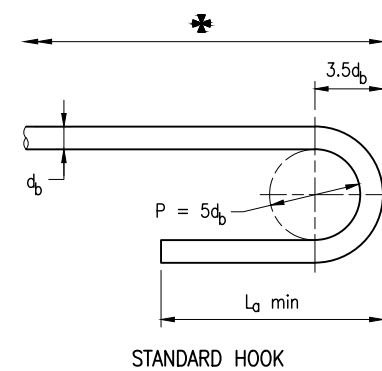
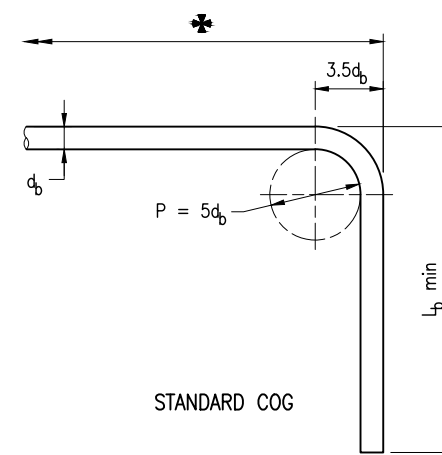


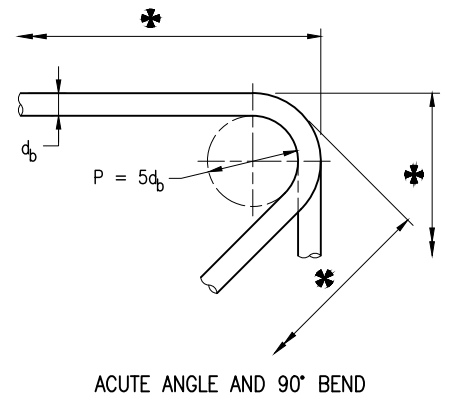
OBTUSE ANGLE BEND



STANDARD HOOK



STANDARD COG

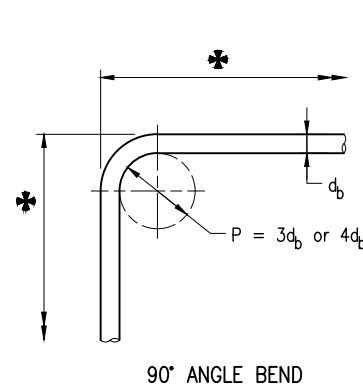


ACUTE ANGLE AND 90° BEND

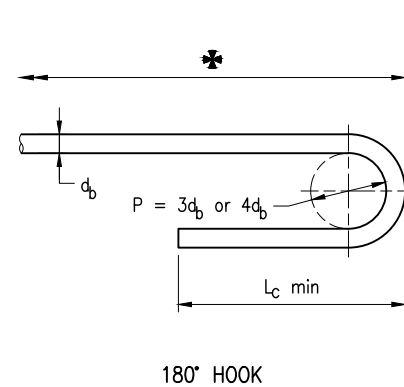
Standard Hook and Cog Dimensions for Reinforcing Bars

$d_b$	10	12	16	20	24	28	32	36	40
P	50	60	80	100	120	140	160	180	200
$L_a$	105	115	130	150	180	210	240	270	300
$L_b$	155	170	205	245	295	345	395	440	490

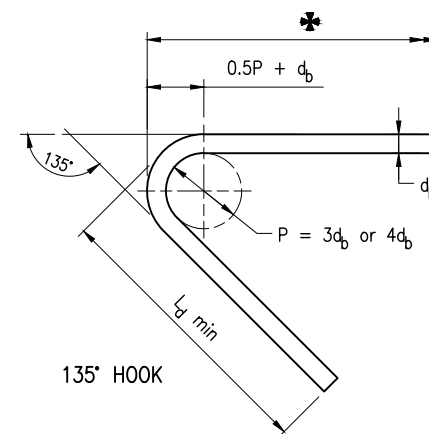
HOOK, COG AND BEND DETAILS FOR REINFORCING BARS  
(Except Stirrups and Ligatures)



90° ANGLE BEND



180° HOOK

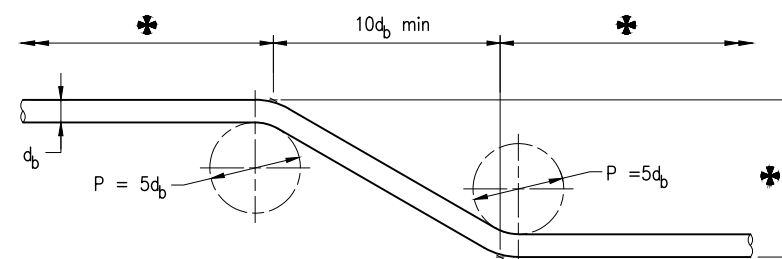


135° HOOK

Hook and Bend Dimensions for Stirrups, Ligatures or Ties (fitments)

$d_b$	10	12	16	20	24
$P = 3d_b$	30	36	48	60	72
$P = 4d_b$	40	48	64	80	96
$L_c$	100	110	120	140	170
$L_d$	120	130	150	180	215

HOOK AND BEND DETAILS FOR STIRRUPS, LIGATURES OR TIES (FITMENTS)  
Refer Note 4





BEND DETAILS FOR CRANKED BARS  
Refer Note 4

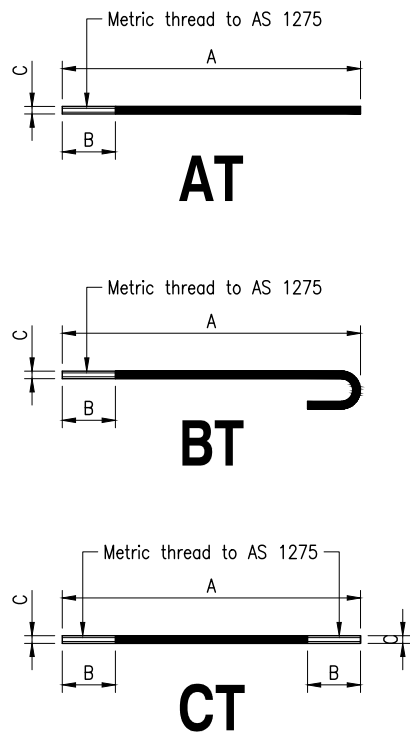
NOTES:

- SCOPE: The purpose of this standard drawing is to provide typical standard details that shall be used within the limitations specified in the drawing. This drawing is to detail standard bar shapes used by TMR and also the hooks, cogs and bends to be used and was developed in accordance with AS 5100.5. Hook, cog and bend details shown in this drawing do not apply to the following:
  - Structural elements built with slip form construction
  - Epoxy coated or galvanised bars, either before or after bending
  - Bends that are subsequently straightened or rebent
  - Bundled bars
  - Stainless steel reinforcement
  - Reinforcing bar with a strength grade greater than 500MPa.
 Hooks, cogs and bends for any of the above shall be project specific design in accordance with AS 5100.5. Refer Standard Drawing 1044 for lapped splice lengths and general steel reinforcement information.
- REINFORCING STEEL shall be in accordance with MRTS71 and AS/NZS 4671. Deformed bars Grade D500N. Round bars Grade R250N. Round wire Grade R500L for helical reinforcement only. All reinforcing steel shall be ACRS certified.
- BAR SHAPE DIMENSIONS denoted by \* in the details on this drawing are those labelled A, B, C, E, F, G, H, L shown on Drawings 2 to 4 of this Standard Drawing.
- PIN DIAMETER  $P = 5d_b$  shall be used for cranking of bars unless shown otherwise in the Steel Schedule. Pin diameter  $P = 3d_b$  shall be used for hooks and 90° angle bends of fitments grade R250N, and  $P = 4d_b$  for fitments grade D500N. Fitments with angle bends other than 90° shall use minimum  $P = 4d_b$ . Measurements at bends are taken from the intersection of the lines along the outer faces of the bar.
- WELDING of reinforcement shall only be used where prior approval of the Project Administrator has been obtained and shall be carried out in accordance with MRTS71. Welding symbols to AS 1101.3. Welding of bar splices to AS/NZS 1554.3. All welds, except location tack welds, shall be SP category. Tack welding for location purposes to AS/NZS 1554.3. Welding shall not be carried out within  $L_e$  from any bent portion of the bar. Welding consumables shall be controlled hydrogen type: G49X to AS/NZS 14341-B or T49X to AS/NZS ISO 17632-B.
- DIMENSIONS are in millimetres.

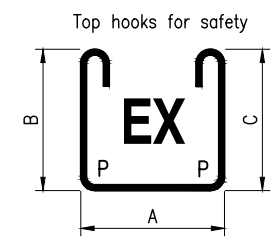
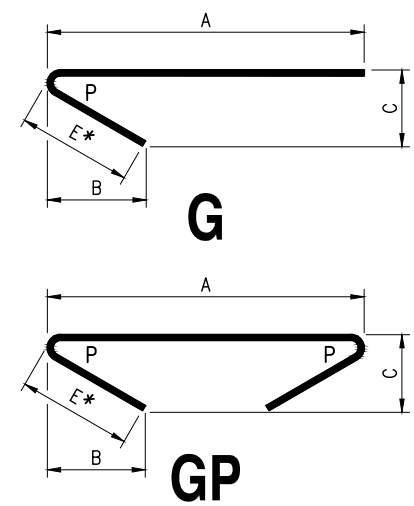
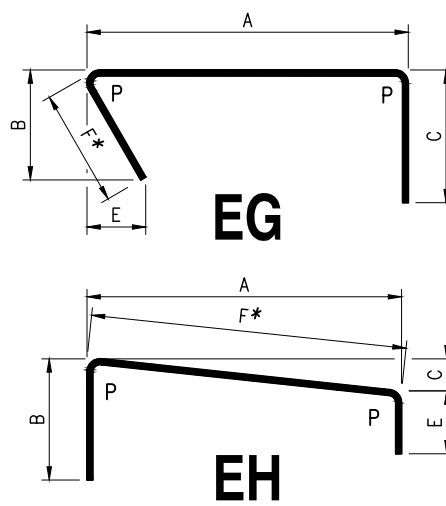
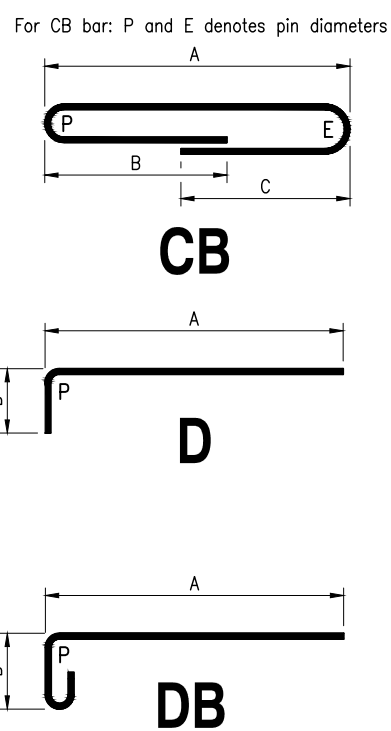
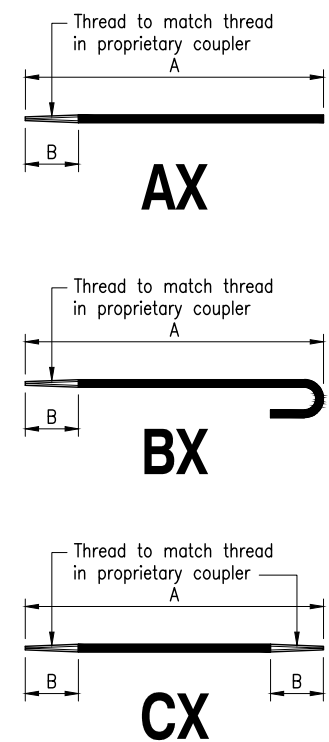
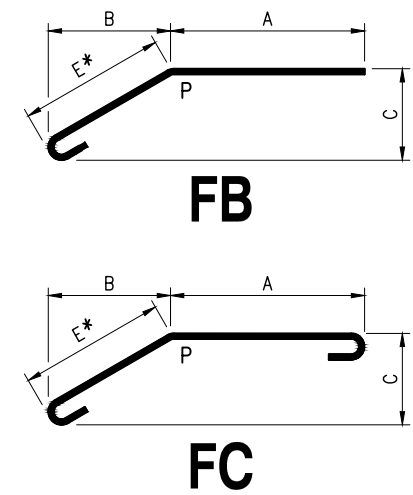
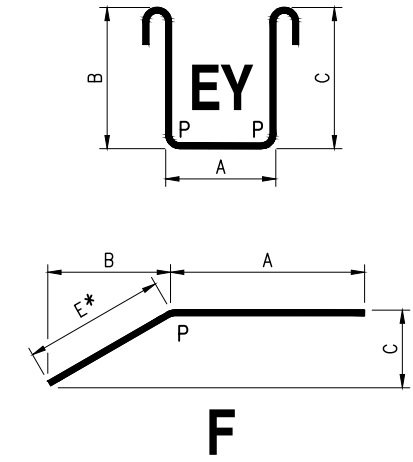
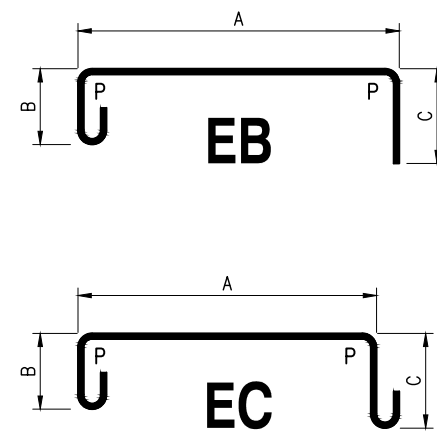
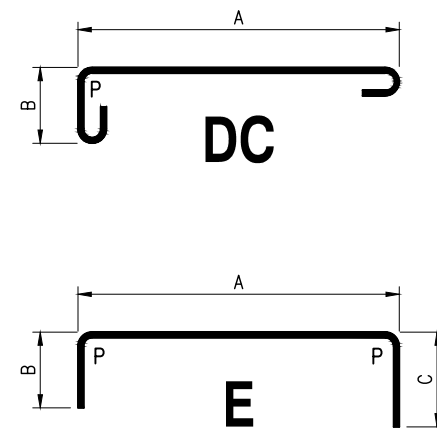
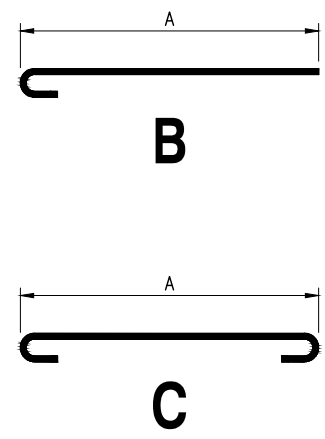
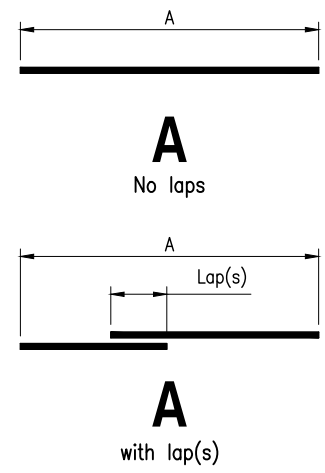
ASSOCIATED DEPARTMENTAL DOCUMENT:  
Design Criteria for Bridges and Other Structures

REFERENCED DOCUMENTS:  
Departmental Standard Drawings:  
1044 Reinforcing Steel – Lap Lengths  
Departmental Specifications:  
MRTS71 Reinforcing Steel

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REINFORCING STEEL			
STANDARD BAR SHAPES TYPICAL DETAILS AND NOTES		A3 Not to Scale	Standard Drawing No <b>1043</b> Date 3/2023
DRAWING 1 OF 4			



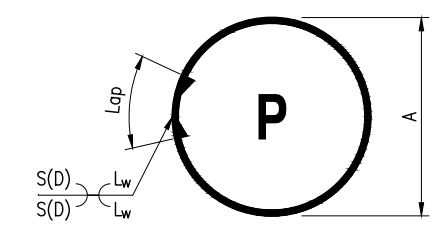
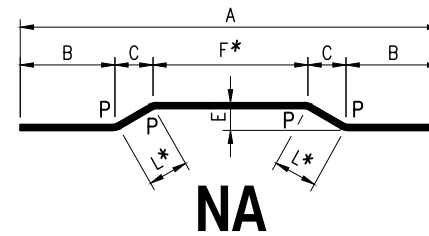
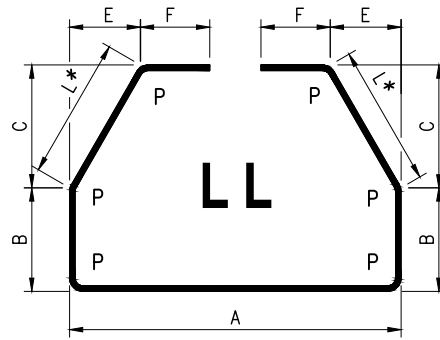
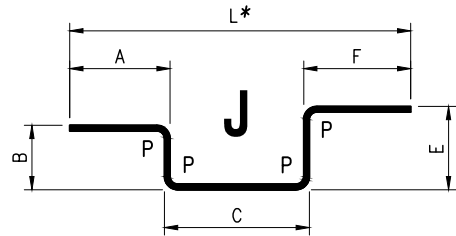
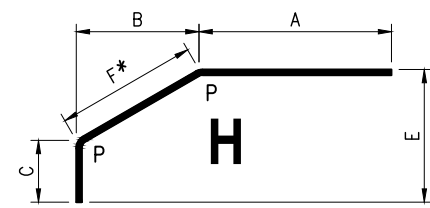
Bar Diameter	16	20	24	28	36	40
C (Thread Size)	M12	M16	M20	M24	M33	M36



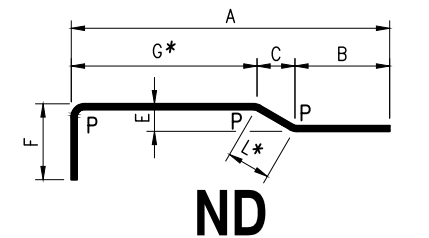
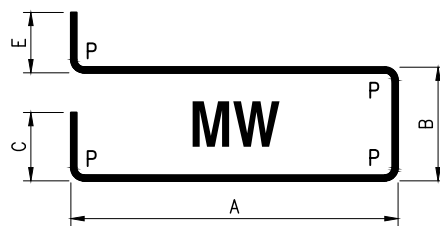
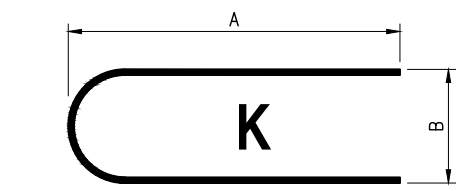
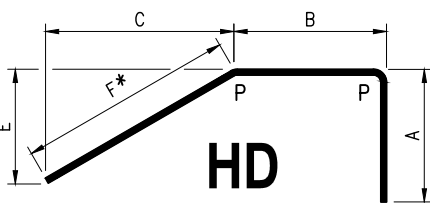
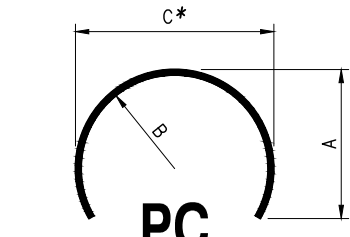
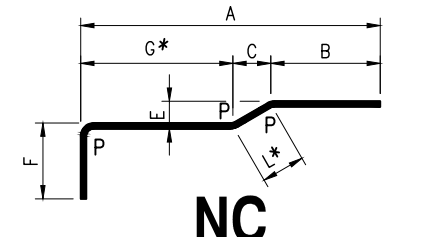
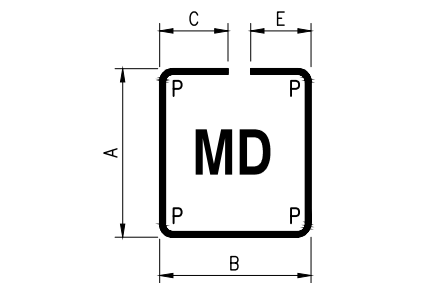
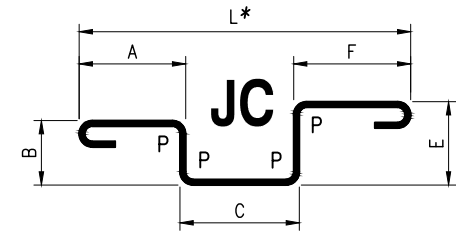
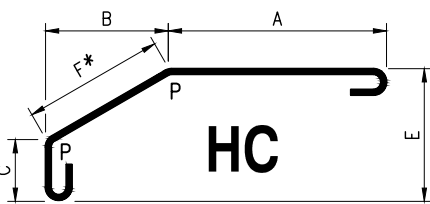
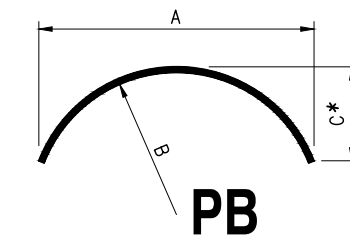
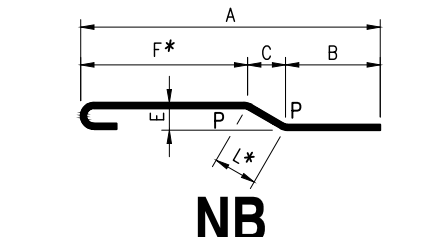
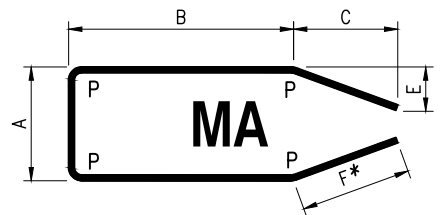
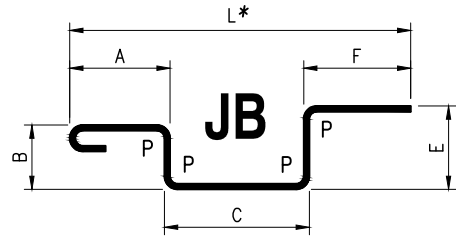
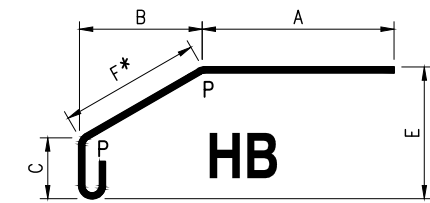
P denotes pin diameter.  
Dimensions marked thus \* are calculated automatically by the Steel Schedule Program and are NOT to be entered on the data sheet.

**NOTES:**  
1. Refer Drawing 1 for all notes and typical details.

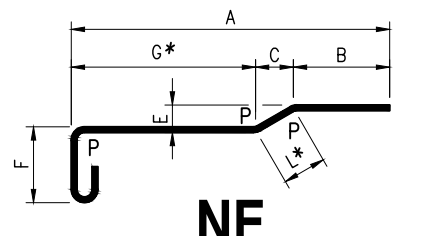
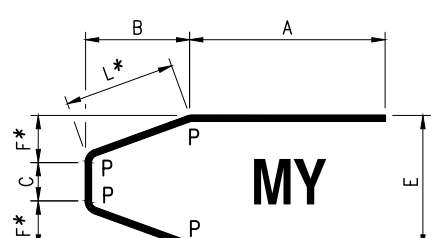
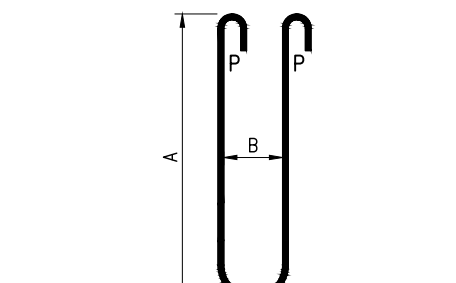
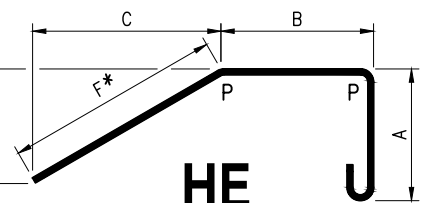
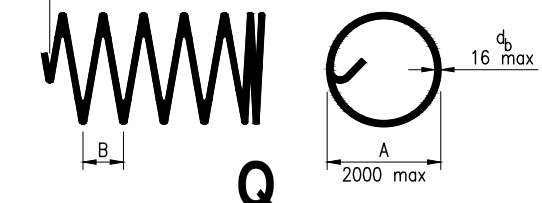
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REINFORCING STEEL				
STANDARD BAR SHAPES		A3	Standard Drawing No	
DRAWING 2 OF 4		Not to Scale	1043	
			Date 3/2023	



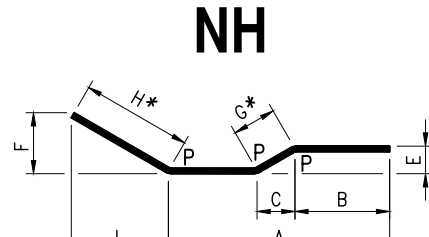
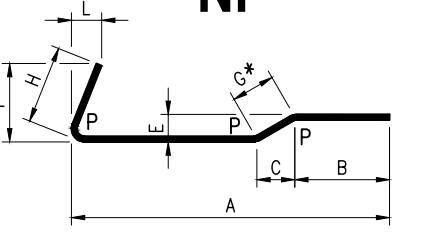
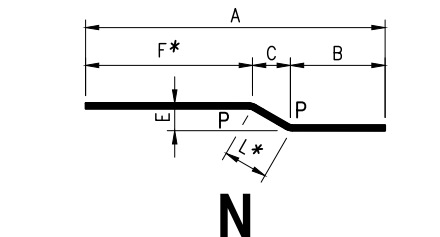
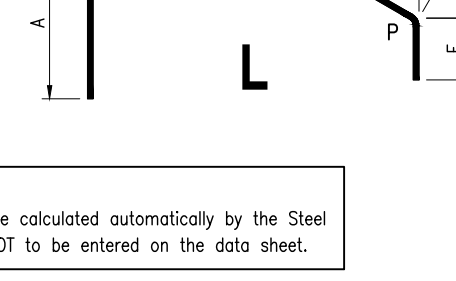
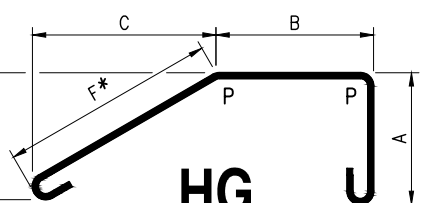
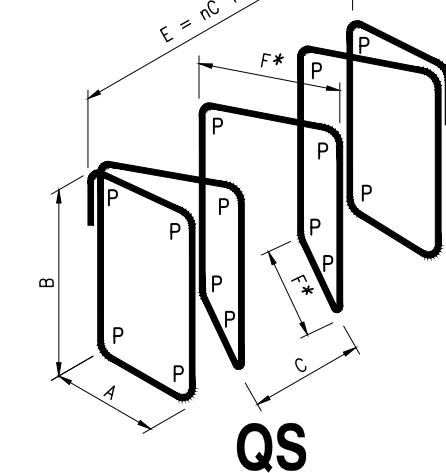
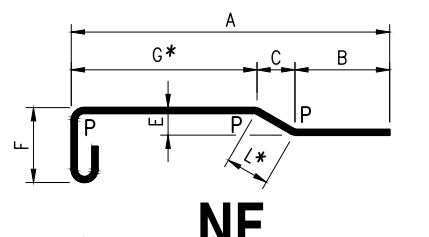
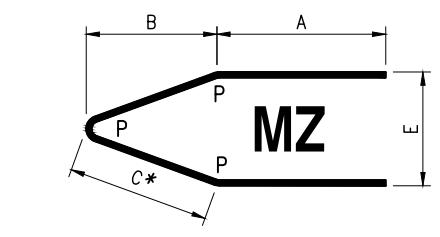
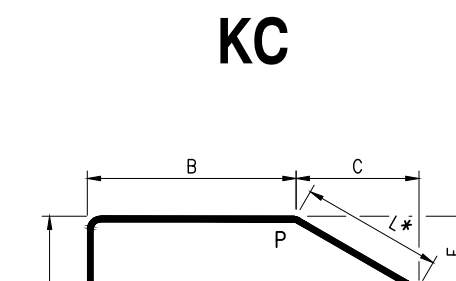
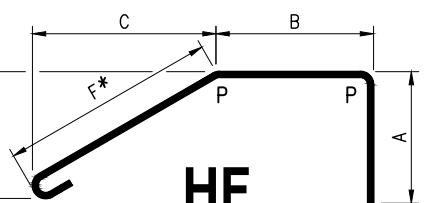
Refer to Weld Table on Standard Drawing 1044 for S, D and L<sub>w</sub> values for each d<sub>b</sub> and Grade



C = required length + extra for lapping or ends.  
 Helix shall be anchored at its end by 1.5 extra flat turns of the helix.  
 Where required, helix shall be spliced within its length by lapping the helix by 1.5 turns and anchoring each end with a 135° hook around a main longitudinal bar, or with a welded splice as shown on the P shaped bar.  
 Hook indicative only. Refer Note



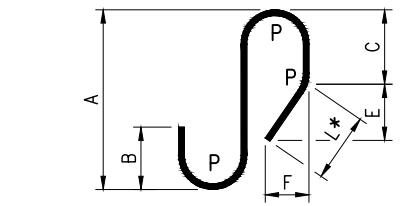
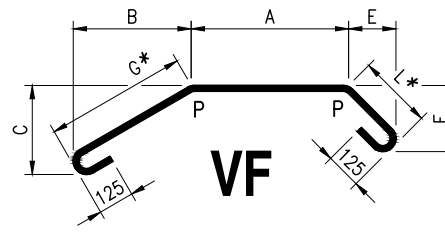
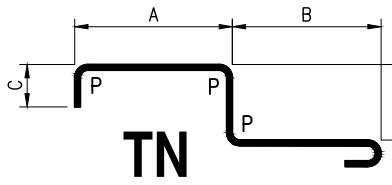
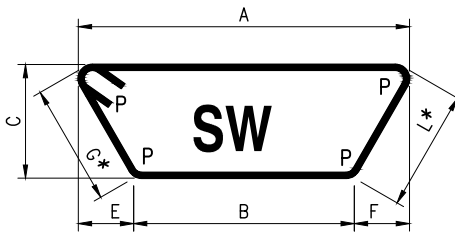
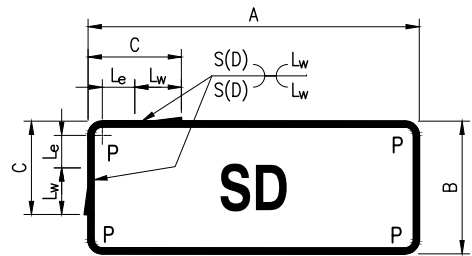
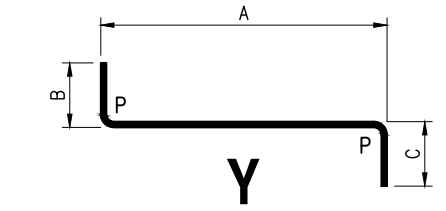
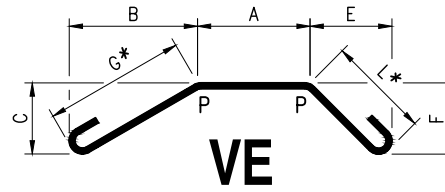
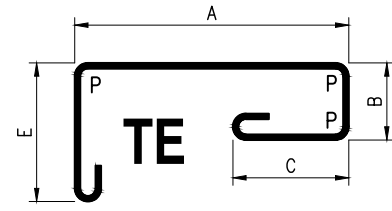
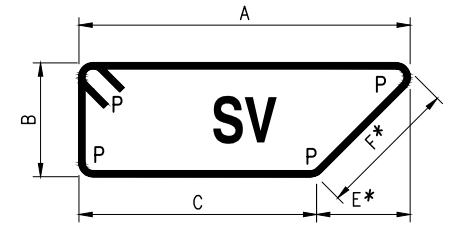
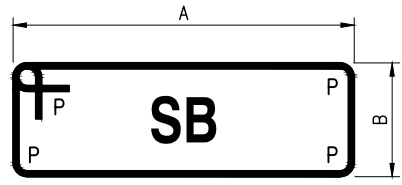
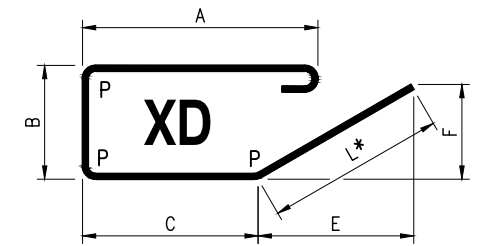
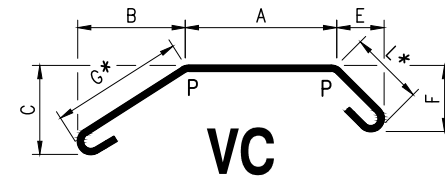
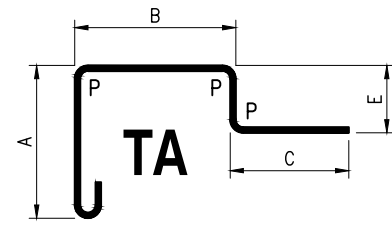
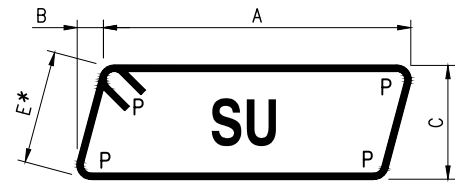
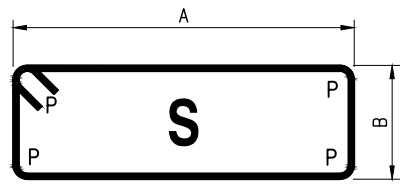
E = nC + 1/2C (n = number of pitches)



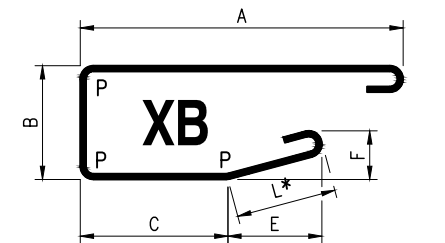
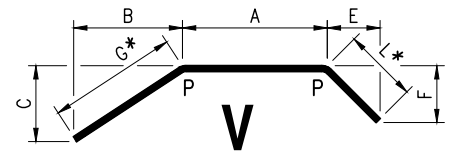
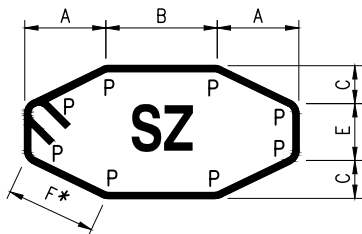
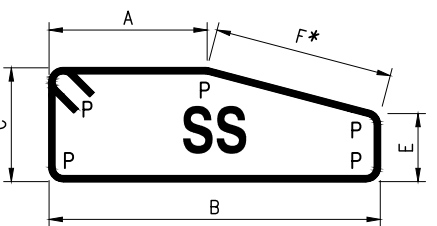
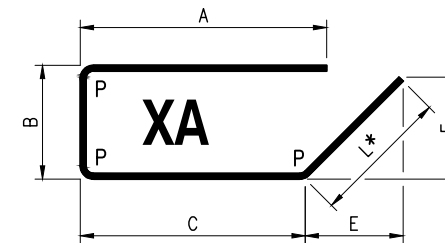
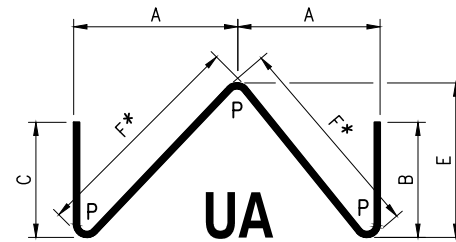
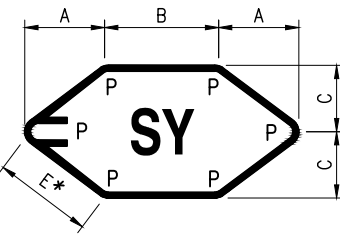
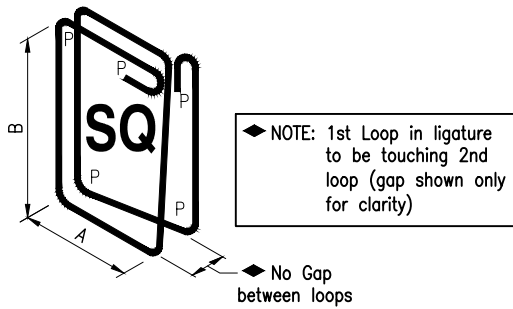
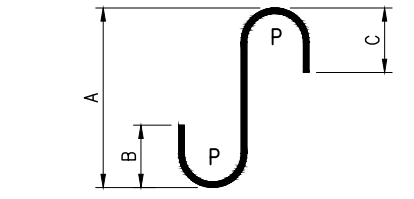
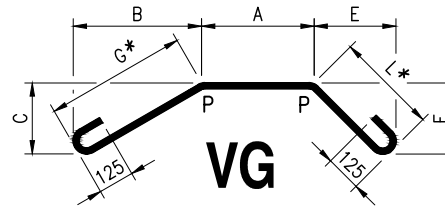
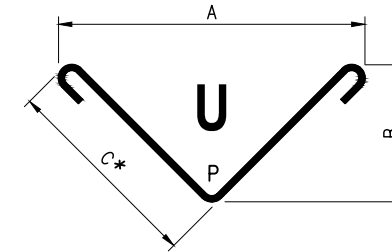
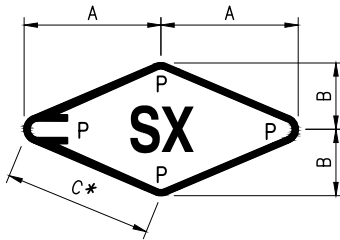
NOTES:  
 1. Refer Drawing 1 for all notes and typical details.

P denotes pin diameter.  
 Dimensions marked thus \* are calculated automatically by the Steel Schedule Program and are NOT to be entered on the data sheet.

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REINFORCING STEEL				A3	Standard Drawing No
STANDARD BAR SHAPES		Not to Scale	1043		
DRAWING 3 OF 4			Date 3/2023		

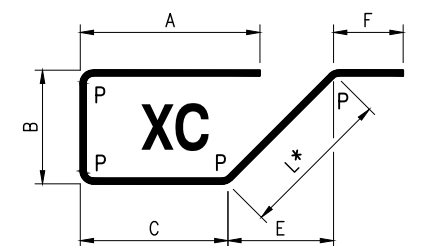
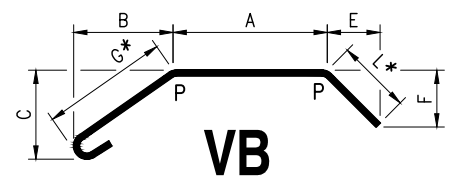
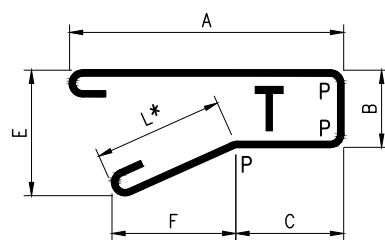
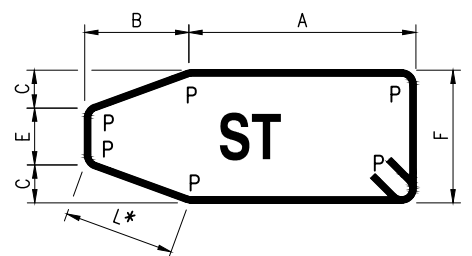


For stirrups and ligatures with  $P = 4d$ , refer to Weld Table on Standard Drawing 1044 for C, S, D,  $L_e$  and  $L_w$  values for each  $d_b$  and Grade



P denotes pin diameter.  
Dimensions marked thus \* are calculated automatically by the Steel Schedule Program and are NOT to be entered on the data sheet.

NOTES:  
1. Refer Drawing 1 for all notes and typical details.



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REINFORCING STEEL			
STANDARD BAR SHAPES		A3	Standard Drawing No
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			Date 3/2023