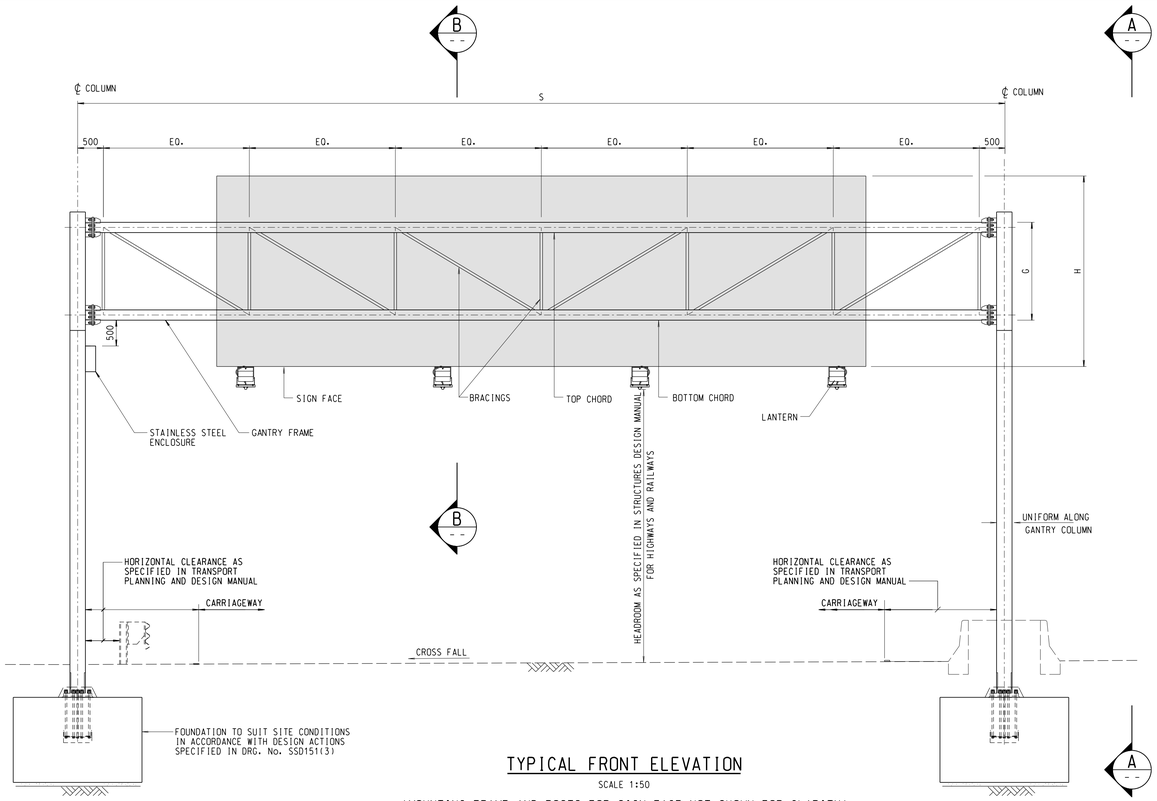
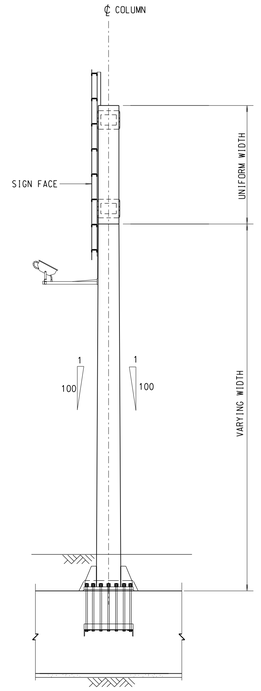


TYPICAL FRONT ELEVATION

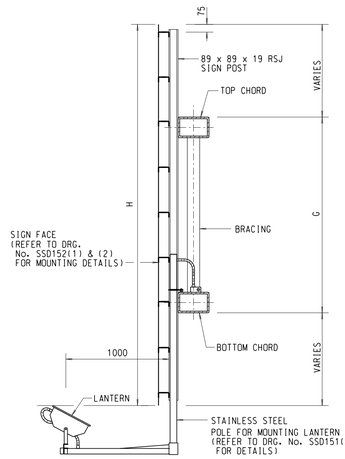
SCALE 1:50

(MOUNTING FRAME AND POSTS FOR SIGN FACE NOT SHOWN FOR CLARITY)



ELEVATION A

SCALE 1:50



SECTION B

SCALE 1:25

15. WHERE MEMBERS ARE TOO LARGE FOR AVAILABLE GALVANIZING BATHS, SUB-ASSEMBLIES SHALL BE PREPARED AS ABOVE AND SUBSEQUENTLY WELDED JOINTS SHALL BE ZINC SPRAYED IN ACCORDANCE WITH BS EN ISO 2063 TO A MINIMUM THICKNESS OF 0.2mm. TWO COATS OF GOOD QUALITY ZINC-RICH PAINT COMPLYING WITH BS 4652 SHALL THEN BE APPLIED ACROSS THE ENTIRE ZINC SPRAYED AREAS INCLUDING AT LEAST 25mm OF THE PARENT GALVANIZED COATING, OR AT THE DISCRETION OF THE ENGINEER, BY THE USE OF LOW MELTING POINT ZINC ALLOY REPAIR RODS MADE SPECIFICALLY FOR THIS PURPOSE RESULTING IN A MINIMUM COATING THICKNESS OF 0.2mm. ANY DAMAGE OF GALVANIZED COATINGS SHALL BE MADE GOOD IN A SIMILAR WAY TO THE TREATMENT OF WELDED JOINTS.
16. BEFORE FABRICATION OF THE STEELWORK, THE CONTRACTOR SHALL SUBMIT A FULL-SET OF WORKSHOP DRAWINGS, TOGETHER WITH DETAILS OF HIS PROPOSED METHOD OF HANDLING, TRANSPORTATION AND ERECTION TO THE ENGINEER FOR HIS APPROVAL.
17. UNLESS OTHERWISE STATED, FASTENERS FOR BOLT CONNECTIONS BETWEEN STEELWORK SHALL BE ISO METRIC PRECISION HEXAGONAL BOLTS AND NUTS TO BS 3692 WITH COMPATIBLE WASHERS. EACH FASTENER SHALL BE COMPLETED WITH EITHER A LOCKING NUT OR SPRING WASHER. THE STRENGTH GRADE OF THE BOLTS SHALL BE 8.8.
18. UNLESS OTHERWISE STATED, FASTENERS FOR HOLDING DOWN AND FIXING ARRANGEMENTS OF SIGN GANTRIES AND FOR ALUMINIUM COMPONENTS SHALL BE GRADE A4-80 STAINLESS STEEL BOLTS AND NUTS TO BS EN ISO 3506-1 AND BS EN ISO 3506-2, WITH COMPATIBLE STAINLESS STEEL WASHERS. NYLON OR OTHER APPROVED NON-METALLIC WASHERS SHALL BE PROVIDED BETWEEN THE SURFACES OF ANY DIFFERENT METALS SUCH AS ALUMINIUM ALLOY, STAINLESS STEEL AND GALVANIZED STEEL.
19. UNLESS OTHERWISE STATED, DIAMETER OF BOLT HOLES SHALL BE AS FOLLOWS:
    2mm LARGER THAN THE NOMINAL DIAMETER OF THE BOLT DIAMETER FOR BOLTS WITH NOMINAL DIAMETER < 27mm;
    3mm LARGER THAN THE NOMINAL DIAMETER OF THE BOLT DIAMETER FOR BOLTS WITH NOMINAL DIAMETER ≥ 27mm.
20. MATERIAL AND WORKMANSHIP SHALL COMPLY WITH BS 5400: PART 6.
21. THE STEELWORK SHALL BE PAINTED IN COLOURS AS SPECIFIED BY THE ENGINEER, WITH PAINT SYSTEMS COMPLYING WITH THE REQUIREMENTS STIPULATED IN CLAUSE 16.4 OF THE STRUCTURES DESIGN MANUAL FOR HIGHWAYS AND RAILWAYS.
22. THE STEEL SURFACE TO BE PAINTED SHALL BE THOROUGHLY CLEANED AND PREPARED, FREE FROM GREASE, DIRT, SCALE AND RUST, AND OTHER SURFACE CONTAMINANTS INCLUDING MILL SCALE AND SLAG. THE CONTRACTOR SHALL SUBMIT THE PROPOSED METHOD STATEMENT FOR STEEL SURFACE PREPARATION WORKS TO THE ENGINEER FOR APPROVAL PRIOR TO THE COMMENCEMENT OF PAINTING WORKS.
23. THE CONTRACTOR SHALL DESIGN AND MAKE NECESSARY PRECAMBER TO THE SIGN GANTRY TO ENSURE THAT IT IS CONSTRUCTED TO THE REQUIRED LEVEL OR ALIGNMENT.
24. CONCRETE GRADE, UNLESS OTHERWISE STATED, SHALL BE AS FOLLOWS :
    40/20D FOR ALL CONCRETE EXCEPT BLINDING LAYER
    10/20D FOR BLINDING LAYER
25. THE DIRECTIONAL SIGN FACES SHALL BE PLACED IN THE POSITIONS SUCH THAT THE VERTICAL ARROW MARKS OF THE SIGNS SHALL PROJECT IN LINE WITH THE CENTRE LINE OF THE FINAL TRAFFIC LANE.
26. AFTER ERECTION OF GANTRY COLUMN TO FOUNDATION, 2 COATS OF BITUMINOUS PAINT OF MINIMUM 50um SHALL BE APPLIED AROUND THE SECTION OF GANTRY COLUMN BASE IN CONTACT WITH SOIL UP TO 150mm ABOVE GROUND SURFACE/THE TOP OF CONCRETE PROFILE BARRIER ACCOMMODATING THE COLUMN. THE BITUMINOUS PAINT SHALL CONFORM TO CLAUSE 20.03 OF THE LATEST EDITION OF GENERAL SPECIFICATIONS FOR CIVIL ENGINEERING WORKS.
27. FINISHED GROUND SURFACE AROUND GANTRY COLUMN SHALL BE MADE TO MINIMUM 0.5% FALL OUTWARD.
28. FOR THE FIXING DETAILS OF LANTERNS, REFER TO DRG. NO. SSD151(4).

NOTES:

1. THE WORKS SHALL COMPLY WITH THE LATEST EDITION OF GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORKS, UNLESS OTHERWISE SPECIFIED.
2. THE STRUCTURAL DESIGN OF THE GANTRY IS BASED ON THE STRUCTURES DESIGN MANUAL FOR HIGHWAYS AND RAILWAYS (2013) WITH A WIND PRESSURE OF 2.8kN/m².
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. ALL STRUCTURAL STEEL SECTIONS SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS AS APPROPRIATE: -

BS EN 10210-2	FOR HOLLOW SECTIONS
BS 4-1 & BS EN 10034	FOR I- SECTIONS
BS 4-1	FOR ROLLED STEEL JOIST
BS EN 10056-1&2	FOR ANGLES
BS EN 10029 CLASS A	FOR STEEL PLATES

5. ALL STRUCTURAL STEEL SECTIONS SHALL BE HOT ROLLED OR HOT FINISHED. COLD FORMED OR HEAT TREATED SECTIONS SHALL NOT BE ACCEPTED UNLESS OTHERWISE SPECIFIED.
6. ALL STEELWORK GRADE, UNLESS OTHERWISE STATED, SHALL BE: -
   S355J0H TO BS EN 10210 FOR HOLLOW SECTIONS
   S355J0 TO BS EN 10025 FOR OTHER SECTIONS AND PLATES.
7. WELDING SHALL COMPLY WITH THE REQUIREMENTS OF BS EN 1011. WELDING CONSUMABLES SHALL COMPLY WITH BS EN 13479 AND THE APPROPRIATE PRODUCT STANDARDS LISTED IN TABLE 5 OF BS EN 1090-2. ELECTRODES FOR WELDING SHALL BE COMPATIBLE WITH, AND HAVE MINIMUM YIELD STRENGTH, MINIMUM TENSILE STRENGTH, MINIMUM ELONGATION AND CHARPY ENERGY VALUE EQUAL TO OR BETTER THAN THE CORRESPONDING VALUES SPECIFIED FOR THE STEELWORK TO BE WELDED.
8. WELDING SYMBOLS ARE IN ACCORDANCE WITH SYSTEM 'A' OF BS EN ISO 2553.
9. FILLET WELDS SHALL BE OF MINIMUM 6mm LEG LENGTH UNLESS OTHERWISE SPECIFIED.
10. ALL CONNECTIONS SHALL BE FULL STRENGTH BUTT WELDS UNLESS OTHERWISE STATED. BUTT WELDS SHALL BE FULL PENETRATION WELDS PRODUCED BY METHODS APPROVED BY THE ENGINEER UPON SATISFACTORY COMPLETION OF PROCEDURE TRIALS.
11. SITE WELDS SHALL BE KEPT TO A MINIMUM AND SHALL ONLY BE PERMITTED WITH THE PRIOR WRITTEN APPROVAL BY THE ENGINEER.
12. WIRE WOOL AND WIRE BRUSHES USED TO CLEAN SURFACES BOTH BEFORE AND AFTER WELDING SHALL BE STAINLESS STEEL. ALL EXPOSED BUTT JOINTS SHALL BE GROUND SMOOTH AND BUFFED. THE DIRECTION OF GRINDING SHALL FOLLOW THE GRAIN PATTERN.
13. ALL STEEL COMPONENTS SHALL BE HOT-DIP GALVANIZED TO BS EN ISO 1461 AFTER FABRICATION BY SPECIALIST CONTRACTOR IN THE "CLASS V: HOT DIP GALVANIZING" OF THE "SPECIALIZED OPERATIONS FOR HIGHWAY STRUCTURES" CATEGORY OF THE LIST OF APPROVED SUPPLIERS OF MATERIALS AND SPECIALIST CONTRACTORS FOR PUBLIC WORKS.
14. POSITION OF GALVANIZING VENT HOLES SHALL BE AGREED WITH THE GALVANIZER AND SUBJECT TO THE APPROVAL BY THE ENGINEER.

TABLE II - SIGN PLATE ARRANGEMENT ON GANTRY

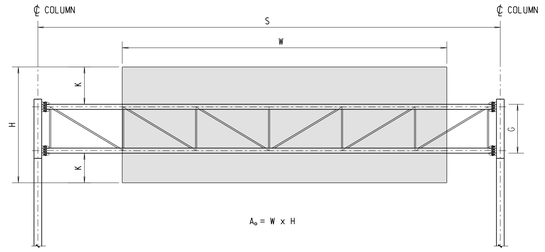
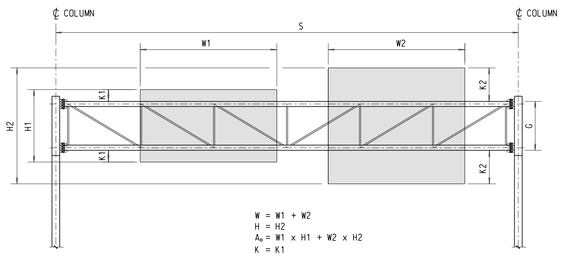
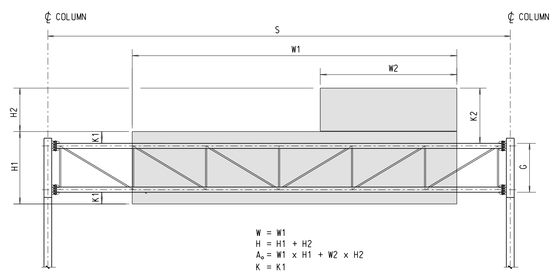
SIGN FACE ARRANGEMENT	DESCRIPTIONS	REMARKS
	SINGLE SIGN FACE SIGN FACE IS PLACED IN SUCH WAY THAT ITS HORIZONTAL CENTRELINE COINCIDES WITH THAT OF THE GANTRY FRAME. NOTE : K ≤ 1300	S IS THE SPAN LENGTH H IS THE LARGEST PROJECTED HEIGHT OF SIGN FACES W IS THE TOTAL PROJECTED LENGTH OF SIGN FACES AND SHALL BE LESS THAN (S-2)m A_p IS THE TOTAL AREA OF SIGN FACES K IS THE PROJECTION OF SIGN FACES ABOVE OR BELOW GANTRY FRAME G IS THE DEPTH OF GANTRY FRAME WHERE G = 1900 FOR K > 150 G < 1900 FOR K = 150
	MULTIPLE SIGN FACES (SINGLE LAYER) EACH SEPARATE SIGN FACE IS PLACED IN SUCH WAY THAT ITS HORIZONTAL CENTRELINE COINCIDES WITH THAT OF THE GANTRY FRAME. NOTE : K1 , K2 ≤ 1300	
	MULTIPLE SIGN FACES (MULTIPLE LAYERS) EACH BOTTOM SIGN FACE IS PLACED IN SUCH WAY THAT ITS HORIZONTAL CENTRELINE COINCIDES WITH THAT OF THE GANTRY FRAME. TOP SIGN FACES ARE PLACED DIRECTLY ABOVE BOTTOM SIGN FACES. NOTE : K2 ≤ 2650	

TABLE I - GANTRY TYPE SCHEDULE

GANTRY SPAN (S) (m)	GANTRY TYPE					
	H ≤ 2.8 m	2.8 m < H ≤ 3.7 m			3.7m < H ≤ 4.5m	
		$A_p \leq 20.0m^2$	$20.0m^2 < A_p \leq 33.5m^2$	$33.5m^2 < A_p \leq 47.0m^2$	$A_p \leq 24.0m^2$	$24.0m^2 < A_p \leq 40.5m^2$
S ≤ 12	A	A	B	D	B	D
12 < S ≤ 14	B	B	C	D	C	D
14 < S ≤ 16	C	C	C	D	C	D
16 < S ≤ 18	D	D	D	D	D	D

ABBREVIATIONS

℄	CENTRE-LINE	R	RADIUS
C/C	CENTRE TO CENTRE	RHS	RECTANGULAR HOLLOW SECTION
DIA	DIAMETER	RSJ	ROLLED STEEL JOIST
DRG.	DRAWING	SHS	SQUARE HOLLOW SECTION
EQ.	EQUAL	SS	STAINLESS STEEL
MAX	MAXIMUM	THK	THICK
MIN	MINIMUM	<	LESS THAN
No.	NUMBER	≤	LESS THAN OR EQUAL TO
Nos.	NUMBERS		

no.	date	description	initial
A	08/17	DRAWING NOTES REVISED; GENERAL REVISION	SIGNED C.P. WONG, E/P2-3 SIGNED P.T. LEUNG, SE/P2

REVISION

		name	signature	date
	designed	K.K. LEE	SIGNED	NOV 01
	drawn	T.M. LEE	SIGNED	NOV 01
checked	senior technical officer	P.S. CHAN	SIGNED	SEP 02
checked	project engineer	K.K. LEE	SIGNED	SEP 02
checked	senior engineer	W.C. CHAN	SIGNED	SEP 02

approved

SIGNED — SEP 2002
R.K.W. WONG — date
Chief Highway Engineer

contract no.

file no.

project no.

contract

drawing title

SIGN GANTRY

SHEET 1 OF 4

drawing no. SSD151(1)-A

scale AS SHOWN

office
BRIDGES AND STRUCTURES DIVISION 結構橋樑部

HIGHWAYS DEPARTMENT HONG KONG 香港路政署

Scale 1 : 1 — 0 10 20 30 40 50 60 70 80 90 100mm

A1 SIZE 1000 X 707mm