

GENERAL NOTES FOR GLASS CANOPY

DESIGN REFERENCE

- BUILDING (CONSTRUCTION) REGULATIONS CHAPTER 123 – 1990
- CODE OF PRACTICE ON WIND EFFECTS HONG KONG – 2004
- CODE OF PRACTICE FOR THE STRUCTURAL USE OF STEEL – 2011
- CODE OF PRACTICE FOR THE STRUCTURAL USE OF CONCRETE – 2004 (2nd EDITION)
- CODE OF PRACTICE FOR THE STRUCTURAL USE OF ALUMINIUM – BS8118 : PART 1 : 1991
- PRACTICE NOTE FOR AUTHORIZED PERSON, REGISTERED STRUCTURAL ENGINEERS AND REGISTERED GEOTECHNICAL ENGINEERS : BD APP-37 (PNAP 106)
- CODE OF PRACTICE FOR DEAD & IMPOSED LOADS – 2011

DESIGN CRITERIA

- WIND LOADS : ABOVE ARTIFICIAL BASE LEVEL (ABL)

HEIGHT ABOVE SITE GROUND LEVEL	BASIC WIND PRESSURE q_z	CP	Topography Factor	DESIGN WIND LOAD
11.15m ABOVE SITE GROUND LEVEL	2.04kPa 2.04kPa	+1.0 -1.4	1.0 1.0	+2.04 kPa -2.86 kPa
11.15m ABOVE SITE GROUND LEVEL	2.04kPa	±2.0	1.0	±4.08 kPa (FOR CANOPY & GRILLES)
11.15m ABOVE SITE GROUND LEVEL	2.04kPa 2.04kPa	+1.2 -2.2	1.0 1.0	+2.45 kPa (FOR ROOF CLADDING) -4.49 kPa

- DEAD LOAD

DEAD LOAD ACCORDING TO PRACTICE OF DEAD & IMPOSED LOAD 2011.

DENSITY OF ALUMINIUM	27 KN/m ³
DENSITY OF STEEL	78.5 KN/m ³
DENSITY OF GLASS	26.0 KN/m ³

- GLASS CANOPY LIVE LOAD

	0.75kPa
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MATERIALS

- GLAZING

- ALL TEMPERED GLASS SHALL COMPLY WITH BS952 PART 1, AND BS6262 (ALL TEMPERED GLASS SHALL BE 100% HEAT SOAKED TEST IN 290 MIN. 2 HRS. COMPLY TO APP37/BSEN14179)
- ALLOWABLE STRESS = 50 MPa
YOUNG'S MODULUS ELASTICITY = 70000 MPa
- GL-01: 10mm+1.52mmSGP+10mm THK. CLEAR LAMINATED TEMPERED GLASS
- GLASS ALLOWABLE DEFLECTION < L/60,
- GLASS SUPPORTING MEMBERS ARE DESIGNED TO L/180 OR 20mm MAX. WHICHEVER IS LESSER.
- IMPACT TEST SHALL BE COMPLY WITH BS 6262 AND GLASS SURFACE COMPRESSION > 69 MPa.

- STEEL

STRUCTURAL STEEL GRADE S355 J0 COMPLY WITH BS EN-10025 (CLASS 1), UNLESS STRUCTURAL STEEL OF HOLLOW SECTION SHALL BE GRADE S355J0H COMPLY WITH BS EN10210.

DESIGN STRENGTH (for t < 16mm)	= 355 MPa
DESIGN SHEAR	= 205 MPa
YOUNG'S MODULUS OF ELASTICITY	= 205000 MPa
DESIGN STRENGTH (for t > 16mm)	= 345 MPa
DESIGN SHEAR	= 200 MPa
YOUNG'S MODULUS OF ELASTICITY	= 205000 MPa

- CORROSION PROTECTION

- ALL SITE WELDS SURFACE SHALL BE RECEIVE 2 COATS OF ZINC RICH PRIMER COMPLYING WITH BS 4652 : 1995 AND BS EN ISO 12944 : 1998 PART 5
- WHERE ALUMINIUM IS IN CONTACT WITH STEEL, PLASTIC TAPE OR COATING SHALL BE PROVIDED AT CONTACT TO PREVENT GALVANIC REACTION AS PER PD 6484
- WHERE ALUMINIUM OR STEEL IS IN CONTACT WITH CONCRETE, THE BITUMINOUS PAINT TO BE PROVIDED AT B) WHERE ALUMINIUM IS IN CONTACT WITH STEEL, PLASTIC TAPE OR COATING SHALL BE PROVIDED AT CONTACT TO PREVENT GALVANIC REACTION AS PER PD 6484
- ALL MILD STEELS SHALL BE HOT DIP GALVANIZED FINISH CONFORMING TO BS EN ISO 1461 : 2009.

THICKNESS OF STEEL	COATING THICKNESS MIN.
STEEL > 6mm	85 μm
STEEL > 3mm TO < 6mm	70 μm
STEEL > 1.5mm TO < 3mm	55 μm

- ALL STAINLESS STEEL SHALL BE GRADE 316
THE DESIGN STRENGTH OF STAINLESS STEEL TO BE EN10088-2

GRADE	DESIGN STRENGTH N/mm ² (0.2% PROOF STRESS)	ULTIMATE TENSILE STRENGTH N/mm ²
316	205	515

- WELDING

- ALL WELDING SHALL BE COMPLYING WITH BS EN 1011-1:2001 & BS EN 1011-2:2001.
- DESIGN OF WELD SHALL BE ACCORDING TO CODE OF PRACTICE FOR THE STRUCTURAL USE OF STEEL 2011 DESIGN STRENGTH OF FILLET WELD – 220 N/mm²
- 2 COATS OF ZINC RICH PRIMER SHALL BE APPLIED AFTER WELDING ALL SLAG AND RESIDUE TO BE REMOVED BEFORE PAINTING.
- ALL WELDING SHALL BE CARRIED OUT BY THE QUALIFIED WELDERS AND COMPLYING TO BS EN 287-1, 2004.
- ALL WELDING PROCEDURES TO COMPLY WITH BS EN ISO 15614 : 2004
- ALL WELD SHALL BE 4mm FILLET WELD UNLESS OTHERWISE SPECIFIED.
- ALL SITE WELDS SHALL BE RECEIVED WITH 2 COATS OF ZINC CHROMATE PRIMER

- FASTENERS

- ALL STAINLESS STEEL FASTENERS, STAINLESS BOLTS, SPRING WASHER & NUTS SHALL BE AUSTENITIC GROUP GRADE 8.8, A4-70 (FOR EXTERNAL) COMPLYING WITH BS EN ISO 3506-1

GRADE	STRESS AT 0.2% PERMANENT STAIN	ULTIMATE TENSILE STRENGTH (U _{ts})	SHEAR STRENGTH (U _{sb})	TENSILE STRENGTH (P _{tb})	BEARING STRENGTH (P _{bb})
A4-70	450 MPa	700 MPa	310 MPa	370 MPa	824 MPa

- GRADE 8.8 BOLTS SHALL BE B.S. 4190,2001 AND THE TOLERANCE OF BS 4190 : 2001.
ALLOWABLE TENSILE STRESS 560MPa
ALLOWABLE SHEAR STRESS 375MPa
ALLOWABLE BEARING STRESS 1000MPa
- STAINLESS STEEL SPIDER BRACKET SHALL BE MADE IN CASTING METHOD AND OF GRADE CF-8M IN COMPLIANCE WITH ASTM A 351.
- STAINLESS STEEL SPIDER BRACKET AND ARTICULATED BOLT SHALL BE GRADE 316 RECOMMENDED
LOAD PER ARM P_t = 6.5kN (UP & DOWN DIRECTION)
- S/S SPIDER BRACKET "KINLONG" 300H21 2 ARMS TYPE (BD REF. NO. SB010)
- THE STAINLESS STEEL SPIDE BRACKET 300H21 2 ARM TYPES SHALL BE CARRIED OUT A PROOF LOAD TEST IN ACCORDANCE WITH SECTION 16.2 OF THE CODE OF PRACTICE FOR THE STRUCTURE USE OF STEEL 2005.
- THE STAINLESS STEEL SPIDER BRACKET INSTALLATION ERECTION AND GLASS TO SPIDER CONNECTION SHALL BE STRICTLY IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATION.

- SEALANTS

- ALL STRUCTURAL SEALANT SHALL BE DOW CORNING 795/995/983 OR EQUIVALENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION AND RECOMMENDATION. (BD. REF. NO. SS-001 & 002). COLORS WILL BE STANDARD COLORS AS SELECTED BY THE ARCHITECT.
ALLOWABLE STRESS = 138 kPa
- ALL NON-STRUCTURAL SEALANT (INTERNAL SEAL AND WEATHERSEAL) SHALL BE DOW CORNING 791 IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION AND RECOMMENDATION. COLORS WILL BE STANDARD COLORS AS SELECTED BY THE ARCHITECT.
- BACK-UP MATERIAL FOR PERIMETER WEATHER SEALS SHALL BE NON-GASSING OPEN CELL SILICONE COMPATIBLE BACKER ROD.
- FOAM SPACER TAPES AT STRUCTURAL SILICONE ARE TO BE SILICONE COMPATIBLE AND NON-GASSING AND SHALL BE PROVEN ACCEPTABLE BY THE SEALANT MANUFACTURER.

- ELECTROLYTIC PROTECTION

INTERFACE BETWEEN DIFFERENT METAL TO BE SEPARATED BY 2 COATS OF BITUMEN PAINT TO PREVENT BI-METALLIC CORROSION.

- CONCRETE GRADE

STRENGTH OF EXISTING REINFORCED CONCRETE = GRADE 45D/20 (FOR INFORMATION ONLY).

- THIS SET OF DESIGN CLADDING SYSTEM DID NOT CONTAIN ANY FIRE RATED MATERIALS.
- NO FIRE RATED REQUIRE FOR THE PROPOSED GLASS CANOPY WORKS.

- ANCHOR BOLT
ANCHOR BOLT TO BE "HILTI" TYPE, DESIGN AND INSTALLATION TO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

Anchor Type	Concrete Type	Recommended Load		Test Load		h _e [mm] Effective anchorage depth	Minimum spacing in concrete	Minimum edge distance in concrete	BD REF NO.
		Tensile (kN)	Shear (kN)	Tensile (kN)	Tensile (kN)				
M8x75 HST-R	Cracked	1.7	4.3	2.55	47	60	60	60	AF130.
M10x110 HST-R	Cracked	3.0	6.7	4.5	60	60	60	65	AF127.
M12x145 HST-R	Cracked	4.0	10	6.0	70	60	60	75	AF130.
M16x165 HST-R	Cracked	8.3	16.3	12.45	82	60	60	100	AF130.
M20x170 HST-R	Cracked	20	10	30	100	101	130	130	AF130.

- SETTING BLOCK :

- SETTING BLOCK SHALL BE 85±5 SHORE A SILICONE RUBBER NO LESS THAN 150mm L AT 1/8 POINT OF GLASS

- DOUBLE COHESIVE TAPE COMPLIED WITH ASTM D-2240 HARDNESS : SHORE A = 30.

DRAWING LIST

DRAWING No.	REVISION						DRAWING TITLE	REMARKS
	20	21	Y	Y	Y	Y		
	06	01	M	M	M	M		
	30	25	D	D	D	D		
1	GC-GN01	-	2				GENERAL NOTES & DRAWING LIST FOR GLASS CANOPY	
2	GC-EM01	-	2				GLASS CANOPY TYPE EMBER	
3	GC-PL01	-	2				GLASS CANOPY LAYOUT PLAN	
4	GC-PL02	-	2				GLASS CANOPY LAYOUT PLAN	
5	GC-PL03	-	2				GLASS CANOPY LAYOUT PLAN	
6	GC-EL01	-	2				GLASS CANOPY ELEVATION	
7	GC-DE01	-	2				GLASS CANOPY DETAIL	
8								
9								
10								
11								
12								
13								
14								
15								

Drawing Status :

Ref NO.:

Client

澳門特別行政區政府
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Contractor:

Supplier:

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Technology

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Project:

工程2 - 修改停車場閘臂位置
INTERVENÇÃO 2 - REVISÃO DA LOCALIZAÇÃO DAS CANCELAS DE ESTACIONAMENTO

Job Title:

CANOPY FOR MOTORCYCLE AND CAR TICKETING MACHINE

Drawing Name:

GENERAL NOTE

Drawing NO.: QPBE20034-GN01

Drawing Scale: AS SHOW

Drawing Date: 2021/01/25

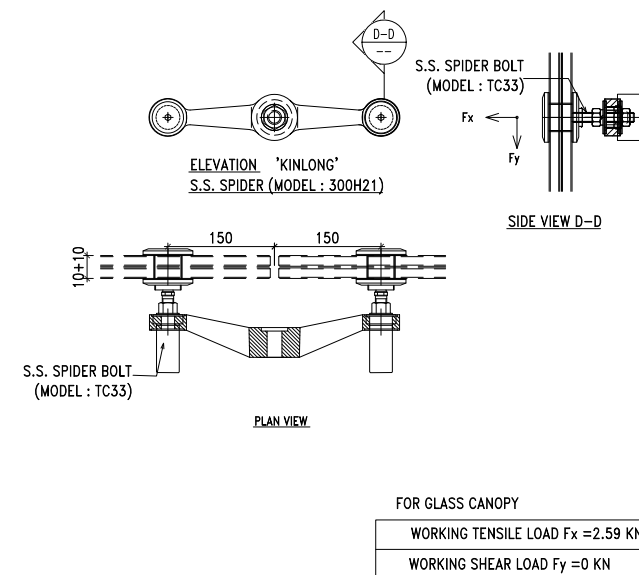
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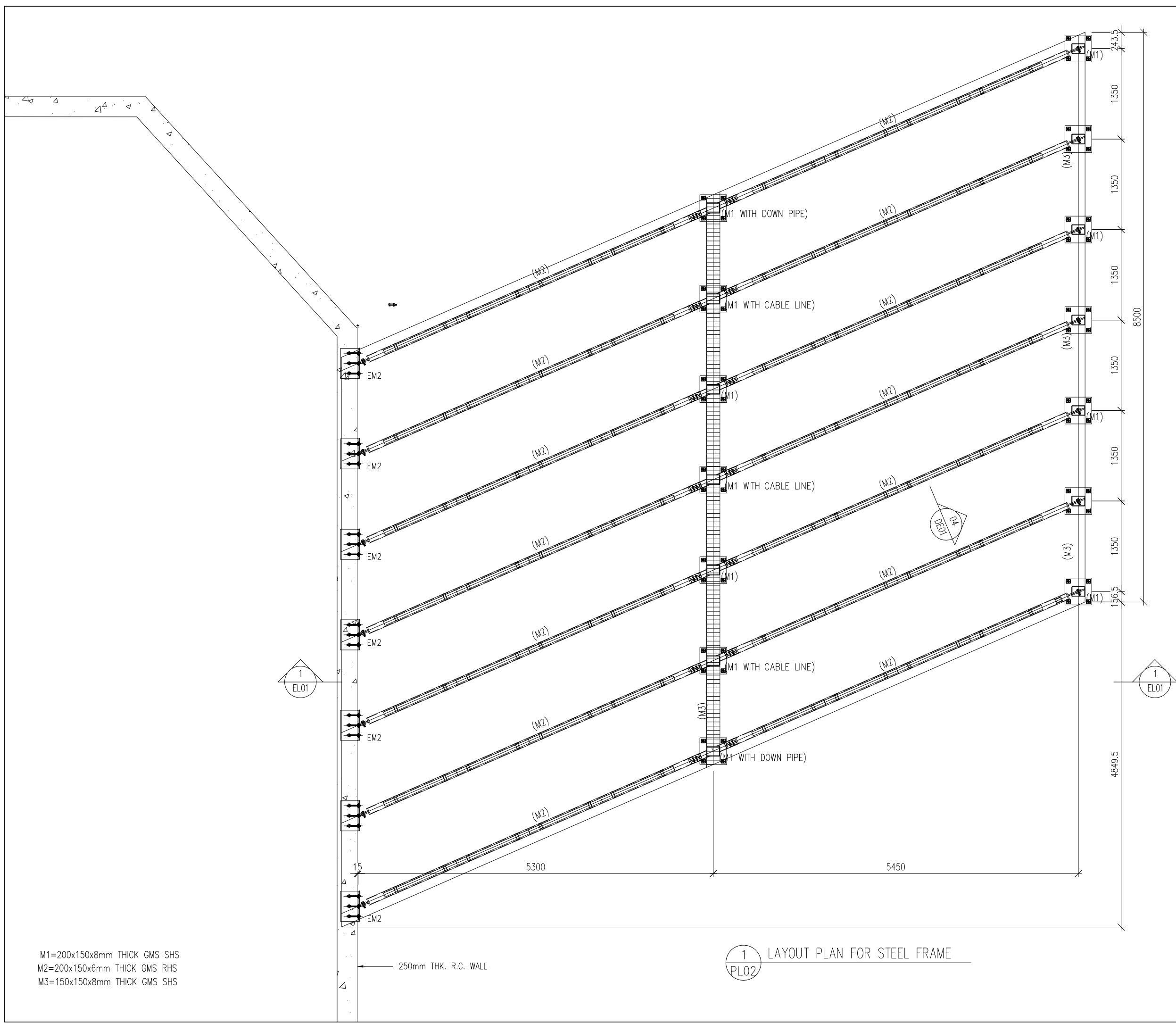
Collate: Joyl

Auditing: Gray Hui

Drawing Version: 2

14) S.S. SPIDER DETAIL





M1=200x150x8mm THICK GMS SHS
M2=200x150x6mm THICK GMS RHS
M3=150x150x8mm THICK GMS SHS

250mm THK. R.C. WALL

1 LAYOUT PLAN FOR STEEL FRAME
PL02

Drawing Status :

Ref NO.:

Client
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Project:
工程2 - 修改停車場開臂位置
INTERVENÇÃO 2 - REVISÃO DA LOCALIZAÇÃO DAS
CANCELAS DE ESTACIONAMENTO

Job Title:
CANOPY FOR MOTORCYCLE AND CAR
TICKETING MACHINE

Drawing Name:
LAYOUT PLAN FOR STEEL FRAME

Drawing NO.: QPBE20034-PL02

Drawing Scale: AS SHOW

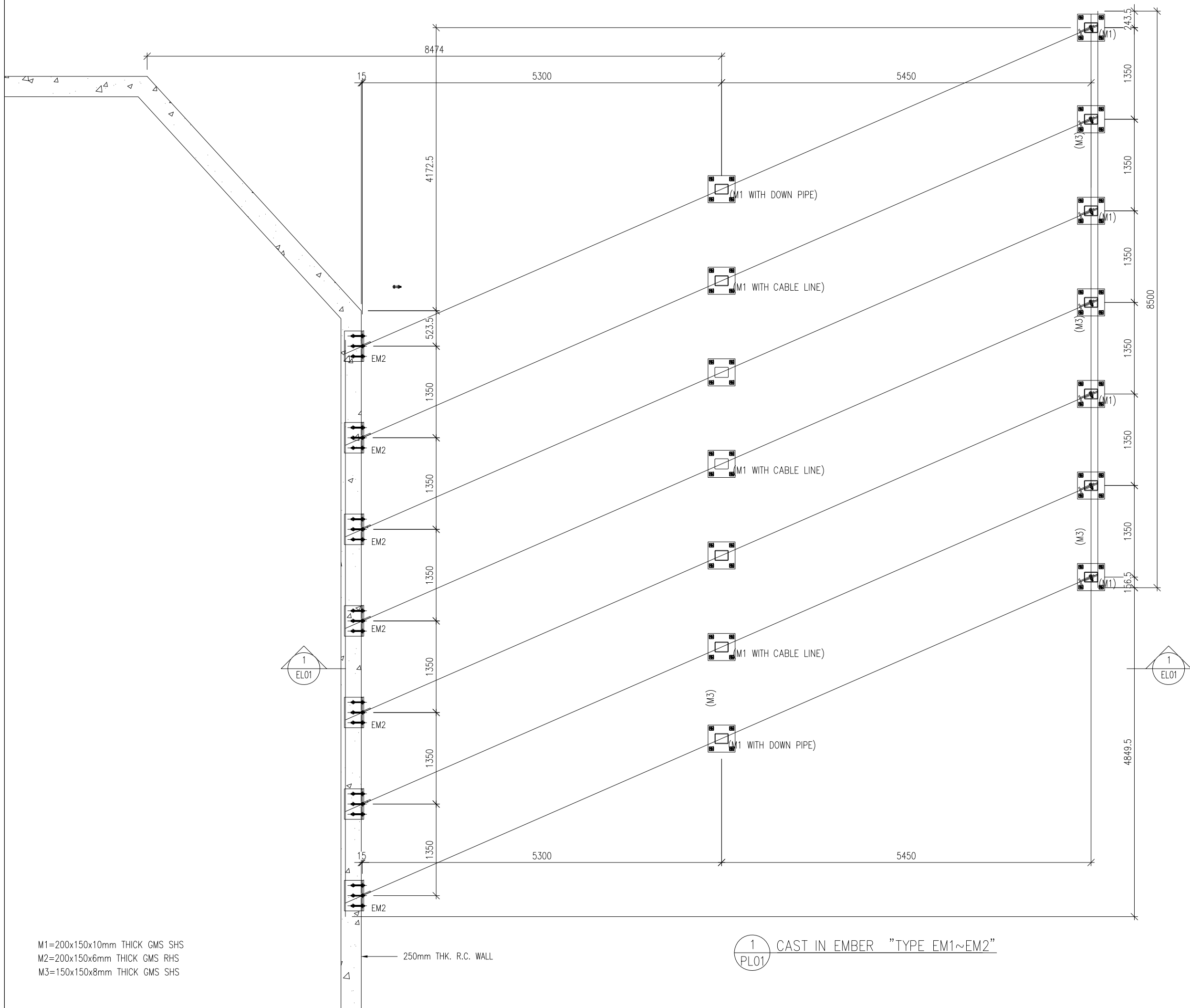
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Drawing: KP

Collate: Joyl

Auditing: Gray Hui

Drawing Version: 2



M1=200x150x10mm THICK GMS SHS
M2=200x150x6mm THICK GMS RHS
M3=150x150x8mm THICK GMS SHS

250mm THK. R.C. WALL

1 PL01 CAST IN EMBER "TYPE EM1~EM2"

Drawing Status :

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Job Title:
CANOPY FOR MOTORCYCLE AND CAR
TICKETING MACHINE

Drawing Name:
LAYOUT PLAN FOR EMBED

Drawing NO.: QPBE20034-PL01

Drawing Scale: AS SHOW

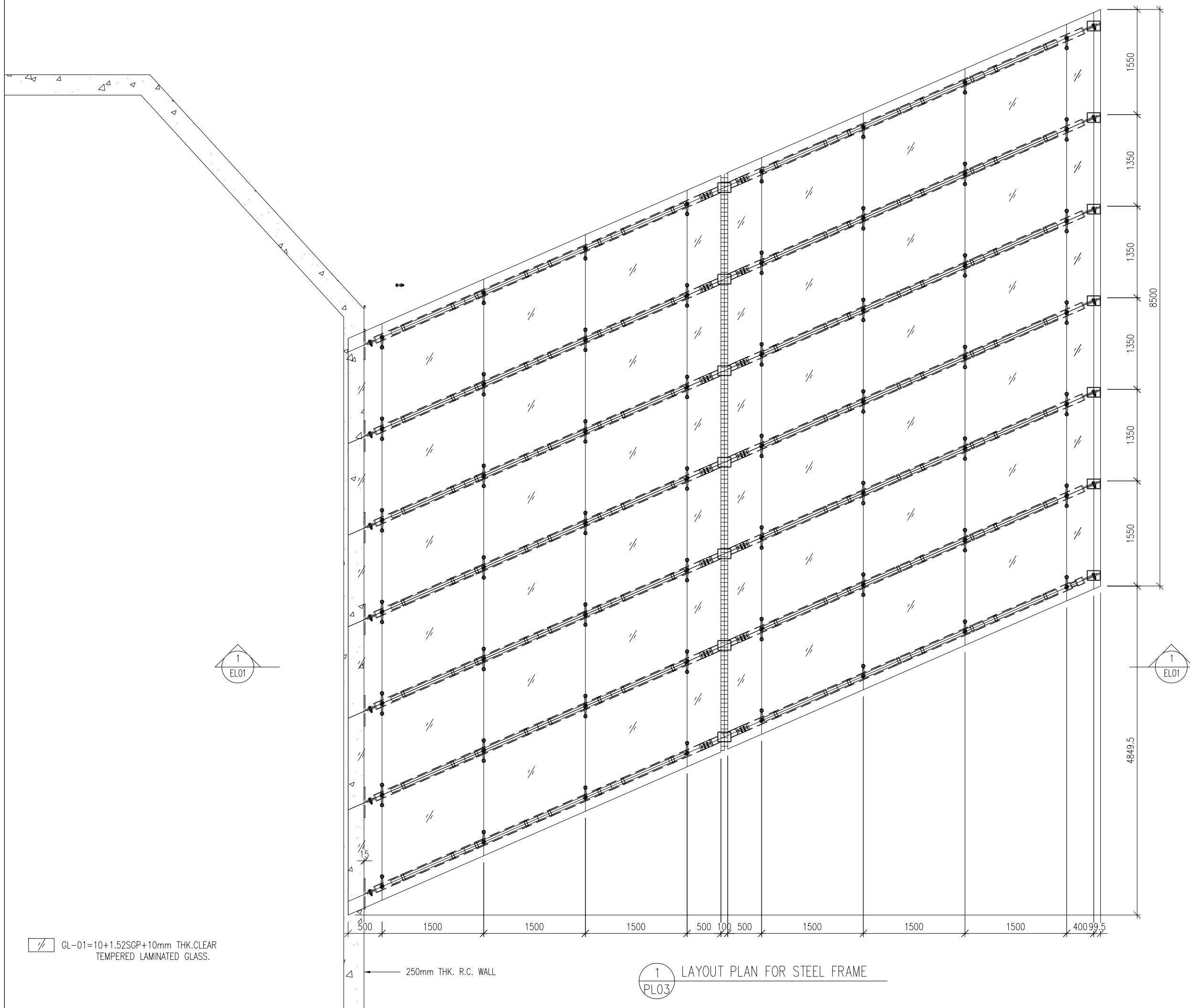
Drawing Date: 2021/01/25

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Collate: Joyl

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Job Title:
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 TICKETING MACHINE

Drawing Name:
 LAYOUT PLAN FOR GLASS ROOF

Drawing NO.: QPBE20034-PL03

Drawing Scale: AS SHOW

Drawing Date: 2021/01/25

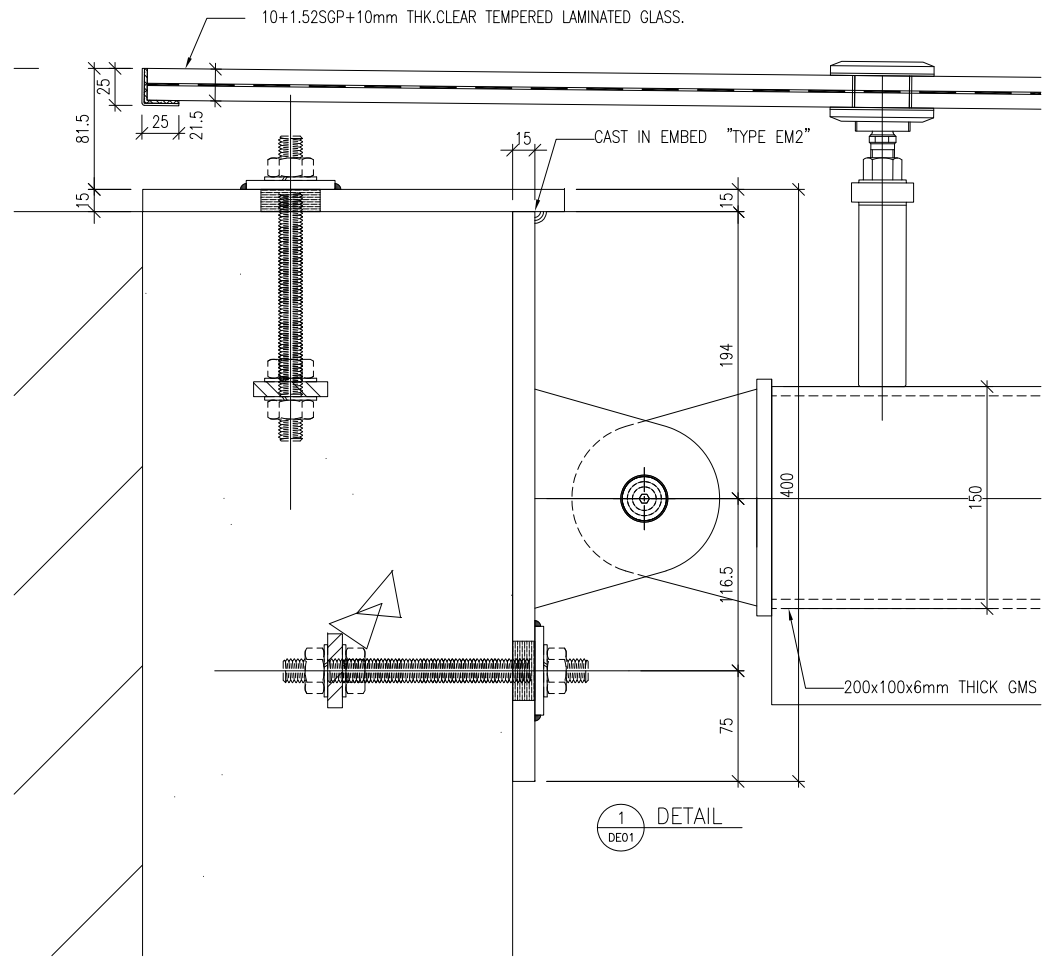
Drawing: KP

Collate: Joyl

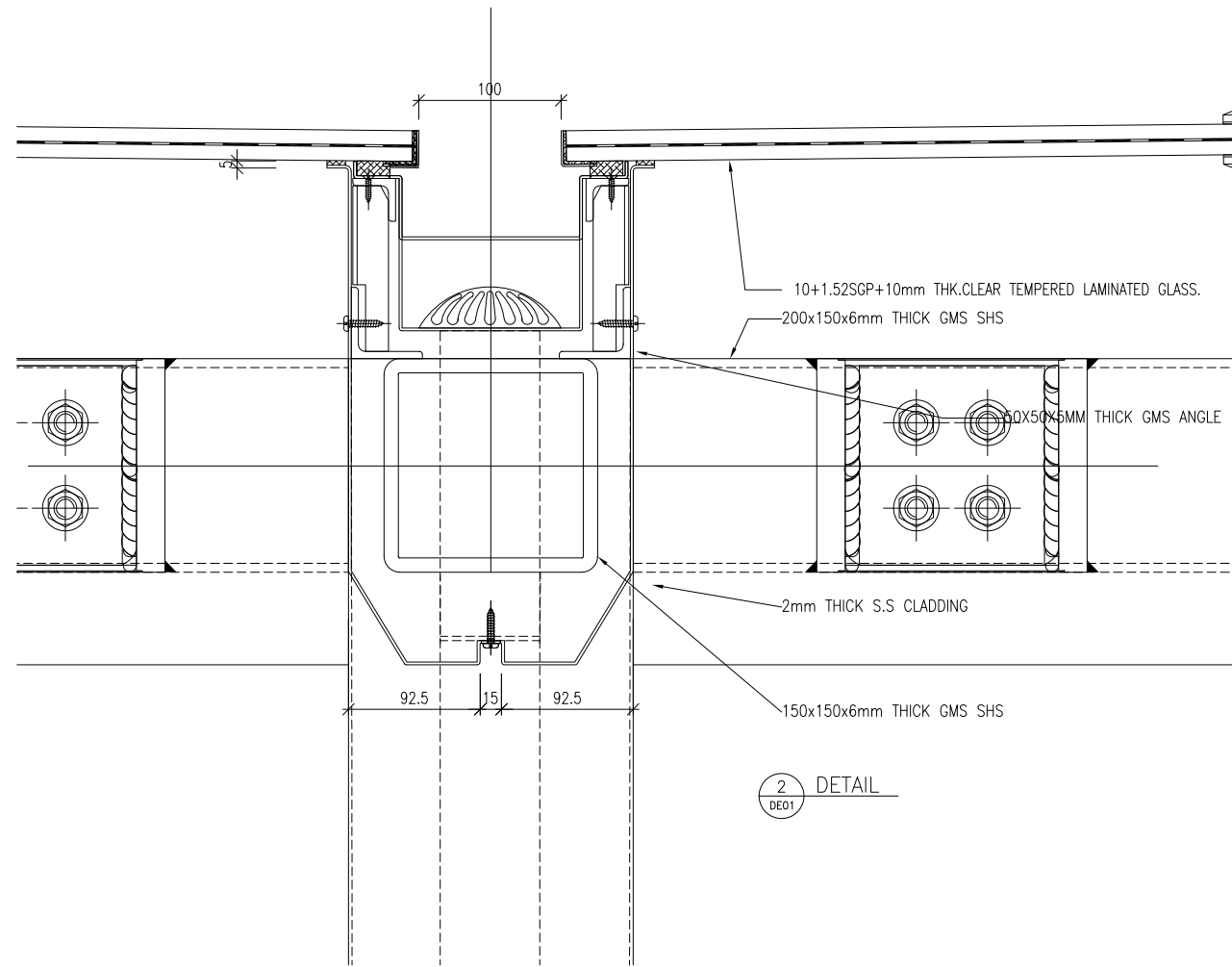
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Drawing Version: 2

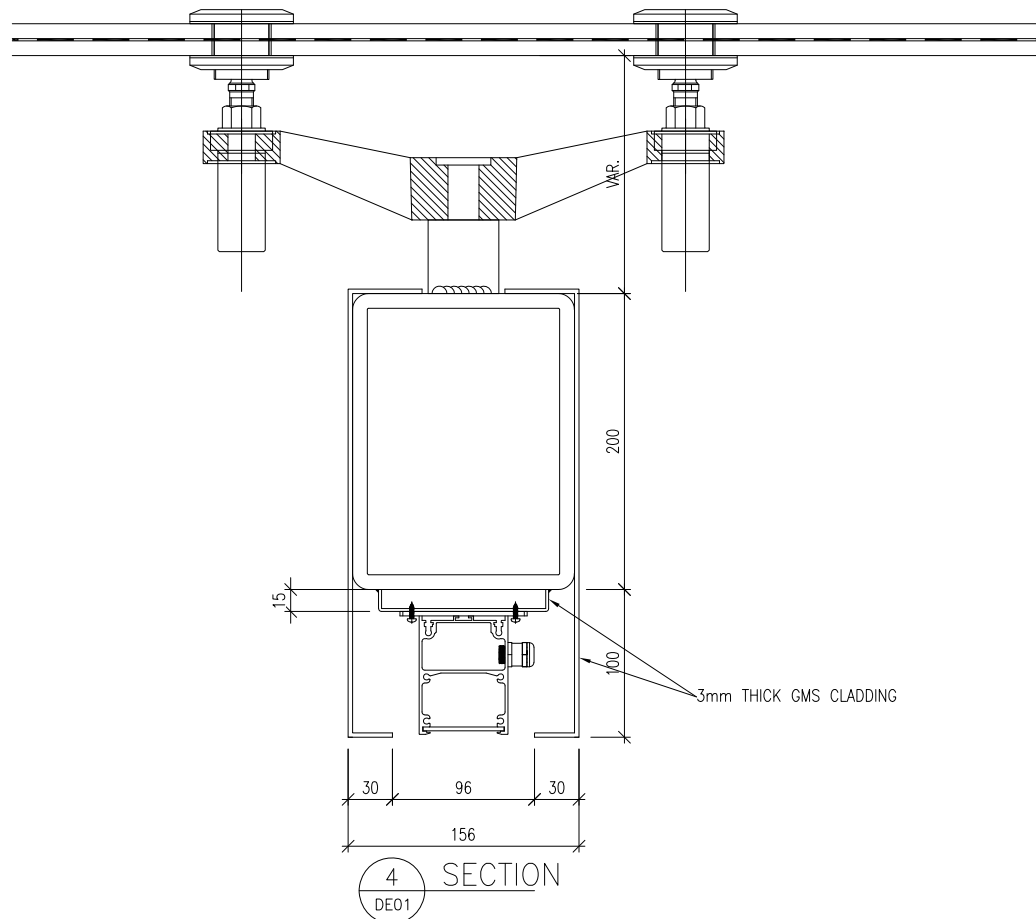
1 LAYOUT PLAN FOR STEEL FRAME
 (PL03)



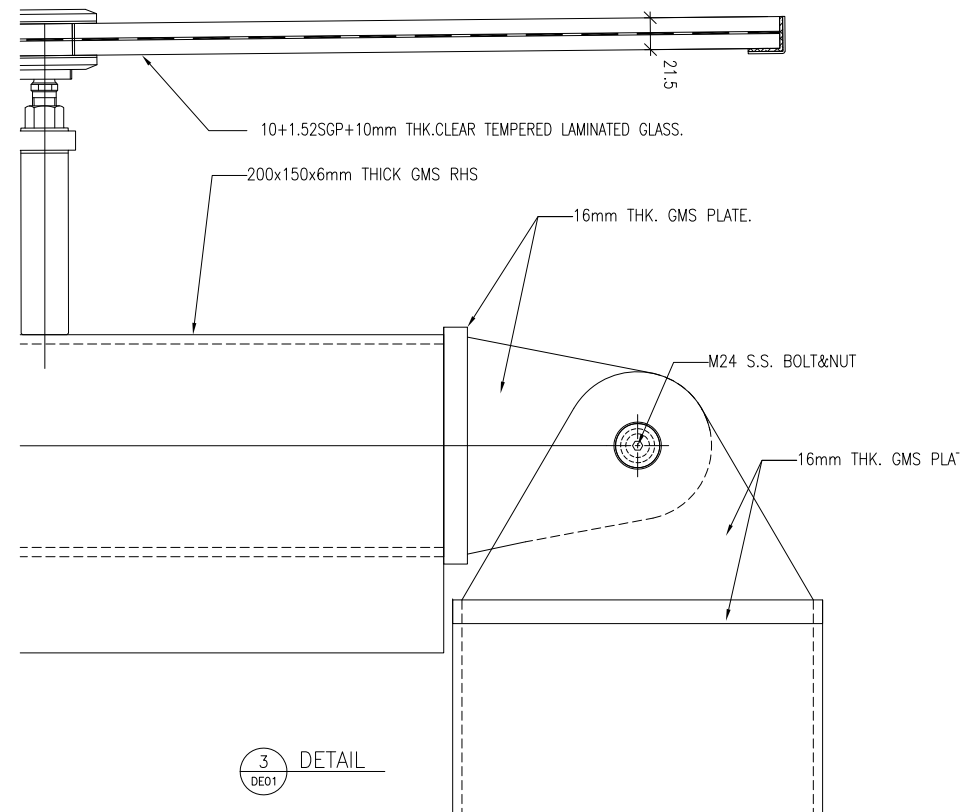
1
DE01
DETAIL



2
DE01
DETAIL



4
DE01
SECTION



3
DE01
DETAIL

Drawing Status :

Ref NO.:

Client
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Job Title:
 CANOPY FOR MOTORCYCLE AND CAR
 TICKETING MACHINE

Drawing Name:

DETAIL

Drawing NO.: QPBE20034-DE01

Drawing Scale: AS SHOW

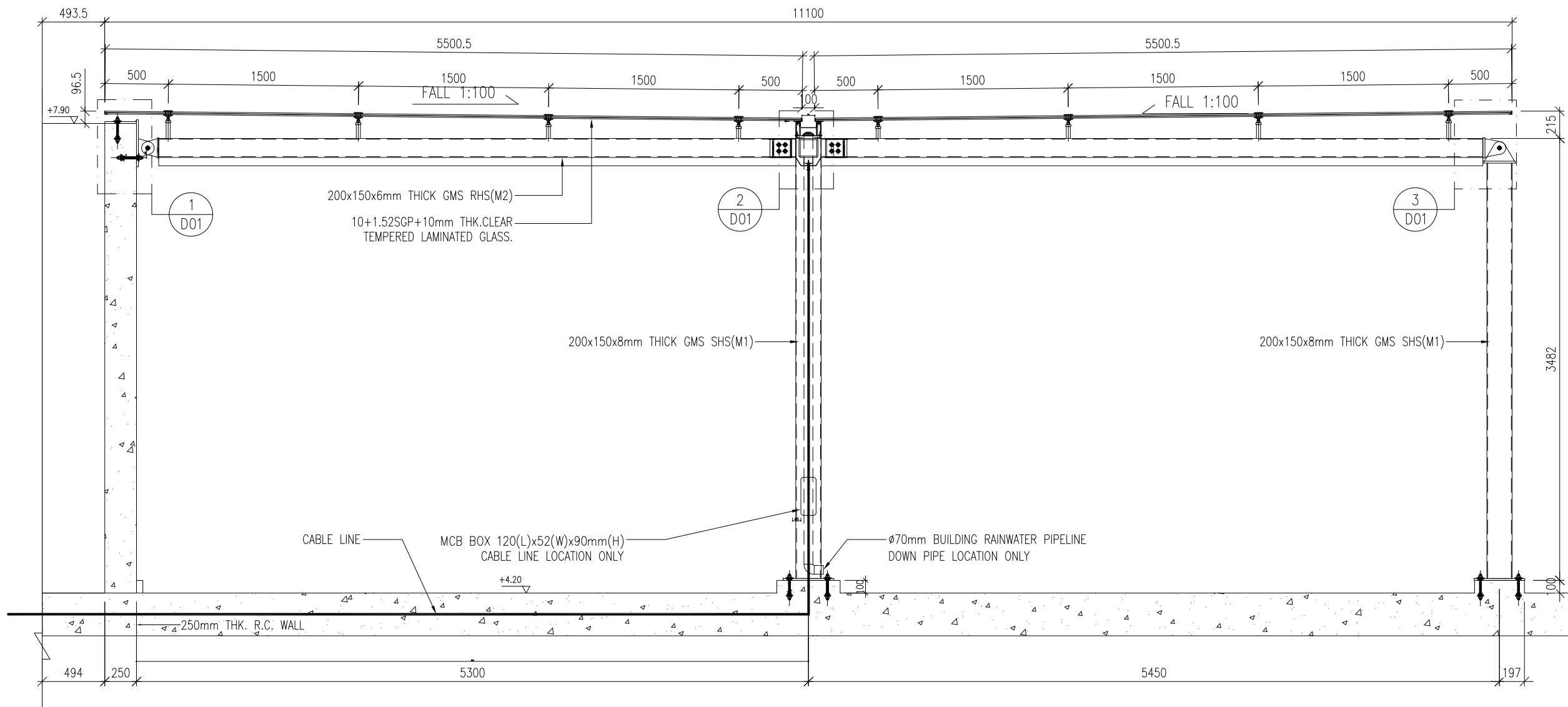
Drawing Date: 2021/01/25

Drawing: KP

Collate: Joyl

Auditing: Gray Hui

Drawing Version: 2



1 ELEVATION
EL01

Drawing Status :

Ref NO.:

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Job Title:
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TICKETING MACHINE

Drawing Name:
ELEVATION

Drawing NO.: QPBE20034-EL01

Drawing Scale: AS SHOW

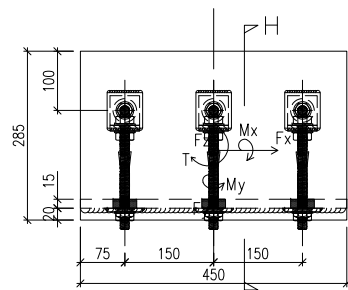
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Drawing: KP

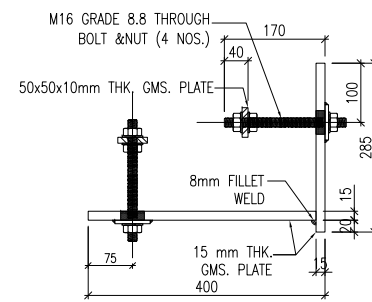
Collate: Joyl

Auditing: Gray Hui

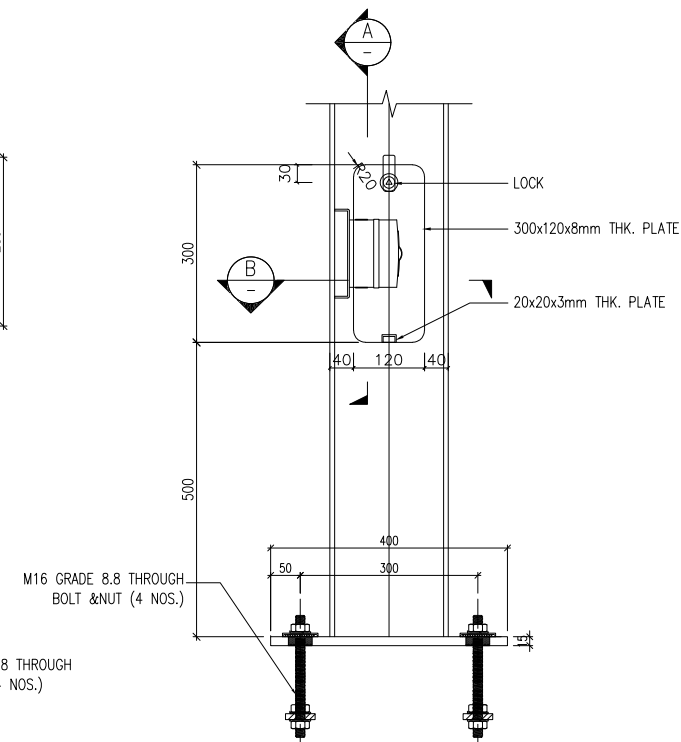
Drawing Version: 2



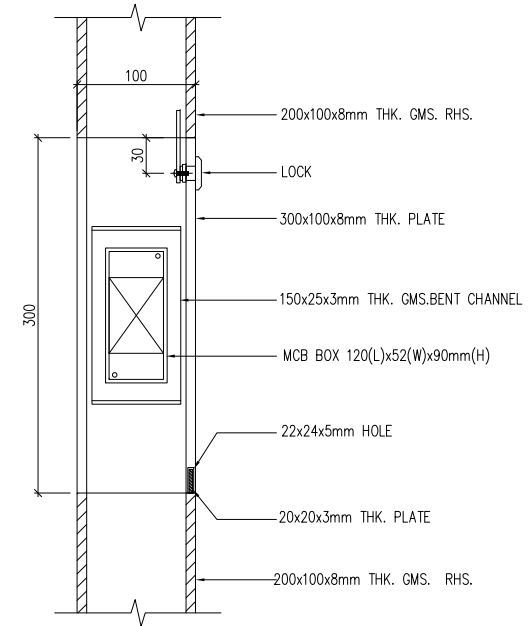
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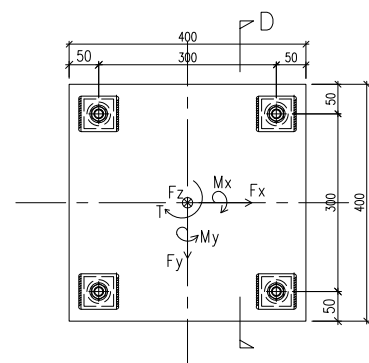
SECTION H-H



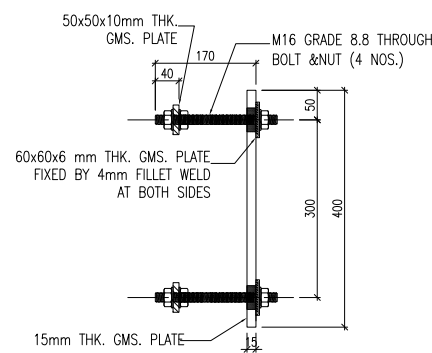
DETAIL FOR MCB BOX



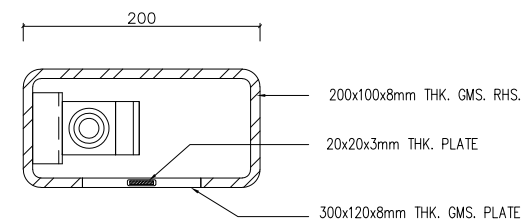
SECTION A-A



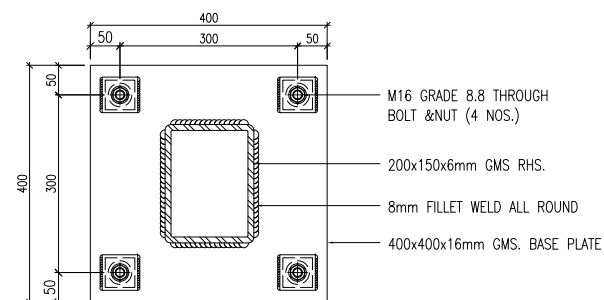
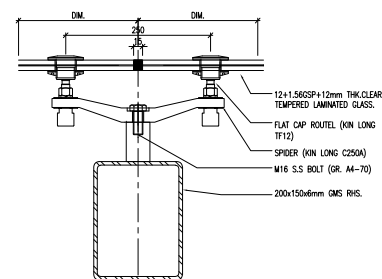
CAST IN BOLT PATTERN "TYPE ME1"



SECTION D-D



SECTION B-B



Drawing Status :

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Drawing NO.: QPBE20034-EM01

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Drawing Date: 2021/01/25

Drawing: KP

Collate: Joyl

Auditing: Gray Hui

Drawing Version: 2