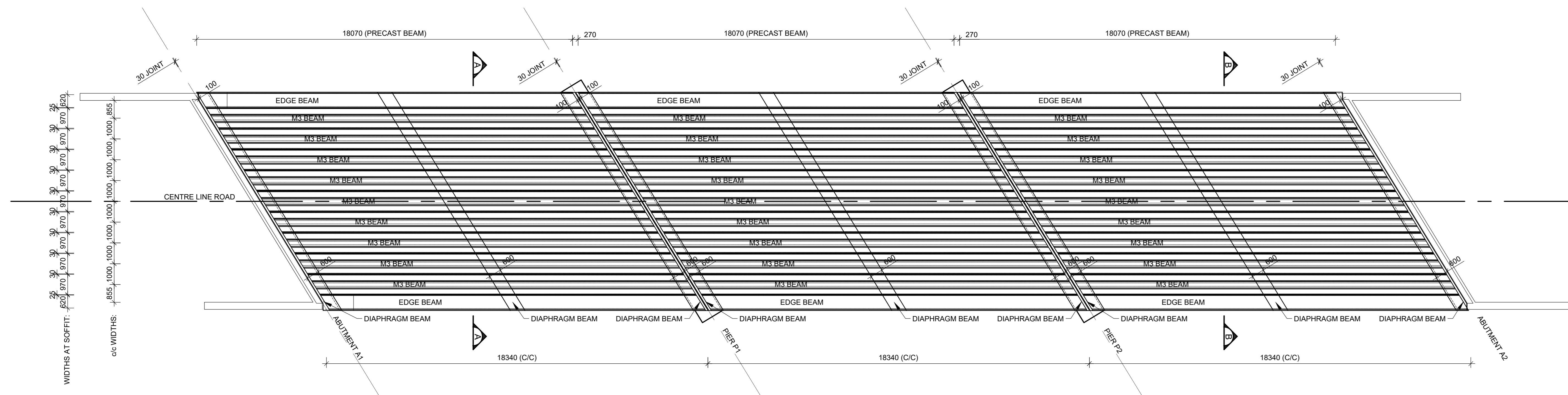


NOTES

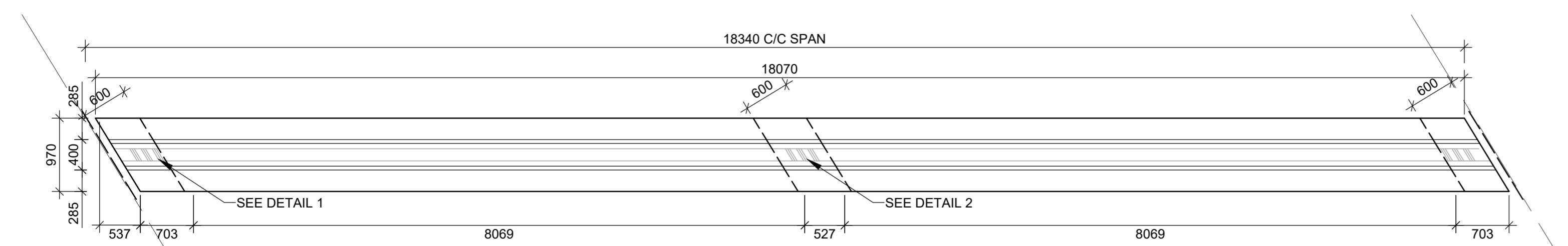
- M3 BEAMS**
- Tendon system & alignment
Low-relaxation 7-wire strands of 15.2 mm nominal diameter, 1770 MPa nominal tensile strength and 139 mm² nominal steel area, placed as shown. Alignment straight in both horizontal and vertical planes, uncurved.
 - Tensioning
A pre-tensioning will be used, transfer at minimum 8 days after casting concrete.
 - Tensioning force
(a) Tensioning force = 172.2 kN per tendon, or 70% of characteristic strength.
(b) Total tensioning force. See Table 1.
 - Extension
(a) Extension: See Table 1
(b) Modulus of elasticity of tendons used: $E_s = 195\ 000$ MPa.
 - Pre-tensioning losses in tendons
(a) Elastic deformation of concrete: Elastic factor = $E_s / E_c = 6.25$ MPa per MPa compressive stress in concrete at lower row of tendons.
(b) Creep of concrete: Creep factor = 0.36 MPa per MPa compressive stress in concrete at lower row of tendons.
(c) Shrinkage of concrete: Stress loss = 35.1 MPa in tendons.
(d) Total losses shall not exceed 25% of applied tensioning force.
 - Anchorage
The first 100mm of the tendons at the ends shall be deboned.
 - Bursting reinforcement
Bursting reinforcement shall be specified by the manufacturer if required. Bursting reinforcement specified shall be approved by the Engineer.
 - Cover
Minimum cover to steel shall be 40mm.
 - Compressive strengths of concrete
(a) Cube strength = 40MPa after 28 days.
(b) Cube strength = 45MPa at transfer (7 days).
(c) If transfer is before 8 days after casting concrete, the concrete strength is to be increased to ensure that 40MPa at transfer is reached.
 - Beams must be at least 28 days old at the time of installation.
 - Modulus of elasticity of concrete used: $E_c = 30\ 000$ MPa.

BEAM TYPE	M3	EDGE
BEAM LENGTH	17.960 m	17.960 m
TOTAL TENSIONING FORCE	4.133 MN	4.994 MN
EXTENSION OF CABLES (OVER BEAM LENGTH)	mm	mm

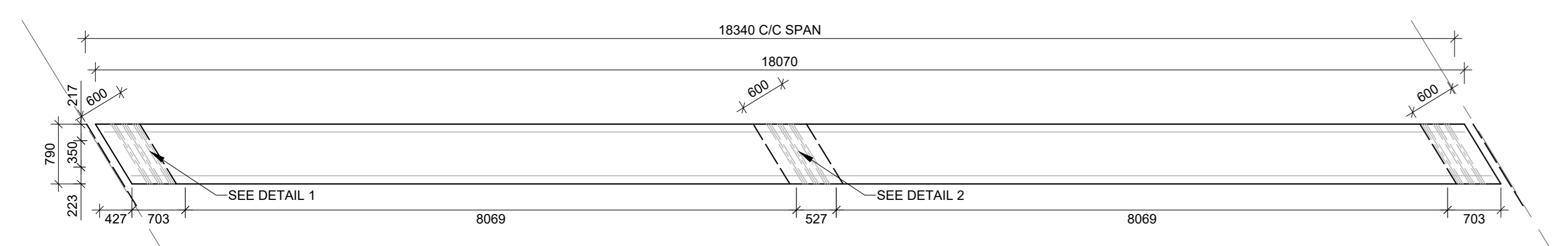
TABLE 1: PRE-STRESSING VALUES



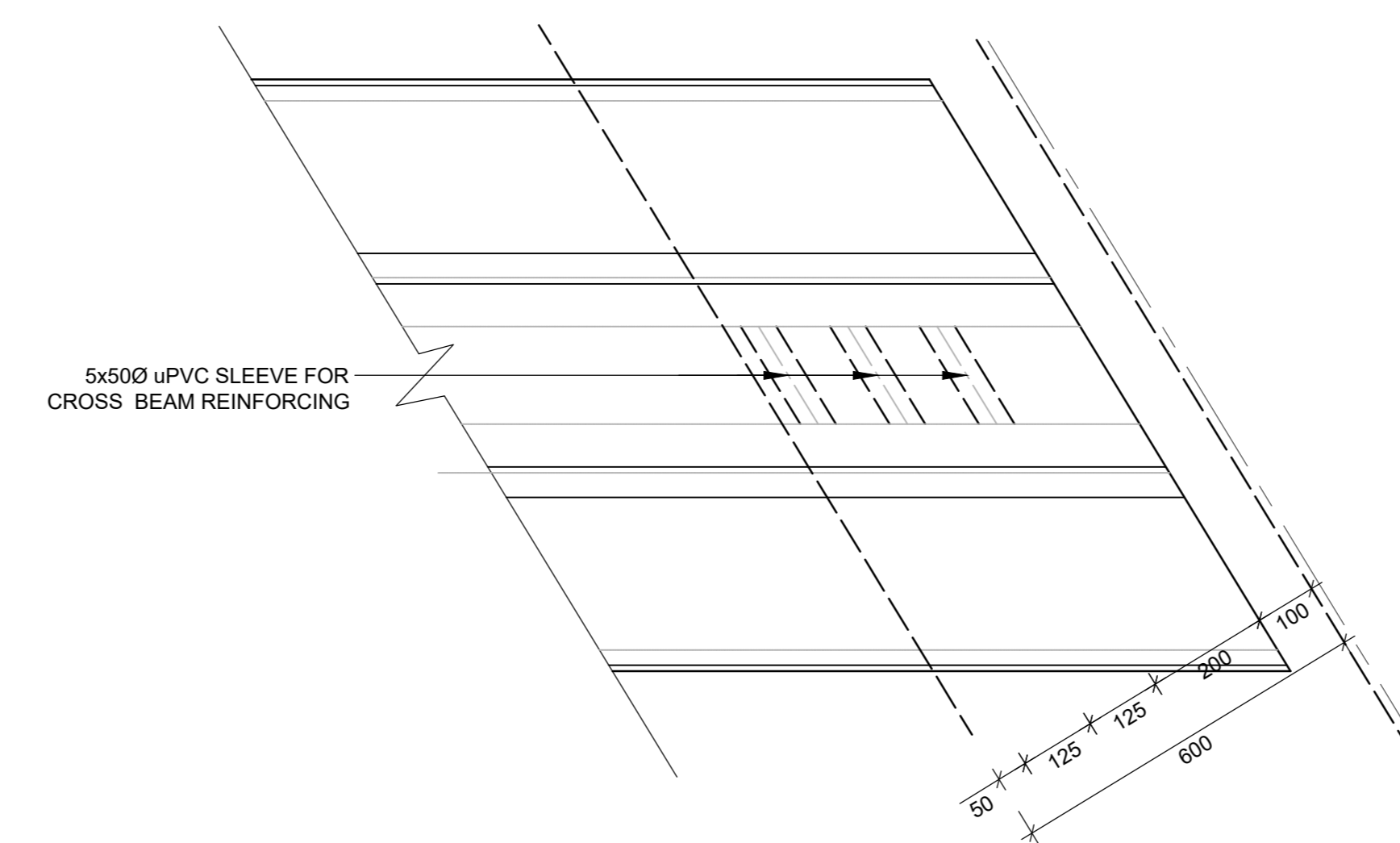
PLAN VIEW OF PRECAST BEAMS
SCALE 1:100



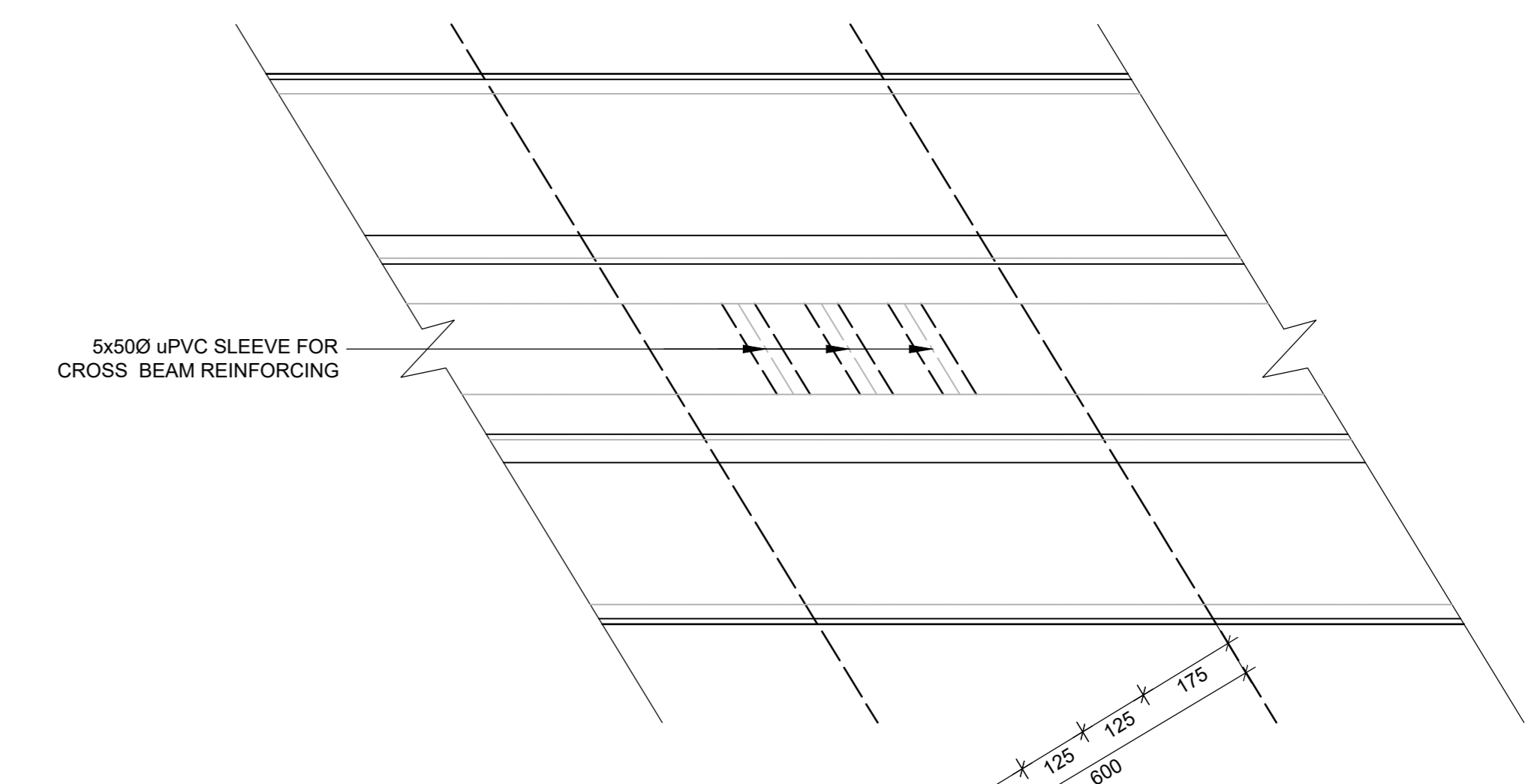
PLAN VIEW OF BEAM TYPE M3
(27 OFF)
SCALE 1:50



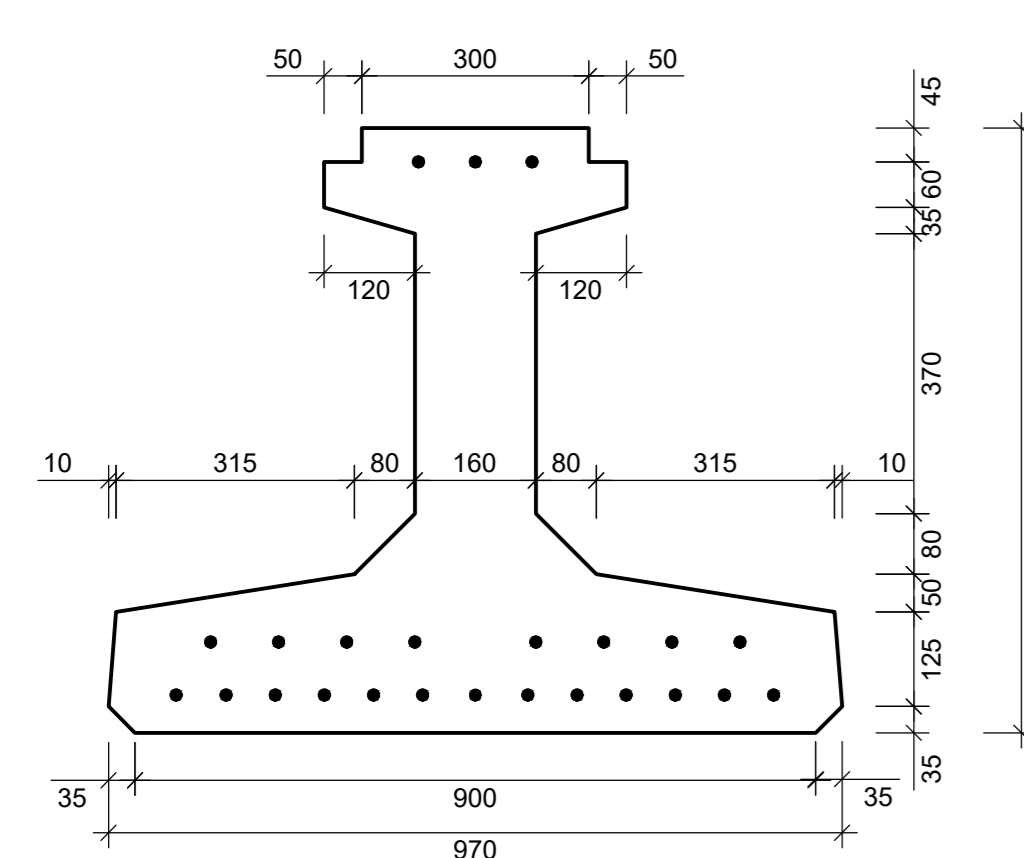
PLAN VIEW OF EDGE BEAM
(6 OFF)
SCALE 1:50



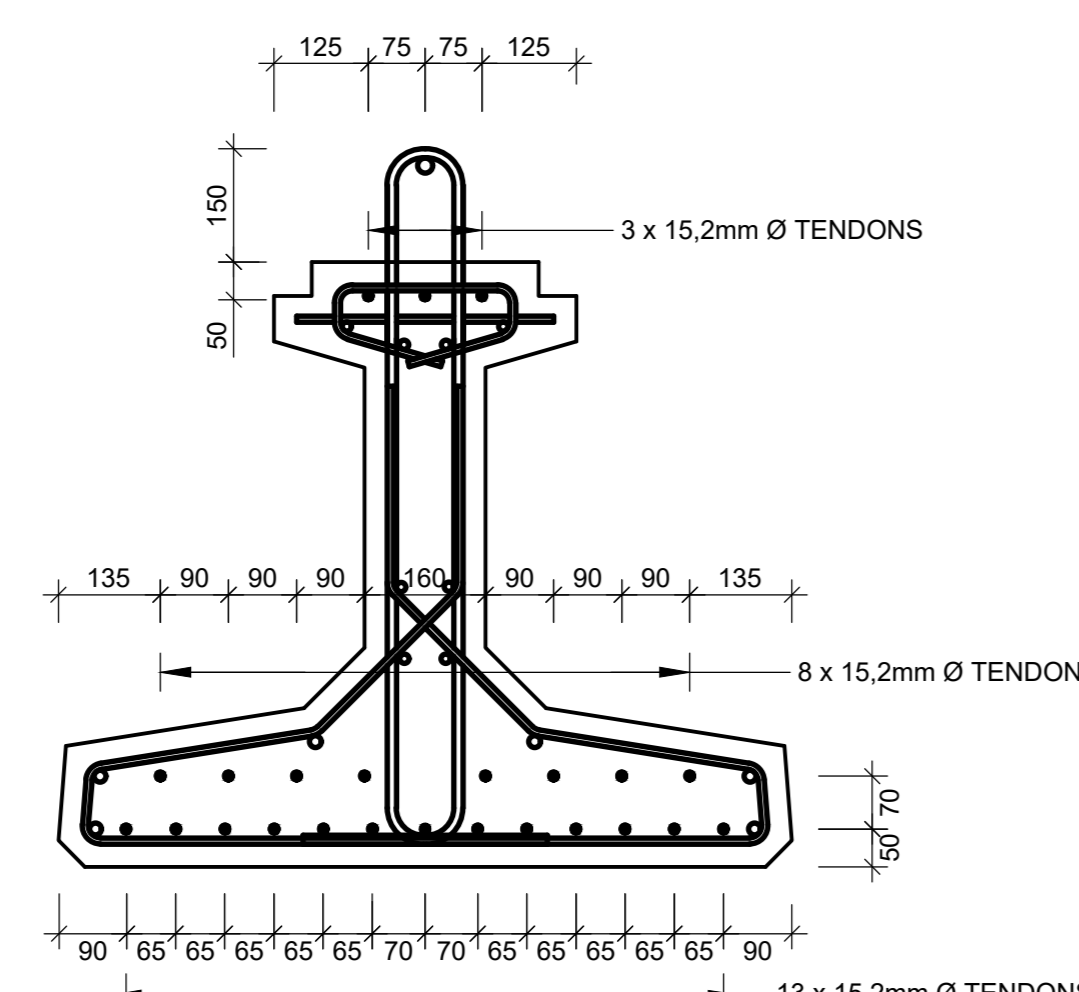
DETAIL 1
(TYPICAL END CROSS BEAM SLEEVES)
SCALE 1:10



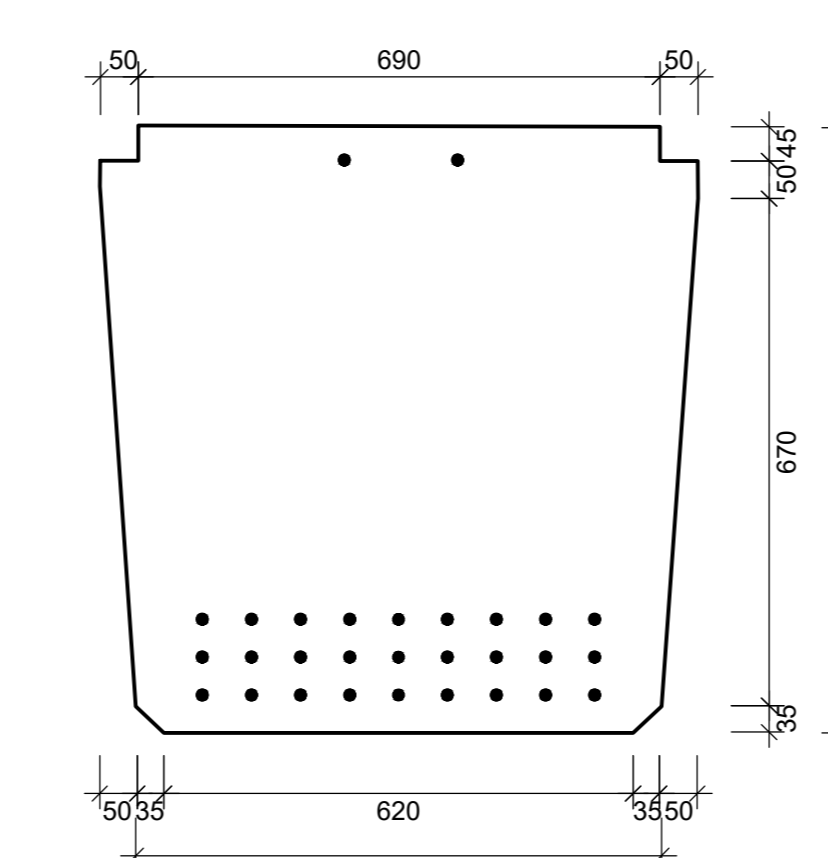
DETAIL 2
(TYPICAL CENTRE CROSS BEAM SLEEVES)
SCALE 1:10



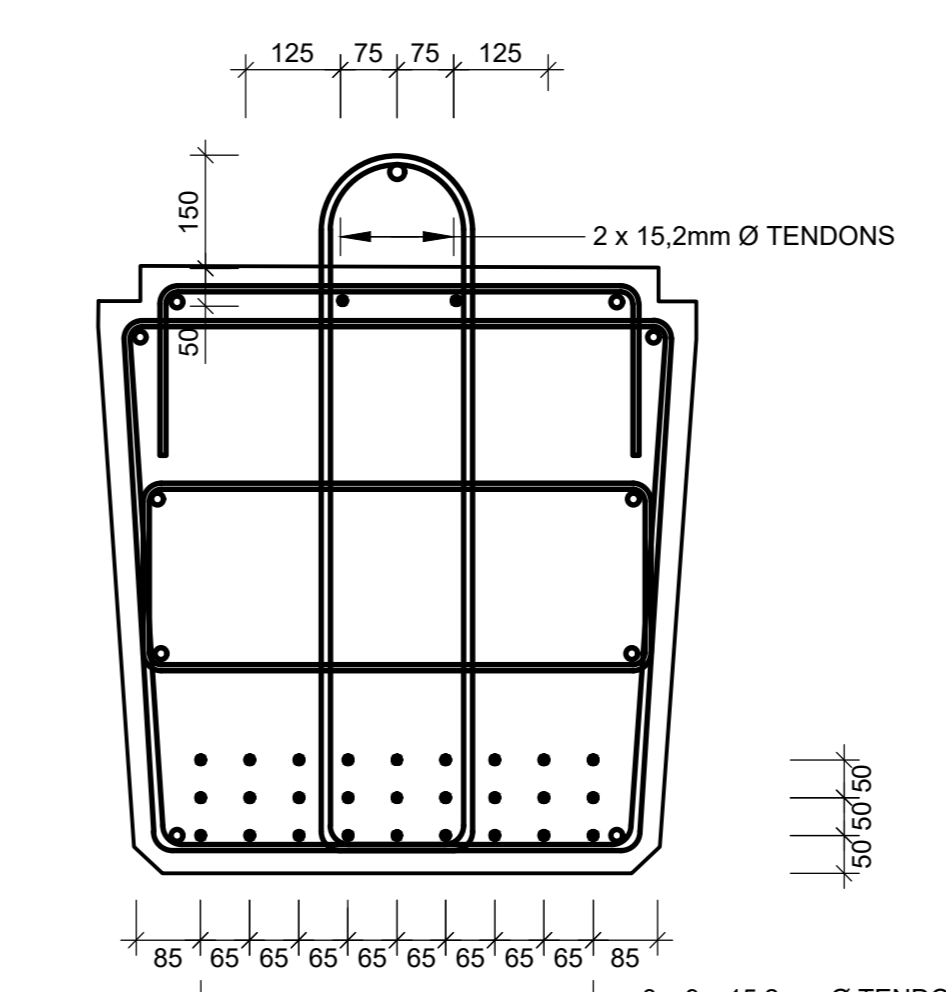
TYPICAL CROSS SECTION
(M3 PRE-STRESSED BEAM)
SCALE 1:10



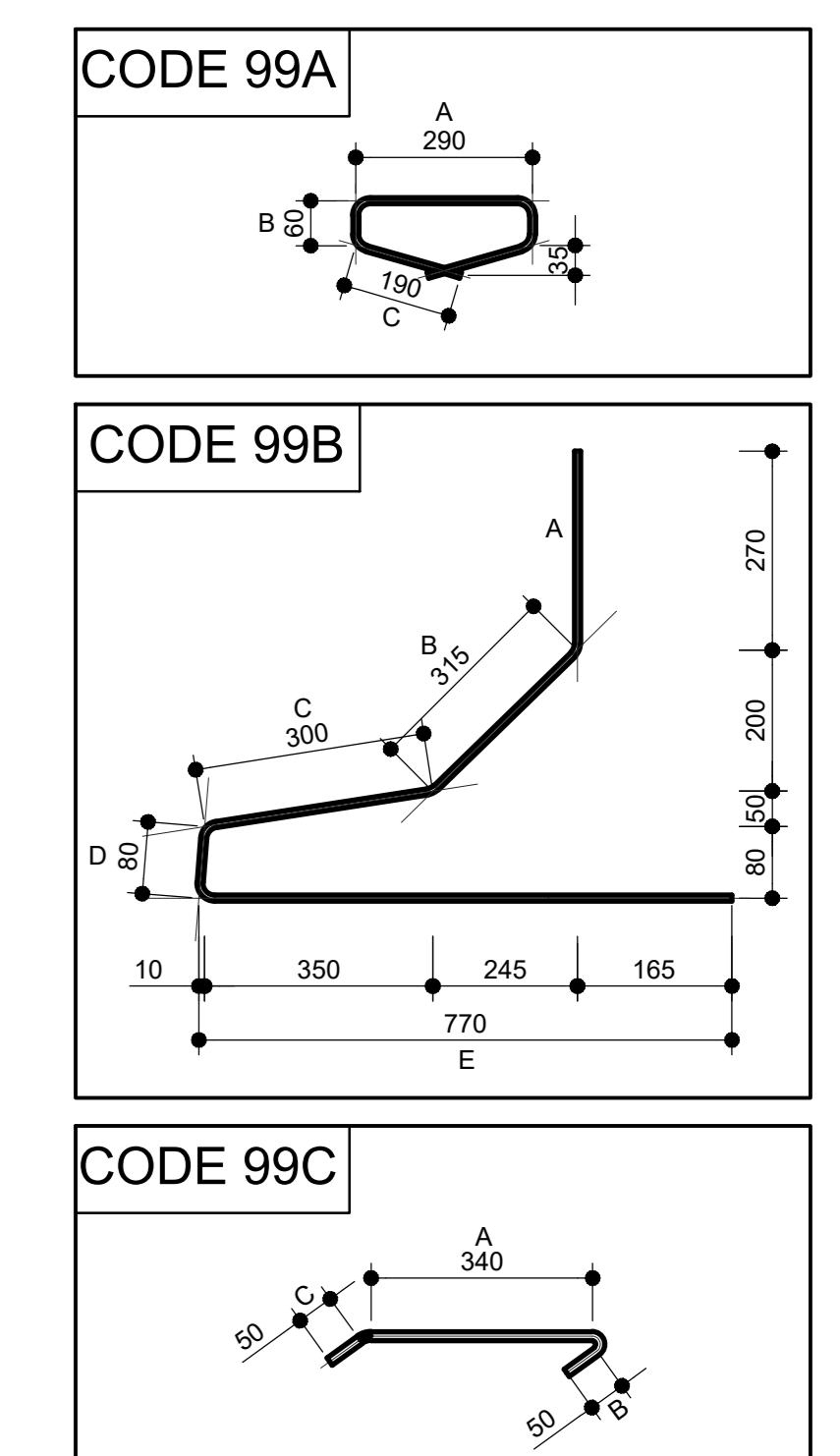
TENDON LAYOUT
(M3 PRE-STRESSED BEAM)
SCALE 1:10



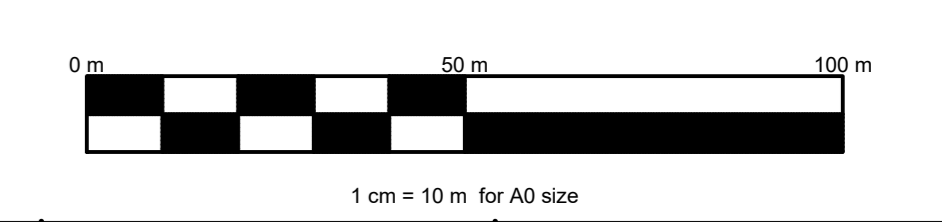
TYPICAL CROSS SECTION
(EDGE PRE-STRESSED BEAM)
SCALE 1:10



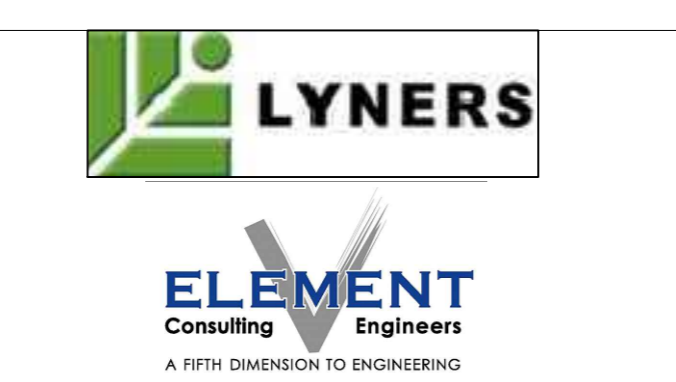
TENDON LAYOUT
(EDGE PRE-STRESSED BEAM)
SCALE 1:10



FOR TENDER
(TENDER APPROVAL ONLY)



NO.	DATE	ADDITIONS AND AMENDMENTS	APPROVED	DESIGNED BY:	CW
A	13.02.2018	FOR TENDER APPROVAL	CONS. PRE	CHEKED BY:	LDT
				DRAWN BY:	CW
				CHEKED BY:	BZ



CONSULTING ENGINEERS
DATE: _____

WESTERN CAPE GOVERNMENT
DEPARTMENT OF TRANSPORT AND PUBLIC WORKS

APPROVED
THIS APPROVAL IS FOR PROCEDURAL AND ADMINISTRATIVE REVIEW PURPOSES ONLY AND DOES NOT ATTRACT LEGAL LIABILITY OF ANY KIND FROM WHATSOEVER OR HOWEVER ARISING
PROVINCIAL ROADS ENGINEER
DATE: _____

PROPOSED ROAD OVER RAIL BRIDGE No. 6048 ON DR 1103 OVER KLAPMUTS-PAARL RAIL NEAR SIMONSVLEI
PRECAST BEAM(S) CONCRETE LAYOUT & DETAILS

P.R.E.'S FILE NO.	SCALE
970123	AS SHOWN
CONTRACT NO.	WCG STRUCTURE PLAN
TPW 16/6/4/1/4-C0850.01	
CONSULTANTS DWG NO.	WCG INDEX NO.
150049/S/008	A93/21