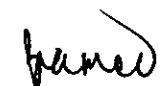


REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
BUREAU OF DESIGN
BRIDGES DIVISION
MANILA

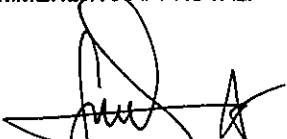
STANDARD MULTI SPAN REINFORCED CONCRETE DECK GIRDER (RCDG) BRIDGES

BOD SET NO. 2018-5 BrD

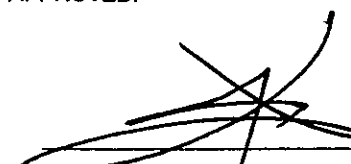
SUBMITTED:


BLESILDA S. RAMOS
OIC - CHIEF, BRIDGES DIVISION
DATE:

RECOMMENDING APPROVAL:

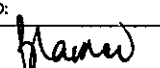

LEA N. DELFINADO, CESO IV
DIRECTOR IV, BUREAU OF DESIGN
DATE: MAR 25 2019

APPROVED:


EMIL K. SADAIN, CESO I
UNDERSECRETARY FOR UPMO
OPERATION AND TECHNICAL SERVICES
DATE:

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 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE:	SHEET CONTENTS:	DESIGNED: <u>RENA S. RAINIER M. VITORIO</u> ENGINEER CHECKED: <u>MA. ROSARIO V. VILLALAN</u> ENGINEER CADD: <u>ROLANDO C. MEDIANTE</u> ENGINEER	SUBMITTED: <u>Blasilda S. Ramos</u> OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	STANDARD MULTI SPAN RCDG SUPERSTRUCTURE	GENERAL INDEX OF DRAWING			SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	BOD 2018-5 BrD	

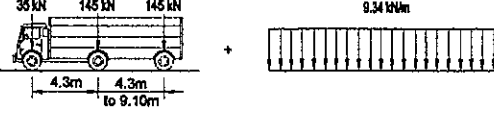
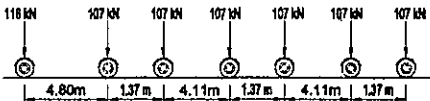
15m MULTIPLE SPAN RCDG

GENERAL NOTES

GENERAL

- IN THE INTERPRETATION OF DRAWINGS, INDICATED DIMENSIONS SHALL GOVERN. ALL DIMENSIONS, DISTANCES AND SIZES SHALL NOT BE SCALED FOR CONSTRUCTION PURPOSES.
- UNLESS OTHERWISE INDICATED, ALL DIMENSIONS AND MEMBER SIZES ARE IN MILLIMETERS.
- STATIONINGS ARE IN KILOMETERS + METERS. ELEVATIONS ARE IN METERS.

DESIGN CRITERIA

- DESIGN SPECIFICATION
 - DPWH DESIGN GUIDELINES CRITERIA AND STANDARDS (DGCS), 2015 EDITION, VOLUME 5 - BRIDGE DESIGN.
- LOADINGS
 - DEAD LOAD: WEIGHT OF THE STRUCTURE AND AN ALLOWANCE OF 1.10 kPa FOR FUTURE BITUMINOUS WEARING COURSE.
 - LIVE LOAD: HL - 93
 - DESIGN TRUCK AND DESIGN LANE LOAD:
 
 - DESIGN TANDUM AND DESIGN LANE LOAD:
 
 - PERMIT DESIGN LIVE LOAD: CALTRANS P-7 (SPECIAL PERMIT REQUIRED BEFORE PASSING THE BRIDGE)
 
- DYNAMIC LOAD ALLOWANCE (TABLE 10.8-1): IN ACCORDANCE WITH DGCS, VOLUME 5 - BRIDGE DESIGN
- PEDESTRIAN LOADS: 3.60 kPa
- SEISMIC LOAD: IN ACCORDANCE WITH DPWH- LRFD BRIDGE SEISMIC DESIGN SPECIFICATIONS (BSDS) 1st EDITION, 2013
- OTHER LOADING IN ACCORDANCE WITH DGCS, VOLUME 5 - BRIDGE DESIGN

MATERIALS

1. CONCRETE

UNLESS OTHERWISE INDICATED, THE CONCRETE CLASS AND STRENGTH SHALL BE AS FOLLOWS:

STRUCTURAL MEMBER	CLASS	28-DAY CYLINDER STRENGTH		MAX. SIZE OF COARSE AGGREGATE (mm)
		MPa	psi	
CAST-IN-PLACE GIRDERS, SLAB, DIAPHRAGMS, WINGWALLS, BACKWALLS, COPING, COLUMNS & FOOTINGS	A	27.58	4000	20
PRECAST R.C. PILE	C	27.58	4000	25
THIN REINFORCED SECTIONS RAILING AND RAILPOST	C	27.58	4000	12
LEAN CONCRETE	B	16.50	2400	38

2. REINFORCEMENT STEEL

- REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO AASHTO M31 (ASTM A615), WITH MINIMUM YIELD STRENGTH AS FOLLOWS:
 $F_y = 414 \text{ MPa (Gr.60)}$ FOR 16mm AND LARGER
 $F_y = 276 \text{ MPa (Gr.40)}$ FOR 12mm AND SMALLER
- REINFORCING STEEL BARS SHALL BE FREE OF MILL SCALES, OIL OR ANY SUBSTANCE WHICH WILL WEAKEN THE BOND WITH CONCRETE.

CONSTRUCTION

1. SPECIFICATION

STANDARD SPECIFICATIONS, 2013 EDITION VOLUME II - HIGHWAYS, BRIDGES AND AIRPORTS

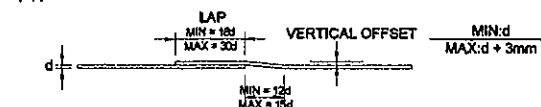
2. SETTING OUT

THE SETTING OUT AND THE ELEVATIONS OF THE DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE START OF ANY CONSTRUCTION WORK.

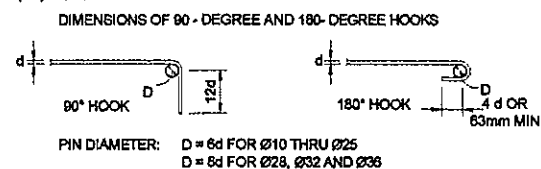
3. REINFORCED CONCRETE

- CONCRETE MIX AND PLACING
 - DESIGN OF CONCRETE MIX SHALL MEET THE DESIGN CONCRETE STRENGTH GIVEN UNDER ITEM 1 OF MATERIALS.
 - CONCRETE SHALL BE DEPOSITED, VIBRATED AND CURED IN ACCORDANCE WITH THE SPECIFICATIONS.
 - FOR CONCRETE DEPOSITED AGAINST THE GROUND, LEAN CONCRETE WITH A MINIMUM THICKNESS OF 50mm SHALL LAID FIRST BEFORE INSTALLING THE REINFORCEMENT. THE LEAN CONCRETE SHALL NOT BE CONSIDERED IN MEASURING THE STRUCTURAL DEPTH OF CONCRETE SECTION.
 - THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL PLACING SEQUENCES FOR ALL CONCRETING WORKS.
- BAR BENDING, SPLICING AND PLACING
 - SHOP DRAWINGS OF ALL REINFORCING BARS INDICATING THE BENDING, CUTTING, SPLICING AND INSTALLATION SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
 - BARS SHALL BE BENT COLD. BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS PERMITTED BY THE ENGINEER.
 - BAR SPLICING NOT INDICATED ON DRAWINGS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
 - WELDED SPLICES, IF APPROVED BY THE ENGINEER, SHALL DEVELOP IN TENSION AT LEAST 125% OF THE SPECIFIED YIELD STRENGTH OF THE BARS.
 - NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION SHALL BE SPLICED.
 - UNLESS OTHERWISE SHOWN ON DRAWINGS, THE CLEAR DISTANCE BETWEEN PARALLEL BARS IN A LAYER SHALL NOT BE LESS THAN 1.5 TIMES THE NOMINAL DIAMETER OF THE BAR NOR LESS THAN 1.5 TIMES THE MAXIMUM SIZE OF COARSE AGGREGATE. THE CLEAR DISTANCE BETWEEN LAYERS SHALL NOT BE LESS THAN 25mm NOR ONE BAR DIAMETER. THE BARS IN THE UPPER LAYER SHALL BE PLACED DIRECTLY ABOVE THOSE IN THE BOTTOM LAYER.

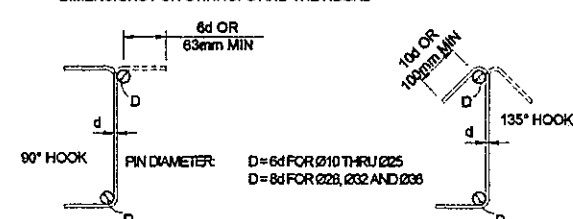
(b.7) CRANKED SPLICES



(b.8) HOOKS AND BENDS



DIMENSIONS FOR STIRRUPS AND THE HOOKS



- CONCRETE COVER TO REINFORCEMENT UNLESS OTHERWISE INDICATED, CONCRETE COVER TO REINFORCEMENT SHALL BE AS FOLLOWS:

STRUCTURAL MEMBER	CLEAR COVER (mm)
GIRDERS & DIAPHRAGMS TOP OF SLAB	50
COLUMNS / SHAFT, FOOTINGS & WINGWALLS	75
BOTTOM OF SLAB & RAILINGS	25
RC PILES	AS SHOWN

d.) CONSTRUCTION JOINT

- THE POSITION AND FORM OF ANY CONSTRUCTION JOINT SHALL BE AS SHOWN ON DRAWINGS OR AS AGREED WITH THE ENGINEER.
- THE INTERFACE BETWEEN THE FIRST AND SECOND POUR CONCRETES SHALL BE ROUGHENED WITH AN AMPLITUDE OF 6mm MINIMUM.

e. FALSEWORK

ALL FALSEWORK SHALL BE DESIGNED BY THE CONTRACTOR SUBJECT TO THE APPROVAL BY THE ENGINEER.

f. FORMWORKS

FORMWORKS SHALL BE CONSTRUCTED SUCH THAT IT WILL NOT YIELD UNDER THE LOAD AND SHALL BE SUCH AS TO AVOID THE FORMATION OF FINS. ALL CORNERS OF CONCRETE MEMBERS SHALL BE CHAMFERED 20mm UNLESS NOTED OTHERWISE ON DRAWINGS. STRIPPING OF FORMS AND SHORES SHALL BE AS DESIGNATED BY THE ENGINEER. THE FOLLOWING MAY BE USED AS A GUIDE:

	MIN. TIME
SHORING UNDER GIRDERS, BEAMS, FRAMES	14 DAYS
DECK SLABS	14 DAYS
WALLS	7 DAYS
COLUMNS / SHAFT	7 DAYS
SIDES OF BEAMS AND ALL OTHER VERTICAL SURFACES	2 DAYS

g. PROTECTION AND CURING OF CONCRETE

CONCRETE SURFACES SHALL BE PROTECTED FROM HARMFUL EFFECTS OF SUN, WIND AND RUNNING WATERS AND SHALL BE KEPT DAMP FOR AT LEAST 7 DAYS.

4. SHORING

CAMBER FOR REINFORCED CONCRETE SUPERSTRUCTURES WERE DETERMINED BASED ON THE USE OF SHORING DURING CONSTRUCTION.

5. EMBANKMENT CONSTRUCTION SEQUENCE

APPROACH EMBANKMENT SHALL BE CONSTRUCTED PRIOR TO DRIVING OF ABUTMENT PILES.

SYMBOLS

LINE OF SYMMETRY OR SIMILARITY

NORTH ARROW

INDICATION OF ELEVATION

LIMITS OF DIMENSION

SECTION IN WATER

SECTION IN EARTH

SECTION IN STRUCTURAL STEEL

SECTION IN CONCRETE

SECTION IN EXISTING CONCRETE STRUCTURE

ELASTOMERIC BEARING PAD

BITUMINOUS WEARING SURFACE ON BRIDGES

PLAN VIEW AND ELEVATION OF CUT & FILL SLOPES

PLAN VIEW OF SLOPE PROTECTION

PLAN VIEW OF GROUDED RIPRAP ON SLOPE

BUNDLED BARS

SET NO. BUREAU OF DESIGN

YEAR-DWG SET NO. BRIDGES DIVISION

SHEET CONTENT STANDARD CODE (SPAN LENGTH)

PAGE No. TOTAL NO. OF SHEET

TITLE TARGET

DRAWING NO. STANDARD CODE (SPAN LENGTH)

SECTION LINE

DRAWING NO. STANDARD CODE (SPAN LENGTH)

ROUND

SQUARE

AT

AND

CENTERLINE

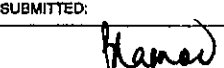
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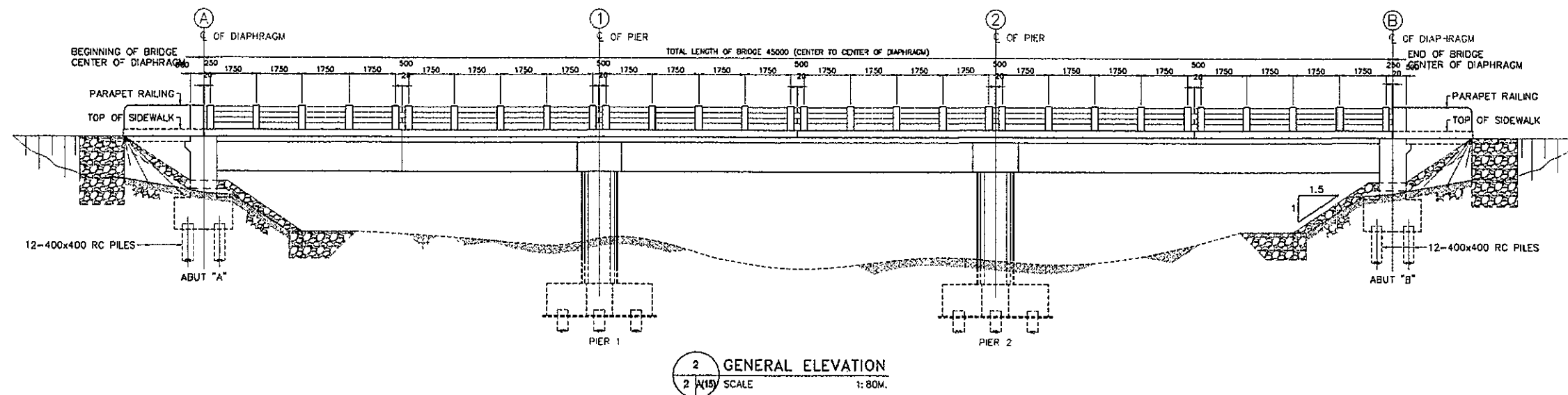
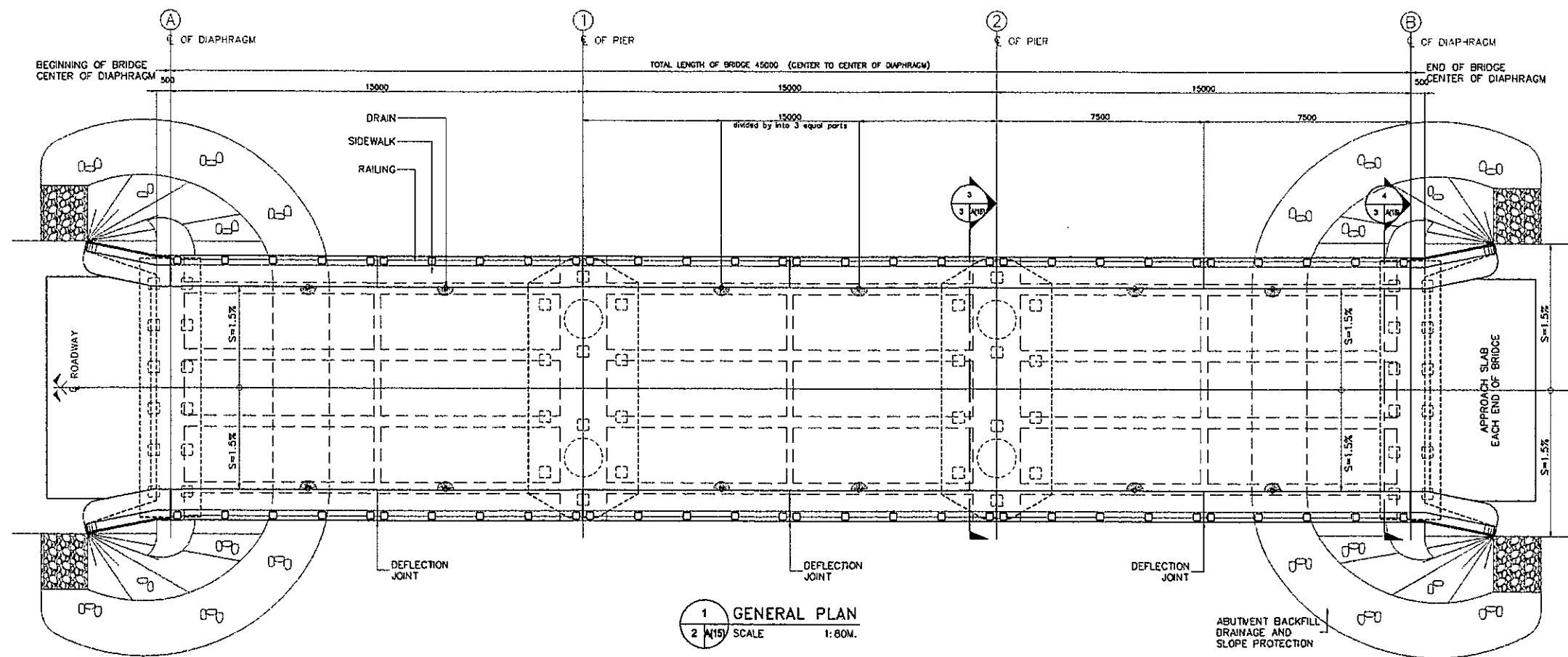
ANGLE SHAPE

C/C, C to C CENTER TO CENTER

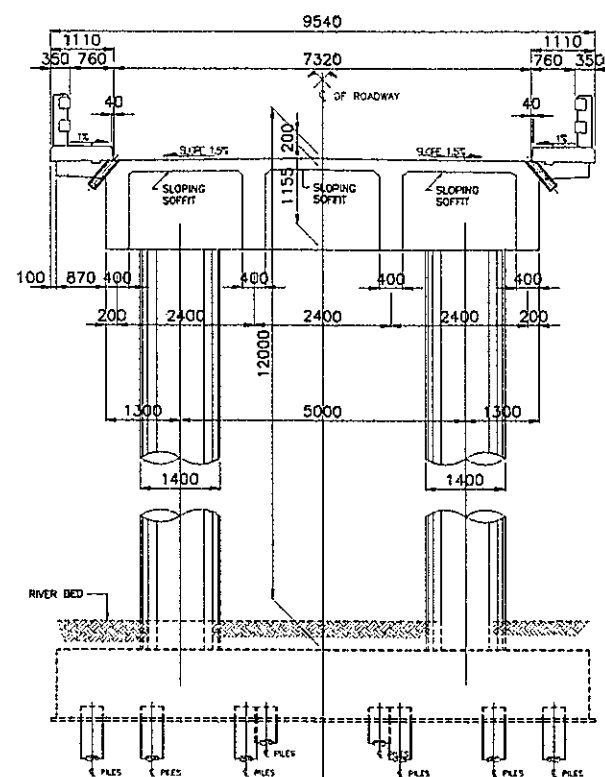
ABBREVIATIONS

ABT	ABOUT	kPa	KILOPASCAL
ABUT	ABUTMENT	m	METER
BEG	BEGINNING	mm	MILLIMETER
BET	BETWEEN	MAX	MAXIMUM
BOTT	BOTTOM	MFVL	MAX. FLOOD WATER LEVEL
BR	BRIDGE	MIN	MINIMUM
BRG	BEARING	MO	MIDDLE ORIGINATE
CLR	CLEAR	MPa	MEGAPASCAL
cm	CENTIMETER	N	NEWTON
COLE	COLUMN	NF	NEAR FACE
CONC	CONCRETE	No.	NUMBER
CONST	CONSTRUCTION	O.C.	ON CENTERS
CONT	CONTINUOUS	O.WL	ORDINARY WATER LEVEL
CTR	CENTER	PEJ	PREMOULDED EXPANSION JOINT
DET	DETAIL	PVC	POLYVINYL CHLORIDE
DIA	DIAMETER	PVI	POINT OF VERTICAL INTERSECTION
DIAPH	DIAPHRAGM	QTY	QUANTITY
DWG	DRAWING	R	RADIUS
EA	EACH	RC	REINFORCED CONCRETE
EF	EACH FACE	RDWY	ROADWAY
ELEV	ELEVATION	REINF	REINFORCEMENT
ENGR	ENGINEER	SDWK	SIDEWALK
EQ	EQUAL	SL	SLOPE
EW	EACHWAY	SP	SPIRAL
EXP	EXPANSION	SPCD	SPACES
EXT	EXTERIOR	SPCS	SPACES
EXIST	EXISTING	STD	STANDARD
FF	FAR FACE	STR	STIRRUP
FTG	FOOTING	STA	STATION
GEN	GENERAL	STRUCT	STRUCTURE
HOR	HORIZONTAL	SYMM	SYMMETRY
HW	HIGH WATER	THK	THICK
INT	INTERIOR	TYP	TYPICAL
INTERM	INTERMEDIATE	VAR	VARIABLE
JT	JOINT	VERT	VERTICAL
L	LENGTH	VOL	VOLUME
LG	LONG	W	WIDTH
KG	KILOGRAM	W	WIDTH
KN	KILONEWTON	&	AND

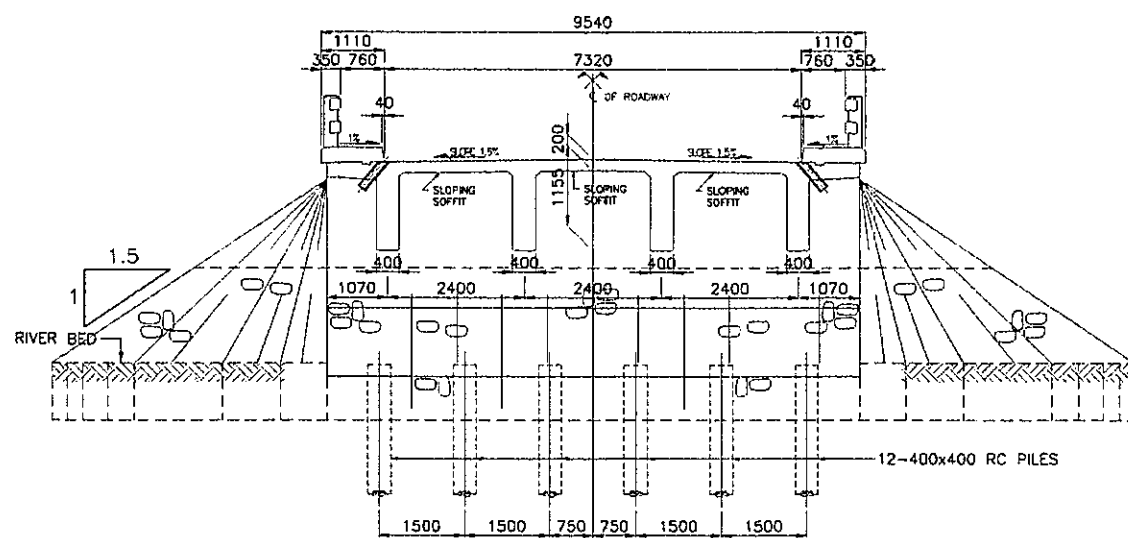
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	STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=15M	GENERAL NOTES, SYMBOLS AND ABBREVIATIONS	CHECKED: MA ROSARIO A. JARAMASAN	BLESIDLA S. RAMOS	SEE COVER SHEET	SEE COVER SHEET	BOD 2018-5 BrD	A(15)
			CADD: ROLANDO S. MEDIANTE	OIC-CHIEF, BRIDGES DIVISION	LEA N. DELFINADO, CESO IV	EMIL K. SADAIN, CESO I		
					DIRECTOR IV, BUREAU OF DESIGN	UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES		



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3 SECTION @ PIER
3 A(15) SCALE 1:60M.



4 SECTION @ ABUTMENT
3 A(15) SCALE 1:60M.

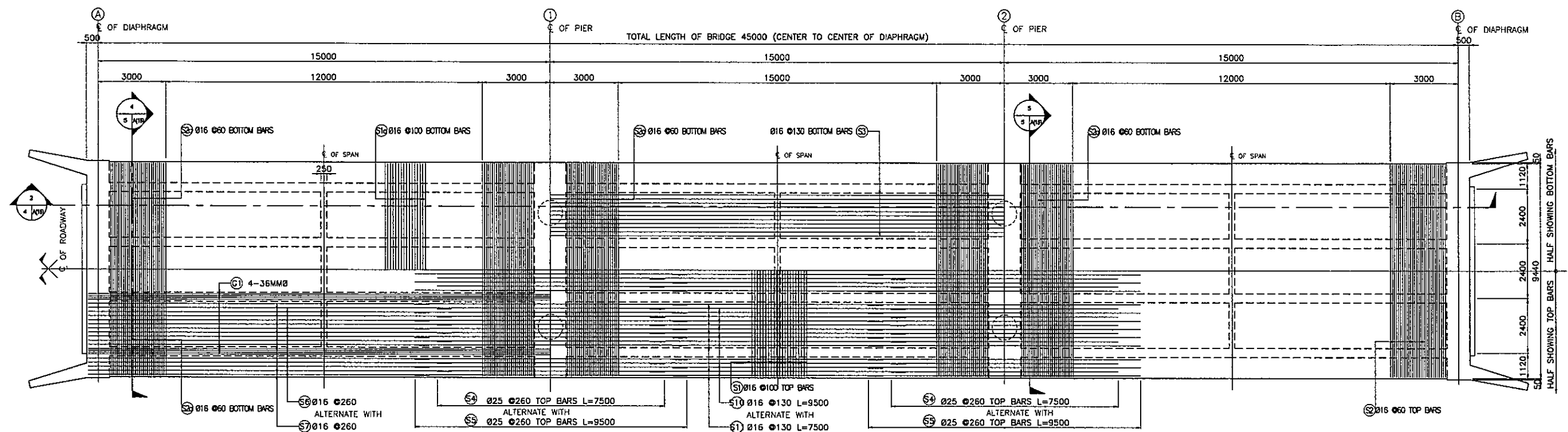
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	A (15) - 16/19	SIDEWALK DETAIL AND TYPICAL DRAIN DETAIL
	A (15) - 17/19	TYPICAL APPROACH SLAB DETAIL
	A (15) - 18/19	TYPICAL PRECAST CONCRETE PILE DETAIL
	A (15) - 19/19	ABUTMENT SLOPE PROTECTION AND DRAINAGE

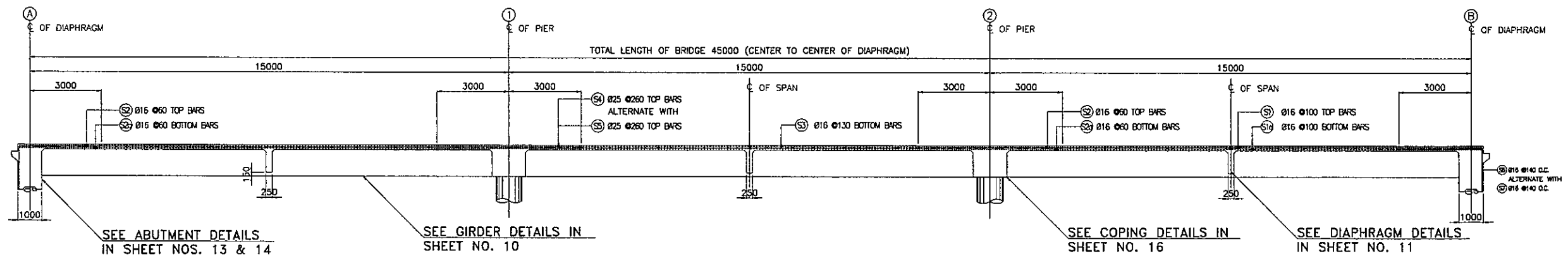
NOTES:

- THIS STANDARD PLAN IS FOR REFERENCE ONLY. STRUCTURAL ANALYSIS SHALL BE PREPARED BASED ON THE ACTUAL SURVEY, HYDRAULIC, HYDROLOGIC AND GEOTECHNICAL DATA ON THE PROJECT SITE.
- PROTECTION WORKS FOR ABUTMENTS SHALL BE DESIGNED BY THE ENGINEER/CONSULTANT. THE PROTECTION WORKS SHOWN HEREIN ARE FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL NOT BE CONSTRUED AS THE FINAL DETAILS. HOWEVER, SLOPE FOR EMBANKMENT PROTECTION WORKS SHALL BE 1.5:1 OR FLATTER.
- LENGTH OF REINFORCED CONCRETE PILES SHALL BE DETERMINED/DESIGNED BASED ON THE ACTUAL BORING DATA AT LOCATION OF FOUNDATION.

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BOHIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCBG SUPERSTRUCTURE L=15M	SHEET CONTENTS: SECTION @ PIER, SECTION @ ABUTMENT AND INDEX OF DRAWING & NOTES	DESIGNED: RENATO R. VICTORIO JEROME V. KATIGBAK	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
			CHECKED: MA. ROSARIO A. VASQUEZ ROLANDO C. MEDIANTE	BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	BOD 2018-5 BrD	A(15) 3/19

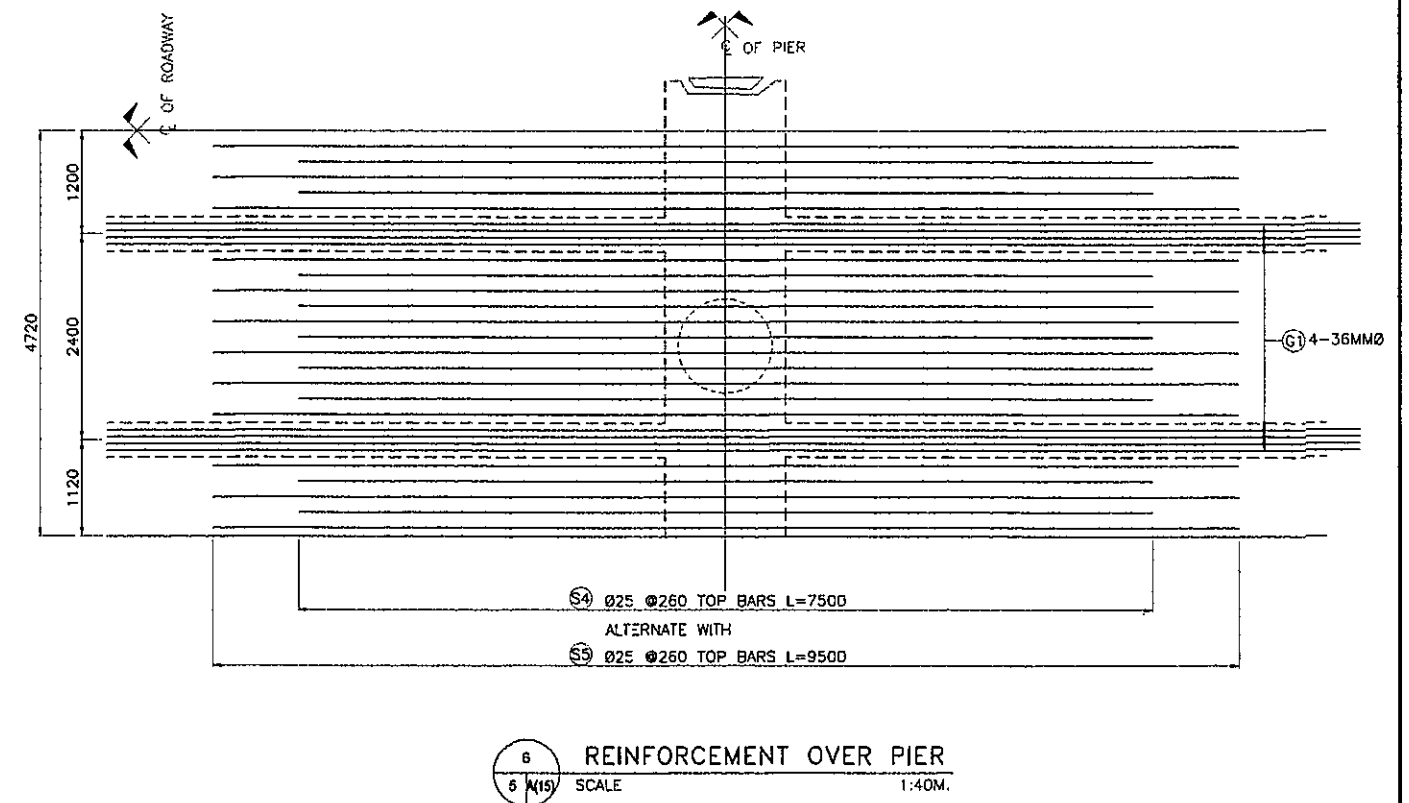
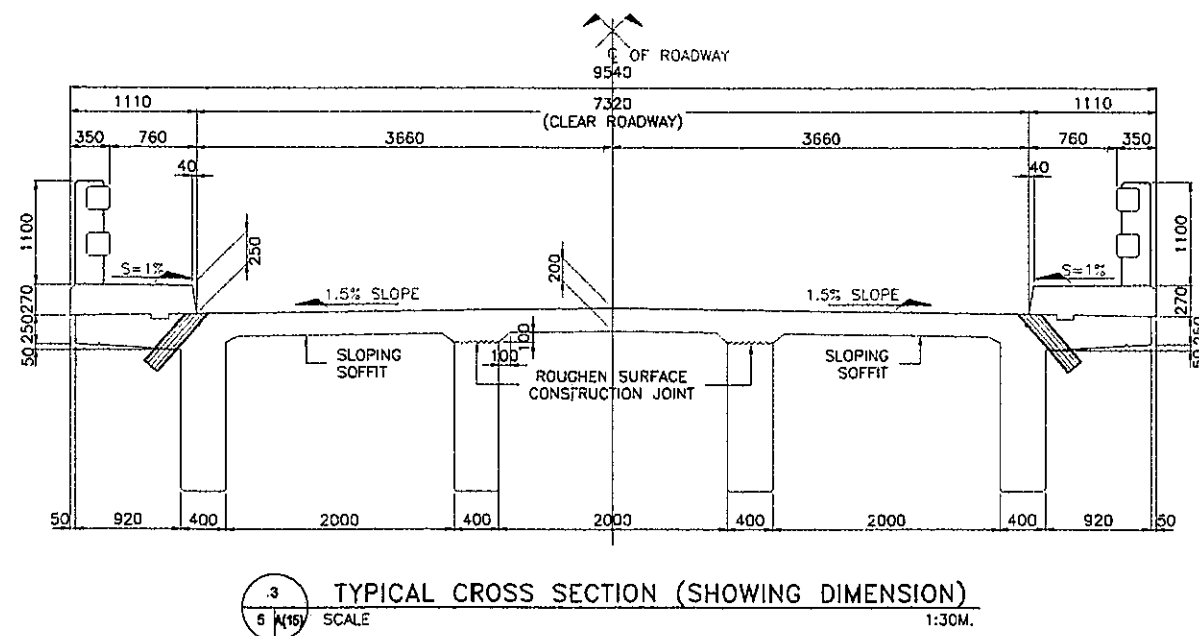
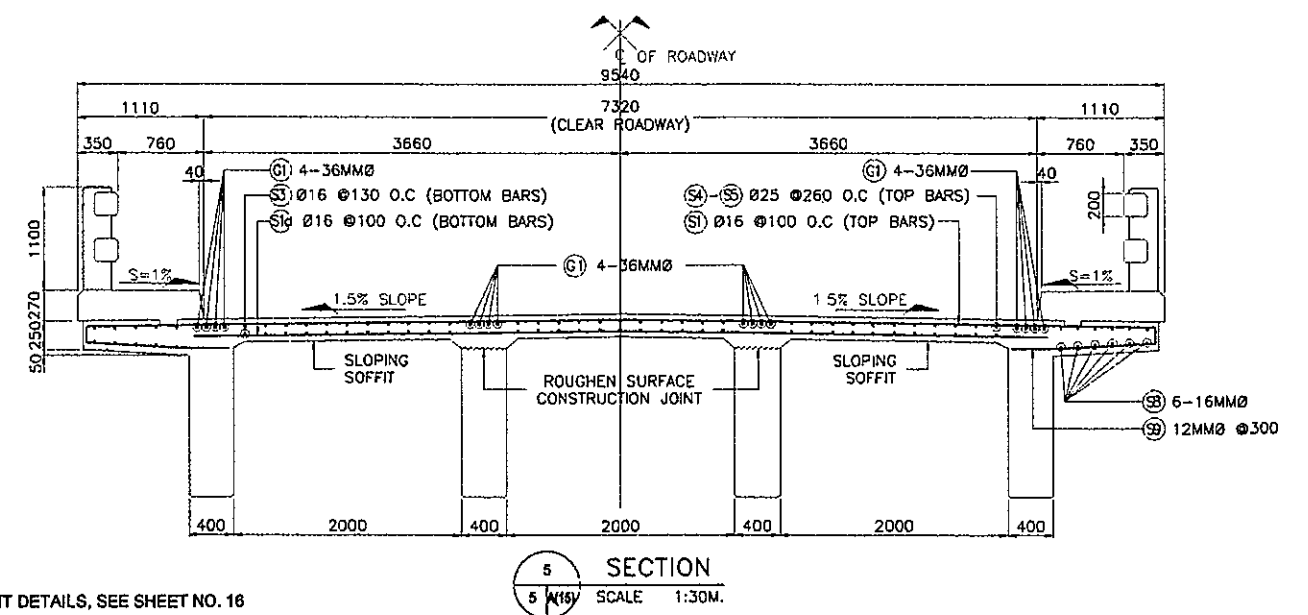
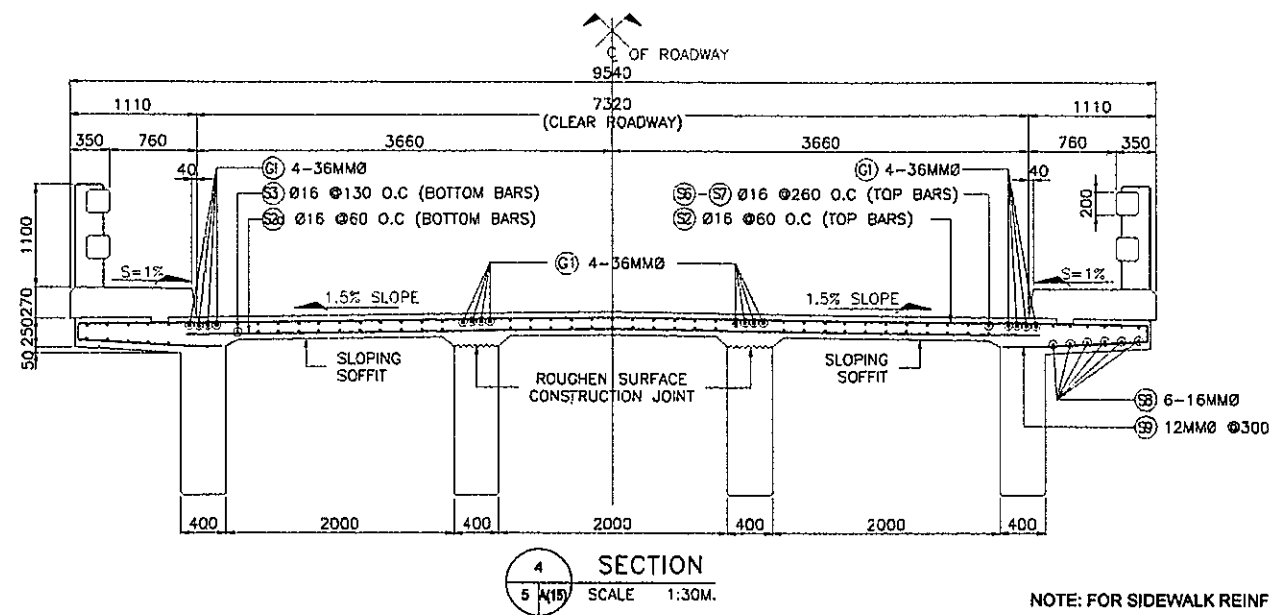


1 FRAMING PLAN
SCALE 1:90M.

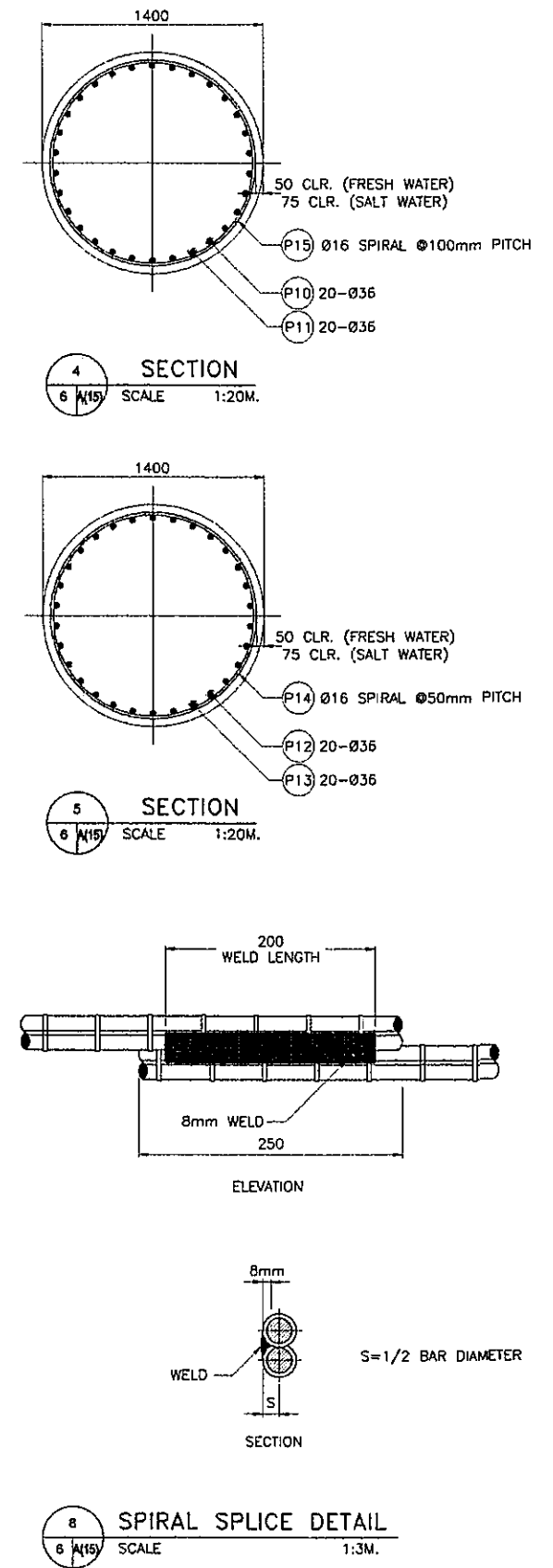
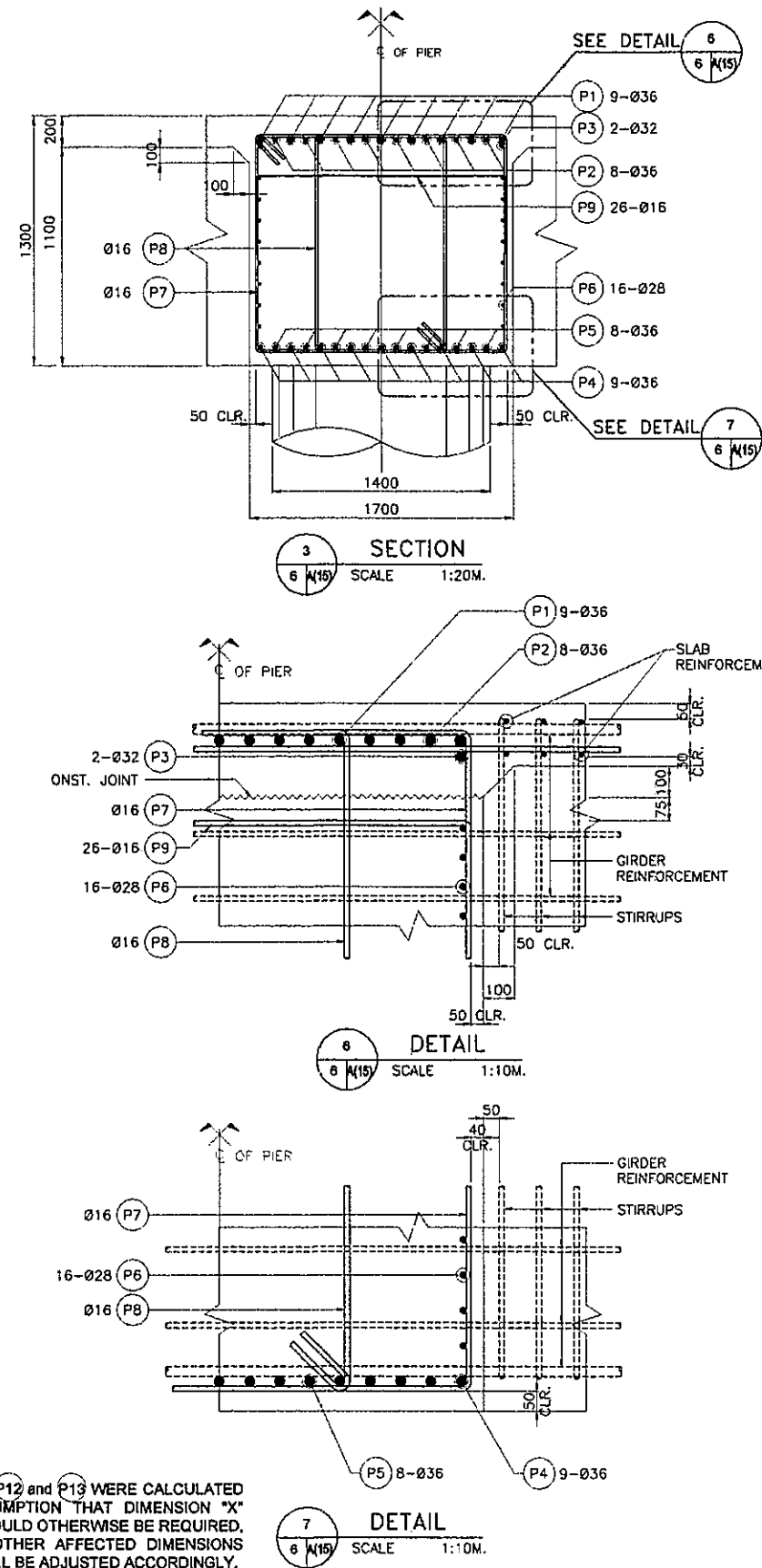
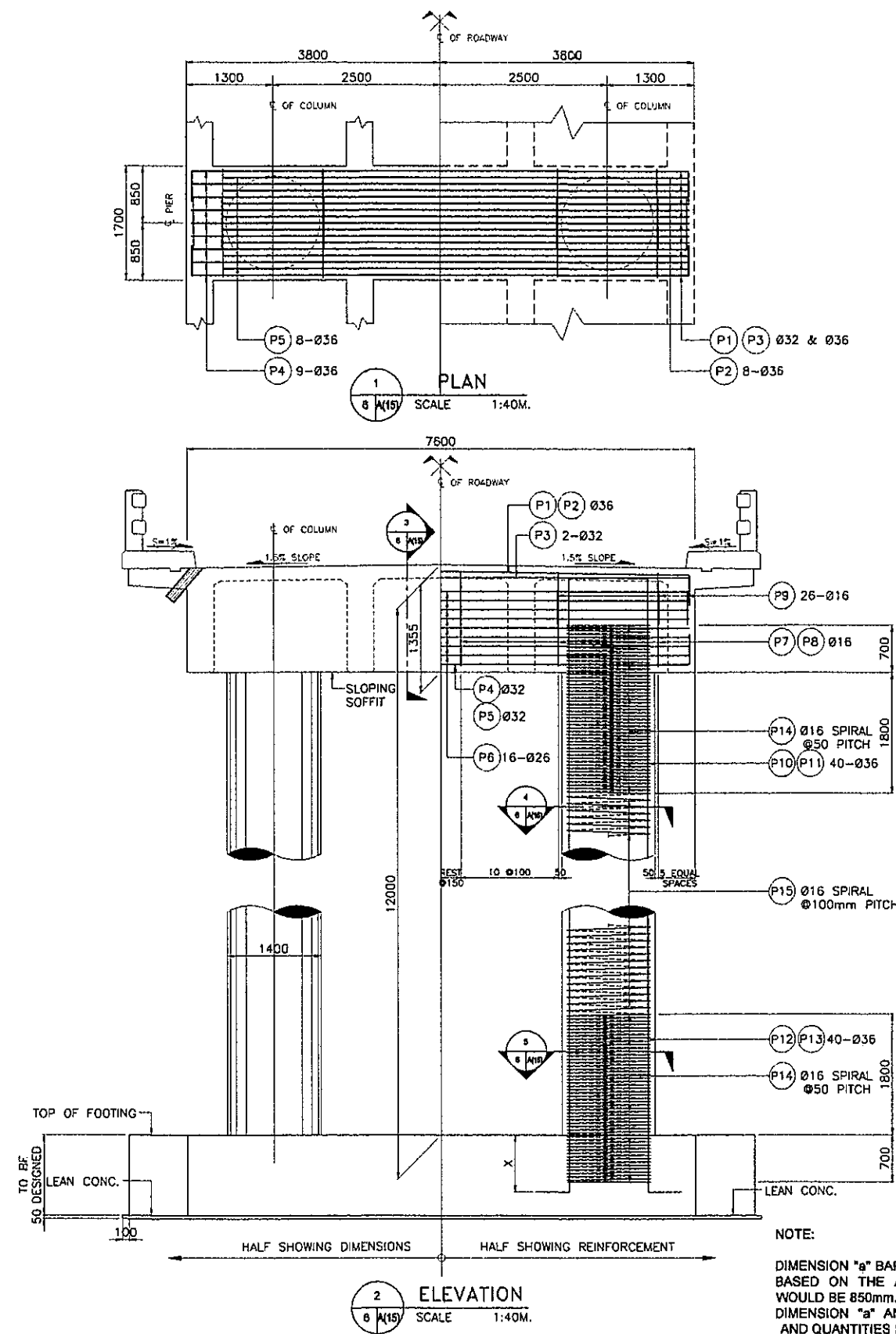


2 LONGITUDINAL SECTION
SCALE 1:90M.

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION SONFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=15M	SHEET CONTENTS: FRAMING PLAN AND LONGITUDINAL SECTION	DESIGNED: RENATO RAINIER M. VITORIO CHECKED: MA. ROSARIO A. ANAPOLSKA CADD: ROLANDO C. MEDIANTE JEROME V. KATIGBAK	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BOD	SHEET NO. A(15) 4 19
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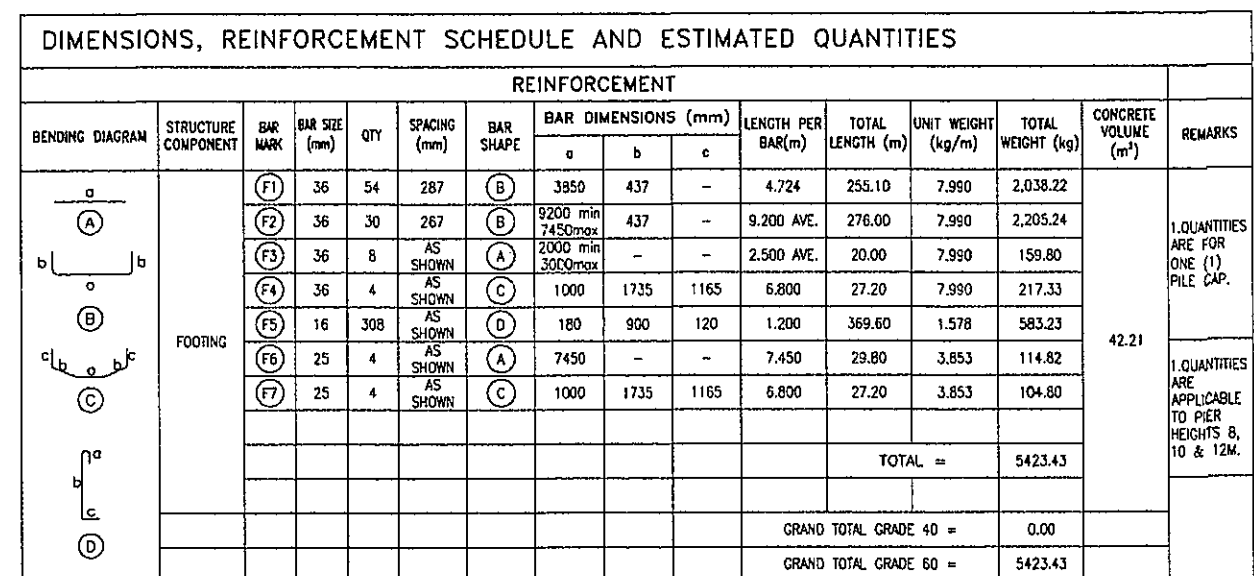
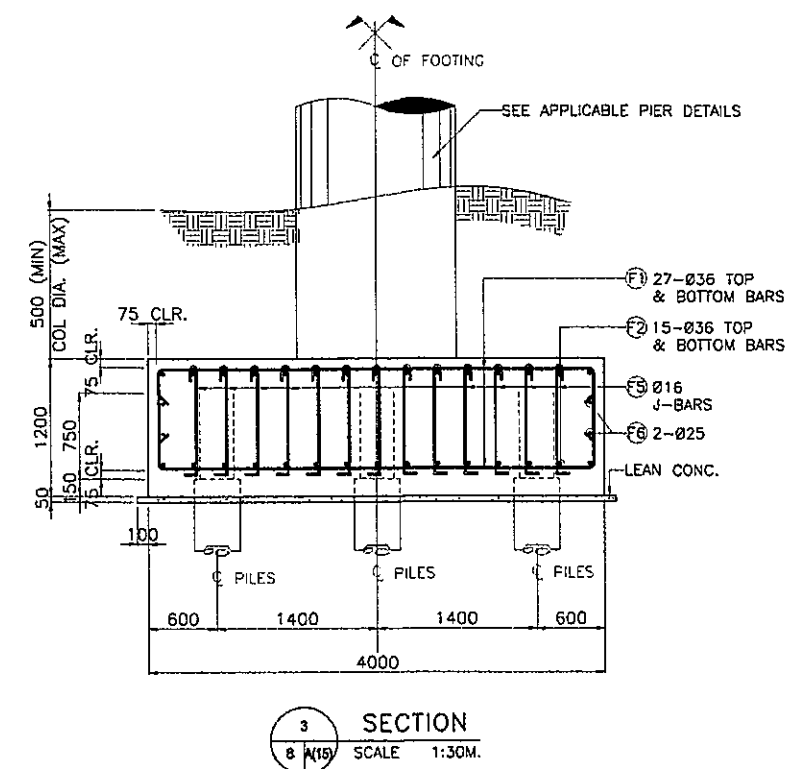
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BOH/FACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=15M	SHEET CONTENTS: TYPICAL CROSS SECTION (SHOWING DIMENSIONS) SECTIONS (SHOWING REINFORCEMENTS) REINFORCEMENT OVER PIER	DESIGNED: RENATO PANIELA VITORIO CHECKED: MA. ROSARIO A. JARAPLAN CADD: ROLANDO C. MEDIANTE JEROME V. KATIGBAK	SUBMITTED: BLESSILDA S. RAMOS OIC-CHEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(19) 5 19
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REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION 60NIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=15M	SHEET CONTENTS: PLAN, ELEVATION, SECTIONS AND SPIRAL SPLICE DETAILS FOR 3 SPAN	DESIGNED: RENATO RAINIER VITORIO CHECKED: MA. ROSARIO A. JARAPASAN CADD: ROLANDO MEDIANTE JEROME V. KATIGBAK	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(20) 6 19
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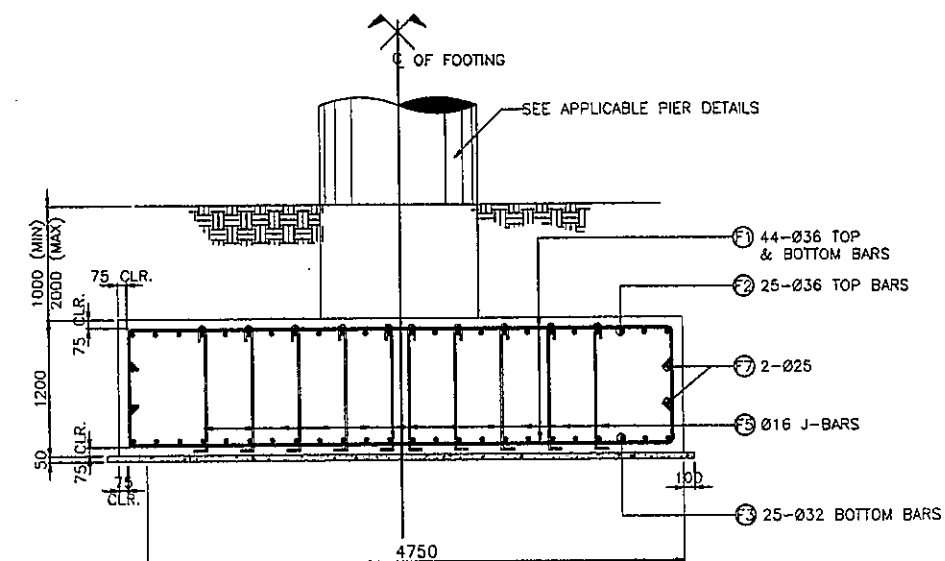
 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE:	SHEET CONTENTS:	DESIGNED: <u>RENATE RAUTER N. YODRIO</u> CHECKED: <u>MA. ROSARIO A. JARAPLASAN</u> CADD: <u>ROLANDO G. MEDIANTE</u>	SUBMITTED: <u>[Signature]</u> BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. 	SHEET NO. 
	STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=15M	REINFORCEMENT SCHEDULE AND LOADING INFORMATION FOR DESIGN OF FOUNDATION FOR 3 SPAN						



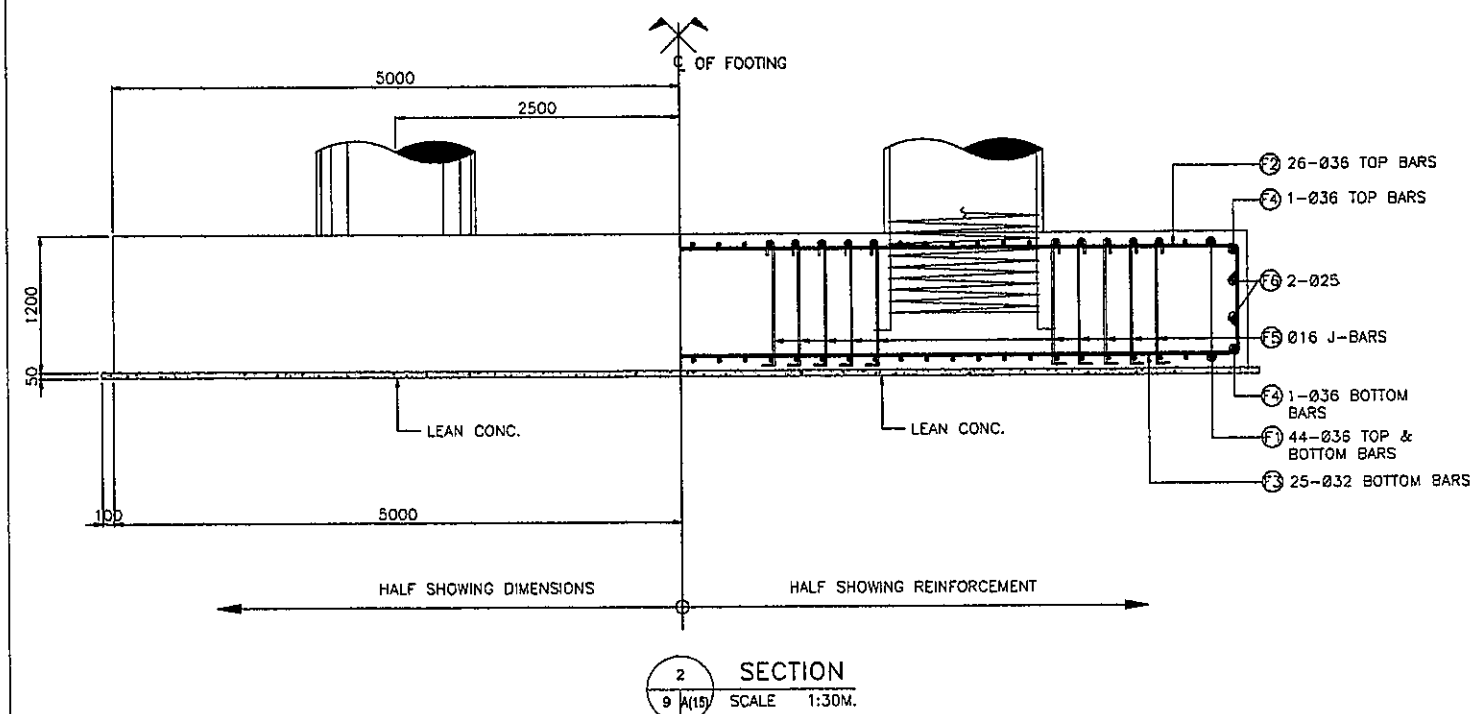
NOTES:

- ALLOWABLE BEARING CAPACITY = 400kPa
- MATERIAL TYPE : ROCK
- MINIMUM DEPTH BELOW SCOUR LINE = 1 METER

TYPE F6 (FOR FOOTING ON PILES)



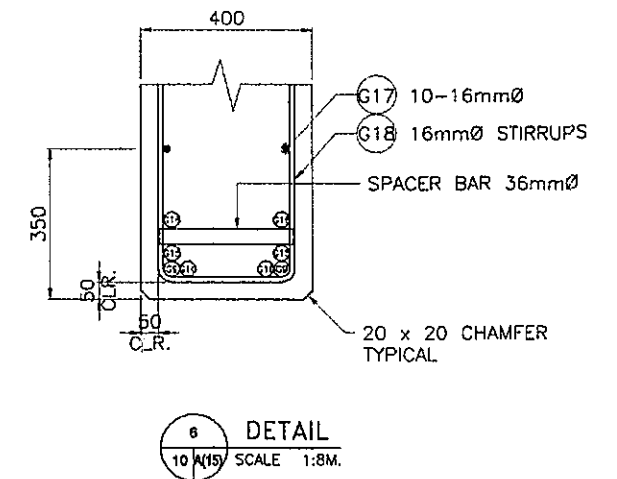
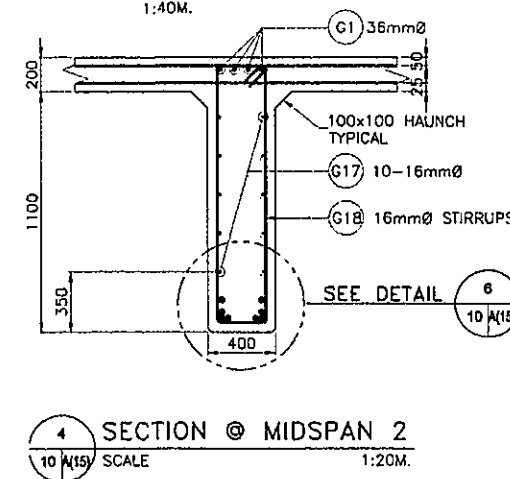
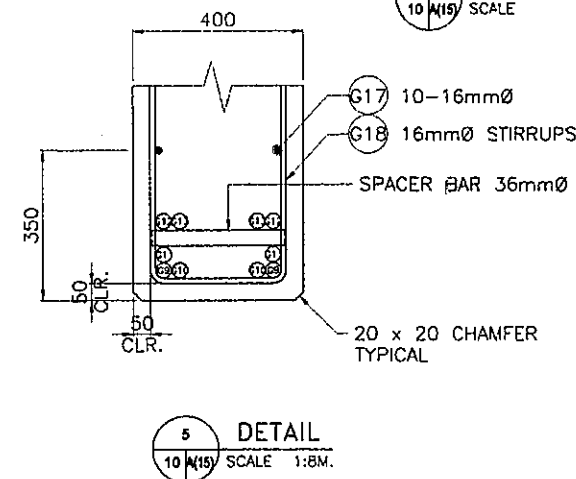
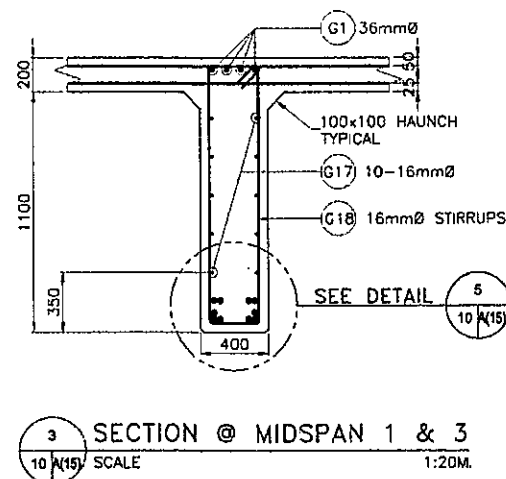
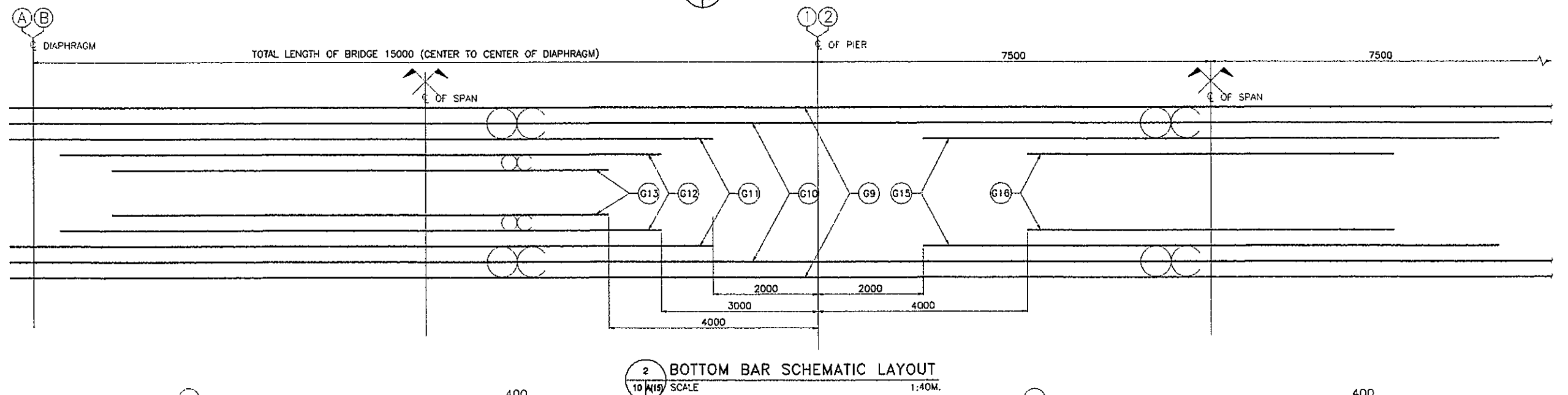
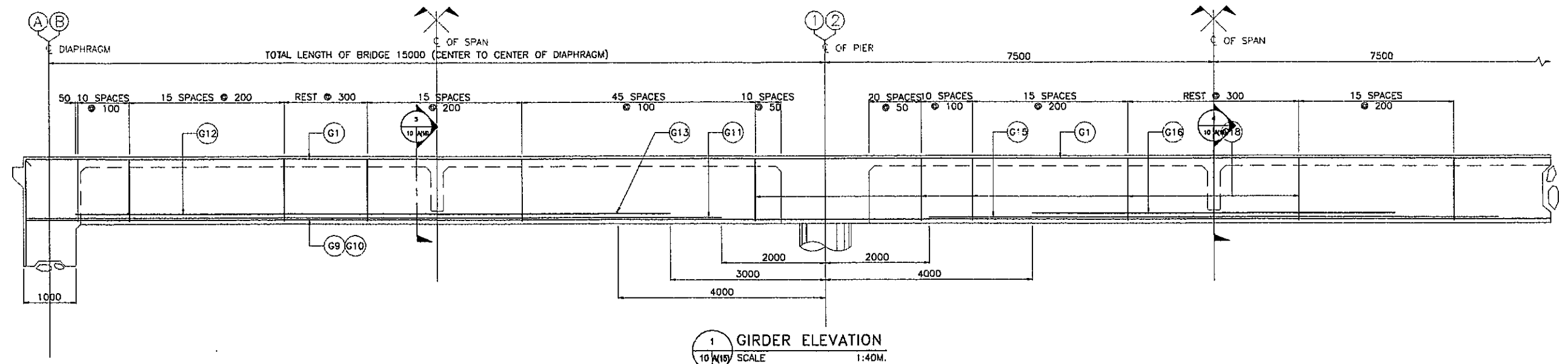
3 SECTION
9 A(15) SCALE 1:30M



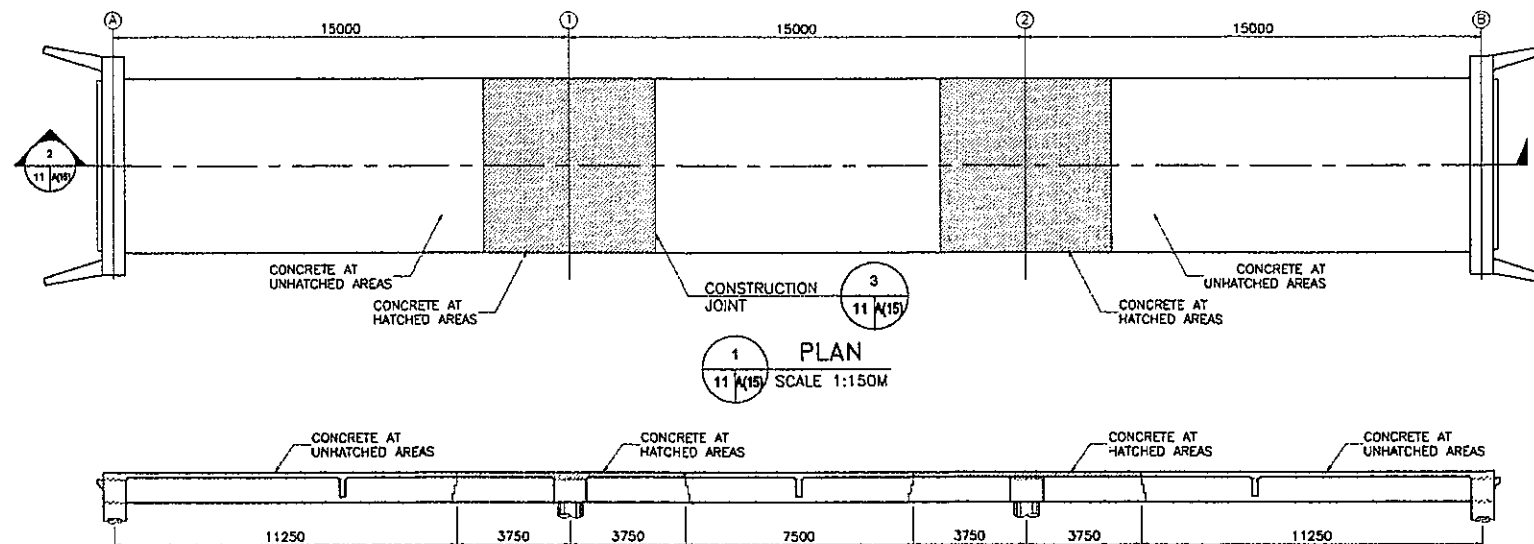
TYPE F6 (FOR SPREAD FOOTING)

[illegible]

- NOTES:
- ALLOWABLE BEARING CAPACITY = 400kPa
 - MATERIAL TYPE : ROCK
 - MINIMUM DEPTH BELOW SCOUR LINE = 1 METER



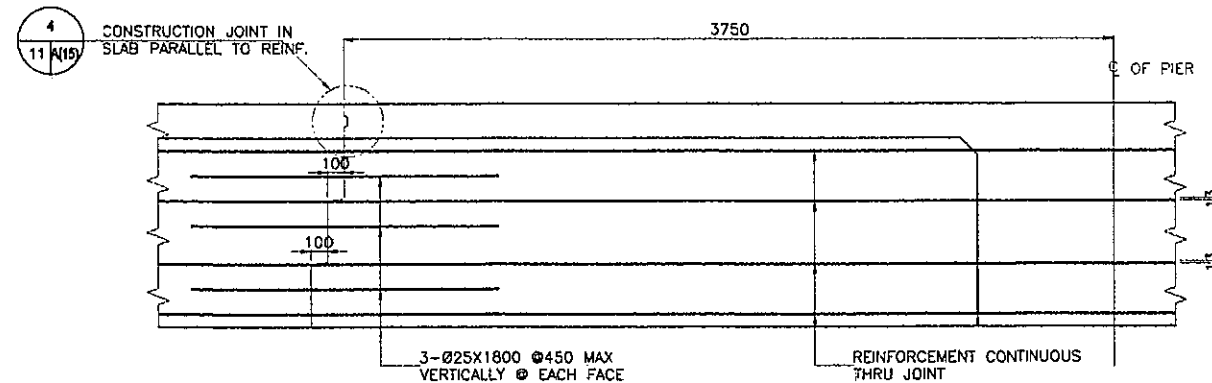
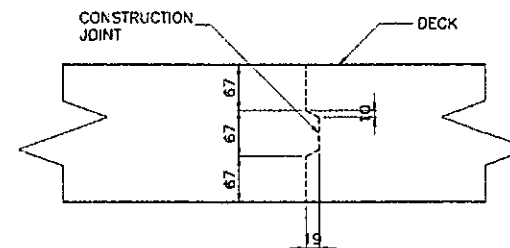
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFAZIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=15M	SHEET CONTENTS: GIRDER ELEVATION, BOTTOM BAR SCHEMATIC LAYOUT, SECTION AT MIDSPAN AND DETAIL	DESIGNED: RENATO RAMIREZ M. VILLORIO CHECKED: MA ROSARIO A. JARAPLAN CADD: ROLANDO C. MEDIANTE JEROME V. KATIGBAK OIC-CHIEF, BRIDGES DIVISION	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(15) 10 18
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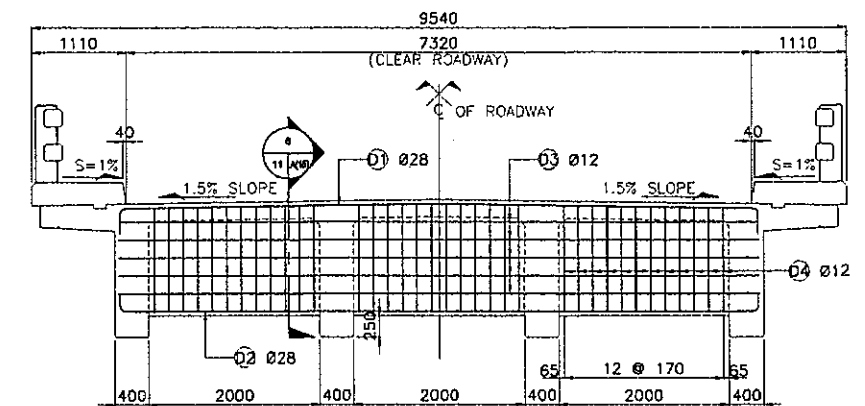
NOTE:

1. CONCRETE AT HATCHED AREAS SHALL BE PLACED AT LEAST ONE DAY AHEAD OF CONCRETE AT UNHATCHED AREAS.
2. REINFORCEMENT SHALL BE CONTINUOUS AT CONSTRUCTION JOINTS.
3. CONSTRUCTION OF SUPERSTRUCTURE SHALL BE FULLY SHORED.

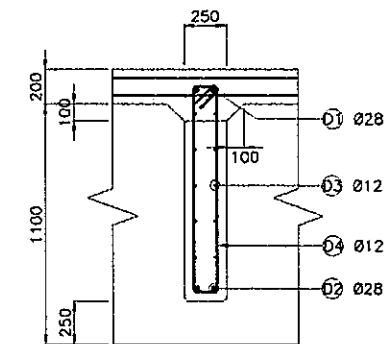
2 SECTION
SCALE 1:150M



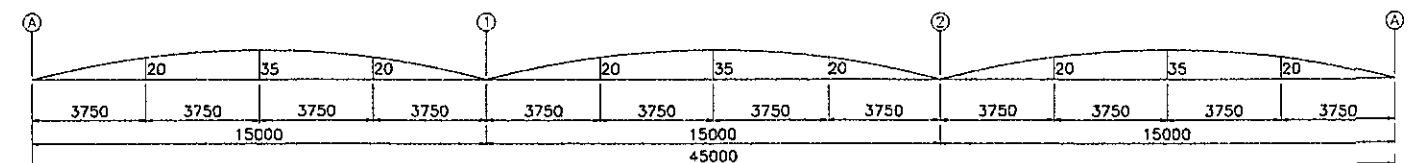
CONC. POURING SEQUENCE
SCALE AS SHOWN



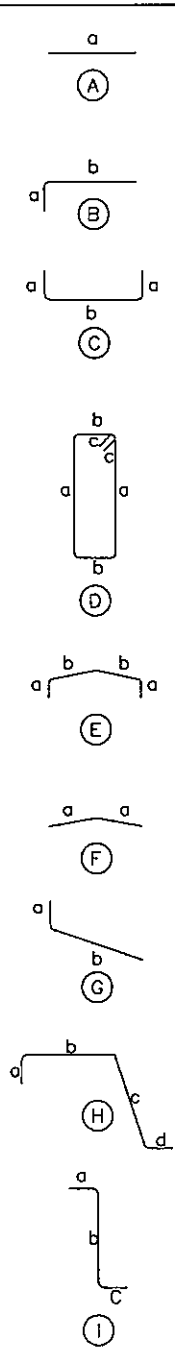
6 SECTION
SCALE 1:20M

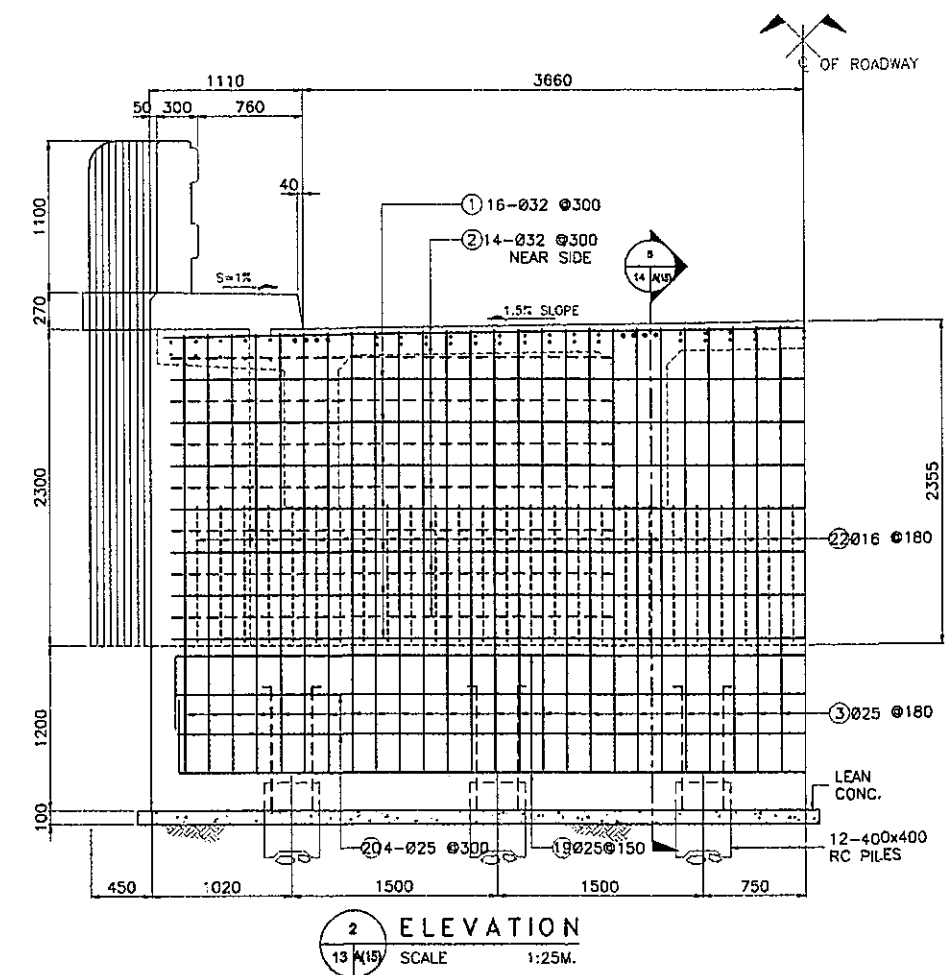
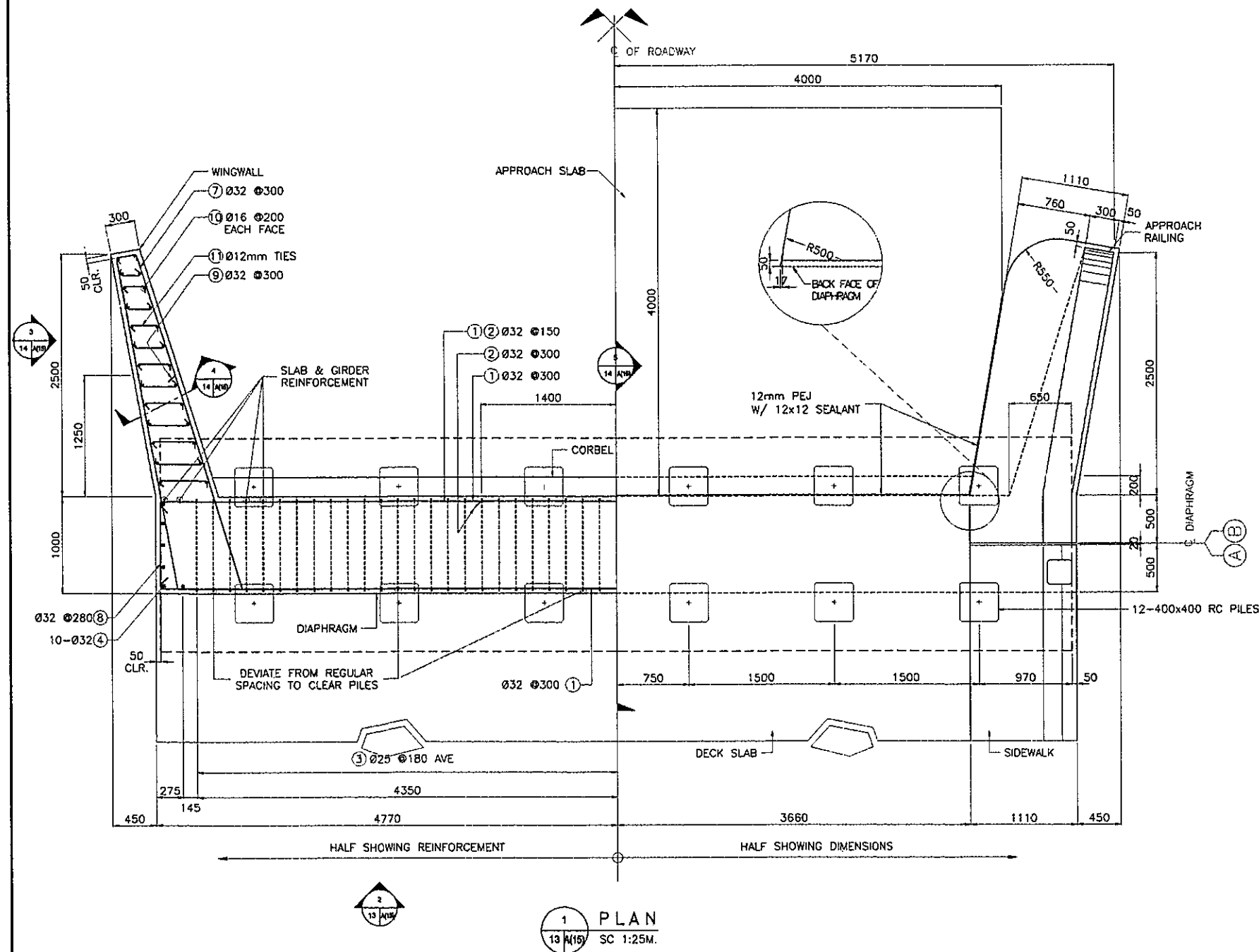


INTERMEDIATE DIAPHRAGM DETAIL
SCALE AS SHOWN

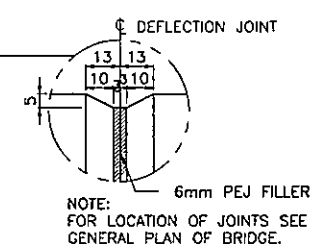
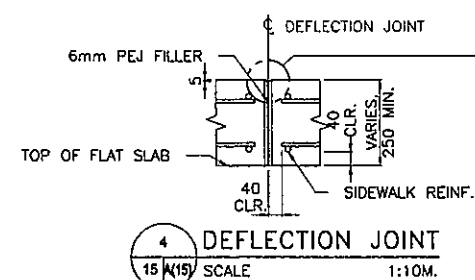
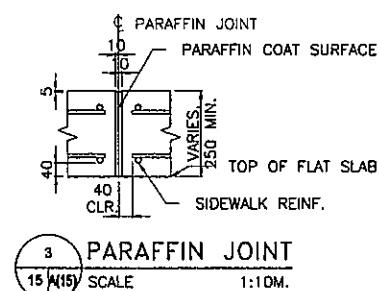
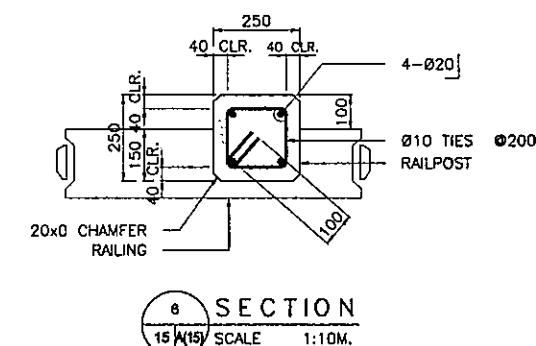
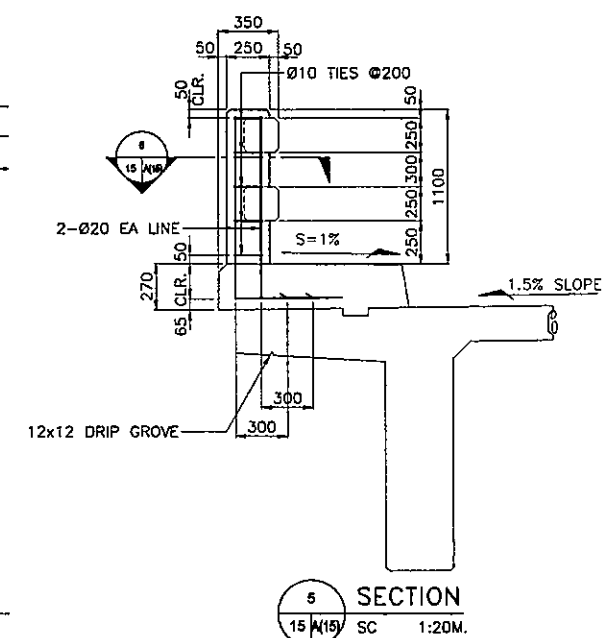


REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=15M	SHEET CONTENTS: CONC. POURING SEQUENCE, INTERMEDIATE DIAPHRAGM DETAIL AND CAMBER DIAGRAM	DESIGNED: RENATO M. VICTOR CHECKED: MA. ROSARIO A. JARAPAS CADD: ROLANDO MEDIANTE JEROME V. KATIGBAK BONIFACIO	SUBMITTED: BLESILDA S. RAMOS CIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(15) 11 19
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REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR STRUCTURE OF 15M MULTI-SPAN																
REINFORCEMENT																
BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY.	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)				LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT		CONCRETE VOLUME (m3)
							a	b	c	d				Grade 40 (kg)	Grade 60 (kg)	
	DECK SLAB	S1	16	226	100	E	100	4680	-	-	9.560	2160.56	1.578	0.00	3409.36	92.69
		S1a	16	226	100	F	3800	-	-	-	7.600	1717.60	1.578	0.00	2710.37	
		S2	16	300	60	E	100	4680	-	-	9.560	2868.00	1.578	0.00	4525.70	
		S2a	16	300	60	F	3800	-	-	-	7.600	2280.00	1.578	0.00	3597.84	
		S3	16	46	130	A	45900	-	-	-	45.900	2118.46	1.578	0.00	3342.93	
		S4	25	54	260	A	7500	-	-	-	7.500	405.00	3.853	0.00	1560.47	
		S5	25	64	260	A	9500	-	-	-	9.500	608.00	3.853	0.00	2342.62	
		S6	16	54	260	B	1600	12750	-	-	14.350	774.90	1.578	0.00	1222.79	
		S7	16	64	260	B	1600	11750	-	-	13.350	854.40	1.578	0.00	1348.24	
		S8	16	12	AS SHOWN	A	45900	-	-	-	45.900	550.80	1.578	0.00	869.16	
		S9	12	271	300	G	100	1200	-	-	1.300	351.87	0.888	312.46	0.00	
		S10	16	27	260	A	9500	-	-	-	9.500	256.50	1.578	0.00	404.76	
		S11	16	32	260	A	7500	-	-	-	7.500	240.00	1.578	0.00	378.72	

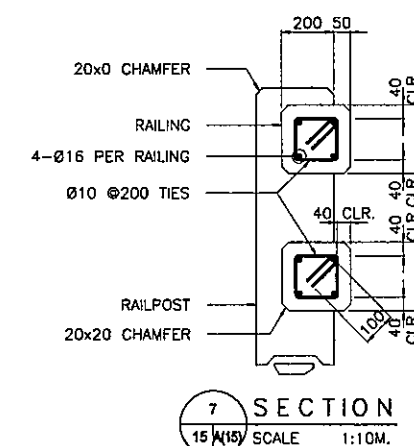


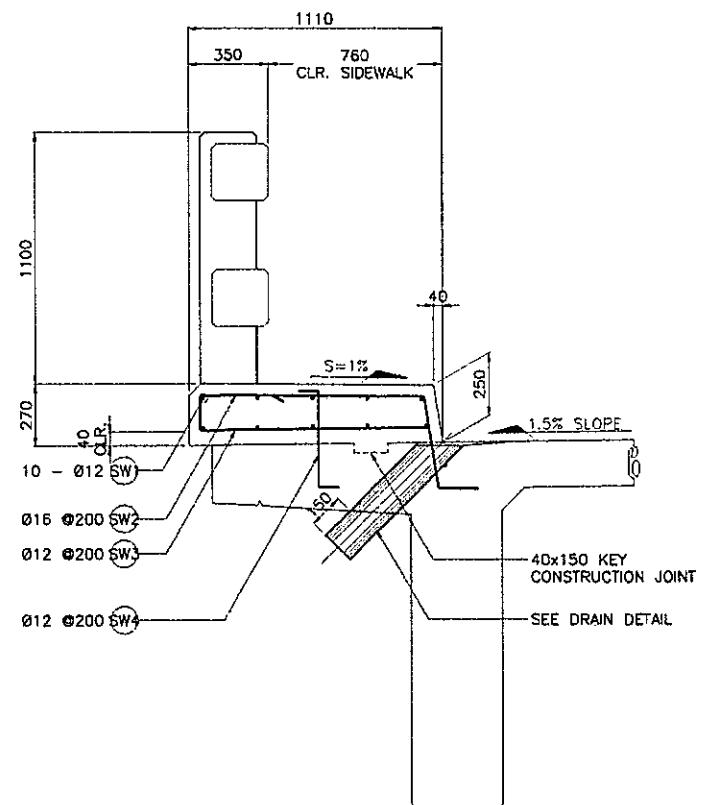
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=15M	SHEET CONTENTS: ABUTMENT DETAIL 1/2 PLAN & ELEVATION	DESIGNED: RENATO RANIER V. AYTORIO CHECKED: MA ROSARIO A. JAVAPLASAN CADD: ROLANDO S. MEDIANTE JEROME V. KATIGBAK ENGR. 100-100000	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(15) 13 19
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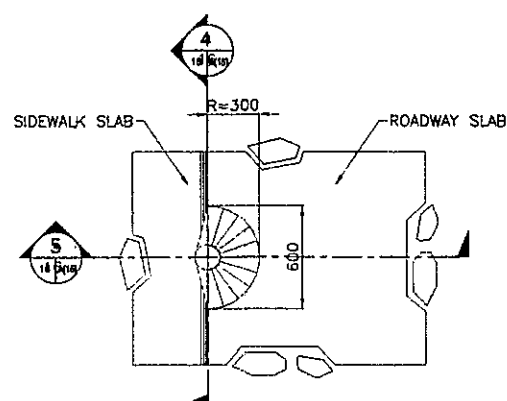
1. SIDEWALK SHALL BE PLACED AFTER THE SHORING UNDER THE SUPERSTRUCTURE HAS BEEN RELEASED SUFFICIENTLY TO PERMIT THE SPANS TO ATTAIN FULL DEAD LOAD DEFLECTION.
2. OTHER TYPES OF STANDARD BRIDGE RAILINGS CAN BE ADOPTED (REFER TO DO. 54 SERIES OF 2018, BOD SET NO. 2017-1-BRD)

SCALE	AS	SHOWN
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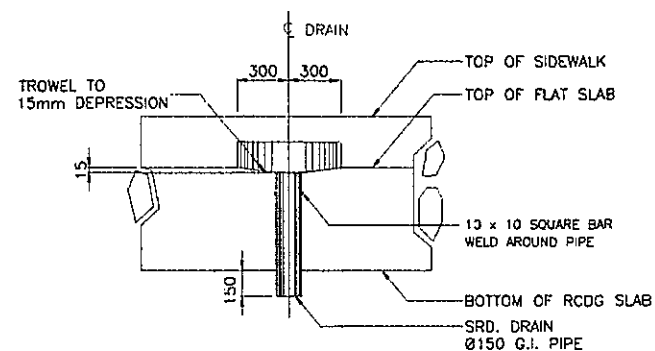
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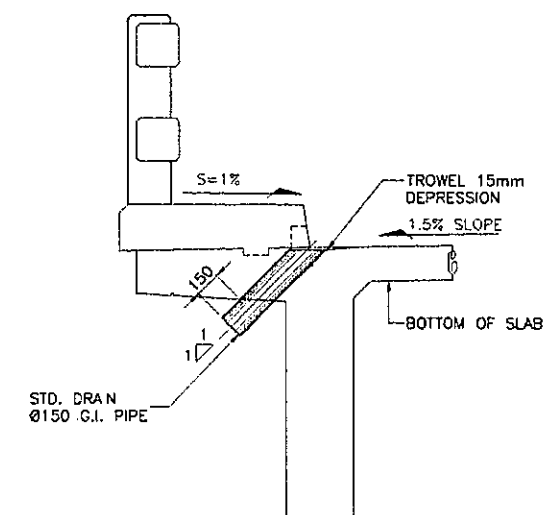
1 SIDEWALK DETAIL
SCALE 1:15M.



2 PLAN
SCALE 1:20M.



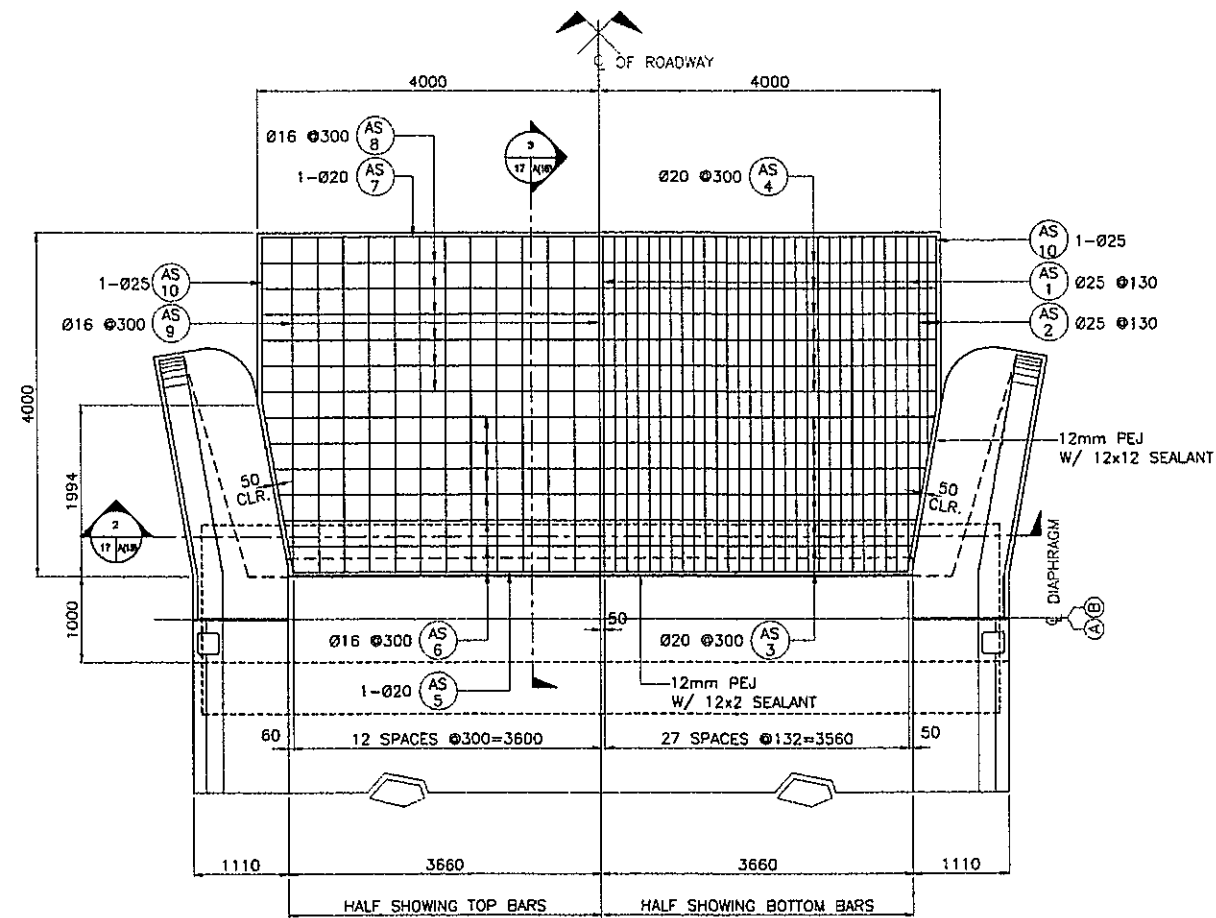
3 SECTION
SCALE 1:20M.



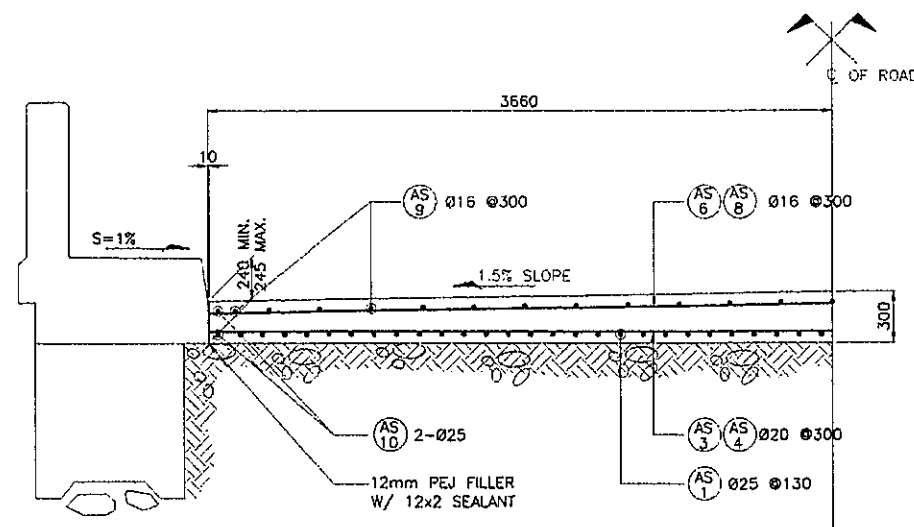
4 SECTION
SCALE 1:20M.

TYPICAL DRAIN DETAILS
SCALE AS SHOWN

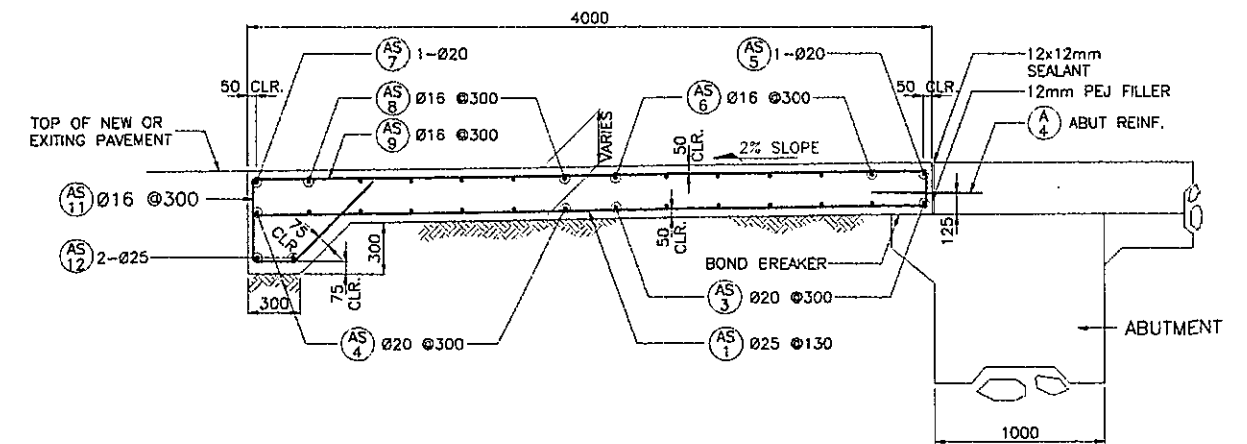
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=15M	SHEET CONTENTS: SIDEWALK DETAIL AND TYPICAL DRAIN DETAIL	DESIGNED: RENATO RANIERA M. VITORIC CHECKED: MA ROSARIO A. JARAPLASAN CADD: ROLANDO C. MEDIANTE JEROME V. KATIGBAK ENGINEER	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BID	SHEET NO. A(15) 16/19
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1 PLAN
17 A(15) SC 1:40M.



2 SECTION
17 A(15) SCALE 1:20M.



3 SECTION
17 A(15) SCALE 1:20M.

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR APPROACH SLAB

REINFORCEMENT														
BENDING DIAGRAM (DIMENSIONS ARE OUT TO OUT OF BARS)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)			LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m³)	REMARKS
						a	b	c						
	AS 1	25	56	130	(B)	3900	150	-	4.050	226.80	3.853	874	8.48	1. QUANTITIES ARE FOR ONE (1) APPROACH SLAB
	AS 2	25	4	130	(B)	2700 MIN 3420 MAX	150	-	3.210 AVE.	12.84	3.853	49		
	AS 3	20	7	300	(D)	7200 MIN 7880 MAX	-	-	7.540 AVE.	52.78	2.466	130		
	AS 4	20	7	300	(A)	7900	-	-	7.900	55.30	2.466	136		
	AS 5	20	1	AS SHOWN	(A)	7200	-	-	7.200	7.20	2.466	18		
	AS 6	16	6	300	(A)	7340 MIN 7880 MAX	-	-	7.610 AVE.	45.66	1.578	72		
	AS 7	20	1	AS SHOWN	(A)	7900	-	-	7.900	7.90	2.466	19		
	AS 8	16	6	300	(A)	7900	-	-	7.900	47.40	1.578	75		
	AS 9	16	25	300	(B)	3900	150	-	4.050	101.25	1.578	160		
	AS 10	25	4	AS SHOWN	(C)	1955	1965	-	3.930	15.72	3.853	61		
	AS 11	16	27	300	(D)	415 MIN 475 MAX	250	650	1.745	47.12	1.578	74		
	AS 12	25	2	AS SHOWN	(A)	2900	-	-	2.900	5.80	3.853	22		
		</												

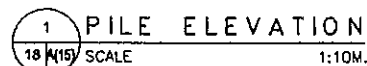
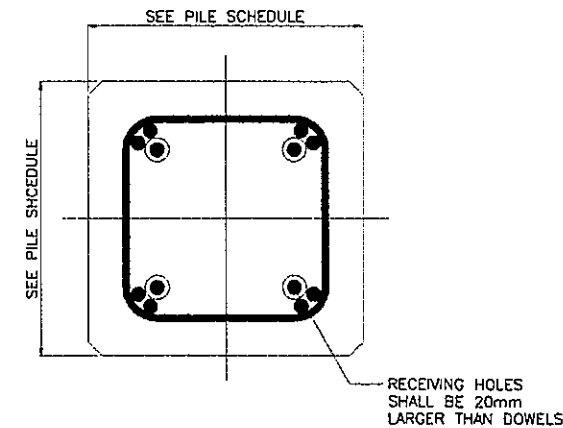
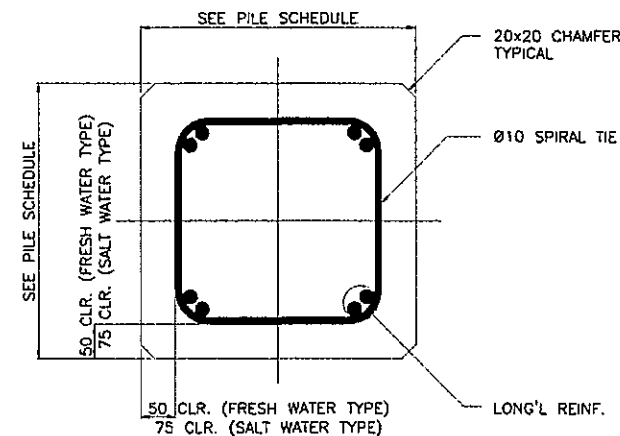
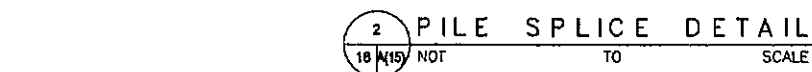


Diagram illustrating the construction of a driven pile. The pile is shown in cross-section, with a central horizontal line representing the **DRIVEN PILE**. A **210 SPACER RING BAR** is positioned horizontally across the pile. **DOWELS** are shown as vertical lines extending from the ring bar into the pile. **EPOXY RESIN BONDING MORTAR** is indicated by a shaded area around the ring bar. A dimension of **30** is shown for the distance from the ring bar to the pile tip. A note on the left states: **DIAMETER AND LENGTH OF REINF. STEEL DOWELS TO BE AS RECOMMENDED BY MANUFACTURER OF EPOXY RESIN IN ORDER TO DEVELOP REQUIRED PILE JOINT STRENGTH. SEE NOTE.**

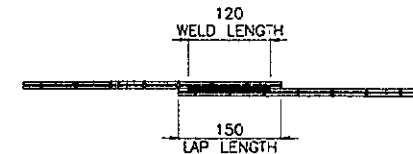
ELEVATION



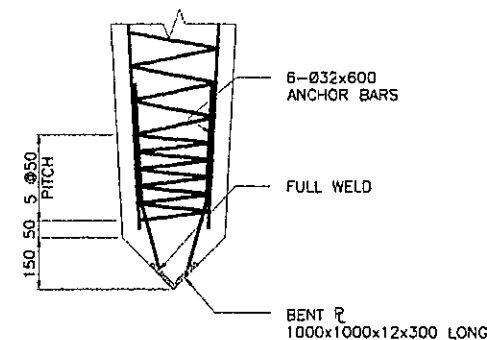
SECTION



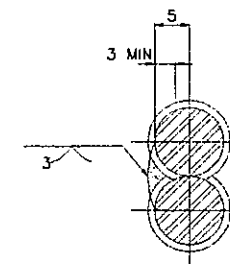
3 SECTION
18 A(15) SCALE 1:5M.



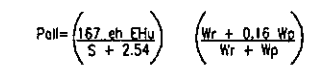
ELEVATION



4 PILE TIP FOR HARD DRIVING
18 1/15 SCALE 1:10M.



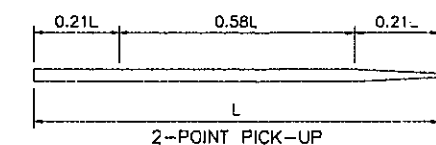
SECTION



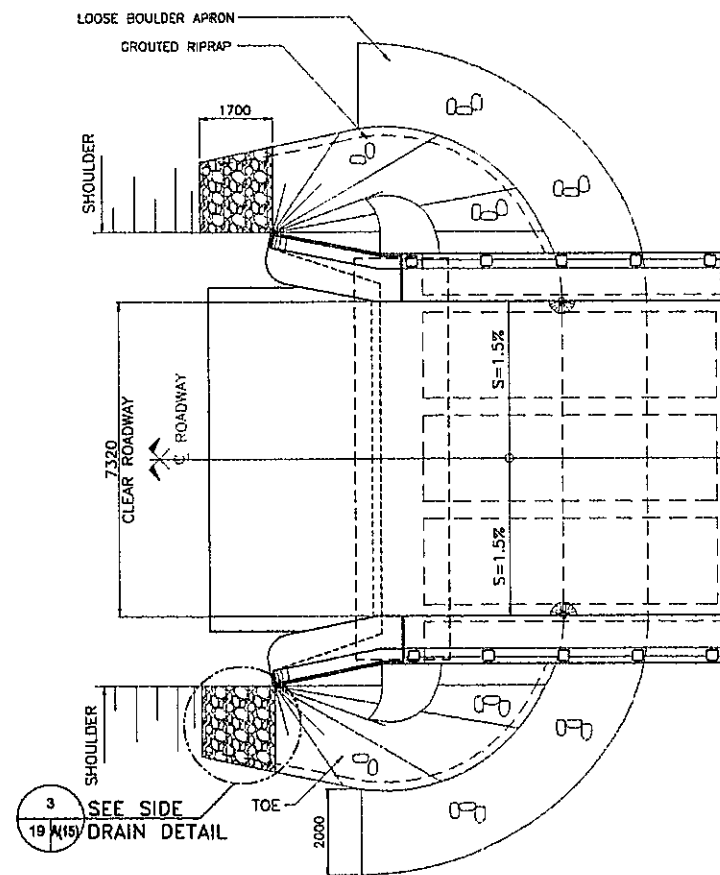
0.30L 0.70L

L

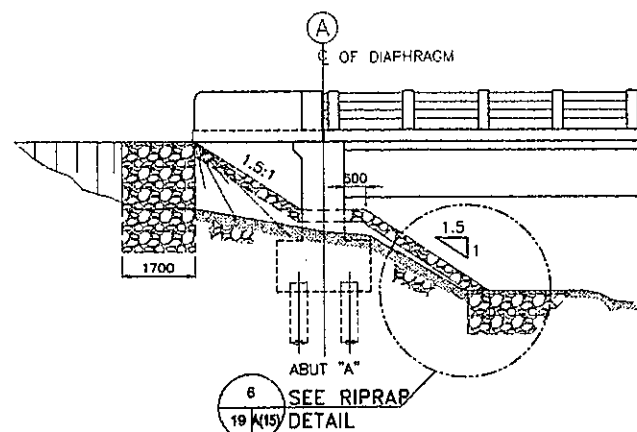
1-POINT PICK-UP



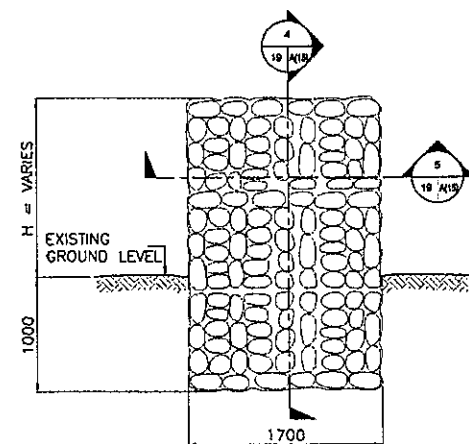
THE USE OF SPECIAL EMBEDDED OR ATTACHED LIFTING DEVICES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.



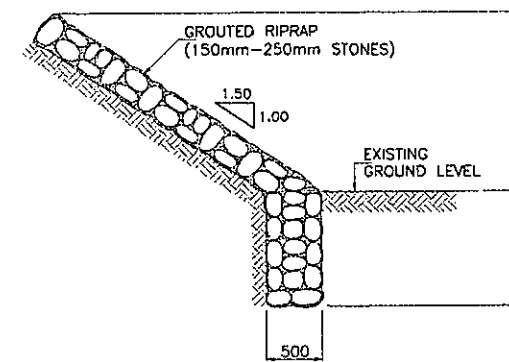
1 PLAN
SCALE 1:80M.



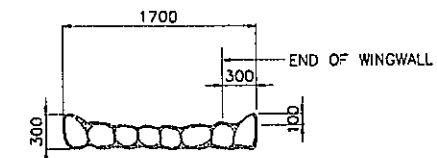
2 ELEVATION
SCALE 1:80M.



3 ELEVATION
SCALE 1:30M.

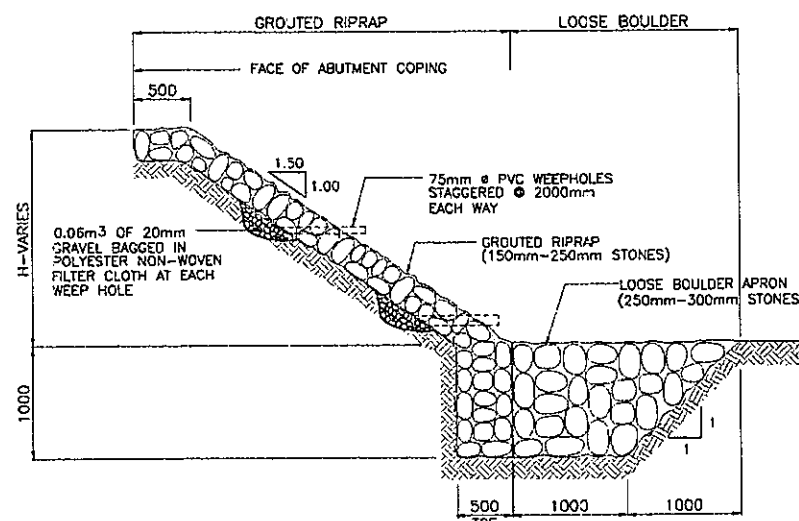


4 SECTION THRU DRAIN
SCALE 1:30M.

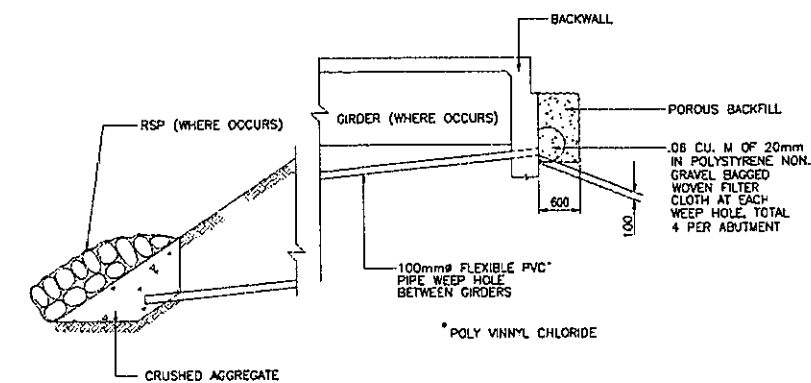


5 SECTION
SCALE 1:30M.

SIDE DRAIN DETAILS
SCALE 1:30M.



6 RIPRAP DETAIL
SCALE 1:30M.



7 ABUTMENT DRAINAGE
SCALE 1:30M.

ABUTMENT RIPRAP PROCEDURE:

1. THE BED FOR RIPRAP SHALL BE EXCAVATED TO THE REQUIRED DEPTHS AND PROPERLY COMPACTED, TRIMMED AND SHAPED.
2. THE RIPRAP SHALL BE FOUNDED IN A TOE TRENCH DUG BELOW THE DEPTH OF SCOUR AS SHOWN ON PLANS OR AS ORDERED BY THE ENGINEER. THE TOE TRENCH SHALL BE FILLED WITH STONE OF THE SAME CLASS AS THAT SPECIFIED FOR THE RIPRAP, UNLESS OTHERWISE SPECIFIED.
3. STONES SHALL BE PLACED BY HAND OR INDIVIDUALLY BY MACHINES. THEY SHALL BE LAID WITH CLOSE, BROKEN JOINTS AND SHALL BE FIRMLY BEDDED INTO THE SLOPE AND AGAINST THE ADJOINING STONES. EACH STONE SHALL BE LAID WITH EACH ADJACENT STONE. THE RIPRAP SHALL BE THOROUGHLY RAMMED INTO PLACE AS CONSTRUCTION PROGRESSES AND THE FINISHED SURFACE SHALL PRESENT AN EVEN, TIGHT SURFACE. INTERSTICES BETWEEN STONES SHALL BE FILLED WITH SMALL BROKEN FRAGMENTS FIRMLY RAMMED INTO PLACE.
4. THE SPACES BETWEEN THE STONES SHALL THEN BE FILLED WITH CEMENT MORTAR AS SPECIFIED IN SUBSECTION 504 2.3. MORTAR SHALL BE USED TO COMPLETELY FILL ALL VOIDS, EXCEPT THAT THE FACE SURFACE OF THE STONES SHALL BE LEFT EXPOSED.
5. GROUT SHALL BE PLACED FROM BOTTOM TO TOP OF THE SURFACE SWEEP WITH STIFF BROOM. AFTER GROUTING IS COMPLETED, THE SURFACE SHALL BE CURED AS SPECIFIED IN ITEM 405, STRUCTURAL CONCRETE FOR A PERIOD OF AT LEAST THREE DAYS.

NOTE:

ABUTMENT DRAINAGE SHALL BE PROVIDED BEHIND ABUTMENTS, POROUS BACKFILL SHALL EXTEND LATERALLY THE FULL LENGTH OF THE BACK WALL

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BOHIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=15M	SHEET CONTENTS: ABUTMENT SLOPE PROTECTION AND DRAINAGE	DESIGNED: RENATO RAMIREZ, M. TORO CHECKED: MA. ROSARIO A. JARAPLASAN CADD: ROLANDO C. MEDIANTE	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 B/D	SHEET NO. A(15) 19 18
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18m MULTIPLE SPAN RCDG

GENERAL NOTES

GENERAL

- IN THE INTERPRETATION OF DRAWINGS, INDICATED DIMENSIONS SHALL GOVERN ALL DIMENSIONS, DISTANCES AND SIZES SHALL NOT BE SCALED FOR CONSTRUCTION PURPOSES.
- UNLESS OTHERWISE INDICATED, ALL DIMENSIONS AND MEMBER SIZES ARE IN MILLIMETERS.

DESIGN CRITERIA

1. DESIGN SPECIFICATION

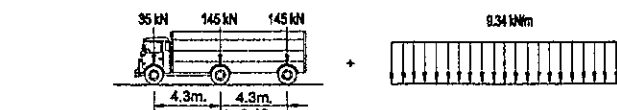
- DPWH DESIGN GUIDELINES CRITERIA AND STANDARDS 2015 EDITION, VOLUME 5 - BRIDGE DESIGN

2. LOADING

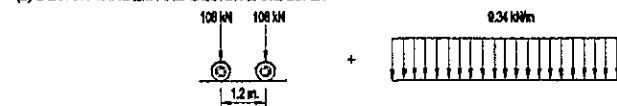
- DEAD LOAD: WEIGHT OF THE STRUCTURE AND AN ALLOWANCE OF 1.05 kPa FOR FUTURE WEARING COURSE

- LIVE LOAD: HL - 93

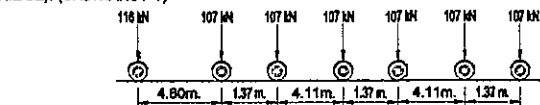
(1) DESIGN TRUCK AND DESIGN LANE LOAD:



(2) DESIGN TANDUM AND DESIGN LANE LOAD:



(3) PERMIT DESIGN LIVE LOAD (SPECIAL PERMIT REQUIRED BEFORE PASSING THE BRIDGE): (CALTRANS P-7)



c.) DYNAMIC LOAD ALLOWANCE (TABLE 10.8-1): IN ACCORDANCE WITH DPWH DGCS 2015 VOLUME 5 - BRIDGE DESIGN

d.) SIDEWALK LL: 4.07 kPa

e.) SEISMIC LOAD:

IN ACCORDANCE WITH BRIDGE SEISMIC DESIGN SPECIFICATIONS (BSDS) 1ST EDITION, 2013

f.) OTHER LOADING IN ACCORDANCE WITH DPWH DGCS 2015 VOLUME 5 - BRIDGE DESIGN

MATERIALS

1. CONCRETE

UNLESS INDICATED OTHERWISE ON PLANS, THE CONCRETE CLASS AND STRENGTH SHALL BE AS FOLLOWS:

STRUCTURAL MEMBER	CLASS	28-DAY CYLINDER STRENGTH		MAX. SIZE OF COARSE AGGREGATE mm (in.)
		MPa	PSI	
CAST-IN-PLACE GIRDERS, DIAPHRAGMS, WINGWALLS, BACKWALLS, COPING COLUMNS, FOOTINGS	A (MOD)	21	3045	20
SLAB	A	28	4060	20
PRECAST R.C. PILE	AA	28	4060	20
THIN REINFORCED SECTIONS RAILING AND RAILPOST	C	21	3045	12
LEAN CONCRETE	-	10	1450	50

2. REINFORCEMENT STEEL

- REINFORCING STEEL NON WELDABLE SHALL CONFORM TO ASTM 615/A615M & FOR WELDABLE STEEL BARS SHALL CONFORM TO ASTM A706/A706M. MINIMUM YIELD STRENGTH AS LISTED BELOW UNLESS OTHERWISE SPECIFIED IN THE DRAWING:
 $F_y = 414 \text{ MPa (Gr.60)}$ FOR 16mmØ AND LARGER
 $F_y = 276 \text{ MPa (Gr.40)}$ FOR 12mmØ AND SMALLER
- REINFORCING STEEL SHALL BE FREE OF MILL SCALES, OIL OR ANY SUBSTANCES WHICH WILL WEAKEN THE BOND WITH CONCRETE

3. ELASTOMERIC BEARING PADS

ELASTOMERIC BEARING PADS SHALL BE 100% VIRGIN CHLOROPRENE (NEOPRENE) PADS WITH DUROMETER HARDNESS 60 UNLESS OTHERWISE SPECIFIED ON THE PLANS. BEARING PADS SHALL BE LAMINATED TYPE BEARING PADS CONSISTING OF LAYER OF ELASTOMERIC RESTRAINED AT THEIR INTERFACES BONDED LAMINATIONS AS REQUIRED ON THE PLANS. LAMINATED PLATE SHALL BE NON-CORROSIVE MILD STEEL SHEETS. ALL BEARING PADS SHALL CONFORM TO THE REQUIREMENT SPECIFIED IN AASHTO SPECIFICATION & DPWH D.O. 25 SERIES OF 1997.

MATERIAL: ALTERNATE LAYERS STEEL AND NEOPRENE BONDED TOGETHER.
 DUROMETER HARDNESS, SHORE "A" (ASTM D 2240).....60
 TENSILE STRENGTH, ASTM D412.....15.5MPa
 ULTIMATE ELONGATION, % MIN (412).....350%MIN.)

CONSTRUCTION

1. SETTING DOWN

THE SETTING OUT AND THE ELEVATIONS OF THE DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE START OF ANY CONSTRUCTION WORK.

2. REINFORCE CONCRETE

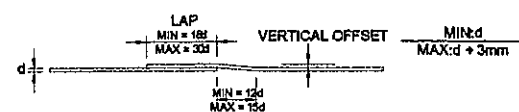
a. CONCRETE MIX AND PLACING

- DESIGN OF CONCRETE MIX SHALL MEET THE DESIGN CONCRETE STRENGTH GIVEN UNDER ITEM 1 OF MATERIALS.
- CONCRETE SHALL BE DEPOSITED, VIBRATED AND CURED IN ACCORDANCE WITH THE SPECIFICATIONS.
- FOR CONCRETE DEPOSITED AGAINST THE GROUND, LEAN CONCRETE WITH A MINIMUM THICKNESS OF 50mm SHALL LAID FIRST BEFORE BE CONSIDERED IN MEASURING THE STRUCTURAL DEPTH OF CONCRETE SECTION.
- THE CONSTRUCTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL PLACING SEQUENCES FOR ALL CONCRETING WORK.

b. BAR BENDING, SPLICING AND PLACING

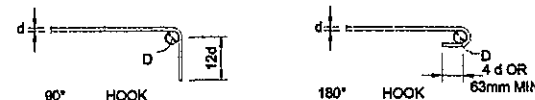
- THE CONSTRUCTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL OF SHOP DRAWINGS INDICATING THE BENDING, CUTTING, SPLICING AND INSTALLATION OF ALL REINFORCING BARS.
- BARS SHALL BE BENT COLD, BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS PERMITTED BY THE ENGINEER.
- BAR SPLICING NOT INDICATED ON DRAWINGS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
- WELDED SPICES, IF APPROVED BY THE ENGINEER, SHALL DEVELOP IN TENSION AT LEAST 125% OF THE SPECIFIED YIELD STRENGTH OF THE BARS.
- NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION SHALL BE SPLICED.
- UNLESS OTHERWISE SHOWN ON DRAWINGS, THE CLEAR DISTANCE BETWEEN PARALLEL BARS IN A LAYER SHALL NOT BE LESS THAN 1.5 TIMES THE NOMINAL DIAMETER OF THE BAR NOR LESS THAN 1.5 TIMES THE MAXIMUM SIZE OF COARSE AGGREGATE. THE CLEAR DISTANCE BETWEEN LAYERS SHALL NOT BE LESS THAN 25mm NOR ONE BAR DIAMETER. THE BARS IN THE UPPER LAYER SHALL BE PLACED DIRECTLY ABOVE THOSE IN THE BOTTOM LAYER.

(7) CRANKED SPLICES



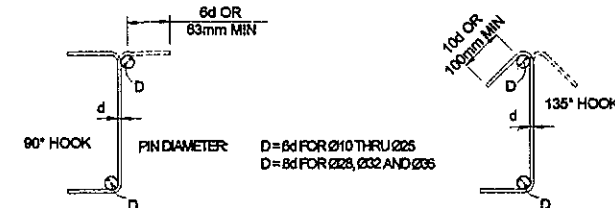
(8) HOOKS AND BENDS

DIMENSIONS OF 90- DEGREE AND 180- DEGREE HOOKS



PIN DIAMETER: $D = 6d$ FOR Ø10 THRU Ø25
 $D = 8d$ FOR Ø28, Ø32 AND Ø36

DIMENSIONS FOR STIRRUPS AND THE HOOKS



c. CONCRETE COVER TO REINFORCEMENT

CONCRETE COVER TO REINFORCEMENT SHALL BE 50mm UNLESS SHOWN OTHERWISE ON DRAWINGS.

d. CONSTRUCTION JOINT

- THE POSITION AND FORM OF ANY CONSTRUCTION JOINT SHALL BE AS SHOWN ON DRAWINGS OR AS AGREED WITH THE ENGINEERS.
- THE INTERFACE BETWEEN THE FIRST AND SECOND POUR CONCRETES SHALL BE ROUGHENED WITH AN AMPLITUDE OF 6mm MINIMUM.

e. FALSEWORK

ALL FALSEWORK SHALL BE DESIGNED BY THE CONTRACTOR SUBJECT TO THE APPROVAL BY THE ENGINEER.

f. FORMWORK

FORMWORKS SHALL BE CONSTRUCTED SUCH THAT IT WILL NOT YIELD UNDER THE LOAD AND SHALL BE SUCH AS TO AVOID THE FORMATION OF FINE. ALL DORNERS OF CONCRETE MEMBERS SHALL BE CHAMFERED TO 20mm UNLESS NOTED OTHERWISE ON DRAWINGS. STRIPPING OF FORMS AND SHORES SHALL BE AS DESIGNATED BY THE ENGINEER. THE FOLLOWING MAYBE USED AS A GUIDE:

	MIN. TIME
SHORING UNDER GIRDERS, BEAMS, FRAMES	14 DAYS
DECK SLABS	14 DAYS
WALLS	7 DAYS
COLUMNS	7 DAYS
SIDES OF BEAMS AND ALL OTHER VERTICAL SURFACES	7 DAYS

g. PROTECTION AND CURING OF CONCRETE

CONCRETE SURFACES SHALL BE PROTECTED FROM HARMFUL EFFECTS OF SUN, WIND AND RUNNING WATERS AND SHALL BE KEPT DAMP FOR AT LEAST 7 DYAS.

3. STRUCTURAL STEEL

THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS FOR ALL STRUCTURAL STEEL WORK. THESE SHOP DRAWINGS SHALL BE APPROVED BY THE ENGINEER BEFORE ANY FABRICATION COMMENCES.

4. SHORING

- CAMBER FOR REINFORCED CONCRETE SUPERSTRUCTURES WERE DETERMINED BASED THE USE OF SHORINGS DURING CONSTRUCTION.

- CAMBER FOR COMPOSITE SUPERSTRUCTURES WITH PRECAST PRESTRESSED GIRDERS WERE DETERMINED BASED ON UNSHORED CONDITIONS.

5. EMBANKMENT CONSTRUCTION SEQUENCE

APPROACH EMBANKMENT SHALL BE CONSTRUCTED PRIOR TO DRIVING OF ABUTMENT PILES.

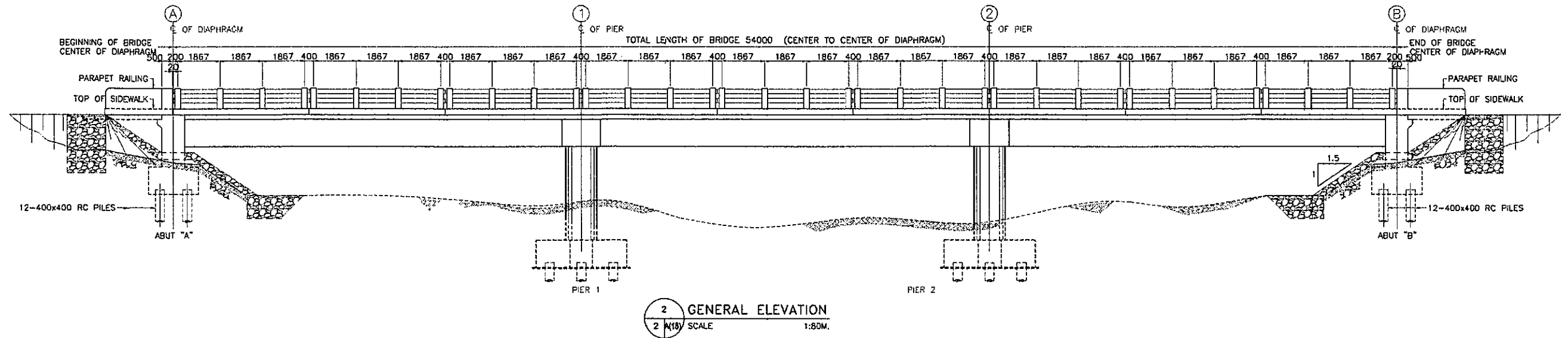
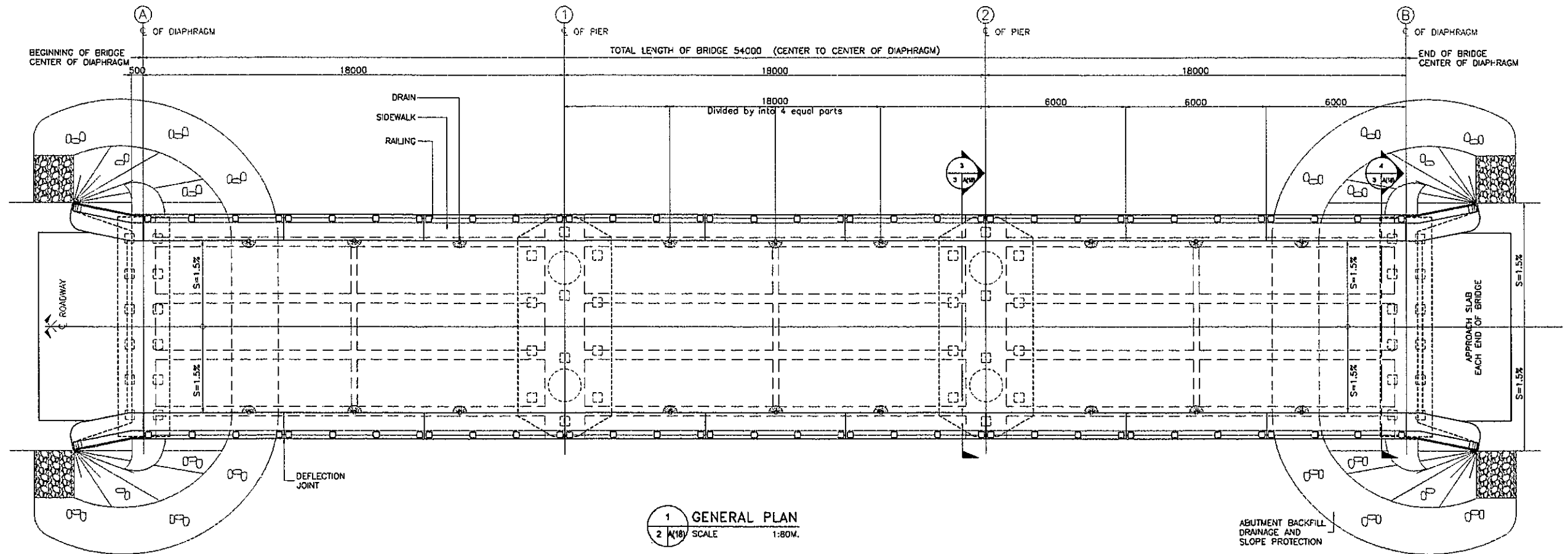
SYMBOLS

	LINE OF SYMMETRY OR SIMILARITY		NORTH ARROW
	INDICATION OF ELEVATION		LIMITS OF DIMENSION
	SECTION IN WATER		SECTION IN EARTH
	SECTION IN STRUCTURAL STEEL		SECTION IN CONCRETE
	SECTION IN EXISTING CONCRETE STRUCTURE		ELASTOMERIC BEARING PAD
	BITUMINOUS WEARING SURFACE ON BRIDGES		PLAN VIEW AND ELEVATION OF CUT & FILL SLOPES
	PLAN VIEW OF SLOPE PROTECTION		PLAN VIEW OF GROUDED RIPRAP ON SLOPE
	BUNDLED BARS		

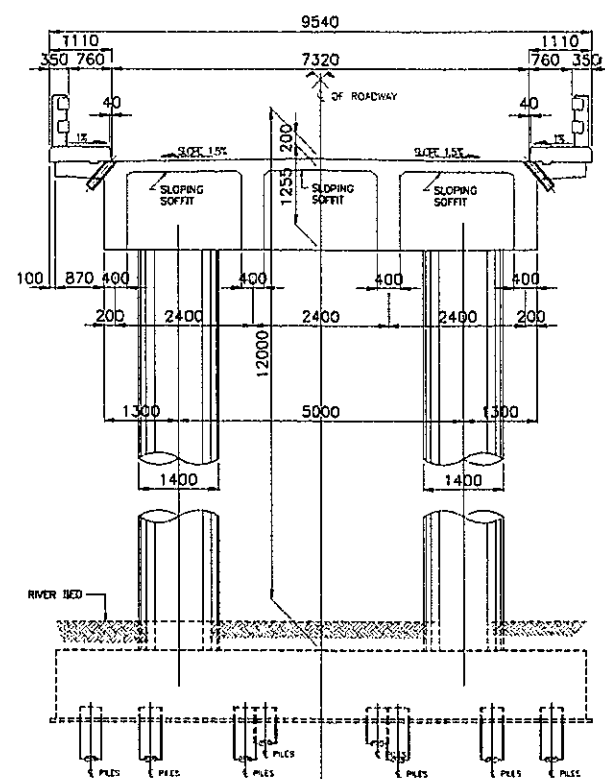
ABBREVIATIONS

ABT	ABOUT	KPa	KILOPASCAL
ABUT	ABUTMENT	m	METER
BEG	BEGINNING	mm	MILLIMETER
BET	BETWEEN	MAX	MAXIMUM
BOTT	BOTTOM	MPWL	MAX. FLOOD WATER LEVEL
BR	BRIDGE	MIN	MINIMUM
BRG	BEARING	MO	MIDDLE ORDNATE
CLR	CLEAR	MPa	MEGAPASCAL
cm	CENTIMETER	N	NEWTON
COLE	COLUMN	NF	NEAR FACE
CONC	CONCRETE	No.	NUMBER
CONST	CONSTRUCTION	O.C.	ON CENTERS
CONT	CONTINUOUS	O.W.L	ORDINARY WATER LEVEL
CTR	CENTER	PEJ	PREMOULDED EXPANSION JOINT
DET	DETAIL	PVC	POLYVINYL CHLORIDE
DIA	DIAMETER	PVI	POINT OF VERTICAL INTERSECTION
DIAPH	DIAPHRAGM	QTY	QUANTITY
DWG	DRAWING	R	RADIUS
EA	EACH	RC	REINFORCED CONCRETE
EF	EACH FACE	RDWY	ROADWAY
ELEV	ELEVATION	REINF	REINFORCEMENT
ENGR	ENGINEER	SDWK	SIDEWALK
EQ	EQUAL	SL	SLOPE
EW	EACHWAY	SP	SPIRAL
EXP	EXPANSION	SPCD	SPACED
EXT	EXTERIOR	SPCS	SPACES
EXIST	EXISTING	STD	STANDARD
FF	FAR FACE	STR	STIRRUP
FTG	FOOTING	STA	STATION
GEN	GENERAL	STRUCT	STRUCTURE
HOR	HORIZONTAL	SYMM	SYMMETRY
HW	HIGH WATER	THK	THICK
INT	INTERIOR	TYP	TYPICAL
INTERM	INTERMEDIATE	VAR	VARIABLE
JT	JOINT	VERT	VERTICAL
L	LENGTH	VOL	VOLUME
LG	LONG	W	WIDTH
KG	KILOGRAM	W	WITH
KN	KILONEWTION	&	AND

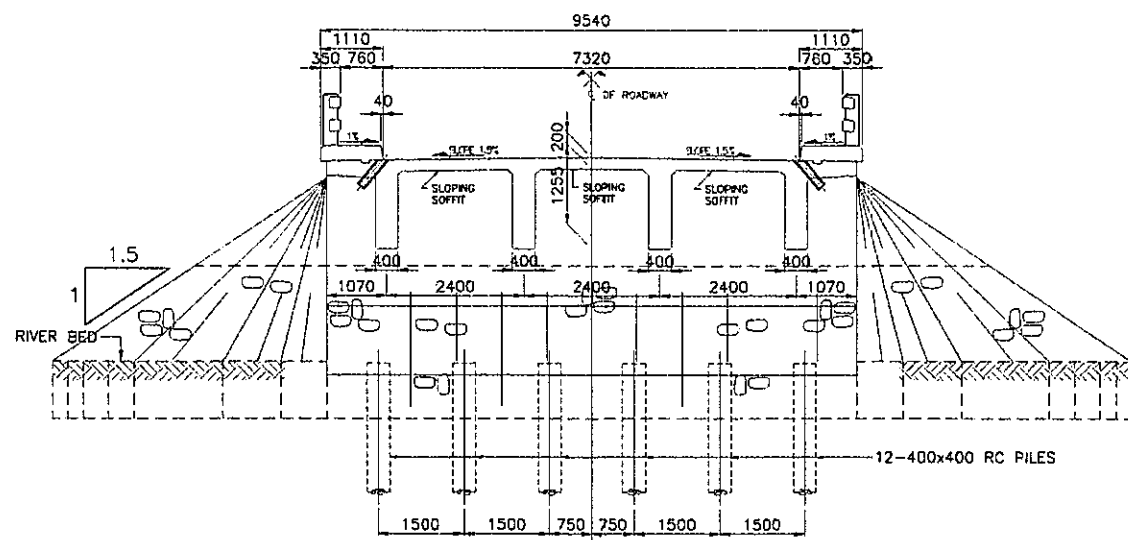
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BOHIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE:	SHEET CONTENTS:	DESIGNED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
			RENATOR V. VITORIC					
			CHECKED:					
			MA. ROSARIO A. JARAPLASAN					
	STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	GENERAL NOTES, SYMBOLS AND ABBREVIATIONS	CADD:	BLEBILDA S. RAMOS	LEA N. DELFINADO, CESO IV	EMIL K. SADAIN, CESO I		
			ROLAND C. MEDIANTE	OIC-CHIEF, BRIDGES DIVISION	DIRECTOR IV, BUREAU OF DESIGN	UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES		



REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	SHEET CONTENTS: GENERAL PLAN, AND GENERAL ELEVATION	DESIGNED: RENATOR M. VITARIO CHECKED: MA. ROSARIO A. JAVARASAN CADD: ROLANDO C. MEDIANTE JEROME V. KATIGBAK ENGINEER I	SUBMITTED: <i>[Signature]</i> BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(18) 2 19
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3 SECTION @ PIER
SCALE 1:60M.



4 SECTION @ ABUTMENT
SCALE 1:60M.

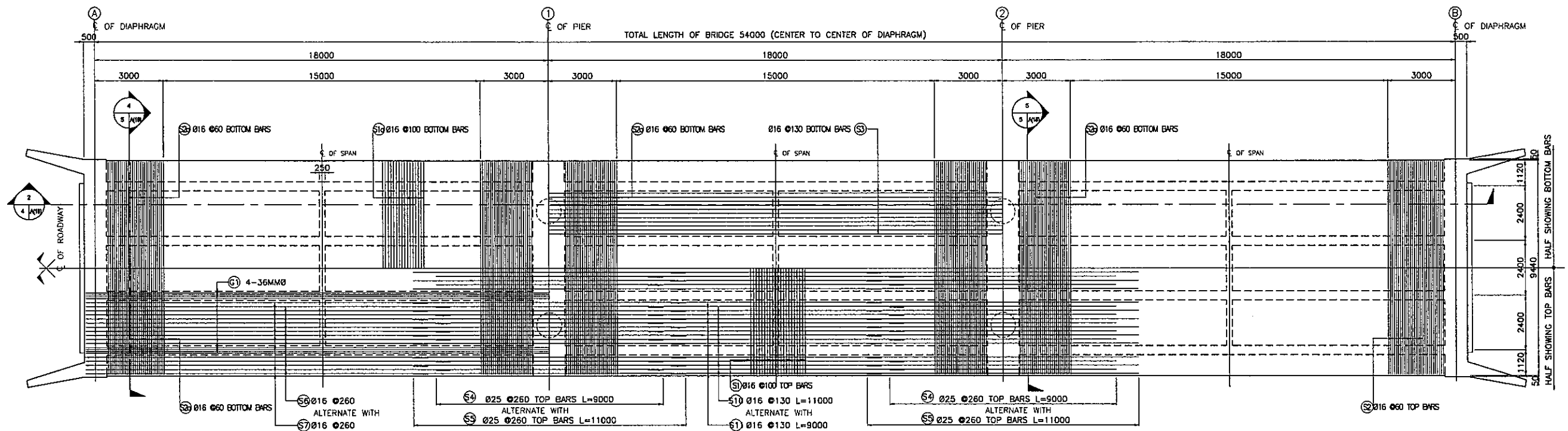
INDEX OF DRAWING

DRAWING NO.		SHEET CONTENTS
SET NO.	SHEET NO.	
BOD 2018-5 BrD	A (18) - 1/19	GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
	A (18) - 2/19	GENERAL PLAN AND ELEVATION
	A (18) - 3/19	SECTION @ PIER, SECTION @ ABUTMENT AND INDEX OF DRAWING & NOTES
	A (18) - 4/19	FRAMING PLAN AND LONGITUDINAL SECTION
	A (18) - 5/19	TYPICAL CROSS SECTION, SECTIONS AND REINFORCEMENT OVER PIER
	A (18) - 6/19	PLAN, ELEVATION, SECTIONS AND SPIRAL SPICE DETAILS FOR 3 SPAN
	A (18) - 7/19	REINFORCEMENT SCHEDULE AND LOADING INFORMATION FOR DESIGN OF FOUNDATION FOR 3 SPAN
	A (18) - 8/19	DETAIL OF FOOTING TYPE F8 (FOR FOOTING ON PILES)
	A (18) - 9/19	DETAIL OF FOOTING TYPE F8 (SPREAD FOOTING)
	A (18) - 10/19	GIRDER ELEVATION, BOTTOM BAR SCHEMATIC LAYOUT, SECTION AT MIDSPAN AND DETAIL
	A (18) - 11/19	CONC. POURING SEQUENCE, INTERMEDIATE DIAPHRAGM DETAIL AND CAMBER DIAGRAM
	A (18) - 12/19	REINFORCEMENT SCHEDULE AND ESTIMATED OF QUANTITIES FOR STRUCTURE OF 18M 3 SPAN
	A (18) - 13/19	ABUTMENT PLAN AND ELEVATION
	A (18) - 14/19	ELEVATION OF WINGWALL, SECTIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES
	A (18) - 15/19	TYPICAL RAILING AND SIDEWALK DETAILS
	A (18) - 16/19	SIDEWALK DETAIL AND TYPICAL DRAIN DETAIL
	A (18) - 17/19	TYPICAL APPROACH SLAB DETAIL
	A (18) - 18/19	TYPICAL PRECAST CONCRETE PILE DETAIL
	A (18) - 19/19	ABUTMENT SLOPE PROTECTION AND DRAINAGE

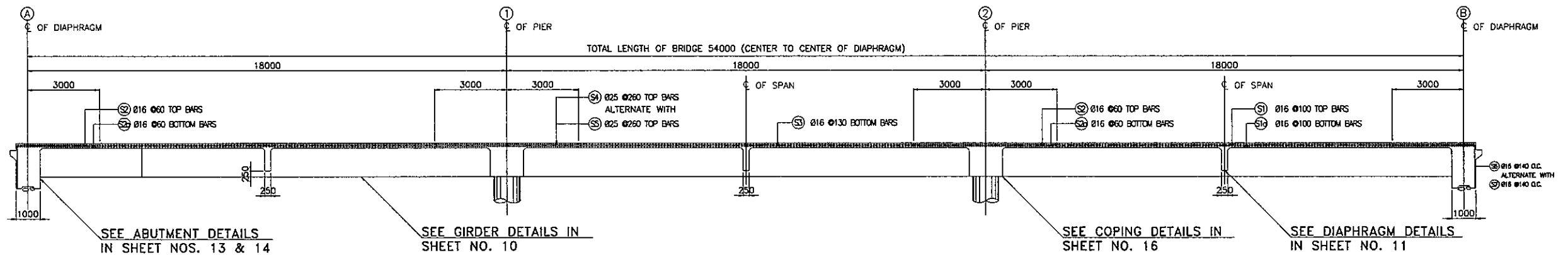
NOTES:

- THIS STANDARD PLAN IS FOR REFERENCE ONLY. STRUCTURAL ANALYSIS SHALL BE PREPARED BASED ON THE ACTUAL SURVEY, HYDRAULIC, HYDROLOGIC AND GEOTECHNICAL DATA ON THE PROJECT SITE.
- PROTECTION WORKS FOR ABUTMENTS SHALL BE DESIGNED BY THE ENGINEER/CONSULTANT. THE PROTECTION WORKS SHOWN HEREIN ARE FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL NOT BE CONSTRUED AS THE FINAL DETAILS. HOWEVER, SLOPE FOR EMBANKMENT PROTECTION WORKS SHALL BE 1.5:1 OR FLATTER.
- LENGTH OF REINFORCED CONCRETE PILES SHALL BE DETERMINED/DESIGNED BASED ON THE ACTUAL BORING DATA AT LOCATION OF FOUNDATION.

	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	SHEET CONTENTS: SECTION @ PIER, SECTION @ ABUTMENT AND INDEX OF DRAWING & NOTES	DESIGNED: RENATO R. VICTORIO 40101111	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(18) 3 19
				CHECKED: MA ROSARIO A. JARAPLASAN OIC-ENGINEER IV					

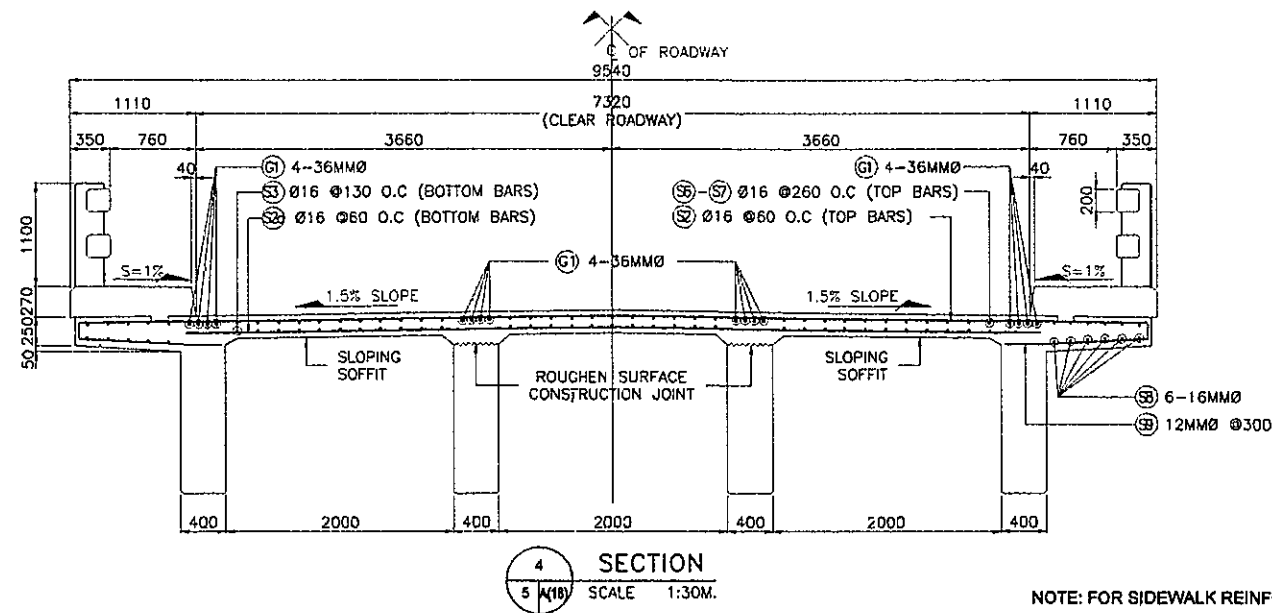


1 FRAMING PLAN
SCALE 1:90M.

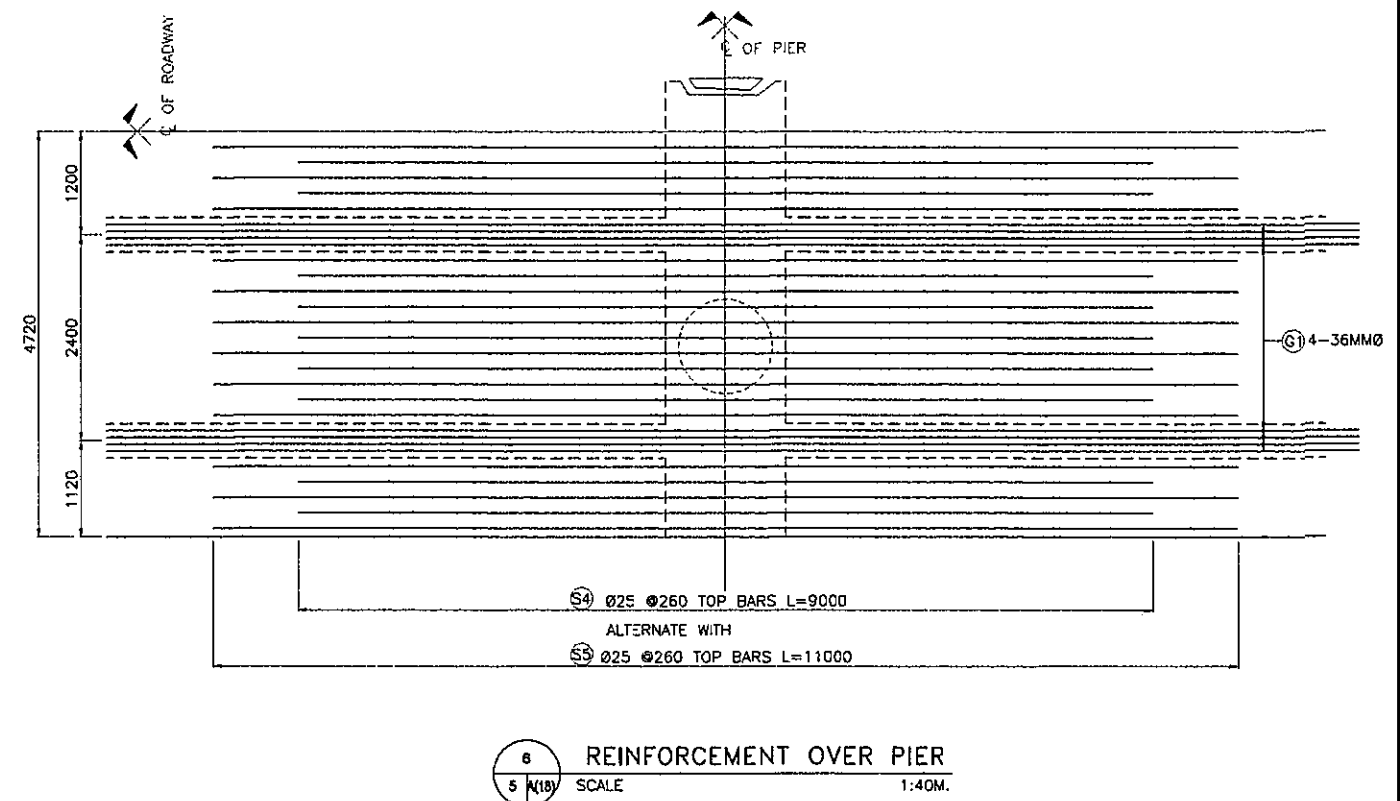
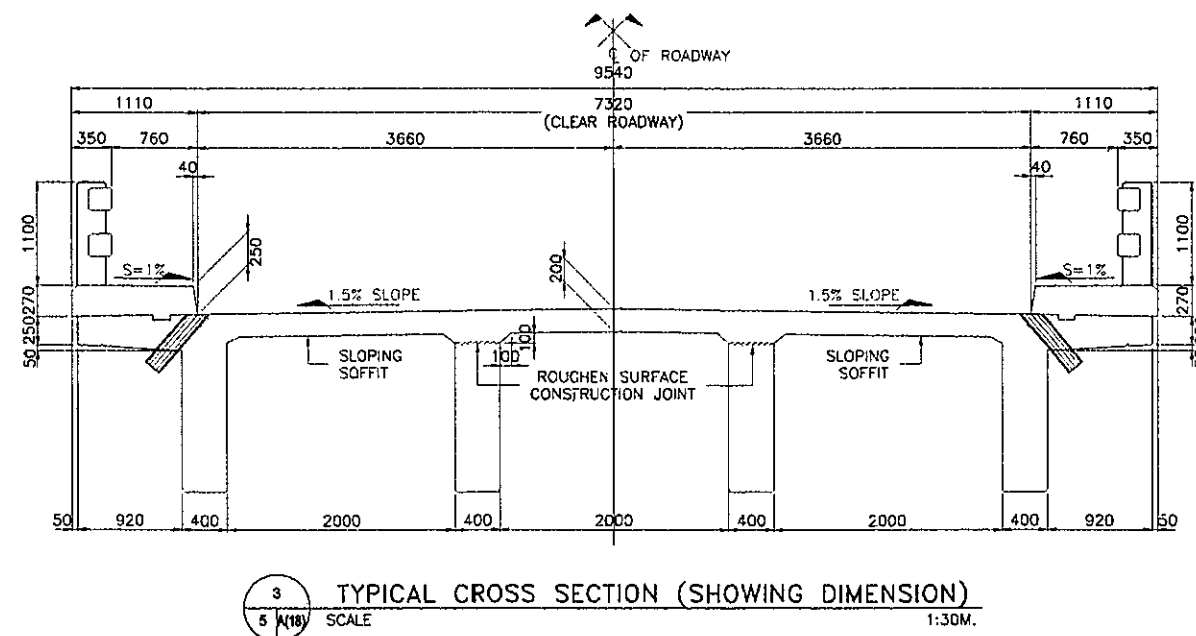
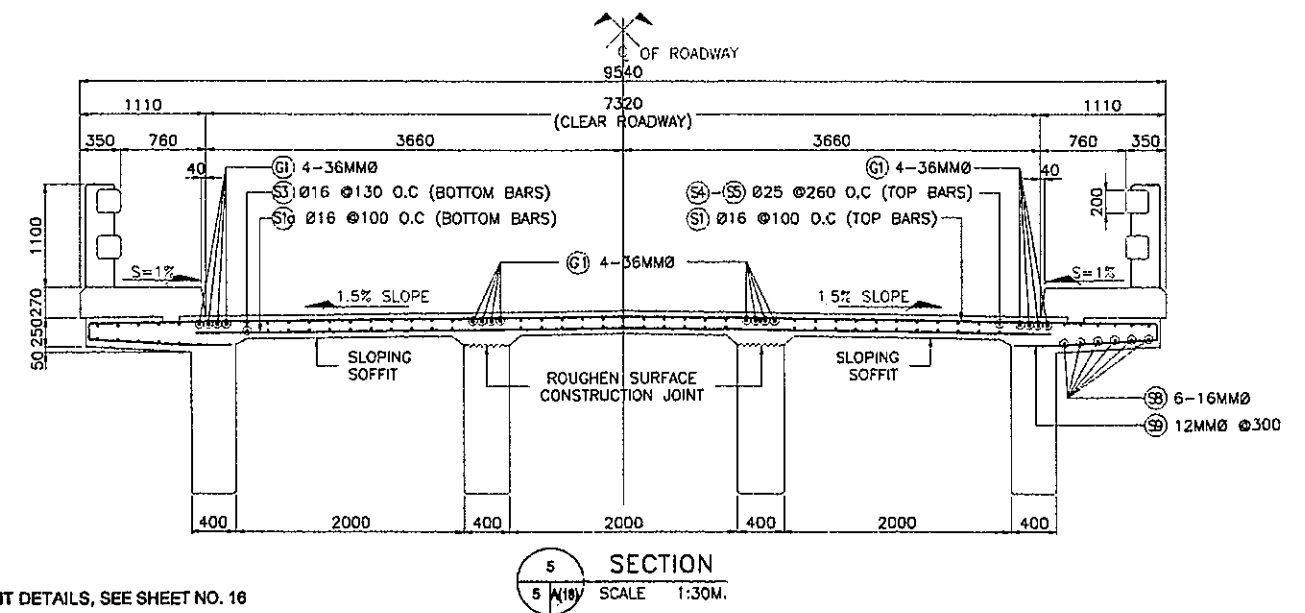


2 LONGITUDINAL SECTION
SCALE 1:90M.

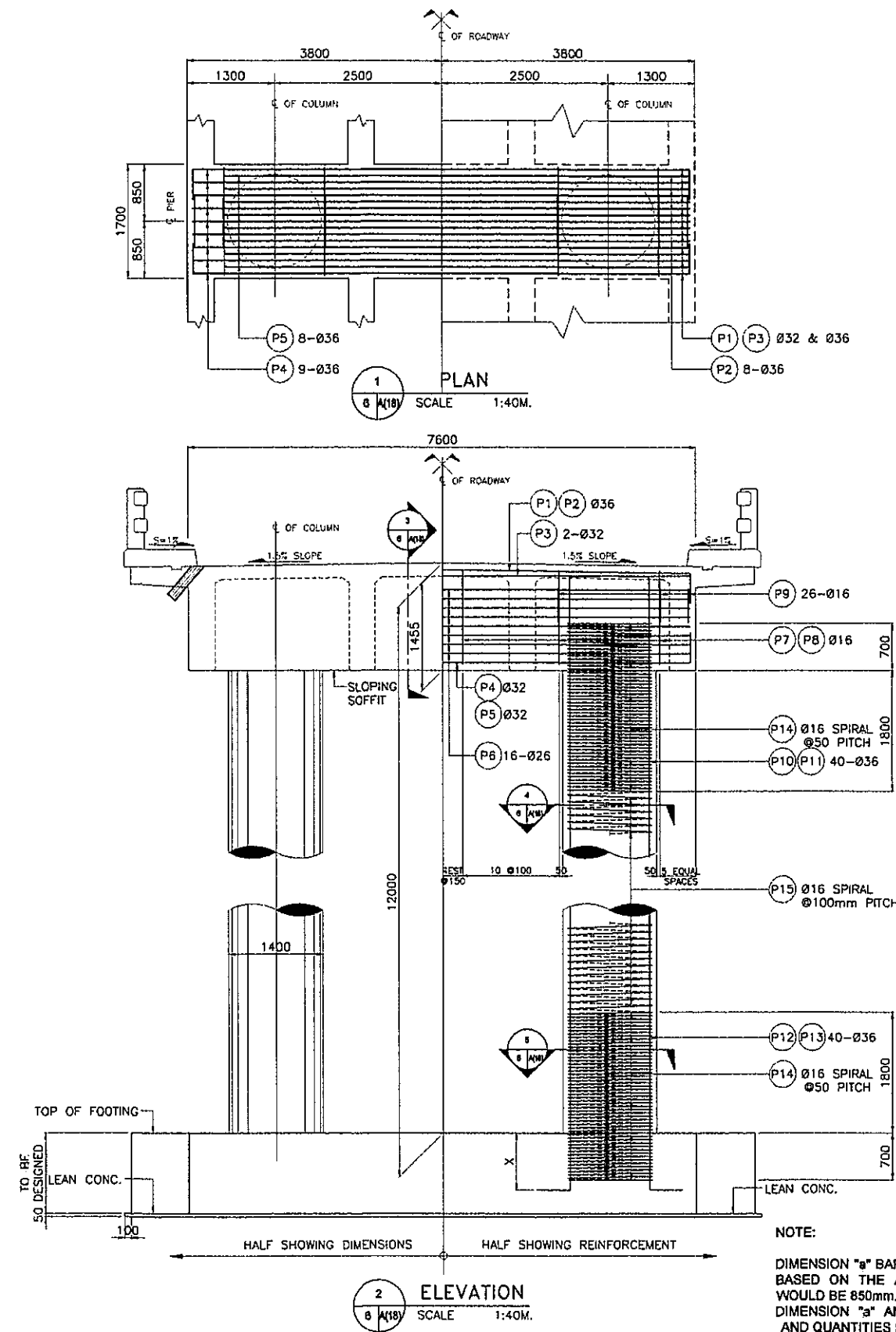
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	SHEET CONTENTS: FRAMING PLAN AND LONGITUDINAL SECTION	DESIGNED: RENATO R. VITORIO CHECKED: MA. ROSARIO A. SARAPLAN CADD: ROLANDO C. MEDANTE JEROME V. KATIGBAK	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(18) 4/19
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NOTE: FOR SIDEWALK REINFORCEMENT DETAILS, SEE SHEET NO. 16

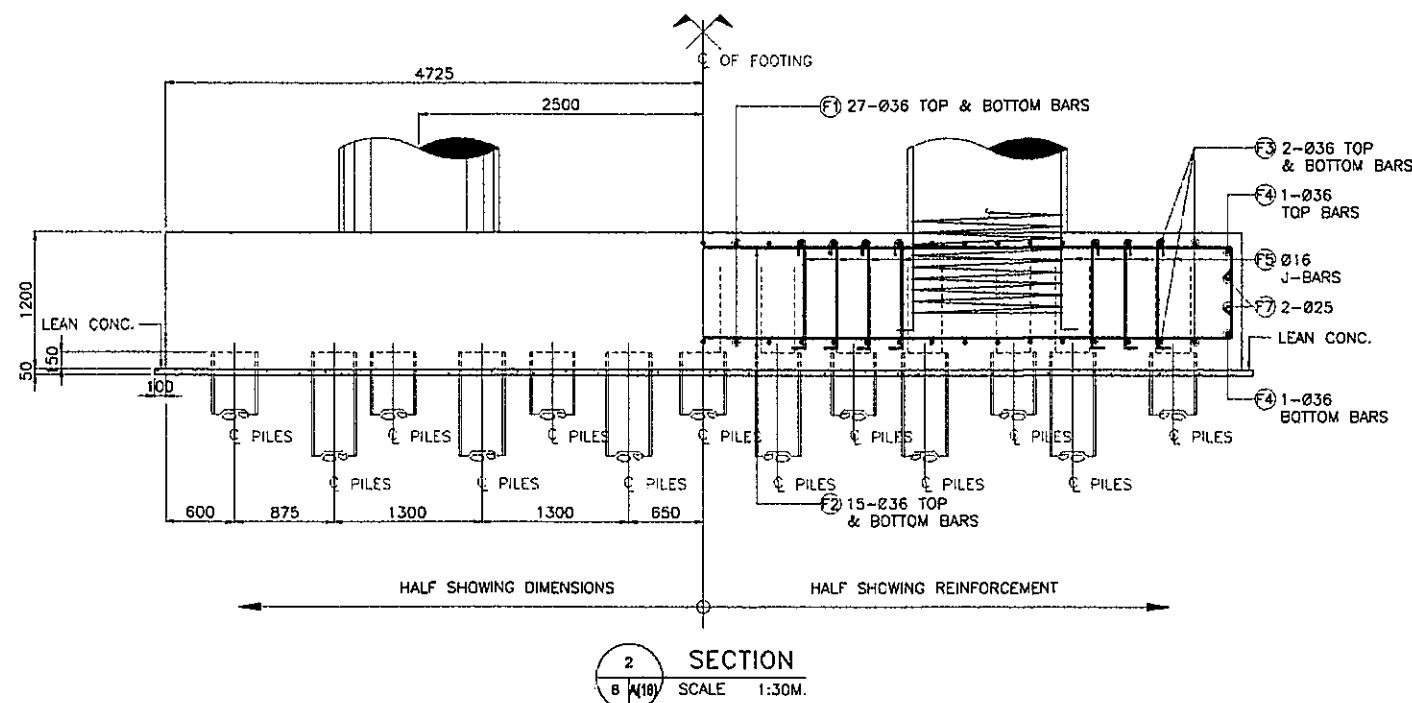
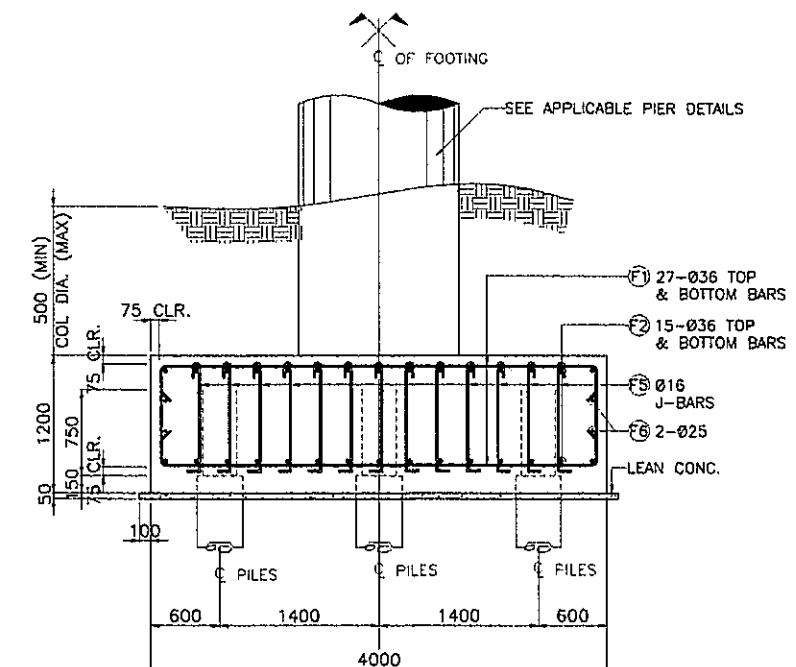
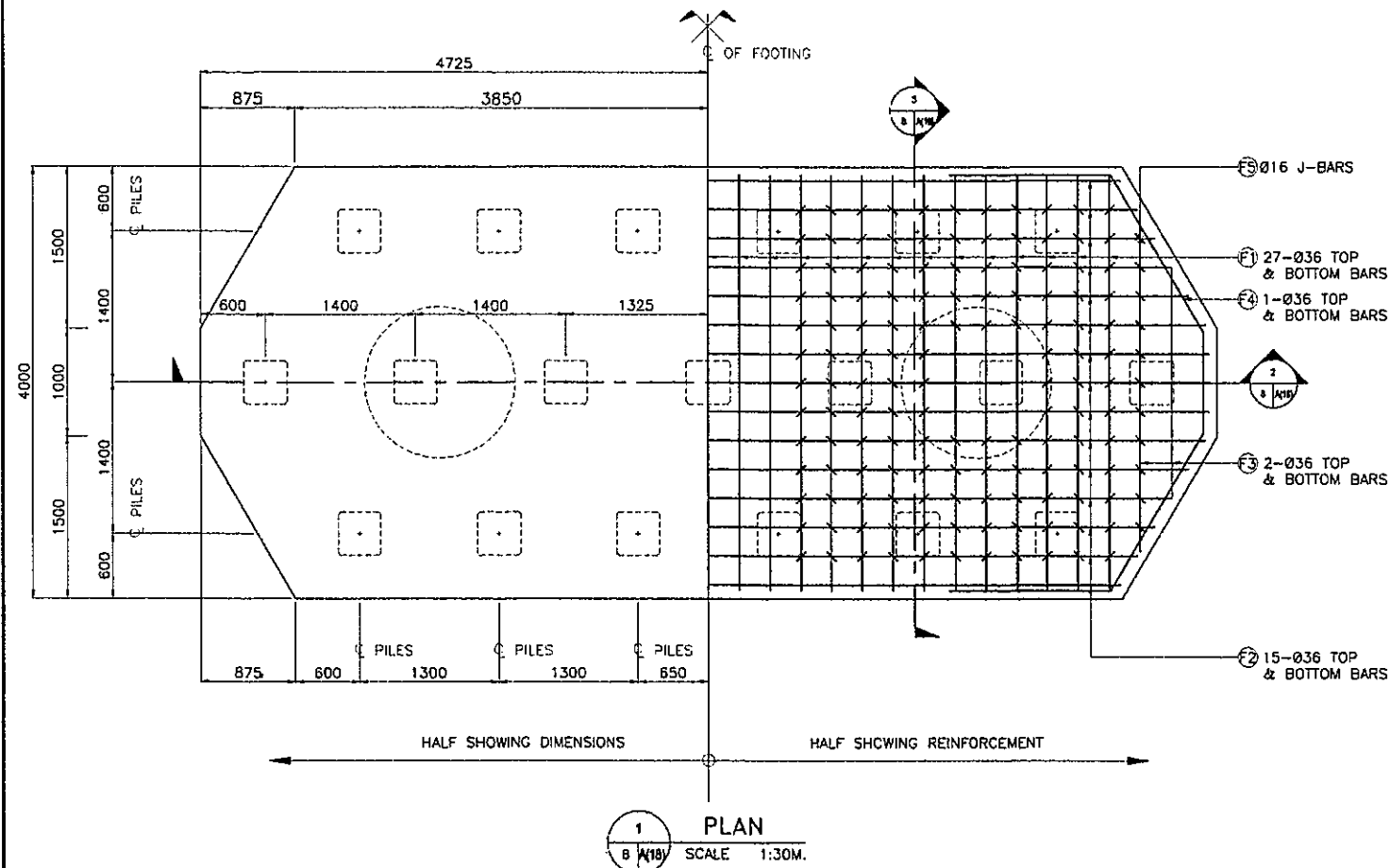


REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCBG SUPERSTRUCTURE L=18M	SHEET CONTENTS: TYPICAL CROSS SECTION (SHOWING DIMENSIONS) SECTIONS (SHOWING REINFORCEMENTS) REINFORCEMENT OVER PIER	DESIGNED: RENATO B. VICTORIA CHECKED: MA. ROSARIO A. JUANILAN CADD: ROLANDO S. MEDIANTE JEROME Y. KATISBAK ENGR. 1	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(18) 5/19
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 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	SHEET CONTENTS: PLAN, ELEVATION, SECTIONS AND SPIRAL SPLICE DETAILS FOR 3 SPAN	DESIGNED: RENATO RANIER V. VITERIO CHECKED: MA. ROSARIO V. RAMOS CADD: RODOLFO C. MEDIANTE JEROME V. KATIGBAK ENGINEER II	SUBMITTED: BLASILDA S. RAMOS CIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(20) 6/19
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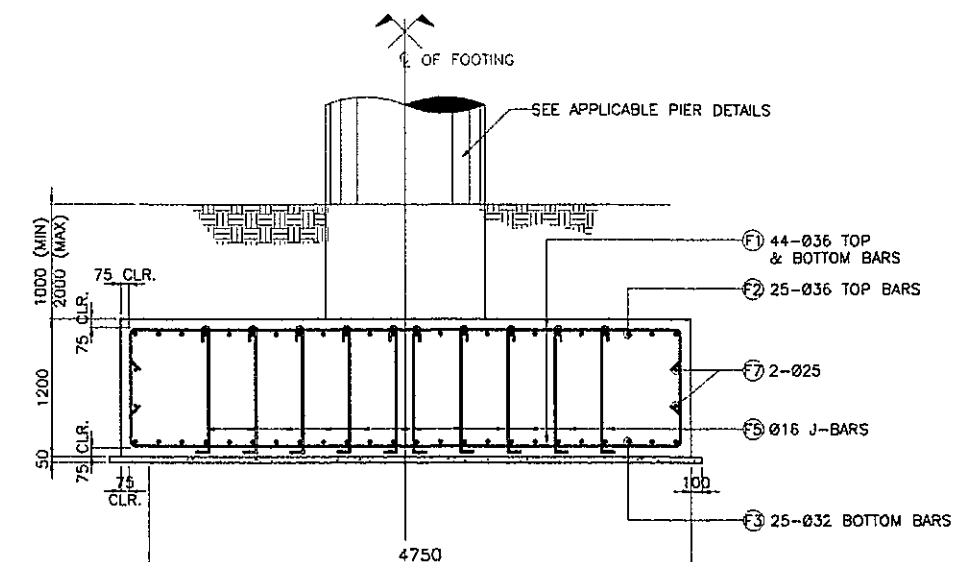
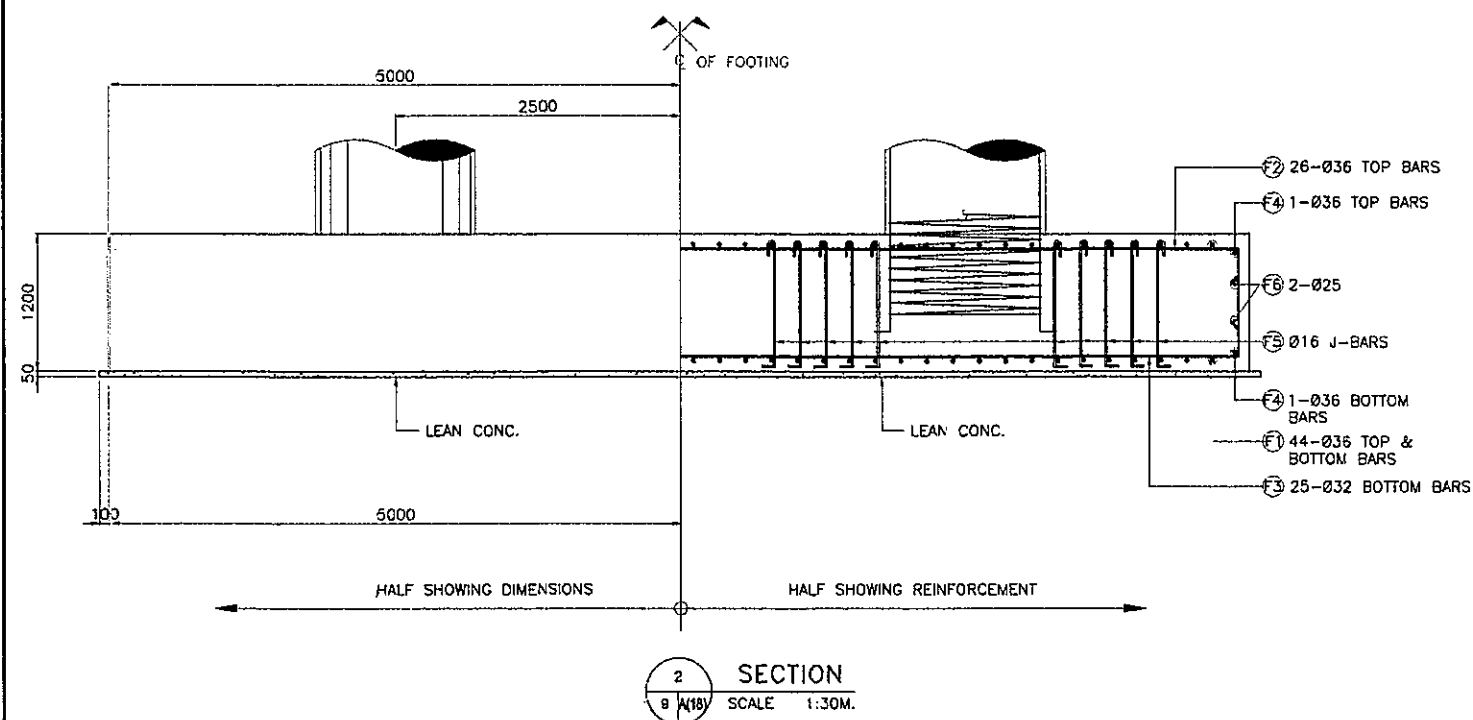


DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES															
REINFORCEMENT															
BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)			LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m³)	REMARKS
							a	b	c						
	FOOTING	(F1)	36	54	287	(B)	3850	437	-	4.724	255.10	7.990	2,038.22	42.21	1.QUANTITIES ARE FOR ONE (1) PILE CAP.
		(F2)	36	30	267	(B)	9200 min 7450max	437	-	9.200 AVE.	276.00	7.990	2,205.24		
		(F3)	36	8	AS SHOWN	(A)	2000 min 3000max	-	-	2.500 AVE.	20.00	7.990	159.80		
		(F4)	36	4	AS SHOWN	(C)	1000	1735	1165	6.800	27.20	7.990	217.33		
		(F5)	16	308	AS SHOWN	(D)	180	900	120	1.200	369.60	1.578	583.23		
		(F6)	25	4	AS SHOWN	(A)	7450	-	-	7.450	29.80	3.853	114.82		
		(F7)	25	4	AS SHOWN	(C)	1000	1735	1165	6.800	27.20	3.853	104.80		
															1.QUANTITIES ARE APPLICABLE TO PIER HEIGHTS 8, 10 & 12M.

- NOTES:
- ALLOWABLE BEARING CAPACITY = 400kPa
 - MATERIAL TYPE : ROCK
 - MINIMUM DEPTH BELOW SCOUR LINE = 1 METER

TYPE F6 (FOR FOOTING ON PILES)
SCALE AS SHOWN

	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	SHEET CONTENTS: DETAIL OF FOOTING TYPE F6 (FOR FOOTING ON PILES)	DESIGNED: RENATO P. MATORIC ENGINEER	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. 	SHEET NO.
			CHECKED: MA. ROSARIO J. ROSAS ENGINEER					



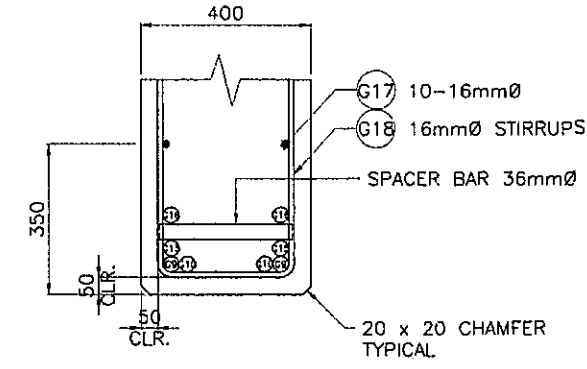
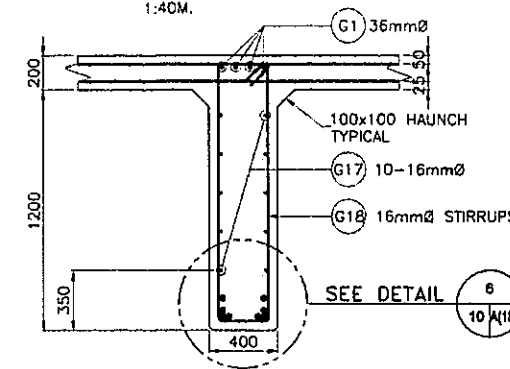
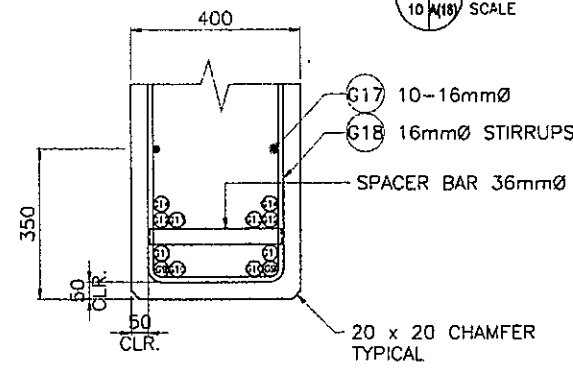
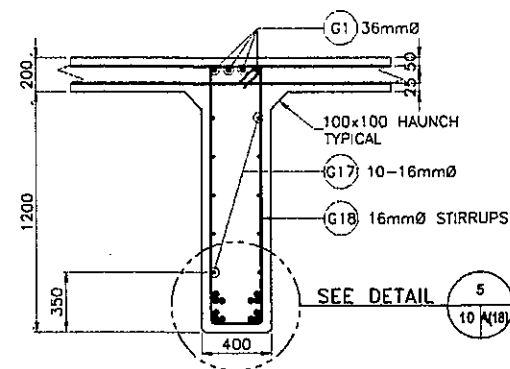
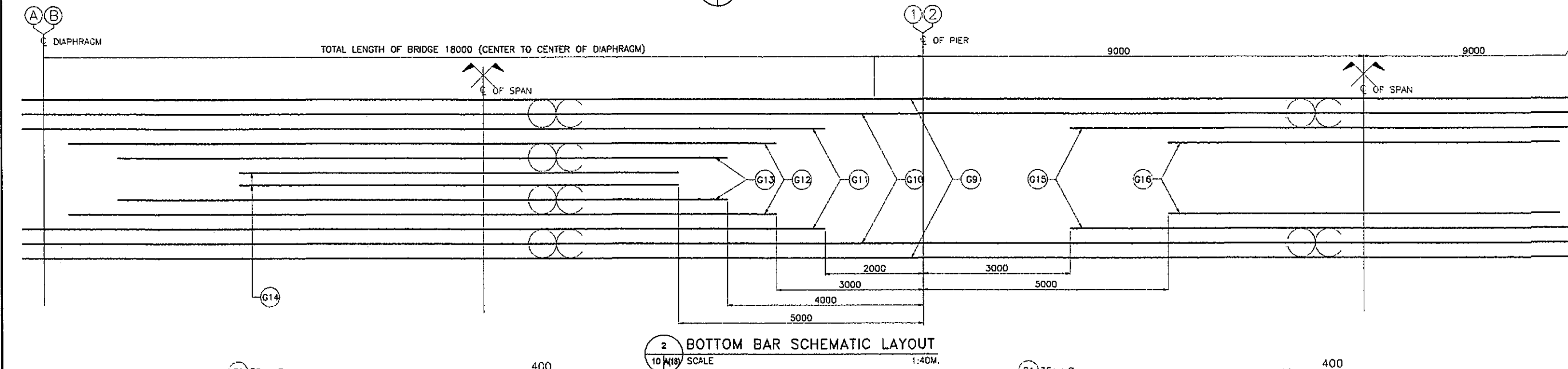
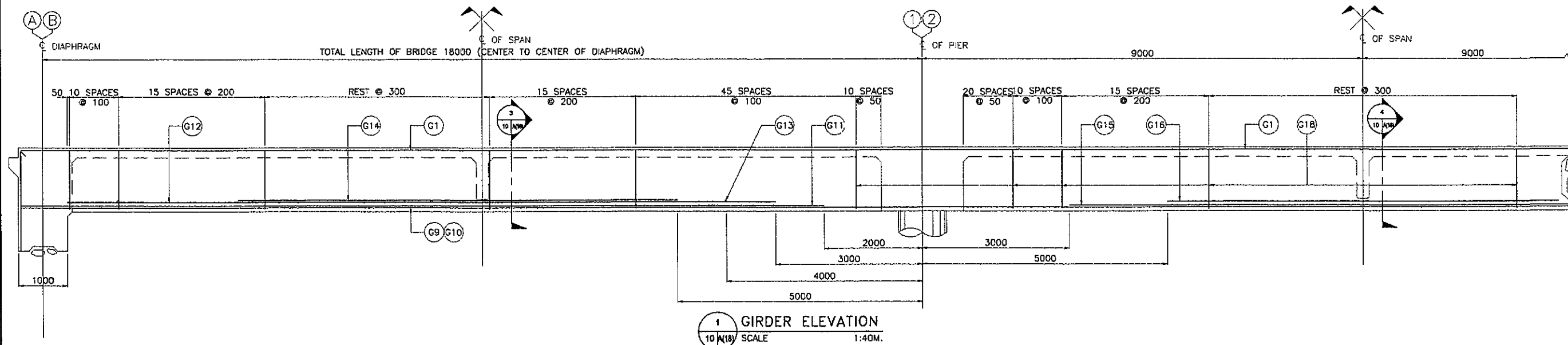
3 SECTION
9 A(18) SCALE 1:30M.

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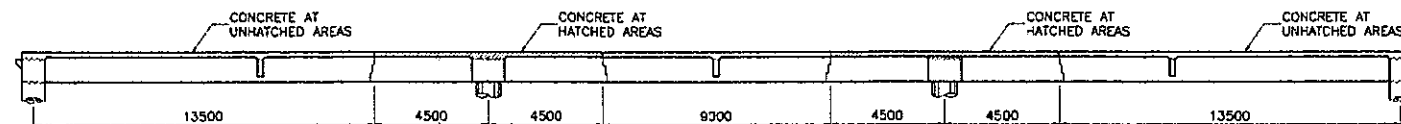
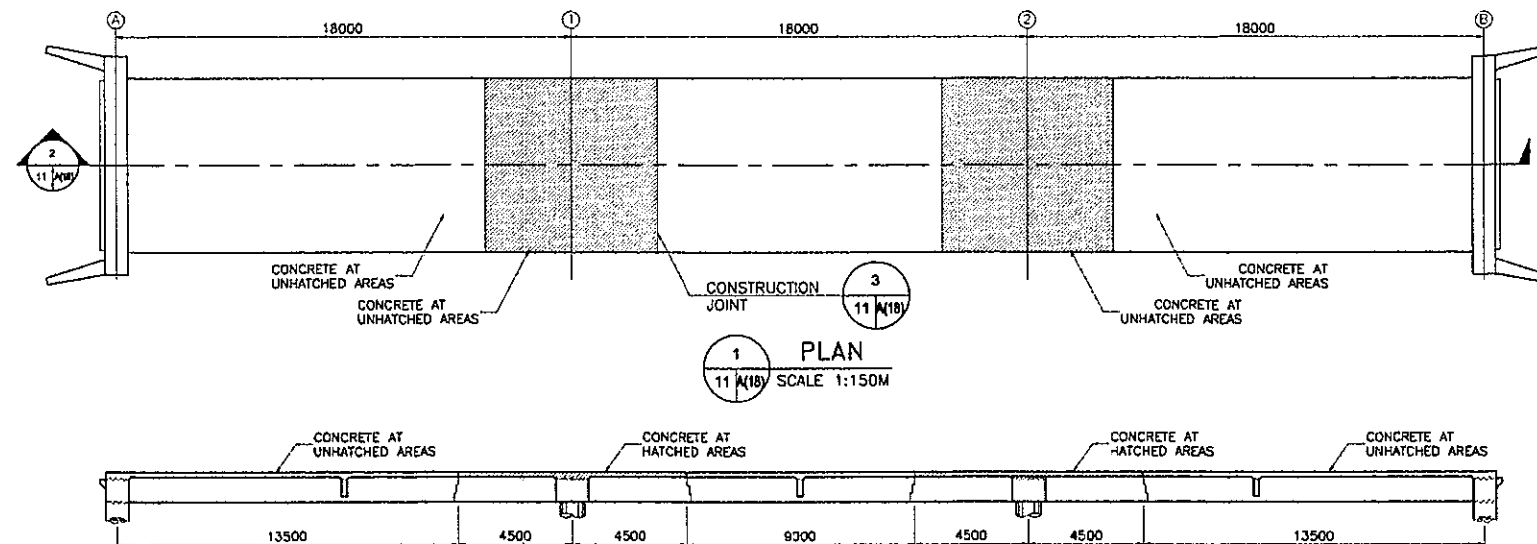
NOTES:

- ALLOWABLE BEARING CAPACITY = 400kPa
- MATERIAL TYPE : ROCK
- MINIMUM DEPTH BELOW SCOUR LINE = 1 METER

TYPE F6 (FOR SPREAD FOOTING)

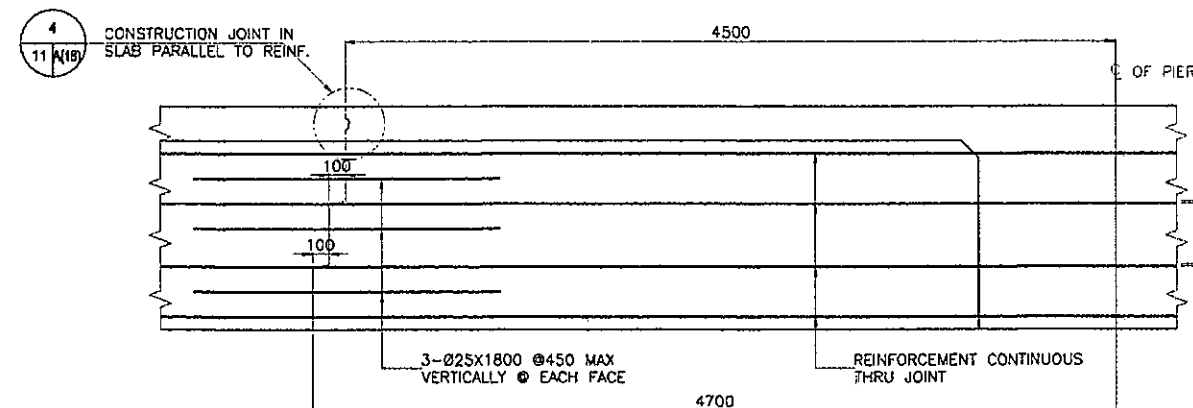
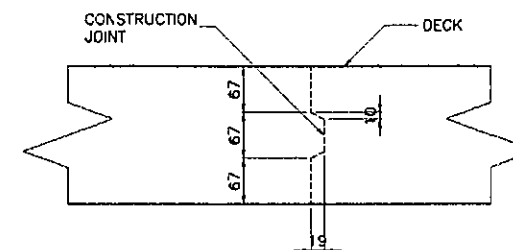


REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION 1011 BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	SHEET CONTENTS: GIRDER ELEVATION, BOTTOM BAR SCHEMATIC LAYOUT, SECTION AT MIDSPAN AND DETAIL	DESIGNED: RENATOR ANIER M. VICTOR CHECKED: MA. ROSARIO A. JARAPUSAN CADD: ROLANDO C. MEDIANTE JEROME V. KATIGBAK ENGINEER	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BRD	SHEET NO. A(18) 10 18
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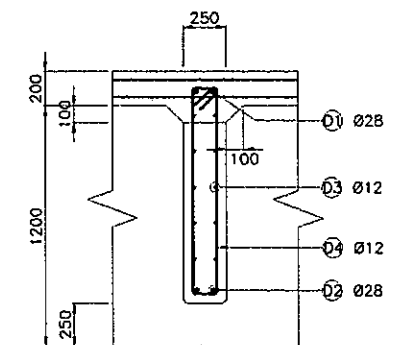
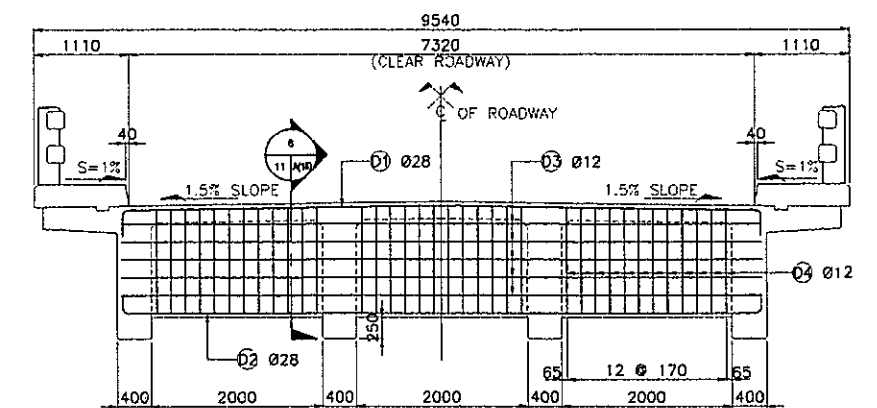


NOTE:

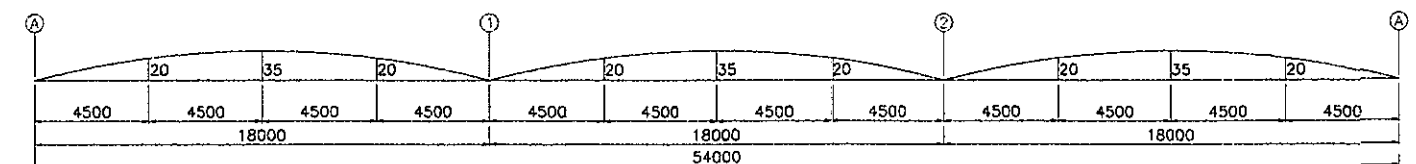
1. CONCRETE AT HATCHED AREAS SHALL BE PLACED AT LEAST ONE DAY AHEAD OF CONCRETE AT UNHATCHED AREAS.
2. REINFORCEMENT SHALL BE CONTINUOUS AT CONSTRUCTION JOINTS.
3. CONSTRUCTION OF SUPERSTRUCTURE SHALL BE FULLY SHORED.



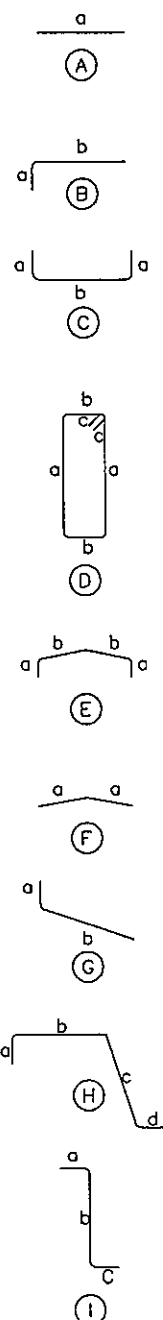
CONC. POURING SEQUENCE
SCALE AS SHOWN

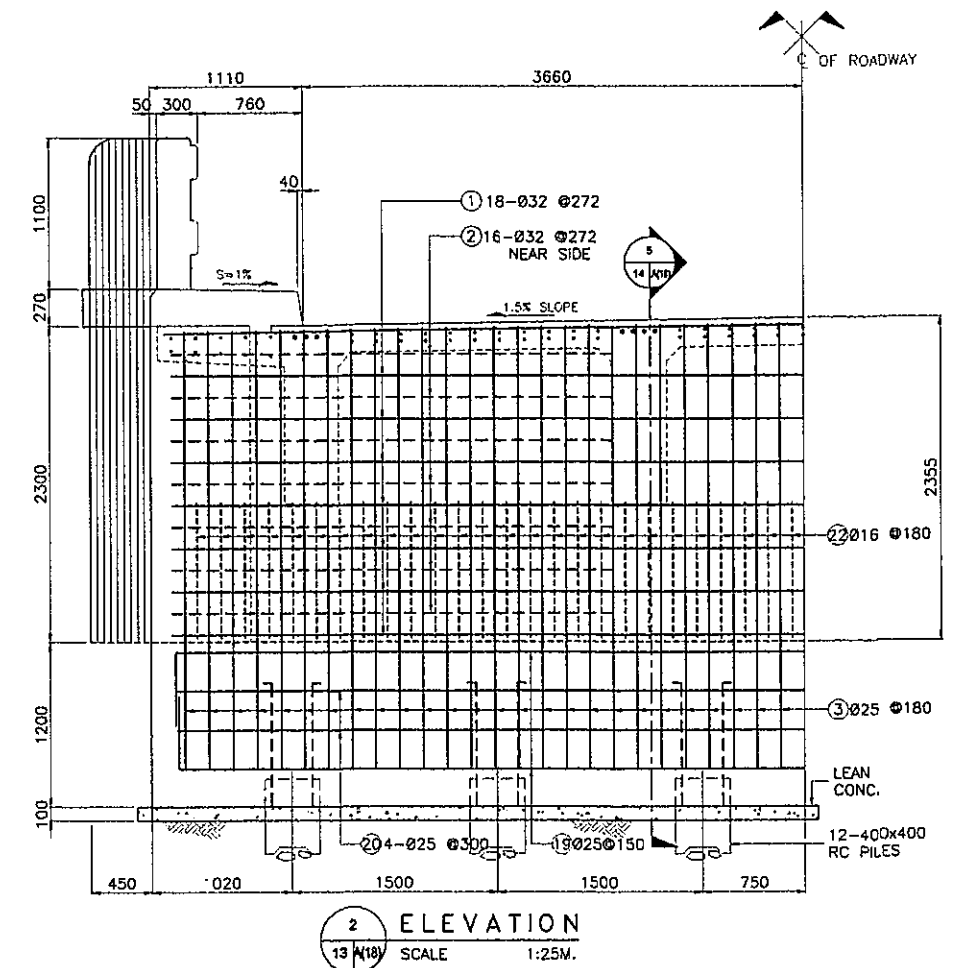
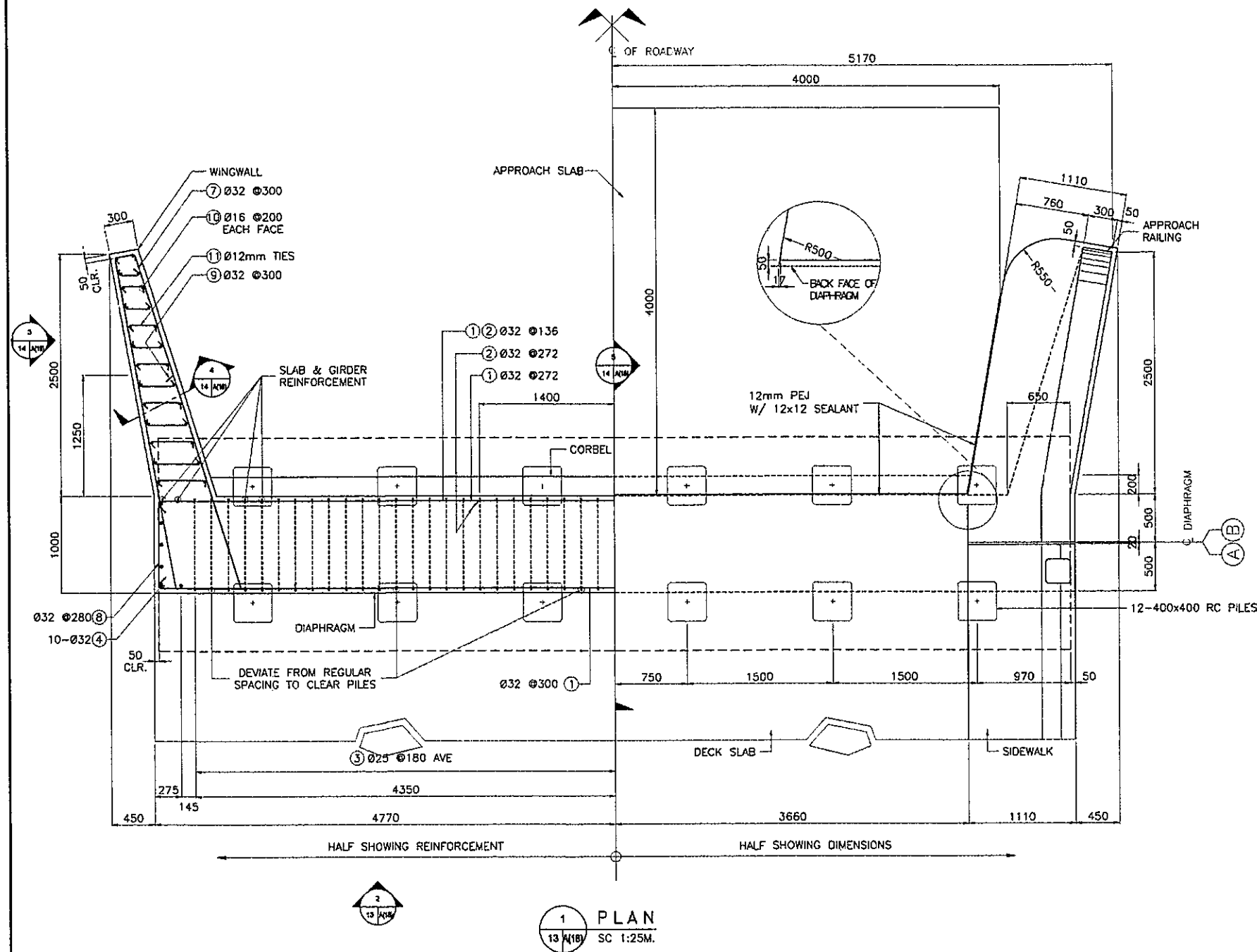


INTERMEDIATE DIAPHRAGM DETAIL
SCALE AS SHOWN

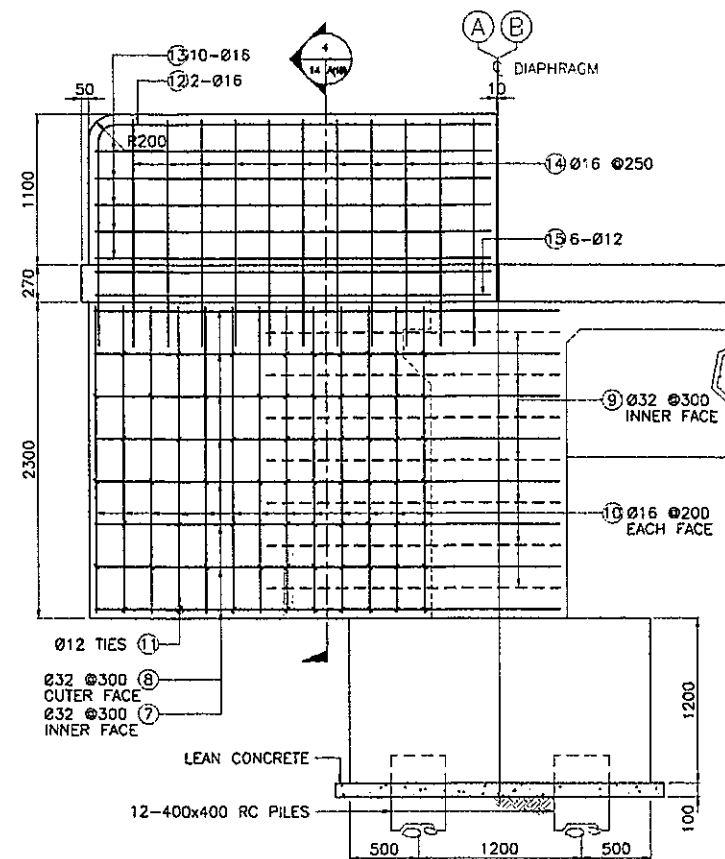


REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCBG SUPERSTRUCTURE L=18M	SHEET CONTENTS: CONC. POURING SEQUENCE, INTERMEDIATE DIAPHRAGM DETAIL AND CAMBER DIAGRAM	DESIGNED: RENATO RAINIER M. VITORIO CHECKED: MA. ROSARIO A. LERIO CADD: ROLANDO C. MEDIANTE JEROME V. KATIGBAK OC-SHOSBIV	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(18) 11 19
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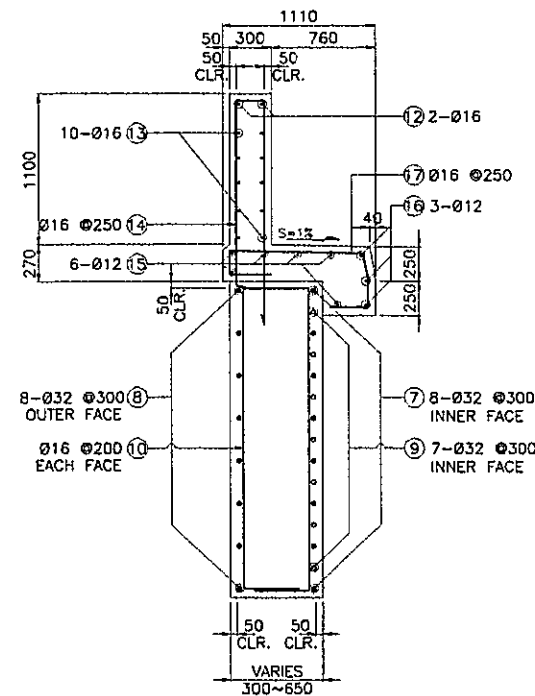
REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR STRUCTURE OF 18M MULTI-SPAN																
REINFORCEMENT																
BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY.	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)				LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT		CONCRETE VOLUME (m3)
							a	b	c	d				Grade 40 (kg)	Grade 60 (kg)	
	DECK SLAB	S1	16	316	100	E	100	4680	-	-	9.560	3020.96	1.578	0.00	4767.07	110.92
		S1a	16	316	100	F	3800	-	-	-	7.600	2401.60	1.578	0.00	3789.72	
		S2	16	300	60	E	100	4680	-	-	9.560	2868.00	1.578	0.00	4525.70	
		S2a	16	300	60	F	3800	-	-	-	7.600	2280.00	1.578	0.00	3597.84	
		S3	16	46	130	A	54900	-	-	-	54.900	2533.85	1.578	0.00	3998.41	
		S4	25	54	260	A	9000	-	-	-	9.000	486.00	3.853	0.00	1872.56	
		S5	25	64	260	A	11000	-	-	-	11.000	704.00	3.853	0.00	2712.51	
		S6	16	54	260	B	1600	15000	-	-	16.600	896.40	1.578	0.00	1414.52	
		S7	16	64	260	B	1600	14000	-	-	15.600	998.40	1.578	0.00	1575.48	
		S8	16	12	AS SHOWN	A	54900	-	-	-	54.900	658.80	1.578	0.00	1039.59	
		S9	12	331	300	G	100	1200	-	-	1.300	429.87	0.888	381.72	0.00	
		S10	16	27	260	A	11000	-	-	-	11.000	297.00	1.578	0.00	468.67	
		S11	16	32	260	A	9000	-	-	-	9.000	288.00	1.578	0.00	454.46	



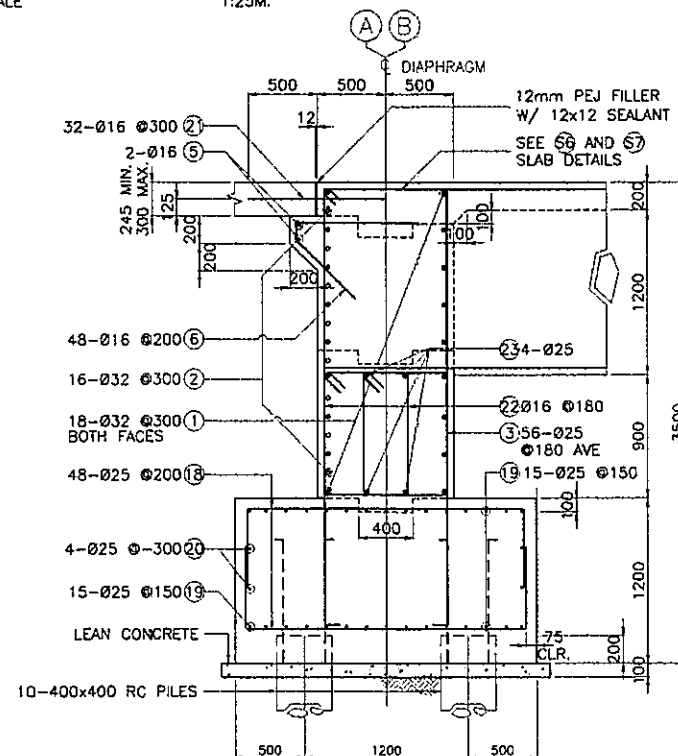
	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	SHEET CONTENTS: ABUTMENT DETAIL 1/2 PLAN & ELEVATION	DESIGNED: RENATO RAMIER M. VICTORIO CHECKED: MA. ROSARIO A. JARAPLASAN CADD: ROLANDO C. MEDIANTE SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(18) 13 19
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3 WINGWALL ELEVATION
SCALE 1:25M.

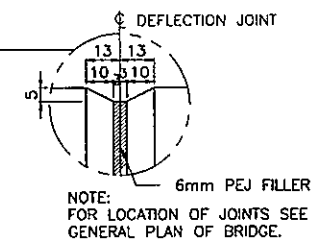
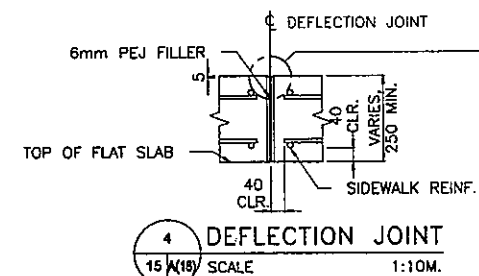
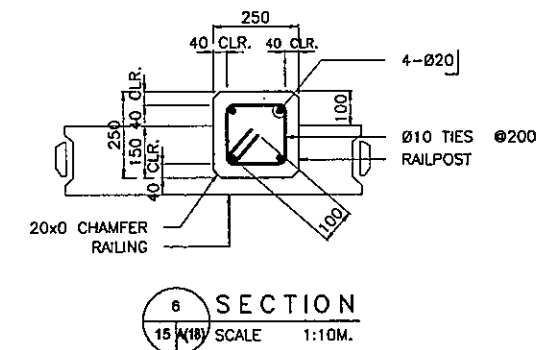
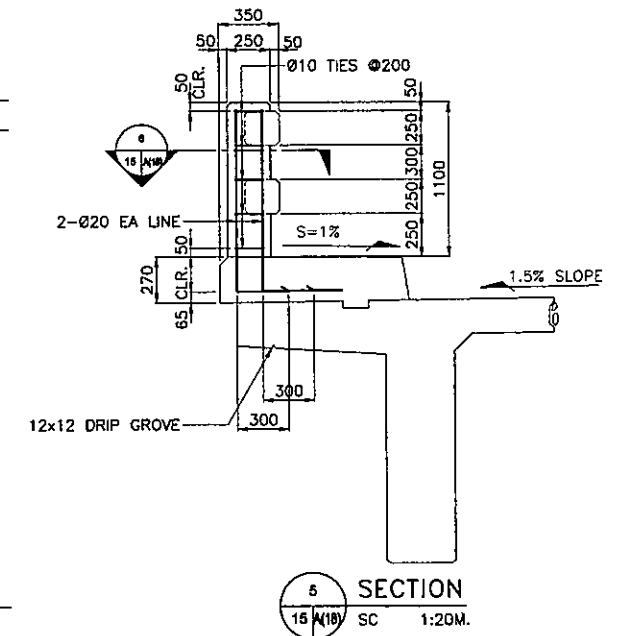


4 SECTION
SCALE 1:25M.



5 SECTION
SCALE 1:25M.

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) ABUTMENT														
BIDDING DIAGRAM (DIMENSIONS ARE OUT TO OUT OF BARS)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)				LENGTH EACH BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m³)
						BAR DIMENSIONS (mm)								
						a	b	c	d					
	1	32	18	300	C	700	9440	-	-	10.840	195.12	6.313	1231.79	32.30
	2	32	16	300	B	700	3270	-	-	3.970	63.52	6.313	401.60	
	3	25	56	180	D	110	3175 MIN 3230 MAX	900	-	7.525	421.40	3.855	1624.50	
	4	32	10	AS SHOWN	A	3175	-	-	-	3.175	31.75	6.313	200.44	
	5	16	2	AS SHOWN	A	3440	-	-	-	9.440	18.88	1.578	29.79	
	6	16	48	200	E	900	100	600	-	1.600	76.80	1.578	121.19	
	7	32	16	300	B	620	3380	-	-	4.000	64.00	6.313	404.03	
	8	32	16	300	B	600	3230	-	-	3.830	61.28	6.313	386.86	
	9	32	7	300	B	620	2080	-	-	2.700	18.90	6.313	119.32	
	10	16	52	200	D	200 MIN 500 MAX	2200	-	-	2.900	150.80	1.578	237.96	
	11	12	114	AS SHOWN	G	170	140 MIN 490 MAX	170	-	0.655	74.67	0.888	66.31	
	12	16	4	AS SHOWN	F	2700	235	1350	-	4.285	17.14	1.578	27.05	
	13	16	20	AS SHOWN	A	2850	-	-	-	2.850	57.00	1.578	89.95	
	14	16	22	250	C	1040	200	-	-	3.480	76.56	1.578	120.81	
	15	12	12	AS SHOWN	A	2600 MIN 2850 MAX	-	-	-	2.725	32.70	0.888	29.04	
	16	12	6	AS SHOWN	F	510	785	2350	-	3.645	21.87	0.888	19.42	
	17	16	26	250	H	300	174	970	196	2.300	59.80	1.578	94.36	
	18	25	96	200	C	600	2050	-	-	3.250	312.00	3.855	1202.76	
	19	25	30	150	B	110	9440	-	-	9.550	286.50	3.855	1104.46	
	20	25	4	300	B	110	9440	-	-	9.550	38.20	3.855	147.26	
	21	16	32	300	A	1000	-	-	-	1.000	32.00	1.578	50.50	
	22	16	110	180	I	570	850	150	-	3.140	345.40	2.578	890.44	
	23	25	4	AS SHOWN	A	3440	-	-	-	9.440	37.76	3.578	135.11	
GRAND TOTAL (GRADE 40) =											114.77	32.30		
GRAND TOTAL (GRADE 60) =											8 619.57			

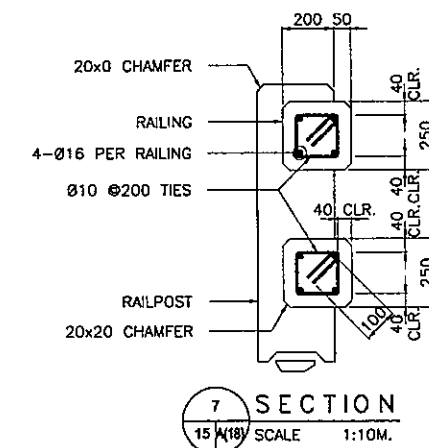


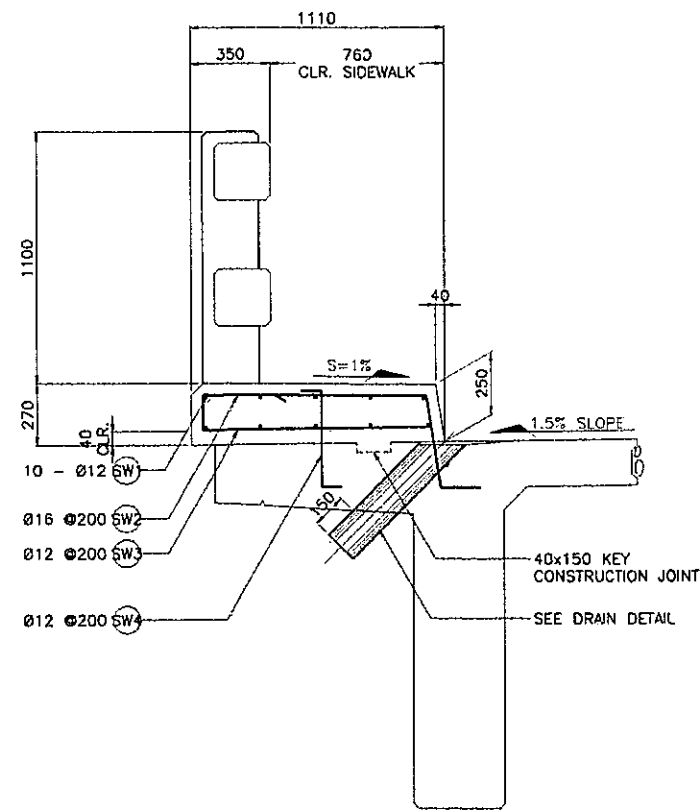
1. SIDEWALK SHALL BE PLACED AFTER THE SHORING UNDER THE SUPERSTRUCTURE HAS BEEN RELEASED SUFFICIENTLY TO PERMIT THE SPANS TO ATTAIN FULL DEAD LOAD DEFLECTION.
2. OTHER TYPES OF STANDARD BRIDGE RAILINGS CAN BE ADOPTED (REFER TO DC. 54 SERIES OF 2018, BOD SET NO. 2017-1-BRD)

TYPICAL RAILING AND SIDEWALK DETAILS

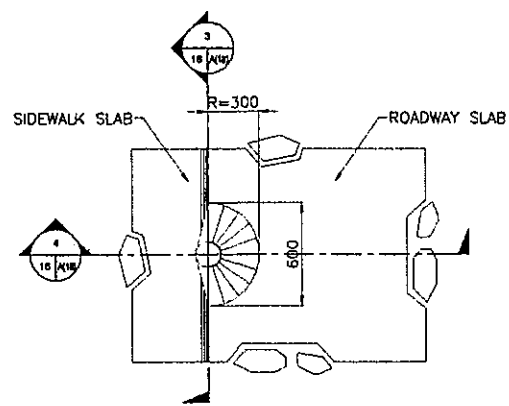
SCALE	AS	SHOWN
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BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY.	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)				LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT		CONCRETE VOLUME (m ³)
							a	b	c	d				Grade 40 (kg)	Grade 60 (kg)	
	POST	MAIN	20	288	AS SHOWN	C	1255	300	-	-	1.555	447.84	2.466	0.00	1104.37	4.95
		TIES	10	432	200	B	170	170	100	-	0.880	380.16	0.617	234.56	0.00	
													TOTAL =	234.56	1104.37	
	RAILING	MAIN	16	144	AS SHOWN	A	6000	-	-	-	6.000	864.00	1.578	0.00	1363.39	13.50
		STIRRUPS	10	1080	200	B	170	170	170	-	0.510	550.80	0.617	339.84	0.00	
													TOTAL =	339.84	1363.39	

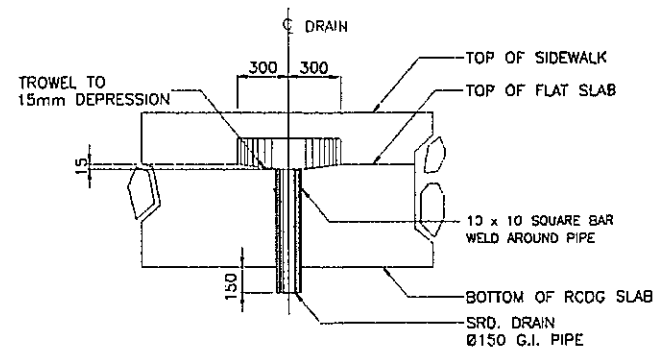




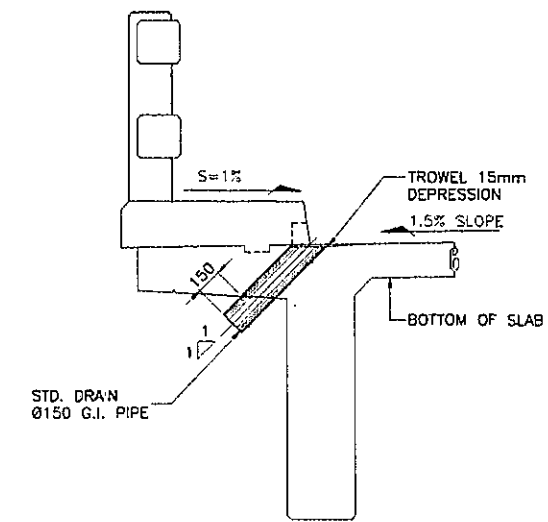
1 SIDEWALK DETAIL
SCALE 1:15M.



2 PLAN
SCALE 1:20M.



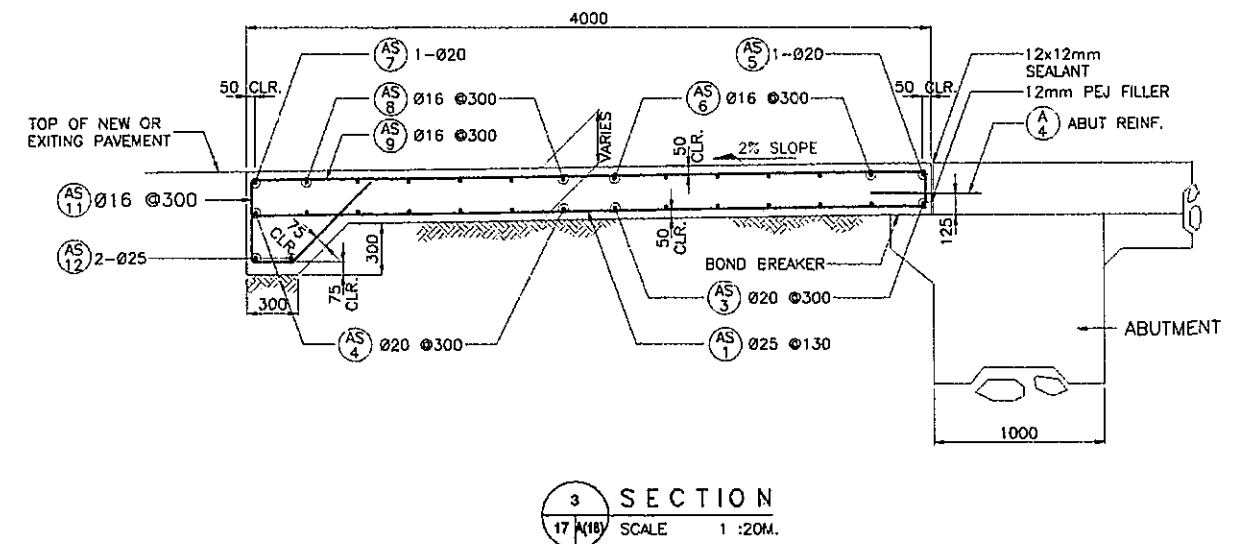
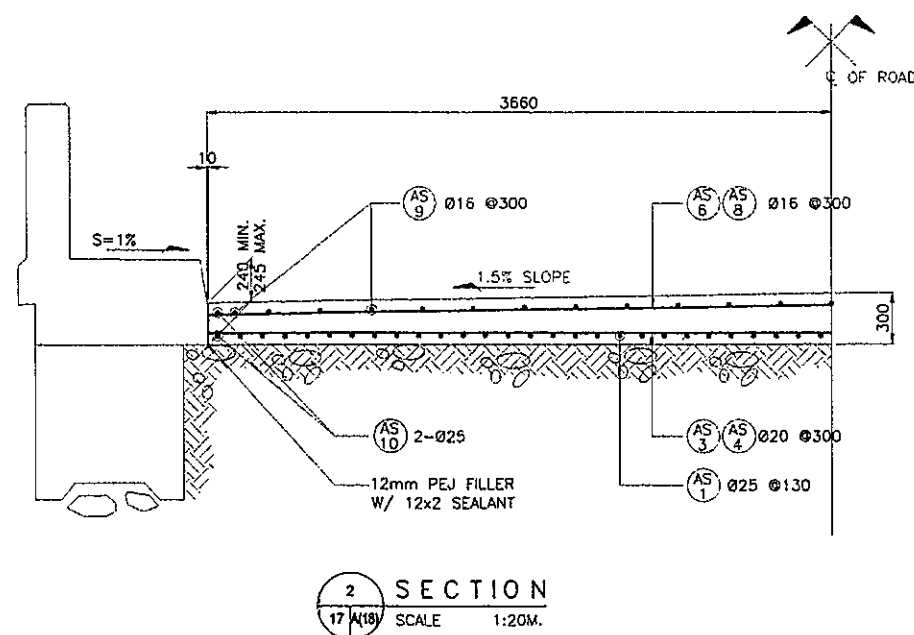
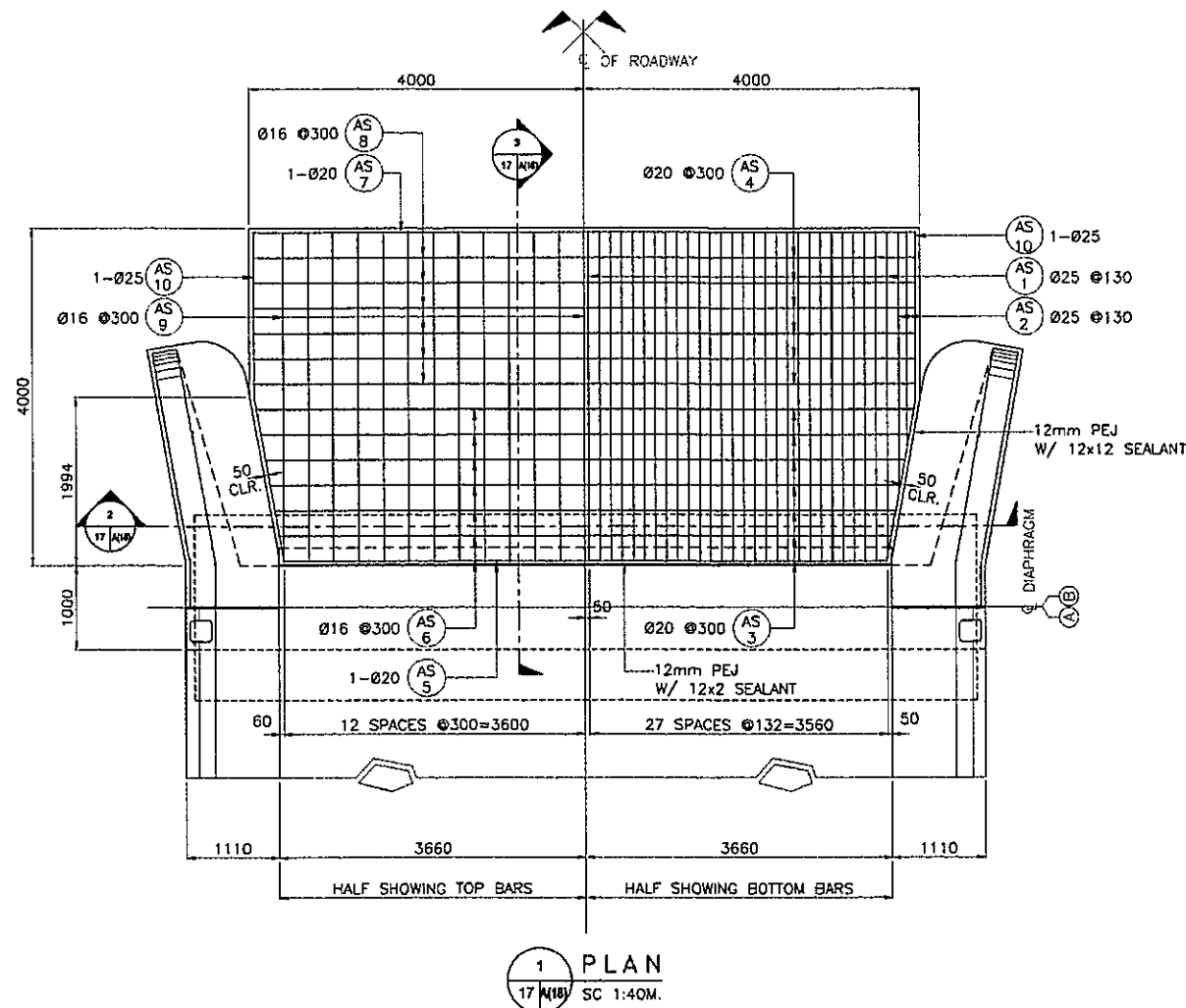
3 SECTION
SCALE 1:20M.



4 SECTION
SCALE 1:20M.

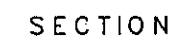
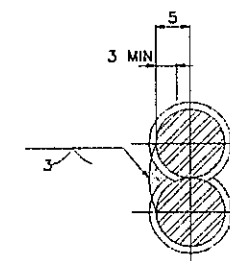
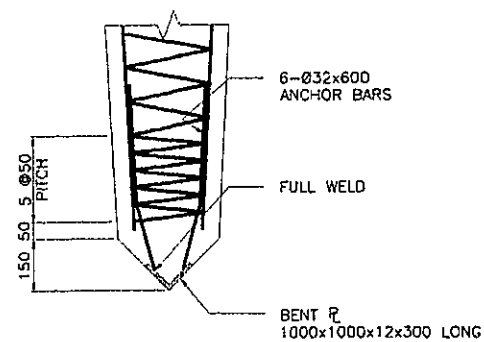
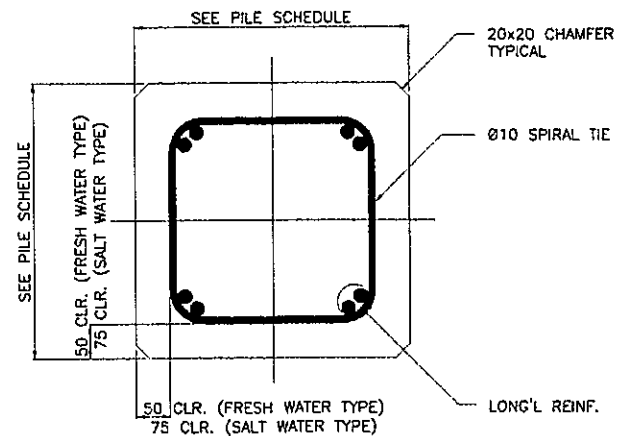
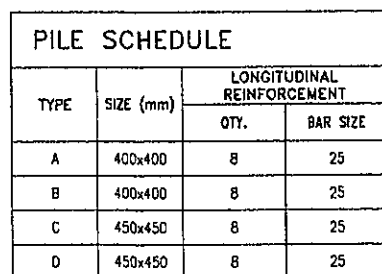
TYPICAL DRAIN DETAILS
SCALE AS SHOWN

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	SHEET CONTENTS: SIDEWALK DETAIL AND TYPICAL DRAIN DETAIL	DESIGNED: RENATO ROSARIO M. VITORIO CHECKED: MA ROSARIO A. JARAPUSAN CADD: ROLANDO C. MEDIANTE JEROME V. HATIGBAK ENGINEER	SUBMITTED: BLESILDA S. RAMOS CIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(18) 18 19
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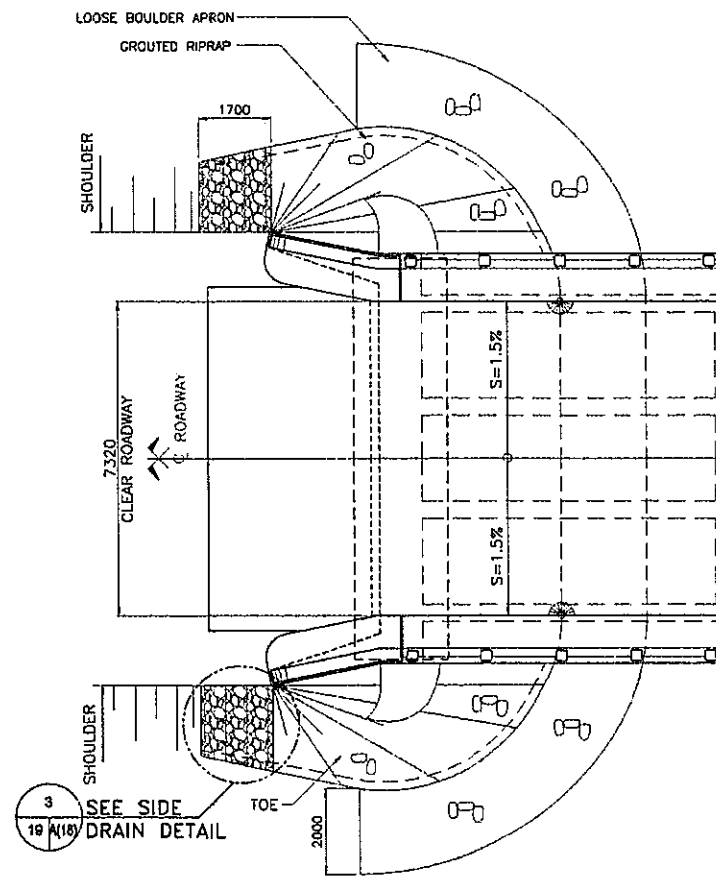
REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR APPROACH SLAB													
REINFORCEMENT													
BENDING DIAGRAM (DIMENSIONS ARE OUT TO OUT OF BARS)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)			LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m³)
						a	b	c					
	AS 1	25	56	130	(B)	3900	150	-	4.050	226.80	3.853	874	8.48
	AS 2	25	4	130	(B)	2700 MIN 3420 MAX	150	-	3.210 AVE.	12.84	3.853	49	
	AS 3	20	7	300	(D)	7200 MIN 7880 MAX	-	-	7.540 AVE.	52.78	2.466	130	
	AS 4	20	7	300	(A)	7900	-	-	7.900	55.30	2.466	136	
	AS 5	20	1	AS SHOWN	(A)	7200	-	-	7.200	7.20	2.466	18	
	AS 6	16	6	300	(A)	7240 MIN 7880 MAX	-	-	7.610 AVE.	45.66	1.578	72	
	AS 7	20	1	AS SHOWN	(A)	7900	-	-	7.900	7.90	2.466	19	
	AS 8	16	6	300	(A)	7900	-	-	7.900	47.40	1.578	75	
	AS 9	16	25	300	(B)	3900	150	-	4.050	101.25	1.578	160	
	AS 10	25	4	AS SHOWN	(C)	1965	1965	-	3.930	15.72	3.853	61	
	AS 11	16	27	300	(D)	415 MIN 475 MAX	250	650	1.745	47.12	1.578	74	
	AS 12	25	2	AS SHOWN	(A)	2900	-	-	2.900	5.80	3.853	22	
											TOTAL =	1691	8.48
											GRAND TOTAL GRADE 40=	0	
											GRAND TOTAL GRADE 60=	1691	

	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	SHEET CONTENTS: TYPICAL APPROACH SLAB DETAIL	DESIGNED: RENATO R. VITING CHECKED: MA ROSARIO A. PARAPLASAN CADD: ROLANDO C. MEDIANTE	SUBMITTED: BLES LDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 Brd	SHEET NO. A(18) 17/19

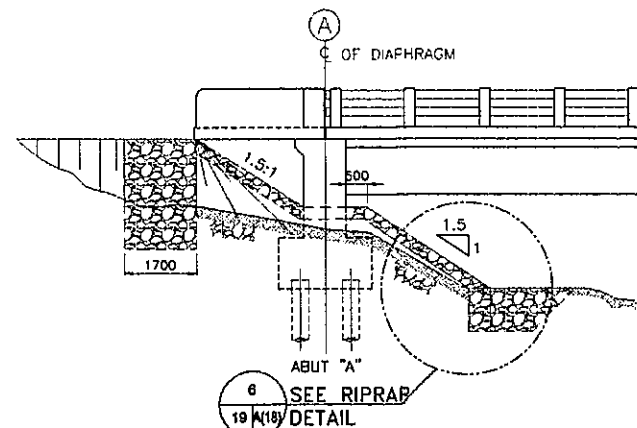


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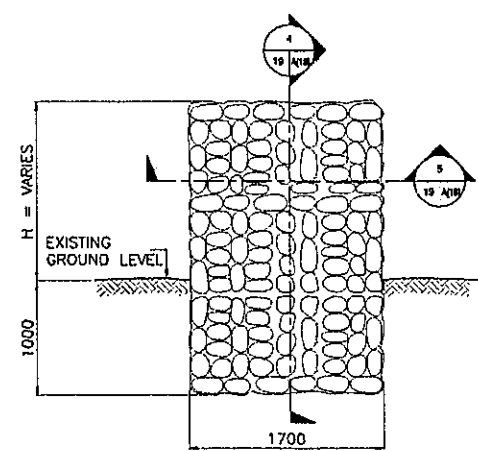
THE USE OF SPECIAL EMBEDDED OR ATTACHED LIFTING DEVICES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.



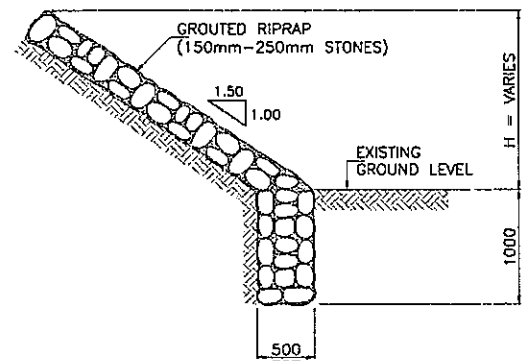
1 PLAN
SCALE 1:80M.



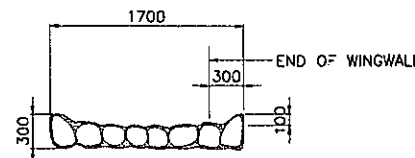
2 ELEVATION
SCALE 1:80M.



3 ELEVATION
SCALE 1:30M.

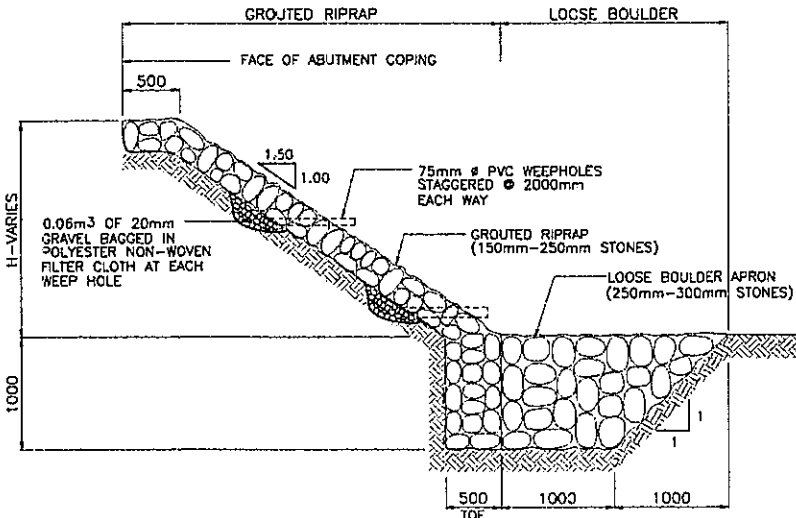


4 SECTION THRU DRAIN
SCALE 1:30M.

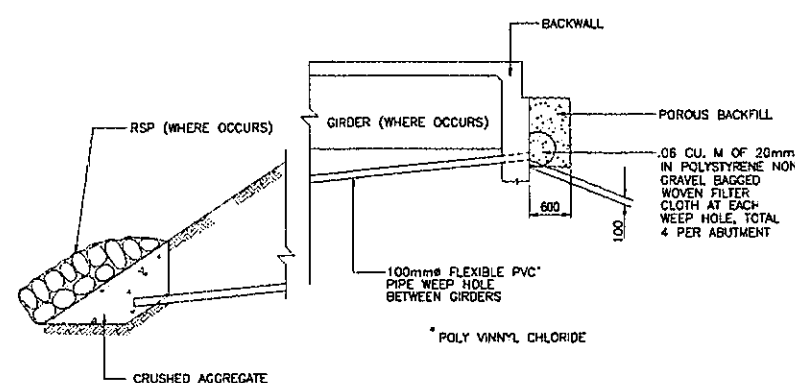


5 SECTION
SCALE 1:30M.

SIDE DRAIN DETAILS
SCALE 1:30M.



6 RIPRAP DETAIL
SCALE 1:30M.



7 ABUTMENT DRAINAGE
SCALE 1:30M.

ABUTMENT RIPRAP PROCEDURE:

1. THE BED FOR RIPRAP SHALL BE EXCAVATED TO THE REQUIRED DEPTHS AND PROPERLY COMPACTED, TRIMMED AND SHAPED.
2. THE RIPRAP SHALL BE FOUNDED IN A TOE TRENCH DUG BELOW THE DEPTH OF SCOUR AS SHOWN ON PLANS OR AS ORDERED BY THE ENGINEER. THE TOE TRENCH SHALL BE FILLED WITH STONE OF THE SAME CLASS AS THAT SPECIFIED FOR THE RIPRAP, UNLESS OTHERWISE SPECIFIED.
3. STONES SHALL BE PLACED BY HAND OR INDIVIDUALLY BY MACHINES. THEY SHALL BE LAID WITH CLOSE, BROKEN JOINTS AND SHALL BE FIRMLY BEDDED INTO THE SLOPE AND AGAINST THE ADJOINING STONES. EACH STONE SHALL BE LAID WITH EACH ADJACENT STONE. THE RIPRAP SHALL BE THOROUGHLY RAMMED INTO PLACE AS CONSTRUCTION PROGRESSES AND THE FINISHED SURFACE SHALL PRESENT AN EVEN, TIGHT SURFACE. INTERSTICES BETWEEN STONES SHALL BE FILLED WITH SMALL BROKEN FRAGMENTS FIRMLY RAMMED INTO PLACE.
4. THE SPACES BETWEEN THE STONES SHALL THEN BE FILLED WITH CEMENT MORTAR AS SPECIFIED IN SUBSECTION 504 2.3. MORTAR SHALL BE USED TO COMPLETELY FILL ALL VOIDS, EXCEPT THAT THE FACE SURFACE OF THE STONES SHALL BE LEFT EXPOSED.
5. GROUT SHALL BE PLACED FROM BOTTOM TO TOP OF THE SURFACE SWEEP WITH STIFF BROOM. AFTER GROUTING IS COMPLETED, THE SURFACE SHALL BE CURED AS SPECIFIED IN ITEM 405, STRUCTURAL CONCRETE FOR A PERIOD OF AT LEAST THREE DAYS.

NOTE:

ABUTMENT DRAINAGE SHALL BE PROVIDED BEHIND ABUTMENTS, POROUS BACKFILL SHALL EXTEND Laterally THE FULL LENGTH OF THE BACK WALL

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=18M	SHEET CONTENTS: ABUTMENT SLOPE PROTECTION AND DRAINAGE	DESIGNED: RENATO R. VICTOR CHECKED: MA. ROSARIO A. MARAPLAN CADD: ROLANDO C. MEDIANTE JEROME V. KATIGBAK	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(18) 19 19
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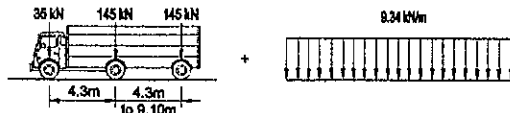
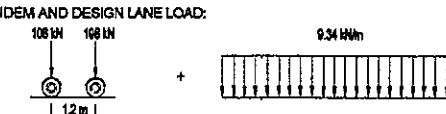
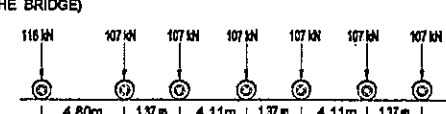
20m MULTIPLE SPAN RCDG

GENERAL NOTES

GENERAL

1. IN THE INTERPRETATION OF DRAWINGS, INDICATED DIMENSIONS SHALL GOVERN. ALL DIMENSIONS, DISTANCES AND SIZES SHALL NOT BE SCALED FOR CONSTRUCTION PURPOSES.
2. UNLESS OTHERWISE INDICATED, ALL DIMENSIONS AND MEMBER SIZES ARE IN MILLIMETERS.
3. STATIONINGS ARE IN KILOMETERS + METERS. ELEVATIONS ARE IN METERS.

DESIGN CRITERIA

1. DESIGN SPECIFICATION
 - a.) DPWH DESIGN GUIDELINES CRITERIA AND STANDARDS (DGCS), 2015 EDITION, VOLUME 5 - BRIDGE DESIGN.
2. LOADINGS
 - a.) DEAD LOAD: WEIGHT OF THE STRUCTURE AND AN ALLOWANCE OF 1.10 kPa FOR FUTURE BITUMINOUS WEARING COURSE.
 - b.) LIVE LOAD: HL - 93
 - (b.1) DESIGN TRUCK AND DESIGN LANE LOAD:
 
 - (b.2) DESIGN TANDUM AND DESIGN LANE LOAD:
 
 - (b.3) PERMIT DESIGN LIVE LOAD: CALTRANS P-7 (SPECIAL PERMIT REQUIRED BEFORE PASSING THE BRIDGE)
 
- c.) DYNAMIC LOAD ALLOWANCE (TABLE 10.8-1): IN ACCORDANCE WITH DGCS, VOLUME 5 - BRIDGE DESIGN
- d.) PEDESTRIAN LOADS: 3.60 kPa
- e.) SEISMIC LOAD: IN ACCORDANCE WITH DPWH- LRFD BRIDGE SEISMIC DESIGN SPECIFICATIONS (BSDS) 1st EDITION, 2013
- f.) OTHER LOADING IN ACCORDANCE WITH DGCS, VOLUME 5 - BRIDGE DESIGN

MATERIALS

1. CONCRETE

UNLESS OTHERWISE INDICATED, THE CONCRETE CLASS AND STRENGTH SHALL BE AS FOLLOWS:

STRUCTURAL MEMBER	CLASS	28-DAY CYLINDER STRENGTH		MAX. SIZE OF COARSE AGGREGATE (mm)
		MPa	psi	
CAST-IN-PLACE GIRDERS, SLAB, DIAPHRAGMS, WINGWALLS, BACKWALLS, COPING, COLUMNS & FOOTINGS	A	27.58	4000	20
PRECAST R.C. PILE	C	27.58	4000	25
THIN REINFORCED SECTIONS RAILING AND RAILPOST	C	27.58	4000	12
LEAN CONCRETE	B	16.50	2400	38

2. REINFORCEMENT STEEL

- (a) REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO AASHTO M31 (ASTM A615), WITH MINIMUM YIELD STRENGTH AS FOLLOWS:
 $F_y = 414 \text{ MPa (Gr.60)}$ FOR 16mm ϕ AND LARGER
 $F_y = 276 \text{ MPa (Gr.40)}$ FOR 12mm ϕ AND SMALLER
- (b) REINFORCING STEEL BARS SHALL BE FREE OF MILL SCALES, OIL OR ANY SUBSTANCE WHICH WILL WEAKEN THE BOND WITH CONCRETE.

CONSTRUCTION

1. SPECIFICATION

STANDARD SPECIFICATIONS, 2013 EDITION VOLUME II - HIGHWAYS, BRIDGES AND AIRPORTS

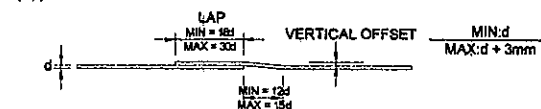
2. SETTING OUT

THE SETTING OUT AND THE ELEVATIONS OF THE DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE START OF ANY CONSTRUCTION WORK.

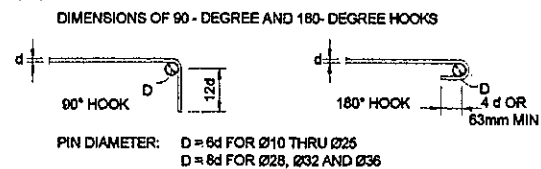
3. REINFORCED CONCRETE

- a.) CONCRETE MIX AND PLACING
 - (a.1) DESIGN OF CONCRETE MIX SHALL MEET THE DESIGN CONCRETE STRENGTH GIVEN UNDER ITEM 1 OF MATERIALS.
 - (a.2) CONCRETE SHALL BE DEPOSITED, VIBRATED AND CURED IN ACCORDANCE WITH THE SPECIFICATIONS.
 - (a.3) FOR CONCRETE DEPOSITED AGAINST THE GROUND, LEAN CONCRETE WITH A MINIMUM THICKNESS OF 50mm SHALL LAID FIRST BEFORE INSTALLING THE REINFORCEMENT. THE LEAN CONCRETE SHALL NOT BE CONSIDERED IN MEASURING THE STRUCTURAL DEPTH OF CONCRETE SECTION.
 - (a.4) THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL PLACING SEQUENCES FOR ALL CONCRETING WORKS.
- b.) BAR BENDING, SPLICING AND PLACING
 - (b.1) SHOP DRAWINGS OF ALL REINFORCING BARS INDICATING THE BENDING, CUTTING, SPLICING AND INSTALLATION SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
 - (b.2) BARS SHALL BE BENT COLD. BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS PERMITTED BY THE ENGINEER.
 - (b.3) BAR SPLICING NOT INDICATED ON DRAWINGS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
 - (b.4) WELDED SPLICES, IF APPROVED BY THE ENGINEER, SHALL DEVELOP IN TENSION AT LEAST 125% OF THE SPECIFIED YIELD STRENGTH OF THE BARS.
 - (b.5) NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION SHALL BE SPLICED.
 - (b.6) UNLESS OTHERWISE SHOWN ON DRAWINGS, THE CLEAR DISTANCE BETWEEN PARALLEL BARS IN A LAYER SHALL NOT BE LESS THAN 1.5 TIMES THE NOMINAL DIAMETER OF THE BAR NOR LESS THAN 1.5 TIMES THE MAXIMUM SIZE OF COARSE AGGREGATE. THE CLEAR DISTANCE BETWEEN LAYERS SHALL NOT BE LESS THAN 25mm NOR ONE BAR DIAMETER. THE BARS IN THE UPPER LAYER SHALL BE PLACED DIRECTLY ABOVE THOSE IN THE BOTTOM LAYER.

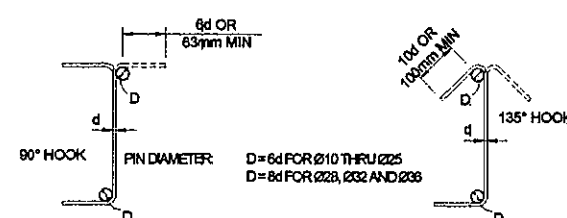
(b.7) CRANKED SPLICES



(b.8) HOOKS AND BENDS



DIMENSIONS FOR STIRRUPS AND THE HOOKS



- c.) CONCRETE COVER TO REINFORCEMENT UNLESS OTHERWISE INDICATED, CONCRETE COVER TO REINFORCEMENT SHALL BE AS FOLLOWS:

STRUCTURAL MEMBER	CLEAR COVER (mm)
GIRDERS & DIAPHRAGMS TOP OF SLAB	50
COLUMNS / SHAFT, FOOTINGS & WINGWALLS	75
BOTTOM OF SLAB & RAILINGS	25
RC PILES	AS SHOWN

d.) CONSTRUCTION JOINT

- (d.1) THE POSITION AND FORM OF ANY CONSTRUCTION JOINT SHALL BE AS SHOWN ON DRAWINGS OR AS AGREED WITH THE ENGINEER.
- (d.2) THE INTERFACE BETWEEN THE FIRST AND SECOND POUR CONCRETES SHALL BE ROUGHENED WITH AN AMPLITUDE OF 6mm MINIMUM.

e. FALSEWORK

ALL FALSEWORK SHALL BE DESIGNED BY THE CONTRACTOR SUBJECT TO THE APPROVAL BY THE ENGINEER.

f. FORMWORKS

FORMWORKS SHALL BE CONSTRUCTED SUCH THAT IT WILL NOT YIELD UNDER THE LOAD AND SHALL BE SUCH AS TO AVOID THE FORMATION OF FINS. ALL CORNERS OF CONCRETE MEMBERS SHALL BE CHAMFERED 20mm UNLESS NOTED OTHERWISE ON DRAWINGS. STRIPPING OF FORMS AND SHORES SHALL BE AS DESIGNATED BY THE ENGINEER. THE FOLLOWING MAYBE USED AS A GUIDE:

	MIN. TIME
SHORING UNDER GIRDERS, BEAMS, FRAMES.	14 DAYS
DECK SLABS.	14 DAYS
WALLS.	7 DAYS
COLUMNS / SHAFT.	7 DAYS
SIDES OF BEAMS AND ALL OTHER VERTICAL SURFACES.	2 DAYS

g. PROTECTION AND CURING OF CONCRETE

CONCRETE SURFACES SHALL BE PROTECTED FROM HARMFUL EFFECTS OF SUN, WIND AND RUNNING WATERS AND SHALL BE KEPT DAMP FOR AT LEAST 7 DAYS.

4. SHORING

CAMBER FOR REINFORCED CONCRETE SUPERSTRUCTURES WERE DETERMINED BASED ON THE USE OF SHORING DURING CONSTRUCTION.

5. EMBANKMENT CONSTRUCTION SEQUENCE

APPROACH EMBANKMENT SHALL BE CONSTRUCTED PRIOR TO DRIVING OF ABUTMENT PILES.

SYMBOLS

LINE OF SYMMETRY OR SIMILARITY

NORTH ARROW

INDICATION OF ELEVATION

LIMITS OF DIMENSION

SECTION IN WATER

SECTION IN EARTH

SECTION IN STRUCTURAL STEEL

SECTION IN CONCRETE

SECTION IN EXISTING CONCRETE STRUCTURE

ELASTOMERIC BEARING PAD

BITUMINOUS WEARING SURFACE ON BRIDGES

PLAN VIEW AND ELEVATION OF CUT & FILL SLOPES

PLAN VIEW OF SLOPE PROTECTION

PLAN VIEW OF GROUTED RIPRAP ON SLOPE

BUNDLED BARS

SET NO. - BUREAU OF DESIGN

YEAR-DWG SET NO. - BRIDGES DIVISION

SHEET CONTENT

STANDARD CODE (SPAN LENGTH)

PAGE No. - TOTAL NO. OF SHEET

TITLE TARGET

DRAWING NO.

STANDARD CODE (SPAN LENGTH)

PAGE No. - TOTAL NO. OF SHEET

SECTION LINE

DRAWING NO.

STANDARD CODE (SPAN LENGTH)

ROUND

SQUARE

AT

AND

CENTERLINE

PL PLATE

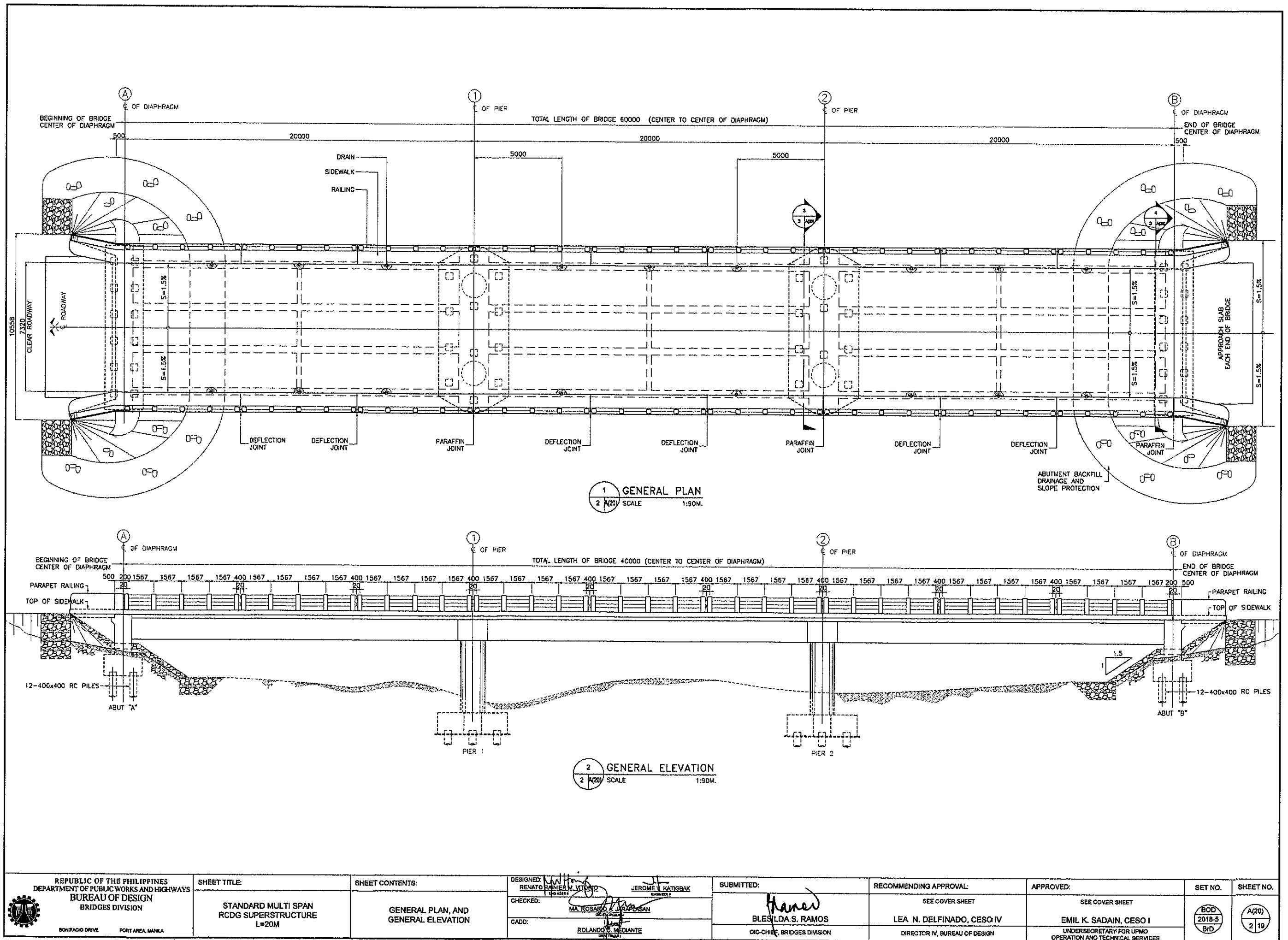
L ANGLE SHAPE

C/C, C to C CENTER TO CENTER

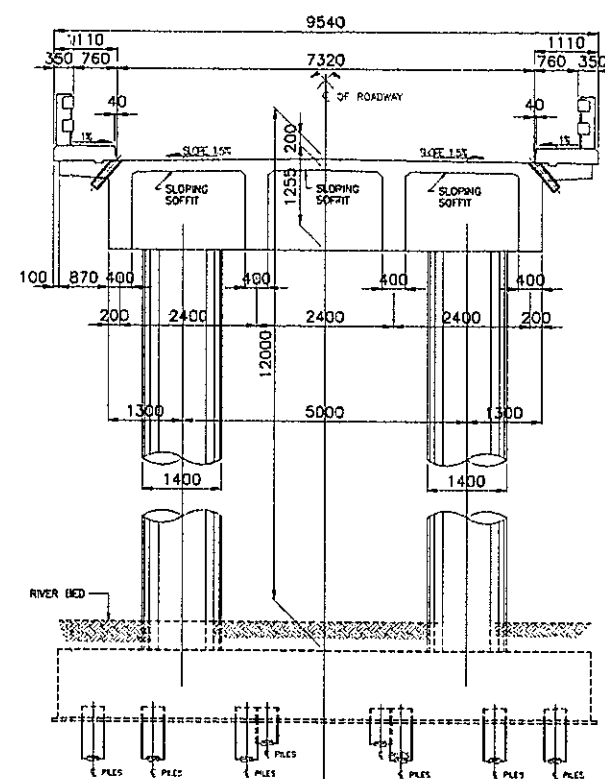
ABBREVIATIONS

ABT	ABOUT	kPa	KILOPASCAL
ABUT	ABUTMENT	m	METER
BEG	BEGINNING	mm	MILLIMETER
BET	BETWEEN	MAX	MAXIMUM
BOTT	BOTTOM	MFWL	MAX. FLOOD WATER LEVEL
BR	BRIDGE	MIN	MINIMUM
BRG	BEARING	MO	MIDDLE ORDNATE
CLR	CLEAR	MPa	MEGAPASCAL
cm	CENTIMETER	N	NEWTON
COL	COLUMN	NF	NEAR FACE
CONC	CONCRETE	No.	NUMBER
CONST	CONSTRUCTION	O.C.	ON CENTERS
CONT	CONTINUOUS	O.W.L	ORDINARY WATER LEVEL
CTR	CENTER	PEJ	PREMOULDED EXPANSION JOINT
DET	DETAIL	PVC	POLYVINYL CHLORIDE
DIA	DIAMETER	PVI	POINT OF VERTICAL INTERSECTION
DIAPH	DIAPHRAGM	QTY	QUANTITY
DWG	DRAWING	R	RADIUS
EA	EACH	RC	REINFORCED CONCRETE
EF	EACH FACE	RDMY	ROADWAY
ELEV	ELEVATION	RENF	REINFORCEMENT
ENGR	ENGINEER	SOWK	SIDEWALK
EQ	EQUAL	SL	SLOPE
EW	EACHWAY	SP	SPIRAL
EXP	EXPANSION	SPCD	SPACED
EXT	EXTERIOR	SPCS	SPACES
EXIST	EXISTING	STD	STANDARD
FF	FAR FACE	STR	STIRRUP
FTG	FOOTING	STA	STATION
GEN	GENERAL	STRUCT	STRUCTURE
HOR	HORIZONTAL	SYMM	SYMMETRY
HW	HIGH WATER	THK	THICK
INT	INTERIOR	TYP	TYPICAL
INTERM	INTERMEDIATE	VAR	VARIABLE
JT	JOINT	VERT	VERTICAL
L	LENGTH	VOL	VOLUME
LG	LONG	W	WIDTH
KG	KILOGRAM	WW	WITH
KN	KILONEWTON	&	AND

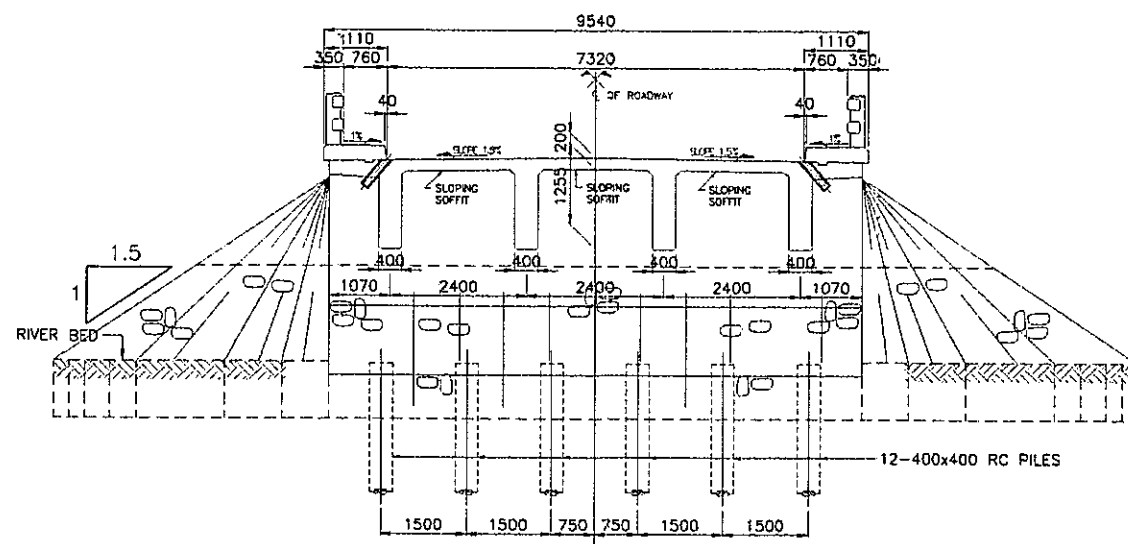
 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE:	SHEET CONTENTS:	DESIGNED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.	
	STANDARD MULTI SPAN RCBG SUPERSTRUCTURE L=20M	GENERAL NOTES, SYMBOLS AND ABBREVIATIONS	RENATO PARRERA, N. VICTOR	BLES DA S. RAMOS	LEA N. DELFINADO, CESO IV	EMIL K. SADAIN, CESO I	BOD 2018-5 BRD	A(20) 1 19	
			CHECKED:						MA ROSARIO A. LASAPLAN
			CADD:						ROLAND C. MEDIANTE
			JEROME M. KATIGBAK		SEE COVER SHEET	SEE COVER SHEET			
				CIC-CHIEF, BRIDGES DIVISION	DIRECTOR IV, BUREAU OF DESIGN	UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES			



REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=20M	SHEET CONTENTS: GENERAL PLAN, AND GENERAL ELEVATION	DESIGNED: <i>Renato</i> RENATO RAMIER M. VITARIO CHECKED: <i>MA ROSARIO</i> MA ROSARIO A. JAVILLAN CADD: <i>ROLANDO</i> ROLANDO C. MEDIANTE	SUBMITTED: <i>Francis</i> BLESILDA S. RAMOS CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BdD	SHEET NO. A(20) 2 19
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3 SECTION @ PIER
SCALE 1:60V.



4 SECTION @ ABUTMENT
SCALE 1:60M.

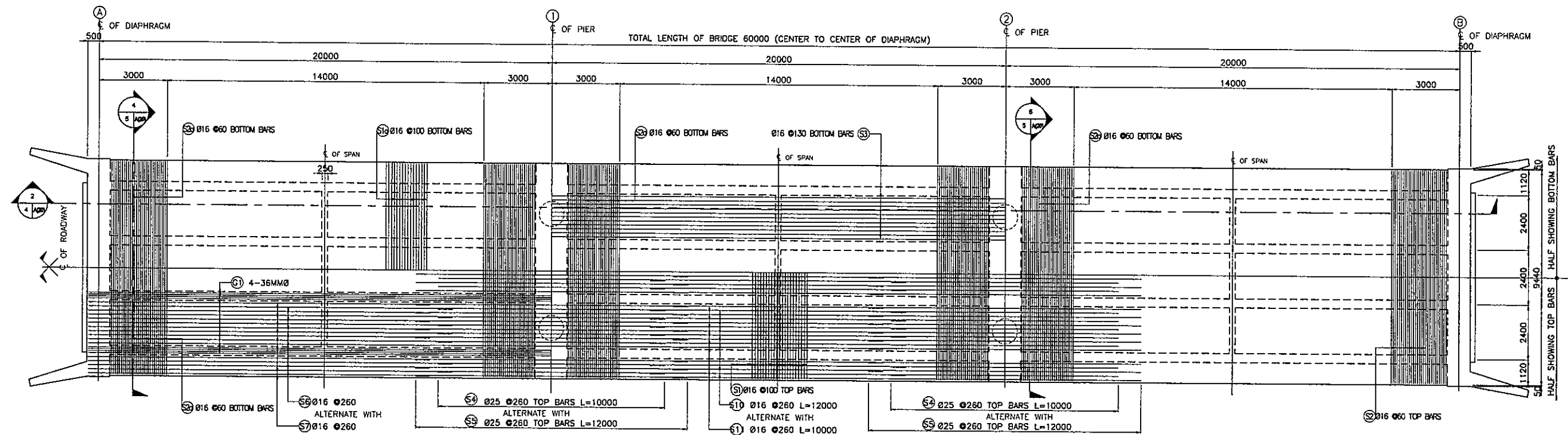
INDEX OF DRAWING

DRAWING NO.	SHEET NO.	SHEET CONTENTS
A (20) - 1/19		GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
A (20) - 2/19		GENERAL PLAN AND ELEVATION
A (20) - 3/19		SECTION @ PIER, SECTION @ ABUTMENT AND INDEX OF DRAWING & NOTES
A (20) - 4/19		FRAMING PLAN AND LONGITUDINAL SECTION
A (20) - 5/19		TYPICAL CROSS SECTION, SECTIONS AND REINFORCEMENT OVER PIER
A (20) - 6/19		PLAN, ELEVATION, SECTIONS AND SPIRAL SPLICE DETAILS FOR 3 SPAN
A (20) - 7/19		REINFORCEMENT SCHEDULE AND LOADING INFORMATION FOR DESIGN OF FOUNDATION FOR 3 SPAN
A (20) - 8/19		DETAIL OF FOOTING TYPE F8 (FOR FOOTING ON PILES)
A (20) - 9/19		DETAIL OF FOOTING TYPE F8 (SPREAD FOOTING)
A (20) - 10/19		GIRDER ELEVATION, BOTTOM BAR SCHEMATIC LAYOUT, SECTION AT MIDSPAN AND DETAIL
A (20) - 11/19		CONC. POURING SEQUENCE, INTERMEDIATE DIAPHRAGM DETAIL AND CAMBER DIAGRAM
A (20) - 12/19		REINFORCEMENT SCHEDULE AND ESTIMATED OF QUANTITIES FOR STRUCTURE OF 20M 3 SPAN
A (20) - 13/19		ABUTMENT PLAN AND ELEVATION
A (20) - 14/19		ELEVATION OF WINGWALL, SECTIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES
A (20) - 15/19		TYPICAL RAILING AND SIDEWALK DETAILS
A (20) - 16/19		SIDEWALK DETAIL AND TYPICAL DRAIN DETAIL
A (20) - 17/19		TYPICAL APPROACH SLAB DETAIL
A (20) - 18/19		TYPICAL PRECAST CONCRETE PILE DETAIL
A (20) - 19/19		ABUTMENT SLOPE PROTECTION AND DRAINAGE

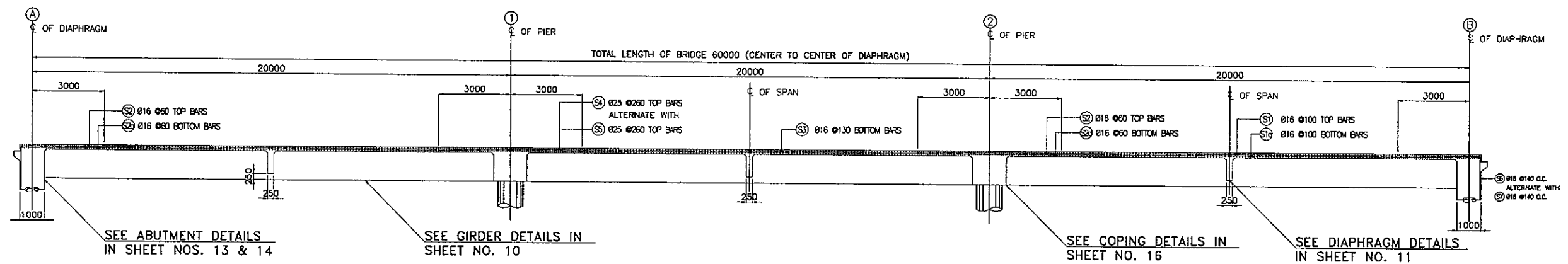
NOTES:

- THIS STANDARD PLAN IS FOR REFERENCE ONLY. STRUCTURAL ANALYSIS SHALL BE PREPARED BASED ON THE ACTUAL SURVEY, HYDRAULIC, HYDROLOGIC AND GEOTECHNICAL DATA ON THE PROJECT SITE.
- PROTECTION WORKS FOR ABUTMENTS SHALL BE DESIGNED BY THE ENGINEER/CONSULTANT. THE PROTECTION WORKS SHOWN HEREIN ARE FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL NOT BE CONSTRUED AS THE FINAL DETAILS. HOWEVER, SLOPE FOR EMBANKMENT PROTECTION WORKS SHALL BE 1.5:1 OR FLATTER.
- LENGTH OF REINFORCED CONCRETE PILES SHALL BE DETERMINED/DESIGNED BASED ON THE ACTUAL BORING DATA AT LOCATION OF FOUNDATION.

	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION	SHEET TITLE:	SHEET CONTENTS:	DESIGNED: REYNALDO M. VICTORINO JEROME V. KATIGBAK	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
		STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=20M	SECTION @ PIER, SECTION @ ABUTMENT AND INDEX OF DRAWING & NOTES	CHECKED: MA. ROSARIO A. LACORON	BLESILDA S. RAMOS	SEE COVER SHEET	SEE COVER SHEET		
				CADD: RODOLFO C. MEDIANTE	OIC-CHIEF, BRIDGES DIVISION	LEA N. DELFINADO, CESO IV	EMIL K. SADAIN, CESO I		
						DIRECTOR IV, BUREAU OF DESIGN	UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES		

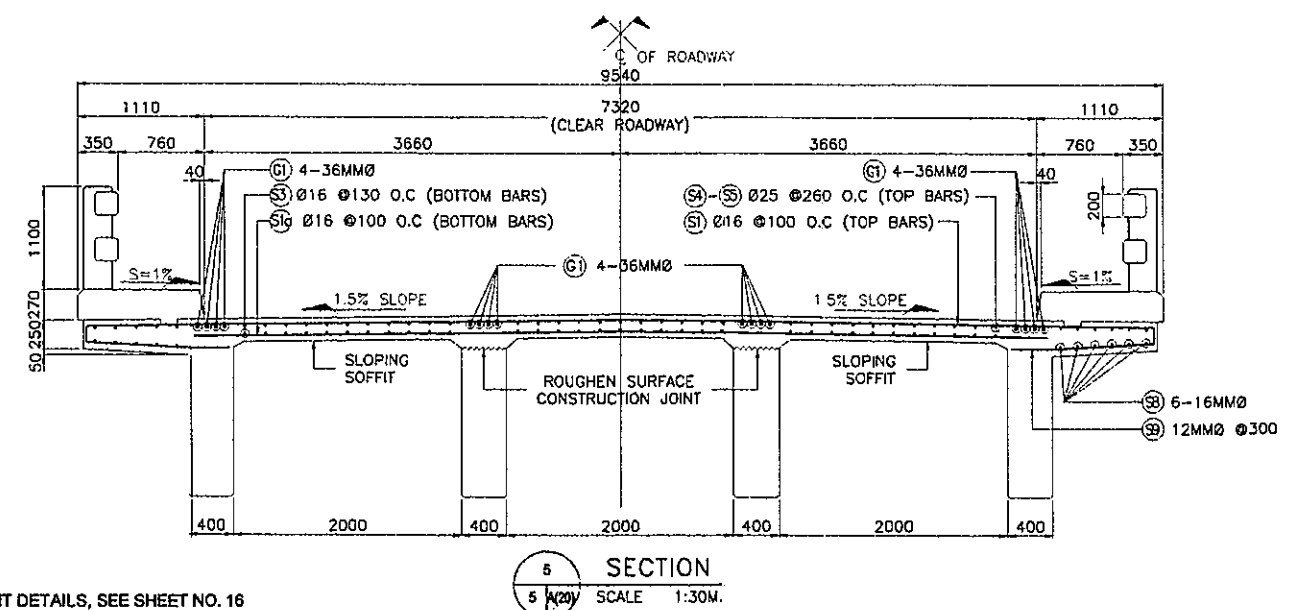
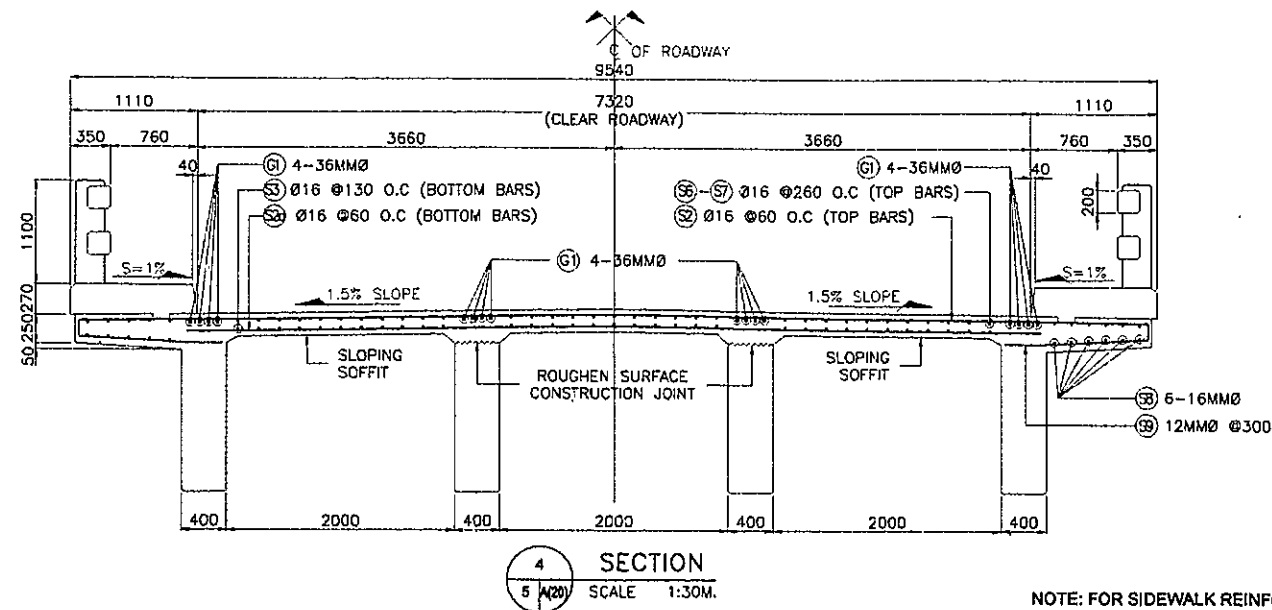


1 FRAMING PLAN
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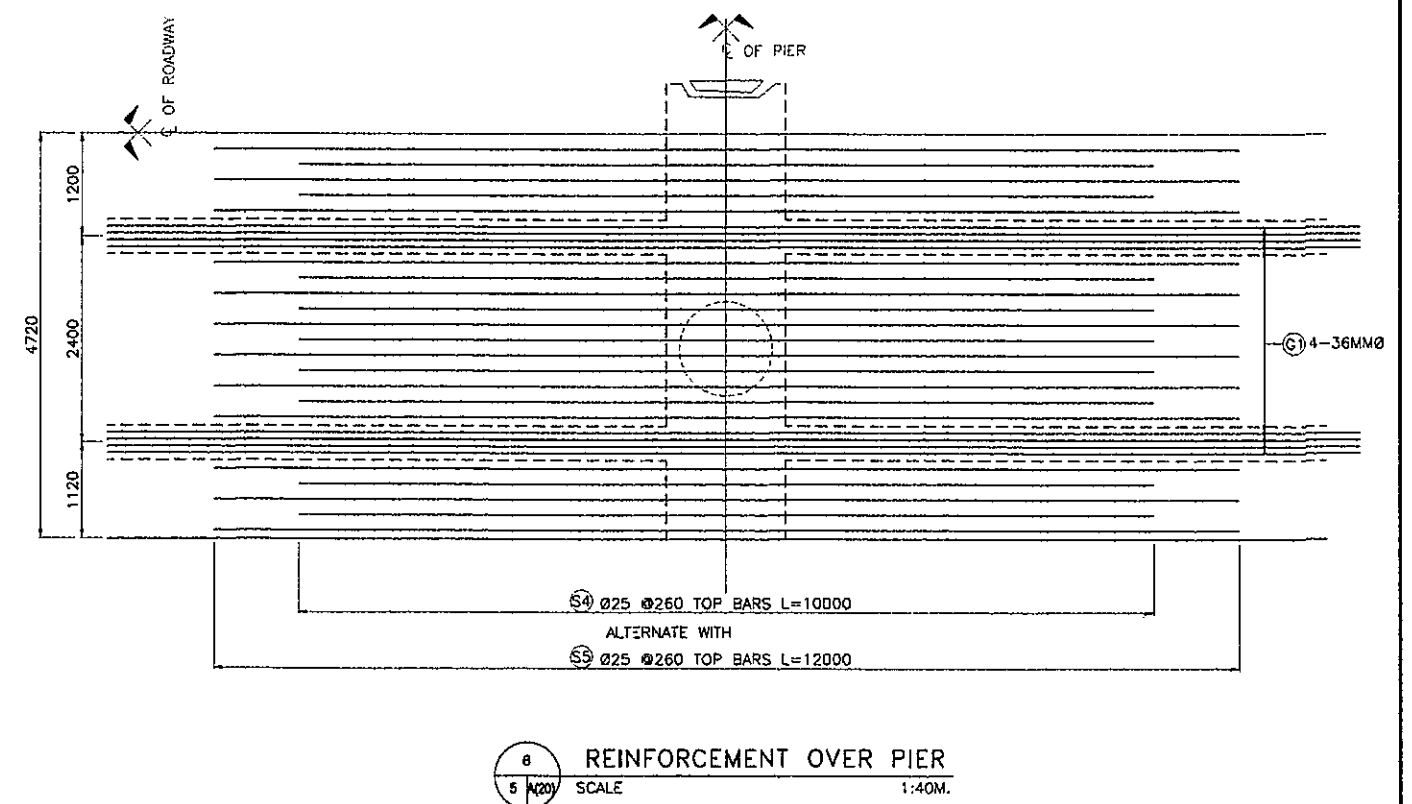
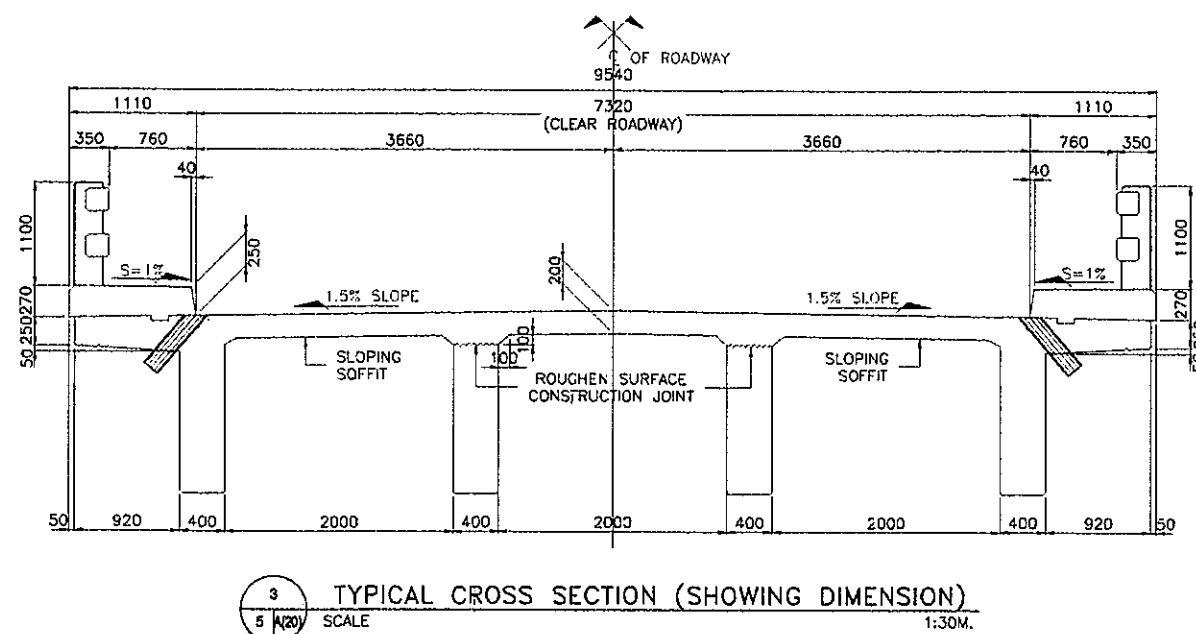


2 LONGITUDINAL SECTION
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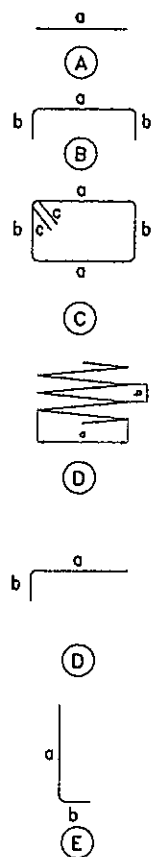
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCBG SUPERSTRUCTURE L=20M	SHEET CONTENTS: FRAMING PLAN AND LONGITUDINAL SECTION	DESIGNED: RENATO RANIER M. VITORIO CHECKED: MA. ROSARIO A. JAVIER CADD: ROLANDO MEDIANTE JEROME V. KATIGBAK OWNER	SUBMITTED: BLES DA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 B/D	SHEET NO. A(20) 4/18
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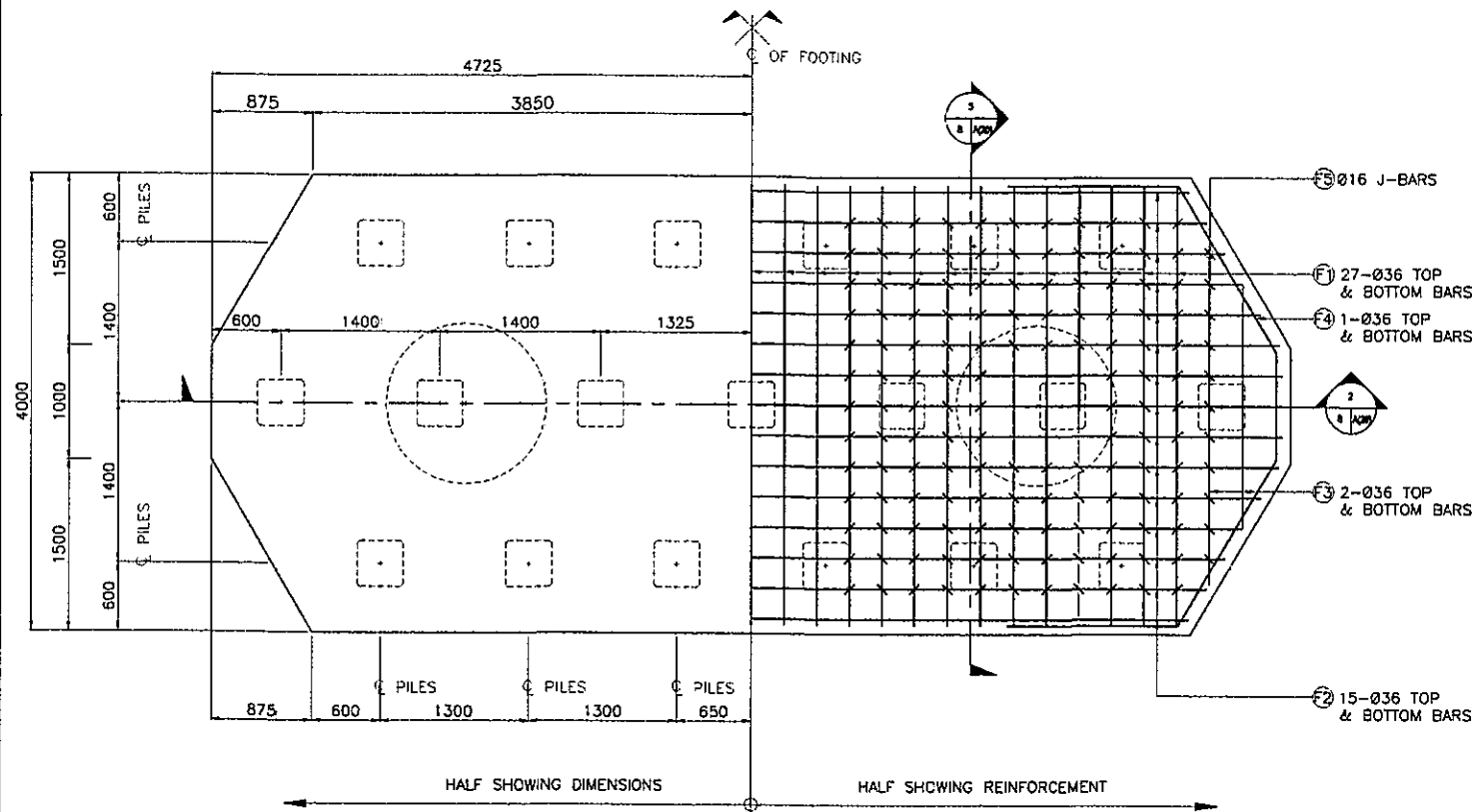
NOTE: FOR SIDEWALK REINFORCEMENT DETAILS, SEE SHEET NO. 16



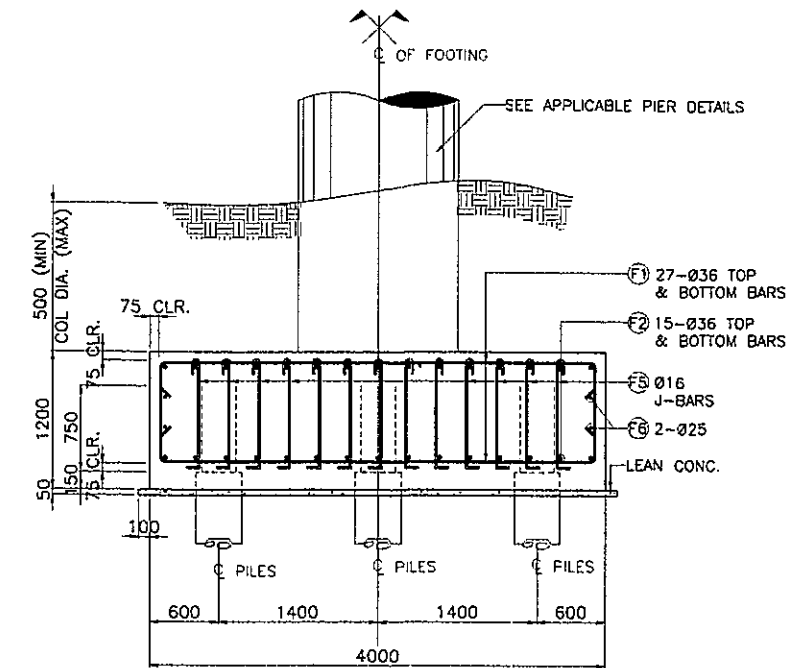
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=20M	SHEET CONTENTS: TYPICAL CROSS SECTION (SHOWING DIMENSIONS) SECTIONS (SHOWING REINFORCEMENTS) REINFORCEMENT OVER PIER	DESIGNED: RENATO M. VICTOR CHECKED: MA ROSARIO A. KRAPLASAN CADD: ROLANDO C. MEDIANTE JEROME Y. KATIGBAK ENGINEER I	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDER SECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 B&D	SHEET NO. A(20) 5/19
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DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) PIER																		
BENDING DIAGRAM	SPAN LENGTHS L1-L1-L1 (m)	COLUMN DIAMETER	COPING BEAM		REINFORCEMENT													
			W	H	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)			LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m³)	REMARKS
										a	b	c						
	20-20-20	1.40	1.70	1.40	(P1)	36	9	AS SHOWN	(B)	7500	570	-	8.640	77.76	7.990	621.30	50.72	1.QUANTITIES ARE FOR THE TWO (2) COLUMNS OF ONE (1) PIER ONLY.
					(P2)	36	8	AS SHOWN	(B)	7500	570	-	8.640	69.12	7.990	552.27		
					(P3)	32	2	AS SHOWN	(A)	7500	-	-	7.500	15.00	6.313	94.69		
					(P4)	36	9	AS SHOWN	(B)	7500	570	-	8.640	77.76	7.990	621.30		
					(P5)	36	8	AS SHOWN	(A)	6500	-	-	6.500	52.00	7.990	415.48		
					(P6)	28	16	AS SHOWN	(A)	7500	-	-	7.500	120.00	4.834	580.08		
					(P7)	16	52	150	(C)	1600	1300	195	6.190	321.88	1.578	507.93		
					(P8)	16	52	150	(C)	845	1300	195	4.680	243.36	1.578	384.02		
					(P9)	16	26	300	(B)	1600	500	-	2.600	67.60	1.578	106.67		
					(P10)	36	40	AS SHOWN	(E)	8250	250	-	8.500	340.00	7.990	2716.60		2. SPLICES FOR BARS P10 P11, P12 AND P13 ARE INCLUDED.
					(P11)	36	40	AS SHOWN	(E)	6200	250	-	6.450	258.00	7.990	2061.42		
					(P12)	36	40	AS SHOWN	(E)	7850	500	-	8.350	334.00	7.990	2668.66		
					(P13)	36	40	AS SHOWN	(E)	5800	500	-	6.300	252.00	7.990	2013.48		
					(P14)	16	68	50	(D)	1300	50	-	12.000	816.00	1.578	1287.65		
					(P15)	16	48	100	(D)	1300	100	-	12.000	576.00	1.578	908.93		
					TOTAL =												15540.49	
					GRAND TOTAL GRADE 40 =												0.00	50.72
					GRAND TOTAL GRADE 60 =												15540.49	

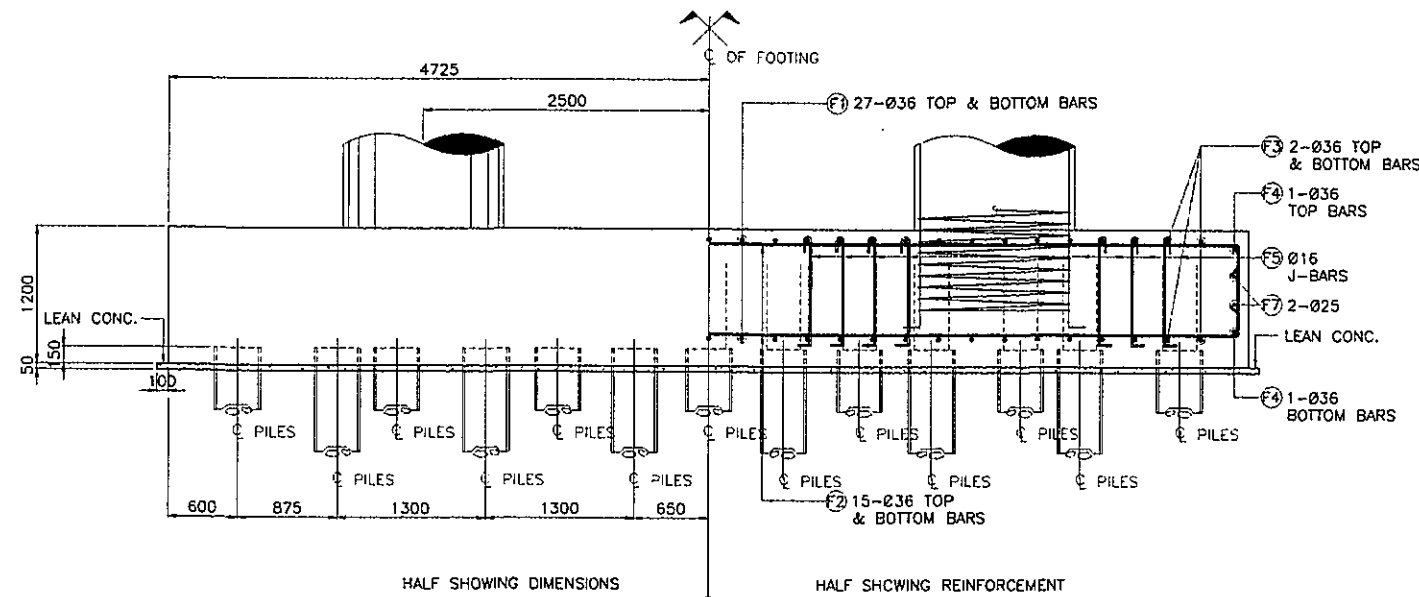
	SHEET TITLE:	SHEET CONTENTS:	DESIGNED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	STANDARD MULTI SPAN	REINFORCEMENT SCHEDULE	RENATO RAMIER V. VITORIO	BLESILDA S. RAMOS	SEE COVER SHEET	SEE COVER SHEET	BOD	A(20)
	RCDG SUPERSTRUCTURE	AND LOADING INFORMATION	MA ROSARIO A. JARAPLASAN	OIC-CHIEF, BRIDGES DIVISION	LEA N. DELFINADO, CESO IV	EMIL K. SADAIN, CESO I	2018-5	7 19
	L=20M	FOR DESIGN OF FOUNDATION	ROLANDO C. MEDIANTE	DIRECTOR IV, BUREAU OF DESIGN	UNDERSECRETARY FOR UPMD	OPERATION AND TECHNICAL SERVICES	Bd	



1 PLAN
SCALE 1:30M.



3 SECTION
SCALE 1:30M.



2 SECTION
SCALE 1:30M.

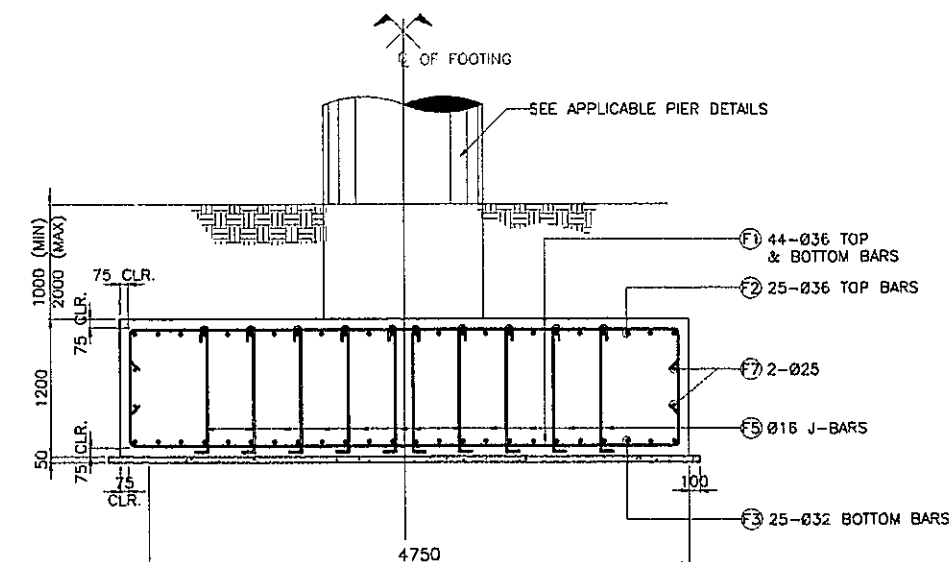
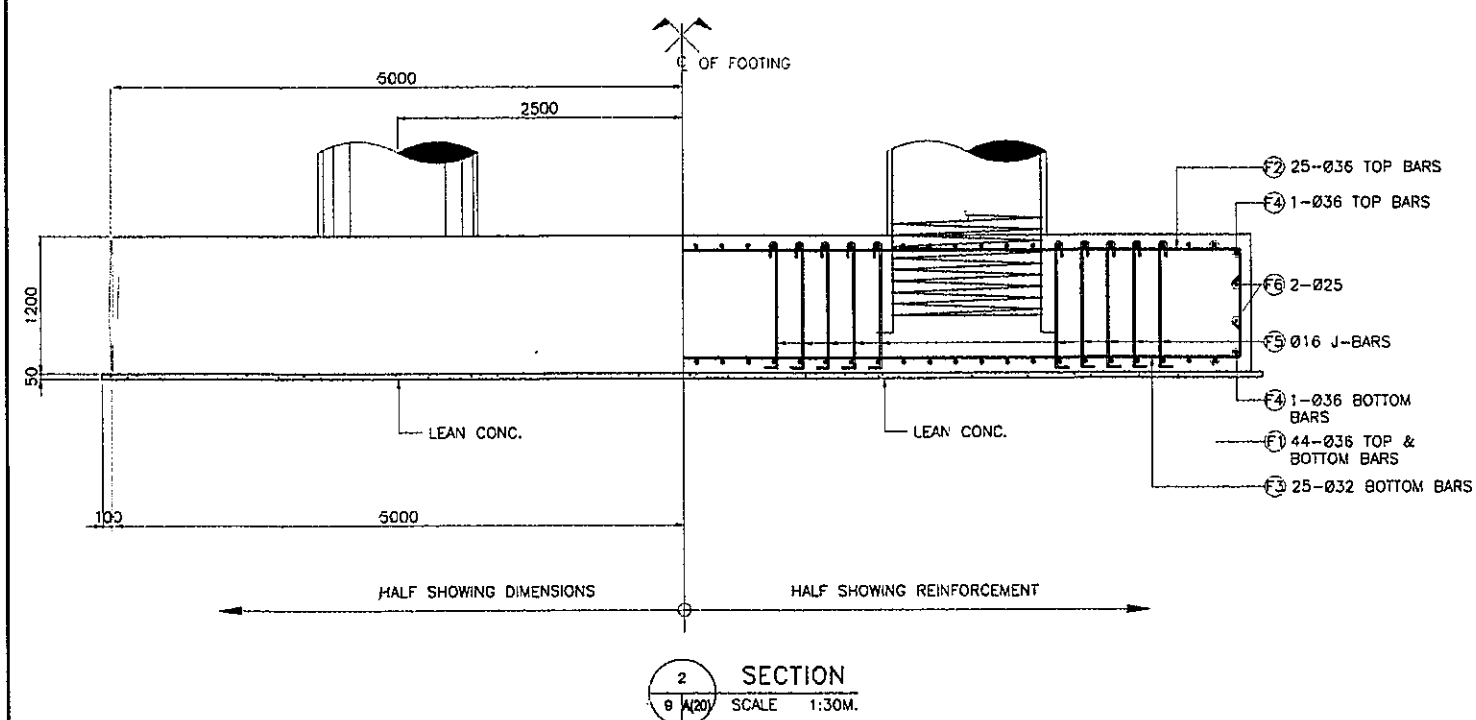
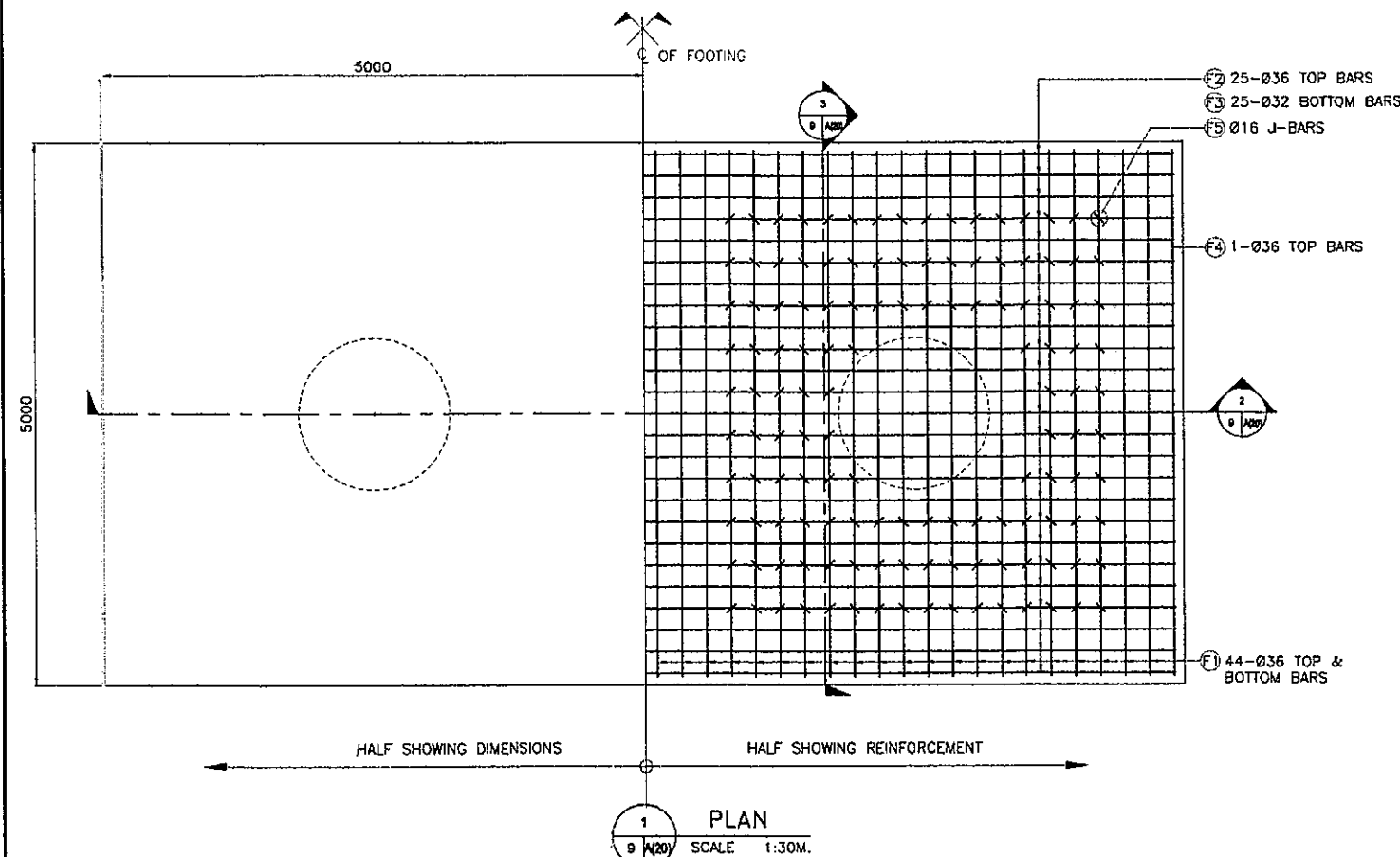
DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES

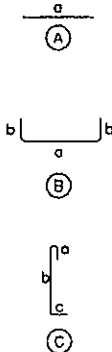
BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)			LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m³)	REMARKS
							a	b	c						
	FOOTING	F1	36	54	287	(B)	3850	437	-	4.724	255.10	7.990	2,038.22	42.21	1. QUANTITIES ARE FOR ONE (1) PILE CAP.
		F2	36	30	267	(B)	9200 min 7450 max	437	-	9.200 AVE.	276.00	7.990	2,205.24		
		F3	36	8	AS SHOWN	(A)	2000 min 3000 max	-	-	2.500 AVE.	20.00	7.990	159.80		
		F4	36	4	AS SHOWN	(C)	1000	1735	1165	6.800	27.20	7.990	217.33		
		F5	16	308	AS SHOWN	(D)	180	900	120	1.200	369.60	1.578	583.23		
		F6	25	4	AS SHOWN	(A)	7450	-	-	7.450	29.80	3.853	114.82		1. QUANTITIES ARE APPLICABLE TO PIER HEIGHTS 8, 10 & 12M.
		F7	25	4	AS SHOWN	(C)	1000	1735	1165	6.800	27.20	3.853	104.80		
													5423.43		
													5423.43		

- NOTES:
- ALLOWABLE BEARING CAPACITY = 400kPa
 - MATERIAL TYPE : ROCK
 - MINIMUM DEPTH BELOW SCOUR LINE = 1 METER

TYPE F6 (FOR FOOTING ON PILES)
SCALE AS SHOWN

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION	SHEET TITLE:	SHEET CONTENTS:	DESIGNED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=20M	DETAIL OF FOOTING TYPE F6 (FOR FOOTING ON PILES)	RENATO RAMIER M. VITORIO CHECKED: MA ROSARIO A. LAPAN CADD: ROLANDO C. MEDIANTE	JEROME V. KATIGBAK BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPDO OPERATION AND TECHNICAL SERVICES	BOD 2018-5 Brd	A(20) 8 19



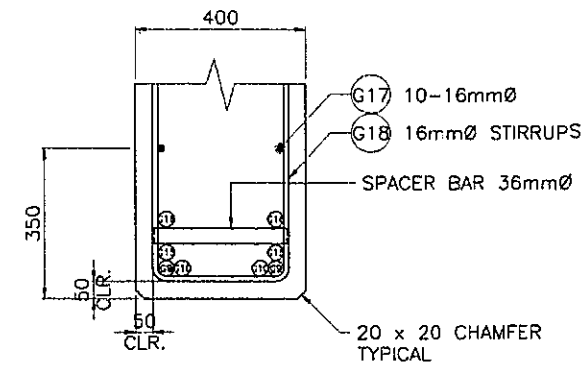
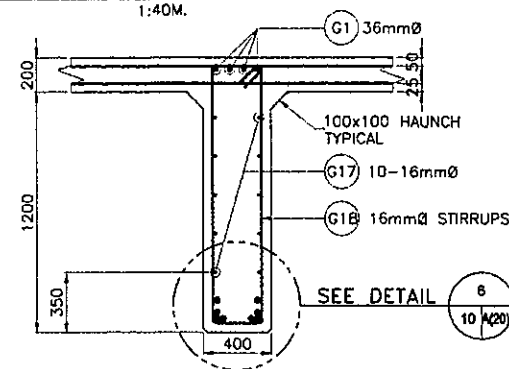
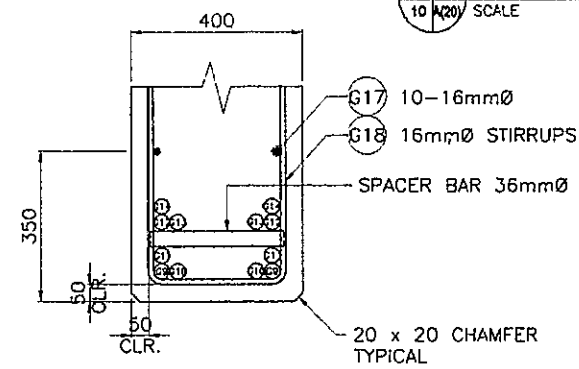
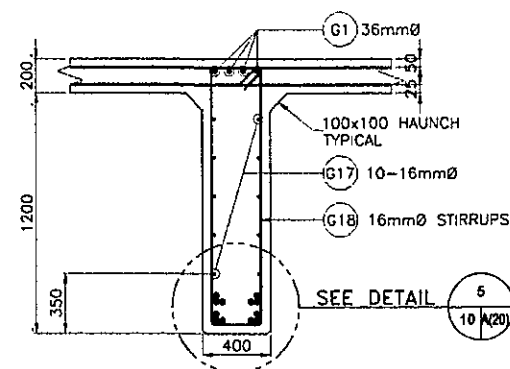
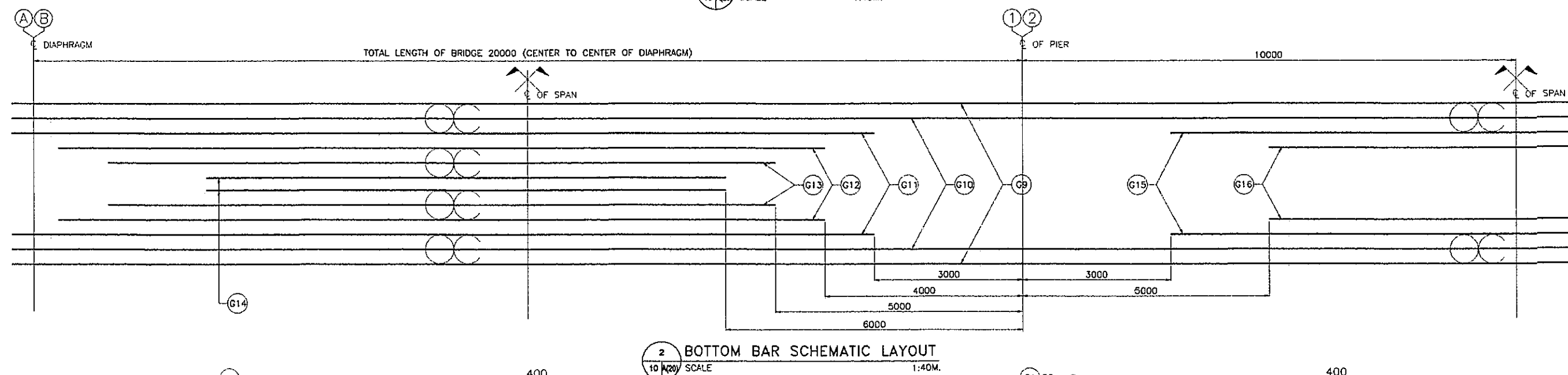
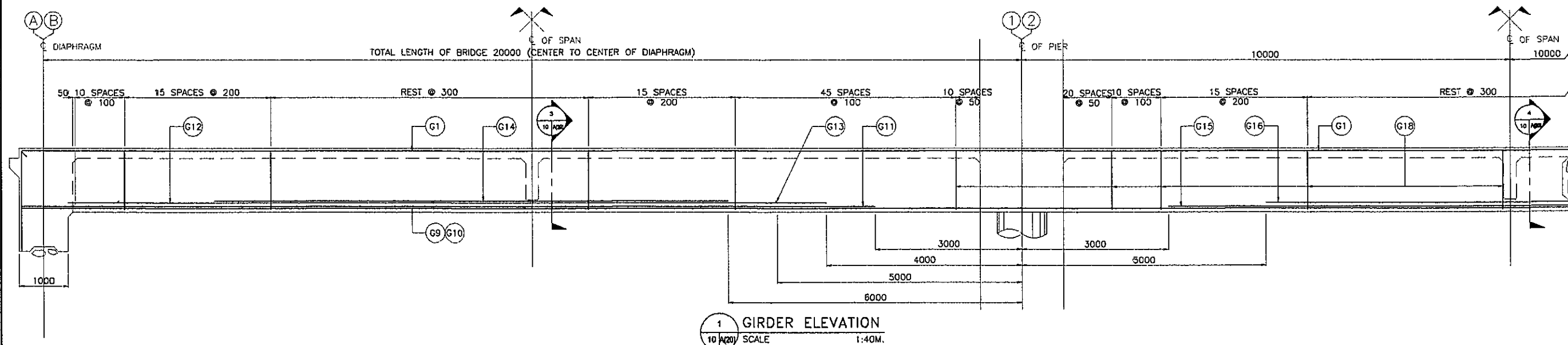
DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES																
REINFORCEMENT														REMARKS		
BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)			LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)		CONCRETE VOLUME (m³)	
							a	b	c							
	FOOTING	(F1)	36	88	AS SHOWN	(B)	4850	825	-	6.500	572.00	7.990	4570.28	60.00	1. QUANTITIES ARE FOR ONE (1) PILE CAP.	
		(F2)	36	25	197	(B)	9850	825	-	11.500	287.50	7.990	2297.13			
		(F3)	32	25	197	(B)	9850	825	-	11.500	287.50	6.313	1814.99			
		(F4)	36	4	AS SHOWN	(A)	4850	-	-	4.850	19.40	7.990	155.01			
		(F5)	16	320	AS SHOWN	(C)	180	1150	120	1.450	464.00	1.578	732.19			
		(F6)	25	4	AS SHOWN	(A)	4850	-	-	4.850	19.40	3.853	74.75			
		(F7)	25	4	AS SHOWN	(A)	9850	-	-	9.850	39.40	3.853	151.81			
																1. QUANTITIES ARE APPLICABLE TO PIER HEIGHTS 10 & 12M

- NOTES:
- ALLOWABLE BEARING CAPACITY = 400kPa
 - MATERIAL TYPE : ROCK
 - MINIMUM DEPTH BELOW SCOUR LINE = 1 METER

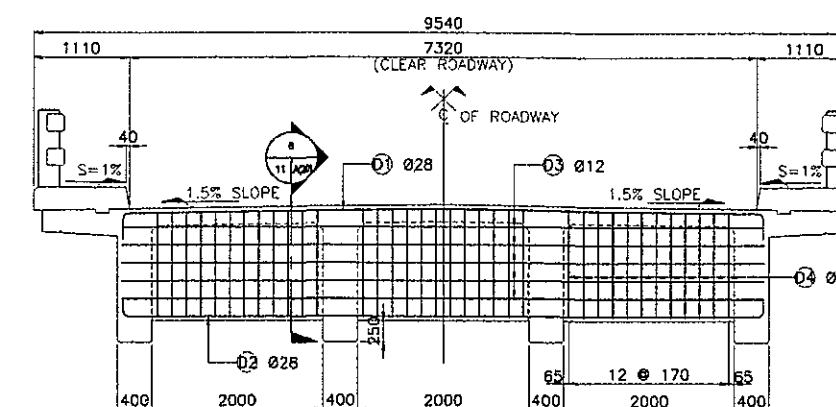
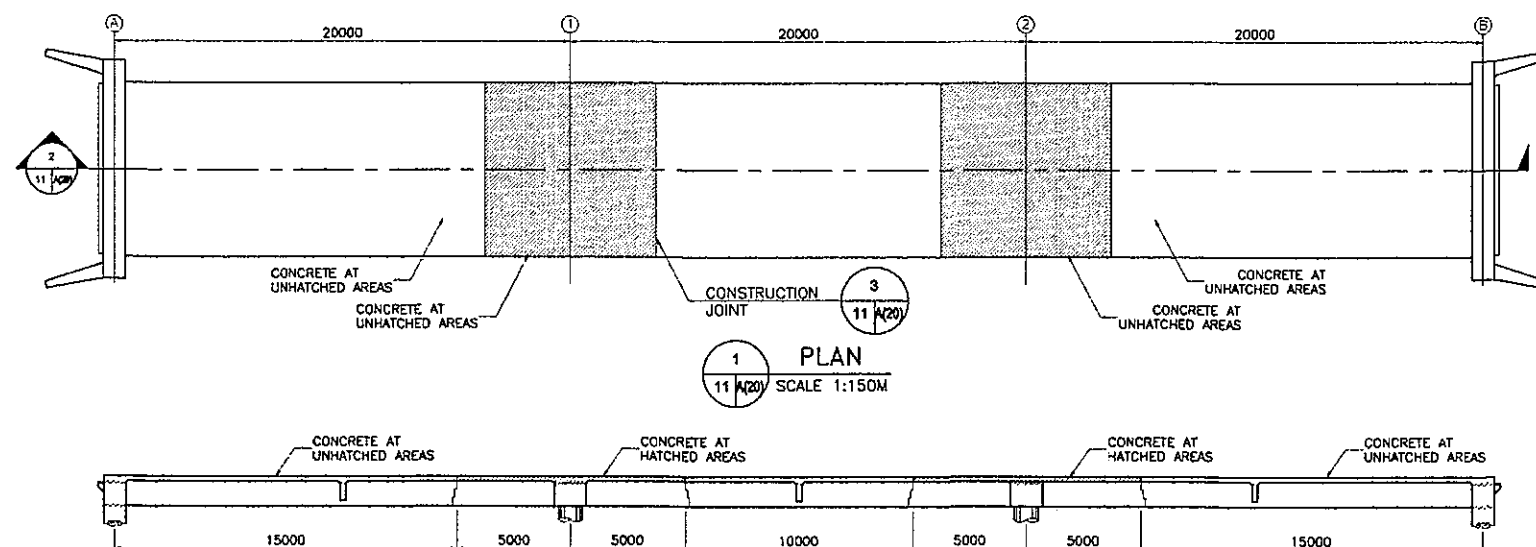
TYPE F6 (FOR SPREAD FOOTING)

SCALE AS SHOWN

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONFACIO DRIVE PORT AREA, MANILA	SHEET TITLE:	SHEET CONTENTS:	DESIGNED: RENATO MANIERA, MITOS	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=20M	DETAIL OF FOOTING TYPE F6 (SPREAD FOOTING)	CHECKED: MAX ROSARIO A. JARAPLASAN	BLESSIDA S. RAMOS	LEA. N. DELFINADO, CESO IV	EMIL K. SADAIN, CESO I	(BOD 2018-5 BrD)	(A(20) 9/19)



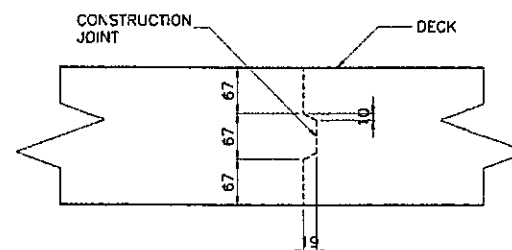
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION 101 BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=20M	SHEET CONTENTS: GIRDER ELEVATION, BOTTOM BAR SCHEMATIC LAYOUT, SECTION AT MIDSPAN AND DETAIL	DESIGNED: RENATO RAJER M. WYDRID CHECKED: MA. ROSARIO A. JARAPLAN CADD: ROLANDO C. MEDIANTE JEROME Y. KATIGBAK SHOWEN 1	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(20) 10/18
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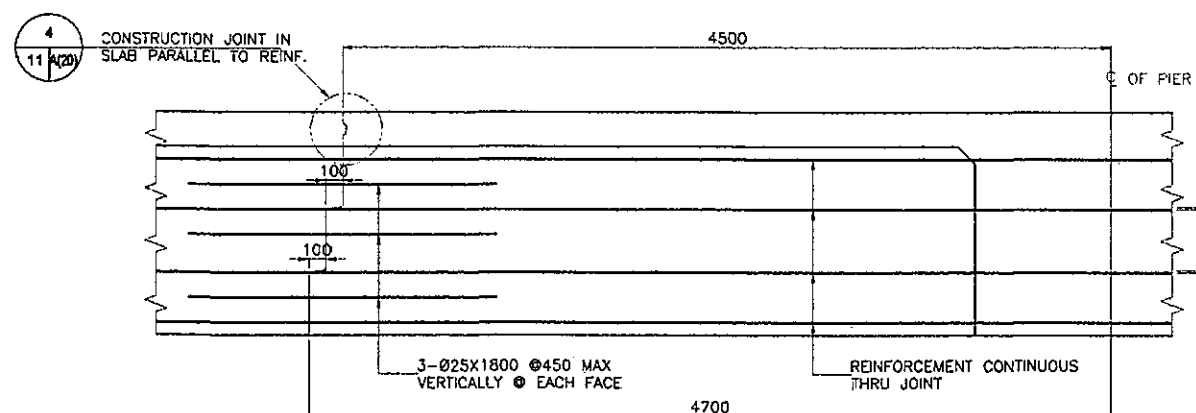
NOTE:

1. CONCRETE AT HATCHED AREAS SHALL BE PLACED AT LEAST ONE DAY AHEAD OF CONCRETE AT UNHATCHED AREAS.
2. REINFORCEMENT SHALL BE CONTINUOUS AT CONSTRUCTION JOINTS.
3. CONSTRUCTION OF SUPERSTRUCTURE SHALL BE FULLY SHORED.

2 SECTION
SCALE 1:150M



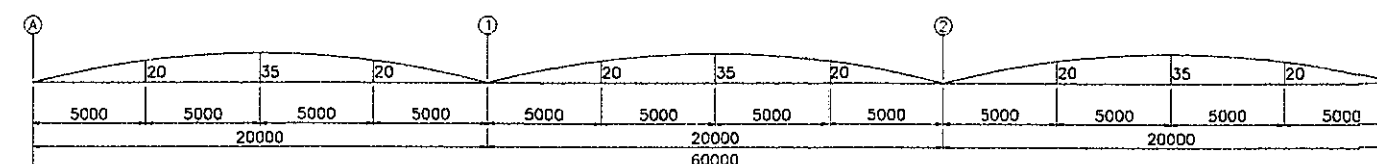
4 DETAIL
SCALE 1:5M



3 TRANSVERSE GIRDER CONSTRUCTION JOINT
SCALE 1:20M

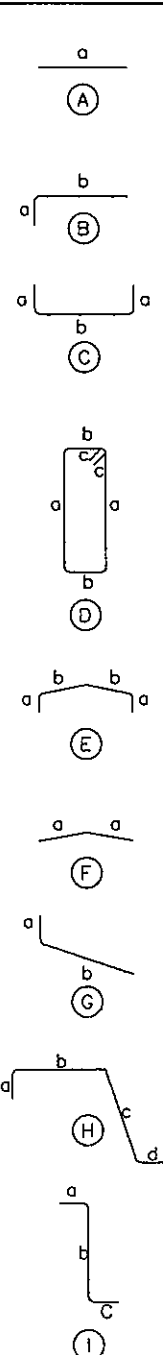
CONC. POURING SEQUENCE
SCALE AS SHOWN

INTERMEDIATE DIAPHRAGM DETAIL
SCALE AS SHOWN



7 CAMBER DIAGRAM
SCALE AS SHOWN

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION	SHEET TITLE: STANDARD MULTI SPAN RCBG SUPERSTRUCTURE L=20M	SHEET CONTENTS: CONC. POURING SEQUENCE, INTERMEDIATE DIAPHRAGM DETAIL AND CAMBER DIAGRAM	DESIGNED: RENATO M. VICTOR CHECKED: MA. ROSARIO A. JARAPLAN CADD: ROLANDO S. MEDIANTE	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(20) 11 19
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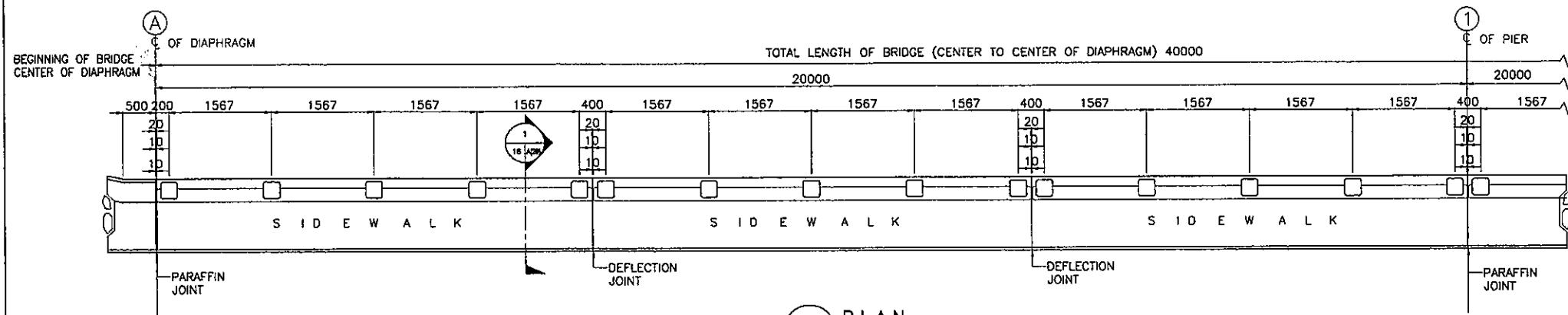
REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR STRUCTURE OF 20M MULTI-SPAN																
REINFORCEMENT																
BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY.	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)				LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT		CONCRETE VOLUME (m3)
							a	b	c	d				Grade 40 (kg)	Grade 60 (kg)	
	DECK SLAB	S1	16	376	100	E	100	4680	-	-	9.560	3594.56	1.578	0.00	5672.22	123.08
		S1a	16	376	100	F	3800	-	-	-	7.600	2857.60	1.578	0.00	4509.29	
		S2	16	300	60	E	100	4680	-	-	9.560	2868.00	1.578	0.00	4525.70	
		S2a	16	300	60	F	3800	-	-	-	7.600	2280.00	1.578	0.00	3597.84	
		S3	16	46	130	A	60900	-	-	-	60.900	2810.77	1.578	0.00	4435.39	
		S4	25	54	260	A	10000	-	-	-	10.000	540.00	3.853	0.00	2080.62	
		S5	25	64	260	A	12000	-	-	-	12.000	768.00	3.853	0.00	2959.10	
		S6	16	54	260	B	1600	16500	-	-	18.100	977.40	1.578	0.00	1542.34	
		S7	16	64	260	B	1600	15500	-	-	17.100	1094.40	1.578	0.00	1726.96	
		S8	16	12	AS SHOWN	A	60900	-	-	-	60.900	730.80	1.578	0.00	1153.20	
		S9	12	371	300	G	100	1200	-	-	1.300	481.87	0.888	427.90	0.00	
		S10	16	27	260	A	12000	-	-	-	12.000	324.00	1.578	0.00	511.27	
		S11	16	32	260	A	10000	-	-	-	10.000	320.00	1.578	0.00	504.96	

3 WINGWALL ELEVATION
14 A(20) SCALE 1:25M.

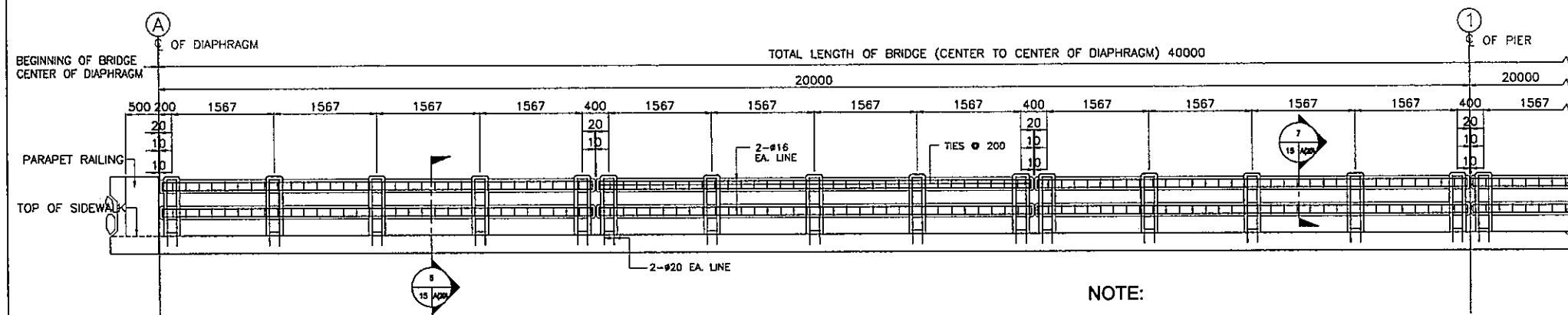
4 SECTION
14 (20) SCALE 1:25M.

5 SECTION
14 A(20) SCALE 1:25M.

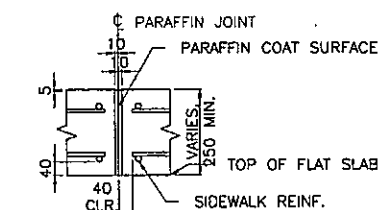
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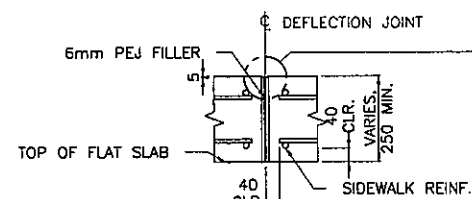
1 PLAN
15 A(20) SC 1:40M.



2 ELEVATION
15 A(20) SCALE 1:40M.



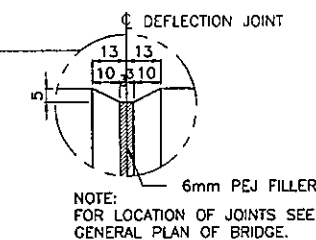
3 PARAFFIN JOINT
15 A(20) SCALE 1:10M.



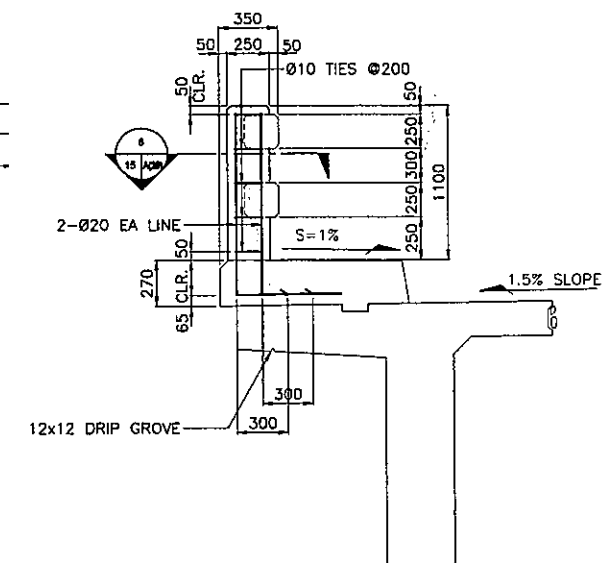
4 DEFLECTION JOINT
15 A(20) SCALE 1:10M.

NOTE:

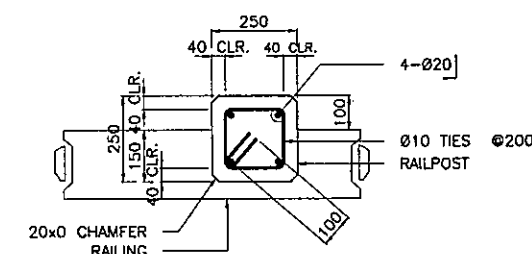
- SIDEWALK SHALL BE PLACED AFTER THE SHORING UNDER THE SUPERSTRUCTURE HAS BEEN RELEASED SUFFICIENTLY TO PERMIT THE SPANS TO ATTAIN FULL DEAD LOAD DEFLECTION.
- OTHER TYPES OF STANDARD BRIDGE RAILINGS CAN BE ADOPTED (REFER TO DO. 64 SERIES OF 2018, BOD SET NO. 2017-1-B/D)



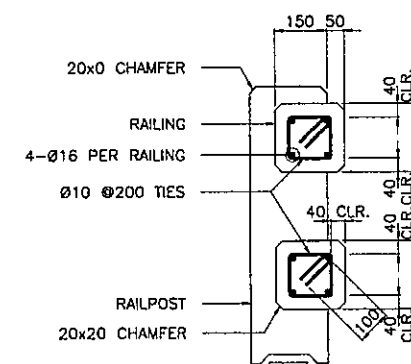
NOTE:
FOR LOCATION OF JOINTS SEE
GENERAL PLAN OF BRIDGE.



5 SECTION
15 A(20) SC 1:20M.



6 SECTION
15 A(20) SCALE 1:10M.



7 SECTION
15 A(20) SCALE 1:10M.

TYPICAL RAILING AND SIDEWALK DETAILS
SCALE AS SHOWN

BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY.	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)				LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT		CONCRETE VOLUME (m ³)	
							a	b	c	d				Grade 40 (kg)	Grade 60 (kg)		
	POST	MAIN	20	360	AS SHOWN	C	1255	300	-	-	1.555	559.80	2.466	0.00	1380.47	6.19	
		TIES	10	540	200	B	170	170	100	-	0.880	475.20	0.617	293.20	0.00		
	RAILING	MAIN	16	144	AS SHOWN	A	6600	-	-	-	6.600	950.40	1.578	0.00	1499.73	15.00	
		STIRRUPS	10	1200	200	B	170	170	170	-	0.510	612.00	0.617	377.60	0.00		
														TOTAL =	293.20	1380.47	6.19
														TOTAL =	377.60	1499.73	15.00



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
BUREAU OF DESIGN
BRIDGES DIVISION
BONFACIO DRIVE PORT AREA, MANILA

SHEET TITLE:
STANDARD MULTI SPAN
RCBG SUPERSTRUCTURE
L=20M

SHEET CONTENTS:
TYPICAL SIDEWALK AND
RAILING DETAILS

DESIGNED: RENATO RANIERI V. VITARIO
CHECKED: MA. ROSARIO A. JACAPLASAN
CADD: ROLANDO C. MEDIANTE

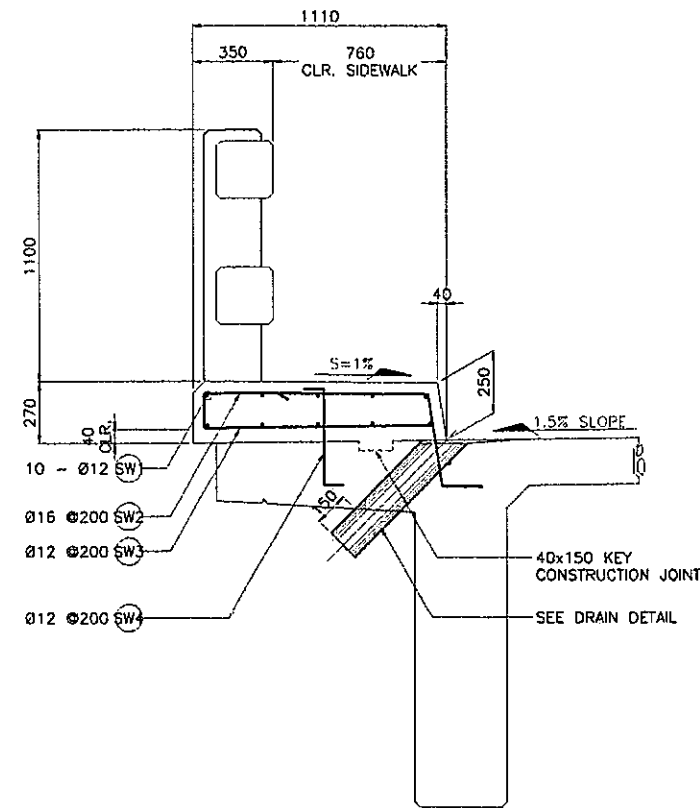
SUBMITTED: BLESILDA S. RAMOS
OIC-CHIEF BRIDGES DIVISION

RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV
DIRECTOR IV, BUREAU OF DESIGN

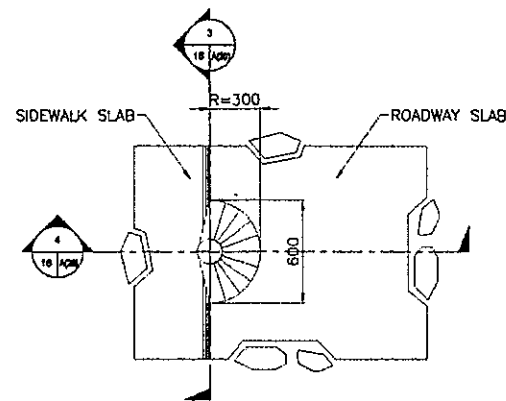
APPROVED: EMIL K. SADAIN, CESO I
UNDERSECRETARY FOR UPMO
OPERATION AND TECHNICAL SERVICES

SET NO.
BOD
2018-5
B/D

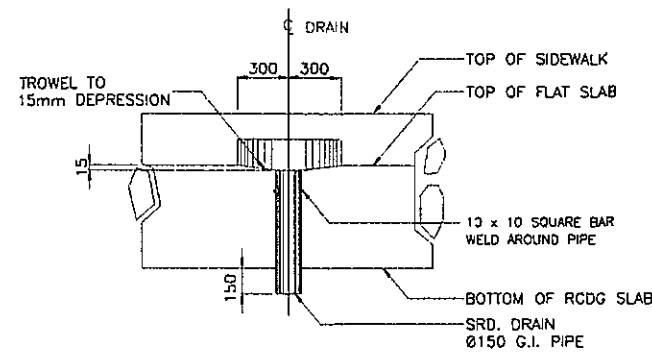
SHEET NO.
A(20)
15 19



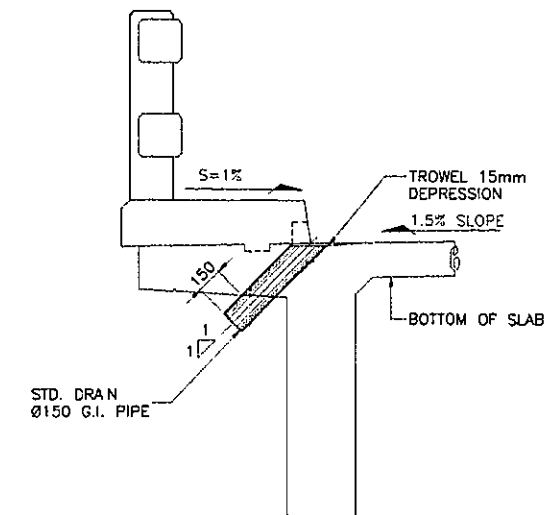
1 SIDEWALK DETAIL
SCALE 1:15M.



2 PLAN
SCALE 1:20M.



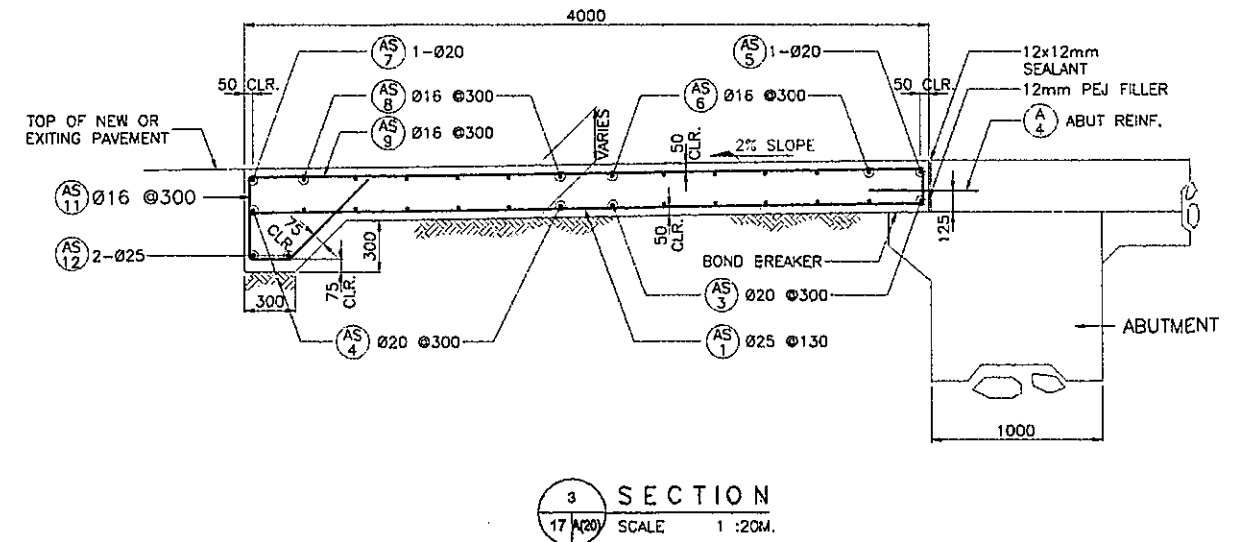
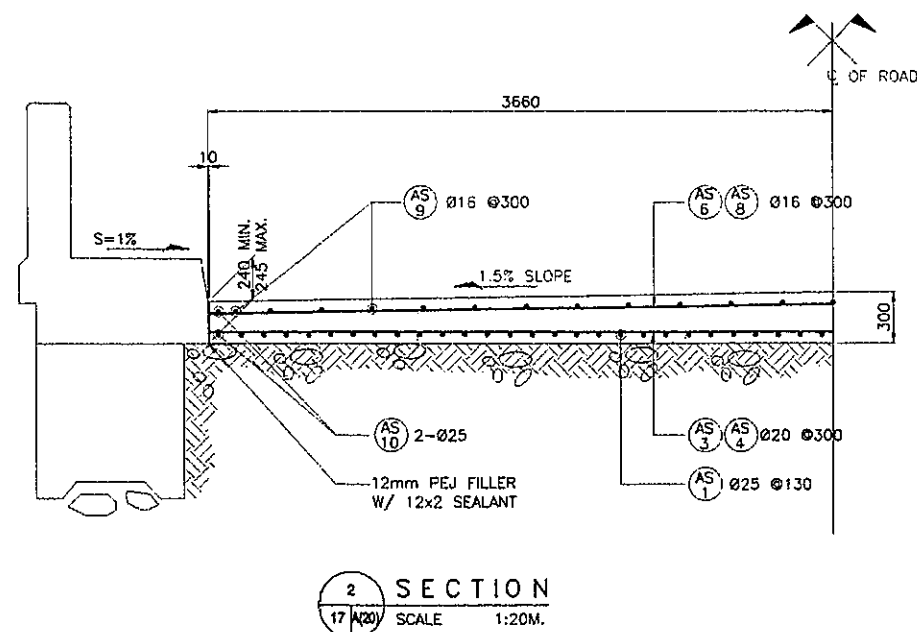
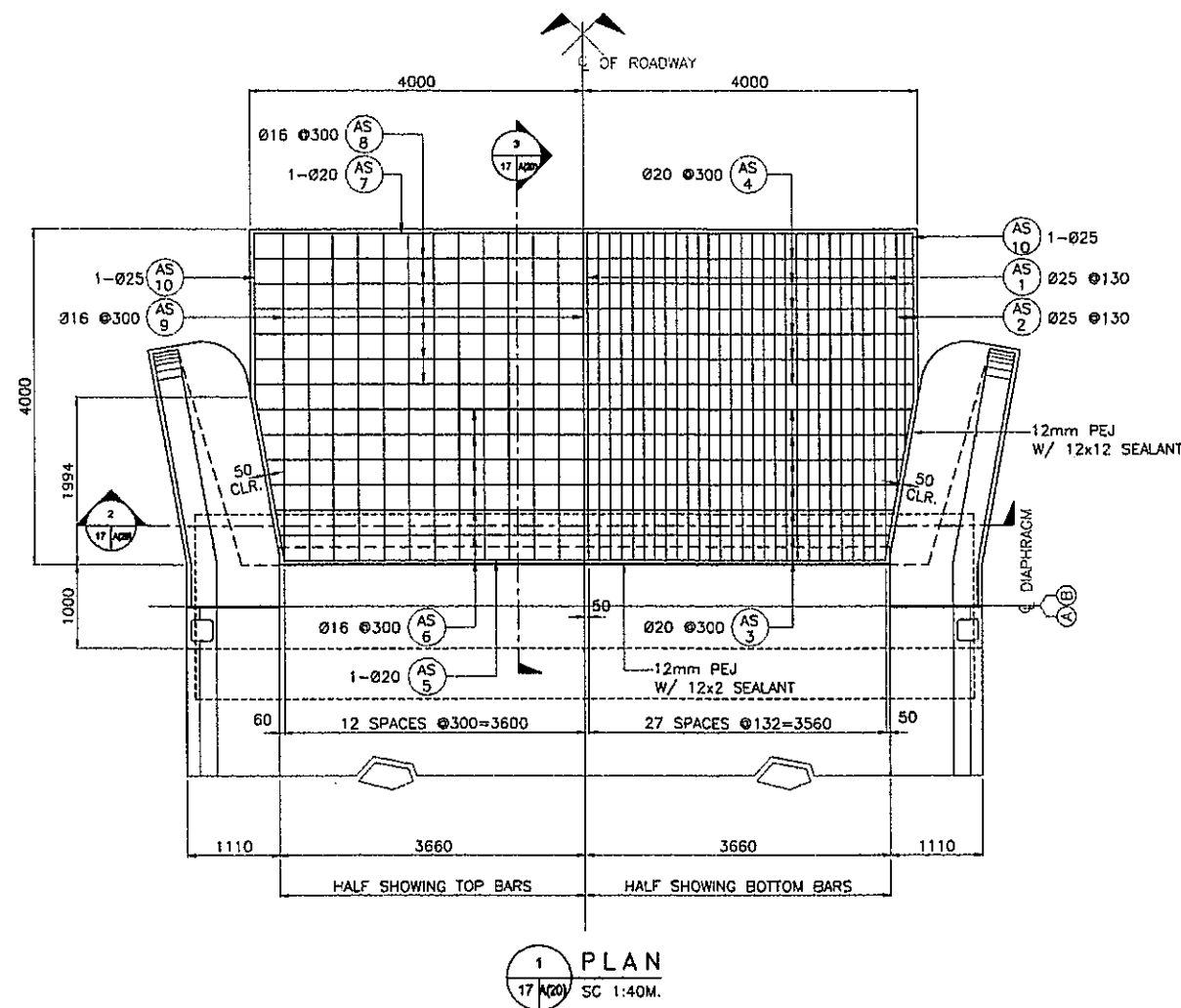
3 SECTION
SCALE 1:20M.



4 SECTION
SCALE 1:20M.

TYPICAL DRAIN DETAILS
SCALE AS SHOWN

	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION			DESIGNED: RENATO R. VICTORIO	JEROME V. KATIGBAK	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
				CHECKED: MA ROSARIO A. JAVAPLASAN		BLESILDA S. RAMOS	SEE COVER SHEET	SEE COVER SHEET		
				CADD: ROLANDO C. MEDIANTE		OIC-CHIEF, BRIDGES DIVISION	LEA N. DELFINADO, CESO IV	EMIL K. SADAIN, CESO I		
							DIRECTOR IV, BUREAU OF DESIGN	UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES		



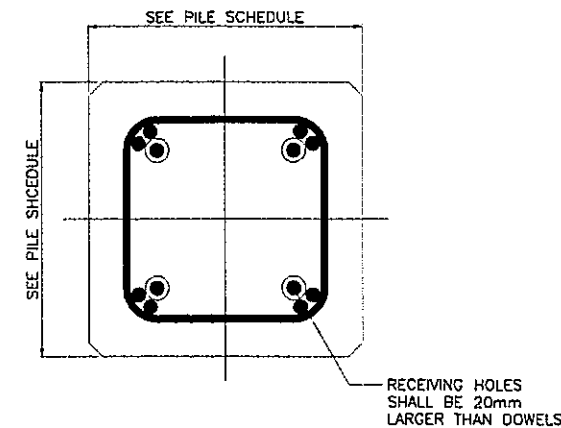
REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR APPROACH SLAB												
BENDING DIAGRAM (DIMENSIONS ARE OUT TO OUT OF BARS)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm)			LENGTH PER BAR (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
						a	b	c				
	(AS 1)	25	56	130	(B)	3900	150	-	4.050	226.80	3.853	874
	(AS 2)	25	4	130	(B)	2700 MIN 3420 MAX	150	-	3.210 AVE.	12.84	3.853	49
	(AS 3)	20	7	300	(D)	7200 MIN 7880 MAX	-	-	7.540 AVE.	52.78	2.466	130
	(AS 4)	20	7	300	(A)	7900	-	-	7.900	55.30	2.466	136
	(AS 5)	20	1	AS SHOWN	(A)	7200	-	-	7.200	7.20	2.466	18
	(AS 6)	16	6	300	(A)	7240 MIN 7880 MAX	-	-	7.610 AVE.	45.66	1.578	72
	(AS 7)	20	1	AS SHOWN	(A)	7900	-	-	7.900	7.90	2.466	19
	(AS 8)	16	6	300	(A)	7900	-	-	7.900	47.40	1.578	75
	(AS 9)	16	25	300	(B)	3900	150	-	4.050	101.25	1.578	160
	(AS 10)	25	4	AS SHOWN	(C)	1965	1965	-	3.930	15.72	3.853	61
	(AS 11)	16	27	300	(D)	415 MIN 475 MAX	250	650	1.745	47.12	1.578	74
	(AS 12)	25	2	AS SHOWN	(A)	2900	-	-	2.900	5.80	3.853	22
TOTAL =											1691	
GRAND TOTAL GRADE 40=											0	8.48
GRAND TOTAL GRADE 60=											1691	



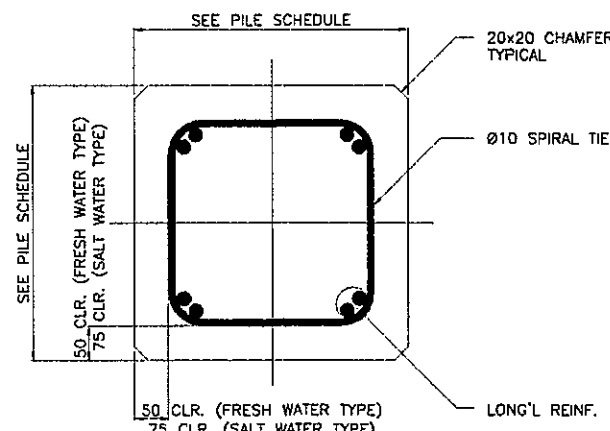
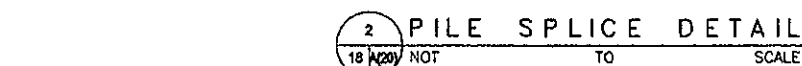
Diagram illustrating the reinforcement details for a driven pile. The diagram shows a cross-section of the pile with the following components labeled:

- DIAMETER AND LENGTH OF REINF. STEEL DOWELS TO BE AS RECOMMENDED BY MANUFACTURER OF EPOXY RESIN IN ORDER TO DEVELOP REQUIRED PILE JOINT STRENGTH SEE NOTE
- DOWELS
- Ø10 SPACER RING BAR
- EPOXY RESIN BONDING MORTAR
- 30
- DRIVEN PILE

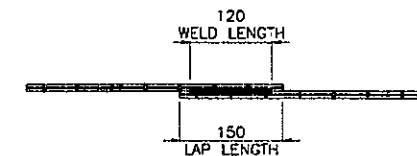
ELEVATION



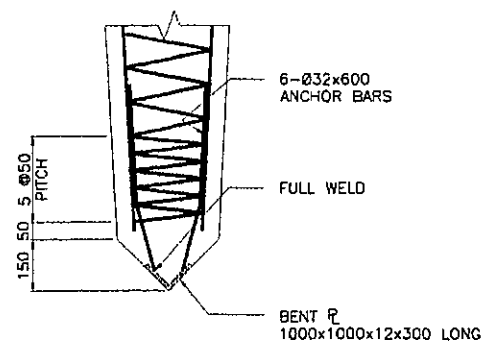
SECTION



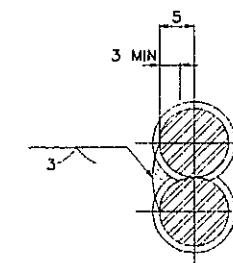
3 SECTION
18 1/2(20) SCALE 1:5M.



ELEVATION



4 PILE TIP FOR HARD DRIVING
18 (20) SCALE 1:10M.



SECTION

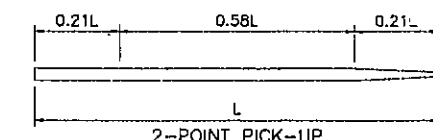

$$P_{all} = \left(\frac{167 \cdot e_h \cdot E_{Hu}}{S + 2.54} \right) \left(\frac{W_r + 0.16 W_p}{W_r + W_p} \right)$$

0.30L 0.70L

L

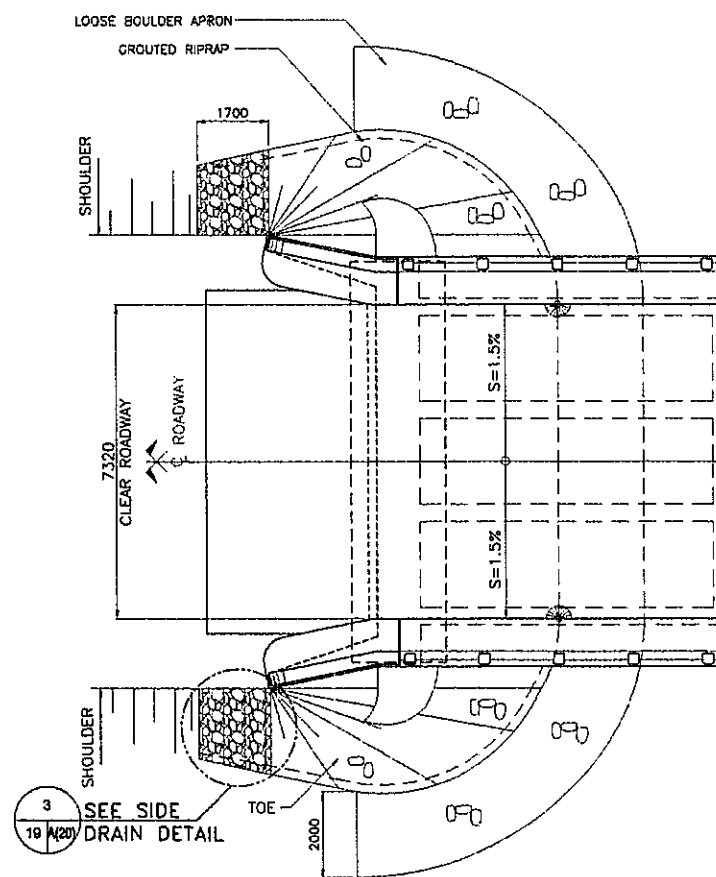
1-POINT PICK-UP

1-POINT PICK-UP

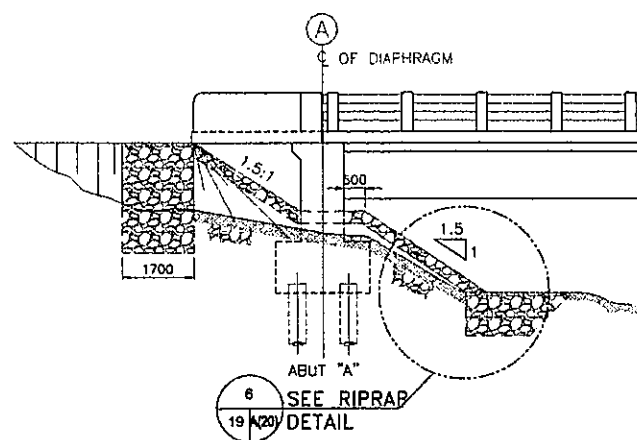


2-POINT PICK-UP

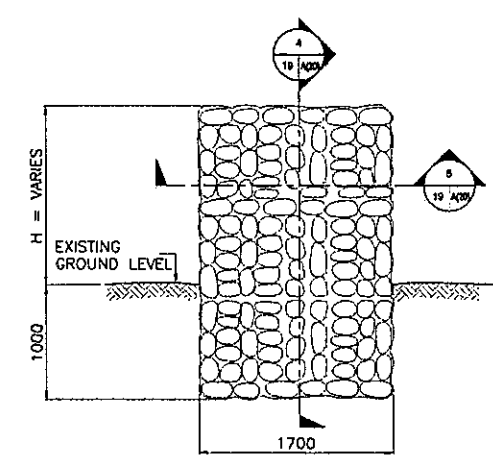
 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BOHACHO DRIVE PORT AREA, MANILA	SHEET TITLE:	SHEET CONTENTS:	DESIGNED:  RENATO HAMER, JTORIO CHECKED:  MA. ROSARIO A. JARAMILLA CADD:  ROLANDO C. MEDANTE	SUBMITTED:  BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: SEE COVER SHEET LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: SEE COVER SHEET EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. 	SHEET NO. 
	STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=20M	TYPICAL PRECAST CONCRETE PILE DETAIL						



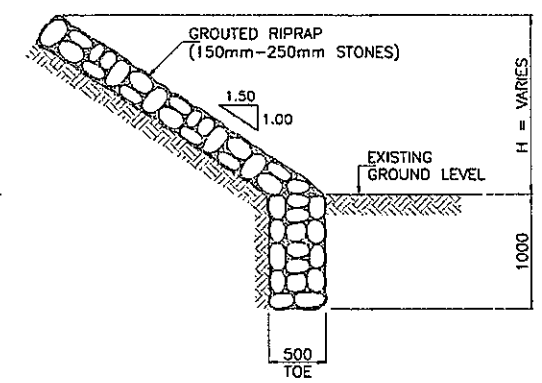
1 PLAN
SCALE 1:80M.



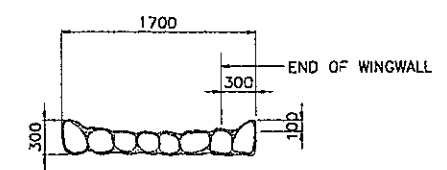
2 ELEVATION
SCALE 1:80M.



3 ELEVATION
SCALE 1:30M.

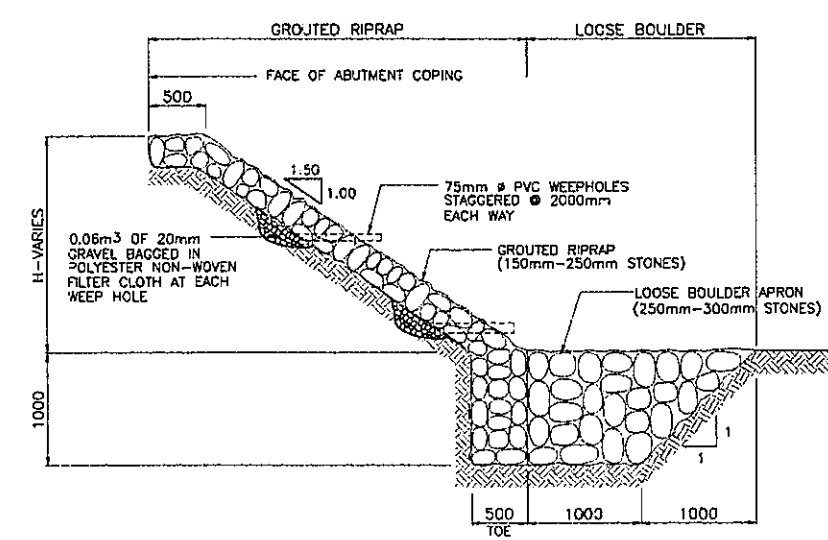


4 SECTION THRU DRAIN
SCALE 1:30M.

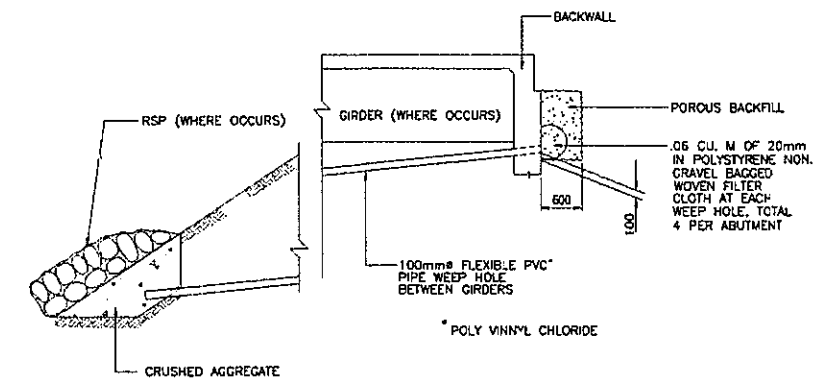


5 SECTION
SCALE 1:30M.

SIDE DRAIN DETAILS
SCALE 1:30M.



6 RIPRAP DETAIL
SCALE 1:30M.



7 ABUTMENT DRAINAGE
SCALE 1:30M.

ABUTMENT RIPRAP PROCEDURE:

1. THE BED FOR RIPRAP SHALL BE EXCAVATED TO THE REQUIRED DEPTHS AND PROPERLY COMPACTED, TRIMMED AND SHAPED.
2. THE RIPRAP SHALL BE FOUNDED IN A TOE TRENCH DUG BELOW THE DEPTH OF SCOUR AS SHOWN ON PLANS OR AS ORDERED BY THE ENGINEER. THE TOE TRENCH SHALL BE FILLED WITH STONE OF THE SAME CLASS AS THAT SPECIFIED FOR THE RIPRAP, UNLESS OTHERWISE SPECIFIED.
3. STONES SHALL BE PLACED BY HAND OR INDIVIDUALLY BY MACHINES. THEY SHALL BE LAID WITH CLOSE, BROKEN JOINTS AND SHALL BE FIRMLY BEDDED INTO THE SLOPE AND AGAINST THE ADJOINING STONES. EACH STONE SHALL BE LAID WITH EACH ADJACENT STONE. THE RIPRAP SHALL BE THOROUGHLY RAMMED INTO PLACE AS CONSTRUCTION PROGRESSES AND THE FINISHED SURFACE SHALL PRESENT AN EVEN, TIGHT SURFACE. INTERSTICES BETWEEN STONES SHALL BE FILLED WITH SMALL BROKEN FRAGMENTS FIRMLY RAMMED INTO PLACE.
4. THE SPACES BETWEEN THE STONES SHALL THEN BE FILLED WITH CEMENT MORTAR AS SPECIFIED IN SUBSECTION 504 2.3. MORTAR SHALL BE USED TO COMPLETELY FILL ALL VOIDS, EXCEPT THAT THE FACE SURFACE OF THE STONES SHALL BE LEFT EXPOSED.
5. GROUT SHALL BE PLACED FROM BOTTOM TO TOP OF THE SURFACE SWEEPED WITH STIFF BROOM. AFTER GROUTING IS COMPLETED, THE SURFACE SHALL BE CURED AS SPECIFIED IN ITEM 405, STRUCTURAL CONCRETE FOR A PERIOD OF AT LEAST THREE DAYS.

NOTE:

ABUTMENT DRAINAGE SHALL BE PROVIDED BEHIND ABUTMENTS, POROUS BACKFILL SHALL EXTEND Laterally THE FULL LENGTH OF THE BACK WALL

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN RCDG SUPERSTRUCTURE L=20M	SHEET CONTENTS: ABUTMENT SLOPE PROTECTION AND DRAINAGE	DESIGNED: RENATO RAINER M. VICTORIO CHECKED: MA. ROSARIO A. JARAPLASAN CADD: ROLANDO C. MEDIANTE	SUBMITTED: BLESILDA S. RAMOS OIC-CHIEF, BRIDGES DIVISION	RECOMMENDING APPROVAL: LEA N. DELFINADO, CESO IV DIRECTOR IV, BUREAU OF DESIGN	APPROVED: EMIL K. SADAIN, CESO I UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-5 BrD	SHEET NO. A(20) 19/19
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