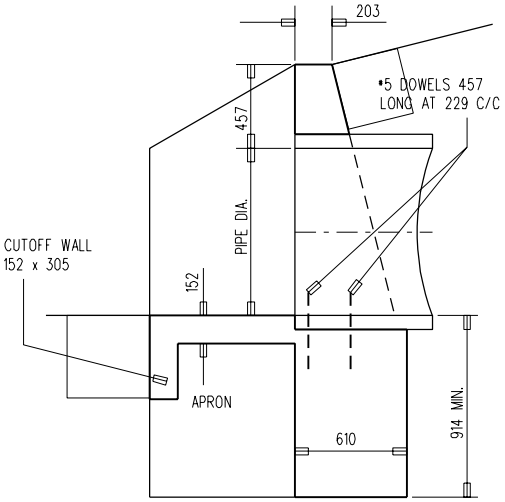
PLAN 1



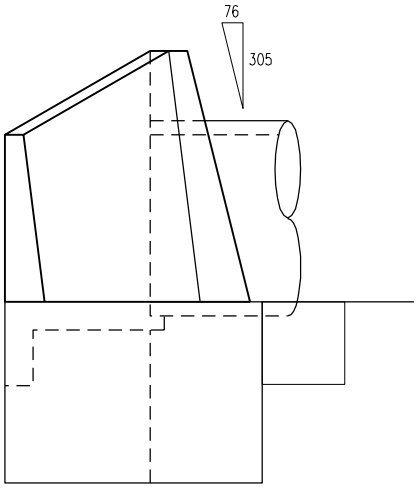
ELEVATION 2



FRONT ELEVATION 1



SECTION A-A



SIDE ELEVATION 3

NOTE:

METRIC VALUES, SHOWN IN MILLIMETRES, ARE AN APPROXIMATE CONVERSION OF IMPERIAL MEASUREMENT SHOWN IN BRACKETS.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

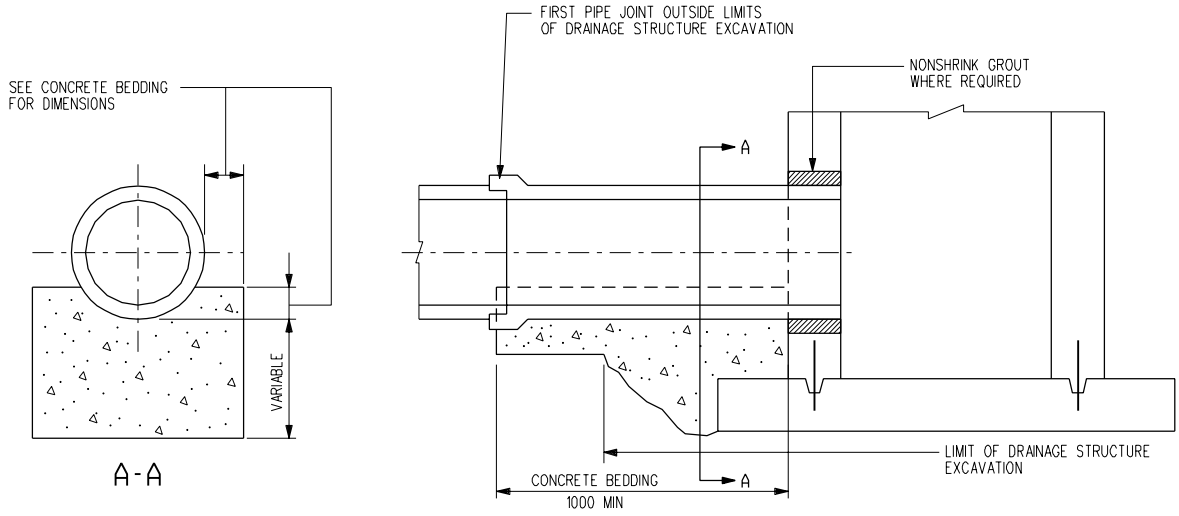
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

CONCRETE HEADWALL DETAILS

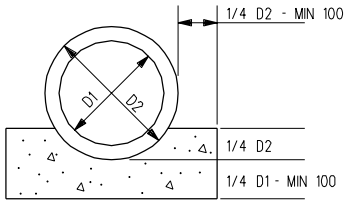
SHEET 1 OF 1 | FILE: 223C017.DGN

0000H223C017

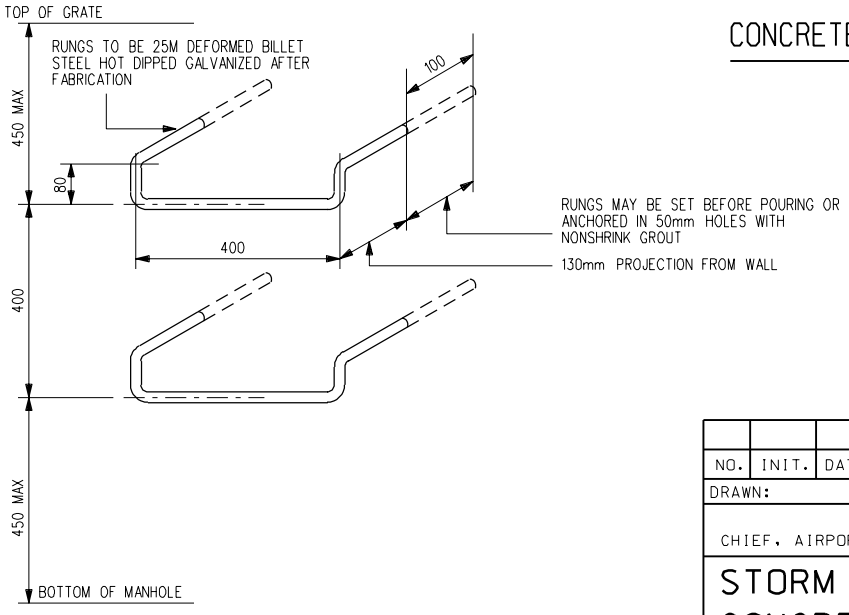
PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



STORM SEWER CONNECTION TO DRAINAGE STRUCTURE



CONCRETE BEDDING



RUNG DETAIL

NOTE:

ALL DIMENSIONS SHOWN ARE IN MILLIMETRES.

NO.	INIT.	DATE:	REVISIONS

DRAWN: | DESIGNED: | APPROVED:

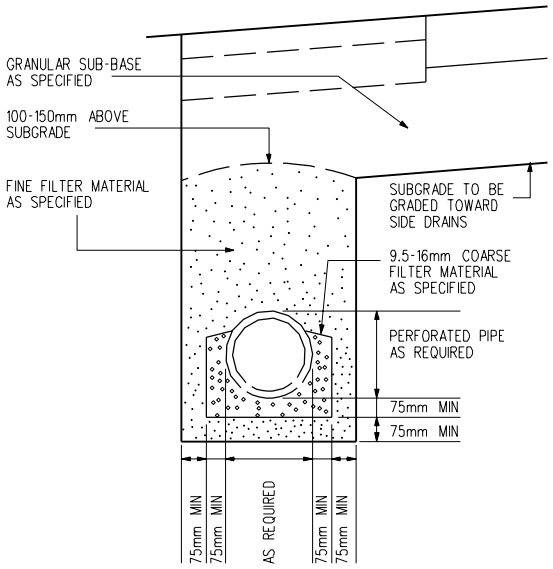
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

STORM SEWER CONNECTION CONCRETE BEDDING RUNG DETAILS

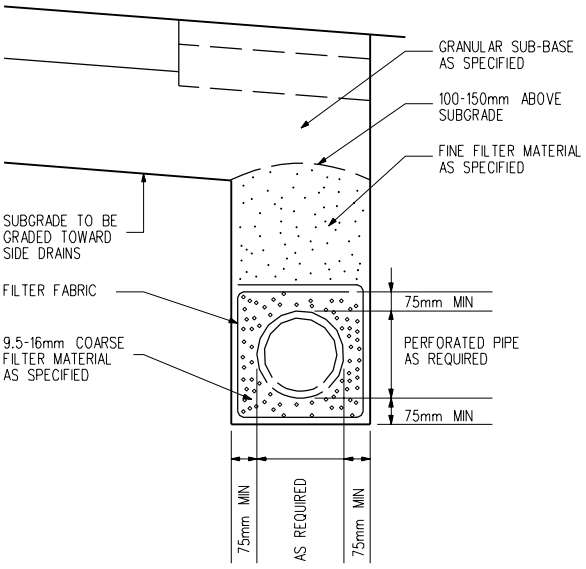
SHEET 1 OF 1 | FILE: 223C018.DGN

OOOOH223C018

PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



USING TWO STAGE FILTER



USING FILTER FABRIC AROUND STONE BACKFILL

NO.	INIT.	DATE:	REVISIONS

DRAWN:	DESIGNED:	APPROVED:

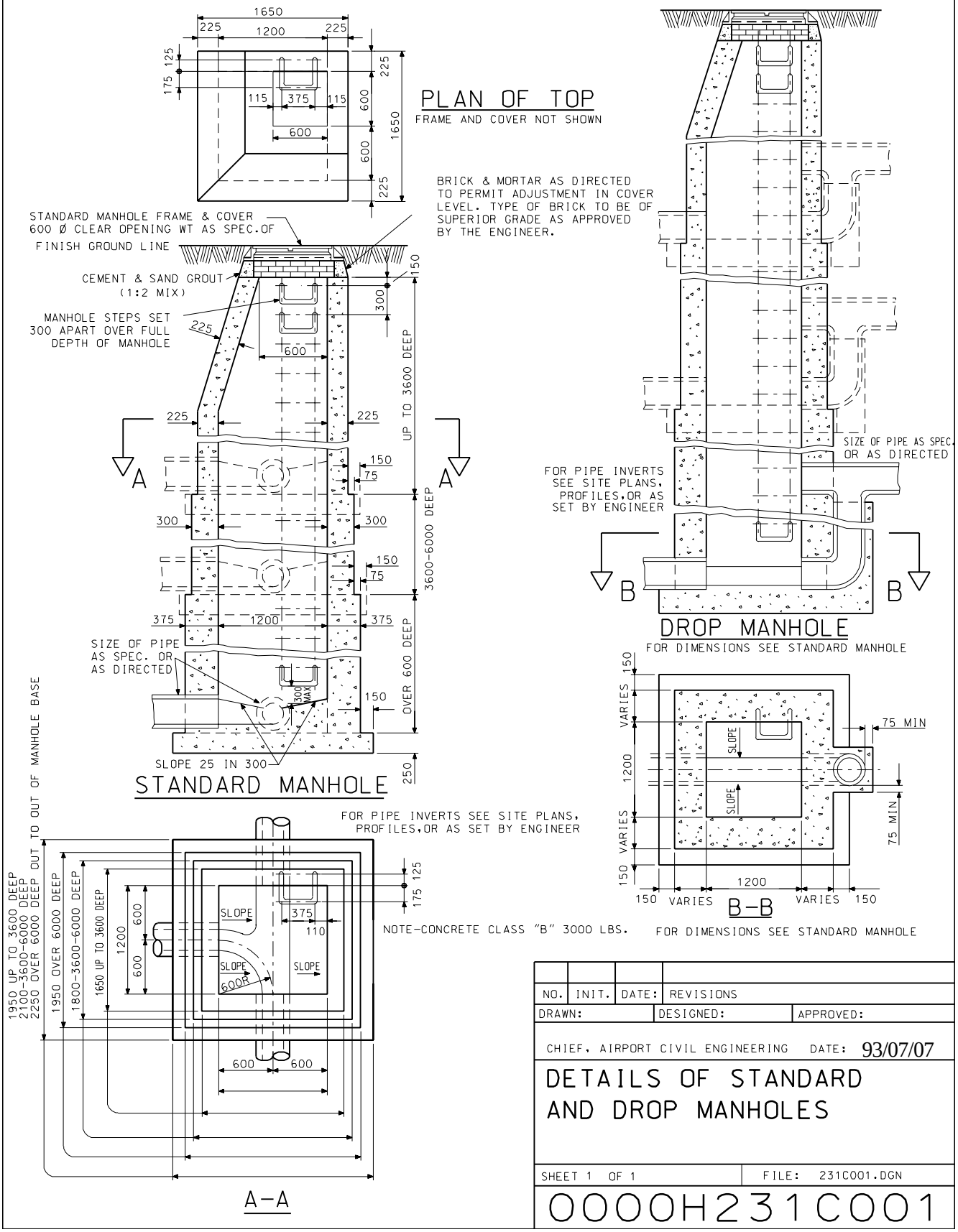
CHIEF, AIRPORT CIVIL ENGINEERING DATE: 93/07/07

TYPICAL SUBGRADE DRAINAGE

SHEET 1 OF 1	FILE: 223C019.DGN

0000H223C019

PUBLIC WORKS CANADA | ARCHITECTURAL & ENGINEERING SERVICES | AIR TRANSPORTATION | Canada



NO.	INIT.	DATE:	REVISIONS
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DETAILS OF STANDARD AND DROP MANHOLES

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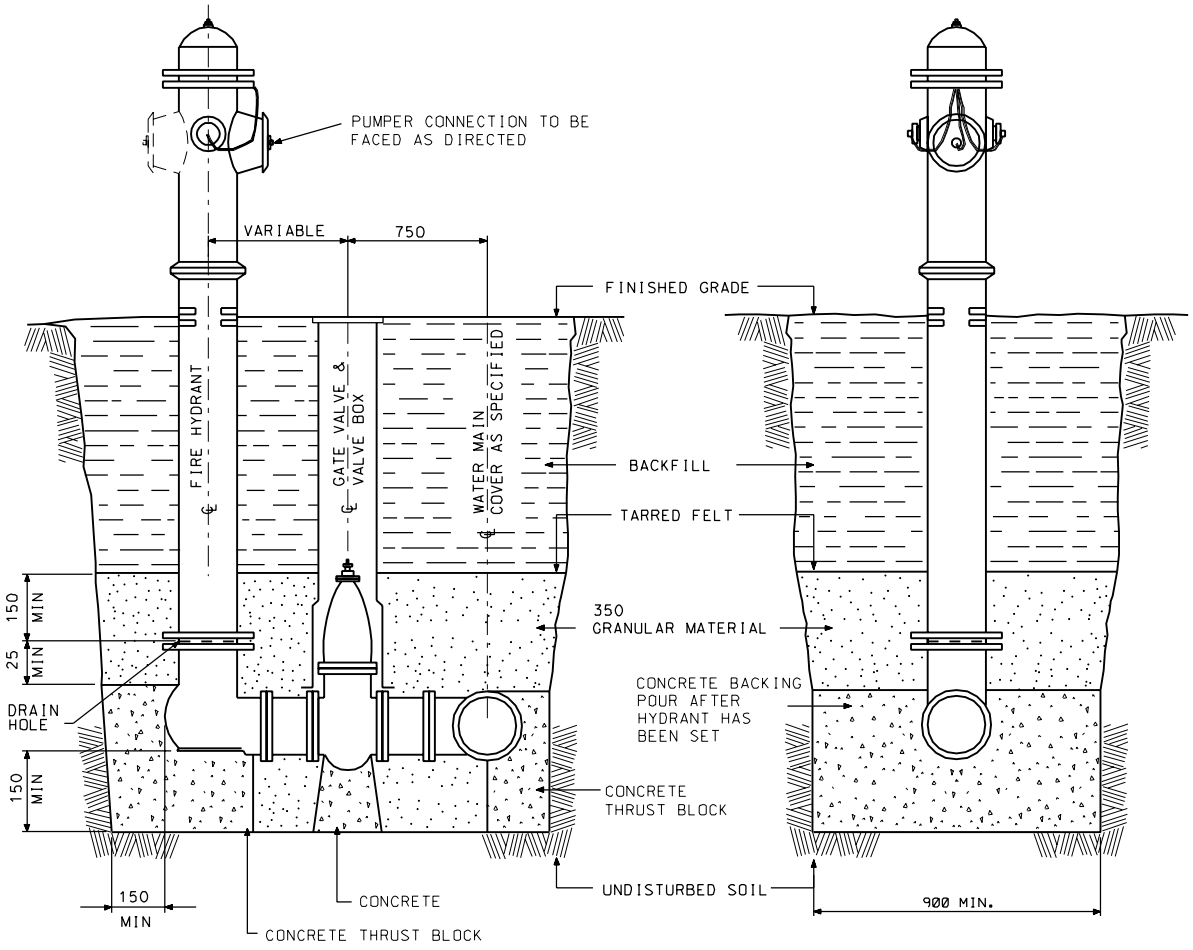

NOTES:
1-METRIC VALUES, SHOWN IN MILLIMETRES, ARE IN APPROXIMATE CONVERSION OF IMPERIAL UNITS.
2-PROVIDE CONCRETE THRUST BLOCKS AT ELBOWS AND CHANGES OF DIRECTION.

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HYDRANT INSTALLATION

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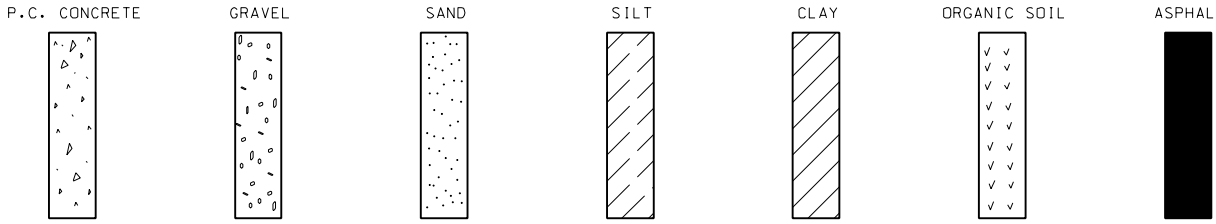
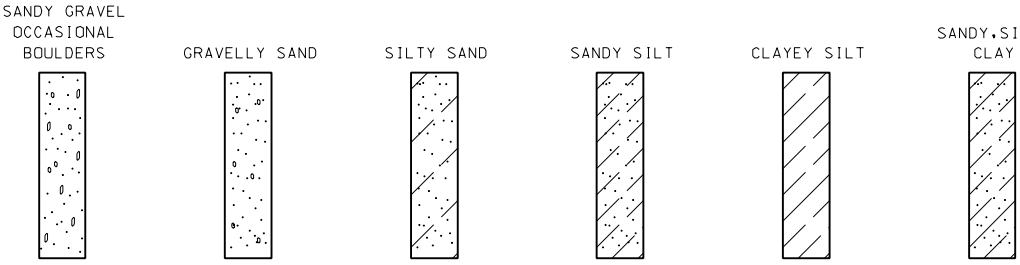


BOULDERS	>200mm
COBBLES	<200mm >75mm
GRAVEL	<100mm >75mm
SAND	<4.75mm >0.075mm
SILT	<0.075mm >0.005mm (NON-PLASTIC) (SANS PLASTICITE)
CLAY	<0.005mm (PLASTIC) (PLASTICITE)

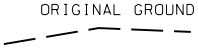
SOME COMPOSITE SOILS



(DENSITY OF SYMBOLS INDICATES PREDOMINANT SOIL TYPE)

NOTE: GROUP SYMBOLS GP,SM,CL ETC USED IN TEST HOLE LOG DESCRIPTIONS,REFER TO THE UNIFIED SOIL CLASSIFICATION SYSTEM.

SPECIAL SYMBOLS



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BASIC TEST HOLE SYMBOLS

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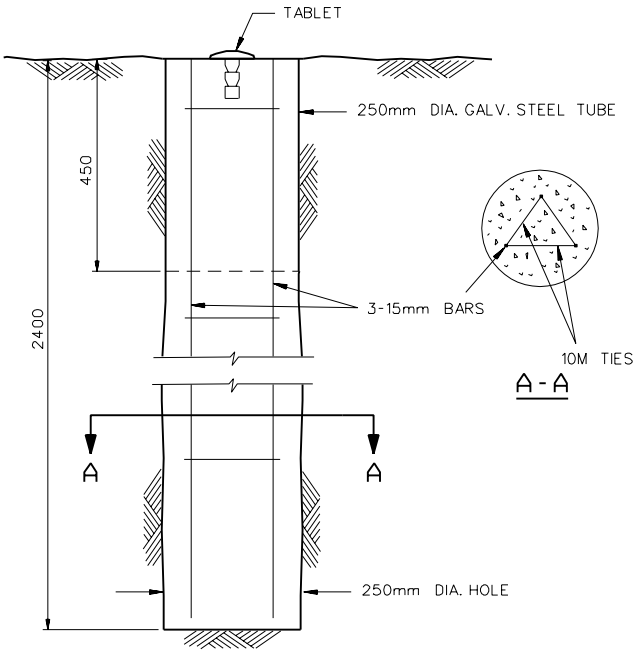
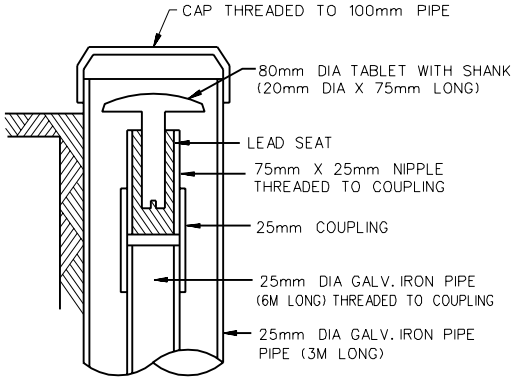
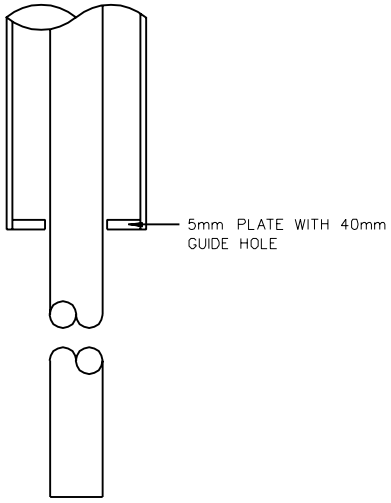
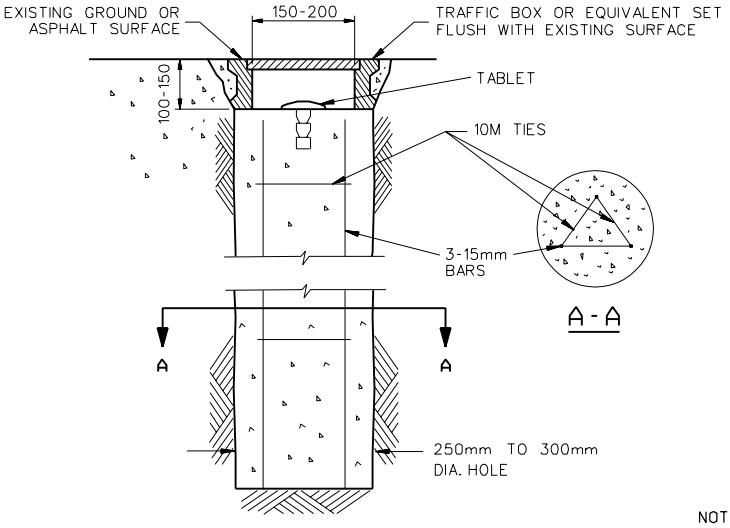


TYPE 'A'



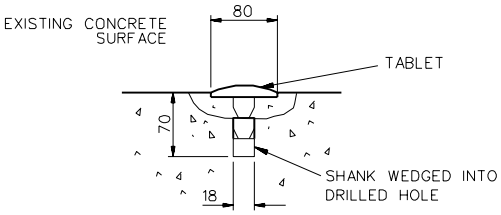


TYPE 'D'



TYPE 'B'

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.



TYPE 'C'

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SURVEY MARKERS

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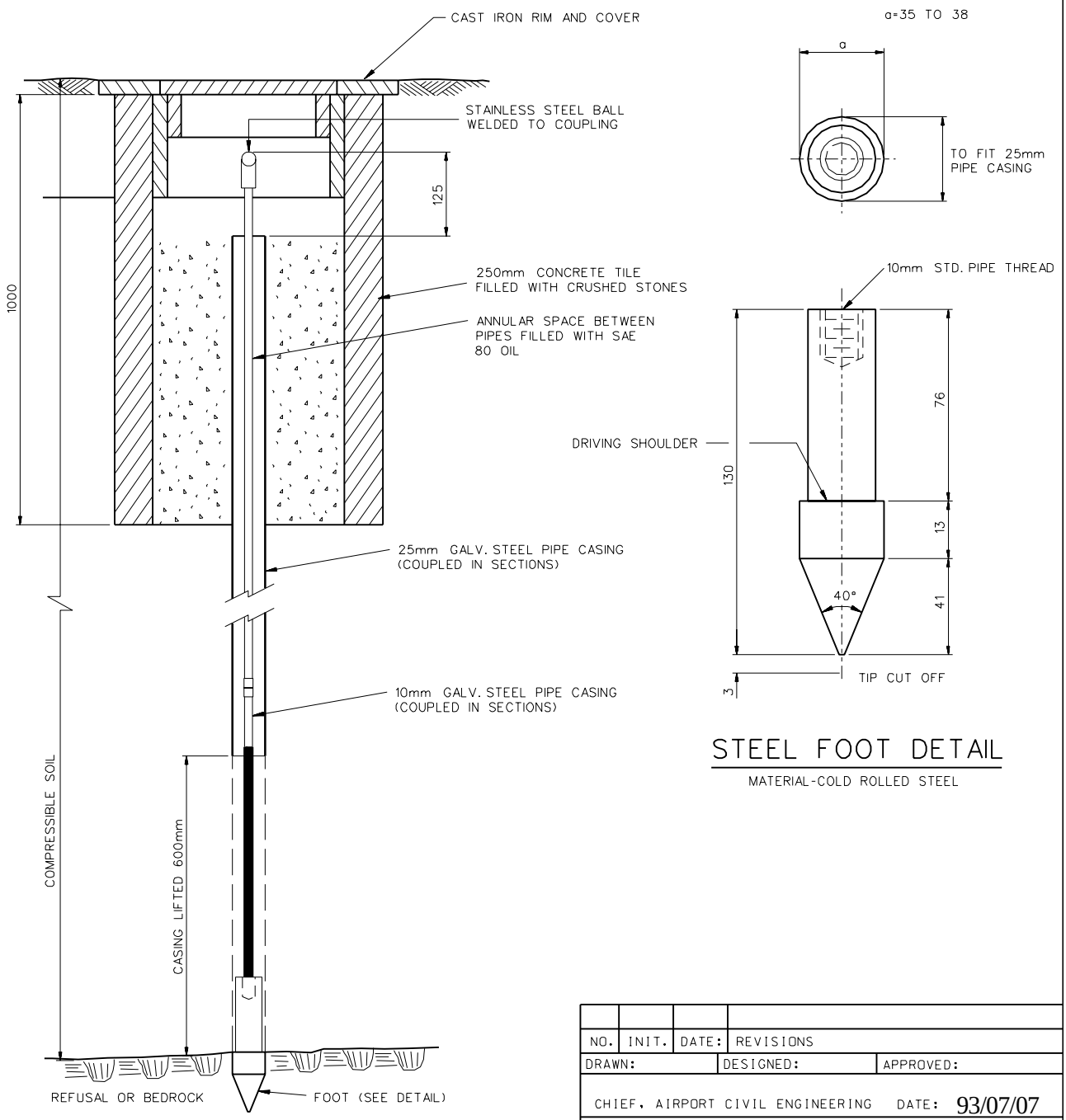

STEEL FOOT DETAIL

MATERIAL-COLD ROLLED STEEL

✱ NATIONAL RESEARCH COUNCIL

NOTE: ALL DIMENSIONS ARE IN MILLIMETRES.

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N.R.C.✱ TYPE DEEP BENCH MARK

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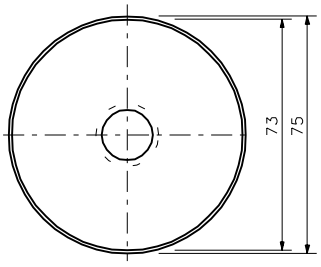
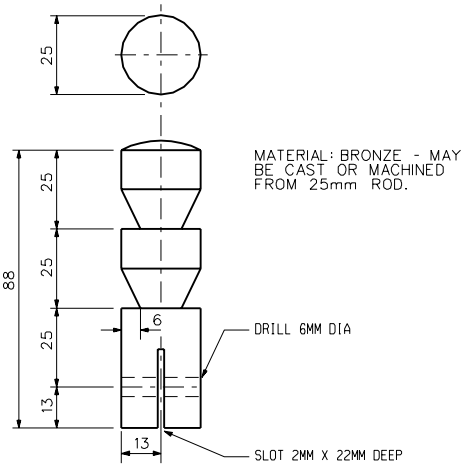
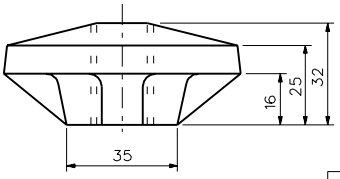


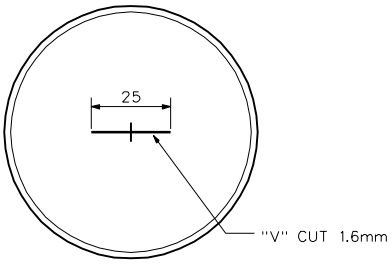
TOP VIEW



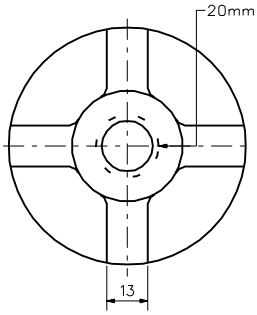
SURVEY BOLT MARKER



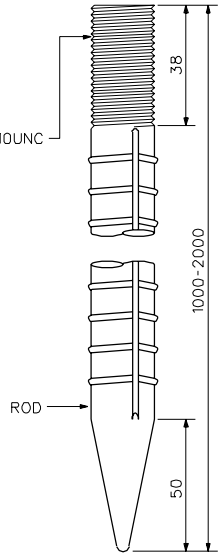
SIDE VIEW



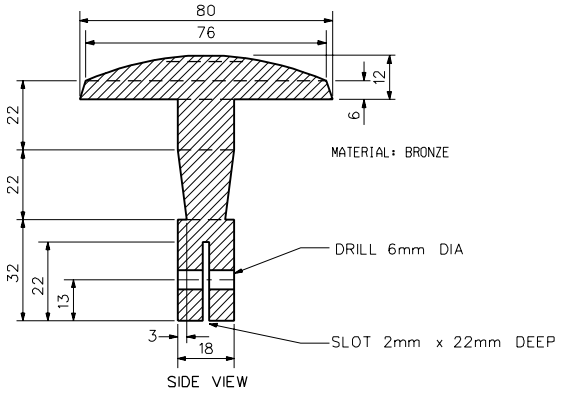
TOP VIEW



BOTTOM VIEW



SURVEY POST MARKER



SURVEY TABLET MARKER

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SURVEY MARKERS

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