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

STANDARD MULTI SPAN PRESTRESSED CONCRETE DECK GIRDER (PCDG) BRIDGES

BOD SET NO. 2018-6 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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	STANDARD THREE SPAN PCDG SUPERSTRUCTURE	GENERAL INDEX OF DRAWING		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 2018-6 BrD	B -

25m MULTIPLE SPAN PCDG

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.

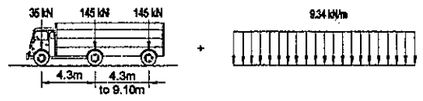
DESIGN;

1. DESIGN SPECIFICATION
   a.) DPWH DESIGN GUIDELINES CRITERIA AND STANDARDS (DGCS), 2015 EDITION, VOLUME 5 - BRIDGE DESIGN.

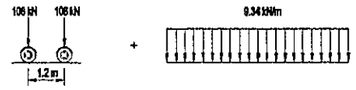
2. LOADINGS
   a.) DEAD LOAD: WEIGHT OF THE STRUCTURE AND AN ALLOWANCE OF 1.10 kPa FOR FUTURE BITUMINOUS WEARING COURSE.

   b.) LIVE LOAD: HL - 93

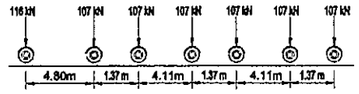
   (b.1) DESIGN TRUCK AND DESIGN LANE LOAD:



   (b.2) DESIGN TANDEM 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 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)
		MPa	psi	
CAST-IN-PLACE GIRDERS, SLAB, DIAPHRAGMS, WINGWALLS, BACKWALLS, COPING, COLUMNS & FOOTINGS	A	27.58	4000	20
PRECAST R.C. PILE	AA	27.58	4000	25
THIN REINFORCED SECTIONS RAILING AND RAILPOST	C	27.58	4000	12
LEAN CONCRETE	B	16.50	2400	38
PRESTRESSED CONCRETE	P	35	5075	20

2. REINFORCEMENT STEEL

   (a) 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:

   Fy = 414 MPa (Gr.60) FOR 16mmØ AND LARGER
   Fy = 276 MPa (Gr.40) FOR 12mmØ AND SMALLER
   = 276 MPa (Gr.40) FOR DECK SLAB REBARS ONLY

   (b) REINFORCING STEEL SHALL BE FREE OF MILL SCALES, OIL OR ANY SUBSTANCES WHICH WILL WEAKEN THE BOND WITH CONCRETE

3. PRESTRESSING STEEL
   REINFORCING STEEL SHALL BE SEVEN WIRE UNCOATED STRESS RELIEVED STRANDS (ASTM A-416) WITH MINIMUM ESTIMATE STRENGTH OF 1860 MPa (270,000 psi)

4. 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

   (1) DESIGN OF CONCRETE MIX SHALL MEET THE DESIGN CONCRETE STRENGTH GIVEN UNDER ITEM 1 OF MATERIALS.

   (2) CONCRETE SHALL BE DEPOSITED, VIBRATED AND CURED IN ACCORDANCE WITH THE SPECIFICATIONS.

   (3) 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.

   (4) THE CONSTRUCTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL PLACING SEQUENCES FOR ALL CONCRETING WORK.

   b. BAR BENDING, SPLICING AND PLACING

   (1) THE CONSTRUCTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL OF SHOP DRAWINGS INDICATING THE BENDING, CUTTING, SPLICING AND INSTALLATION OF ALL REINFORCING BARS.

   (2) BARS SHALL BE BENT COLD, BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS PERMITTED BY THE ENGINEER.

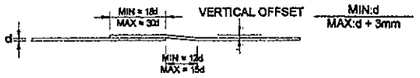
   (3) BAR SPLICING NOT INDICATED ON DRAWINGS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

   (4) WELDED SPLICES, IF APPROVED BY THE ENGINEER, SHALL DEVELOP IN TENSION AT LEAST 125% OF THE SPECIFIED WELD STRENGTH OF THE BARS.

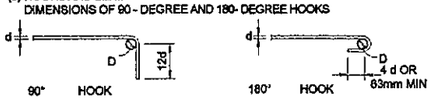
   (5) NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION SHALL BE SPLICED.

   (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.

   (7) CRANKED SPLICES

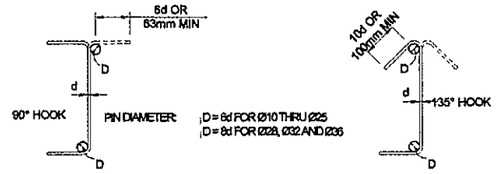


   (8) HOOKS AND BENDS
   DIMENSIONS OF 90 - DEGREE AND 180- DEGREE HOOKS



   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
   (1) THE POSITION AND FORM OF ANY CONSTRUCTION JOINT SHALL BE AS SHOWN ON DRAWINGS OR AS AGREED WITH THE ENGINEERS.
   (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. 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 HARMFULS EFFECTS OF SUN, WIND AND RUNNING WATERS AND SHALL BE KEPT DAMP FOR AT LEAST 7 DAYS.

3. PRESTRESSED CONCRETE

   a. POST TENSIONING STEEL : THE PROPOSED TYPE OF TENDONS WHICH WILL BE USED IN THE POST TENSIONED DESIGNS, ALL NECESSARY ADDITIONAL DETAILS INCLUDING THOSE FOR END ANCHORAGES, METHODS TO BE EMPLOYED AND PROCEDURES TO BE FOLLOWED, SHALL BE AS APPROVED BY THE ENGINEERS. THE TENDONS SHALL BE DRAPED LONGITUDINAL IN PARABOLIC POSITIONS, ALL TENDONS SHALL BE PLACED SO THAT THEIR CENTER OF GRAVITY WILL BE AT THE POSITION SHOWN ON THE PLANS. THE REQUIRED FORCES AFTER LOSSES SHALL BE OBTAINED BY APPLYING INITIAL TENSILE FORCES OF SUFFICIENT MAGNITUDE TO ALLOW FOR ALL SUBSEQUENT LOSSES, INCLUDING THOSE FOR ELASTIC SHORTENING, SHRINKAGE, CREEP, RELAXATION, FRICTION AND EFFICIENCY OF END ANCHORAGE. AFTER SECURING THE END ANCHORAGES ALL TENDONS SHALL BE PRESSURE GROUTED IN THEIR CONDUITS IN ACCORDANCE WITH "SPECIFICATIONS".

   b. CONCRETE FOR GIRDERS SHALL BE A MINIMUM STRENGTH OF 35 N/mm (5,000 PSI) AT THE AGE OF 28 DAYS.

   c. CONCRETE FOR CAST-IN-PLACE SLAB HAVE A MINIMUM STRENGTH OF 28 MPa AT THE AGE OF 28 DAYS.

   d. THE CONTRACTOR MAY PROPOSE ANY ALTERNATIVE TENDON SIZE AND LAYOUT AND SUBJECT SHALL MEET THE APPROVAL OF THE ENGINEER.

   e. THE REQUIRED STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL BE 28 MPa (4,000 PSI). A GRID CONSISTING OF Ø12 BARS AT 100 CENTERS IN BOTH DIRECTIONS SHALL BE PLACED NEAR EACH ANCHORAGE OF THE POST-TENSIONING SYSTEM. POST-TENSIONING FORCES SHOWN BELOW COMPUTED FOR TENDONS JACKED SIMULTANEOUSLY AT BOTH ENDS, FRICTIONS COEFFICIENTS ARE K=0.0015 AND u=0.25 WITH AN ANCHORAGE DEFORMATION OF 5mm.

   f. HANDLING IN PRESTRESSED CONCRETE BEAMS: THE BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY SUITABLE DEVICES PROVIDED AT THE ENDS OF THE BEAMS. THE CONTRACTOR'S PROPOSED LIFTING DETAILS SHOULD BE GIVEN CAREFUL CONSIDERATION BEFORE BEING SUBMITTED ON SHOP DRAWINGS FOR APPROVAL. THE USE OF HOLES FOR LIFTING PURPOSES WILL NOT BE PERMITTED.

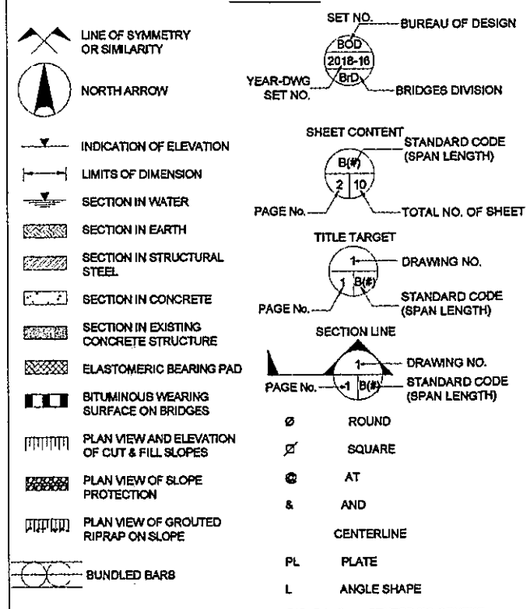
   g. CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE ENGINEER THE CALCULATED ELONGATION OF THE PRESTRESSING TENDONS CORRESPONDING TO THE REQUIRED JACKING FORCES

4. SHORING

   (a) 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



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 ORDINATE
CLR	CLEAR	MPa	MEGAPASCAL
cm	CENTEMETER	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	STIR	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	KILONEWTON	&	AND

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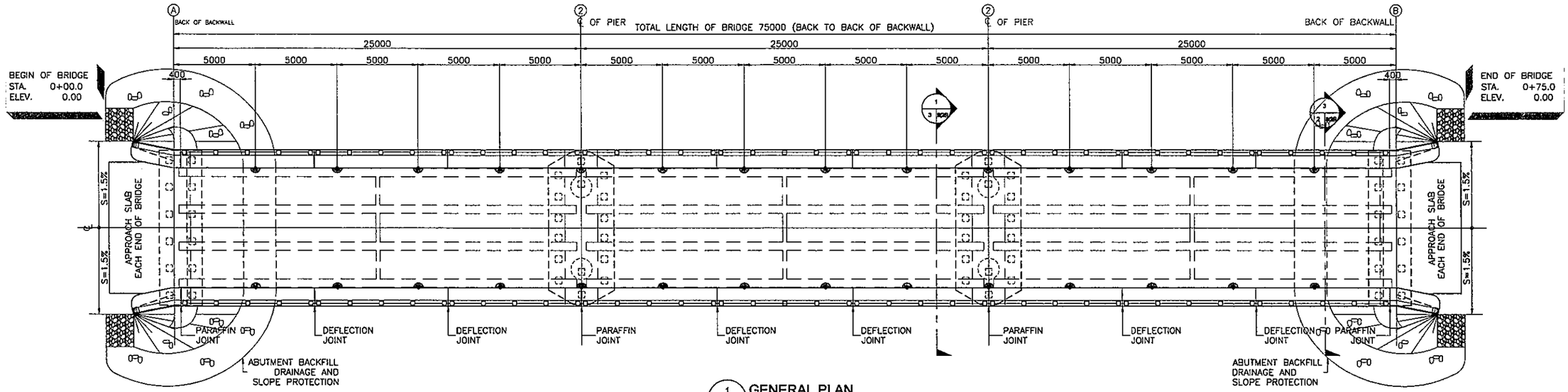
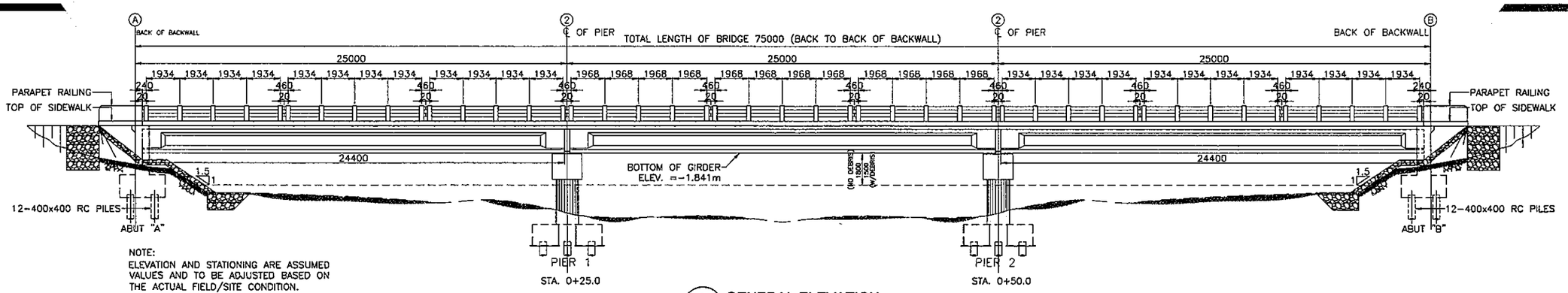
NOTE: DIRECTION OF FLOW TO BE INDICATED IN THE PLAN



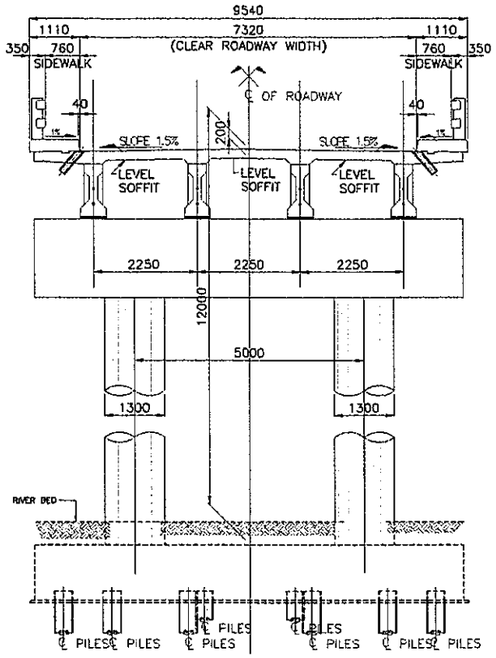
1 / 2 B(25) GENERAL PLAN
SCALE 1:90



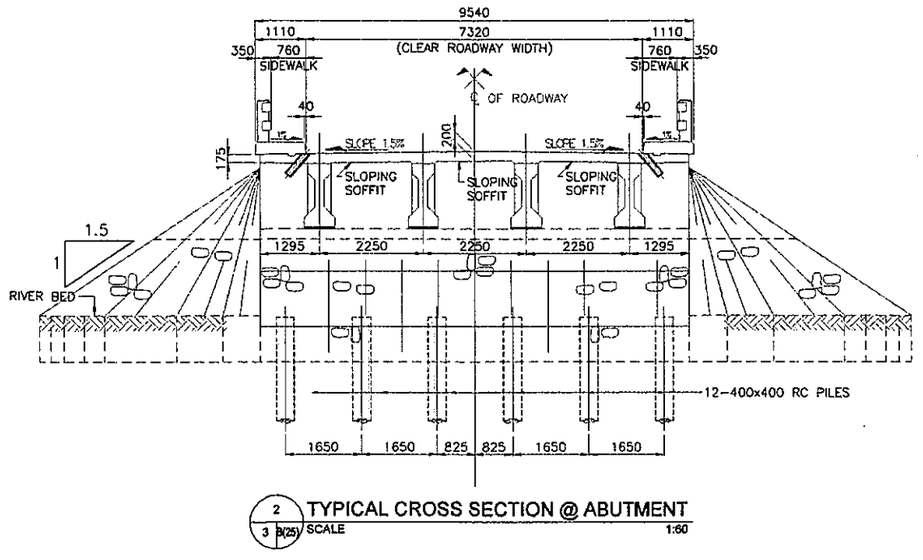
NOTE:
ELEVATION AND STATIONING ARE ASSUMED VALUES AND TO BE ADJUSTED BASED ON THE ACTUAL FIELD/SITE CONDITION.

2 / 2 B(25) GENERAL ELEVATION
SCALE 1:90

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 25M	SHEET CONTENTS: GENERAL PLAN AND GENERAL ELEVATION	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-8 BrD	SHEET NO. B(25) 2 20



1 / 3 B(25) TYPICAL CROSS SECTION @ PIER
SCALE 1:60



2 / 3 B(25) TYPICAL CROSS SECTION @ ABUTMENT
SCALE 1:60

INDEX OF DRAWING

DRAWING NO. SET NO.	DRAWING NO. SHEET NO.	SHEET CONTENTS
BOD 2018-6 BrD	B (25)- 1/20	GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
	B (25) - 2/20	GENERAL PLAN AND GENERAL ELEVATION
	B (25) - 3/20	TYPICAL CROSS SECTION @ PIER & ABUTMENT AND INDEX OF DRAWING & NOTES
	B (25) - 4/20	FRAMING PLAN, LONGITUDINAL SECTION & BLOW-UP SECTION
	B (25) - 5/20	SUPERSTRUCTURE CROSS SECTIONS AND REINFORCEMENT OVER PIER
	B (25) - 6/20	GIRDER ELEVATION DETAILS, SECTION (TYPE IV) L=25M
	B (25) - 7/20	CAMBER DIAGRAM & SCHEDULE OF REINFORCEMENT
	B (25) - 8/20	CONCRETE POURING SEQUENCE , INTERMEDIATE DIAPHRAGM DETAIL AND SECTION
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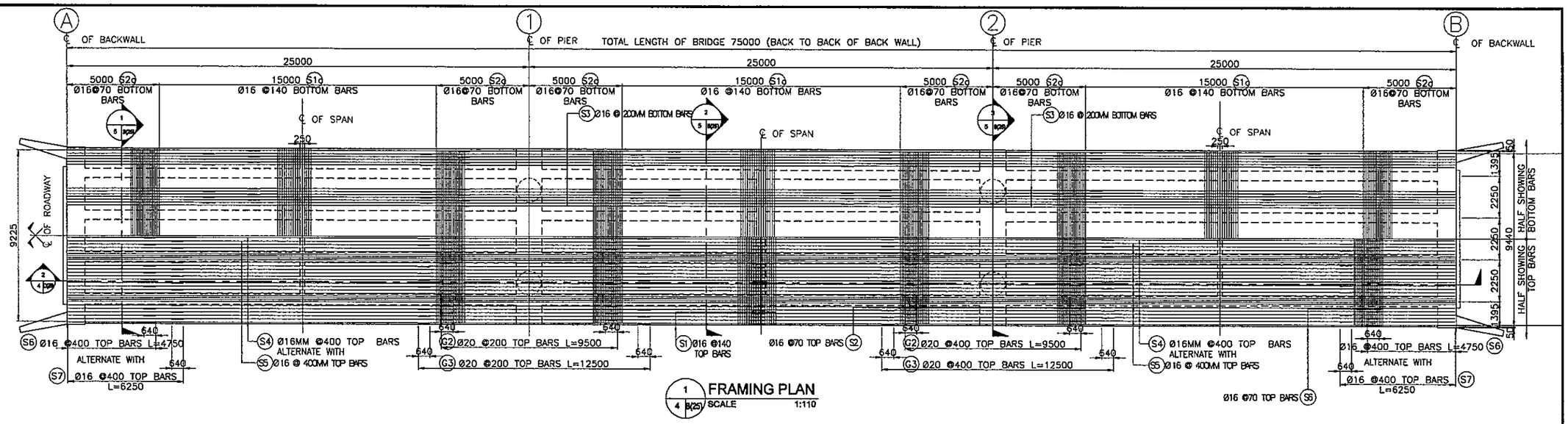
	B (25) - 10/20	REINFORCEMENT SCHEDULE AND LOADING INFORMATION FOR DESIGN OF FOUNDATION FOR 3 SPAN
	B (25) - 11/20	DETAIL OF FOOTING TYPE F6 (FOR FOOTING ON PILES)
	B (25) - 12/20	DETAIL OF FOOTING TYPE F6 (SPREAD FOOTING)
	B (25) - 13/20	ABUTMENT DETAIL
	B (25) - 14/20	WINGWALL DETAIL AND REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) ABUTMENT
	B (25) - 15/20	REINF.SCHEDULE & ESTIMATED OF QUANTITIES FOR SUPERSTRUCTURE OF 25m - THREE SPAN
	B (25) - 16/ 20	TYPICAL SIDEWALK DETAIL AND DRAIN DETAILS
	B (25) - 17/ 20	TYPICAL APPROACH SLAB DETAIL
	B (25) - 18/ 20	TYPICAL PRECAST CONCRETE PILE DETAIL
	B (25) - 19/ 20	ABUTMENT SLOPE PROTECTION AND DRAINAGE
	B (25) - 20/ 20	RAILING PLAN & ELEVATION AND TYPICAL RAILING DETAILS

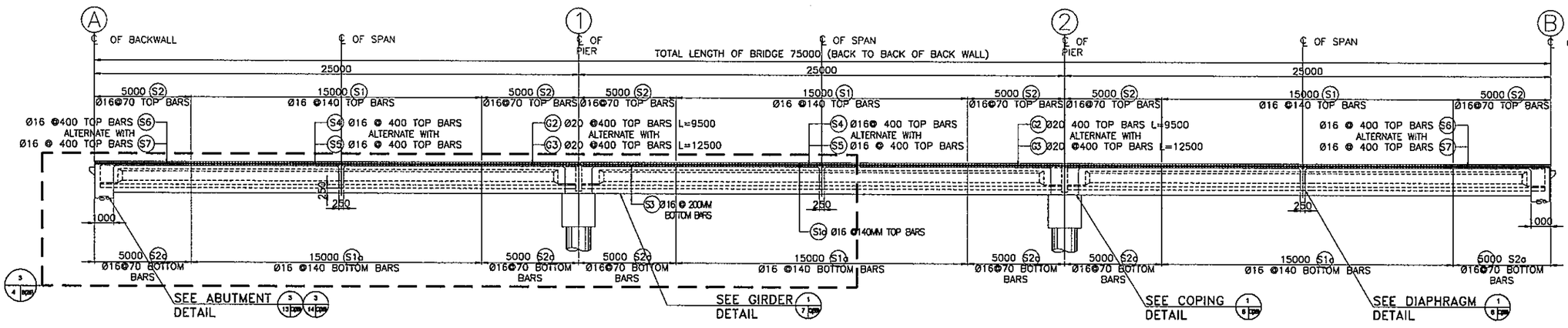
NOTES:

1. 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.
2. 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.
3. 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 THREE SPAN PSDG SUPERSTRUCTURE L = 25M	SHEET CONTENTS: TYPICAL CROSS SECTION @ PIER & ABUTMENT AND INDEX OF DRAWING & NOTES	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO B. PEDIANTE	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 2018-6 BrD	SHEET NO. B(25) 3 20



1 / 4 B(25) FRAMING PLAN
SCALE 1:110



2 / 4 B(25) LONGITUDINAL SECTION
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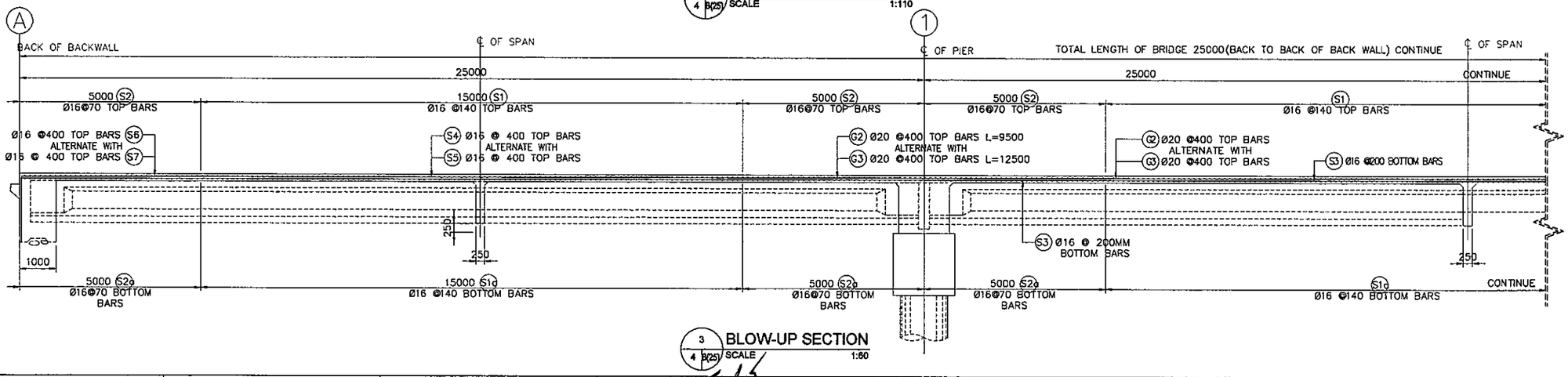

3 / 4 B(25) BLOW-UP SECTION
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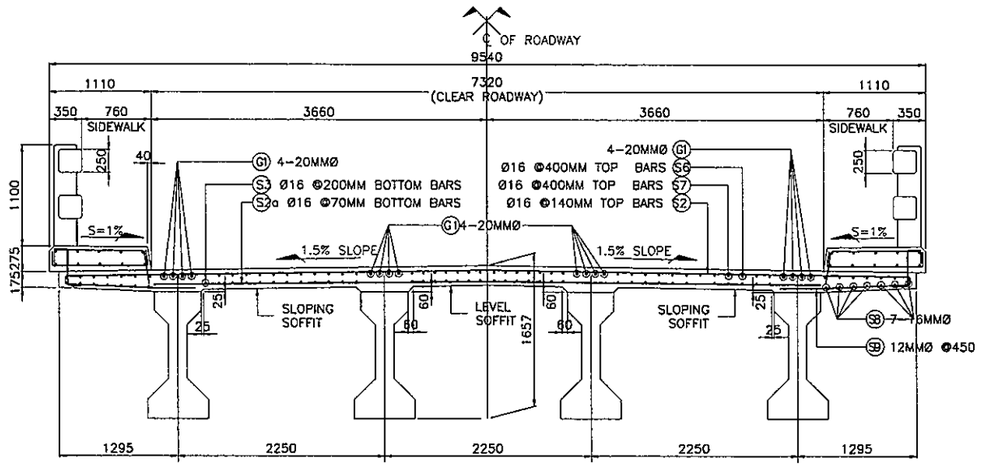
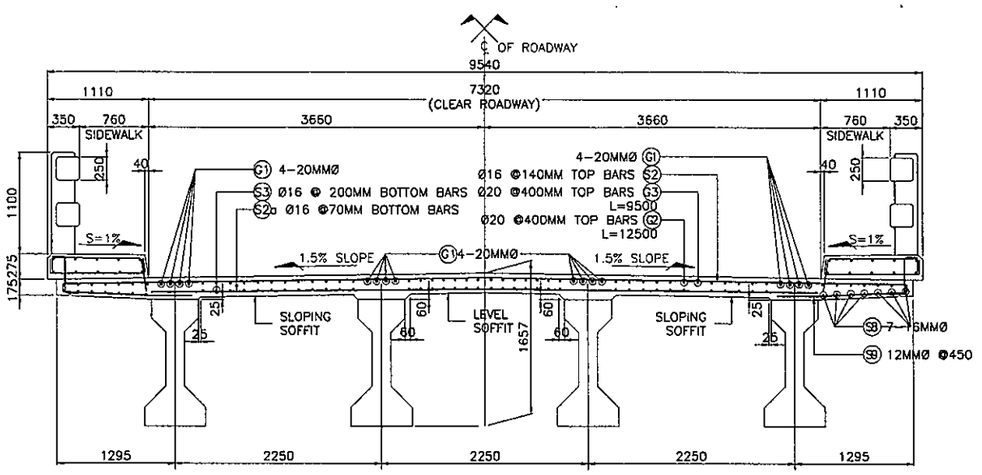
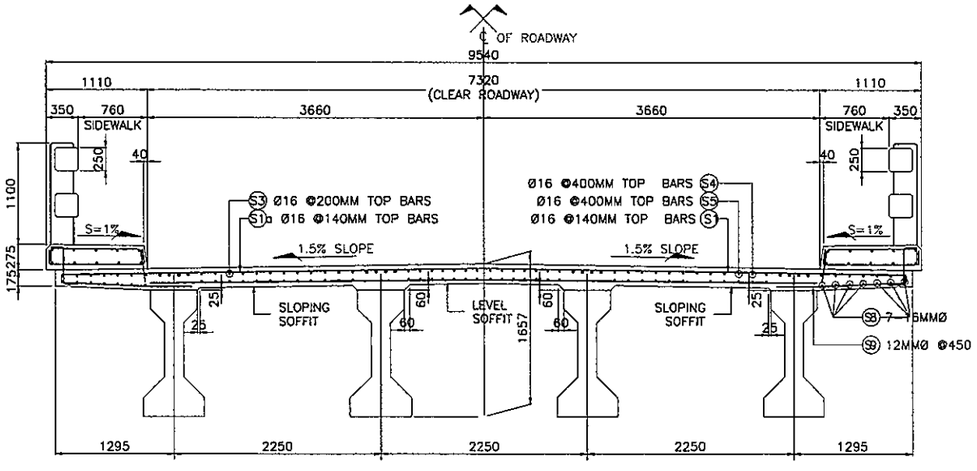
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 25M	SHEET CONTENTS: FRAMING PLAN, LONGITUDINAL SECTION & BLOW-UP SECTION	DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER II CHECKED: MARIANO S. FLORES ENGINEER IV CADD: ROLANDO V. MEDIANTE DRAFTSMAN	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 2018-6 BrD	SHEET NO. B(25) 4 20



1 / 5 B(25) TRANSVERSE SECTION
SCALE 1:30



3 / 5 B(25) TYPICAL CROSS SECTION (OVER PIER)
SCALE 1:30



2 / 5 B(25) TRANSVERSE SECTION
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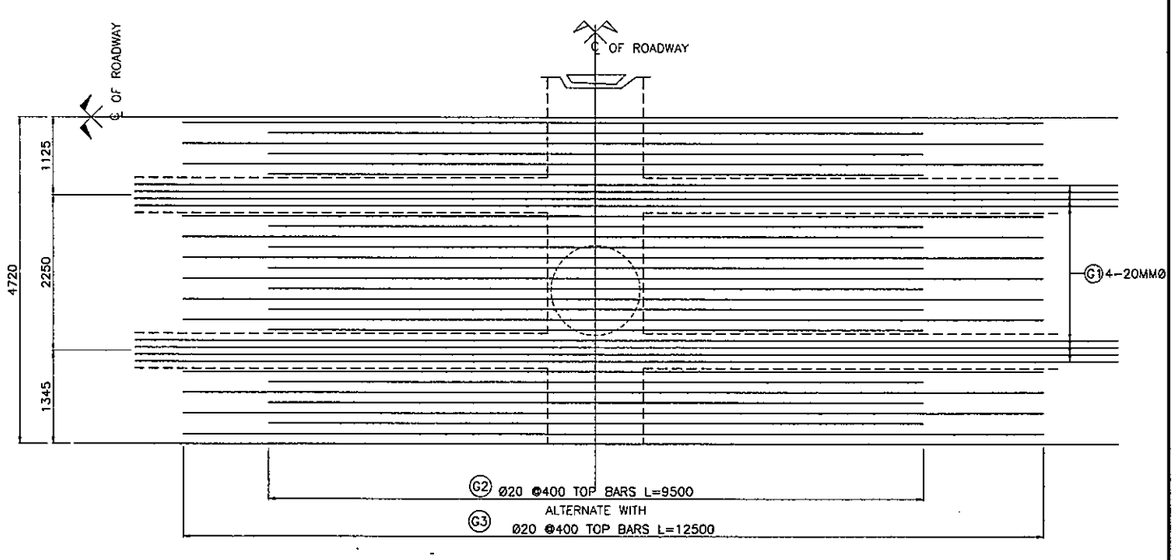
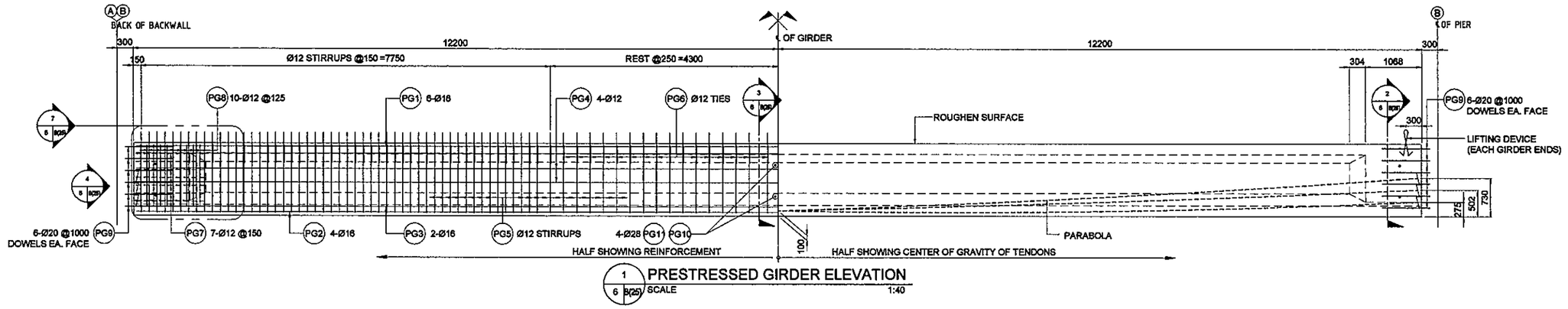


4 / 5 B(25) REINFORCEMENT OVER PIER
SCALE 1:40

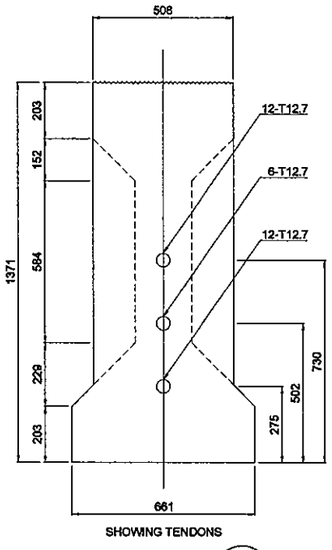
NOTES: SEE SHEET NO. 16 FOR SIDEWALK REINFORCEMENT DETAILS

SUPERSTRUCTURE CROSS SECTIONS

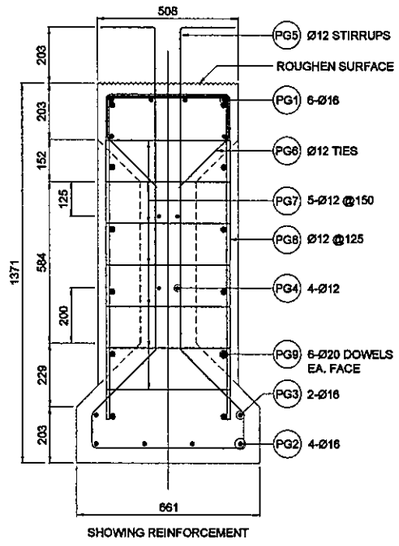
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 25M	SHEET CONTENTS: SUPERSTRUCTURE CROSS SECTIONS AND REINFORCEMENT OVER PIER	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO S. 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 2018-6 BrD	SHEET NO. B(25) 5 20



1 / 6 B(25) PRESTRESSED GIRDER ELEVATION
SCALE 1:40

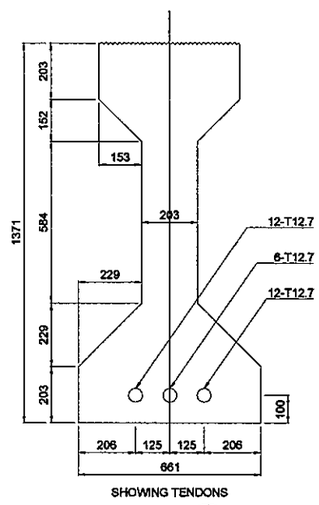


SHOWING TENDONS

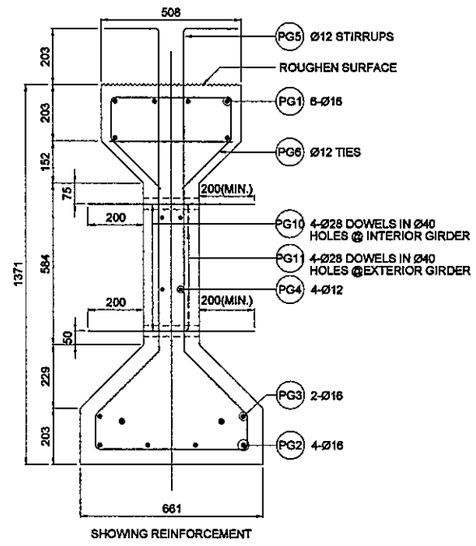


SHOWING REINFORCEMENT

2 / 6 B(25) SECTION AT END BLOCK
SCALE 1:10

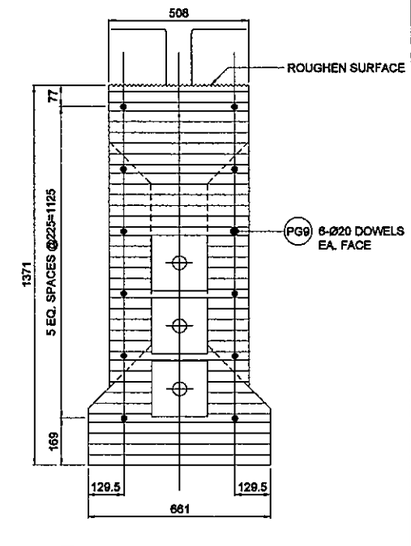


SHOWING TENDONS

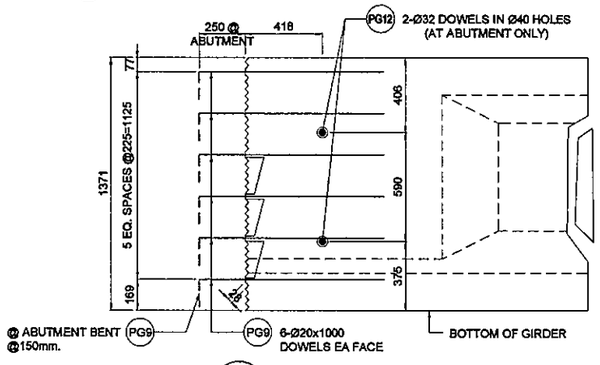


SHOWING REINFORCEMENT

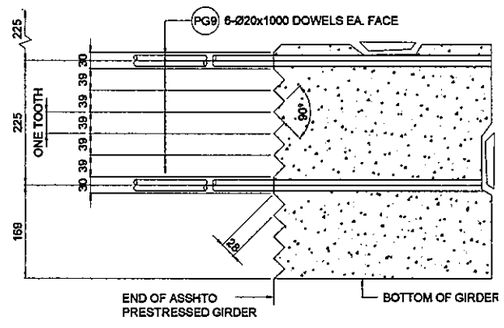
3 / 6 B(25) SECTION AT END MIDSPAN
SCALE 1:10



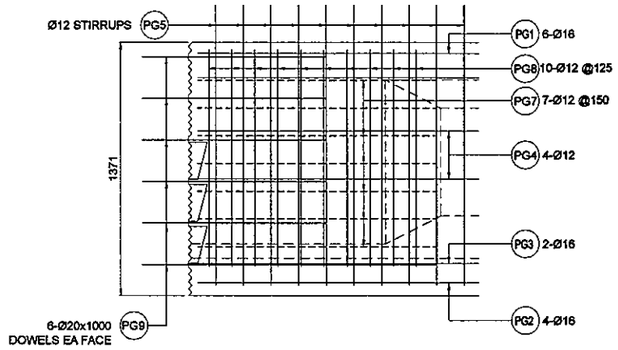
4 / 6 B(25) TOOTH AT END VIEW
SCALE 1:10



5 / 6 B(25) DOWELS AT END BLOCK
SCALE 1:15



6 / 6 B(25) TOOTH DETAIL
SCALE 1:5



7 / 6 B(25) END BLOCK REINFORCEMENT DETAIL
SCALE 1:15

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GIRDER DESIGN GUIDE

1.) POST–TENSIONING STEEL : THE PROPOSED TYPE OF TENDONS WHICH WILL BE USED IN THE POST– TENSIONED DESIGNS, ALL NECESSARY ADDITIONAL DETAILS INCLUDING THOSE FOR END ANCHORAGES, METHODS TO BE EMPLOYED AND PROCEDURES TO BE FOLLOWED, SHALL BE AS APPROVED BY THE ENGINEERS. A PORTION OF THE TENDONS SHALL BE DRAPED LONGITUDINAL IN PARABOLIC POSITIONS, ALL TENDONS SHALL BE PLACED SO THAT THEIR CENTER OF GRAVITY WILL BE AT THE POSITION SHOWN ON PLANS. THE TOTAL POST–TENSION FORCE AFTER LOSSES REQUIRED AT MIDSPAN SHALL BE PROVIDED AS CALLED FOR IN THE VARIOUS DESIGNS. THE REQUIRED FORCES AFTER LOSSES SHALL BE OBTAINED BY APPLYING INITIAL TENSILE FORCES OF SUFFICIENT MAGNITUDE TO ALLOW FOR ALL SUBSEQUENT LOSSES, INCLUDING THOSE FOR ELASTIC SHORTENING, SHRINKAGE, CREEP, RELAXATION, FRICTION, AND EFFICIENCY OF END ANCHORAGES. AFTER SECURING THE END ANCHORAGES ALL TENDONS SHALL BE PRESSURE GROUTED IN THEIR CONDUITS IN ACCORDANCE WITH "SPECIFICATIONS".

2.) CONCRETE FOR GIRDERS SHALL BE A MINIMUM STRENGTH OF 35 N/mm AT THE AGE OF 28 DAYS.

3.) CONCRETE FOR CAST–IN–PLACE SLAB HAVE A MINIMUM STRENGTH 28 N/mm AT THE AGE OF 28 DAYS.

4.) THE CONTRACTOR MAY PROPOSE ANY ALTERNATIVE TENDON SIZE AND LAYOUT AND SUBJECT SHALL MEET THE APPROVAL OF THE ENGINEER.

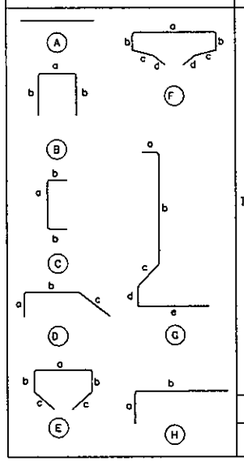
5.) THE REQUIRED STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL BE 28 MPa (4,000 PSI). A GRID CONSISTING OF ø12 BARS AT 100 CENTERS IN BOTH DIRECTIONS SHALL BE PLACED NEAR EACH ANCHORAGE OF THE POST–TENSIONING SYSTEM. POST–TENSIONING FORCES SHOWN BELOW COMPUTED FOR TENDONS JACKED SIMULTANEOUSLY AT BOTH ENDS, FRICTIONS COEFFICIENTS ARE K = 0.0015 AND u = 0.25 WITH AN ANCHORAGE DEFORMATION OF 3mm.

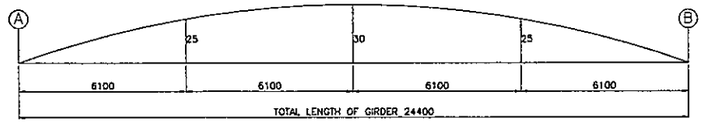
6.) HANDLING PRESTRESSED CONCRETE BEAMS : THE BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY SUITABLE DEVICES PROVIDED AT THE ENDS OF THE BEAMS. ATTENTION IS DIRECTED TO THE INCREASED DIFFICULTY OF LIFTING BEAMS WITHOUT END BLOCKS. THE CONTRACTOR PROPOSED LIFTING DETAILS SHOULD BE GIVEN CAREFULL CONSIDERATION BEFORE BEING SUBMITTED ON SHOP DRAWING FOR APPROVAL. THE USE OF HOLES FOR LIFTING PURPOSES WILL NOT BE PERMITTED.

7.) CONCTRACTOR SUBMIT FOR APPROVAL BY THE ENGINEER THE CORRESPONDING ELONGATION OF THE PRESTRESSING TENDONS.

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR PRESTRESSED GIRDER (L–25M) TYPE–IV

REINFORCEMENT

BENDING DIAGRAM	STRUCTURE COMPONENT	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	d	LOCATION Lc	LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	REMARKS
	TYPE IV	46.70	PG1	16	6	AS SHOWN	A	24400	–	–	–	–	24.40	146.40	1.578	231	
			PG2	16	4	AS SHOWN	A	24400	–	–	–	–	24.40	97.60	1.578	154	
			PG3	16	2	AS SHOWN	A	24400	–	–	–	–	24.40	48.80	1.578	77	
			PG4	12	4	AS SHOWN	B	24400	–	–	–	–	24.40	97.60	0.888	87	
			PG5	12	140	AS SHOWN	A	170	1145	340	170	590	2.415	338.10	0.888	300	
			PG6	12	140	AS SHOWN	A	430	170	260	–	–	1.290	180.60	0.888	160	
			PG7	12	14	150	B	410	1070	350	–	–	1.830	25.62	0.888	23	
			PG8	12	22	125	B	430	1130	–	–	–	2.690	59.18	0.888	53	
			PG9	20	24	AS SHOWN	A	1000	–	–	–	–	1.000	24.00	2.466	59	
			PG10	20	4	AS SHOWN	B	603	–	–	–	–	0.603	2.41	4.833	12	
			PG11	28	4	AS SHOWN	A	250	400	–	–	–	0.650	2.60	4.833	13	
			PG12	32	2	AS SHOWN	C	910	–	–	–	–	0.910	1.82	6.313	11	
														TOTAL =		1,179.51	
														GRAND TOTAL GRADE 40 =		1,084.62	
														GRAND TOTAL GRADE 60 =		94.90	



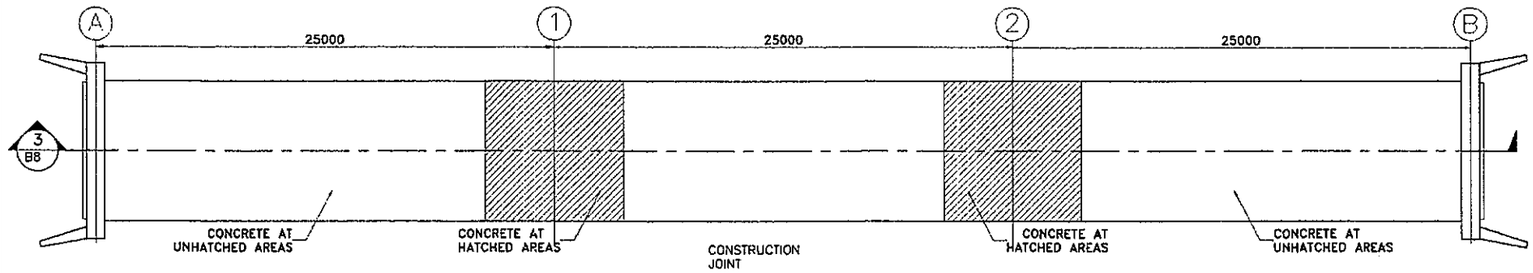
1 / 7 B(25) CAMBER DIAGRAM
NOT TO SCALE

POST TENSIONING FORCE, F, AFTER LOSSES AT CENTERLINE OF SPAN/ TOTAL JACKING FORCE PER GIRDER

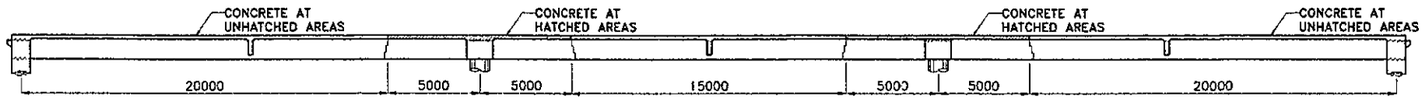
GIRDER LENGTH (m)	AASHTO GIRDER TYPE	F (kN)	JACKING FORCE PER GIRDER (kN)
24.40	IV	3271	4214

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

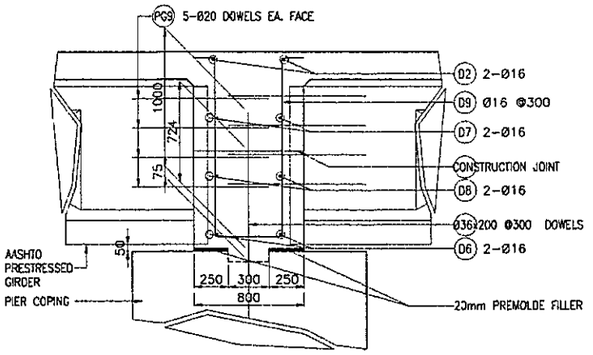
SHEET TITLE:	SHEET CONTENTS:	DESIGNED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	CAMBER DIAGRAM & SCHEDULE OF REINFORCEMENT	ERDOLFO M. DOMINGO, JR. ENGINEER A CHECKED: MARIANO S. FLORES DESIGNATION CADD: ROLANDO C. MEDIANTE DRAFTSMAN I	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 2018-6 BrD	B(25) 7 20



1 / 8 B(25) PLAN SCALE 1:150



2 / 8 B(25) SECTION SCALE 1:150

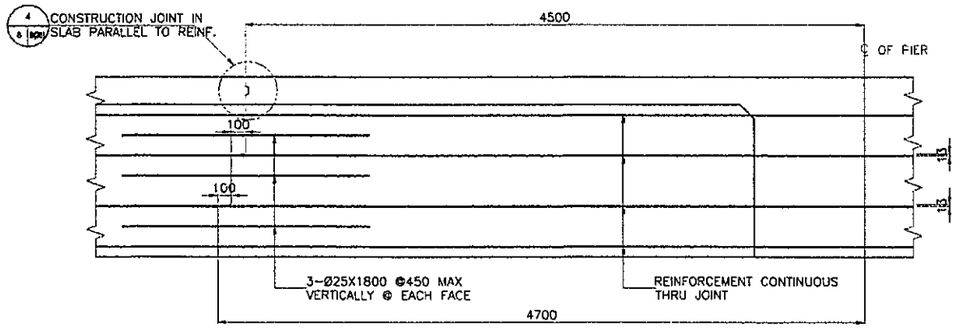


5 / 8 B(25) SECTION SCALE 1:20

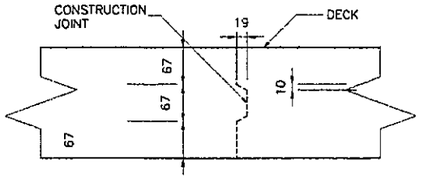
NOTE:

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

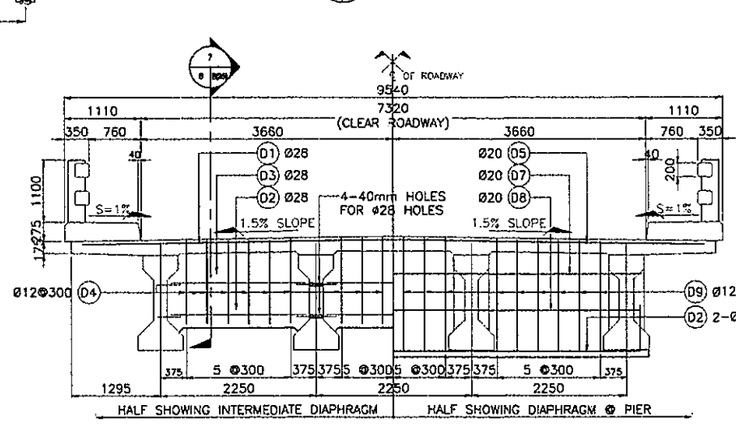
CONCRETE POURING SEQUENCE



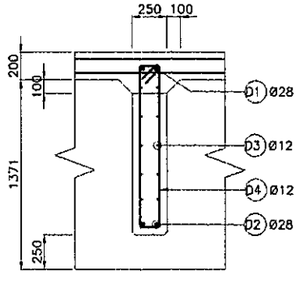
3 / 8 B(25) TRANSVERSE GIRDER CONSTRUCTION JOINT SCALE 1:20



4 / 8 B(25) DETAIL SCALE 1:5



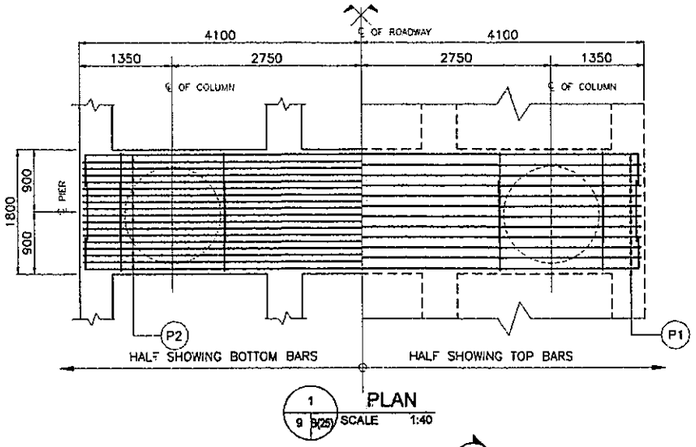
6 / 8 B(25) ELEVATION (TYPE-IV) SCALE 1:40



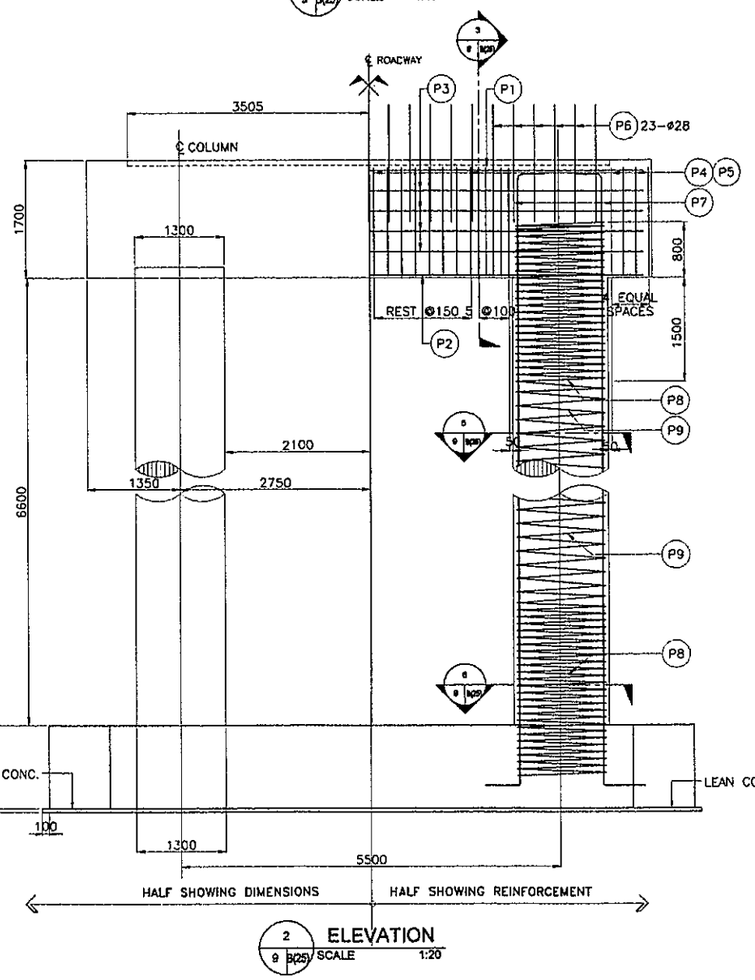
7 / 8 B(25) SECTION SCALE 1:20

INTERMEDIATE DIAPHRAGM DETAIL

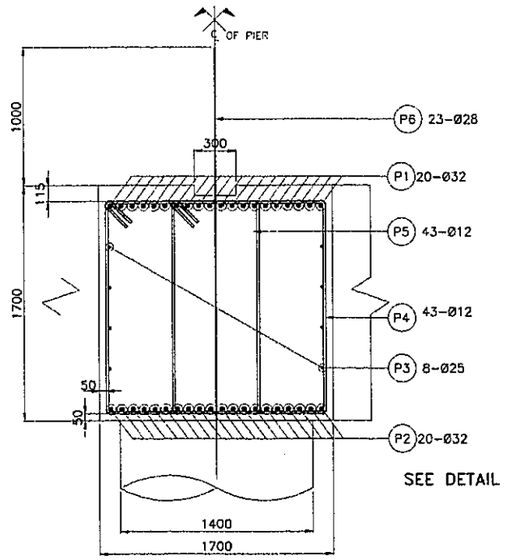
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: CONCRETE POURING SEQUENCE, INTERMEDIATE DIAPHRAGM DETAIL AND SECTION	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrD	SHEET NO. B(25) 8 20



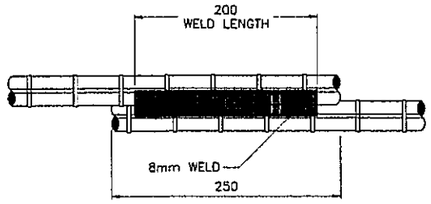
1 PLAN
9 B(25) SCALE 1:40

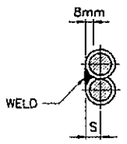


2 ELEVATION
9 B(25) SCALE 1:20



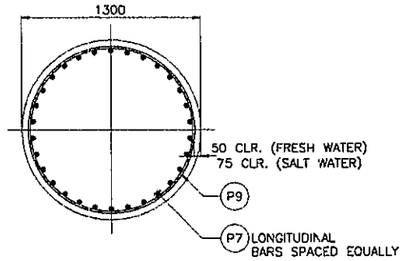
3 SECTION
9 B(25) SCALE 1:20



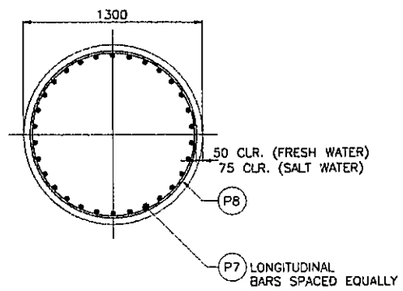


S=1/2 BAR DIAMETER

4 SPIRAL SPLICE DETAIL
9 B(25) SCALE 1:3



5 SECTION
9 B(25) SCALE 1:20

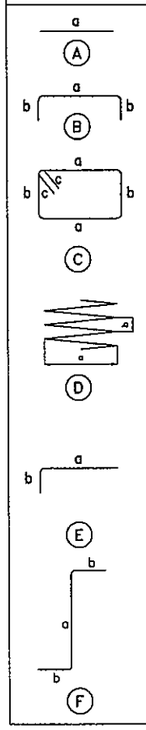


6 SECTION
9 B(25) SCALE 1:20

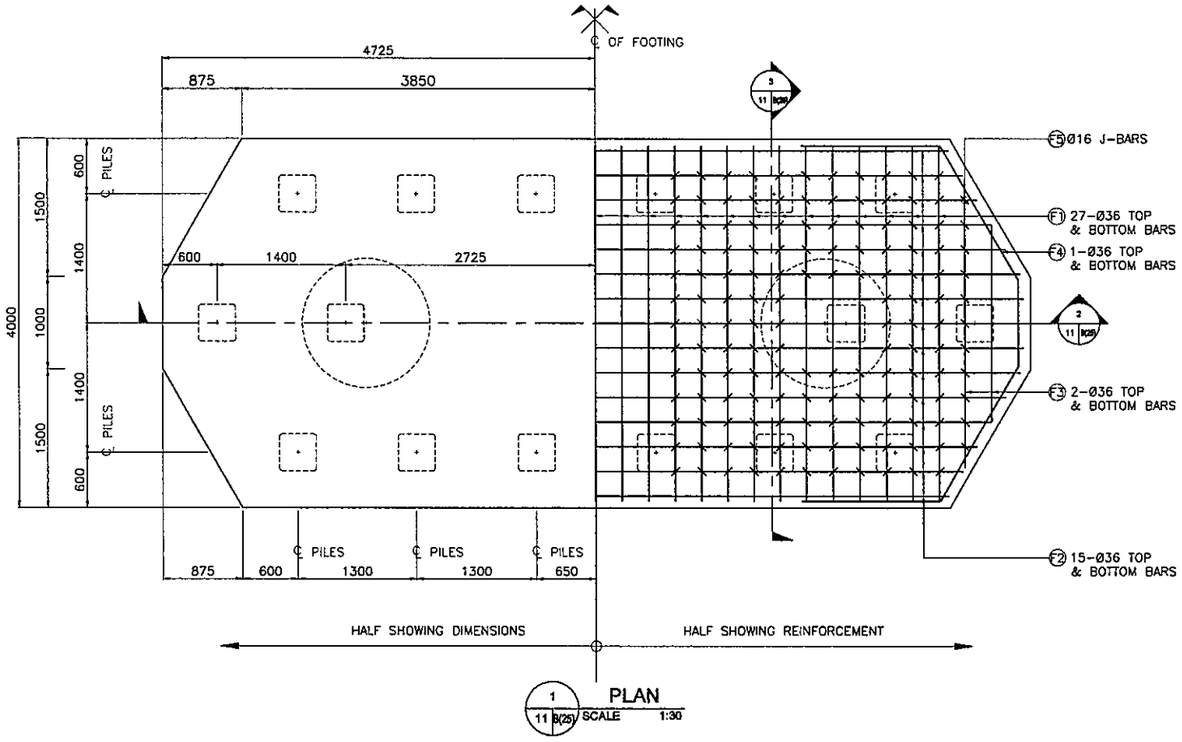
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
BUREAU OF DESIGN
BRIDGES DIVISION
BONIFACIO DRIVE PORT AREA, MANILA

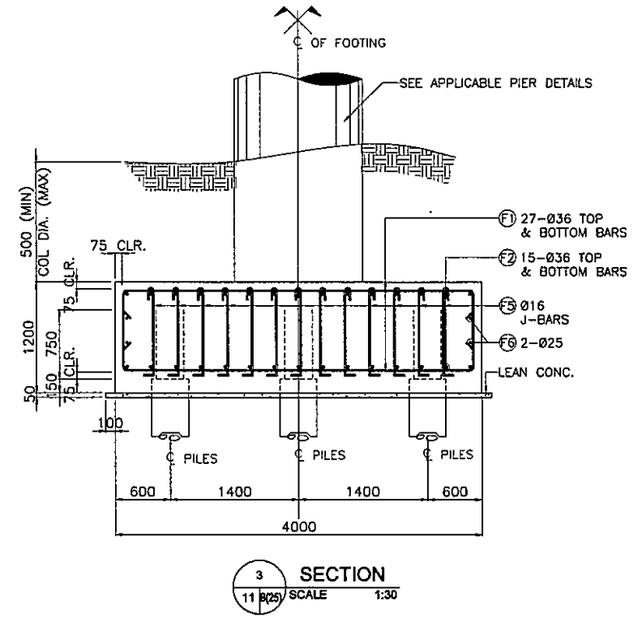
SHEET TITLE:	STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M
SHEET CONTENTS:	PLAN, ELEVATION, SECTIONS & SPIRAL SPLICE DETAILS OF PIER
DESIGNED:	ERODULO M. DOMINGO, JR. ENGINEER V
CHECKED:	MARIANO S. FLORES ENGINEER V
CADD:	ROLANDO C. MADIANTE DRAFTSMAN I
SUBMITTED:	BLESILDA S. RAMOS OIC-CHIEF, BRIDGES 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 2018-6 BrO
SHEET NO.	B(25) 9 20

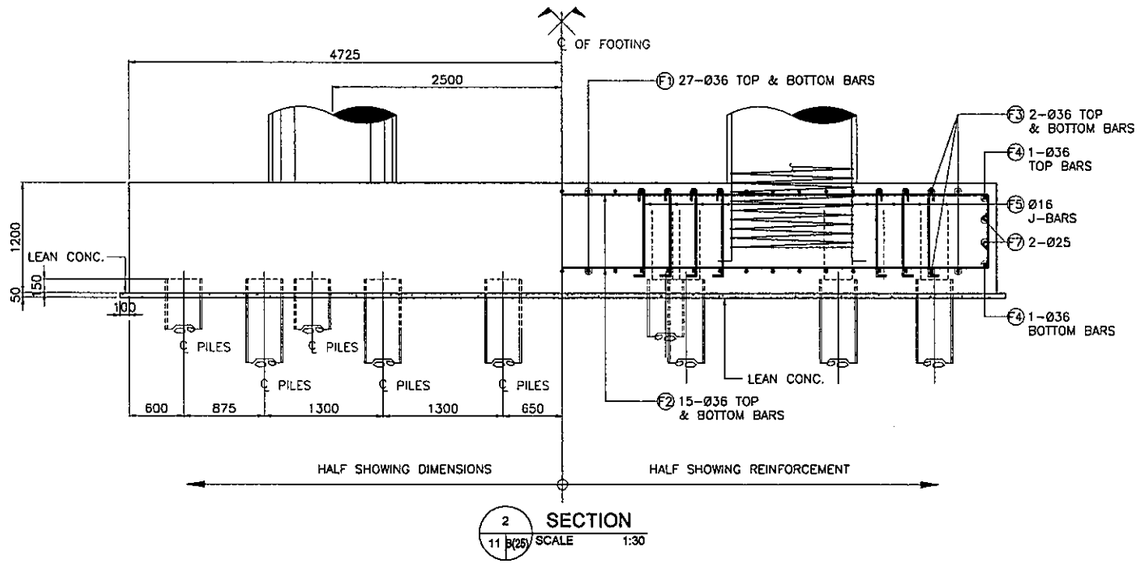
DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) PIER

BENDING DIAGRAM	SPAN LENGTHS L1–L1–L1 (m)	COLUMN DIAMETER	COPING BEAM W	COPING BEAM H	REINFORCEMENT: BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	LENGTH PER BAR(mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)	REMARKS
	25–25–25	1.40	1.70	1.70	P1	32	20	AS SHOWN	B	8100	450	–	9000	180.00	7.990	1,438	52.89	1.QUANTITIES ARE FOR THE TWO (2) COLUMNS OF ONE (1) PIER ONLY.
					P2	32	15	AS SHOWN	B	8100	450	–	9000	135.00	7.990	1,079		
					P3	16	12	AS SHOWN	A	8000	–	–	8000	96.00	6.313	606		
					P4	16	35	AS SHOWN	C	1620	1545	195	6720	235.20	7.990	1,879		
					P5	16	35	AS SHOWN	C	640	1545	195	4760	166.60	7.990	1,331		
					P6	28	23	300	A	2000	–	–	2000	46.00	4.833	222		
					P7	32	58	AS SHOWN	F	11175	250	–	11675	677.15	1.578	1,069		
					P8	16	66	60	D	1400	60	–	1460	96.36	1.578	152		
					P9	16	27	100	D	1400	100	–	1500	40.50	1.578	64		
					P10	36	30	AS SHOWN	E	8250	250	–	8500	255.00	7.990	2,037		2. SPLICES FOR BARS P10 P11, P12 AND P13 ARE INCLUDED.
					P11	36	30	AS SHOWN	E	6200	250	–	6450	193.50	7.990	1,546		
					P12	36	30	AS SHOWN	E	7850	500	–	8350	250.50	7.990	2,001		
					P13	36	30	AS SHOWN	E	5800	500	–	6300	189.00	7.990	1,510		
					P14	16	68	50	D	1300	50	–	8350	567.80	1.578	896		
					P15	16	47	100	D	1300	100	–	6300	296.10	1.578	467		
														TOTAL =		16298		
													GRAND TOTAL GRADE 40 =			4832	52.890	
													GRAND TOTAL GRADE 60 =			8,371		

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: REINFORCEMENT SCHEDULE AND LOADING INFORMATION FOR DESIGN OF FOUNDATION FOR THREE SPAN	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrD SHEET NO.: B(25) 10 20







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.
- LENGTH OF REINFORCED CONCRETE PILES SHALL BE DETERMINED/DESIGNED BASED ON THE ACTUAL BORING AT LOCATION OF FOUNDATION

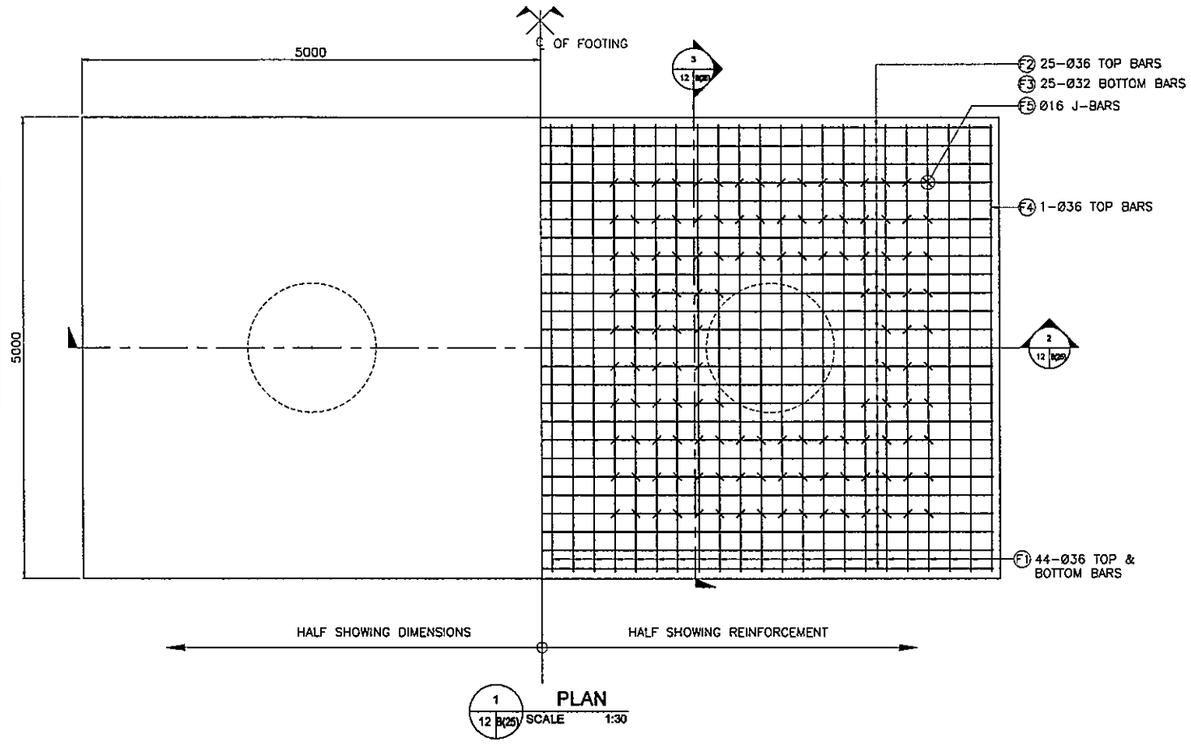
DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES

REINFORCEMENT

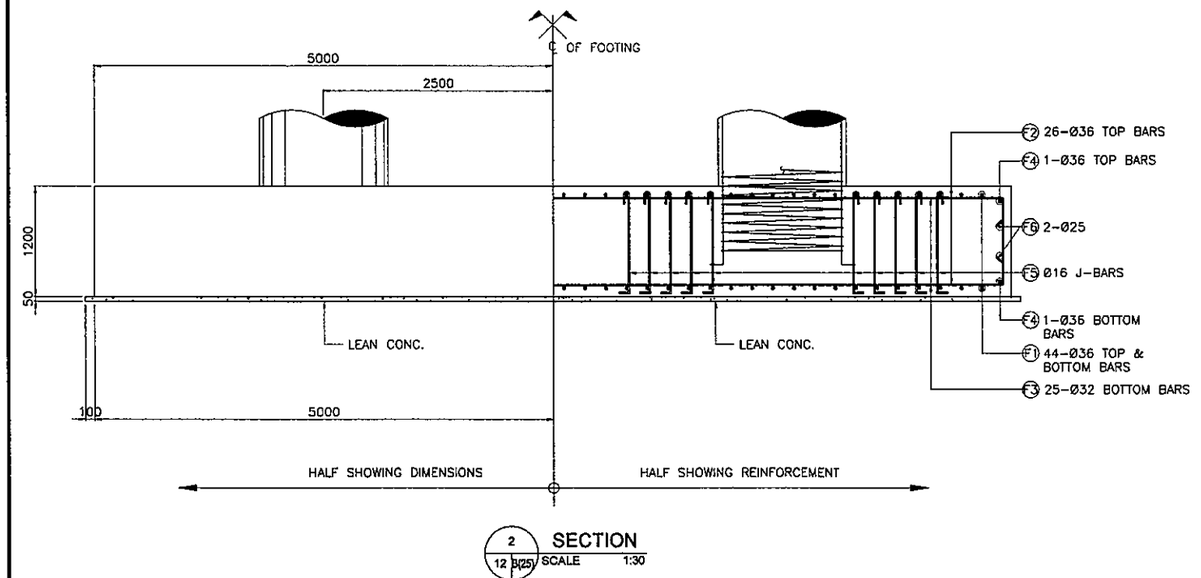
BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	LENGTH PER BAR(mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)	REMARKS
a (A)	FOOTING	F1	36	54	287	B	3850	437	–	4724	255.10	7.990	2,038	41.73	1.QUANTITIES ARE FOR ONE (1) PILE CAP.
b a b (B)		F2	36	30	267	B	9200 min 7450max	437	–	9200 AVE.	276.00	7.990	2,205		
c b a b c (C)		F3	36	8	AS SHOWN	A	2000 min 3000max	–	–	2500 AVE.	20.00	7.990	160		
		F4	36	4	AS SHOWN	C	1000	1735	1165	6800	27.20	7.990	217		
		F5	16	264	AS SHOWN	D	180	900	120	1200	316.80	1.578	500		
		F6	25	4	AS SHOWN	A	7450	–	–	7450	29.80	3.854	115		1.QUANTITIES ARE APPLICABLE TO PIER HEIGHTS 8, 10 & 12M.
		F7	25	4	AS SHOWN	C	1000	1735	1165	6800	27.20	3.854	105		
											TOTAL =		5340		
a b c (D)										GRAND TOTAL GRADE 40 =			4840		
										GRAND TOTAL GRADE 60 =			500		

TYPE F6 (FOR FOOTING ON PILES)

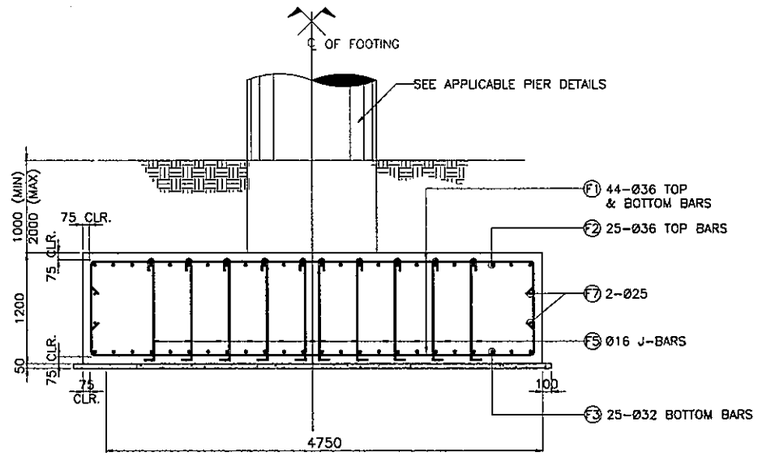
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: DETAIL OF FOOTING TYPE F6 (FOR FOOTING ON PILES)	DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER CHECKED: MARIANO S. FLORES ENGINEER CADD: ROLANDO S. MEDIANTE DRAFTSMAN I	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 2018-8 BrD SHEET NO. B(25) 11 20



1 / 12 B(25) PLAN SCALE 1:30



2 / 12 B(25) SECTION SCALE 1:30



3 / 12 B(25) SECTION SCALE 1:30

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.
- LENGTH OF REINFORCED CONCRETE PILES SHALL BE DETERMINED/DESIGNED BASED ON THE ACTUAL BORING AT LOCATION OF FOUNDATION

DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES

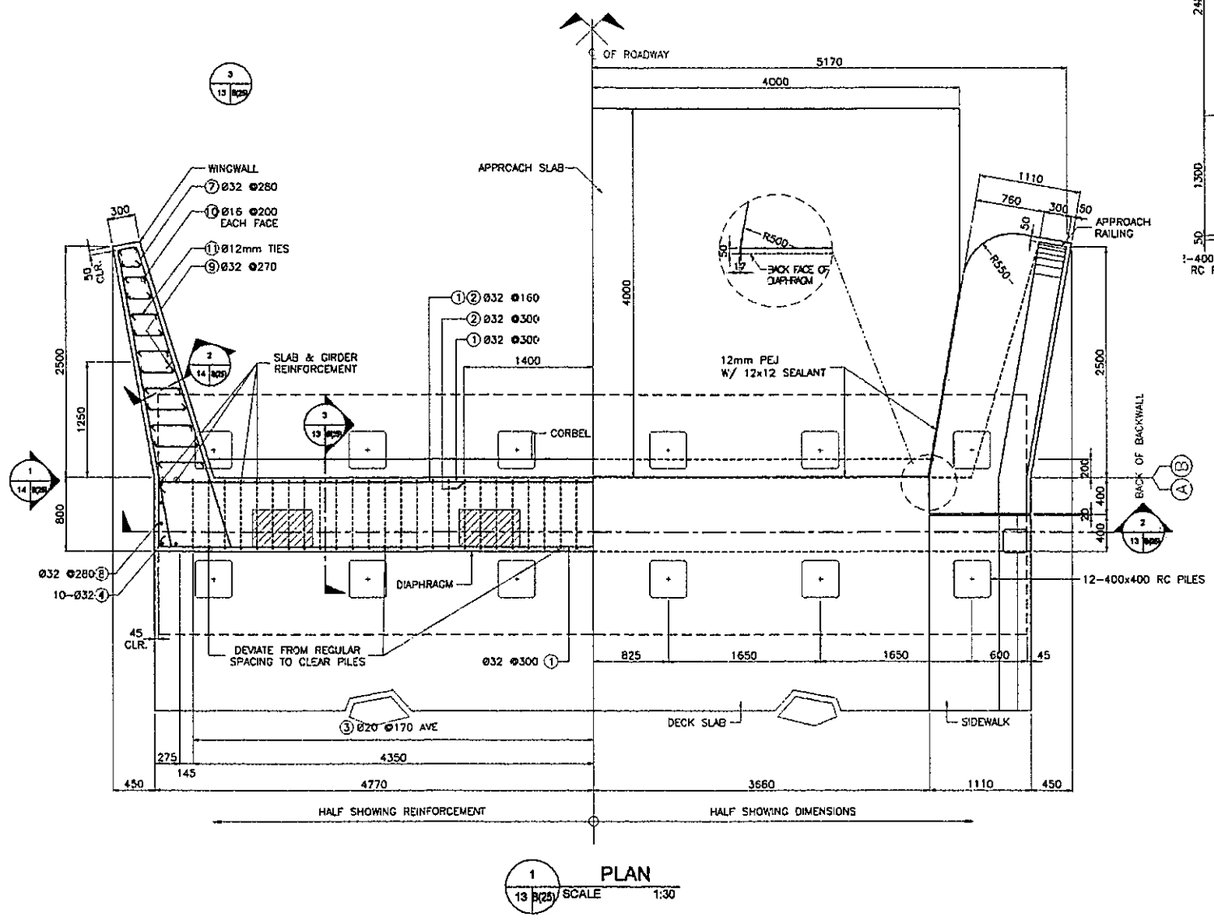
REINFORCEMENT

BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	LENGTH PER BAR(mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)	REMARKS
A	FOOTING	F1	36	88	AS SHOWN	B	4850	825	–	6500	572.00	7.990	4570	51.30	1.QUANTITIES ARE FOR ONE (1) PILE CAP.
		F2	36	25	197	B	9850	825	–	11500	287.50	7.990	2297		
		F3	32	25	197	B	9850	825	–	11500	287.50	6.313	1815		
		F4	36	4	AS SHOWN	A	4850	–	–	4850	19.40	7.990	155		
B		F5	16	292	AS SHOWN	C	180	1150	120	1450	423.40	1.578	668		
		F6	25	4	AS SHOWN	A	4850	–	–	4850	19.40	3.854	75		1.QUANTITIES ARE APPLICABLE TO PIER HEIGHTS 8, 10 & 12M.
		F7	25	4	AS SHOWN	A	9850	–	–	9850	39.40	3.854	152		
C											TOTAL =		9732		
										GRAND TOTAL GRADE 40 =			668		
										GRAND TOTAL GRADE 60 =			9064		

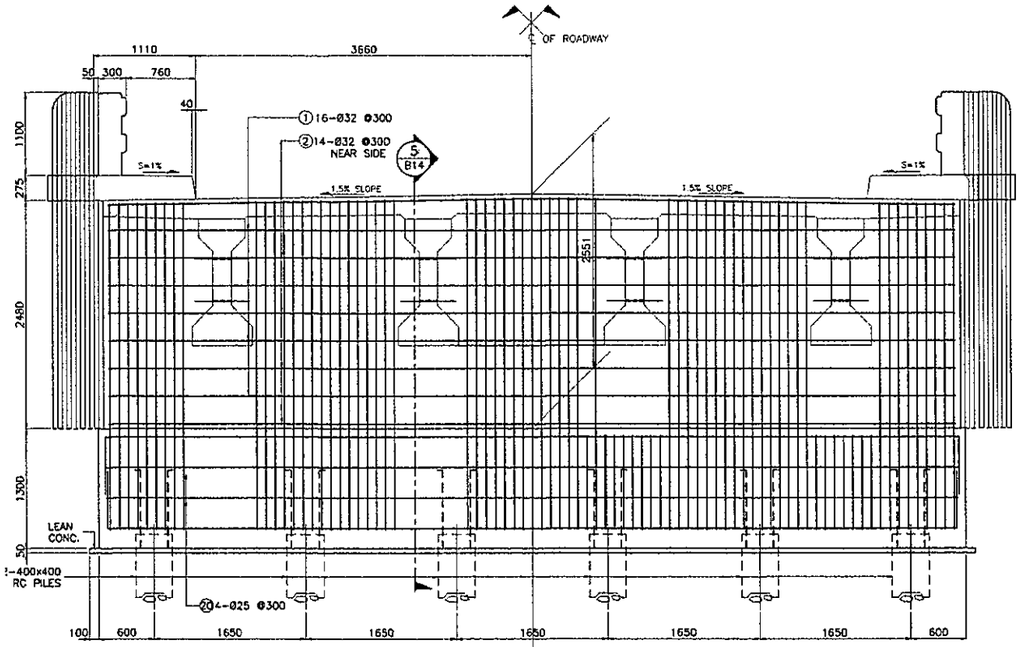
NOTES:
- ALLOWABLE BEARING CAPACITY = 400kPa
- MATERIAL TYPE : ROCK
- MINIMUM DEPTH BELOW SCOUR LINE = 1 METER

TYPE F6 (FOR SPREAD FOOTING)

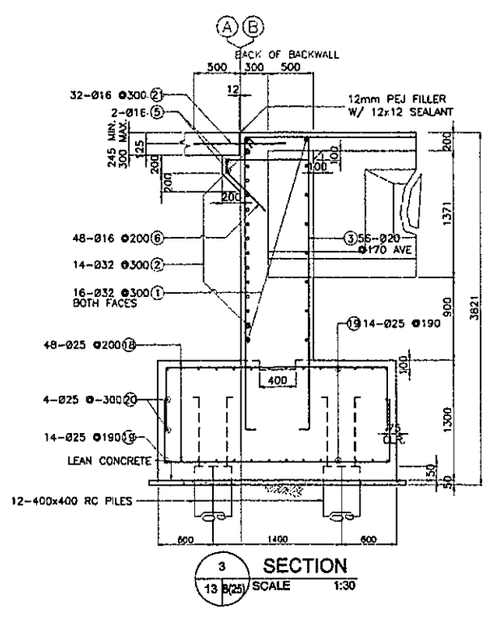
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: DETAIL OF FOOTING TYPE F6 (SPREAD FOOTING)	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrD	SHEET NO. B(25) 12 | 20



1 / 13 B(25) PLAN SCALE 1:30



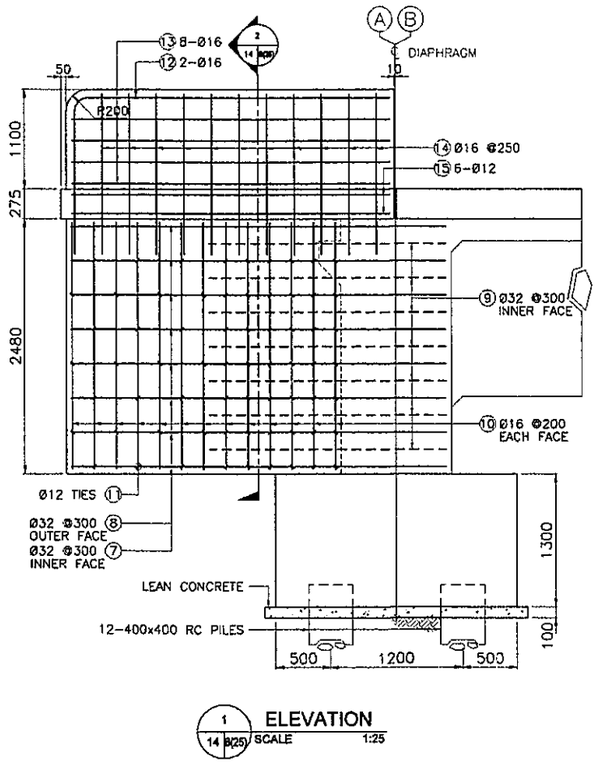
2 / 13 B(25) ELEVATION SCALE 1:30



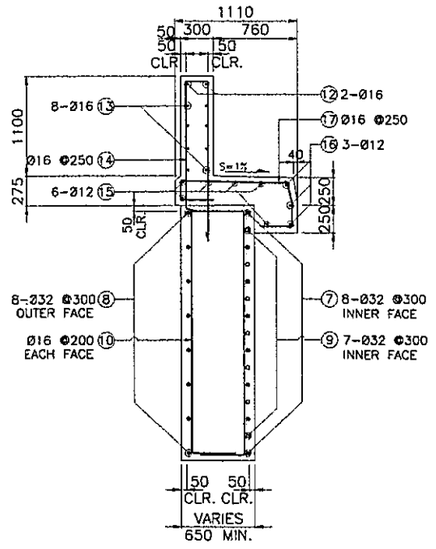
3 / 13 B(25) SECTION SCALE 1:30

ABUTMENT DETAIL

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: ABUTMENT DETAIL	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrO	SHEET NO. B(25) 13 20



1 ELEVATION
14 B(25) SCALE 1:25



2 SECTION
14 B(25) SCALE 1:25

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) ABUTMENT

REINFORCEMENT

BENDING DIAGRAM (DIMENSIONS ARE OUT TO OUT OF BARS)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	d	LENGTH EACH BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)
a (A)	1	32	16	300	C	600	9440	–	–	10640	170.24	6.313	1075	
	2	32	7	300	B	600	3270	–	–	3870	27.09	6.313	171	
a b (B)	3	20	56	170	D	110	9440	900	–	7520	421.12	2.467	1039	
	4	32	10	AS SHOWN	A	3300	–	–	–	3300	33	6.313	208	
a a b (C)	5	16	2	AS SHOWN	A	9440	–	–	–	9440	18.88	1.578	30	
	6	16	48	200	E	900	100	600	–	1600	76.80	1.578	122	
	7	32	16	300	B	620	3380	–	–	4000	56.00	6.313	354	
	8	32	16	300	B	600	3230	–	–	3830	61.28	6.313	387	
c b b (D) a a	9	32	7	300	B	620	2080	–	–	2700	18.90	6.313	120	
	10	16	52	200	D	200MIN 400MAX	1690	–	–	2490	129.48	1.578	205	
	11	12	114	AS SHOWN	G	170	140MIN 490MAX	170	–	830	94.62	0.888	84	21.450
b a c (E)	12	16	4	AS SHOWN	F	2700	235	1350	–	4285	17.14	1.578	28	
	13	16	16	AS SHOWN	A	2850	–	–	–	2850	45.6	1.578	72	
	14	16	25	250	C	1500	200	–	–	3200	80.00	1.578	126	
b a c (F)	15	12	12	AS SHOWN	A	2600MIN 2850MAX	–	–	–	2850	34.20	0.888	31	
	16	12	6	AS SHOWN	F	510	785	2350	–	3645	21.87	0.888	20	
	17	16	25	250	H	300	170	970	200	2280	57.00	1.578	90	
b a c (G)	18	25	96	200	C	600	2050	–	–	3250	312	3.855	1203	
	19	25	28	150	B	110	9440	–	–	9550	267.4	3.855	1031	
b c d e=200 d f=VARIES (H)	20	25	4	300	B	110	9440	–	–	9550	19.1	3.855	74	
	21	16	32	300	A	1000	–	–	–	1000	52	1.578	82	
	22	25	62	150	I	728	854	150	–	3464	214.77	3.855	828	
											TOTAL =		335.45	
a c b b a (I)										TOTAL (Gr. 40)			890	21.450
										TOTAL (Gr. 60)			6490	
													0.00	0.000

WINGWALL DETAIL

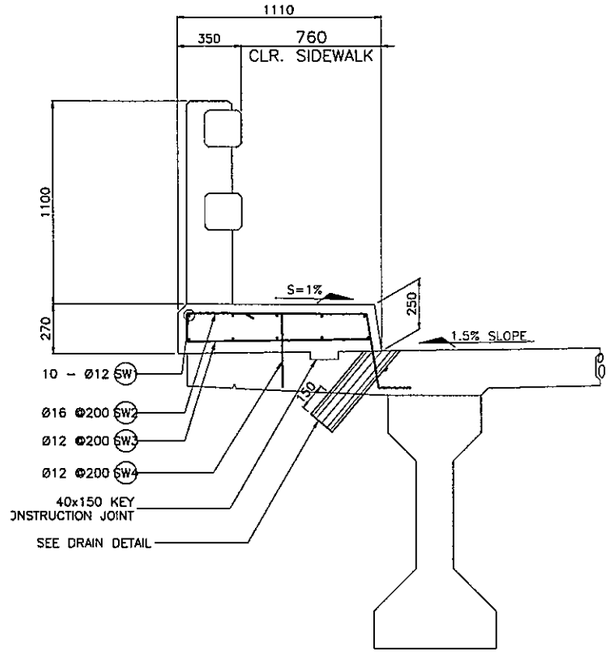
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: WINGWALL DETAIL AND REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) ABUTMENT	DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER III CHECKED: MARIANO B. FLORES ENGINEER V CADD: ROLANDO C. MEDIANTE DRAFTSMAN I	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 2018-6 BrD	SHEET NO. B(25) 14 20

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR SUPERSTRUCTURE OF 3@ 25m SPAN

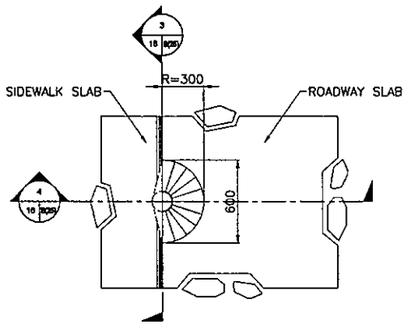
REINFORCEMENT

BENDING DIAGRAM	STRUCTURE COMPONENT	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	d	LOCATION Lc	LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	REMARKS
A	DECK SLAB	140.10	G1	20	16	AS SHOWN	C	1600	74900	–	–	–	78.1	1,249.60	2.466	3,081.51	
			G2	20	42	400	A	9500	–	–	–	–	9.50	399.00	2.466	983.93	
			G3	20	40	400	A	12500	–	–	–	–	12.50	500.00	2.466	1,233.00	
			S1	16	493	140	E	145	4630	–	–	–	9.55	4,708.15	1.578	7,429.46	
B			S1c	16	493	140	F	3630	–	–	–	–	7.26	3,579.18	1.578	5,647.95	
			S2	16	438	70	E	145	4630	–	–	–	9.55	4,182.90	1.578	6,600.62	
			S2c	16	438	70	F	3630	–	–	–	–	7.26	3,179.88	1.578	5,017.85	
C			S3	16	27	200	A	74850	–	–	–	–	74.85	2,020.95	1.578	3,189.06	
			S4	16	60	400	A	13780	–	–	–	–	13.78	826.80	1.578	1,304.69	
			S5	16	63	400	A	16780	–	–	–	–	16.78	1,057.14	1.578	1,668.17	
			S6	16	42	400	B	1600	4750	–	–	–	6.35	266.70	1.578	420.85	
D			S7	16	40	400	B	1600	6250	–	–	–	7.85	314.00	1.578	495.49	
			S8	16	14	AS SHOWN	A	74850	–	–	–	–	74.85	1,047.90	1.578	1,653.59	
			S9	12	370	AS SHOWN	G	110	1500	–	–	–	1.61	595.70	0.888	528.98	
														TOTAL =		39,255.15	
E																	
F	DIAPHRAGM	26.55	D1	28	6	AS SHOWN	F	3640	–	–	–	–	7.28	43.68	4.833	211.11	
			D2	28	18	AS SHOWN	A	2030	–	–	–	–	2.03	36.54	4.833	176.60	
			D3	28	18	AS SHOWN	A	2030	–	–	–	–	2.03	36.54	4.833	176.60	
			D4	12	54	AS SHOWN	D	11.40	170	150	–	–	2.92	157.68	0.888	140.02	
			D5	20	4	AS SHOWN	F	3640	–	–	–	–	7.28	29.12	2.466	71.81	
G			D6	20	4	AS SHOWN	C	740	7080	–	–	–	8.66	34.64	2.466	85.42	
			D7	20	4	AS SHOWN	A	7130	–	–	–	–	7.13	28.52	2.466	70.33	
			D8	20	4	AS SHOWN	A	7130	–	–	–	–	7.13	28.52	2.466	70.33	
			D9	12	36	300	J	160	1670	520	–	–	4.70	169.20	0.888	150.25	
														TOTAL =		1,152.46	
													GRAND TOTAL GRADE 40 =			34,246.97	
													GRAND TOTAL GRADE 60 =			6,160.64	

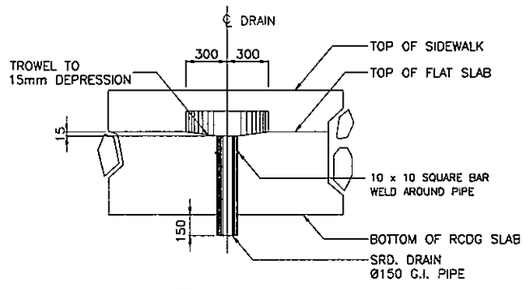
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: REINFORCEMENT SCHEDULE AND ESTIMATED OF QUANTITIES FOR SUPERSTRUCTURE OF 25m THREE SPAN	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrD	SHEET NO. B(25) 15 20



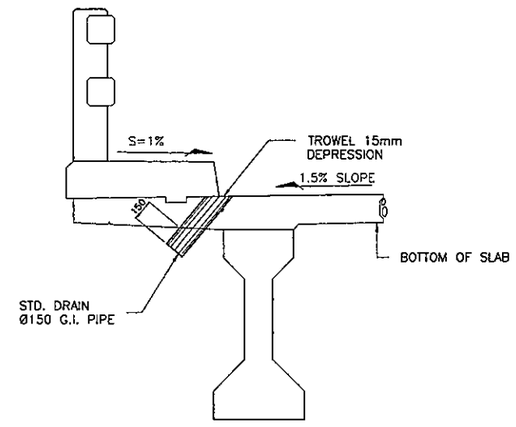
1 16 B(25) SIDEWALK DETAIL
SCALE 1:15



2 16 B(25) PLAN
SCALE 1:20



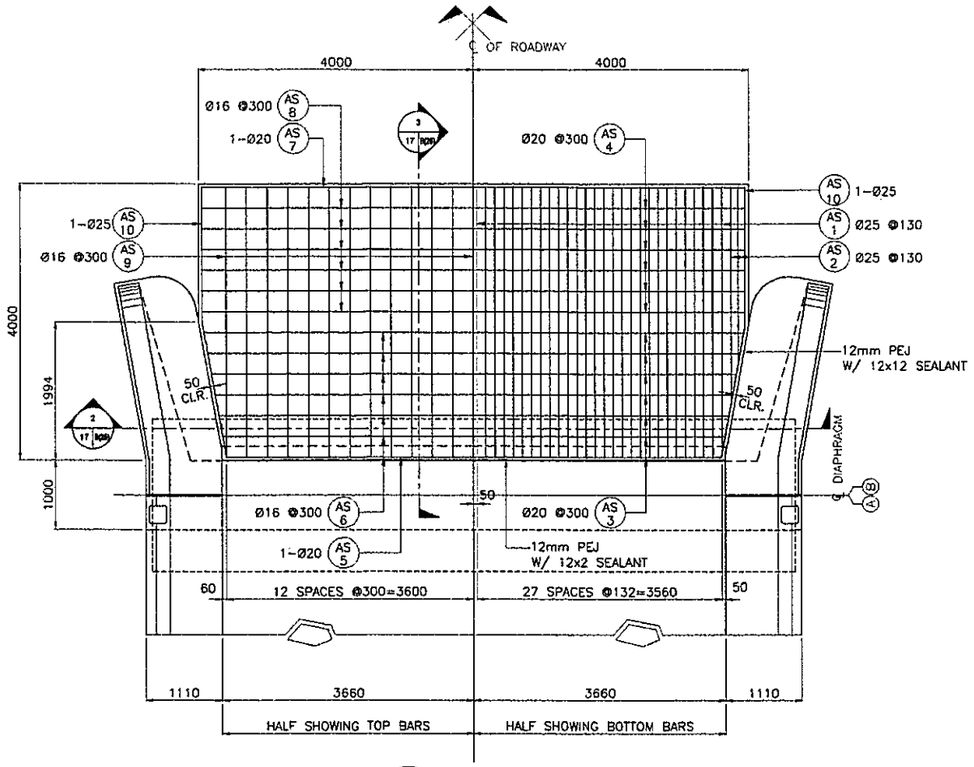
3 16 B(25) SECTION
SCALE 1:20



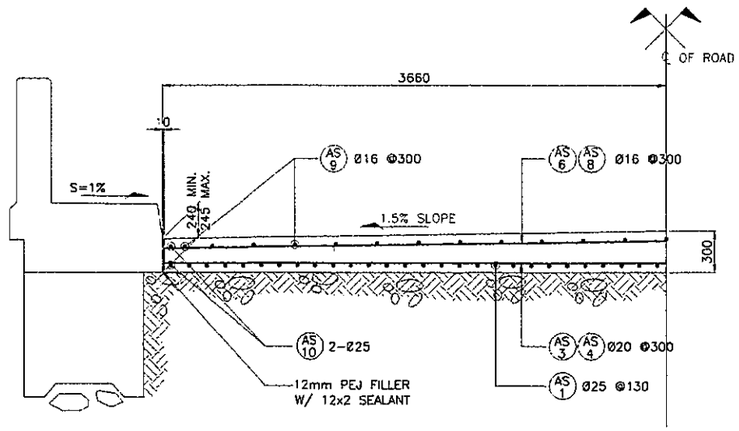
4 16 B(25) SECTION
SCALE 1:20

TYPICAL DRAIN DETAILS

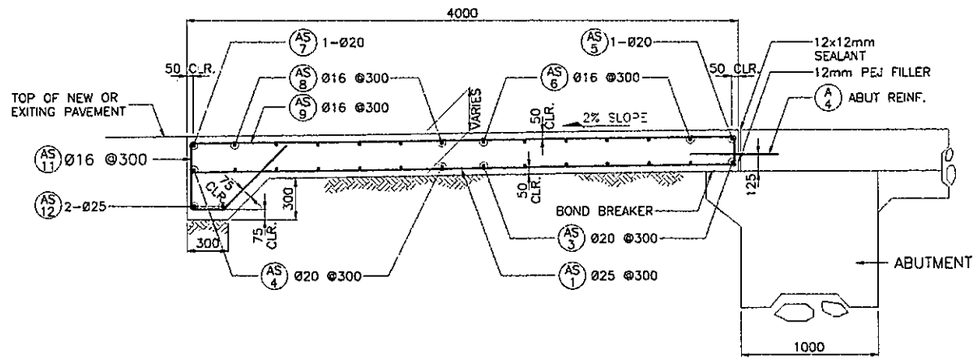
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: TYPICAL SIDEWALK DETAIL AND DRAIN DETAIL	DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER IV CHECKED: MARIANO S. FLORES ENGINEER V CADD: ROLANDO C. NEDANTE DRAFTSMAN	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 2018-6 BrD	SHEET NO. B(25) 16 20



1 / 17 B(25) PLAN SCALE 1:40



2 / 17 B(25) SECTION SCALE 1:20



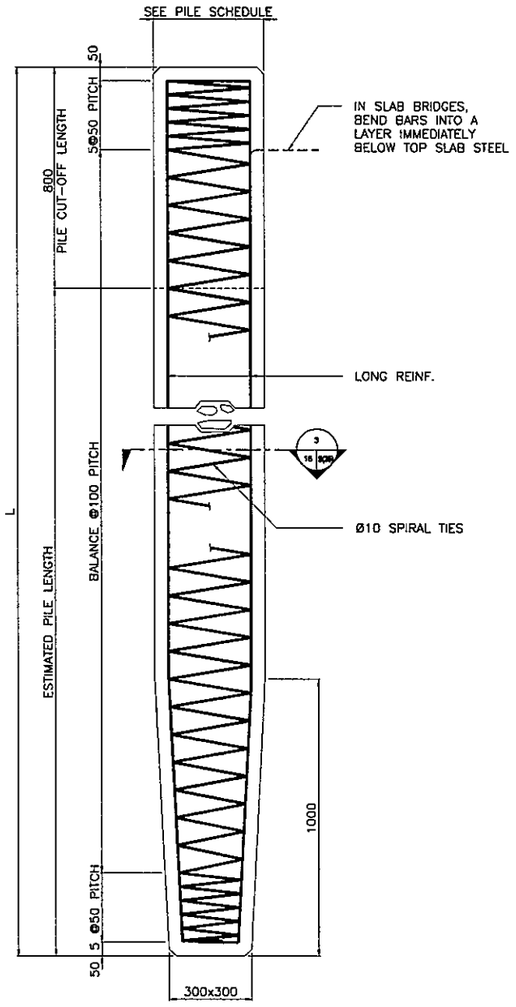
3 / 17 B(25) SECTION SCALE 1:20

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR APPROACH SLAB

REINFORCEMENT

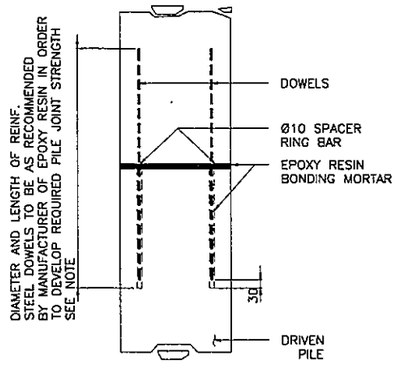
BENDING DIAGRAM (DIMENSIONS ARE OUT TO OUT OF BARS)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)	REMARKS
a A	AS 1	25	56	130	B	3900	150	–	4050	226.80	3.853	874		
a b B	AS 2	25	4	130	B	2700 MIN 3420 MAX	150	–	3210 AVE.	12.84	3.853	49		
	AS 3	20	7	300	D	7200 MIN 7880 MAX	–	–	7540 AVE.	52.78	2.468	130		
	AS 4	20	7	300	A	7900	–	–	7900	55.30	2.466	136		
	AS 5	20	1	AS SHOWN	A	7200	–	–	7200	7.20	2.466	18		
	AS 6	16	6	300	A	7340 MIN 7880 MAX	–	–	7610 AVE.	45.66	1.578	72		
a b C	AS 7	20	1	AS SHOWN	A	7900	–	–	7900	7.90	2.466	19	8.480	1. QUANTITIES ARE FOR ONE (1) APPROACH SLAB
	AS 8	16	6	300	A	7900	–	–	7900	47.40	1.578	75		
	AS 9	16	25	300	B	3900	150	–	4050	101.25	1.578	160		
	AS 10	25	4	AS SHOWN	C	1965	1965	–	3930	15.72	3.853	61		
	AS 11	16	27	300	D	415 MIN 475 MAX	250	650	1745	47.12	1.578	74		
400 a b c D	AS 12	25	2	AS SHOWN	A	2900	–	–	2900	5.80	3.853	22		
											TOTAL =	1691		
											GRAND TOTAL GRADE 40=	381	8.48	
											GRAND TOTAL GRADE 60=	1310		

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: TYPICAL APPROACH SLAB DETAIL	DESIGNED: ERDOMO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrD SHEET NO. B(25) 17 20

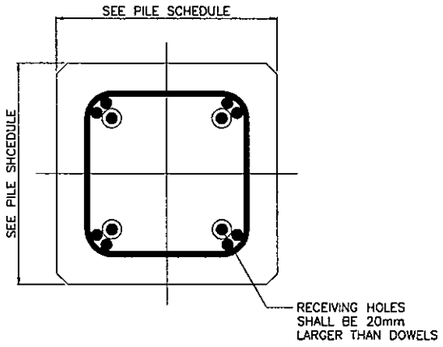


1 PILE ELEVATION
18 B(25) SCALE 1:10

PILE SCHEDULE			
TYPE	SIZE (mm)	LONGITUDINAL REINFORCEMENT	
		QTY.	BAR SIZE
A	400x400	8	25
B	400x400	8	28
C	450x450	8	28
D	450x450	8	32

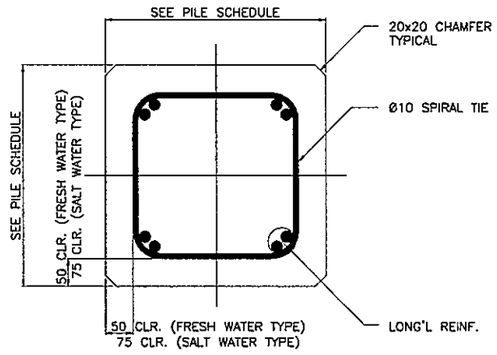


ELEVATION

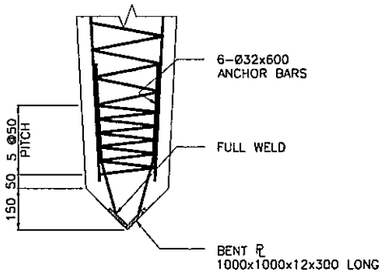


SECTION

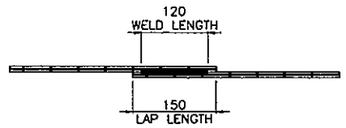
2 PILE SPLICE DETAIL
18 B(25) NOT TO SCALE



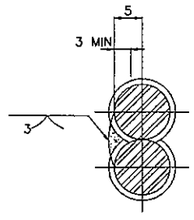
3 SECTION
18 B(25) SCALE 1:5



4 PILE TIP FOR HARD DRIVING
18 B(25) SCALE 1:10



ELEVATION



SECTION

5 WELDED SPIRAL-TIE DETAIL
18 B(25) NOT TO SCALE

NOTES:

1. CONCRETE:
   CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF CLASS AA CONCRETE WITH 27.6 MPa CYLINDER STRENGTH AND 19.0mm MAXIMUM AGGREGATE SIZE

2. REINFORCEMENT:
   A. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASSHTO M31 (ASTM A615 GRADE 40.
   B. SPLICES OF ADJACENT LONGITUDINAL STEEL SHALL BE STAGGERED 100 BAR DIAMETERS APART. LENGTH OF SPLICES SHALL BE 1000mm FOR Ø25 AND 1300mm FORØ28 AND 1700mm FOR Ø32.
   C. SPIRAL-TIES SHALL BE WELDED AT SPLICES.

3. DRIVING:
   A. PILE HEADS SHALL BE PROTECTED FROM DIRECT IMPACT OF THE HAMMER BY CUSHION BLOCKS CONSISTING OF SEVERAL BLOCKS OF WOOD OR OF OTHER APPROVED MATERIALS.
   B. PILE SHALL BE DRIVEN TO A DEPTH THAT WILL PRODUCE THE REQUIRED ALLOWANCE BEARING CAPACITY.

4. PILE FOUNDATION DESIGN:
   A. IN PILE-BENT PIERS, PILE LENGTHS SHALL BE DETERMINED BY THE ENGINEER/ CONSULTANT BASED ON THE ALLOWABLE PILE BEARING CAPACITY SPECIFIED BELLOW
   B. IN COLUMN-BENT PIERS, THE NUMBER, LOCATION AND LENGTH OF PILES SHALL BE DETERMINED BY THE ENGINEERS/ CONSULTANT BASED ON THE LOADING INFORMATION GIVEN IN THE PIER DETAILS.

5. PILE SPLICE:
   A. PILES MAY BE SPLICED ONLY IF STRICTLY NECESSARY AND APPROVED BY THE ENGINEER PILE SPLICES SHALL BE LOCATED AT LEAST 10m BELOW THE EXISTING GROUND LEVEL
   B. PILE SPLICE SHALL DEVELOP 100% AXIAL AND 50% BENDING OF THE CAPACITY OF THE PILE SECTION WHERE THE SPLICE IS LOCATED.

6. ALLOWABLE PILE BEARING CAPACITY: 500 kN PER PILE (FOR 400x400 PILE)
   700 kN PER PILE (FOR 450x450 PILE)

7. MINIMUM HAMMER ENERGY RATING = 55 kN-m

8. BASIS FOR COMPUTING ALLOWABLE PILE BEARING CAPACITY:

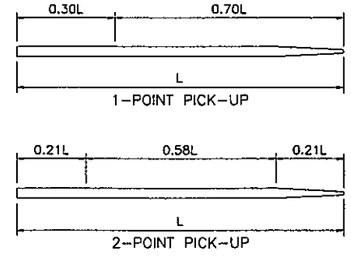
$$Pall = \left(\frac{1.67\ eh\ EHu}{S + 2.54}\right)\left(\frac{Wr + 0.16\ Wp}{Wr + Wp}\right)$$

WHERE:

Pall	=	ALLOWABLE PILE BEARING CAPACITY (kN)
eH	=	HAMMER EFFICIENCY
EH	=	HAMMER ENERGY RATING (kN-m)
Wr	=	WEIGHT OF RAM (kN)
Wp	=	WEIGHT OF PILE AND OTHER DRIVEN WEIGHTS (kN)
S	=	AVERAGE PENETRATION PER BLOW FOR THE LAST 150mm OF DRIVING (mm)

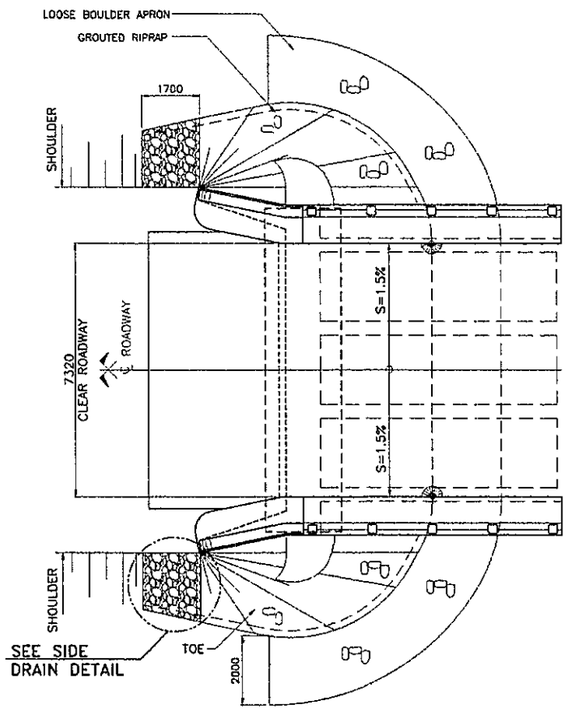
9. TEST PILES:
   TEST PILES SHALL BE DRIVEN WITH THE SAME HAMMER USED FOR DRIVING REGULAR PILES AND MAY BE PART OF FOUNDATION IF APPROVED BY THE ENGINEER.

10. PICK-UP POINTS:
    PICK-UP POINTS SHALL BE MARKED ON ALL PILES AND ALL LIFTING SHALL BE DONE AT THESE POINTS.

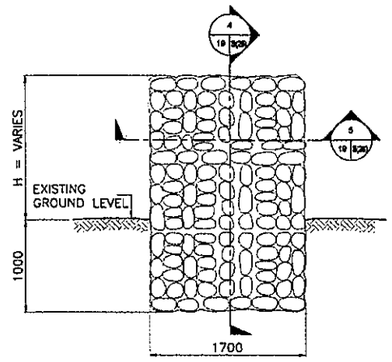


THE USE OF SPECIAL EMBEDDED OR ATTACHED LIFTING DEVICES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

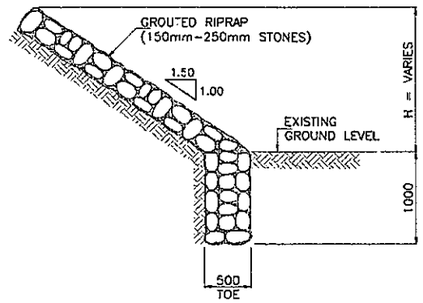
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: TYPICAL PRECAST CONCRETE PILE DETAIL	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO E. 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 2018-8 BrD	SHEET NO. B(25) 18 20



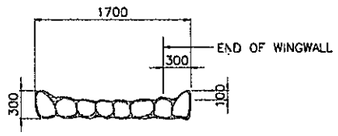
1 / 19 B(25) PLAN SCALE 1:80



3 / 19 B(25) ELEVATION SCALE 1:80

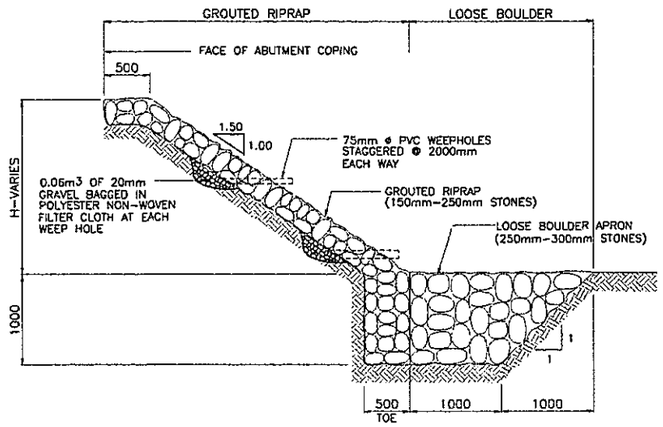


4 / 19 B(25) SECTION THRU DRAIN SCALE 1:80

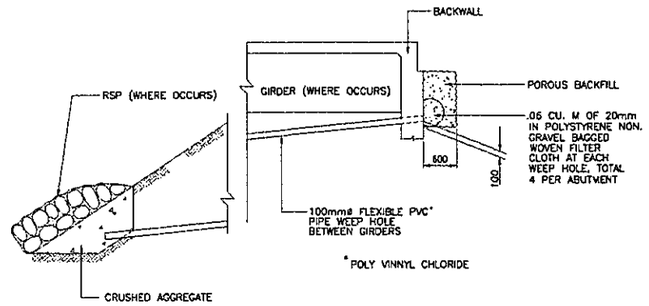


5 / 19 B(25) SECTION SCALE 1:80

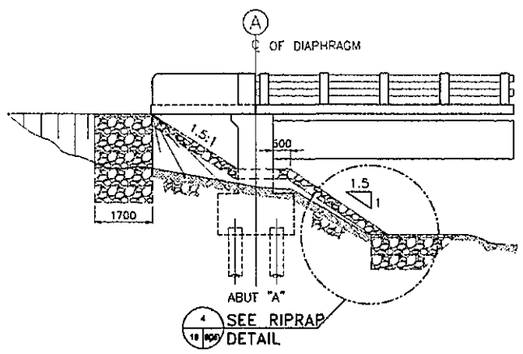
SIDE DRAIN DETAILS



6 / 19 B(25) RIPRAP DETAIL SCALE 1:30



7 / 19 B(25) ABUTMENT DRAINAGE SCALE 1:30



2 / 19 B(25) ELEVATION SCALE 1:80

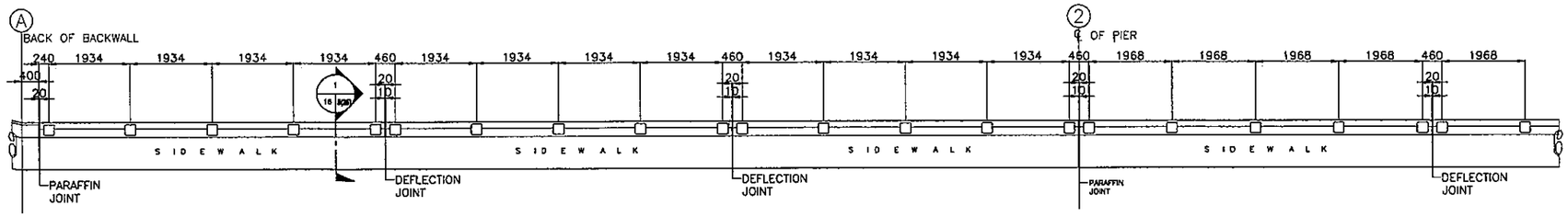
ABUTMENT RIPRAP PROCEDURE:

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 SWEPT 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.

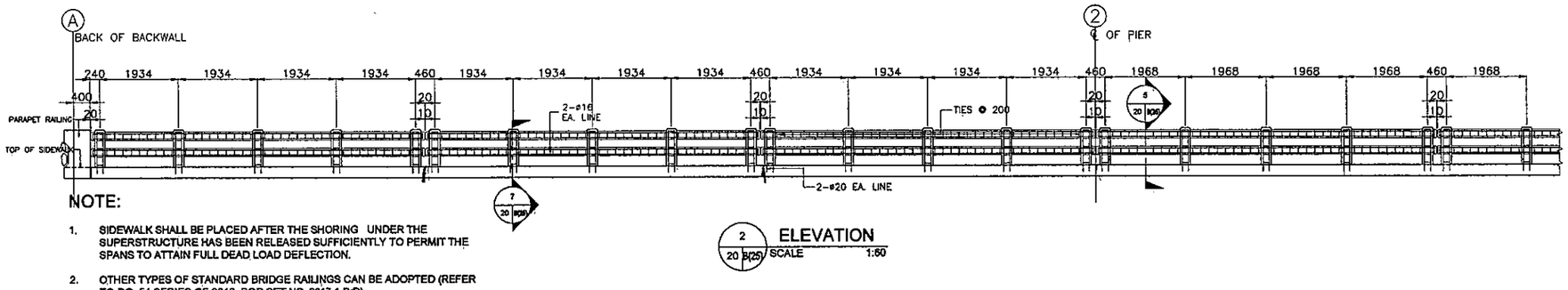
NOTE:

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 THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: ABUTMENT SLOPE PROTECTION AND DRAINAGE	ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO C. REDIANTE	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 2018-6 BrD	SHEET NO. B(25) 19 20



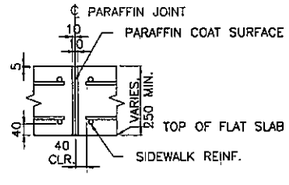
1 20 B(25) **PLAN** SCALE 1:60



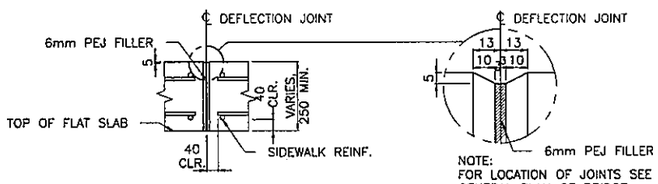
2 20 B(25) **ELEVATION** SCALE 1:60

NOTE:

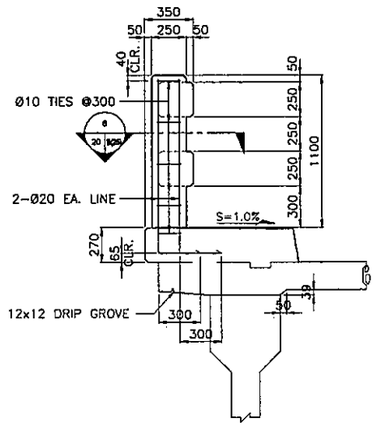
1. SIDEWALK SHALL BE PLACED AFTER THE SHORING UNDER THE SUPERSTRUCTURE HAS BEEN RELEASED SUFFICIENTLY TO PERMIT THE SPANS TO ATTAIN FULL DEAD LOAD DEFLECTION.
2. OTHER TYPES OF STANDARD BRIDGE RAILINGS CAN BE ADOPTED (REFER TO DO. 54 SERIES OF 2018, BOD SET NO. 2017-1-BrD)



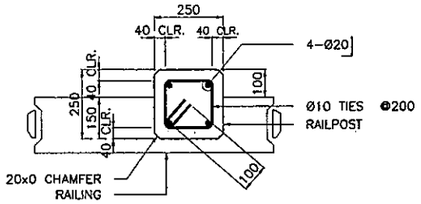
3 20 B(25) **PARAFFIN JOINT** SCALE 1:10



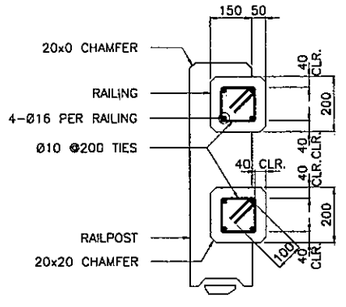
4 20 B(25) **DEFLECTION JOINT** SCALE 1:10



5 20 B(25) **SECTION** SCALE 1:20



6 20 B(25) **SECTION** SCALE 1:10



7 20 B(25) **SECTION** SCALE 1:10

TYPICAL RAILING DETAILS

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: RAILING PLAN & ELEVATION AND TYPICAL RAILING DETAILS	DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER CHECKED: MARIANO S. FLORES ENGINEER IV CADD: ROLANDO A. MEDIANTE DRAFTSMAN	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 2018-6 BrD	SHEET NO. B(25) 20 20

30m MULTIPLE SPAN PCDG

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.

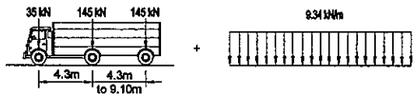
DESIGN;

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.

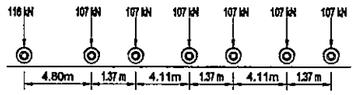
   b.) LIVE LOAD: HL - 93

   (b.1) DESIGN TRUCK AND DESIGN LANE LOAD:



   (b.2) DESIGN TANDEM 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 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)
		MPa	psi	
CAST-IN-PLACE GIRDERS, SLAB, DIAPHRAGMS, WINGWALLS, BACKWALLS, COPING, COLUMNS & FOOTINGS	A	28	4000	20
PRECAST R.C. PILE	AA	28	4000	25
THIN REINFORCED SECTIONS RAILING AND RAILPOST	C	28	4000	12
LEAN CONCRETE	B	16.50	2400	38
PRESTRESSED CONCRETE	P	35	5075	20

2. REINFORCEMENT STEEL

   (a) 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:

   Fy = 414 MPa (Gr.60) FOR 16mmØ AND LARGER
   Fy = 276 MPa (Gr.40) FOR 12mmØ AND SMALLER
   = 276 MPa (Gr.40) FOR DECK SLAB REBARS ONLY

   (b) REINFORCING STEEL SHALL BE FREE OF MILL SCALES, OIL OR ANY SUBSTANCES WHICH WILL WEAKEN THE BOND WITH CONCRETE

3. PRESTRESSING STEEL
   REINFORCING STEEL SHALL BE SEVEN WIRE UNCOATED STRESS RELIEVED STRANDS (ASTM A-416) WITH MINIMUM ESTIMATE STRENGTH OF 1860 MPa (270,000 psi)

4. 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

   (1) DESIGN OP CONCRETE MIX SHALL MEET THE DESIGN CONCRETE STRENGTH GIVEN UNDER ITEM 1 OF MATERIALS.

   (2) CONCRETE SHALL BE DEPOSITED, VIBRATED AND CURED IN ACCORDANCE WITH THE SPECIFICATIONS.

   (3) 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.

   (4) THE CONSTRUCTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL PLACING SEQUENCES FOR ALL CONCRETING WORK.

   b. BAR BENDING, SPLICING AND PLACING

   (1) THE CONSTRUCTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL OF SHOP DRAWINGS INDICATING THE BENDING, CUTTING, SPLICING AND INSTALLATION OF ALL REINFORCING BARS.

   (2) BARS SHALL BE BENT COLD, BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS PERMITTED BY THE ENGINEER.

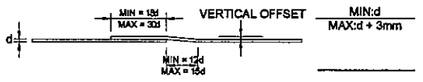
   (3) BAR SPLICING NOT INDICATED ON DRAWINGS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

   (4) WELDED SPLICES, IF APPROVED BY THE ENGINEER, SHALL DEVELOP IN TENSION AT LEAST 125% OF THE SPECIFIED WELD STRENGTH OF THE BARS.

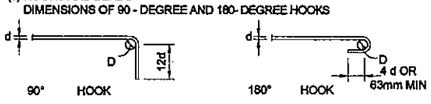
   (5) NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION SHALL BE SPLICED.

   (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.

   (7) CRANKED SPLICES

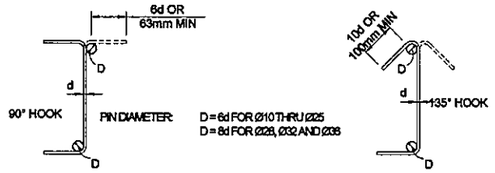


   (8) HOOKS AND BENDS
   DIMENSIONS OF 90 - DEGREE AND 180- DEGREE HOOKS



   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
   (1) THE POSITION AND FORM OF ANY CONSTRUCTION JOINT SHALL BE AS SHOWN ON DRAWINGS OR AS AGREED WITH THE ENGINEERS.
   (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. 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 HARMFULS EFFECTS OF SUN, WIND AND RUNNING WATERS AND SHALL BE KEPT DAMP FOR AT LEAST 7 DAYS.

3. PRESTRESSED CONCRETE

   a. POST TENSIONING STEEL : THE PROPOSED TYPE OF TENDONS WHICH WILL BE USED IN THE POST TENSIONED DESIGNS, ALL NECESSARY ADDITIONAL DETAILS INCLUDING THOSE FOR END ANCHORAGES, METHODS TO BE EMPLOYED AND PROCEDURES TO BE FOLLOWED, SHALL BE AS APPROVED BY THE ENGINEERS. THE TENDONS SHALL BE DRAPED LONGITUDINAL IN PARABOLIC POSITIONS, ALL TENDONS SHALL BE PLACED SO THAT THEIR CENTER OF GRAVITY WILL BE AT THE POSITION SHOWN ON THE PLANS. THE REQUIRED FORCES AFTER LOSSES SHALL BE OBTAINED BY APPLYING INITIAL TENSILE FORCES OF SUFFICIENT MAGNITUDE TO ALLOW FOR ALL SUBSEQUENT LOSSES, INCLUDING THOSE FOR ELASTIC SHORTENING, SHRINKAGE, CREEP, RELAXATION, FRICTION AND EFFICIENCY OF END ANCHORAGE. AFTER SECURING THE END ANCHORAGES ALL TENDONS SHALL BE PRESSURE GROUTED IN THEIR CONDUITS IN ACCORDANCE WITH "SPECIFICATIONS".

   b. CONCRETE FOR GIRDERS SHALL BE A MINIMUM STRENGTH OF 35 N/mm (5,000 PSI) AT THE AGE OF 28 DAYS.

   c. CONCRETE FOR CAST-IN-PLACE SLAB HAVE A MINIMUM STRENGTH OF 28 MPa AT THE AGE OF 28 DAYS.

   d. THE CONTRACTOR MAY PROPOSE ANY ALTERNATIVE TENDON SIZE AND LAYOUT AND SUBJECT SHALL MEET THE APPROVAL OF THE ENGINEER.

   e. THE REQUIRED STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL BE 28 MPa (4,000 PSI). A GRID CONSISTING OF Ø12 BARS AT 100 CENTERS IN BOTH DIRECTIONS SHALL BE PLACED NEAR EACH ANCHORAGE OF THE POST-TENSIONING SYSTEM. POST-TENSIONING FORCES SHOWN BELOW COMPUTED FOR TENDONS JACKED SIMULTANEOUSLY AT BOTH ENDS, FRICTIONS COEFFICIENTS ARE K=0.0015 AND u=0.25 WITH AN ANCHORAGE DEFORMATION OF 5mm.

   f. HANDLING IN PRESTRESSED CONCRETE BEAMS: THE BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY SUITABLE DEVICES PROVIDED AT THE ENDS OF THE BEAMS. THE CONTRACTOR'S PROPOSED LIFTING DETAILS SHOULD BE GIVEN CAREFUL CONSIDERATION BEFORE BEING SUBMITTED ON SHOP DRAWINGS FOR APPROVAL. THE USE OF HOLES FOR LIFTING PURPOSES WILL NOT BE PERMITTED.

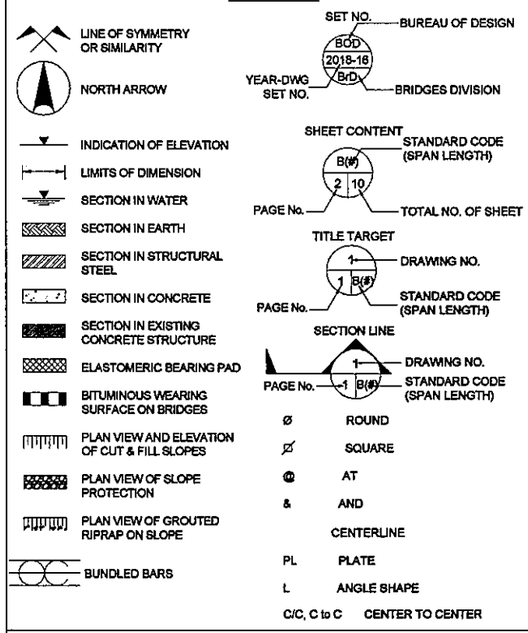
   g. CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE ENGINEER THE CALCULATED ELONGATION OF THE PRESTRESSING TENDONS CORRESPONDING TO THE REQUIRED JACKING FORCES

4. SHORING

   (a) CAMBER FOR REINFORCED CONCRETE SUPERSTRUCTURES WERE DETERMINED BASED THE USE OF SHORINGS DURING CONSTRUCTION.

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

SYMBOLS



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 ORDINATE
CLR	CLEAR	MPa	MEGAPASCAL
cm	CENTEMETER	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	ROWY	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	STIR	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	KILONEWTON	&	AND

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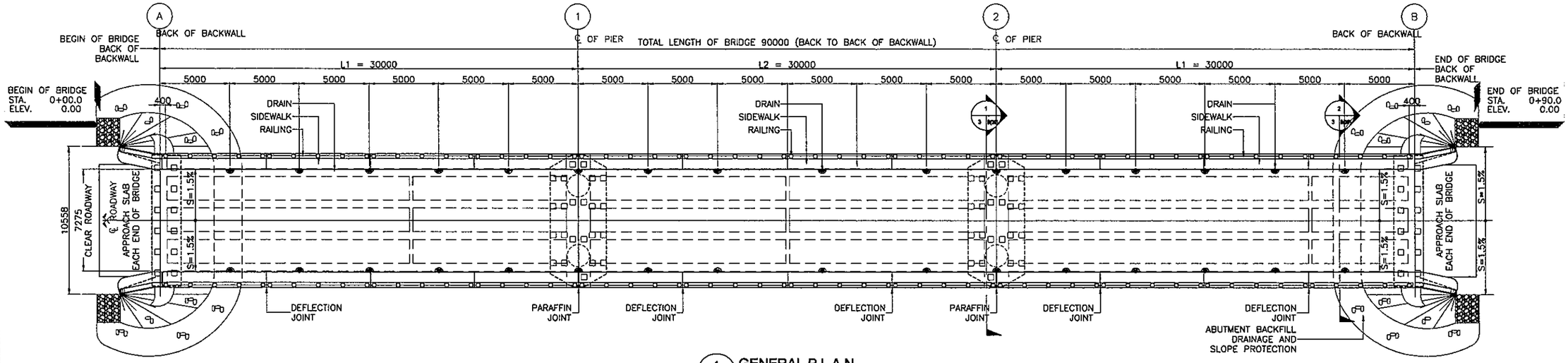
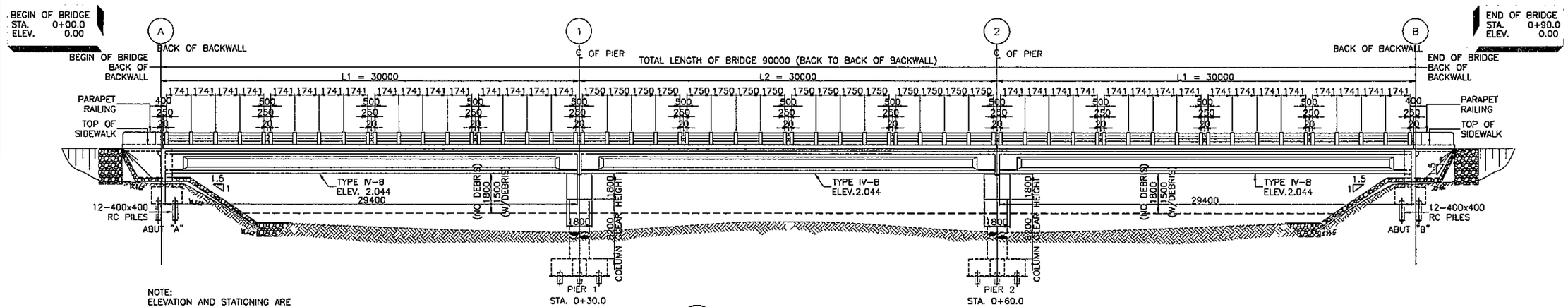
NOTE: DIRECTION OF FLOW TO BE INDICATED IN THE PLAN



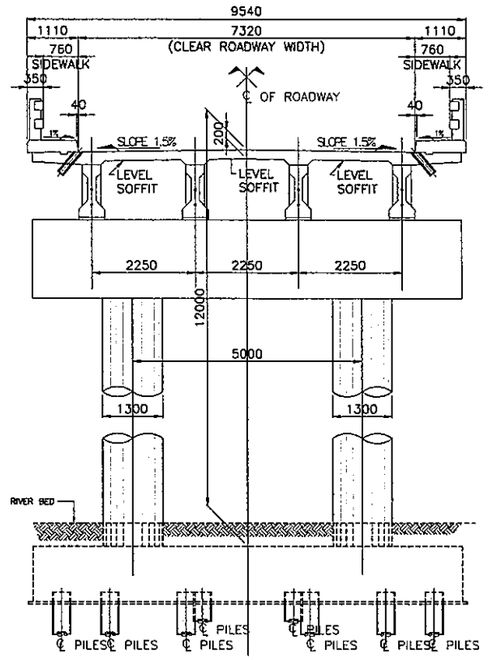
1 / 2 B(30) GENERAL P L A N
SCALE: 1:140



NOTE:
ELEVATION AND STATIONING ARE ASSUMED VALUES AND TO BE ADJUSTED BASED ON THE ACTUAL FIELD/SITE CONDITION.

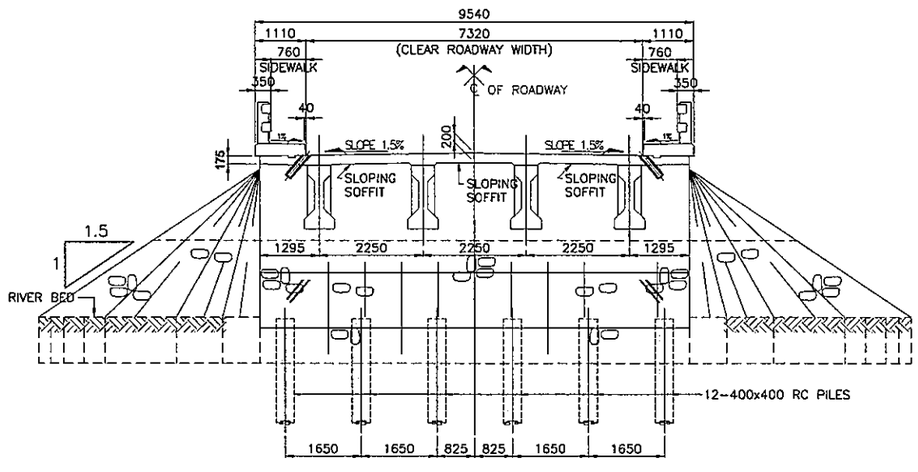
2 / 2 B(30) GENERAL ELEVATION
SCALE: 1:140

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 30M	SHEET CONTENTS: GENERAL PLAN AND GENERAL ELEVATION	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO C. MEDIANTE	SUBMITTED: BLESILDA S. RAMOS O/C-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 2018-6 BrD	SHEET NO. B(30) 2 | 20



1 / 3 B(30) TYPICAL CROSS SECTION @ PIER

SCALE: 1:60



1 / 3 B(30) TYPICAL CROSS SECTION @ ABUTMENT

SCALE: 1:60

INDEX OF DRAWING

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	B(25)- 3/ 20	TYPICAL CROSS SECTION @ PIER & ABUTMENT AND INDEX OF DRAWING & NOTES
	B(25)- 4/ 20	FRAMING PLAN, LONGITUDINAL SECTION & BLOW-UP SECTION
	B(25)- 5/ 20	SUPERSTRUCTURE CROSS SECTION AND REINFORCEMENT OVER PIER
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	B(25)- 17/ 20	TYPICAL APPROACH SLAB DETAIL
	B(25)- 18/ 20	TYPICAL PRECAST CONCRETE PILE DETAIL
	B(25)- 19/ 20	ABUTMENT SLOPE PROTECTION AND DRAINAGE
	B(25)- 19/ 20	TYPICAL RAILING, DETAILS & SECTION

NOTES:

1. 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.

2. 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.

3. 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 THREE SPAN PSDG SUPERSTRUCTURE L = 30M

SHEET CONTENTS: SECTION @ PIER, SECTION @ ABUTMENT AND INDEX OF DRAWING & NOTES

DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER
CHECKED: MARIANO S. FLORES ENGINEER IV
CADD: ROLANDO C. MEDIANTE DRAFTSMAN I

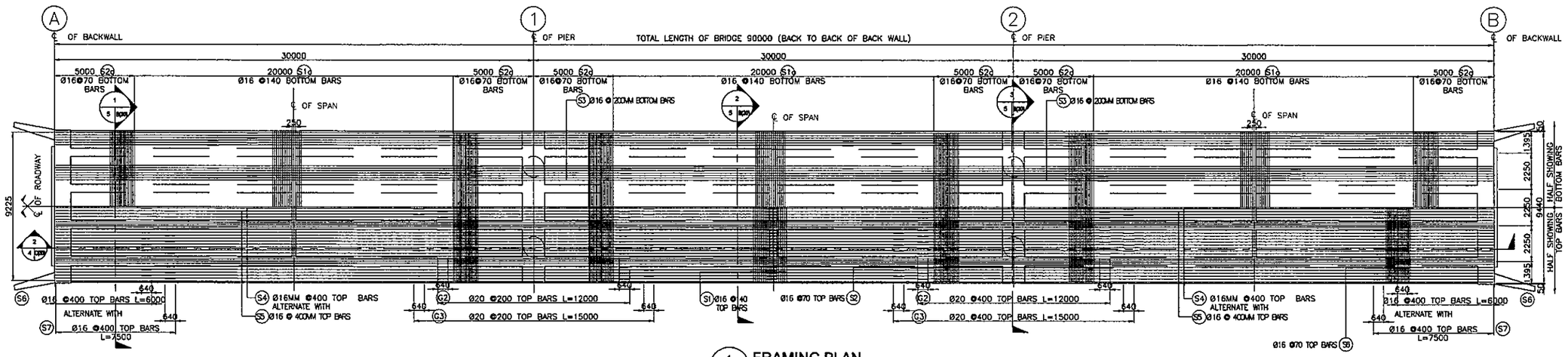
SUBMITTED: BLESILDA S. RAMOS, OIC-CHIEF, BRIDGES DIVISION

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

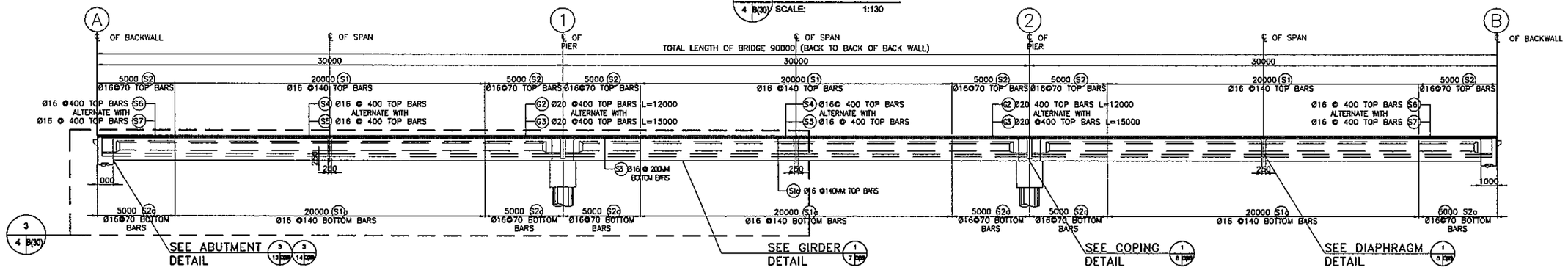
APPROVED: SEE COVER SHEET, EMIL K. SADAIN, CESO I, UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES

SET NO.: BOD 2018-6 BrD

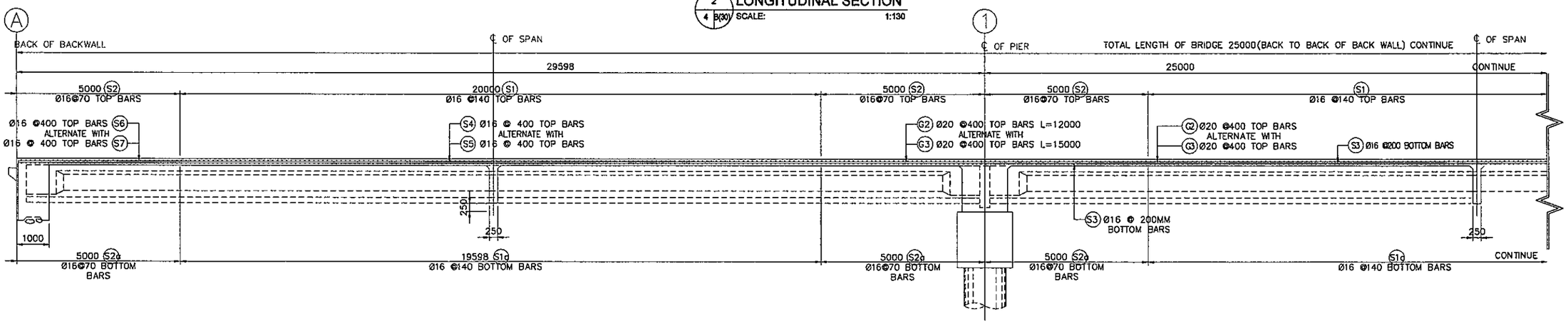
SHEET NO.: B(30) 3 20



1 / 4 B(30) **FRAMING PLAN** SCALE: 1:130

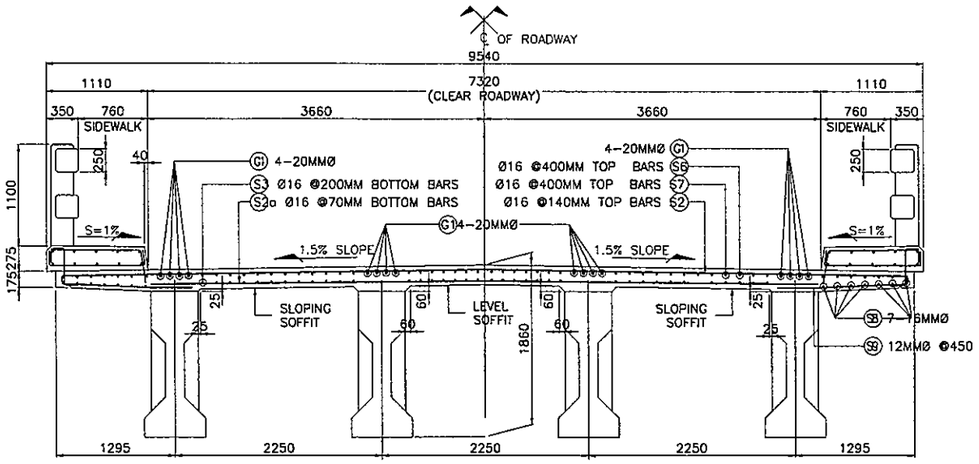


2 / 4 B(30) **LONGITUDINAL SECTION** SCALE: 1:130

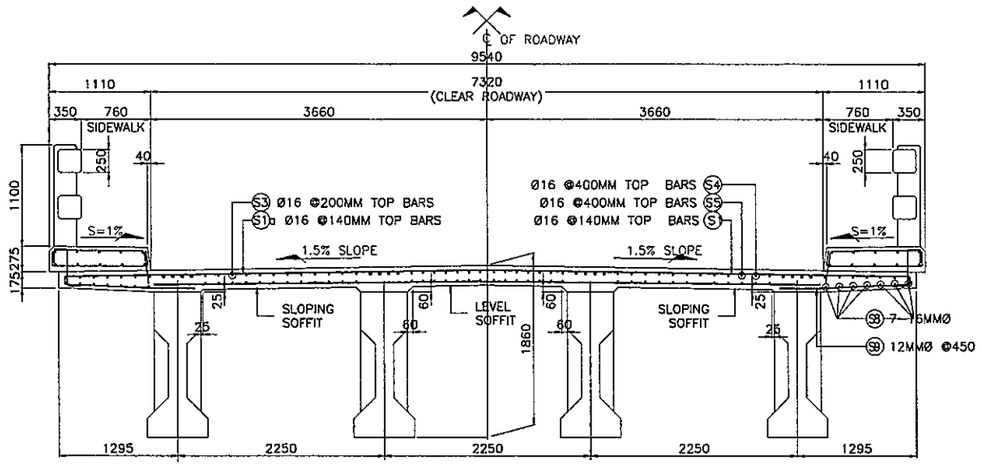


3 / 4 B(30) **BLOW UP SECTION** SCALE: 1:60

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 30M	SHEET CONTENTS: FRAMING PLAN LONGITUDINAL SECTION & BLOW UP SECTION	DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER CHECKED: MARIANO S. FLORES ENGINEER CADD: ROLANDO C. MEDIANTE DRAFTSMAN I	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 UPNO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-8 BrO	SHEET NO. B(30) 4 20



1 / 5 B(30) TYPICAL CROSS SECTION (OVER PIER)
SCALE: 1:30



3 / 5 B(30) TRANSVERSE SECTION
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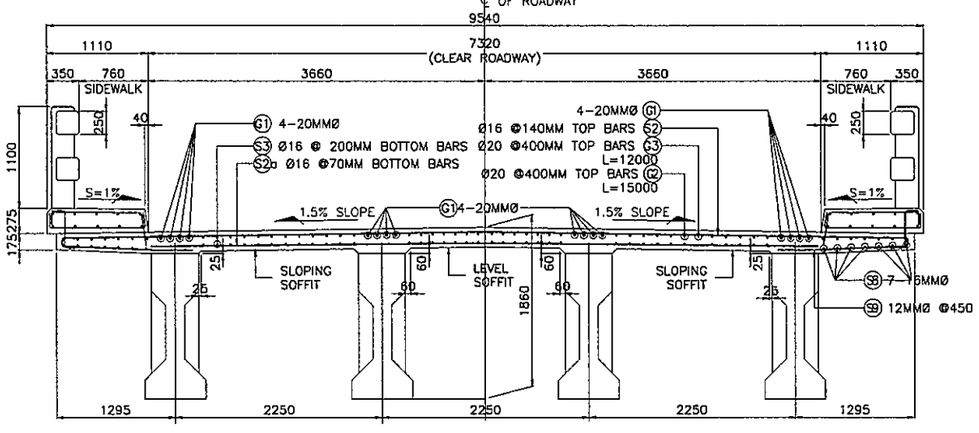

2 / 5 B(30) TRANSVERSE SECTION
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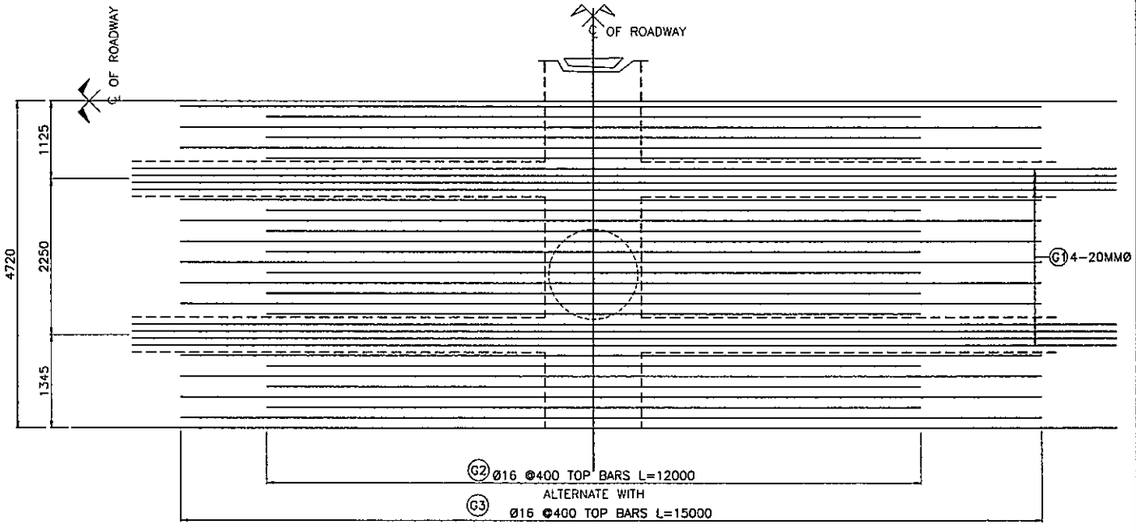
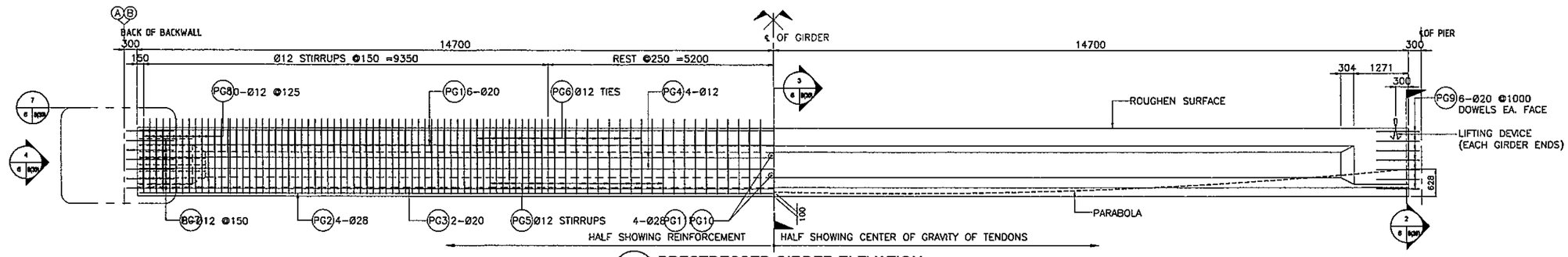
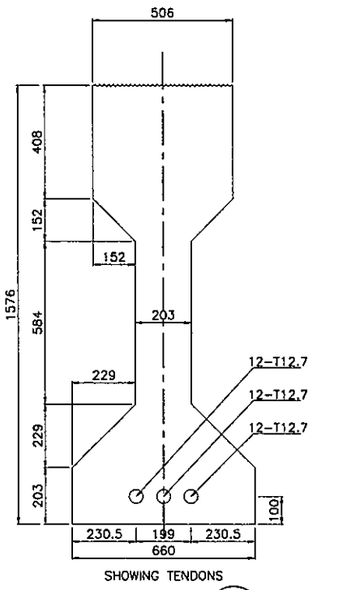


4 / 5 B(30) REINFORCEMENT OVER PIER
SCALE: 1:40

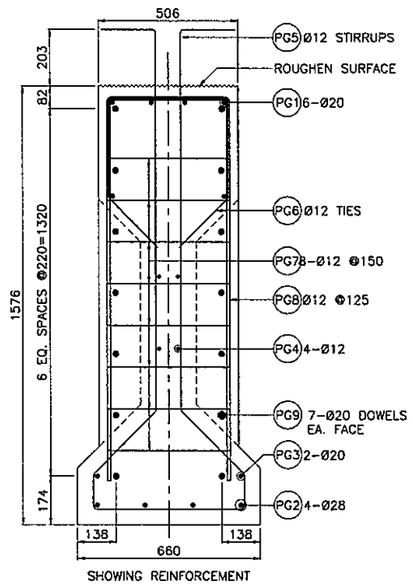
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 30M	SHEET CONTENTS: TYPICAL CROSS SECTION (SHOWING DIMENSIONS) SECTIONS (SHOWING REINFORCEMENTS) REINFORCEMENT OVER PIER	DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER III CHECKED: MARIANO S. FLORES ENGINEER IV CADD: ROLANDO C. MEDIANTE DRAFTSMAN I	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 2018-6 BrD	SHEET NO. B(30) 5 20



1 6 B(30) **PRESTRESSED GIRDER ELEVATION**
SCALE: 1:50

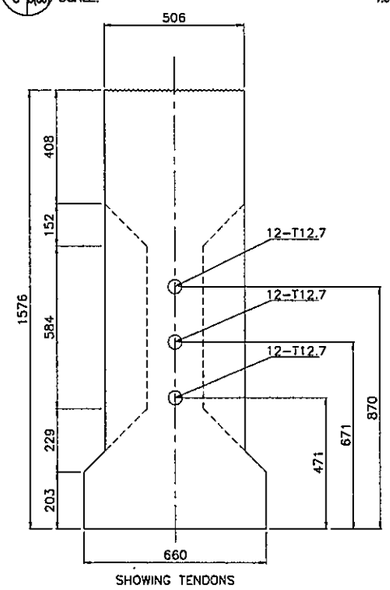


SHOWING TENDONS

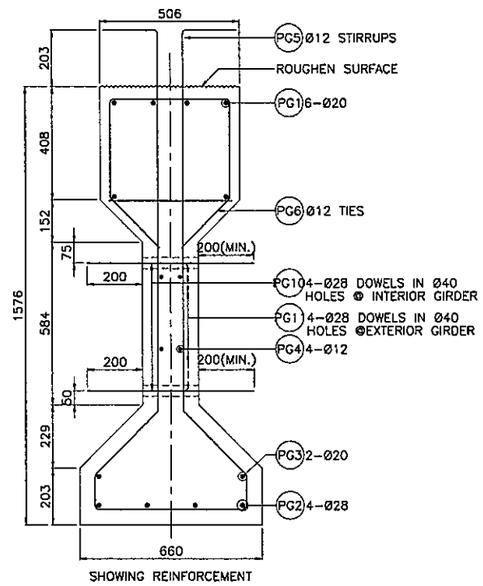


SHOWING REINFORCEMENT

2 6 B(30) **SECTION @ END BLOCK**
SCALE: 1:10

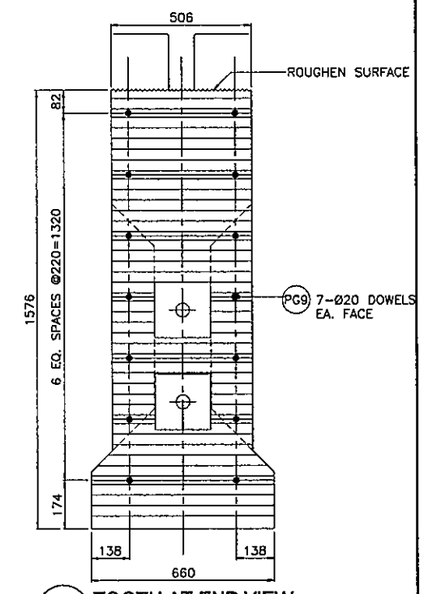


SHOWING TENDONS

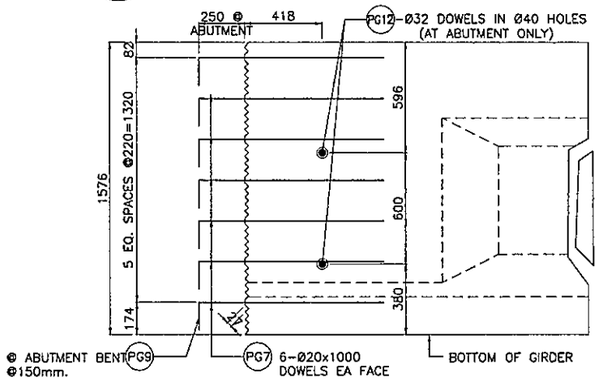


SHOWING REINFORCEMENT

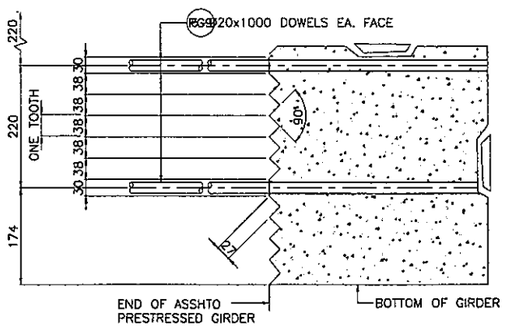
3 6 B(30) **SECTION @ END MIDSPAN**
SCALE: 1:10



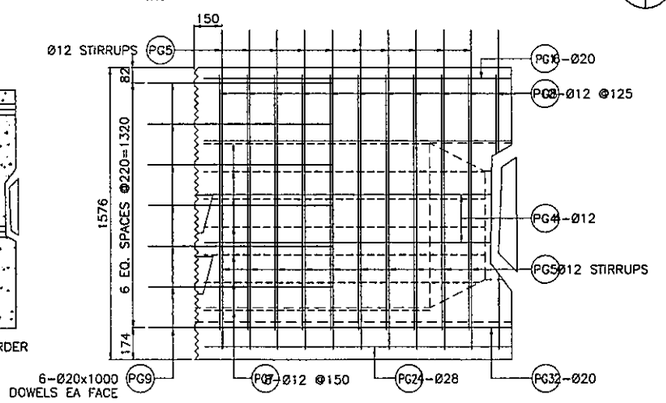
4 6 B(30) **TOOTH AT END VIEW**
SCALE: 1:10



5 6 B(30) **DOWELS @ END BLOCK**
SCALE: 1:15



6 6 B(30) **TOOTH DETAIL**
SCALE: 1:5



7 6 B(30) **END BLOCK REINFORCEMENT DETAIL**
SCALE: 1:15

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 30M	SHEET CONTENTS: GIRDER ELEVATION, BOTTOM BAR LAYOUT & SECTION (TYPE IV-B = 30.00M)	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrD	SHEET NO. B(30) 6 20

GIRDER DESIGN GUIDE

1.) POST–TENSIONING STEEL : THE PROPOSED TYPE OF TENDONS WHICH WILL BE USED IN THE POST– TENSIONED DESIGNS, ALL NECESSARY ADDITIONAL DETAILS INCLUDING THOSE FOR END ANCHORAGES, METHODS TO BE EMPLOYED AND PROCEDURES TO BE FOLLOWED, SHALL BE AS APPROVED BY THE ENGINEERS. A PORTION OF THE TENDONS SHALL BE DRAPED LONGITUDINAL IN PARABOLIC POSITIONS, ALL TENDONS SHALL BE PLACED SO THAT THEIR CENTER OF GRAVITY WILL BE AT THE POSITION SHOWN ON PLANS. THE TOTAL POST–TENSION FORCE AFTER LOSSES REQUIRED AT MIDSPAN SHALL BE PROVIDED AS CALLED FOR IN THE VARIOUS DESIGNS. THE REQUIRED FORCES AFTER LOSSES SHALL BE OBTAINED BY APPLYING INITIAL TENSILE FORCES OF SUFFICIENT MAGNITUDE TO ALLOW FOR ALL SUBSEQUENT LOSSES, INCLUDING THOSE FOR ELASTIC SHORTENING, SHRINKAGE, CREEP, RELAXATION, FRICTION, AND EFFICIENCY OF END ANCHORAGES. AFTER SECURING THE END ANCHORAGES ALL TENDONS SHALL BE PRESSURE GROUTED IN THEIR CONDUITS IN ACCORDANCE WITH "SPECIFICATIONS".

2.) CONCRETE FOR GIRDERS SHALL BE A MINIMUM STRENGTH OF 35 N/mm AT THE AGE OF 28 DAYS.

3.) CONCRETE FOR CAST–IN–PLACE SLAB HAVE A MINIMUM STRENGTH 28 N/mm AT THE AGE OF 28 DAYS.

4.) THE CONTRACTOR MAY PROPOSE ANY ALTERNATIVE TENDON SIZE AND LAYOUT AND SUBJECT SHALL MEET THE APPROVAL OF THE ENGINEER.

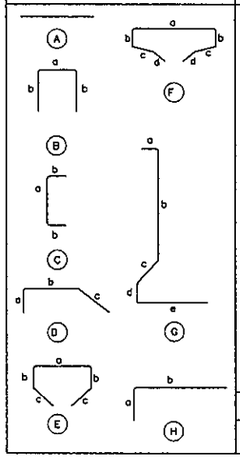
5.) THE REQUIRED STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL BE 28 MPa (4,000 PSI). A GRID CONSISTING OF ø12 BARS AT 100 CENTERS IN BOTH DIRECTIONS SHALL BE PLACED NEAR EACH ANCHORAGE OF THE POST–TENSIONING SYSTEM. POST–TENSIONING FORCES SHOWN BELOW COMPUTED FOR TENDONS JACKED SIMULTANEOUSLY AT BOTH ENDS, FRICTIONS COEFFICIENTS ARE K = 0.0015 AND u = 0.25 WITH AN ANCHORAGE DEFORMATION OF 3mm.

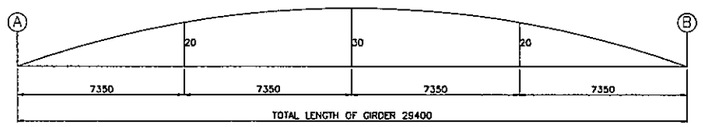
6.) HANDLING PRESTRESSED CONCRETE BEAMS : THE BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY SUITABLE DEVICES PROVIDED AT THE ENDS OF THE BEAMS. ATTENTION IS DIRECTED TO THE INCREASED DIFFICULTY OF LIFTING BEAMS WITHOUT END BLOCKS. THE CONTRACTOR PROPOSED LIFTING DETAILS SHOULD BE GIVEN CAREFULL CONSIDERATION BEFORE BEING SUBMITTED ON SHOP DRAWING FOR APPROVAL. THE USE OF HOLES FOR LIFTING PURPOSES WILL NOT BE PERMITTED.

7.) CONCTRACTOR SUBMIT FOR APPROVAL BY THE ENGINEER THE CORRESPONDING ELONGATION OF THE PRESTRESSING TENDONS.

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR PRESTRESSED GIRDER (L–30M) TYPE–IVB

REINFORCEMENT

BENDING DIAGRAM	STRUCTURE COMPONENT	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	d	LOCATION Lc	LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	REMARKS
	TYPE IVB	30.00	FG1	20	6	AS SHOWN	A	29400	–	–	–	–	29.40	176.40	2.466	435	
			FG2	28	4	AS SHOWN	A	29400	–	–	–	–	29.40	117.60	4.833	568	
			FG3	20	2	AS SHOWN	A	29400	–	–	–	–	29.40	58.80	2.466	145	
			FG4	12	4	AS SHOWN	B	29400	–	–	–	–	29.40	117.60	0.888	104	
			FG5	12	169	AS SHOWN	A	170	1370	340	170	590	2.640	446.16	0.888	396	
			FG6	12	169	AS SHOWN	A	430	370	260	–	–	1.690	285.61	0.888	254	
			FG7	12	16	150	B	410	1300	350	–	–	2.080	33.28	0.888	30	
			FG8	12	24	125	B	430	1340	–	–	–	3.110	74.64	0.888	66	
			FG9	20	28	AS SHOWN	A	1000	–	–	–	–	1.000	28.00	2.466	69	
			FG10	20	4	AS SHOWN	B	603	–	–	–	–	0.603	2.41	4.833	12	
			FG11	28	4	AS SHOWN	A	250	400	–	–	–	0.650	2.60	4.833	13	
			FG12	32	2	AS SHOWN	C	910	–	–	–	–	0.910	1.82	6.313	11	
														TOTAL =		2,103.20	
													GRAND TOTAL GRADE 40 =			1,998.44	
													GRAND TOTAL GRADE 60 =			104.76	



POST TENSIONING FORCE, F, AFTER LOSSES AT CENTERLINE OF SPAN/ TOTAL JACKING FORCE PER GIRDER

SPAN LENGTH (m)	AASHTO GIRDER TYPE	F (kN)	JACKING FORCE PER GIRDER (kN)
29.40	IV–B	3602	5300

1 / 7 B(30) CAMBER DIAGRAM
SCALE: NTS

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

SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M

SHEET CONTENTS: CAMBER DIAGRAM & SCHEDULE OF REINFORCEMENT

DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER III
CHECKED: MARIANO B. FLORES ENGINEER IV
CADD: ROLANDO C. NEDIANTE DRAFTSMAN I

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 2018-6 BrD

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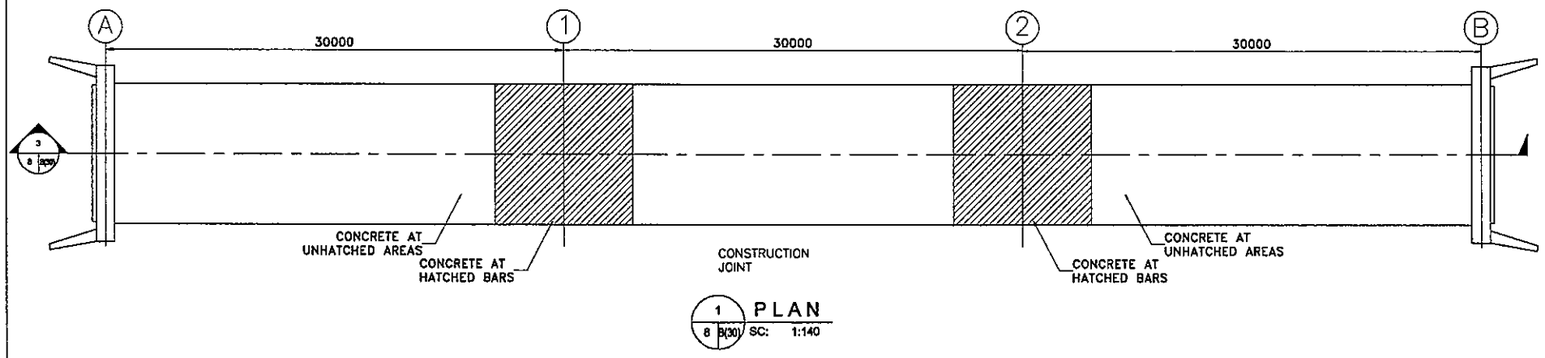
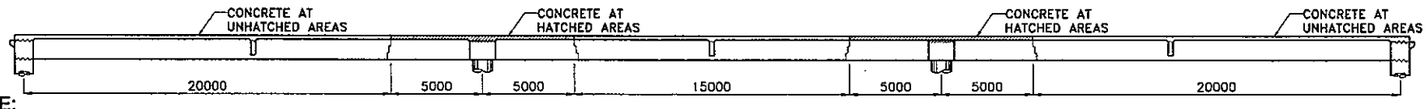


1 8 B(30) PLAN SC: 1:140

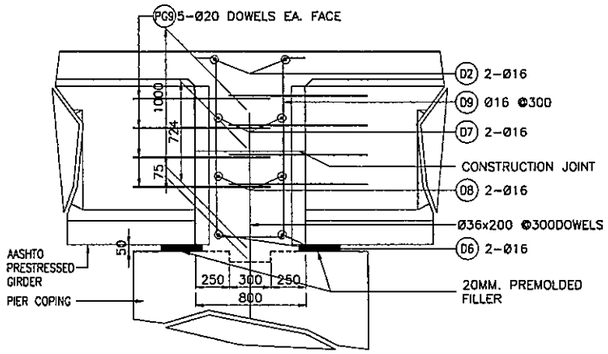


2 8 B(30) SECTION SCALE: 1:150

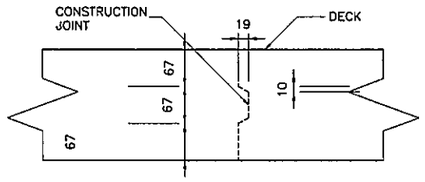
NOTE:

1.CONCRETE AT UNHATCHED AREAS SHALL BE PLACED AT LEAST ONE DAY AHEAD OF CONCRETE AT HATCHED AREAS.

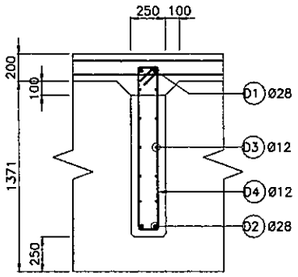
1. REINFORCEMENT SHALL BE CONTINUOUS AT CONSTRUCTION JOINTS.
2. CONSTRUCTION OF SUPERSTRUCTURE SHALL BE FULLY SHORED.



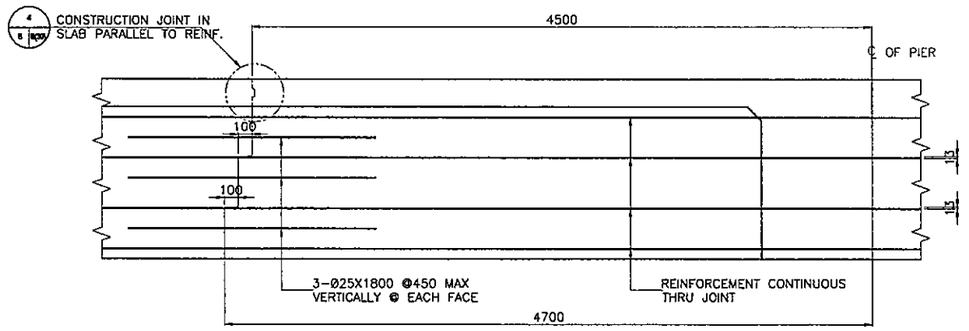
5 8 B(30) SECTION SCALE: 1:20



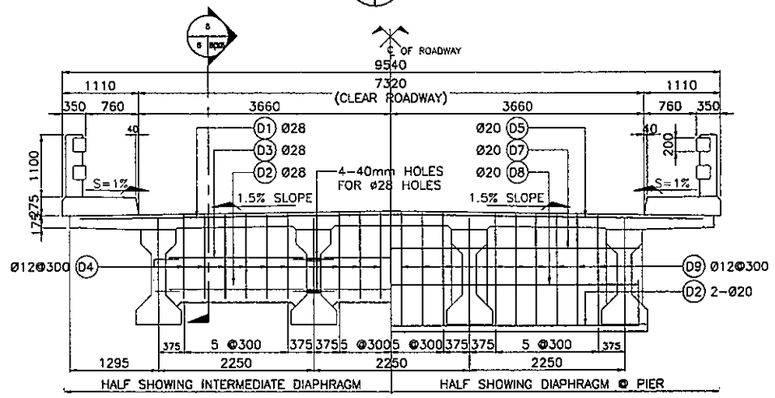
4 8 B(30) DETAIL SC: 1:5



6 8 B(30) SECTION SCALE: 1:20



3 8 B(30) TRANSVERSE GIRDER CONSTRUCTION JOINT SCALE: 1:20



7 8 B(30) ELEVATION (TYPE-IV) SCALE: 1:40

CONCRETE 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 THREE SPAN PCDG SUPERSTRUCTURE L=30M
SHEET CONTENTS:	CONCRETE POURING SEQUENCE, INTERMEDIATE DIAPHRAGM DETAIL AND SECTION
DESIGNED:	ERDOLFO M. DOMINGO, JR.
CHECKED:	MARIANO S. FLORES
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 2018-6 BrD
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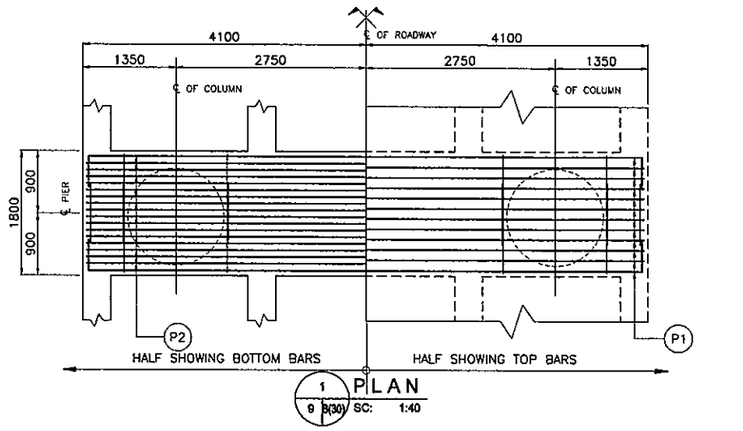
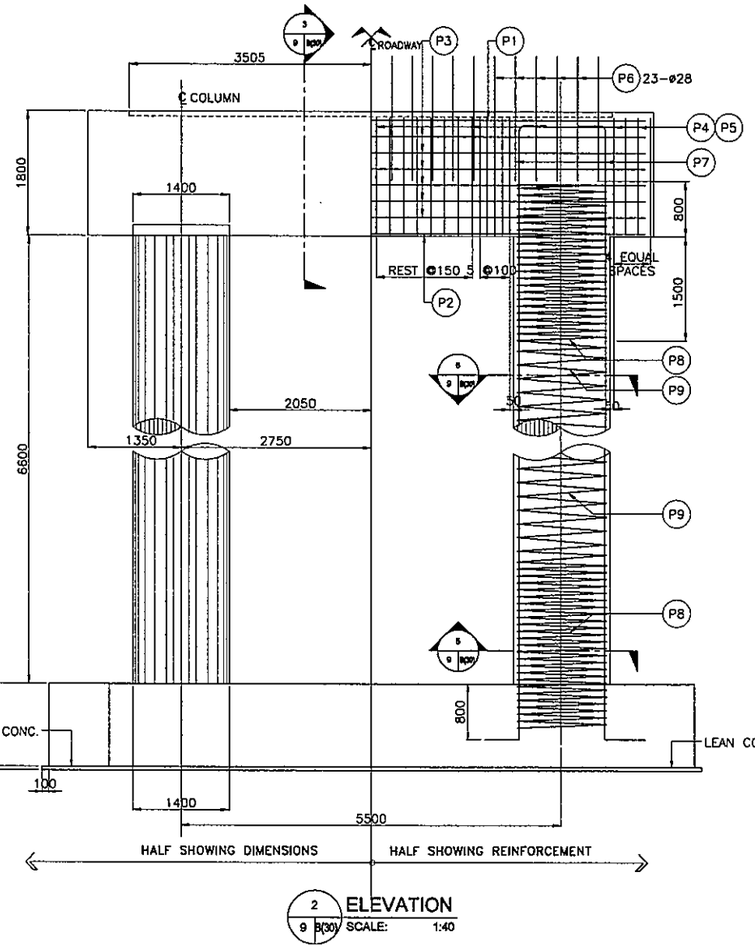
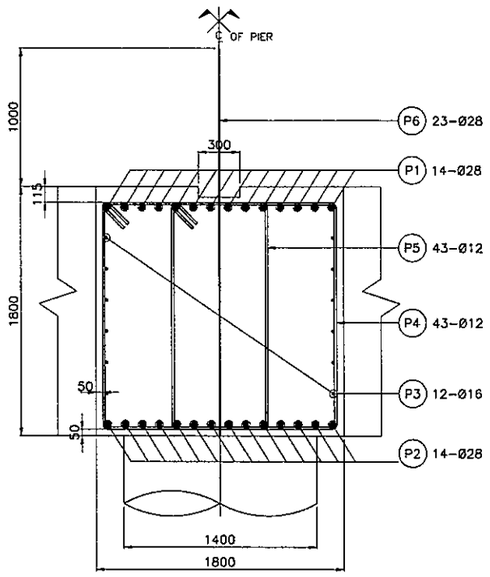


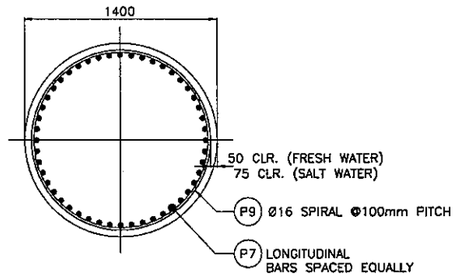
1 PLAN
9 B(30) SC: 1:40



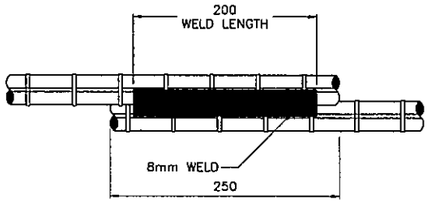
2 ELEVATION
9 B(30) SCALE: 1:40



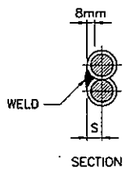
3 SECTION
9 B(30) SCALE: 1:20



5 SECTION
9 B(30) SCALE: 1:20



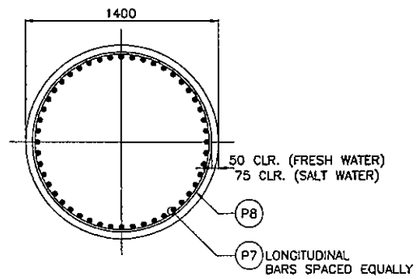
ELEVATION



S=1/2 BAR DIAMETER

SECTION

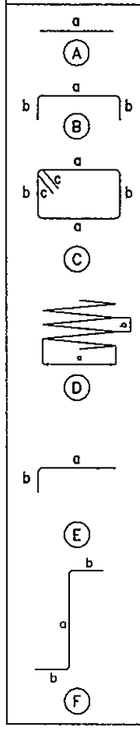
4 SPIRAL SPLICE DETAIL
9 B(30) SCALE: 1:30



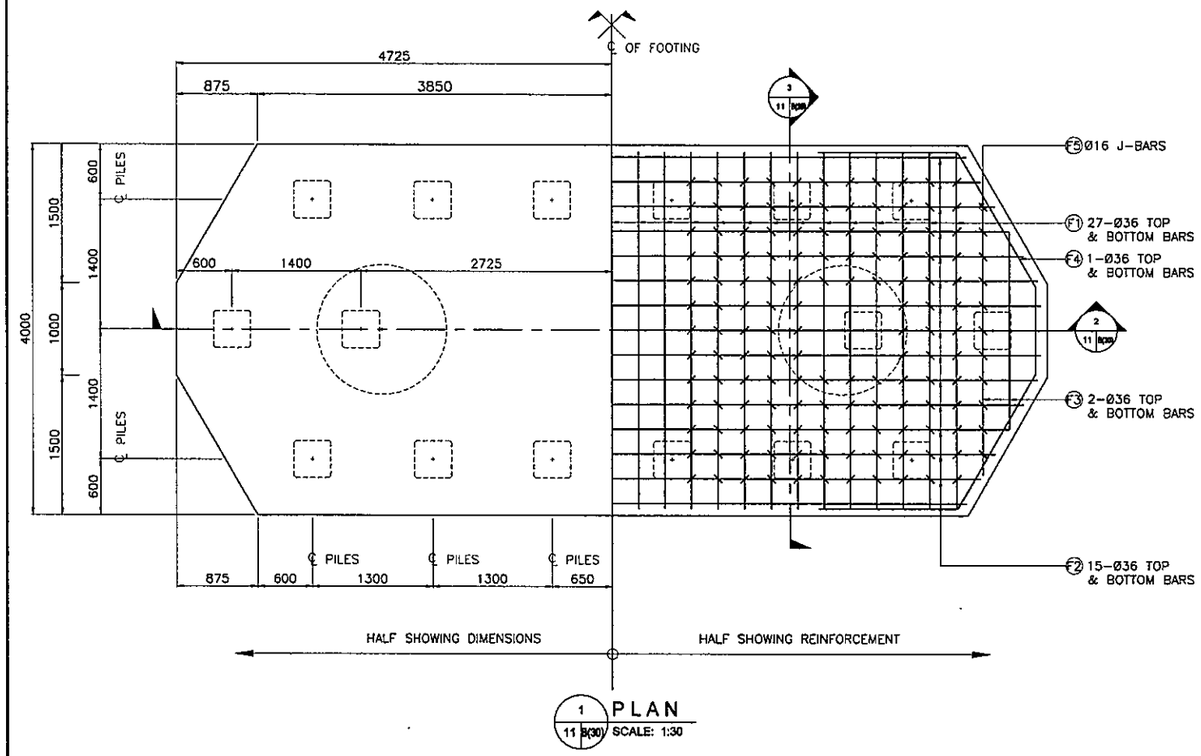
6 SECTION
9 B(30) SCALE: 1:20

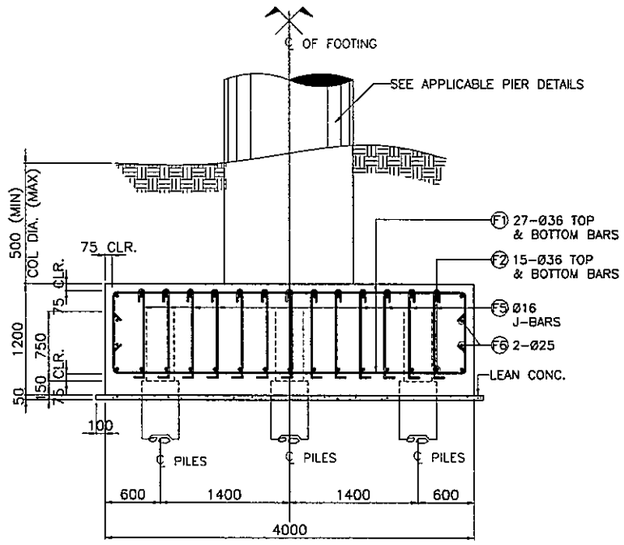
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M	SHEET CONTENTS: PLAN, ELEVATION, SECTIONS & SPIRAL SPLICE DETAILS FOR PIER	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrD	SHEET NO. B(30) 9 20

DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) PIER

BENDING DIAGRAM	SPAN LENGTHS L1–L1–L1 (m)	COLUMN DIAMETER	COPING BEAM W	COPING BEAM H	REINFORCEMENT: BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	LENGTH PER BAR(mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)	REMARKS
	30–30–30	1.60	1.90	1.90	P1	36	20	AS SHOWN	B	8100	450	–	9000	180.00	7.990	1,438	52.89	1.QUANTITIES ARE FOR THE TWO (2) COLUMNS OF ONE (1) PIER ONLY.
					P2	36	20	AS SHOWN	B	8100	450	–	9000	180.00	7.990	1,438		
					P3	16	12	AS SHOWN	A	8000	–	–	8000	96.00	6.313	606		
					P4	16	35	AS SHOWN	C	1620	1545	195	6720	235.20	7.990	1,879		
					P5	16	35	AS SHOWN	C	640	1545	195	4760	166.60	7.990	1,331		
					P6	28	23	300	A	2000	–	–	2000	46.00	4.833	222		
					P7	32	58	AS SHOWN	F	11175	250	–	11675	677.15	1.578	1,069		
					P8	16	66	60	D	1400	60	–	1460	96.36	1.578	152		
					P9	16	27	100	D	1400	100	–	1500	40.50	1.578	64		
																		2. SPLICES FOR BARS P10 P11, P12 AND P13 ARE INCLUDED.
														TOTAL =		8200		
													GRAND TOTAL GRADE 40 =			4032	52.890	
													GRAND TOTAL GRADE 60 =			4,167		

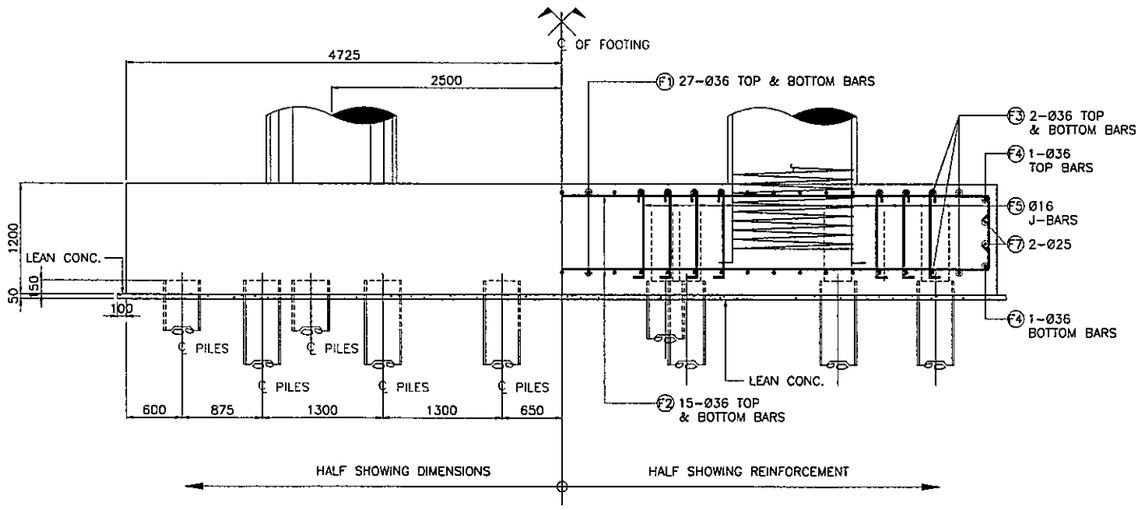
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M	SHEET CONTENTS: REINFORCEMENT SCHEDULE AND LOADING INFORMATION FOR DESIGN OF FOUNDATION FOR THREE SPAN	DESIGNED: ERDOLITO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-8 BrD	SHEET NO. B(36) 10 20





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.
- LENGTH OF REINFORCED CONCRETE PILES SHALL BE DETERMINED/DESIGNED BASED ON THE ACTUAL BORING AT LOCATION OF FOUNDATION



DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES

REINFORCEMENT

BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	LENGTH PER BAR(mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)	REMARKS
A	FOOTING	F1	36	54	287	B	3850	437	–	4724	255.10	7.990	2,038	41.73	1.QUANTITIES ARE FOR ONE (1) PILE CAP.
		F2	36	30	267	B	9200 min 7450max	437	–	9200 AVE.	276.00	7.990	2,205		
		F3	36	8	AS SHOWN	A	2000 min 3000max	–	–	2500 AVE.	20.00	7.990	160		
		F4	36	4	AS SHOWN	C	1000	1735	1165	6800	27.20	7.990	217		
		F5	16	264	AS SHOWN	D	180	900	120	1200	316.80	1.578	500		1.QUANTITIES ARE APPLICABLE TO PIER HEIGHTS 8, 10 & 12M.
		F6	25	4	AS SHOWN	A	7450	–	–	7450	29.80	3.854	115		
		F7	25	4	AS SHOWN	C	1000	1735	1165	6800	27.20	3.854	105		
											TOTAL =		5340		
										GRAND TOTAL GRADE 40 =			4840		
										GRAND TOTAL GRADE 60 =			500		

TYPE F6 (FOR FOOTING ON PILES)

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 THREE SPAN PCDG SUPERSTRUCTURE L=30M

SHEET CONTENTS: DETAIL OF FOOTING TYPE F6 (FOR FOOTING ON PILES)

DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER III
CHECKED: MARIANO S. FLORES ENGINEER V
CADD: ROLANDO C. NEDIANTE DRAFTSMAN I

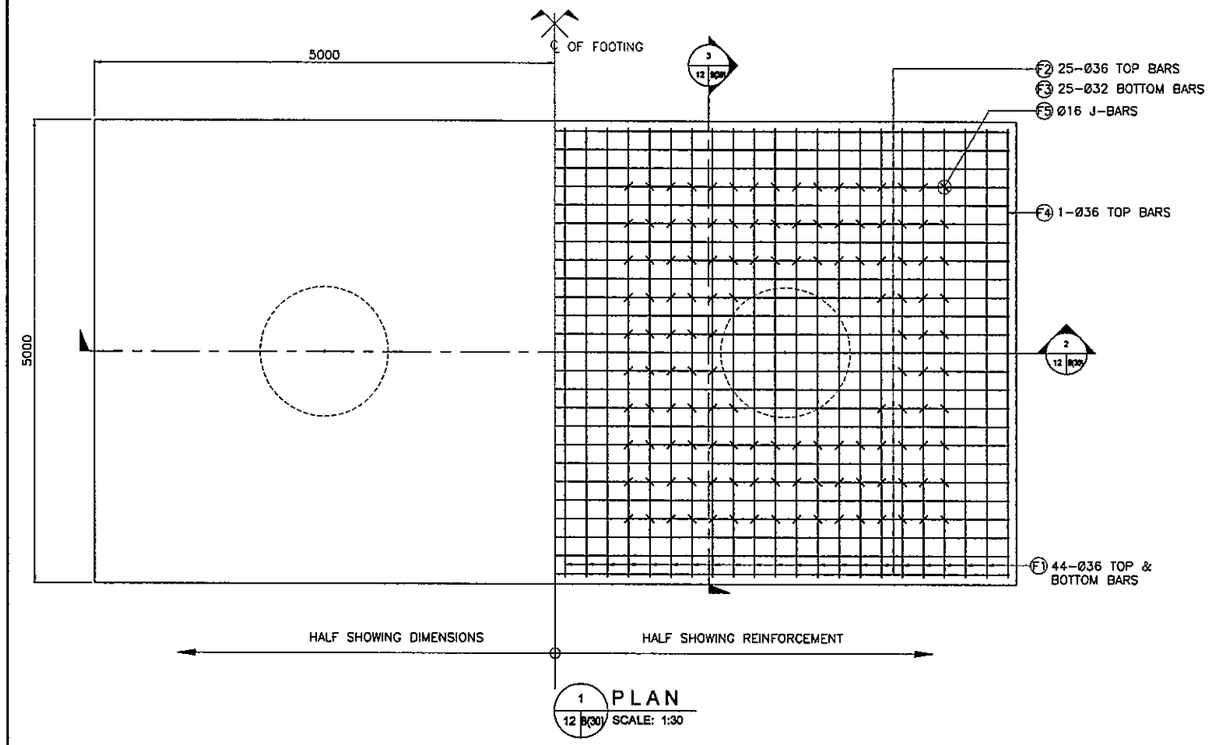
SUBMITTED: BLESILDA S. RAMOS, OIC-CHIEF, BRIDGES DIVISION

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

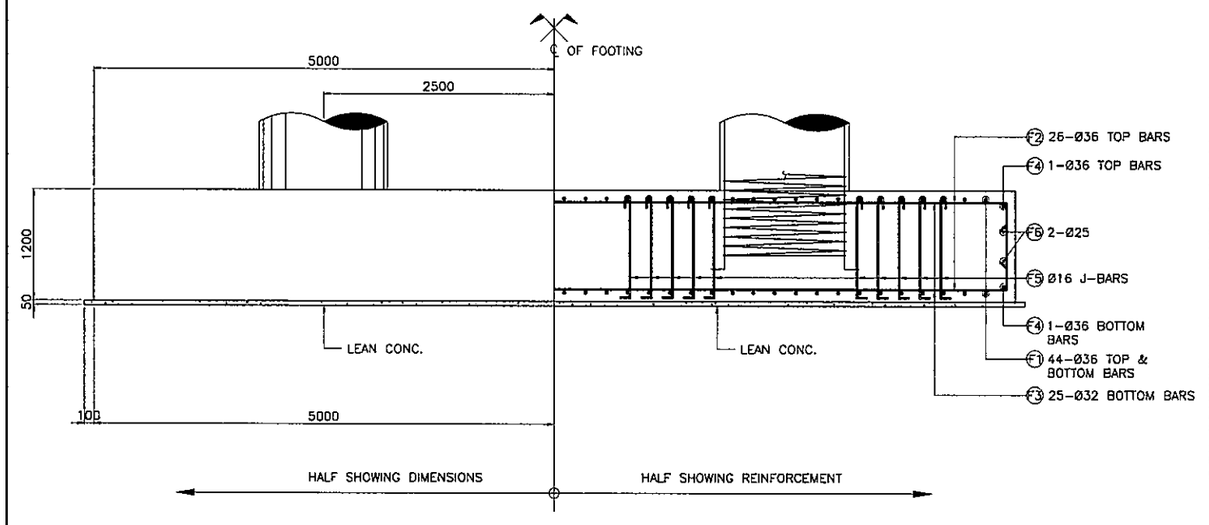
APPROVED: SEE COVER SHEET, EMIL K. SADAIN, CESO I, UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES

SET NO. BOD 2018-8 BrD

SHEET NO. B(30) 11 20



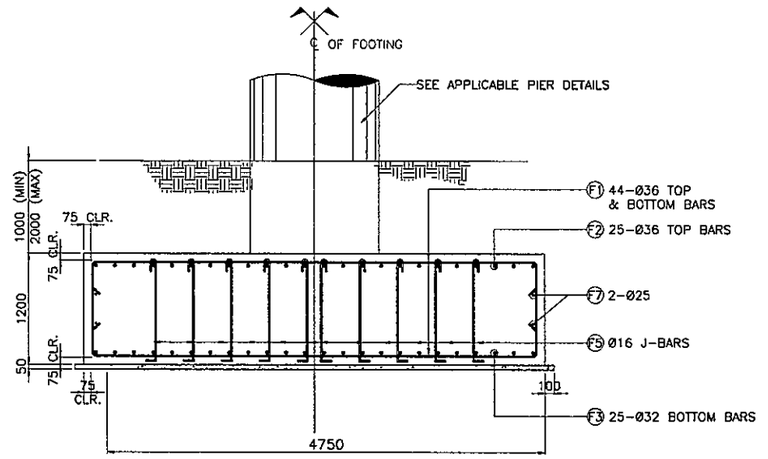
1 / 12 B(30) PLAN SCALE: 1:30



2 / 12 B(30) SECTION SCALE: 1:30

TYPE F6 (FOR SPREAD FOOTING)

SCALE: AS SHOWN



3 / 12 B(30) SECTION SCALE: 1:30

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.
- LENGTH OF REINFORCED CONCRETE PILES SHALL BE DETERMINED/DESIGNED BASED ON THE ACTUAL BORING AT LOCATION OF FOUNDATION

DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES

REINFORCEMENT

BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	LENGTH PER BAR(mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m³)	REMARKS
c (A)	FOOTING	F1	36	88	AS SHOWN	B	4850	825	–	6500	572.00	7.990	4570	51.30	1.QUANTITIES ARE FOR ONE (1) PILE CAP.
		F2	36	25	197	B	9850	825	–	11500	287.50	7.990	2297		
		F3	32	25	197	B	9850	825	–	11500	287.50	6.313	1815		
		F4	36	4	AS SHOWN	A	4850	–	–	4850	19.40	7.990	155		
b a b (B)		F5	16	292	AS SHOWN	C	180	1150	120	1450	423.40	1.578	668		
		F6	25	4	AS SHOWN	A	4850	–	–	4850	19.40	3.854	75		1.QUANTITIES ARE APPLICABLE TO PIER HEIGHTS 8, 10 & 12M.
		F7	25	4	AS SHOWN	A	9850	–	–	9850	39.40	3.854	152		
a b c (C)											TOTAL =		9732		
										GRAND TOTAL GRADE 40 =			668		
										GRAND TOTAL GRADE 60 =			9064		

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
BONIFACIO DRIVE PORT AREA, MANILA

SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M

SHEET CONTENTS: DETAIL OF FOOTING TYPE F6 (SPREAD FOOTING)

DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER
CHECKED: MARIANO S. FLORES ENGINEER IV
CADD: ROLANDO C. MEDIANTE DRAFTSMAN

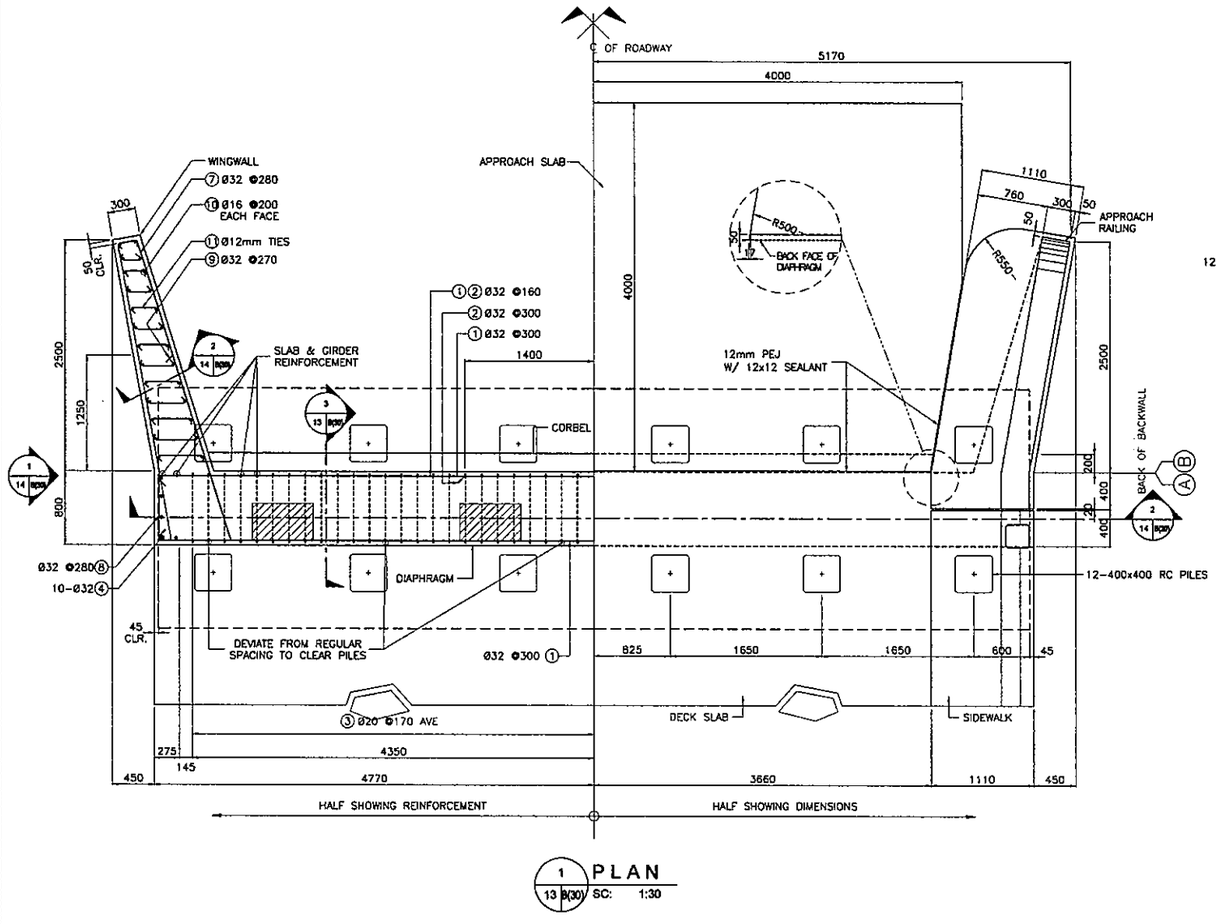
SUBMITTED: BLESILDA S. RAMOS, OIC-CHIEF, BRIDGES DIVISION

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

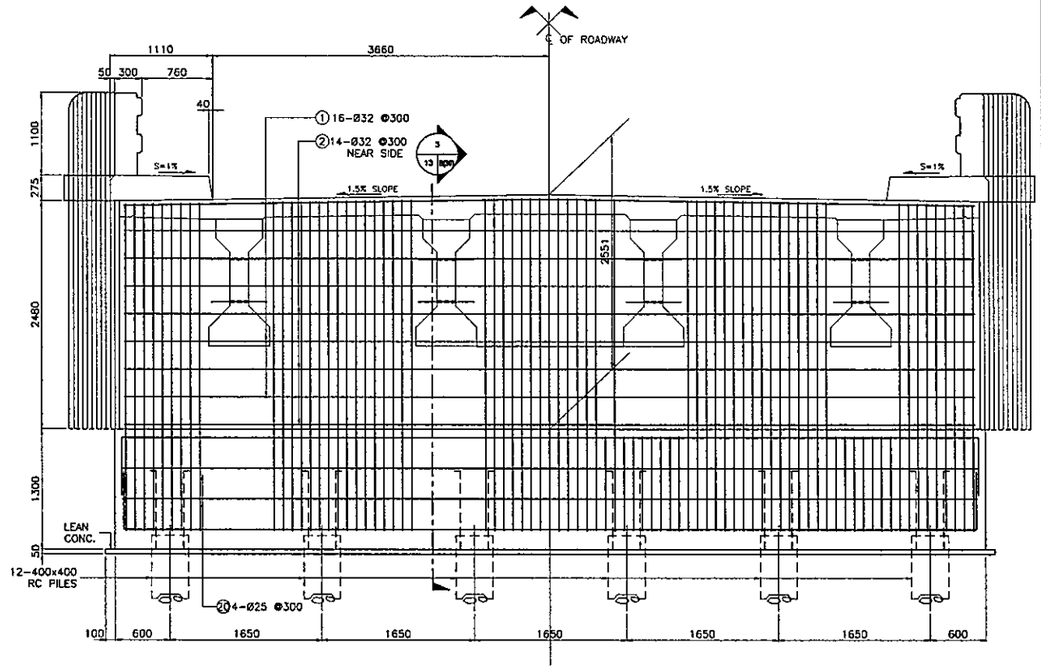
APPROVED: SEE COVER SHEET, EMIL K. SADAIN, CESO I, UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES

SET NO.: BOD 2018-6 BrD

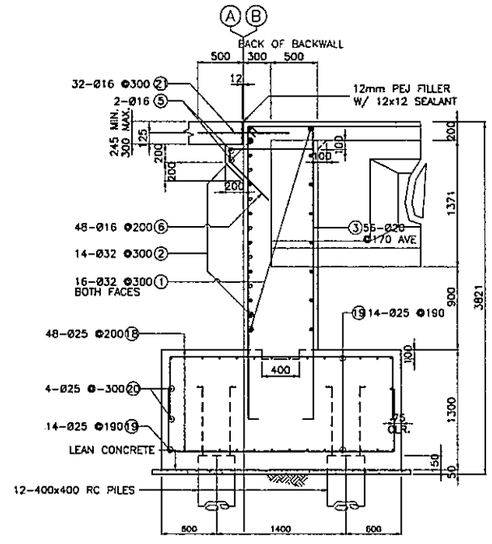
SHEET NO.: B(30) 12 19



1 / 13 B(30) PLAN SC: 1:30

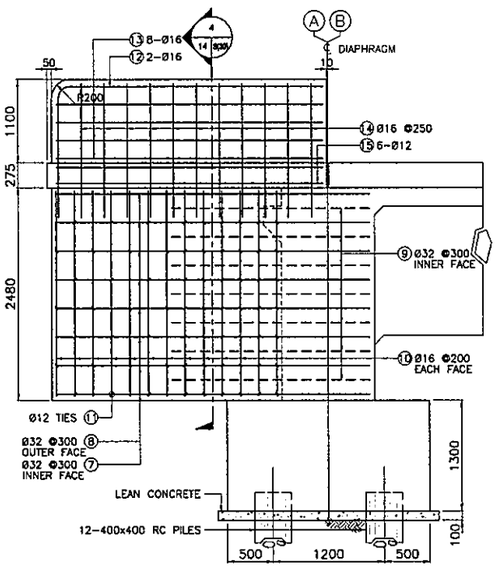


2 / 13 B(30) ELEVATION SC: 1:30

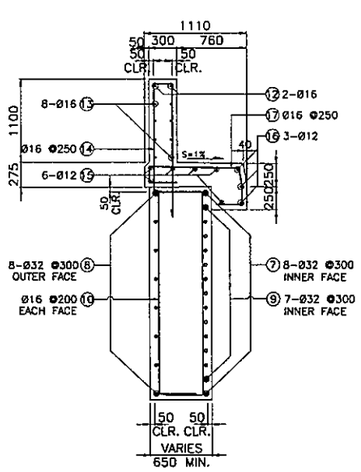


3 / 13 B(30) SECTION SC: 1:30

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M	SHEET CONTENTS: ABUTMENT PLAN AND ELEVATION	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO G. 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 2018-6 BrD	SHEET NO. B(30) 13 20

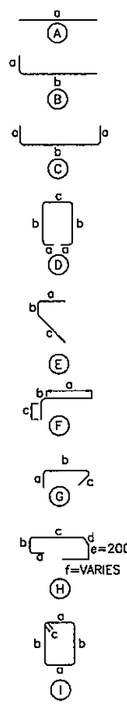


1 14 B(30) ELEVATION OF WINGWALL
SCALE: 1:30



2 14 B(30) SECTION
SCALE: 1:30

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) ABUTMENT

REINFORCEMENT														
BENDING DIAGRAM (DIMENSIONS ARE OUT TO OUT OF BARS)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	d	LENGTH EACH BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)
	1	32	16	300	C	600	9440	–	–	10640	170.24	6.313	1075	21.450
	2	32	7	300	B	600	3270	–	–	3870	27.09	6.313	171	
	3	20	56	170	D	110	9440	900	–	7520	421.12	2.467	1039	
	4	32	10	AS SHOWN	A	3300	–	–	–	3300	33	6.313	208	
	5	16	2	AS SHOWN	A	9440	–	–	–	9440	18.88	1.578	30	
	6	16	48	200	E	900	100	600	–	1600	76.80	1.578	122	
	7	32	16	300	B	620	3380	–	–	4000	56.00	6.313	354	
	8	32	16	300	B	600	3230	–	–	3830	61.28	6.313	387	
	9	32	7	300	B	620	2080	–	–	2700	18.90	6.313	120	
	10	16	52	200	D	200MIN 400MAX	1690	–	–	2490	129.48	1.578	205	
	11	12	114	AS SHOWN	G	170	140MIN 490MAX	170	–	830	94.62	0.888	84	
	12	16	4	AS SHOWN	F	2700	235	1350	–	4285	17.14	1.578	28	
	13	16	16	AS SHOWN	A	2850	–	–	–	2850	45.6	1.578	72	
	14	16	25	250	C	1500	200	–	–	3200	80.00	1.578	126	
	15	12	12	AS SHOWN	A	2600MIN 2850MAX	–	–	–	2850	34.20	0.888	31	
	16	12	6	AS SHOWN	F	510	785	2350	–	3645	21.87	0.888	20	
	17	16	25	250	H	300	170	970	200	2280	57.00	1.578	90	
	18	25	96	200	C	600	2050	–	–	3250	312	3.855	1203	
	19	25	28	150	B	110	9440	–	–	9550	267.4	3.855	1031	
	20	25	4	300	B	110	9440	–	–	9550	19.1	3.855	74	
	21	16	32	300	A	1000	–	–	–	1000	52	1.578	82	
	22	25	62	150	I	728	854	150	–	3464	214.77	3.855	828	
											TOTAL =		335.45	
										TOTAL (Gr. 40)			890	21.450
										TOTAL (Gr. 60)			6490	
													0.00	0.000

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

SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M

SHEET CONTENTS: ABUTMENT DETAIL 2 OF 2 WINGWALL ELEVATION, TRANSVERSE SECTION OF ABUTMENT & SCHEDULE OF REINFORCEMENT

DESIGNED: ERDOLFO M. DOMINGO, JR.
CHECKED: MARIANO S. FLORES
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 2018-6 BrD

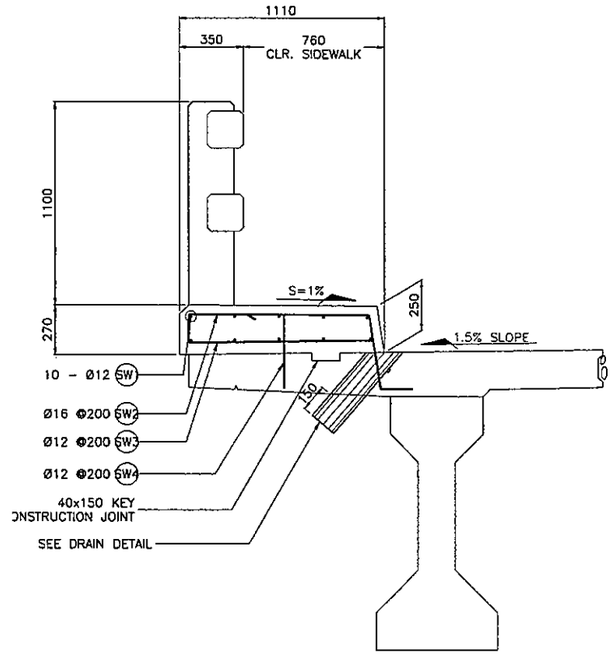
SHEET NO.: B(30) 14 | 20

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR SUPERSTRUCTURE OF 3@ 30m SPAN

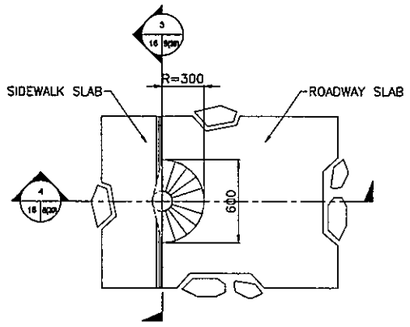
REINFORCEMENT

BENDING DIAGRAM	STRUCTURE COMPONENT	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	d	LOCATION Lc	LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	REMARKS
A	DECK SLAB	196.10	G1	20	16	AS SHOWN	C	1900	89900	–	–	–	93.7	1499.20	2.466	3,697.03	
			G2	20	42	400	A	12000	–	–	–	–	12.00	504.00	2.466	1,242.86	
			G3	20	40	400	A	15000	–	–	–	–	15.00	600.00	2.466	1,479.60	
B			S1	16	600	140	E	145	4630	–	–	–	9.55	5730.00	1.578	9,041.94	
			S1o	16	600	140	F	3630	–	–	–	–	7.26	4356.00	1.578	6,873.77	
C			S2	16	438	70	E	145	4630	–	–	–	9.55	4182.90	1.578	6,600.62	
			S2o	16	438	70	F	3630	–	–	–	–	7.26	3179.80	1.578	5,017.72	
			S3	16	27	200	A	89850	–	–	–	–	89.85	2425.92	1.578	3,828.10	
			S4	16	60	400	A	16280	–	–	–	–	16.28	976.80	1.578	1,541.39	
D			S5	16	63	400	A	19280	–	–	–	–	19.28	1214.64	1.578	1,916.70	
			S6	16	42	400	B	1900	6000	–	–	–	7.90	331.80	1.578	523.58	
			S7	16	40	400	B	1900	7500	–	–	–	9.40	376.00	1.578	593.33	
			S8	16	14	AS SHOWN	A	89850	–	–	–	–	74.85	1,047.90	1.578	1,653.59	
			S9	12	450	AS SHOWN	G	110	1500	–	–	–	1.61	724.50	0.888	643.36	
														TOTAL =		44,653.58	
E																	
	DIAPHRAGM	26.55	D1	28	6	AS SHOWN	F	3640	–	–	–	–	7.28	43.68	4.833	211.11	
			D2	28	18	AS SHOWN	A	2030	–	–	–	–	2.03	36.54	4.833	176.60	
F			D3	28	18	AS SHOWN	A	2030	–	–	–	–	2.03	36.54	4.833	176.60	
			D4	12	54	AS SHOWN	D	1540	170	150	–	–	3.72	200.9	0.888	178.38	
			D5	12	4	300	F	3640	–	–	–	–	7.28	29.12	2.466	71.81	
G			D6	20	4	AS SHOWN	C	740	7180	–	–	–	8.66	34.64	2.466	85.42	
			D7	20	4	AS SHOWN	A	7130	–	–	–	–	7.13	28.52	2.466	70.33	
			D8	20	4	AS SHOWN	A	7130	–	–	–	–	7.13	28.52	2.466	70.33	
			D9	12	36	AS SHOWN	J	160	1870	520	–	–	5.10	183.60	0.888	163.04	
														TOTAL =		1,203.61	
													GRAND TOTAL GRADE 40 =			38,575.51	
													GRAND TOTAL GRADE 60 =			7,281.69	

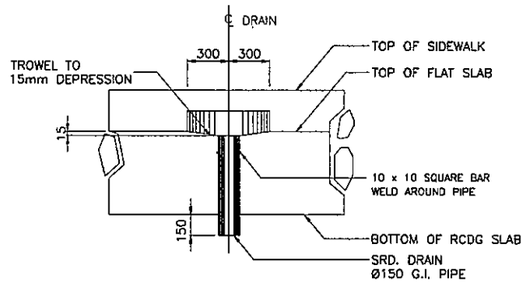
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M	SHEET CONTENTS: REINFORCEMENT SCHEDULE AND ESTIMATED OF QUANTITIES FOR SUPERSTRUCTURE OF 30m THREE SPAN	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 B/D	SHEET NO. B(30) 15 20



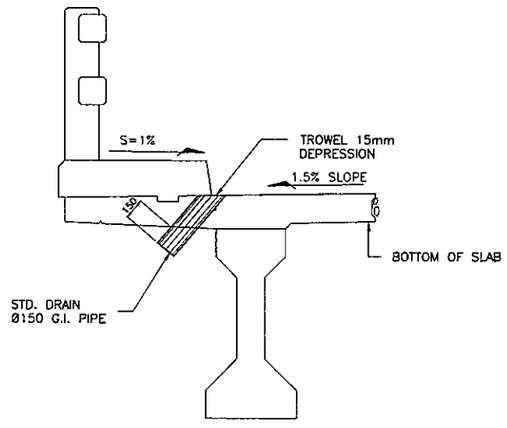
1 / 16 B(30) SIDEWALK DETAIL
SCALE: 1:20



2 / 16 B(30) PLAN
SC: 1:20



3 / 16 B(30) SECTION
SC: 1:20

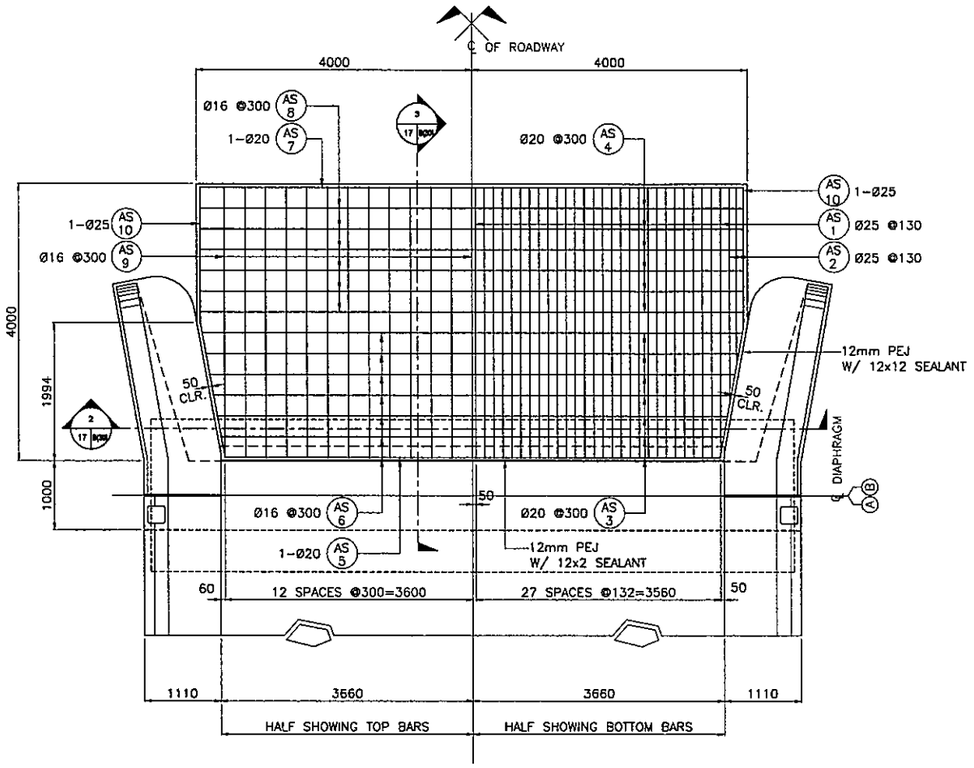


4 / 16 B(30) SECTION
SC: 1:20

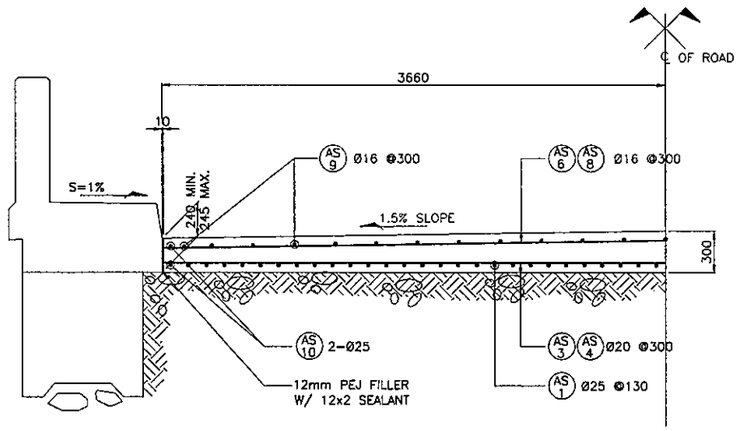
TYPICAL DRAIN DETAILS

SC: AS SHOWN

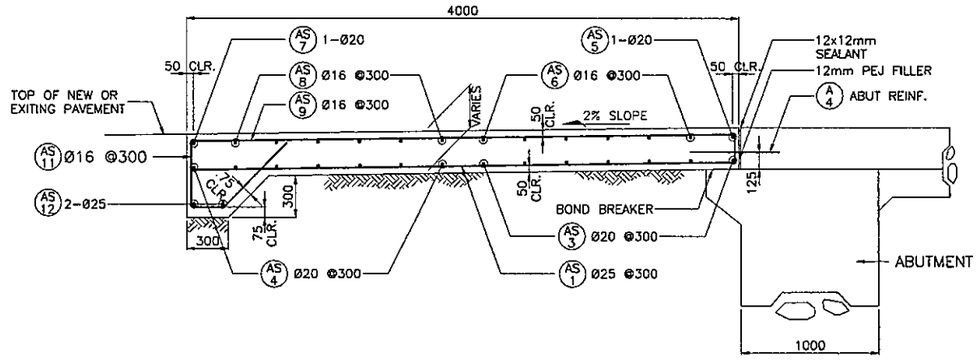
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M	SHEET CONTENTS: TYPICAL SIDEWALK DETAILS & DRAIN DETAIL	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO S. 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 2018-6 BrO	SHEET NO. B(30) 16 20



1 / 17 B(30) PLAN SCALE 1:40



2 / 17 B(30) SECTION SCALE 1:20



3 / 17 B(30) SECTION SCALE 1:20

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) a	b	c	LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)	REMARKS
a (A)	AS 1	25	56	130	B	3900	150	–	4050	226.80	3.853	874		
	AS 2	25	4	130	B	2700 MIN 3420 MAX	150	–	3210 AVE.	12.84	3.853	49		
	AS 3	20	7	300	D	7200 MIN 7880 MAX	–	–	7540 AVE.	52.78	2.466	130		
a b (B)	AS 4	20	7	300	A	7900	–	–	7900	55.30	2.466	136		
	AS 5	20	1	AS SHOWN	A	7200	–	–	7200	7.20	2.466	18		
	AS 6	16	6	300	A	7340 MIN 7880 MAX	–	–	7610 AVE.	45.66	1.578	72		
a b (C)	AS 7	20	1	AS SHOWN	A	7900	–	–	7900	7.90	2.466	19	8.480	1. QUANTITIES ARE FOR ONE (1) APPROACH SLAB
	AS 8	16	6	300	A	7900	–	–	7900	47.40	1.578	75		
	AS 9	16	25	300	B	3900	150	–	4050	101.25	1.578	160		
	AS 10	25	4	AS SHOWN	C	1965	1965	–	3930	15.72	3.853	61		
400 a c b (D)	AS 11	16	27	300	D	415 MIN 475 MAX	250	650	1745	47.12	1.578	74		
	AS 12	25	2	AS SHOWN	A	2900	–	–	2900	5.80	3.853	22		
											TOTAL =	1691		
											GRAND TOTAL GRADE 40=	381	8.48	
											GRAND TOTAL GRADE 60=	1310		

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

SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M

SHEET CONTENTS: TYPICAL APPROACH SLAB DETAIL

DESIGNED: ERDOLFO M. DOMINGO, JR.
CHECKED: MARIANO S. FLORES
CADD: ROLANDO C. NEDANTE

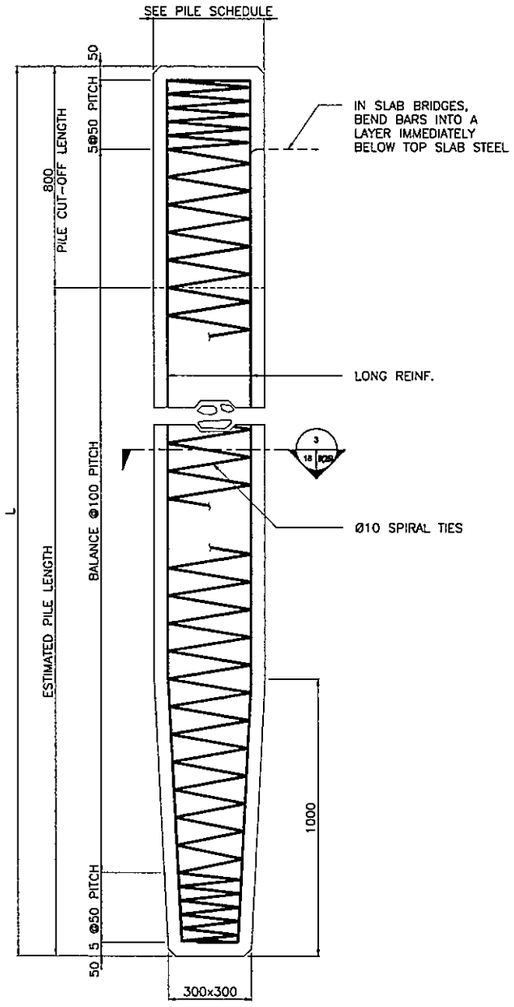
SUBMITTED: BLESILDA S. RAMOS, OIC-CHIEF, BRIDGES DIVISION

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

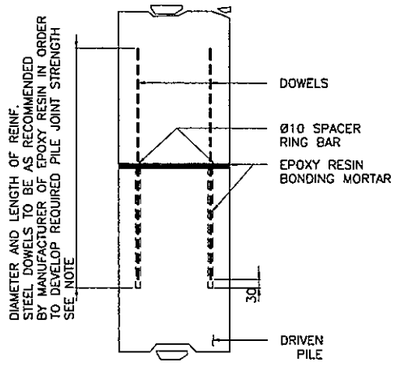
APPROVED: SEE COVER SHEET, EMIL K. SADAIN, CESO I, UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES

SET NO.: BOD 2018-6 BrO

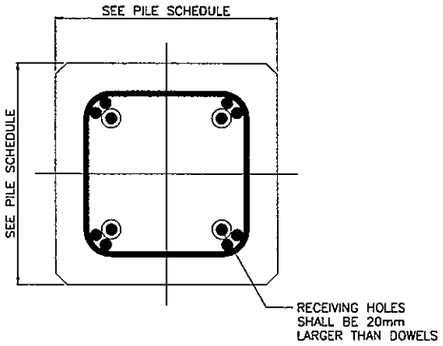
SHEET NO.: B(30) 17 20



1 18 B(25) PILE ELEVATION SCALE 1:10

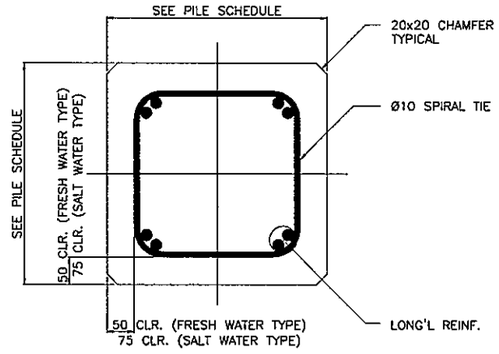


ELEVATION

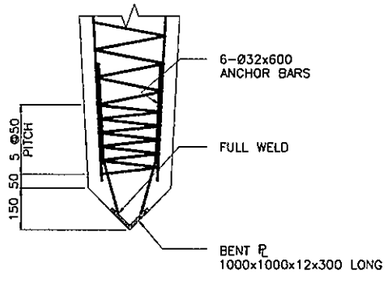


SECTION

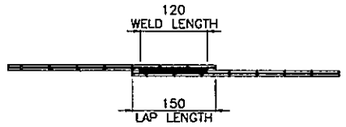
2 18 B(25) PILE SPLICE DETAIL NOT TO SCALE



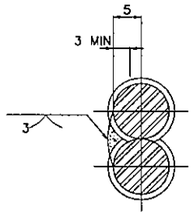
3 18 B(25) SECTION SCALE 1:5



4 18 B(25) PILE TIP FOR HARD DRIVING SCALE 1:10



ELEVATION



SECTION

5 18 B(25) WELDED SPIRAL-TIE DETAIL NOT TO SCALE

PILE SCHEDULE			
TYPE	SIZE (mm)	LONGITUDINAL REINFORCEMENT	
		QTY.	BAR SIZE
A	400x400	8	25
B	400x400	8	28
C	450x450	8	28
D	450x450	8	32

NOTES:

1. CONCRETE:
   CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF CLASS AA CONCRETE WITH 27.6 MPa CYLINDER STRENGTH AND 19.0mm MAXIMUM AGGREGATE SIZE

2. REINFORCEMENT:
   A. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASSHTO M31 (ASTM A615 GRADE 40.
   B. SPLICES OF ADJACENT LONGITUDINAL STEEL SHALL BE STAGGERED 100 BAR DIAMETERS APART. LENGTH OF SPLICES SHALL BE 1000mm FOR Ø25 AND 1300mm FORØ28 AND 1700mm FOR Ø32.
   C. SPIRAL-TIES SHALL BE WELDED AT SPLICES.

3. DRIVING:
   A. PILE HEADS SHALL BE PROTECTED FROM DIRECT IMPACT OF THE HAMMER BY CUSHION BLOCKS CONSISTING OF SEVERAL BLOCKS OF WOOD OR OF OTHER APPROVED MATERIALS.
   B. PILE SHALL BE DRIVEN TO A DEPTH THAT WILL PRODUCE THE REQUIRED ALLOWANCE BEARING CAPACITY.

4. PILE FOUNDATION DESIGN:
   A. N PILE-BENT PIERS, PILE LENGTHS SHALL BE DETERMINED BY THE ENGINEER/ CONSULTANT BASED ON THE ALLOWABLE PILE BEARING CAPACITY SPECIFIED BELLOW
   B. IN COLUMN-BENT PIERS, THE NUMBER, LOCATION AND LENGTH OF PILES SHALL BE DETERMINED BY THE ENGINEERS/ CONSULTANT BASED ON THE LOADING INFORMATION GIVEN IN THE PIER DETAILS.

5. PILE SPLICE:
   A. PILES MAY BE SPLICED ONLY IF STRICTLY NECESSARY AND APPROVED BY THE ENGINEER PILE SPLICES SHALL BE LOCATED AT LEAST 10m BELOW THE EXISTING GROUND LEVEL
   B. PILE SPLICE SHALL DEVELOP 100% AXIAL AND 50% BENDING OF THE CAPACITY OF THE PILE SECTION WHERE THE SPLICE IS LOCATED.

6. ALLOWABLE PILE BEARING CAPACITY: 500 kN PER PILE (FOR 400x400 PILE)
   700 kN PER PILE (FOR 450x450 PILE)

7. MINIMUM HAMMER ENERGY RATING = 55 kN-m

8. BASIS FOR COMPUTING ALLOWABLE PILE BEARING CAPACITY:

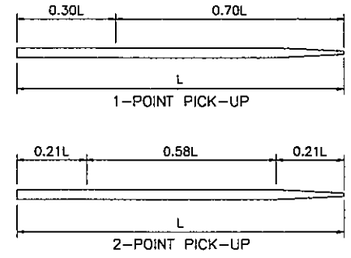
$$P_{all} = \left(\frac{167\ e_H\ E_{Hu}}{S + 2.54}\right)\left(\frac{W_r + 0.16\ W_p}{W_r + W_p}\right)$$

WHERE:

- P_{all} = ALLOWABLE PILE BEARING CAPACITY (kN)
- e_H = HAMMER EFFICIENCY
- E_H = HAMMER ENERGY RATING (kN-m)
- W_r = WEIGHT OF RAM (kN)
- W_p = WEIGHT OF PILE AND OTHER DRIVEN WEIGHTS (kN)
- S = AVERAGE PENETRATION PER BLOW FOR THE LAST 150mm OF DRIVING (mm)

9. TEST PILES:
   TEST PILES SHALL BE DRIVEN WITH THE SAME HAMMER USED FOR DRIVING REGULAR PILES AND MAY BE PART OF FOUNDATION IF APPROVED BY THE ENGINEER.

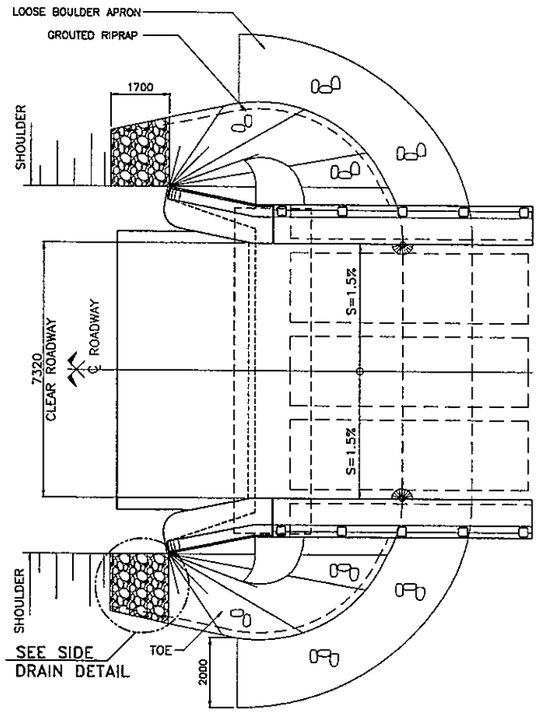
10. PICK-UP POINTS:
    PICK-UP POINTS SHALL BE MARKED ON ALL PILES AND ALL LIFTING SHALL BE DONE AT THESE POINTS.



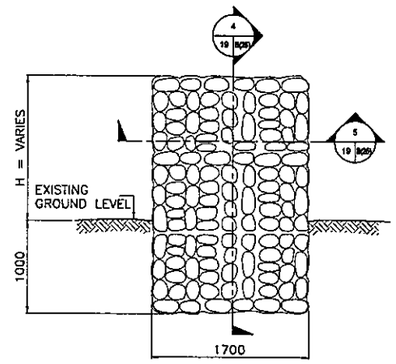
THE USE OF SPECIAL EMBEDDED OR ATTACHED LIFTING DEVICES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

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

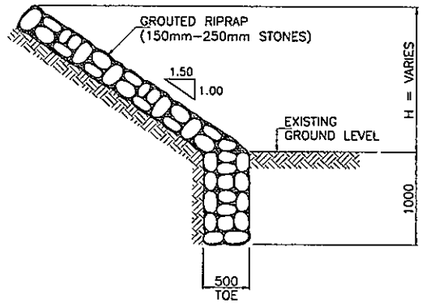
SHEET TITLE:	SHEET CONTENTS:	DESIGNED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M	TYPICAL PRECAST CONCRETE PILE DETAIL	ERDOLFO M. DOMINGO, JR. ENGINEER IV CHECKED: MARIANO S. FLORES ENGINEER IV CADD: ROLANDO C. REDANTE DRAFTSMAN I	BLESILDA 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 2018-8 BrD	B(30) 18 20



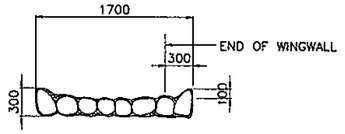
1 / 19 B(25) PLAN SCALE 1:80



3 / 19 B(25) ELEVATION SCALE 1:80

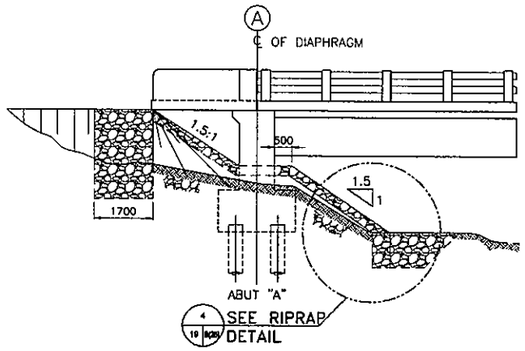


4 / 19 B(25) SECTION THRU DRAIN SCALE 1:80

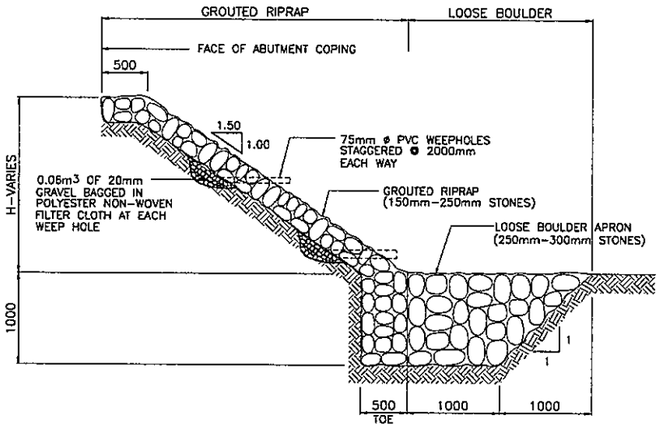


5 / 19 B(25) SECTION SCALE 1:80

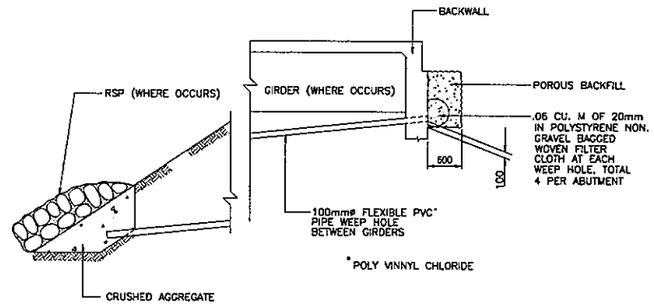
SIDE DRAIN DETAILS



2 / 19 B(25) ELEVATION SCALE 1:80



6 / 19 B(25) RIPRAP DETAIL SCALE 1:30



7 / 19 B(25) ABUTMENT DRAINAGE SCALE 1:30

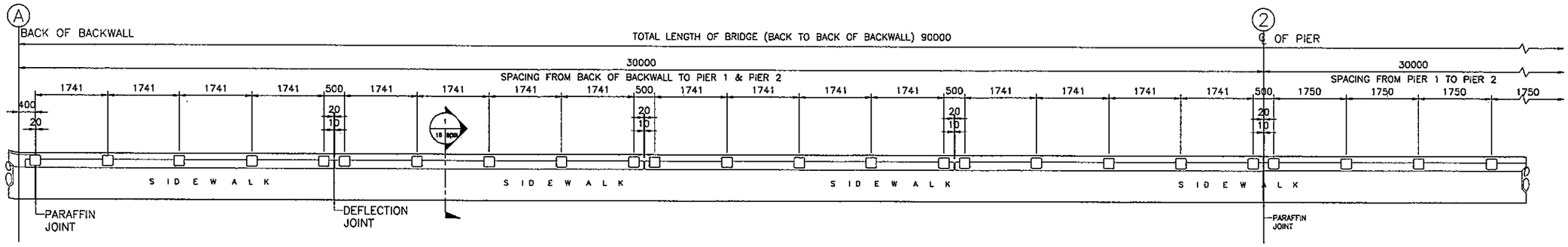
ABUTMENT RIPRAP PROCEDURE:

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 SWEPT 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.

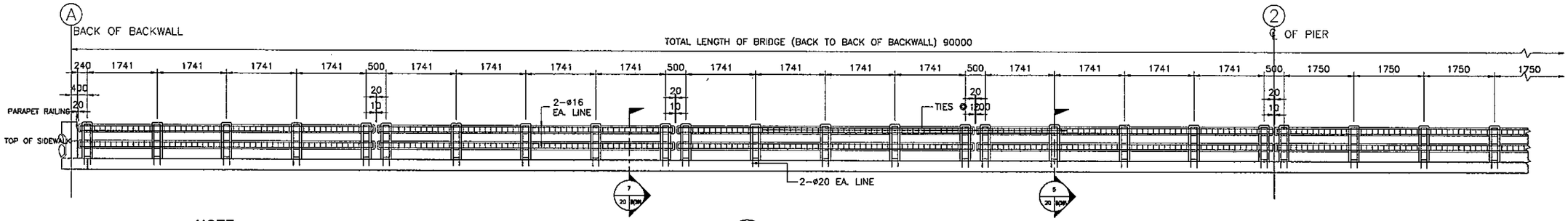
NOTE:

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 THREE SPAN PCDG SUPERSTRUCTURE L=30M	SHEET CONTENTS: ABUTMENT SLOPE PROTECTION AND DRAINAGE	ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO G. 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 2018-6 BrD	SHEET NO. B(30) 19 20



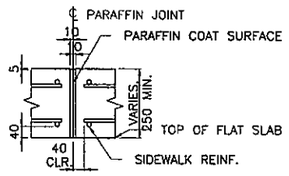
1 20 B(30) **PLAN** SCALE 1:40



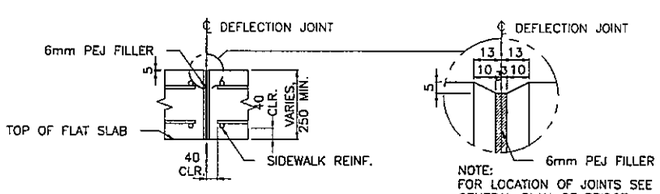
2 20 B(30) **ELEVATION** SCALE 1:40

NOTE:

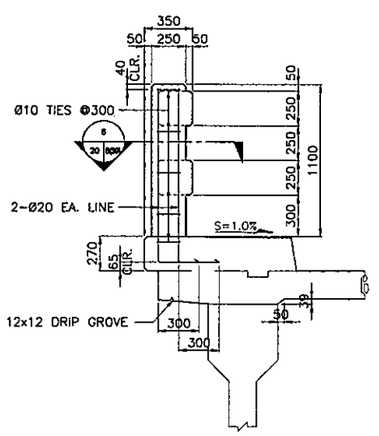
1. SIDEWALK SHALL BE PLACED AFTER THE SHORING UNDER THE SUPERSTRUCTURE HAS BEEN RELEASED SUFFICIENTLY TO PERMIT THE SPANS TO ATTAIN FULL DEAD LOAD DEFLECTION.
2. OTHER TYPES OF STANDARD BRIDGE RAILINGS CAN BE ADOPTED (REFER TO DO. 54 SERIES OF 2018, BOD SET NO. 2017-1-BrD)



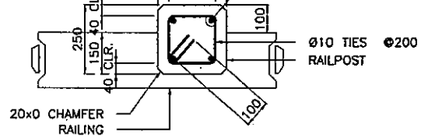
3 20 B(30) **PARAFFIN JOINT** SCALE 1:10



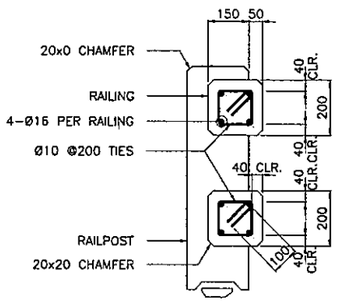
4 20 B(30) **DEFLECTION JOINT** SCALE 1:10



5 20 B(30) **SECTION** SCALE 1:20



6 20 B(30) **SECTION** SCALE 1:10



7 20 B(30) **SECTION** SCALE 1:10

TYPICAL RAILING DETAILS

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=25M	SHEET CONTENTS: RAILING PLAN & ELEVATION AND TYPICAL RAILING DETAILS	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO S. 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 2018-8 BrD	SHEET NO. B(30) 20 20

35m MULTIPLE SPAN PCDG

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.

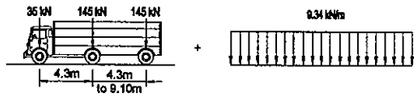
DESIGN;

1. DESIGN SPECIFICATION
   a.) DPWH DESIGN GUIDELINES CRITERIA AND STANDARDS (DGCS), 2015 EDITION, VOLUME 5 - BRIDGE DESIGN.

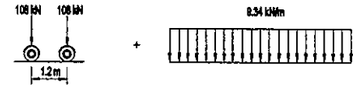
2. LOADINGS
   a.) DEAD LOAD: WEIGHT OF THE STRUCTURE AND AN ALLOWANCE OF 1.10 kPa FOR FUTURE BITUMINOUS WEARING COURSE.

   b.) LIVE LOAD: HL - 93

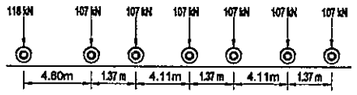
   (b.1) DESIGN TRUCK AND DESIGN LANE LOAD:



   (b.2) DESIGN TANDEM 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 10.6-1):
   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 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)
		MPa	psi	
CAST-IN-PLACE GIRDERS, SLAB, DIAPHRAGMS, WINGWALLS, BACKWALLS, COPING, COLUMNS & FOOTINGS	A	28	4000	20
PRECAST R.C. PILE	AA	28	4000	25
THIN REINFORCED SECTIONS RAILING AND RAILPOST	C	28	4000	12
LEAN CONCRETE	B	16.50	2400	38
PRESTRESSED CONCRETE	P	35	5075	20

2. REINFORCEMENT STEEL

   (a) 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:

   Fy = 414 MPa (Gr.60) FOR 16mmØ AND LARGER
   Fy = 276 MPa (Gr.40) FOR 12mmØ AND SMALLER
   = 276 MPa (Gr.40) FOR DECK SLAB REBARS ONLY

   (b) REINFORCING STEEL SHALL BE FREE OF MILL SCALES, OIL OR ANY SUBSTANCES WHICH WILL WEAKEN THE BOND WITH CONCRETE

3. PRESTRESSING STEEL
   REINFORCING STEEL SHALL BE SEVEN WIRE UNCOATED STRESS RELIEVED STRANDS (ASTM A-416) WITH MINIMUM ESTIMATE STRENGTH OF 1860 MPa (270,000 psi)

4. 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

      (1) DESIGN OP CONCRETE MIX SHALL MEET THE DESIGN CONCRETE STRENGTH GIVEN UNDER ITEM 1 OF MATERIALS.

      (2) CONCRETE SHALL BE DEPOSITED, VIBRATED AND CURED IN ACCORDANCE WITH THE SPECIFICATIONS.

      (3) 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.

      (4) THE CONSTRUCTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL PLACING SEQUENCES FOR ALL CONCRETING WORK.

   b. BAR BENDING, SPLICING AND PLACING

      (1) THE CONSTRUCTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL OF SHOP DRAWINGS INDICATING THE BENDING, CUTTING, SPLICING AND INSTALLATION OF ALL REINFORCING BARS.

      (2) BARS SHALL BE BENT COLD, BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS PERMITTED BY THE ENGINEER.

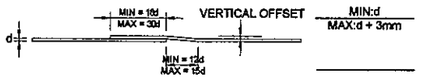
      (3) BAR SPLICING NOT INDICATED ON DRAWINGS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

      (4) WELDED SPLICES, IF APPROVED BY THE ENGINEER, SHALL DEVELOP IN TENSION AT LEAST 125% OF THE SPECIFIED WELD STRENGTH OF THE BARS.

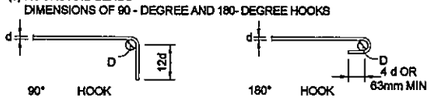
      (5) NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION SHALL BE SPLICED.

      (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.

      (7) CRANKED SPLICES

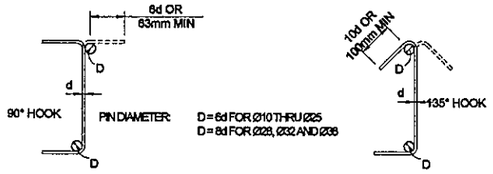


      (8) HOOKS AND BENDS
      DIMENSIONS OF 90 - DEGREE AND 180- DEGREE HOOKS



      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
      (1) THE POSITION AND FORM OF ANY CONSTRUCTION JOINT SHALL BE AS SHOWN ON DRAWINGS OR AS AGREED WITH THE ENGINEERS.
      (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. 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 HARMFULS EFFECTS OF SUN, WIND AND RUNNING WATERS AND SHALL BE KEPT DAMP FOR AT LEAST 7 DAYS.

3. PRESTRESSED CONCRETE

   a. POST TENSIONING STEEL : THE PROPOSED TYPE OF TENDONS WHICH WILL BE USED IN THE POST TENSIONED DESIGNS, ALL NECESSARY ADDITIONAL DETAILS INCLUDING THOSE FOR END ANCHORAGES, METHODS TO BE EMPLOYED AND PROCEDURES TO BE FOLLOWED, SHALL BE AS APPROVED BY THE ENGINEERS. THE TENDONS SHALL BE DRAPED LONGITUDINAL IN PARABOLIC POSITIONS, ALL TENDONS SHALL BE PLACED SO THAT THEIR CENTER OF GRAVITY WILL BE AT THE POSITION SHOWN ON THE PLANS. THE REQUIRED FORCES AFTER LOSSES SHALL BE OBTAINED BY APPLYING INITIAL TENSILE FORCES OF SUFFICIENT MAGNITUDE TO ALLOW FOR ALL SUBSEQUENT LOSSES, INCLUDING THOSE FOR ELASTIC SHORTENING, SHRINKAGE, CREEP, RELAXATION, FRICTION AND EFFICIENCY OF END ANCHORAGE. AFTER SECURING THE END ANCHORAGES ALL TENDONS SHALL BE PRESSURE GROUTED IN THEIR CONDUITS IN ACCORDANCE WITH "SPECIFICATIONS".

   b. CONCRETE FOR GIRDERS SHALL BE A MINIMUM STRENGTH OF 35 N/mm (5,000 PSI) AT THE AGE OF 28 DAYS.

   c. CONCRETE FOR CAST-IN-PLACE SLAB HAVE A MINIMUM STRENGTH OF 28 MPa AT THE AGE OF 28 DAYS.

   d. THE CONTRACTOR MAY PROPOSE ANY ALTERNATIVE TENDON SIZE AND LAYOUT AND SUBJECT SHALL MEET THE APPROVAL OF THE ENGINEER.

   e. THE REQUIRED STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL BE 28 MPa (4,000 PSI). A GRID CONSISTING OF Ø12 BARS AT 100 CENTERS IN BOTH DIRECTIONS SHALL BE PLACED NEAR EACH ANCHORAGE OF THE POST-TENSIONING SYSTEM. POST-TENSIONING FORCES SHOWN BELOW COMPUTED FOR TENDONS JACKED SIMULTANEOUSLY AT BOTH ENDS, FRICTIONS COEFFICIENTS ARE K=0.0015 AND u=0.25 WITH AN ANCHORAGE DEFORMATION OF 5mm.

   f. HANDLING IN PRESTRESSED CONCRETE BEAMS: THE BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY SUITABLE DEVICES PROVIDED AT THE ENDS OF THE BEAMS. THE CONTRACTOR'S PROPOSED LIFTING DETAILS SHOULD BE GIVEN CAREFUL CONSIDERATION BEFORE BEING SUBMITTED ON SHOP DRAWINGS FOR APPROVAL. THE USE OF HOLES FOR LIFTING PURPOSES WILL NOT BE PERMITTED.

   g. CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE ENGINEER THE CALCULATED ELONGATION OF THE PRESTRESSING TENDONS CORRESPONDING TO THE REQUIRED JACKING FORCES

4. SHORING

   (a) 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 GROUTED RIPRAP ON SLOPE	
BUNDLED BARS	

SET NO. — BUREAU OF DESIGN
BOD 2018-16 BrD
YEAR-DWG SET NO. — BRIDGES DIVISION

SHEET CONTENT
B(#) — STANDARD CODE (SPAN LENGTH)
2 | 10
PAGE No. — TOTAL NO. OF SHEET

TITLE TARGET
1 — DRAWING NO.
1 B(#) — STANDARD CODE (SPAN LENGTH)
PAGE No.

SECTION LINE
1 — DRAWING NO.
PAGE No. -1 B(#) — STANDARD CODE (SPAN LENGTH)

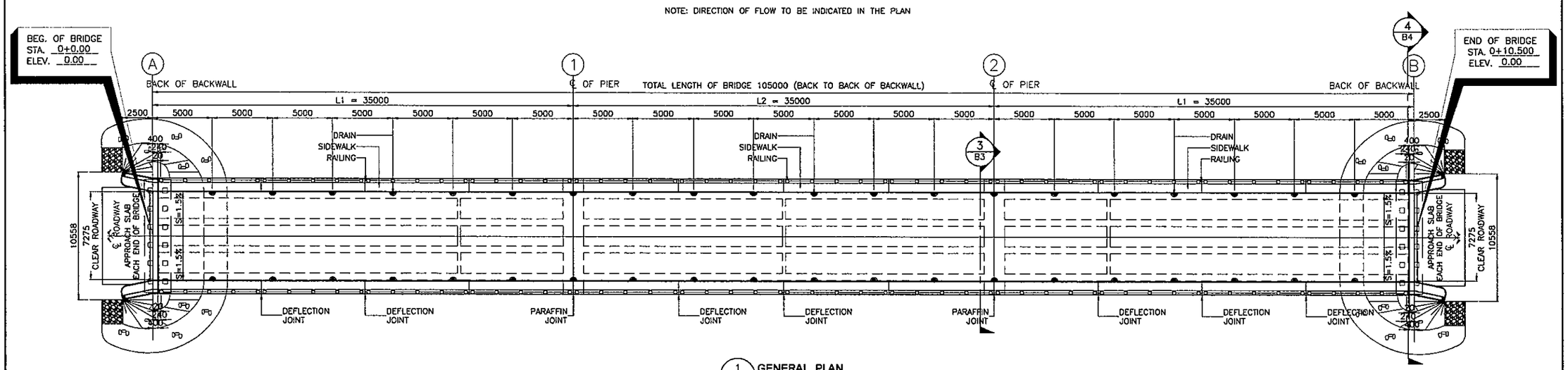
Ø	ROUND
⌀	SQUARE
@	AT
&	AND
	CENTERLINE
PL	PLATE
L	ANGLE SHAPE
C/C, C to C	CENTER TO CENTER

ABBREVIATIONS

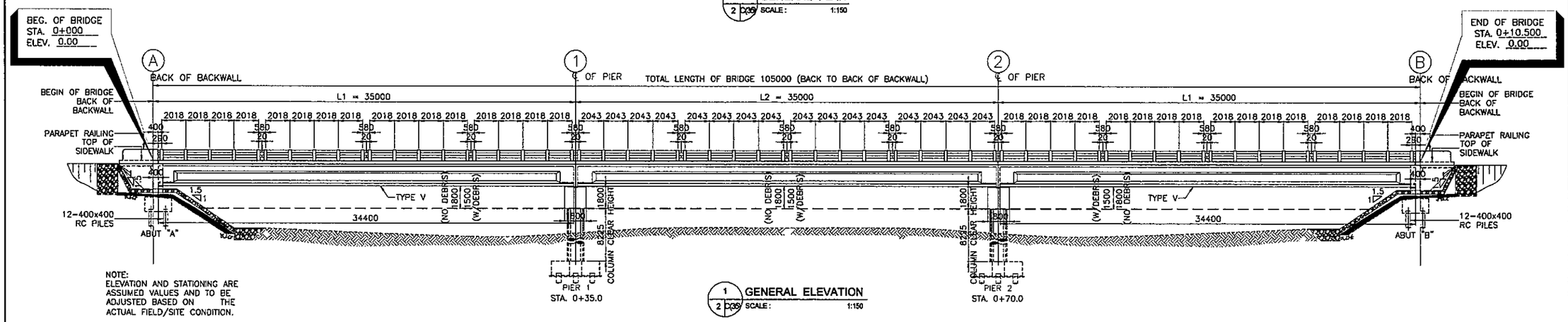
ABT	ABOUT	kPa	KILOPASCAL
ABUT	ABUTMENT	m	METER
BEG	BEGINNING	mm	MILLIMETER
BET	BETWEEN	MAX	MAXIMUM
BOTT	BOTTOM	MFWL	MAX. FLOOD WATER LEVEL
BR	BRIDGE	MIN	MINIMUM
BRG	BEARING	MO	MIDDLE ORDINATE
CLR	CLEAR	MPa	MEGAPASCAL
cm	CENTEMETER	N	NEWTON
COLE	COLUMN	NF	NEAR FACE
CONC	CONCRETE	No.	NUMBER
CONST	CONSTRUCTION	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	STIR	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	KILONEWTON	&	AND

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L =30M	SHEET CONTENTS: GENERAL NOTES, SYMBOLS & ABBREVIATIONS	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO C. BEDIANTE	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 2018-6 BrD	SHEET NO. B(36) 1 | 20

NOTE: DIRECTION OF FLOW TO BE INDICATED IN THE PLAN



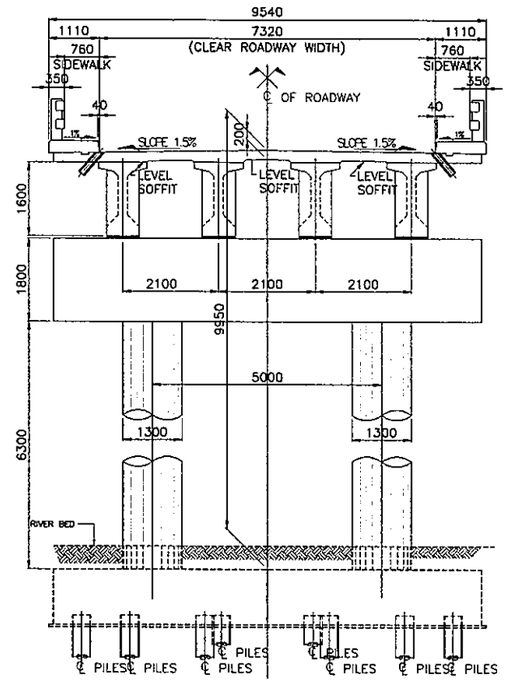
1 / 2 C09 GENERAL PLAN
SCALE: 1:150



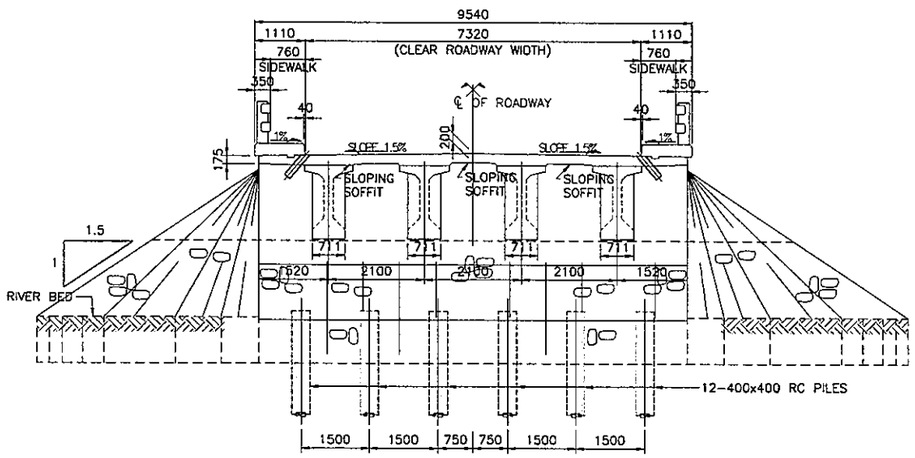
NOTE:
ELEVATION AND STATIONING ARE ASSUMED VALUES AND TO BE ADJUSTED BASED ON THE ACTUAL FIELD/SITE CONDITION.

1 / 2 C09 GENERAL ELEVATION
SCALE: 1:150

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M	SHEET CONTENTS: GENERAL PLAN AND GENERAL ELEVATION	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrD	SHEET NO. B(35) 2 20



1 / 2 B(35) TYPICAL CROSS SECTION
SCALE: 1:60



2 / 2 B(35) TYPICAL CROSS SECTION
SCALE: 1:60

INDEX OF DRAWING

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SET NO.	SHEET NO.	
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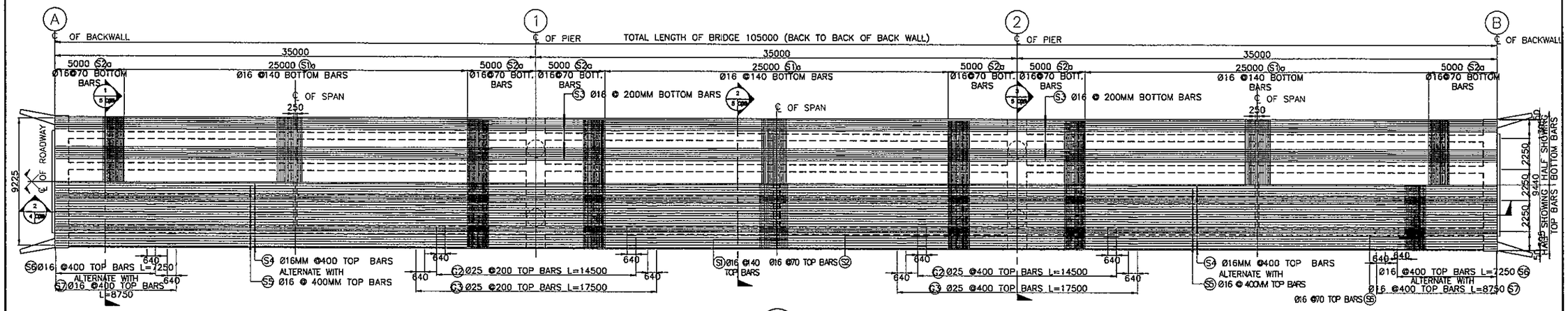
	B(35) - 2 / 20	GENERAL PLAN AND GENERAL ELEVATION
	B(35) - 3 / 20	TYPICAL CROSS SECTION @ PIER & ABUTMENT AND INDEX OF DRAWING & NOTES
	B(35) - 4 / 20	FRAMING PLAN, LONGITUDINAL SECTION & BLOW-UP SECTION
	B(35) - 5 / 20	SUPERSTRUCTURE CROSS SECTION AND REINFORCEMENT OVER PIER
	B(35) - 6 / 20	GIRDER ELEVATION DETAILS, SECTION (TYPE V) L=35M
	B(35) - 7 / 20	CAMBER DIAGRAM & SCHEDULE OF REINFORCEMENT
	B(35) - 8 / 20	CONCRETE POURING SEQUENCE , INTERMEDIATE DIAPHRAGM DETAIL AND SECTION
	B(35) - 9 / 20	PLAN, ELEVATION, SECTIONS & SPIRAL SPLICE DETAILS OF PIER
	B(35) - 10 / 20	REINFORCEMENT SCHEDULE AND LOADING INFORMATION FOR DESIGN OF FOUNDATION FOR THREE SPAN
	B(35) - 11 / 20	DETAIL OF FOOTING TYPE F8 (FOR FOOTING ON PILES)
	B(35) - 12 / 20	DETAIL OF FOOTING TYPE F8 (SPREAD FOOTING)
	B(35) - 13 / 20	ABUTMENT DETAIL
	B(35) - 14 / 20	WINGWALL DETAIL AND REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) ABUTMENT
	B(35) - 15 / 20	REINF.SCHEDULE & ESTIMATED OF QUANTITIES FOR SUPERSTRUCTURE OF 35m THREE SPAN
	B(35) - 16 / 20	TYPICAL SIDEWALK DETAIL AND DRAIN DETAILS
	B(35) - 17 / 20	TYPICAL APPROACH SLAB DETAIL
	B(35) - 18 / 20	TYPICAL PRECAST CONCRETE PILE DETAIL
	B(35) - 19 / 20	ABUTMENT SLOPE PROTECTION AND DRAINAGE
	B(35) - 20 / 20	TYPICAL RAILING, DETAILS & SECTION

NOTES:

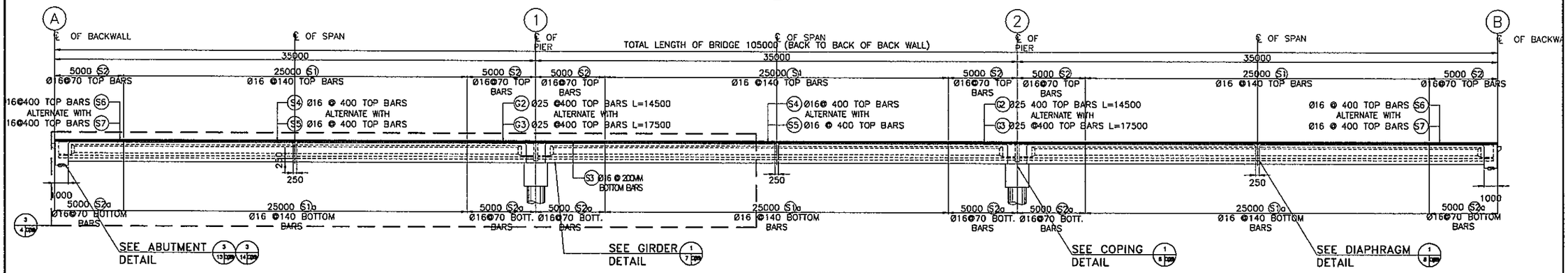
1. THIS STANDARD PLAN IS FOR REFERENCE ONLY. STRUCTURAL ANALYSIS SHALL BE PREPARED BASED ON THE ACTUAL SURVEY, HYDRAULIC, HYDROLOGIC AND GEOTECHNICAL DATA ON THE PROJECT SITE.
2. PROTECTION WORKS FOR ABUTMENTS SHALL BE DESIGNED BY THE ENGINEER/CONSULTANT. THE PROTECTION WORKS SHOWN HEREIN ARE FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL NOT BE CONSTRUED AS THE FINAL DETAILS. HOWEVER, SLOPE FOR EMBANKMENT PROTECTION WORKS SHALL BE 1.5:1 OR FLATTER.
3. 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

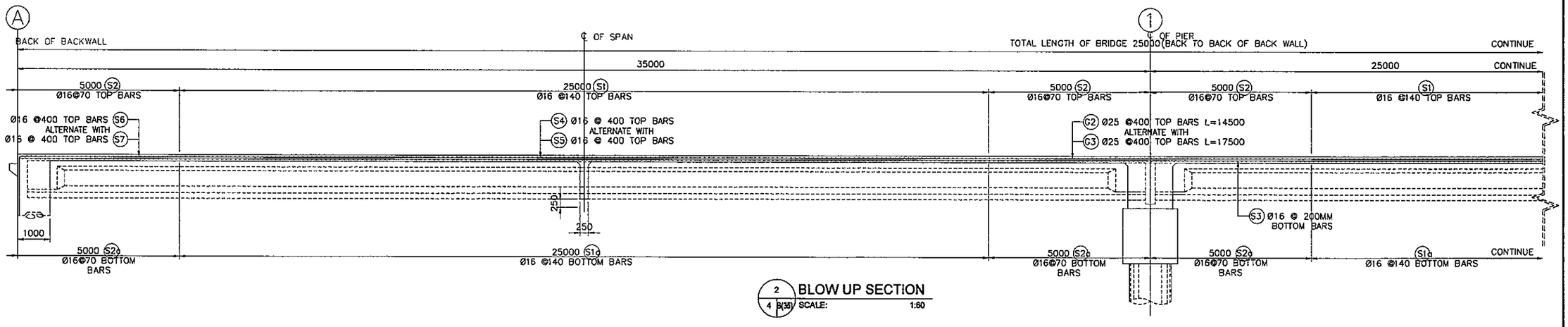
SHEET TITLE:	SHEET CONTENTS:	DESIGNED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M	SECTION @ PIER, SECTION @ ABUTMENT AND INDEX OF DRAWING & NOTES	ERDOLFO M. DOMINGO, JR. ENGINEER III	BLESILDA S. RAMOS	SEE COVER SHEET	SEE COVER SHEET	BOD 2018-6 BrD	B(35) 3 20
		CHECKED: MARIANO S. FLORES ENGINEER IV	OIC-CHIEF, BRIDGES DIVISION	LEA N. DELFINADO, CESO IV	EMIL K. SADAIN,CESO I		
		CADD: ROLANDO C. MEDIANTE DRAFTSMAN I		DIRECTOR IV, BUREAU OF DESIGN	UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES		



1 / 4 B(35) **FRAMING PLAN** SCALE: 1:140

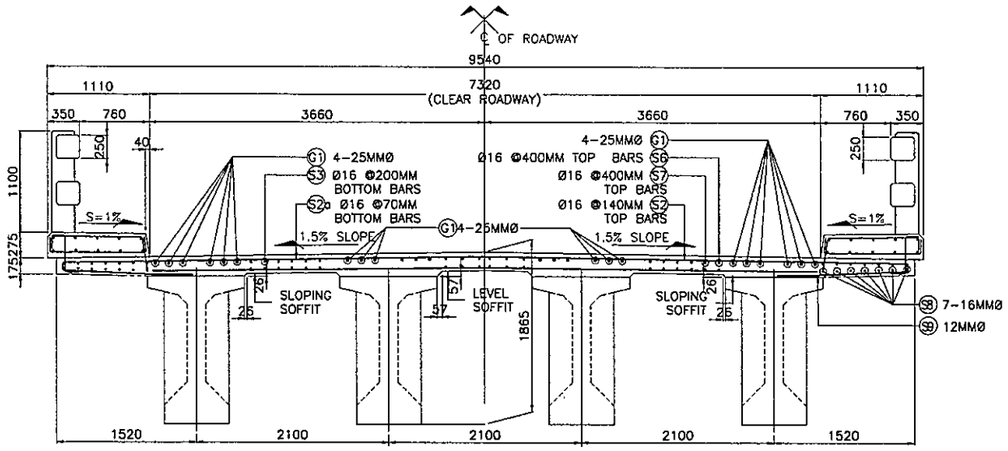


1 / 4 B(35) **LONGITUDINAL SECTION** SCALE: 1:140

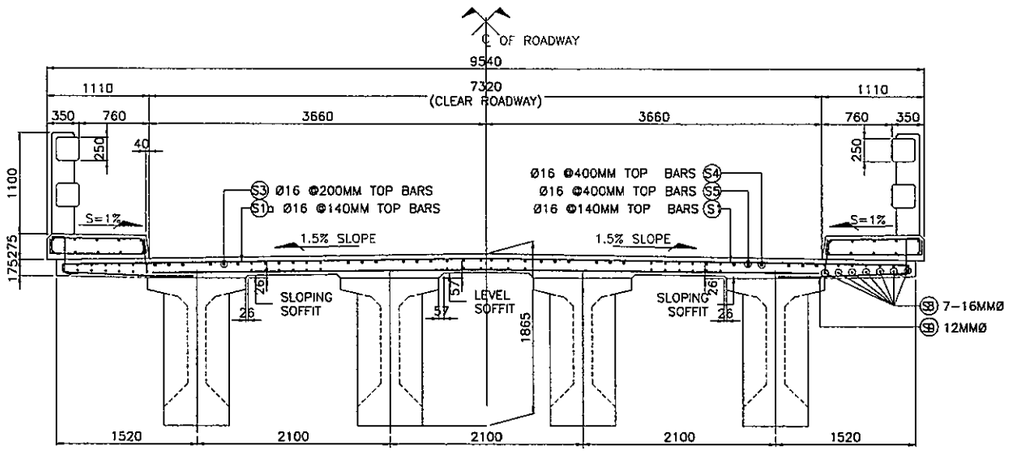


2 / 4 B(35) **BLOW UP SECTION** SCALE: 1:60

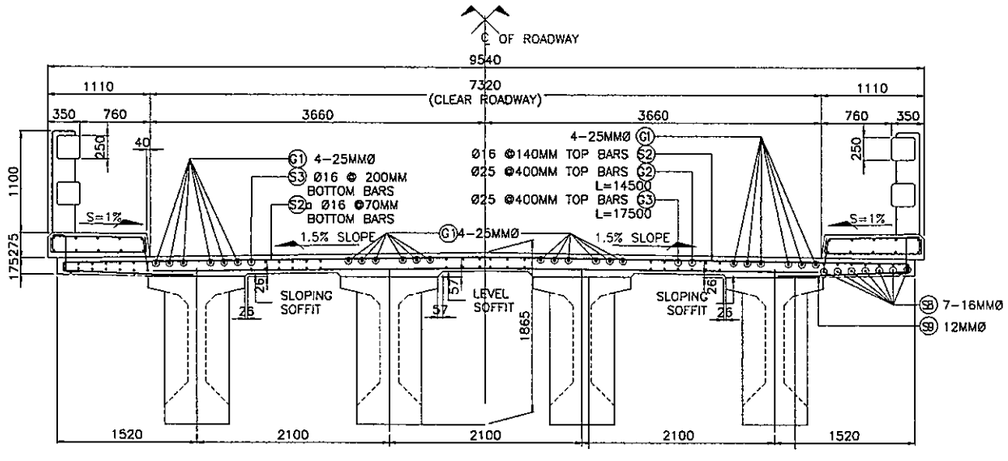
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD MULTI SPAN PSCG SUPERSTRUCTURE L = 35M	SHEET CONTENTS: FRAMING PLAN LONGITUDINAL SECTION	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO C. MEDIANTE	SUBMITTED: BLESILDA S. RAMOS CIC-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 UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES	SET NO. BOD 2018-6 BrD	SHEET NO. B(35) 4 20



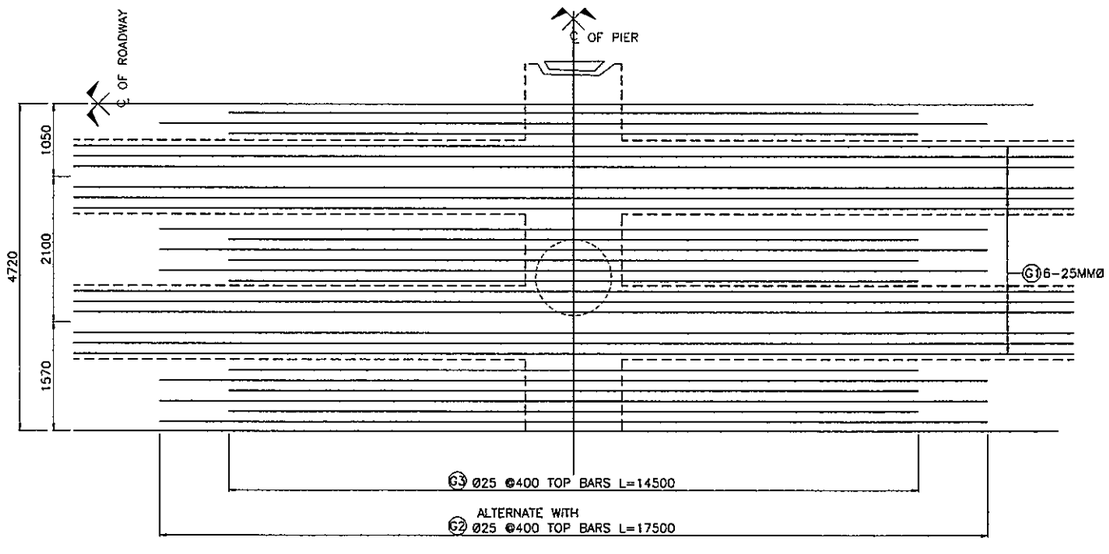
1 TRANSVERSE SECTION
5 B(35) SCALE: 1:30



2 TRANSVERSE SECTION
5 B(35) SCALE: 1:30

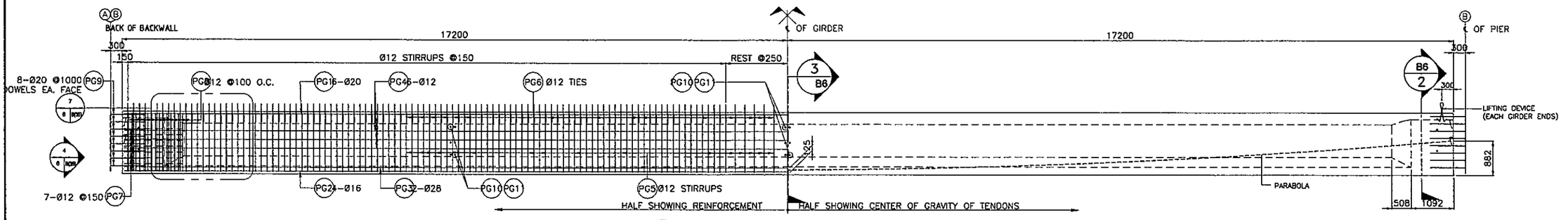


3 TYPICAL CROSS SECTION (OVER PIER)
5 B(35) SCALE: 1:30

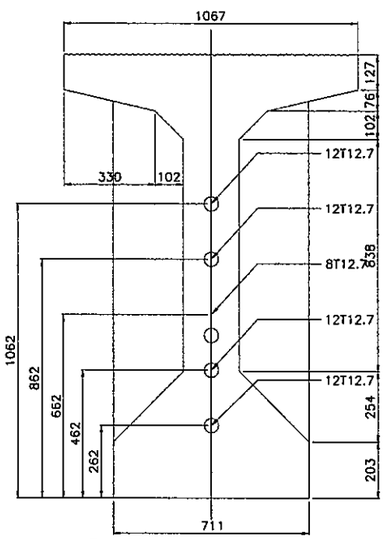


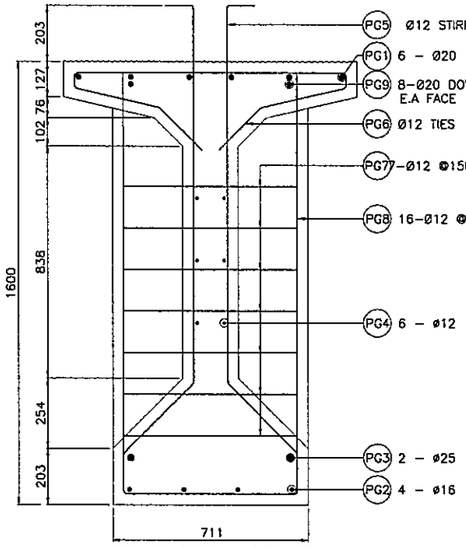
4 REINFORCEMENT OVER PIER
5 B(35) SCALE: 1:40

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 PSDG SUPERSTRUCTURE L = 35M	SHEET CONTENTS: TYPICAL CROSS SECTION (SHOWING DIMENSIONS) SECTIONS (SHOWING REINFORCEMENTS) REINFORCEMENT OVER PIER	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO C. MEDIANTE	SUBMITTED: BLEBILDA 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. B(35) 5 20



1 PRESTRESSED GIRDER ELEVATION
SCALE: 1:50

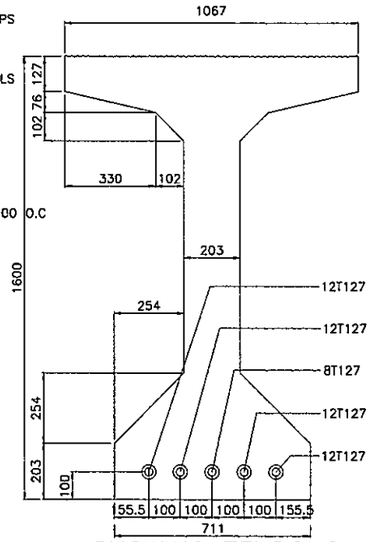


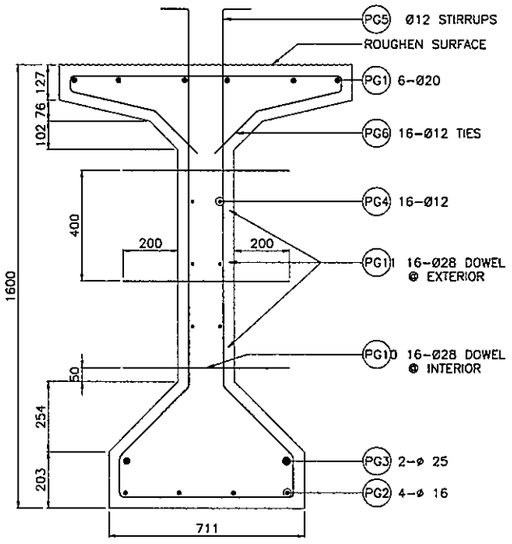


SHOWING TENDONS

SHOWING REINF.

2 SECTION @ END BLOCK
SCALE: 1:10

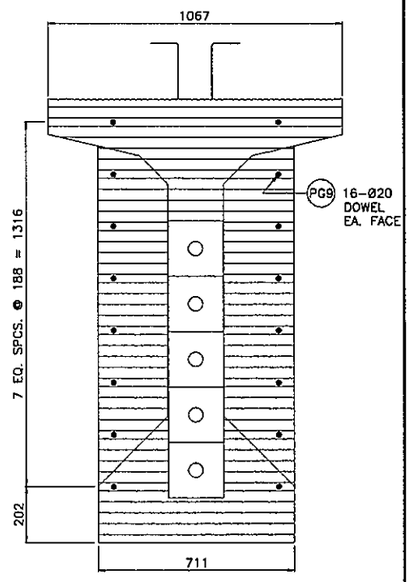




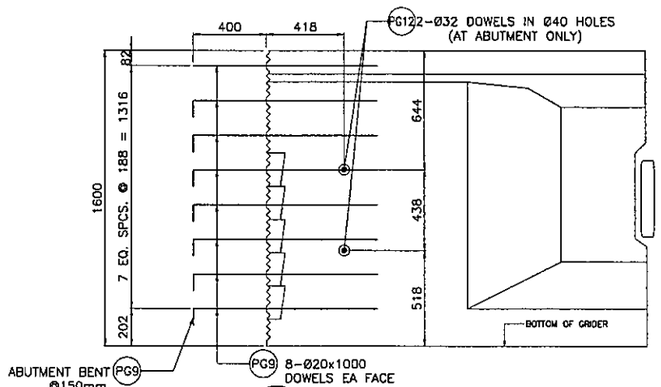
SHOWING TENDONS

SHOWING REINF.

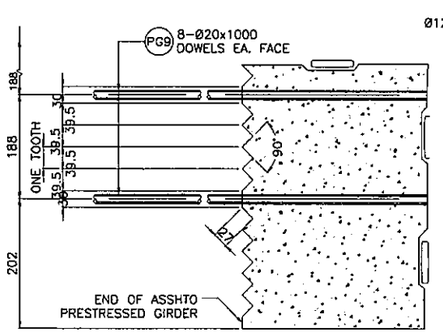
3 SECTION @ END MIDSPAN
SCALE: 1:10



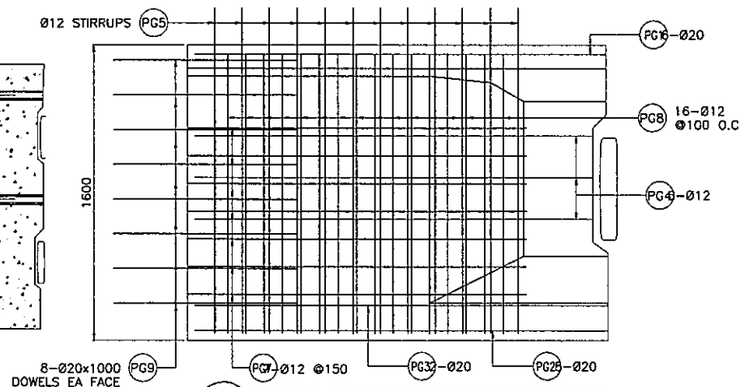
4 TOOTH AT END VIEW
SCALE: 1:10



5 DOWELS @ END BLOCK
SCALE: 1:15



6 TOOTH DETAIL
SCALE: 1:5



7 END BLOCK REINFORCEMENT DETAIL
SCALE: 1:15

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M	SHEET CONTENTS: GIRDER ELEVATION, BOTTOM BAR LAYOUT & SECTION (TYPE V = 35.00M)	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 B&D	SHEET NO. B(35) 6 20

GIRDER DESIGN GUIDE

1.) POST–TENSIONING STEEL : THE PROPOSED TYPE OF TENDONS WHICH WILL BE USED IN THE POST– TENSIONED DESIGNS, ALL NECESSARY ADDITIONAL DETAILS INCLUDING THOSE FOR END ANCHORAGES, METHODS TO BE EMPLOYED AND PROCEDURES TO BE FOLLOWED, SHALL BE AS APPROVED BY THE ENGINEERS. A PORTION OF THE TENDONS SHALL BE DRAPED LONGITUDINAL IN PARABOLIC POSITIONS, ALL TENDONS SHALL BE PLACED SO THAT THEIR CENTER OF GRAVITY WILL BE AT THE POSITION SHOWN ON PLANS. THE TOTAL POST–TENSION FORCE AFTER LOSSES REQUIRED AT MIDSPAN SHALL BE PROVIDED AS CALLED FOR IN THE VARIOUS DESIGNS. THE REQUIRED FORCES AFTER LOSSES SHALL BE OBTAINED BY APPLYING INITIAL TENSILE FORCES OF SUFFICIENT MAGNITUDE TO ALLOW FOR ALL SUBSEQUENT LOSSES, INCLUDING THOSE FOR ELASTIC SHORTENING, SHRINKAGE, CREEP, RELAXATION, FRICTION, AND EFFICIENCY OF END ANCHORAGES. AFTER SECURING THE END ANCHORAGES ALL TENDONS SHALL BE PRESSURE GROUTED IN THEIR CONDUITS IN ACCORDANCE WITH "SPECIFICATIONS".

2.) CONCRETE FOR GIRDERS SHALL BE A MINIMUM STRENGTH OF 35 N/mm THE AGE OF 28 DAYS.

3.) CONCRETE FOR CAST–IN–PLACE SLAB HAVE A MINIMUM STRENGTH 28 N/mm AT THE AGE OF 28 DAYS.

4.) THE CONTRACTOR MAY PROPOSE ANY ALTERNATIVE TENDON SIZE AND LAYOUT AND SUBJECT SHALL MEET THE APPROVAL OF THE ENGINEER.

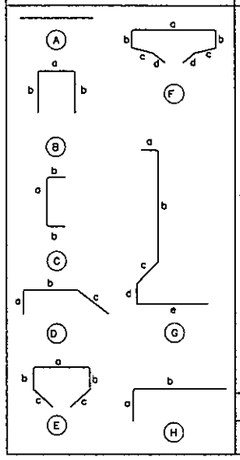
5.) THE REQUIRED STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL BE 28 MPa (4,000 PSI). A GRID CONSISTING OF ø12 BARS AT 100 CENTERS IN BOTH DIRECTIONS SHALL BE PLACED NEAR EACH ANCHORAGE OF THE POST–TENSIONING SYSTEM. POST–TENSIONING FORCES SHOWN BELOW COMPUTED FOR TENDONS JACKED SIMULTANEOUSLY AT BOTH ENDS, FRICTIONS COEFFICIENTS ARE K = 0.0015 AND u = 0.25 WITH AN ANCHORAGE DEFORMATION OF 3mm.

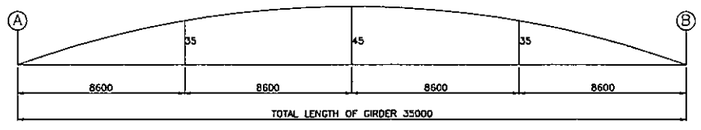
6.) HANDLING PRESTRESSED CONCRETE BEAMS : THE BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AND SHALL BE LIFTED BY SUITABLE DEVICES PROVIDED AT THE ENDS OF THE BEAMS. ATTENTION IS DIRECTED TO THE INCREASED DIFFICULTY OF LIFTING BEAMS WITHOUT END BLOCKS. THE CONTRACTOR PROPOSED LIFTING DETAILS SHOULD BE GIVEN CAREFULL CONSIDERATION BEFORE BEING SUBMITTED ON SHOP DRAWING FOR APPROVAL. THE USE OF HOLES FOR LIFTING PURPOSES WILL NOT BE PERMITTED.

7.) CONCTRACTOR SUBMIT FOR APPROVAL BY THE ENGINEER THE CORRESPONDING ELONGATION OF THE PRESTRESSING TENDONS.

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR PRESTRESSED GIRDER (L–35M) TYPE–V

REINFORCEMENT

BENDING DIAGRAM	STRUCTURE COMPONENT	CONCRETE VOLUME (m³)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	d	LOCATION Lc	LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	REMARKS
	TYPE IV	46.70	PG1	20	6	AS SHOWN	A	34400	–	–	–	–	34.55	207.30	2.466	511	
			PG2	28	8	AS SHOWN	A	34400	–	–	–	–	34.68	277.44	4.833	1,341	
			PG3	25	2	AS SHOWN	A	34400	–	–	–	–	34.68	69.36	3.853	267	
			PG4	12	4	AS SHOWN	B	34400	–	–	–	–	34.40	137.60	0.888	122	
			PG5	12	198	AS SHOWN	A	450	1350	360	160	635	2.955	585.09	0.888	520	
			PG6	12	198	AS SHOWN	A	1000	50	320	200	–	2.140	423.72	0.888	376	
			PG7	12	14	150	B	500	1100		–	–	2.120	29.68	0.888	26	
			PG8	12	64	125	B	1520	600	–	–	–	2.720	174.08	0.888	155	
			PG8	20	32	AS SHOWN	A	1000	–	–	–	–	1.000	32.00	2.466	79	
			PG10	20	6	AS SHOWN	B	603	–	–	–	–	0.603	3.62	4.833	17	
			PG1	28	6	AS SHOWN	A	250	400	–	–	–	0.650	3.90	4.833	19	
			PG12	32	2	AS SHOWN	C	1467	–	–	–	–	1.467	2.93	6.313	19	
														TOTAL =		3,452.03	
													GRAND TOTAL GRADE 40 =			3,318.26	
													GRAND TOTAL GRADE 60 =			133.77	



1 / 7 B(30) CAMBER DIAGRAM
SCALE: NTS

POST TENSIONING FORCE, F, AFTER LOSSES AT CENTERLINE OF SPAN/ TOTAL JACKING FORCE PER GIRDER

SPAN LENGTH (m)	AASHTO GIRDER TYPE	F (kN)	JACKING FORCE PER GIRDER (kN)
34.40	V	5270	8250

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

SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=35M

SHEET CONTENTS: CAMBER DIAGRAM & SCHEDULE OF REINFORCEMENT

DESIGNED: ERDOLFO M. DOMINGO, JR. ENGINEER
CHECKED: MARIANO S. FLORES ENGINEER IV
CADD: ROLANDO C. MERANTE DRAFTSMAN I

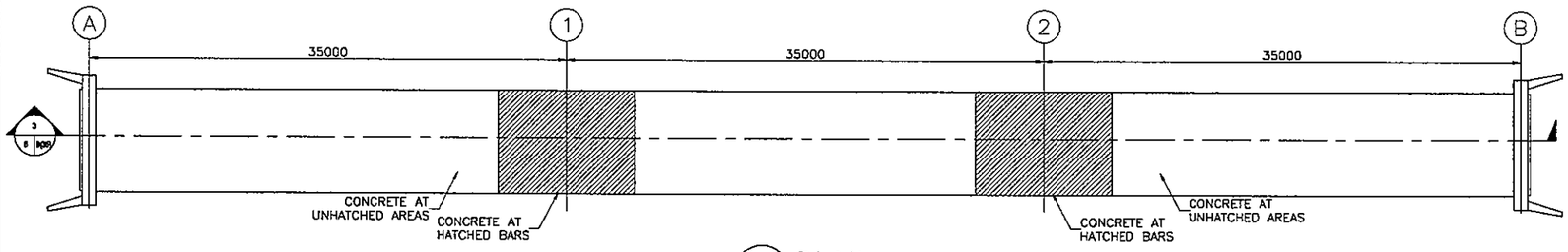
SUBMITTED: BLESILDA S. RAMOS, OIC-CHIEF, BRIDGES DIVISION

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

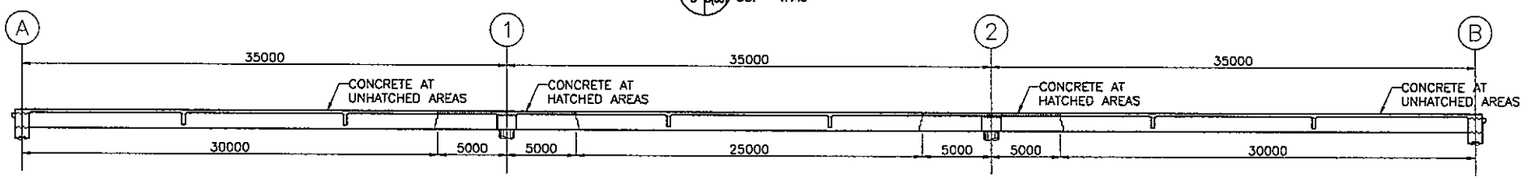
APPROVED: SEE COVER SHEET, EMIL K. SADAIN, CESO I, UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES

SET NO.: BOD 2018-6 BrD

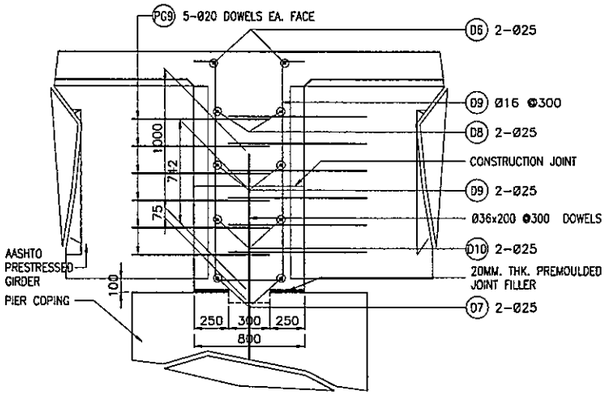
SHEET NO.: B(35) 7 20



1 PLAN
8 B(35) SC: 1:140



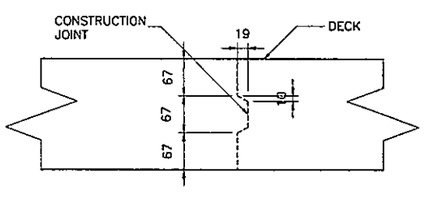
2 SECTION
8 B(35) SCALE: 1:150



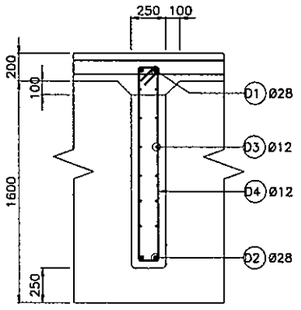
5 SECTION
8 B(35) SCALE: 1:20

NOTE:

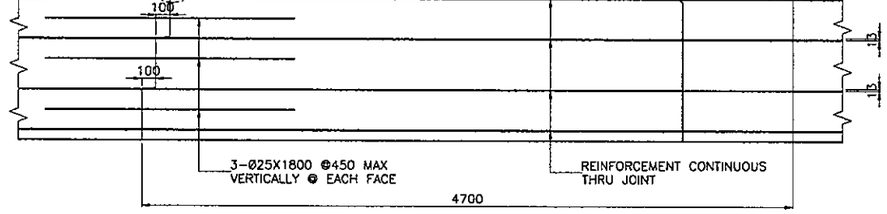
1. CONCRETE AT UNHATCHED AREAS SHALL BE PLACED AT LEAST ONE DAY AHEAD OF CONCRETE AT HATCHED AREAS.
2. REINFORCEMENT SHALL BE CONTINUOUS AT CONSTRUCTION JOINTS.
3. CONSTRUCTION OF SUPERSTRUCTURE SHALL BE FULLY SHORED.



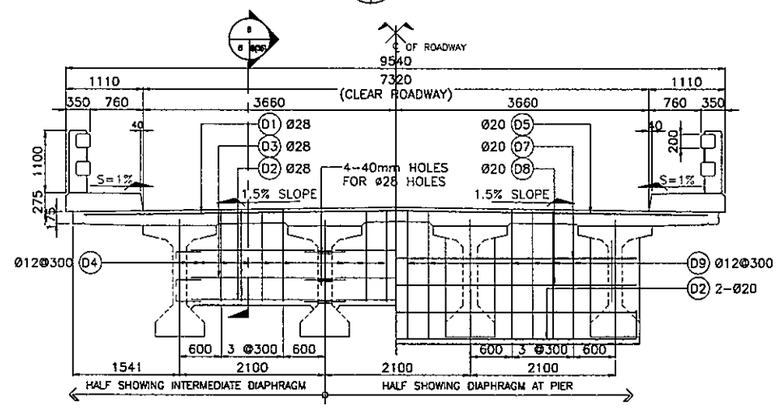
4 DETAIL
8 B(35) SC: 1:5



6 SECTION
8 B(35) SCALE: 1:20



3 TRANSVERSE GIRDER CONSTRUCTION JOINT
8 B(35) SCALE: 1:20



7 ELEVATION (TYPE-V)
8 B(35) SCALE: 1:40

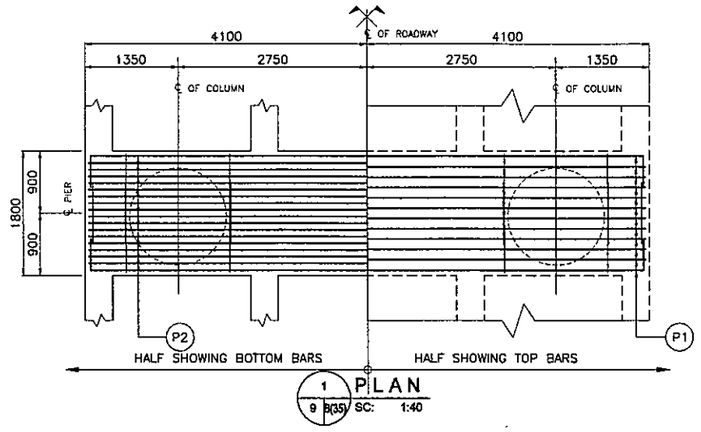
CONCRETE POURING SEQUENCE

SCALE: AS SHOWN

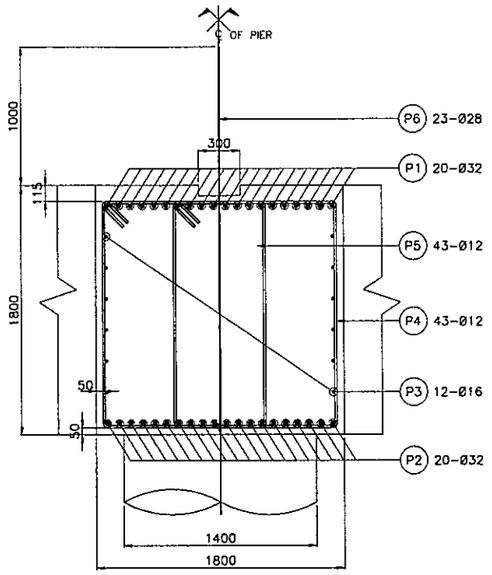
INTERMEDIATE DIAPHRAGM DETAIL

SCALE: AS SHOWN

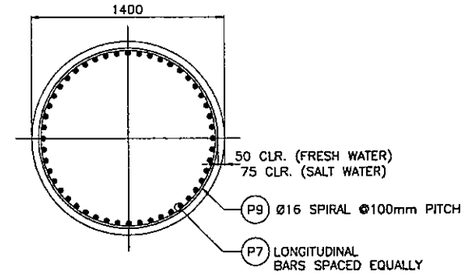
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M	SHEET CONTENTS: CONC. POURING SEQUENCE, INTERMEDIATE DIAPHRAGM DETAIL AND CAMBER DIAGRAM	DESIGNED: ERDOLEO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrD	SHEET NO. B(35) 8 20



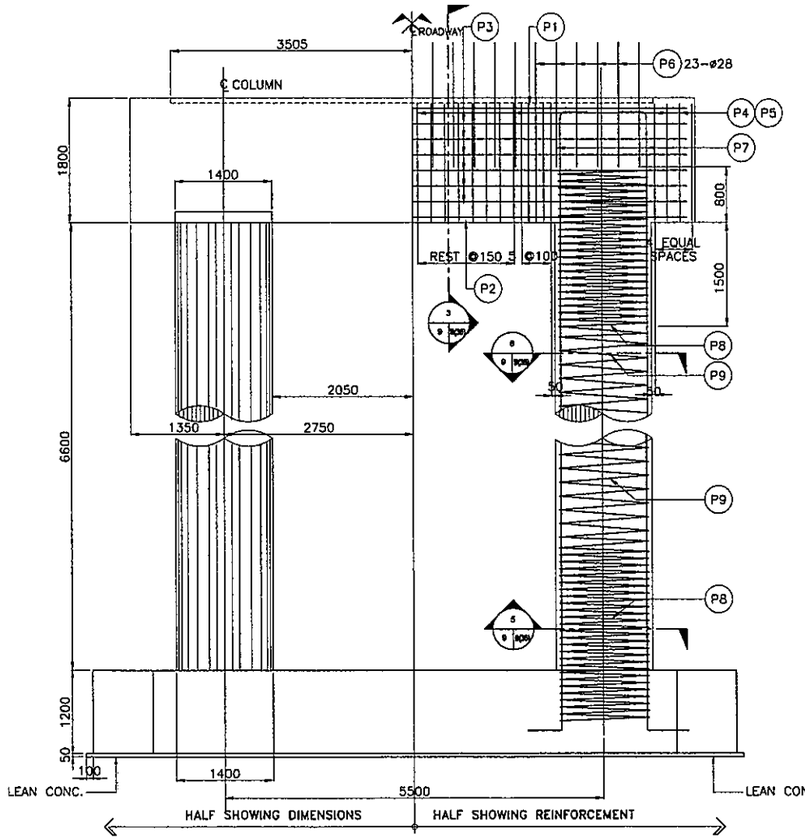
1 / 9 B(35) PLAN SC: 1:40



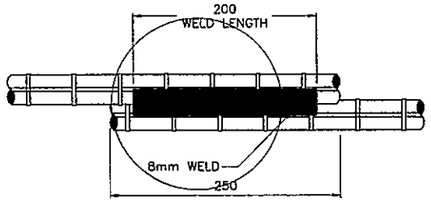
3 / 9 B(35) SECTION SCALE: 1:20



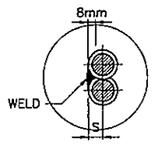
5 / 9 B(35) SECTION SCALE: 1:20



2 / 9 B(35) ELEVATION SCALE: 1:40



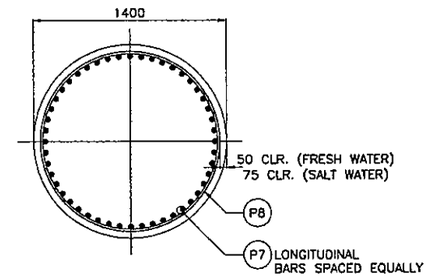
ELEVATION



S=1/2 BAR DIAMETER

SECTION

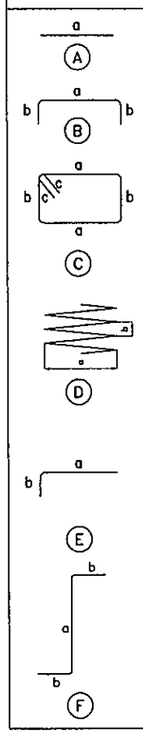
4 / 9 B(35) SPIRAL SPLICE DETAIL SCALE: 1:30



6 / 9 B(35) SECTION SCALE: 1:20

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=30M	SHEET CONTENTS: PLAN, ELEVATION, SECTIONS & SPIRAL SPLICE DETAILS FOR PIER	DESIGNED: ERDOLFO M. DOMINGO, JR. Engineer CHECKED: MARIANO S. FLORES Engineer IV CADD: ROLANDO C. MEDIANTE Draftsman I	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 2018-6 BrD	SHEET NO. B(35) 9 20

DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) PIER

BENDING DIAGRAM	SPAN LENGTHS L1–L1–L1 (m)	COLUMN DIAMETER	COPING BEAM W	COPING BEAM H	REINFORCEMENT: BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	LENGTH PER BAR(mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)	REMARKS
	35–35–35	1.60	1.90	1.90	P1	36	20	AS SHOWN	B	8100	450	–	9000	180.00	7.990	1,438	62.293	1.QUANTITIES ARE FOR THE TWO (2) COLUMNS OF ONE (1) PIER ONLY.
					P2	36	20	AS SHOWN	B	8100	450	–	9000	180.00	7.990	1,438		
					P3	20	12	AS SHOWN	A	8000	–	–	8000	96.00	6.313	606		
					P4	20	35	AS SHOWN	C	1820	1745	240	7610	266.35	7.990	2,128		
					P5	20	35	AS SHOWN	C	740	1745	240	5450	190.75	7.990	1,524		
					P6	32	23	300	A	2000	–	–	2000	46.00	4.833	222		
					P7	36	58	AS SHOWN	F	11175	250	–	11675	677.15	1.578	1,069		
					P8	16	78	55	D	1500	60	–	1560	121.68	1.578	192		
					P9	16	37	100	D	1500	100	–	1600	59.20	1.578	93		
														TOTAL =		8711		
														GRAND TOTAL GRADE 40 =		285	62.293	
														GRAND TOTAL GRADE 60 =		8,426		

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

SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M

SHEET CONTENTS: REINFORCEMENT SCHEDULE AND LOADING INFORMATION FOR DESIGN OF FOUNDATION FOR THREE SPAN

DESIGNED: ERDOLFO M. DOMUGO, JR. ENGINEER II
CHECKED: MARIANO S. FLORES ENGINEER IV
CADD: ROLANDO S. MEDIANTE DRAFTSMAN I

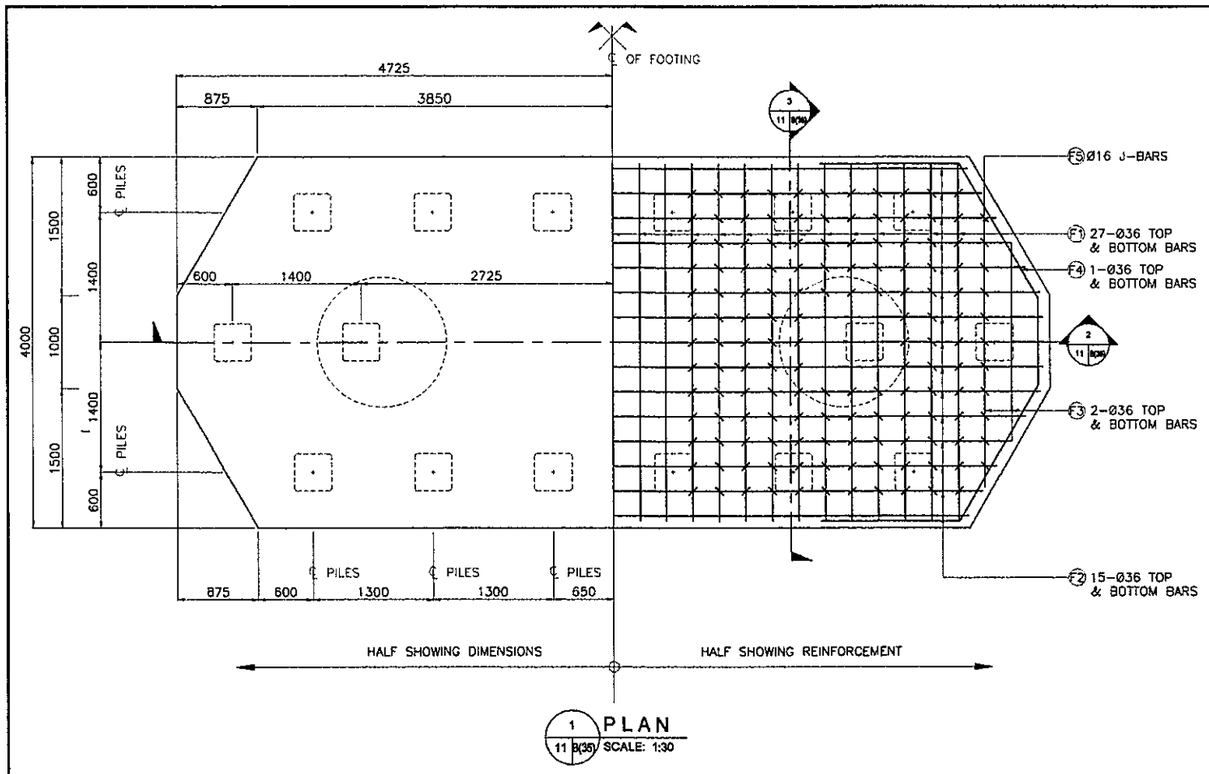
SUBMITTED: BLESILDA S. RAMOS, OIC-CHIEF, BRIDGES DIVISION

RECOMMENDING APPROVAL: SEE COVER SHEET — LEA N. DELFINADO, CESO IV, DIRECTOR IV, BUREAU OF DESIGN

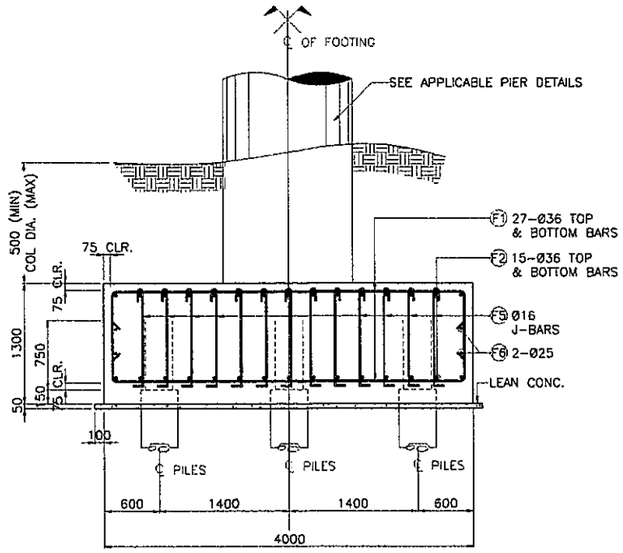
APPROVED: SEE COVER SHEET — EMIL K. SADAIN, CESO I, UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES

SET NO.: BOD 2018-6 BrD

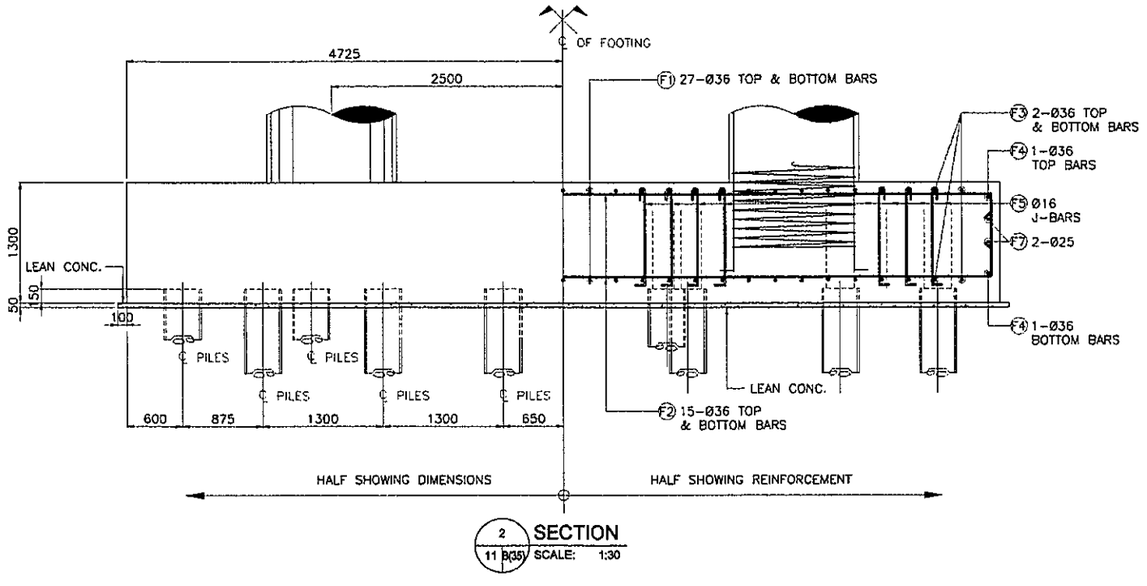
SHEET NO.: B(35) 10 20



1 / 11 B(35) PLAN SCALE: 1:30



3 / 11 B(35) SECTION SCALE: 1:30



2 / 11 B(35) SECTION SCALE: 1:30

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.
- LENGTH OF REINFORCED CONCRETE PILES SHALL BE DETERMINED/DESIGNED BASED ON THE ACTUAL BORING AT LOCATION OF FOUNDATION

DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES

REINFORCEMENT

BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	LENGTH PER BAR(mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m³)	REMARKS
A	FOOTING	F1	36	54	287	B	3850	450	–	4737	255.80	7.990	2,044	45.73	1.QUANTITIES ARE FOR ONE (1) PILE CAP.
B		F2	36	32	267	B	9200 min 7450max	450	–	9325 AVE.	276.00	7.990	2,205		
C		F3	36	8	AS SHOWN	A	2000 min 3000max	–	–	2425 AVE.	20.00	7.990	160		
D		F4	36	4	AS SHOWN	C	1000	1735	1165	6800	27.20	7.990	217		
		F5	16	300	AS SHOWN	D	180	1000	120	1300	390.00	1.578	615		
		F6	25	4	AS SHOWN	A	7550	–	–	7550	30.20	3.854	116		1.QUANTITIES ARE APPLICABLE TO PIER HEIGHTS 8, 10 & 12M.
		F7	25	4	AS SHOWN	C	1000	1735	1165	6800	27.20	3.854	105		
											TOTAL =		5463		
										GRAND TOTAL GRADE 40 =			4847		
										GRAND TOTAL GRADE 60 =			615		

SCALE: AS SHOWN

TYPE F8 (FOR FOOTING ON PILES

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

SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M

SHEET CONTENTS: DETAIL OF FOOTING TYPE F8 (FOR FOOTING ON PILES)

DESIGNED: ERDOLFO M. DOMINGO, JR.
CHECKED: MARIANO S. FLORES
CADD: ROLANDO C. MEDIANTE

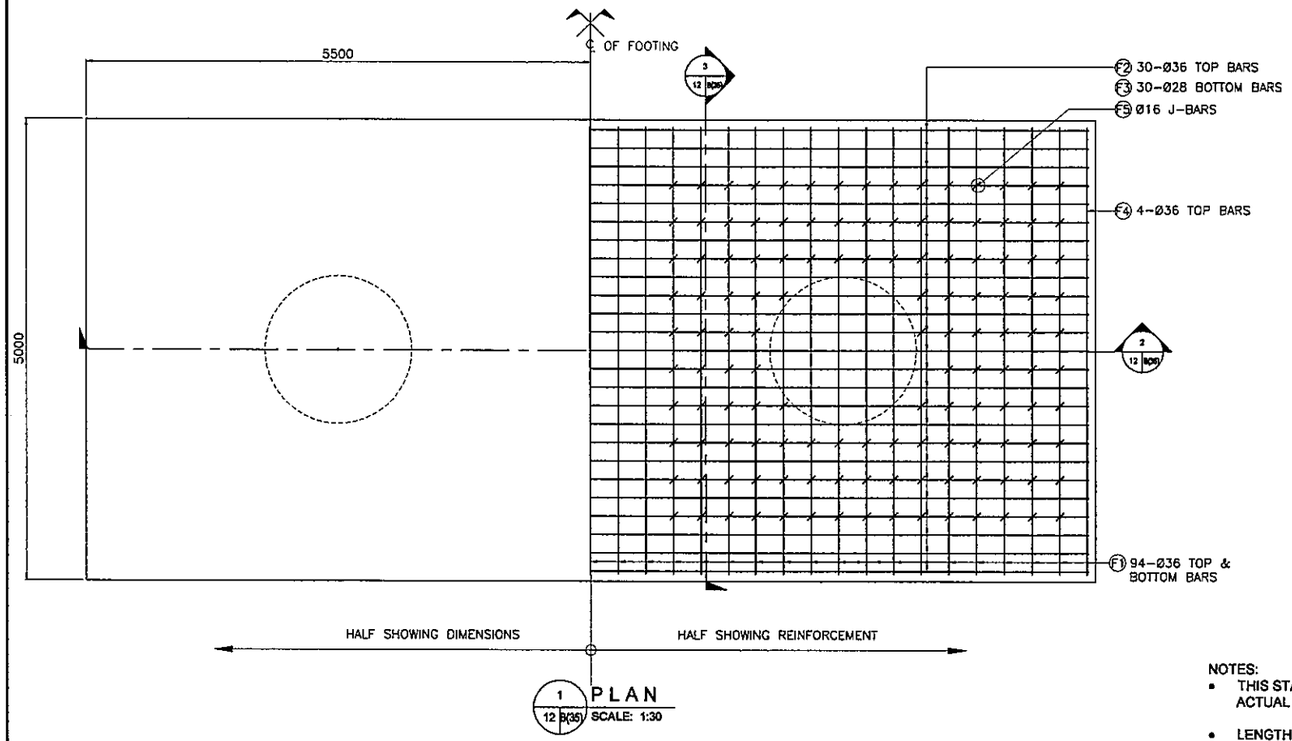
SUBMITTED: BLESILDA S. RAMOS, OIC-CHIEF, BRIDGES DIVISION

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

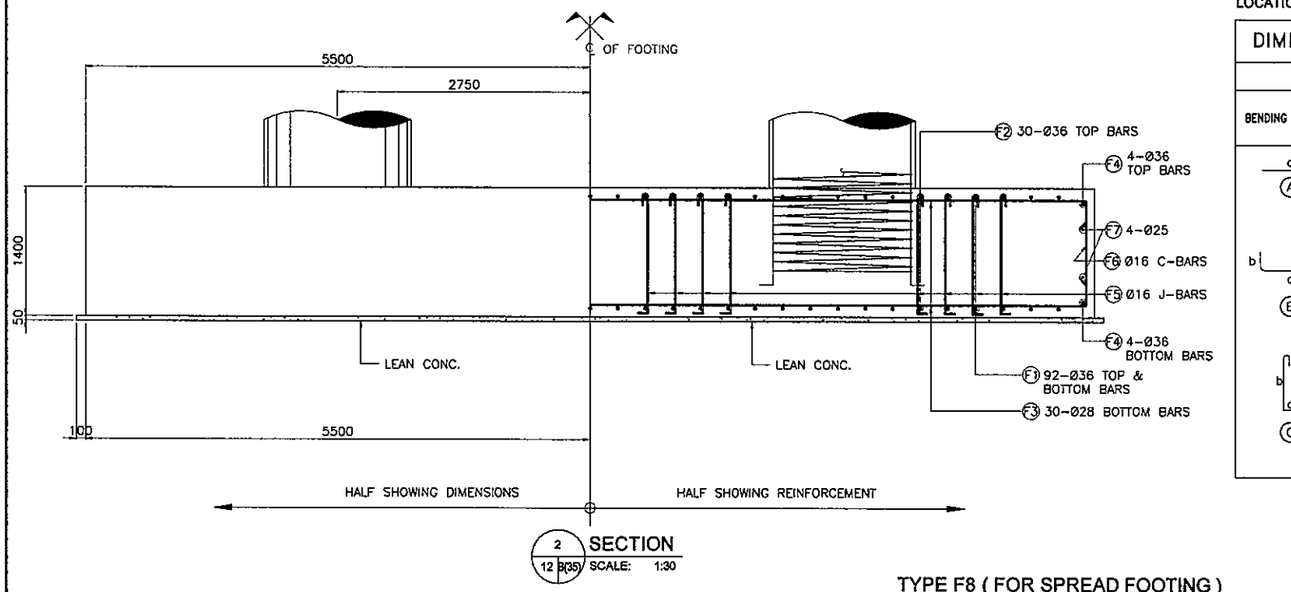
APPROVED: SEE COVER SHEET, EMIL K. SADAIN,CESO I, UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES

SET NO.: BOD 2018-6 BrD

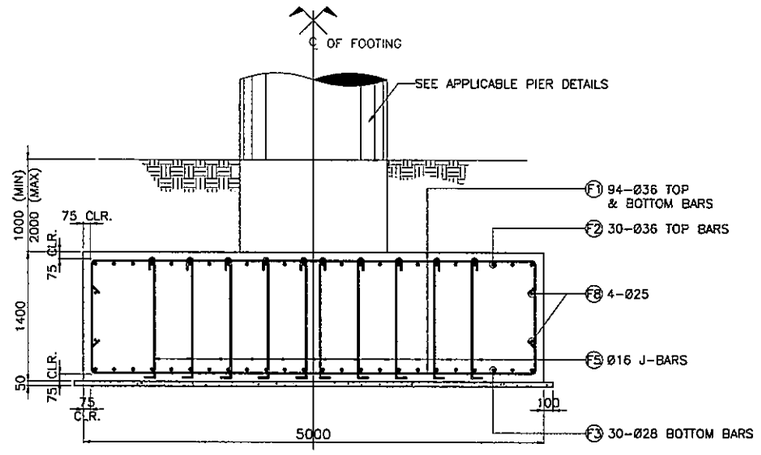
SHEET NO.: B(35) 11 20



1 PLAN
12 B(35) SCALE: 1:30



2 SECTION
12 B(35) SCALE: 1:30



3 SECTION
12 B(35) SCALE: 1:30

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.
- LENGTH OF REINFORCED CONCRETE PILES SHALL BE DETERMINED/DESIGNED BASED ON THE ACTUAL BORING AT LOCATION OF FOUNDATION

DIMENSIONS, REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES

REINFORCEMENT

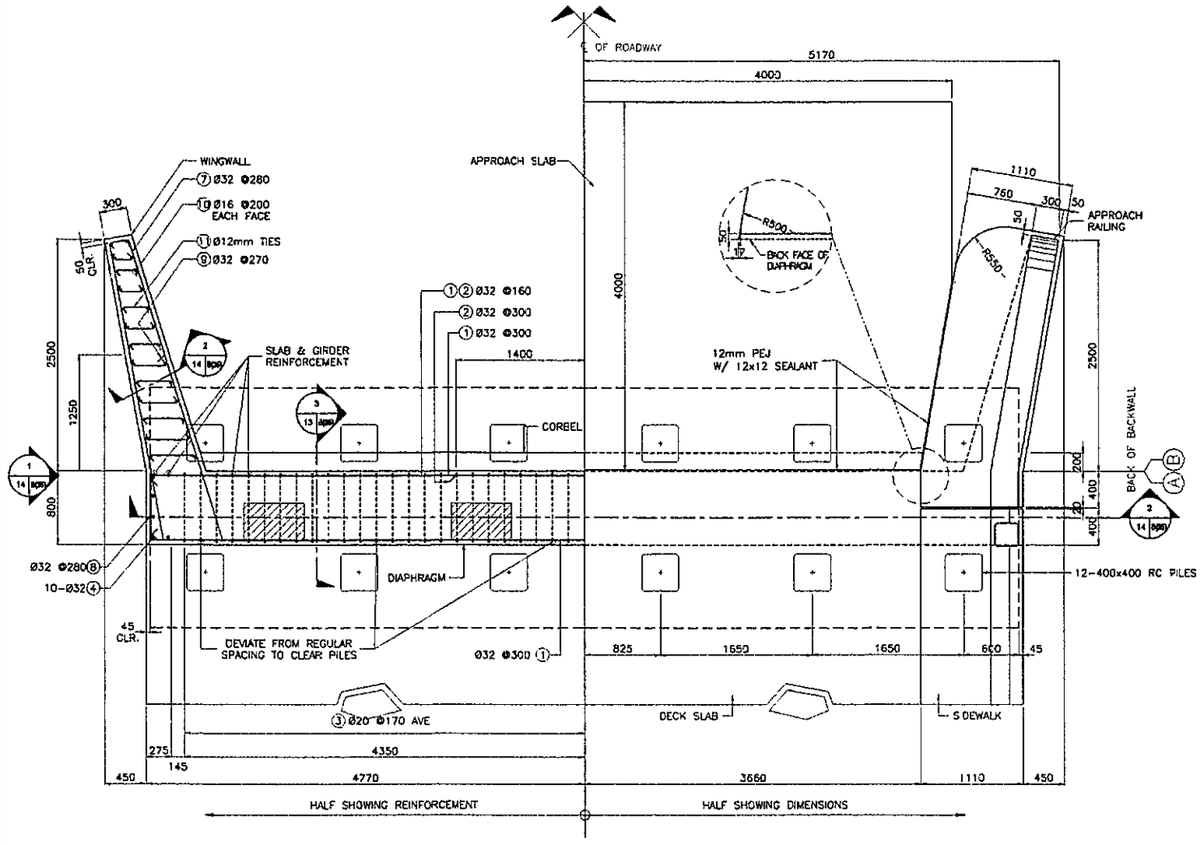
BENDING DIAGRAM	STRUCTURE COMPONENT	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	LENGTH PER BAR(mm)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)	REMARKS
a / A	FOOTING	F1	36	92	AS SHOWN	B	4850	825	–	6500	598.00	7.990	4778	77.00	1.QUANTITIES ARE FOR ONE (1) PILE CAP.
		F2	36	30	163	A	10900	–	–	11725	351.75	7.990	2810		
		F3	28	30	163	A	10900	–	–	11725	351.75	6.313	2221		
		F4	36	4	AS SHOWN	A	4850	–	–	4850	19.40	7.990	155		
b a b / B		F5	16	448	AS SHOWN	C	180	1250	150	1580	707.84	1.578	1,117		
		F6	16	60	AS SHOWN	B	4850	200	–	5050	303.00	3.854	1,168		
		F7	25	4	AS SHOWN	A	4850	–	–	4850	19.40	3.854	75		1.QUANTITIES ARE APPLICABLE TO PIER HEIGHTS 8, 10 & 12M.
a b c / C		F8	25	4	AS SHOWN	A	10900	–	–	10900	43.60	4.854	212		
											TOTAL =		12535		
										GRAND TOTAL GRADE 40 =			1117		
										GRAND TOTAL GRADE 60 =			11207		

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

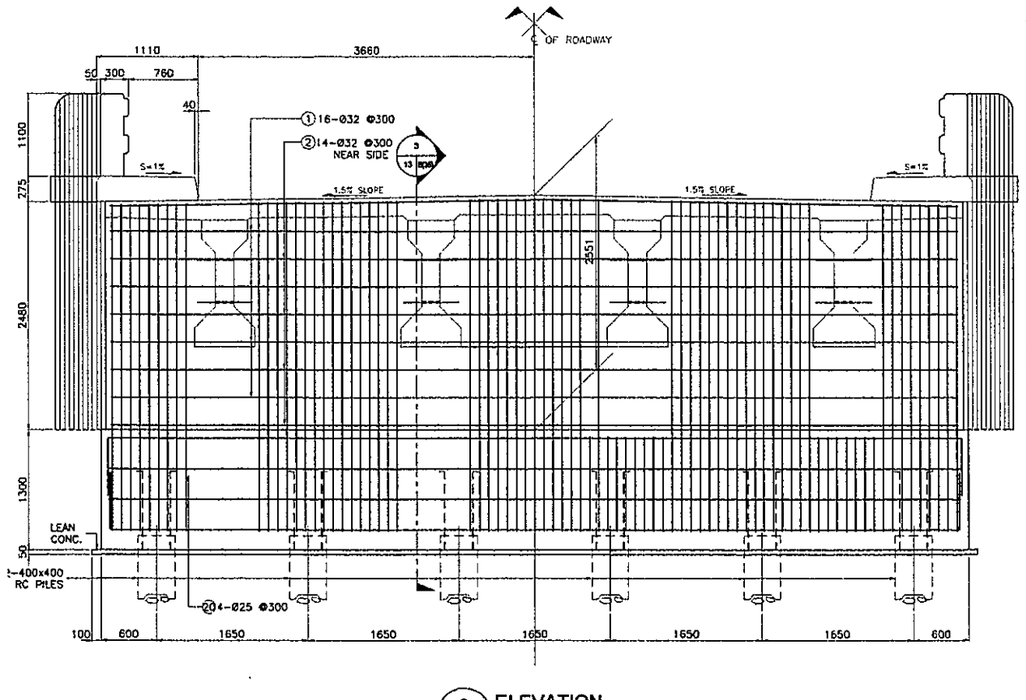
TYPE F8 (FOR SPREAD FOOTING)
SCALE: AS SHOWN

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

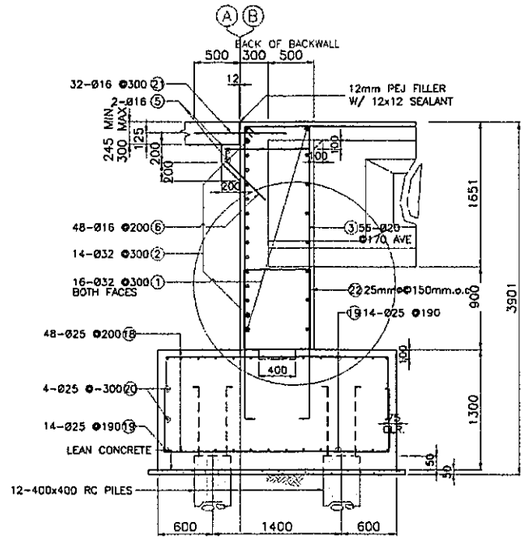
SHEET TITLE:	SHEET CONTENTS:	DESIGNED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M	DETAIL OF FOOTING TYPE F8 (SPREAD FOOTING)	ERDOLFO M. DOMINGO, JR. ENGINEER II CHECKED: MARIANO B. FLORES ENGINEER II CADD: ROLANDO C. MEDIANTE DRAFTSMAN	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 2016-8 BrD	B(35) 12 20



1 PLAN
13 B(35) SC: 1:30

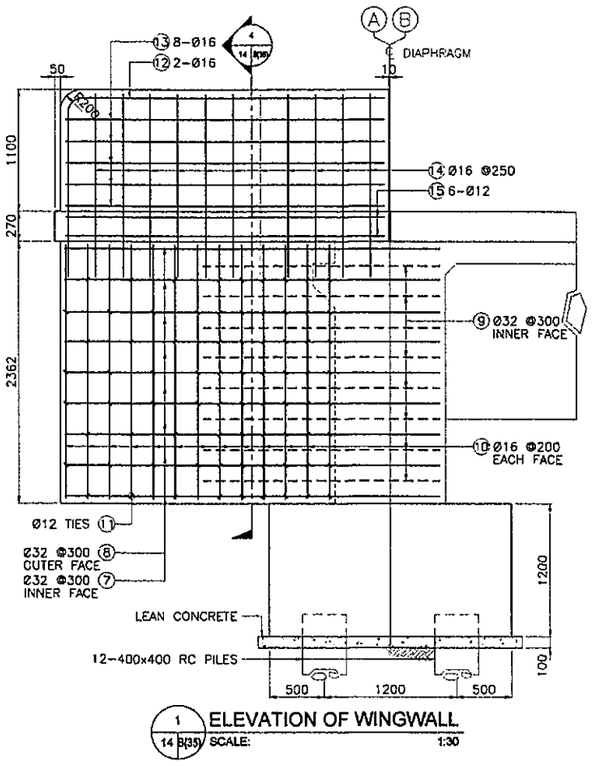


2 ELEVATION
13 B(35) SC: 1:30

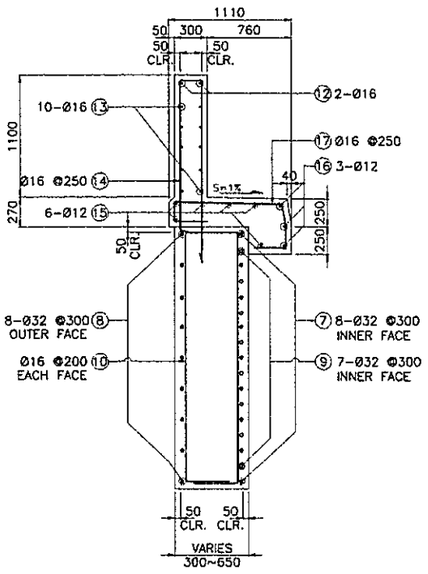


3 SECTION
13 B(35) SC: 1:30

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=35M	SHEET CONTENTS: ABUTMENT PLAN AND ELEVATION	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO D. REDIANTE	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 2018-6 BrD	SHEET NO. B(35) 13 20



1 / 14 B(35) ELEVATION OF WINGWALL
SCALE: 1:30



2 / 14 B(35) SECTION
SCALE: 1:30

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR ONE (1) ABUTMENT

REINFORCEMENT

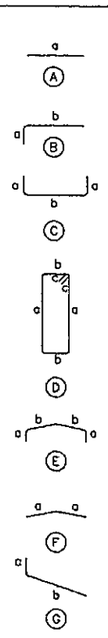
BENDING DIAGRAM (DIMENSIONS ARE CUT TO OUT OF BARS)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	d	LENGTH EACH BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)
a (A)	1	32	16	300	C	600	9440	–	–	10640	170.24	6.313	1075	
	2	32	7	300	B	600	3270	–	–	3870	27.09	6.313	171	
	3	25	56	180	D	110	9440	900	–	20000	1120.00	3.855	4318	
a b (B)	4	32	10	AS SHOWN	A	3300	–	–	–	3300	33.00	6.313	208	
	5	16	2	AS SHOWN	A	9440	–	–	–	9440	18.88	1.578	30	
a a b (C)	6	16	48	200	E	900	100	600	–	1600	76.80	1.578	121	
	7	32	16	300	B	620	3380	–	–	4000	64.00	6.313	404	
	8	32	16	300	B	600	3230	–	–	3830	61.28	6.313	387	
c b b a a (D)	9	32	7	300	B	620	2080	–	–	2700	18.90	6.313	119	
	10	16	52	200	D	200MIN 400MAX	1690	650	–	4830	251.16	1.578	396	
	11	12	114	AS SHOWN	G	170	140MIN 490MAX	170	–	830	94.62	0.888	84	21.450
b a c (E)	12	16	4	AS SHOWN	F	2700	235	1350	–	4285	17.14	1.578	27	
	13	16	20	AS SHOWN	A	2850	–	–	–	2850	57.00	1.578	90	
	14	16	25	250	C	1640	200	–	–	3480	87.00	1.578	137	
	15	12	12	AS SHOWN	A	2650	260MIN 2850MAX	–	–	2650	34.20	0.889	30	
b a c (F)	16	12	6	AS SHOWN	F	510	785	2350	–	3645	21.87	0.888	19	
	17	16	25	250	H	300	174	970	195	2135	53.38	1.578	84	
b a c (G)	18	25	96	200	C	600	2050	–	–	3250	312.00	3.855	1203	
	19	25	28	150	B	110	9440	–	–	9550	267.40	3.855	1031	
	20	25	4	300	B	110	9440	–	–	9550	38.20	3.855	147	
b a c d e=200 f=VARIES (H)	21	16	32	300	A	1000	–	–	–	1000	32.00	1.578	50	
	22	16	56	180	I	1226	1354	300	–	11520	645.12	2.578	1663	
	23	25	4	AS SHOWN	A	9440	–	–	–	9440	37.76	3.578	135	
a b b (I)											TOTAL =		11,931	
											GRAND TOTAL (GRADE 40) =		2,733	21.450
											GRAND TOTAL (GRADE 60) =		9,198	

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 THREE SPAN PCDG SUPERSTRUCTURE L=30M	ABUTMENT DETAIL 2 OF 2 WINGWALL ELEVATION, TRANSVERSE SECTION OF ABUTMENT & SCHEDULE OF REINFORCEMENT	ERDOLFO M. DOMINGO, JR. ENGINEER II CHECKED: MARIANO B. FLORES ENGINEER III CADD: ROLANDO V. MEDIANTE DRAFTSMAN I	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 2018-6 BrD	B(35) 14 20

REINFORCEMENT SCHEDULE AND ESTIMATED QUANTITIES FOR SUPERSTRUCTURE OF 3@ 35m SPAN

REINFORCEMENT

BENDING DIAGRAM	STRUCTURE COMPONENT	CONCRETE VOLUME (m^3)	BAR MARK	BAR SIZE (mm)	QTY	SPACING (mm)	BAR SHAPE	BAR DIMENSIONS (mm) a	b	c	d	LOCATION Lc	LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	REMARKS
	DECK SLAB	196.10	G1	25	24	AS SHOWN	C	1900	104900	–	–	–	108.7	2608.80	3.853	10,051.71	
			G2	25	48	400	A	14500	–	–	–	–	14.50	609.00	3.853	2,346.48	
			G3	25	46	400	A	17500	–	–	–	–	17.50	700.00	3.853	2,697.10	
			S1	16	707	140	E	145	4630	–	–	–	9.55	6751.85	1.578	10,654.42	
			S1a	16	707	140	F	3630	–	–	–	–	7.26	5132.82	1.578	8,099.59	
			S2	16	438	70	E	145	4630	–	–	–	9.55	4182.90	1.578	6,600.62	
			S2a	16	438	70	F	3630	–	–	–	–	7.26	3179.80	1.578	5,017.72	
			S3	16	27	200	A	104850	–	–	–	–	104.85	2830.95	1.578	4,467.24	
			S4	16	66	400	A	15780	–	–	–	–	15.78	946.80	1.578	1,494.05	
			S5	16	69	400	A	18780	–	–	–	–	18.78	1183.14	1.578	1,866.99	
			S6	16	48	400	B	1900	7250	–	–	–	9.15	384.30	1.578	606.43	
			S7	16	46	400	B	1900	8750	–	–	–	10.65	426.00	1.578	672.23	
			S8	16	14	AS SHOWN	A	104850	–	–	–	–	104.85	1,467.90	1.578	2,316.35	
			S9	12	525	AS SHOWN	G	110	1500	–	–	–	1.61	845.25	0.888	750.58	
														TOTAL =		57,641.50	
	DIAPHRAGM	26.55	D1	28	18	AS SHOWN	F	3700	–	–	–	–	7.40	133.20	4.833	643.76	
			D2	28	54	AS SHOWN	A	1880	–	–	–	–	1.88	101.52	4.833	490.65	
			D3	28	54	AS SHOWN	A	1880	–	–	–	–	1.88	101.52	4.833	490.65	
			D4	28	54	AS SHOWN	D	1880	–	–	–	–	4.16	101.5	4.833	490.65	
			D5	12	108	300	F	1760	170	150	–	–	7.40	449.28	0.888	398.96	
			D6	25	4	AS SHOWN	C	3700	–	–	–	–	9.10	29.60	3.853	114.05	
			D7	25	4	AS SHOWN	A	900	7300	–	–	–	7.24	36.40	3.853	140.25	
			D8	25	4	AS SHOWN	A	7240	–	–	–	–	7.24	28.96	3.853	111.58	
			D9	25	4	AS SHOWN	J	7240	–	–	–	–	7.24	28.96	3.853	111.58	
			D10	25	4	AS SHOWN	J	7240	–	–	–	–	7.24	28.96	3.853	111.58	
			D11	12	12	300	J	160	1900	520	–	–	5.16	123.84	0.888	109.97	
														TOTAL =		3,213.67	
													GRAND TOTAL GRADE 40 =			43,148.44	
													GRAND TOTAL GRADE 60 =			17,485.17	

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

SHEET TITLE: STANDARD THREE SPAN PCDG SUPERSTRUCTURE L=35M

SHEET CONTENTS: REINFORCEMENT SCHEDULE AND ESTIMATED OF QUANTITIES FOR SUPERSTRUCTURE OF 25m THREE SPAN

DESIGNED: ERDOLITO M. DOMINGO, JR.
CHECKED: MARIANO S. FLORES
CADD: ROLANDO M. MEDIANTE

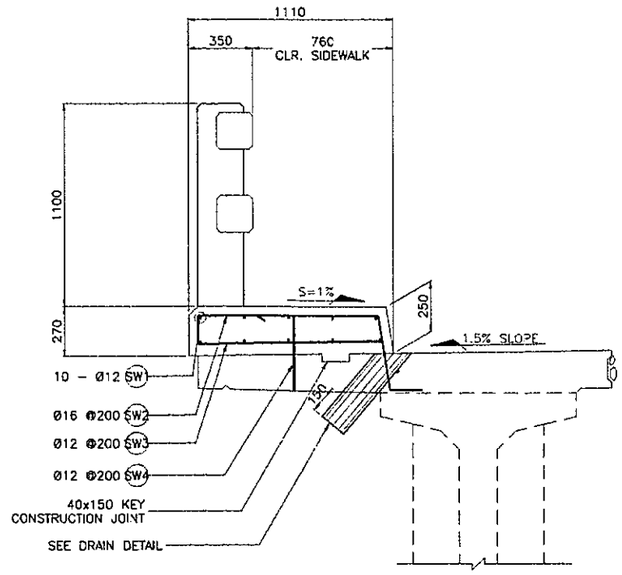
SUBMITTED: BLESILDA S. RAMOS, OIC-CHIEF, BRIDGES DIVISION

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

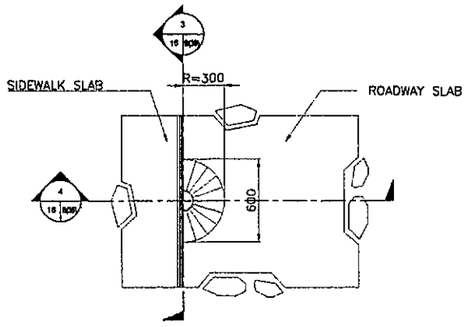
APPROVED: SEE COVER SHEET, EMIL K. SADAIN, CESO I, UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES

SET NO.: BOD 2018-6 BrD

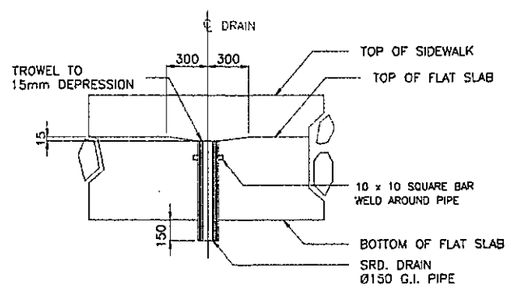
SHEET NO.: B(35) 15 | 20



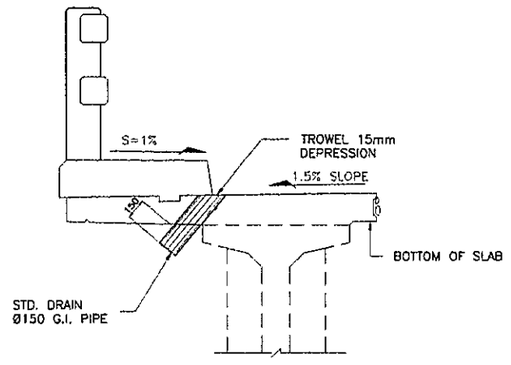
1 / 16 B(35) **SIDEWALK DETAIL**
SCALE: 1:20



2 / 16 B(35) **PLAN** SC: 1:20



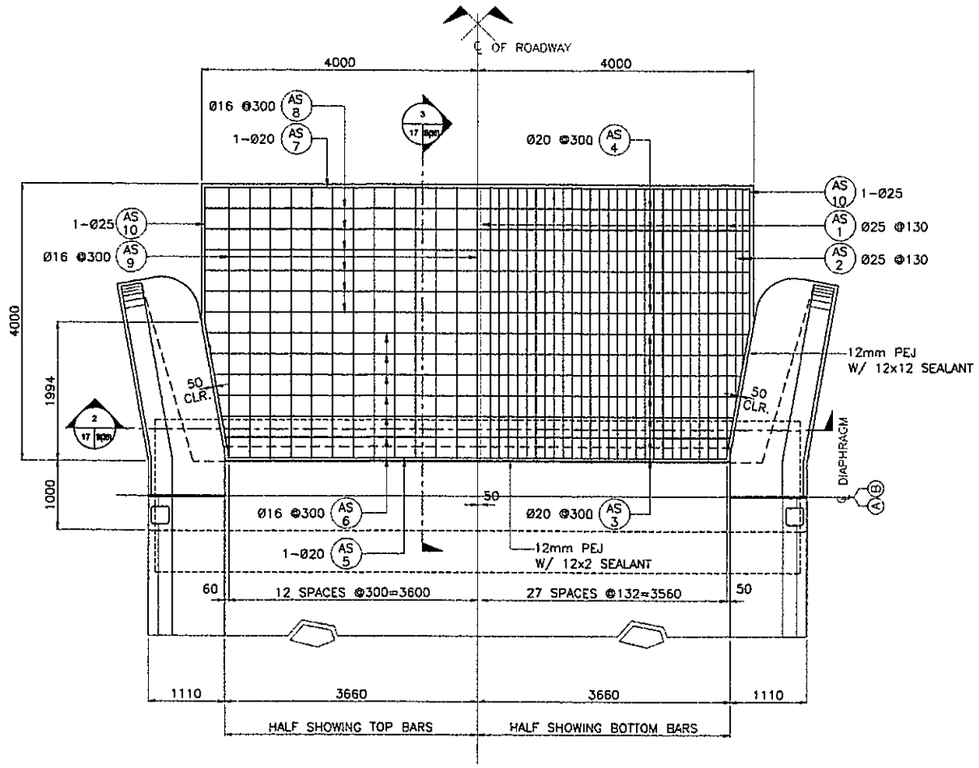
3 / 16 B(35) **SECTION** SC: 1:20



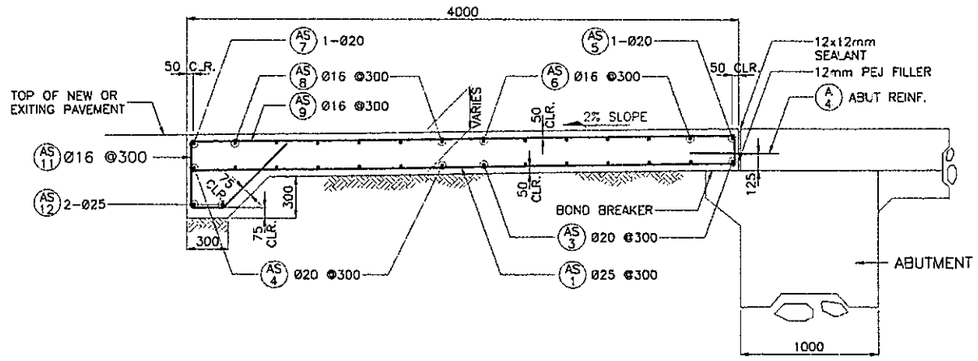
4 / 16 B(35) **SECTION** SC: 1:20

TYPICAL DRAIN DETAILS
SC: AS SHOWN

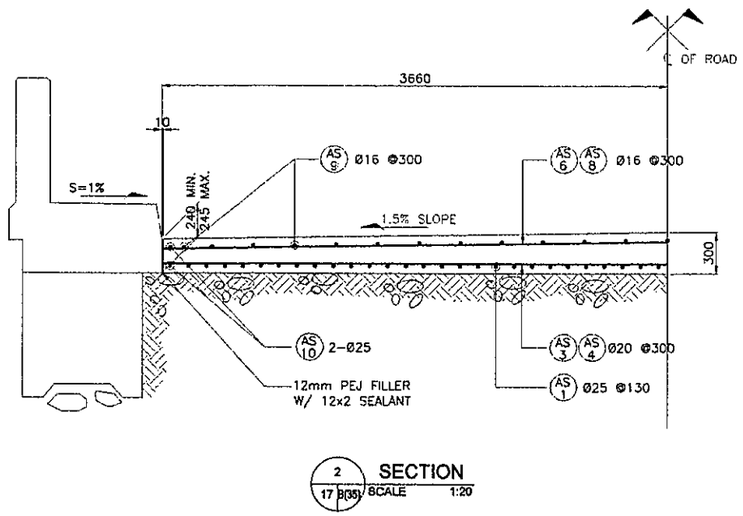
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M	SHEET CONTENTS: DETAIL SYMBOLS & ABBREVIATIONS	DESIGNED: ERDOLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-6 BrD	SHEET NO. B(35) 16 20



1 / 17 B(35) PLAN SCALE 1:40



3 / 17 B(35) SECTION SCALE 1:20



2 / 17 B(35) SECTION SCALE 1:20

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) a	b	c	LENGTH PER BAR(m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)	CONCRETE VOLUME (m^3)	REMARKS
a (A)	AS 1	25	56	130	B	3900	150	–	4050	226.80	3.853	874	8.480	1. QUANTITIES ARE FOR ONE (1) APPROACH SLAB
a, b (B)	AS 2	25	4	130	B	2700 MIN 3420 MAX	150	–	3210 AVE.	12.84	3.853	49		
a, b (C)	AS 3	20	7	300	D	7200 MIN 7880 MAX	–	–	7540 AVE.	52.78	2.466	130		
	AS 4	20	7	300	A	7900	–	–	7900	55.30	2.466	136		
	AS 5	20	1	AS SHOWN	A	7200	–	–	7200	7.20	2.466	18		
	AS 6	16	6	300	A	7340 MIN 7880 MAX	–	–	7610 AVE.	45.66	1.578	72		
	AS 7	20	1	AS SHOWN	A	7900	–	–	7900	7.90	2.466	19		
	AS 8	16	6	300	A	7900	–	–	7900	47.40	1.578	75		
	AS 9	16	25	300	B	3900	150	–	4050	101.25	1.578	160		
	AS 10	25	4	AS SHOWN	C	1965	1965	–	3930	15.72	3.853	61		
	AS 11	16	27	300	D	415 MIN 475 MAX	250	650	1745	47.12	1.578	74		
	AS 12	25	2	AS SHOWN	A	2900	–	–	2900	5.80	3.853	22		
										TOTAL =		1691		
										GRAND TOTAL GRADE 40=		381	8.48	
										GRAND TOTAL GRADE 60=		1310		

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

SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M

SHEET CONTENTS: TYPICAL APPROACH SLAB DETAIL

DESIGNED: ERDOLFO M. DOMINGO, JR.
CHECKED: MARIANO R. FLORES
CADD: ROLANDO C. MEDIANTE

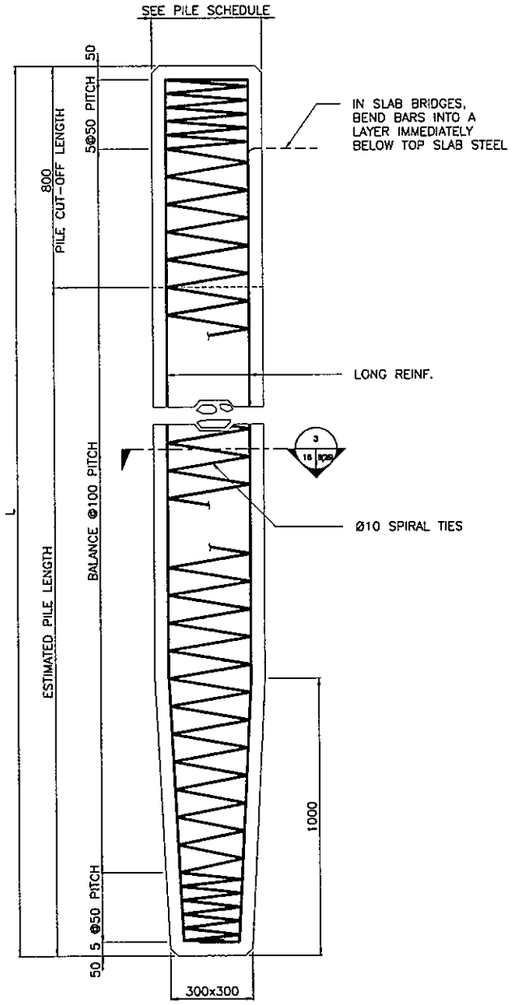
SUBMITTED: BLESILDA S. RAMOS, OIC-CHIEF, BRIDGES DIVISION

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

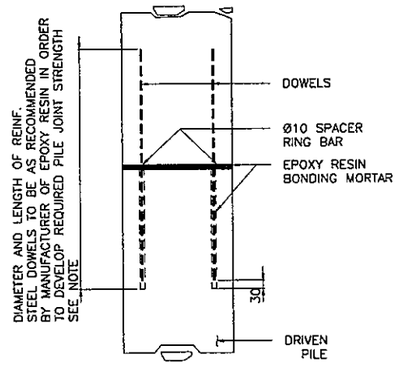
APPROVED: SEE COVER SHEET, EMIL K. SADAIN, CESO I, UNDERSECRETARY FOR UPMO OPERATION AND TECHNICAL SERVICES

SET NO.: BOD 2016-6 BrD

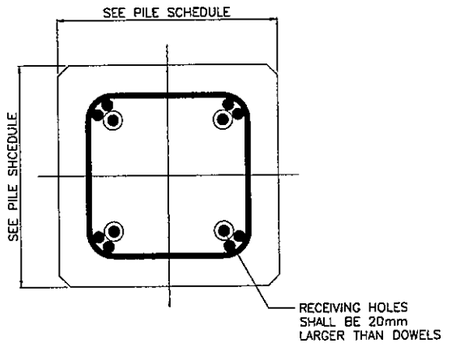
SHEET NO.: B(35) 17 | 20



1 18 B(25) PILE ELEVATION SCALE 1:10

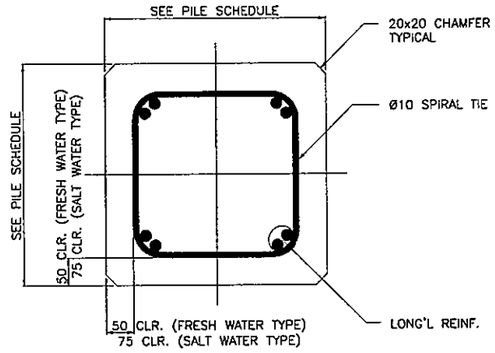


ELEVATION

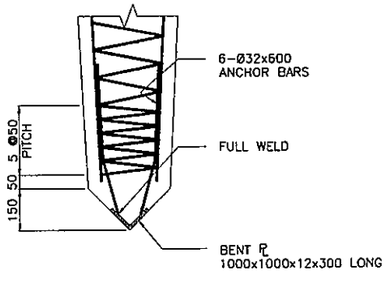


SECTION

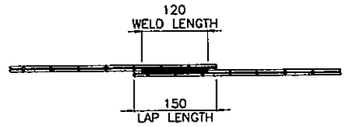
2 18 B(25) PILE SPLICE DETAIL NOT TO SCALE



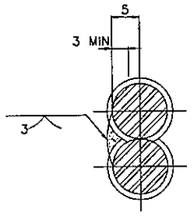
3 18 B(25) SECTION SCALE 1:5



4 18 B(25) PILE TIP FOR HARD DRIVING SCALE 1:10



ELEVATION



SECTION

5 18 B(25) WELDED SPIRAL-TIE DETAIL NOT TO SCALE

PILE SCHEDULE			
TYPE	SIZE (mm)	LONGITUDINAL REINFORCEMENT	
		QTY.	BAR SIZE
A	400x400	8	25
B	400x400	8	28
C	450x450	8	28
D	450x450	8	32

NOTES:

1. CONCRETE:
   CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF CLASS AA CONCRETE WITH 27.6 MPa CYLINDER STRENGTH AND 19.0mm MAXIMUM AGGREGATE SIZE

2. REINFORCEMENT:
   A. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASSHTO M31 (ASTM A615 GRADE 40.
   B. SPLICES OF ADJACENT LONGITUDINAL STEEL SHALL BE STAGGERED 100 BAR DIAMETERS APART. LENGTH OF SPLICES SHALL BE 1000mm FOR Ø25 AND 1300mm FORØ28 AND 1700mm FOR Ø32.
   C. SPIRAL-TIES SHALL BE WELDED AT SPLICES.

3. DRIVING:
   A. PILE HEADS SHALL BE PROTECTED FROM DIRECT IMPACT OF THE HAMMER BY CUSHION BLOCKS CONSISTING OF SEVERAL BLOCKS OF WOOD OR OF OTHER APPROVED MATERIALS.
   B. PILE SHALL BE DRIVEN TO A DEPTH THAT WILL PRODUCE THE REQUIRED ALLOWANCE BEARING CAPACITY.

4. PILE FOUNDATION DESIGN:
   A. N PILE-BENT PIERS, PILE LENGTHS SHALL BE DETERMINED BY THE ENGINEER/ CONSULTANT BASED ON THE ALLOWABLE PILE BEARING CAPACITY SPECIFIED BELLOW
   B. IN COLUMN-BENT PIERS, THE NUMBER, LOCATION AND LENGTH OF PILES SHALL BE DETERMINED BY THE ENGINEERS/ CONSULTANT BASED ON THE LOADING INFORMATION GIVEN IN THE PIER DETAILS.

5. PILE SPLICE:
   A. PILES MAY BE SPLICED ONLY IF STRICTLY NECESSARY AND APPROVED BY THE ENGINEER PILE SPLICES SHALL BE LOCATED AT LEAST 10m BELOW THE EXISTING GROUND LEVEL
   B. PILE SPLICE SHALL DEVELOP 100% AXIAL AND 50% BENDING OF THE CAPACITY OF THE PILE SECTION WHERE THE SPLICE IS LOCATED.

6. ALLOWABLE PILE BEARING CAPACITY: 500 kN PER PILE (FOR 400x400 PILE)
   700 kN PER PILE (FOR 450x450 PILE)

7. MINIMUM HAMMER ENERGY RATING = 55 kN-m

8. BASIS FOR COMPUTING ALLOWABLE PILE BEARING CAPACITY:

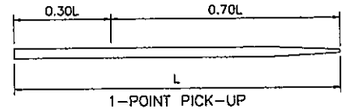
$$Pall = \left(\frac{167\ eh\ EHu}{S + 2.54}\right)\left(\frac{Wr + 0.16\ Wp}{Wr + Wp}\right)$$

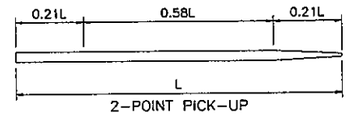
WHERE:

Pall = ALLOWABLE PILE BEARING CAPACITY (kN)
eH = HAMMER EFFICIENCY
EH = HAMMER ENERGY RATING (kN-m)
Wr = WEIGHT OF RAM (kN)
Wp = WEIGHT OF PILE AND OTHER DRIVEN WEIGHTS (kN)
S = AVERAGE PENETRATION PER BLOW FOR THE LAST 150mm OF DRIVING (mm)

9. TEST PILES:
   TEST PILES SHALL BE DRIVEN WITH THE SAME HAMMER USED FOR DRIVING REGULAR PILES AND MAY BE PART OF FOUNDATION IF APPROVED BY THE ENGINEER.

10. PICK-UP POINTS:
    PICK-UP POINTS SHALL BE MARKED ON ALL PILES AND ALL LIFTING SHALL BE DONE AT THESE POINTS.





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

REPUBLIC OF THE PHILIPPINES
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BUREAU OF DESIGN
BRIDGES DIVISION
BONIFACIO DRIVE PORT AREA, MANILA

SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M

SHEET CONTENTS: TYPICAL PRECAST CONCRETE PILE DETAIL

DESIGNED: ERDOLFO M. DOMINGO, JR.
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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 2018-6 BrD

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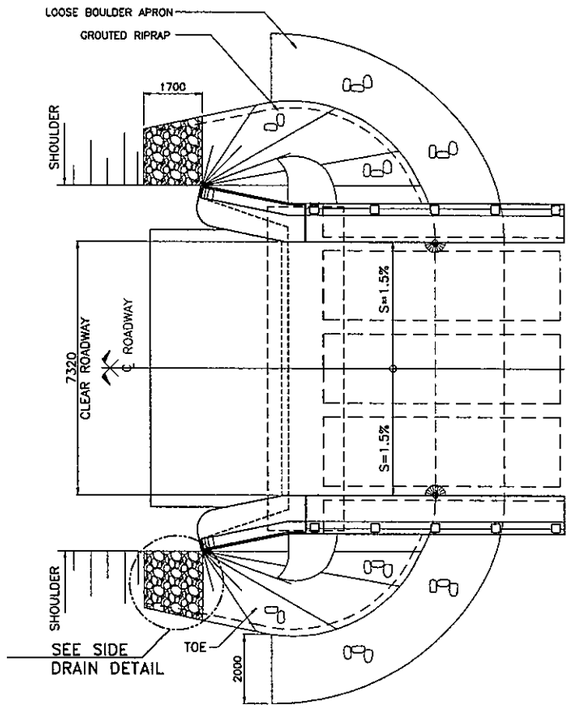
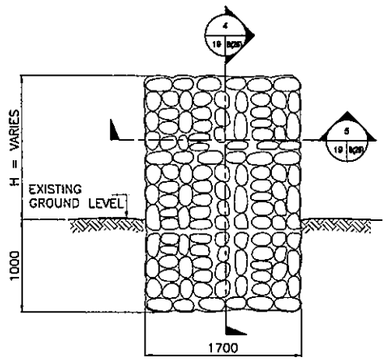
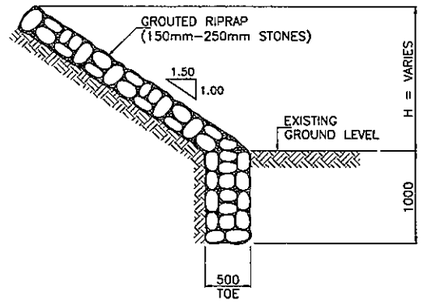


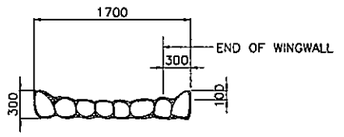
1 / 19 B(25) PLAN SCALE 1:80



3 / 19 B(25) ELEVATION SCALE 1:80

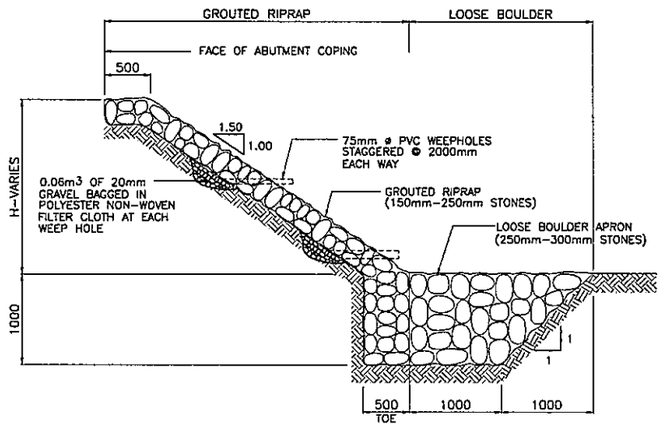


4 / 19 B(25) SECTION THRU DRAIN SCALE 1:80

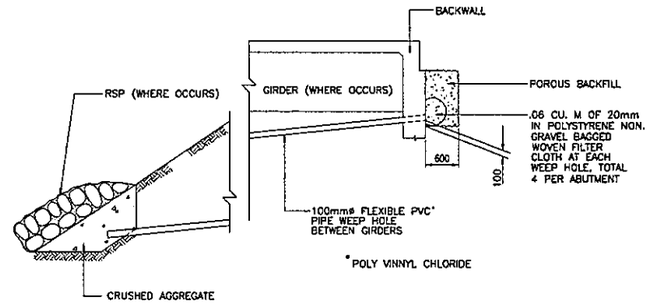


5 / 19 B(25) SECTION SCALE 1:80

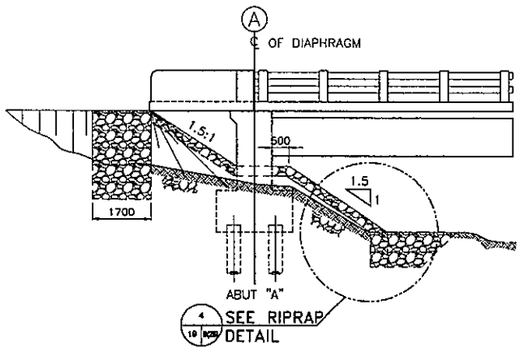
SIDE DRAIN DETAILS



6 / 19 B(25) RIPRAP DETAIL SCALE 1:30



7 / 19 B(25) ABUTMENT DRAINAGE SCALE 1:30



2 / 19 B(25) ELEVATION SCALE 1:80

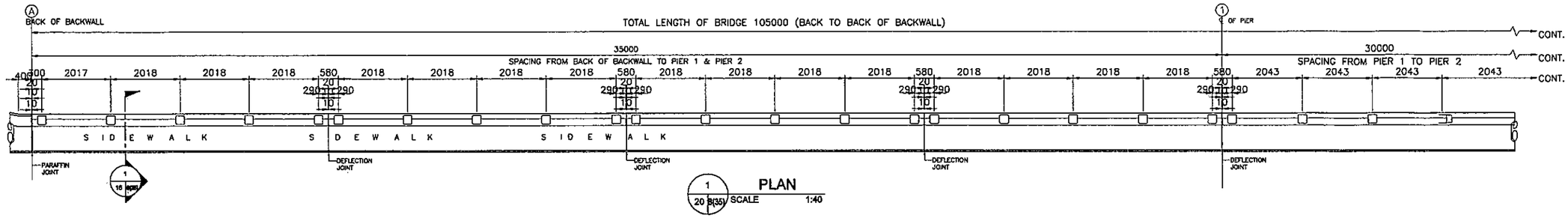
ABUTMENT RIPRAP PROCEDURE:

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 SWEPT 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.

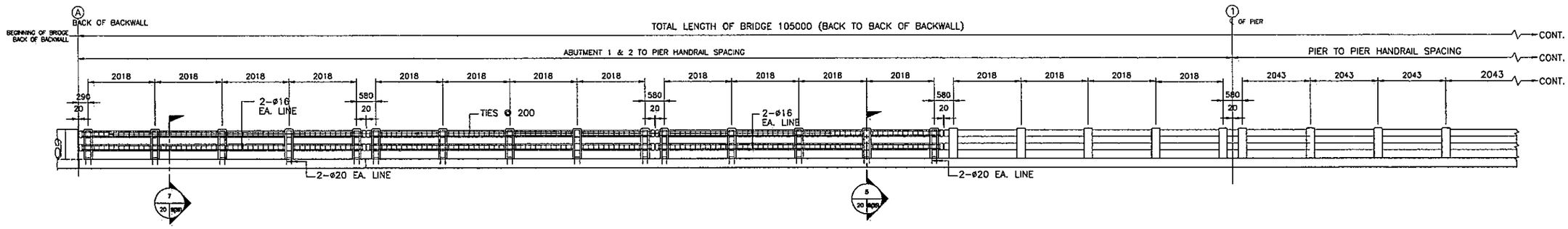
NOTE:

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 THREE SPAN PSCG SUPERSTRUCTURE L = 35M	SHEET CONTENTS: ABUTMENT SLOPE PROTECTION AND DRAINAGE	DESIGNED: EROLFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES 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 2018-8 BrO	SHEET NO. B(35) 19 20



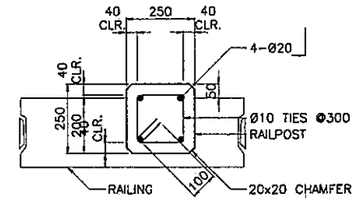
1 20 B(35) PLAN SCALE 1:40



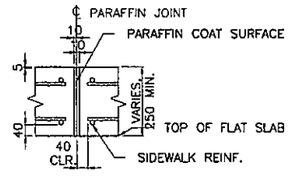
2 20 B(35) ELEVATION SCALE 1:40

NOTE:

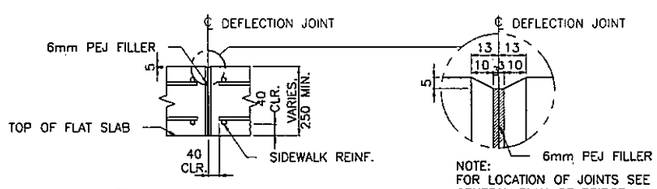
1. SIDEWALK SHALL BE PLACED AFTER THE SHORING UNDER THE SUPERSTRUCTURE HAS BEEN RELEASED SUFFICIENTLY TO PERMIT THE SPANS TO ATTAIN FULL DEAD LOAD DEFLECTION.
2. OTHER TYPES OF STANDARD BRIDGE RAILINGS CAN BE ADOPTED (REFER TO DO. 54 SERIES OF 2018, BOD SET NO. 2017-1-BrD)



6 20 B(35) SECTION SCALE 1:10



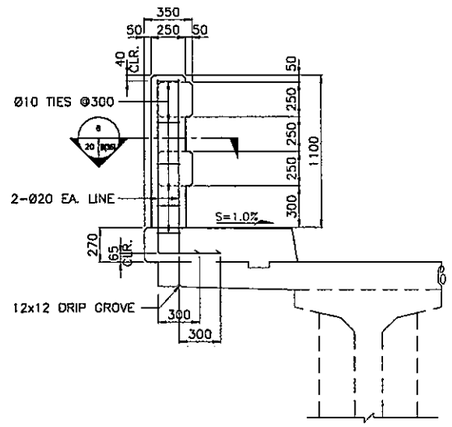
3 20 B(35) PARAFFIN JOINT SCALE 1:10



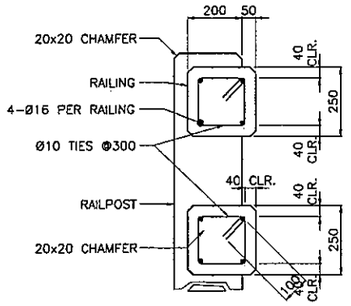
4 20 B(35) DEFLECTION JOINT SCALE 1:10

TYPE RAILING AND SIDEWALK DETAILS

SCALE AS SHOWN



5 20 B(35) SECTION SCALE 1:20



7 20 B(35) SECTION SCALE 1:10

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BUREAU OF DESIGN BRIDGES DIVISION BONIFACIO DRIVE PORT AREA, MANILA	SHEET TITLE: STANDARD THREE SPAN PSCG SUPERSTRUCTURE L = 35M	SHEET CONTENTS: RAILING PLAN & ELEVATION AND TYPICAL RAILING DETAILS	DESIGNED: ERODELFO M. DOMINGO, JR. CHECKED: MARIANO S. FLORES CADD: ROLANDO V. 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 2018-6 BrD SHEET NO. B(35) 20 20