

GENERAL

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUPPLY, FABRICATION AND INSTALLATION OF ALL CD DOORS, INCLUDING ALL NECESSARY TOOLS AND EQUIPMENT AS SPECIFIED.
- THE CONTRACTOR SHALL PREPARE A FULL-SCALE MOCKUP OF THE DOOR FOR THE ENGINEER'S ACCEPTANCE BEFORE FABRICATING ALL OF THE DOORS.
- THE DOORS ARE SUBJECT TO FACTORY AND ON-SITE ACCEPTANCE TESTS.
- THE CONTRACTOR SHALL SUBMIT DETAILED METHOD STATEMENTS, INCLUDING ALL SUPPORT AND BRACING DETAILS, FOR THE SAFE ERECTION AND INSTALLATION OF THE DOORS WITHIN THEIR ALLOWABLE TOLERANCES.
- THE CONTRACTOR SHALL NOTE THE WEIGHTS AND SIZES OF THE DOORS AND MAKE FULL ALLOWANCES IN HIS CONSTRUCTION METHOD AND PROGRAMME FOR THE HANDLING, POSITIONING AND INSTALLATION OF THE DOORS.
- THE CONTRACTOR SHALL DEVELOP DETAILED SHOP DRAWINGS IN CONSULTATION WITH THE ENGINEER FOR AN OPTIMAL DESIGN NOT LIMITED BY THE DESIGN DRAWINGS, AND FOR THE ENGINEER'S APPROVAL.
- THE CONTRACTOR SHALL PLAN FOR A DESIGN COMPLIANT INSTALLATION OF REBARS AROUND THE DOOR FRAME AND ENSURE ADEQUATE STRUCTURAL THICKNESS TO ACCOMMODATE THEM.

MATERIALS:

- STRUCTURAL STEEL : S 355 (SS EN 1993)
- REINFORCING STEEL : HIGH-YIELD STEEL (SS EN 1992) $f_y = 460 \text{ MPa}$
- ALL STEEL BOLTS SHALL BE OF GRADE 8.8.
- ALL BEARINGS, BUSHINGS AND THREADING SHALL BE AS DETAILED IN THE DRAWINGS AND SPECIFICATIONS.
- RUBBER FOR DOOR SEALS AND SHOCK PADS SHALL COMPLY WITH THE SPECIFICATIONS.
- ALL WELD TYPES AND SIZES SHALL BE AS INDICATED. FILLET WELDS SHALL BE OF SIZE 7MM AND CONTINUOUS UNLESS OTHERWISE SPECIFIED.

FURTHER NOTES:

- ALL SHEAR KEYS SHALL BE POSITIONED AT THE WEB OF THE VERTICAL I-SECTIONS AND SHALL NOT EXCEED THEIR MAXIMUM SPACINGS SHOWN IN THE DRAWINGS.
- WHERE THERE ARE MORE THAN 6 SHEAR KEYS IN A ROW PER DOOR LEAF, THEY SHALL BE SUITABLY DIVIDED BETWEEN TWO HANDLE AND GEAR WHEEL SYSTEMS PER DOOR LEAF.

Rev.	Date	By	Description	Chk'd	App'd
A	APR 2015	HO SH	UPDATES TO FOOT NOTES AND SHEAR KEY MECHANISM	TPS	TWK

Qualified Person Endorsement :
LTA Endorsement :

AUTHORITY'S DRAWING
Project Title : CD DOOR DESIGN DRAWING

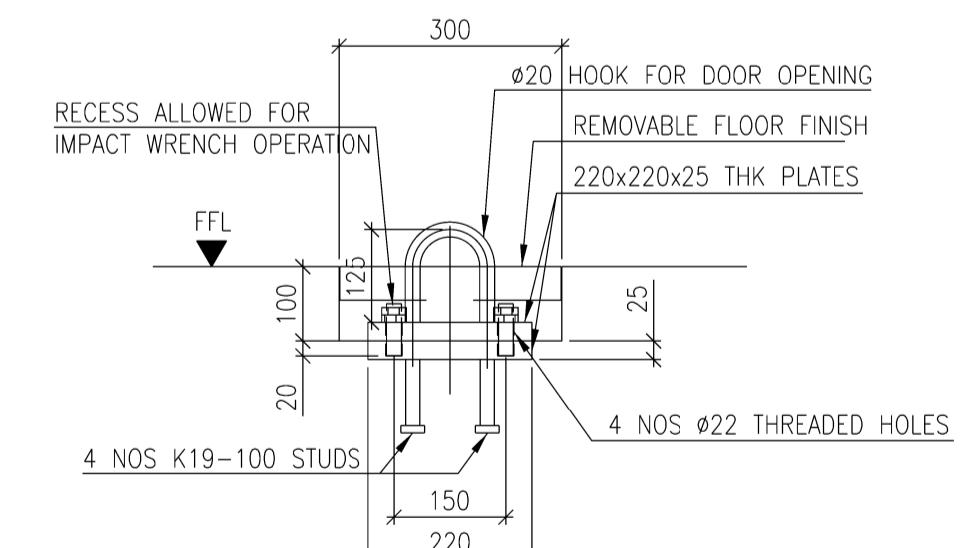
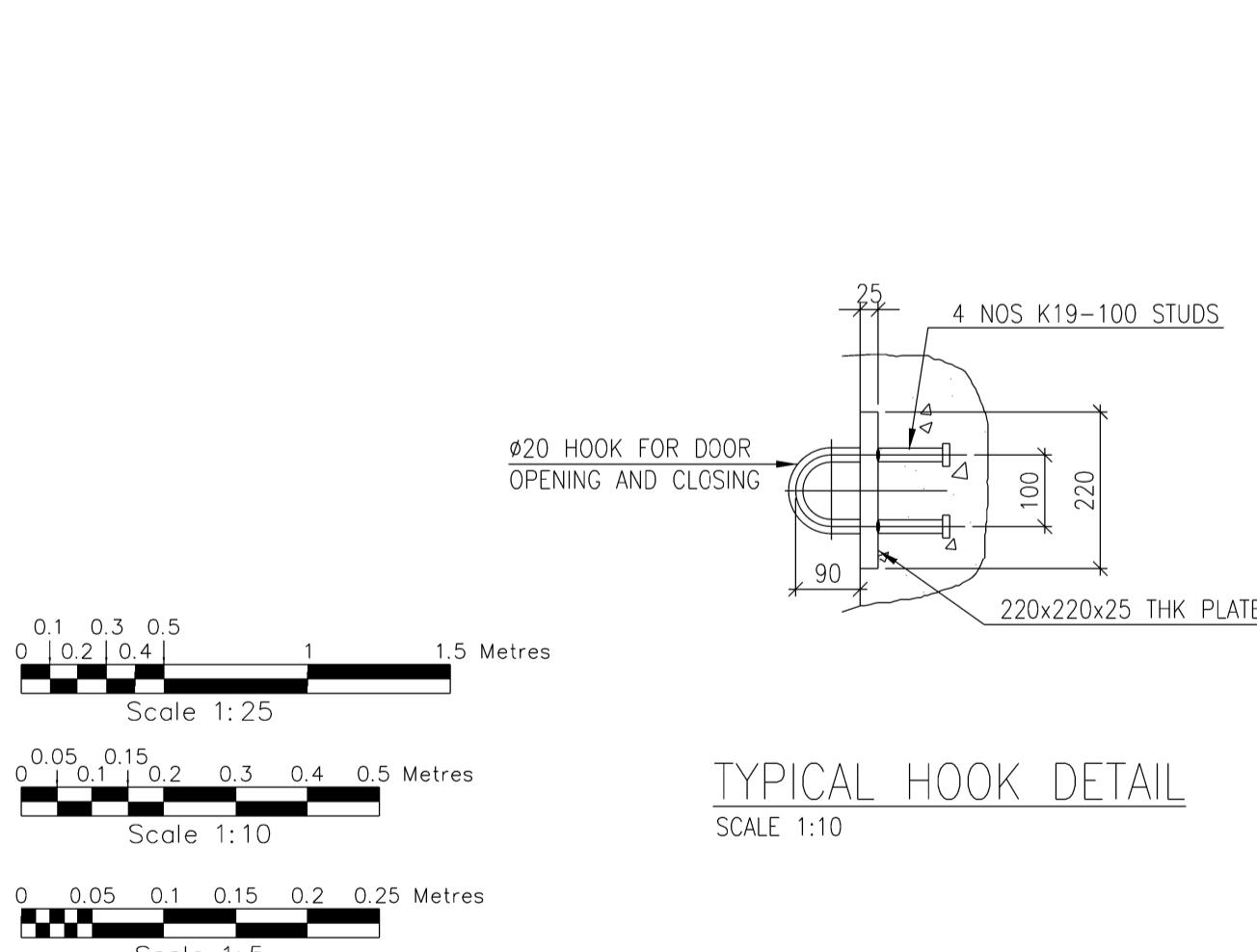
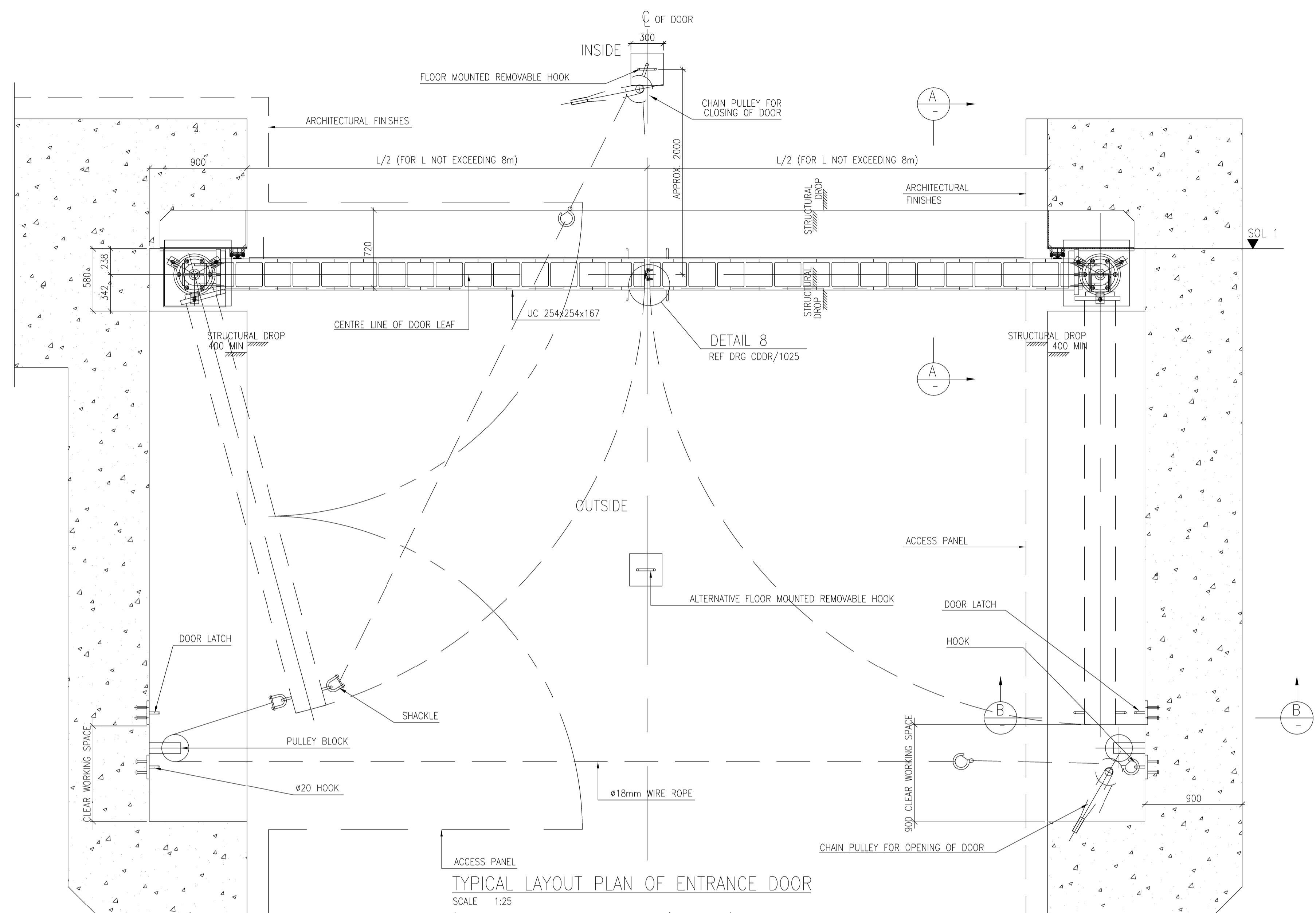
Drawing Title : ENTRANCE HINGED DOORS ELEVATION, SECTION AND ACCESSORIES DETAILS

Designed SOH LP	Checked TAN PS	Approved TAN WK
Scale AS SHOWN	Drawn HO SH	Date 2 APR 2015

Drawing No. : L/CWD/CDDR/1021

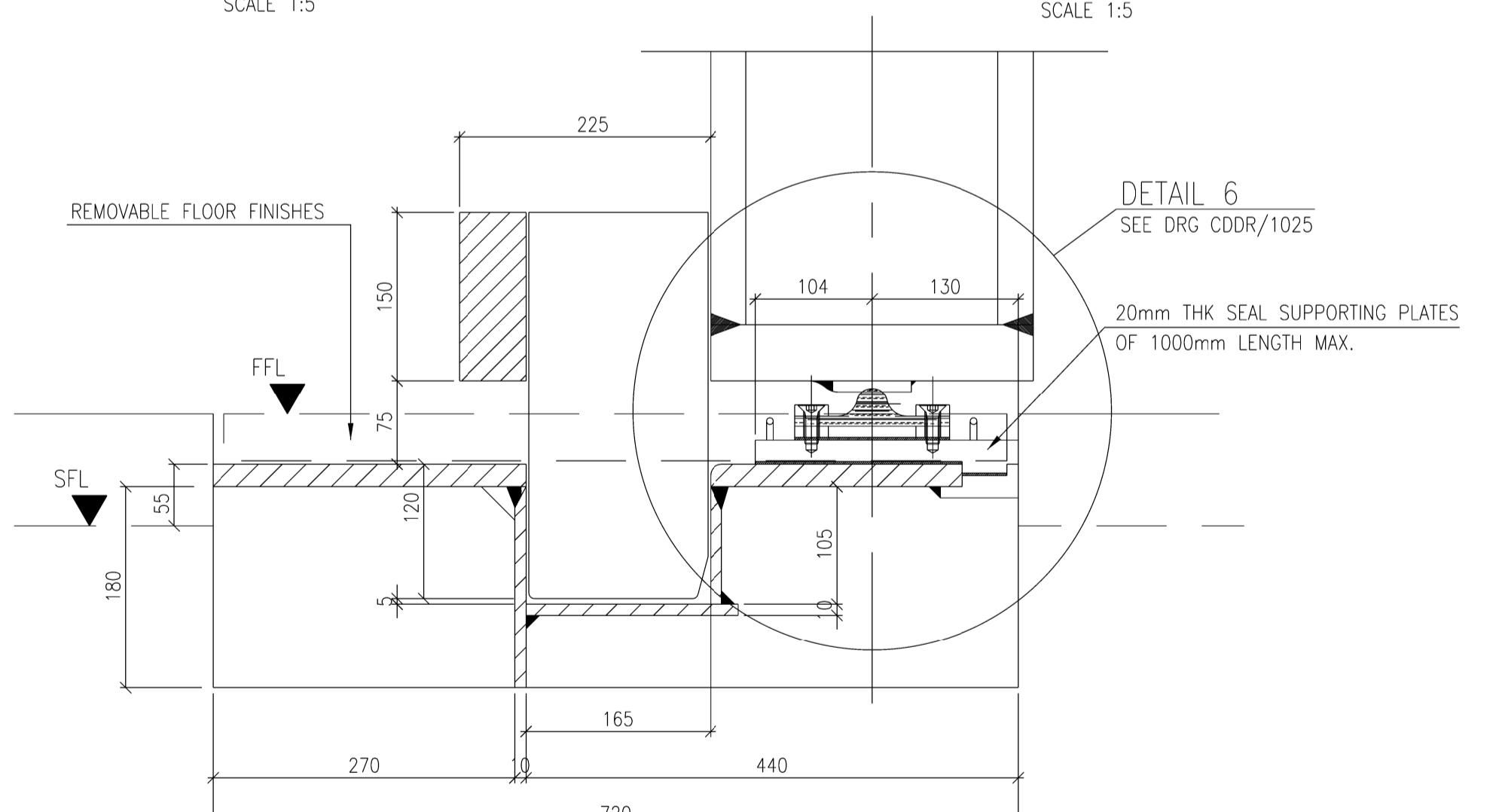
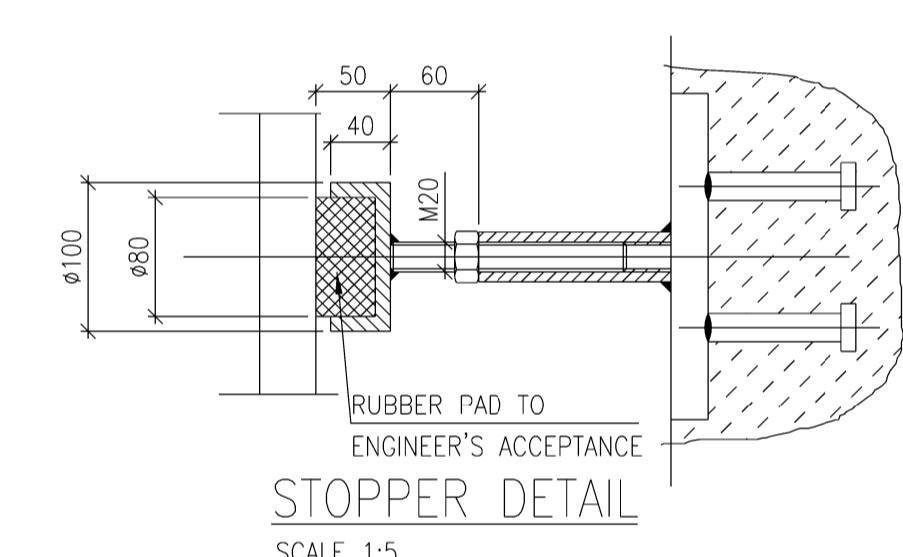
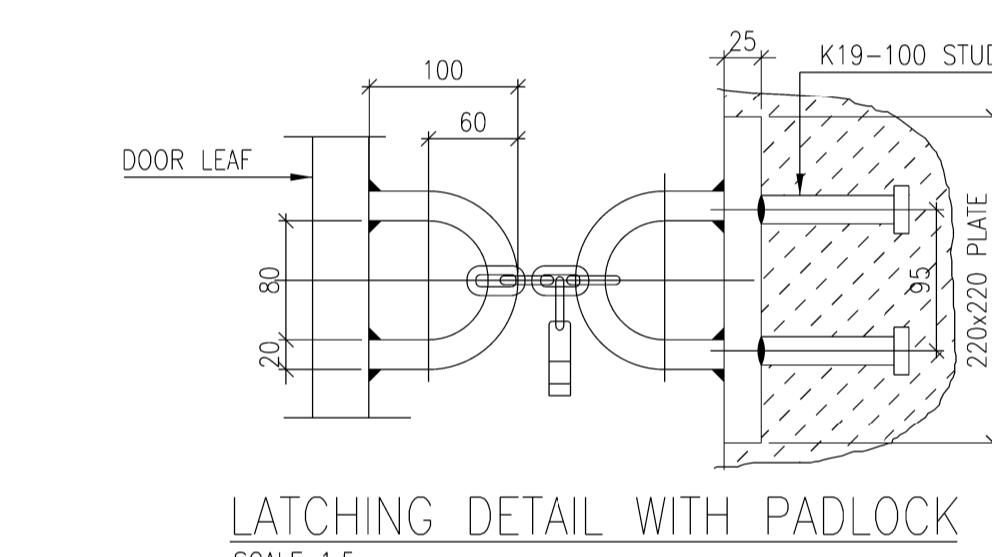
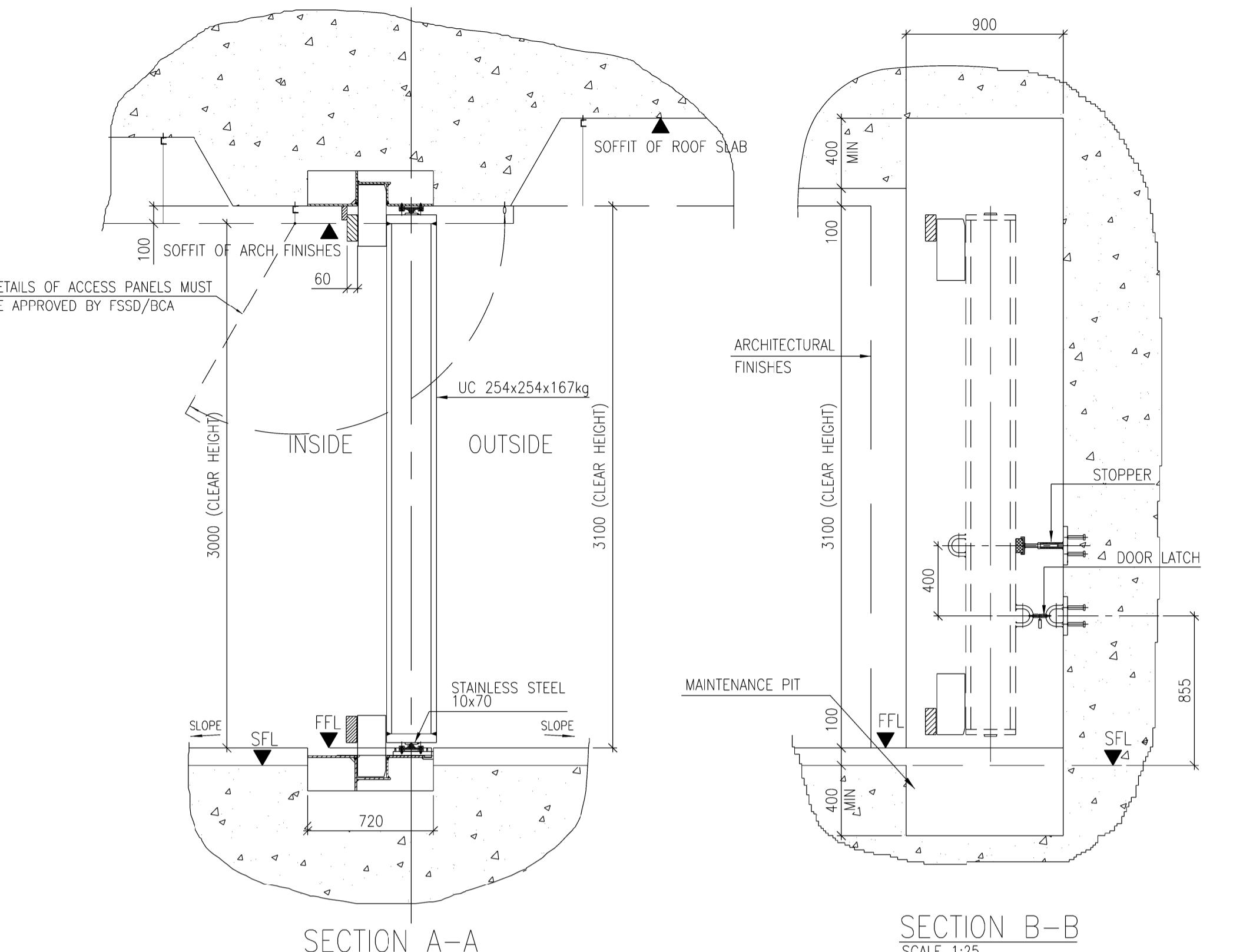
CAD File Name : LCWD-CDDR1021-

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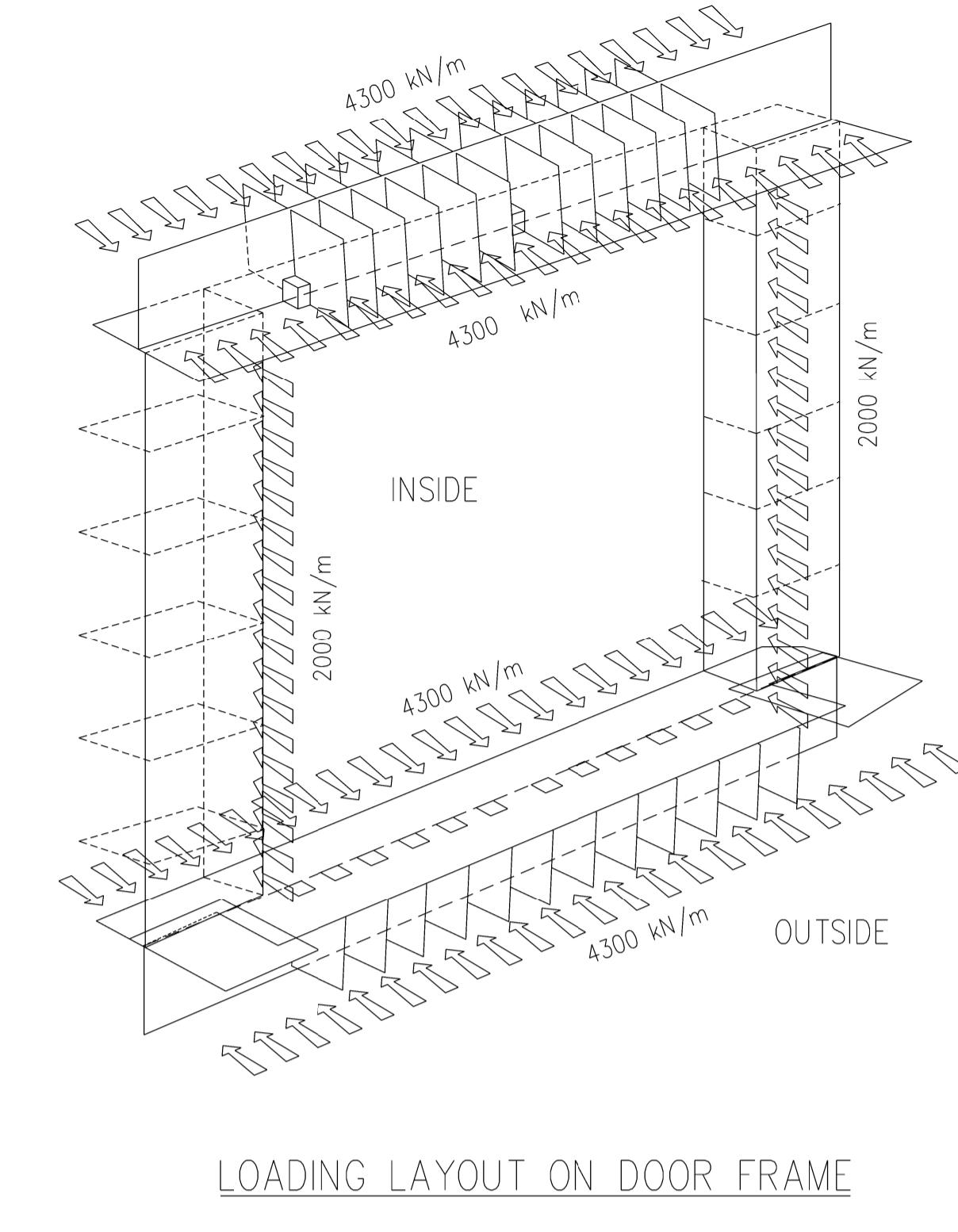
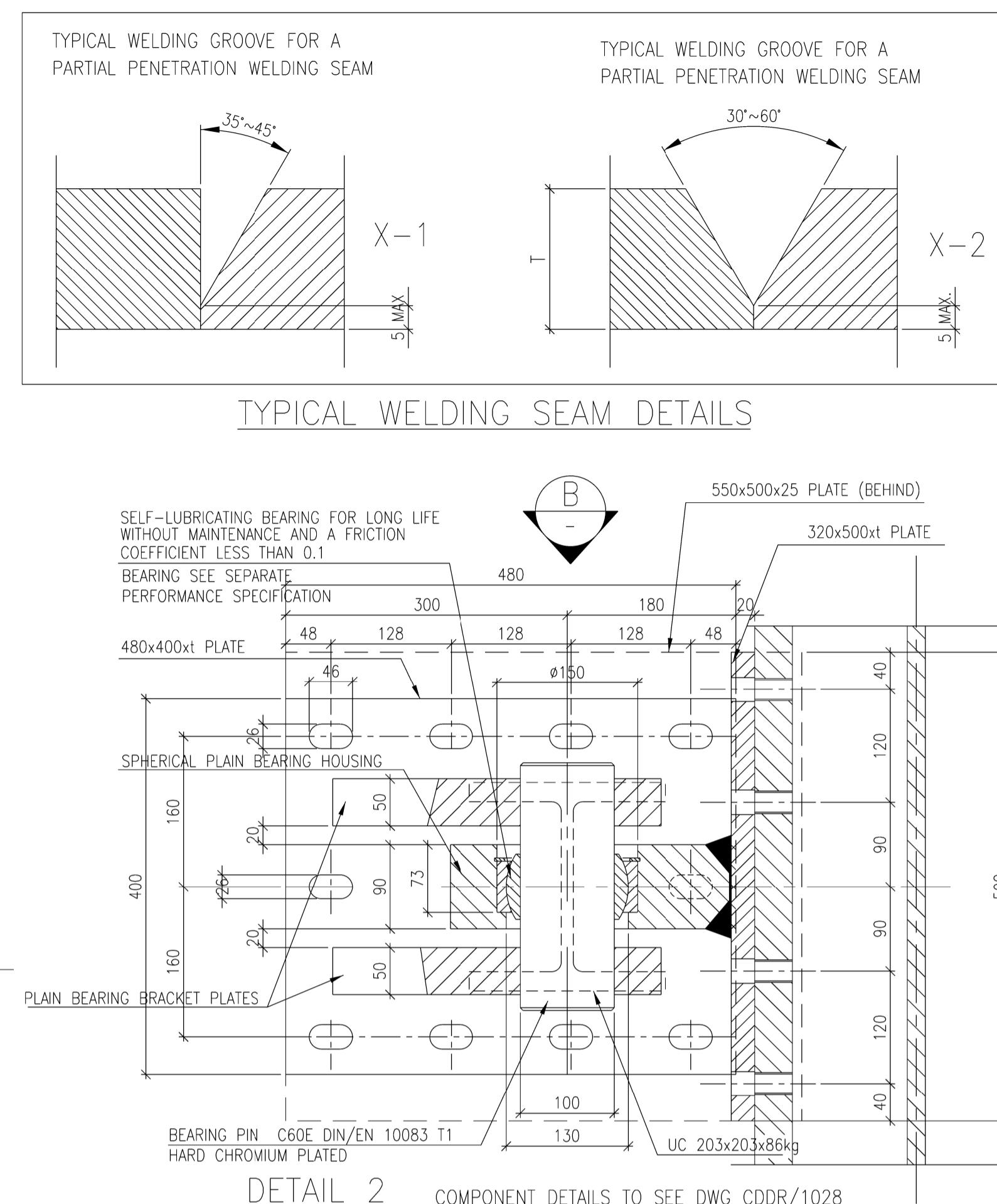
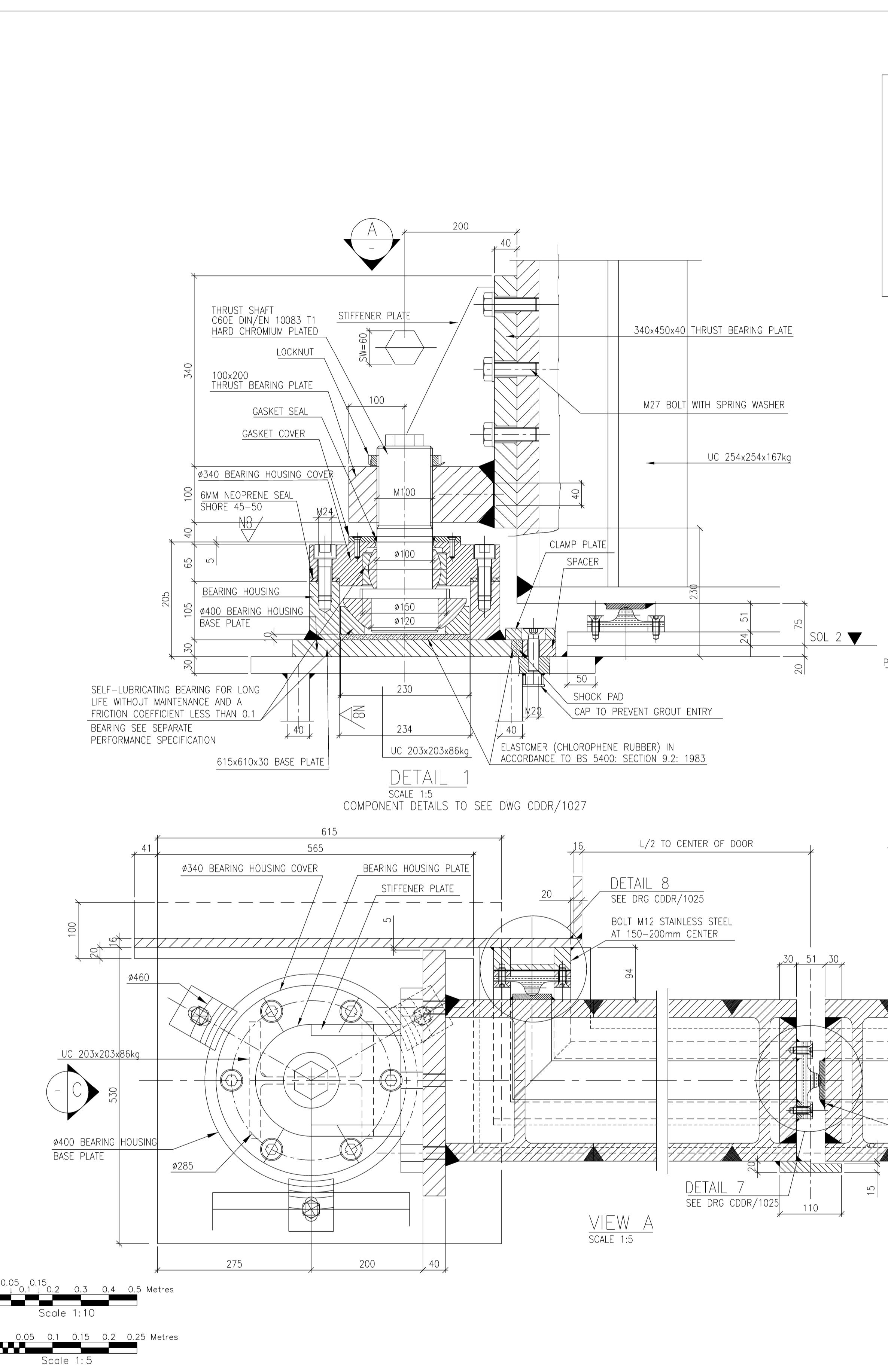
PLEASE REFER TO DRAWING NO CDDR/1021 FOR NOTES.

LTA Endorsement :					
Project Title :					Drawing Title :
CD DOOR DESIGN DRAWING					ENTRANCE HINGED DOOR TYPICAL LAYOUT PLAN
Designed	Checked	Approved			Drawing No. :
SOH LP	TAN PS	TAN WK			L/CWD/CDDR/1022
Scale	Drawn	Date			Rev. A Sheet 2 of 8
AS SHOWN	HO SH	2 APR 2015			CAD File Name : LCWD-CDDR1022-
Rev.	Date	By	Description	Chkd	App'd
A	APR 2015	HO SH	CHECKER'S NAME UPDATED	TPS	TWK
Rev.					



Qualified Person Endorsement :					
Project Title :					Drawing Title :
CD DOOR DESIGN DRAWING					ENTRANCE HINGED DOOR TYPICAL LAYOUT PLAN
Designed	Checked	Approved			Drawing No. :
SOH LP	TAN PS	TAN WK			L/CWD/CDDR/1022
Scale	Drawn	Date			Rev. A Sheet 2 of 8
AS SHOWN	HO SH	2 APR 2015			CAD File Name : LCWD-CDDR1022-
Rev.	Date	By	Description	Chkd	App'd
A	APR 2015	HO SH	CHECKER'S NAME UPDATED	TPS	TWK
Rev.					

Land Transport Authority



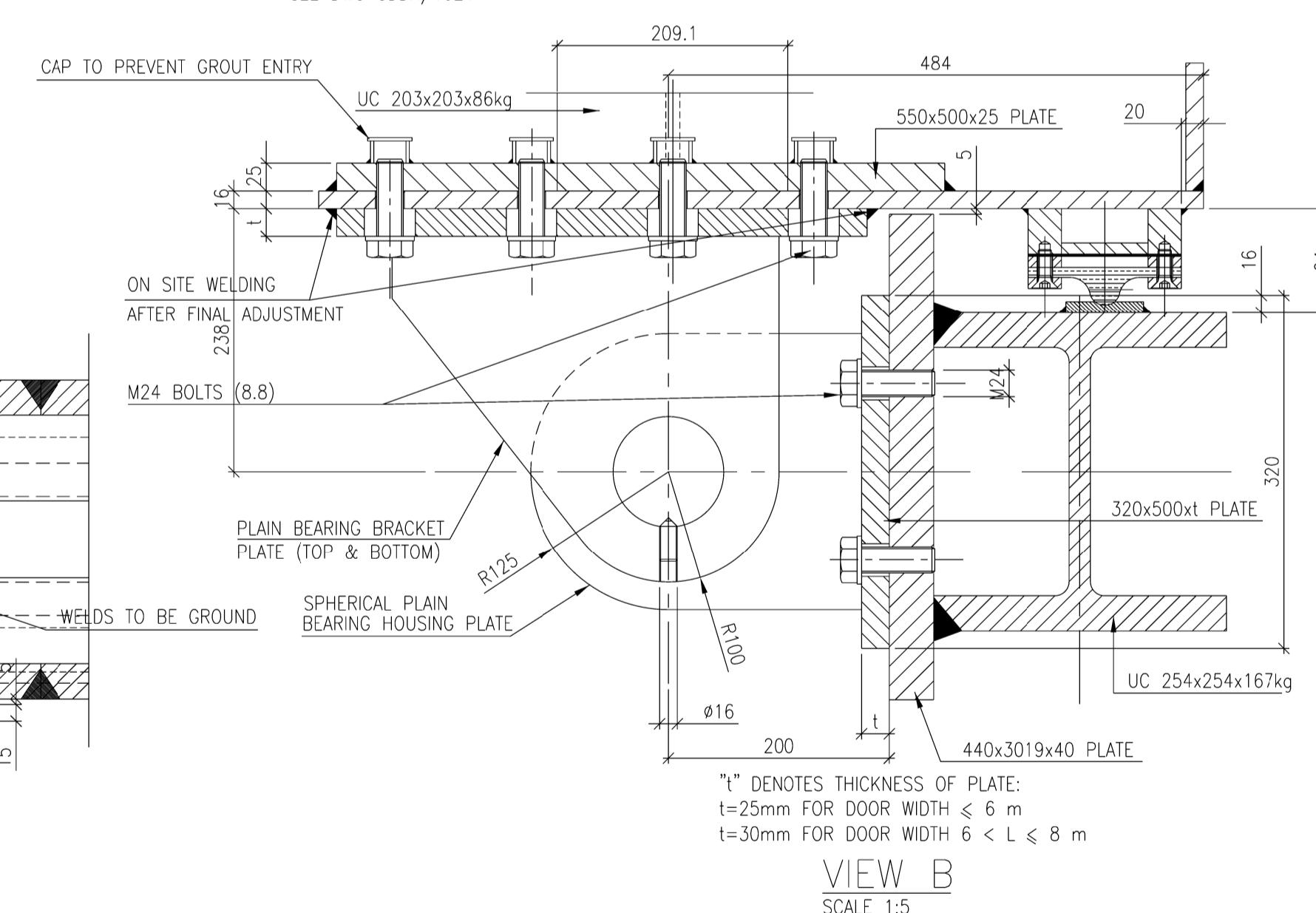
LOADING LAYOUT ON DOOR FRAME

LOAD SPECIFICATIONS

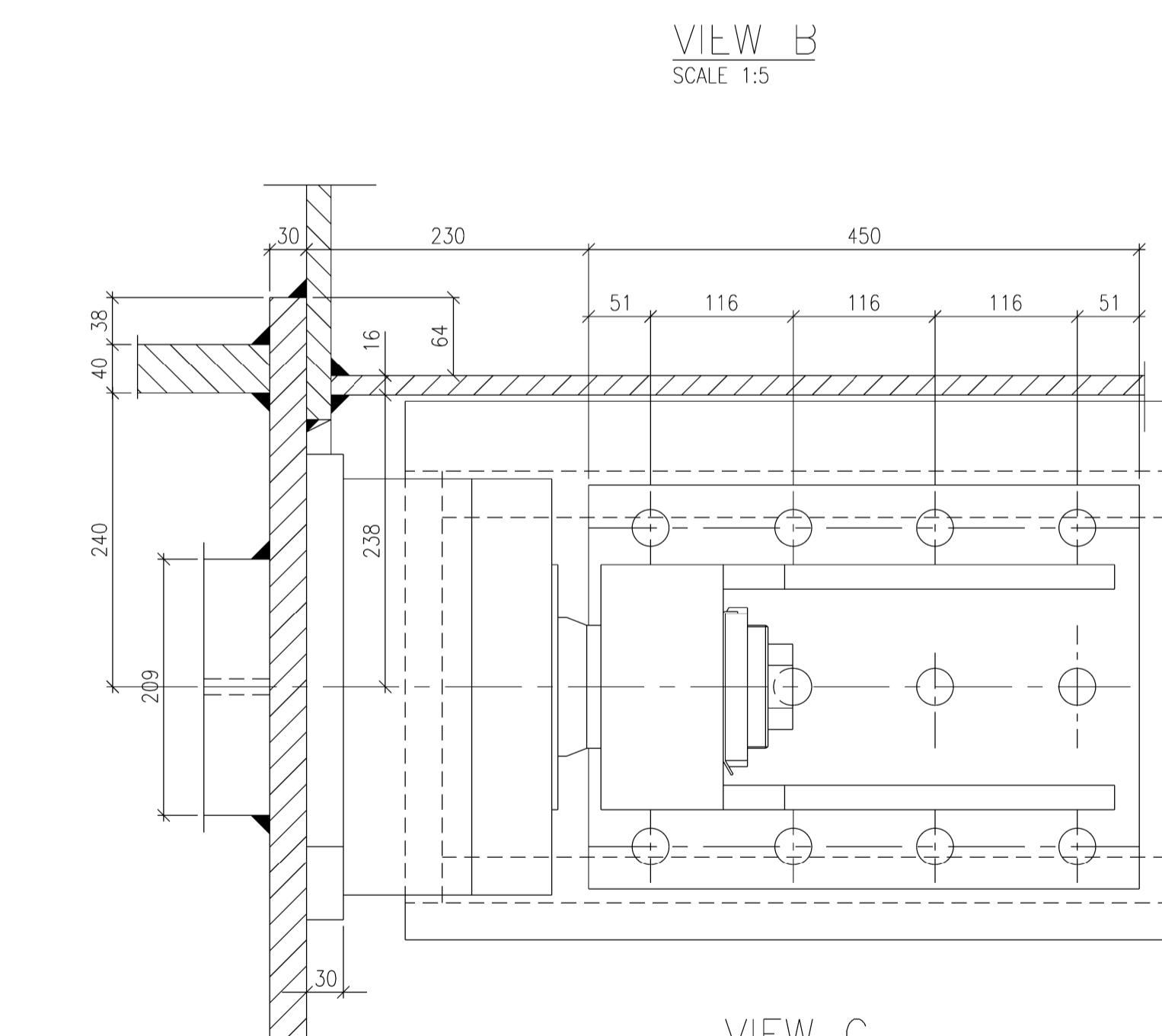
THE REINFORCED CONCRETE ELEMENTS/STRUCTURES SUPPORTING THE DOOR ASSEMBLY

- SHALL BE DESIGNED FOR THE FOLLOWING LOADS:

 - a) SELF WEIGHT OF DOOR IN THE VARIOUS OPEN/CLOSED POSITIONS.
 - b) LINE LOADS ALONG DOOR FRAME PERPENDICULAR TO DOOR LEAF :
 - i) AT FLOOR AND CEILING = 4300 kN/m
 - ii) AT VERTICAL SIDES = 2000 kN/m
 - c) LINE LOAD ALONG DOOR FRAME PERPENDICULAR TO DOOR LEAF AT FLOOR AND CEILING = -4300 kN/m

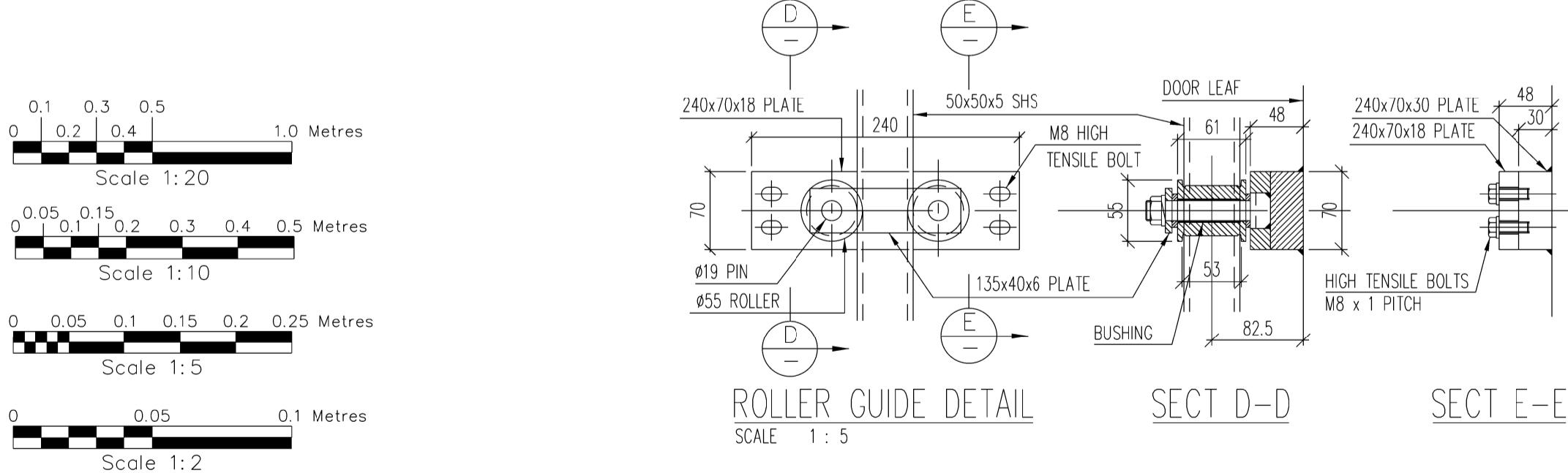
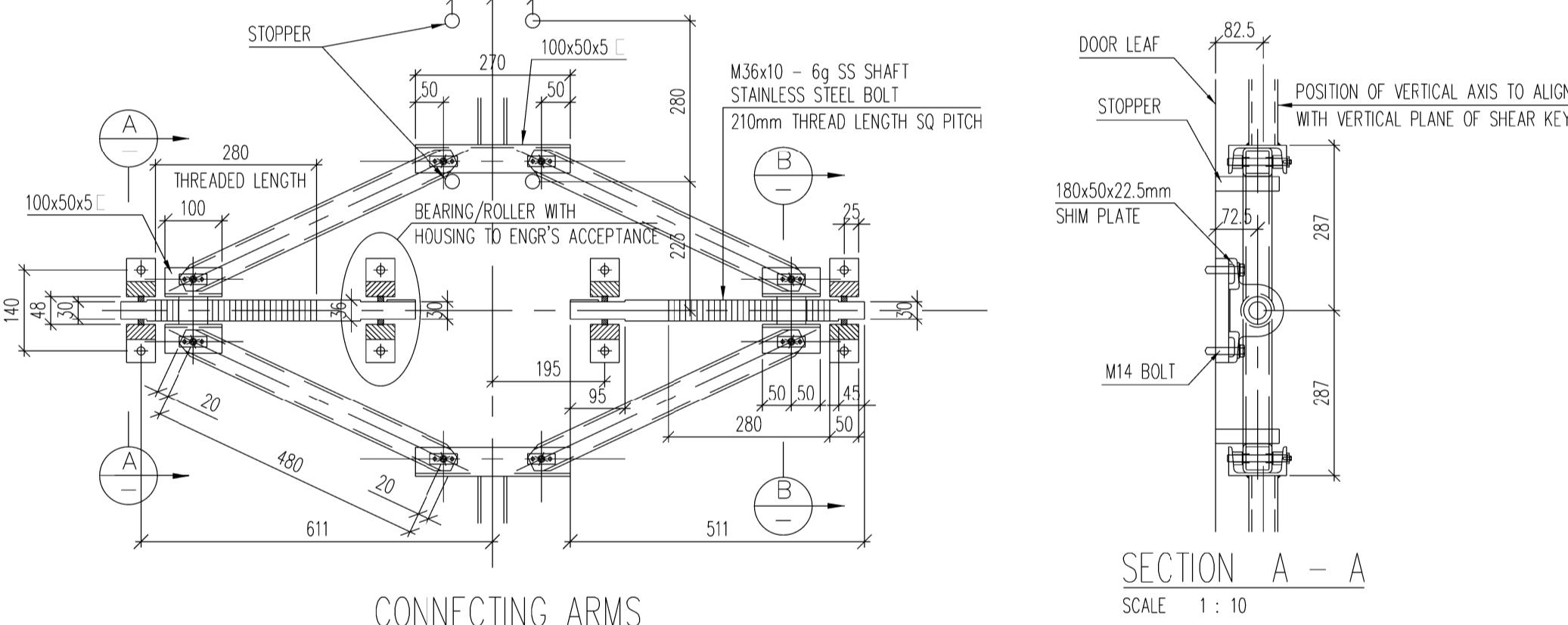
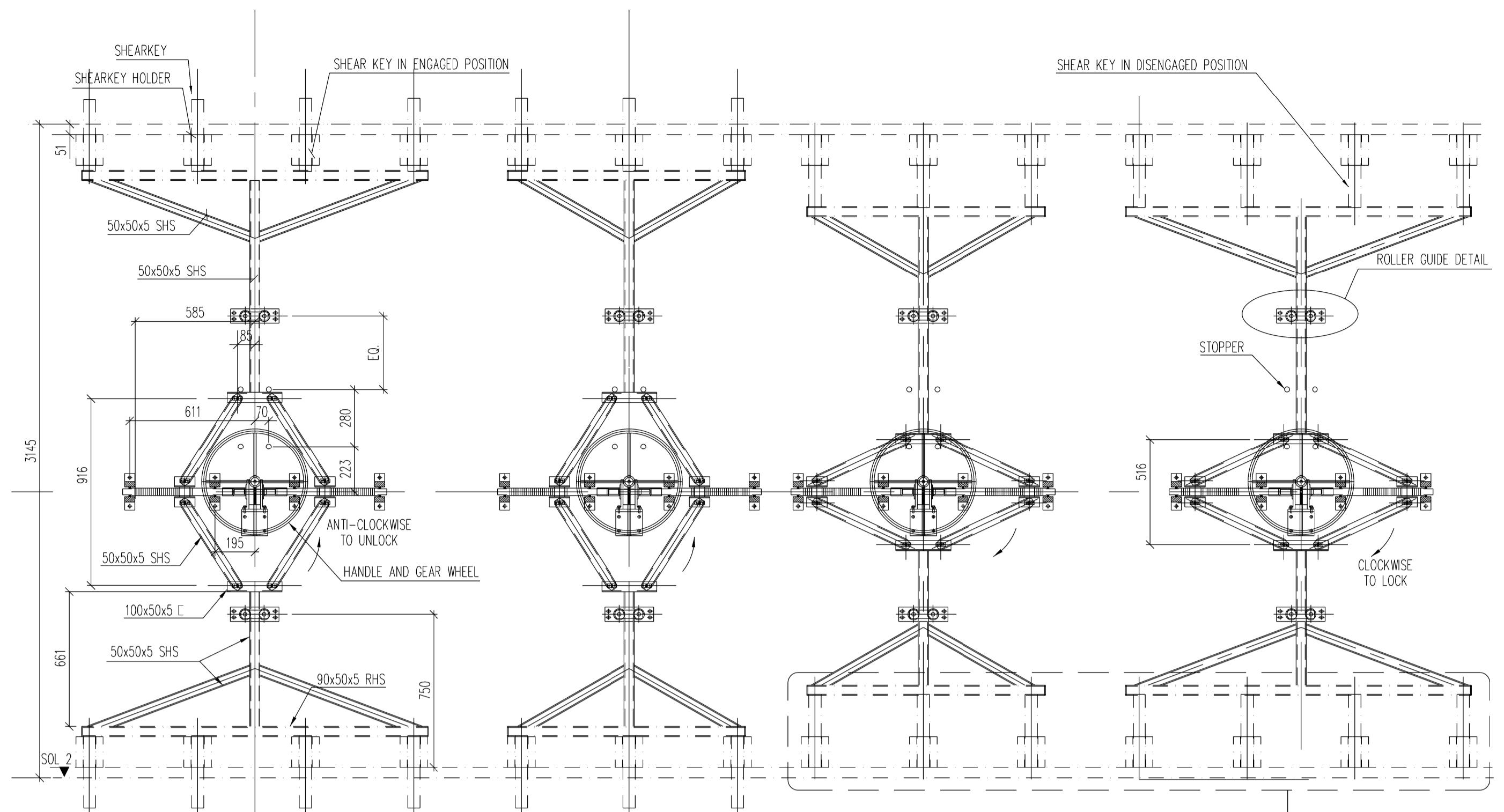


VIEW
SCALE 1:5

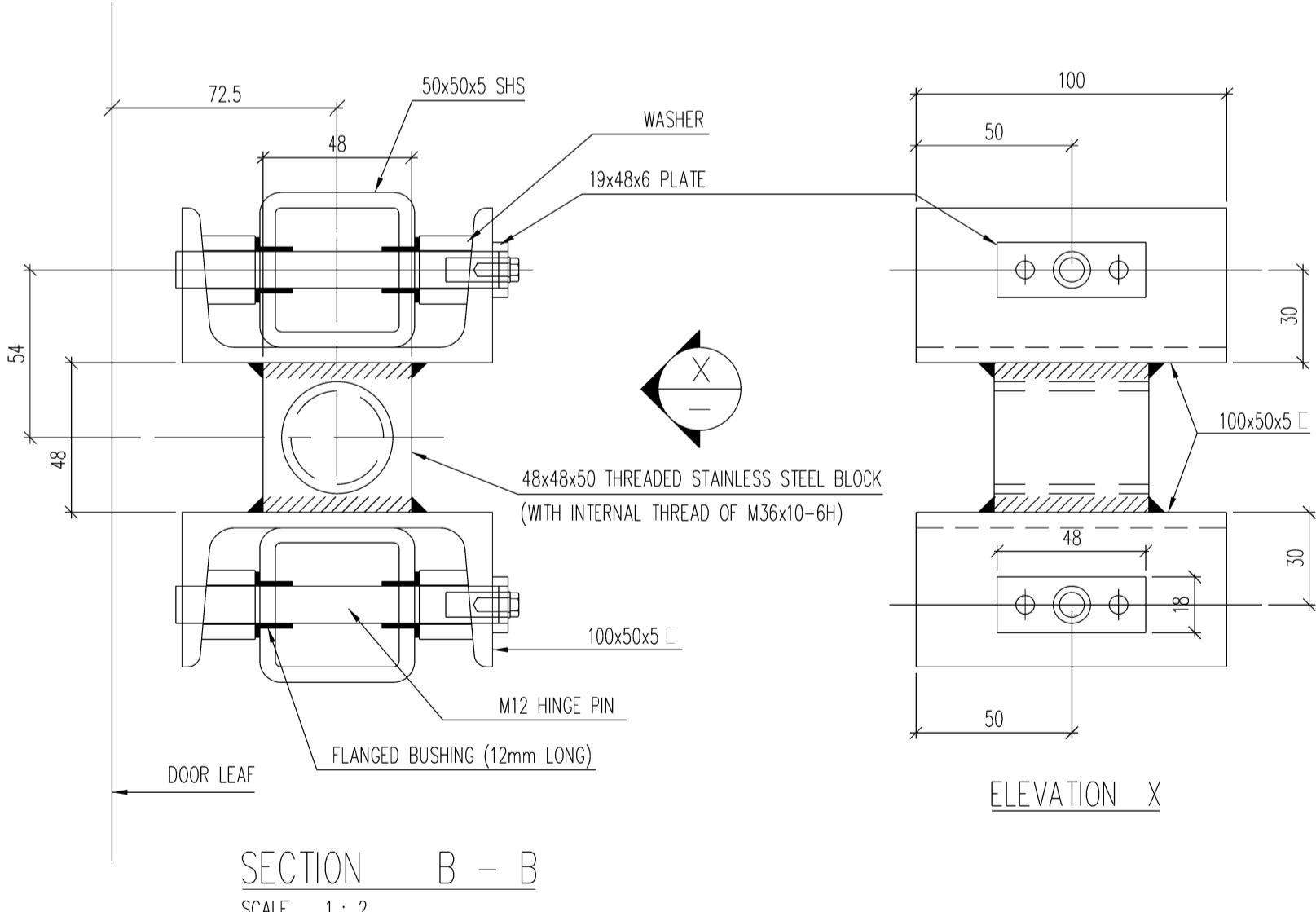
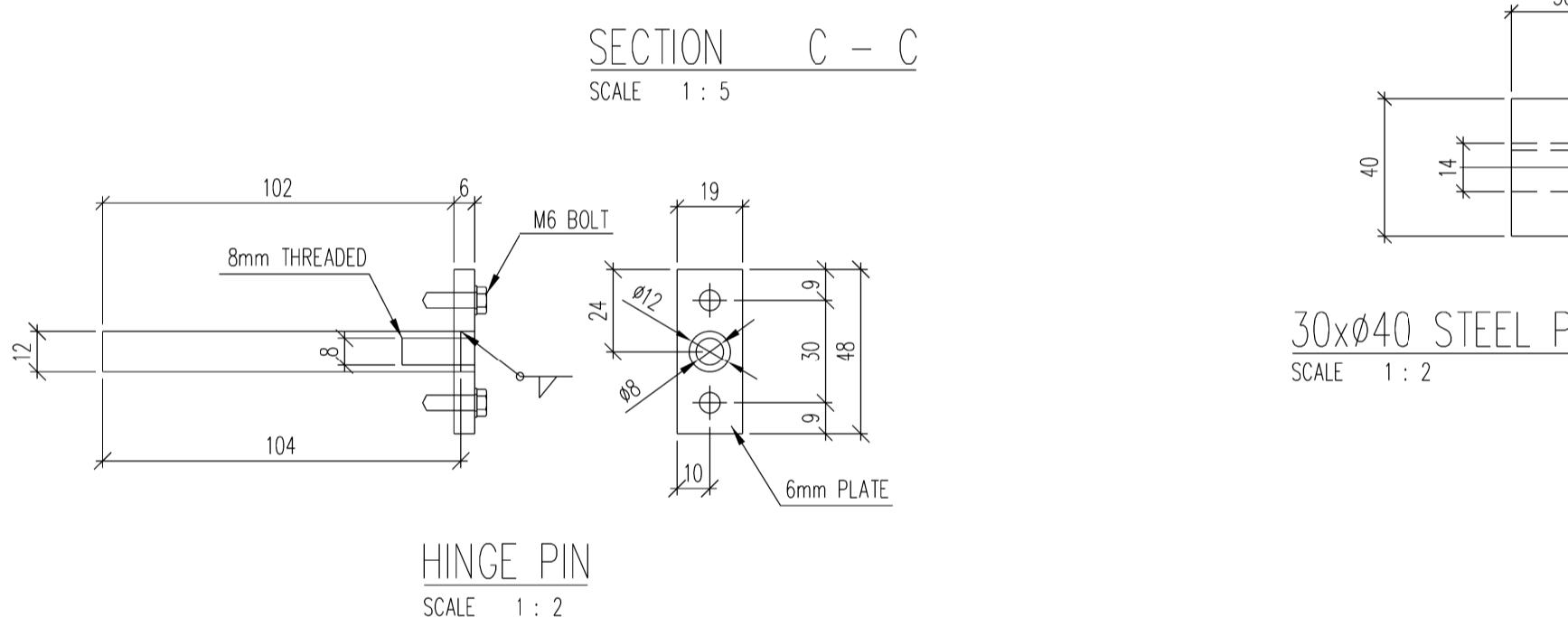
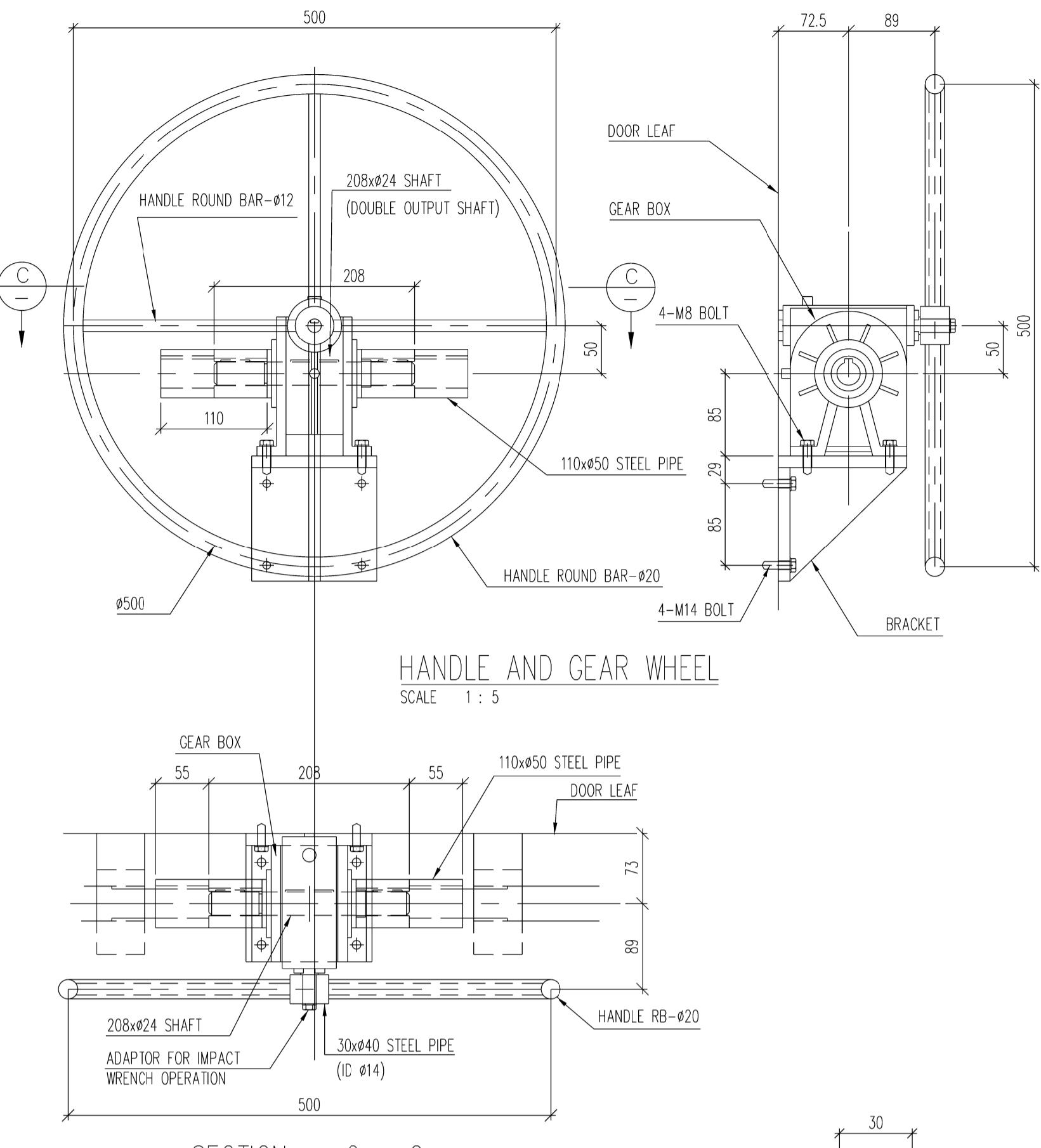


VIEW C
SCALE 1:5

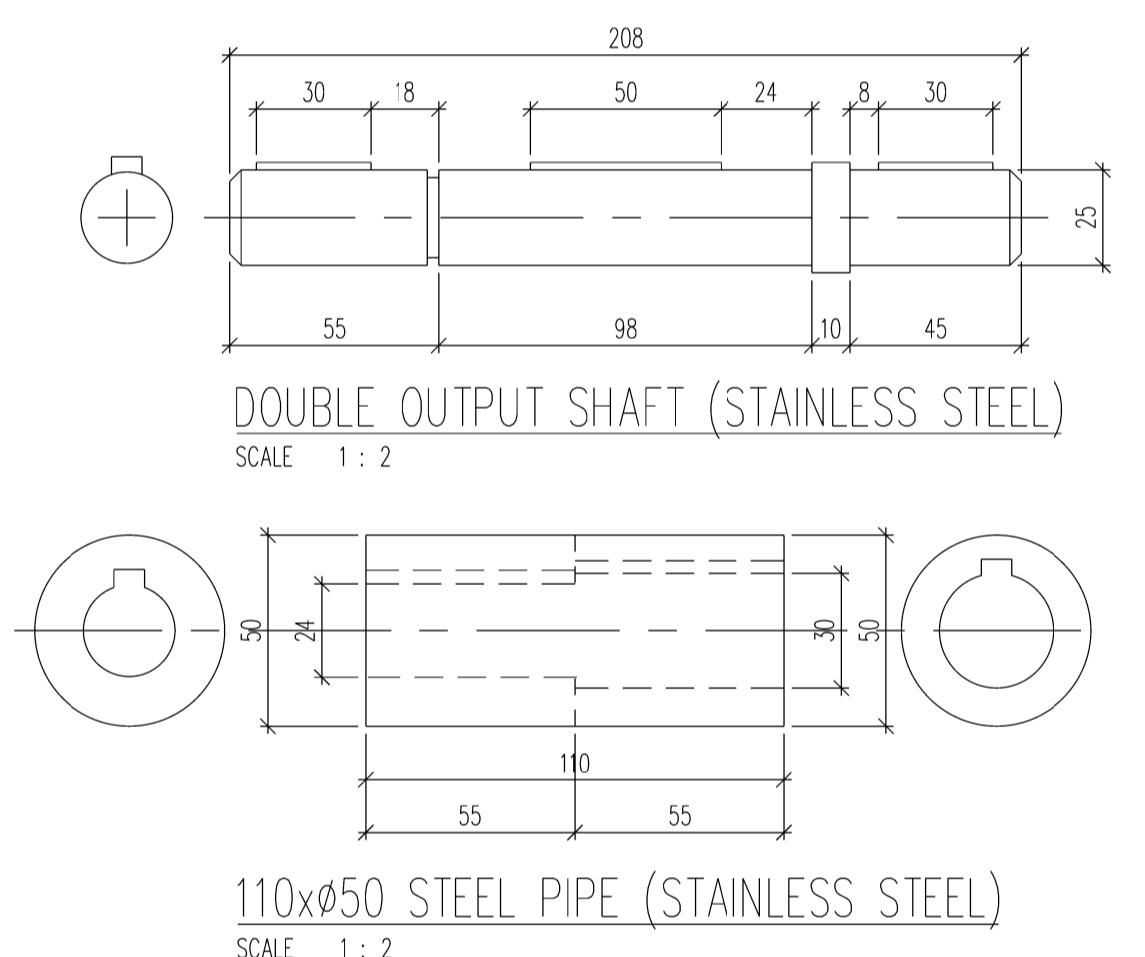
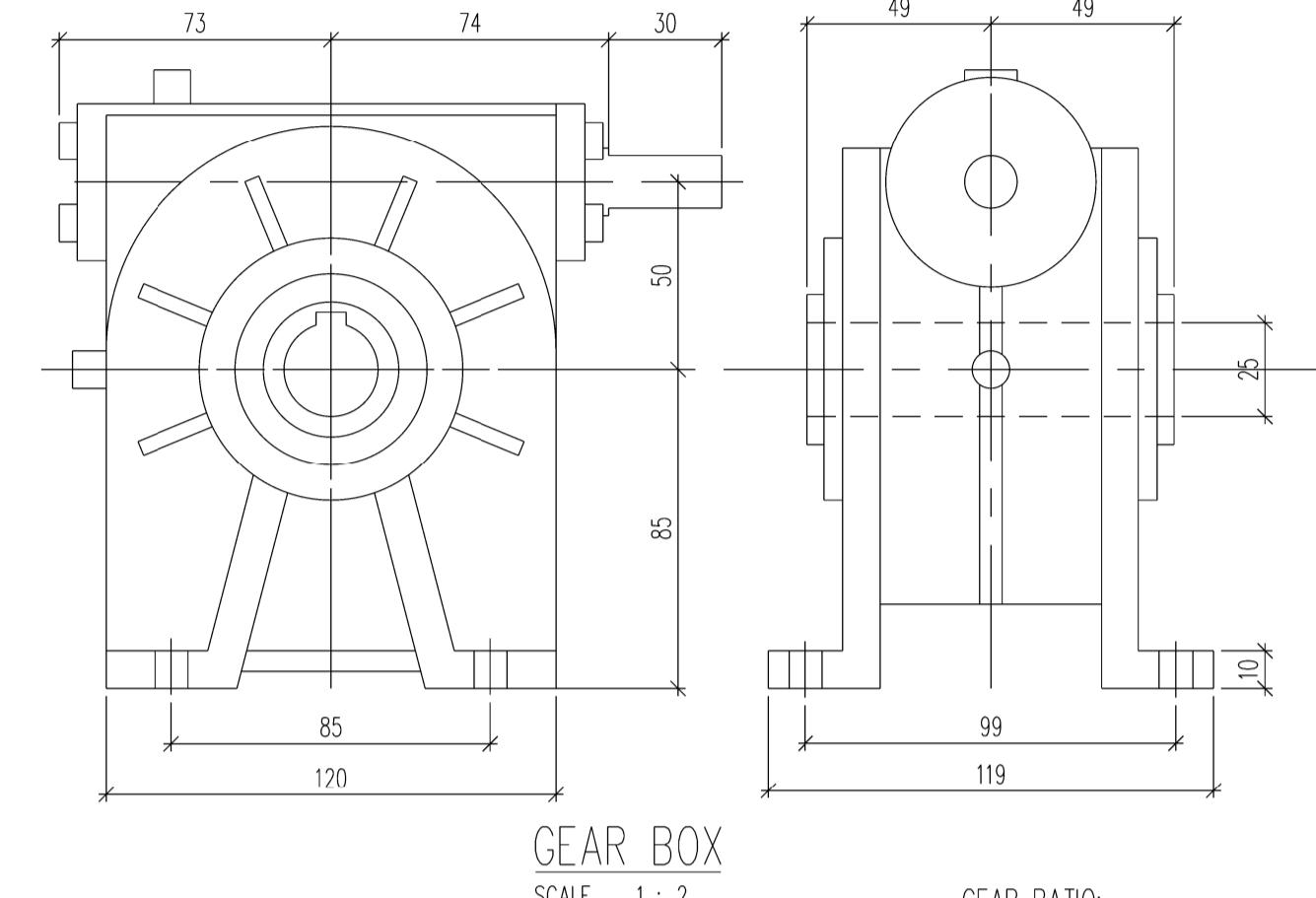
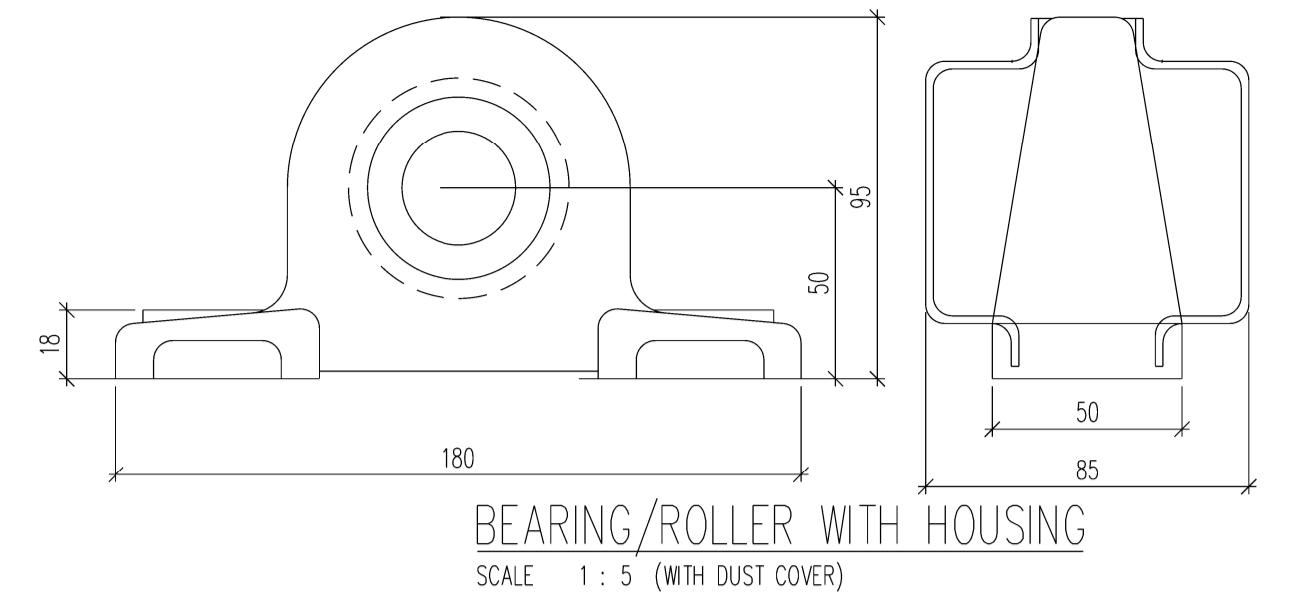
PLEASE REFER TO DRAWING NO CDDR/1021 FOR NOTES.



PLEASE REFER TO DRAWING NO CDDR/1021 FOR NOTES.

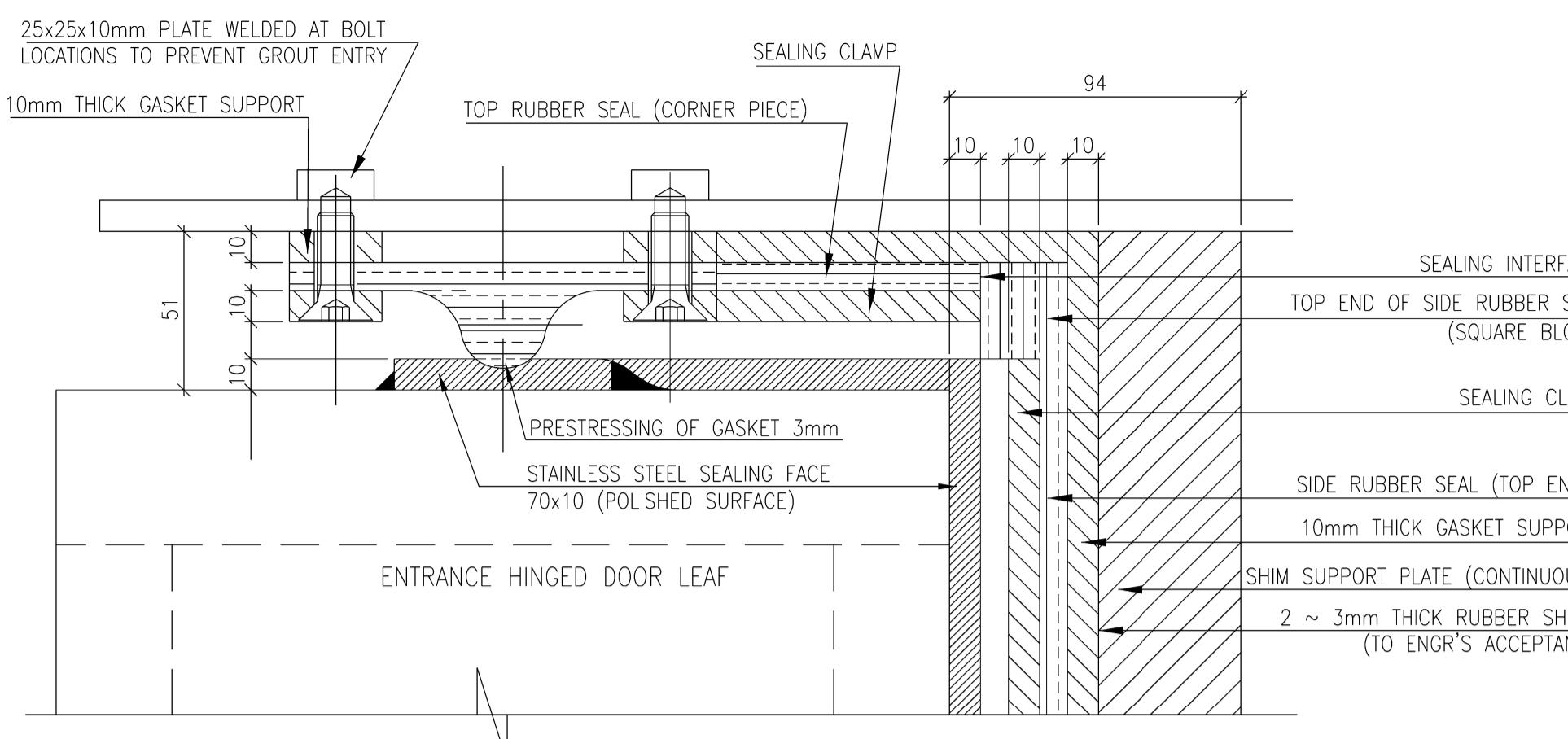


A	APR 2015	HO SH	CHECKER'S NAME AND SHEAR KEY MECHANISM UPDATED	TPB	TWK
Rev.	Date	By	Description	Chkd	App'd



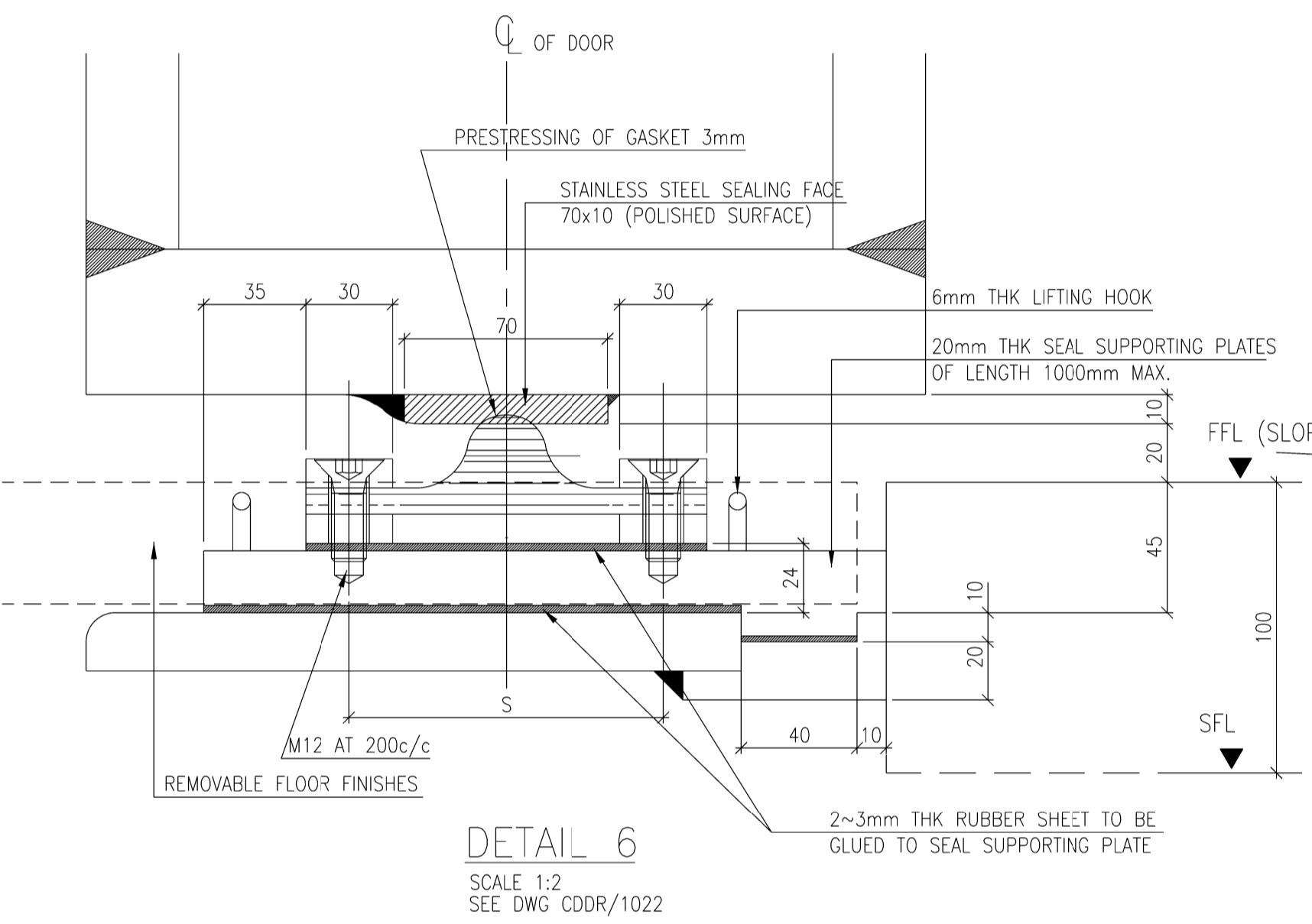
Land Transport Authority

Project Title :	Drawing Title :
CD DOOR DESIGN DRAWING	
ENTRANCE HINGED DOOR SHEARKEY MECHANISM AND DETAILS	
Designed : SOH LR	Checked : TAN PS
Scale : AS SHOWN	Drawn : HO SH
Date : 2 APR 2015	Date : 2 APR 2015
Drawing No. : L/CWD/CDDR/1024	Rev. A
CAD File Name : LCWD-CDDR1024-	Sheet 4 of 8

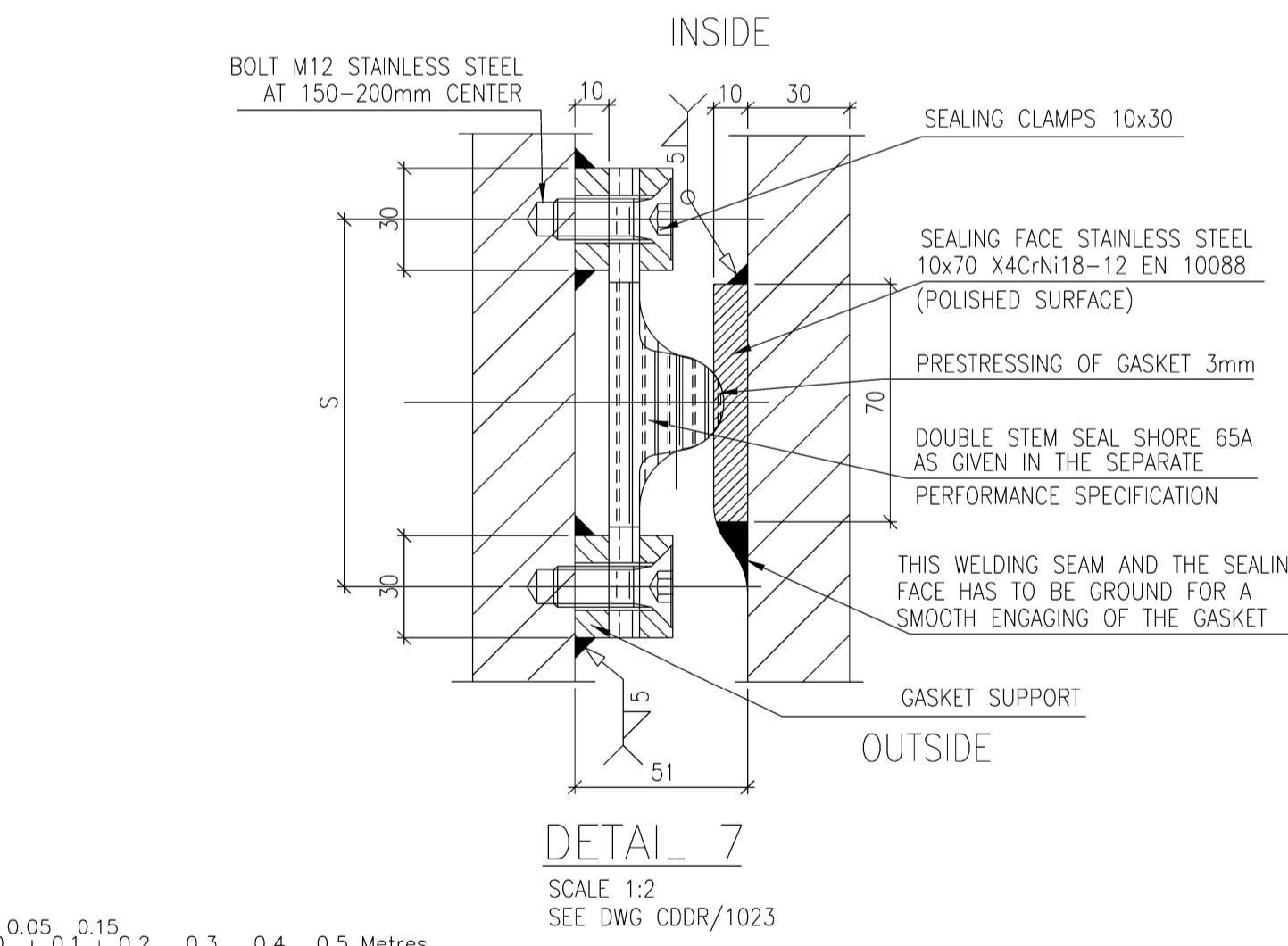


INSIDE VIEW OF JOINT 1

SCALE 1:2



DETAIL 6
SCALE 1:2
SEE DWG CDDR/1022



DETAIL 7
SCALE 1:2
SEE DWG CDDR/1023

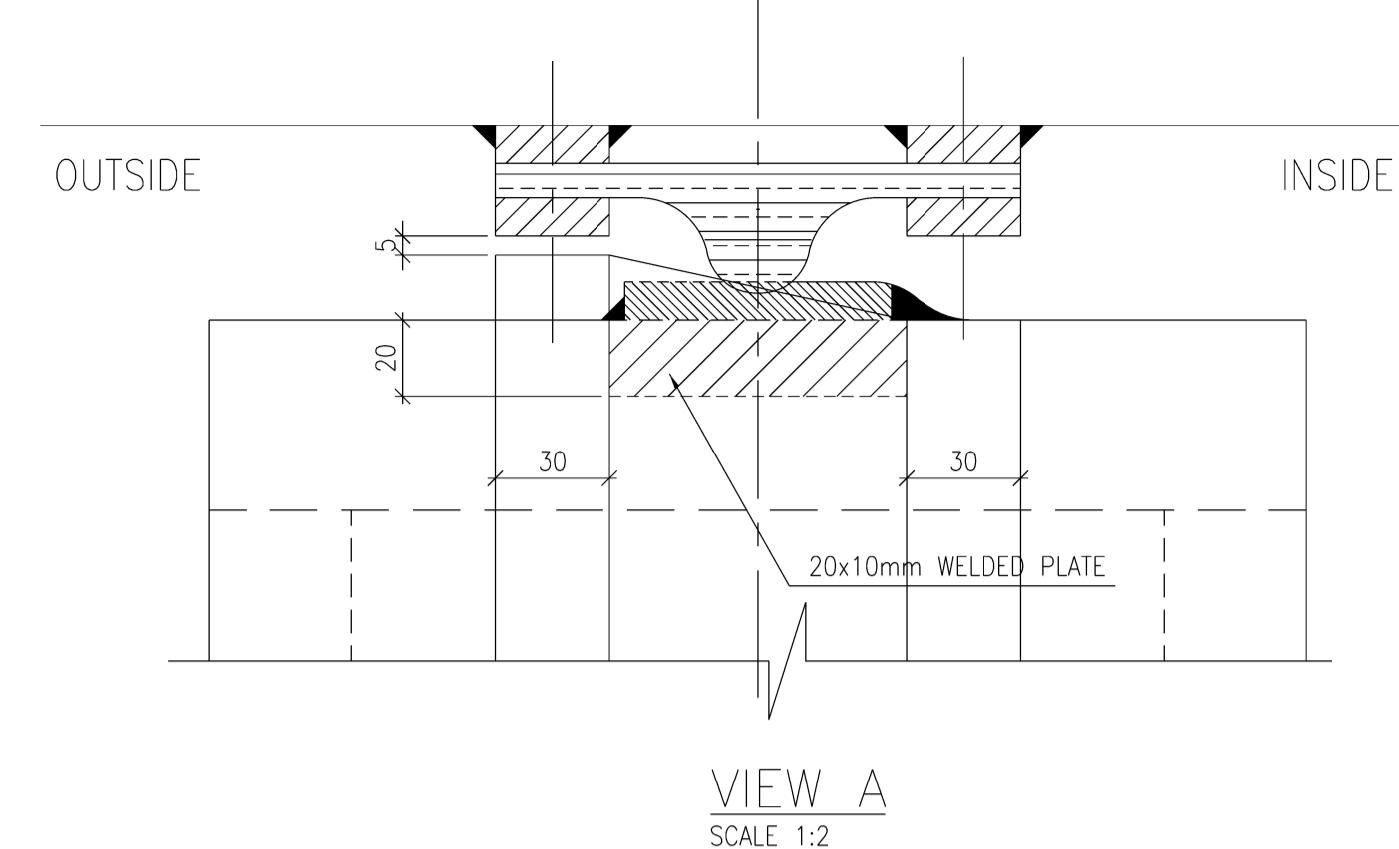
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0.05 0.1 0.15 0.2 0.3 0.4 0.5 Metres

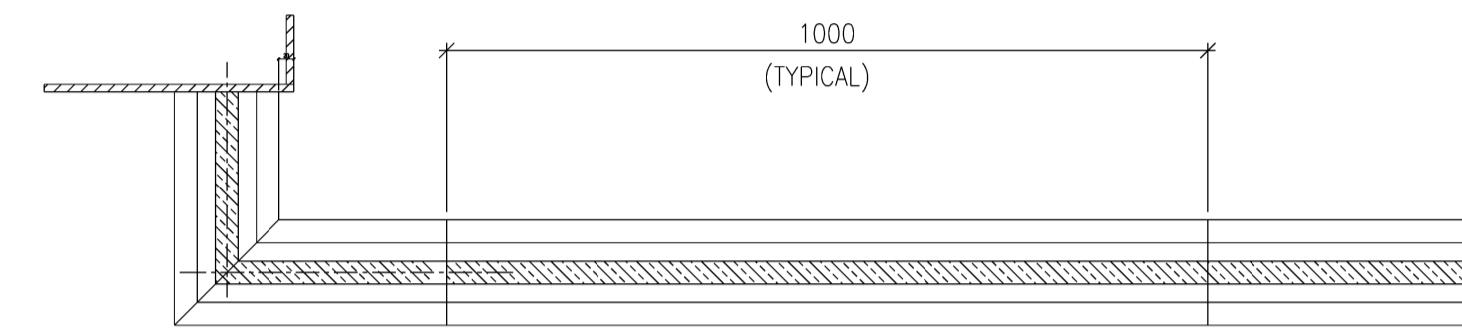
Scale 1:2

0 0.05 0.1 Metres

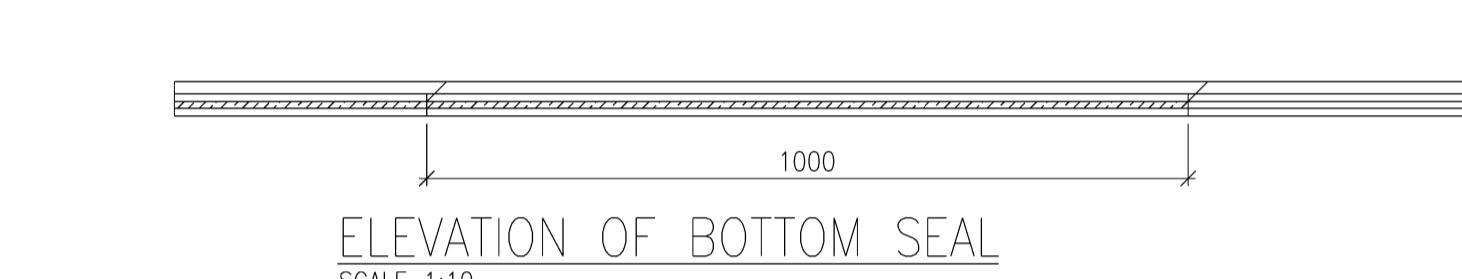
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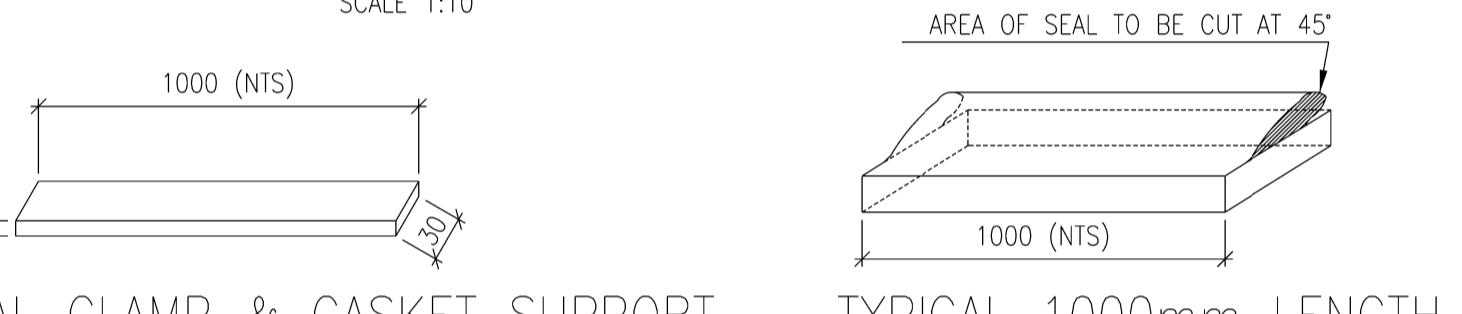
VIEW A
SCALE 1:2



PLAN OF BOTTOM SEAL
SCALE 1:10



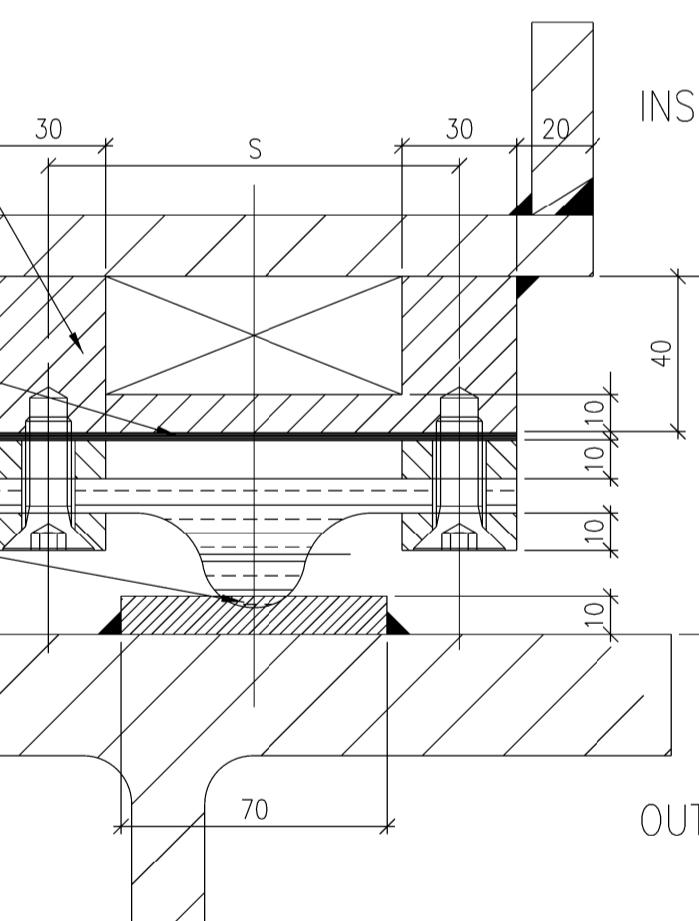
ELEVATION OF BOTTOM SEAL
SCALE 1:10



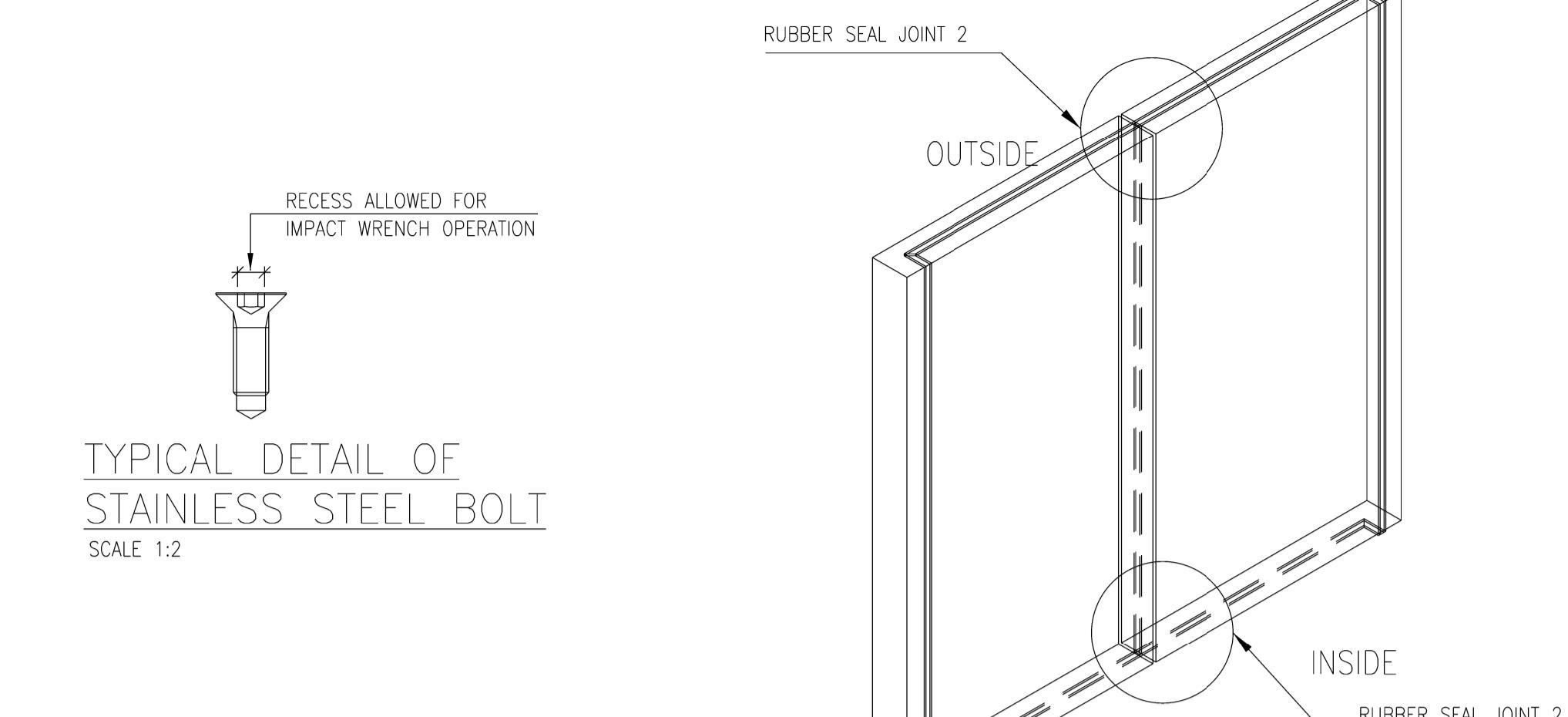
TYPICAL SEAL CLAMP & GASKET SUPPORT
SCALE 1:NTS



TYPICAL 1000mm LENGTH OF SEAL
SCALE 1:NTS
AREA OF SEAL TO BE CUT AT 45°

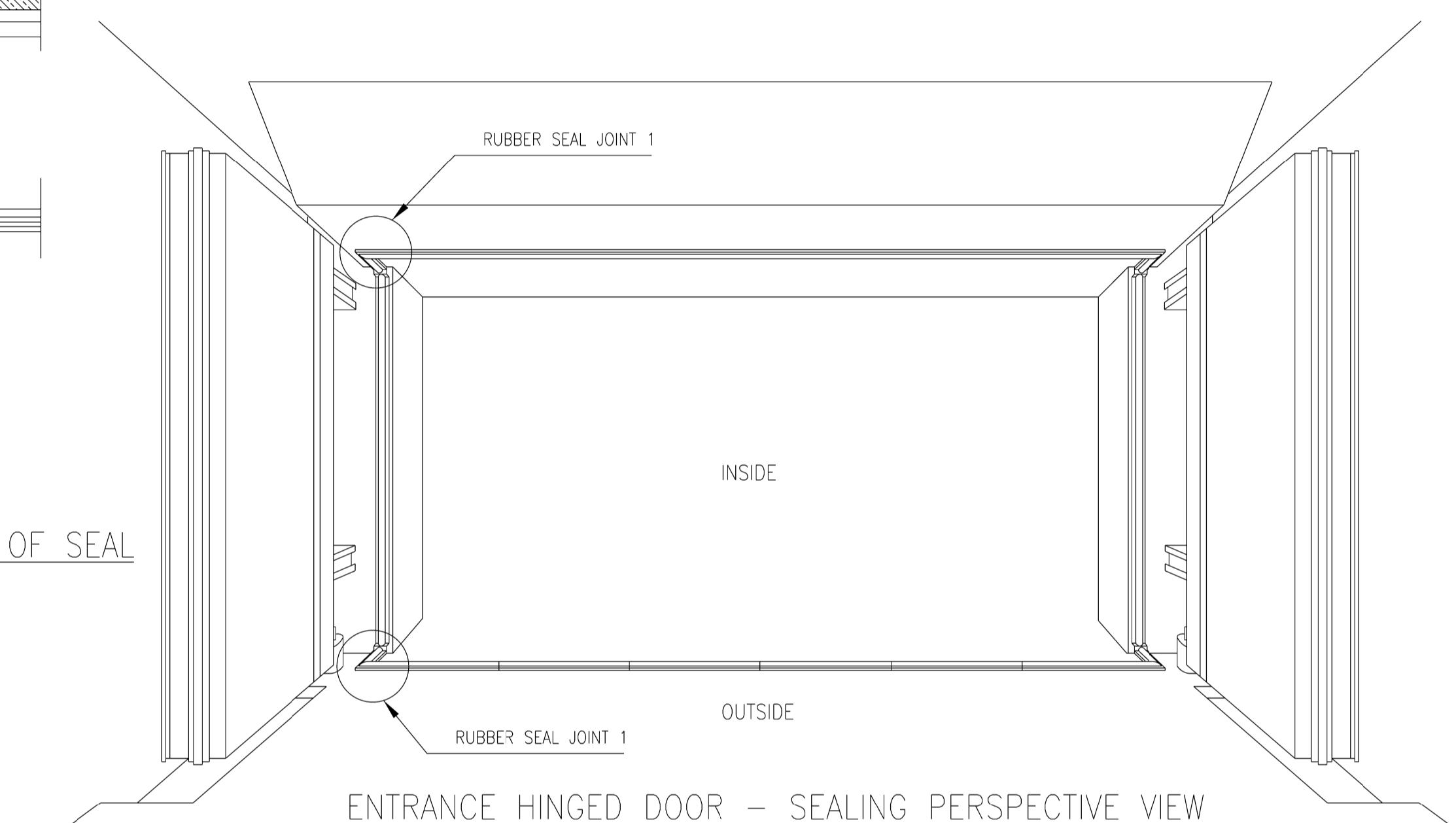


DETAIL 8
SCALE 1:2
SEE DWG CDDR/1023

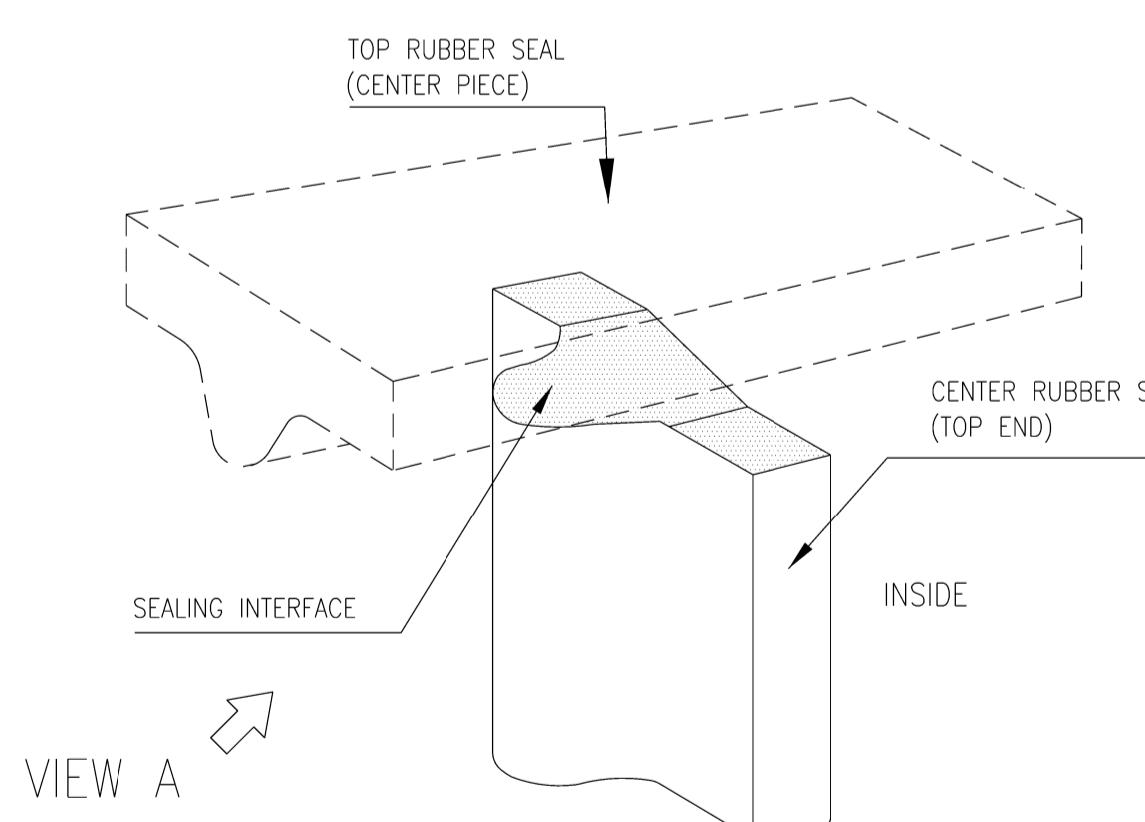


TYPICAL DETAIL OF STAINLESS STEEL BOLT
SCALE 1:2

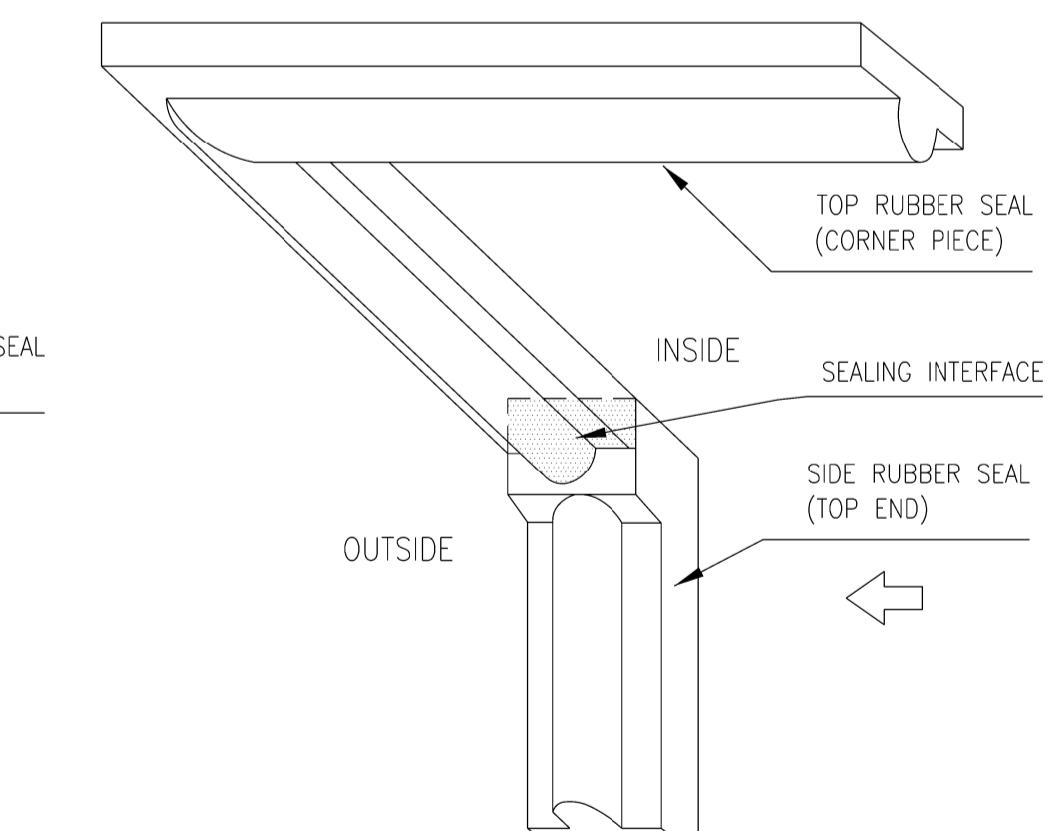
SEAL SCHEMATIC LAYOUT



ENTRANCE HINGED DOOR - SEALING PERSPECTIVE VIEW



VIEW A
RUBBER SEAL JOINT 2



RUBBER SEAL JOINT 1

PLEASE REFER TO DRAWING NO CDDR/1021 FOR NOTES.

A	APR 2015	HO SH	CHECKER'S NAME UPDATED		TPB	TWK			
Rev.	Date	By	Description	Chkd	App'd				

Qualified Person Endorsement :

LTA Endorsement :

AUTHORITY'S DRAWING

Project Title :
CD DOOR DESIGN DRAWING

Designed : SOH LP Checked : TAN PS Approved : TAN WK

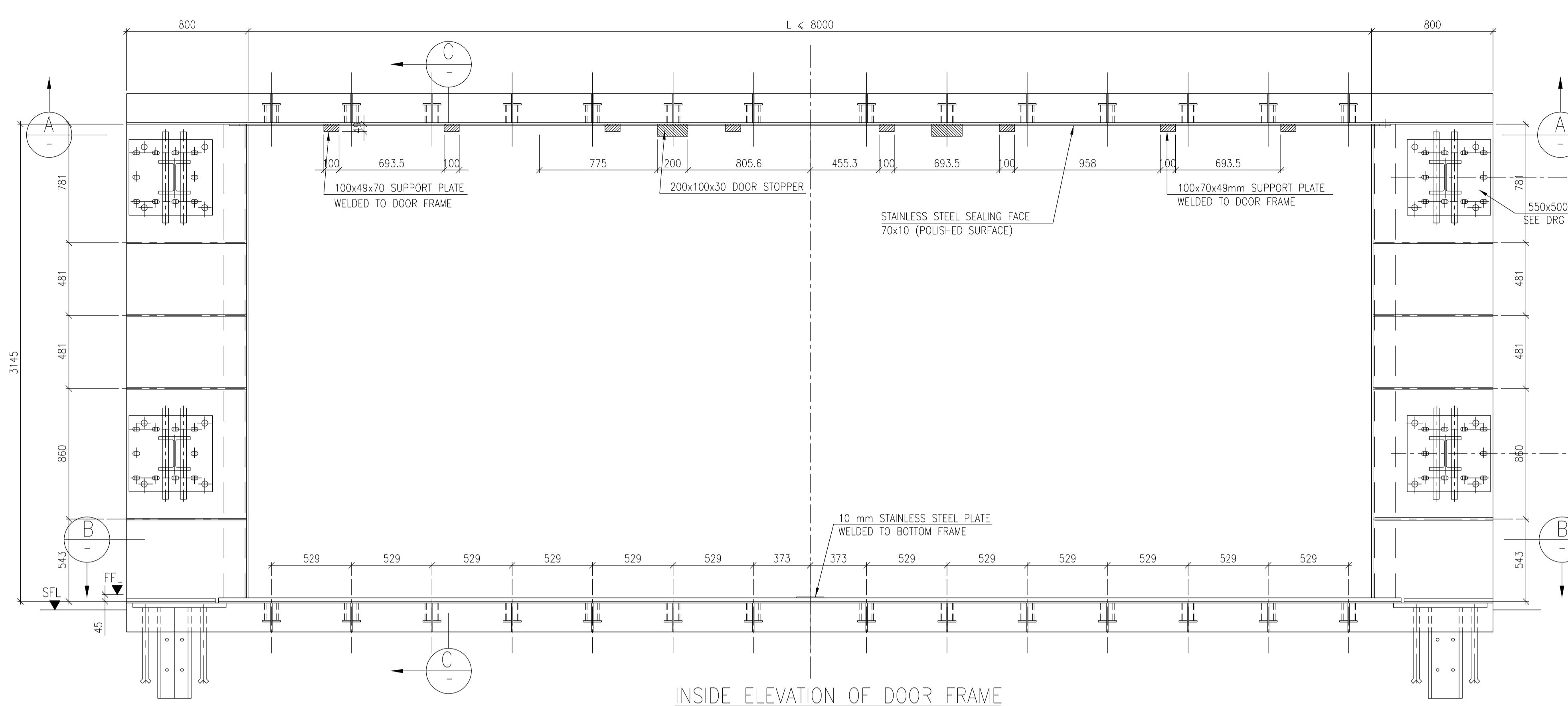
Scale : AS SHOWN Drawn : HO SH Date : 2 APR 2015

Drawing Title :
ENTRANCE HINGED DOOR
SEAL DETAILS

Drawing No. :
L/CWD/CDDR/1025

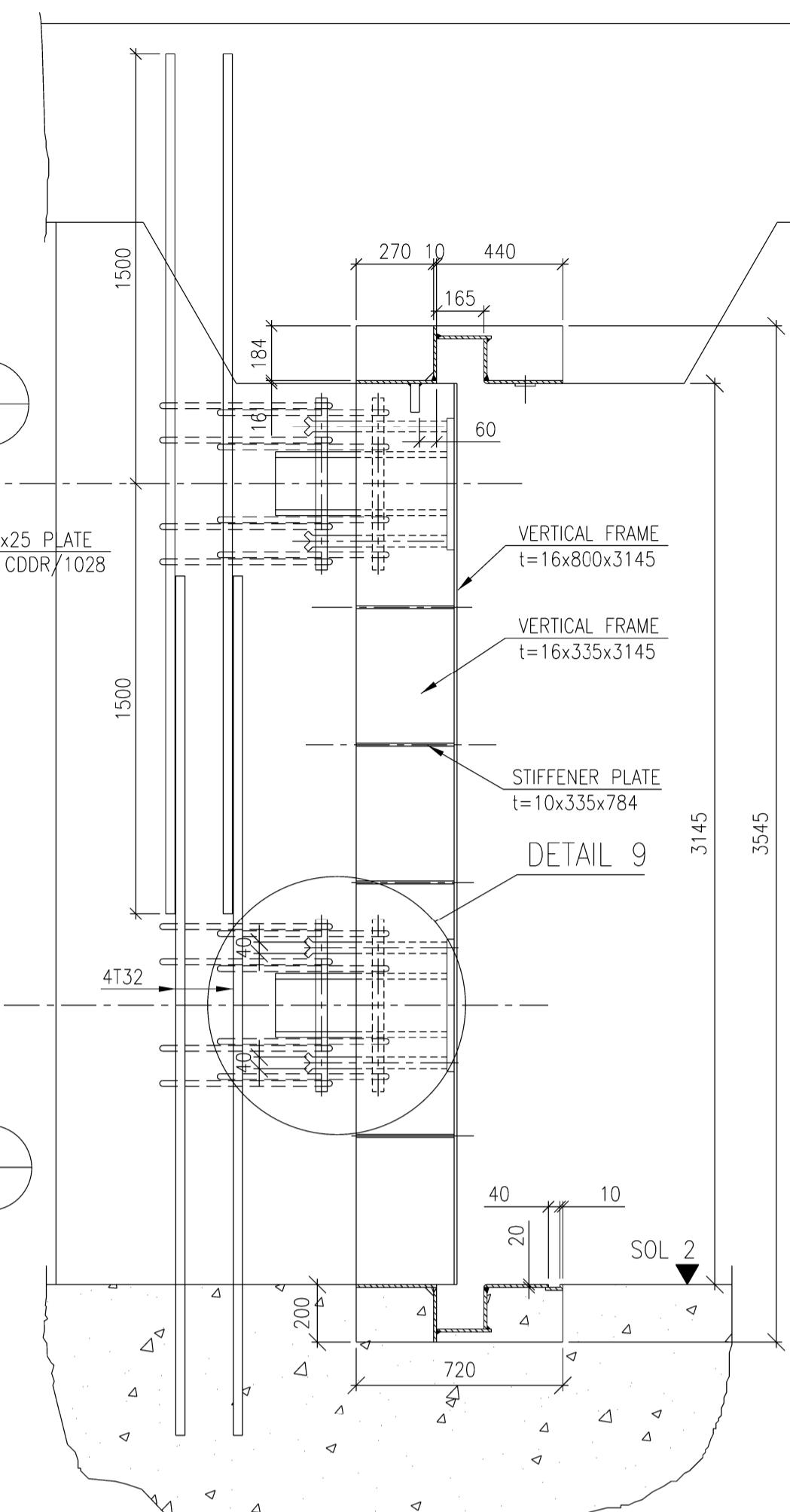
Rev. A Sheet 5 of 8

CAD File Name : LCWD-CDDR1025- A1



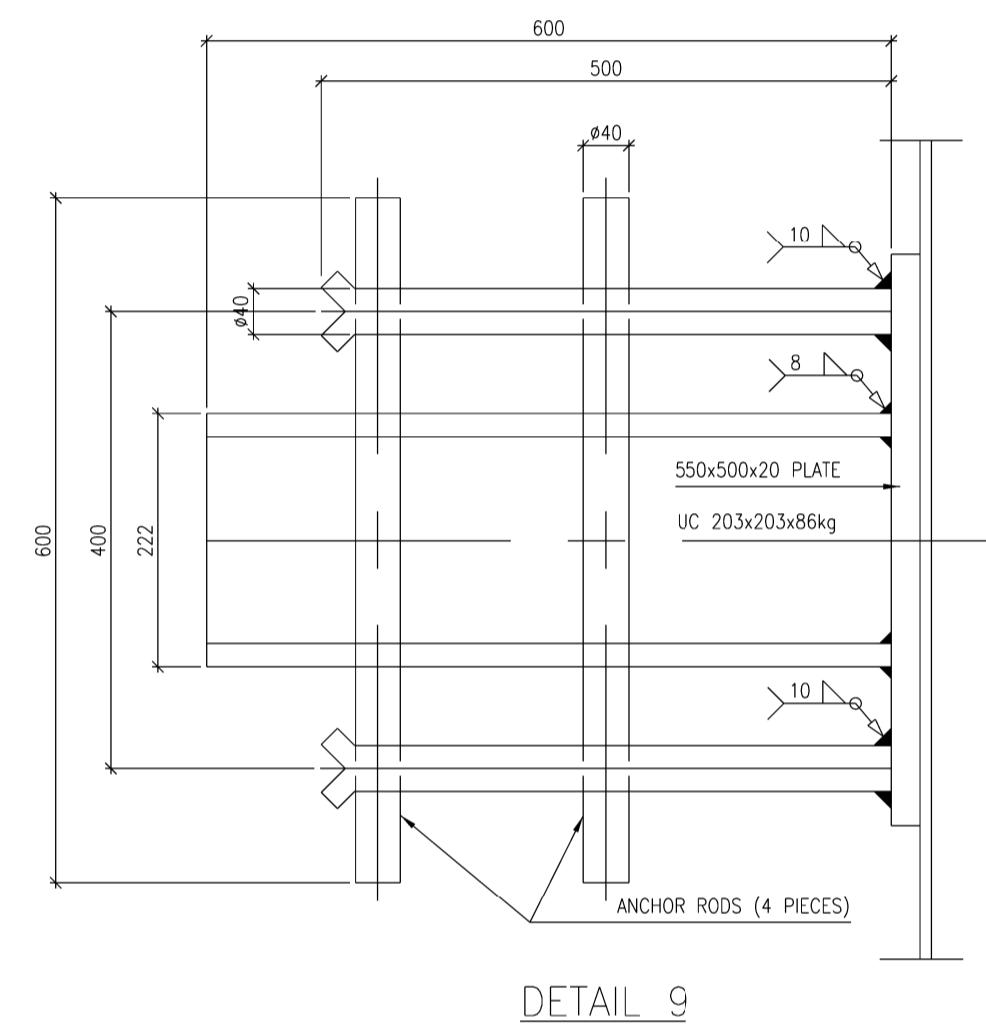
INSIDE ELEVATION OF DOOR FRAME
SCALE 1:20

SCALE 1:20



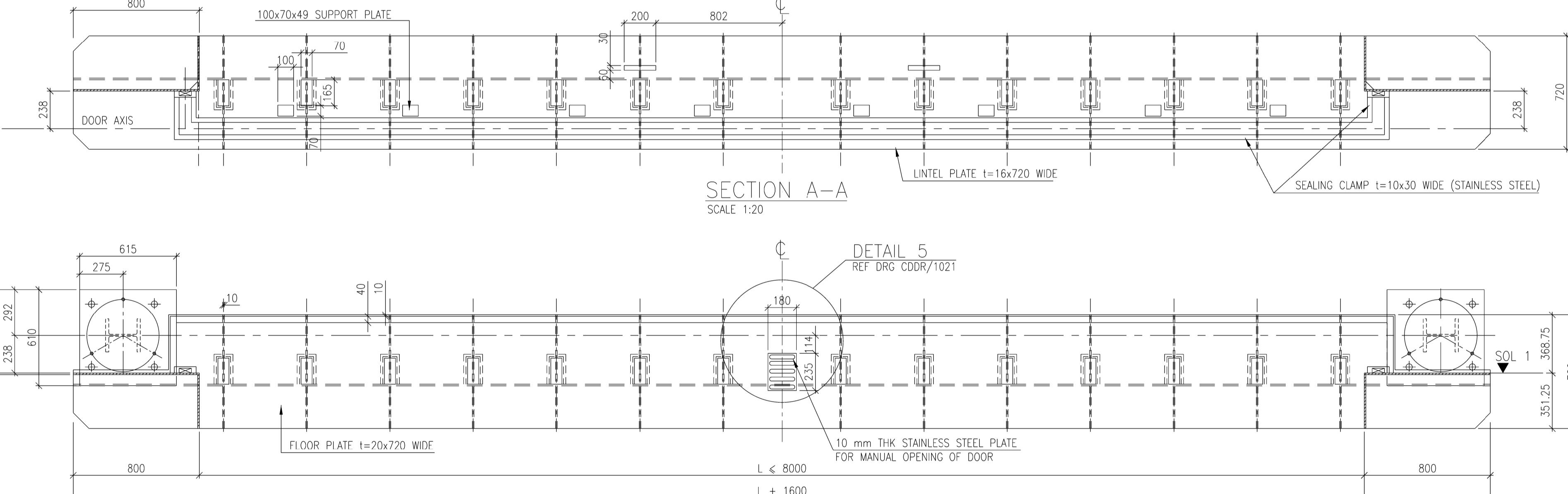
SECTION C-C

SCALE 1:20



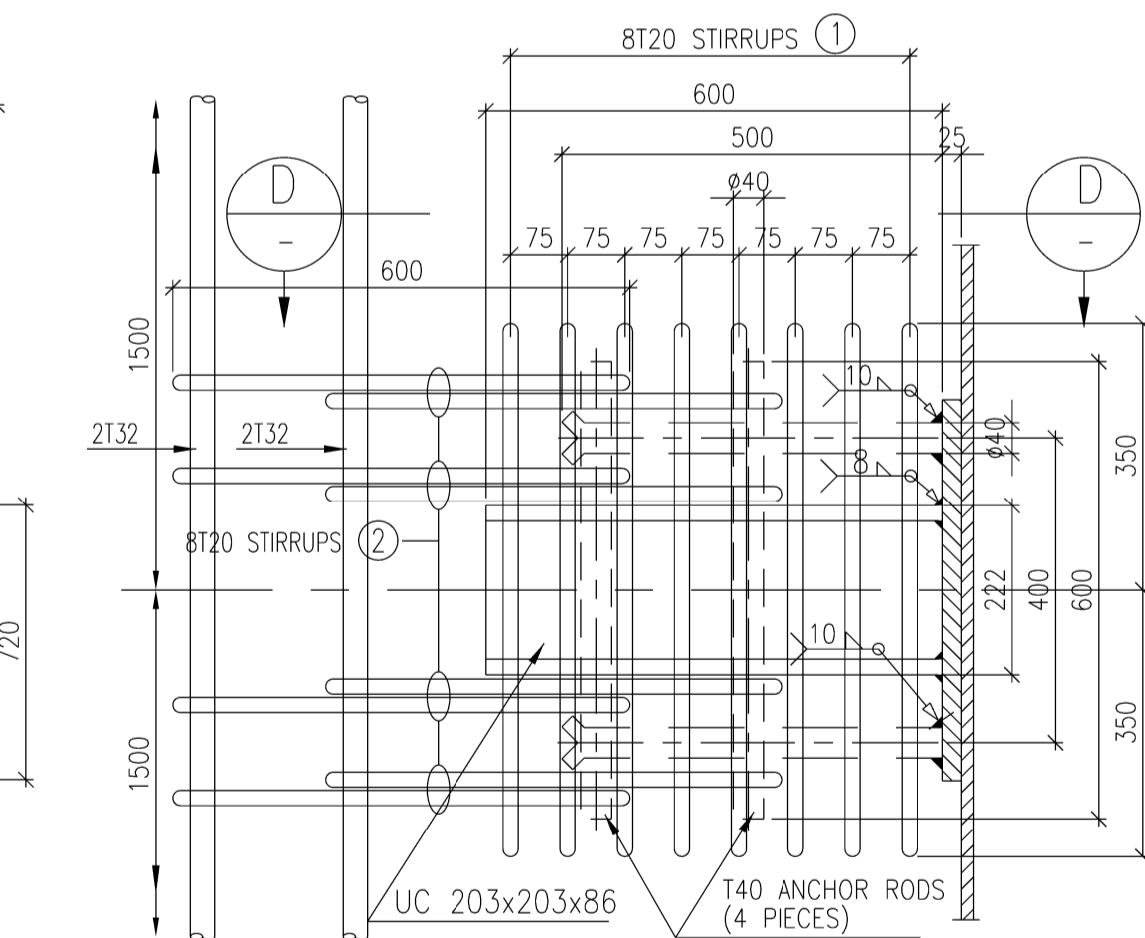
DETAIL 9

DETAIL



SECTION B-B

SCALE 1:20



TYPICAL REINFORCEMENT DETAILS AROUND DOOR HINGES(AND BELOW BEARINGS)

MINIMU

AUTHORITY'S DRAWING

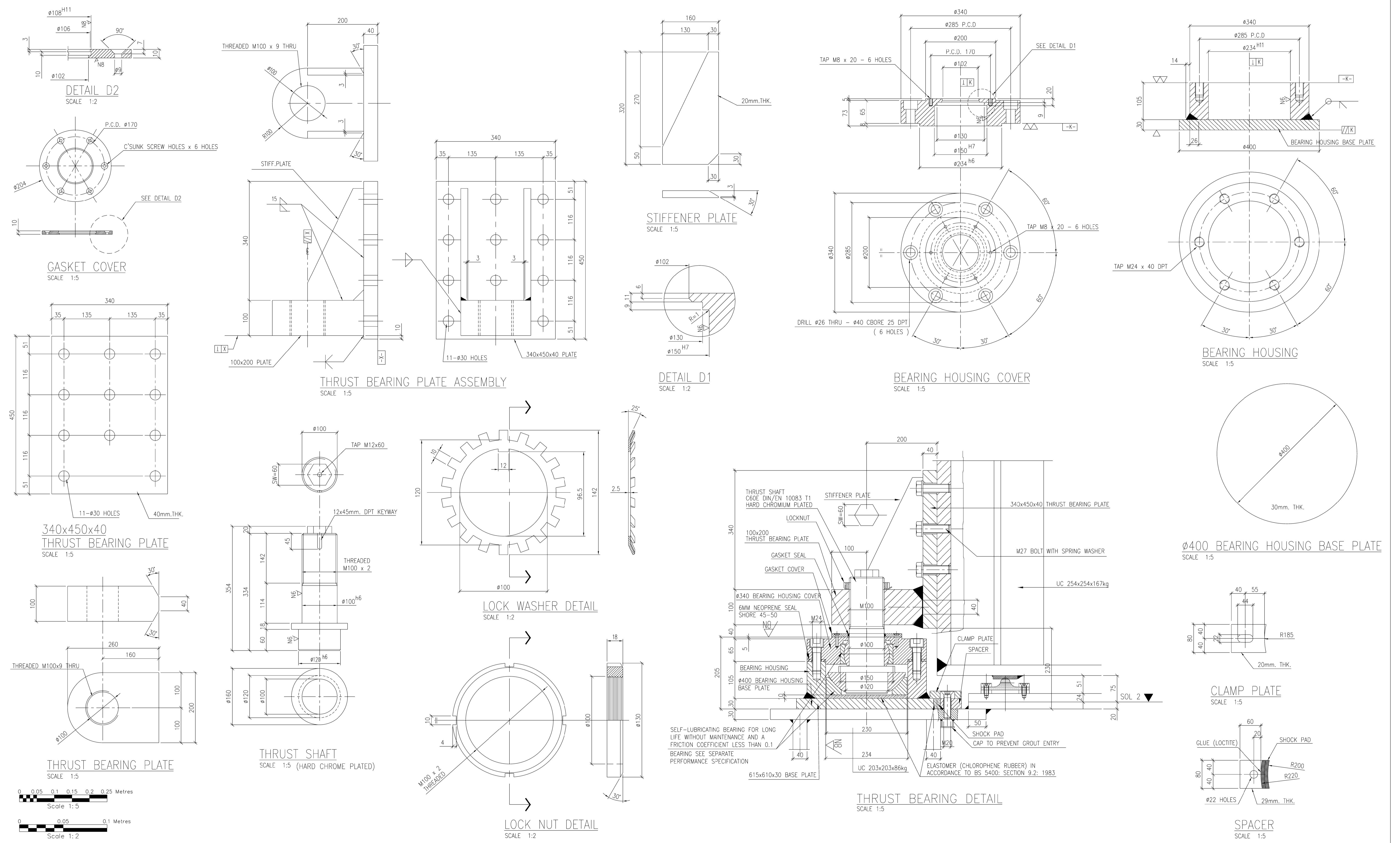
Designed
SOH LP

Land Transport Authority

/CDDR/1026

LCWD-CDDR1026-

PLEASE REFER TO DRAWING NO CDDR/1021 FOR NOTES.



PLEASE REFER TO DRAWING NO CDDR/1021 FOR NOTES.

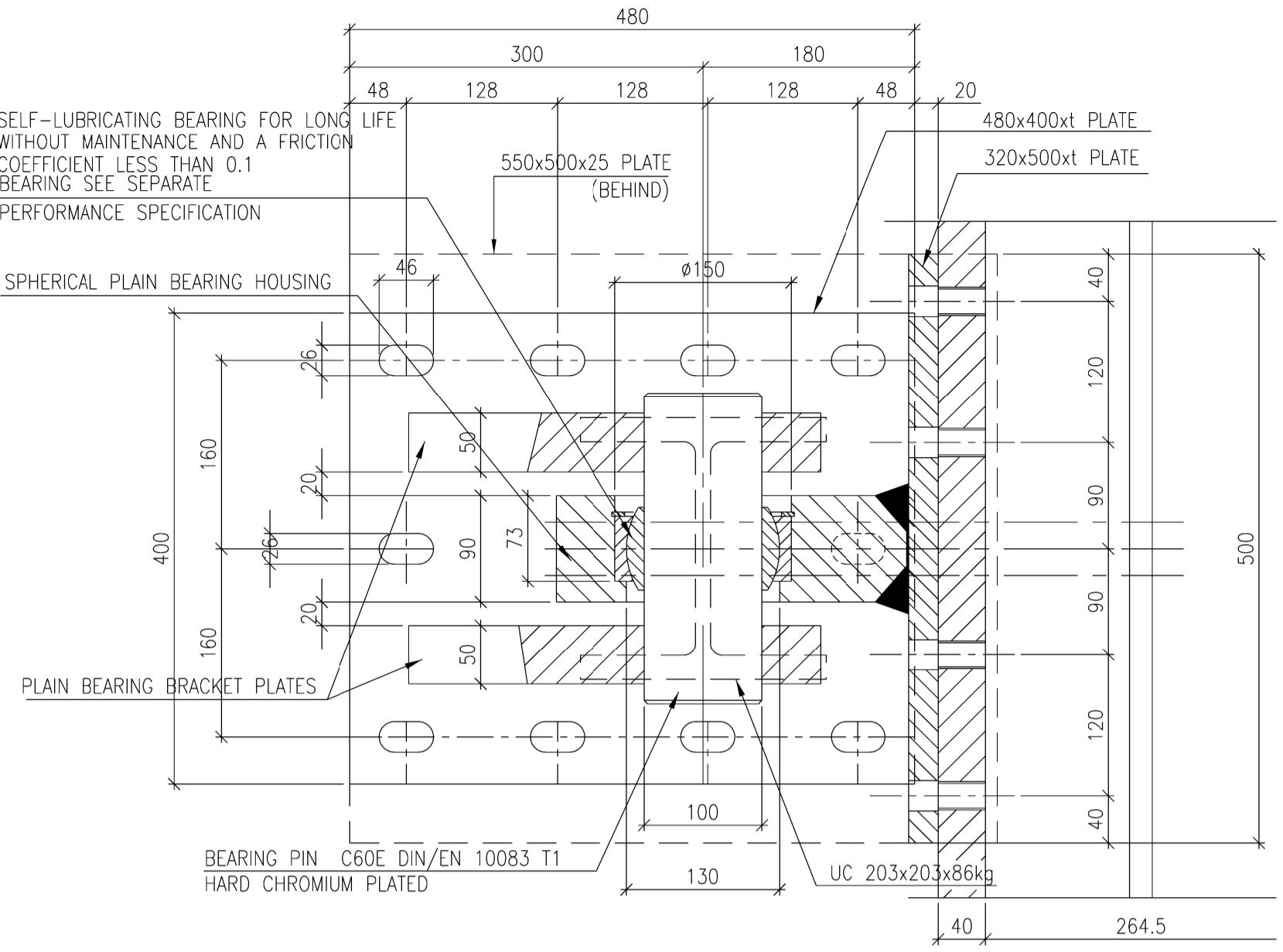
Person Endorsement :	AUT
Project Title	CD
orsement :	SOH LP
Designed	AS SHOWN
Scale	

AUTHORITY'S DRAWING		
e :		D
DOOR DESIGN DRAWING		
	Checked TAN PS	 Approved TAN WK
	Drawn HO SH	 Date 2 APR 2015

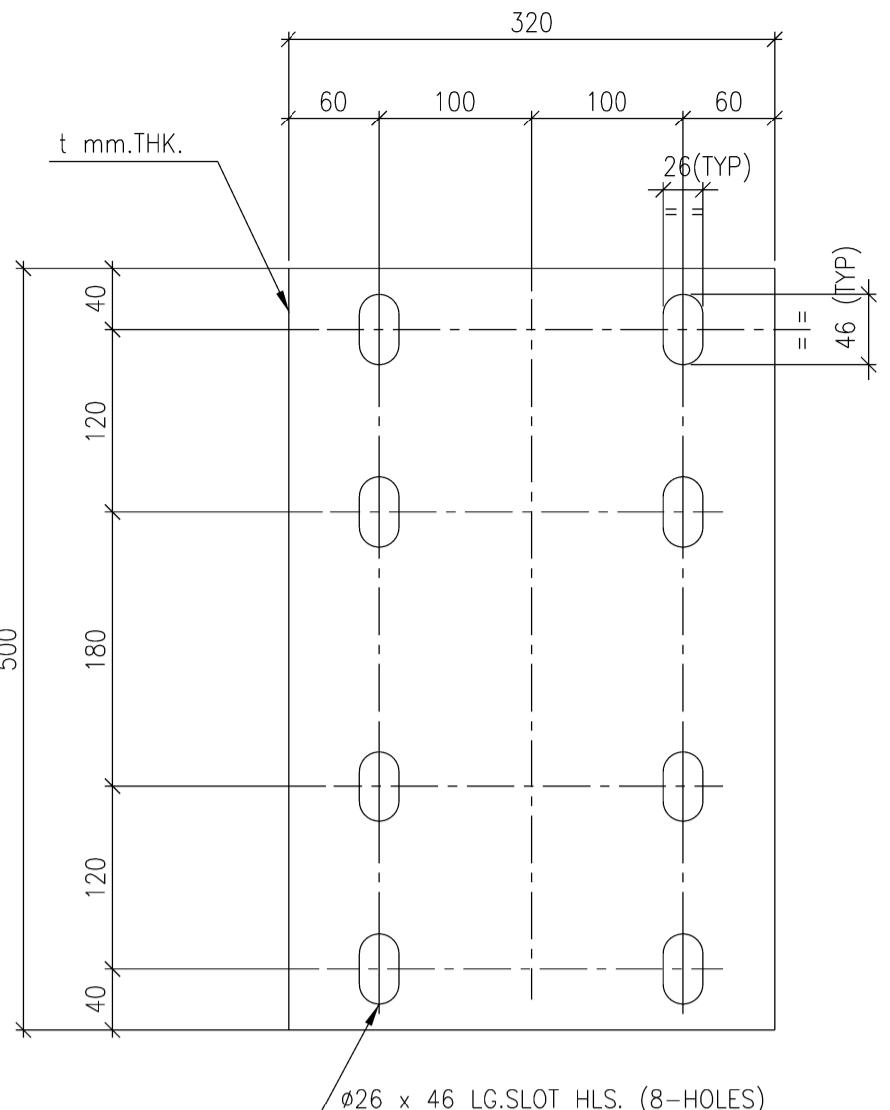
Land Transport Authority

SWING HINGED BLAST AND GASTIGHT DOORS BEARING COMPONENTS DETAILS

/SWD/CDDR/1027	Rev. A	Sheet 7 of 8
: 1800SWD-CDDR1027 A		A1

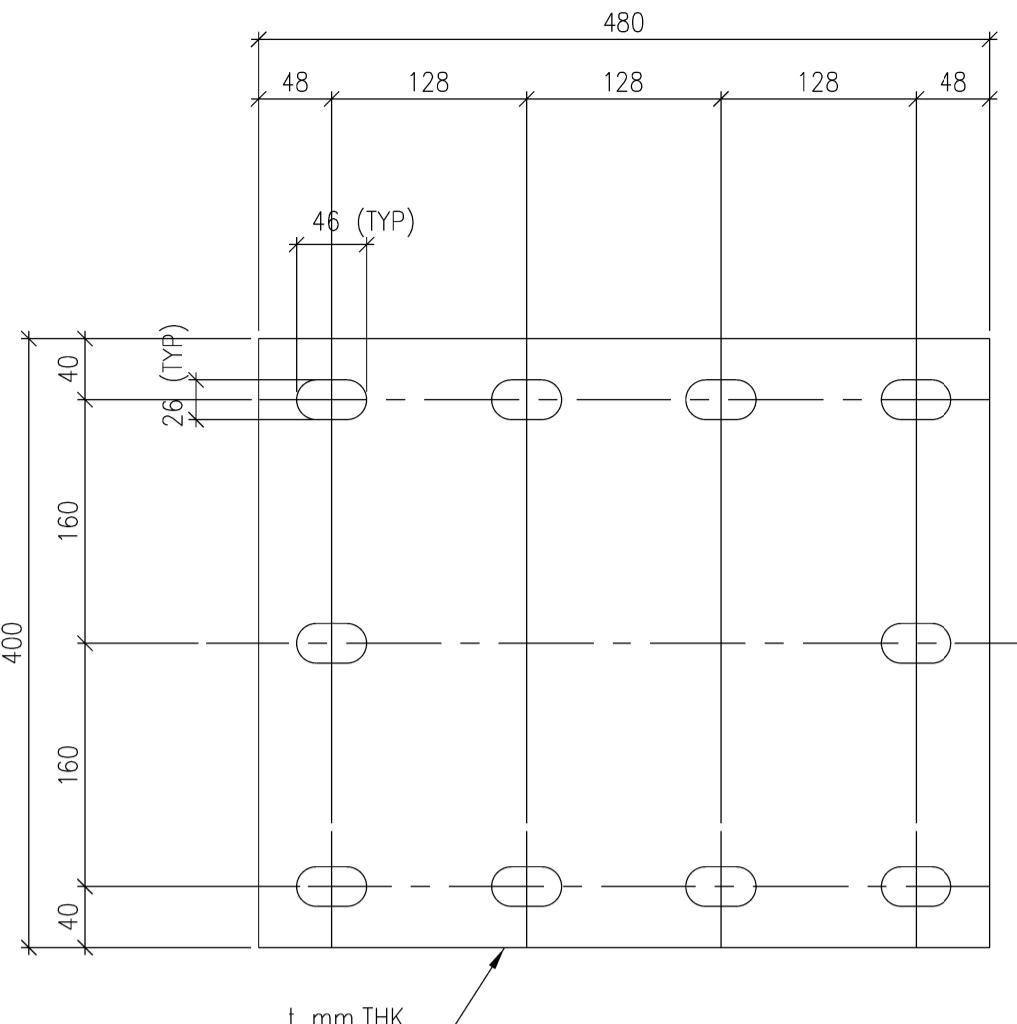


HINGE DETAIL



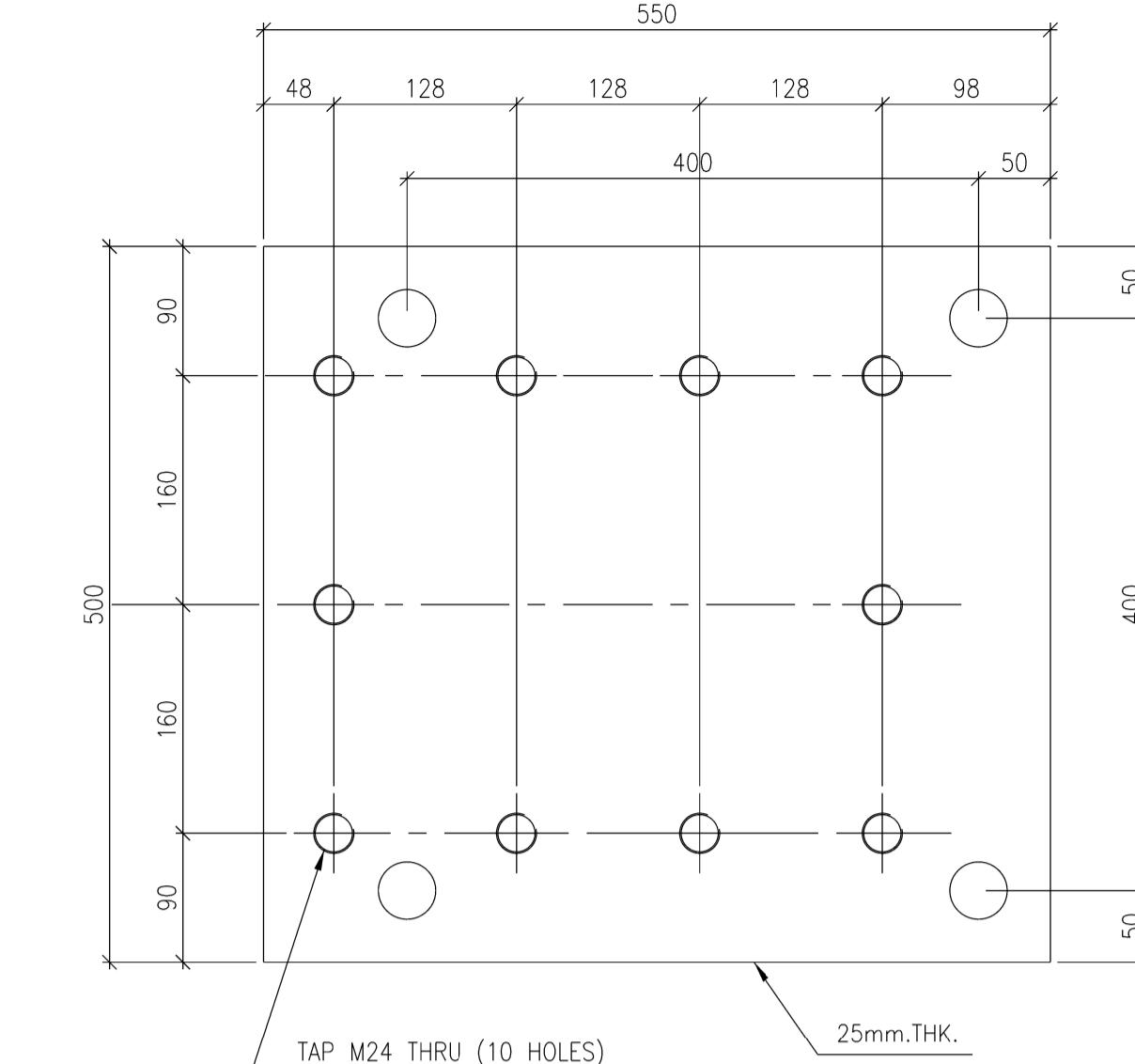
320x500xt PLATE

SCALE 1:5
"t" DENOTES THICKNESS OF PLATE
 $t=25\text{mm}$ FOR DOOR WIDTH $\leq 6 \text{ m}$
 $t=30\text{mm}$ FOR DOOR WIDTH $6 < L \leq 8 \text{ m}$

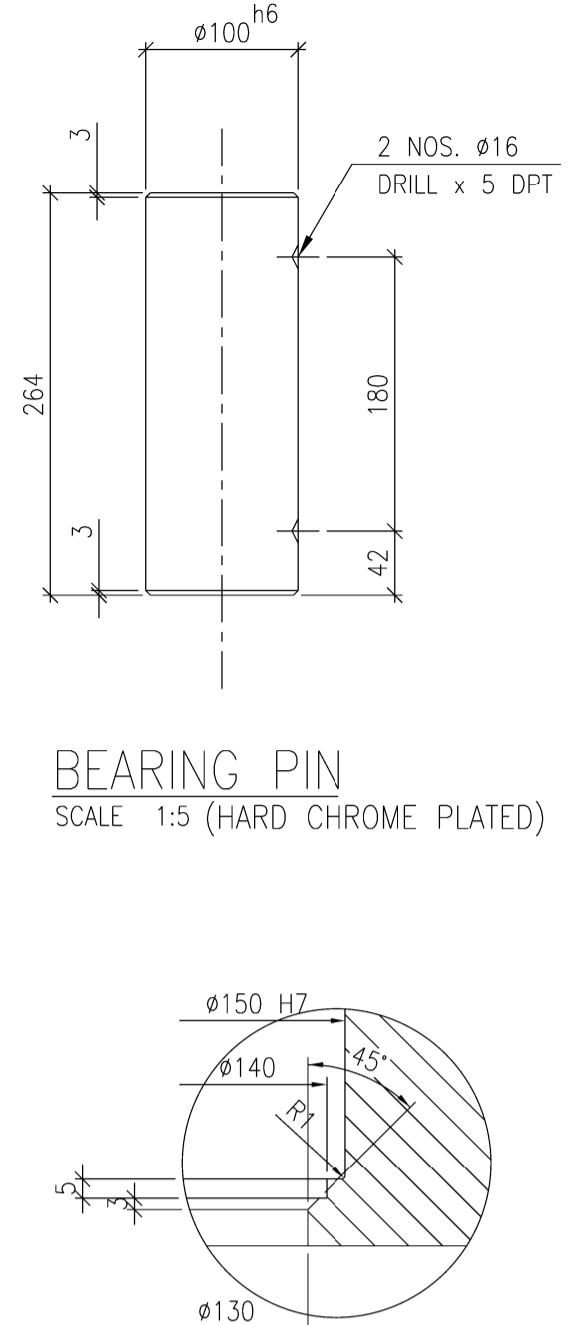


480x400xt PLATE
SCALE 1:5

"t" DENOTES THICKNESS OF PLATE
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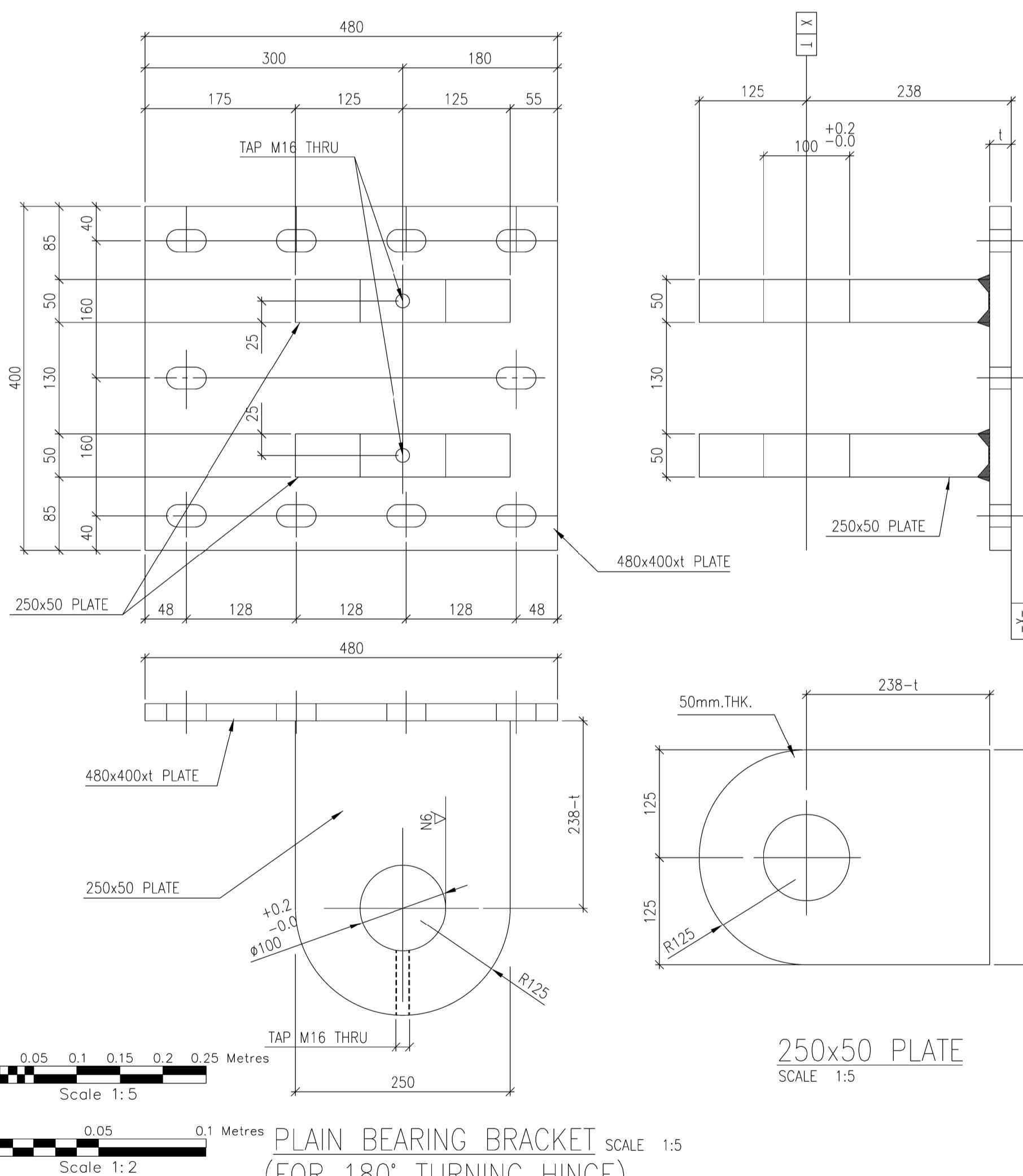


550x500x25 PLATE
SCALE 1:5

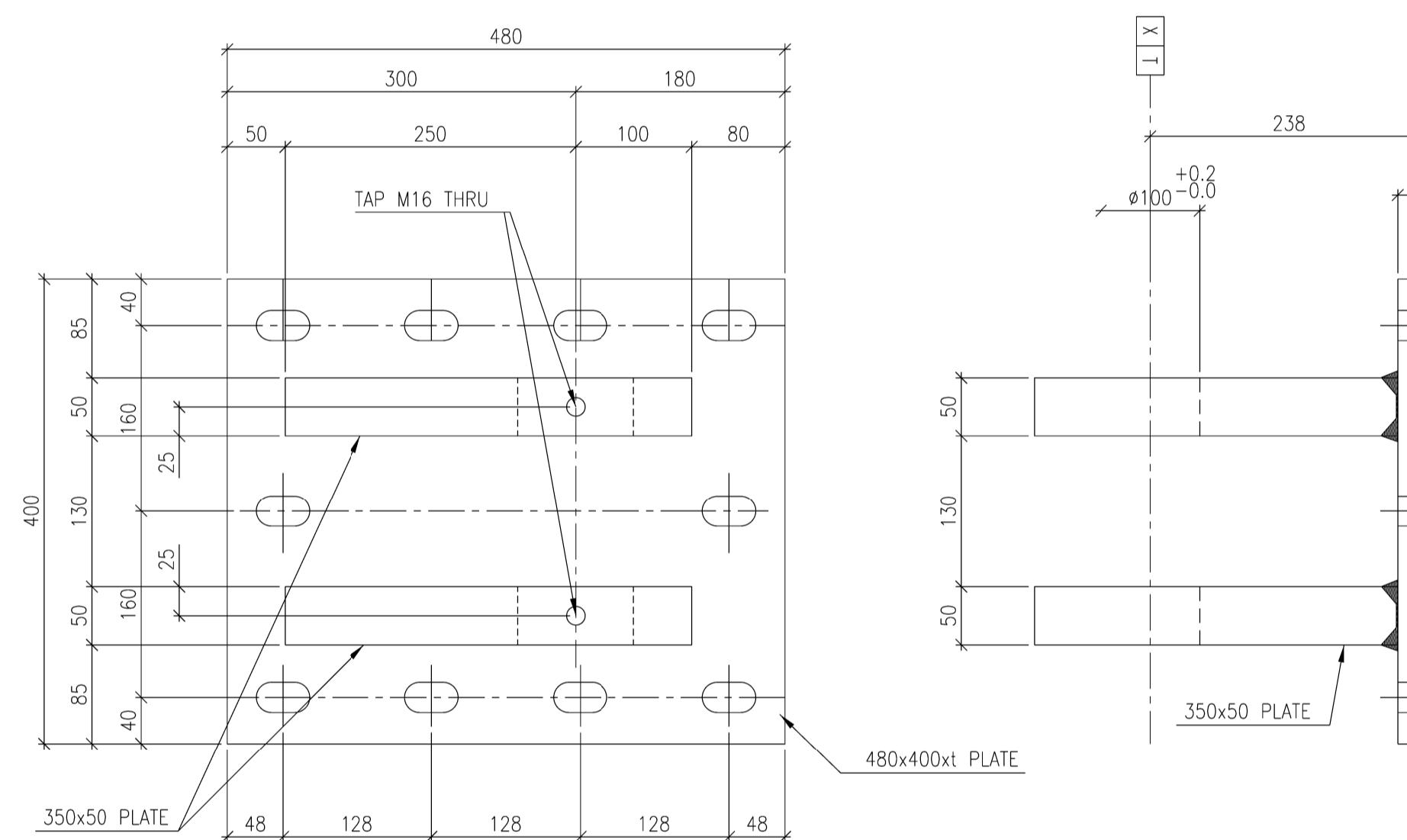


BEARING PIN
SCALE 1:5 (HARD CHROME PLATED)

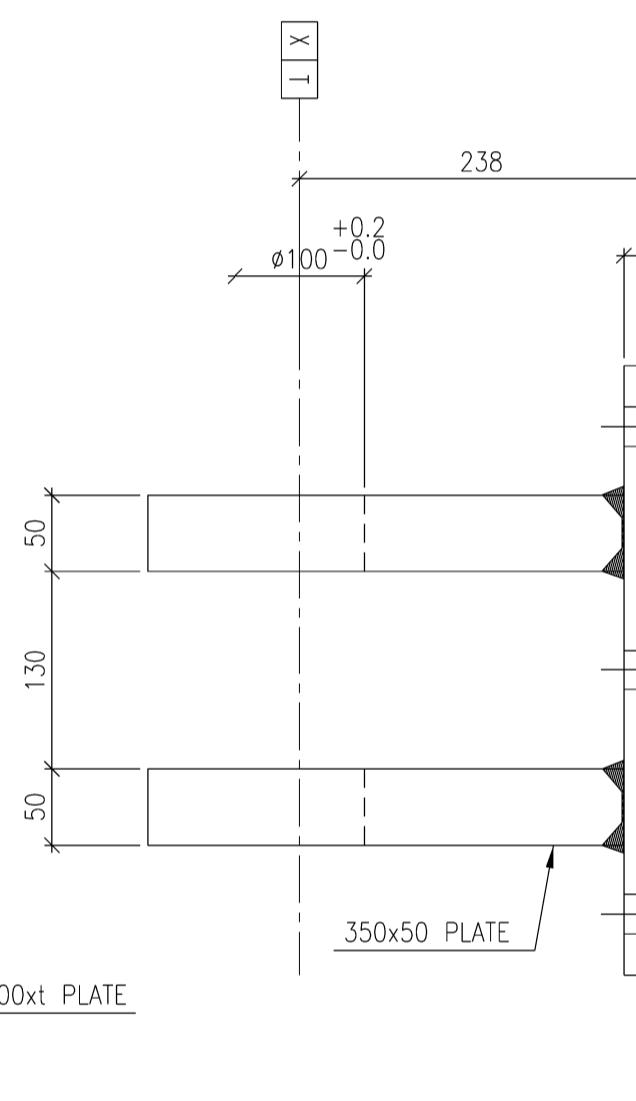
TAIL D3
E 1:2



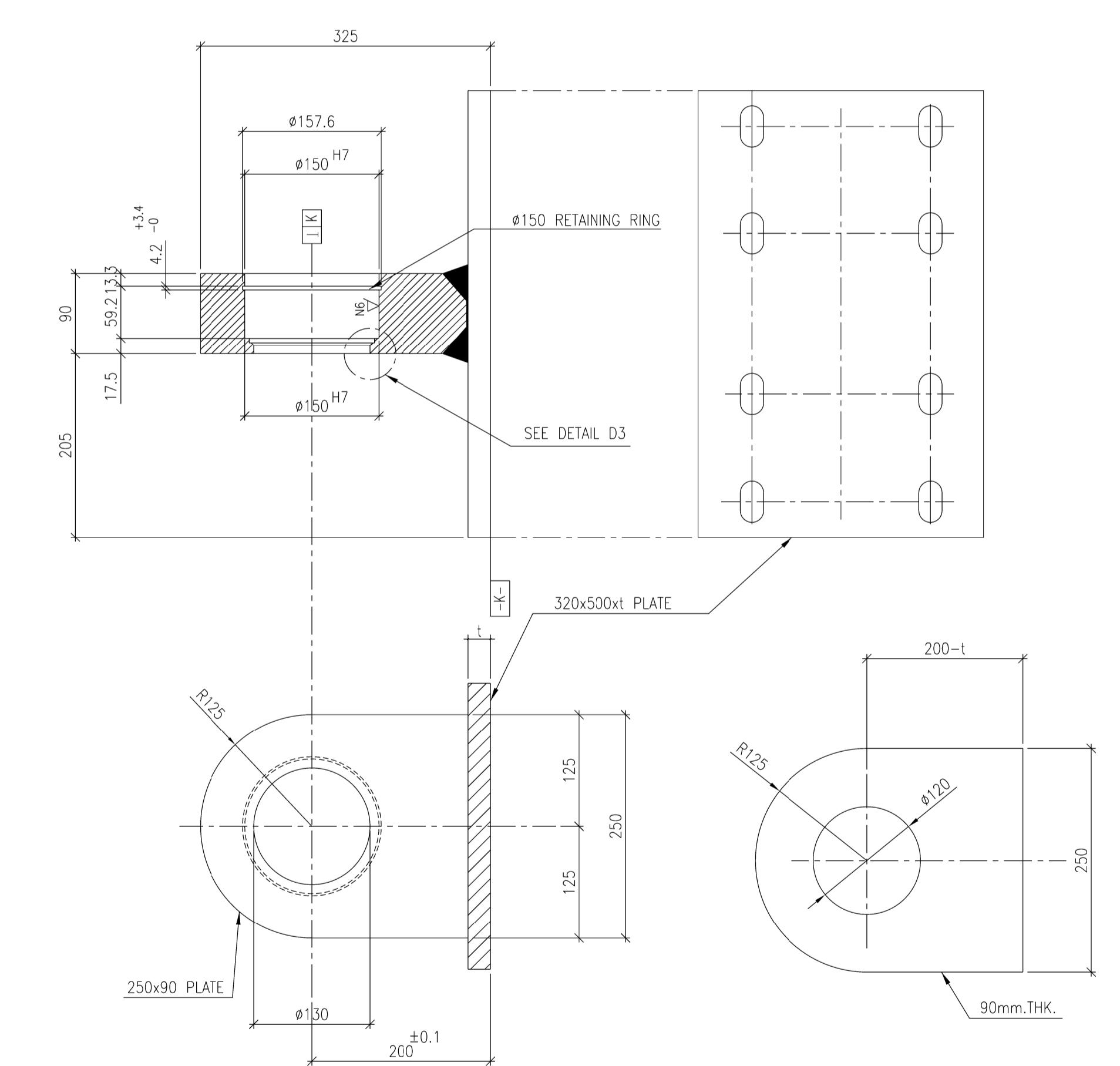
PLAIN BEARING BRACKET SCALE 1:5
(FOR 180° TURNING HINGE)



PLAIN BEARING BRACKET



350x50 PLATE
SCALE 1:5



SPHERICAL PLAIN BEARING HOUSING

PLEASE REFER TO DRAWING NO CDDR/1021 FOR NOTES.

Qualified Person Endorsement

LTA Endorsement :

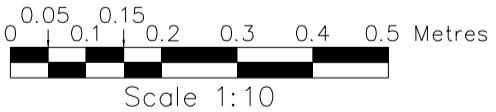
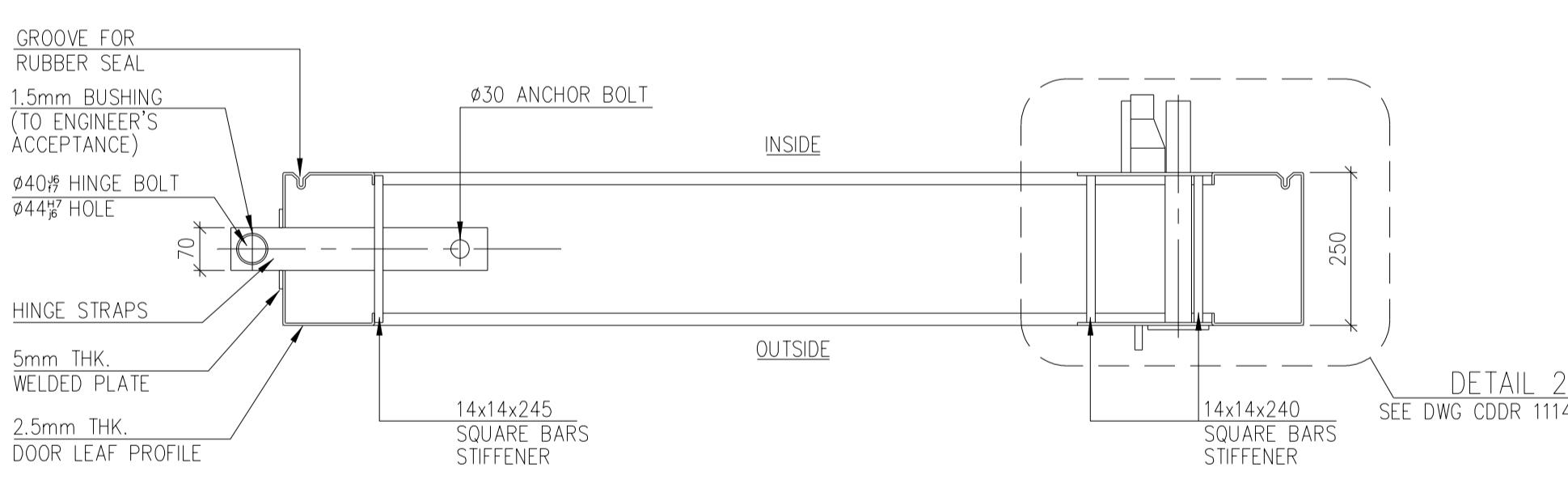
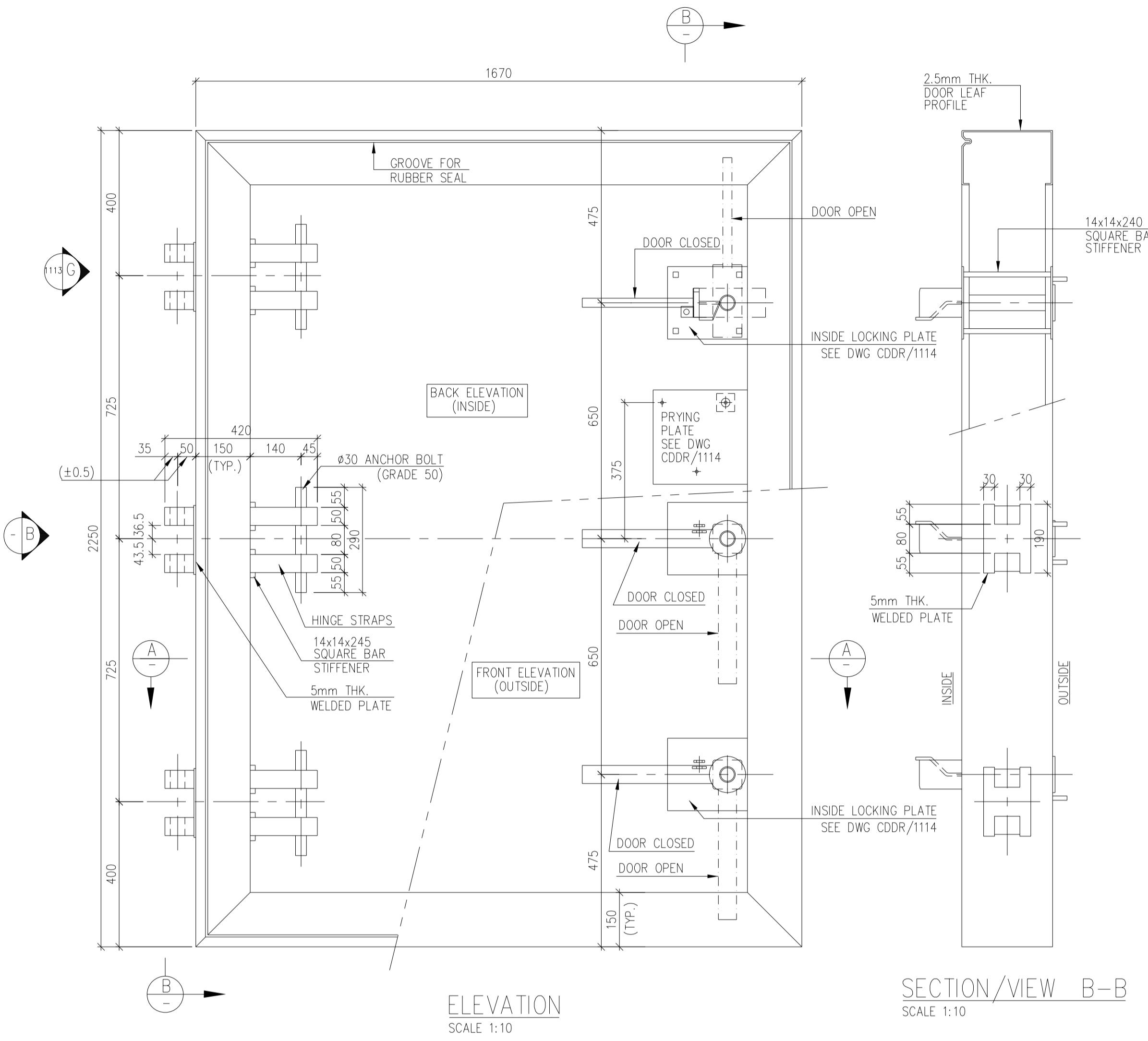
AUTHORITY'S DRAWING

Project Title : CD DOOR DESIGN DRAWING

Land Transport Authority

ng Title :
**TRANCE HINGED BLAST AND GASTIGHT DOORS
NGE COMPONENTS DETAILS**

/CDDR/1028 Rev. A Sheet 8 of 8
LCWD-CDDR1028-



GENERAL

- GENERAL**

 1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUPPLY, FABRICATION AND INSTALLATION OF ALL CD DOORS, INCLUDING ALL NECESSARY TOOLS AND EQUIPMENT AS SPECIFIED.
 2. 1 SET OF RESCUE TOOLS COMPRISING THE PRYING TUBE, BOLT, NUT, WRENCH AND HOLDER SHALL BE PROVIDED FOR EACH DOOR.
 3. THE CONTRACTOR SHALL PREPARE A FULL-SCALE MOCKUP OF THE DOOR FOR THE ENGINEER'S ACCEPTANCE BEFORE FABRICATING ALL OF THE DOORS.
 4. THE DOORS ARE SUBJECT TO FACTORY AND ON-SITE ACCEPTANCE TESTS.
 5. THE CONTRACTOR SHALL SUBMIT DETAILED METHOD STATEMENTS, INCLUDING ALL SUPPORT AND BRACING DETAILS, FOR THE SAFE ERECTION AND INSTALLATION OF THE DOORS WITHIN THEIR ALLOWABLE TOLERANCES.
 6. THE CONTRACTOR SHALL NOTE THE WEIGHTS AND SIZES OF THE DOORS AND MAKE FULL ALLOWANCES IN HIS CONSTRUCTION METHOD AND PROGRAMME FOR THE HANDLING, POSITIONING AND INSTALLATION OF THE DOORS.
 7. THE CONTRACTOR SHALL DEVELOP DETAILED SHOP DRAWINGS IN CONSULTATION WITH THE ENGINEER FOR AN OPTIMAL DESIGN NOT LIMITED BY THE DESIGN DRAWINGS, AND FOR THE ENGINEER'S APPROVAL.
 8. THE CONTRACTOR SHALL PLAN FOR A DESIGN COMPLIANT INSTALLATION OF REBARS AROUND THE DOOR FRAME AND ENSURE ADEQUATE STRUCTURAL THICKNESS TO ACCOMMODATE THEM.

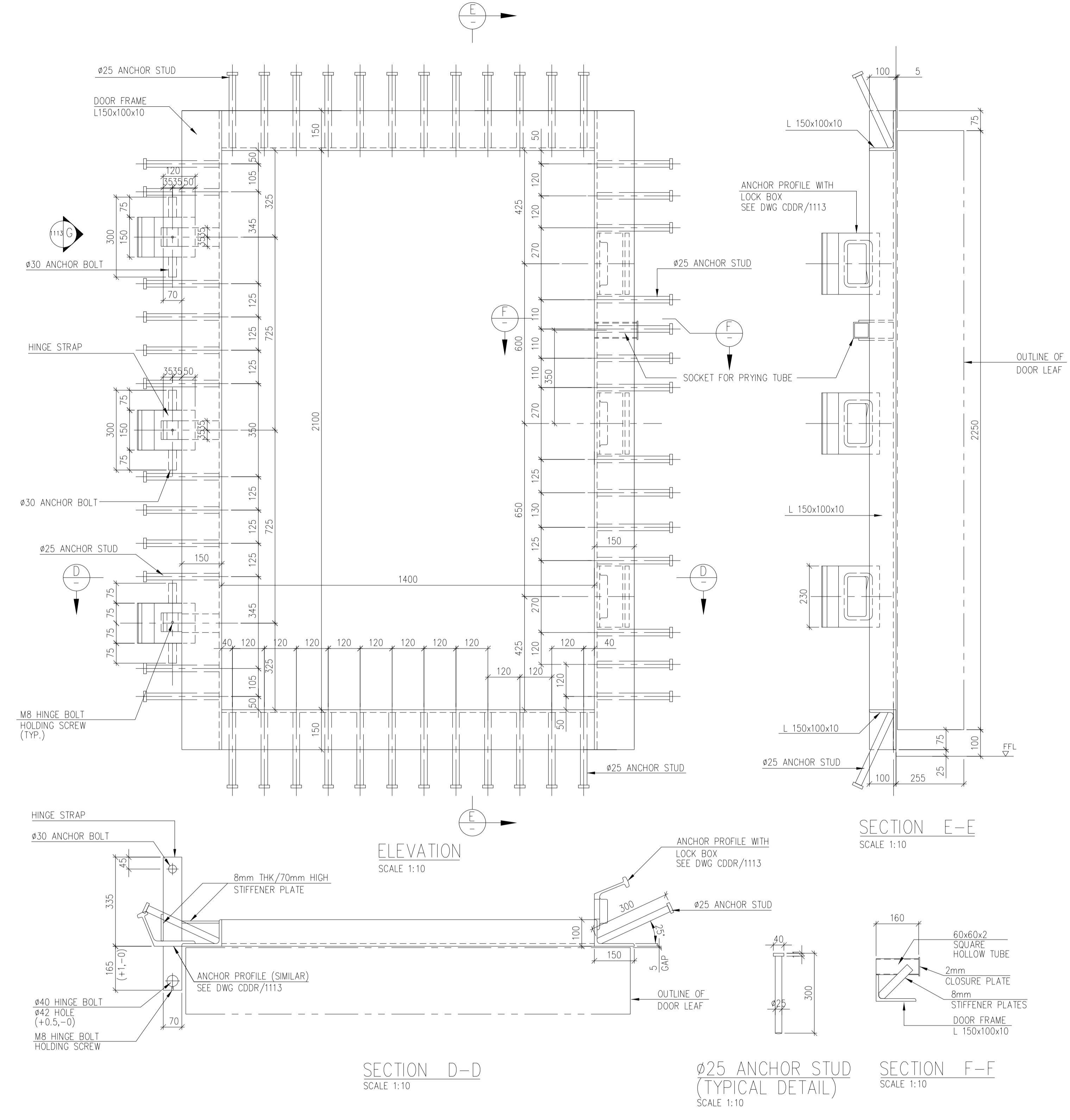
MATERIALS:

 1. STRUCTURAL STEEL :
 - a) FOR HINGES, SHAFT & LOCKS : S 355 (SS EN 1993)
 - b) FOR ALL OTHERS UNLESS OTHERWISE SPECIFIED : S 275 (SS EN 1993)
 2. DOOR LEAF CONCRETE : GRADE C30 (SS EN 1992), $f_{cu} = 30\text{ MPa}$
 3. REINFORCING STEEL : HIGH-YIELD STEEL (SS EN 1992), $f_y = 460 \text{ MPa}$
 4. ALL BUSHINGS SHALL BE AS DETAILED IN THE DRAWINGS AND SPECIFICATION
 5. WELD SIZES:
 - a) AS SHOWN IN DRAWINGS
 - b) AS REQUIRED FOR TRANSPORTATION AND ERECTION IF NOT SHOWN IN THE DRAWINGS.
 6. RUBBER FOR DOOR SEALS SHALL COMPLY WITH REQUIREMENTS DETAILED IN THE SPECIFICATIONS.

MATERIALS

- MATERIALS:

 1. STRUCTURAL STEEL :
 - a) FOR HINGES, SHAFT & LOCKS : S 355 (SS EN 1993)
 - b) FOR ALL OTHERS UNLESS OTHERWISE SPECIFIED : S 275 (SS EN 1993)
 2. DOOR LEAF CONCRETE : GRADE C30 (SS EN 1992), $f_{cu} = 30\text{ MPa}$
 3. REINFORCING STEEL : HIGH-YIELD STEEL (SS EN 1992), $f_y = 460 \text{ MPa}$
 4. ALL BUSHINGS SHALL BE AS DETAILED IN THE DRAWINGS AND SPECIFICATION
 5. WELD SIZES:
 - a) AS SHOWN IN DRAWINGS
 - b) AS REQUIRED FOR TRANSPORTATION AND ERECTION IF NOT SHOWN IN THE DRAWINGS.
 6. RUBBER FOR DOOR SEALS SHALL COMPLY WITH REQUIREMENTS DETAILED IN THE SPECIFICATIONS.



SECTION D-
SCALE 1:10

SECTION F-F
SCALE 1:10

I Person Endorsement :

endorsement :

AUTHORITY'S DRAWING

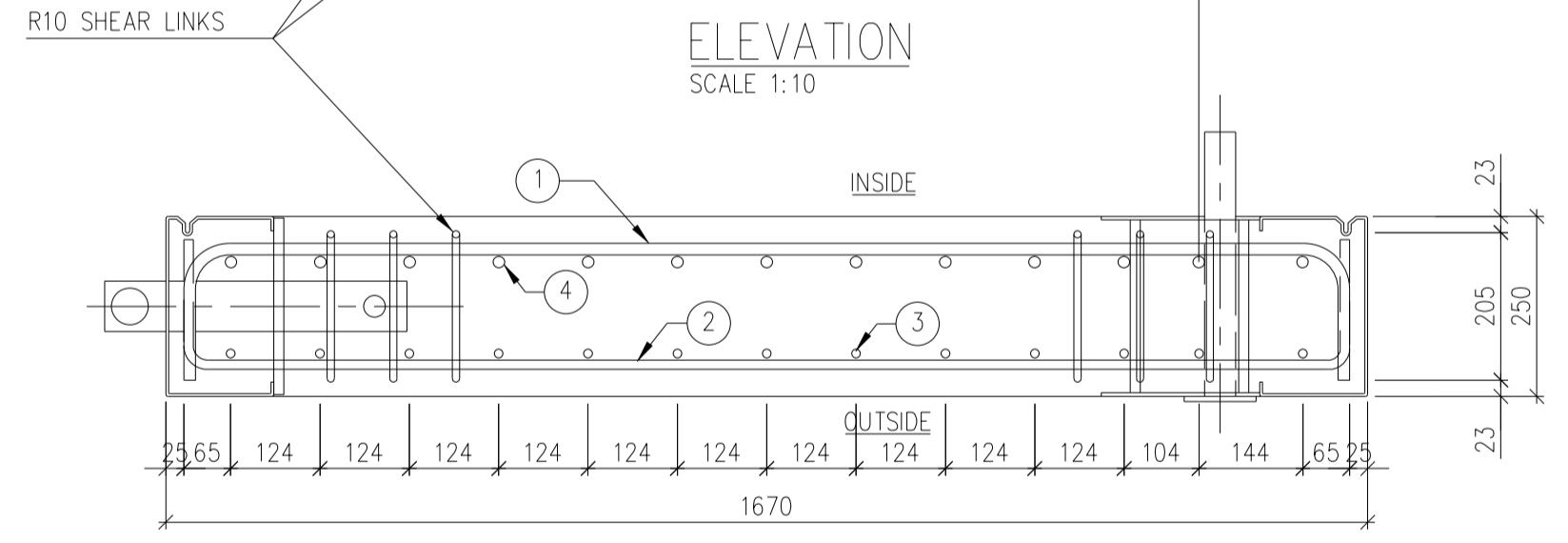
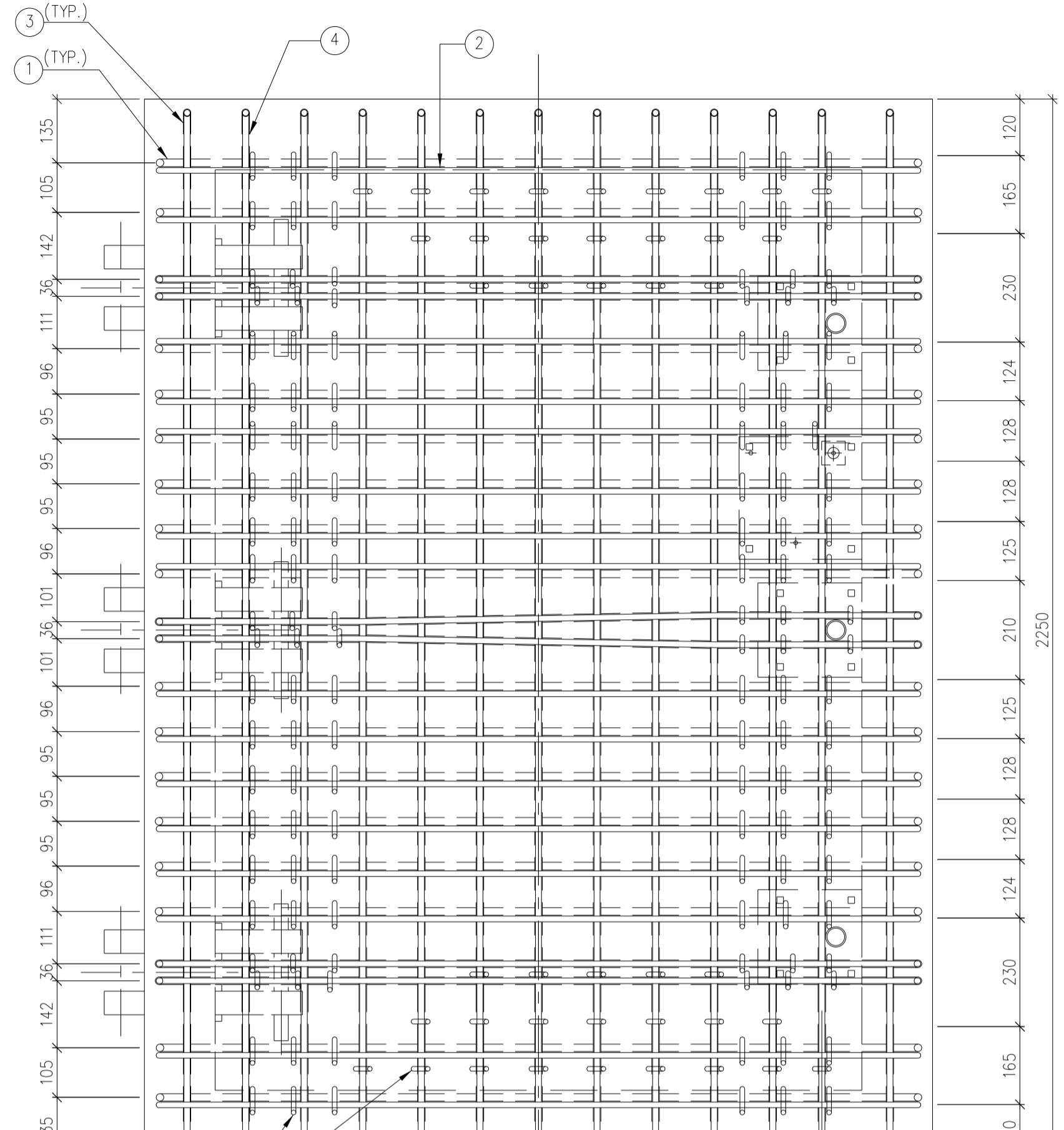
Project Title :

CD DOOR DESIGN DRAWING

Land Transport Authority



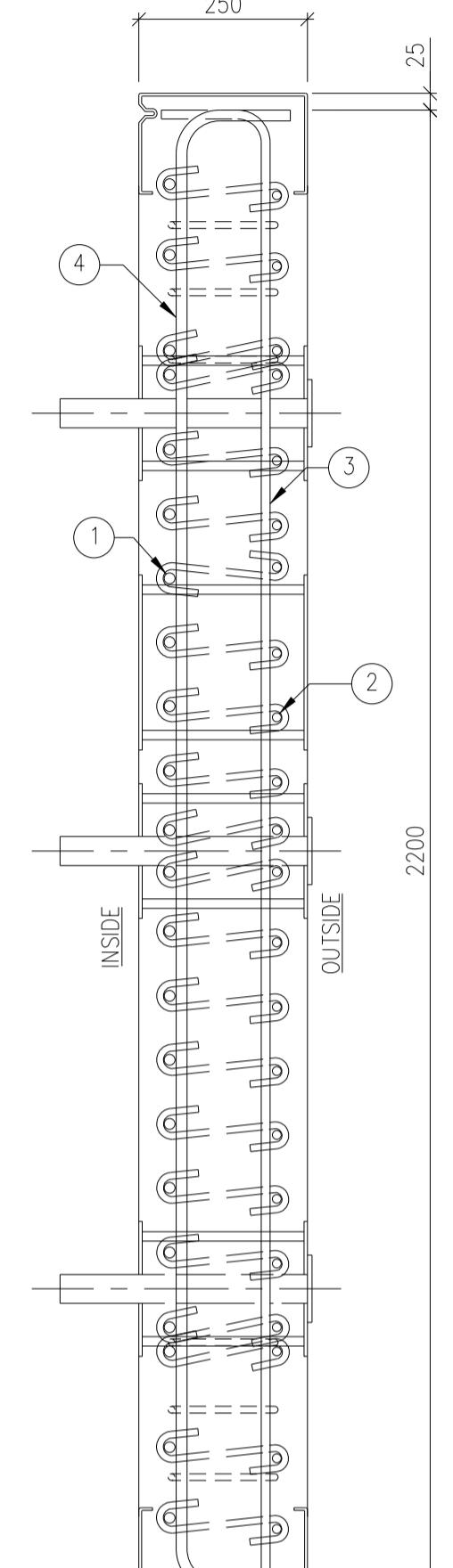
LCWD / CDDR / 1111	Rev. A	Sheet 1 of 5
LCWD-CDDR1111-	A1	



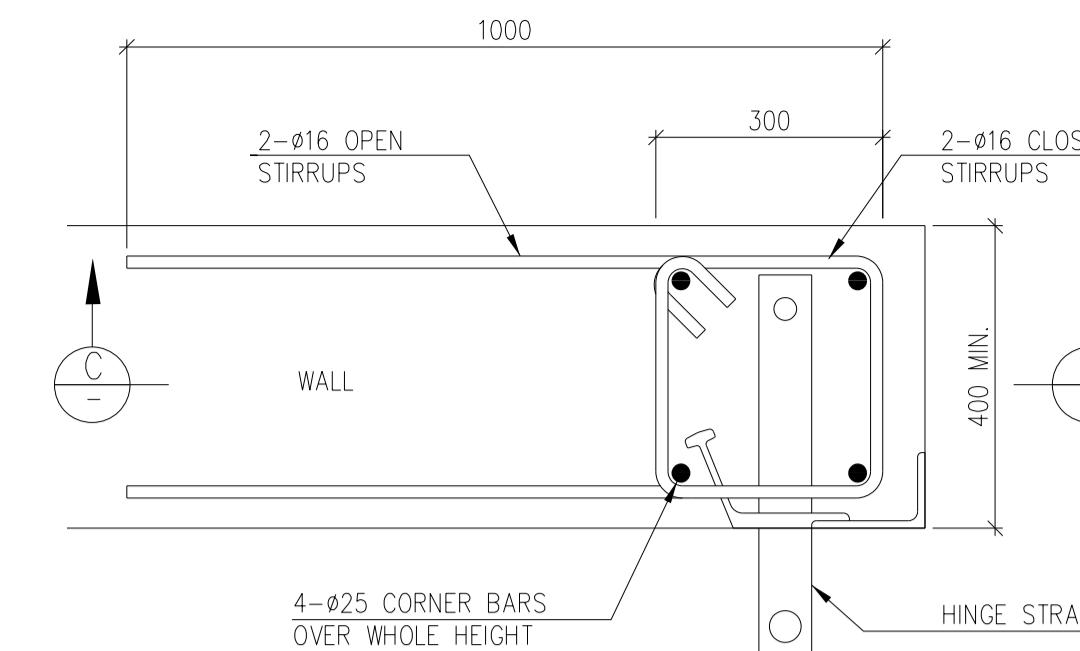
REINFORCEMENT CAGE FOR DOOR LEAF

0 0.05 0.1 0.15 0.2 0.3 0.4 0.5 Metres
Scale 1:10

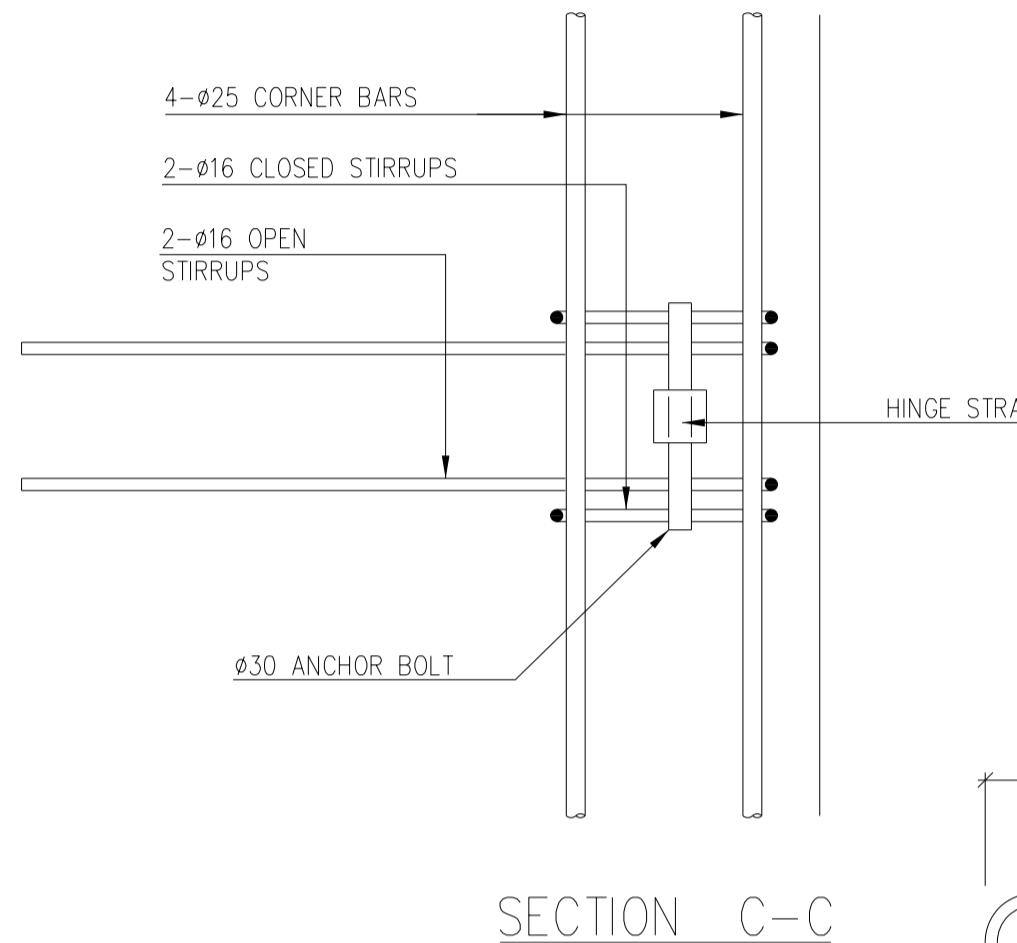
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Scale 1:2



VERTICAL SECTION
SCALE 1:10

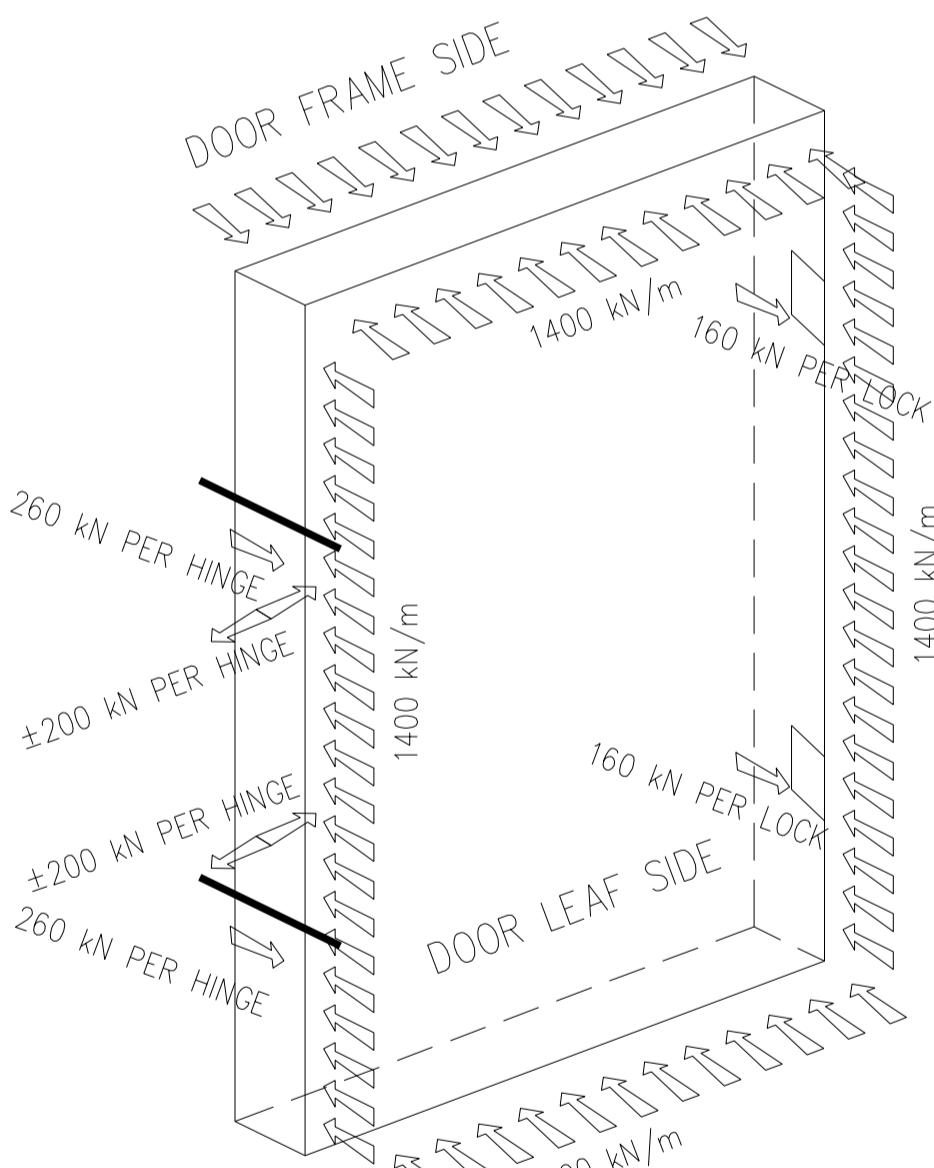


REINFORCEMENT AT HINGE STRAP IN WALL
SCALE 1:10



SECTION C-C
SCALE 1:10

MINIMUM REINFORCEMENT IN WALL



LOADING LAYOUT ON DOOR LEAF

LOAD SPECIFICATIONS

THE REINFORCED CONCRETE ELEMENTS/STRUCTURES SUPPORTING THE DOOR ASSEMBLY SHALL BE DESIGNED FOR THE FOLLOWING LOADS:

- LINE LOADS (ULTIMATE) ALL AROUND DOOR FRAME PERPENDICULAR TO DOOR LEAF = 1400 kN/m
- POINT LOAD (ULTIMATE) PERPENDICULAR TO DOOR LEAF:
 - 160 kN PER LOCK
 - 260 kN PER HINGE
- POINT LOAD (ULTIMATE) IN PLANE OF DOOR LEAF : ±200 kN PER HINGE

Ø10 MILD STEEL SHEAR LINKS
SCALE 1:2

BAR SHAPES FOR DOOR LEAF
SCALE 1:10

3 - Ø13 BARS
13 - Ø16 BARS
4 - Ø16 BARS
13 - Ø13 BARS

VERTICAL BARS
SCALE 1:10

PLEASE REFER TO DRAWING NO CDDR/1111 FOR NOTES.

Qualified Person Endorsement :											
Project Title : CD DOOR DESIGN DRAWING											
LTA Endorsement :											
A	APR 2015	HO SH	CHECKER'S NAME AND SHEAR KEY MECHANISM UPDATED	TPS	TWK						
Rev.	Date	By	Description	Chkd	App'd						

AUTHORITY'S DRAWING

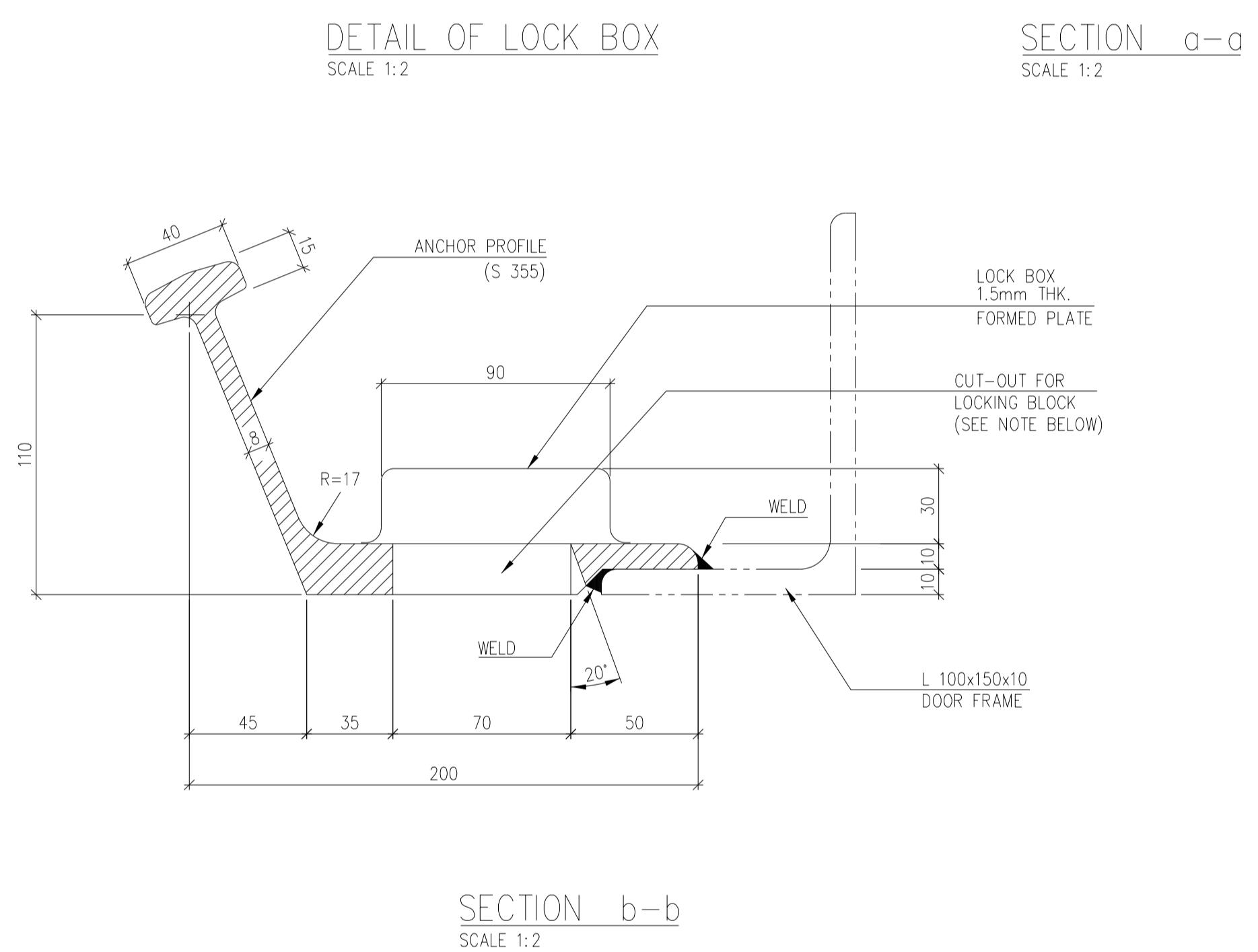
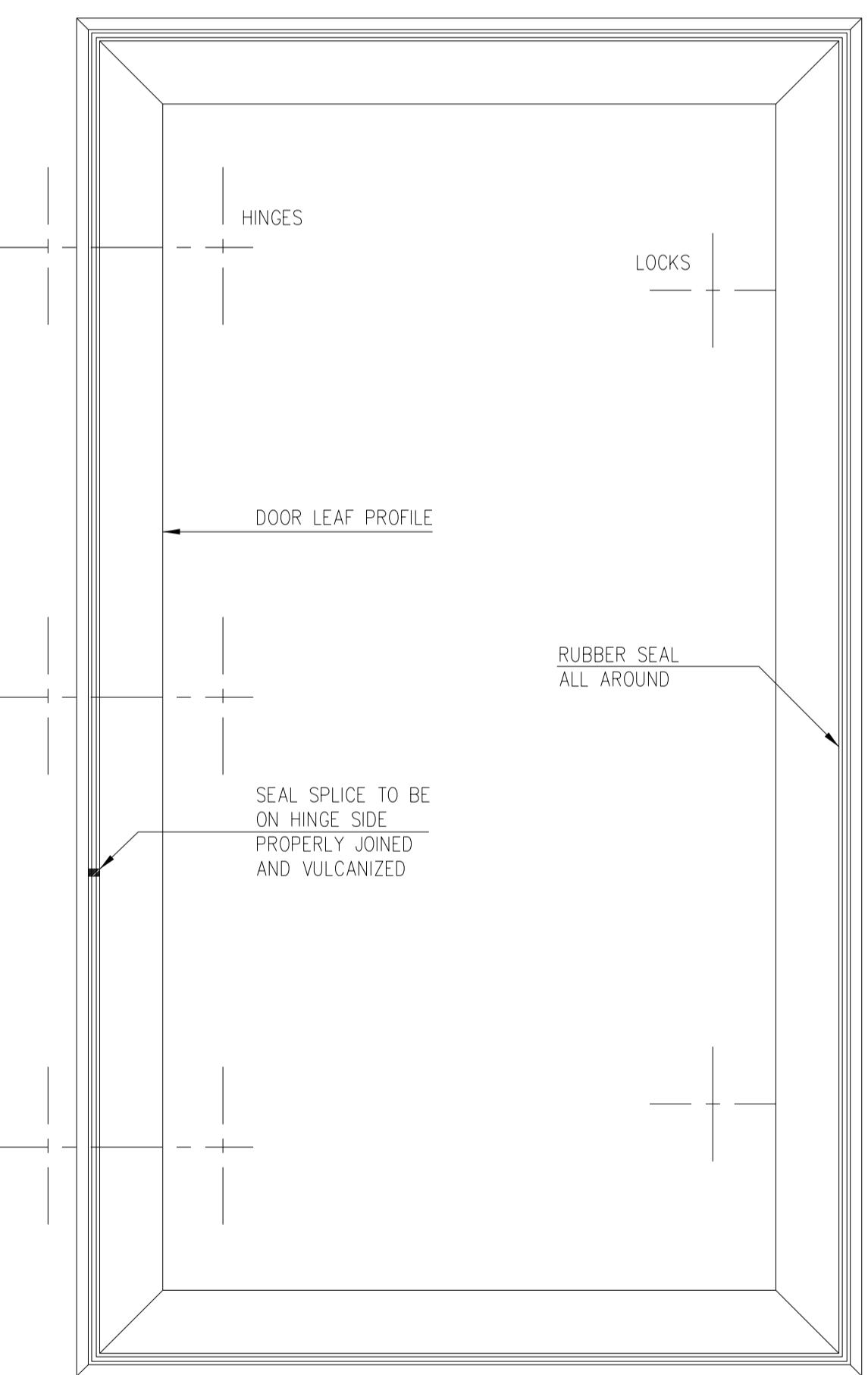
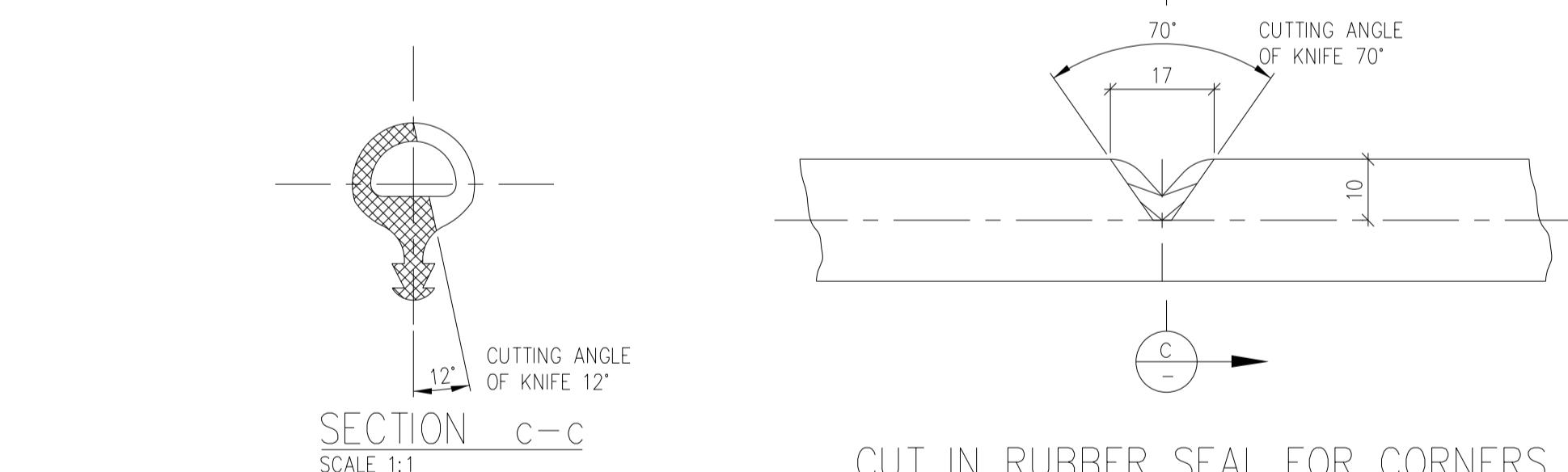
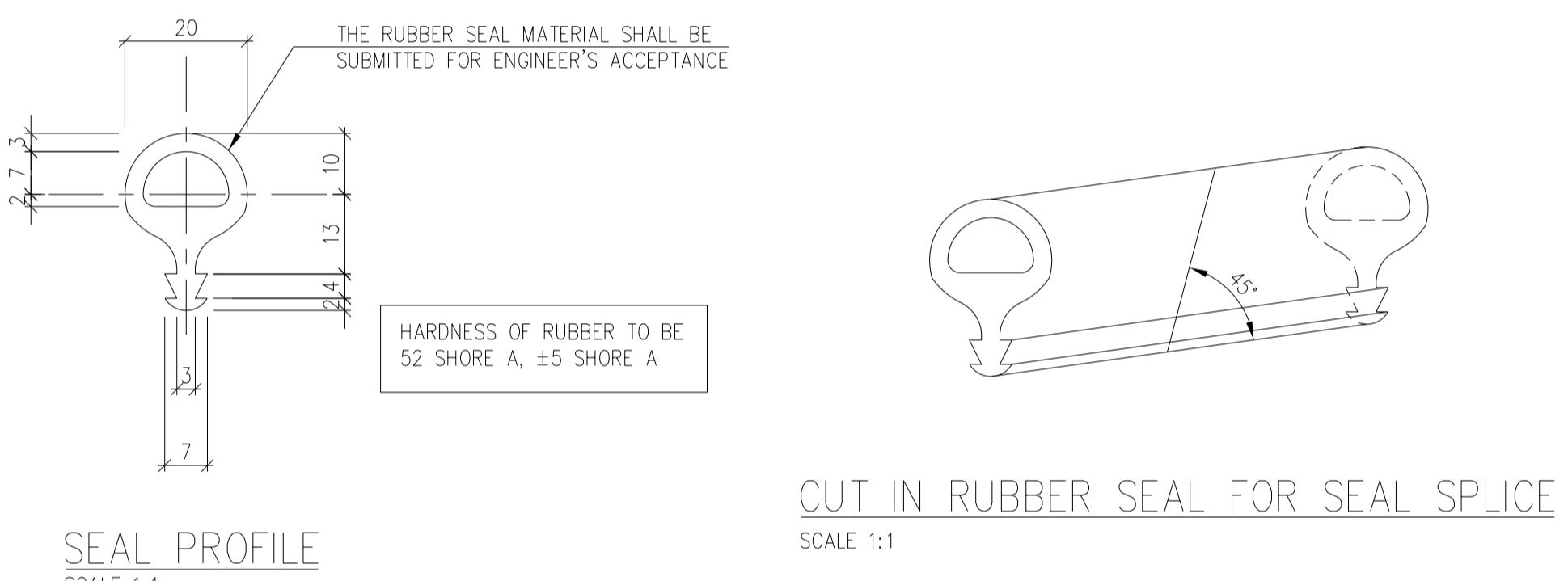
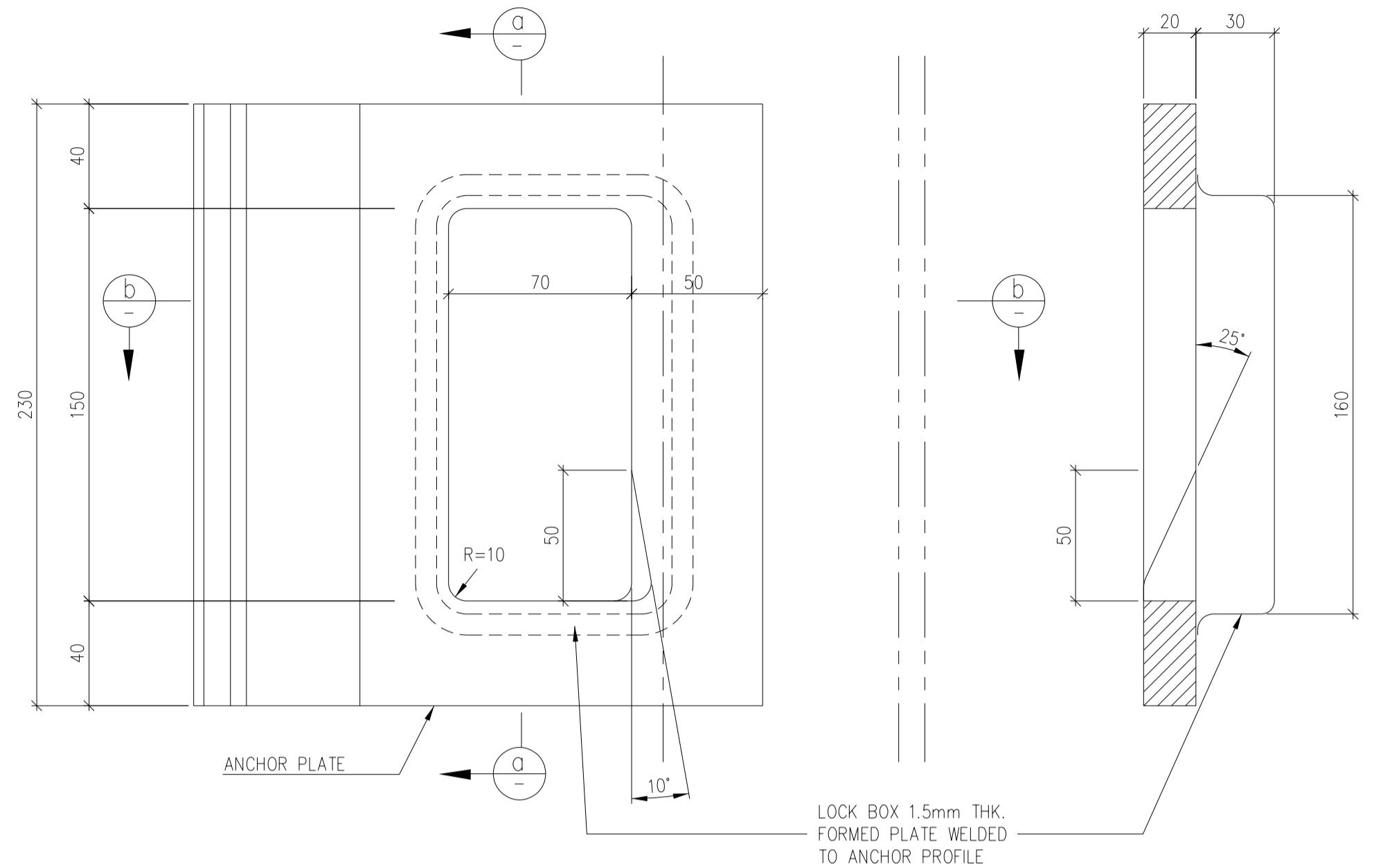
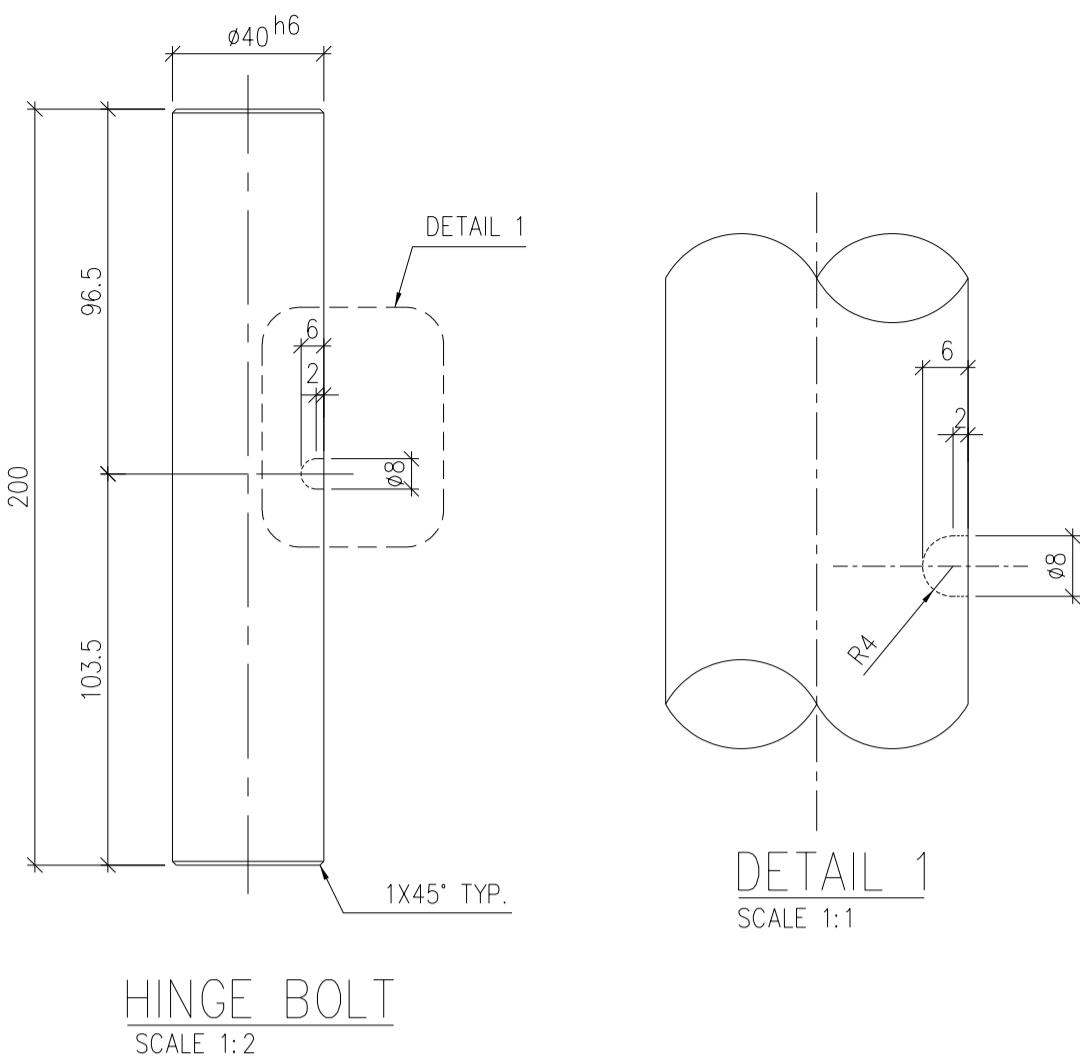
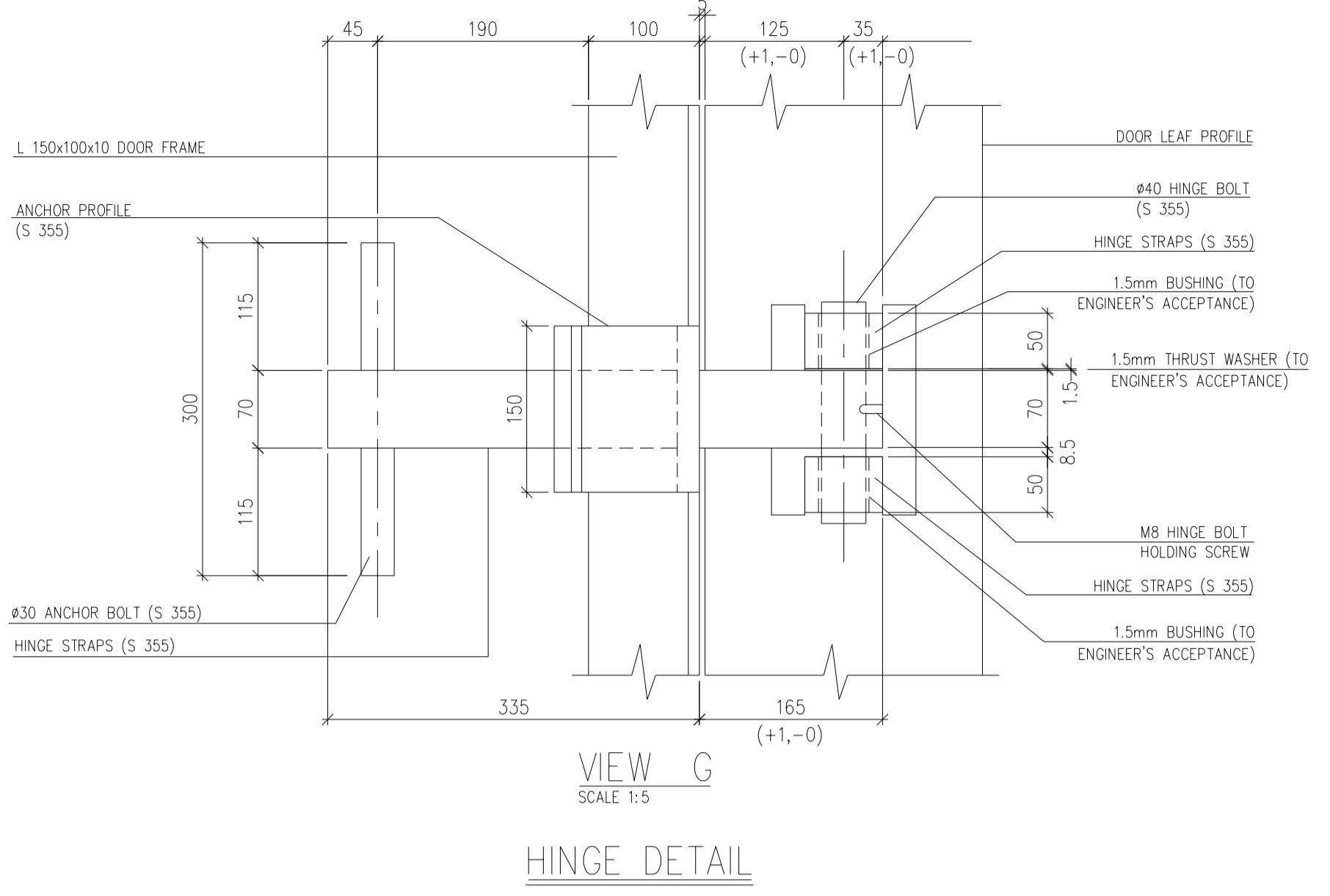
Project Title : CD DOOR DESIGN DRAWING

Designed : SOH LP Checked : TAN PS Approved : TAN WK
Scale : AS SHOWN Drawn : HO SH Date : 2 APR 2015

Land Transport Authority

BLAST PROOF DOOR TYPE PT3
REINFORCEMENT DETAILS

Drawing No. : L/CWD/CDDR/1112 Rev. A Sheet 2 of 5
CAD File Name : LCWD-CDDR1112-A1



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Qualified Person Endorsement :

LTA Endorsement :

AUTHORITY'S DRAWING

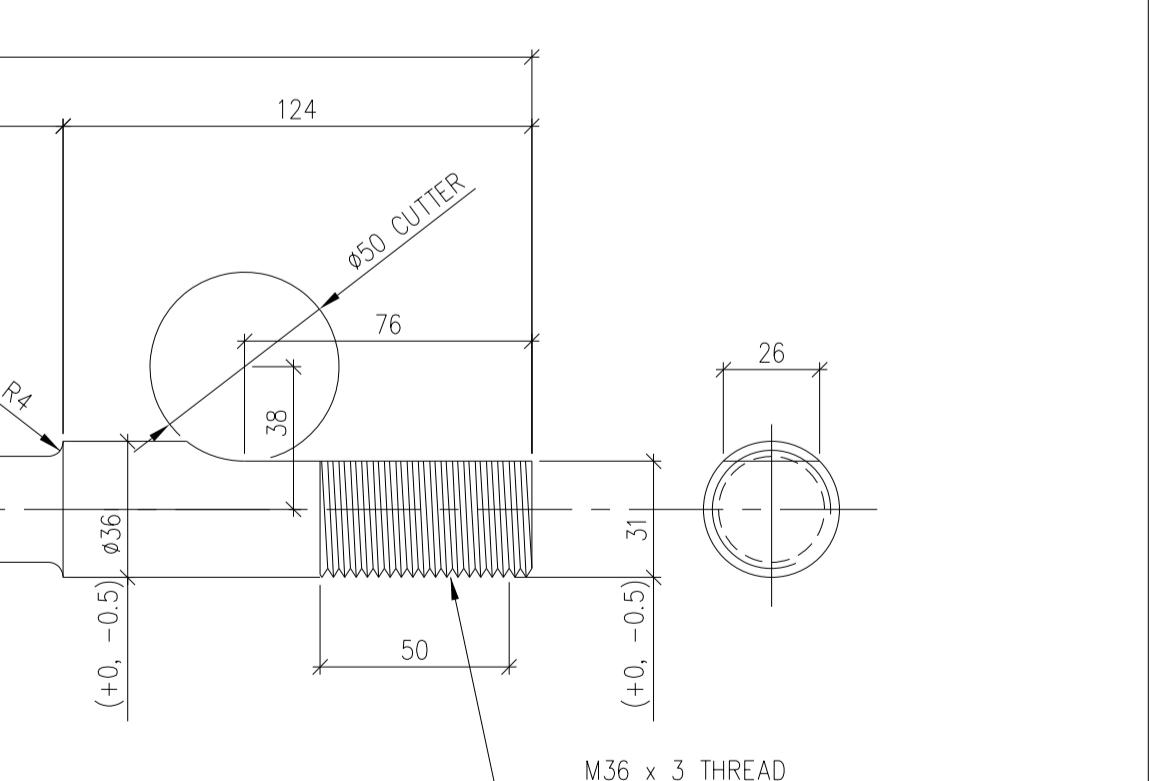
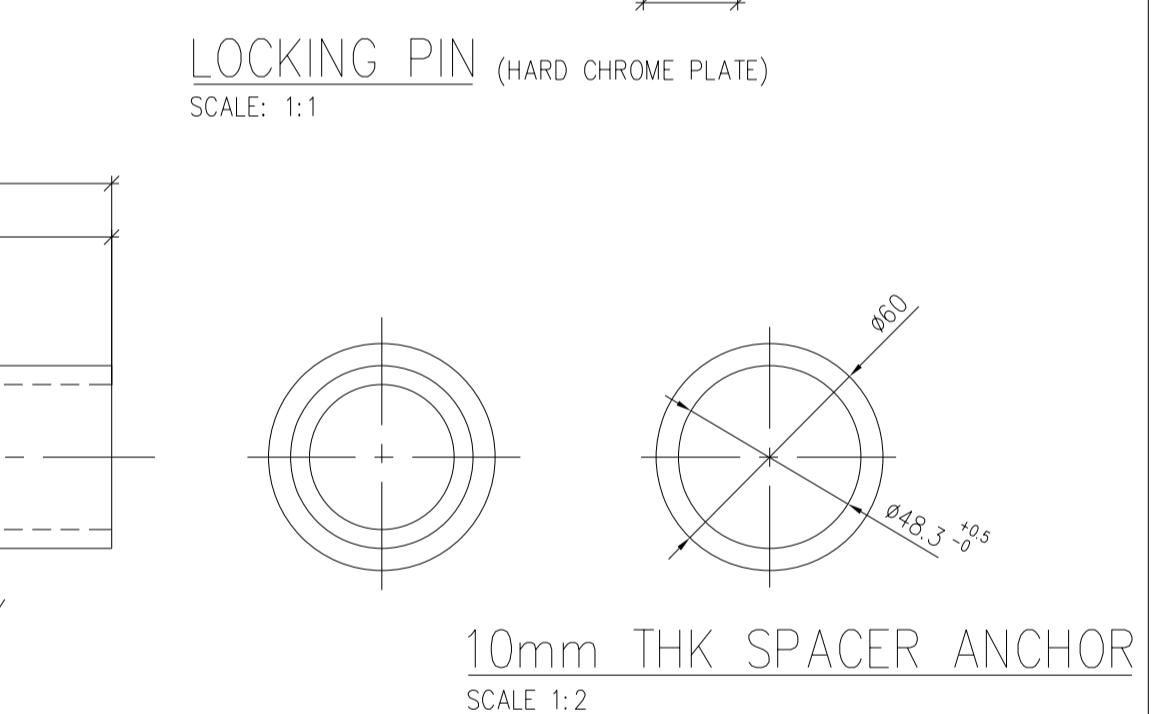
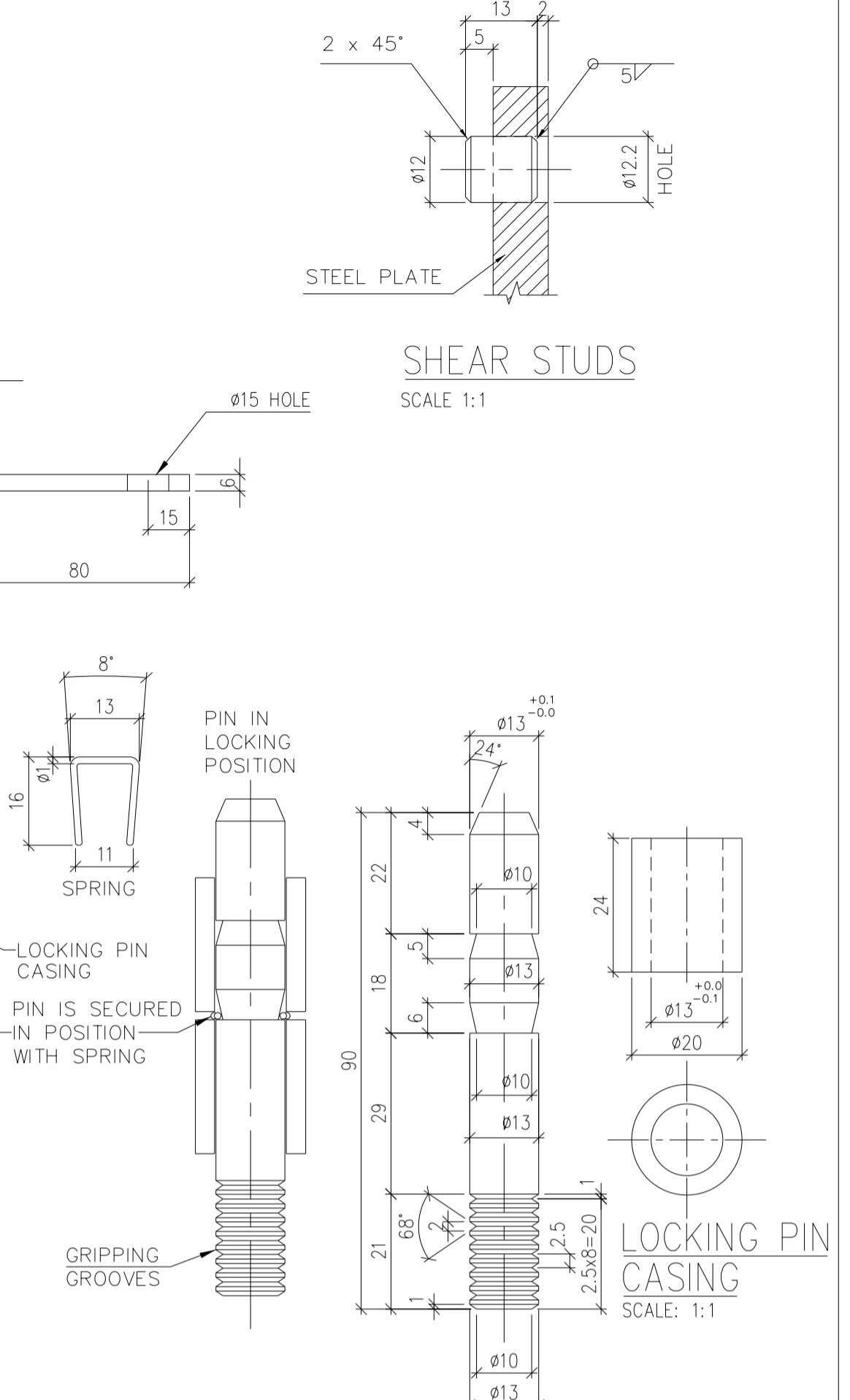
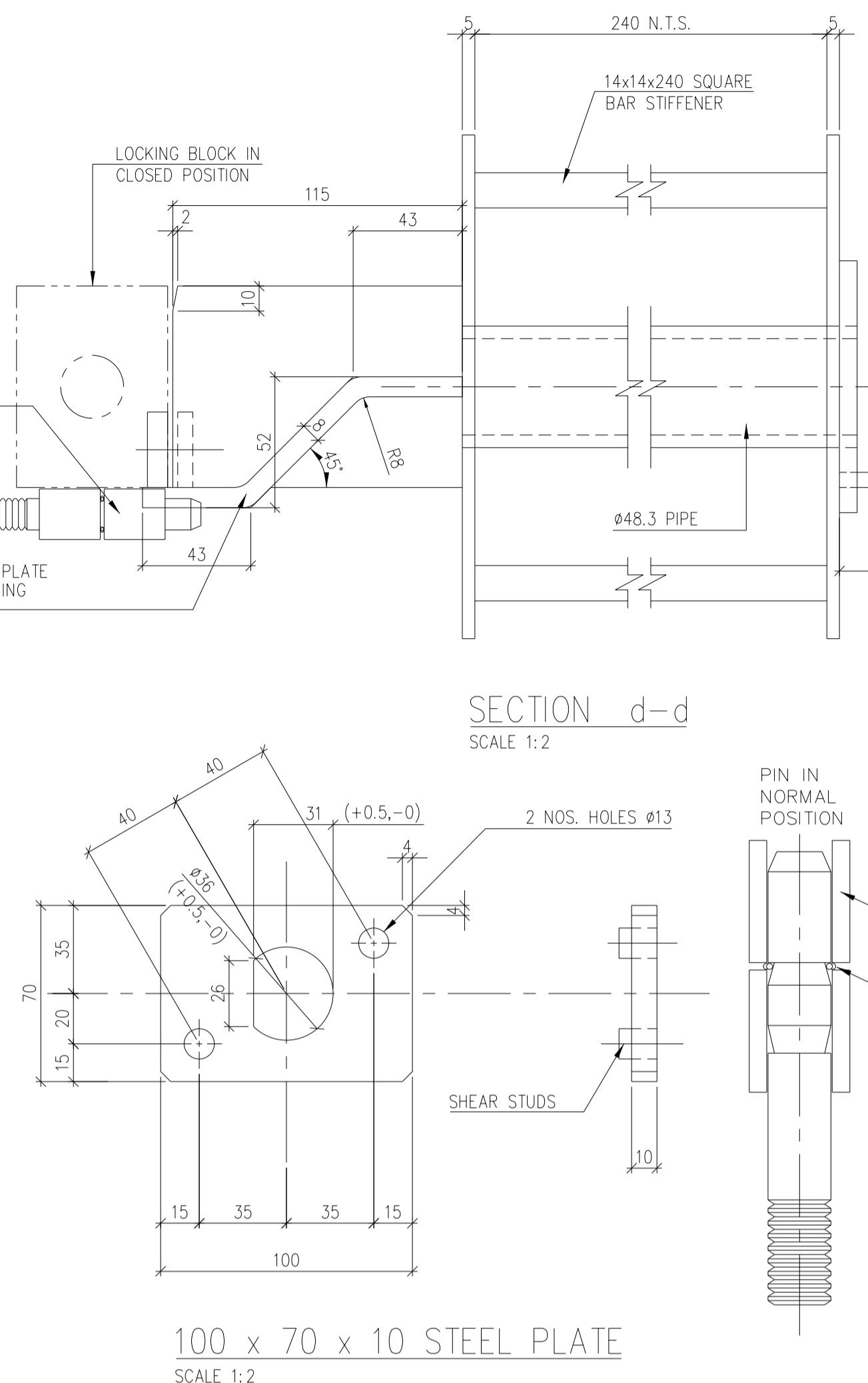
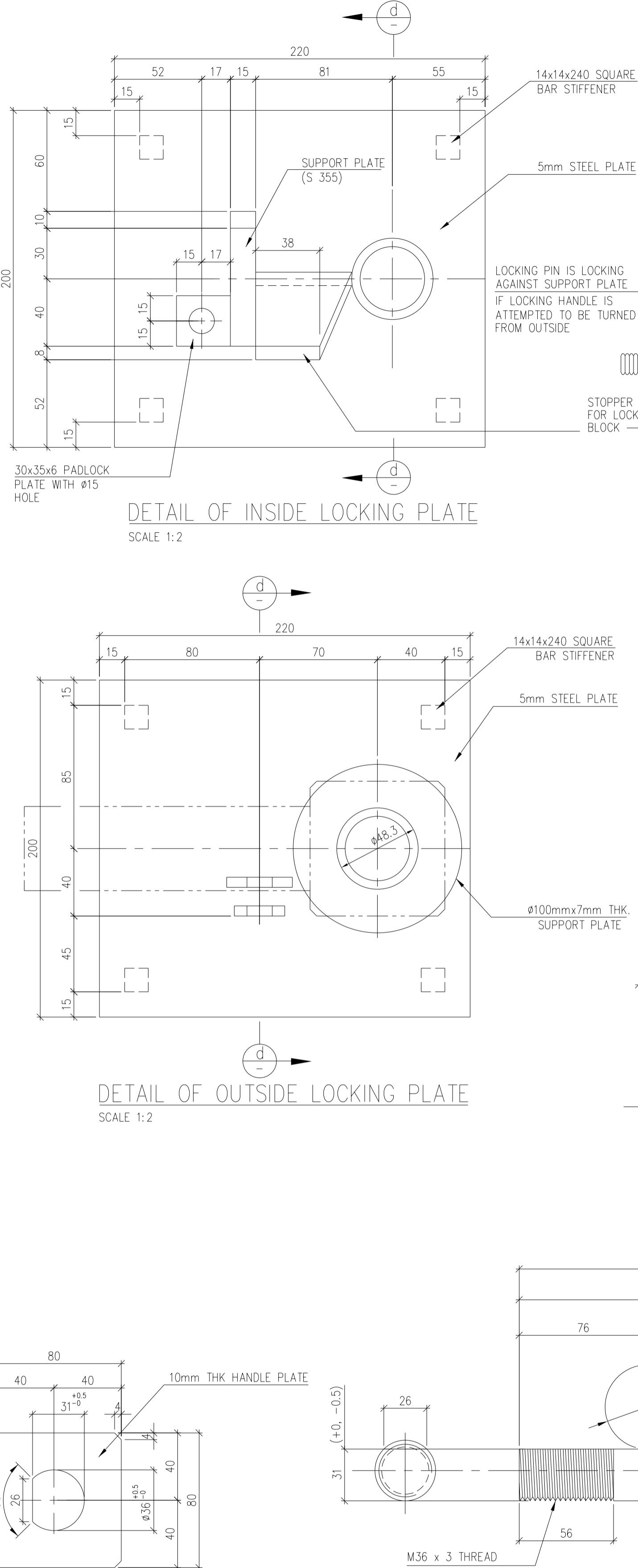
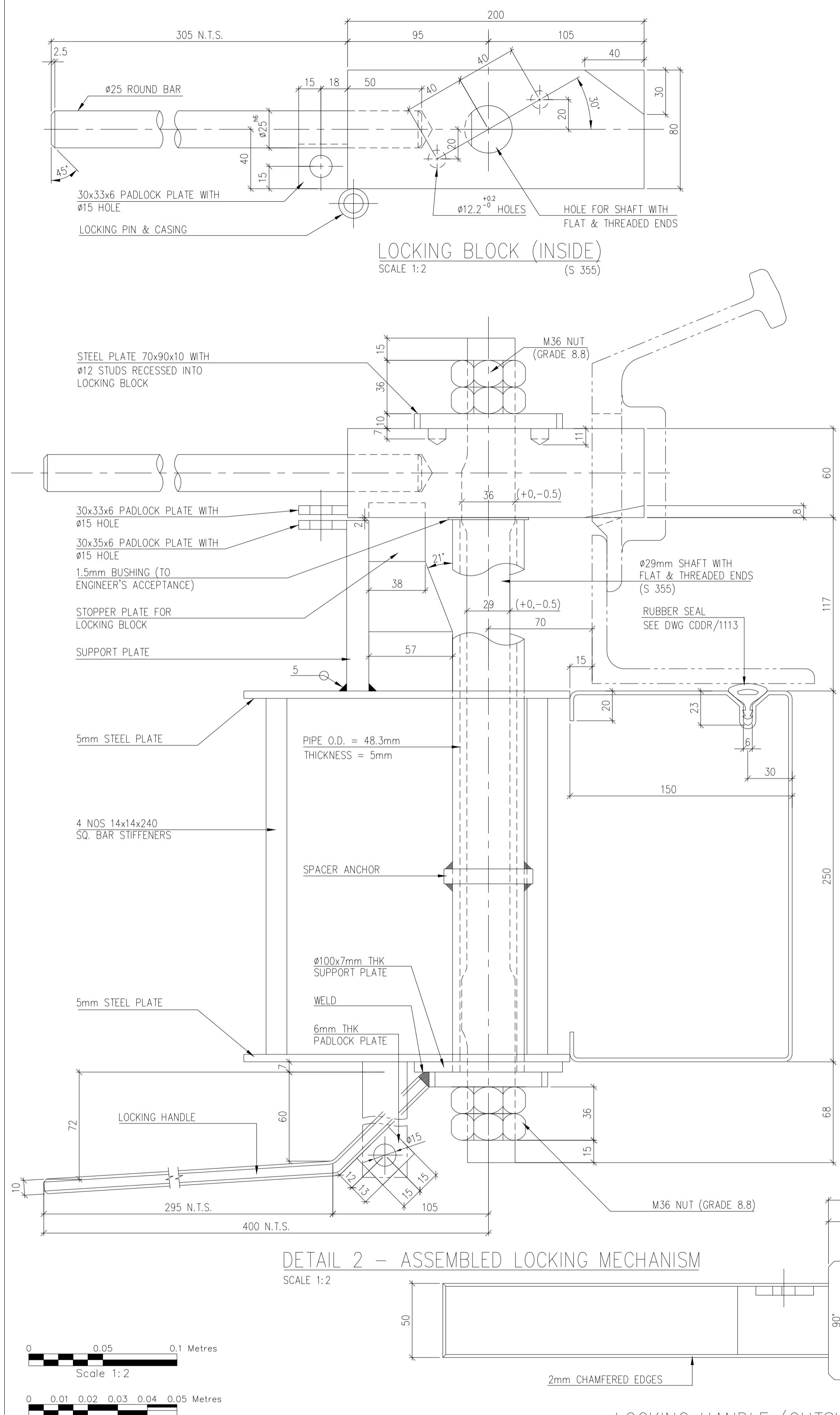
Project Title :

CD DOOR DESIGN DRAWING

Land Transport Authority

Drawing Title :
BLAST PROOF DOOR TYPE PT3
HINGE, SEAL AND LOCK BOX DETAIL

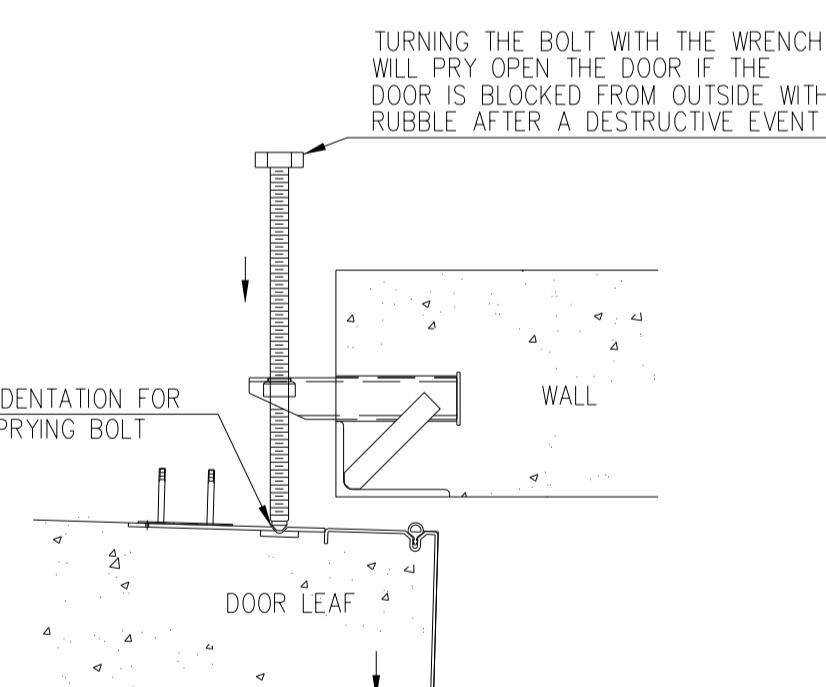
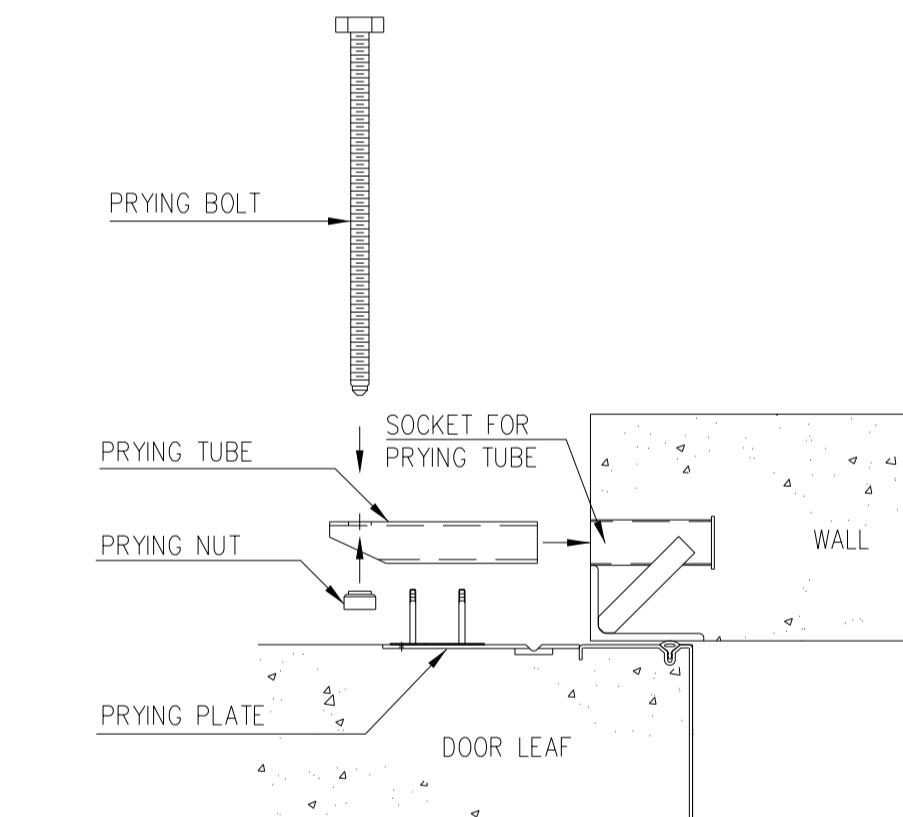
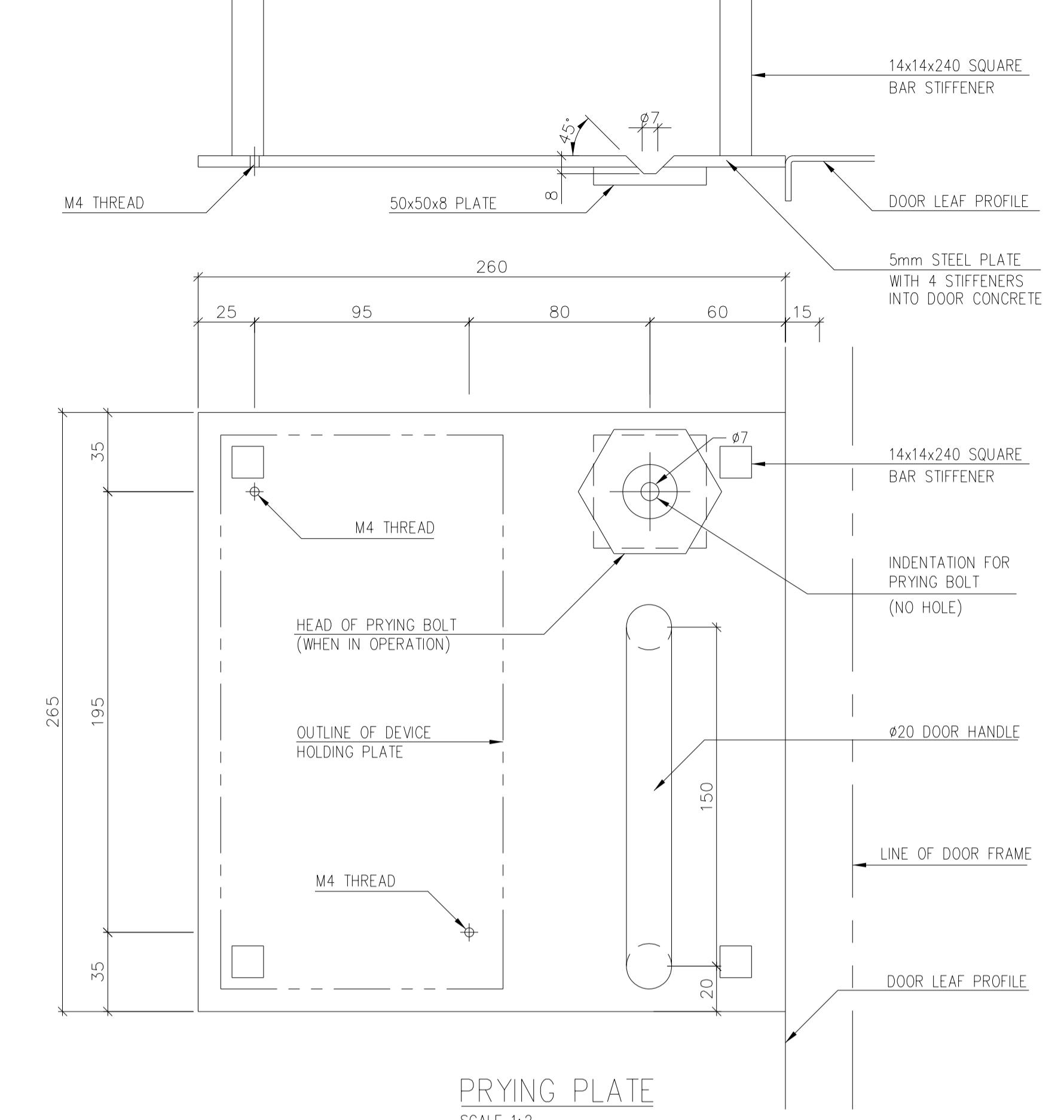
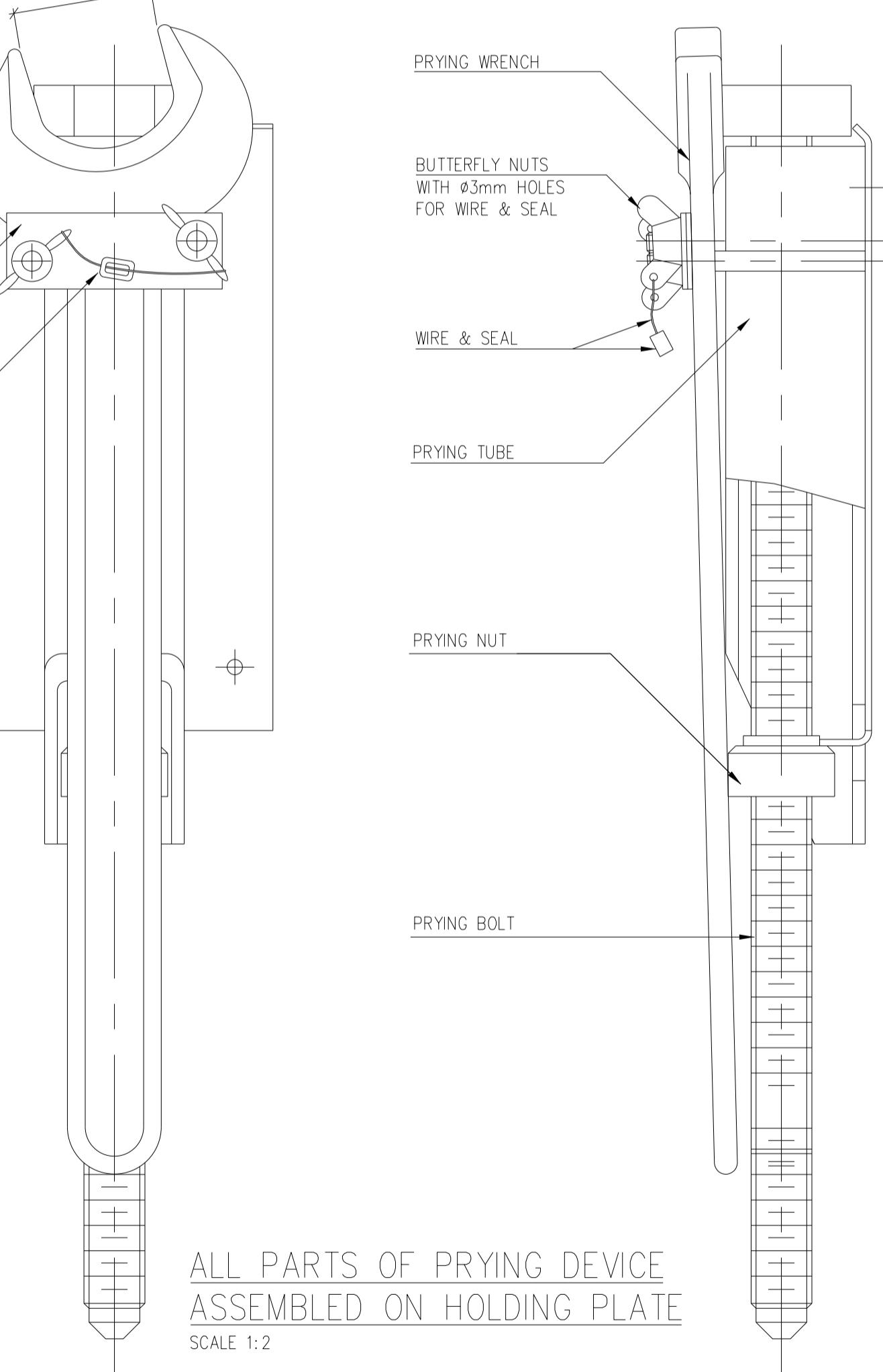
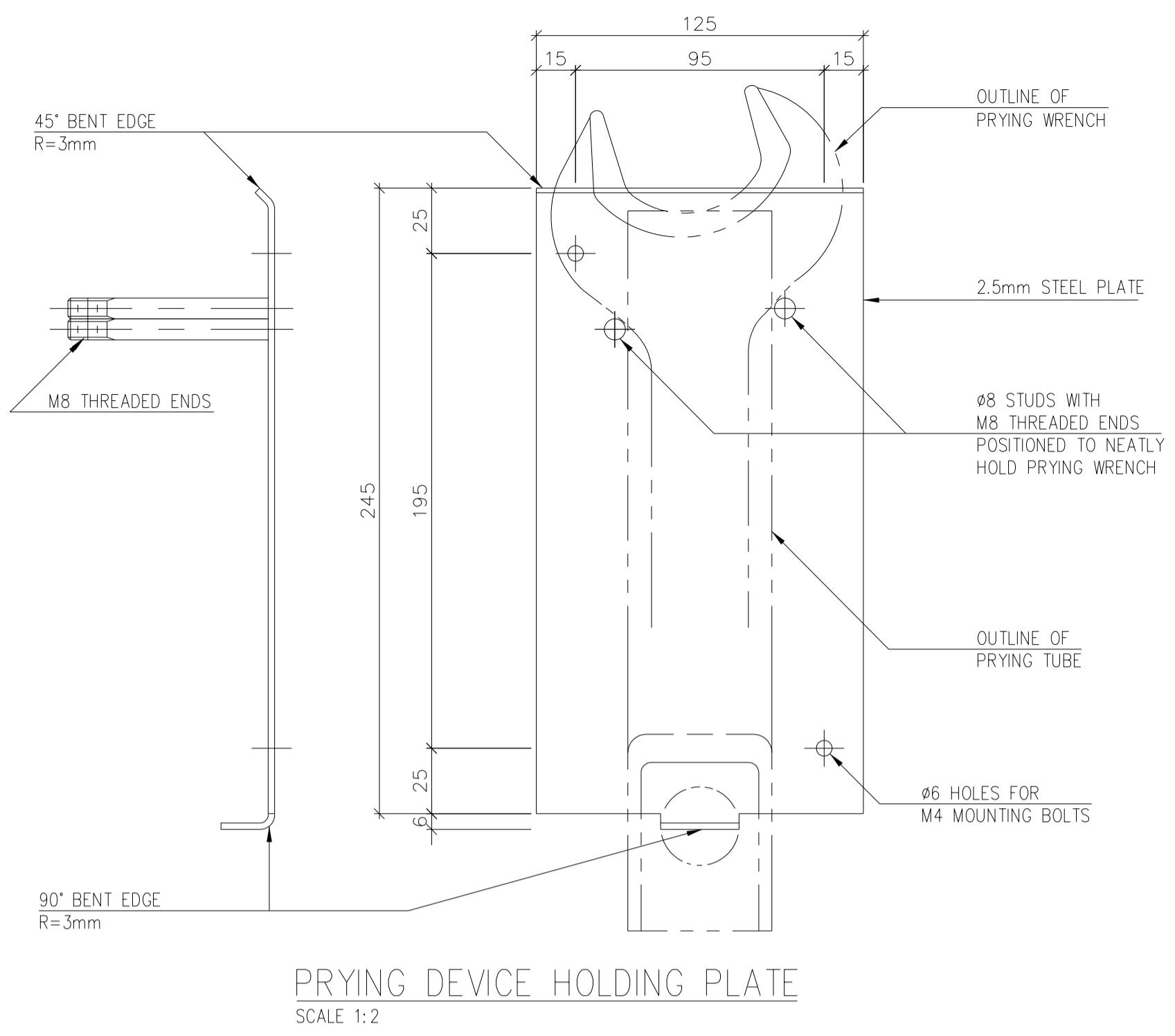
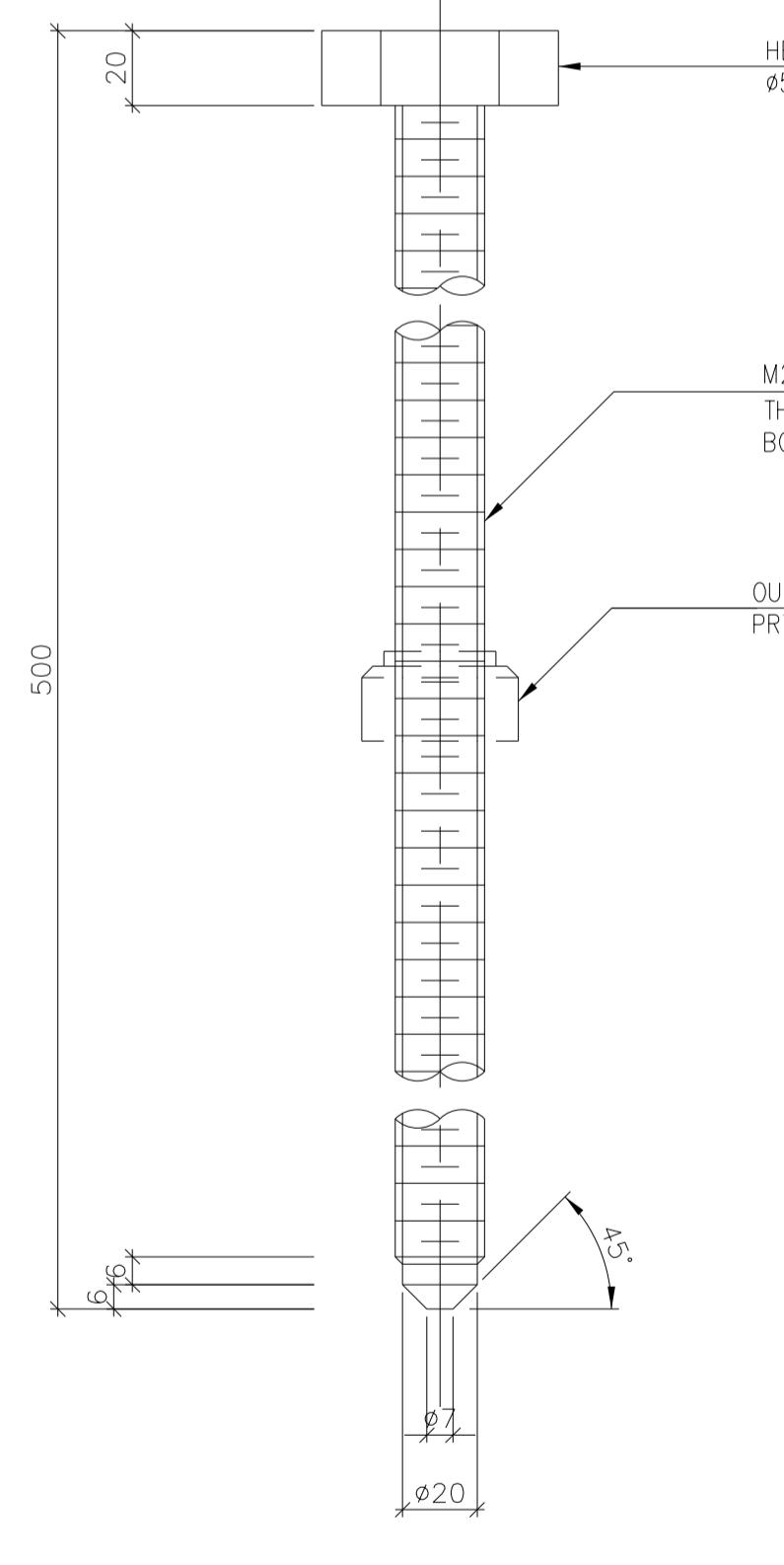
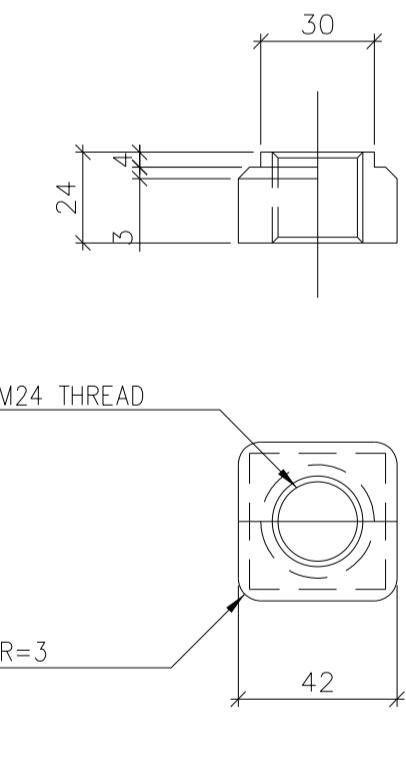
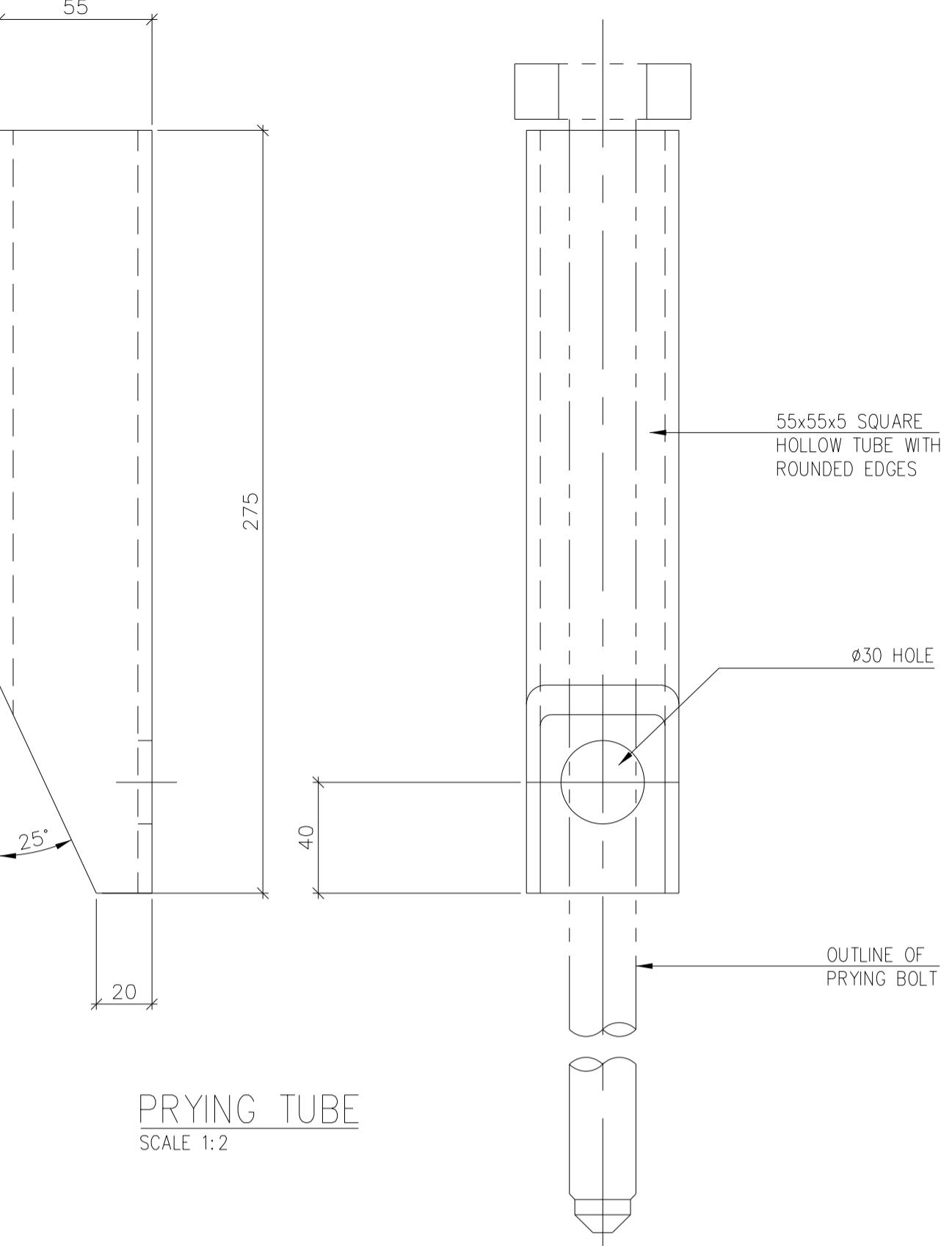
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Scale AS SHOWN Drawn HO SH Date 2 APR 2015
CAD File Name : LCWD-CDDR1113- A1



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Qualified Person Endorsement :	AUTHORITY'S DRAWING								
	Project Title :								
A Endorsement :	CD DOOR DESIGN DRAWING								
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Designed SOH LP	Checked TAN PS	Approved TAN WK							
Scale AS SHOWN	Drawn HO SH	Date 2 APR 2015							

			
<p>Drawing Title :</p> <h1>BLAST PROOF DOOR TYPE PT3 LOCKING MECHANISM AND DETAILS</h1>			
<p>Drawing No. : L/CWD/CDDR/1114</p>		<p>Rev. A</p>	<p>Sheet 4 of 5</p>
<p>CAD File Name : LCWD-CDDR1114-</p>			



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A	APR 2015	HO SH	CHECKER'S NAME AND SHEAR KEY MECHANISM UPDATED	TPS	TWK
Rev.	Date	By	Description	Chkd	App'd

Qualified Person Endorsement :
LTA Endorsement :

AUTHORITY'S DRAWING
Project Title : CD DOOR DESIGN DRAWING

Drawing Title : BLAST PROOF DOOR TYPE PT3 RESCUE TOOL DETAILS

Designed : SOH LP Checked : TAN PS Approved : TAN WK
Scale : AS SHOWN Drawn : HO SH Date : 2 APR 2015

Drawing No. : L/CWD/CDDR/1115 Rev. A Sheet 5 of 5
CAD File Name : LCWD-CDDR1115-A1