

1 Dec 2023

Industry Professionals

Dear Sir/Madam,

**REVISION TO PUB'S STANDARD DRAWING – DETAILS OF HANDRAIL AND SAFETY CHAIN/ROPE (PUB/WRN/STD/102A)**

PUB has revised the above standard drawing to enhance safety requirements of handrail and safety chain. The revised drawing is attached and can also be downloaded at <https://info.pub.gov.sg/compliance/industry/drawings>. Key changes to the drawings are stated in **Annex A**.

2 All new Development Control (DC) submissions shall adopt the revised standard drawing (Drawing No: PUB/WRN/STD/102B) and comply fully with the new design requirements from 01 Jun 2024. During this transition period from now till 31 May 2024, we encourage all industry professionals to adopt the revised standard drawing and the new design requirements where this is possible.

3 If you have queries regarding the revised standard drawing, you may contact Assistant Director Mr Lee Jia Yi at [lee\\_jia\\_yi@pub.gov.sg](mailto:lee_jia_yi@pub.gov.sg) or send your queries to [pub\\_one@pub.gov.sg](mailto:pub_one@pub.gov.sg).

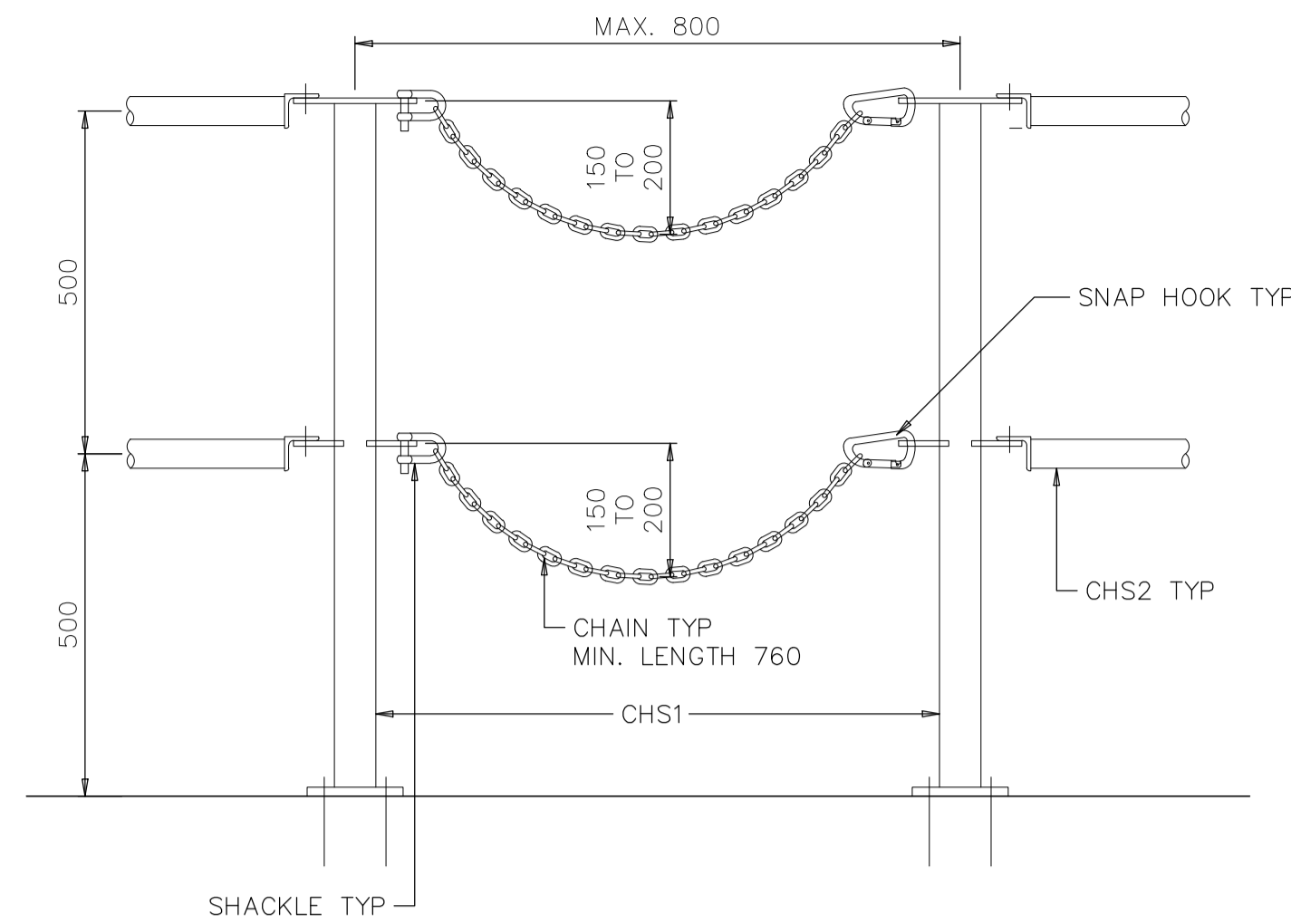
Yours faithfully



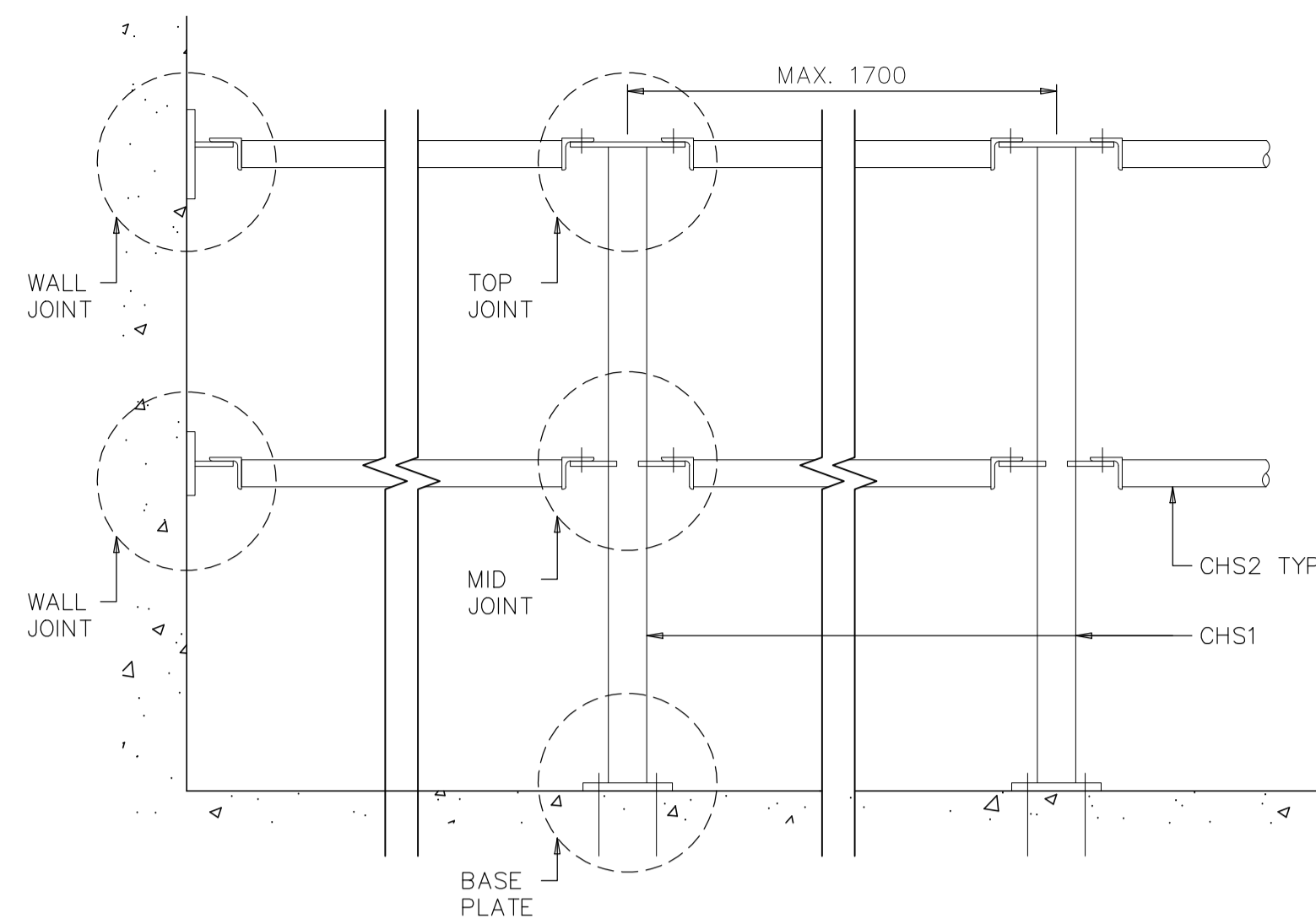
**f** Cheng Geok Ling (Ms)  
Senior Deputy Director  
Water Reclamation (Network) Department  
PUB, Singapore's National Water Agency

## Annex A – Key Changes to PUB/WRN/STD/102B

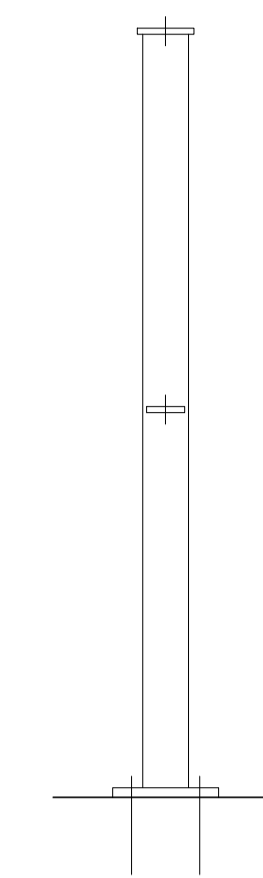
<b>S/N</b>	<b>Descriptions</b>
1	Change in design of members' shape, size, and connection detail.
2	Change in material from aluminium alloy to Grade 316 Stainless Steel.



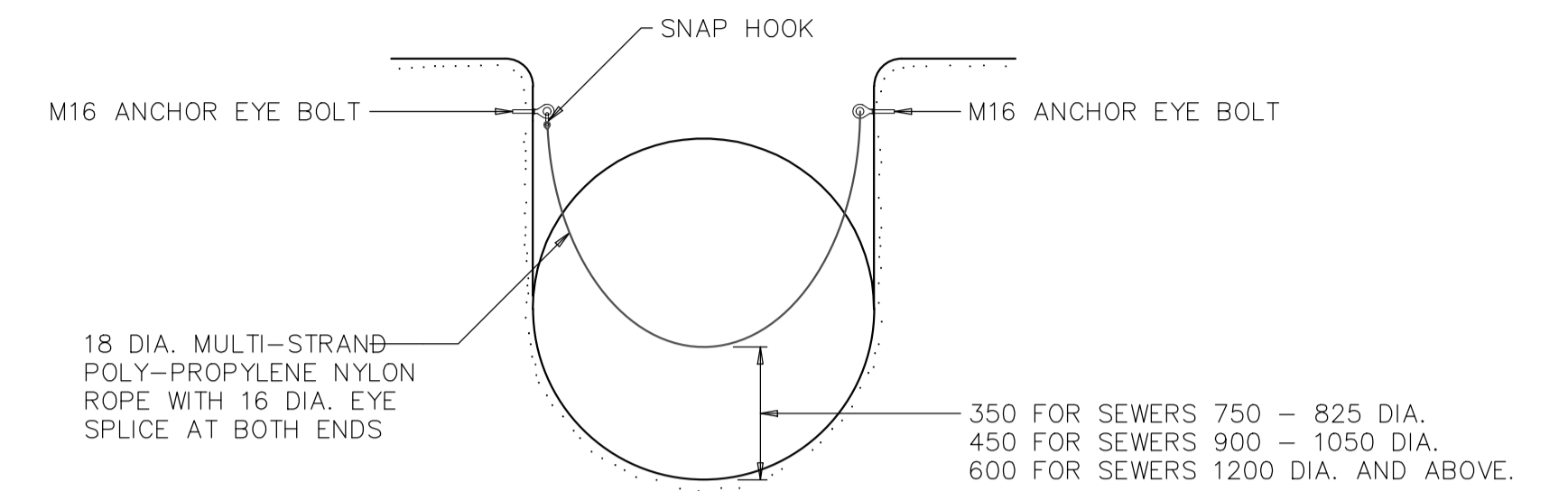
**OPENING FOR ACCESS**  
SCALE 1 : 10



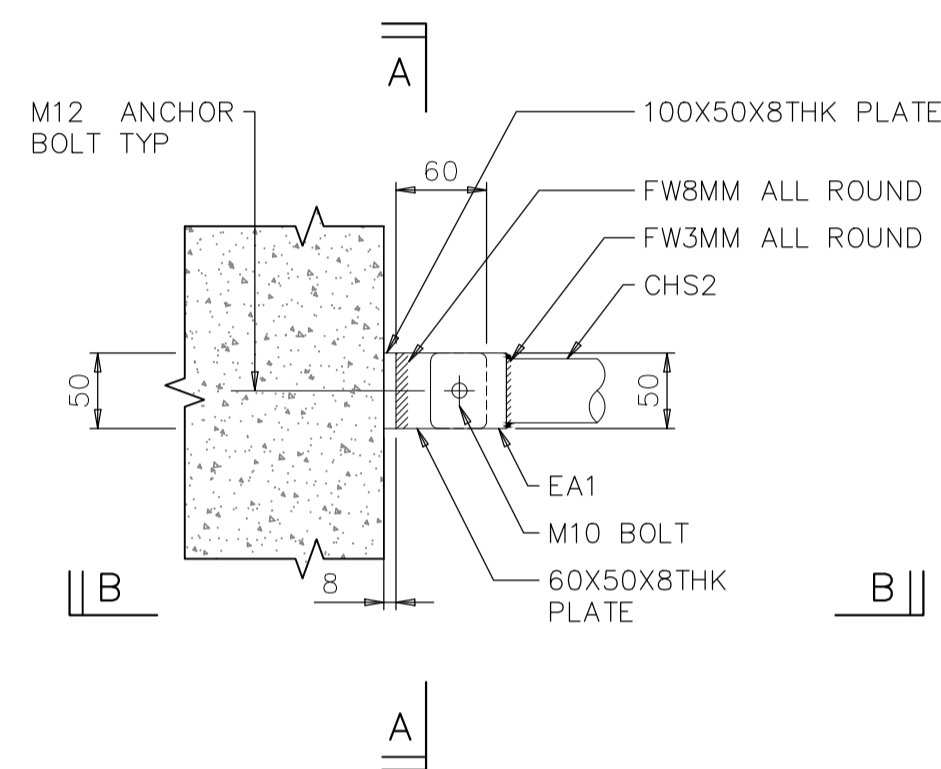
**TYPICAL HANDRAIL ARRANGEMENT**  
SCALE 1 : 10



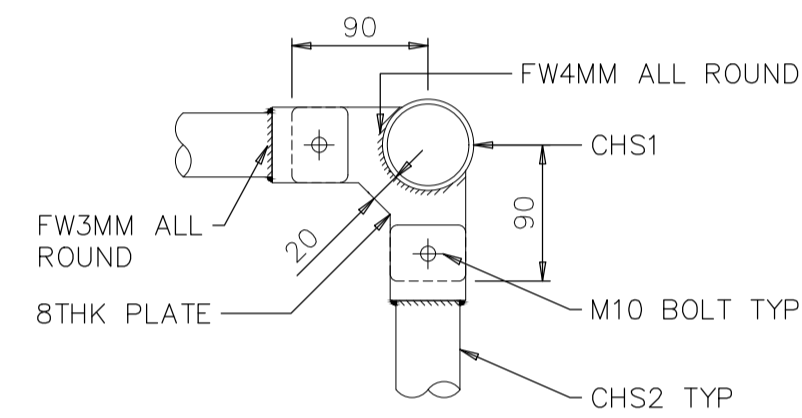
**SIDE ELEVATION**  
SCALE 1 : 10



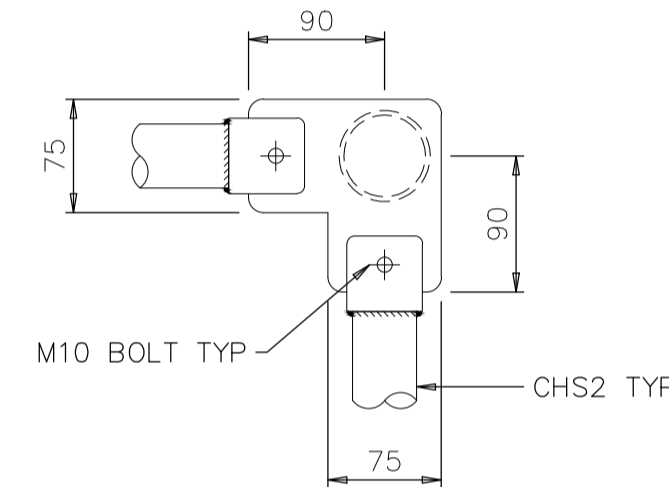
**ARRANGEMENT OF SAFETY ROPE FOR MAIN SEWER IN MANHOLE BENCHING**  
SCALE 1 : 20



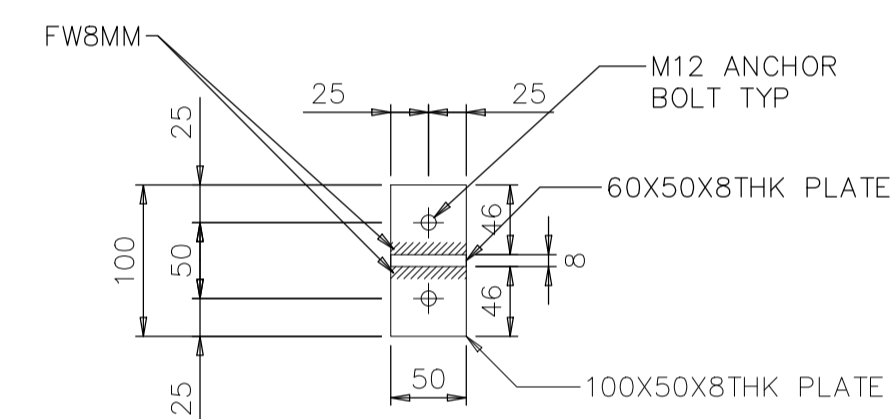
**TYPICAL PLAN OF WALL JOINT**  
SCALE 1 : 5



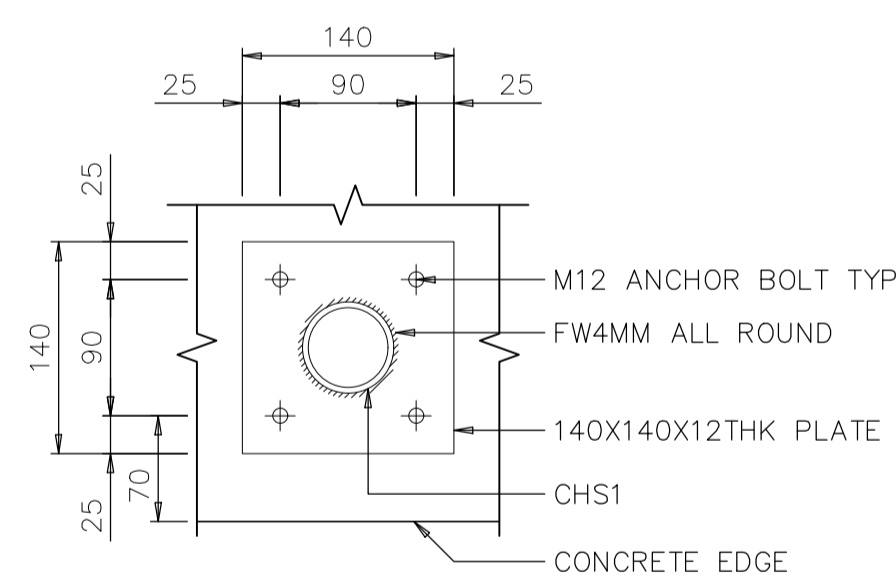
**TYPICAL PLAN OF 90° MID JOINT**  
SCALE 1 : 5



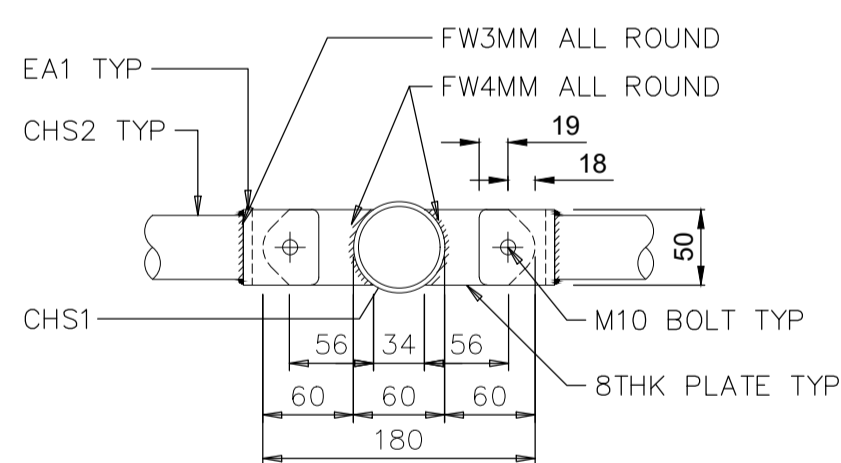
**TYPICAL PLAN OF 90° TOP JOINT**  
SCALE 1 : 5



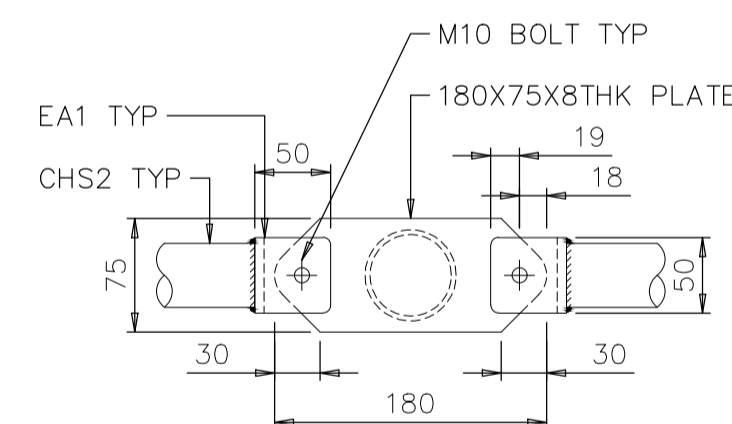
**SECTION A-A**  
SCALE 1 : 5



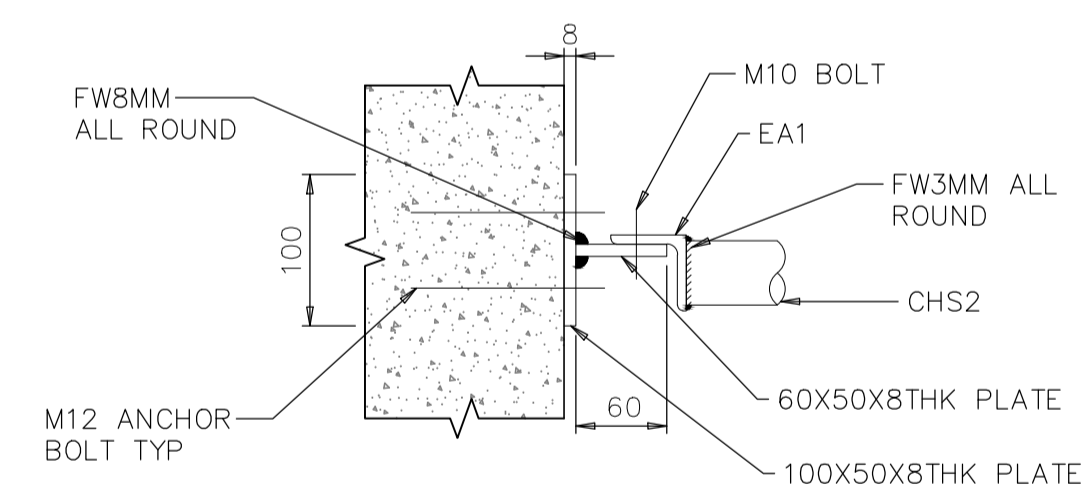
**SECTIONAL PLAN C-C**  
SCALE 1:5



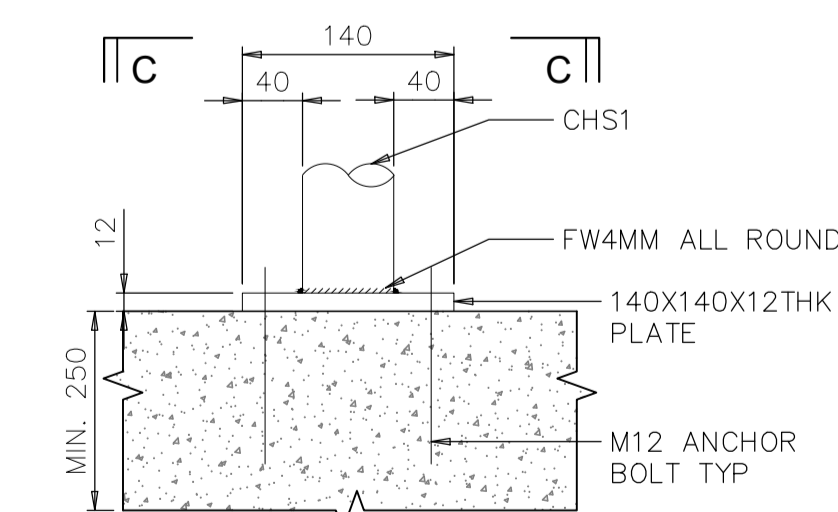
**SECTIONAL PLAN D-D**  
SCALE 1:5



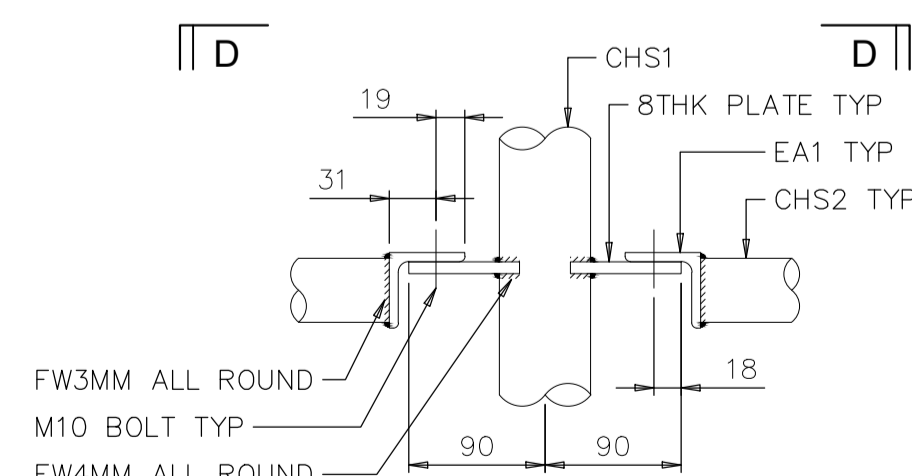
**SECTIONAL PLAN E-E**  
SCALE 1:5



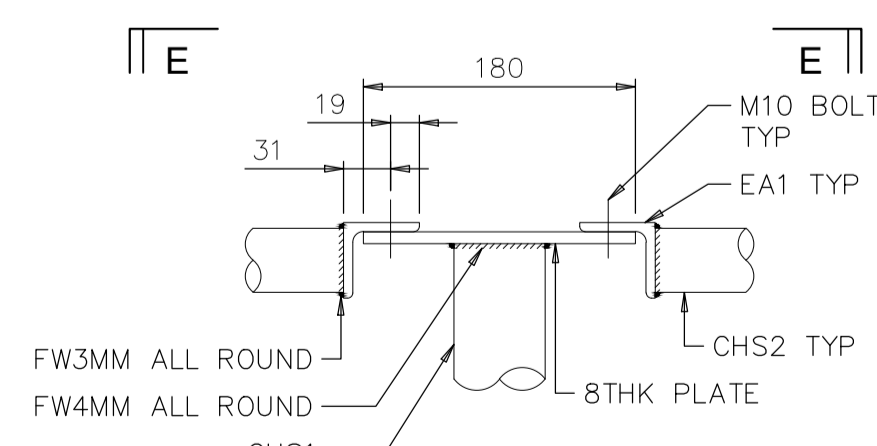
**SECTION B-B**  
SCALE 1 : 5



**BASE PLATE DETAIL**  
SCALE 1:5



**MID JOINT DETAIL**  
SCALE 1:5



**TOP JOINT DETAIL**  
SCALE 1:5

ELEMENT	SECTION/SIZE
CHS1	CHS 60.3X3.9THK
CHS2	CHS 42.4X3.2THK
EA1	EA 50X50X6THK

**NOTES**

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
- THERE SHALL BE NO SHARP EDGE ON EXPOSED SURFACES.
- ALL CONCRETE SHALL BE MINIMUM GRADE C32/40.
- ALL STEEL MEMBERS AND COMPONENTS INCLUDING BOLTS, ANCHOR BOLTS, ANCHOR EYE BOLTS, NUTS, WASHERS, SHACKLES, CHAINS, SNAP HOOKS, ETC SHALL BE STAINLESS STEEL 316.
- ALL BOLTS SHALL BE TIGHTENED WITH DOUBLE NUTS OF EQUAL THICKNESS.
- ALL WELDS SHALL BE STRUCTURAL TYPE MADE BY APPROVED WELDING TECHNIQUE TO GIVE SOUND, STRONG WELDS WITH A MAXIMUM THICKNESS NOT EXCEEDING THE THICKNESS OF JOINTING MEMBERS.
- ALL CORNER FILLETS SHOWN SHALL BE SMOOTH AND HAVE A MINIMUM RADIUS OF 2MM
- ALL ANCHOR BOLTS FOR RAILINGS SHALL BE M12 CHEMICAL/ MECHANICAL ANCHOR BOLTS EMBED MINIMUM 100 MM, WITH MINIMUM TENSILE CAPACITY 15KN, SHEAR CAPACITY 5KN. ALL ANCHOR BOLTS SHALL HAVE MINIMUM 60MM DISTANCE TO CONCRETE EDGE. BOLTS SHALL COMPLY WITH THE REQUIREMENTS SET BY THE BOLT MANUFACTURER.
- ALL SHACKLES, CHAINS, AND SNAP HOOKS FOR RAILING SAFETY CHAINS SHALL HAVE A MINIMUM WORKING LOAD OF 1.35 KN.
- ALL POLY-PROPYLENE NYLON ROPES, ANCHOR EYE BOLTS AND SNAP HOOKS FOR BENCHING SAFETY ROPE SHALL HAVE A MINIMUM WORKING LOAD OF 1.35 KN.
- ALL SNAP HOOKS SHALL BE PROPORTIONALLY SIZED TO ALLOW EASY HOOKING ONTO HANDRAIL BOLT HOLES OR SAFETY ROPE ANCHOR EYE BOLTS.

A	1) THICKNESS OF MEMBERS ADDED.
	2) VERTICAL MOUNTING STANDARD'S BASE DIMENSION REVISED.
	3) WALL BRACKET DIMENSION REVISED.
	4) STAINLESS STEEL GRADE ADDED.
	5) STAINLESS STEEL SAFETY CHAIN REMOVED.
	6) BASE OF DETACHABLE STANDARD DIMENSION REVISED.
B	7) BASE OF STANDARD (SIDE MOUNTING) DIMENSION REVISED.
	8) NOTE REVISED.
	1) NOTE REVISED.
	2) DESIGN AND MATERIAL REVISED
	AMENDMENTS

ISSUED : JAN 2019

LAST REVIEWED : MAY 2023

SCALES  
AS  
SHOWN

**DETAILS OF HANDRAIL AND SAFETY CHAIN/ROPE**

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