

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS



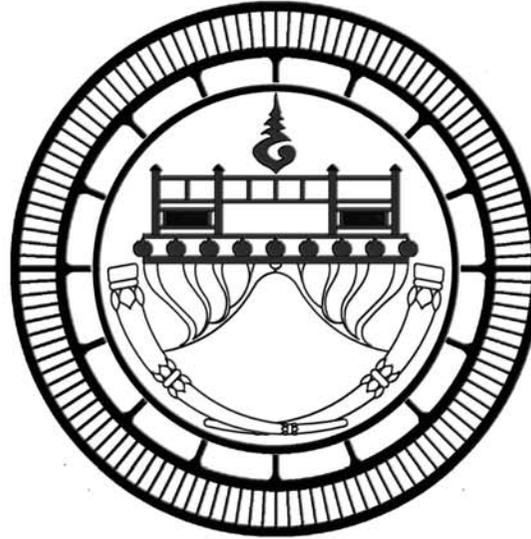
STANDARD DRAWINGS

FOR
I-GIRDER BRIDGE
BORED PILE
BRIDGE WIDENING
HANDICAPPED PEDESTRIAN OVERPASS AND UNDERPASS

2015

THAI VERSION

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LIST OF DRAWING

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14	I-GIRDER 16.00 M. (FULL JOINT) : BRIDGE DECK DIMENSION (FOR CURVE)	NP1-16F/03
15	I-GIRDER 16.00 M. (FULL JOINT) : BRIDGE DECK REINFORCEMENT (FOR CURVE)	NP1-16F/04
16	I-GIRDER 16.00 M. (FULL JOINT) : GIRDER DIMENSION	NP1-16F/05
17	I-GIRDER 16.00 M. (FULL JOINT) : GIRDER PRESTRESSING & REINFORCEMENT	NP1-16F/06
18	I-GIRDER 16.00 M. (HAFT JOINT) : BRIDGE DECK DIMENSION	NP1-16H/01
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21	I-GIRDER 16.00 M. (HAFT JOINT) : BRIDGE DECK REINFORCEMENT (FOR CURVE)	NP1-16H/04
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25	I-GIRDER 18.00 M. (FULL JOINT) : BRIDGE DECK REINFORCEMENT	NP1-18F/02
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40	I-GIRDER 22.00 M. (FULL JOINT) : GIRDER DIMENSION	NP1-22F/05
41	I-GIRDER 22.00 M. (FULL JOINT) : GIRDER PRESTRESSING & REINFORCEMENT	NP1-22F/06
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43	I-GIRDER 22.00 M. (HAFT JOINT) : BRIDGE DECK REINFORCEMENT	NP1-22H/02
44	I-GIRDER 22.00 M. (HAFT JOINT) : BRIDGE DECK DIMENSION (FOR CURVE)	NP1-22H/03
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53	I-GIRDER 26.00 M. (FULL JOINT) : GIRDER REINFORCEMENT	NP1-26F/06
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56	I-GIRDER 26.00 M. (HAFT JOINT) : BRIDGE DECK REINFORCEMENT	NP1-26H/02
57	I-GIRDER 26.00 M. (HAFT JOINT) : BRIDGE DECK DIMENSION (FOR CURVE)	NP1-26H/03
58	I-GIRDER 26.00 M. (HAFT JOINT) : BRIDGE DECK REINFORCEMENT (FOR CURVE)	NP1-26H/04
59	I-GIRDER 26.00 M. (HAFT JOINT) : GIRDER DIMENSION	NP1-26H/05
60	I-GIRDER 26.00 M. (HAFT JOINT) : GIRDER REINFORCEMENT	NP1-26H/06
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64	I-GIRDER 20.00 M. (FULL JOINT) : BRIDGE DECK DIMENSION (FOR CURVE)	NP2-20F/03
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67	I-GIRDER 20.00 M. (FULL JOINT) : GIRDER REINFORCEMENT	NP2-20F/06
68	I-GIRDER 20.00 M. (FULL JOINT) : GIRDER PRESTRESSING	NP2-20F/07
69	I-GIRDER 20.00 M. (HAFT JOINT) : BRIDGE DECK DIMENSION	NP2-20H/01
70	I-GIRDER 20.00 M. (HAFT JOINT) : BRIDGE DECK REINFORCEMENT	NP2-20H/02
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73	I-GIRDER 20.00 M. (HAFT JOINT) : GIRDER DIMENSION	NP2-20H/05
74	I-GIRDER 20.00 M. (HAFT JOINT) : GIRDER REINFORCEMENT	NP2-20H/06
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86	I-GRDER 25.00 M. (HAFT JOINT) : GIRDER REINFORCEMENT FOR PRE-TENSION	NP2-25H/04
87	I-GRDER 25.00 M. (HAFT JOINT) : GIRDER PRE-TENSION DETAILS	NP2-25H/05
88	I-GRDER 25.00 M. (HAFT JOINT) : GIRDER REINFORCEMENT FOR POST-TENSION	NP2-25H/06
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92	I-GRDER 30.00 M. (FULL JOINT) : GIRDER DIMENSION	NP2-30F/03
93	I-GRDER 30.00 M. (FULL JOINT) : GIRDER REINFORCEMENT	NP2-30F/04
94	I-GRDER 30.00 M. (FULL JOINT) : GIRDER PRESTRESSING	NP2-30F/05
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202	HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 : PILE FOOTING PLAN	UH-201
203	HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 : SPREAD FOOTING PLAN	UH-202
204	HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 : UNDERGROUND FLOOR PLAN	UH-203
205	HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 : GROUND FLOOR PLAN	UH-204
206	HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 : ROOF PLAN	UH-205
207	HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 : PILE FOOTING DETAILS (SECTION A)	UH-206
208	HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 : PILE FOOTING DETAILS (SECTION B AND C)	UH-207
209	HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 : SPREAD FOOTING DETAILS (SECTION A)	UH-208
210	HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 : SPREAD FOOTING DETAILS (SECTION B AND C)	UH-209
211	HANDICAPPED PEDESTRIAN UNDERPASS : LIGHTING	UH-210
212	HANDICAPPED PEDESTRIAN UNDERPASS TYPE-1 : UNDERGROUND PLAN - RAINWATER DRAINAGE SYSTEM	SNU-101
213	HANDICAPPED PEDESTRIAN UNDERPASS TYPE-2 : UNDERGROUND PLAN - RAINWATER DRAINAGE SYSTEM	SNU-102
214	HANDICAPPED PEDESTRIAN UNDERPASS TYPE-1 : VENTILATION SYSTEM	MEU-101
215	HANDICAPPED PEDESTRIAN UNDERPASS TYPE-2 : VENTILATION SYSTEM	MEU-102
216	HANDICAPPED PEDESTRIAN UNDERPASS : VENTILATION SYSTEM AT ROAD MEDIANS	MEU-103

1. DESIGN STANDARD AND CODES OF PRACTICE

- AASHTO : AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS⁶ EDITION, 2012
- AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, AASHTO GUIDE SPECIFICATIONS FOR LRFD SEISMIC BRIDGE DESIGN^{7,8} EDITION, 2011
- USING THE FOLLOWING CODES WHEN THE AASHTO LRFD (2012) SPECIFICATIONS IS NOT SPECIFIED.
- ACI : AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 318M-11, 2011
- BSI : BRITISH STANDARDS INSTITUTION, BS 5400
- PCI : PRECAST AND PRESTRESSED CONCRETE INSTITUTE, PCI DESIGN HANDBOOK: PRECAST AND PRESTRESSED CONCRETE, 9th EDITION, 2010

2. MATERIAL SPECIFICATIONS

2.1 CONCRETE

2.1.1 CLASSIFICATIONS OF CONCRETE AND THE MINIMUM CEMENT CONTENTS SHALL BE AS FOLLOWS, UNLESS OTHERWISE SPECIFIED IN THE DRAWING.

CLASS	COMPRESSIVE CUBE STRENGTH AT 28 DAYS (MPa)	MINIMUM CEMENT CONTENT (KG/M ³)
A	51-60	500
B	46-50	450
C	41-45	400
D	30-40	350
E	<30	300

2.1.2 THE COMPRESSIVE STRENGTH (f_{cu}) OF CONCRETE CUBES (15x15x15 CM.) SHALL BE AS FOLLOWS :

STRUCTURAL TYPES	STRUCTURAL ELEMENTS	COMPRESSIVE CUBE STRENGTH* AT 28 DAYS (MPa)	MINIMUM CEMENT CONTENT (KG/M ³)
SUPERSTRUCTURE	POST-TENSIONED I-GIRDER	45	400
	PRECAST I-GIRDER/BOX BEAM	50	450
	PRECAST PLANK GIRDER	50	450
	DECK SLAB FOR I-GIRDER/DIAPHRAGM	35	350
	CONCRETE TOPPING/SHEAR KEY	40	350
	SLAB TYPE BRIDGE/BARRIER/SIDEWALK	35	350
SUBSTRUCTURE	PIER AND CAP BEAM	35	350
	FOOTING	35	350
	ABUTMENT/WINGWALL	35	350
	BORED PILE (DRY PROCESS)	30	350
	BORED PILE (WET PROCESS)	35	350
	R.C. DRIVEN PILE	35	350
	PRECAST DRIVEN PILE	45	400
	PRECAST SPUN PILE	60	500
OTHERS	RETAINING WALL	35	350
	R.C. BOX CULVERT	30	350
	PRECAST BOX CULVERT	40	350
	OTHERS, NOT SPECIFY ABOVE	35	300
	NON-STRUCTURE	LEAN CONCRETE (1:3:6 BY VOLUME)	

- THE MIX DESIGN FOR ALL CLASSES OF CONCRETE, EXCEPT LEAN CONCRETE, SHALL BE SUBMITTED FOR APPROVAL
- FOR THE CONCRETE COMPRESSIVE STRENGTH OVER THAN 35 MPa, THE NOMINAL AGGREGATE SIZE SHALL BE LIMITED TO 20 MM
- * FOR SPECIFICATION OF CONCRETE COMPRESSIVE STRENGTH, TEST RESULTS OF STANDARD CONCRETE 15x15x15 CENTIMETER CUBE AGED AT 28 DAYS ARE USED AS CRITERION. IN CASE THE COMPRESSIVE STRENGTHS OBTAINED FROM THE TESTING AT AGE EARLIER THAN 28 DAYS ARE NOT LESS THAN THE COMPRESSIVE STRENGTH AS SPECIFIED, THE CONCRETE SHALL BE ACCEPTED AS HAVING SPECIFIED COMPRESSIVE STRENGTH AT AGE OF 28 DAYS.
- 2.1.3 WHEN THE CONCRETE STRUCTURE IS EXPOSED TO HIGH LEVELS OF CHLORIDE ION (CL⁻) OR USING NEAR SALTWATER, THE MAXIMUM WATER CEMENT RATIO (W/C RATIO) OF 0.40 AND THE SPECIAL CEMENT SUCH AS POZZOLAN PORTLAND CEMENT ARE RECOMMENDED. THE MINIMUM CUBE STRENGTH (f_{cu}) OF 40 MPa (408 KG/CM²) IS RECOMMENDED. THE SHORT-TERM (6 HOURS) RAPID CHLORIDE PERMEABILITY TEST (RCPT) SHALL BE SUBMITTED FOR APPROVAL. THE MAXIMUM RAPID CHLORIDE PERMEABILITY IS 1,500 COULOMBS (ASTM C1202).
- 2.1.4 WHEN THE CONCRETE STRUCTURE IS EXPOSED TO HIGH LEVELS OF SULPHATE ION (SO₄²⁻) OR USING NEAR WASTEWATER, THE MAXIMUM WATER CEMENT RATIO (W/C RATIO) OF 0.45 AND HIGH SULPHATE RESISTANCE PORTLAND CEMENT CONFORMING TO IS 15 SHALL BE USED. THE MINIMUM CUBE STRENGTH (f_{cu}) OF 40 MPa (408 KG/CM²) IS RECOMMENDED.
- 2.1.5 THE USE OF AGGREGATE FROM SOURCES THAT ARE KNOWN TO BE EXCESSIVELY ALKALI-SILICA REACTIVE (ASR) SHALL BE PROHIBITED.
- 2.1.6 CONCRETE COVER

UNLESS NOTED ON THE DRAWINGS, THE FOLLOWING MINIMUM CONCRETE COVER (FROM FACE OF CONCRETE TO FACE OF REBAR) SHALL BE PROVIDED AS INDICATED BELOW.

CAST-IN-PLACE CONCRETE PILE	75 MM.
PRECAST AND R.C. PILES	50 MM.**
FOOTING	75 MM.
PIER	50 MM.**
TOP REBARS IN DECK SLAB	40 MM.
BARRIER AND OTHERS	30 MM.

** IF PIERS OR PILES ARE IN SALTWATER, THE COVERING MUST BE 75 MM.

2.1.7 ALL EXPOSED CONCRETE CORNERS SHALL HAVE A 20 MM. CHAMFER UNLESS OTHERWISE INDICATED

2.2 REBAR REINFORCEMENT

- 2.2.1 MILD STEEL ROUND BARS GRADE SR24 ACCORDING TO IS 20 DENOTED BY "RB" SHALL BE USED FOR REBARS WITH DIAMETER 6 AND 9 MM., UNLESS OTHERWISE INDICATED.
 - 2.2.2 HIGH YIELD DEFORMED BARS GRADE SD40 ACCORDING TO IS 24 DENOTED BY "DB" SHALL BE USED FOR REBARS WITH DIAMETER 12, 16, 20, 25 AND 28 MM., UNLESS OTHERWISE INDICATED.
 - 2.2.4 UNLESS NOTED ON THE DRAWINGS, THE FOLLOWING MINIMUM CLEAR DISTANCE BETWEEN PARALLEL BARS SHALL BE PROVIDED AS INDICATED BELOW.
- | REBAR SIZE | THE MINIMUM CLEAR DISTANCE |
|--------------------------------|----------------------------|
| RB9, DB12, DB16, DB20 AND DB25 | 35 MM. IN A LAYER |
| DB28 | 40 MM. IN A LAYER |
| ANY REBARS TWO OR MORE LAYERS | 25 MM. BETWEEN LAYERS |

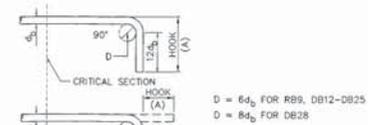
2.2.5 THE RESISTANCE OF FULL-MECHANICAL CONNECTION SHALL NOT BE LESS THAN 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE REBAR IN TENSION OR COMPRESSION, AS REQUIRED.

2.2.6 ALL HOOKS, IF NOT BE SHOWN ON THE DRAWING, SHALL COMPLY WITH AASHTO LRFD (2012) STANDARD HOOKS.

2.2.7 STANDARD HOOK DETAILS AND DEVELOPMENT LENGTH OF STANDARD HOOKS AS FOLLOWS :

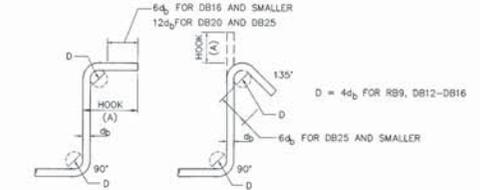
2.2.7.1 STANDARD HOOK DIMENSIONS OF MAIN REINFORCING

REBAR DIAMETER (d_b)	HOOK (A)		DIAMETER OF REBAR BENT (D)
	90° HOOK	180° HOOK	
RB9	0.15	0.12	0.06
DB12	0.20	0.15	0.08
DB16	0.25	0.18	0.10
DB20	0.30	0.20	0.12
DB25	0.40	0.25	0.15
DB28	0.45	0.30	0.23



2.2.7.2 STANDARD HOOK DIMENSIONS OF STIRRUP AND TIE

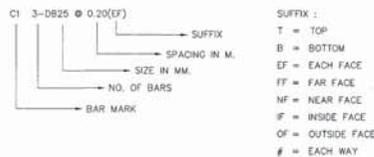
REBAR DIAMETER (d_b)	HOOK (A)		DIAMETER OF REBAR BENT (D)
	90° HOOK	135° HOOK	
RB9	0.10	0.10	0.04
DB12	0.15	0.12	0.05
DB16	0.15	0.15	0.07



2.2.7.3 DEVELOPMENT LENGTH (L_{db}) OF STANDARDS HOOKS
THE DEVELOPMENT LENGTH IS MEASURED FROM THE CRITICAL SECTION TO THE OUTSIDE END (OR EDGE) OF THE HOOK.

REBAR DIAMETER (d_b)	DEVELOPMENT LENGTH (L_{db})		
	$f_{cu} = 30$ MPa	$f_{cu} = 35$ MPa	$f_{cu} = 40$ MPa
RB9	0.18	0.12	0.16
DB12	0.24	0.22	0.21
DB16	0.32	0.30	0.28
DB20	0.40	0.37	0.34
DB25	0.50	0.46	0.43
DB28	0.56	0.52	0.48

2.2.7.4 NOTATION OF BAR REINFORCEMENT



2.2.8 LAP LENGTH OF SPLICING IS NOT APPLIED IN CRITICAL REGIONS OF DUCTILE OR SEISMIC-CRITICAL MEMBERS. THE REQUIRED LENGTHS OF SPLICES IN REINFORCING STEEL ARE AS FOLLOWS :

REBAR DIAMETER (d_b)	LAP LENGTH ($f_{cu} = 30$ MPa)			LAP LENGTH ($f_{cu} = 35$ MPa)			LAP LENGTH ($f_{cu} = 40$ MPa)		
	COMP.	TENSION**		COMP.	TENSION**		COMP.	TENSION**	
		TOP BAR*	OTHER		TOP BAR*	OTHER		TOP BAR*	OTHER
DB12	0.40	0.55	0.40	0.40	0.55	0.40	0.40	0.55	0.40
DB16	0.50	0.70	0.50	0.50	0.70	0.50	0.50	0.70	0.50
DB20	0.60	0.90	0.65	0.60	0.90	0.65	0.60	0.90	0.65
DB25	0.75	1.40	1.00	0.75	1.30	0.95	0.75	1.20	0.90
DB28	0.85	1.75	1.25	0.85	1.65	1.15	0.85	1.50	1.10

* MINIMUM 0.30 M CONCRETE CAST BELOW

** THE MAXIMUM PERCENTAGE OF REINFORCEMENT SPLICED AT THE SAME SECTION SHALL BE 50

NOTES :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- THE GENERAL NOTES ARE RECOMMENDED UNLESS OTHERWISE SPECIFIED IN THE DRAWING
- THE SKEW ANGLE (θ) IS THE ANGLE IN DEGREES BETWEEN THE DIRECTION OF THE CANAL AND A LINE PERPENDICULAR TO THE ROADWAY

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
STRUCTURAL NOTES
GENERAL NOTES - I

DESIGNED :	CHECKED :	DATE :
D.O.H. & CONSULTANTS	BUREAU OF LOCATION & DESIGN	OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. GN-001 SHEET NO. 200/R1

REV.	REVISION	SIGNATURE	DATE
REV1	REVISION 1/2017		JAN 2017

3. HIGHWAY DESIGN LOADINGS

LIVE LOAD : HL-93 ; BASIC WIND SPEED : 120 KM/H

4. BEARING AND EXPANSION JOINT

BEARINGS AND EXPANSION JOINTS SHALL BE DESIGNED AND MANUFACTURED ACCORDING TO AASHTO LRFD (2012) REQUIREMENTS OF LOADS, TRANSLATIONS AND ROTATIONS

5. DRAWING SYMBOLS AND NOTATION

	SECTION IN EXISTING GROUND
	SECTION THROUGH REINFORCED CONCRETE (W OR W/O REINFORCEMENT INDICATED)
	SECTION IN CAST-IN-PLACE
	SECTION IN CONCRETE PRECAST
	SECTION THROUGH ASPHALTIC CONCRETE SURFACE
	SECTION THROUGH SAND
	SECTION IN GRAVEL
PLAN VIEW AND ELEVATION OF CUT AND FILL SLOPES	
	SLOPE 1:2 = 1 (VERTICAL LINE) TO 2 (HORIZONTAL LINE)
	CENTER LINE
	SQUARE PILE
	REINFORCEMENT IN BOTH WAYS
	DIAMETER
	REBAR AS SEEN ON CROSS SECTION OR PLAN
	REBAR BENT PERPENDICULAR TO OR FROM READER
	LAP SPLICE OF REBAR
	BREAK ON REBAR
	WATER LEVEL
	TO INDICATE END OF DEFORMED BARS WITHOUT HOOK
EXAMPLE : MEANS	
	BAR BENT AWAY FROM THE READER
	LIMIT OF AREA COVERED BY REBARS
	SECTION STRUCTURE
XX-000	STRUCTURAL TYPES
000	DRAWING NUMBERS
00	SERIES NUMBER
0	STRUCTURAL SUBTYPES
L	ANGLE
C	CHANNEL
I	BEAM
I	STRUCTURAL STEEL SECTION
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
C/C	CENTER OF CENTER
CG	CENTROID
C.G.S	CENTROID OF STEEL
CIS	CAST-IN-SITU
Ø	REBAR OR STIRRUP SPAACING
CL	CENTERLINE
CM	CENTIMETER
CM ²	SQUARE CENTIMETER
DIA.	DIAMETER
D.O.H.	DEPARTMENT OF HIGHWAYS
DWG.	DRAWING
H	CLEAR COLUMN HEIGHT
H.W.L.	HIGH WATER LEVEL
kN	KILONEWTION
KG/CM ²	KILOGRAM PER SQUARE CENTIMETER
L.W.L.	LOW WATER LEVEL
M	METER
M ²	SQUARE METER
M ³	CUBIC METER
MM	MILLIMETER
MAX.	MAXIMUM
MIN.	MINIMUM
M.S.L.	MEAN SEA LEVEL
P.C.	PRESTRESSED CONCRETE
R.C.	REINFORCED CONCRETE
S1	ROAD NORMAL CROWN OR CROSS SLOPE (%)
TIS	THAI INDUSTRIAL STANDARD

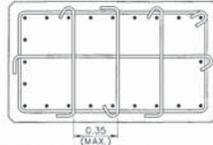
6. SEISMIC RESISTANCE DETAILS

6.1 SEISMIC PERFORMANCE LEVEL IN THAILAND ACCORDING TO AREA UNDER MINISTERIAL REGULATION B.E. 2550

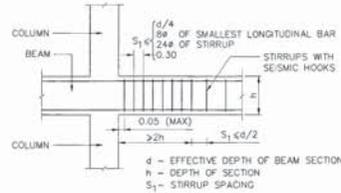
SEISMIC LEVELS	SEISMIC AREAS
LEVEL 1A	PROVINCES IN NORTHEAST AND EASTERN REGIONS
LEVEL 1B	ALL PROVINCES, EXCEPT SEISMIC AREAS IN LEVEL 1A AND LEVEL 2
LEVEL 2	KANCHANABURI, CHANG RAI, CHANG MAI, TAK, NAN, PHAYAO, PHRAE, LAMPANG, LAMPHUN AND MAE HONG SON.

6.2 STEEL REINFORCEMENT DETAILS FOR RESIST EARTHQUAKE (LEVEL 1B AND LEVEL 2)

6.2.1 SEISMIC STIRRUP AND TIE HOOKS SHALL CONSIST OF A 135-DEGREE BEND, PLUS AN EXTENSION THE LARGER OF 6d_s OR 75 MM. THE SEISMIC HOOKS SHALL BE USED FOR STIRRUP AND TIE IN REGIONS OF EXPECTED PLASTIC HINGES. SUCH HOOKS AND THEIR REQUIRED LOCATIONS SHALL BE DETAILED IN THE DRAWINGS.



6.2.2 TRANSVERSE REINFORCEMENT REQUIREMENTS

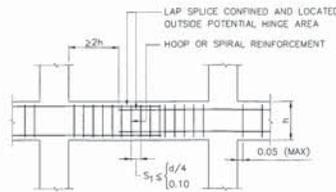


TYPICAL TRANSVERSE REINFORCEMENT DETAIL FOR FLEXURAL MEMBERS

NOTE : LAP SPLICES SHOULD NOT BE USED WITHIN A DISTANCE OF TWICE THE BEAM DEPTH (2h) FROM THE FACE OF COLUMN.

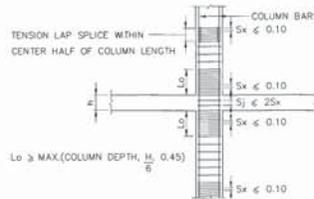
6.2.3 SPLICE REQUIREMENTS

6.2.3.1 LAP SPLICES OF CAP BEAM (BEAM) ARE PERMITTED ONLY IF HOOP OR SPIRAL REINFORCEMENT IS PROVIDED OVER THE LAP LENGTH



LAP SPLICE REQUIREMENTS

6.2.3.2 LAP SPLICE OF REINFORCING BAR AT THE COLUMN ENDS IS NOT PERMITTED, AND POSITION OF MAIN REINFORCING BAR SPLICING OF COLUMN SHALL LOCATED AT THE MIDDLE.

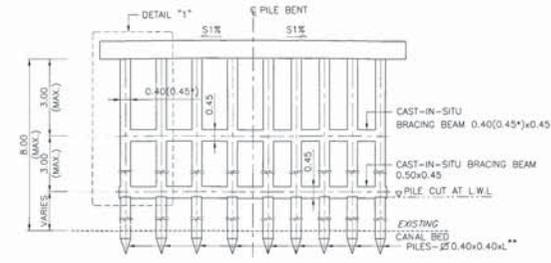


TYPICAL SPLICE LOCATION FOR COLUMNS

6.2.3.3 MINIMUM DEVELOPMENT AND SPLICE LENGTHS OF REBARS SHALL BE APPROVAL BY THE ENGINEER

6.2.4 STEEL REINFORCEMENT DETAILS OF PILE BENT AND PIERS FOR RESIST EARTHQUAKE (LEVEL 1B AND LEVEL 2)

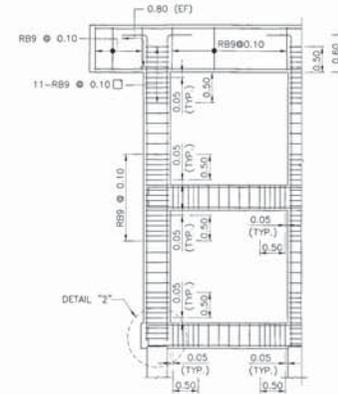
6.2.4.1 PILE BENT DETAIL



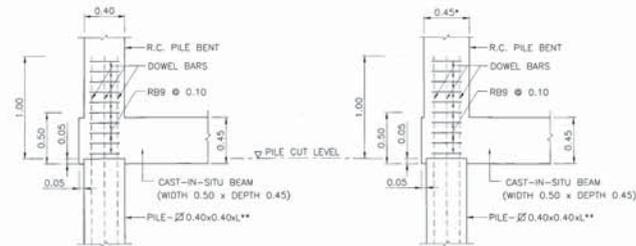
PILE BENT DETAIL
SCALE 1 : 75

NOTE : * USING 0.45 WHEN PILE BENT AND BEAM ARE IN SALTWATER

** PILE LENGTH SHALL BE DETERMINED FOR EACH PILE



DETAIL "2"
SCALE 1 : 50



DETAIL "2" (REGULAR)
SCALE 1 : 25

DETAIL "2" (CL AND SO₂+ PROTECTION)
SCALE 1 : 25

NOTES :

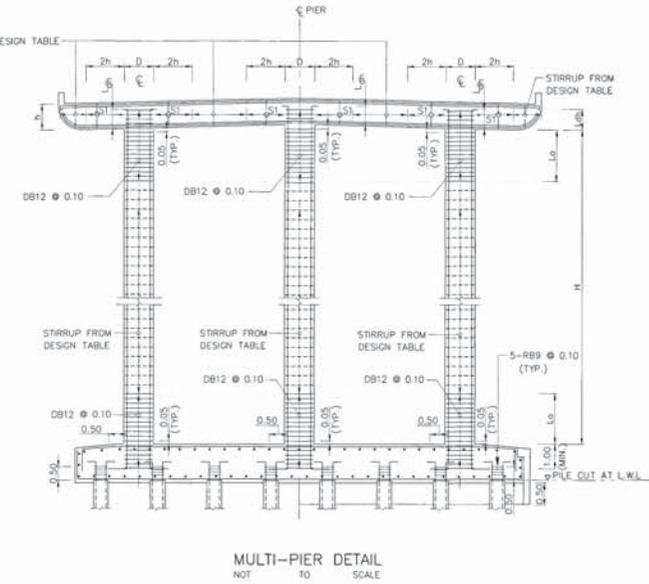
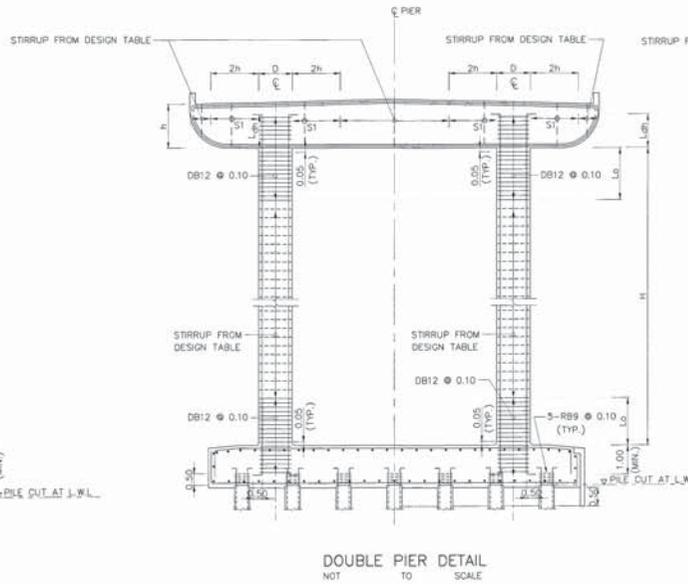
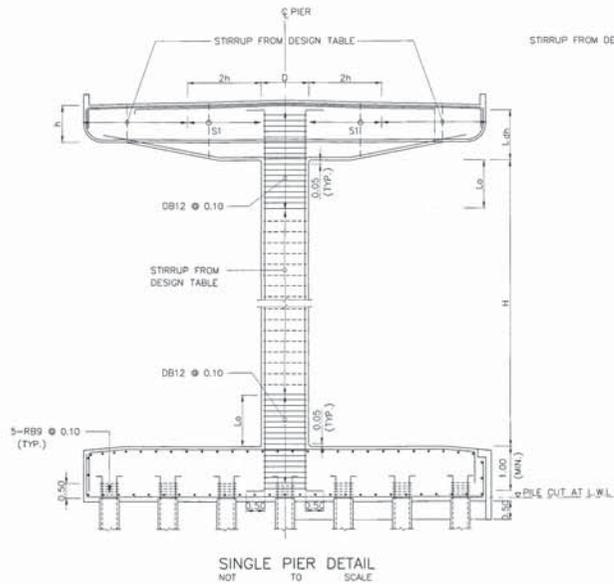
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. THE GENERAL NOTES ARE RECOMMENDED UNLESS OTHERWISE SPECIFIED IN THE DRAWING
3. THE SKEW ANGLE (Ø) IS THE ANGLE IN DEGREES BETWEEN THE DIRECTION OF THE CANAL AND A LINE PERPENDICULAR TO THE ROADWAY

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
STRUCTURAL NOTES
GENERAL NOTES - II

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
REV1 REVISION 1/2017	SIGNATURE DATE	DWG NO. GN-002
REV :	REVISION	SHEET NO. 2

REV1	REVISION	SIGNATURE	DATE
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6.2.4.2 PIER DETAIL



WHEN THE SPACINGS OF STIRRUPS (S1) ARE FOLLOWING
 S1 = MINIMUM SPACING BETWEEN DESIGN TABLE AND,
 S1 = 0.175 M., WHEN $h = 0.70$ M.
 = 0.185 M., WHEN $h = 0.75$ M.
 = 0.200 M., WHEN $0.80 \leq h \leq 1.90$ M.

6.2.5 CONJUNCTION REGIONS (TEE JOINTS) ARE NECESSARY TO IMPROVE CONFINEMENT AS FOLLOWS :
 6.2.5.1 THE ANCHORAGE LENGTHS FOR COLUMN-CAP BEAM CONNECTIONS ARE EQUAL TO TWICE THE DEPTH OF THE BEAM (2h)
 6.2.5.2 COLUMNS ARE CONFINED AT THE END LENGTH (L_e)

MAX. PIER HEIGHT (H)	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00
END REGION LENGTH (L_e)	1.00	1.20	1.35	1.50	1.70	1.85	2.00	2.20	2.35	2.50	2.70	2.85	3.00	3.20	3.35

6.2.5.3 L_{ch} SHALL BE EXTENDED INTO CAP BEAM FOR AT LEAST 1.00 M.

7. FOUNDATION DETAILS

7.1 PILE FOUNDATION

- 7.1.1 PILES SHALL BE DRIVEN TO A DEPTH WHERE SCOUR WILL NOT AFFECT ITS CAPACITY AND HAVE A MINIMUM EMBEDDED LENGTH OF 3.00 M.
- 7.1.2 IN CASE OF PARTLY-EMBEDDED VERTICAL DRIVEN PILE, THE LENGTH BETWEEN BOTTOM FOUNDATION ELEVATION AND GROUND ELEVATION (FREE STANDING HEIGHT) SHALL BE INDICATED AND APPROVED BY ENGINEER
- 7.1.3 FREE STANDING HEIGHT OF PILE SHALL NOT EXCEED 3.00 M. FOR OTHER SUITABLE FREE STANDING HEIGHT SHALL BE DESIGNED.

7.2 SPREAD FOUNDATION

- 7.2.1 TOP ELEVATION OF SPREAD FOUNDATION SHALL BE LOCATED LOWER THAN GROUND ELEVATION AT LEAST 1.00 M. (LOCATED ON STIFF SOIL LAYER) AND AT LEAST 2.50 M. DEEP FROM THE CANAL WHERE SCOUR WILL NOT AFFECT. THE ALLOWABLE SOIL BEARING CAPACITY UNDER THE SPREAD FOUNDATION SHALL BE MORE THAN 20 TONS PER 50.M (0.20 MPa)
- 7.2.2 SPREAD FOOTINGS FOUNDATIONS ARE NOT RECOMMENDED WHERE LIQUEFIABLE SOILS (SILTY CLAY) OCCUR UNLESS THE MAXIMUM DEPTH OF LIQUEFACTION OR SOIL IMPROVEMENT TECHNIQUES ARE USED TO MITIGATE THE EFFECTS OF LIQUEFACTION (AASHTO LRFD 2012, ARTICLE 10.5.4.2)
- 7.2.3 10 CM. THICKNESS OF LEAN CONCRETE SHALL BE POURED AT LEAST 10 CM. WIDER THAN THE FOOTING ALL AROUND.

7.3 SEISMIC REQUIREMENTS OF PILES SHALL COMPLY WITH THE REQUIREMENTS SPECIFIED IN ARTICLE 5.13.4.6 AASHTO LRFD (2012)

NOTES :

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2. THE GENERAL NOTES ARE RECOMMENDED UNLESS OTHERWISE SPECIFIED IN THE DRAWING.
3. THE SKEW ANGLE (θ) IS THE ANGLE IN DEGREES BETWEEN THE DIRECTION OF THE CANAL AND A LINE PERPENDICULAR TO THE ROADWAY

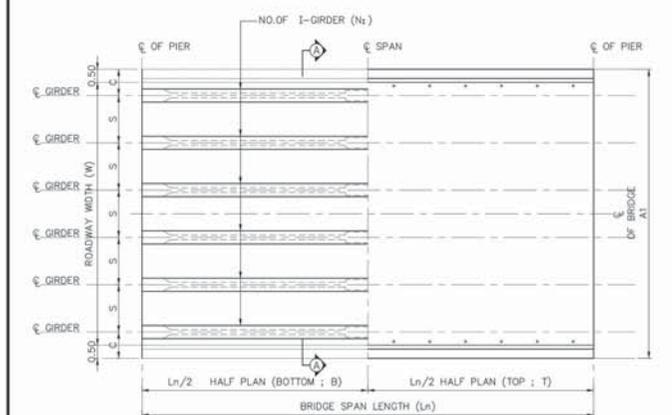
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

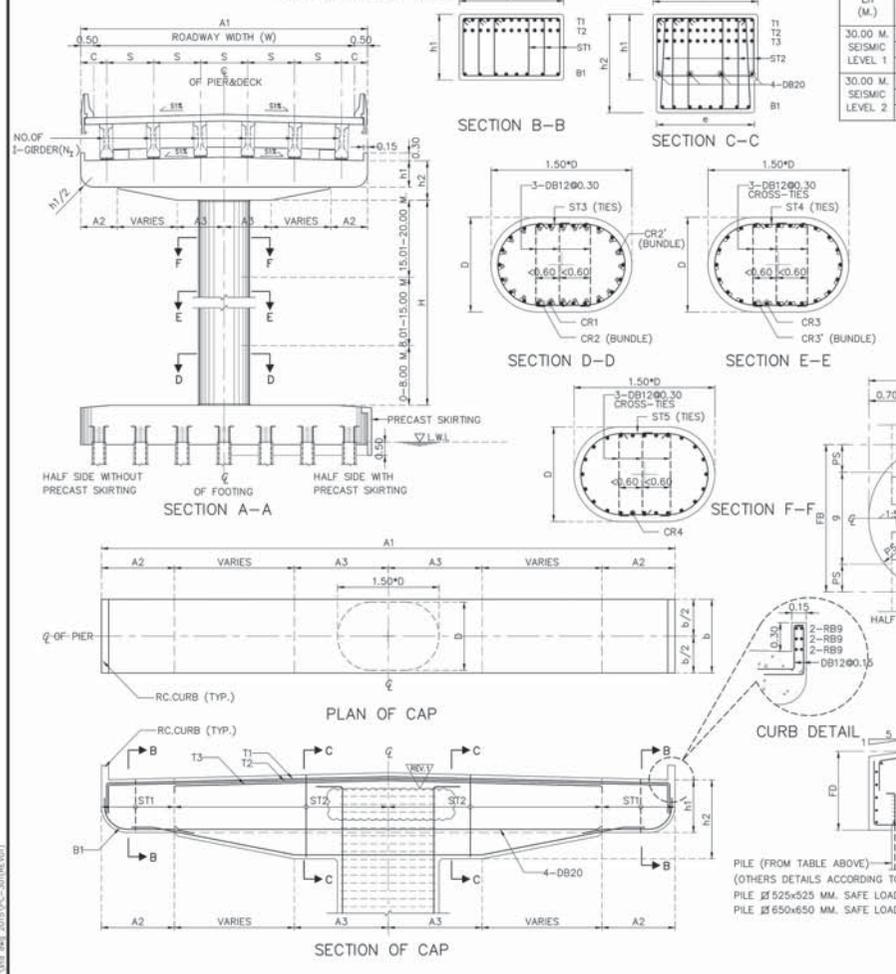
STANDARD DRAWING
 STRUCTURAL NOTES
 GENERAL NOTES - III

DESIGNED : D.D.M. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED : (DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN	
APPROVED : (FOR DIRECTOR GENERAL)	DWG NO. GN-003	SHEET NO. 3

REV. 1	REVISION	SIGNATURE	DATE



PLAN OF BRIDGE DECK



SECTION OF CAP

1.SPAN LENGTH 25.00 M. HEIGHT NOT OVER 20.00 M. (0.00 M. ≤ H ≤ 20.00 M.)

Ln (M.)	W (M.)	NO.OF GIRDER (Ng)	DIMENSION (M.)										REBAR COLUMN									
			A1	A2	A3	b	e	S	h1	h2	STRAIGHT	CURVED	Dx1.5D(M.)	CR1	CR2	CR2'	ST3	CR3	CR3'	ST4	CR4	ST5
25.00 M.	12.00	7	13.00	1.60	2.20	1.60	1.50	1.83	1.00	1.50	1.00	1.00-1.50	1.40x2.10	44-DB28	44-DB28	-	DB1200.15	44-DB28	16-DB28	DB1200.15	44-DB28	DB1200.15
SEISMIC LEVEL 1	15.00	8	16.00	2.00	2.70	1.80	1.65	2.00	1.20	1.90	1.00	1.00-1.50	1.50x2.25	54-DB28	42-DB28	-	DB1200.15	54-DB28	18-DB28	DB1200.15	54-DB28	DB1200.30
25.00 M.	12.00	7	13.00	1.60	2.20	1.60	1.55	1.83	1.00	1.50	1.00	1.00-1.50	1.50x2.25	52-DB28	52-DB28	52-DB28	DB1200.15	52-DB28	30-DB28	DB1200.15	52-DB28	DB1200.30
SEISMIC LEVEL 2	15.00	8	16.00	2.00	2.70	1.80	1.70	2.00	1.20	1.90	1.00	1.00-1.50	1.60x2.40	60-DB28	60-DB28	60-DB28	DB1200.15	60-DB28	32-DB28	DB1200.15	60-DB28	DB1200.30

Ln (M.)	W (M.)	REBAR CAPBEAM						PILE SIZING, PS (MM.)		NO.OF PILE	FOOTING SKEW 0°-15°					FOOTING SKEW 16°-45°					BOTTOM REBAR		TOP REBAR		
		T1	T2	T3	B1	ST1(STIRRUPS)	ST2(STIRRUPS)	Nc1	Nc2		FL	FB	FD	f	g	FL	FB	FD	f	g	BF1	BF2	TF1	TF2	
25.00 M.	12.00	22-DB28	22-DB28	22-DB28	12-DB20	4-DB1200.15	5-DB1200.10	Ø 650x650	8	2	16	15.00	3.55	2.25	1.94	2.25	15.00	4.05	2.25	1.94	2.75	DB3200.10	DB2500.12	DB2000.14	DB2000.14
SEISMIC LEVEL 1	15.00	24-DB28	24-DB28	24-DB28	12-DB20	4-DB1200.15	5-DB1200.10	Ø 650x650	9	2	18	17.00	3.55	2.50	1.95	2.25	17.00	4.05	2.50	1.95	2.75	DB3200.08	DB2500.11	DB2000.13	DB2000.13
25.00 M.	12.00	22-DB28	22-DB28	22-DB28	12-DB20	4-DB1200.15	5-DB1200.10	Ø 650x650	8	2	16	15.00	3.55	2.25	1.94	2.25	15.00	4.05	2.25	1.94	2.75	DB3200.08	DB2500.12	DB2000.14	DB2000.14
SEISMIC LEVEL 2	15.00	24-DB28	24-DB28	24-DB28	12-DB20	4-DB1200.15	5-DB1200.10	Ø 650x650	9	2	18	17.00	3.55	2.50	1.95	2.25	17.00	4.05	2.50	1.95	2.75	DB3200.09	DB2500.11	DB2000.13	DB2000.13

REMARK ; ** = 2 LAYERS
*** = 3 LAYERS

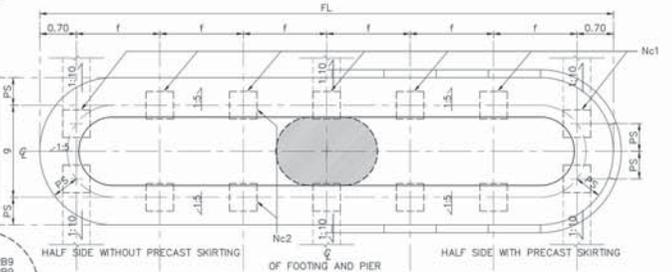
2.SPAN LENGTH 30.00 M. HEIGHT NOT OVER 20.00 M. (0.00 M. ≤ H ≤ 20.00 M.)

Ln (M.)	W (M.)	NO.OF GIRDER (Ng)	DIMENSION (M.)										REBAR COLUMN									
			A1	A2	A3	b	e	S	h1	h2	STRAIGHT	CURVED	Dx1.5D(M.)	CR1	CR2	CR2'	ST3	CR3	CR3'	ST4	CR4	ST5
30.00 M.	12.00	7	13.00	1.60	2.20	1.80	1.60	1.83	1.00	1.70	1.00	1.00-1.50	1.40x2.10	52-DB28	52-DB28	-	DB1200.15	52-DB28	16-DB28	DB1200.15	52-DB28	DB1200.30
SEISMIC LEVEL 1	15.00	8	16.00	2.00	2.70	2.00	1.75	2.00	1.20	1.90	1.00	1.00-1.50	1.50x2.25	56-DB28	56-DB28	-	DB1200.15	56-DB28	18-DB28	DB1200.15	56-DB28	DB1200.30
30.00 M.	12.00	7	13.00	1.60	2.20	1.80	1.70	1.83	1.00	1.70	1.00	1.00-1.50	1.60x2.40	56-DB28	56-DB28	56-DB28	DB1200.15	56-DB28	32-DB28	DB1200.15	56-DB28	DB1200.30
SEISMIC LEVEL 2	15.00	8	16.00	2.00	2.70	2.00	1.85	2.00	1.20	1.90	1.00	1.00-1.50	1.70x2.55	66-DB28	66-DB28	66-DB28	DB1200.15	66-DB28	34-DB28	DB1200.15	66-DB28	DB1200.30

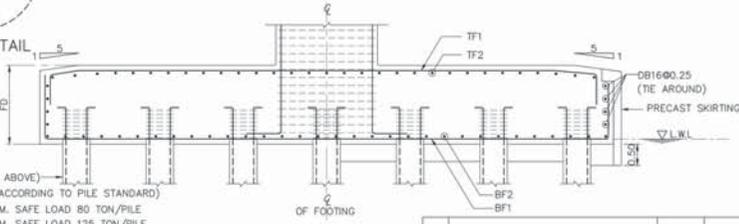
Ln (M.)	W (M.)	REBAR CAPBEAM						PILE SIZING, PS (MM.)		NO.OF PILE	FOOTING SKEW 0°-15°					FOOTING SKEW 16°-45°									
		T1	T2	T3	B1	ST1(STIRRUPS)	ST2(STIRRUPS)	Nc1	Nc2		FL	FB	FD	f	g	FL	FB	FD	f	g					
30.00 M.	12.00	20-DB28	20-DB28	20-DB28	10-DB20	3-DB1200.10	4-DB1200.10	Ø 650x650	8	2	16	15.00	3.55	2.25	1.94	2.25	15.00	4.05	2.25	1.94	2.75	DB3200.12	DB2500.11	DB2000.12	DB2000.12
SEISMIC LEVEL 1	15.00	27-DB28	27-DB28	27-DB28	12-DB20	3-DB1200.10	4-DB1200.10	Ø 650x650	10	2	20	19.00	3.75	2.90	1.96	2.45	19.00	4.25	2.90	1.96	2.95	DB3200.12	DB2500.11	DB2000.12	DB2000.12
30.00 M.	12.00	20-DB28	20-DB28	20-DB28	10-DB20	3-DB1200.10	4-DB1200.10	Ø 650x650	8	2	16	15.00	3.55	2.25	1.94	2.25	15.00	4.05	2.25	1.94	2.75	DB3200.09	DB2500.12	DB2000.14	DB2000.14
SEISMIC LEVEL 2	15.00	27-DB28	27-DB28	27-DB28	12-DB20	3-DB1200.10	4-DB1200.10	Ø 650x650	10	2	20	19.00	3.75	2.90	1.96	2.45	19.00	4.25	2.90	1.96	2.95	DB3200.09	DB2500.11	DB2000.12	DB2000.12

Ln (M.)	W (M.)	BOTTOM REBAR		TOP REBAR	
		BF1	BF2	TF1	TF2
30.00 M.	12.00	DB3200.09	DB2500.12	DB2000.14	DB2000.14
SEISMIC LEVEL 1	15.00	DB3200.12	DB2500.11	DB2000.12	DB2000.12
30.00 M.	12.00	DB3200.09	DB2500.12	DB2000.14	DB2000.14
SEISMIC LEVEL 2	15.00	DB3200.09	DB2500.11	DB2000.12	DB2000.12

REMARK ; ** = 2 LAYERS
*** = 3 LAYERS



PLAN OF FOOTING



SECTION OF FOOTING

PILE (FROM TABLE ABOVE)
(OTHERS DETAILS ACCORDING TO PILE STANDARD)
PILE Ø 525x525 MM. SAFE LOAD 80 TON/PILE
PILE Ø 650x650 MM. SAFE LOAD 125 TON/PILE

ADJUST LENGTH FOR SKEW BRIDGE

VALUE OF SECO IN CASE OF SKEW BRIDGE (SKEW, θ)					
SKEW ANGLE, θ (DEGREE)	0	5	10	15	20
SEC θ	1.0000	1.0038	1.0154	1.0353	1.0642
SKEW ANGLE, θ (DEGREE)	25	30	35	40	45
SEC θ	1.1034	1.1547	1.2208	1.3054	1.4142

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

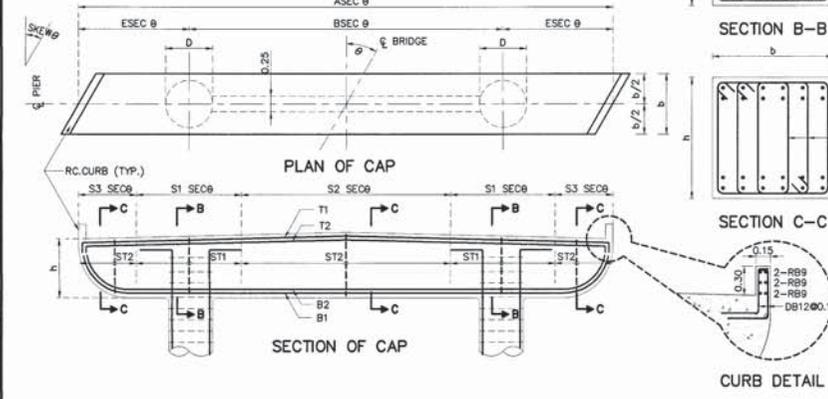
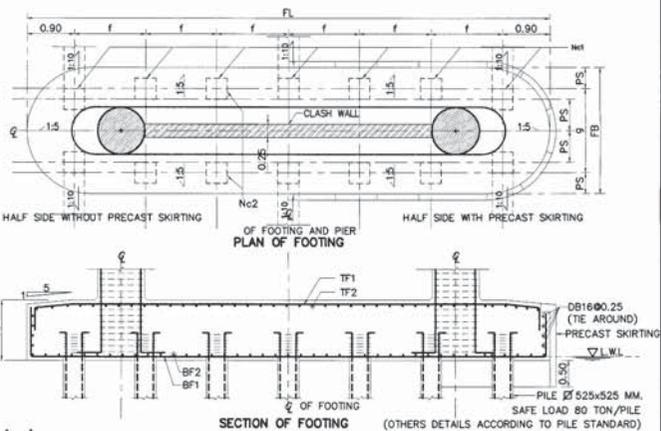
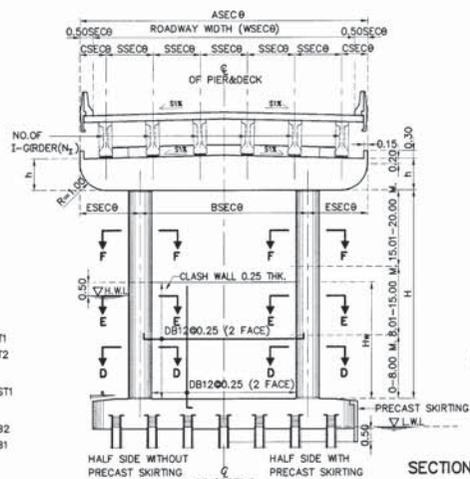
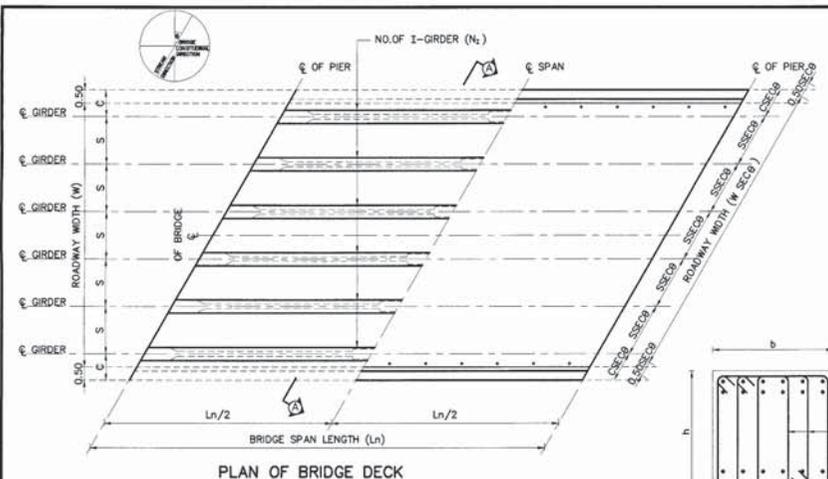
STANDARD DRAWING
SINGLE COLUMN PIER WITHOUT SIDEWALK : SPAN LENGTH 25.00 M. AND 30.00 M.
HEIGHT NOT OVER 20.00 M.

DESIGNED : B.O.H. & CONSULTANTS
CHECKED : BUREAU OF LOCATION & DESIGN
DATE : OCT 2015

SUBMITTED :
(DIRECTOR OF LOCATION & DESIGN BUREAU)

APPROVED :
(FOR DIRECTOR GENERAL)

SCALE : AS SHOWN
DWG NO. : PC-301
SHEET NO. : 4



ADJUST LENGTH FOR SKEW BRIDGE

SKEW ANGLE, θ (DEGREE)	VALUE OF SECθ IN CASE OF SKEW BRIDGE (SKEW, θ)									
	0	5	10	15	20	25	30	35	40	45
SEC θ	1.0000	1.0038	1.0154	1.0353	1.0642	1.1034	1.1547	1.2208	1.3054	1.4142

1. SPAN LENGTH 25.00 M. HEIGHT NOT OVER 20.00 M. (0.00 M. ≤ H ≤ 20.00 M.)

1.1 DIMENSION OF SUBSTRUCTURE & REBAR OF COLUMN

L _n (M.)	W (M.)	NO. OF I-GRIDER (N _g)	DIMENSION (M.)										REBAR COLUMN									
			A	B	E	S	S1	S2	S3	STRAIGHT	CURVED	D (M.)	CR1	CR2	ST3	CR3	ST4	CR4	ST5			
25.00 M. SEISMIC LEVEL 1	12.00	7	13.00	7.30	2.85	1.83	3.70	3.60	1.00	1.00	1.00-1.50	1.30	30-DB28	30-DB28	DB1200.15	30-DB28	DB1200.30	24-DB28	DB1200.30	24-DB28	DB1200.30	
	15.00	8	16.00	9.40	3.30	2.00	3.40	6.00	1.60	1.00	1.00-1.50	1.30	30-DB28	30-DB28	DB1200.15	30-DB28	DB1200.30	24-DB28	DB1200.30	26-DB28	DB1200.30	
25.00 M. SEISMIC LEVEL 2	12.00	7	13.00	7.30	2.85	1.83	3.70	3.60	1.00	1.00	1.00-1.50	1.40	42-DB28	42-DB28	DB1200.15	42-DB28	DB1200.30	30-DB28	DB1200.30	30-DB28	DB1200.30	
	15.00	8	16.00	9.40	3.30	2.00	3.40	6.00	1.60	1.00	1.00-1.50	1.50	48-DB28	48-DB28	DB1200.15	48-DB28	DB1200.30	30-DB28	DB1200.30	30-DB28	DB1200.30	

1.2 REBAR OF CAP BEAM

L _n (M.)	W (M.)	b (M.)	h (M.)	SKEW 0-30 DEGREE								SKEW 31-45 DEGREE									
				T1	T2	B1	B2	ST1 (STIRRUPS)	ST2 (STIRRUPS)	T1	T2	B1	B2	ST1 (STIRRUPS)	ST2 (STIRRUPS)						
25.00 M. SEISMIC LEVEL 1	12.00	1.60	1.40	19-DB25	-	19-DB25	-	4-DB1200.15	3-DB1200.20	13-DB25	13-DB25	13-DB25	13-DB25	4-DB1200.15	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.15	3-DB1200.20
	15.00	1.60	1.40	14-DB25	14-DB25	14-DB25	14-DB25	4-DB1200.125	3-DB1200.20	18-DB25	18-DB25	18-DB25	18-DB25	4-DB1200.125	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.125	3-DB1200.20
25.00 M. SEISMIC LEVEL 2	12.00	1.60	1.40	19-DB25	-	19-DB25	-	4-DB1200.15	3-DB1200.20	14-DB25	14-DB25	14-DB25	14-DB25	4-DB1200.15	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.15	3-DB1200.20
	15.00	1.70	1.40	14-DB25	14-DB25	14-DB25	14-DB25	4-DB1200.125	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.125	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.125	3-DB1200.20

1.3 FOUNDATION & PILE

L _n (M.)	W (M.)	PILE SIZING, PS (MM.)	Nc1	Nc2	NO. OF PILE	FOOTING DIMENSION (M.)					BOTTOM REBAR		TOP REBAR	
						FL	FB	FD	f	g	BF1	BF2	TF1	TF2
25.00 M. SEISMIC LEVEL 1	12.00	Ø 525x525	8	2	16	13.00	3.00	1.75	1.60	1.95	DB25Ø0.10	DB25Ø0.15	DB25Ø0.10	DB20Ø0.175
	15.00	Ø 525x525	9	2	18	16.00	3.00	2.00	1.78	1.95	DB28Ø0.09	DB25Ø0.125	DB28Ø0.09	DB20Ø0.175
25.00 M. SEISMIC LEVEL 2	12.00	Ø 525x525	8	2	16	13.00	3.00	1.75	1.60	1.95	DB25Ø0.09	DB25Ø0.15	DB25Ø0.09	DB20Ø0.175
	15.00	Ø 525x525	9	2	18	16.00	3.00	2.00	1.78	1.95	DB28Ø0.14 **	DB25Ø0.125	DB28Ø0.14 **	DB20Ø0.175

REMARK : ** = 2 LAYERS

2. SPAN LENGTH 30.00 M. HEIGHT NOT OVER 20.00 M. (0.00 M. ≤ H ≤ 20.00 M.)

2.1 DIMENSION OF SUBSTRUCTURE & REBAR OF COLUMN

L _n (M.)	W (M.)	NO. OF I-GRIDER (N _g)	DIMENSION (M.)										REBAR COLUMN									
			A	B	E	S	S1	S2	S3	STRAIGHT	CURVED	D (M.)	CR1	CR2	ST3	CR3	ST4	CR4	ST5			
30.00 M. SEISMIC LEVEL 1	12.00	7	13.00	7.30	2.85	1.83	3.70	3.60	1.00	1.00	1.00-1.50	1.30	30-DB28	30-DB28	DB1200.15	30-DB28	DB1200.30	24-DB28	DB1200.30	24-DB28	DB1200.30	
	15.00	8	16.00	9.40	3.30	2.00	3.40	6.00	1.60	1.00	1.00-1.50	1.40	30-DB28	30-DB28	DB1200.15	30-DB28	DB1200.30	26-DB28	DB1200.30	26-DB28	DB1200.30	
30.00 M. SEISMIC LEVEL 2	12.00	7	13.00	7.30	2.85	1.83	3.70	3.60	1.00	1.00	1.00-1.50	1.50	42-DB28	42-DB28	DB1200.15	42-DB28	DB1200.30	30-DB28	DB1200.30	30-DB28	DB1200.30	
	15.00	8	16.00	9.40	3.30	2.00	3.40	6.00	1.60	1.00	1.00-1.50	1.50	48-DB28	48-DB28	DB1200.15	48-DB28	DB1200.30	30-DB28	DB1200.30	30-DB28	DB1200.30	

2.2 REBAR OF CAP BEAM

L _n (M.)	W (M.)	b (M.)	h (M.)	SKEW 0-30 DEGREE								SKEW 31-45 DEGREE									
				T1	T2	B1	B2	ST1 (STIRRUPS)	ST2 (STIRRUPS)	T1	T2	B1	B2	ST1 (STIRRUPS)	ST2 (STIRRUPS)						
30.00 M. SEISMIC LEVEL 1	12.00	1.60	1.40	10-DB25	10-DB25	10-DB25	10-DB25	4-DB1200.125	3-DB1200.20	14-DB25	14-DB25	14-DB25	14-DB25	4-DB1200.125	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.125	3-DB1200.20
	15.00	1.60	1.40	15-DB25	15-DB25	15-DB25	15-DB25	4-DB1200.10	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.10	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.10	3-DB1200.20
30.00 M. SEISMIC LEVEL 2	12.00	1.70	1.40	10-DB25	10-DB25	10-DB25	10-DB25	4-DB1200.125	3-DB1200.20	14-DB25	14-DB25	14-DB25	14-DB25	4-DB1200.125	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.125	3-DB1200.20
	15.00	1.70	1.40	15-DB25	15-DB25	15-DB25	15-DB25	4-DB1200.10	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.10	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	4-DB1200.10	3-DB1200.20

2.3 FOUNDATION & PILE

L _n (M.)	W (M.)	PILE SIZING, PS (MM.)	Nc1	Nc2	NO. OF PILE	FOOTING DIMENSION (M.)					BOTTOM REBAR		TOP REBAR	
						FL	FB	FD	f	g	BF1	BF2	TF1	TF2
30.00 M. SEISMIC LEVEL 1	12.00	Ø 525x525	9	2	18	14.00	3.00	1.75	1.53	1.95	DB28Ø0.13	DB25Ø0.15	DB28Ø0.13	DB20Ø0.175
	15.00	Ø 525x525	10	2	20	16.00	3.00	2.00	1.58	1.95	DB28Ø0.16 **	DB25Ø0.125	DB28Ø0.16 **	DB20Ø0.15
30.00 M. SEISMIC LEVEL 2	12.00	Ø 525x525	9	2	18	14.00	3.00	1.75	1.53	1.95	DB28Ø0.12	DB25Ø0.15	DB28Ø0.12	DB20Ø0.175
	15.00	Ø 525x525	10	2	20	16.00	3.00	2.00	1.58	1.95	DB28Ø0.13 **	DB25Ø0.125	DB28Ø0.13 **	DB20Ø0.15

REMARK : ** = 2 LAYERS

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING

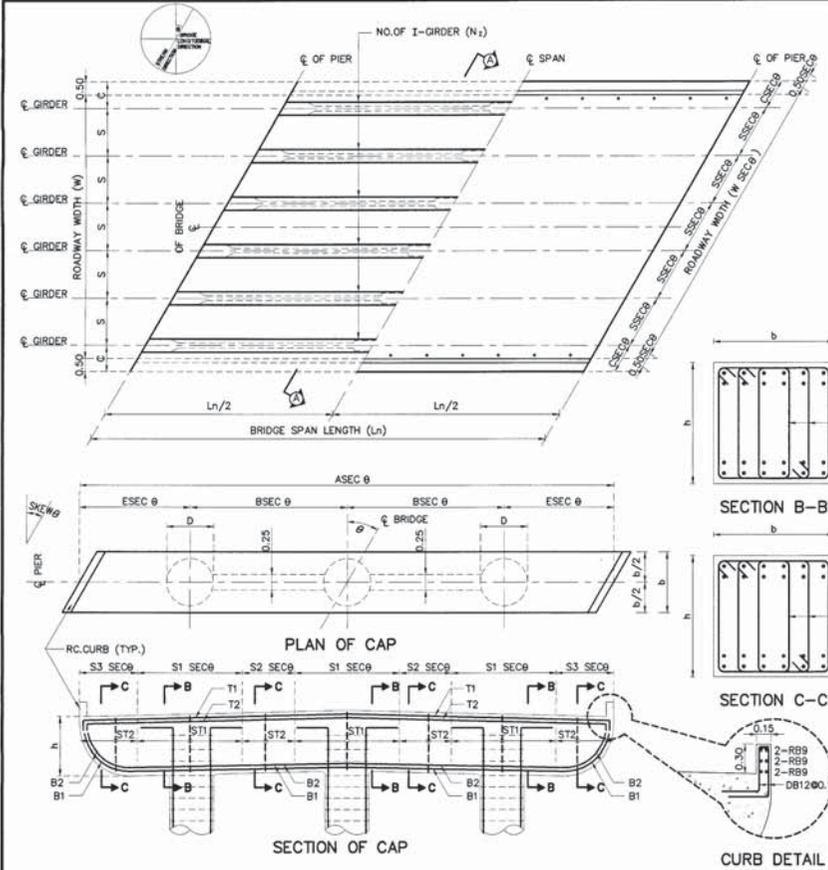
TWO COLUMNS PIER WITHOUT SIDEWALK : SPAN LENGTH 25.00 M. AND 30.00 M. HEIGHT NOT OVER 20.00 M.

DESIGNED: D.G.H. & CONSULTANTS CHECKED: BUREAU OF LOCATION & DESIGN DATE: OCT 2015

SUBMITTED: (DIRECTOR OF LOCATION & DESIGN BUREAU) SCALE: AS SHOWN

APPROVED: (FOR DIRECTOR GENERAL) DWG NO. PC-302 SHEET NO. 5

REF.	REVISION	SIGNATURE	DATE



1. SPAN LENGTH 25.00 M. HEIGHT NOT OVER 20.00 M. (0.00 M. ≤ H ≤ 20.00 M.)

1.1 DIMENSION OF SUBSTRUCTURE & REBAR OF COLUMN

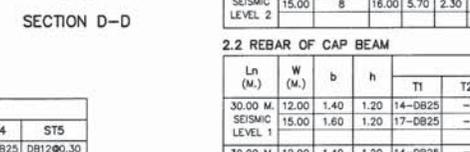
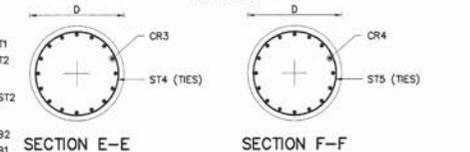
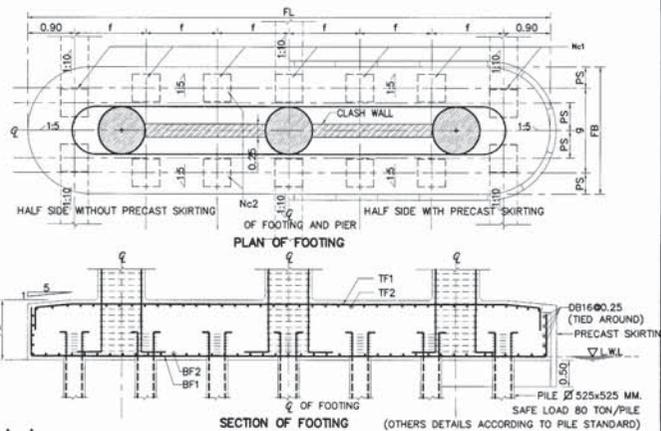
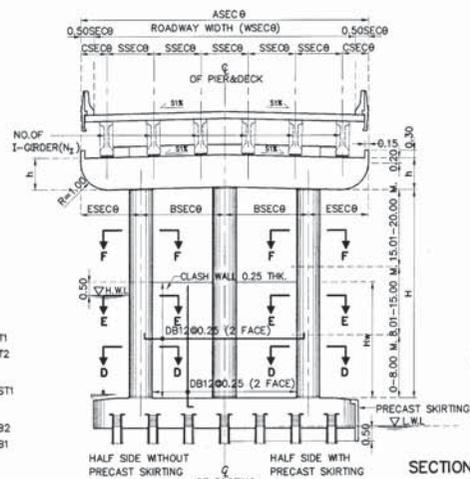
Ln (M.)	W (M.)	NO. OF I-GIRDER (N _g)	DIMENSION (M.)							REBAR COLUMN											
			A	B	E	S	S1	S2	S3	STRAIGHT	CURVED	D (M.)	CR1	CR2	ST3	CR3	ST4	CR4	ST5		
25.00 M. SEISMIC LEVEL 1	12.00	7	13.00	4.70	1.80	1.83	3.60	1.10	-	1.00	1.00-1.50	1.20	26-DB25	26-DB25	DB1200.15	26-DB25	DB1200.30	26-DB25	DB1200.30	26-DB25	DB1200.30
	15.00	8	16.00	5.70	2.30	2.00	2.60	3.10	1.00	1.00	1.00-1.50	1.40	33-DB25	33-DB25	DB1200.15	33-DB25	DB1200.30	33-DB25	DB1200.30	33-DB25	DB1200.30
25.00 M. SEISMIC LEVEL 2	12.00	7	13.00	4.70	1.80	1.83	3.60	1.10	-	1.00	1.00-1.50	1.20	40-DB25	40-DB25	DB1200.15	40-DB25	DB1200.30	40-DB25	DB1200.30	40-DB25	DB1200.30
	15.00	8	16.00	5.70	2.30	2.00	2.60	3.10	1.00	1.00	1.00-1.50	1.40	33-DB25	33-DB25	DB1200.15	33-DB25	DB1200.30	33-DB25	DB1200.30	33-DB25	DB1200.30

1.2 REBAR OF CAP BEAM

Ln (M.)	W (M.)	b (M.)	h (M.)	SKEW 0-30								SKEW 31-45							
				T1	T2	B1	B2	ST1(STIRRUPS)	ST2(STIRRUPS)	T1	T2	B1	B2	ST1(STIRRUPS)	ST2(STIRRUPS)				
25.00 M. SEISMIC LEVEL 1	12.00	1.40	1.20	12-DB25	-	12-DB25	-	5-DB1200.175	4-DB1200.20	12-DB25	-	12-DB25	-	5-DB1200.175	4-DB1200.20				
	15.00	1.60	1.20	16-DB25	-	16-DB25	-	5-DB1200.15	4-DB1200.20	16-DB25	-	16-DB25	-	5-DB1200.15	4-DB1200.20				
25.00 M. SEISMIC LEVEL 2	12.00	1.40	1.20	12-DB25	-	12-DB25	-	5-DB1200.175	4-DB1200.20	12-DB25	-	12-DB25	-	5-DB1200.175	4-DB1200.20				
	15.00	1.60	1.20	16-DB25	-	16-DB25	-	5-DB1200.15	4-DB1200.20	16-DB25	-	16-DB25	-	5-DB1200.15	4-DB1200.20				

1.3 FOUNDATION & PILE

Ln (M.)	W (M.)	PILE SIZING, PS (MM.)	Nc1	Nc2	NO. OF PILE	FOOTING DIMENSION (M.)					BOTTOM REBAR		TOP REBAR	
						FL	FB	FD	f	g	BF1	BF2	TF1	TF2
25.00 M. SEISMIC LEVEL 1	12.00	∅ 525x525	9	2	18	14.00	3.05	1.50	1.53	2.00	DB2500.15	DB2500.175	DB2000.20	DB2000.20
	15.00	∅ 525x525	10	2	20	16.00	3.05	1.75	1.58	2.00	DB2500.13	DB2500.15	DB2000.13	DB2000.20
25.00 M. SEISMIC LEVEL 2	12.00	∅ 525x525	9	2	18	14.00	3.05	1.50	1.53	2.00	DB2500.14	DB2500.175	DB2000.175	DB2000.20
	15.00	∅ 525x525	10	2	20	16.00	3.05	1.75	1.58	2.00	DB2500.13	DB2500.15	DB2000.10	DB2000.20



ADJUST LENGTH FOR SKEW BRIDGE

SKEW ANGLE, θ (DEGREE)	VALUE OF SEC θ IN CASE OF SKEW BRIDGE (SKEW, θ)									
	0	5	10	15	20	25	30	35	40	45
SEC θ	1.0000	1.0038	1.0154	1.0353	1.0642	1.1034	1.1547	1.2208	1.3054	1.4142

2. SPAN LENGTH 30.00 M. HEIGHT NOT OVER 20.00 M. (0.00 M. ≤ H ≤ 20.00 M.)

2.1 DIMENSION OF SUBSTRUCTURE & REBAR OF COLUMN

Ln (M.)	W (M.)	NO. OF I-GIRDER (N _g)	DIMENSION (M.)										REBAR COLUMN									
			A	B	E	S	S1	S2	S3	STRAIGHT	CURVED	D (M.)	CR1	CR2	ST3	CR3	ST4	CR4	ST5			
30.00 M. SEISMIC LEVEL 1	12.00	7	13.00	4.70	1.80	1.83	3.60	1.10	-	1.00	1.00-1.50	1.20	29-DB25	29-DB25	DB1200.15	29-DB25	DB1200.30	29-DB25	DB1200.30	29-DB25	DB1200.30	
	15.00	8	16.00	5.70	2.30	2.00	2.60	3.10	1.00	1.00	1.00-1.50	1.40	34-DB25	34-DB25	DB1200.15	34-DB25	DB1200.30	34-DB25	DB1200.30	34-DB25	DB1200.30	
30.00 M. SEISMIC LEVEL 2	12.00	7	13.00	4.70	1.80	1.83	3.60	1.10	-	1.00	1.00-1.50	1.20	38-DB28	38-DB28	DB1200.15	38-DB28	DB1200.30	38-DB28	DB1200.30	38-DB28	DB1200.30	
	15.00	8	16.00	5.70	2.30	2.00	2.60	3.10	1.00	1.00	1.00-1.50	1.40	44-DB25	44-DB25	DB1200.15	44-DB25	DB1200.30	44-DB25	DB1200.30	44-DB25	DB1200.30	

2.2 REBAR OF CAP BEAM

Ln (M.)	W (M.)	b (M.)	h (M.)	SKEW 0-30						SKEW 31-45					
				T1	T2	B1	B2	ST1(STIRRUPS)	ST2(STIRRUPS)	T1	T2	B1	B2	ST1(STIRRUPS)	ST2(STIRRUPS)
30.00 M. SEISMIC LEVEL 1	12.00	1.40	1.20	14-DB25	-	14-DB25	-	5-DB1200.15	4-DB1200.20	14-DB25	-	14-DB25	-	5-DB1200.15	4-DB1200.20
	15.00	1.60	1.20	17-DB25	-	17-DB25	-	5-DB1200.15	4-DB1200.20	17-DB25	-	17-DB25	-	5-DB1200.15	4-DB1200.20
30.00 M. SEISMIC LEVEL 2	12.00	1.40	1.20	14-DB25	-	14-DB25	-	5-DB1200.15	4-DB1200.20	14-DB25	-	14-DB25	-	5-DB1200.15	4-DB1200.20
	15.00	1.60	1.20	17-DB25	-	17-DB25	-	5-DB1200.15	4-DB1200.20	17-DB25	-	17-DB25	-	5-DB1200.15	4-DB1200.20

2.3 FOUNDATION & PILE

Ln (M.)	W (M.)	PILE SIZING, PS (MM.)	Nc1	Nc2	NO. OF PILE	FOOTING DIMENSION (M.)					BOTTOM REBAR		TOP REBAR	
						FL	FB	FD	f	g	BF1	BF2	TF1	TF2
30.00 M. SEISMIC LEVEL 1	12.00	∅ 525x525	9	2	18	14.00	3.45	1.50	1.53	2.40	DB2500.15	DB2500.175	DB2000.20	DB2000.20
	15.00	∅ 525x525	10	2	20	16.00	3.45	1.75	1.58	2.40	DB2500.13	DB2500.15	DB2000.13	DB2000.20
30.00 M. SEISMIC LEVEL 2	12.00	∅ 525x525	9	2	18	14.00	3.45	1.50	1.53	2.40	DB2500.15	DB2500.175	DB2000.20	DB2000.20
	15.00	∅ 525x525	10	2	20	16.00	3.45	1.75	1.58	2.40	DB2500.13	DB2500.15	DB2000.11	DB2000.20

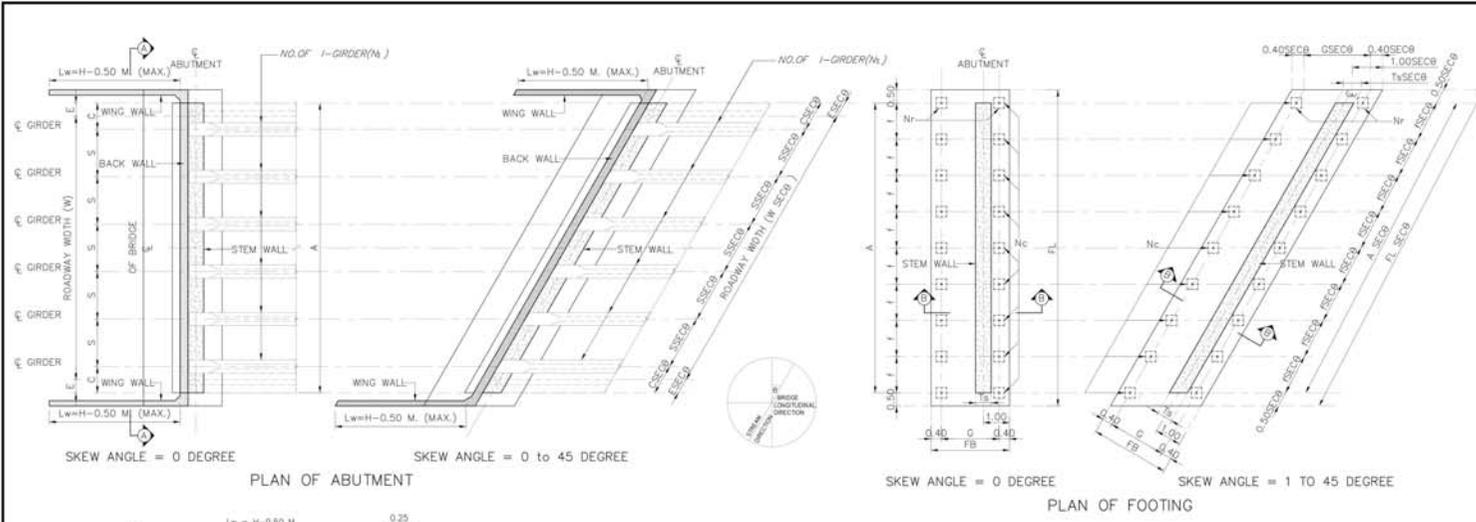
KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING

THREE COLUMNS PIER WITHOUT SIDEWALK : SPAN LENGTH 25.00 M. AND 30.00 M.
 HEIGHT NOT OVER 20.00 M.

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED: (DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN	DWG NO. PC-303
APPROVED: (FOR DIRECTOR GENERAL)	SIGNATURE	DATE

D:\M41 - Hwy 250x30 PC-303 (REV.001)



SKIEW ANGLE = 0 DEGREE

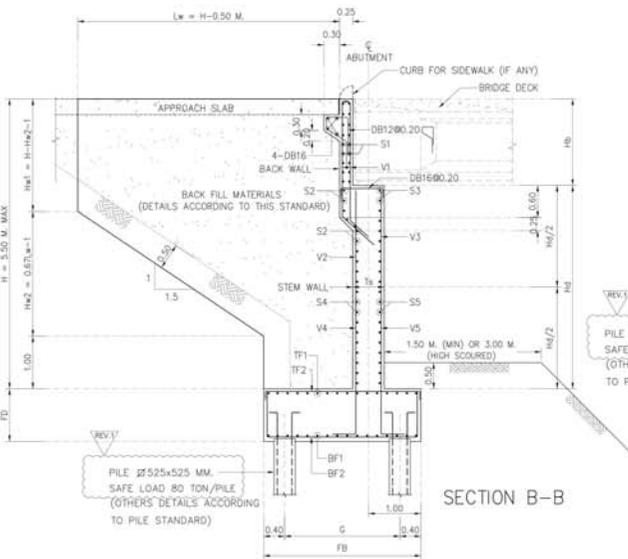
SKIEW ANGLE = 0 TO 45 DEGREE

PLAN OF ABUTMENT

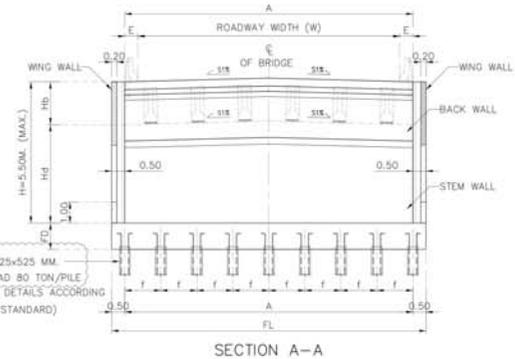
SKIEW ANGLE = 0 DEGREE

SKIEW ANGLE = 1 TO 45 DEGREE

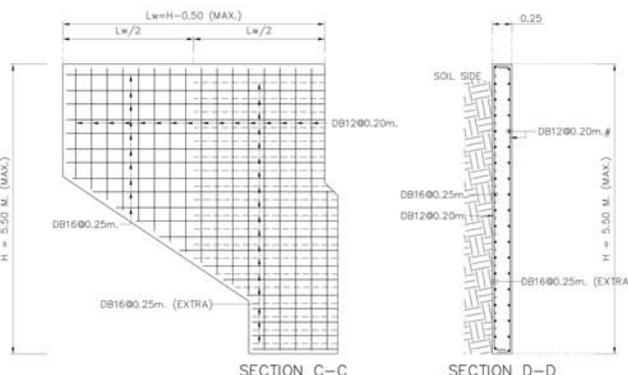
PLAN OF FOOTING



SECTION B-B

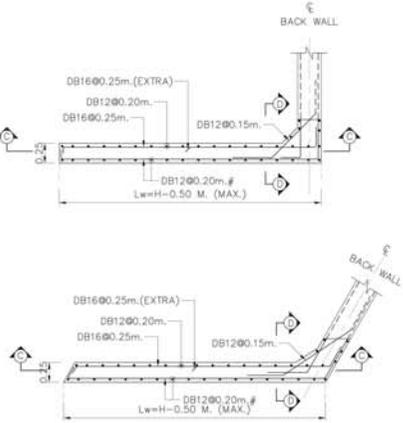


SECTION A-A



SECTION C-C

SECTION D-D



1. SPAN LENGTH 25.00 M. AND 30.00 M.

1.1 DIMENSION OF ABUTMENT

Ln (M.)	W (M.)	NO. OF I-GIRDER (N _g)	H (M.) (MAX)	DIMENSION (M.)						C	
				A	E	S	H _b	H _d	T _s	STRAIGHT	CURVED
25.00 M.	12.00	7	5.50	13.00	0.50	1.833	1.68	3.82	0.60	1.00	1.00-1.50
	15.00	8	5.50	16.00	0.50	2.00	1.68	3.82	0.60	1.00	1.00-1.50
30.00 M.	12.00	7	5.50	13.00	0.50	1.833	1.68	3.82	0.60	1.00	1.00-1.50
	15.00	8	5.50	16.00	0.50	2.00	1.68	3.82	0.60	1.00	1.00-1.50

REMARK ; * = DEPENDS ON DEPTH OF GIRDER

1.2 REBAR IN ABUTMENT

Ln (M.)	W (M.)	SKIEW 0-45 DEGREE									
		V1	V2	V3	V4	V5	S1	S2	S3	S4	S5
25.00 M.	12.00,15.00	DB1200.20	DB2000.20	DB1600.20	DB2000.10	DB1600.20	RB900.15	DB1600.20	DB1600.20	DB1600.20	DB1600.20
30.00 M.	12.00,15.00	DB1200.20	DB2000.20	DB1600.20	DB2000.10	DB1600.20	RB900.15	DB1600.20	DB1600.20	DB1600.20	DB1600.20

1.3 FOUNDATION & PILE

Ln (M.)	W (M.)	PILE SIZING (MM.)	N _c	N _r	NO. OF PILE	FOOTING DIMENSION (M.)					BOTTOM REBAR		TOP REBAR	
						FL	FB	FD	f	G	BF1	BF2	TF1	TF2
25.00 M.	12.00	Ø 525x525	7	2	14	14.00	3.00	1.00	2.20	2.20	DB2000.17	DB2500.25	DB2000.30	DB2000.30
	15.00	Ø 525x525	9	2	18	17.00	3.00	1.00	2.03	2.20	DB2000.17	DB2500.25	DB2000.30	DB2000.30
30.00 M.	12.00	Ø 525x525	8	2	16	14.00	3.00	1.00	1.89	2.20	DB2000.17	DB2500.25	DB2000.30	DB2000.30
	15.00	Ø 525x525	10	2	20	17.00	3.00	1.00	1.80	2.20	DB2000.17	DB2500.25	DB2000.30	DB2000.30

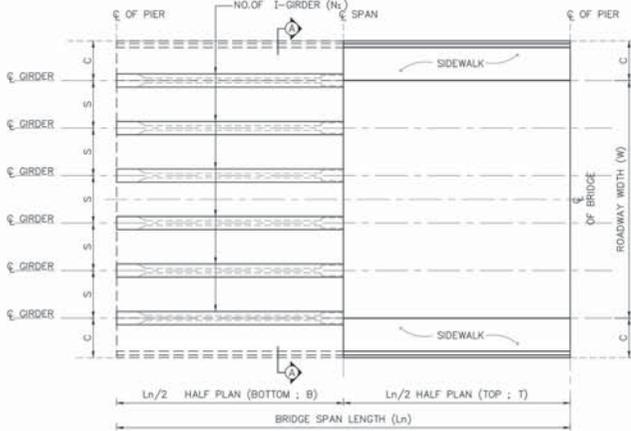
1.4 ADJUST LENGTH FOR SKEW BRIDGE

SKIEW ANGLE, θ (DEGREE)	VALUE OF SEC θ IN CASE OF SKEW BRIDGE (SKEW, θ)									
	0	5	10	15	20	25	30	35	40	45
SEC θ	1.0000	1.0038	1.0154	1.0353	1.0642	1.1034	1.1547	1.2208	1.3054	1.4142

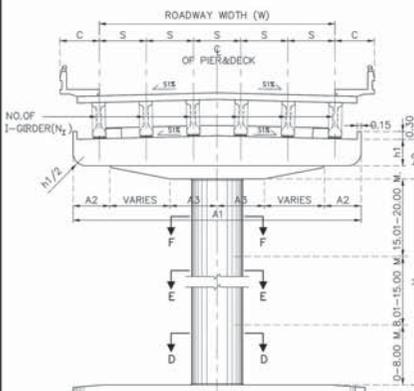
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 ABUTMENT WITHOUT SIDEWALK : SPAN LENGTH 25.00 M. AND 30.00 M.

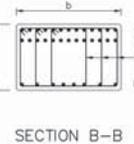
DESIGNED : D.O.M. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT. 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(TOP DIRECTOR GENERAL)	DWG NO. PC-304
REV.1 REUSE AS CLOUD	DEC 2017	SHEET NO. 7
REF. REVISION	SIGNATURE DATE	



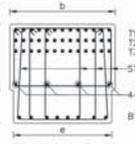
PLAN OF BRIDGE DECK



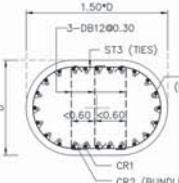
SECTION A-A



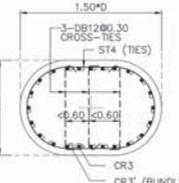
SECTION B-B



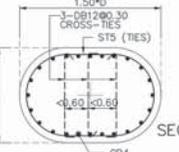
SECTION C-C



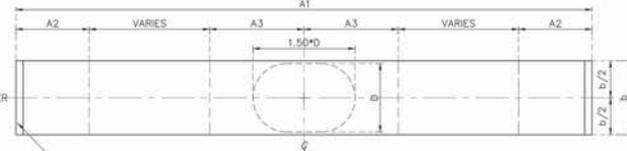
SECTION D-D



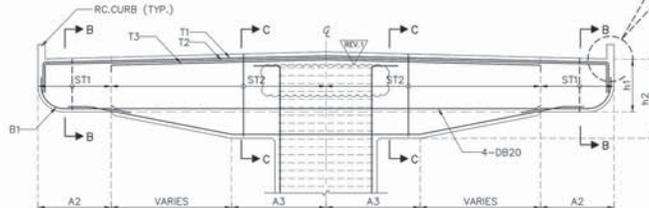
SECTION E-E



SECTION F-F



PLAN OF CAP



SECTION OF CAP

1.SPAN LENGTH 25.00 M. HEIGHT NOT OVER 20.00 M. (0.00 M. ≤ H ≤ 20.00 M.)

Ln (M.)	W (M.)	NO. OF I-GIRDER (N _g)	DIMENSION (M.)										C (SIDE WALK WIDTH)		REBAR COLUMN									
			A1	A2	A3	b	e	S	h1	h2	SW=1.00 M	SW=1.50 M	Dx1.50(M.)	CR1	CR2	CR2'	ST3	CR3	CR3'	ST4	CR4	ST5		
25.00 M SEISMIC LEVEL 1	12.00	7	14.00	1.60	2.20	1.60	1.50	2.00	1.00	1.50	1.00	1.50	1.40x2.10	46-DB28	46-DB28	-	DB1200.15	46-DB28	16-DB28	DB1200.15	46-DB28	DB1200.30		
15.00	8	16.00	2.00	2.70	1.80	1.65	2.00	1.20	1.90	1.00	-	1.50x2.25	54-DB28	54-DB28	-	DB1200.15	54-DB28	16-DB28	DB1200.15	54-DB28	DB1200.30			
25.00 M SEISMIC LEVEL 2	12.00	7	14.00	1.60	2.20	1.60	1.55	2.00	1.00	1.50	1.00	1.50	1.50x2.25	52-DB28	52-DB28	52-DB28	DB1200.15	52-DB28	30-DB28	DB1200.15	52-DB28	DB1200.30		
15.00	8	16.00	2.00	2.70	1.80	1.70	2.00	1.20	1.90	1.00	-	1.60x2.40	60-DB28	60-DB28	60-DB28	DB1200.15	60-DB28	32-DB28	DB1200.15	60-DB28	DB1200.30			

Ln (M.)	W (M.)	REBAR CAPBEAM						PILE SIZING, PS (MM.)		NO. OF PILE		FOOTING SKEW 0°-15°					FOOTING SKEW 16°-45°					BOTTOM REBAR		TOP REBAR	
		T1	T2	T3	B1	ST1(STIRRUPS)	ST2(STIRRUPS)	Nc1	Nc2	FL	FB	FD	f	g	FL	FB	FD	f	g	BF1	BF2	TF1	TF2		
25.00 M SEISMIC LEVEL 1	12.00	22-DB28	22-DB28	22-DB28	12-DB20	4-DB1200.15	5-DB1200.10	∅ 650x650	8	2	16	15.00	3.55	2.25	1.94	2.25	15.00	4.05	2.25	1.94	2.75	DB3200.10 **	DB2500.12	DB2000.14	DB2000.13
15.00	8	24-DB28	24-DB28	24-DB28	12-DB20	4-DB1200.15	5-DB1200.10	∅ 650x650	9	2	18	17.00	3.55	2.50	1.95	2.25	17.00	4.05	2.50	1.95	2.75	DB3200.08 **	DB2500.11	DB2000.13	DB2000.13
25.00 M SEISMIC LEVEL 2	12.00	22-DB28	22-DB28	22-DB28	12-DB20	4-DB1200.15	5-DB1200.10	∅ 650x650	8	2	16	15.00	3.55	2.25	1.94	2.25	15.00	4.05	2.25	1.94	2.75	DB3200.08 **	DB2500.12	DB2000.14	DB2000.13
15.00	8	24-DB28	24-DB28	24-DB28	12-DB20	4-DB1200.15	5-DB1200.10	∅ 650x650	9	2	18	17.00	3.55	2.50	1.95	2.25	17.00	4.05	2.50	1.95	2.75	DB3200.09 ***	DB2500.11	DB2000.13	DB2000.13

REMARK : ** = 2 LAYERS
*** = 3 LAYERS

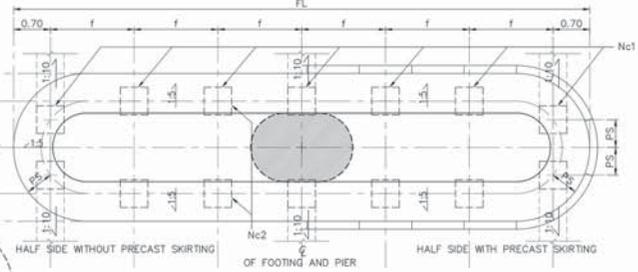
2.SPAN LENGTH 30.00 M. HEIGHT NOT OVER 20.00 M. (0.00 M. ≤ H ≤ 20.00 M.)

Ln (M.)	W (M.)	NO. OF I-GIRDER (N _g)	DIMENSION (M.)										C (SIDE WALK WIDTH)		REBAR COLUMN									
			A1	A2	A3	b	e	S	h1	h2	SW=1.00 M	SW=1.50 M	Dx1.50(M.)	CR1	CR2	CR2'	ST3	CR3	CR3'	ST4	CR4	ST5		
30.00 M SEISMIC LEVEL 1	12.00	7	14.00	1.60	2.20	1.80	1.60	2.00	1.00	1.70	1.00	1.50	1.40x2.10	52-DB28	52-DB28	-	DB1200.15	52-DB28	16-DB28	DB1200.15	52-DB28	DB1200.30		
15.00	8	16.00	2.00	2.70	2.00	1.75	2.00	1.20	1.90	1.00	-	1.50x2.25	56-DB28	56-DB28	-	DB1200.15	56-DB28	16-DB28	DB1200.15	56-DB28	DB1200.30			
30.00 M SEISMIC LEVEL 2	12.00	7	14.00	1.60	2.20	1.80	1.70	2.00	1.00	1.70	1.00	1.50	1.60x2.40	56-DB28	56-DB28	56-DB28	DB1200.15	56-DB28	32-DB28	DB1200.15	56-DB28	DB1200.30		
15.00	8	16.00	2.00	2.70	2.00	1.85	2.00	1.20	1.90	1.00	-	1.70x2.55	66-DB28	66-DB28	66-DB28	DB1200.15	66-DB28	34-DB28	DB1200.15	66-DB28	DB1200.30			

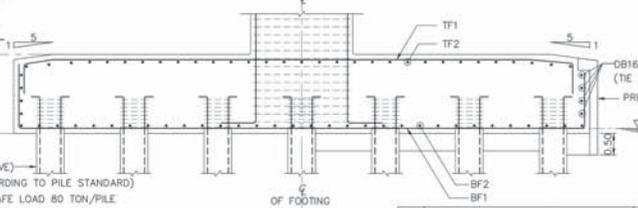
Ln (M.)	W (M.)	REBAR CAPBEAM						PILE SIZING, PS (MM.)		NO. OF PILE		FOOTING SKEW 0°-15°					FOOTING SKEW 16°-45°				
		T1	T2	T3	B1	ST1(STIRRUPS)	ST2(STIRRUPS)	Nc1	Nc2	FL	FB	FD	f	g	FL	FB	FD	f	g		
30.00 M SEISMIC LEVEL 1	12.00	22-DB28	22-DB28	22-DB28	12-DB20	4-DB1200.15	5-DB1200.10	∅ 650x650	8	2	16	15.00	3.55	2.25	1.94	2.25	15.00	4.05	2.25	1.94	2.75
15.00	8	27-DB28	27-DB28	27-DB28	12-DB20	4-DB1200.10	5-DB1200.10	∅ 650x650	10	2	20	19.00	3.75	2.90	1.96	2.45	19.00	4.25	2.90	1.96	2.95
30.00 M SEISMIC LEVEL 2	12.00	22-DB28	22-DB28	22-DB28	12-DB20	4-DB1200.15	5-DB1200.10	∅ 650x650	8	2	16	15.00	3.55	2.25	1.94	2.25	15.00	4.05	2.25	1.94	2.75
15.00	8	27-DB28	27-DB28	27-DB28	12-DB20	4-DB1200.10	5-DB1200.10	∅ 650x650	10	2	20	19.00	3.75	2.90	1.96	2.45	19.00	4.25	2.90	1.96	2.95

Ln (M.)	W (M.)	BOTTOM REBAR		TOP REBAR	
		BF1	BF2	TF1	TF2
30.00 M SEISMIC LEVEL 1	12.00	DB3200.09 **	DB2500.12	DB2000.14	DB2000.14
15.00	8	DB3200.12***	DB2500.11	DB2000.12	DB2000.12
30.00 M SEISMIC LEVEL 2	12.00	DB3200.09***	DB2500.12	DB2000.14	DB2000.14
15.00	8	DB3200.09***	DB2500.11	DB2000.12	DB2000.12

REMARK : ** = 2 LAYERS
*** = 3 LAYERS



PLAN OF FOOTING



SECTION OF FOOTING

PILE (FROM TABLE ABOVE)
(OTHERS DETAILS ACCORDING TO PILE STANDARD)
PILE ∅ 525x525 MM. SAFE LOAD 80 TON/PILE
PILE ∅ 650x650 MM. SAFE LOAD 125 TON/PILE

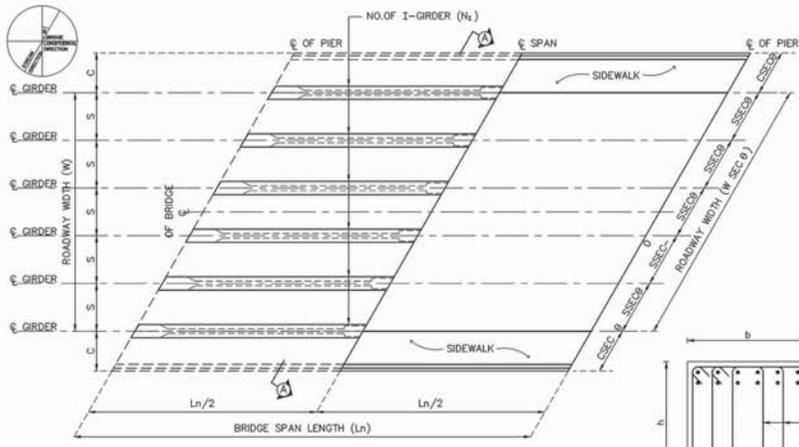
ADJUST LENGTH FOR SKEW BRIDGE

SKEW ANGLE, θ (DEGREE)	VALUE OF SEC θ IN CASE OF SKEW BRIDGE (SKEW, θ)				
	0	5	10	15	20
SEC θ	1.0000	1.0038	1.0154	1.0353	1.0642
SKEW ANGLE, θ (DEGREE)	25	30	35	40	45
SEC θ	1.1034	1.1547	1.2208	1.3054	1.4142

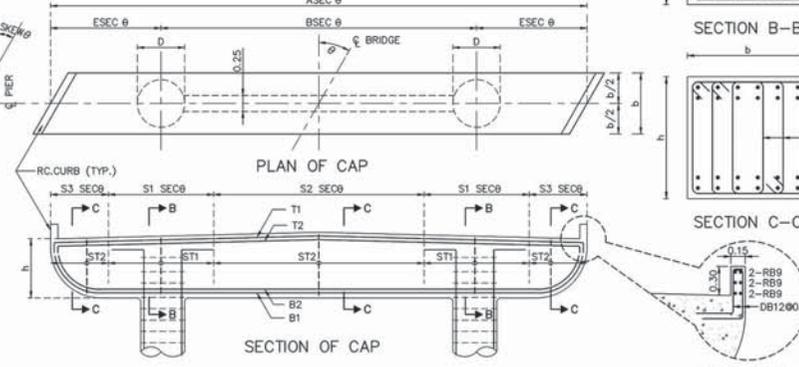
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
SINGLE COLUMN PIER WITH SIDEWALK : SPAN LENGTH 25.00 M. AND 30.00 M. HEIGHT NOT OVER 20.00 M.

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PC-305
REV.1	REVISE AS CLOUD	DEC 2017
REV.	REVISION	SIGNATURE DATE
		SHEET NO. 8



PLAN OF BRIDGE DECK

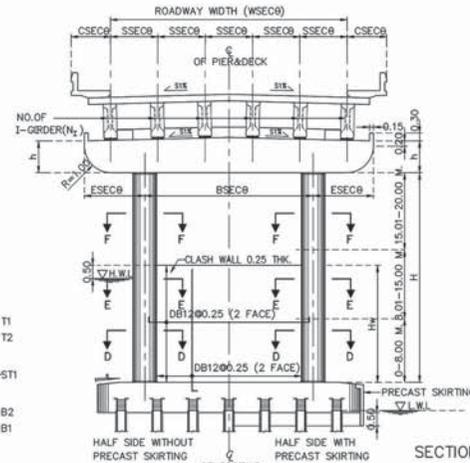


SECTION OF CAP

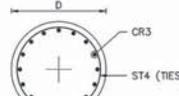
SECTION B-B

SECTION C-C

CURB DETAIL

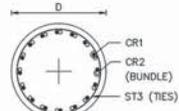


SECTION A-A

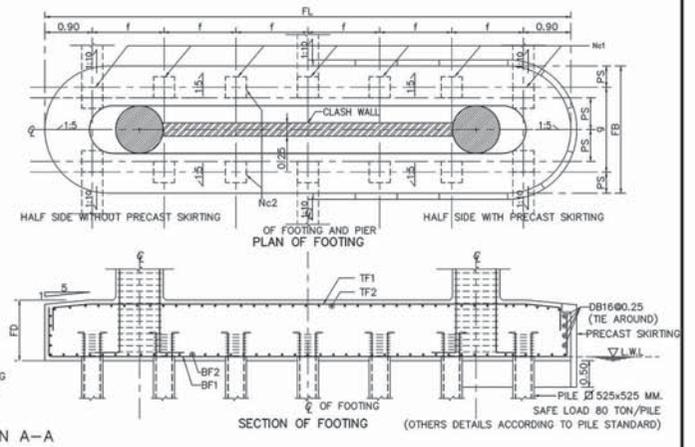


SECTION E-E

SECTION F-F



SECTION D-D



SECTION OF FOOTING

ADJUST LENGTH FOR SKEW BRIDGE

SKEW ANGLE, θ (DEGREE)	VALUE OF SECθ IN CASE OF SKEW BRIDGE (SKEW, θ)									
	0	5	10	15	20	25	30	35	40	45
SEC θ	1.0000	1.0038	1.0154	1.0353	1.0642	1.1034	1.1547	1.2208	1.3054	1.4142

1. SPAN LENGTH 25.00 M. HEIGHT NOT OVER 20.00 M. (0.00 M. ≤ H ≤ 20.00 M.)

1.1 DIMENSION OF SUBSTRUCTURE & REBAR OF COLUMN

Ln (M.)	W (M.)	NO. OF I-GIRDER (N1)	DIMENSION (M.)						C (SIDE WALK WIDTH)		REBAR COLUMN											
			A	B	E	S	S1	S2	S3	SW=1.00 M.	SW=1.50 M.	D (M.)	CR1	CR2	ST3	CR3	ST4	CR4	ST5			
25.00 M. SEISMIC LEVEL 1	12.00	7	14.00	7.30	2.85	2.00	3.70	4.60	1.00	1.00	1.50	1.30	30-DB28	30-DB28	DB1200.15	30-DB28	DB1200.30	24-DB28	DB1200.30	24-DB28	DB1200.30	
15.00	8	16.00	9.40	3.30	2.00	3.40	6.00	1.60	1.00	1.30	30-DB28	30-DB28	DB1200.15	30-DB28	DB1200.30	24-DB28	DB1200.30	26-DB28	DB1200.30	26-DB28	DB1200.30	
25.00 M. SEISMIC LEVEL 2	12.00	7	14.00	7.30	2.85	2.00	3.70	4.60	1.00	1.00	1.50	1.40	42-DB28	42-DB28	DB1200.15	42-DB28	DB1200.30	26-DB28	DB1200.30	26-DB28	DB1200.30	
15.00	8	16.00	9.40	3.30	2.00	3.40	6.00	1.60	1.00	1.50	1.40	44-DB28	44-DB28	DB1200.15	44-DB28	DB1200.30	30-DB28	DB1200.30	30-DB28	DB1200.30	30-DB28	DB1200.30

1.2 REBAR OF CAP BEAM

Ln (M.)	W (M.)	b (M.)	h (M.)	SKEW 0-30 DEGREE				SKEW 31-45 DEGREE							
				T1	T2	B1	B2	ST1(STIRRUPS)	ST2(STIRRUPS)	T1	T2	B1	B2	ST1(STIRRUPS)	ST2(STIRRUPS)
25.00 M. SEISMIC LEVEL 1	12.00	1.60	1.40	12-DB25	12-DB25	14-DB25	14-DB25	5-DB1200.15	3-DB1200.20	13-DB25	13-DB25	14-DB25	14-DB25	5-DB1200.15	3-DB1200.20
15.00	1.60	1.40	14-DB25	14-DB25	14-DB25	14-DB25	5-DB1200.125	3-DB1200.20	18-DB25	18-DB25	18-DB25	18-DB25	5-DB1200.125	3-DB1200.20	
25.00 M. SEISMIC LEVEL 2	12.00	1.60	1.40	12-DB25	12-DB25	14-DB25	14-DB25	5-DB1200.15	3-DB1200.20	13-DB25	13-DB25	14-DB25	14-DB25	5-DB1200.15	3-DB1200.20
15.00	1.70	1.40	14-DB25	14-DB25	14-DB25	14-DB25	5-DB1200.125	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	5-DB1200.125	3-DB1200.20	

1.3 FOUNDATION & PILE

Ln (M.)	W (M.)	PILE SIZING, PS (MM.)	Nc1	Nc2	NO. OF PILE	FOOTING DIMENSION (M.)					BOTTOM REBAR		TOP REBAR	
						FL	FB	FD	f	g	BF1	BF2	TF1	TF2
25.00 M. SEISMIC LEVEL 1	12.00	Ø 525x525	9	2	18	14.00	3.25	1.75	1.53	2.20	DB2500.10	DB2500.15	DB2500.10	DB2000.175
15.00	15.00	Ø 525x525	9	2	18	16.00	3.00	2.00	1.75	1.95	DB2800.09	DB2500.125	DB2800.09	DB2000.175
25.00 M. SEISMIC LEVEL 2	12.00	Ø 525x525	9	2	18	14.00	3.25	1.75	1.53	2.20	DB2500.09	DB2500.15	DB2500.09	DB2000.175
15.00	15.00	Ø 525x525	9	2	18	16.00	3.00	2.00	1.75	1.95	DB2800.14	DB2500.125	DB2800.14	DB2000.175

REMARK ; ** = 2 LAYERS

2. SPAN LENGTH 30.00 M. HEIGHT NOT OVER 20.00 M. (0.00 M. ≤ H ≤ 20.00 M.)

2.1 DIMENSION OF SUBSTRUCTURE & REBAR OF COLUMN

Ln (M.)	W (M.)	NO. OF I-GIRDER (N1)	DIMENSION (M.)						C (SIDE WALK WIDTH)		REBAR COLUMN										
			A	B	E	S	S1	S2	S3	SW=1.00 M.	SW=1.50 M.	D (M.)	CR1	CR2	ST3	CR3	ST4	CR4	ST5		
30.00 M. SEISMIC LEVEL 1	12.00	7	14.00	7.30	2.85	2.00	3.70	4.60	1.00	1.00	1.50	1.30	30-DB28	30-DB28	DB1200.15	30-DB28	DB1200.30	24-DB28	DB1200.30	24-DB28	DB1200.30
15.00	8	16.00	9.40	3.30	2.00	3.40	6.00	1.60	1.00	1.40	30-DB28	30-DB28	DB1200.15	30-DB28	DB1200.30	26-DB28	DB1200.30	26-DB28	DB1200.30	26-DB28	DB1200.30
30.00 M. SEISMIC LEVEL 2	12.00	7	14.00	7.30	2.85	2.00	3.70	4.60	1.00	1.00	1.50	1.50	44-DB28	44-DB28	DB1200.15	44-DB28	DB1200.30	30-DB28	DB1200.30	30-DB28	DB1200.30
15.00	8	16.00	9.40	3.30	2.00	3.40	6.00	1.60	1.00	1.50	48-DB28	48-DB28	DB1200.15	48-DB28	DB1200.30	30-DB28	DB1200.30	30-DB28	DB1200.30	30-DB28	DB1200.30

2.2 REBAR OF CAP BEAM

Ln (M.)	W (M.)	b (M.)	h (M.)	SKEW 0-30 DEGREE				SKEW 31-45 DEGREE							
				T1	T2	B1	B2	ST1(STIRRUPS)	ST2(STIRRUPS)	T1	T2	B1	B2	ST1(STIRRUPS)	ST2(STIRRUPS)
30.00 M. SEISMIC LEVEL 1	12.00	1.60	1.40	12-DB25	12-DB25	14-DB25	14-DB25	5-DB1200.15	3-DB1200.20	13-DB25	13-DB25	14-DB25	14-DB25	5-DB1200.15	3-DB1200.20
15.00	1.60	1.40	15-DB25	15-DB25	15-DB25	15-DB25	5-DB1200.10	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	5-DB1200.10	3-DB1200.20	
30.00 M. SEISMIC LEVEL 2	12.00	1.70	1.40	12-DB25	12-DB25	14-DB25	14-DB25	5-DB1200.15	3-DB1200.20	14-DB25	14-DB25	14-DB25	14-DB25	5-DB1200.15	3-DB1200.20
15.00	1.70	1.40	15-DB25	15-DB25	15-DB25	15-DB25	5-DB1200.10	3-DB1200.20	19-DB25	19-DB25	19-DB25	19-DB25	5-DB1200.10	3-DB1200.20	

2.3 FOUNDATION & PILE

Ln (M.)	W (M.)	PILE SIZING, PS (MM.)	Nc1	Nc2	NO. OF PILE	FOOTING DIMENSION (M.)					BOTTOM REBAR		TOP REBAR	
						FL	FB	FD	f	g	BF1	BF2	TF1	TF2
30.00 M. SEISMIC LEVEL 1	12.00	Ø 525x525	9	2	18	14.00	3.25	1.75	1.53	2.20	DB2800.15	DB2500.15	DB2500.13	DB2000.175
15.00	15.00	Ø 525x525	9	2	20	16.00	3.00	2.00	1.58	1.95	DB2800.16	DB2500.125	DB2800.16	DB2000.15
30.00 M. SEISMIC LEVEL 2	12.00	Ø 525x525	9	2	18	14.00	3.25	1.75	1.53	2.20	DB2800.12	DB2500.15	DB2800.12	DB2000.175
15.00	15.00	Ø 525x525	9	2	20	16.00	3.00	2.00	1.58	1.95	DB2800.13	DB2500.125	DB2800.13	DB2000.15

REMARK ; ** = 2 LAYERS

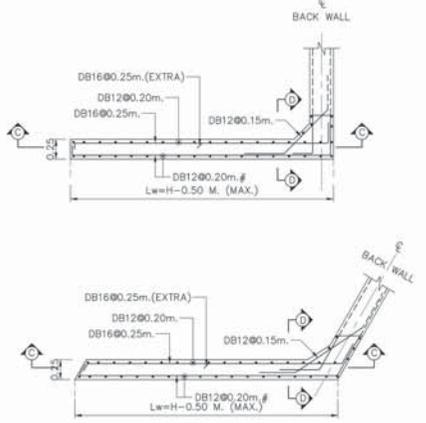
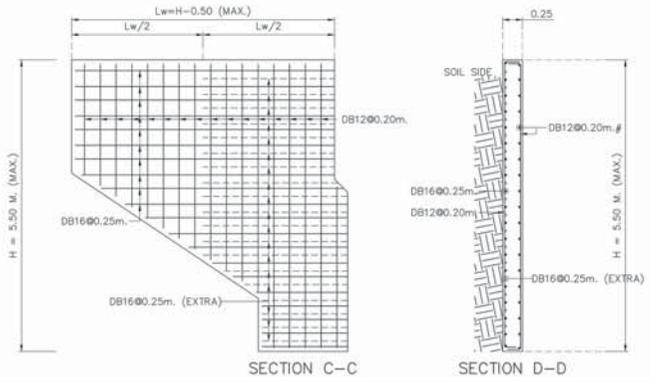
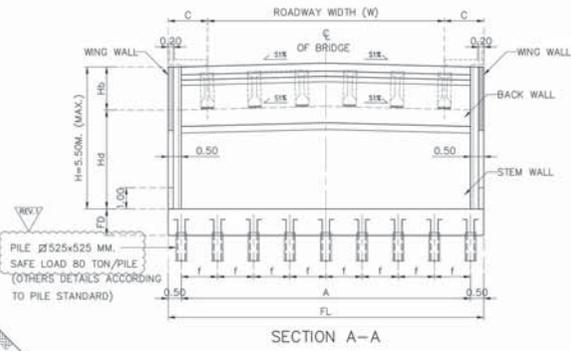
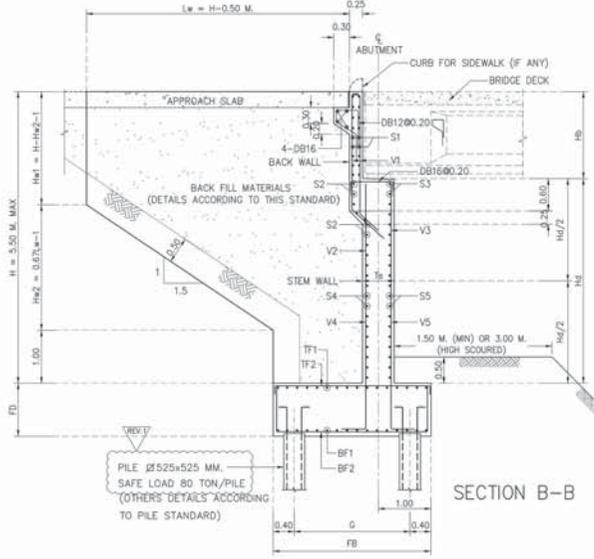
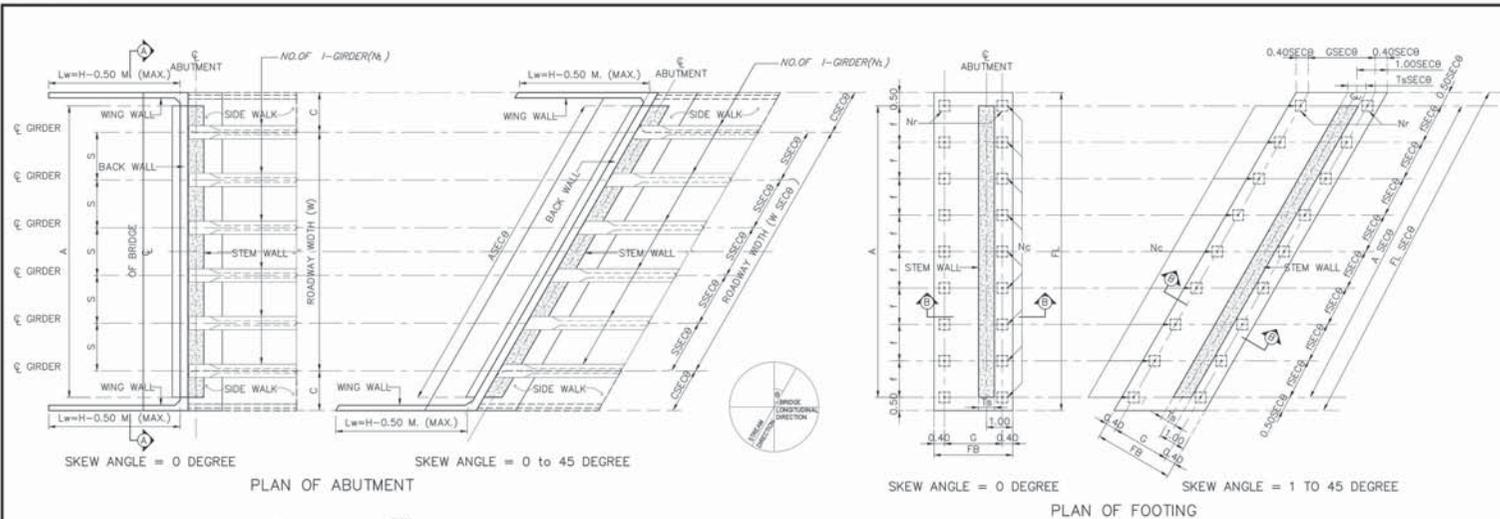
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING

TWO COLUMNS PIER WITH SIDEWALK : SPAN LENGTH 25.00 M. AND 30.00 M. HEIGHT NOT OVER 20.00 M.

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED : (DIRECTOR OF LOCATION & DESIGN BUREAU)		SCALE : AS SHOWN
APPROVED : (FOR DIRECTOR GENERAL)	DWG NO. PC-306	
REV. 1 REVISION		SHEET NO. 9



1.SPAN LENGTH 25.00 M. AND 30.00 M.

1.1 DIMENSION OF ABUTMENT

Ln (M.)	W (M.)	NO.OF I-GIRDER (N _g)	H(M.) (MAX)	DIMENSION (M.)					C (SIDE WALK WIDTH)	
				A	S	H _b	H _d	T _s	SW=1.00 M	SW=1.50 M
25.00 M.	12.00	7	5.50	14.00	2.00	1.68 *	3.82	0.60	1.00	1.50
	15.00	8	5.50	16.00	2.00	1.68 *	3.82	0.60	1.00	--
30.00 M.	12.00	7	5.50	14.00	2.00	1.68 *	3.82	0.60	1.00	1.50
	15.00	8	5.50	16.00	2.00	1.68 *	3.82	0.60	1.00	--

REMARK : * = DEPENDS ON DEPTH OF GIRDER

1.2 REBAR IN ABUTMENT

Ln (M.)	W (M.)	SKEW 0-45 DEGREE											
		V1	V2	V3	V4	V5	S1	S2	S3	S4	S5		
25.00 M.	12.00,15.00	DB1200.20	DB2000.20	DB1600.20	DB1600.20	DB2000.10	DB1600.20	R9900.15	DB1600.20	DB1600.20	DB1600.20	DB1600.20	DB1600.20
30.00 M.	12.00,15.00	DB1200.20	DB2000.20	DB1600.20	DB2000.10	DB1600.20	R9900.15	DB1600.20	DB1600.20	DB1600.20	DB1600.20	DB1600.20	DB1600.20

1.3 FOUNDATION & PILE

Ln (M.)	W (M.)	PILE SIZING (MM.)	N _c	N _r	NO.OF PILE	FOOTING DIMENSION (M.)					BOTTOM REBAR		TOP REBAR	
						FL	FB	FD	f	G	BF1	BF2	TF1	TF2
25.00 M.	12.00	Ø 525x525	8	2	16	15.00	3.00	1.00	2.03	2.20	DB2000.15	DB2500.25	DB2000.30	DB2000.30
	15.00	Ø 525x525	9	2	18	17.00	3.00	1.00	2.03	2.20	DB2000.17	DB2500.25	DB2000.30	DB2000.30
30.00 M.	12.00	Ø 525x525	9	2	18	15.00	3.00	1.00	1.78	2.20	DB2000.15	DB2500.25	DB2000.30	DB2000.30
	15.00	Ø 525x525	10	2	20	17.00	3.00	1.00	1.80	2.20	DB2000.17	DB2500.25	DB2000.30	DB2000.30

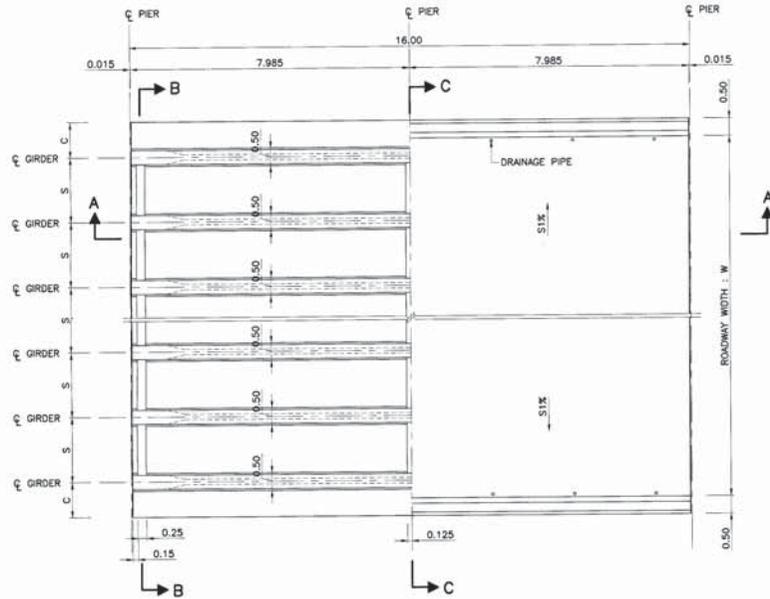
1.4 ADJUST LENGHT FOR SKEW BRIDGE

SKEW ANGLE, θ (DEGREE)	VALUE OF SEC θ IN CASE OF SKEW BRIDGE (SKEW, θ)									
	0	5	10	15	20	25	30	35	40	45
SEC θ	1.0000	1.0038	1.0154	1.0353	1.0642	1.1034	1.1547	1.2208	1.3054	1.4142

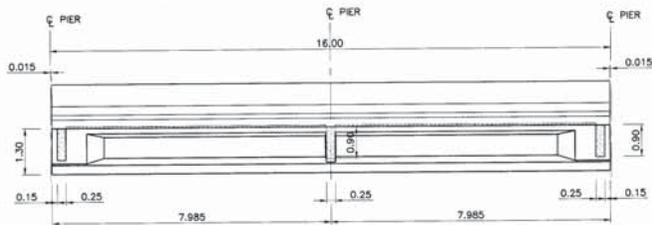
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 ABUTMENT WITH SIDEWALK : SPAN LENGTH 25.00 M. AND 30.00 M.

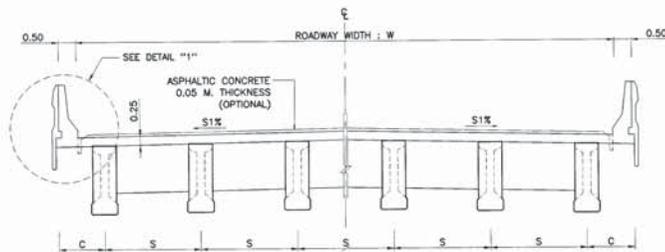
DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PC-308
REV.1 REVISION AS CLOUD	DEC 2017	SHEET NO. 11
REF. REVISION	SIGNATURE DATE	



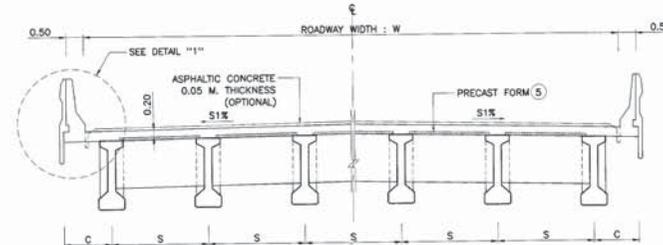
HALF PLAN (BOTTOM ; B) HALF PLAN (TOP ; T)
DECK PLAN FOR GIRDER SPAN LENGTH 16.00 M.
SCALE 1 : 75



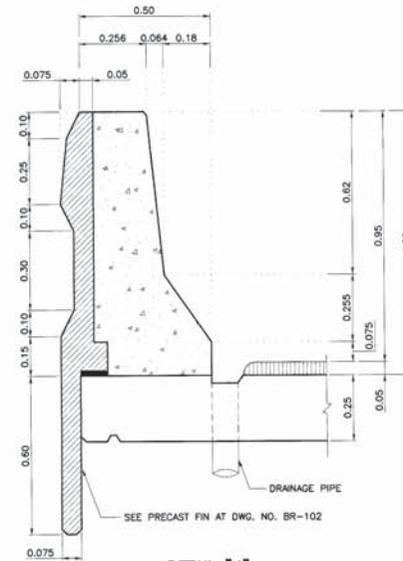
SECTION A - A
SCALE 1 : 75



SECTION B - B
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



DETAIL "1"
SCALE 1 : 10

TABLE OF W, S, C AND NO. OF GIRDER

ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER C (M.)
9.00	5	4 @ 2.00	1.00
10.00	6	5 @ 1.80	1.00
11.00	6	5 @ 2.00	1.00
12.00	7	4 @ 1.83 2 @ 1.84	1.00
15.00	8	5 @ 1.86 2 @ 1.85	1.00
VARIES	n	2.00 (MAX.)	1.00

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO. NP1-16F/02 TO NP1-16F/05
- CONCRETE FOR PC. SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- PRECAST FORM SHALL BE AS FOLLOWS:
 - THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M²(INCLUDED THE WEIGHT OF PRECAST FORM)
 - THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. NOTAR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS.420 OR TIS.95.
 - PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.

KINGDOM OF THAILAND

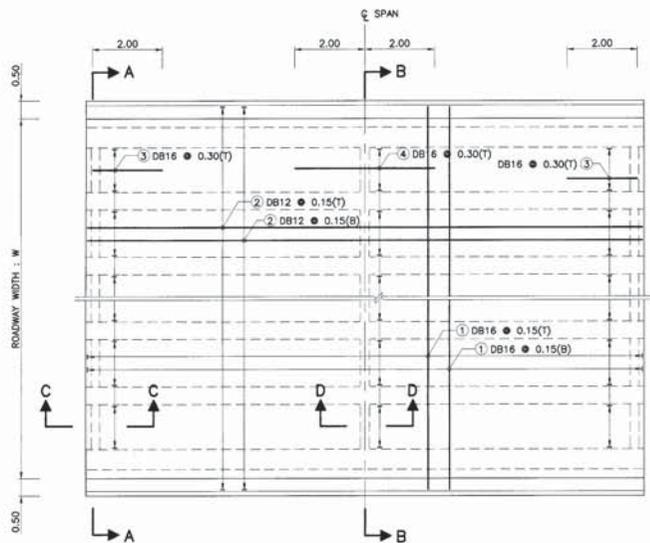
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING

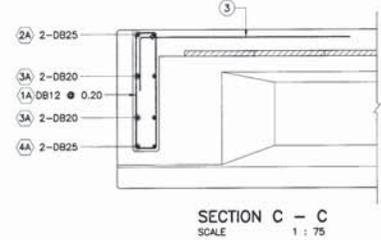
I-GIRDER 16.00 M. (FULL JOINT)
BRIDGE DECK DIMENSION

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. NP1-16F/01
REF.	REVISION	SIGNATURE DATE

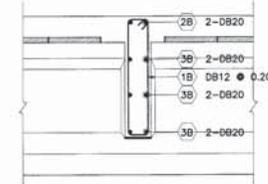
SHEET NO. 12



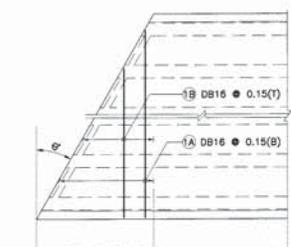
PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75



SKEW REINFORCEMENT
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1A	DB12	W+1.00-2C
2A	DB25	S/2+0.40
3A	DB20	S/2+0.40
4A	DB25	S/4+0.10
5A	DB20	S/4+0.10
6A	DB25	S/2
7A	DB20	S/2
8A	DB25	S/2

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

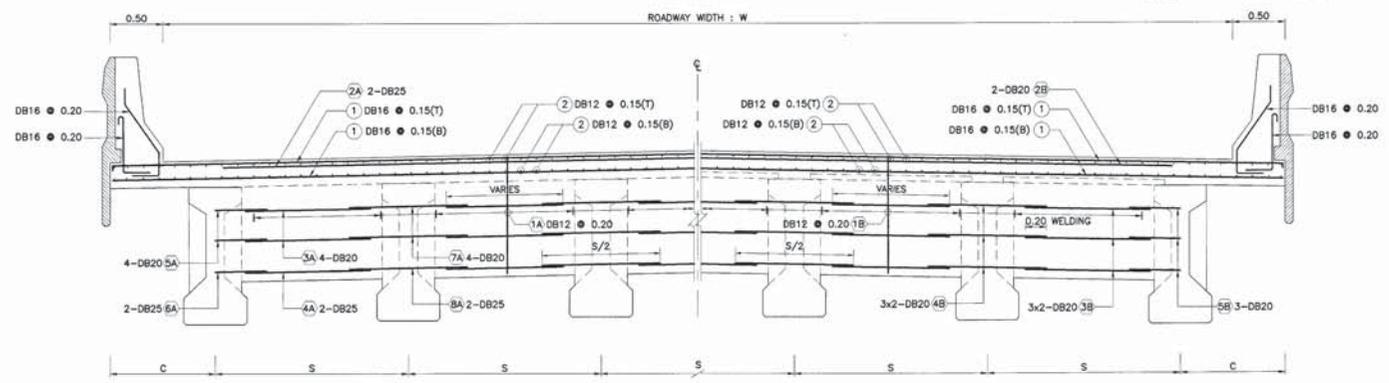
BAR NO.	BAR SIZE	SHAPE
1B	DB12	W+1.00-2C
2B	DB20	S/2+0.40
3B	DB20	S/2+0.40
4B	DB20	S/2
5B	DB20	S/2

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W+0.70
2	DB12	15.91
3	DB16	2.00
4	DB16	4.00

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
5. THE REINFORCE BAR NO. 5A, 6A, 7A, 8A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
6. THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO.NP1-16F/01 AND NP1-16F/03 TO NP1-16F/06



HALF SECTION A - A

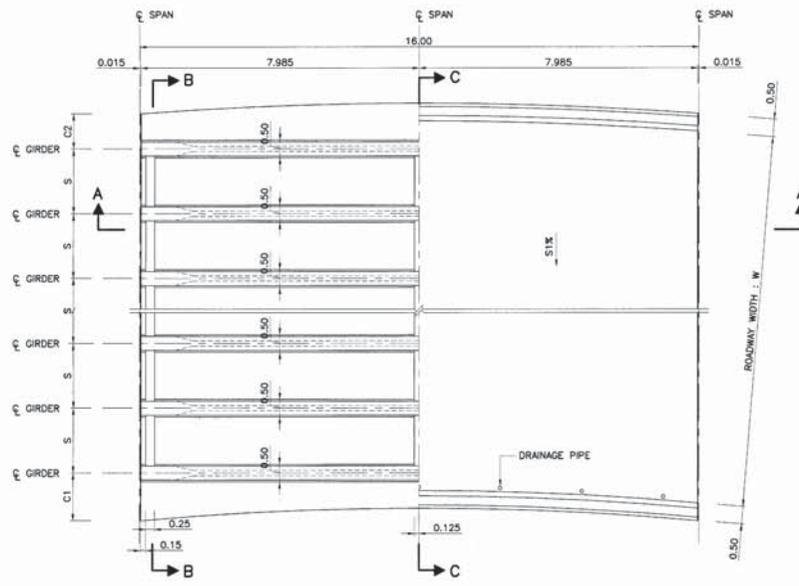
HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 16.00 M. (FULL JOINT)
BRIDGE DECK REINFORCEMENT

DESIGNED : D.G.K. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO.NP1-16F/02 SHEET NO. 13

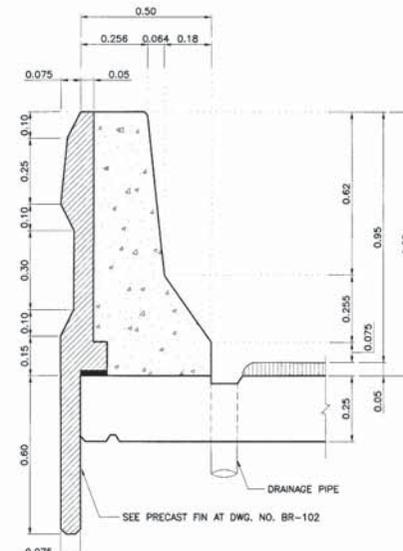
NO.	REVISION	SIGNATURE	DATE



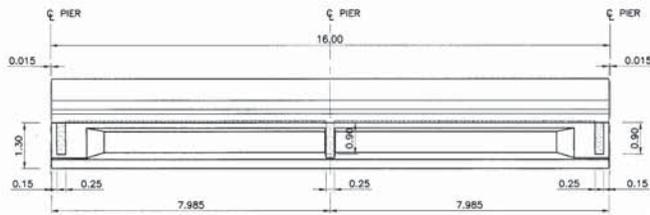
HALF PLAN (BOTTOM ; B)

HALF PLAN (TOP ; T)

DECK PLAN FOR GIRDER SPAN LENGTH 16.00 M.
SCALE 1 : 75



DETAIL "1"
SCALE 1 : 10



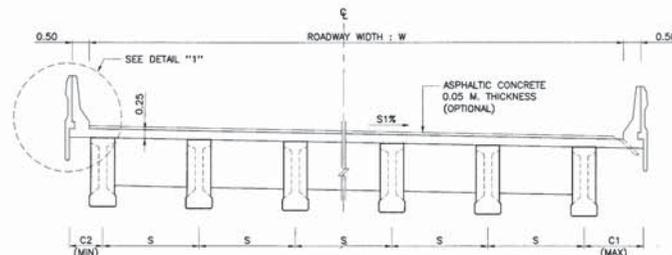
SECTION A - A
SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

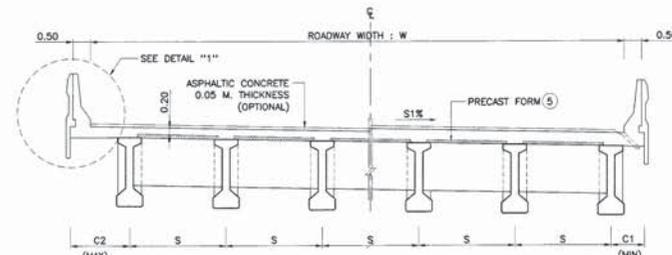
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER			
			C1 (M.)		C2 (M.)	
			MIN.	MAX.	MIN.	MAX.
9.00	5	2.00 (MAX.)	0.60	1.50	0.60	1.50
10.00	6	2.00 (MAX.)	0.60	1.50	0.60	1.50
11.00	6	2.00 (MAX.)	0.60	1.50	0.60	1.50
12.00	7	2.00 (MAX.)	0.60	1.50	0.60	1.50
15.00	8	2.00 (MAX.)	0.60	1.50	0.60 <td 1.50	
VARIES	n	2.00 (MAX.)	0.60	1.50	0.60	1.50

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO. NP1-16F/01, NP1-16F/02, NP1-16F/04 TO NP1-16F/06
- CONCRETE FOR PC SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TIS. 15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- PRECAST FORM SHALL BE AS FOLLOWS:
 - THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M²(INCLUDED THE WEIGHT OF PRECAST FORM)
 - THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTAR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS-420 OR TIS-95.
 - PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



SECTION B - B
SCALE 1 : 75



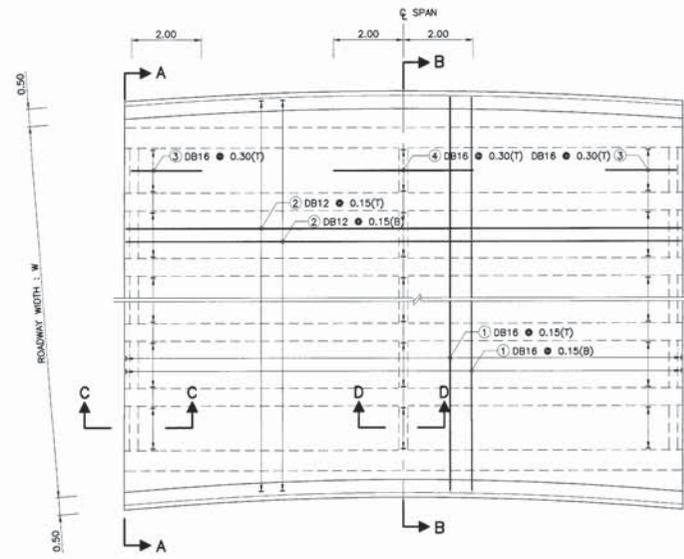
SECTION C - C
SCALE 1 : 75

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

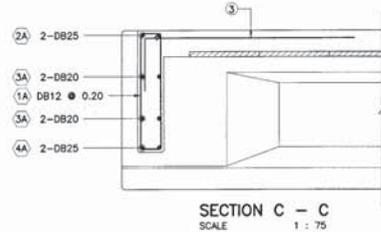
STANDARD DRAWING
 I-GIRDER 16.00 M. (FULL JOINT)
 BRIDGE DECK DIMENSION (FOR CURVE)

DESIGNED: D.G.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. NP1-16F/03
REF.	REVISION	SHEET NO. 14

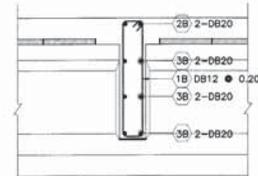
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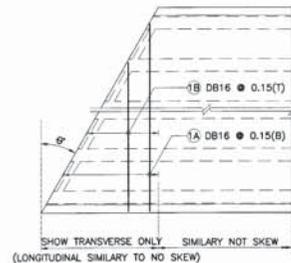
PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75

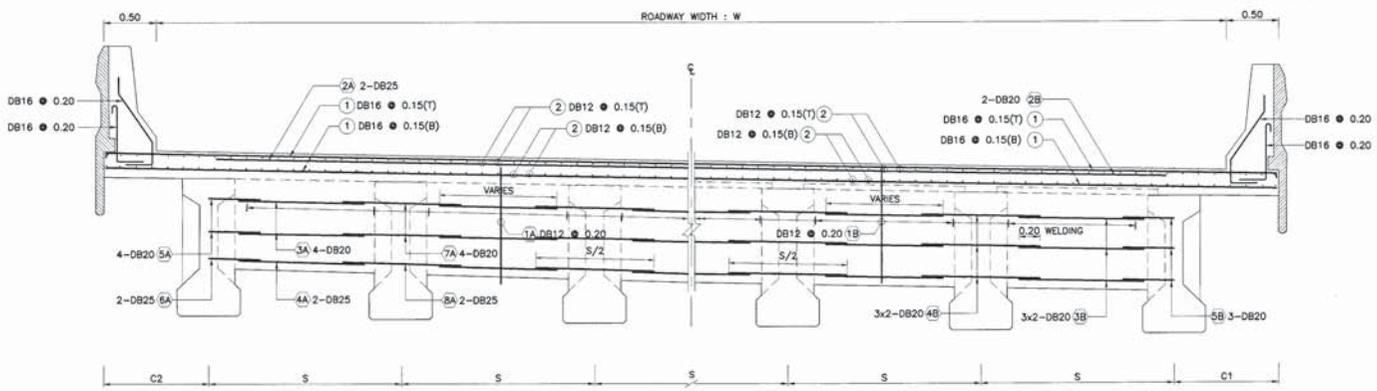


SKEW REINFORCEMENT
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)		
BAR NO.	BAR SIZE	SHAPE
1A	DB12	
2A	DB25	
3A	DB20	
4A	DB25	
5A	DB20	
6A	DB25	
7A	DB20	
8A	DB25	

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)		
BAR NO.	BAR SIZE	SHAPE
1B	DB12	
2B	DB20	
3B	DB20	
4B	DB20	
5B	DB20	
6B	DB20	

TABLE OF REINFORCEMENT (SLAB)		
BAR NO.	BAR SIZE	SHAPE
1	DB16	
2	DB12	
3	DB16	
4	DB16	



HALF SECTION A - A

HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. DESIGN LIVE LOAD : HL-93.
 3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 4. REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
 5. THE REINFORCE BAR NO. 5A, 6A, 7A, 8A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
 6. THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO.NP1-16F/01 TO NP1-16F AND NP1-16F/05, NP1-16F/06

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
1-GIRDER 16.00 M. (FULL JOINT)
 BRIDGE DECK REINFORCEMENT (FOR CURVE)

DESIGNED : D.O.A. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO.NP1-16F/04
REF.	REVISION	SIGNATURE DATE

SHEET NO. 15

S:\1616 - 16m - 2015\1616-16F-04(16.00M).DWG

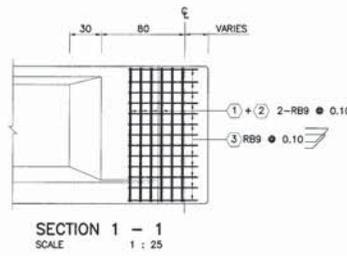
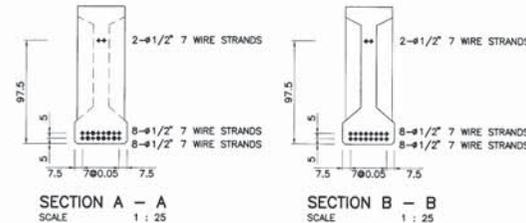
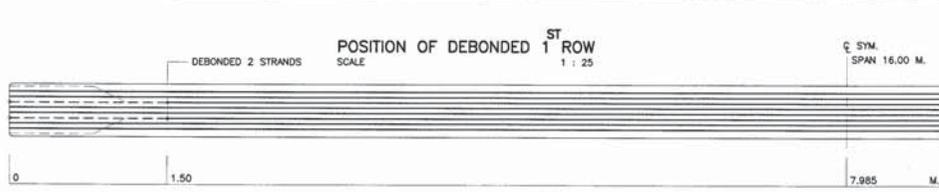
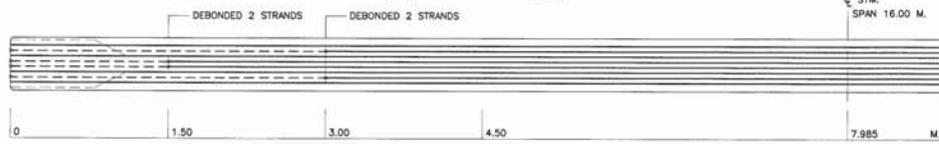
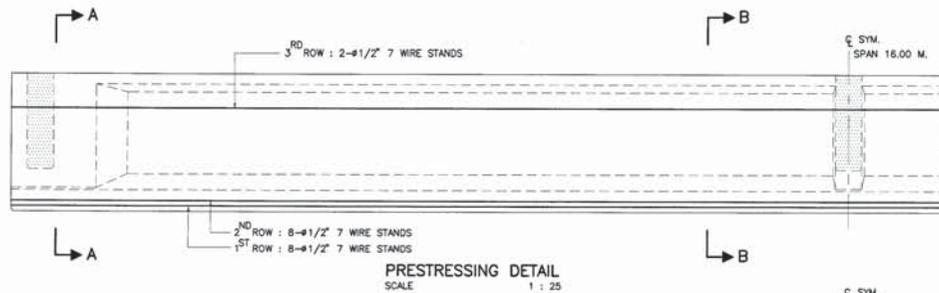
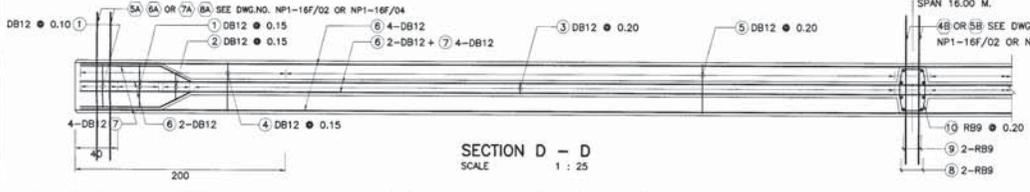
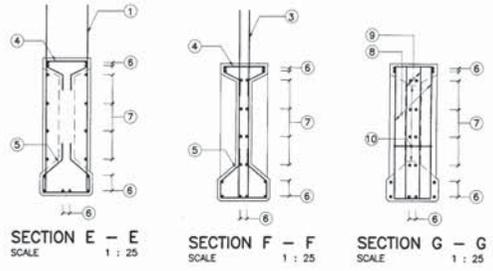
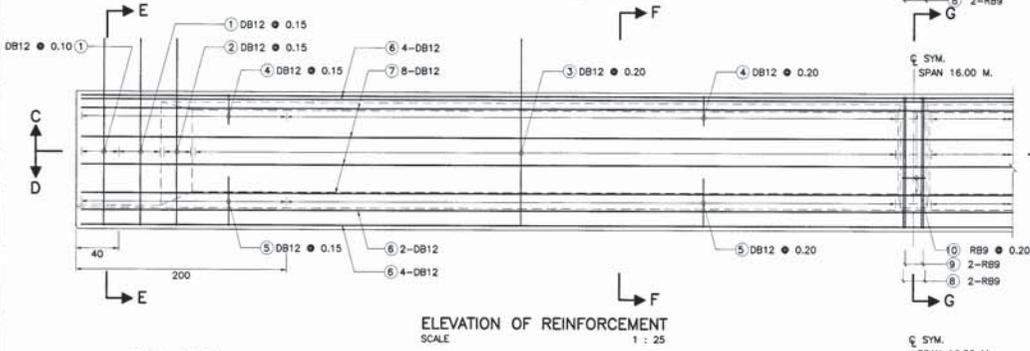
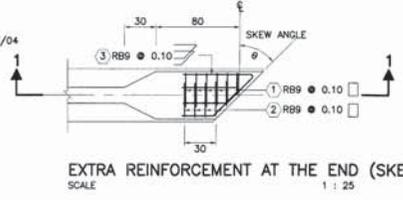
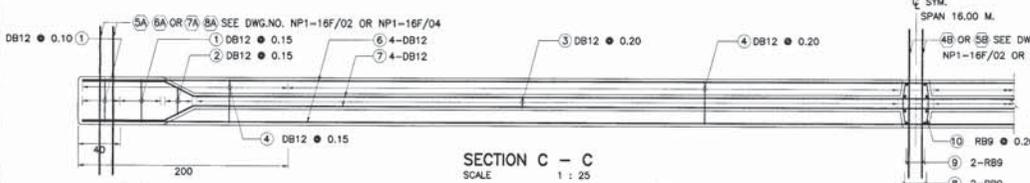


TABLE OF GIRDER REINFORCEMENT		
BAR NO.	BAR SIZE	SHAPE
1	DB12	
2	DB12	
3	DB12	
4	DB12	
5	DB12	
6	DB12	
7	DB12	
8	RB9	
9	RB9	
10	RB9	

- NOTE :**
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD : HL-93.
 - MIX. DESIGN OF CONCRETE FOR PRESTRESSED I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
 - PRESTRESSING :
 - LOW RELAXATION SEVEN WIRE STRANDS # 12.7 MM. IN ACCORDANCE WITH TIS.420
 - MIN CHARACTERISTIC STRENGTH OF STRAND 180 KN.
 - INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH.
 - POSITION OF DEBONDED SHALL BE SPECIFIED IN THIS DRAWING AS FOLLOW :
 - POINT OF DEBONDED MEANS STARTING POINT TO END OF GIRDER
 - DEBONDED MEANS PERFORMING FOR NO CONTACT BETWEEN STRAND AND CONCRETE.
 - AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 40 MPa. (410 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
 - LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
 - SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
 - SKEW ANGLE SHALL BE LESS THAN 45 DEGREE.
 - SYMBOLS OF PRESTRESSING STRANDS
 - + BOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
 - +--- DEBOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-16F/01 TO NP1-16F/05

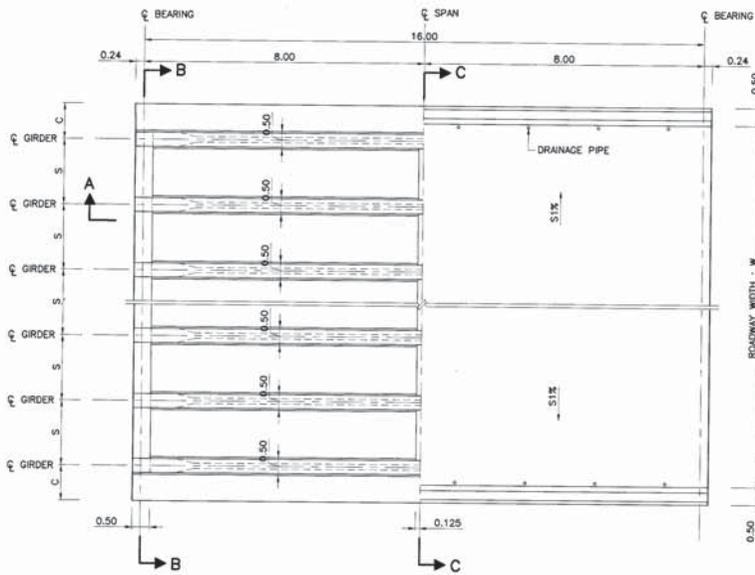


KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

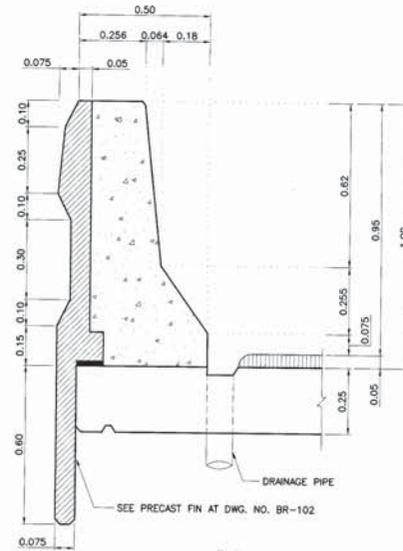
STANDARD DRAWING
I-GIRDER 16.00 M. (FULL JOINT)
GIRDER PRESTRESSING & REINFORCEMENT

DESIGNED : D.G.K. & CONSULTANTS	CHECKED : BUREAU OF LOCATION DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-16F/06
REF.	REVISION	SIGNATURE DATE

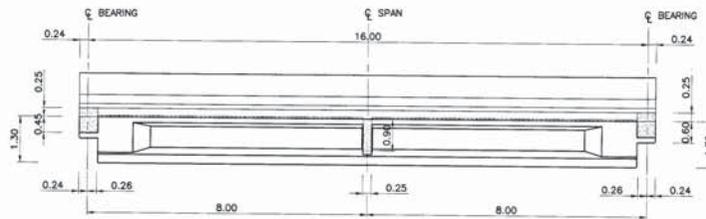
SHEET NO. 17



HALF PLAN (BOTTOM ; B) HALF PLAN (TOP ; T)
 DECK PLAN FOR GIRDER SPAN LENGTH 16.00 M.
 SCALE 1 : 75



DETAIL "1"
 SCALE 1 : 10



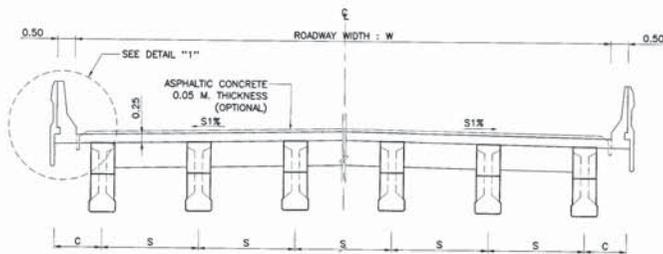
SECTION A - A
 SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

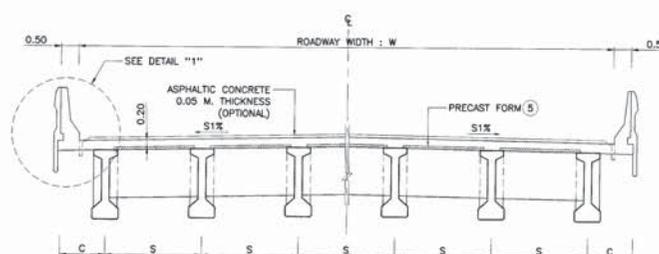
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER C (M.)
9.00	5	4 @ 2.00	1.00
10.00	6	5 @ 1.80	1.00
11.00	6	5 @ 2.00	1.00
12.00	7	4 @ 1.83 2 @ 1.84	1.00
15.00	8	5 @ 1.86 2 @ 1.85	1.00
VARIES	n	2.00 (MAX.)	1.00

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-16H/02 TO NP1-16H/06
4. CONCRETE FOR PC SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS. 15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
5. PRECAST FORM SHALL BE AS FOLLOWS:
 - 5.1 THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - 5.2 ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M² (INCLUDED THE WEIGHT OF PRECAST FORM)
 - 5.3 THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - 5.4 ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTOR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - 5.5 CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS.420 OR TIS.85.
 - 5.6 PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - 5.7 PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - 5.8 THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



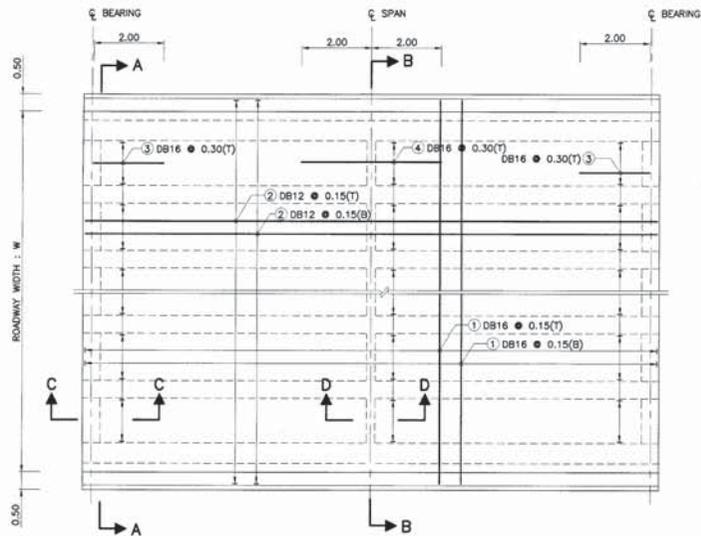
SECTION B - B
 SCALE 1 : 75



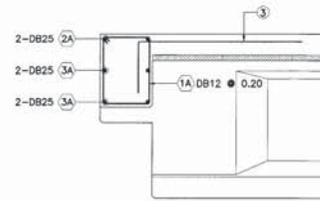
SECTION C - C
 SCALE 1 : 75

KINGDOM OF THAILAND MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING I-GIRDER 16.00 M. (HALF JOINT) BRIDGE DECK DIMENSION		
DESIGNED : D.O.M. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
REF.	REVISION	SIGNATURE DATE
APPROVED :		DWG. NO. NP1-16H/06
(FOR DIRECTOR GENERAL)		SHEET NO. 18

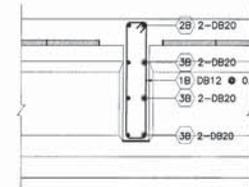
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PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

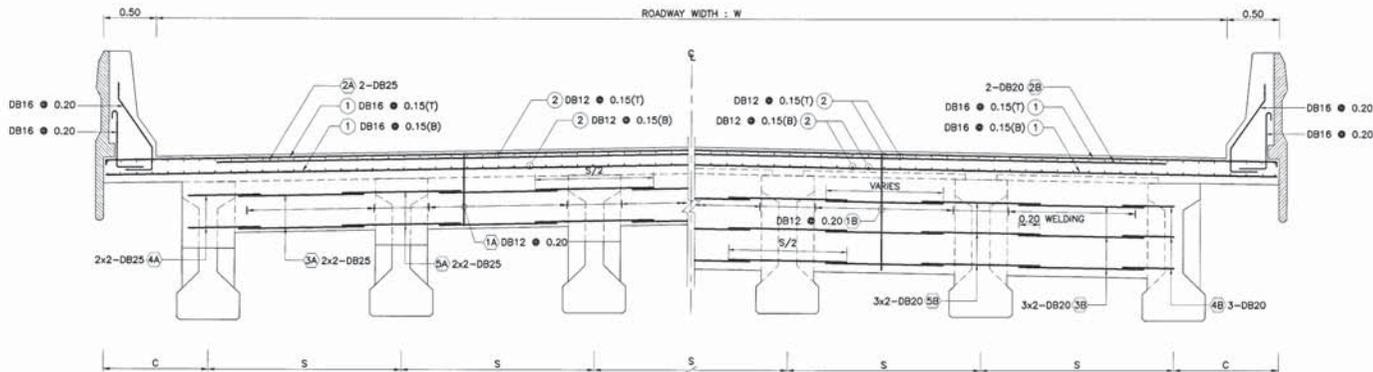
BAR NO.	BAR SIZE	SHAPE
1A	DB12	W+1.00-2C
2A	DB25	2A
3A	DB25	S/2+0.40
4A	DB25	3A
5A	DB25	S/2

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
1B	DB12	W+1.00-2C
2B	DB20	2B
3B	DB20	S/2+0.40
4B	DB20	3B
5B	DB20	S/2

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W+0.70
2	DB12	16.40
3	DB16	2.00
4	DB16	0.50



HALF SECTION A - A

HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

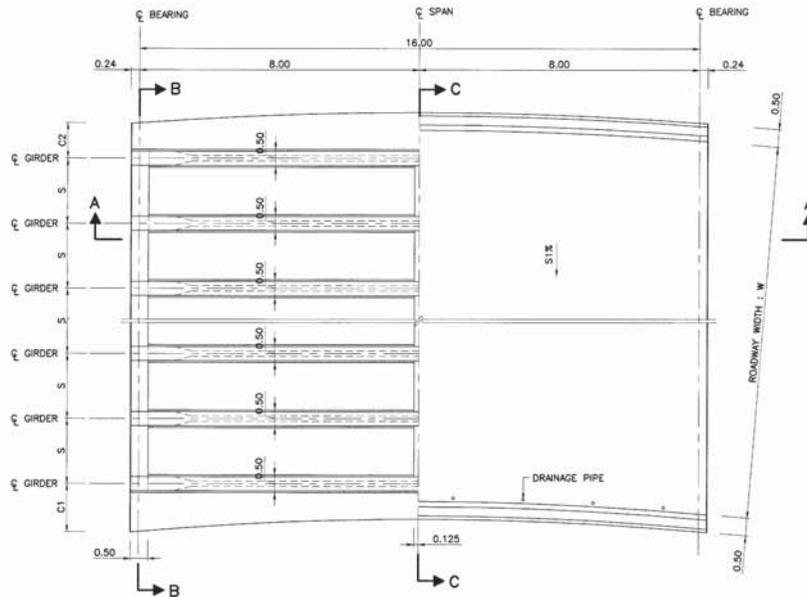
NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
- THE REINFORCE BAR NO. 4A, 5A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP1-16H/01 AND NP1-16H/03 TO NP1-16H/06

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 16.00 M. (HALF JOINT)
BRIDGE DECK REINFORCEMENT

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-16H/02
		SHEET NO. 19

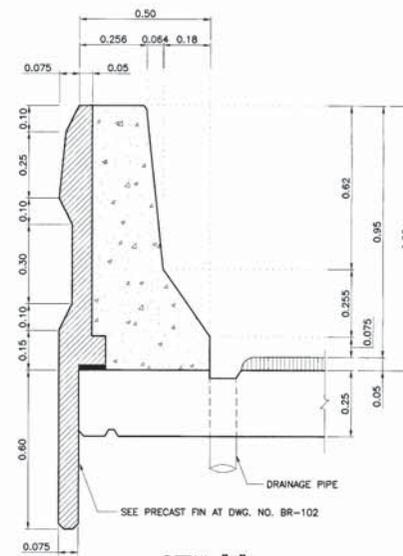
REF.	REVISION	SIGNATURE	DATE



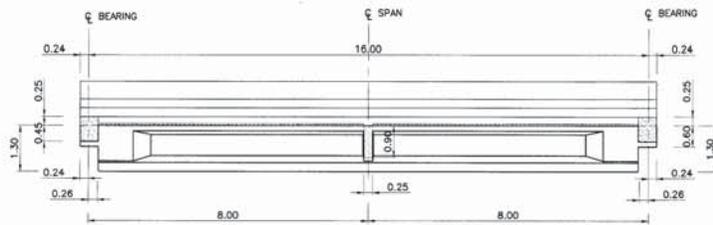
HALF PLAN (BOTTOM ; B)

HALF PLAN (TOP ; T)

DECK PLAN FOR GIRDER SPAN LENGTH 16.00 M.
SCALE 1 : 75



DETAIL "1"
SCALE 1 : 10



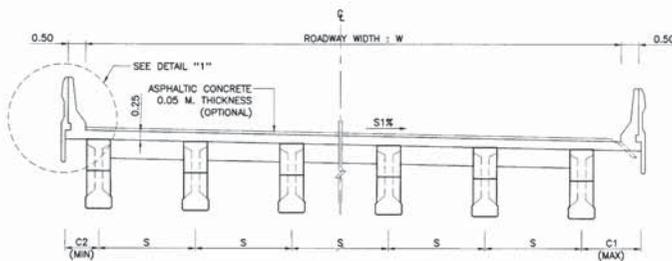
SECTION A - A
SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

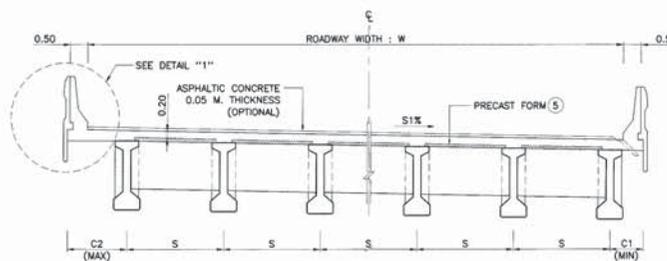
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER			
			C1 (M.)		C2 (M.)	
			MIN.	MAX.	MIN.	MAX.
9.00	5	2.00 (MAX.)	0.60	1.50	0.60	1.50
10.00	6	2.00 (MAX.)	0.60	1.50	0.60	1.50
11.00	6	2.00 (MAX.)	0.60	1.50	0.60	1.50
12.00	7	2.00 (MAX.)	0.60	1.50	0.60	1.50
15.00	8	2.00 (MAX.)	0.60	1.50	0.60	1.50
VARIES	n	2.00 (MAX.)	0.60	1.50	0.60	1.50

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO. NP1-16H/01 , NP1-16H/02 AND NP1-16/04 TO NP1-16H/06
4. CONCRETE FOR PC. SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
5. PRECAST FORM SHALL BE AS FOLLOWS:
 - 5.1 THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - 5.2 ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M² (INCLUDED THE WEIGHT OF PRECAST FORM)
 - 5.3 THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - 5.4 ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MORTAR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - 5.5 CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS.420 OR TIS.95.
 - 5.6 PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - 5.7 PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - 5.8 THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



SECTION B - B
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75

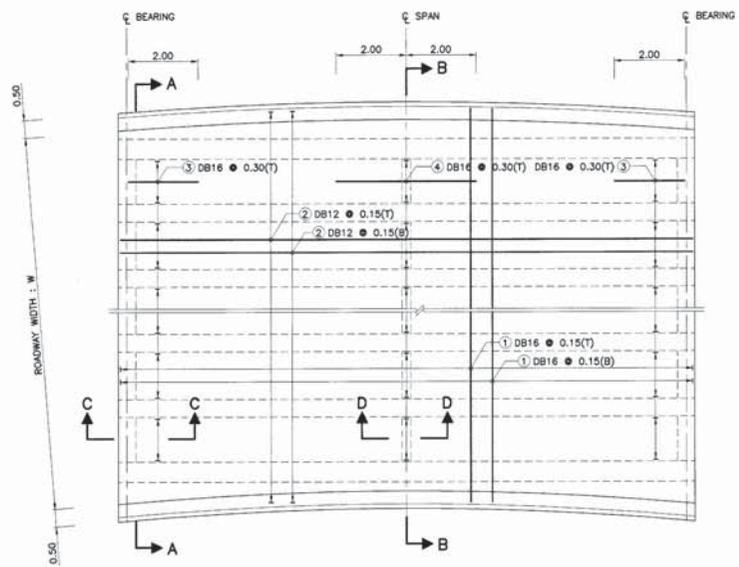
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

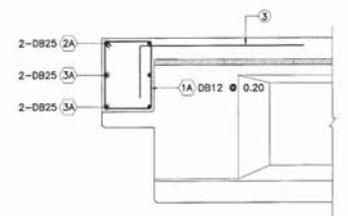
STANDARD DRAWING
I-GIRDER 16.00 M. (HALF JOINT)
BRIDGE DECK DIMENSION (FOR CURVE)

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: [Signature]	BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED: [Signature]	(DIRECTOR OF LOCATION & DESIGN BUREAU)		SCALE: AS SHOWN
APPROVED: [Signature]	(FOR DIRECTOR GENERAL)		DWG NO. NP1-16H/02
REF.	REVISION	SIGNATURE	DATE

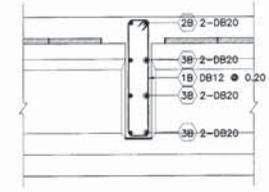
SHEET NO. 20



PLAN OF REINFORCEMENT SLAB AND RAILING
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

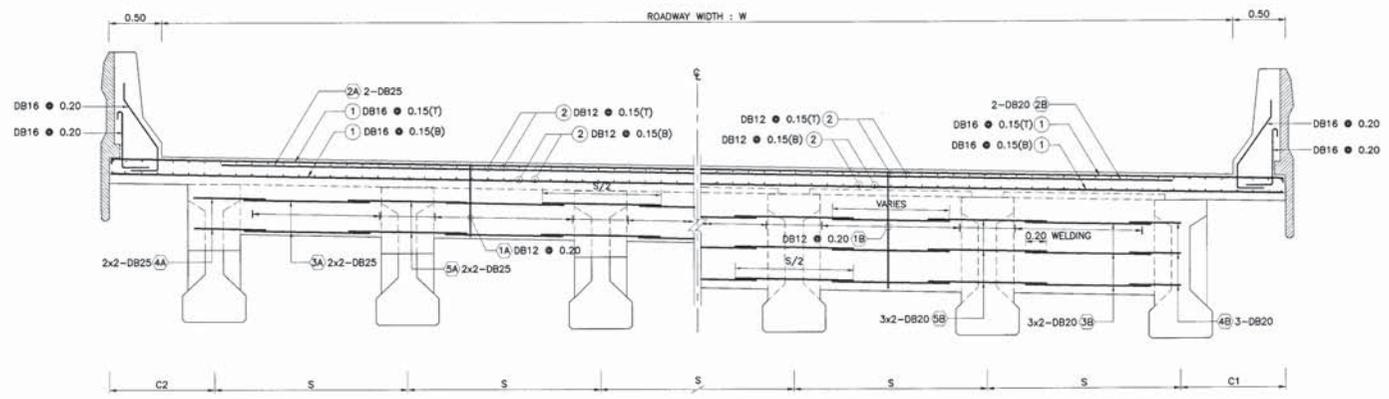
BAR NO.	BAR SIZE	SHAPE
(1A)	DB12	
(2A)	DB25	
(3A)	DB25	
(4A)	DB25	
(5A)	DB25	

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
(1B)	DB12	
(2B)	DB20	
(3B)	DB20	
(4B)	DB20	
(5B)	DB20	

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
(1)	DB16	
(2)	DB12	
(3)	DB16	
(4)	DB16	



HALF SECTION A - A

HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

- NOTE :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD : HL-93.
 - CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 - REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
 - THE REINFORCE BAR NO. 4A, 5A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP1-16H/01 TO NP1-16H/03 AND NP1-16H/05, NP1-16H/06

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 16.00 M. (HALF JOINT)
BRIDGE DECK REINFORCEMENT (FOR CURVE)

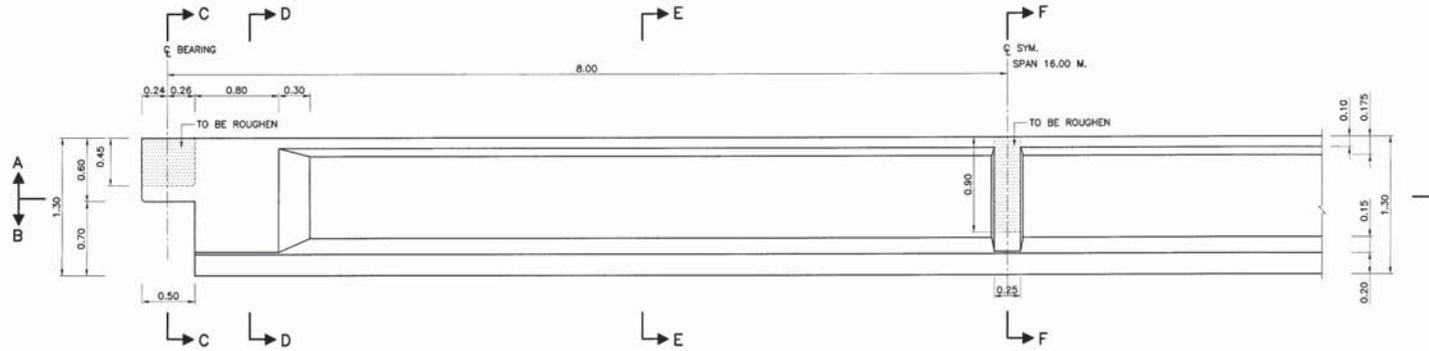
DESIGNED: B.G.A. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. NP1-16H/04 SHEET NO. 21

REF.	REVISION	SIGNATURE	DATE

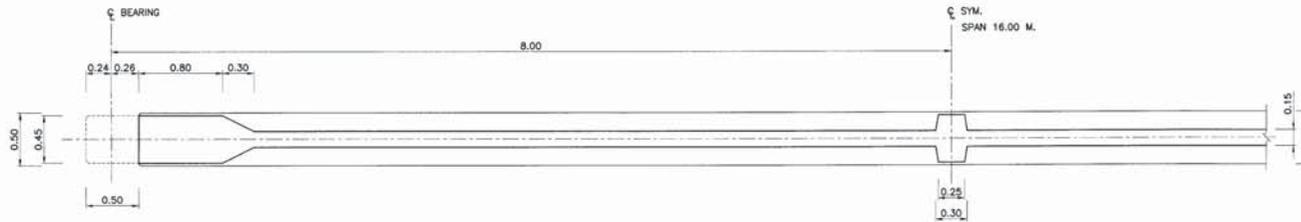
S:\1611-16h-2015\16h1-16h-16h\16h04.dwg



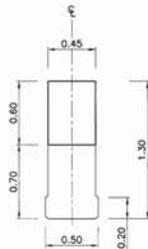
SECTION A - A
SCALE 1 : 25



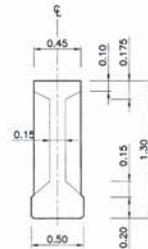
ELEVATION OF GIRDER SPAN LENGTH 16.00 M.
SCALE 1 : 25



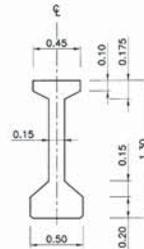
SECTION B - B
SCALE 1 : 25



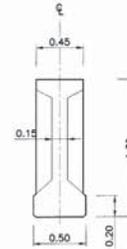
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. CONCRETE FOR PRECAST I-GIRDER SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-16H/01 TO NP1-16H/04 AND NP1-16H/06

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 16.00 M. (HALF JOINT)
GIRDER DIMENSION

DESIGNED : B.O.M. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-16H/05
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 22

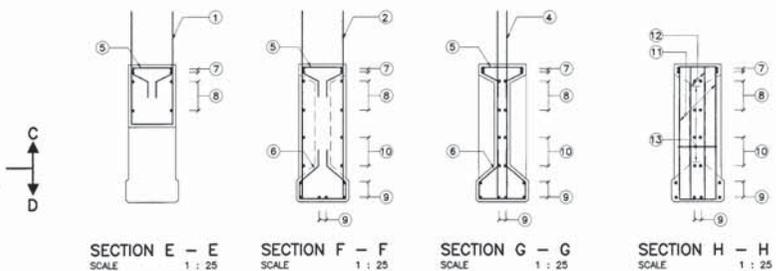
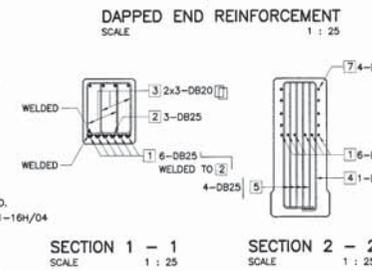
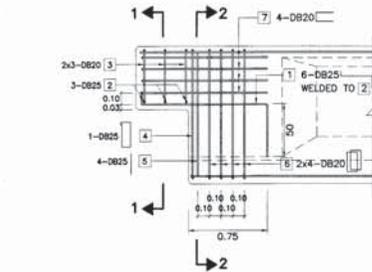
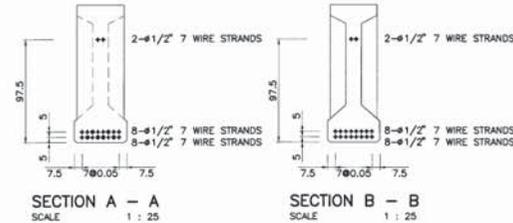
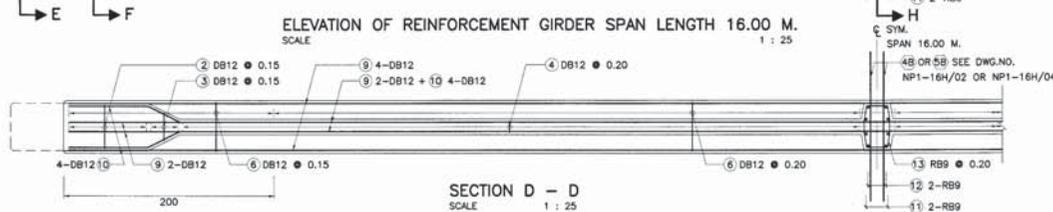
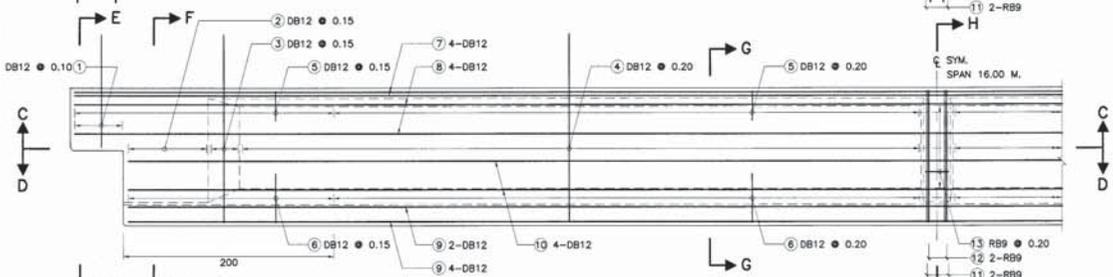
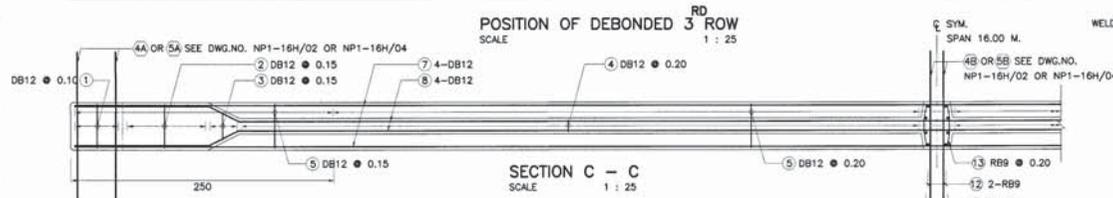
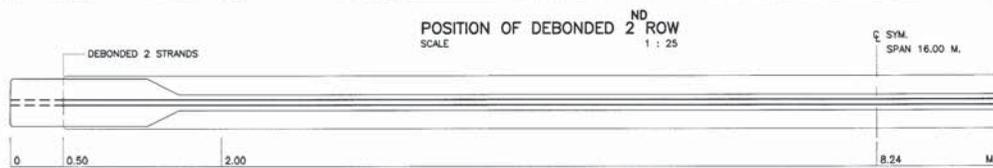
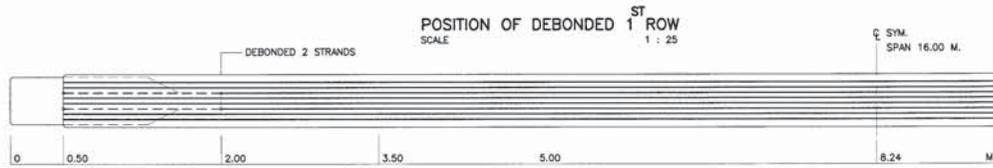
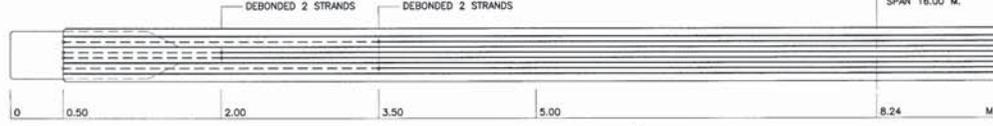
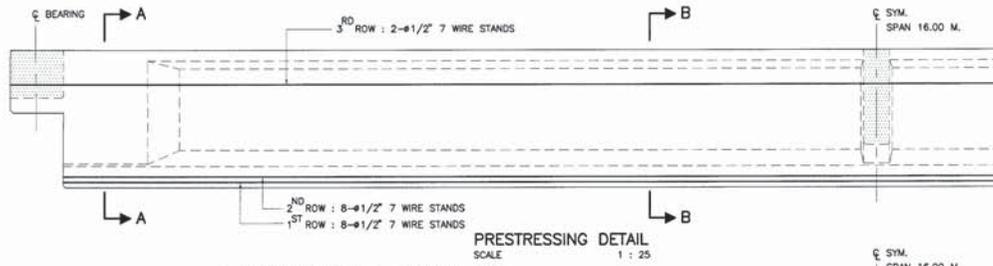


TABLE OF GIRDER REINFORCEMENT

BAR NO.	SIZE	SHAPE
1	DB12	① 1.05 ② 1.77 ③ 1.77 ④ 1.77
2	DB12	0.39
3	DB12	0.39 VARIES 0.09
4	DB12	0.05 0.39 0.20
5	DB12	0.20 0.17 0.25 0.17 0.44
6	DB12	16.42
7	DB12	1.26 13.28 1.26
8	DB12	0.36 0.30
9	DB12	15.42
10	DB12	0.76 13.28 0.76
11	DB12	0.36 0.30
12	RB9	11 1.24 12 1.24 13 0.36
13	RB9	0.34 0.14 0.20

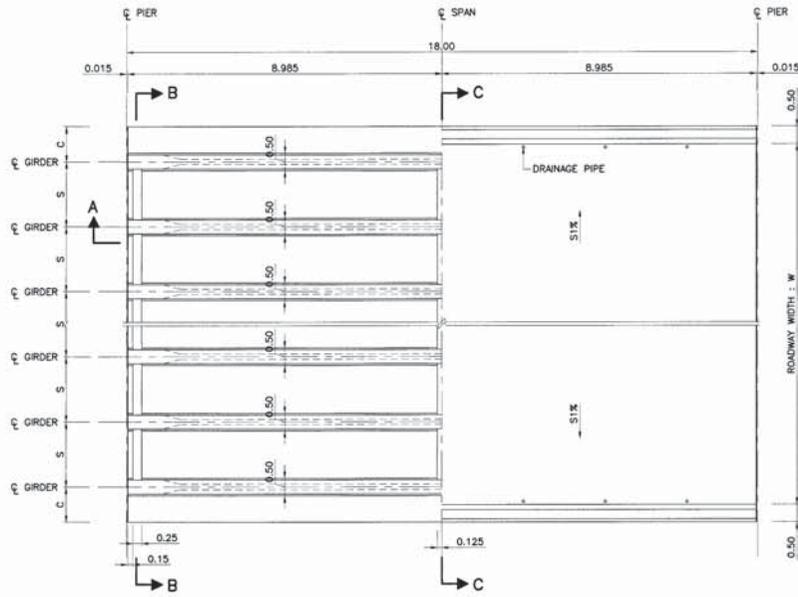
NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- MIX. DESIGN OF CONCRETE FOR PRESTRESSED I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
- PRESTRESSING :
 - 1.1 LOW RELAXATION SEVEN WIRE STRANDS # 12.7 MM. IN ACCORDANCE WITH TIS-420
 - 1.2 MIN CHARACTERISTIC STRENGTH OF STRAND 180 KN.
 - 1.3 INITIAL PRESTRESS SHALL BE 70% OF CHARACTERISTIC STRENGTH.
- POSITION OF DEBONDED SHALL BE SPECIFIED IN THIS DRAWING AS FOLLOWS :
 - 5.1 POINT OF DEBONDED MEANS STARTING POINT TO END OF GIRDER
 - 5.2 DEBONDED MEANS PERFORMING FOR NO CONTACT BETWEEN STRAND AND CONCRETE.
- AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 40 MPa. (410 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
- LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
- SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
- SKEW ANGLE SHALL BE LESS THAN 45 DEGREE.
- SYMBOLS OF PRESTRESSING STRANDS
 - BOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
 - + DEBOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-16H/01 TO NP1-16H/05

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS
 STANDARD DRAWING
 I-GIRDER 16.00 M. (HALF JOINT)
 GIRDER PRESTRESSING & REINFORCEMENT

DESIGNED : D.G.A. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-16H/05 SHEET NO. 23

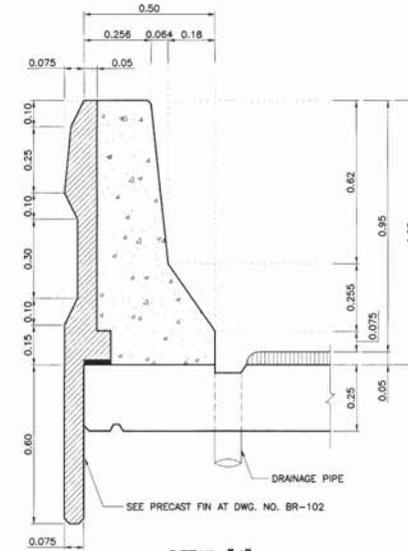
REF.	REVISION	SIGNATURE	DATE



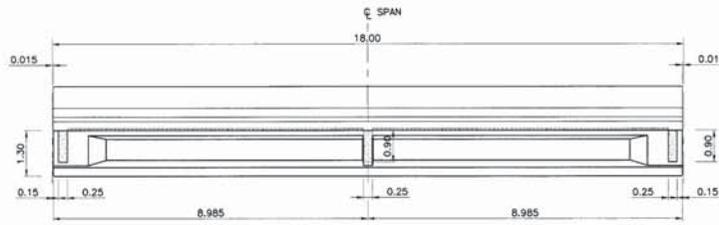
HALF PLAN (BOTTOM ; B)

HALF PLAN (TOP ; T)

DECK PLAN FOR GIRDER SPAN LENGTH 18.00 M.
SCALE 1 : 75



DETAIL "1"
SCALE 1 : 10



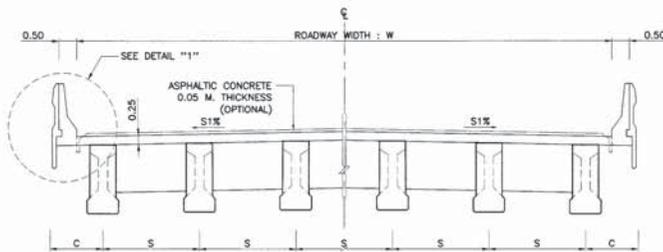
SECTION A - A
SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

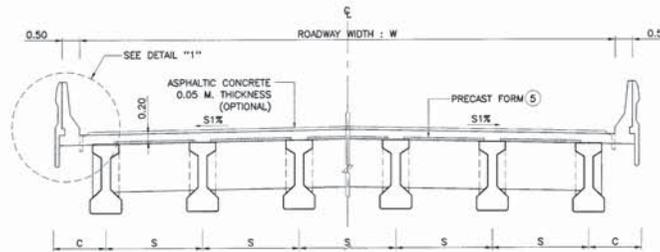
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER C (M.)
9.00	5	4 • 2.00	1.00
10.00	6	5 • 1.80	1.00
11.00	6	5 • 2.00	1.00
12.00	7	4 • 1.83 2 • 1.84	1.00
15.00	8	1 • 1.92 6 • 1.93	1.00
VARIES	n	2.00 (MAX.)	1.00

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO. NP1-18F/02 TO NP1-18F/06
- CONCRETE FOR PC. SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- PRECAST FORM SHALL BE AS FOLLOWS:
 - THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M² (INCLUDED THE WEIGHT OF PRECAST FORM)
 - THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. NOTAR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS.420 OR TIS.95.
 - PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



SECTION B - B
SCALE 1 : 75



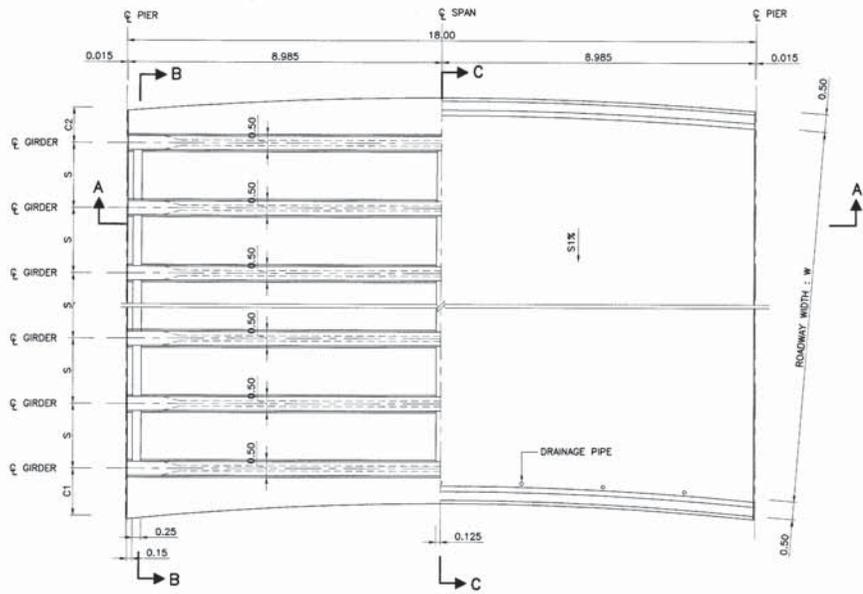
SECTION C - C
SCALE 1 : 75

KINGDOM OF THAILAND

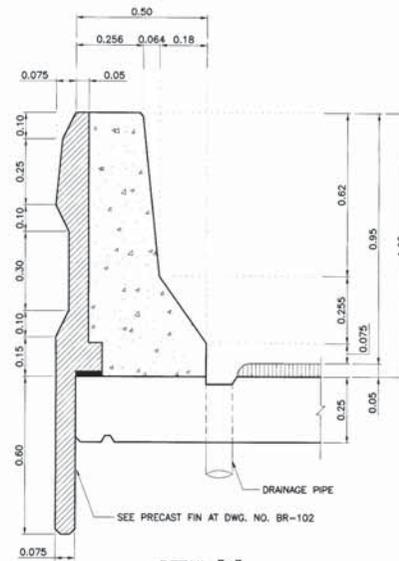
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 18.00 M. (FULL JOINT)
BRIDGE DECK DIMENSION

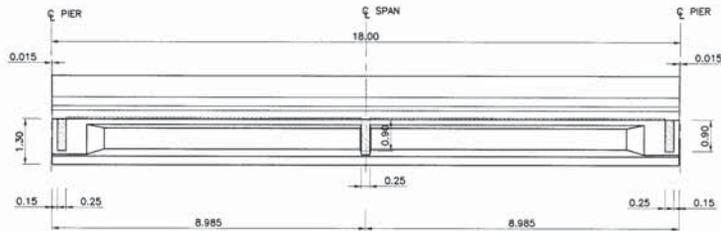
DESIGNED : D.O.A. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO.NP1-18F/01
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 24



HALF PLAN (BOTTOM ; B) HALF PLAN (TOP ; T)
 DECK PLAN FOR GIRDER SPAN LENGTH 18.00 M.
 SCALE 1 : 75



DETAIL "1"
 SCALE 1 : 10



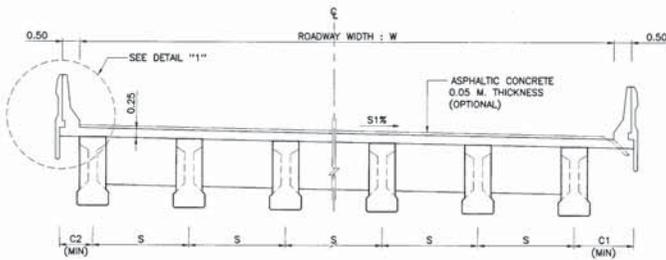
SECTION A - A
 SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

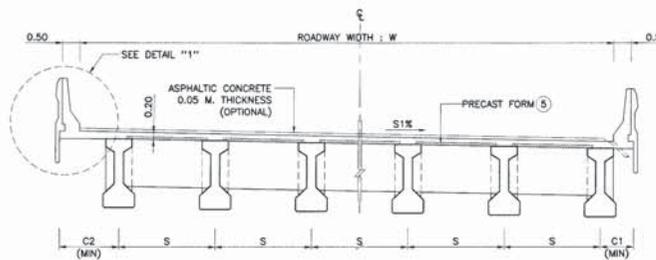
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER			
			C1 (M.)		C2 (M.)	
			MIN.	MAX.	MIN.	MAX.
9.00	5	2.00 (MAX.)	0.60	1.50	0.60	1.50
10.00	6	2.00 (MAX.)	0.60	1.50	0.60	1.50
11.00	6	2.00 (MAX.)	0.60	1.50	0.60	1.50
12.00	7	2.00 (MAX.)	0.60	1.50	0.60	1.50
15.00	8	2.00 (MAX.)	0.60	1.50	0.60	1.50
VARIES	n	2.00 (MAX.)	0.60	1.50	0.60	1.50

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO. NP1-18F/01 , NP1-18F/02 AND NP1-18F/04 TO NP1-18/06
- CONCRETE FOR PC. SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- PRECAST FORM SHALL BE AS FOLLOWS:
 - THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M² (INCLUDED THE WEIGHT OF PRECAST FORM)
 - THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTAR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS.420 OR TIS.95.
 - PRECAST FORM SHALL NOT BEND OR DEFLECT, THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



SECTION B - B
 SCALE 1 : 75



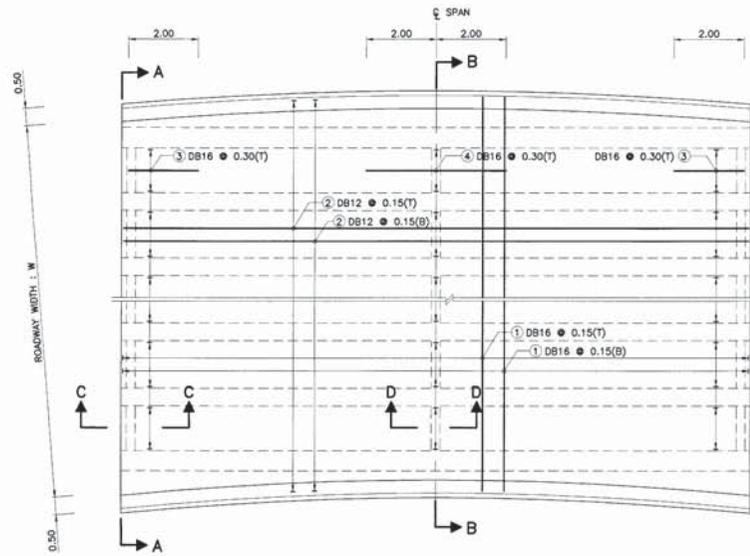
SECTION C - C
 SCALE 1 : 75

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

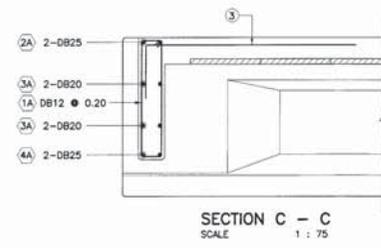
STANDARD DRAWING
 I-GIRDER 18.00 M. (FULL JOINT)
 BRIDGE DECK DIMENSION (FOR CURVE)

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG.NO.NP1-18F/03
		SHEET NO. 26

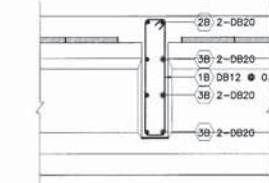
REF.	REVISION	SIGNATURE	DATE



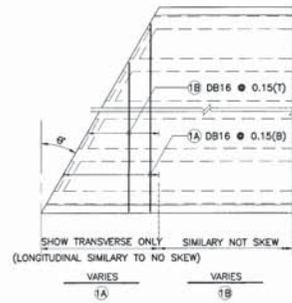
PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75



SKEW REINFORCEMENT
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

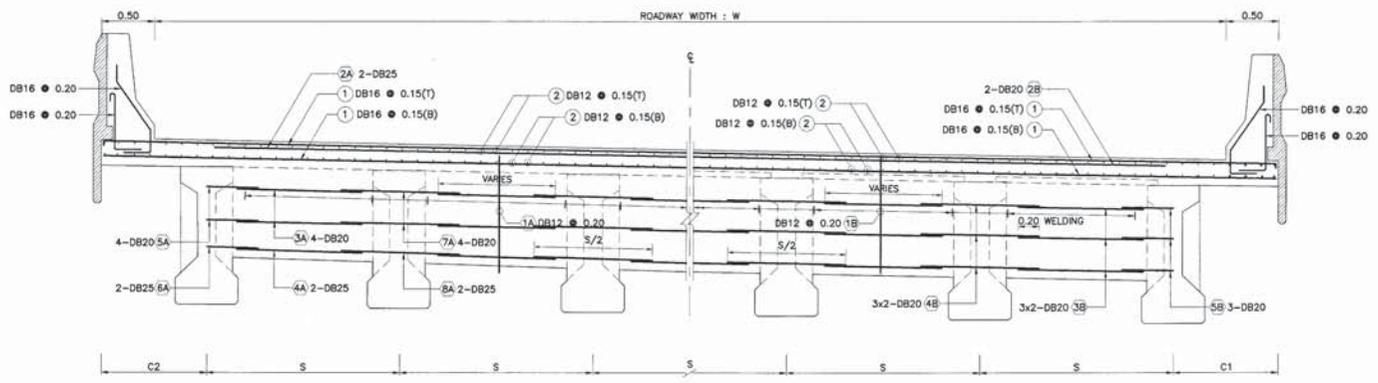
BAR NO.	BAR SIZE	SHAPE
1A	DB12	
2A	DB25	
3A	DB20	
4A	DB25	
5A	DB20	
6A	DB25	
7A	DB20	
8A	DB25	

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1B	DB12	
2B	DB20	
3B	DB20	
4B	DB20	
5B	DB20	
6B	DB20	

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	
2	DB12	
3	DB16	
4	DB16	



HALF SECTION A - A
HALF SECTION B - B
CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
5. THE REINFORCE BAR NO. 5A, 6A, 7A, 8A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
6. THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP1-18F/01 TO NP1-18F/03 AND NP1-18F/05 , NP1-18F/06

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 18.00 M. (FULL JOINT)
BRIDGE DECK REINFORCEMENT (FOR CURVE)

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-18F/04 SHEET NO. 27

REF.	REVISION	SIGNATURE	DATE

D:\Work Area 2015\Map-S&P-04070000

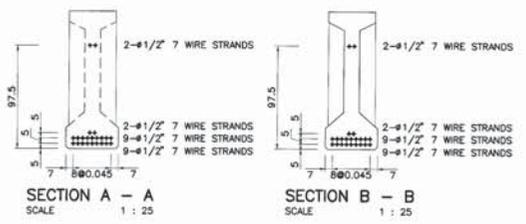
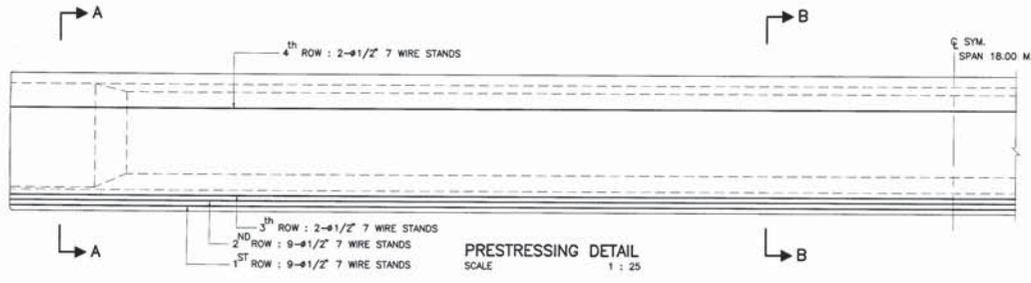
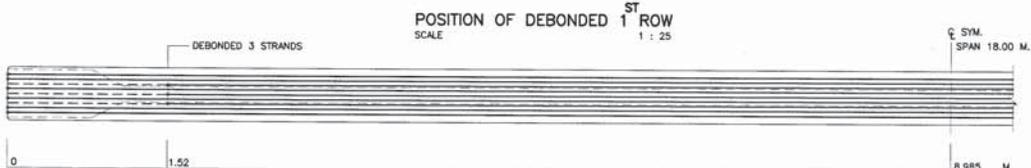
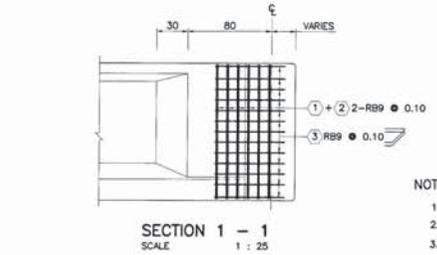
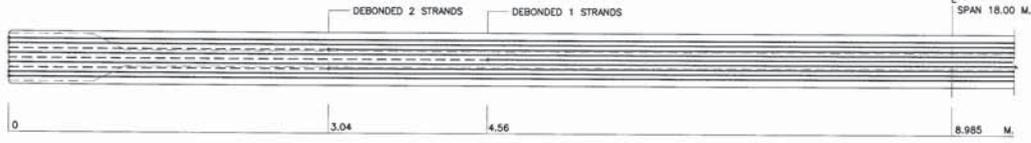
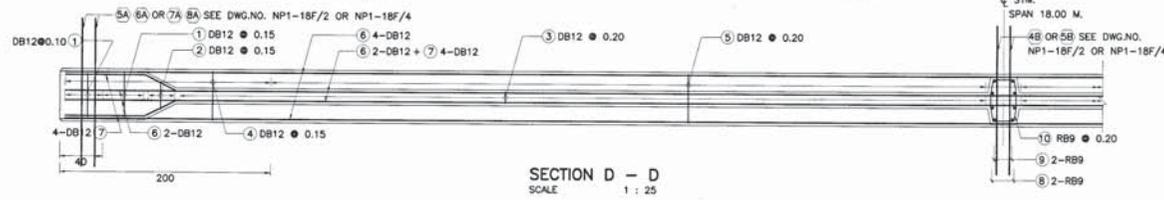
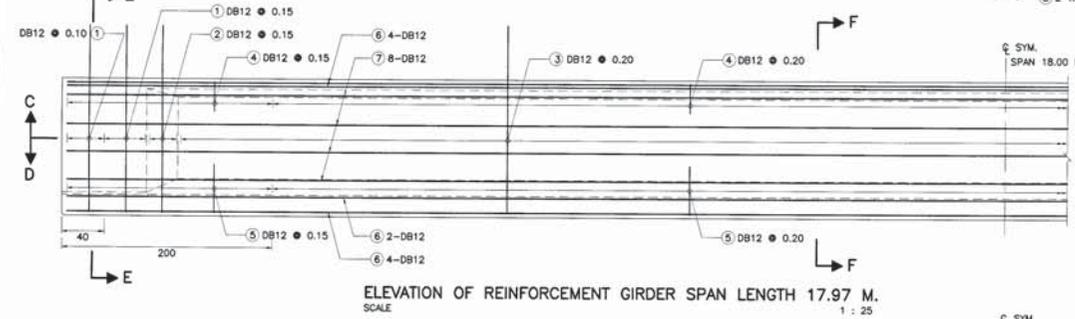
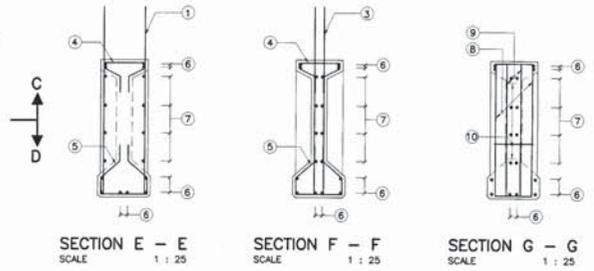
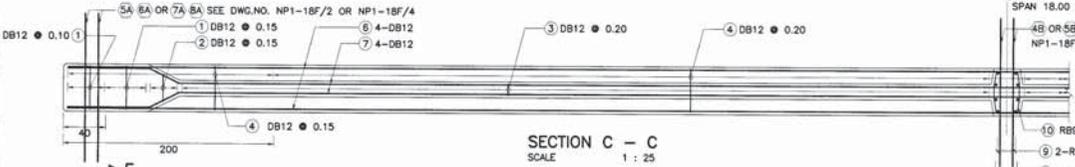
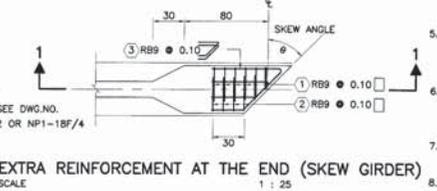


TABLE OF GIRDER REINFORCEMENT		
BAR NO.	BAR SIZE	SHAPE
1	DB12	
2	DB12	
3	DB12	
4	DB12	
5	DB12	
6	DB12	
7	DB12	
8	RB9	
9	RB9	
10	RB9	



- NOTE :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD : HL-93.
 - MIX. DESIGN OF CONCRETE FOR PRESTRESSED I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
 - PRESTRESSING :
 - 1 LOW RELAXATION SEVEN WIRE STANDS # 12.7 MM. IN ACCORDANCE WITH T15.420
 - 2 MIN CHARACTERISTIC STRENGTH OF STRAND 180 KN.
 - 3 INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH.
 - POSITION OF DEBONDED SHALL BE SPECIFIED IN THIS DRAWING AS FOLLOW :
 - 1 POINT OF DEBONDED MEANS STARTING POINT TO END OF GIRDER
 - 2 DEBONDED MEANS PERFORMING FOR NO CONTACT BETWEEN STRAND AND CONCRETE.
 - AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 40 MPa. (410 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
 - LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER, DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
 - SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
 - SKIEW ANGLE SHALL BE LESS THAN 45 DEGREE.
 - SYMBOLS OF PRESTRESSING STRANDS
 - + BOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STANDS)
 - ⊕ DEBOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STANDS)
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-18F/01 TO NP1-18F/05

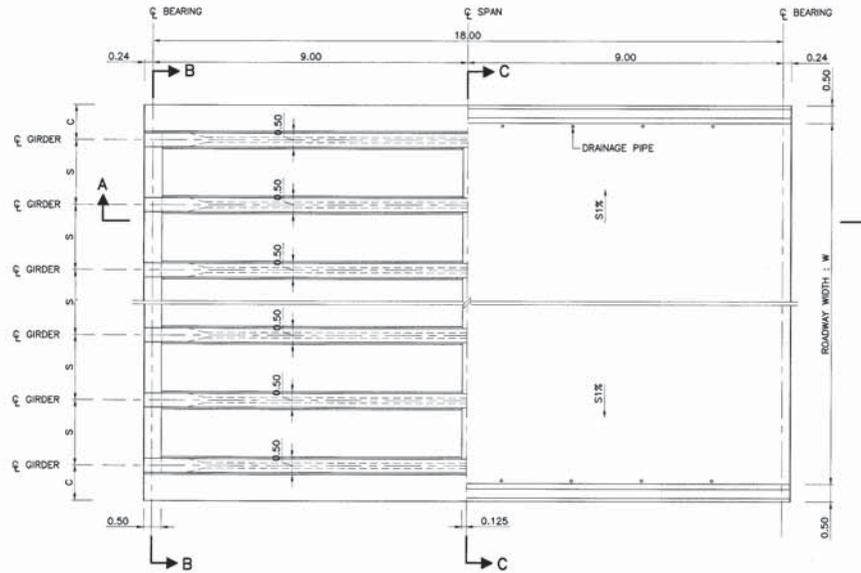


KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 I-GIRDER 18.00 M. (FULL JOINT)
 GIRDER PRESTRESSING & REINFORCEMENT

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-18F/05 SHEET NO. 29

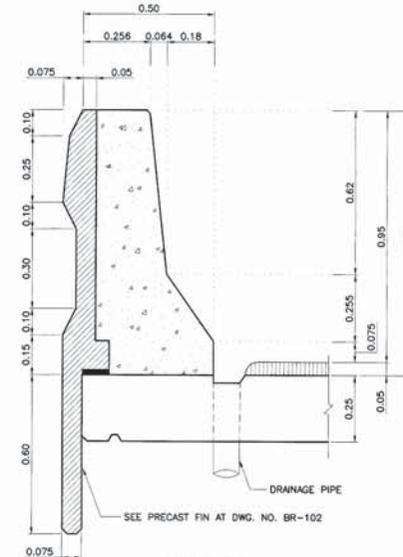
REF.	REVISION	SIGNATURE	DATE



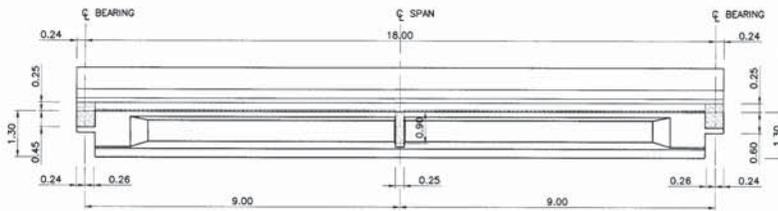
HALF PLAN (BOTTOM ; B)

HALF PLAN (TOP ; T)

DECK PLAN FOR GIRDER SPAN LENGTH 18.00 M.
SCALE 1 : 75



DETAIL "1"
SCALE 1 : 10



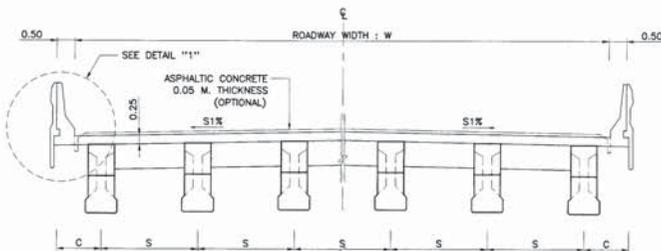
SECTION A - A
SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

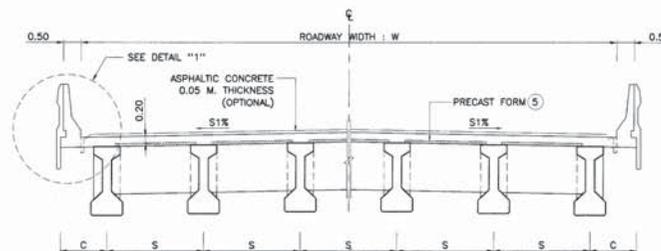
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER C (M.)
9.00	5	4 ● 2.00	1.00
10.00	6	5 ● 1.80	1.00
11.00	6	5 ● 2.00	1.00
12.00	7	4 ● 1.83 2 ● 1.84	1.00
15.00	8	1 ● 1.92 6 ● 1.93	1.00
VARIES	n	2.00 (MAX.)	1.00

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO. NP1-18H/02 TO NP1-18H/06
4. CONCRETE FOR PC SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
5. PRECAST FORM SHALL BE AS FOLLOWS:
 - 5.1 THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - 5.2 ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M²(INCLUDED THE WEIGHT OF PRECAST FORM)
 - 5.3 THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - 5.4 ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTAR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - 5.5 CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TS.420 OR TS.95.
 - 5.6 PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - 5.7 PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - 5.8 THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



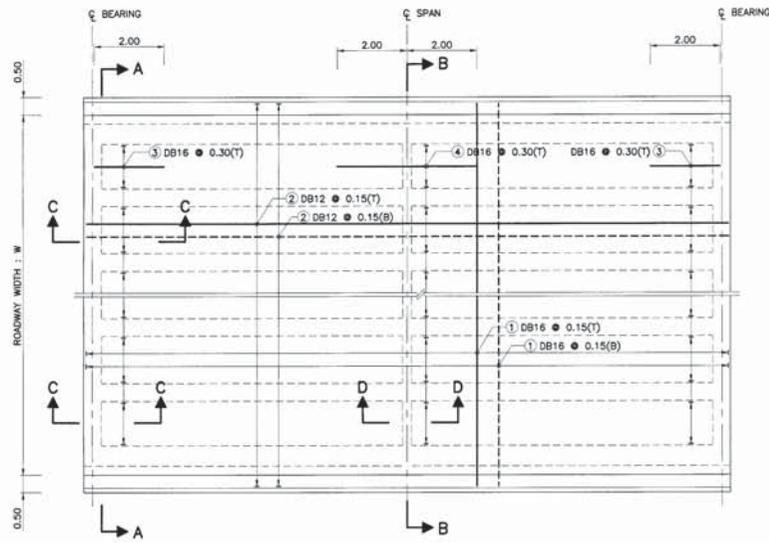
SECTION B - B
SCALE 1 : 75



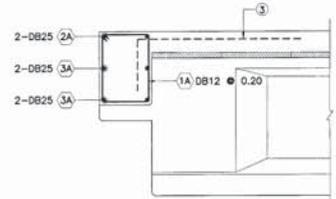
SECTION C - C
SCALE 1 : 75

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 18.00 M. (HALF JOINT)
BRIDGE DECK DIMENSION

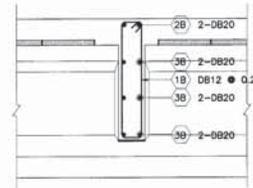
DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-18H/01
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 30



PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

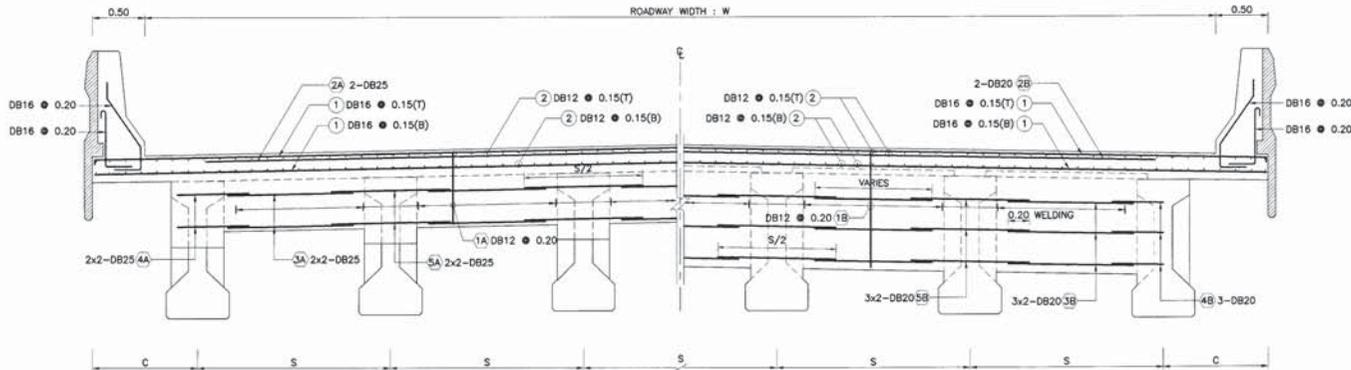
BAR NO.	BAR SIZE	SHAPE
1A	DB12	W+1.00-2C
2A	DB25	S/2+0.40
3A	DB25	S/2
4A	DB25	S/4+0.10
5A	DB25	S/2

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
1B	DB12	W+1.00-2C
2B	DB20	S/2+0.40
3B	DB20	S/2
4B	DB20	S/4+0.10
5B	DB20	S/2

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W+0.70
2	DB12	17.91
3	DB16	2.00, 0.50, 4.00
4	DB16	



HALF SECTION A - A

HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
5. THE REINFORCE BAR NO. 4A, 5A, 4B, AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
6. THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP1-18H/01 AND NP1-18H/03 TO NP1-18H/06

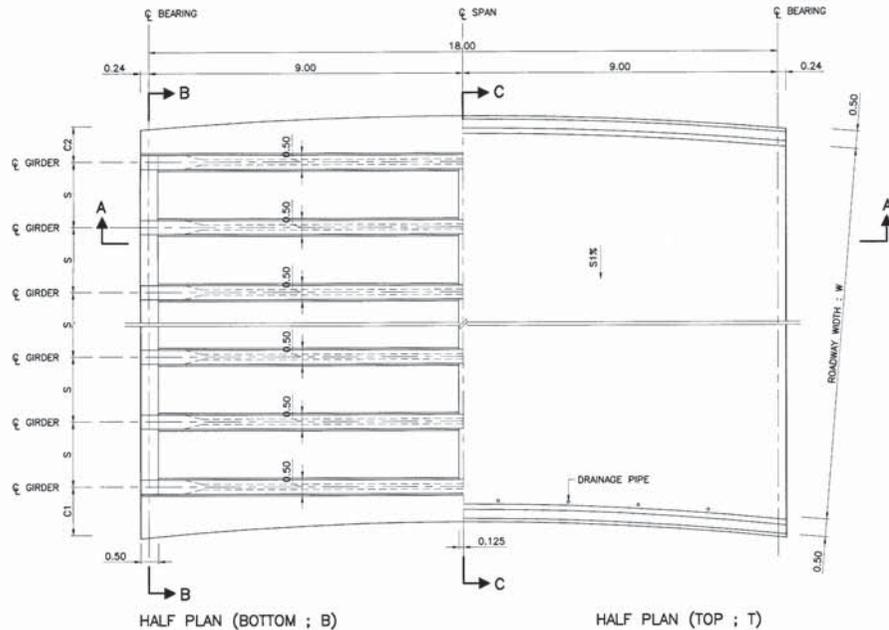
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 18.00 M. (HALF JOINT)
BRIDGE DECK REINFORCEMENT

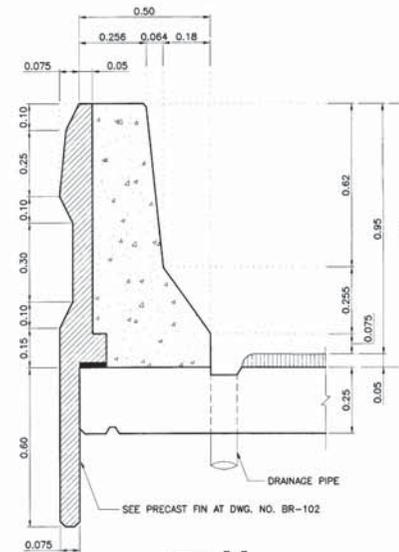
DESIGNED : S.O.K. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-18H/02
REF.	REVISION	SIGNATURE DATE

SHEET NO. 31

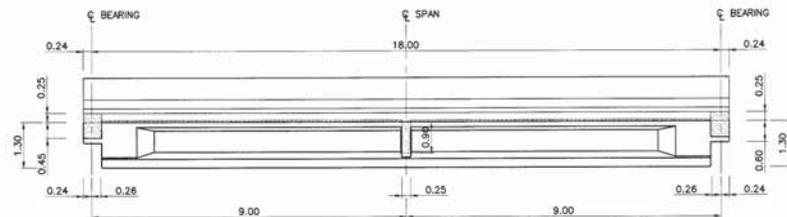


HALF PLAN (BOTTOM ; B) HALF PLAN (TOP ; T)

DECK PLAN FOR GIRDER SPAN LENGTH 18.00 M.
SCALE 1 : 75



DETAIL "1"
SCALE 1 : 10



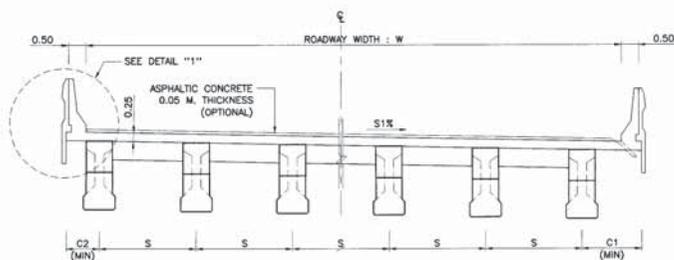
SECTION A - A
SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

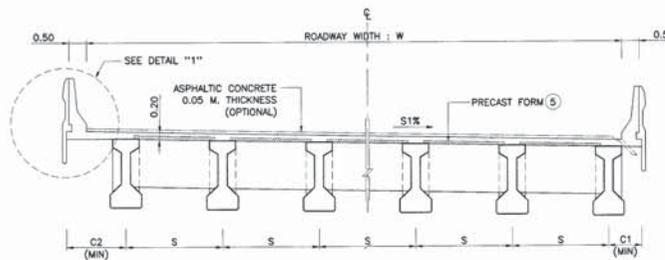
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER			
			C1 (M.)		C2 (M.)	
			MIN.	MAX.	MIN.	MAX.
9.00	5	2.00 (MAX.)	0.60	1.50	0.60	1.50
10.00	6	2.00 (MAX.)	0.60	1.50	0.60	1.50
11.00	6	2.00 (MAX.)	0.60	1.50	0.60	1.50
12.00	7	2.00 (MAX.)	0.60	1.50	0.60	1.50
15.00	8	2.00 (MAX.)	0.60	1.50	0.60	1.50
VARIES	n	2.00 (MAX.)	0.60	1.50	0.60	1.50

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-18H/01 , NP1-18H/02 AND NP1-18H/04 TO NP1-18H/06
- CONCRETE FOR PC. SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- PRECAST FORM SHALL BE AS FOLLOWS:
 - THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M² (INCLUDED THE WEIGHT OF PRECAST FORM)
 - THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTAR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS.420 OR TIS.95.
 - PRECAST FORM SHALL NOT BEND OR DEFLECT, THE TOLERANCE OF ALL DIMENSIONS OF OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



SECTION B - B
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75

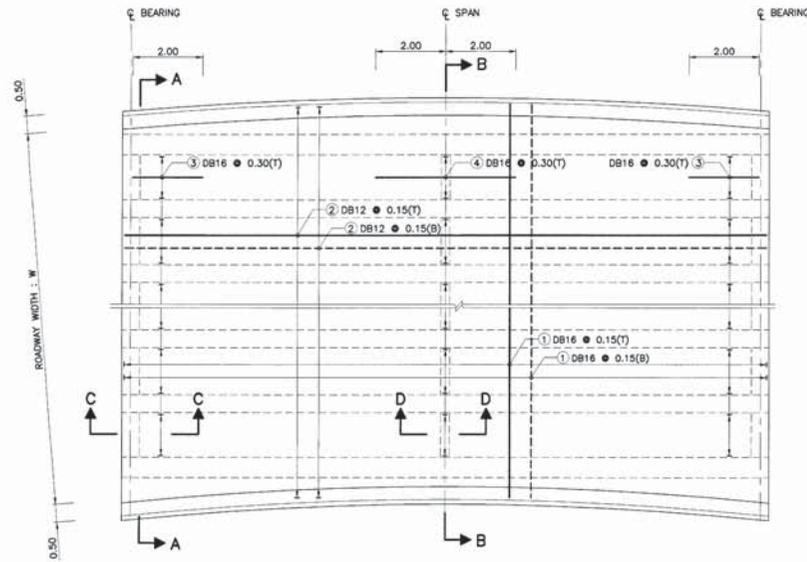
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

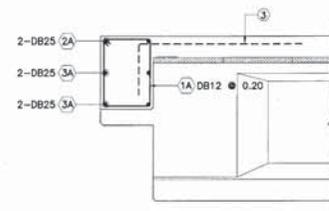
STANDARD DRAWING
I-GIRDER 18.00 M. (HALF JOINT)
BRIDGE DECK DIMENSION (FOR CURVE)

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-18H/03
REF.	REVISION	SIGNATURE DATE

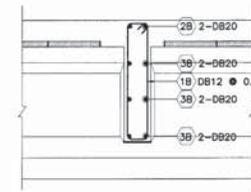
SHEET NO. 32



PLAN OF REINFORCEMENT SLAB AND RAILING
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

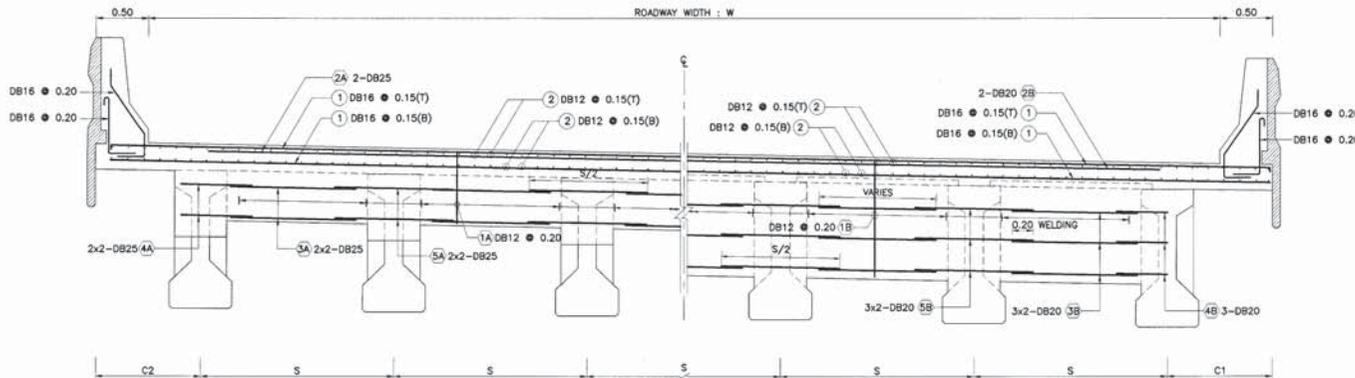
BAR NO.	BAR SIZE	SHAPE
(1A)	DB12	0.44
(2A)	DB25	0.54
(3A)	DB25	0.20
(4A)	DB25	S/4+0.10
(5A)	DB25	

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
(1B)	DB12	0.19
(2B)	DB20	1.09
(3B)	DB20	0.20
(4B)	DB20	S/4+0.10
(5B)	DB20	

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
(1)	DB16	W+0.70
(2)	DB12	15.91
(3)	DB16	2.00
(4)	DB16	0.50



HALF SECTION A - A

HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-9.3.
3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS-15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. REINFORCING STEEL SHALL CONFORM TO TIS-20 GRADE SR24 FOR ROUND BARS AND TIS-24 GRADE SD40 FOR DEFORMED BARS.
5. THE REINFORCE BAR NO. 4A, 5A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
6. THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP1-18H/01 TO NP1-18H/03 AND NP1-18H/05, NP1-18H/06

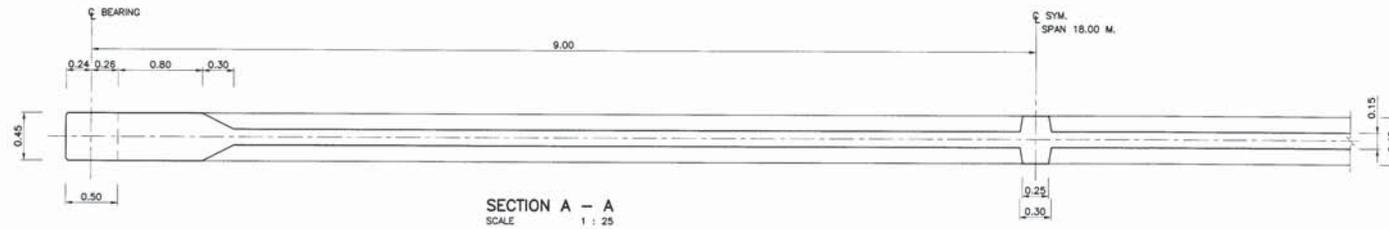
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

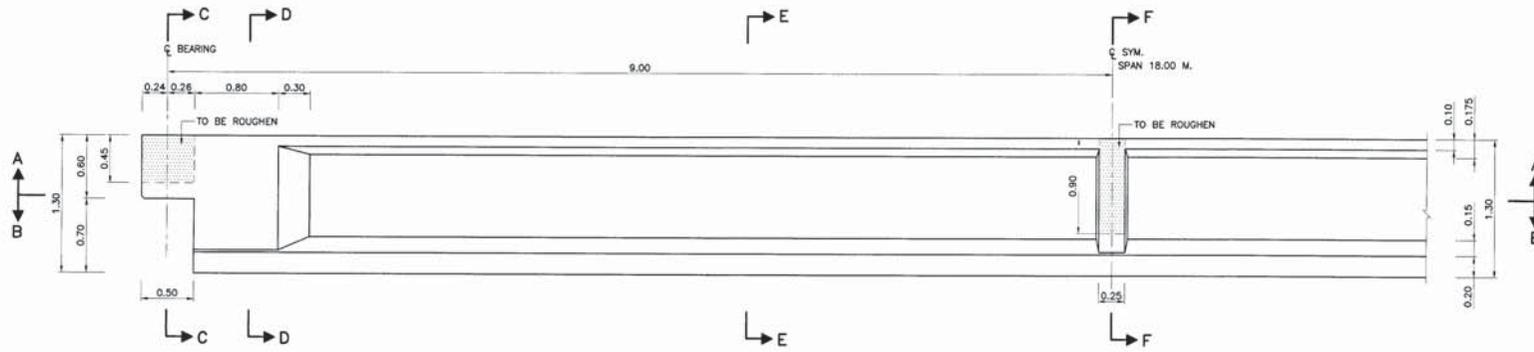
STANDARD DRAWING
I-GIRDER 18.00 M. (HALF JOINT)
BRIDGE DECK REINFORCEMENT (FOR CURVE)

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO NP1-18H/04
		SHEET NO. 33

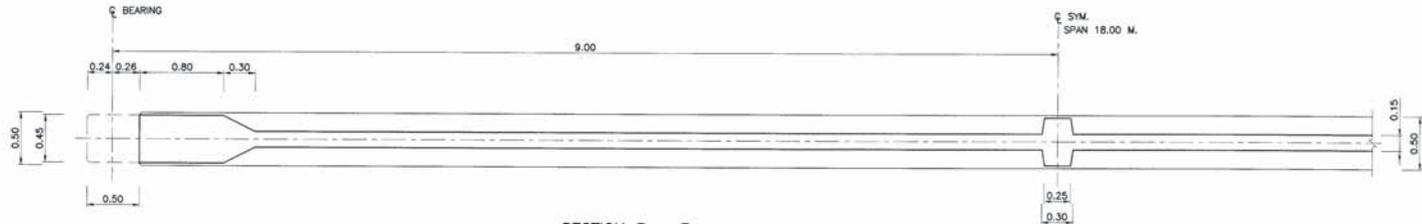
REF.	REVISION	SIGNATURE	DATE



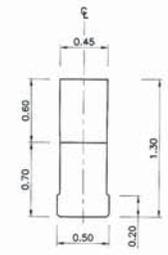
SECTION A - A
SCALE 1 : 25



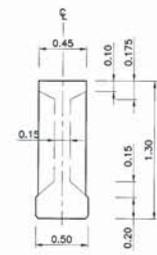
ELEVATION OF GIRDER SPAN LENGTH 18.00 M.
SCALE 1 : 25



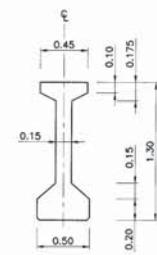
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SCALE 1 : 25



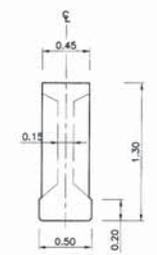
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. DESIGN LIVE LOAD : HL-93.
 3. CONCRETE FOR PRECAST I-GIRDER SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 4. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-18H/01 TO NP1-18H/04 AND NP1-18H/06

KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING I-GIRDER 18.00 M. (HALF JOINT) GIRDER DIMENSION		
DESIGNED : O.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-18H/05 SHEET NO. 34

REF.	REVISION	SIGNATURE	DATE

D:\S&P\Draw\2015\NP1-18H\05.dwg

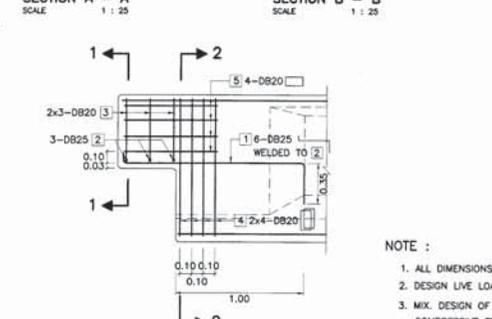
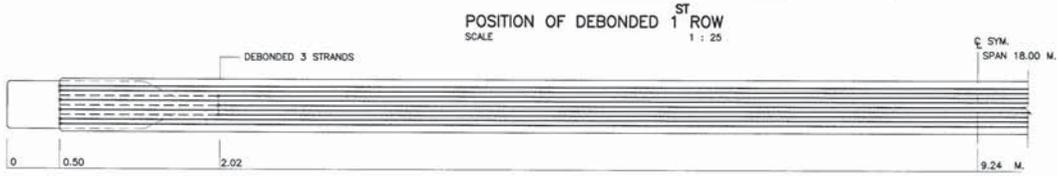
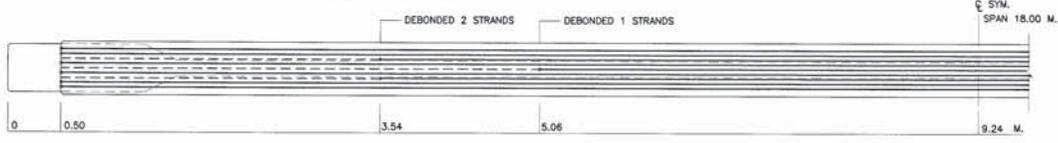
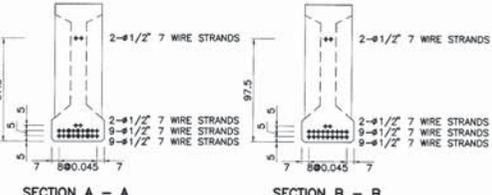
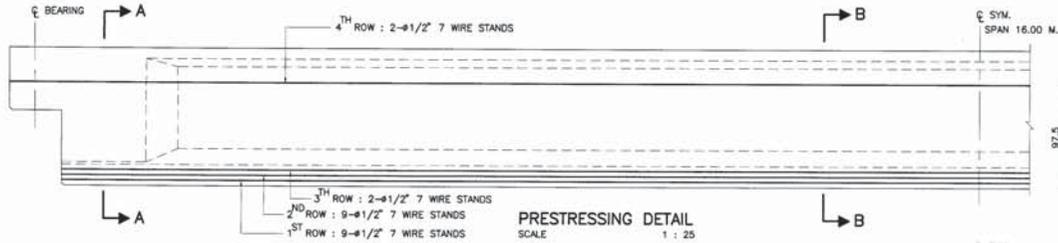
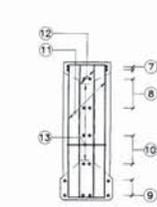
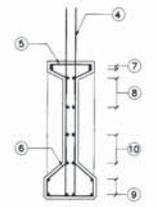
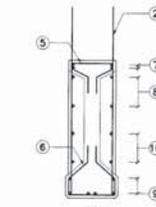
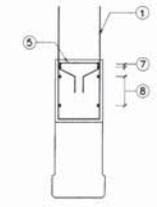
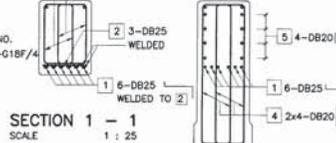
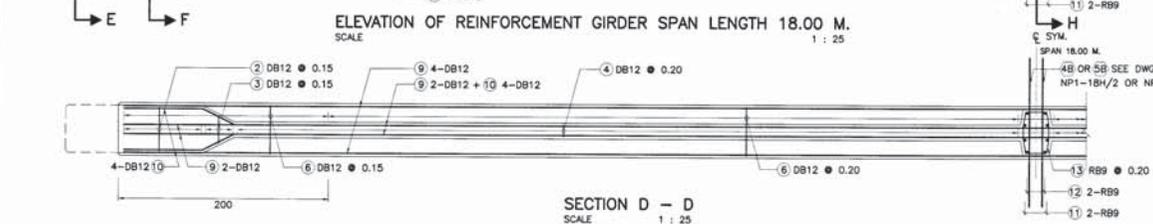
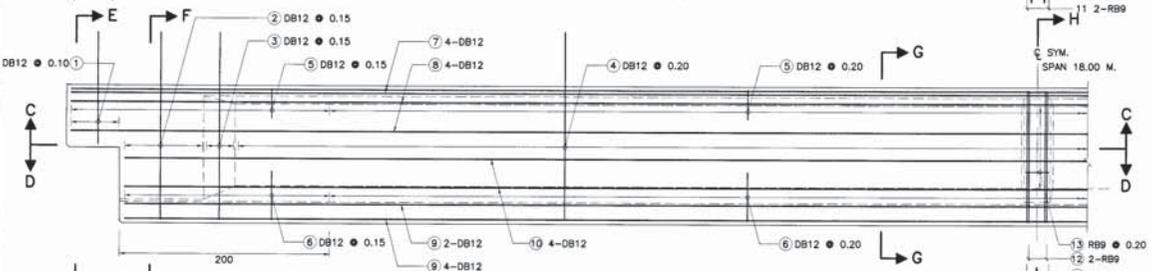
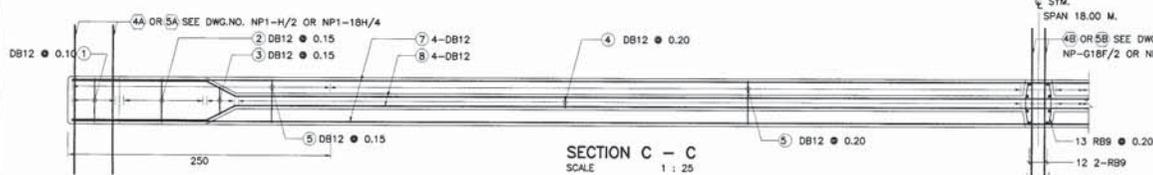


TABLE OF GIRDER REINFORCEMENT

BAR NO.	SIZE	SHAPE
1	DB12	① 1.05 ② 1.77 ③ 1.77 ④ 1.77
2	DB12	0.39
3	DB12	0.39 VARIES 0.09
4	DB12	0.05 0.39 0.17 0.20 0.44
5	DB12	0.20 0.17 0.20 0.44
6	DB12	⑦ 18.42
7	DB12	⑧ 1.26 15.28 1.26 0.30
8	DB12	⑨ 17.42
9	DB12	⑩ 0.76 15.28 0.76 0.30
10	DB12	
11	RB9	⑪ 1.24 ⑫ 1.24 ⑬ 0.36
12	RB9	0.34 0.14 0.29
13	RB9	

- NOTE :**
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD : HL-93.
 - MIX. DESIGN OF CONCRETE FOR PRESTRESSED I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
 - PRESTRESSING :
 - 1 LOW RELAXATION SEVEN WIRE STRANDS # 12.7 MM. IN ACCORDANCE WITH TIS-420
 - 2 MIN CHARACTERISTIC STRENGTH OF STRAND 180 KN.
 - 3 INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH.
 - POSITION OF DEBONDED SHALL BE SPECIFIED IN THIS DRAWING AS FOLLOW :
 - 5.1 POINT OF DEBONDED MEANS STARTING POINT TO END OF GIRDER
 - 5.2 DEBONDED MEANS PERFORMING FOR NO CONTACT BETWEEN STRAND AND CONCRETE.
 - AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 40 MPa. (410 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
 - LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
 - SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
 - SKEW ANGLE SHALL BE LESS THAN 45 DEGREE.
 - SYMBOLS OF PRESTRESSING STRANDS
 - + BOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
 - ⊕ DEBOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-1BH/01 TO NP1-1BH/05

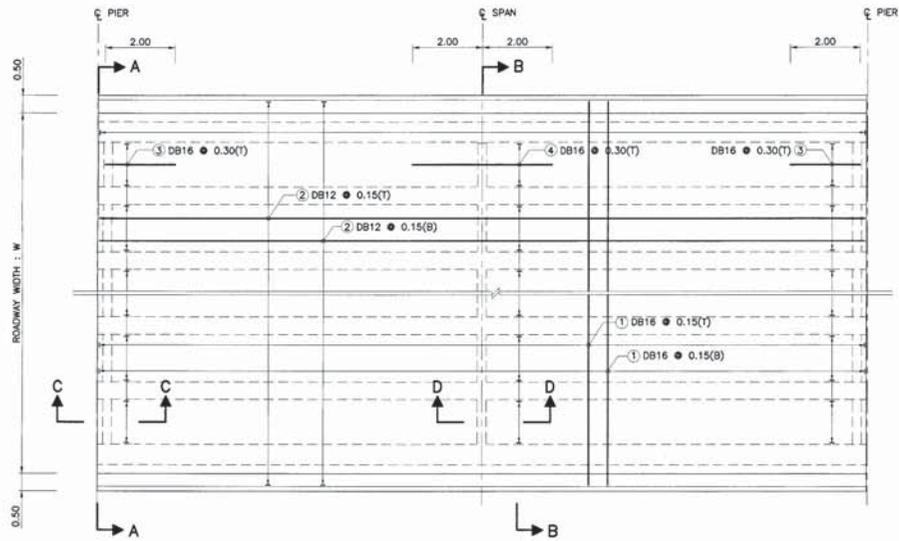


KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

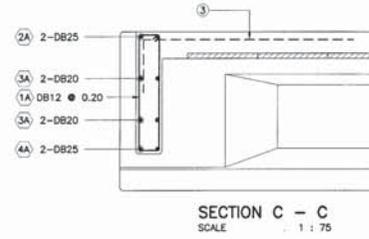
STANDARD DRAWING
I-GIRDER 18.00 M. (HALF JOINT)
GIRDER PRESTRESSING & REINFORCEMENT

DESIGNED : D.O.K. & CONSULTANTS	CHECKED : BUREAU OF LOCATION DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO NP1-1BH/06 SHEET NO. 35

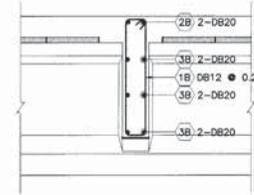
REF.	REVISION	SIGNATURE	DATE



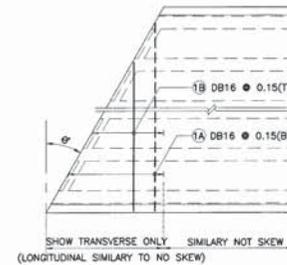
PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



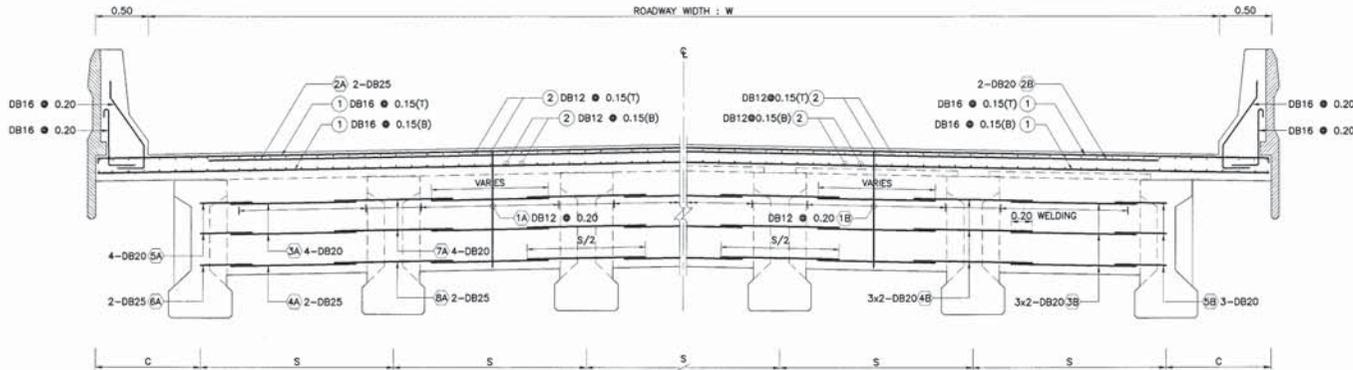
SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75



SKEW REINFORCEMENT
SCALE 1 : 75



HALF SECTION A - A HALF SECTION B - B
CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
1A	DB12	
2A	DB25	
3A	DB20	
4A	DB25	
5A	DB20	
6A	DB25	
7A	DB20	
8A	DB25	

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
1B	DB12	
2B	DB20	
3B	DB20	
4B	DB20	
5B	DB20	
6B	DB25	

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	
2	DB12	
3	DB16	
4	DB16	

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : $H_L=9.3$.
3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS-15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. REINFORCING STEEL SHALL CONFORM TO TIS-20 GRADE SR24 FOR ROUND BARS AND TIS-24 GRADE SD40 FOR DEFORMED BARS.
5. THE REINFORCE BAR NO. 5A, 6A, 7A, 8A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
6. THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP1-22F/01 AND NP1-22F/03 TO NP1-22F/06

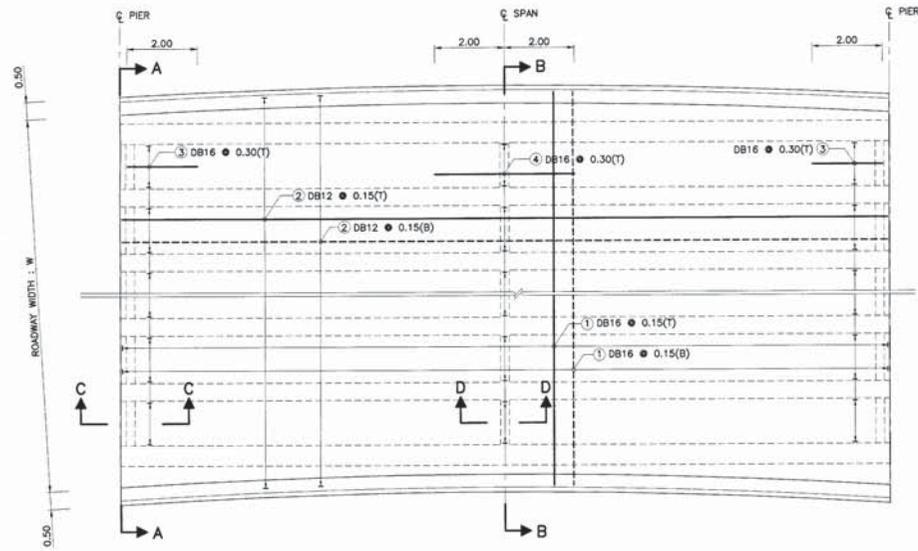
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

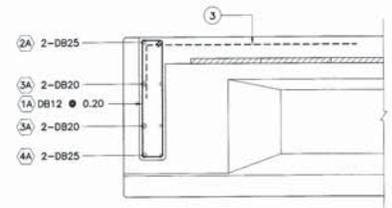
STANDARD DRAWING
I-GIRDER 22.00 M. (FULL JOINT)
BRIDGE DECK REINFORCEMENT

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	DIRECTOR OF LOCATION & DESIGN BUREAU	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-22F/02
REF.	REVISION	SIGNATURE DATE

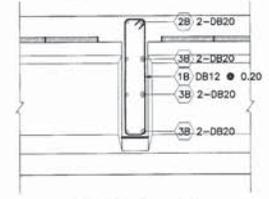
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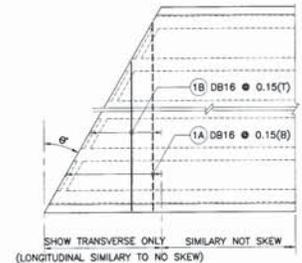
PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



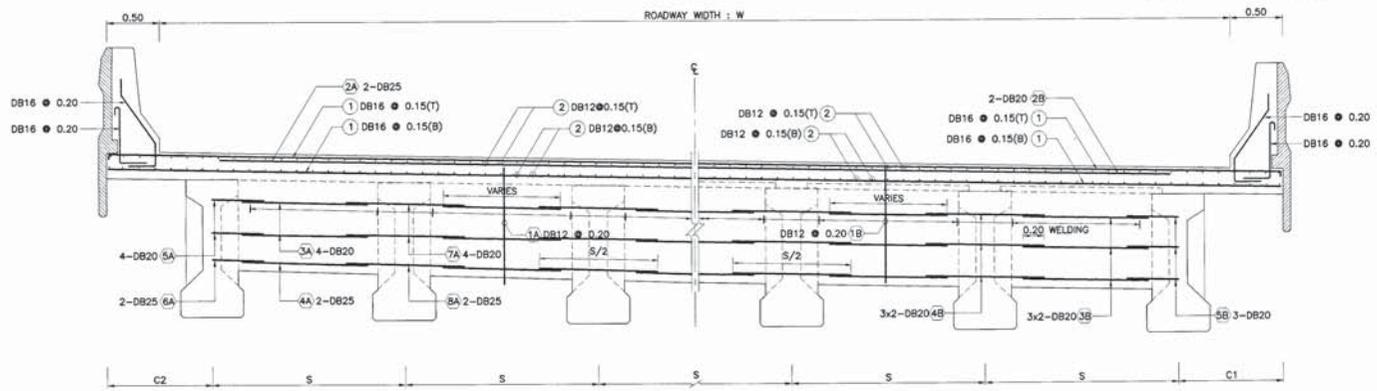
SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75



SKEW REINFORCEMENT
SCALE 1 : 75



HALF SECTION A - A HALF SECTION B - B
CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
1A	DB12	
2A	DB25	
3A	DB20	
4A	DB25	
5A	DB20	
6A	DB25	
7A	DB20	
8A	DB25	

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
1B	DB12	
2B	DB20	
3B	DB20	
4B	DB20	
5B	DB20	
6B	DB20	

TABLE OF REINFORCEMENT (SLAB)

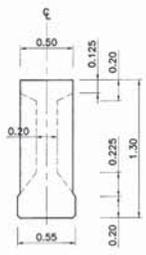
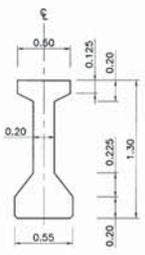
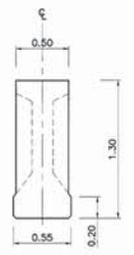
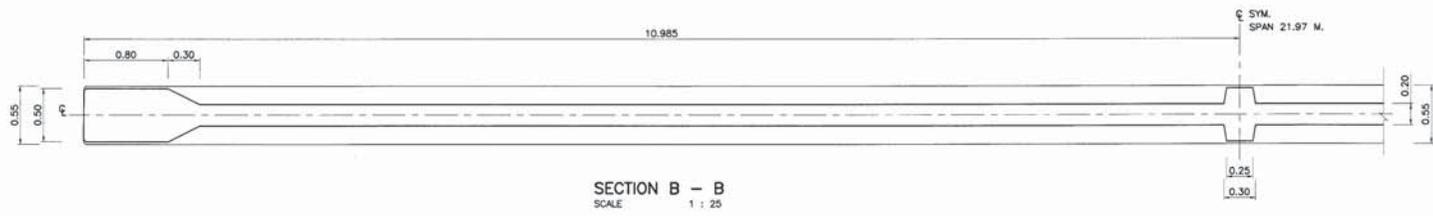
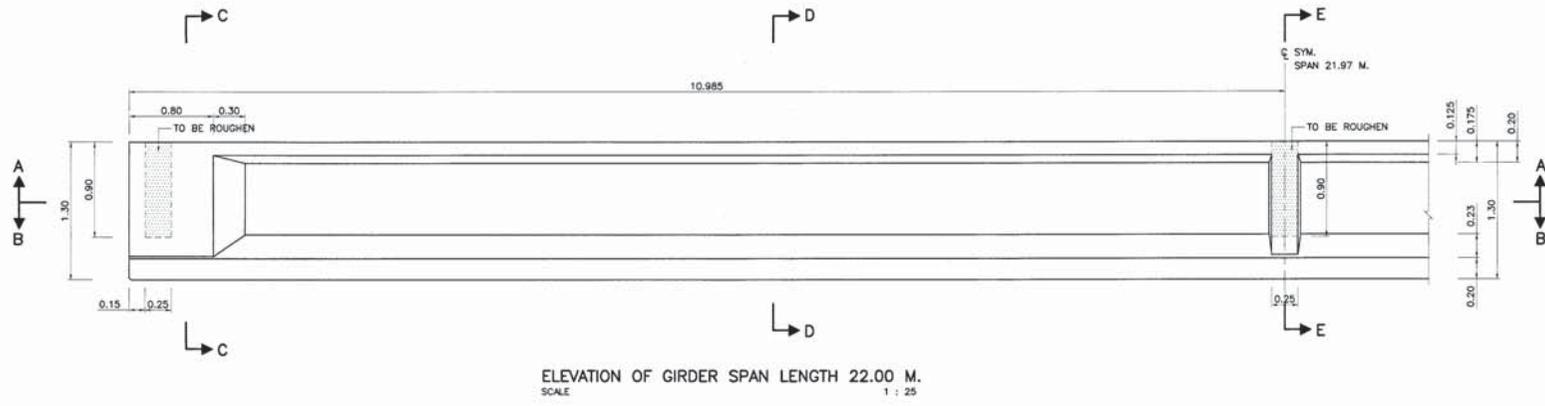
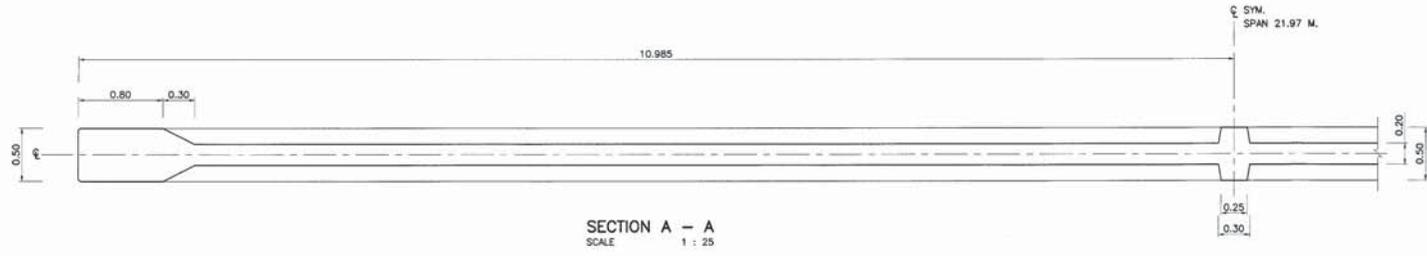
BAR NO.	BAR SIZE	SHAPE
1	DB16	
2	DB12	
3	DB16	
4	DB16	

- NOTE :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD : HL-93.
 - CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 - REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
 - THE REINFORCE BAR NO. 5A, 6A, 7A, 8A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP1-22F/01 TO NP1-22F/03 AND NP1-22F/05, NP1-22F/06

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 22.00 M. (FULL JOINT)
BRIDGE DECK REINFORCEMENT (FOR CURVE)

DESIGNED: D.G.A. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO: NP1-22F/04 SHEET NO. 39

REF.	REVISION	SIGNATURE	DATE



- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. DESIGN LIVE LOAD : HL-93.
 3. CONCRETE FOR PRECAST I-GIRDER SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 4. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-22F/01 TO NP1-22F/04 AND NP1-22F/06

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 22.00 M. (FULL JOINT)
GIRDER DIMENSION

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	 (DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	 (FOR DIRECTOR GENERAL)	DWG NO. NP1-22F/05 SHEET NO. 40

REF.	REVISION	SIGNATURE	DATE

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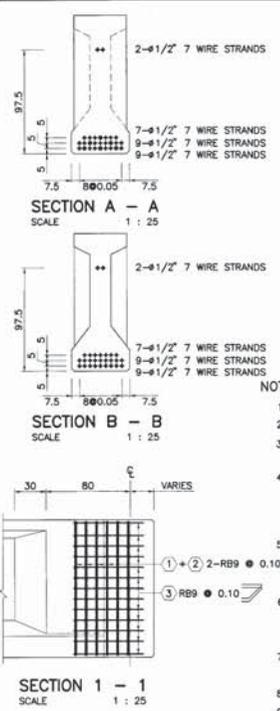
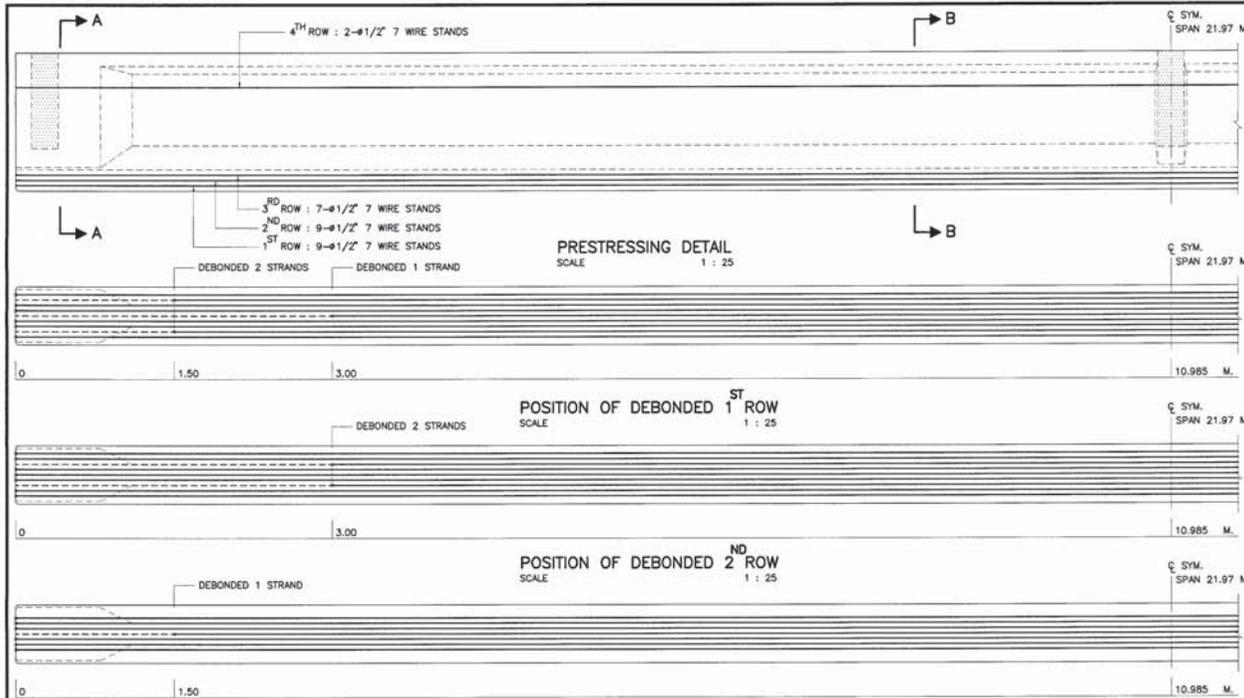
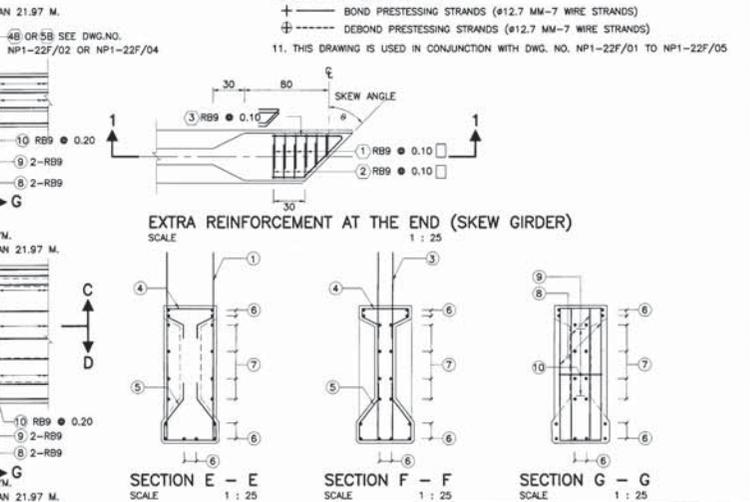
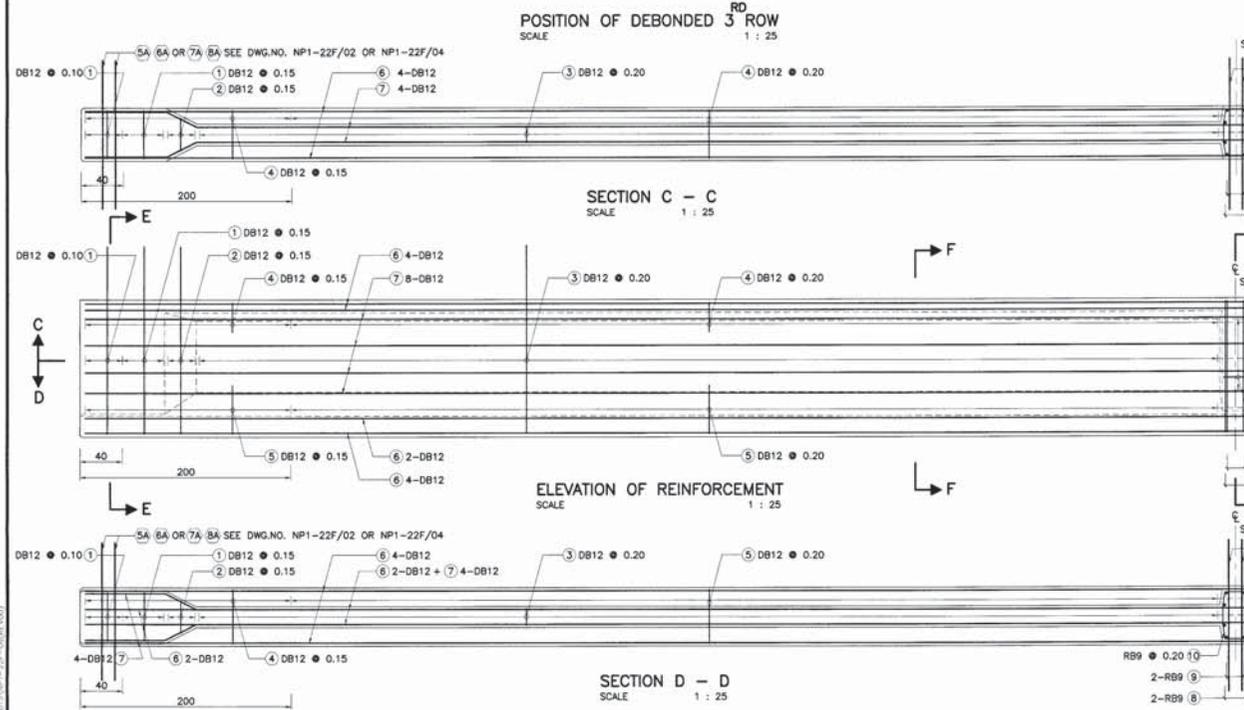


TABLE OF GIRDER REINFORCEMENT		
BAR NO.	BAR SIZE	SHAPE
1	DB12	
2	DB12	
3	DB12	
4	DB12	
5	DB12	
6	DB12	
7	DB12	
8	RB9	
9	RB9	
10	RB9	

- NOTE :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD : HL-93.
 - MIX. DESIGN OF CONCRETE FOR PRESTRESSED I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
 - PRESTRESSING :
 - 4.1 LOW RELAXATION SEVEN WIRE STANDS # 12.7 MM. IN ACCORDANCE WITH TS.420
 - 4.2 MIN CHARACTERISTIC STRENGTH OF STRAND 180 KN.
 - 4.3 INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH.
 - POSITION OF DEBONDED SHALL BE SPECIFIED IN THIS DRAWING AS FOLLOW:
 - 5.1 POINT OF DEBONDED MEANS STARTING POINT TO END OF GIRDER
 - 5.2 DEBONDED MEANS PERFORMING FOR NO CONTACT BETWEEN STRAND AND CONCRETE.
 - AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 40 MPa. (410 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
 - LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
 - SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
 - SKEW ANGLE SHALL BE LESS THAN 45 DEGREE.
 - SYMBOLS OF PRESTRESSING STRANDS
 - + BOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STANDS)
 - ⊕ DEBOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STANDS)
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-22F/01 TO NP1-22F/05

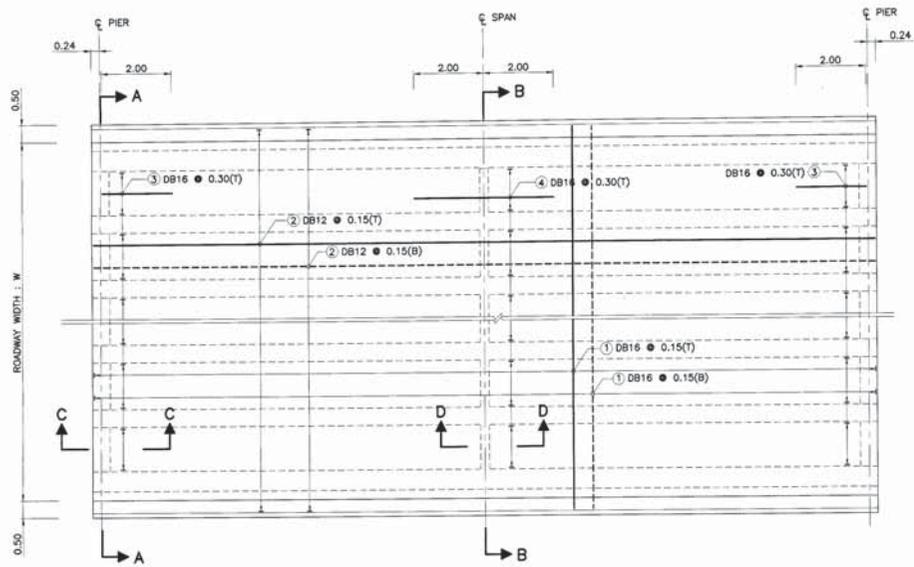


KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

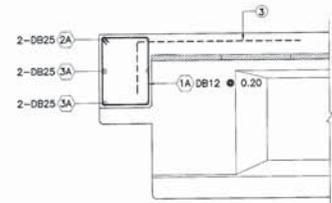
STANDARD DRAWING
I-GIRDER 22.00 M. (FULL JOINT)
 GIRDER PRESTRESSING & REINFORCEMENT

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-22F/06 SHEET NO. 41

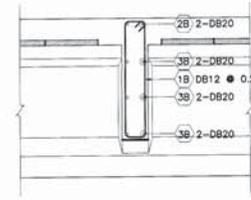
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PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

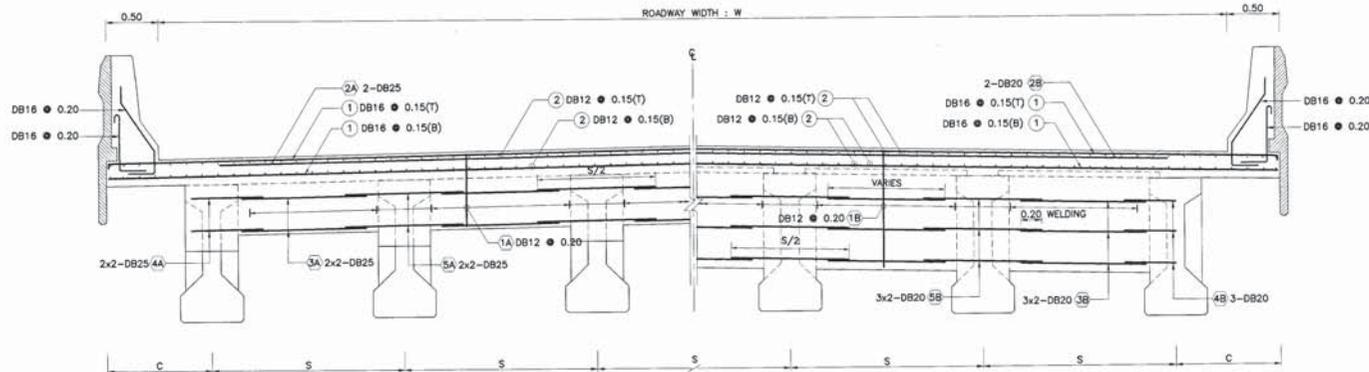
BAR NO.	BAR SIZE	SHAPE
1A	DB12	
2A	DB25	
3A	DB25	
4A	DB25	
5A	DB25	

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
1B	DB12	
2B	DB20	
3B	DB20	
4B	DB20	
5B	DB20	

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W+0.70 ①
2	DB12	22.40 ②
3	DB16	2.00 ③ 0.50 ④ 4.00 ④
4	DB16	



HALF SECTION A - A HALF SECTION B - B
CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

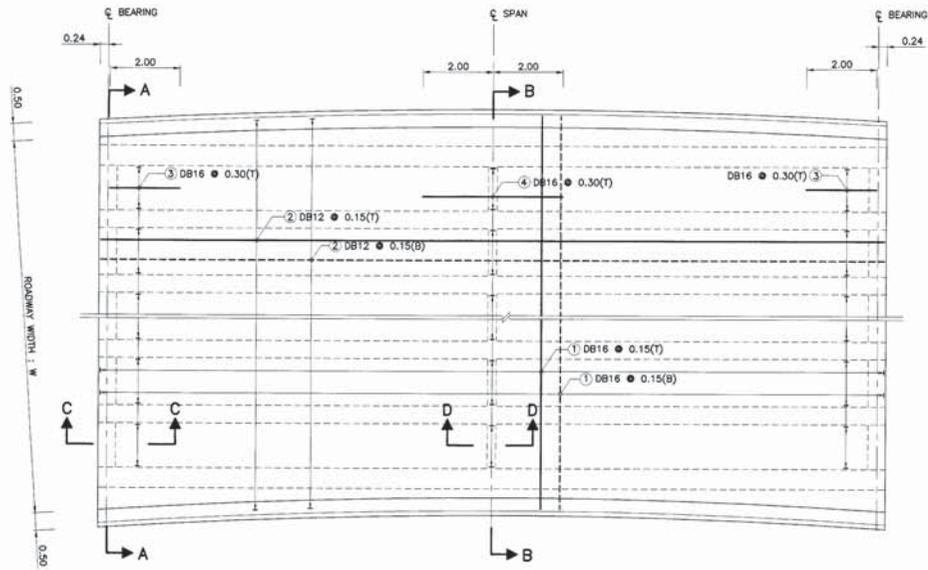
NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
5. THE REINFORCE BAR NO. 4A, 5A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
6. THIS DRAWING IS USED IN CONJUNCTION WITH
DWG NO. NP1-22H/01 AND NP1-22H/03 TO NP1-22H/06

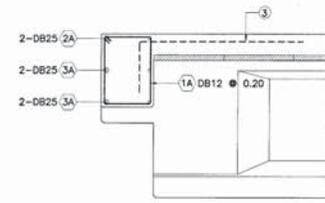
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 22.00 M. (HALF JOINT)
BRIDGE DECK REINFORCEMENT

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-22H/02
REF.	REVISION	SIGNATURE DATE

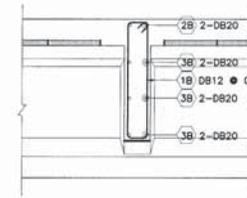
REF.	REVISION	SIGNATURE	DATE



PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

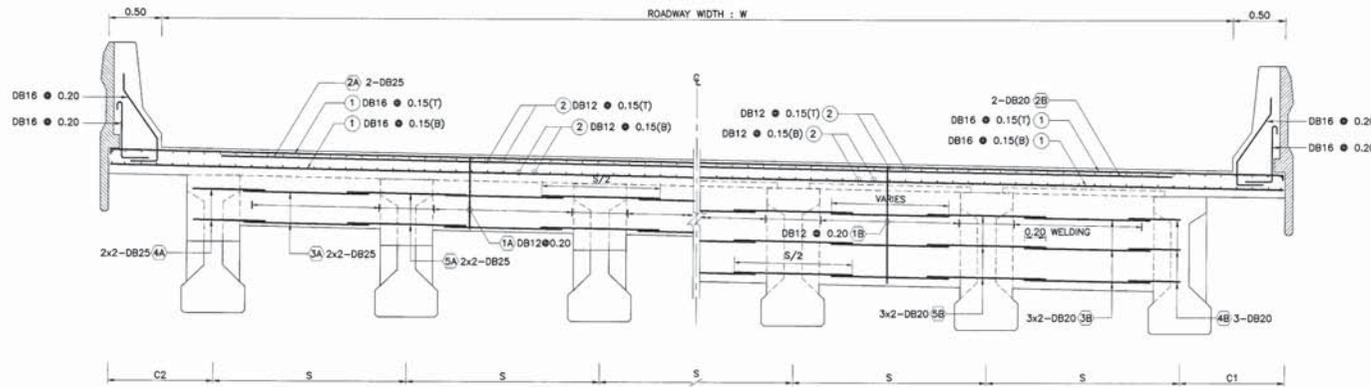
BAR NO.	BAR SIZE	SHAPE
1A	DB12	0.44
2A	DB25	0.54
3A	DB25	0.19
4A	DB25	S/4+0.10
5A	DB25	0.44

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
1B	DB12	0.19
2B	DB20	1.09
3B	DB20	0.19
4B	DB20	S/4+0.10
5B	DB20	0.19

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W+0.70
2	DB12	22.40
3	DB16	2.00
4	DB16	4.00



HALF SECTION A - A

HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
5. THE REINFORCE BAR NO. 4A, 5A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
6. THIS DRAWING IS USED IN CONJUNCTION WITH
DWG NO. NP1-22H/01 TO NO. NP1-22H/03 AND NP1-22H/05 , NO. NP1-22H/06

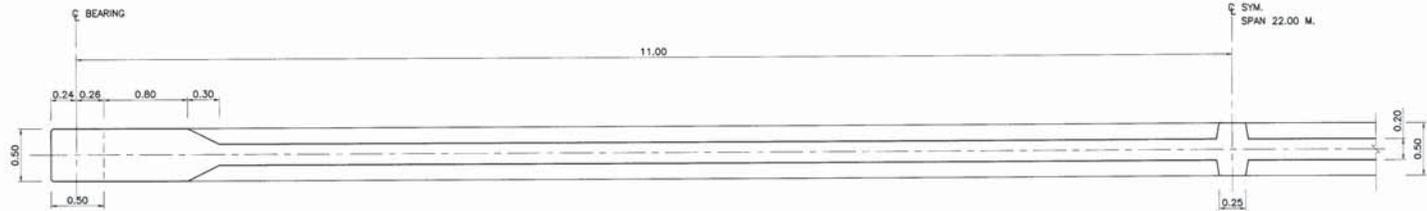
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

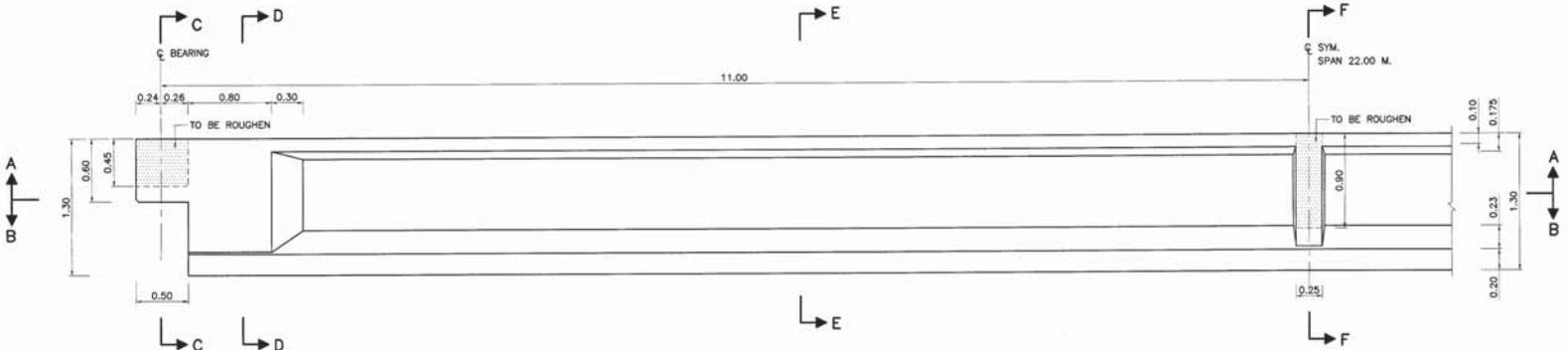
STANDARD DRAWING
I-GIRDER 22.00 M. (HALF JOINT)
BRIDGE DECK REINFORCEMENT (FOR CURVE)

DESIGNED : D.O.M. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-22H/04 SHEET NO. 45

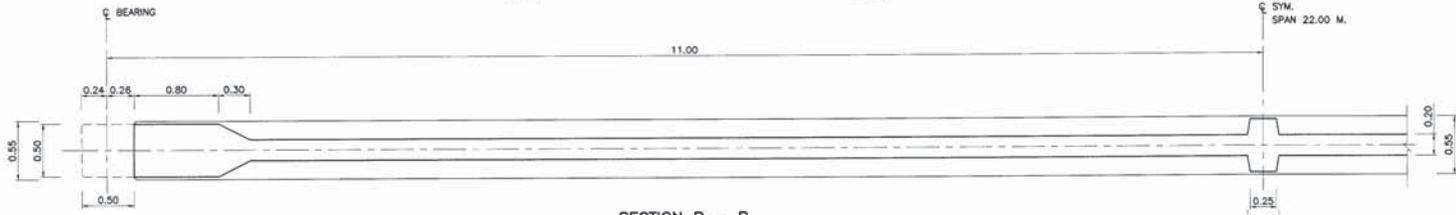
NO.	REVISION	SIGNATURE	DATE



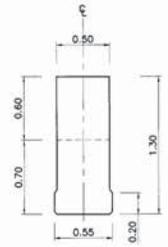
SECTION A - A
SCALE 1 : 25



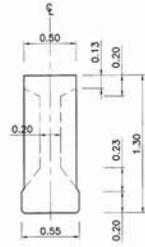
ELEVATION OF GIRDER SPAN LENGTH 22.00 M.
SCALE 1 : 25



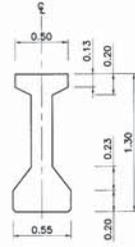
SECTION B - B
SCALE 1 : 25



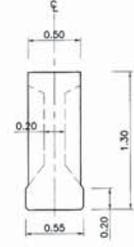
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

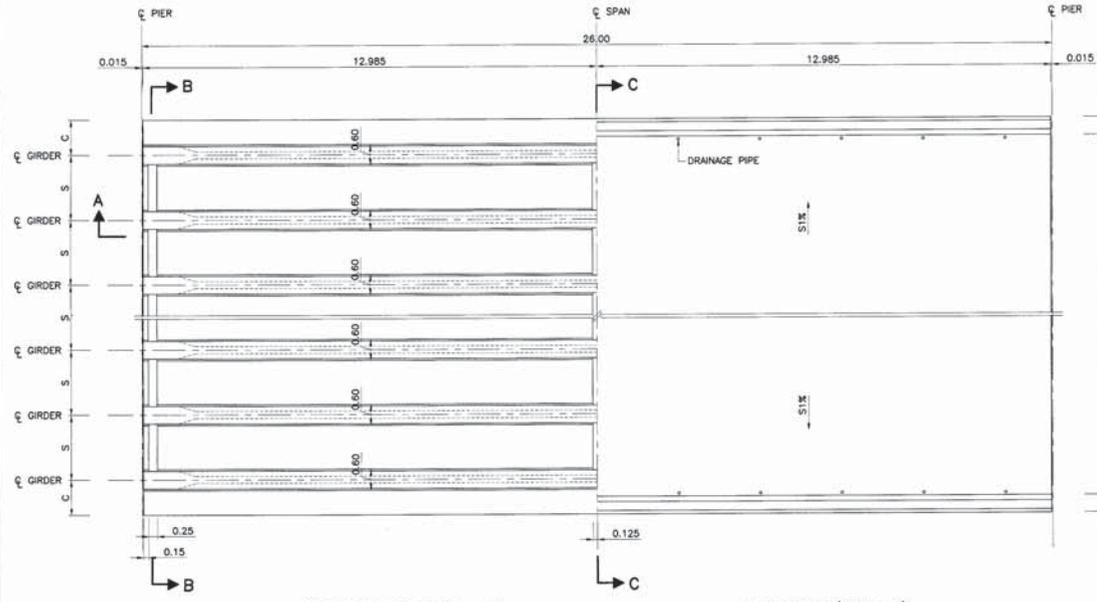
- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. DESIGN LIVE LOAD : HL-93.
 3. CONCRETE FOR PRECAST I-GIRDER SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO IS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 4. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-22H/01 TO NP1-22H/04 AND NP1-22H/06

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 22.00 M. (HALF JOINT)
GIRDER DIMENSION

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED : (DIRECTOR OF LOCATION & DESIGN BUREAU)		SCALE : AS SHOWN
APPROVED : (FOR DIRECTOR GENERAL)		DWG NO. NP1-22H/05
REF.	REVISION	SIGNATURE DATE

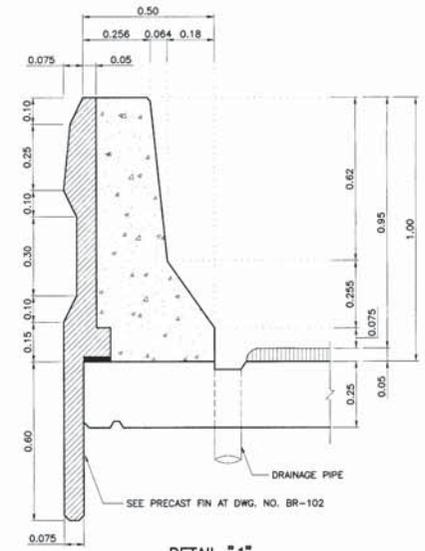
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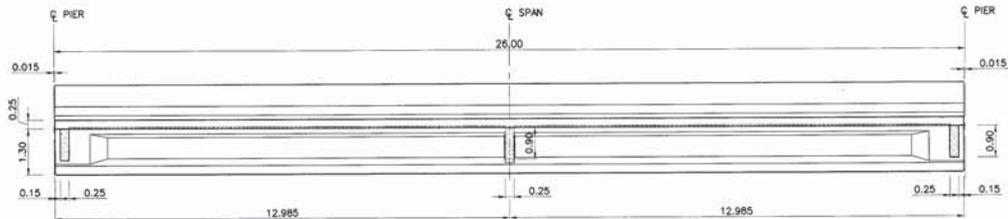
HALF PLAN (BOTTOM ; B)

HALF PLAN (TOP ; T)

DECK PLAN FOR GIRDER SPAN LENGTH 26.00 M.
SCALE 1 : 75



DETAIL "1"
SCALE 1 : 10



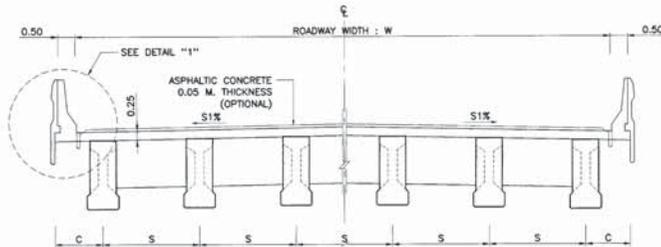
SECTION A - A
SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

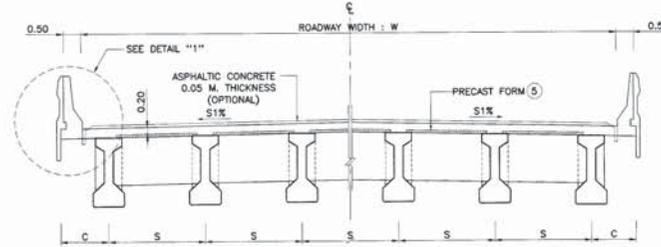
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER C (M.)
9.00	5	5 @ 1.80	1.00
10.00	6	6 @ 1.50	1.00
11.00	7	2 @ 1.66 4 @ 1.57	1.00
12.00	8	6 @ 1.57 1 @ 1.58	1.00
15.00	10	5 @ 1.56 4 @ 1.55	1.00
VARIES	n	2.00 (MAX.)	1.00

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-26F/02 TO NP1-26F/07
4. CONCRETE FOR PC. SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
5. PRECAST FORM SHALL BE AS FOLLOWS:
 - 5.1 THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - 5.2 ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M² (INCLUDED THE WEIGHT OF PRECAST FORM)
 - 5.3 THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - 5.4 ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTOR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - 5.5 CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS.420 OR TIS.95.
 - 5.6 PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - 5.7 PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - 5.8 THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



SECTION B - B
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75

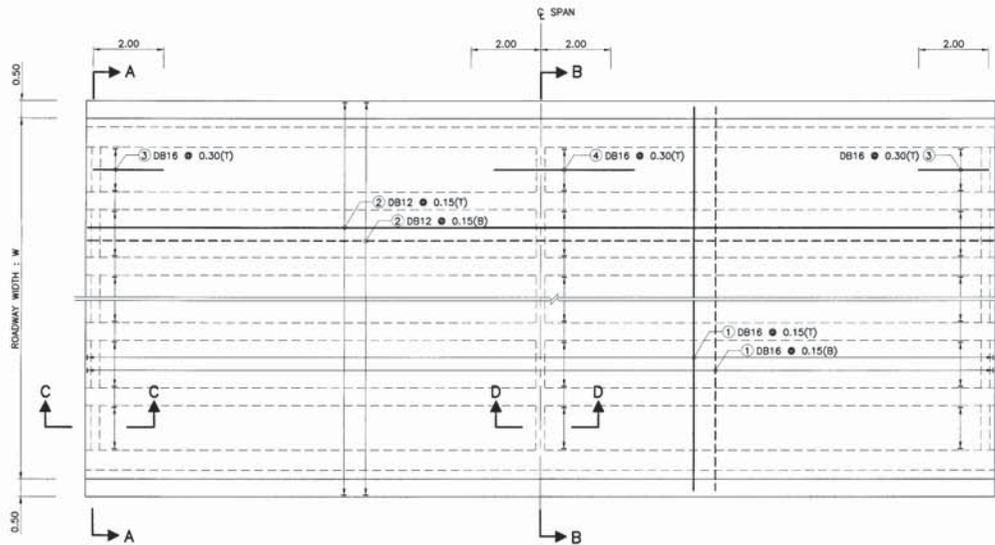
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

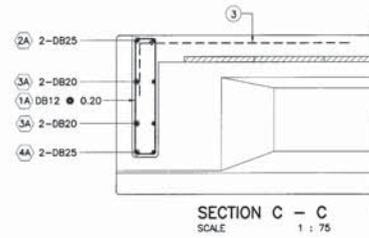
STANDARD DRAWING
I-GIRDER 26.00 M. (FULL JOINT)
BRIDGE DECK DIMENSION

DESIGNED : D.G.M. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-26F/01 SHEET NO. 48

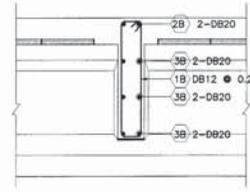
REF.	REVISION	SIGNATURE	DATE



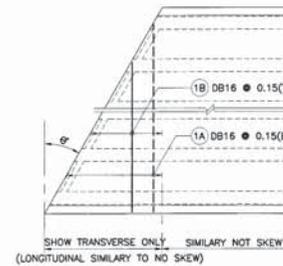
PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



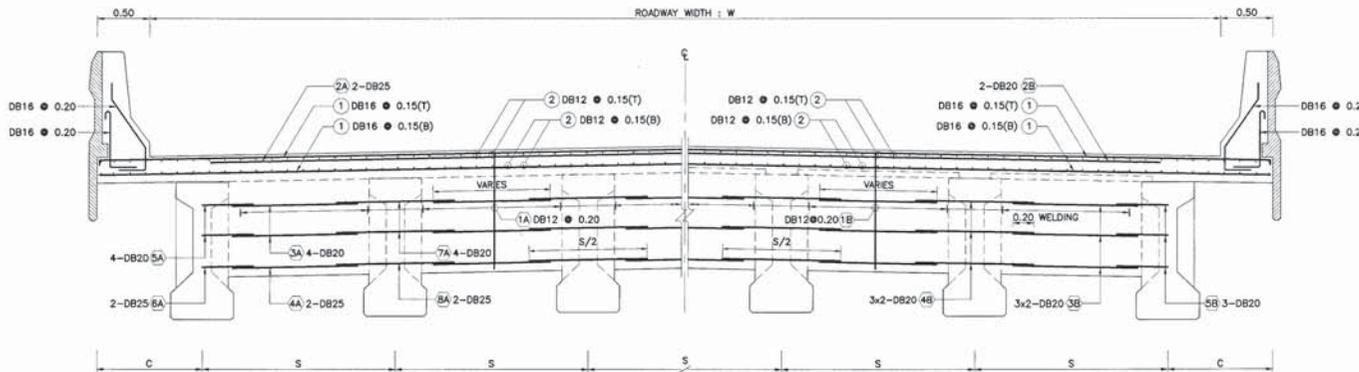
SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75



SKEW REINFORCEMENT
SCALE 1 : 75



HALF SECTION A - A

HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1A	DB12	
2A	DB25	
3A	DB20	
4A	DB25	
5A	DB20	
6A	DB25	
7A	DB20	
8A	DB25	

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1B	DB12	
2B	DB20	
3B	DB20	
4B	DB20	
5B	DB20	
6B	DB20	

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	
2	DB12	
3	DB16	
4	DB16	

NOTE :

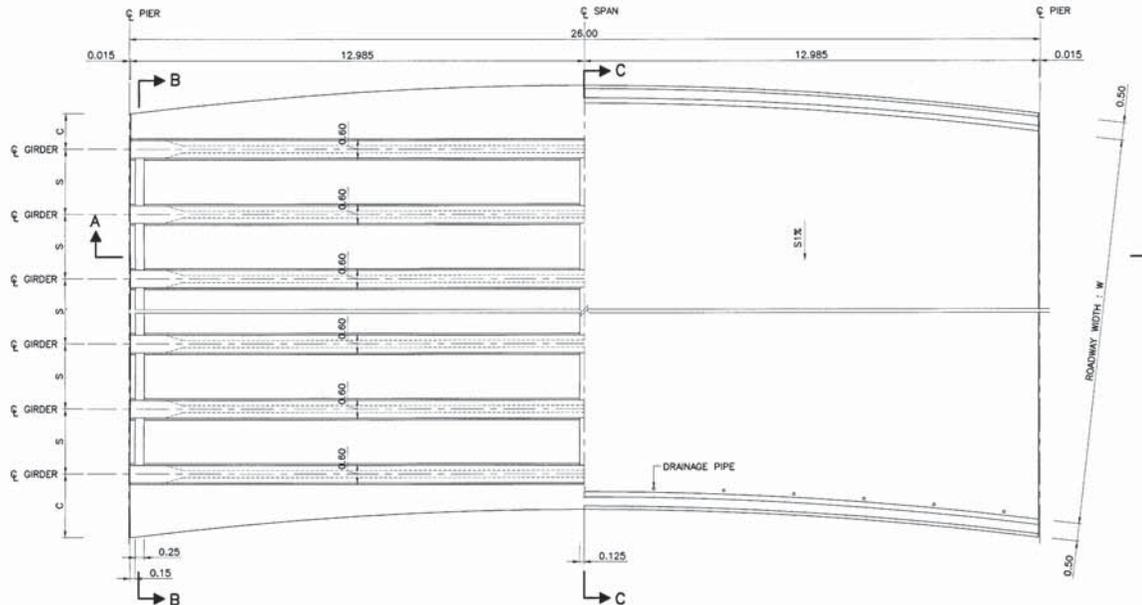
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-9.3.
- CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
- THE REINFORCE BAR NO. 5A, 6A, 7A, 8A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO.1 NP1-26F/01 AND NP1-26F/03 TO NP1-26F/07

KINGDOM OF THAILAND

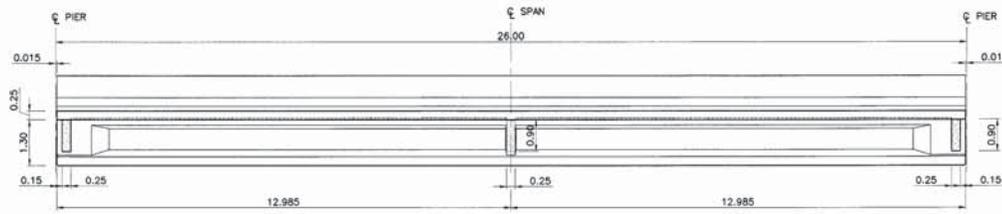
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 26.00 M. (FULL JOINT)
BRIDGE DECK REINFORCEMENT

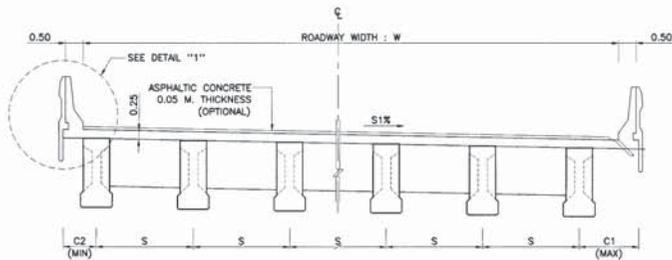
DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-26F/02
REF.	REVISION	SIGNATURE DATE



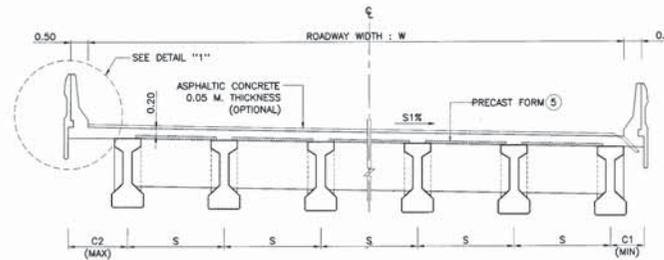
HALF PLAN (BOTTOM ; B) HALF PLAN (TOP ; T)
 DECK PLAN FOR GIRDER SPAN LENGTH 26.00 M.
 SCALE 1 : 75



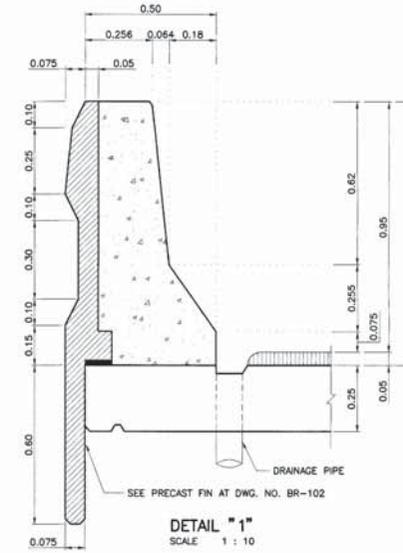
SECTION A - A
 SCALE 1 : 75



SECTION B - B
 SCALE 1 : 75



SECTION C - C
 SCALE 1 : 75



DETAIL "1"
 SCALE 1 : 10

TABLE OF W, S, C AND NO. OF GIRDER

ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER			
			C1 (M.)		C2 (M.)	
			MIN.	MAX.	MIN.	MAX.
9.00	6	1.70 (MAX.)	0.60	1.50	0.60	1.50
10.00	7	1.70 (MAX.)	0.60	1.50	0.60	1.50
11.00	7	1.70 (MAX.)	0.60	1.50	0.60	1.50
12.00	8	1.70 (MAX.)	0.60	1.50	0.60	1.50
15.00	10	1.70 (MAX.)	0.60	1.50	0.60	1.50
VARIES	n	1.70 (MAX.)	0.60	1.50	0.60	1.50

NOTE :

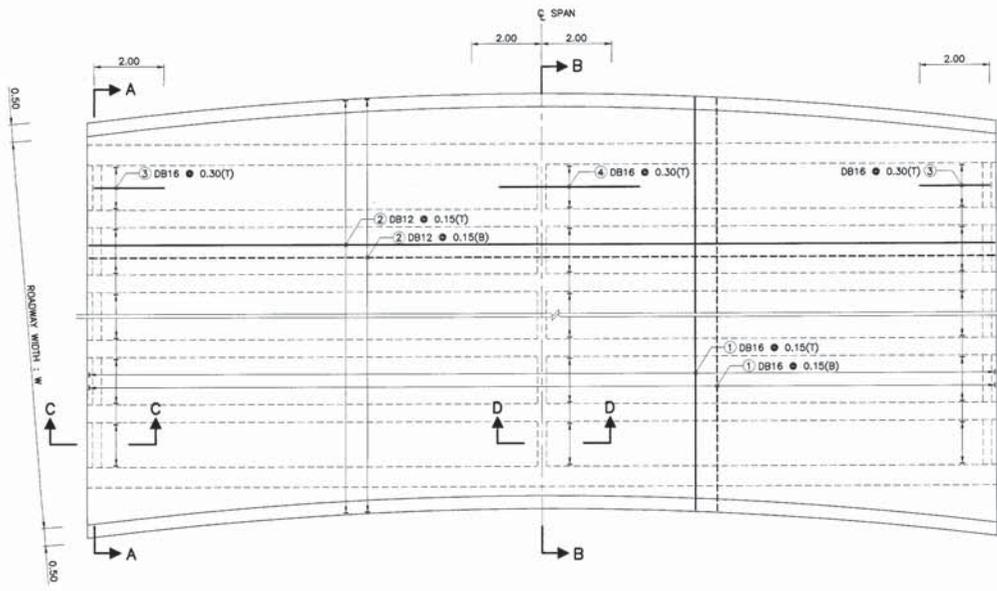
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO. NP1-26F/01 , NP1-26F/02 AND NP1-26F/04 TO NP1-26F/07
- CONCRETE FOR PC. SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- PRECAST FORM SHALL BE AS FOLLOWS:
 - THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M²(INCLUDED THE WEIGHT OF PRECAST FORM)
 - THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTOR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS.420 OR TIS.95.
 - PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.

KINGDOM OF THAILAND

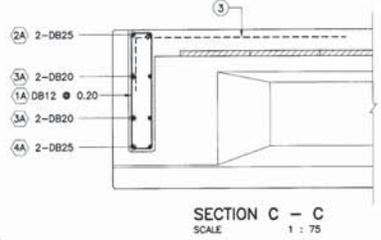
MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 I-GIRDER 26.00 M. (FULL JOINT)
 BRIDGE DECK DIMENSION (FOR CURVE)

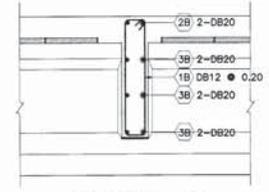
DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP1-26F/03
REF.	REVISION	SIGNATURE DATE



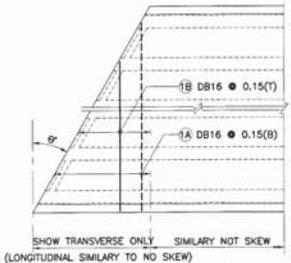
PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



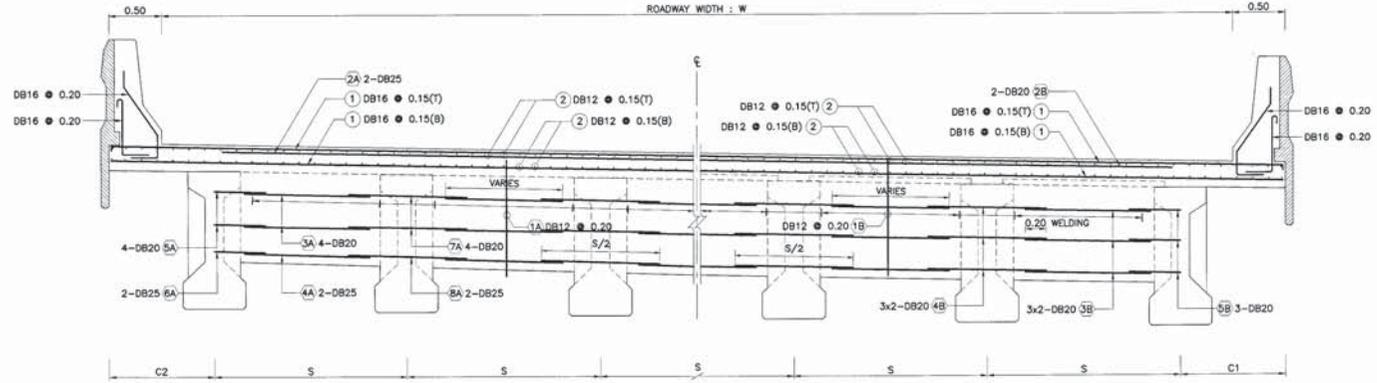
SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75



SHOW TRANSVERSE ONLY SIMILARY NOT SKEW
(LONGITUDINAL SIMILARY TO NO SKEW)
SCALE 1 : 75



HALF SECTION A - A HALF SECTION B - B
CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1A	DB12	0.19
2A	DB25	1.09
3A	DB20	0.20
4A	DB25	0.20
5A	DB20	0.19
6A	DB25	0.19
7A	DB20	0.19
8A	DB25	0.19

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1B	DB12	0.19
2B	DB20	1.09
3B	DB20	0.20
4B	DB20	0.19
5B	DB20	0.19

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	0.70
2	DB12	25.91
3	DB16	2.00
4	DB16	4.00

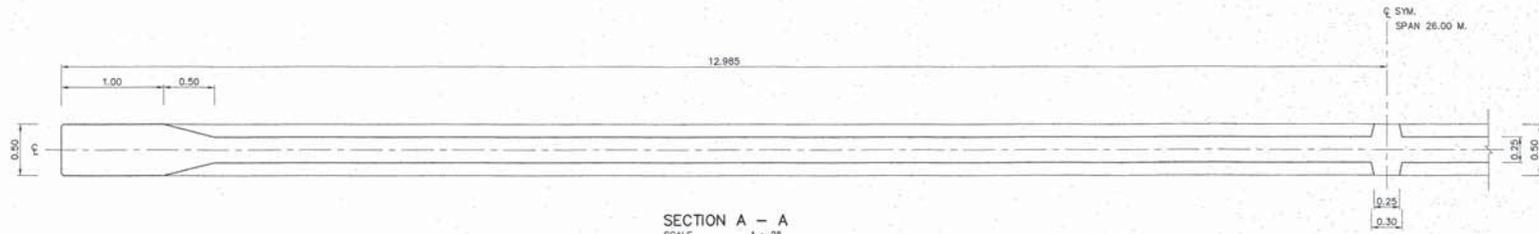
- NOTE :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD : HL-93.
 - CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 - REINFORCING STEEL SHALL CONFORM TO TS.20 GRADE SR24 FOR ROUND BARS AND TS.24 GRADE SD40 FOR DEFORMED BARS.
 - THE REINFORCE BAR NO. 5A, 6A, 7A, 8A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP1-26F/01 TO NP1-26F/03 AND NP1-26F/05, NP1-26F/06

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

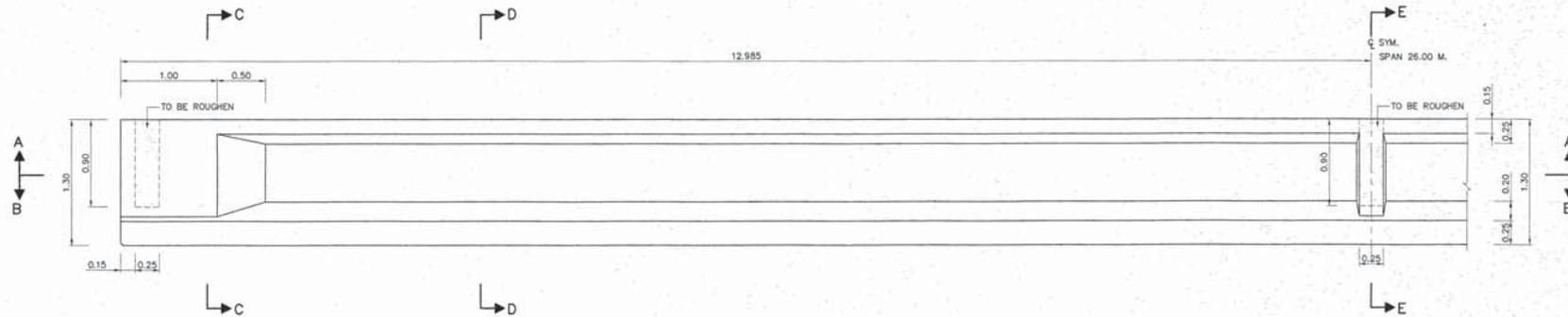
STANDARD DRAWING
I-GIRDER 26.00 M. (FULL JOINT)
BRIDGE DECK REINFORCEMENT (FOR CURVE)

DESIGNED: D.O.M. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. NP1-26F/04
REF.	REVISION	SIGNATURE DATE

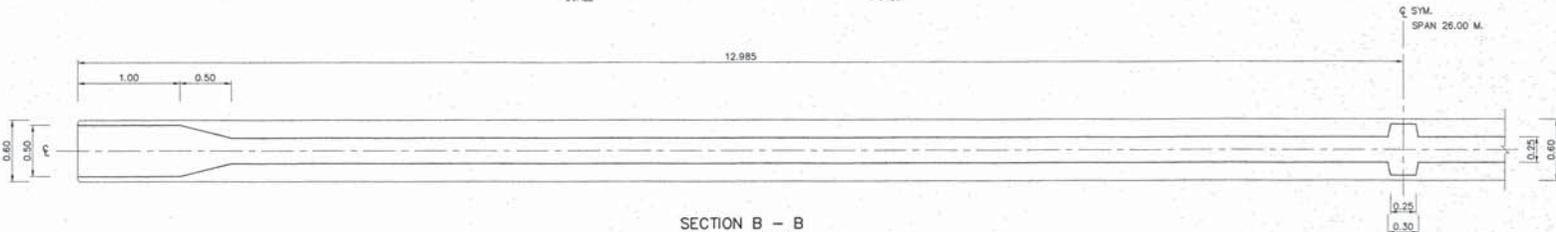
SHEET NO. 51



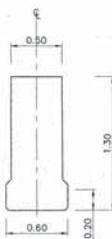
SECTION A - A
SCALE 1 : 25



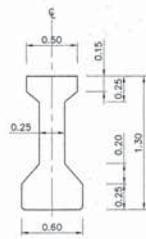
ELEVATION OF GIRDER SPAN LENGTH 26.00 M.
SCALE 1 : 25



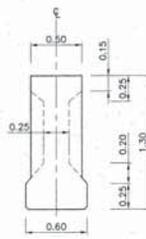
SECTION B - B
SCALE 1 : 25



SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



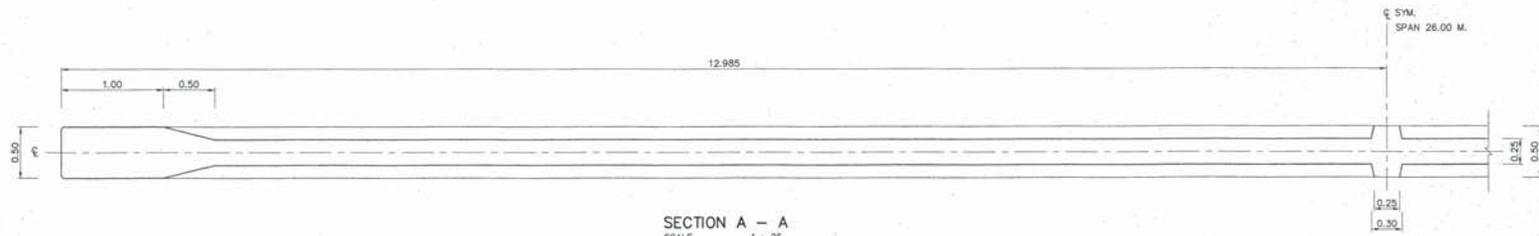
SECTION E - E
SCALE 1 : 25

- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. DESIGN LIVE LOAD : HL-93.
 3. MIX. DESIGN OF CONCRETE FOR POST TENSION I-GIRDER BEAM SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa. (459 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 4. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NP1-26F/01 TO NP1-26F/04 AND NP1-26F/06 , NP1-26F/07

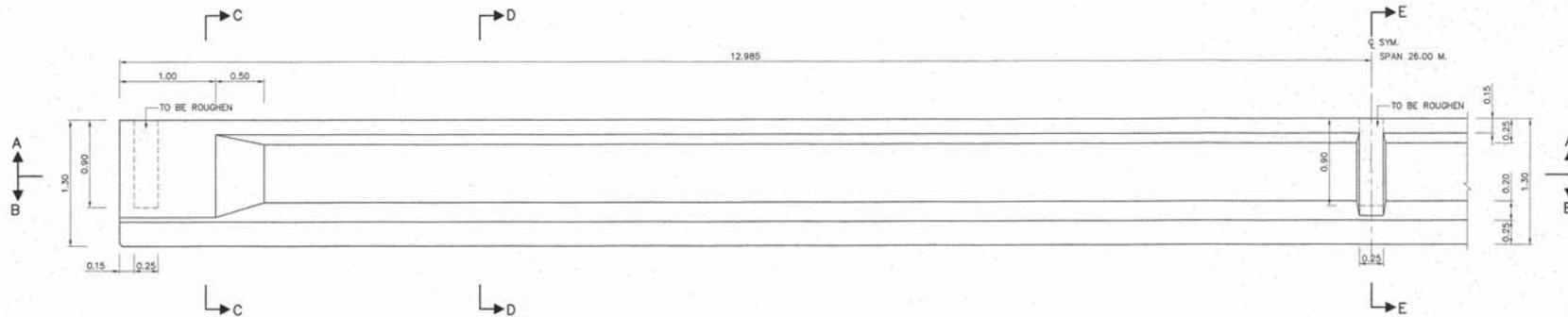
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 26.00 M. (FULL JOINT)
GIRDER DIMENSION

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT. 2015
SUBMITTED :		SCALE : AS SHOWN
APPROVED :		DWG NO: NP1-26F/05
REV.1 REVISION 1/2018	SIGNATURE DATE	SHEET NO. 52/R1

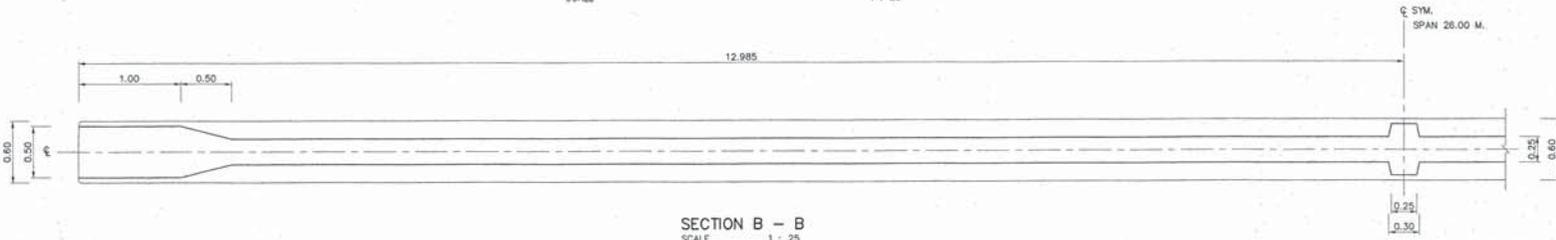
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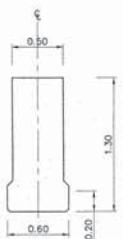
SECTION A - A
SCALE 1 : 25



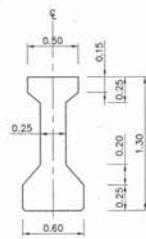
ELEVATION OF GIRDER SPAN LENGTH 26.00 M.
SCALE 1 : 25



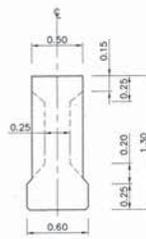
SECTION B - B
SCALE 1 : 25



SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25

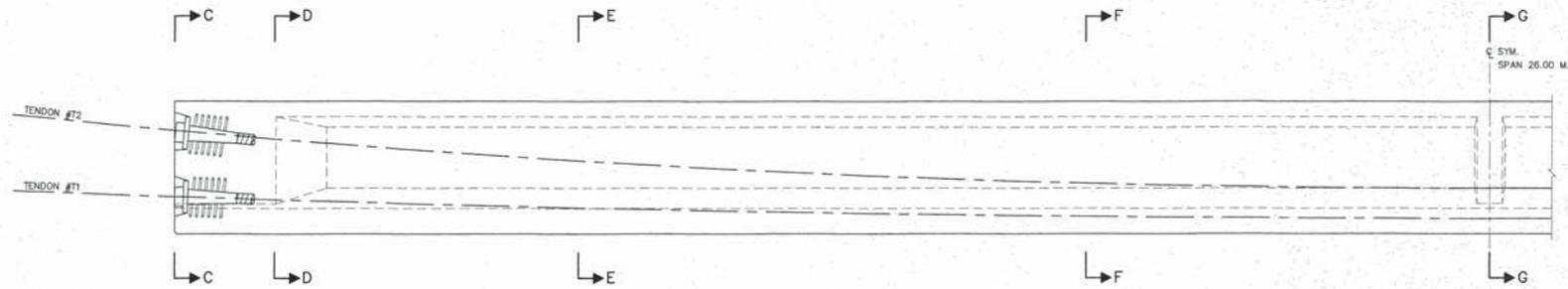


SECTION E - E
SCALE 1 : 25

- หมายเหตุ :
1. มิติที่ระบุไว้ในแบบทั้งหมดมีหน่วยเป็นเมตร เว้นแต่จะระบุไว้เป็นอย่างอื่น
 2. มีน้ำหนักบรรทุกที่ระบุไว้ในภาคออกแบบ: HL-93.
 3. ค่าแรงดัดหรือคดแรง I-GIRDER ชนิดคดหรือคดทั้งนี้ จะต้องมีกำลังรับแรงดัดที่จุดคานากับ 45 เมกะปาสกาล (459 กก./ซม.) ของคานาซึ่งอาจแตกต่างกันไปขึ้นอยู่กับขนาดที่อายุ 28 วัน
 4. แบบแผ่นนี้ใช้ประกอบกับแบบเลขที่ NP1-26F/01 ถึง NP1-26F/04 และ NP1-26F/06 , NP1-26F/07

KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING I-GIRDER 26.00 M. (FULL JOINT) GIRDER DIMENSION		
DESIGNED : B.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :		SCALE : AS SHOWN
APPROVED :		DWG NO: NP1-26F/05
REV.1 REVISION 1/2015	J. 13/2015	SHEET NO. 52/R1
REF. REVISION	SIGNATURE DATE	

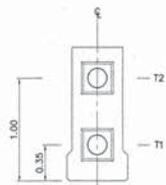
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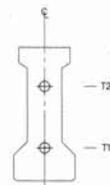
ELEVATION OF CABLE PROFILE GIRDER SPAN LENGTH 26.00 M.
SCALE 1 : 25

VERTICAL TENDON PROFILE DETAILS (MEASURED FROM BOTTOM OF GIRDER)

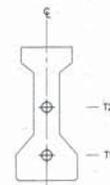
DISTANCE (M.)	12.985	12.000	11.000	10.000	9.000	8.000	7.000	6.000	5.000	4.000	3.000	2.000	1.000	0.000
TENDON #T2 (M.)	1.000	0.919	0.844	0.775	0.714	0.658	0.609	0.567	0.531	0.502	0.479	0.463	0.453	0.450
TENDON #T1 (M.)	0.350	0.320	0.293	0.268	0.246	0.228	0.208	0.193	0.180	0.169	0.161	0.155	0.151	0.150



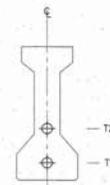
SECTION C - C
SCALE 1 : 25



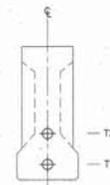
SECTION D - D
SCALE 1 : 25



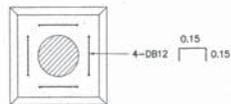
SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

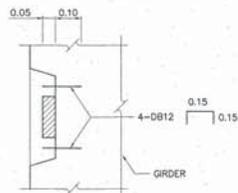


SECTION G - G
SCALE 1 : 25



ANCHORAGE PLATE

EXTRA REINFORCEMENT FOR ANCHORAGE PLATE
SCALE 1 : 25



BLOCKOUT FOR ANCHORAGE PLATE

NOTE :

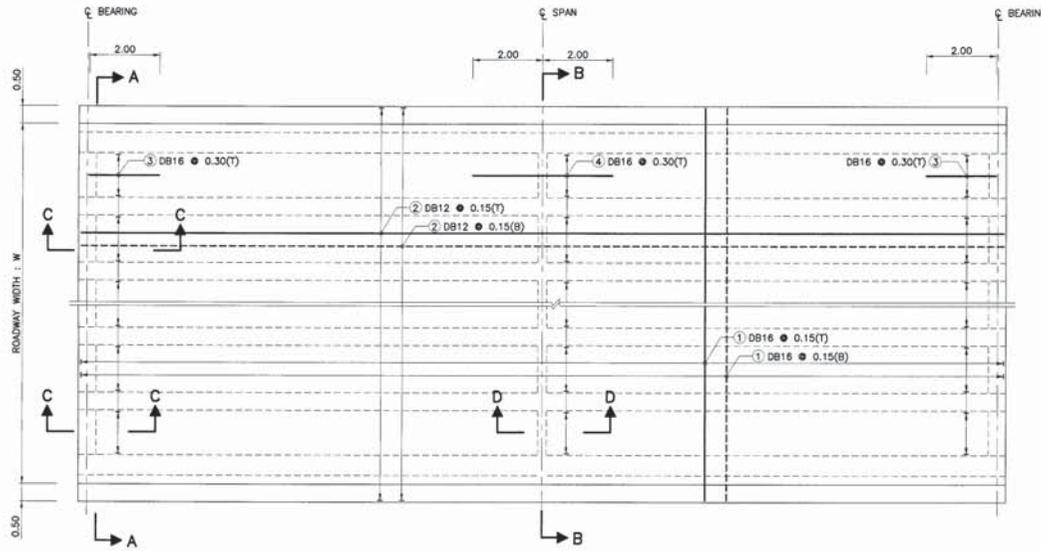
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- MIX. DESIGN OF CONCRETE FOR POST TENSION I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa. (459 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
- PRESTRESSING :
 - LOW RELAXATION SEVEN WIRE STRANDS # 15.2 MM. IN ACCORDANCE WITH TIS.420 GRADE 1860
 - MIN CHARACTERISTIC STRENGTH OF STRAND 250 KN.
 - INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH. IN WHICH THE SEQUENCE OF JACKING SHALL BE TENDON 1 AND THEN TENDON 2. EACH TENDON IS STRESSED BOTH END.
- NUMBER OF PRESTRESSING STRANDS
T1 = 14 PRESTRESSING STRANDS
T2 = 14 PRESTRESSING STRANDS
- DUCTS ARE GALVANIZED METAL SHEATHING GROUDED IMMEDIATELY AFTER STRESSING OPERATION.
- JACKING FORCES ARE CALCULATED USING "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS" AND ASSUMED DESIGN PARAMETERS AS FOLLOW :
FRICTION CURVATURE COEFFICIENT 0.20
FRICTION WOBBLE COEFFICIENT 0.0033 1/M.
A WEDGE SLIP 6 MM.
- THE CONTRACTOR SHALL CARRY OUT TEST WITH THE TENDONS AND DUCTS PROPOSED FOR USING TO ESTABLISH THE FRICTION COEFFICIENTS AND SHALL ADJUST THE STRESSING FORCES FOR APPROVAL IF THE MEASURED COEFFICIENT IS DIFFERED SIGNIFICANTLY FROM THE ASSUME VALUE.
- AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 36 MPa. (367 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
- LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
- SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
- SKEW ANGLE SHALL BE LESS THAN 45 DEGREE.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO.NP1-26F/01 TO NP1-26F/06

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 26.00 M. (FULL JOINT)
POSTTENSIONED TENDON PROFILE

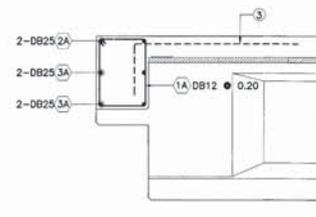
DESIGNED : S.O.H. & CONSULTANTS CHECKED : BUREAU OF LOCATION & DESIGN DATE : OCT 2015

SUBMITTED : *[Signature]* SCALE : AS SHOWN
(DIRECTOR OF LOCATION & DESIGN BUREAU)

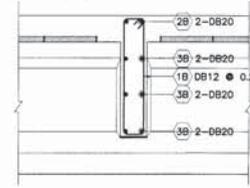
REV.1 REVISION 1/2018 *[Signature]* FEB 2018
APPROVED : *[Signature]* DWG NO. NP1-26F/07
SIGNATURE DATE (FOR DIRECTOR GENERAL) SHEET NO. 54/R1



PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75



SECTION D - D
SCALE 1 : 75

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

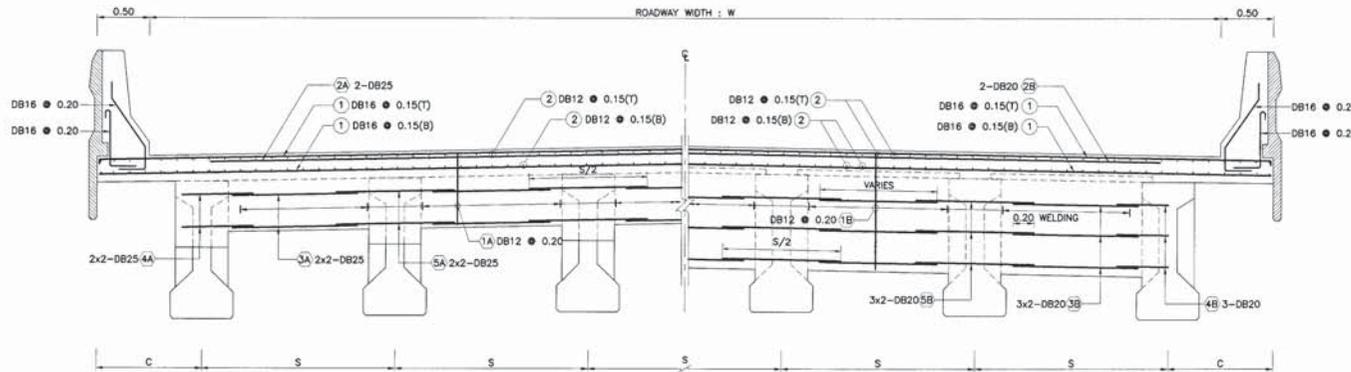
BAR NO.	BAR SIZE	SHAPE
1A	DB12	0.44
2A	DB25	0.54
3A	DB25	0.54
4A	DB25	S/4+0.10
5A	DB25	0.54

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

NO	BAR SIZE	SHAPE
1B	DB12	0.19
2B	DB20	1.09
3B	DB20	1.09
4B	DB20	S/4+0.10
5B	DB20	0.19

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W+0.70
2	DB12	26.40
3	DB16	2.00
4	DB16	0.50



HALF SECTION A - A

HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 75

NOTE :

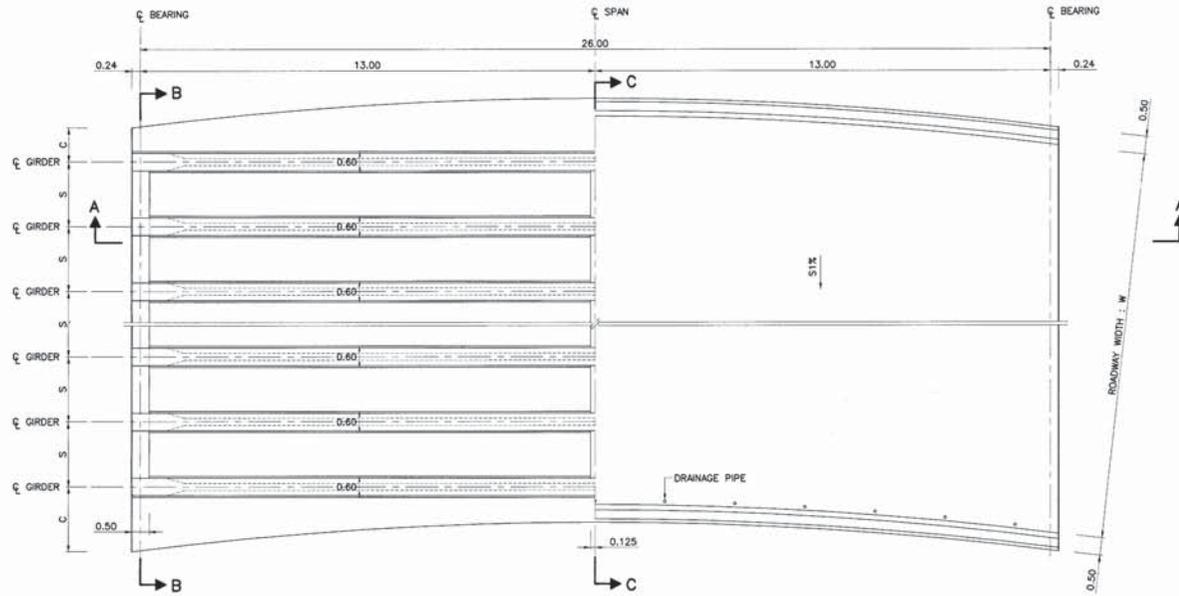
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-9.3.
3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
5. THE REINFORCE BAR NO. 4A, 5A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
6. THIS DRAWING IS USED IN CONJUNCTION WITH
DWG NO. NP1-26H/01 AND NP1-26H/03 TO NP1-26H/07

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

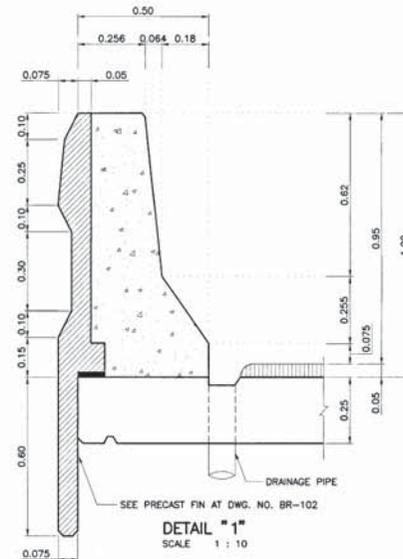
STANDARD DRAWING
I-GIRDER 26.00 M. (HALF JOINT)
BRIDGE DECK REINFORCEMENT

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : [Signature]	BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)		SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)		DWG NO. NP1-26H/02
REF.	REVISION	SIGNATURE	DATE



HALF PLAN (BOTTOM ; B) HALF PLAN (TOP ; T)

DECK PLAN FOR GIRDER SPAN LENGTH 16.00 M.
SCALE 1 : 75



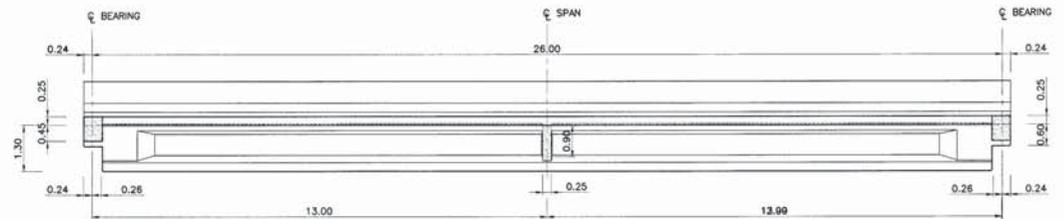
DETAIL "1"
SCALE 1 : 10

TABLE OF W, S, C AND NO. OF GIRDER

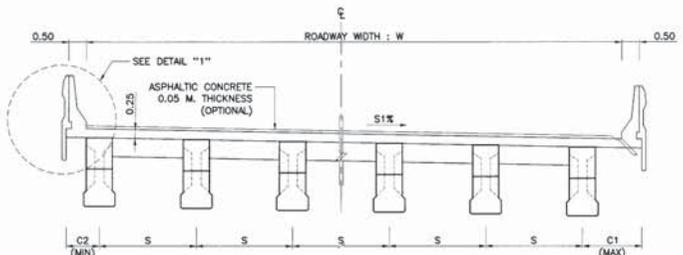
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER			
			C1 (M.)		C2 (M.)	
			MIN.	MAX.	MIN.	MAX.
9.00	5	1.70 (MAX.)	0.60	1.50	0.60	1.50
10.00	7	1.70 (MAX.)	0.60	1.50	0.60	1.50
11.00	7	1.70 (MAX.)	0.60	1.50	0.60	1.50
12.00	8	1.70 (MAX.)	0.60	1.50	0.60	1.50
15.00	10	1.70 (MAX.)	0.60	1.50	0.60	1.50
VARIES	n	1.70 (MAX.)	0.60	1.50	0.60	1.50

NOTE :

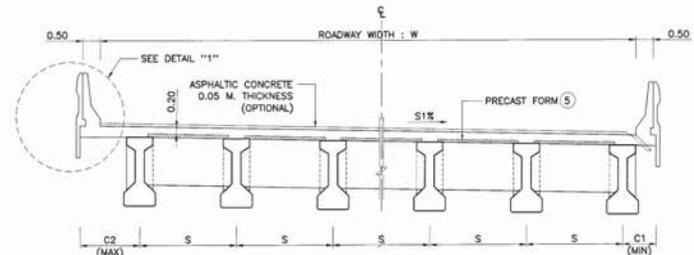
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO. NP1-26H/01 , NP1-26H/02 AND NP1-26H/04 TO NP1-26H/07
4. CONCRETE FOR PC SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TS-15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
5. PRECAST FORM SHALL BE AS FOLLOWS:
 - 5.1 THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - 5.2 ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M²(INCLUDED THE WEIGHT OF PRECAST FORM)
 - 5.3 THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - 5.4 ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTOR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - 5.5 CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TS-420 OR TS-95.
 - 5.6 PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - 5.7 PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - 5.8 THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



SECTION A - A
SCALE 1 : 75



SECTION B - B
SCALE 1 : 75

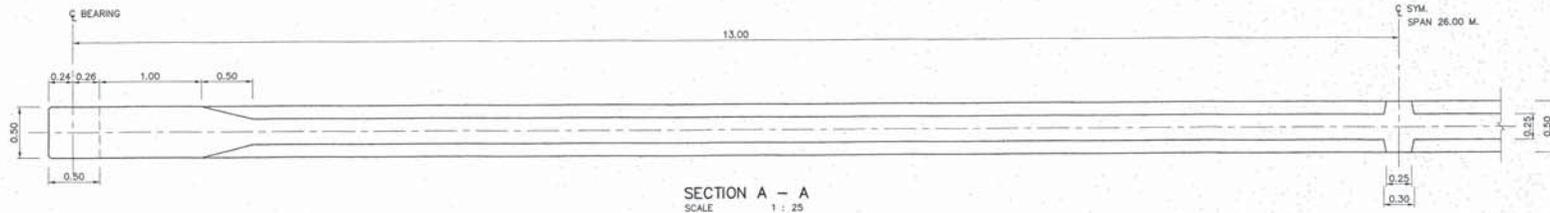


SECTION C - C
SCALE 1 : 75

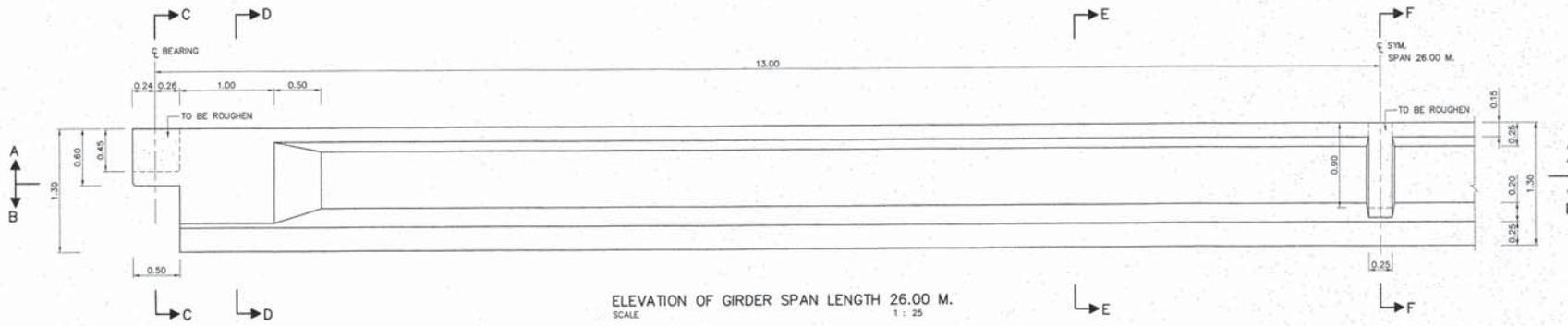
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 26.00 M. (HALF JOINT)
BRIDGE DECK DIMENSION (FOR CURVE)

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. NP1-26H/03 SHEET NO. 57

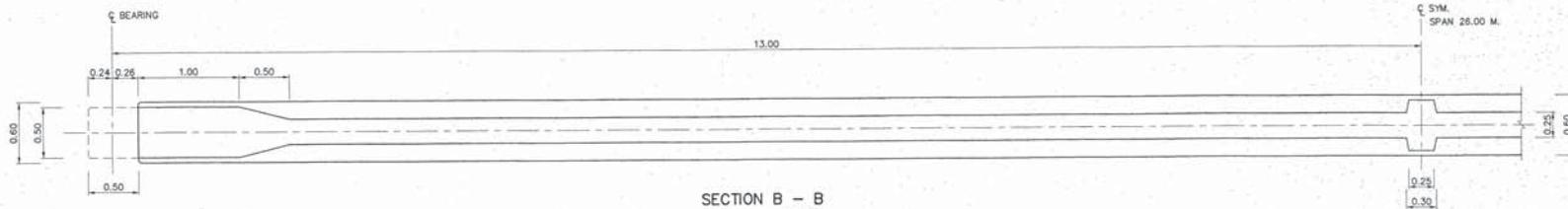
REF.	REVISION	SIGNATURE	DATE



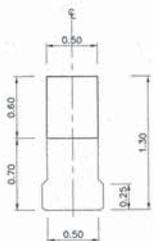
SECTION A - A
SCALE 1 : 25



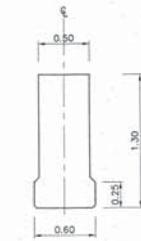
ELEVATION OF GIRDER SPAN LENGTH 26.00 M.
SCALE 1 : 25



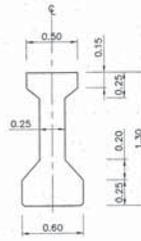
SECTION B - B
SCALE 1 : 25



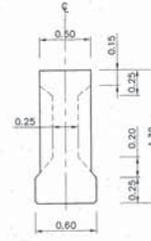
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

หมายเหตุ :

1. มิติที่ระบุไว้ในแบบที่จะหมดมีหน่วยเป็นเมตร เว้นแต่ระบุไว้เป็นอย่างอื่น
2. ป้ายกำกับบรรจุทองแดงที่ใช้ในการออกแบบ: HL-93.
3. คานอลงบาคีตติ์แรง I-GIRDER ชนิดสี่เหลี่ยมที่หลัง จะต้องมีการเชื่อมประต้อมีขนาดเท่ากับ 45 มม. และขนาด (459 กก./ซม.) ของเหล็กตัวข้างคานหรือคานที่บรรจุทองแดงคานที่อายุ 28 วัน
4. แบบแผ่นนี้ใช้ประกอบกับแบบเลขที่ NP1-26H/01 ถึง NP1-26H/04 และ NP1-26H/06 , NP1-26H/07

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING

I-GIRDER 26.00 M. (HALF JOINT)
GIRDER DIMENSION

DESIGNED : D.G.H. & CONSULTANTS CHECKED : BUREAU OF LOCATION & DESIGN DATE : OCT 2015

SUBMITTED : (DIRECTOR OF LOCATION & DESIGN BUREAU)

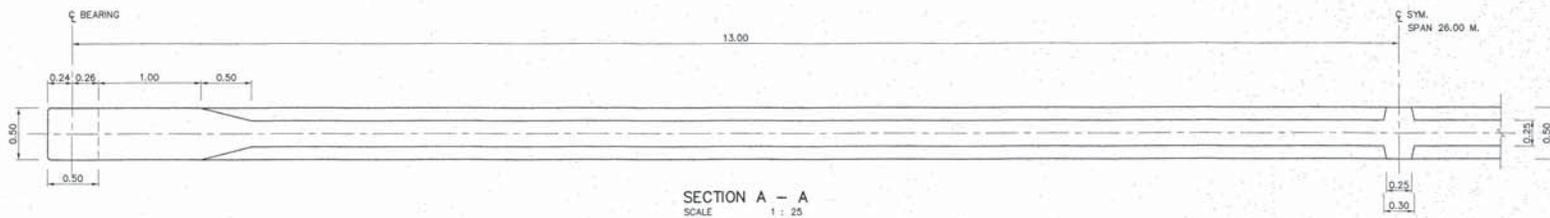
SCALE : AS SHOWN

REV1 REVISION 1/2015
REF. REVISION

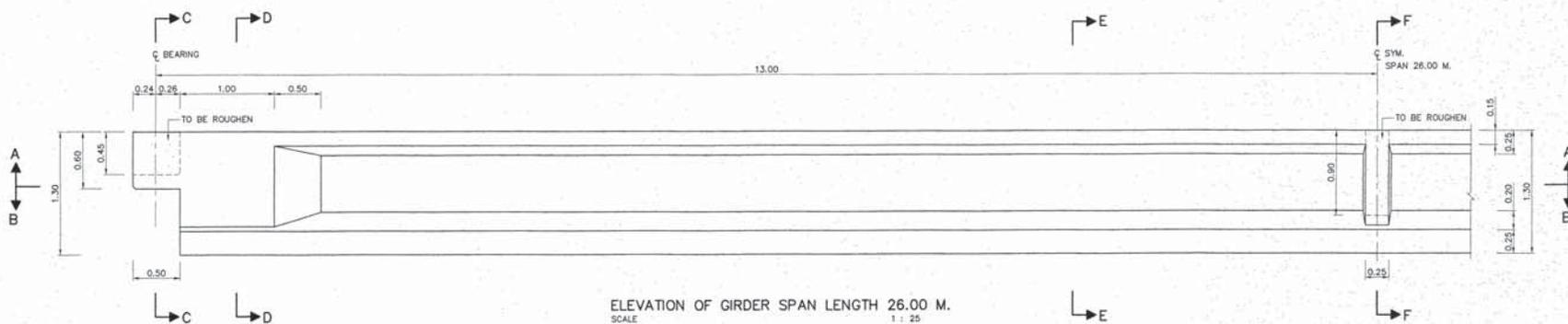
APPROVED : (FOR DIRECTOR GENERAL)

DWG NONP1-26H/05

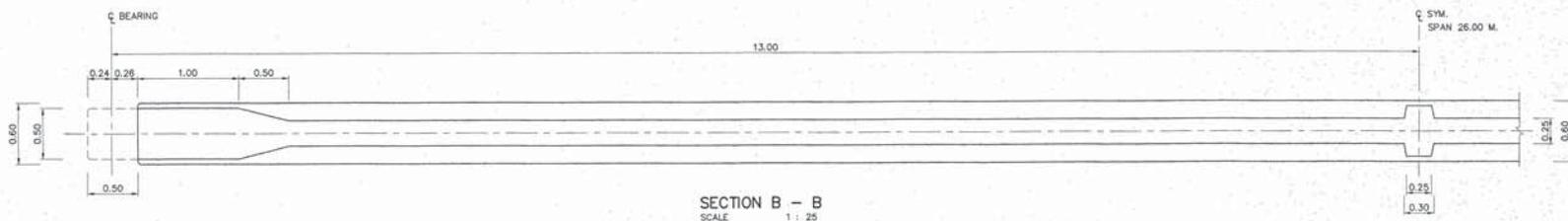
SHEET NO. 59/R1



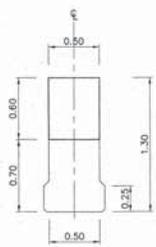
SECTION A - A
SCALE 1 : 25



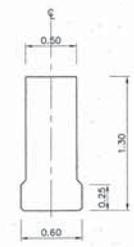
ELEVATION OF GIRDER SPAN LENGTH 26.00 M.
SCALE 1 : 25



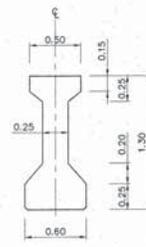
SECTION B - B
SCALE 1 : 25



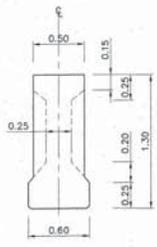
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. MIX. DESIGN OF CONCRETE FOR POST TENSION I-GIRDER SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa. (459 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP1-26H/01 TO NP1-26H/04 AND NP1-26H/06 , NP1-26H/07

KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING I-GIRDER 26.00 M. (HALF JOINT) GIRDER DIMENSION		
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :		SCALE : AS SHOWN
(DIRECTOR OF LOCATION & DESIGN BUREAU)		DWG NO: NP1-26H/05
REV.1 REVISION 1/2018	182018	APPROVED :
REF. REVISION	SIGNATURE DATE	(FOR DIRECTOR GENERAL)
		SHEET NO. 59/81

D:\1511\1511-2015\NP1-26H-2015\059.rvt

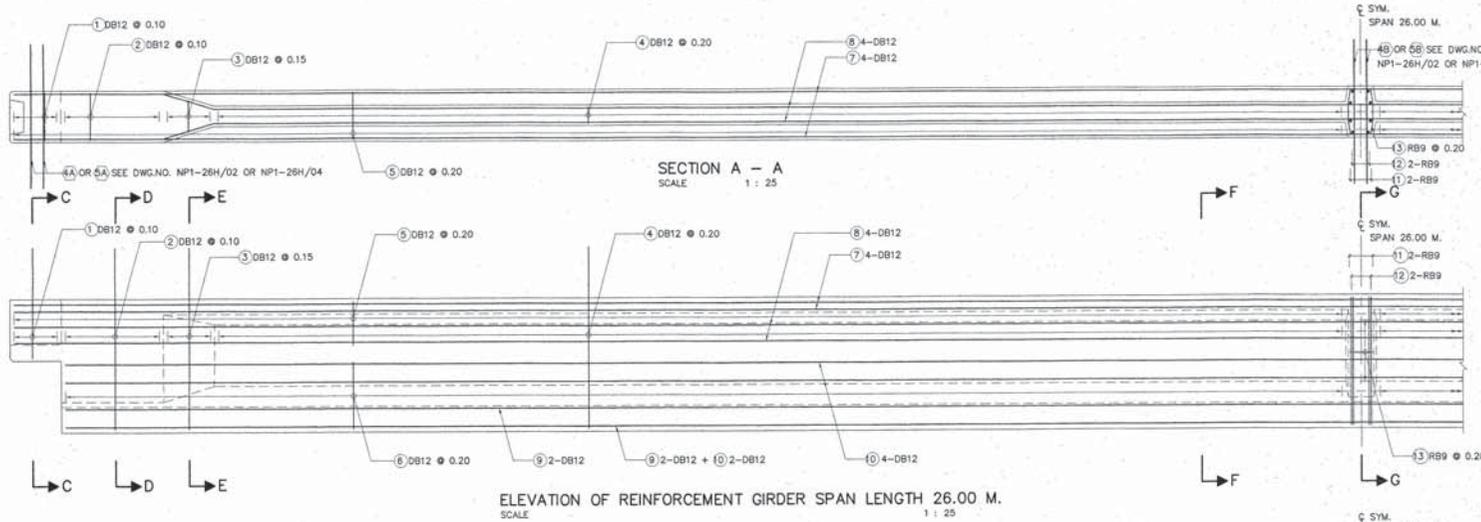


TABLE OF GIRDER REINFORCEMENT

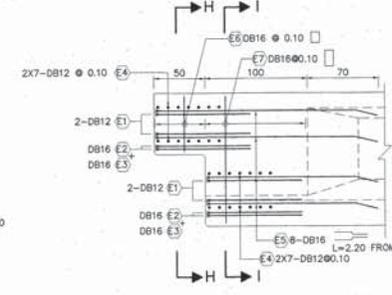
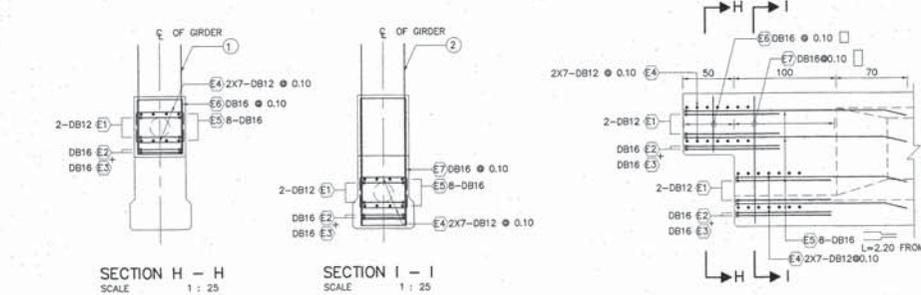
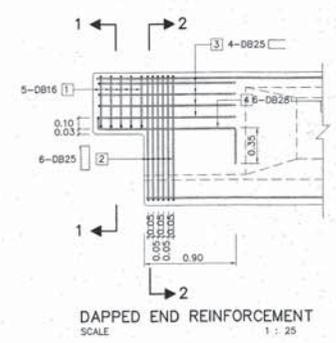
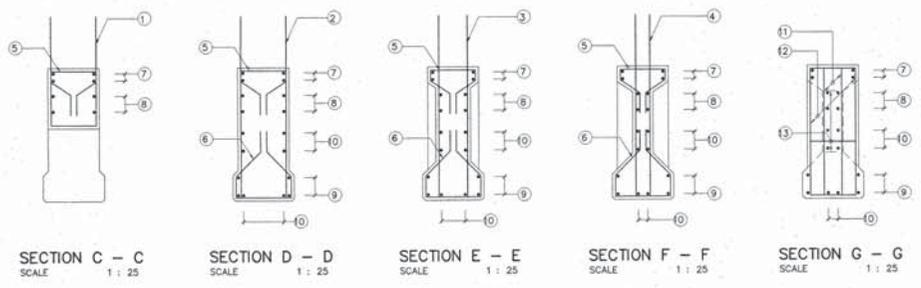
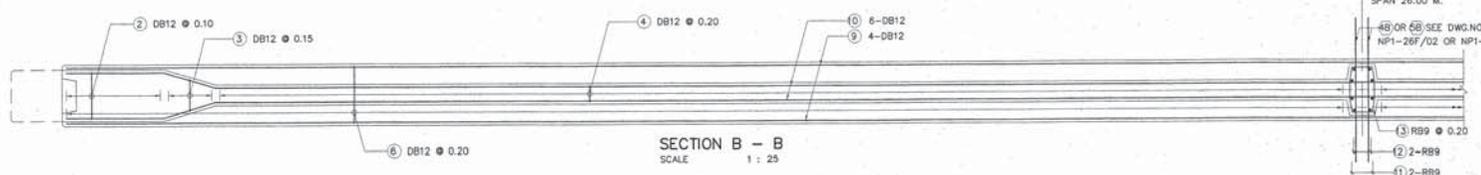
BAR NO.	SIZE	SHAPE
1	DB12	① 1.050 0.440
2	DB12	② 1.770 ③ 1.770 ④ 1.770
3	DB12	VARIES 0.180
4	DB12	⑤ 0.440 ⑥ 0.209 ⑦ 0.540
5	DB12	⑧ 0.200 ⑨ 0.209
6	DB12	⑩ 26.420
7	DB12	⑪ 1.460 ⑫ 22.480 ⑬ 1.460
8	DB12	⑭ 0.500 ⑮ 0.500
9	DB12	⑯ 25.420
10	DB12	⑰ 0.960 ⑱ 22.480 ⑲ 0.960
11	RB9	⑳ 0.500 ㉑ 0.500
12	RB9	㉒ 1.240 ㉓ 1.240 ㉔ 0.440
13	RB9	㉕ 0.230 ㉖ 0.420 ㉗ 0.200

TABLE OF DAPPED END REINFORCEMENT

BAR NO.	SIZE	SHAPE
1	DB16	①
2	DB25	②
3	DB25	③
4	DB28	④

TABLE OF EXTRA REINFORCEMENT AT THE END

BAR NO.	SIZE	SHAPE
E1	DB12	①
E2	DB16	② 0.90
E3	DB16	③ 0.90
E4	DB12	④ 0.25
E5	DB16	⑤ 0.15
E6	DB16	⑥
E7	DB16	⑦



หมายเหตุ :

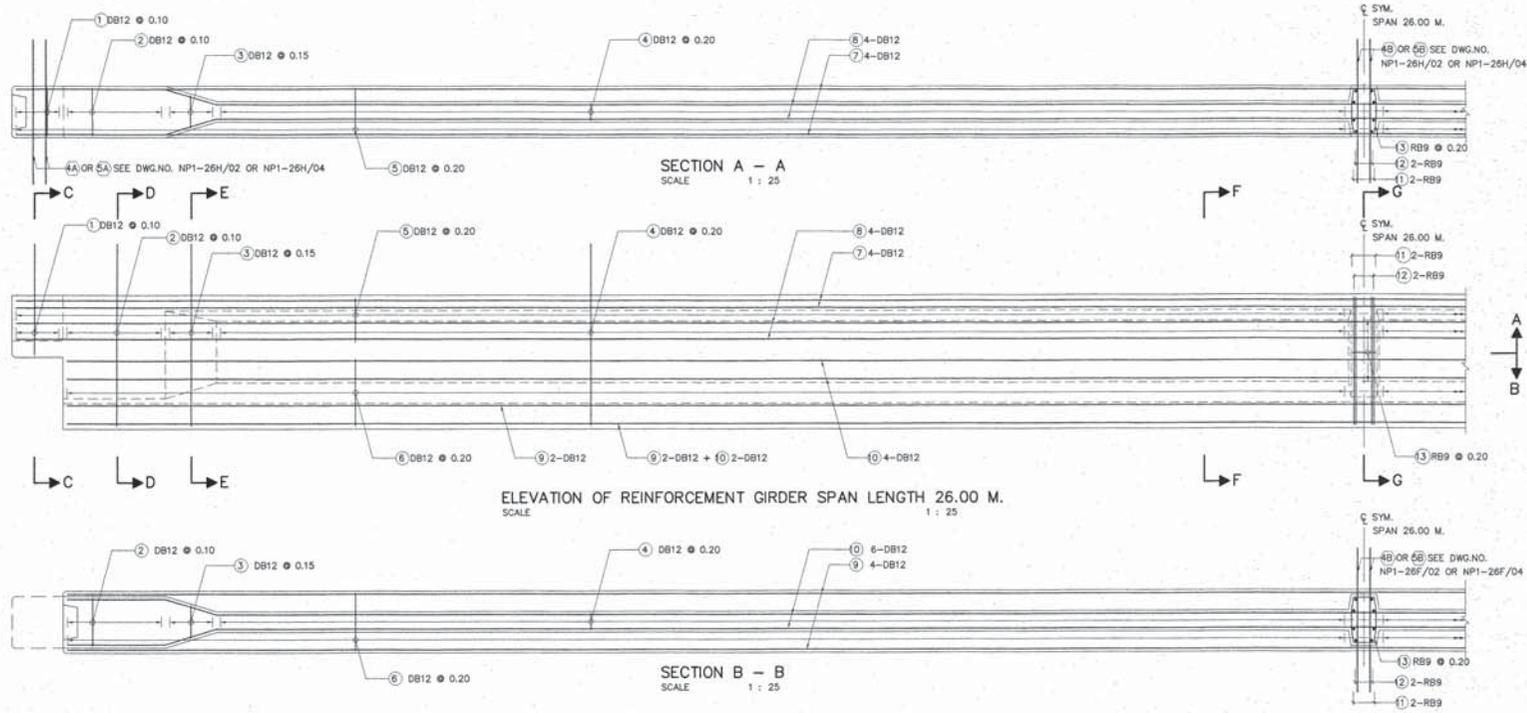
1. วัสดุที่ใช้ในแบบที่ระบุไว้เป็นแบบมาตรฐาน เว้นแต่จะระบุไว้เป็นอย่างอื่น
2. น้ำหนักบรรทุกที่ใช้ในการออกแบบ: HL-93.
3. ความเค้นดัดแรง I-ORDER ชนิดเหล็กที่ผลิต จะต้องมีค่าลิมิตประลัยต่ำกว่าค่ากับ 45 เมกะปาสกาล (459 กก./ซม.) ของเหล็กค้ำยันของเหล็กค้ำยันที่ระบุไว้ที่อายุ 28 วัน
4. การผลิตเหล็กเสริมขนาด 5A, 6A, 5B สำหรับค้ำยันค้ำยัน และเหล็กเสริมขนาด 7A, 8A, 4B สำหรับค้ำยันค้ำยัน ต้องผลิตในแบบที่ NP1-26H/02 หรือ NP1-26H/04
5. มุมเอียงของสะพาน คือไม่เกิน 45 องศา
6. แบบแผนนี้ใช้ประกอบกับแบบที่ NP1-26H/01 ถึง NP1-26H/05 และ NP1-26H/07

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 26.00 M. (HALF JOINT)
GIRDER REINFORCEMENT

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
REV.1 REVISION 1/2018	PERIODIC	DWG NO: NP1-26H/06
APPROVED:	(FOR DIRECTOR GENERAL)	SHEET NO. 60/R1

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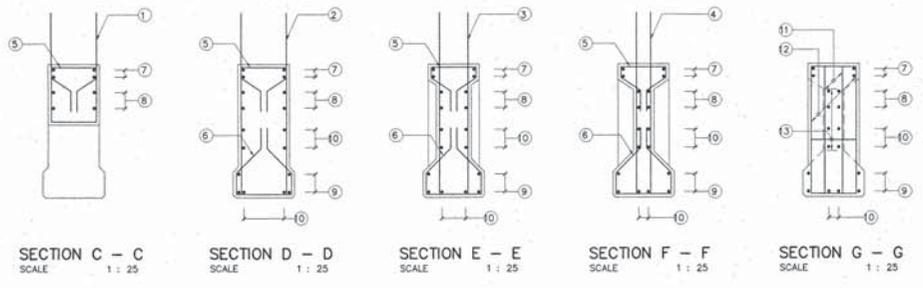


ELEVATION OF REINFORCEMENT GIRDER SPAN LENGTH 26.00 M.
SCALE 1 : 25

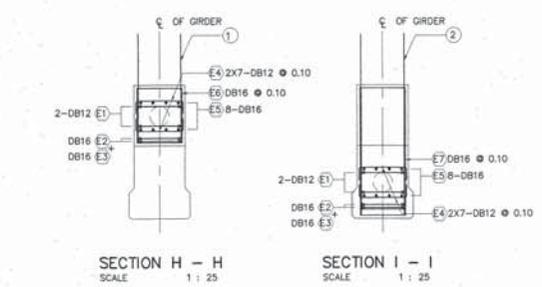
TABLE OF GIRDER REINFORCEMENT		
BAR NO.	SIZE	SHAPE
1	DB12	
2	DB12	
3	DB12	
4	DB12	
5	DB12	
6	DB12	
7	DB12	
8	DB12	
9	DB12	
10	DB12	
11	RB9	
12	RB9	
13	RB9	

TABLE OF DAPPED END REINFORCEMENT		
BAR NO.	SIZE	SHAPE
1	DB16	
2	DB25	
3	DB25	
4	DB28	

TABLE OF EXTRA REINFORCEMENT AT THE END		
BAR NO.	SIZE	SHAPE
E1	DB12	
E2	DB16	
E3	DB16	
E4	DB12	
E5	DB16	
E6	DB16	
E7	DB16	

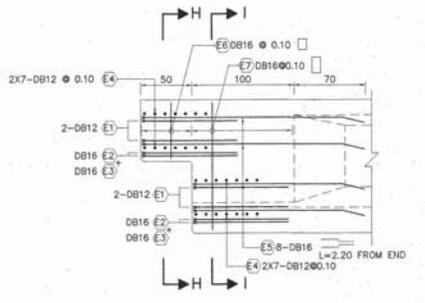


SECTION C - C SCALE 1 : 25
SECTION D - D SCALE 1 : 25
SECTION E - E SCALE 1 : 25
SECTION F - F SCALE 1 : 25
SECTION G - G SCALE 1 : 25



SECTION H - H SCALE 1 : 25
SECTION I - I SCALE 1 : 25

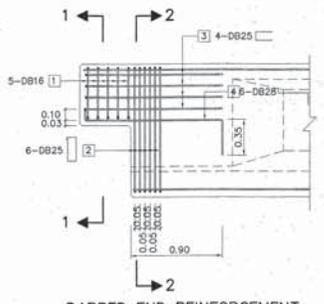
EXTRA REINFORCEMENT AT THE END (FRONT VIEW)
SCALE 1 : 25



DAPPED END REINFORCEMENT SCALE 1 : 25

SECTION 1 - 1 SCALE 1 : 25
SECTION 2 - 2 SCALE 1 : 25

EXTRA REINFORCEMENT AT THE END (SIDE VIEW)
SCALE 1 : 25



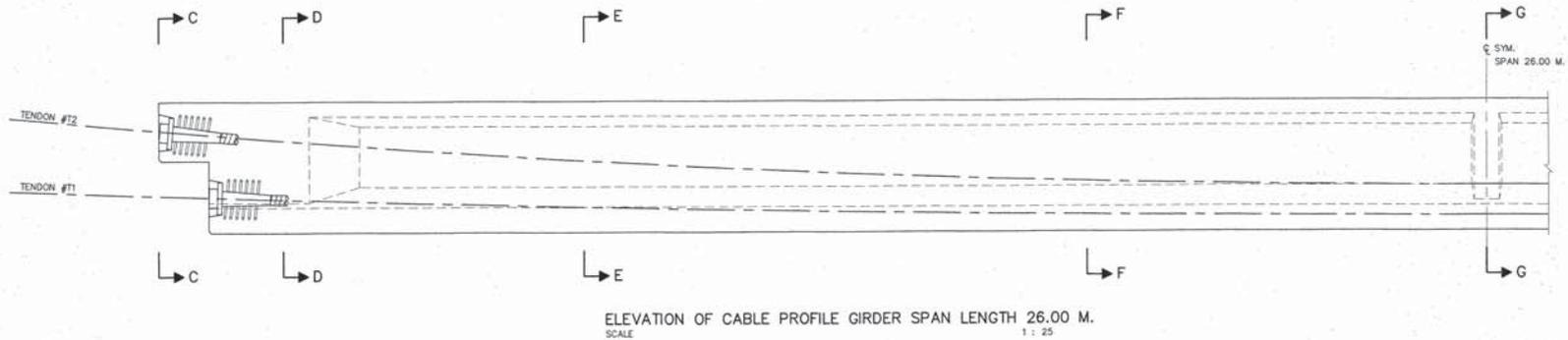
- NOTE :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD : HL-93.
 - MIX. DESIGN OF CONCRETE FOR POST TENSION I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa. (459 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
 - THE REINFORCE BAR NO. 5A, 6A, 4B FOR EDGE GIRDER AND REINFORCE BAR NO. 7A, 8A, 4B FOR INSIDE GIRDER
SEE DRAWING NO. NP1-26H/02 OR NP1-26H/04
 - SKREW ANGLE SHALL BE LESS THAN 45 DEGREE.
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO.NP1-26H/01 TO NP1-26H/05 AND NP1-26H/07

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 26.00 M. (HALF JOINT)
GIRDER REINFORCEMENT

DESIGNED : O.C.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :		SCALE : AS SHOWN
REV.1 REVISION 1/2018		DWG NO.NP1-26H/06
APPROVED :	(FOR DIRECTOR GENERAL)	SHEET NO. 60/81

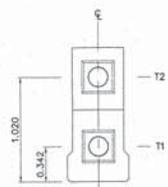
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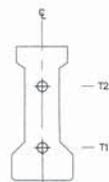
ELEVATION OF CABLE PROFILE GIRDER SPAN LENGTH 26.00 M.
SCALE 1 : 25

VERTICAL TENDON PROFILE DETAILS (MEASURED FROM BOTTOM OF GIRDER)

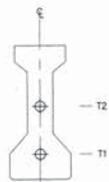
DISTANCE (M.)	13.240	12.740	12.000	11.000	10.000	9.000	8.000	7.000	6.000	5.000	4.000	3.000	2.000	1.000	0.000
TENDON #T2 (M.)	1.020	0.978	0.919	0.844	0.775	0.714	0.658	0.609	0.567	0.531	0.502	0.479	0.463	0.453	0.450
TENDON #T1 (M.)		0.342	0.320	0.293	0.268	0.246	0.226	0.208	0.193	0.180	0.169	0.161	0.155	0.151	0.150



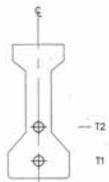
SECTION C - C
SCALE 1 : 25



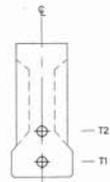
SECTION D - D
SCALE 1 : 25



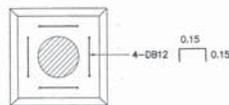
SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

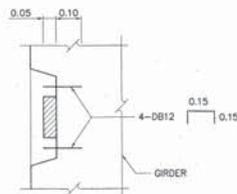


SECTION G - G
SCALE 1 : 25



ANCHORAGE PLATE

EXTRA REINFORCEMENT FOR ANCHORAGE PLATE
SCALE 1 : 25



BLOCKOUT FOR ANCHORAGE PLATE

หมายเหตุ:

- มิติที่ระบุไว้ในแบบที่หมดมีหน่วยเป็นเมตร เว้นแต่ระบุไว้เป็นอย่างอื่น
- น้ำหนักบรรทุกจรที่ใช้ในการออกแบบ: HL-93.
- ความเค้นคานค้ำยัน I-GORDER ชนิดเสริมเหล็กที่หลัง จะต้องมีกำลังอัดประลัยที่คู่เท่ากับ 45 เมกะปาสคาล (459 กก./ซม²) ของพื้นที่ว่างก่อนการขึ้นรูปทรงขนาดค้ำที่ยาว 28 วัน
- การอัดแรง PRESTRESSING :
 1. ลวดอัดแรงมีลักษณะเป็นรูปหลายเหลี่ยม 7 เหลี่ยม (LOW RELAXATION SEVEN WIRE STRANDS) ขนาด ϕ 15.2 มม. ตาม มอก. 420
 2. แรงดึงจะเปลี่ยนไปตามลักษณะของคานค้ำ (FRICTION WOBBLE COEFFICIENT) = 0.0033 1/M.
 3. แรงดึงจะมีค่าลดลงเนื่องจากความโค้ง (FRICTION CURVATURE COEFFICIENT) = 0.20
 4. แรงดึงจะมีค่าลดลงเนื่องจากการเสียดสี (A WEDGE SLIP) = 6 MM.
- ผู้รับจ้างต้องตรวจสอบชนิดของลวดอัดแรงและให้เป็นไปตามที่ระบุในข้อ 6 หากมีความแตกต่างจากที่ระบุไว้ ผู้รับจ้างต้องคำนวณค่าแรงดึงลวดอัดแรงใหม่ และส่งแบบรายละเอียดพร้อมรายการคำนวณดังกล่าว ให้คณะกรรมการตรวจการจ้างพิจารณาอนุมัติ
- ขนาดของแรงอัดลวดอัดแรง (JACKING FORCE) ให้ทำได้เมื่อ กำลังอัดประลัยต่อหน่วยของคานค้ำรูปทรงขนาดค้ำขนาด 15x15 ซม. จะต้องมีไม่น้อยกว่า 38 เมกะปาสคาล (387 กก./ซม²)
- วิธีการยก ให้ยก ณ จุดที่กั้นกลางทั้งสองข้างของคานค้ำชนิดค้ำ และวางคานค้ำที่จุดกึ่งกลางของคาน
- ระยะห่างของคานค้ำชนิดค้ำ I-GORDER ต้องไม่เกิน 2.00 ม.
- มุมเอียงของสะพาน ต้องไม่เกิน 45 องศา
- แบบนี้ใช้ประกอบกับแบบเลขที่ NP1-26H/01 TO NP1-26H/06

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

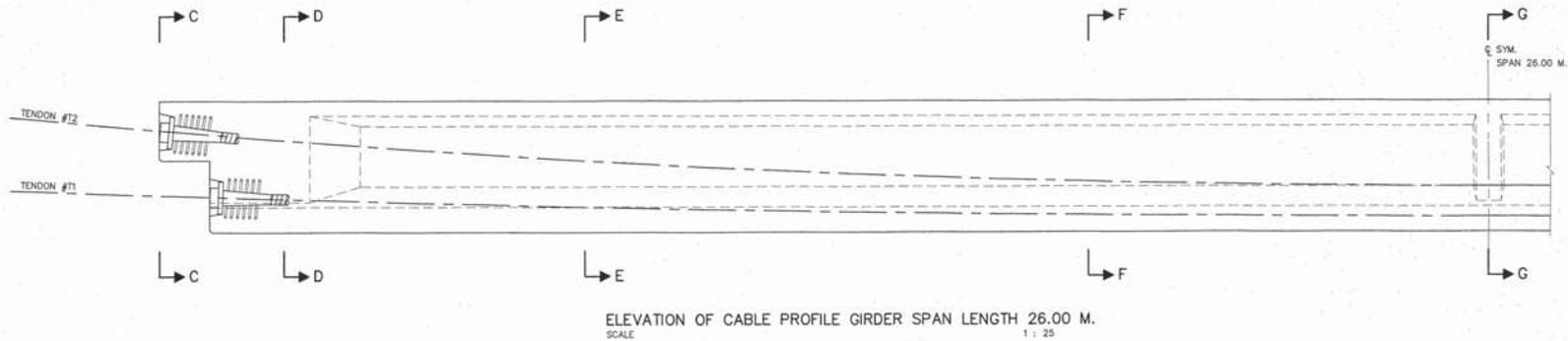
STANDARD DRAWING
I-GIRDER 26.00 M. (HALF JOINT)
POSTTENSIONED TENDON PROFILE

DESIGNED : D.O.H. & CONSULTANTS CHECKED : BUREAU OF LOCATION & DESIGN DATE : OCT 2015

SUBMITTED : (DIRECTOR OF LOCATION & DESIGN BUREAU) SCALE : AS SHOWN

APPROVED : (FOR DIRECTOR GENERAL) DWG NONP1-26H/07 SHEET NO. 61/R1

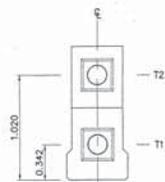
REV.	REVISION	DATE	SIGNATURE	DATE
REV.1	REVISION 1/2018			FEB 2018
REF.	REVISION			



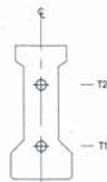
ELEVATION OF CABLE PROFILE GIRDER SPAN LENGTH 26.00 M.
SCALE 1 : 25

VERTICAL TENDON PROFILE DETAILS (MEASURED FROM BOTTOM OF GIRDER)

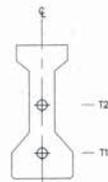
DISTANCE (M.)	13.240	12.740	12.000	11.000	10.000	9.000	8.000	7.000	6.000	5.000	4.000	3.000	2.000	1.000	0.000
TENDON #T2 (M.)	1.020	0.978	0.919	0.844	0.775	0.714	0.658	0.609	0.567	0.531	0.502	0.479	0.463	0.453	0.450
TENDON #T1 (M.)		0.342	0.320	0.293	0.268	0.246	0.226	0.208	0.193	0.180	0.169	0.161	0.155	0.151	0.150



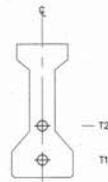
SECTION C - C
SCALE 1 : 25



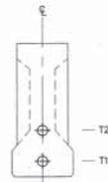
SECTION D - D
SCALE 1 : 25



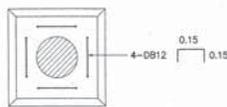
SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

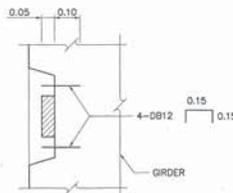


SECTION G - G
SCALE 1 : 25



ANCHORAGE PLATE

EXTRA REINFORCEMENT FOR ANCHORAGE PLATE
SCALE 1 : 25



BLOCKOUT FOR ANCHORAGE PLATE

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- MIX. DESIGN OF CONCRETE FOR POST TENSION I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa. (459 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
- PRESSURING :
 - LOW RELAXATION SEVEN WIRE STRANDS # 15.2 MM. IN ACCORDANCE WITH ITS-420 GRADE 1860
 - MIN CHARACTERISTIC STRENGTH OF STRAND 250 KN.
 - INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH. IN WHICH THE SEQUENCE OF JACKING SHALL BE TENDON 1 AND THEN TENDON 2. EACH TENDON IS STRESSED BOTH END.
 - NUMBER OF PRESTRESSING STRANDS
T1 = 14 PRESTRESSING STRANDS
T2 = 14 PRESTRESSING STRANDS
- DUCTS ARE GALVANIZED METAL SHEATHING GROUTED IMMEDIATELY AFTER STRESSING OPERATION.
- JACKING FORCES ARE CALCULATED USING "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS" AND ASSUMED DESIGN PARAMETERS AS FOLLOW :
FRICTION CURVATURE COEFFICIENT 0.20
FRICTION WOBBLE COEFFICIENT 0.0033 1/M.
WEDGE SLIP 8 MM
- THE CONTRACTOR SHALL CARRY OUT TEST WITH THE TENDONS AND DUCTS PROPOSED FOR USING TO ESTABLISH THE FRICTION COEFFICIENTS AND SHALL ADJUST THE STRESSING FORCES FOR APPROVAL IF THE MEASURED COEFFICIENT IS DIFFERED SIGNIFICANTLY FROM THE ASSUME VALUE.
- AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 36 MPa. (367 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
- LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
- SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
- SKREW ANGLE SHALL BE LESS THAN 45 DEGREE.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO.NP1-26H/01 TO NP1-26H/06

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

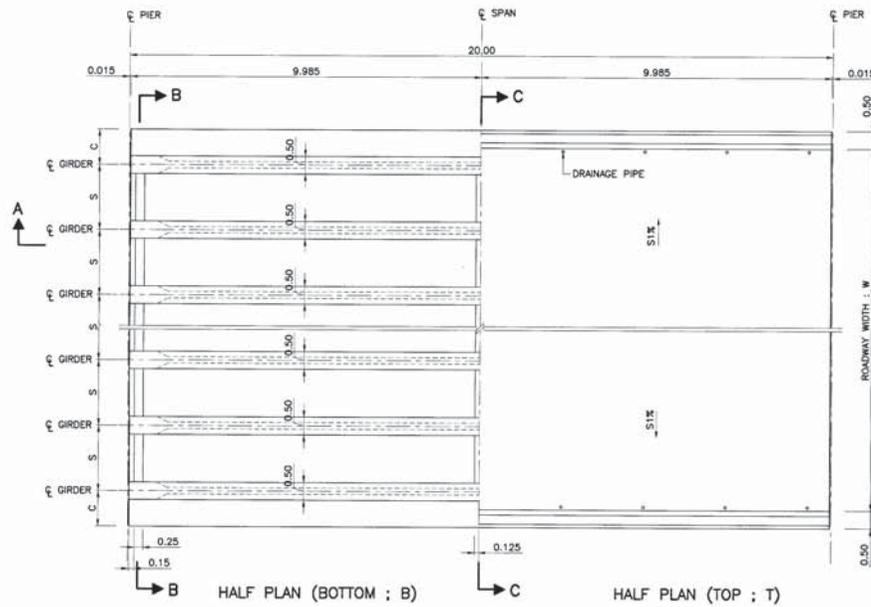
STANDARD DRAWING
I-GIRDER 26.00 M. (HALF JOINT)
POSTTENSIONED TENDON PROFILE

DESIGNED : D.O.H. & CONSULTANTS CHECKED : BUREAU OF LOCATION & DESIGN DATE : OCT 2015

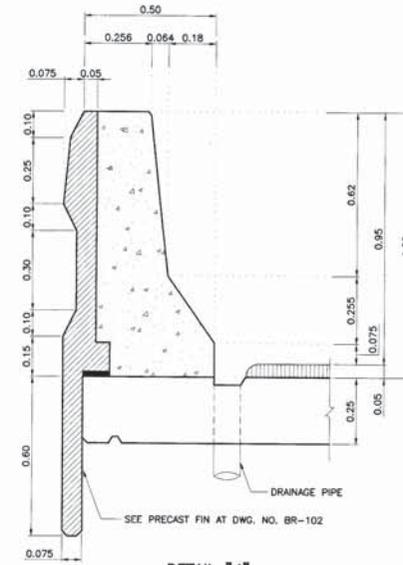
SUBMITTED : (DIRECTOR OF LOCATION & DESIGN BUREAU) SCALE : AS SHOWN

APPROVED : (FOR DIRECTOR GENERAL) DWG NO.NP1-26H/07 SHEET NO. 61/81

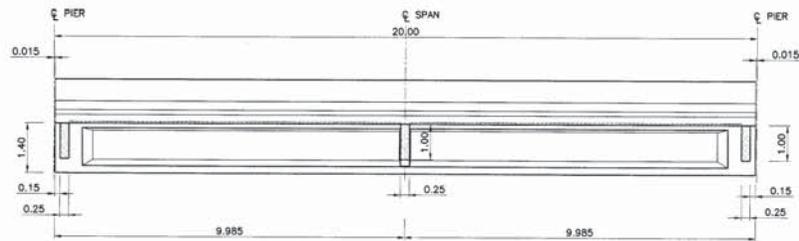
REV.	REVISION	SIGNATURE	DATE
REV.1	REVISION 1/2018		FEB2018
REF.	REVISION		



DECK PLAN FOR GIRDER SPAN LENGTH 20.00 M.
SCALE 1 : 75



DETAIL "1"
SCALE 1 : 10



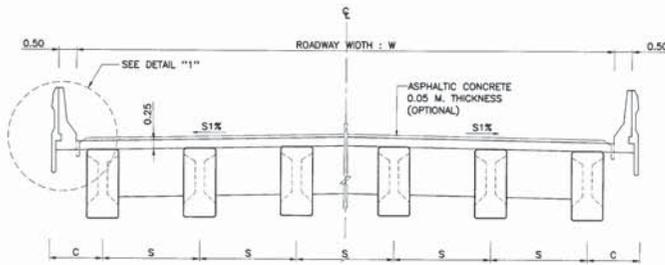
SECTION A - A
SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

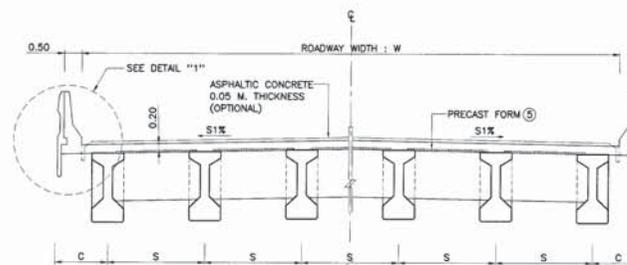
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER C (M.)
9.00	5	4 @ 2.00	1.00
10.00	6	5 @ 1.80	1.00
11.00	6	5 @ 2.00	1.00
12.00	7	4 @ 1.83 2 @ 1.84	1.00
15.00	8	5 @ 1.86 2 @ 1.85	1.00
VARIES	n	2.00 (MAX.)	1.00

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO. NP2-20F/02 TO NP2-20F/07
- CONCRETE FOR PC. SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 - PRECAST FORM SHALL BE AS FOLLOWS:
 - THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M²(INCLUDED THE WEIGHT OF PRECAST FORM)
 - THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTAR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS.420 OR TIS.95.
 - PRECAST FORM SHALL NOT BEND OR DEFLECT, THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



SECTION B - B
SCALE 1 : 75

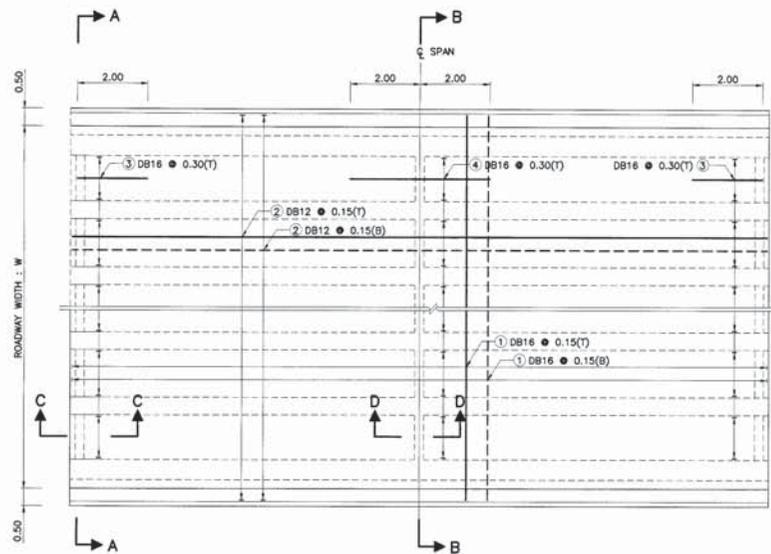


SECTION C - C
SCALE 1 : 75

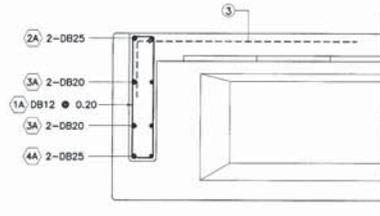
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 20.00 M. (FULL JOINT)
BRIDGE DECK DIMENSION

DESIGNED : D.O.K. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO NP2-20F/01 SHEET NO. 62

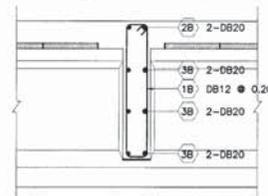
REF.	REVISION	SIGNATURE	DATE



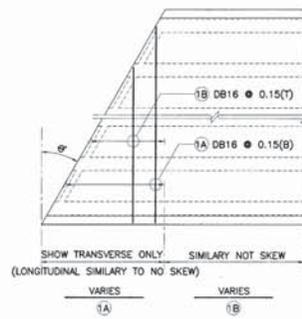
PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SKEW REINFORCEMENT
SCALE 1 : 25

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1A)	DB12	0.19
2A)	DB25	1.19
3A)	DB20	W+1.00-2C
4A)	DB25	S/2+0.40
5A)	DB20	S/2+0.40
6A)	DB25	S/4+0.10
7A)	DB20	S/4+0.10
8A)	DB25	S/2

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

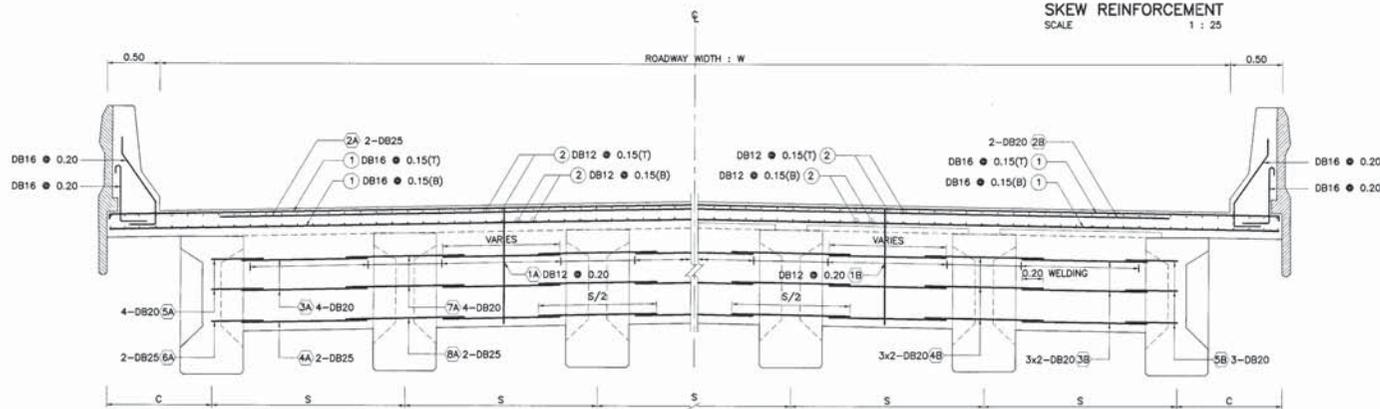
BAR NO.	BAR SIZE	SHAPE
1B)	DB12	0.19
2B)	DB20	1.19
3B)	DB20	W+1.00-2C
4B)	DB20	S/2+0.40
5B)	DB20	S/2

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W+0.70
2	DB12	19.91
3	DB16	2.00
4	DB16	0.50

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE S040 FOR DEFORMED BARS.
5. THE REINFORCE BAR NO. 5A, 6A, 7A, 8A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
6. THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP2-20F/01 AND NP2-20F/03 TO NP2-20F/07



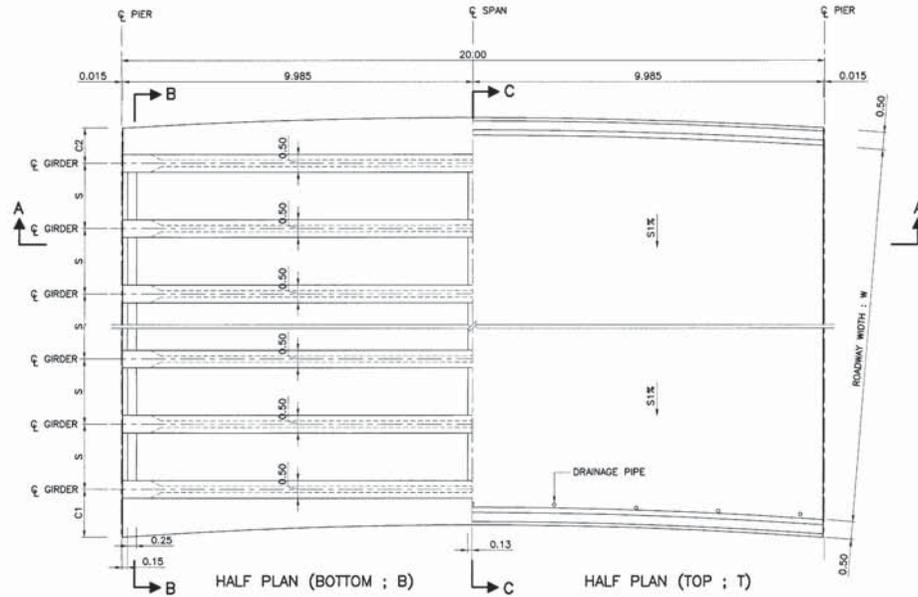
HALF SECTION A - A

HALF SECTION B - B

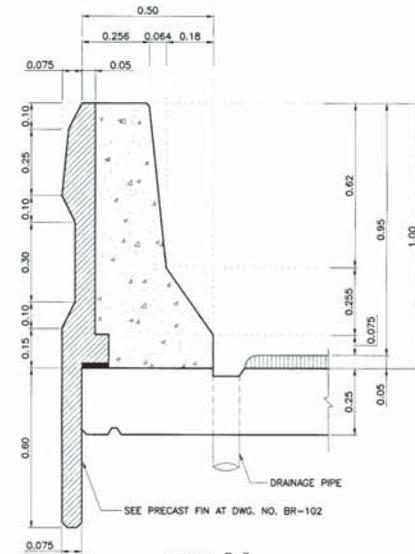
CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 25

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 20.00 M. (FULL JOINT)
BRIDGE DECK REINFORCEMENT

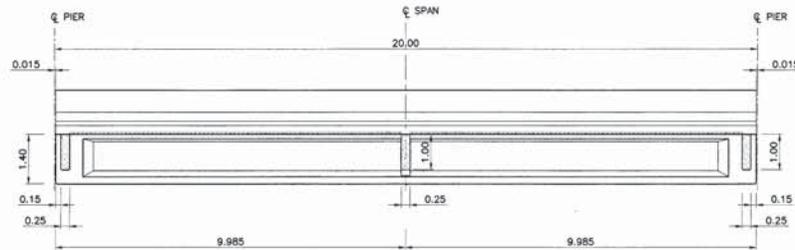
DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATOR & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATOR & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO NP2-20F /02
REF.	REVISION	SIGNATURE DATE



DECK PLAN FOR GIRDER SPAN LENGTH 20.00 M.
SCALE 1 : 75



DETAIL "1"
SCALE 1 : 10



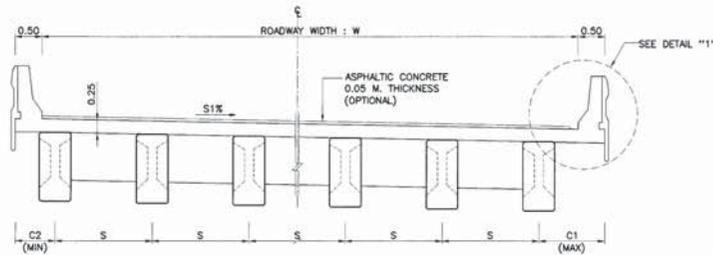
SECTION A - A
SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

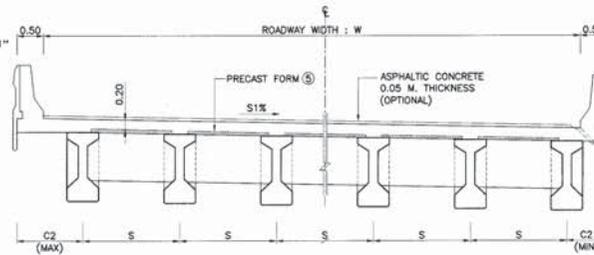
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER			
			C1 (M.)		C2 (M.)	
			MIN.	MAX.	MIN.	MAX.
9.00	5	2.00 (MAX.)	0.60	1.50	0.60	1.50
10.00	6	2.00 (MAX.)	0.60	1.50	0.60	1.50
11.00	6	2.00 (MAX.)	0.60	1.50	0.60	1.50
12.00	7	2.00 (MAX.)	0.60	1.50	0.60	1.50
15.00	8	2.00 (MAX.)	0.60	1.50	0.60	1.50
VARIES	n	2.00 (MAX.)	0.60	1.50	0.60	1.50

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP2-20F/01, NP2-20F/02 AND NP2-20F/04 TO NP2-20F/07
- CONCRETE FOR PC SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS-15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- PRECAST FORM SHALL BE AS FOLLOWS:
 - THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M² (INCLUDED THE WEIGHT OF PRECAST FORM)
 - THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTOR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS-420 OR TIS-95.
 - PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



SECTION B - B
SCALE 1 : 50



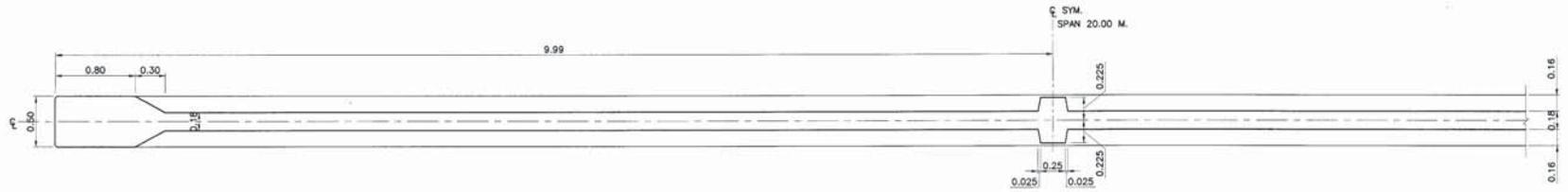
SECTION C - C
SCALE 1 : 50

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

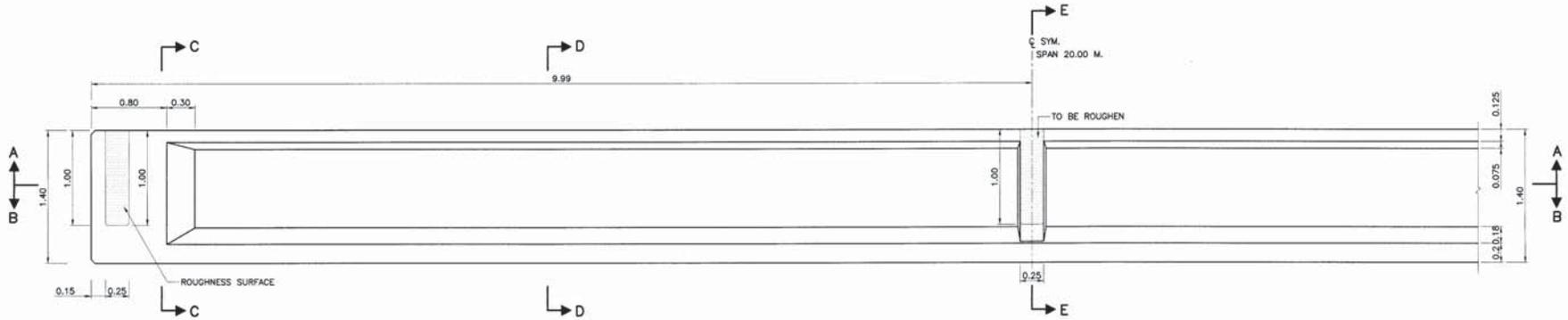
STANDARD DRAWING
I-GIRDER 20.00 M. (FULL JOINT)
BRIDGE DECK DIMENSION (FOR CURVE)

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP2-20F/03
		SHEET NO. 64

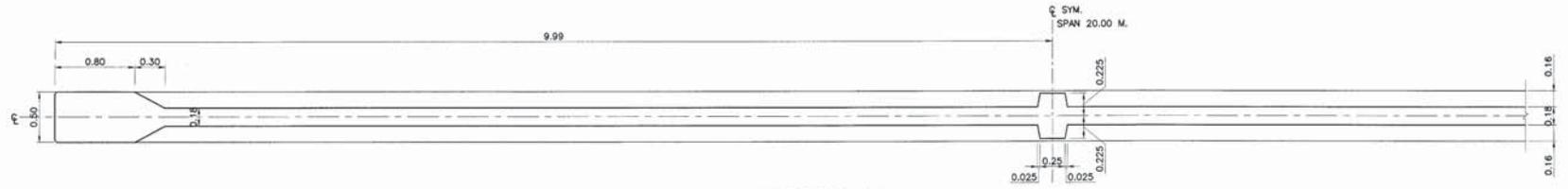
REF.	REVISION	SIGNATURE	DATE



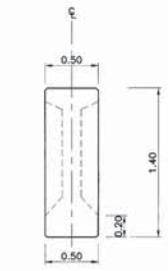
SECTION A - A
SCALE 1 : 25



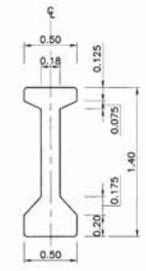
ELEVATION OF GIRDER SPAN LENGTH 20.00 M.
SCALE 1 : 25



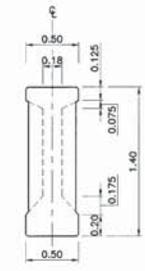
SECTION B - B
SCALE 1 : 25



SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25

- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. DESIGN LIVE LOAD : HL-93.
 3. CONCRETE FOR PRECAST I-GIRDER SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 4. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NP2-20F/01 TO NP2-20F/04 AND NP2-20F/06 TO NP2-20F/07

KINGDOM OF THAILAND			
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS			
STANDARD DRAWING I-GIRDER 20.00 M. (FULL JOINT) GIRDER DIMENSION			
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015	
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN	DWG NO. NP2-20F/05
APPROVED :	(FOR DIRECTOR GENERAL)	REF.	REVISION
		SIGNATURE	DATE
			SHEET NO. 66

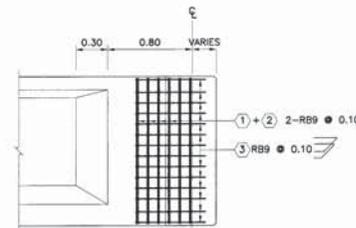
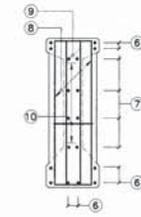
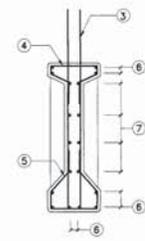
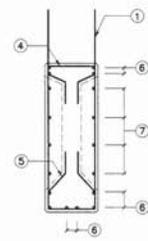
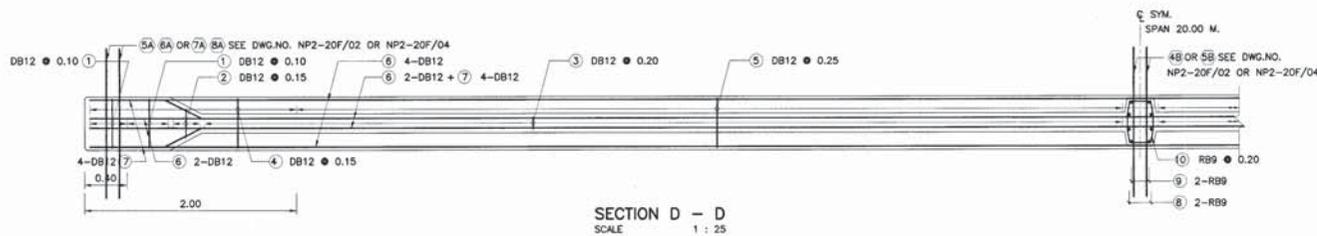
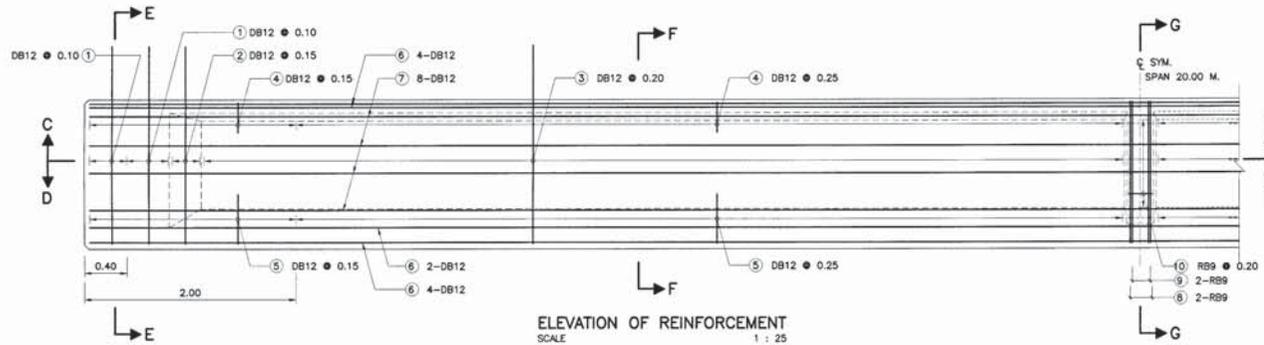
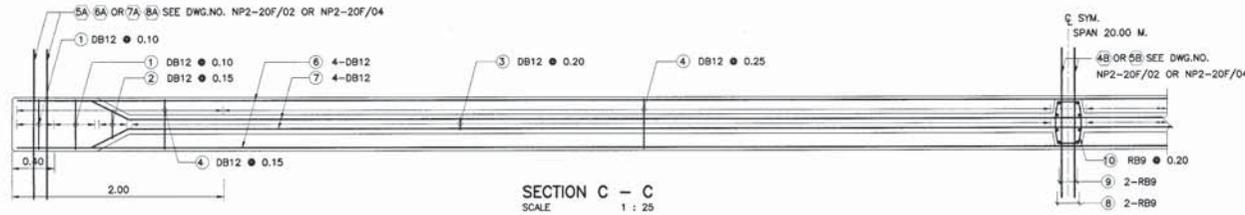
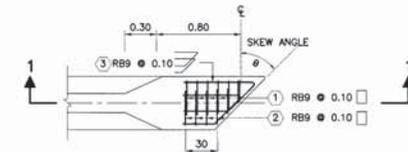


TABLE OF GIRDER REINFORCEMENT

BAR NO.	BAR SIZE	SHAPE
1	DB12	
2	DB12	
3	DB12	
4	DB12	
5	DB12	
6	DB12	
7	DB12	
8	RB9	
9	RB9	
10	RB9	



NOTE :

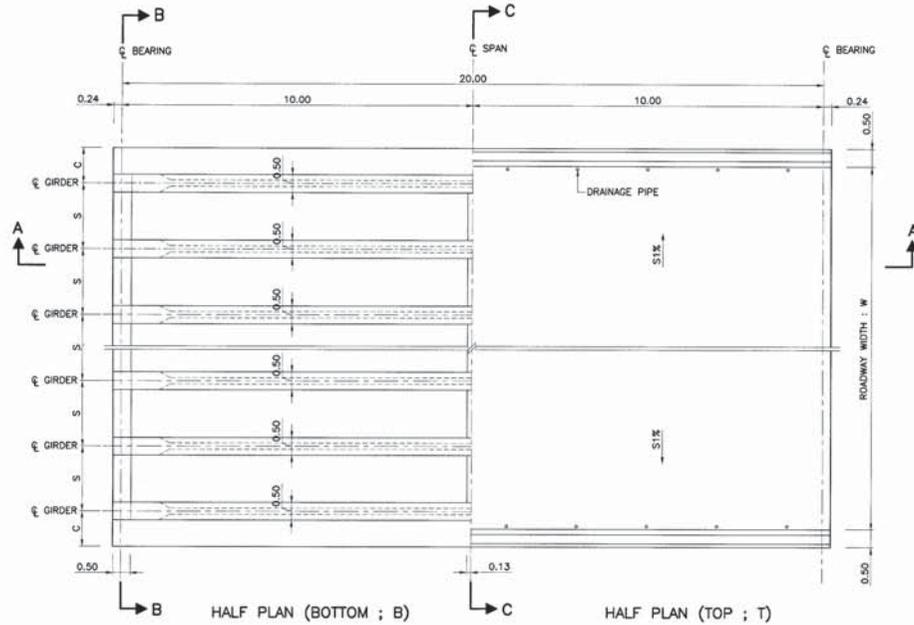
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. MIX. DESIGN OF CONCRETE FOR PRESTRESSED I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
4. THE REINFORCE BAR NO. 5A, 6A, 5B FOR EDGE GIRDER AND REINFORCE BAR NO. 7A, 8A, 4B FOR INSIDE GIRDER SEE DRAWING NO. NP2-20F/02 OR NP2-20F/04
5. SKEW ANGLE SHALL BE LESS THAN 45 DEGREE.
6. THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO.NP2-20F/01 TO NP2-20F/05 AND NP2-20F/07

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

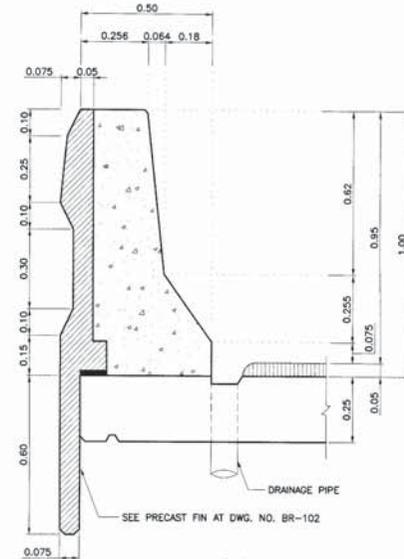
STANDARD DRAWING
I-GIRDER 20.00 M. (FULL JOINT)
GIRDER REINFORCEMENT

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP2-20F/05
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 67

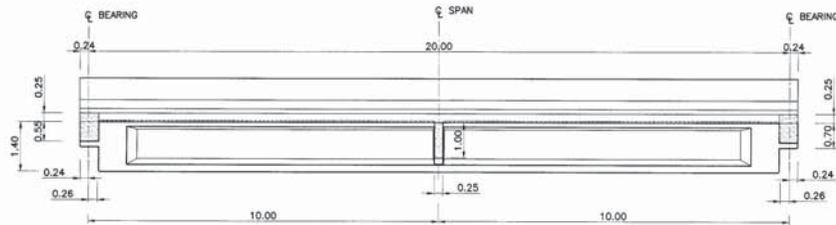


HALF PLAN (BOTTOM ; B) HALF PLAN (TOP ; T)

DECK PLAN FOR GIRDER SPAN LENGTH 20.00 M.
SCALE 1 : 75



DETAIL "1"
SCALE 1 : 10



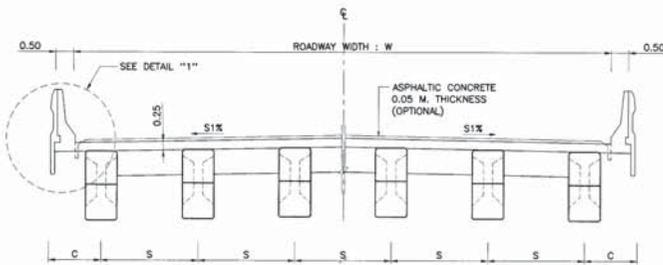
SECTION A - A
SCALE 1 : 75

TABLE OF W, S, C AND NO. OF GIRDER

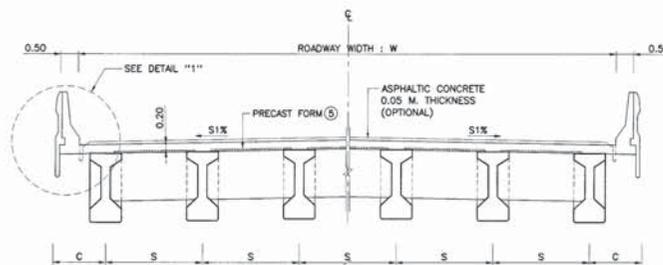
ROADWAY WIDTH W (M.)	NO. OF GIRDER	SPACING S (M.)	CANTILEVER C (M.)
9.00	5	4 • 2.00	1.00
10.00	5	5 • 1.80	1.00
11.00	6	5 • 2.00	1.00
12.00	7	4 • 1.83 2 • 1.84	1.00
15.00	8	5 • 1.88 2 • 1.85	1.00
VARIES	n	2.00 (MAX.)	1.00

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO. NP2-20F/02 TO NP2-20F/07
- CONCRETE FOR PC SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- PRECAST FORM SHALL BE AS FOLLOWS:
 - THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M² (INCLUDED THE WEIGHT OF PRECAST FORM)
 - THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M.
 - ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MOTAR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TIS.420 OR TIS.95.
 - PRECAST FORM SHALL NOT BEND OR DEFLECT. THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS.
 - PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED.



SECTION B - B
SCALE 1 : 75

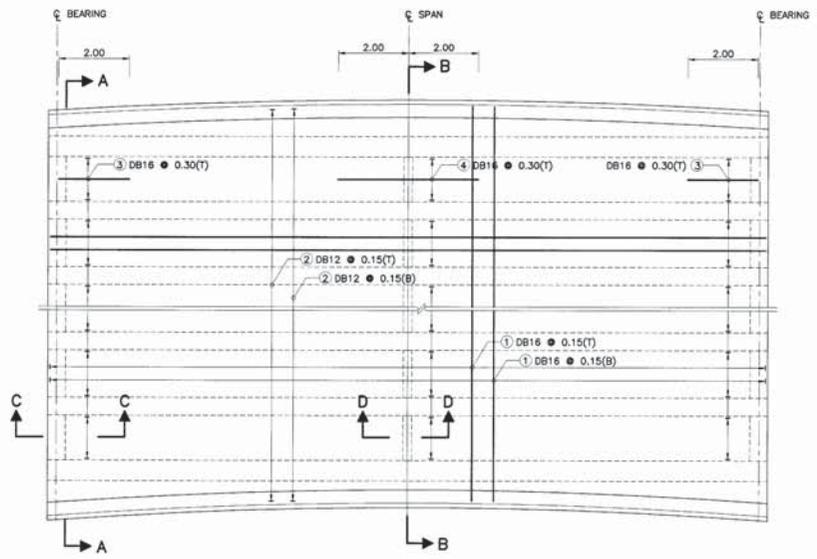


SECTION C - C
SCALE 1 : 75

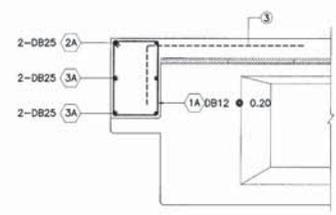
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
1-GIRDER 20.00 M. (HALF JOINT)
BRIDGE DECK DIMENSION

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO.NP2-20H/07 SHEET NO. 69

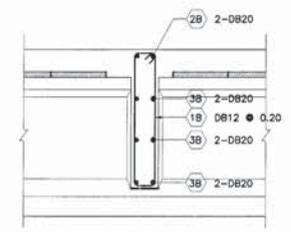
REF.	REVISION	SIGNATURE	DATE



PLAN OF REINFORCEMENT SLAB AND RAILING
SCALE 1 : 75



SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

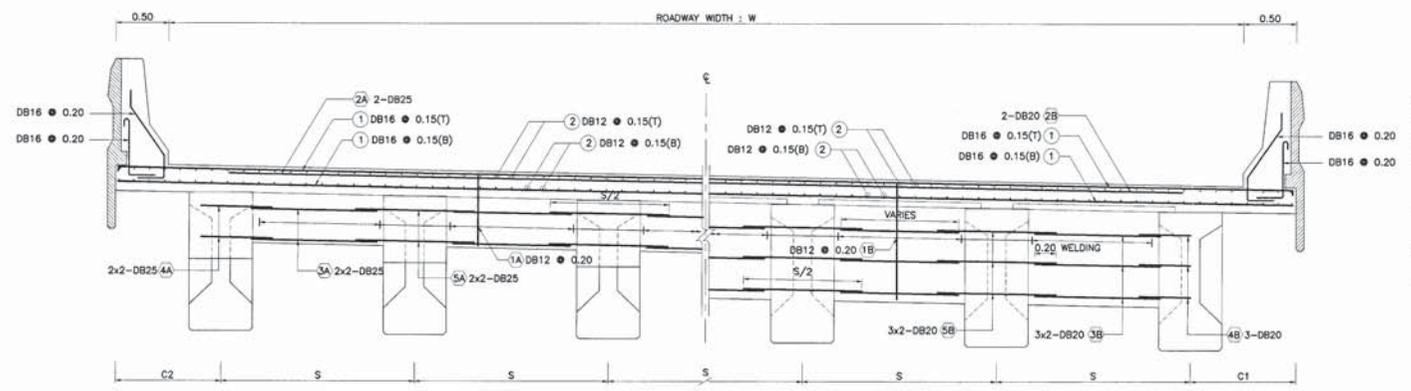
BAR NO.	BAR SIZE	SHAPE
1A	DB12	
2A	DB25	
3A	DB25	
4A	DB25	
5A	DB25	

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1B	DB12	
2B	DB20	
3B	DB20	
4B	DB20	
5B	DB20	

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	
2	DB12	
3	DB16	
4	DB16	



HALF SECTION A - A HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 25

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
4. REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
5. THE REINFORCE BAR NO. 4A, 5A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
6. THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP2-20H/01 TO NP2-20H/03 AND NP2-20H/05 TO NP2-20H/07

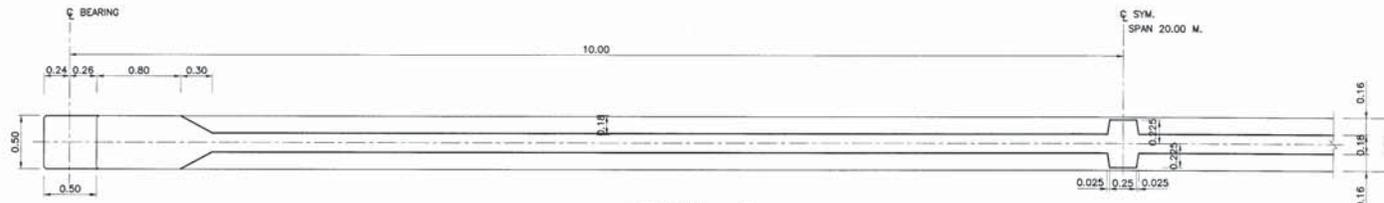
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

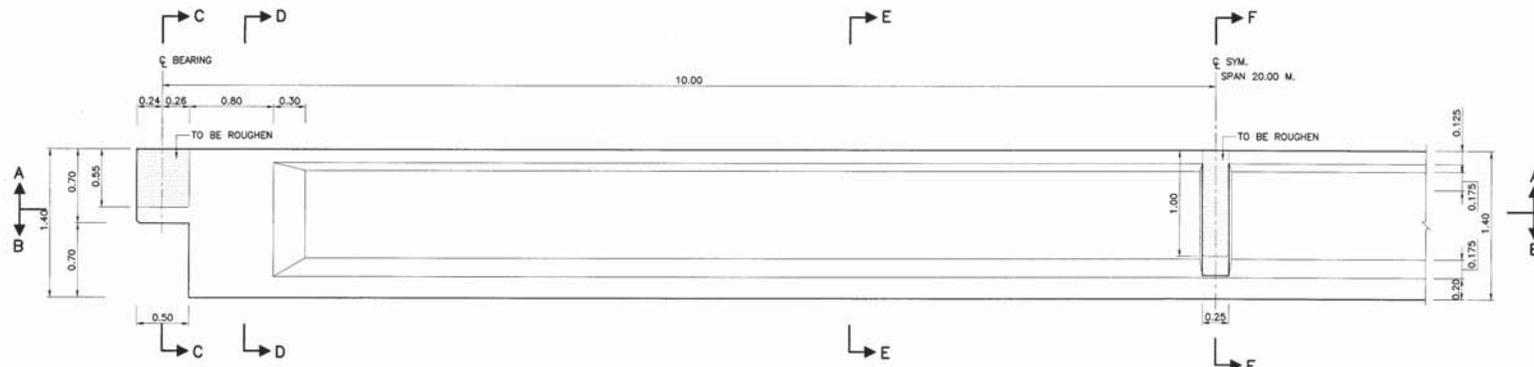
STANDARD DRAWING
I-GIRDER 20.00 M. (HALF JOINT)
BRIDGE DECK REINFORCEMENT (FOR CURVE)

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO NP2-20H/04 SHEET NO. 72

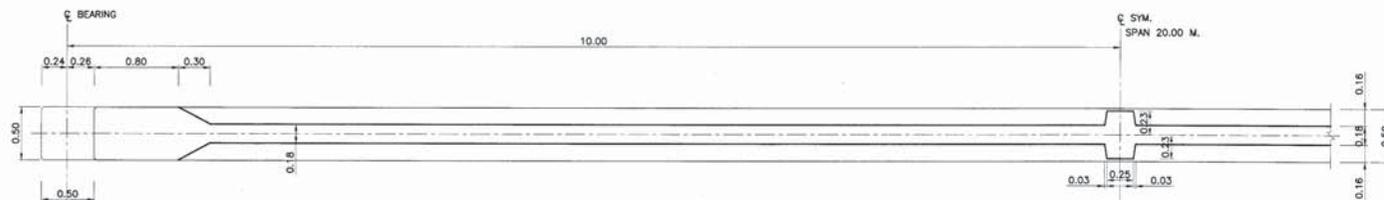
REF.	REVISION	SIGNATURE	DATE



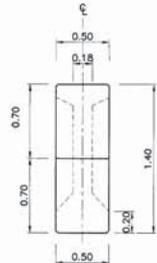
SECTION A - A
SCALE 1 : 25



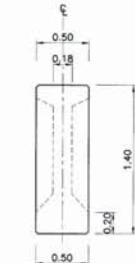
ELEVATION OF GIRDER SPAN LENGTH 20.00 M.
SCALE 1 : 25



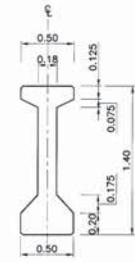
SECTION B - B
SCALE 1 : 25



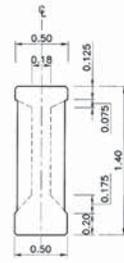
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. DESIGN LIVE LOAD : HL-93.
 3. CONCRETE FOR PRECAST I-GIRDER SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 4. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NP2-20H/01 TO NP2-20H/04 AND NP2-20H/06 TO NP2-20H/07

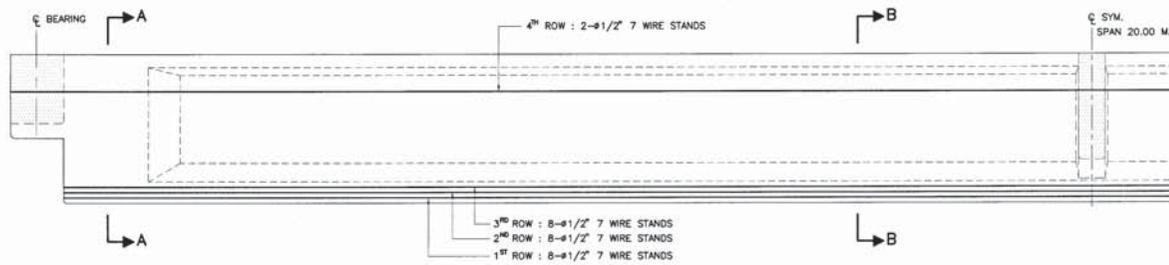
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 20.00 M. (HALF JOINT)
GIRDER DIMENSION

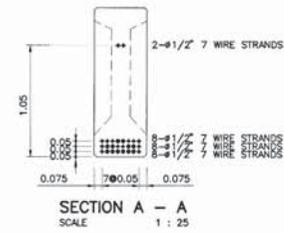
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	<i>[Signature]</i> (DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	<i>[Signature]</i> (FOR DIRECTOR GENERAL)	DWG NO: NP2-20H/05 SHEET NO. 73

REF.	REVISION	SIGNATURE	DATE

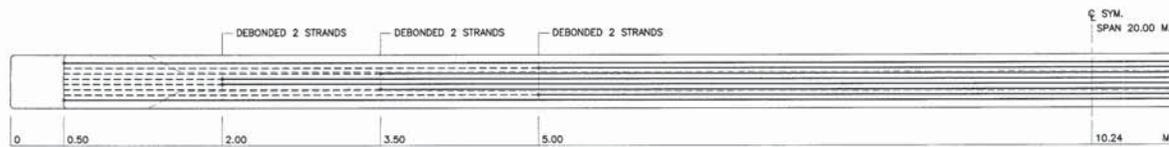
D:\1517_444_2015\1517-20H-05\1517-20H-05.dwg



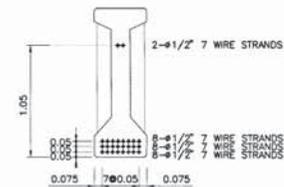
PRESTRESSING DETAIL
SCALE 1 : 25



SECTION A - A
SCALE 1 : 25



POSITION OF DEBONDED 1ST ROW
SCALE 1 : 25



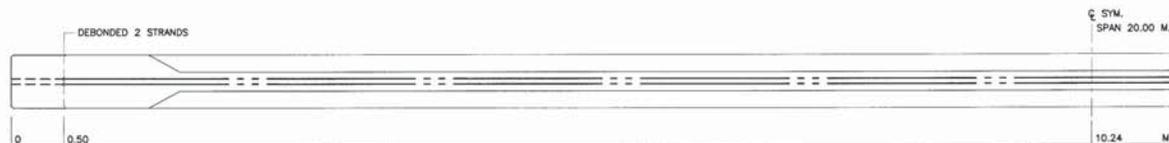
SECTION B - B
SCALE 1 : 25



POSITION OF DEBONDED 2ND ROW
SCALE 1 : 25



POSITION OF DEBONDED 3RD ROW
SCALE 1 : 25



POSITION OF DEBONDED 4TH ROW
SCALE 1 : 25

NOTE :

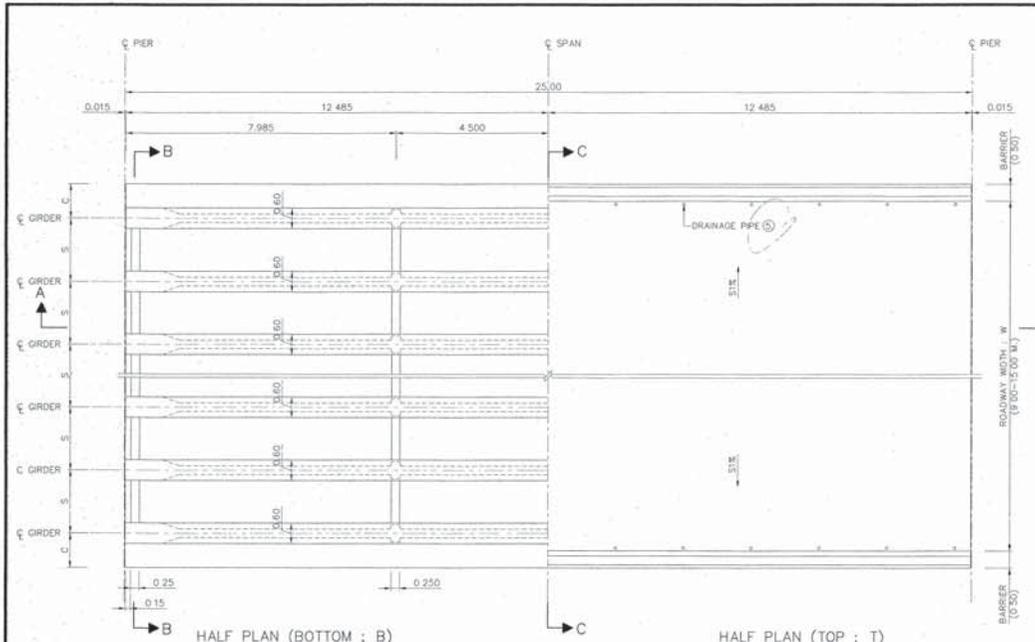
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. MIX. DESIGN OF CONCRETE FOR PRESTRESSED I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
4. PRESTRESSING :
 - 4.1 LOW RELAXATION SEVEN WIRE STRANDS # 12.7 MM. IN ACCORDANCE WITH TIS.420
 - 4.2 MIN CHARACTERISTIC STRENGTH OF STRAND 180 KN.
 - 4.3 INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH.
5. POSITION OF DEBONDED SHALL BE SPECIFIED IN THIS DRAWING AS FOLLOW:
 - 5.1 POINT OF DEBONDED MEANS STARTING POINT TO END OF GIRDER
 - 5.2 DEBONDED MEANS PERFORMING FOR NO CONTACT BETWEEN STRAND AND CONCRETE.
6. AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 40 MPa. (410 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
7. LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
8. SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
9. SKEW ANGLE SHALL BE LESS THAN 45 DEGREE.
10. SYMBOLS OF PRESTRESSING STRANDS
 - + ——— BOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
 - + - - - - DEBOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
11. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP2-20H/01 OR NP2-20H/06

KINGDOM OF THAILAND

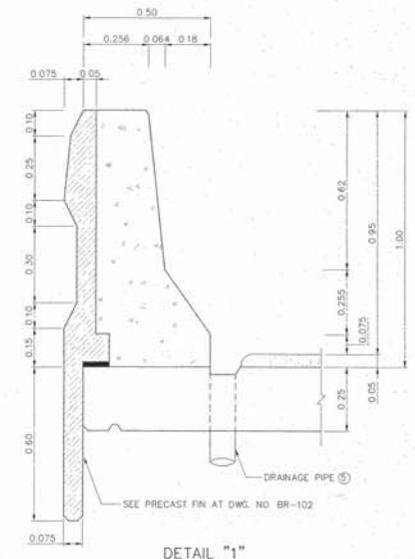
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 20.00 M. (HALF JOINT)
GIRDER PRESTRESSING

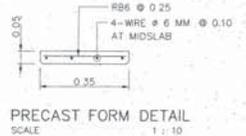
DESIGNED : S.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP2-20H/07
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 75



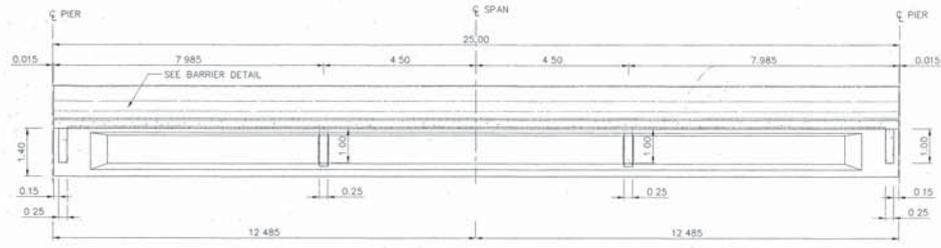
HALF PLAN (BOTTOM : B) HALF PLAN (TOP : T)
 DECK PLAN FOR GIRDER SPAN LENGTH 25.00 M.
 SCALE 1 : 75



DETAIL "1"
 SCALE 1 : 10



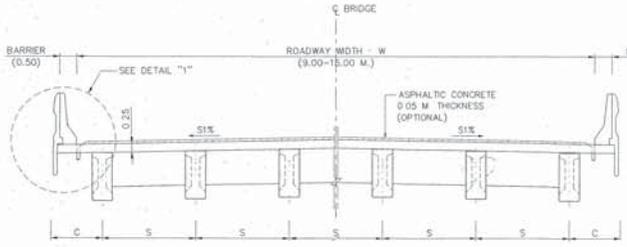
PRECAST FORM DETAIL
 SCALE 1 : 10



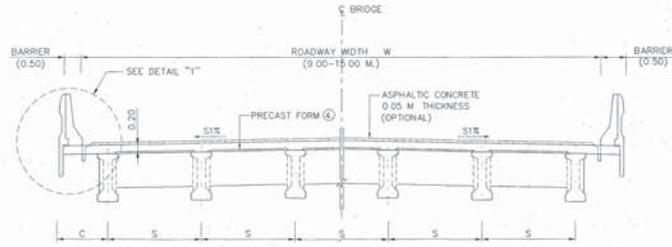
SECTION A - A
 SCALE 1 : 75

ROADWAY WIDTH W (M)	NO. OF GIRDER	SPACING S (M)	CANTILEVER C (M)
9.00	5	4 @ 2.00	1.00
10.00	6	5 @ 1.80	1.00
11.00	6	5 @ 2.00	1.00
12.00	7	4 @ 1.83 2 @ 1.84	1.00
15.00	8	5 @ 1.86 2 @ 1.85	1.00
VARIES	n	2.00 (MAX.)	1.00

- NOTE :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD = HL-93
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP2-25F/02 TO NP2-25F/07
 - PRECAST FORM SHALL BE AS FOLLOWS:
 - CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa (510 KG/CM²) FOR 15x15x15 CM CUBE AT 28 DAYS. CEMENT SHALL CONFORM TO TS-15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE
 - THE WEIGHT OF PRECAST FORM SHALL BE LESS THAN 120 KG/M²
 - ALL PRECAST FORM SHALL CARRY THE TOTAL SAFE LOAD NOT LESS THAN 750 KG/M² (INCLUDED THE WEIGHT OF PRECAST FORM)
 - THE WIDTH OF PRECAST FORM SHALL BE GREATER THAN 0.35 M
 - ENDS OF PRECAST FORM SHALL BE SEATED OVER THE SUPPORT NOT LESS THAN 7.5 CM. MORTAR WITH THE MIXED RATIO (CEMENT : SAND) OF 1:2 SHALL BE USED TO ADJUST THE ALIGNMENT OF THE PRECAST AND TO SMOOTHEN
 - CONCRETE PROPERTIES SHALL BE CONFORMED TO THE SPECIFICATION OF PRESTRESSED CONCRETE GIRDERS AND ALL PRESTRESSING STRANDS SHALL BE CONFORMED TO TS-420 OR TS-95
 - PRECAST FORM SHALL NOT BEND OR DEFLECT THE TOLERANCE OF ALL DIMENSIONS OF PRECAST FORM SHALL BE WITHIN THE ACCEPTABLE LIMITS
 - PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE THE SHOP DRAWINGS OF PRECAST FORM INCLUDING ALL CALCULATION AND SUPPORTED DOCUMENTS. THE DOCUMENTS SHALL BE CERTIFIED BY ENGINEERS AS THE REQUIREMENTS OF COUNCIL OF ENGINEERS AND SUBMITTED TO THE DESIGNERS FOR APPROVED.
 - THE BOTTOM SURFACE OF PRECAST FORM SHALL BE SMOOTHENED
 - DRAINAGE PIPE SEE BRIDGE DRAINAGE SYSTEM



SECTION B - B
 SCALE 1 : 75



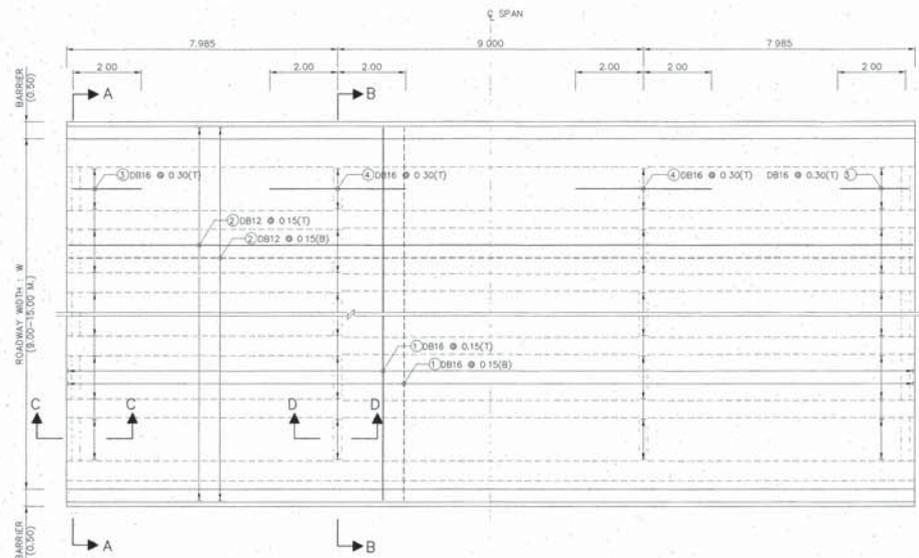
SECTION C - C
 SCALE 1 : 75

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS
 STANDARD DRAWING
 I-GIRDER 25.00 M. (FULL JOINT)
 BRIDGE DECK DIMENSION

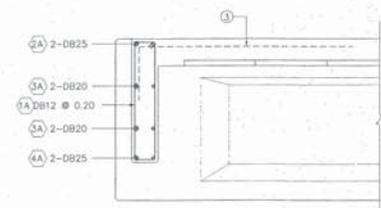
DESIGNED: DOH & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED: [Signature]	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED: [Signature]	(FOR DIRECTOR GENERAL)	DWG NO. NP2-25F/01 SHEET NO. 76/91

REV1	REVISION 1/2018	[Signature]	FOR INFO
REV	REVISION	SIGNATURE	DATE

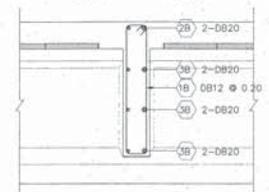
C:\Users\444\Documents\2015\NP2-25F\01.dwg



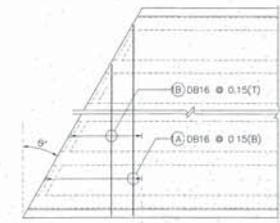
PLAN OF SLAB REINFORCEMENT
SCALE 1 : 25



SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SKEW REINFORCEMENT
SCALE 1 : 25

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

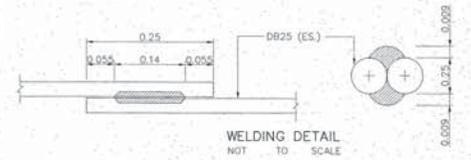
BAR NO.	BAR SIZE	SHAPE
1A	DB12	W+1 00-2C
2A	DB25	5/2+0 40
3A	DB20	5/2+0 40
4A	DB25	5/2+0 40
5A	DB20	5/4+0 10
6A	DB25	5/4+0 10
7A	DB20	5/2
8A	DB25	5/2, 5A

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1B	DB12	W+1 00-2C
2B	DB20	5/2+0 40
3B	DB20	5/2+0 40
4B	DB20	5/2
5B	DB20	5/4+0 10

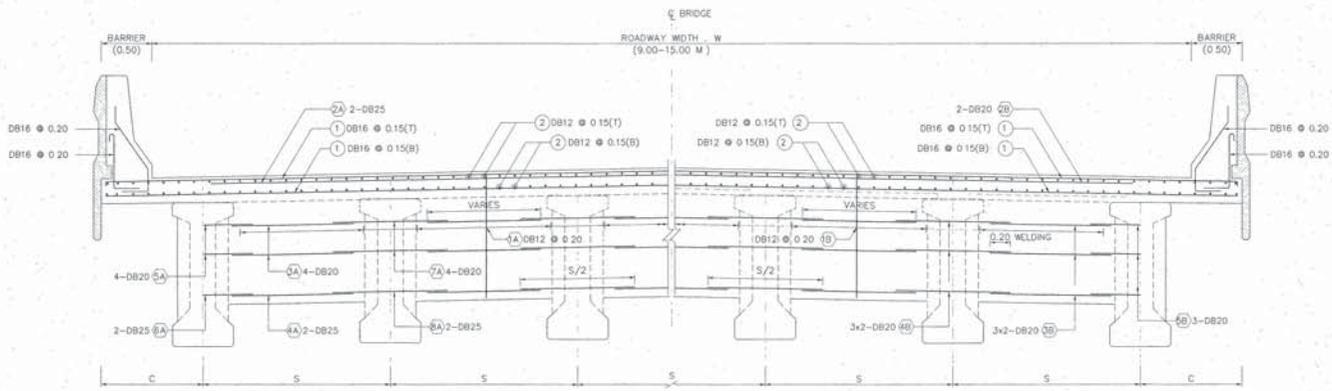
TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W+0 70
2	DB12	19 91
3	DB16	2.00, 4.00
4	DB16	0.50



WELDING DETAIL
NOT TO SCALE

- NOTE :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD = HL-93.
 - CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS 15 TYPE 1 PORTLAND CEMENT OR APPROVAL TYPE.
 - REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS.24 GRADE SD40 FOR DEFORMED BARS.
 - THE REINFORCE BAR NO. 5A, 6A, 7A, 8A, 4B AND 5B SHALL BE EMBEDDED IN ORDER AT STAGE OF GIRDER CASTING.
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP2-25F/01 AND NP2-25F/03 TO NP2-25F/07



HALF SECTION A - A HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 25

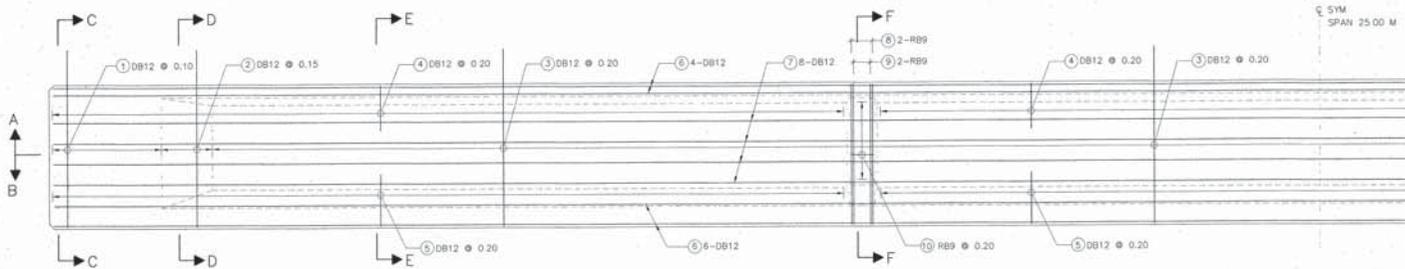
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 25.00 M. (FULL JOINT)
BRIDGE DECK REINFORCEMENT

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED: <i>aw</i>	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
REV 1 REVISION 1/2016	19/10/16	DWG NO. NP2-25F/03
REV REVISION	SIGNATURE DATE	SHEET NO. 77/R1

APPROVED: *J*
(FOR DIRECTOR GENERAL)

S:\145-844-2015\145-844-2015-025F-03(001)



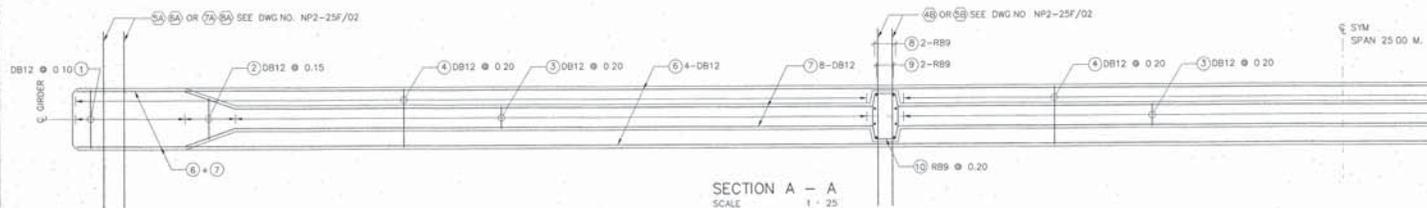
ELEVATION OF REINFORCEMENT
SCALE 1 : 25

TABLE OF GIRDER REINFORCEMENT

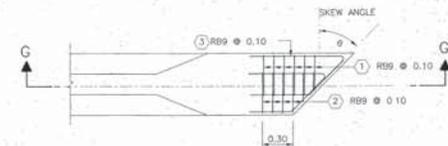
NO.	SIZE	SHAPE
1	DB12	
2	DB12	
3	DB12	
4	DB12	
5	DB12	
6	DB12	
7	DB12	
8	RB9	
9	RB9	
10	RB9	

TABLE OF EXTRA REINFORCEMENT

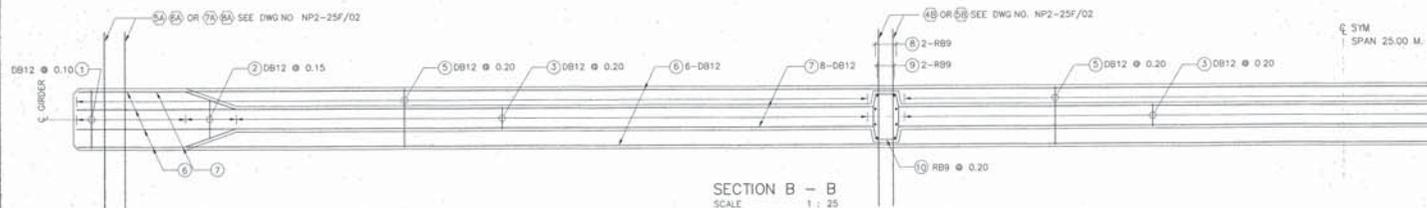
NO.	BARS SIZE	SHAPE
1	RB9	
2	RB9	
3	RB9	



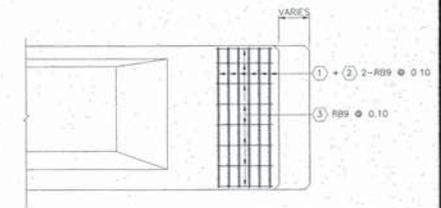
SECTION A - A
SCALE 1 : 25



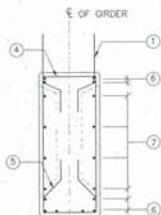
EXTRA REINFORCEMENT AT END (SKEW GIRDER)
SCALE 1 : 25



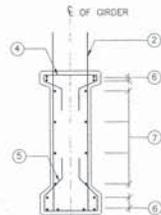
SECTION B - B
SCALE 1 : 25



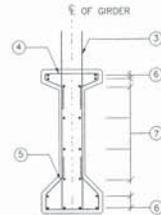
SECTION G - G
SCALE 1 : 25



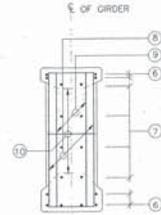
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LINE LOAD HL-93
- MIX. DESIGN OF CONCRETE FOR PRESTRESSED I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa. (510 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS
- THE REINFORCE BAR NO. 3A, 6A, 5B FOR EDGE GIRDER AND REINFORCE BAR NO. 7A, 8A, 4B FOR INSIDE GIRDER SEE DRAWING NO. NP2-25F/02
- SKEW ANGLE SHALL BE LESS THAN 45 DEGREE
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO.NP2-25F/01 TO NP2-25F/03 AND NP2-25F/05 TO NP2-25F/07

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 25.00 M. (FULL JOINT)
GIRDER REINFORCEMENT FOR PRE-TENSION

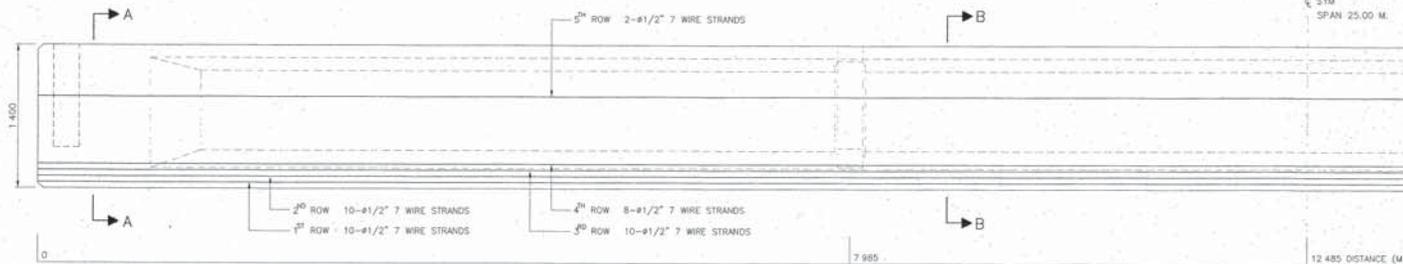
DESIGNED : DGH & CONSULTANTS CHECKED : BUREAU OF LOCATION & DESIGN DATE : OCT 2015.

SUBMITTED : SCALE : AS SHOWN

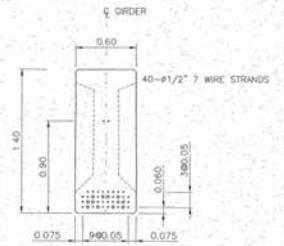
REV1 REVISION 1/2016 DWG NO. NP2-25F/04

APPROVED : SHEET NO. 79/R1

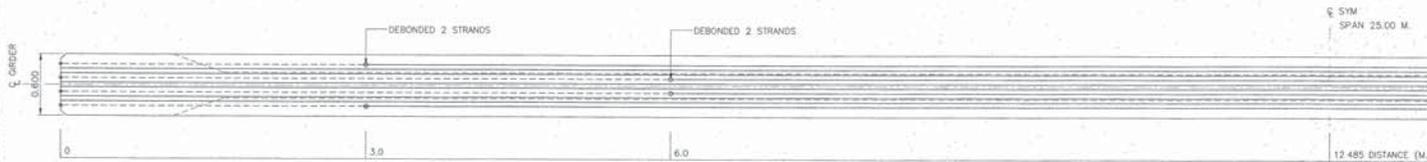
REV	REVISION	DATE	SIGNATURE
REV1	REVISION 1/2016		
REV	REVISION		



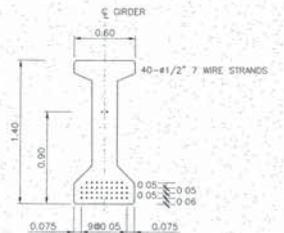
PRESTRESSING DETAILS
SCALE 1 : 25



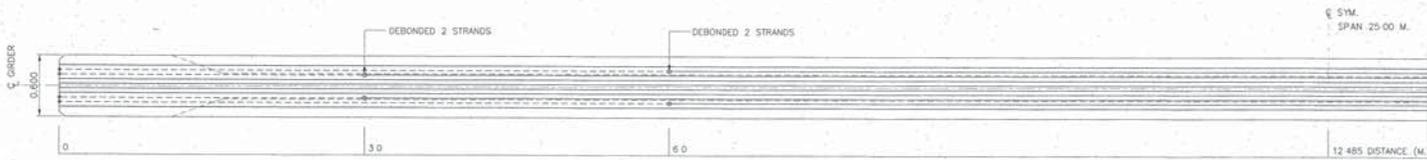
SECTION A - A
SCALE 1 : 25



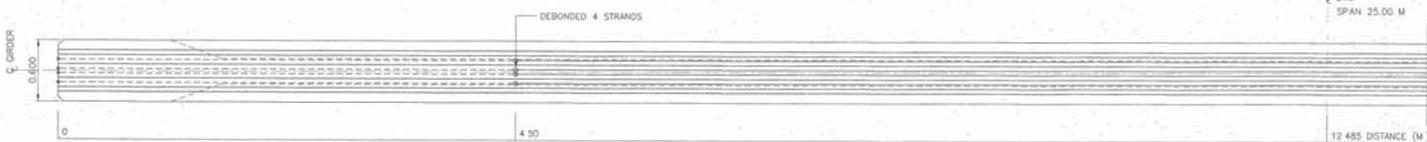
POSITION OF DEBONDED 1ST ROW
SCALE 1 : 25



SECTION B - B
SCALE 1 : 25



POSITION OF DEBONDED 2ND ROW
SCALE 1 : 25



POSITION OF DEBONDED 3RD ROW
SCALE 1 : 25

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED
2. DESIGN LIVE LOAD - HL-93.
3. MIX DESIGN OF CONCRETE FOR PRESTRESSED I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa (510 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
4. PRESTRESSING :
 - 4.1 LOW RELAXATION SEVEN WIRE STRANDS # 12.7 MM. IN ACCORDANCE WITH ITS 420
 - 4.2 MIN CHARACTERISTIC STRENGTH OF STRAND 180 KN.
 - 4.3 INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH.
5. POSITION OF DEBONDED SHALL BE SPECIFIED IN THIS DRAWING AS FOLLOW :
 - 5.1 POINT OF DEBONDED MEANS STARTING POINT TO END OF GIRDER
 - 5.2 DEBONDED MEANS PERFORMING FOR NO CONTACT BETWEEN STRAND AND CONCRETE.
6. AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 40 MPa (410 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
7. LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER, DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
8. SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M
9. SKEW ANGLE SHALL BE LESS THAN 45 DEGREE.
10. SYMBOLS OF PRESTRESSING STRANDS
 - + BOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
 - ⊕ DEBOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
11. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP2-25F/01 TO NP2-25F/04 AND NP2-25F/06, NP2-25F/07

KINGDOM OF THAILAND

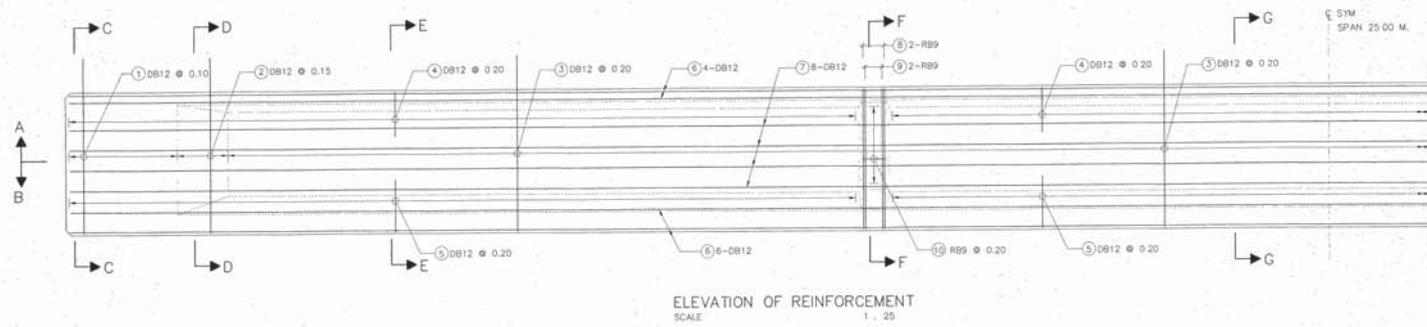
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 25.00 M, (FULL JOINT)
GIRDER PRE-TENSION DETAILS

DESIGNED: OGH & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT. 2015
SUBMITTED: <i>[Signature]</i>	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED: <i>[Signature]</i>	(FOR DIRECTOR GENERAL)	DWG NO. NP2-25F/05 SHEET NO. 80/R1

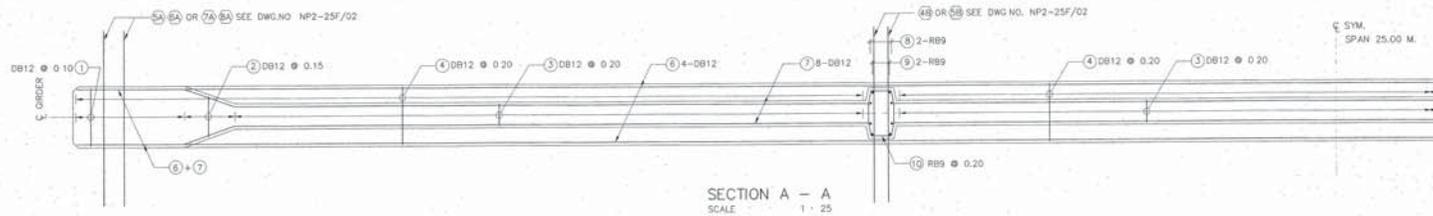
REV1	REVISION 1/2018	<i>[Signature]</i>	SEP 2018
REV	REVISION	SIGNATURE	DATE

0-344-444-20151010-0204-00000001



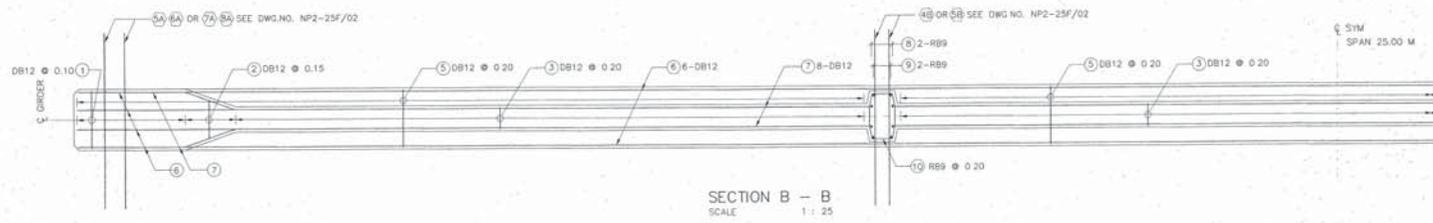
ELEVATION OF REINFORCEMENT
SCALE 1 : 25

TABLE OF GIRDER REINFORCEMENT		
NO.	SIZE	SHAPE
1	DB12	
2	DB12	
3	DB12	
4	DB12	
5	DB12	
6	DB12	
7	DB12	
8	RB9	
9	RB9	
10	RB9	

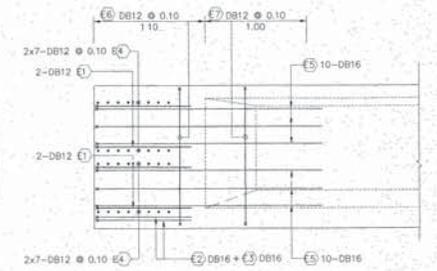


SECTION A - A
SCALE 1 : 25

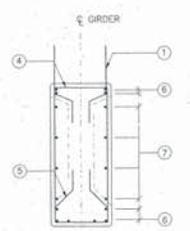
TABLE OF EXTRA REINFORCEMENT		
NO.	BARS SIZE	SHAPE
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E2	DB16	
E3	DB16	
E4	DB12	
E5	RB9	
E6	DB12	
E7	DB12	



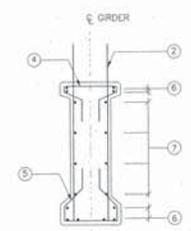
SECTION B - B
SCALE 1 : 25



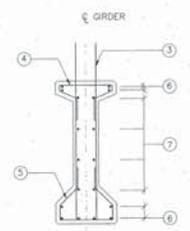
EXTRA REINFORCEMENT AT THE END SIDE VIEW
SCALE 1 : 25



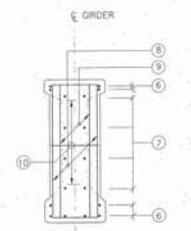
SECTION C - C
SCALE 1 : 25



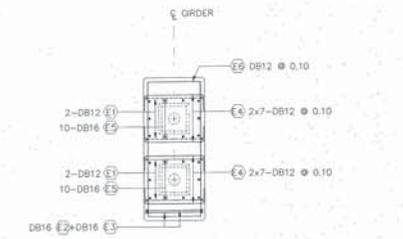
SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25



EXTRA REINFORCEMENT AT THE END FRONT VIEW
SCALE 1 : 25

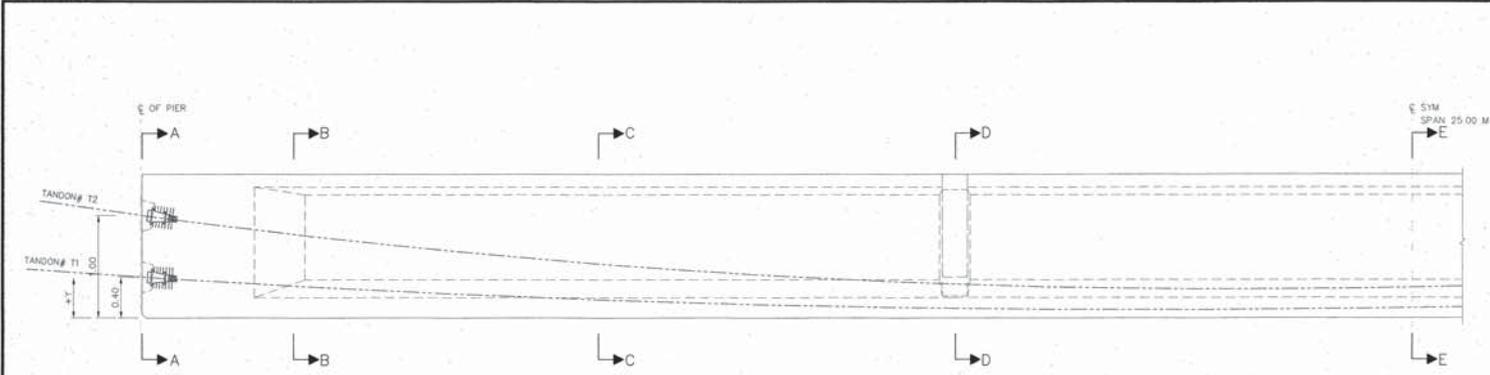
- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. DESIGN LIVE LOAD : HL-93.
 3. MIX DESIGN OF CONCRETE FOR POST-TENSION I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa (459 KG/CM) FOR CUBE STRENGTH AT 28 DAYS.
 4. THE REINFORCE BAR NO. 5A, 6A, 5B FOR EDGE GIRDER AND REINFORCE BAR NO. 7A, 8A, 4B FOR INSIDE GIRDER SEE DRAWING NO. NP2-25F/02
 5. THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO.NP2-25F/01 TO NP2-25F/05 AND NP2-25F/07

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 I-GIRDER 25.00 M. (FULL JOINT)
 GIRDER REINFORCEMENT FOR POST-TENSION

DESIGNED : D.O.H & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
REV.1 : REVISION 1/2016	SIGNATURE DATE	DWG NO. NP2-25F/06
REV. : REVISION	SIGNATURE DATE	SHEET NO. 81/R1

K:\WP\2015\NP2-25F\06-81R1.dwg



VERTICAL TENDON PROFILE DETAILS (MEASURED FROM BOTTOM OF GIRDER : Y)

DISTANCE (M.)	12.485	12.00	11.00	10.00	9.00	8.00	7.00	6.00	5.00	4.00	3.00	2.00	1.00	0.00
TANDON# T2	1.000	0.947	0.843	0.749	0.664	0.587	0.520	0.462	0.412	0.372	0.340	0.318	0.304	0.300
TANDON# T1	0.400	0.377	0.353	0.292	0.256	0.223	0.194	0.169	0.148	0.131	0.117	0.108	0.102	0.100

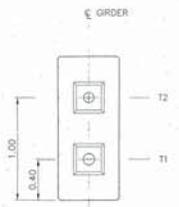
CABLE PROFILE (GIRDER 25.00 M.)
SCALE 1 : 25



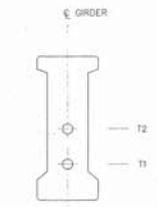
HORIZONTAL TENDON PROFILE DETAILS (MEASURED FROM CENTERLINE OF GIRDER : X)

DISTANCE (M.)	12.485	12.00	11.00	10.00	9.00	8.00	7.00	6.00	5.00	4.00	3.00	2.00	1.00	0.00
TANDON# T2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TANDON# T1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

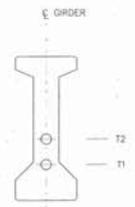
CABLE DIAGRAMATIC ARRANGMENT (GIRDER 25.00 M.)
SCALE 1 : 25



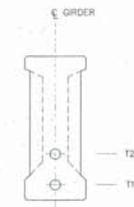
SECTION A - A
SCALE 1 : 25



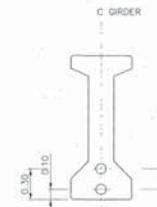
SECTION B - B
SCALE 1 : 25



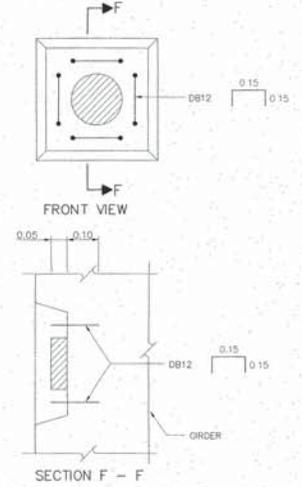
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



EXTRA REINFORCEMENTS FOR RECESS
SCALE 1 : 10

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-9.3.
- MIX DESIGN OF CONCRETE FOR POST-TENSION I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa (459 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
- PRESTRESSING
 - LOW RELAXATION SEVEN WIRE STRANDS # 15.2 MM. IN ACCORDANCE WITH TIS.420 GRADE 1860
 - MIN CHARACTERISTIC STRENGTH OF STRAND 250 KN.
 - INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH. IN WHICH THE SEQUENCE OF JACKING SHALL BE TENDON 1 AND THEN TENDON 2, EACH TENDON IS STRESSED BOTH END.
 - NUMBER OF PRESTRESSING STRANDS
T1 = 13 PRESTRESSING STRANDS
T2 = 15 PRESTRESSING STRANDS
- DUCTS ARE GALVANIZED METAL SHEATHING GROUTED IMMEDIATELY AFTER STRESSING OPERATION.
- JACKING FORCES ARE CALCULATED USING "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS" AND ASSUMED DESIGN PARAMETERS AS FOLLOW :
FRICTION CURVATURE COEFFICIENT 0.20
FRICTION WOBBLE COEFFICIENT 0.0033 1/M
A WEDGE SLIP 6 MM.
- THE CONTRACTOR SHALL CARRY OUT TEST WITH THE TENDONS AND DUCTS PROPOSED FOR USING TO ESTABLISH THE FRICTION COEFFICIENTS AND SHALL ADJUST THE STRESSING FORCES FOR APPROVAL IF THE MEASURED COEFFICIENT IS DIFFERED SIGNIFICANTLY FROM THE ASSUME VALUE.
- AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM OF 38 MPa (367 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
- LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER
- SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO NP2-25F/01 TO NP2-25F/06

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 I-GIRDER 25.00 M. (FULL JOINT)
 GIRDER POST-TENSION DETAILS

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP2-25F/07 SHEET NO. 82/R1

REV	REVISION	DATE	SIGNATURE	DATE
REV 1	REVISION 1/2016	19/01/2016		
REV	REVISION			

JUST-ENG-20151016-25F-001REV-001

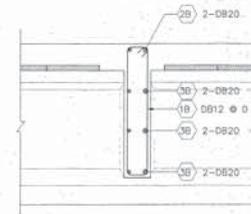
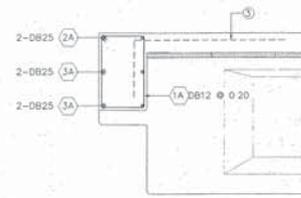
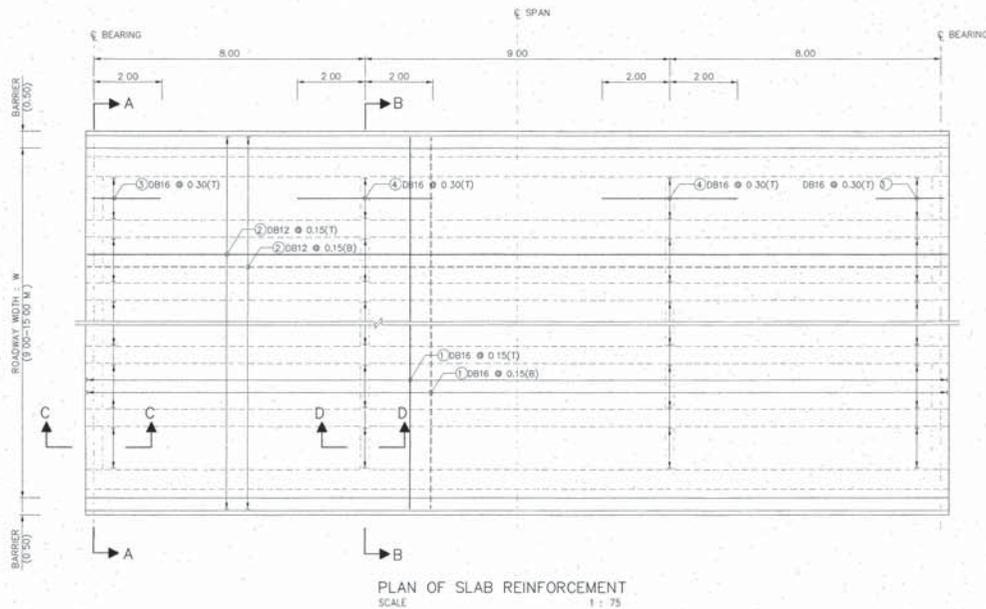


TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

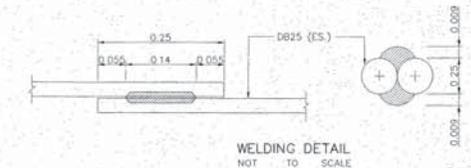
BAR NO.	BAR SIZE	SHAPE
1A	DB12	W=1.00-2C
2A	DB25	S/2+0.40
3A	DB25	S/4+0.10
4A	DB25	S/2
5A	DB25	S/2

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1B	DB12	W=1.00-7C
2B	DB20	S/2+0.40
3B	DB20	S/4+0.10
4B	DB20	S/2
5B	DB20	S/2

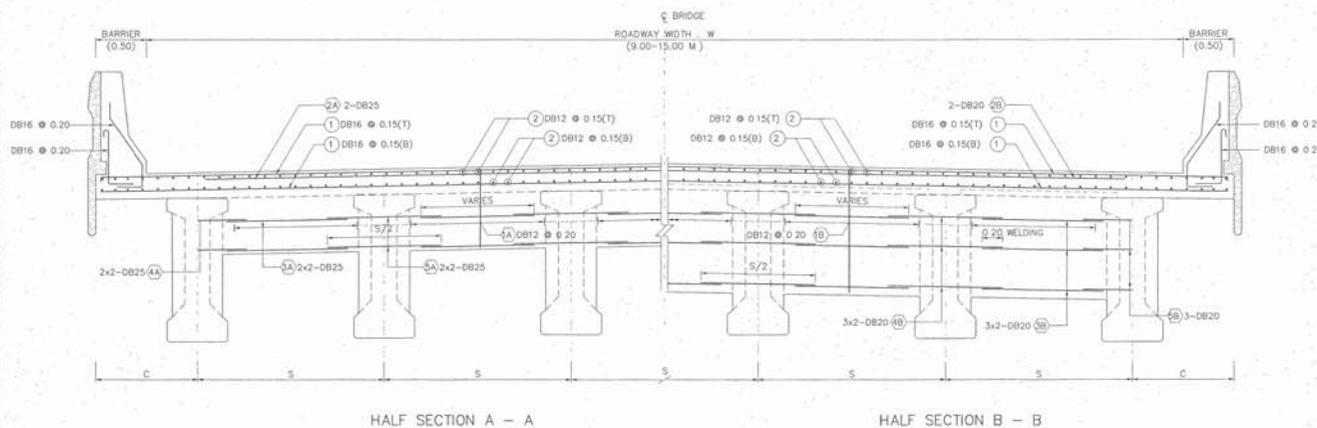
TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W=0.70
2	DB12	19.91
3	DB16	2.00
4	DB16	0.50



NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93
- CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TS-15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- REINFORCING STEEL SHALL CONFORM TO TS-20 GRADE SR24 FOR ROUND BARS AND TS-24 GRADE SD40 FOR DEFORMED BARS
- THE REINFORCE BAR NO. 4A, 5A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP2-25H/01 AND NP2-25H/03 TO NP2-25H/07



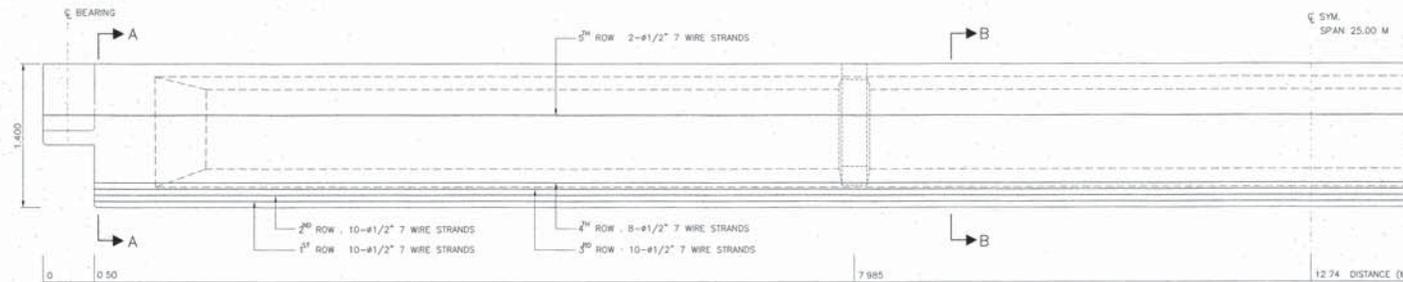
CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 25

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
I-GIRDER 25.00 M. (HAFT JOINT)
BRIDGE DECK REINFORCEMENT

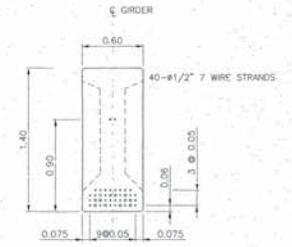
DESIGNED : G.D.R. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
REV1 : REVISION 1/2016	DATE : 13/08/2016	DWG NO. NP2-25H/02
REV : REVISION	SIGNATURE : DATE :	SHEET NO. 84/71

APPROVED : (FOR DIRECTOR GENERAL)

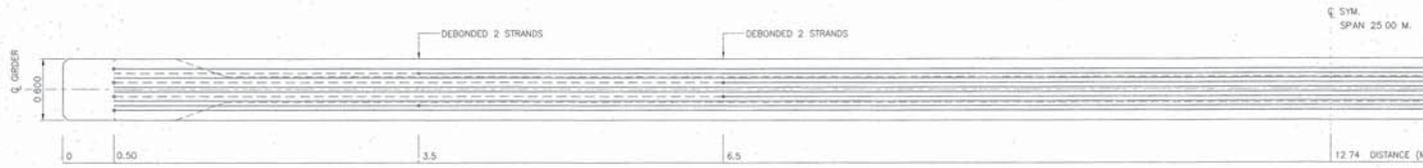
G:\ASST. ENG. 2015\10-25H\01-25H-02(84-71).DWG



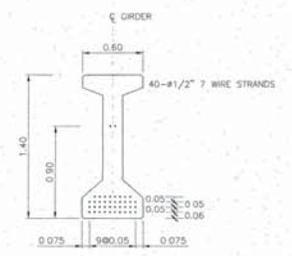
PRESTRESSING DETAILS
SCALE 1 : 25



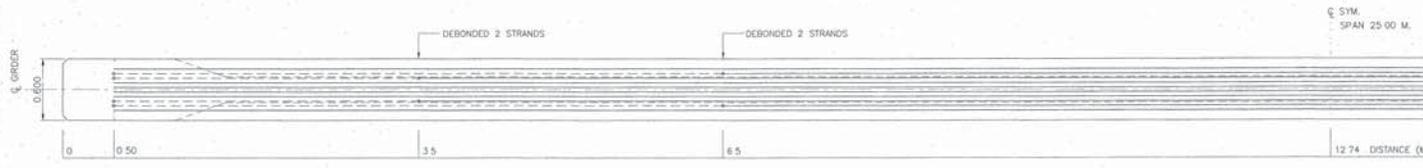
SECTION A - A
SCALE 1 : 25



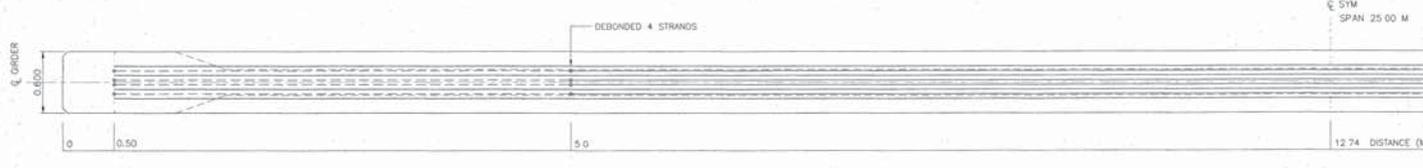
POSITION OF DEBONDED 1ST ROW
SCALE 1 : 25



SECTION B - B
SCALE 1 : 25



POSITION OF DEBONDED 2ND ROW
SCALE 1 : 25



POSITION OF DEBONDED 3RD ROW
SCALE 1 : 25

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD : HL-93.
3. MIX. DESIGN OF CONCRETE FOR PRESTRESSED I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 50 MPa (510 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
4. PRESTRESSING :
 - 4.1 LOW RELAXATION SEVEN WIRE STRANDS # 12.7 MM. IN ACCORDANCE WITH TIS 420
 - 4.2 MIN CHARACTERISTIC STRENGTH OF STRAND 180 KN.
 - 4.3 INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH.
5. POSITION OF DEBONDED SHALL BE SPECIFIED IN THIS DRAWING AS FOLLOW.
 - 5.1 POINT OF DEBONDED MEANS STARTING POINT TO END OF GIRDER
 - 5.2 DEBONDED MEANS PERFORMING FOR NO CONTACT BETWEEN STRAND AND CONCRETE.
6. AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM OF 40 MPa (410 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
7. LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
8. SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
9. SYMBOLS OF PRESTRESSING STRANDS
 - + ——— BOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
 - ⊕ ——— DEBOND PRESTRESSING STRANDS (#12.7 MM-7 WIRE STRANDS)
10. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP2-25H/01 TO NP2-25H/04 AND NP2-25H/06, NP2-25H/07.

KINGDOM OF THAILAND

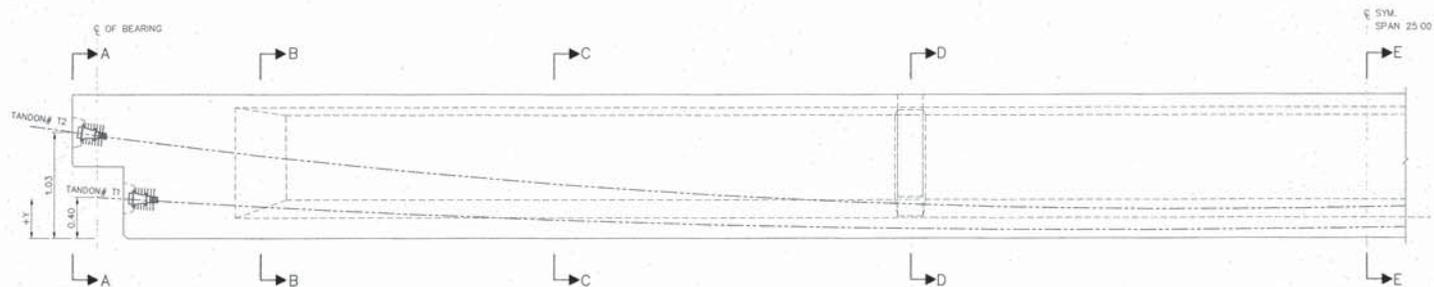
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
I-GIRDER 25.00 M. (HAFT JOINT)
GIRDER PRE-TENSION DETAILS

DESIGNED : BDM & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015.
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. NP2-25H/06 SHEET NO. 87/R1

REV 1	REVISION 1/2016	DATE 1/28/2016
REV	REVISION	SIGNATURE DATE

D:\AEC\Bim\2015\NP2-25H\06-25H/06.rvt



VERTICAL TENDON PROFILE DETAILS (MEASURED FROM BOTTOM OF GIRDER : Y)

DISTANCE (M)	12.74	12.24	12.00	11.00	10.00	9.00	8.00	7.00	6.00	5.00	4.00	3.00	2.00	1.00	0.00
TANDON# T2	1.029	0.973	0.947	0.843	0.749	0.664	0.587	0.520	0.462	0.412	0.372	0.340	0.318	0.304	0.300
TANDON# T1	-	0.388	0.377	0.333	0.292	0.256	0.223	0.194	0.169	0.148	0.131	0.117	0.108	0.102	0.100

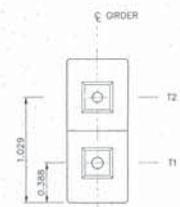
CABLE PROFILE (GIRDER 25.00 M.)
SCALE 1 : 25



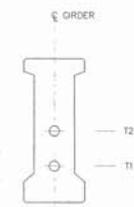
HORIZONTAL TENDON PROFILE DETAILS (MEASURED FROM CENTERLINE OF GIRDER : X)

DISTANCE (M)	12.74	12.24	12.00	11.00	10.00	9.00	8.00	7.00	6.00	5.00	4.00	3.00	2.00	1.00	0.00
TANDON# T2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TANDON# T1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

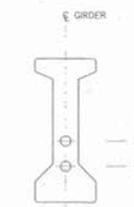
CABLE DIAGRAMATIC ARRANGMENT (GIRDER 25.00 M.)
SCALE 1 : 25



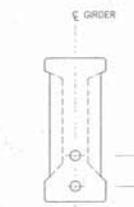
SECTION A - A
SCALE 1 : 25



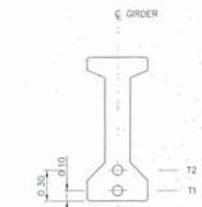
SECTION B - B
SCALE 1 : 25



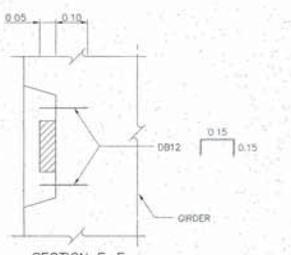
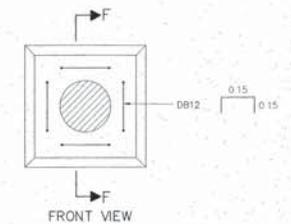
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



EXTRA REINFORCEMENTS FOR RECESS
SCALE 1 : 10

NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD HL-93.
- MIX. DESIGN OF CONCRETE FOR POST-TENSION I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa. (459 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
- PRESSURING
 - LOW RELAXATION SEVEN WIRE STRANDS ϕ 15.2 MM. IN ACCORDANCE WITH TIS-420 GRADE 1860
 - MIN CHARACTERISTIC STRENGTH OF STRAND 250 KN.
 - INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH IN WHICH THE SEQUENCE OF JACKING SHALL BE TENDON 1 AND THEN TENDON 2 EACH TENDON IS STRESSED BOTH END.
 - NUMBER OF PRESTRESSING STRANDS
T1 = 13 PRESTRESSING STRANDS
T2 = 15 PRESTRESSING STRANDS
- DUCTS ARE GALVANIZED METAL SHEATHING GROUTED IMMEDIATELY AFTER STRESSING OPERATION.
- JACKING FORCES ARE CALCULATED USING "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS" AND ASSUMED DESIGN PARAMETERS AS FOLLOW :
FRICTION CURVATURE COEFFICIENT 0.20
FRICTION WOBBLE COEFFICIENT 0.0033 1/M
WEDGE SLIP 6 MM.
- THE CONTRACTOR SHALL CARRY OUT TEST WITH THE TENDONS AND DUCTS PROPOSED FOR USING TO ESTABLISH THE FRICTION COEFFICIENTS AND SHALL ADJUST THE STRESSING FORCES FOR APPROVAL IF THE MEASURED COEFFICIENT IS DIFFERED SIGNIFICANTLY FROM THE ASSUME VALUE
- AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 36 MPa. (367 KG/CM²), THE JACKING FORCES SHALL BE APPLIED.
- LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
- SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO NP2-25H/01 TO NP2-25H/06

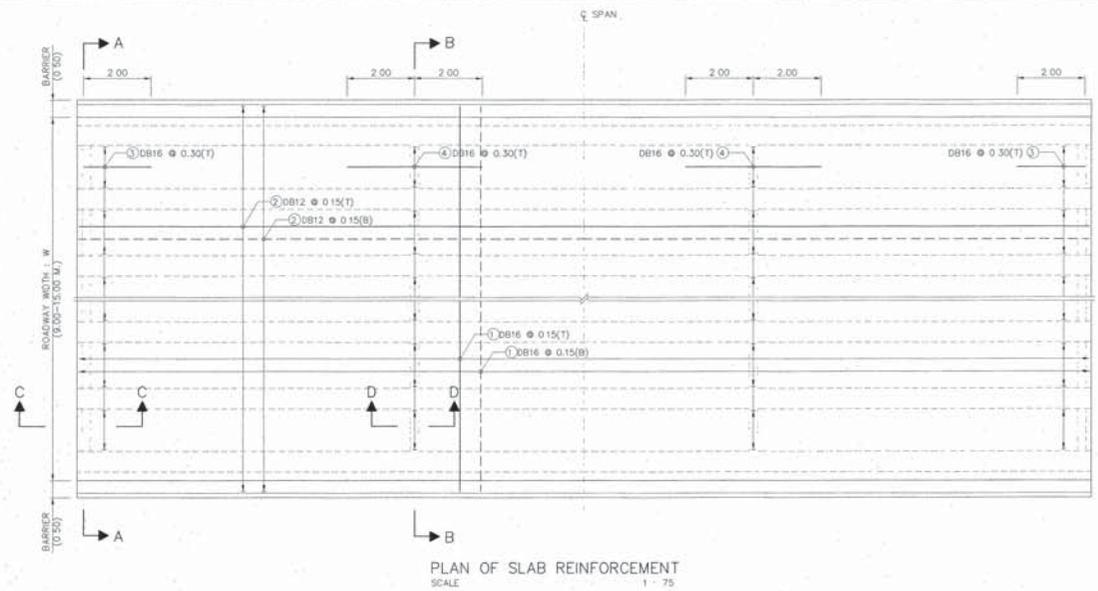
KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 I-GIRDER 25.00 M. (HAFT JOINT)
 GIRDER POST-TENSION DETAILS

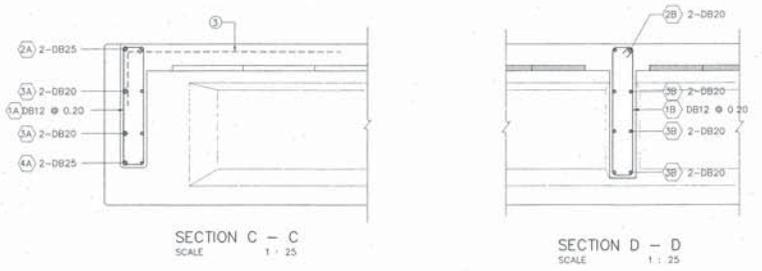
DESIGNED : BDM & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
REV1 REVISION 1/2018	DATE 19/10/18	DWG NO. NP2-25H/01
REV REVISION	SIGNATURE DATE	SHEET NO. 89/71

APPROVED : (FOR DIRECTOR GENERAL)

D:\1814_044_2014\1814\1814-25H\1814-25H-01.dwg

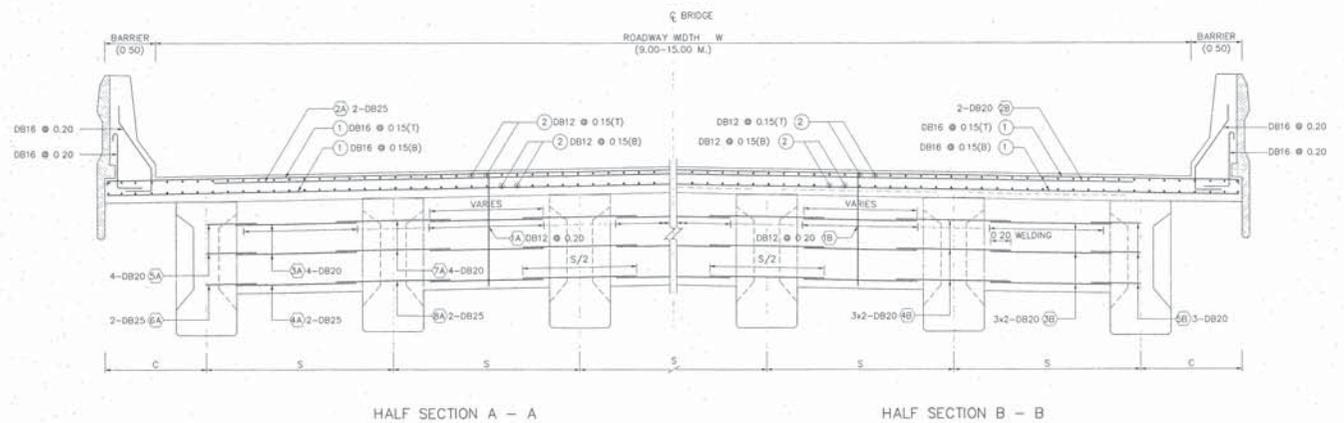


PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 25

SECTION D - D
SCALE 1 : 25



HALF SECTION A - A

HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 25

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

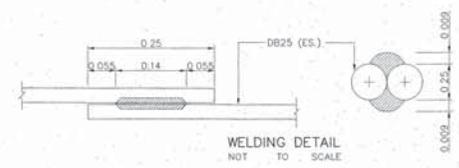
BAR NO.	BAR SIZE	SHAPE
1A	DB12	W+1.00-2C
2A	DB25	S/2+0.40
3A	DB20	S/2+0.40
4A	DB25	S/2+0.40
5A	DB20	S/4+0.10
6A	DB25	S/4+0.10
7A	DB20	S/2
8A	DB25	S/2

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1B	DB12	W+1.00-2C
2B	DB20	S/2+0.40
3B	DB20	S/2+0.40
4B	DB20	S/4+0.10
5B	DB20	S/2

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W+0.70
2	DB12	19.91
3	DB16	2.00
4	DB16	0.50



NOTE :

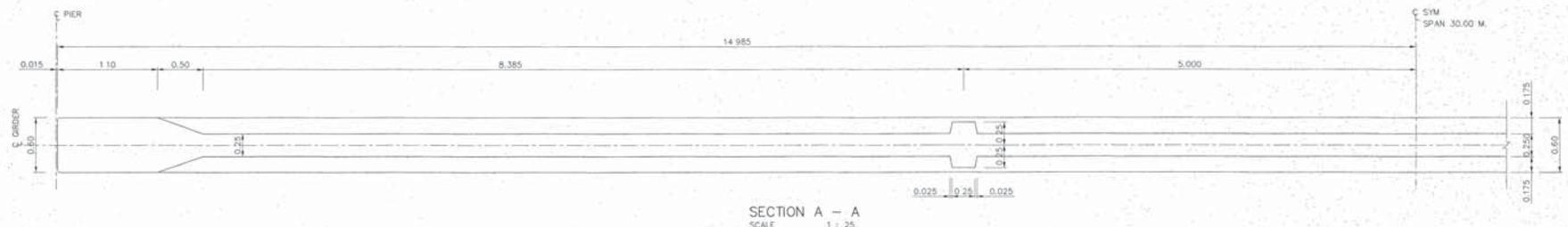
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD : HL-93.
- CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) FOR 15x15x15 CM. CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TS 15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
- REINFORCING STEEL SHALL CONFORM TO TS.20 GRADE SR24 FOR ROUND BARS AND TS.24 GRADE SD40 FOR DEFORMED BARS.
- THE REINFORCE BAR NO. 5A, 6A, 7A, 8A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP2-30F/01 AND NP2-30F/03 TO NP2-30F/05.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

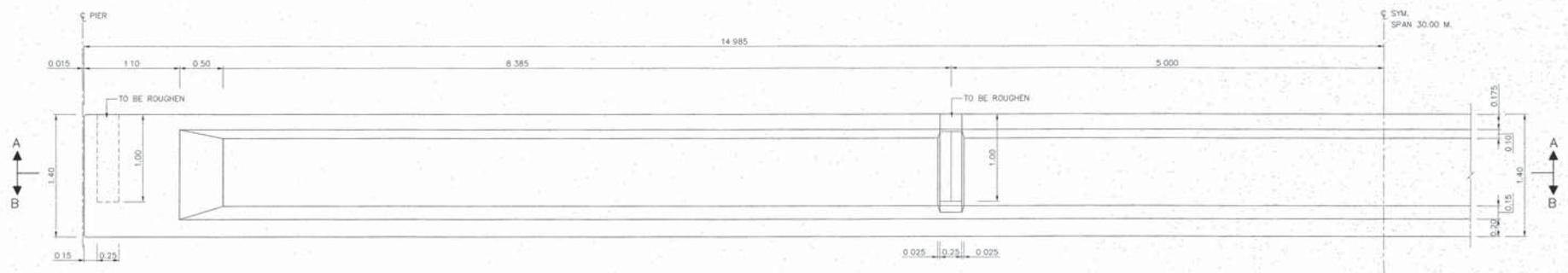
STANDARD DRAWING
[I-GIRDER 30.00 M. (FULL JOINT)]
BRIDGE DECK REINFORCEMENT

DESIGNED : BDM & COLLABORATORS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
REV 1 REVISION 1/2018	(SIGNATURE) DATE	DWG NO. NP2-30F/02
REV REVISION	(SIGNATURE) DATE	SHEET NO. 91/R1

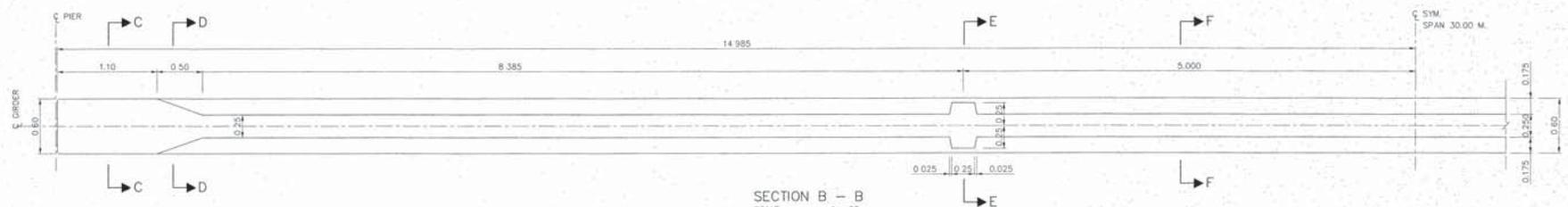
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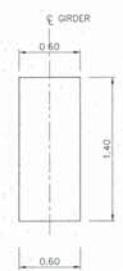
SECTION A - A
SCALE 1 : 25



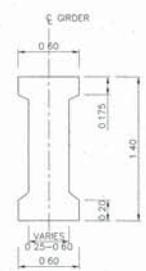
ELEVATION OF GIRDER SPAN LENGTH 30.00 M.
SCALE 1 : 25



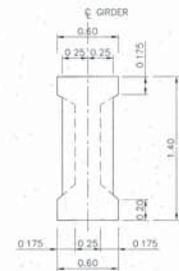
SECTION B - B
SCALE 1 : 25



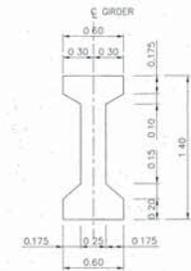
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25

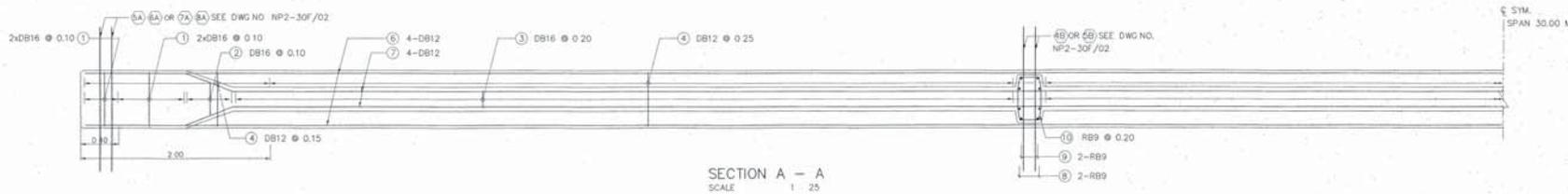


SECTION F - F
SCALE 1 : 25

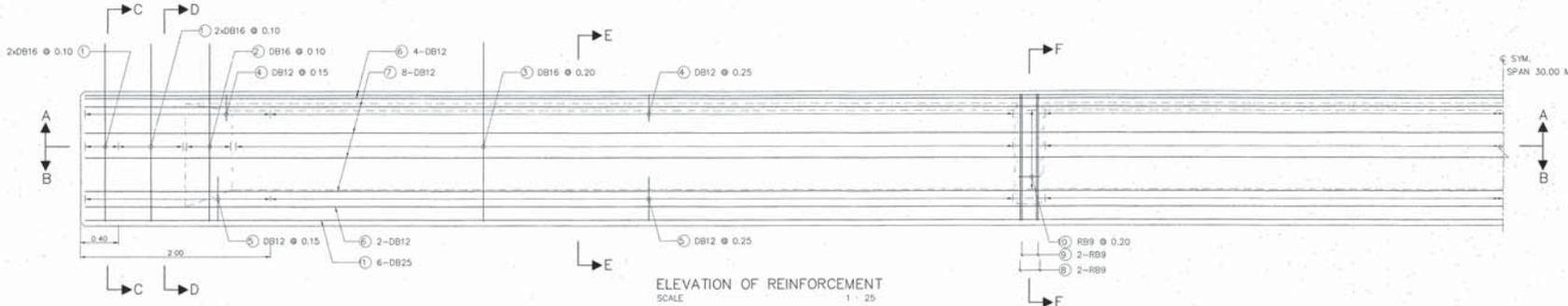
- NOTE :
- 1 ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - 2 DESIGN LIVE LOAD : HL-93.
 - 3 CONCRETE FOR POST-TENSION I-GIRDER SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa (459 KG/CM²) FOR 15x15x15 CM CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 - 4 THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. NP2-30F/01, NP2-30F/02 AND NP2-30F/04 TO NP2-30F/05.

KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING I-GIRDER 30.00 M. (FULL JOINT) GIRDER DIMENSION		
DESIGNED : S.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	APPROVED : <i>[Signature]</i>	SCALE : AS SHOWN
REV1 REVISION 1/2016	DATE 15/10/16	DWG NO. NP2-30F/03
REF REVISION	SIGNATURE DATE	SHEET NO. 92/R1

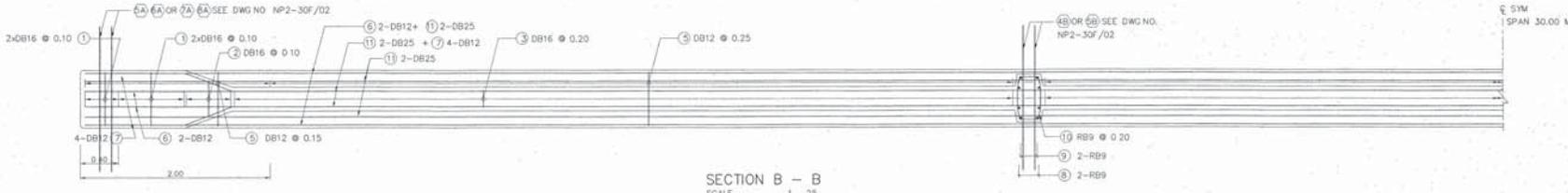
S:\A\44-2015\NP2-30F-03\DWG\001



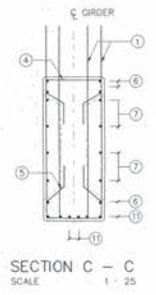
SECTION A - A
SCALE 1 : 25



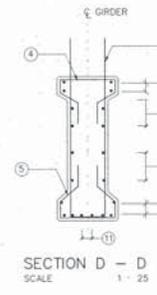
ELEVATION OF REINFORCEMENT
SCALE 1 : 25



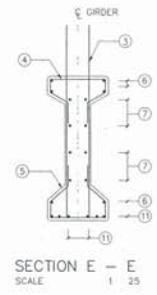
SECTION B - B
SCALE 1 : 25



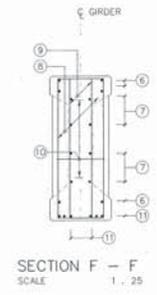
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

TABLE OF GIRDER REINFORCEMENT

BAR NO.	BAR SIZE	SHAPE
1	DB16	
2	DB16	
3	DB16	
4	DB12	
5	DB12	
6	DB12	
7	DB12	
8	RB9	
9	RB9	
10	RB9	
11	DB25	

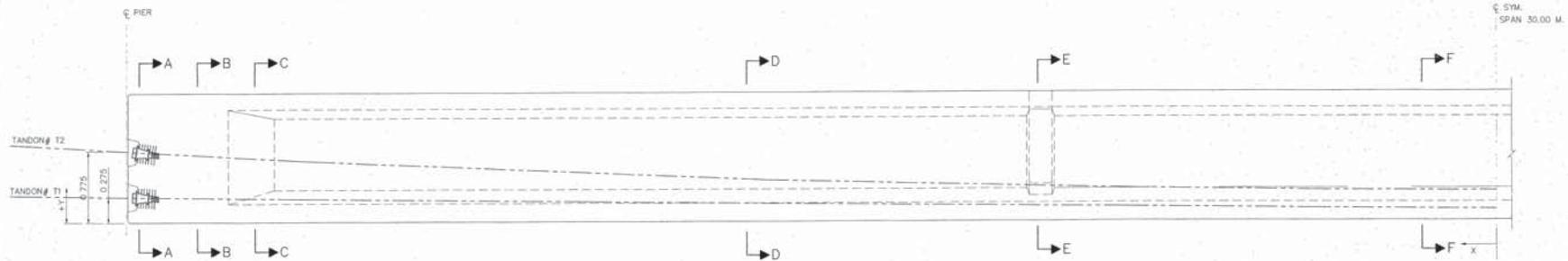
NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. DESIGN LIVE LOAD HL-93.
3. MIX DESIGN OF CONCRETE FOR POST-TENSION 1-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa. (459 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
4. THE REINFORCE BAR NO. 5A, 6A, 5B FOR EDGE GIRDER AND REINFORCE BAR NO. 7A, 8A, 4B REINFOR INSIDE GIRDER SEE DRAWING NO. NP2-30F/02
5. THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO NP2-30F/01 TO NP2-30F/03 AND NP2-30F/05

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS
 STANDARD DRAWING
 1-GIRDER 30.00 M. (FULL JOINT)
 GIRDER REINFORCEMENT

DESIGNED: S.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
REV 1 REVISION 1/2018	SIGNATURE DATE	DWG NO. NP2-30F/04
REF. REVISION	SIGNATURE DATE	APPROVED: (FOR DIRECTOR GENERAL)

2015-10-14 10:44:25 (NP2-30F-04) (REV.001)



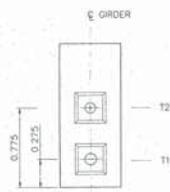
PRESTRESSING DETAIL (VERTICAL PROFILE)
SCALE 1 : 25

VERTICAL TENDON PROFILE DETAILS (MEASURED FROM BOTTOM OF GIRDER : Y)

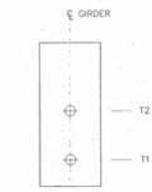
DISTANCE (X), M.	14.985	14.00	13.50	13.00	12.00	11.00	10.00	9.00	8.00	7.00	6.00	5.00	4.00	3.00	2.00	1.00	0.00
TENDON #T2 (M.)	0.775	0.717	0.689	0.662	0.632	0.565	0.523	0.484	0.450	0.419	0.393	0.371	0.352	0.338	0.328	0.322	0.320
TENDON #T1 (M.)	0.275	0.255	0.246	0.237	0.219	0.204	0.189	0.176	0.164	0.154	0.145	0.137	0.131	0.126	0.123	0.121	0.120

TABLE OF EXTRA REINFORCEMENT AT THE END

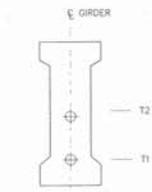
BAR NO.	SIZE	SHAPE
E1	DB12	
E2	DB16	
E3	DB16	
E4	DB12	
E5	DB16	



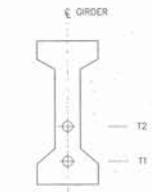
SECTION A - A
SCALE 1 : 25



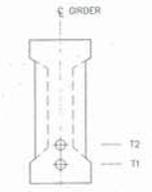
SECTION B - B
SCALE 1 : 25



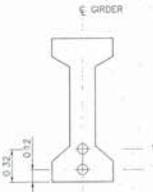
SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



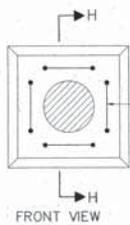
SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

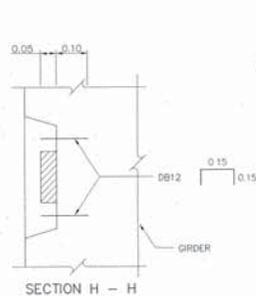
NOTE :

- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- DESIGN LIVE LOAD - HL-93
- MIX DESIGN OF CONCRETE FOR POST-TENSION I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa. (459 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
- PRESTRESSING
 - LOW RELAXATION SEVEN WIRE STRANDS # 15.2 MM. IN ACCORDANCE WITH AISI 420 GRADE 1860
 - MIN CHARACTERISTIC STRENGTH OF STRAND 250 KN.
 - INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH IN WHICH THE SEQUENCE OF JACKING SHALL BE TENDON 1 AND THEN TENDON 2 EACH TENDON IS STRESSED BOTH END
 - NUMBER OF PRESTRESSING STRANDS
 - T1 = 17 PRESTRESSING STRANDS
 - T2 = 17 PRESTRESSING STRANDS
- DUCTS ARE GALVANIZED METAL SHEATHING GROUTED IMMEDIATELY AFTER STRESSING OPERATION.
- JACKING FORCES ARE CALCULATED USING "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS" AND ASSUMED DESIGN PARAMETERS AS FOLLOW :
 - FRICITION CURVATURE COEFFICIENT 0.20
 - FRICITION WIGGLE COEFFICIENT 0.0333 1/M
 - A WEDGE SLIP 6 MM.
- THE CONTRACTOR SHALL CARRY OUT TEST WITH THE TENDONS AND DUCTS PROPOSED FOR USING TO ESTABLISH THE FRICITION COEFFICIENTS AND SHALL ADJUST THE STRESSING FORCES FOR APPROVAL IF THE MEASURED COEFFICIENT IS DIFFERED SIGNIFICANTLY FROM THE ASSUME VALUE.
- AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 36 MPa. (367 KG/CM²), THE JACKING FORCES SHALL BE APPLIED
- LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER DO NOT LIFT UP AT THE MIDDLE OF GIRDER
- SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO.NP2-30H/01 TO NP2-30H/04

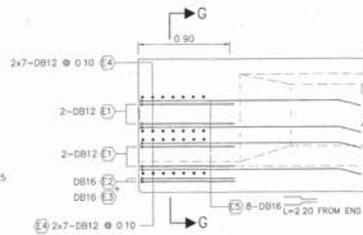


FRONT VIEW

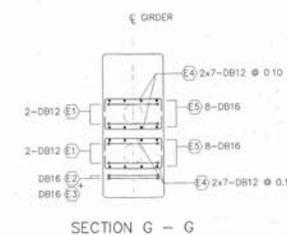
EXTRA REINFORCEMENTS FOR RECESS
SCALE 1 : 10



SECTION H - H



EXTRA REINFORCEMENT AT THE END (SIDE VIEW)
SCALE 1 : 25



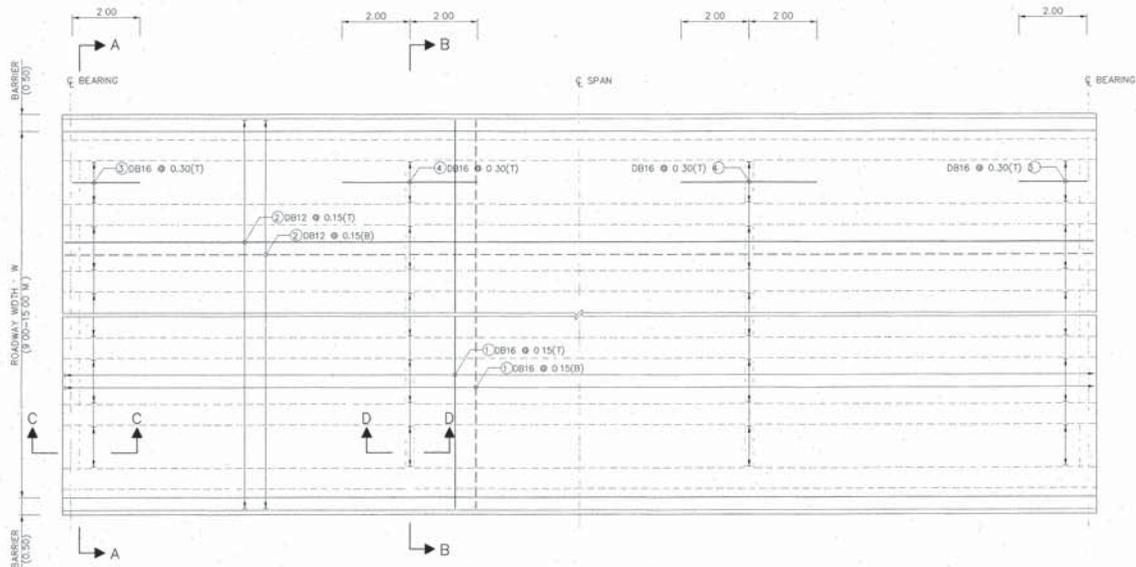
EXTRA REINFORCEMENT AT THE END FRONT VIEW
SCALE 1 : 25

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

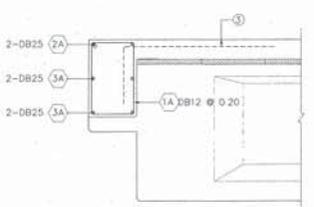
STANDARD DRAWING
 I-GIRDER 30.00 M. (FULL JOINT)
 GIRDER PRESTRESSING

DESIGNED: O.D.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED: [Signature]	SCALE: AS SHOWN	DWG NO. NP2-30F/05
REV1 REVISION 1/2018	APPROVED: [Signature]	SHEET NO. 94/91
REF REVISION	(FOR DIRECTOR GENERAL)	

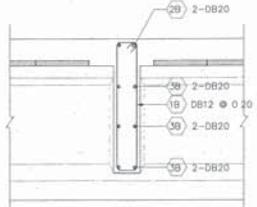
D:\1416-Eng-2015\NP2-30F-05(DWG)01



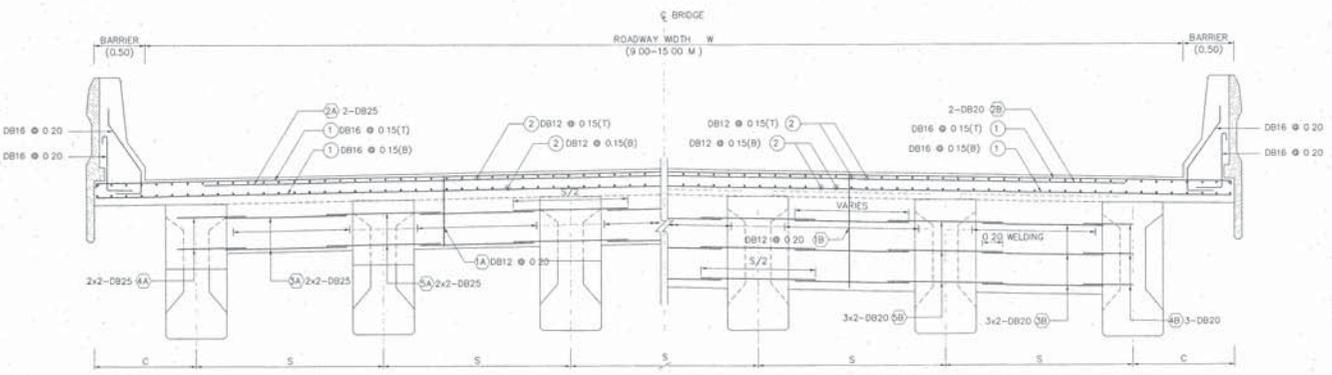
PLAN OF SLAB REINFORCEMENT
SCALE 1 : 75



SECTION C - C
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25



HALF SECTION A - A

HALF SECTION B - B

CROSS SECTION OF REINFORCEMENT SLAB AND DIAPHRAGM
SCALE 1 : 25

TABLE OF REINFORCEMENT (EXTERIOR DIAPHRAGM)

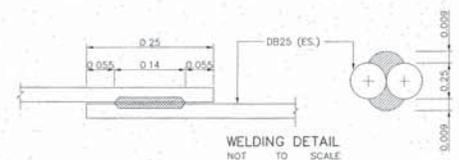
BAR NO.	BAR SIZE	SHAPE
1A	DB12	W+1.00-2C
2A	DB25	S/2+0.40
3A	DB25	S/4+0.10
4A	DB25	S/2
5A	DB25	S/2

TABLE OF REINFORCEMENT (INTERIOR DIAPHRAGM)

BAR NO.	BAR SIZE	SHAPE
1B	DB12	W+1.00-2C
2B	DB20	S/2+0.40
3B	DB20	S/4+0.10
4B	DB20	S/2
5B	DB20	S/2

TABLE OF REINFORCEMENT (SLAB)

BAR NO.	BAR SIZE	SHAPE
1	DB16	W+0.70
2	DB12	19.91
3	DB16	2.00
4	DB16	0.50



WELDING DETAIL
NOT TO SCALE

- NOTE :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - DESIGN LIVE LOAD - HL-93.
 - CONCRETE FOR DECK SLAB SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 15x15x15 CM CUBE AT 28 DAYS, CEMENT SHALL CONFORM TO TIS.15 TYPE I PORTLAND CEMENT OR APPROVAL TYPE.
 - REINFORCING STEEL SHALL CONFORM TO TIS.20 GRADE SR24 FOR ROUND BARS AND TIS 24 GRADE SD40 FOR DEFORMED BARS.
 - THE REINFORCE BAR NO. 4A, 5A, 4B AND 5B SHALL BE EMBEDDED IN GIRDER AT STAGE OF GIRDER CASTING.
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG NO. NP2-30H/01 AND NP2-30H/03 TO NP2-30H/05

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS
 STANDARD DRAWING
 I-GIRDER 30.00 M. (HAFT JOINT)
 BRIDGE DECK REINFORCEMENT

DESIGNED : D.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT. 2015.
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
REV 1 REVISION 1/2018	APPROVED :	DWG NO. NP2-30H/02
REV REVISION	(FOR DIRECTOR GENERAL)	SHEET NO. 96/91

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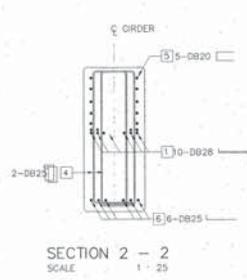
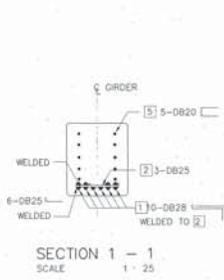
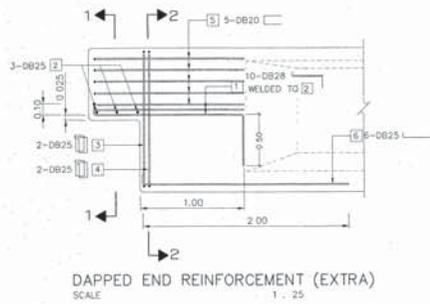
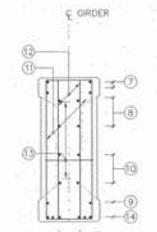
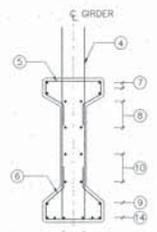
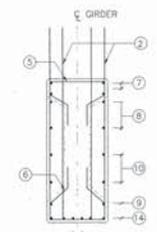
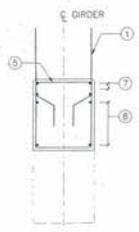
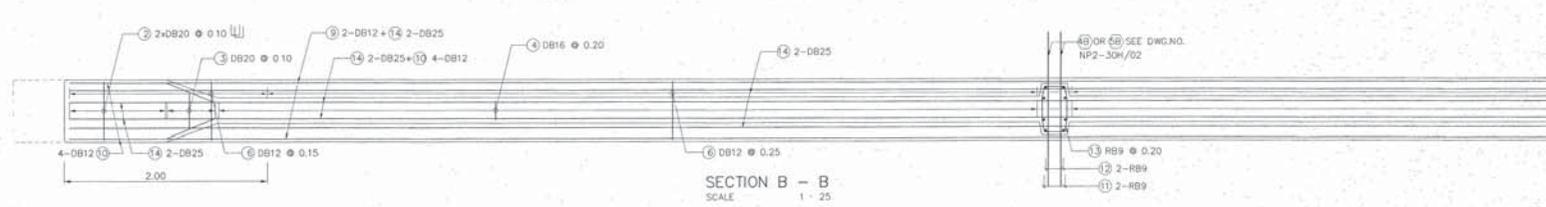
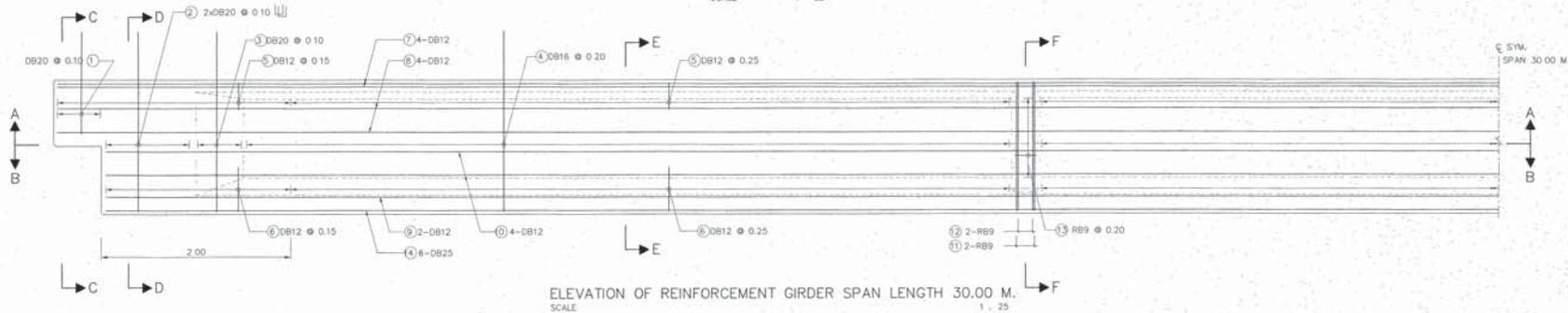
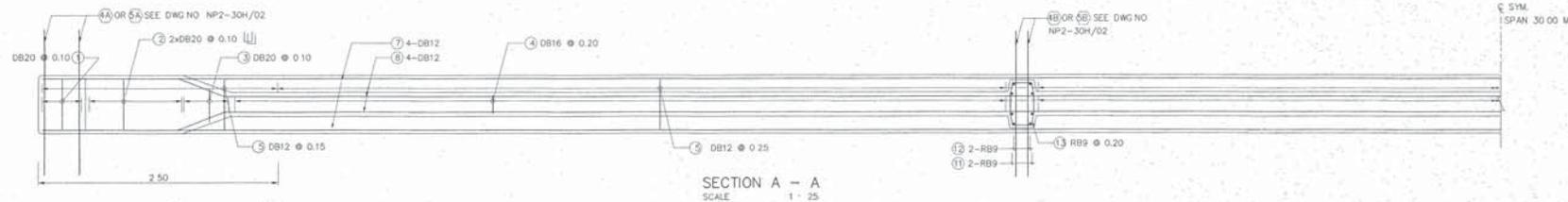


TABLE OF GIRDER REINFORCEMENT

BAR NO.	SIZE	SHAPE
1	DB20	115, 0.54, 1.87, 1.87, 0.19
2	DB20	0.54, 1.87, 1.87, 0.19
3	DB20	0.54, 1.87, 1.87, 0.19
4	DB16	0.54, 0.20, 0.14, 0.54
5	DB12	30.40
6	DB12	1.48, 26.44, 1.48, 0.53, 0.52
7	DB12	1.48, 26.44, 1.48, 0.53, 0.52
8	DB12	29.44
9	DB12	0.98, 26.44, 0.98, 0.53, 0.52
10	DB12	0.98, 26.44, 0.98, 0.53, 0.52
11	RB9	0.34, 0.19, 0.38
12	RB9	0.34, 0.19, 0.38
13	RB9	0.34, 0.19, 0.38
14	DB25	29.44

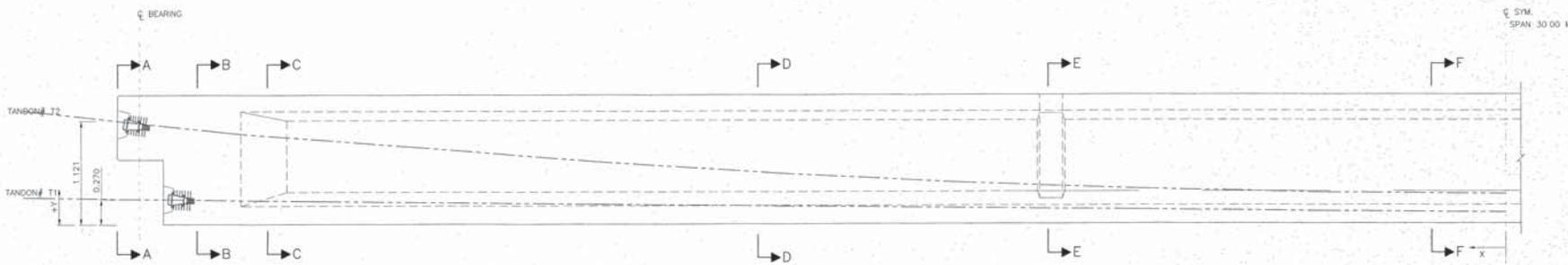
- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED
 2. DESIGN LIVE LOAD : HL-93.
 3. MIX. DESIGN OF CONCRETE FOR POST-TENSION I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa (459 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS
 4. THE REINFORCE BAR NO. 5A, 6A, 8B FOR EDGE GIRDER AND REINFORCE BAR NO. 7A, 8A, 4B REINFOR INSIDE GIRDER SEE DRAWING NO. NP2-30H/02
 5. THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NO.NP2-30H/01 TO NP2-30H/03 AND NP2-30H/05.

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 I-GIRDER 30.00 M. (HAFT JOINT)
 GIRDER REINFORCEMENT

DESIGNED : DGH & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT. 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
REV1 : REVISION 1/2016	DATE :	DWG NO. NP2-30H/04
REF : REVISION	SIGNATURE : DATE :	SHEET NO. 98/R1

FILE NAME: 2015\NP2-30H\NP2-30H-REINFORC



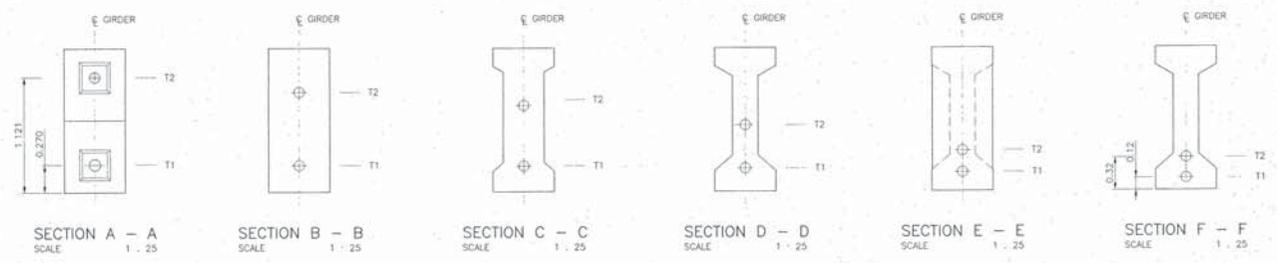
PRESTRESSING DETAIL (VERTICAL PROFILE)
SCALE 1 : 25

VERTICAL TENDON PROFILE DETAILS (MEASURED FROM BOTTOM OF GIRDER : Y)

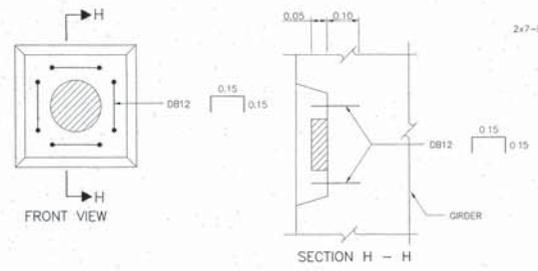
DISTANCE (X), M	15.24	14.74	14.00	13.50	13.00	12.00	11.00	10.00	9.00	8.00	7.00	6.00	5.00	4.00	3.00	2.00	1.00	0.00
TENDON #T2 (M.)	1.121	1.069	0.996	0.949	0.903	0.817	0.737	0.665	0.599	0.541	0.489	0.444	0.406	0.375	0.351	0.334	0.323	0.320
TENDON #T1 (M.)	-	0.270	0.255	0.246	0.237	0.219	0.204	0.189	0.176	0.164	0.154	0.145	0.137	0.131	0.126	0.123	0.121	0.120

TABLE OF EXTRA REINFORCEMENT AT THE END

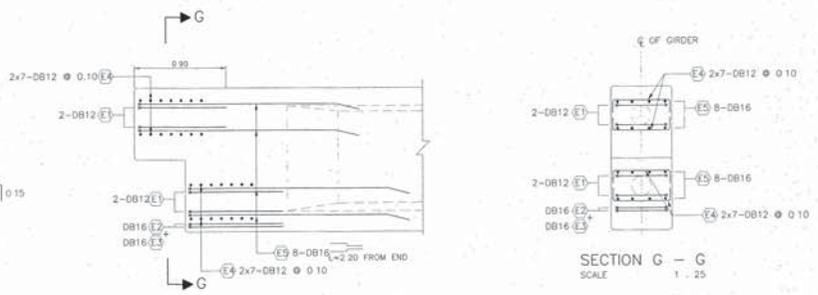
BAR NO.	SIZE	SHAPE
E1	DB12	
E2	DB16	
E3	DB16	
E4	DB12	
E5	DB16	



SECTION A - A SCALE 1 : 25
SECTION B - B SCALE 1 : 25
SECTION C - C SCALE 1 : 25
SECTION D - D SCALE 1 : 25
SECTION E - E SCALE 1 : 25
SECTION F - F SCALE 1 : 25



EXTRA REINFORCEMENTS FOR RECESS
SCALE 1 : 10



EXTRA REINFORCEMENT AT THE END (SIDE VIEW) SCALE 1 : 25
EXTRA REINFORCEMENT AT THE END (FRONT VIEW) SCALE 1 : 25

NOTE :

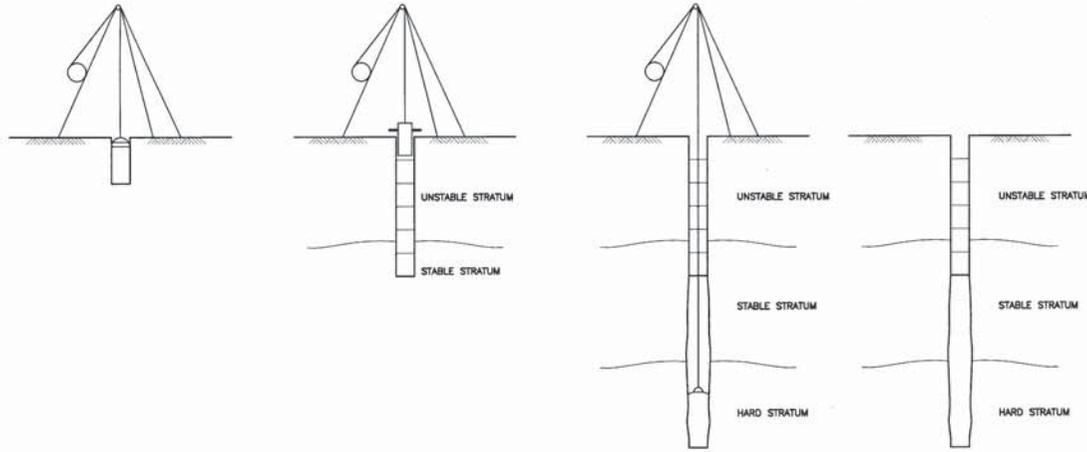
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED
- DESIGN LIVE LOAD HL-93.
- MIX DESIGN OF CONCRETE FOR POST-TENSION I-GIRDER BEAM HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 45 MPa (459 KG/CM²) FOR CUBE STRENGTH AT 28 DAYS.
- PRESTRESSING
 - LOW RELAXATION SEVEN WIRE STRANDS # 15.2 MM. IN ACCORDANCE WITH AISI 420 GRADE 1860
 - MIN CHARACTERISTIC STRENGTH OF STRAND 250 KN.
 - INITIAL PRESTRESS SHALL BE 75% OF CHARACTERISTIC STRENGTH IN WHICH THE SEQUENCE OF JACKING SHALL BE TENDON 1 AND THEN TENDON 2. EACH TENDON IS STRESSED BOTH END
 - NUMBER OF PRESTRESSING STRANDS
T1 = 17 PRESTRESSING STRANDS
T2 = 17 PRESTRESSING STRANDS
- DUCTS ARE GALVANIZED METAL SHEATHING GROUTED IMMEDIATELY AFTER STRESSING OPERATION.
- JACKING FORCES ARE CALCULATED USING "ASHITO LIFTED BRIDGE DESIGN SPECIFICATIONS" AND ASSUMED DESIGN PARAMETERS AS FOLLOW :
 FRICTION CURVATURE COEFFICIENT 0.20
 FRICTION WOBBLE COEFFICIENT 0.0033 1/M
 WEDGE SLIP 6 MM
- THE CONTRACTOR SHALL CARRY OUT TEST WITH THE TENDONS AND DUCTS PROPOSED FOR USING TO ESTABLISH THE FRICTION COEFFICIENTS AND SHALL ADJUST THE STRESSING FORCES FOR APPROVAL IF THE MEASURED COEFFICIENT IS DIFFERED SIGNIFICANTLY FROM THE ASSUME VALUE
- AFTER THE COMPRESSIVE STRENGTH OF CONCRETE OF THE BRIDGE GIRDER GAINS THE MINIMUM COMPRESSIVE STRENGTH TESTED BY USING THE CONCRETE CUBE 15x15x15 CM. OF 38 MPa (367 KG/CM²) THE JACKING FORCES SHALL BE APPLIED.
- LIFTING METHOD SHALL BE LIFTING UP AT BOTH END OF GIRDER. DO NOT LIFT UP AT THE MIDDLE OF GIRDER.
- SPACING OF GIRDERS SHALL BE LESS THAN 2.00 M.
- THIS DRAWING IS USED IN CONJUNCTION WITH DWG.NP2-30H/01 TO NP2-30H/04

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS
 STANDARD DRAWING
 I-GIRDER 30.00 M. (HAFT JOINT)
 GIRDER PRESTRESSING

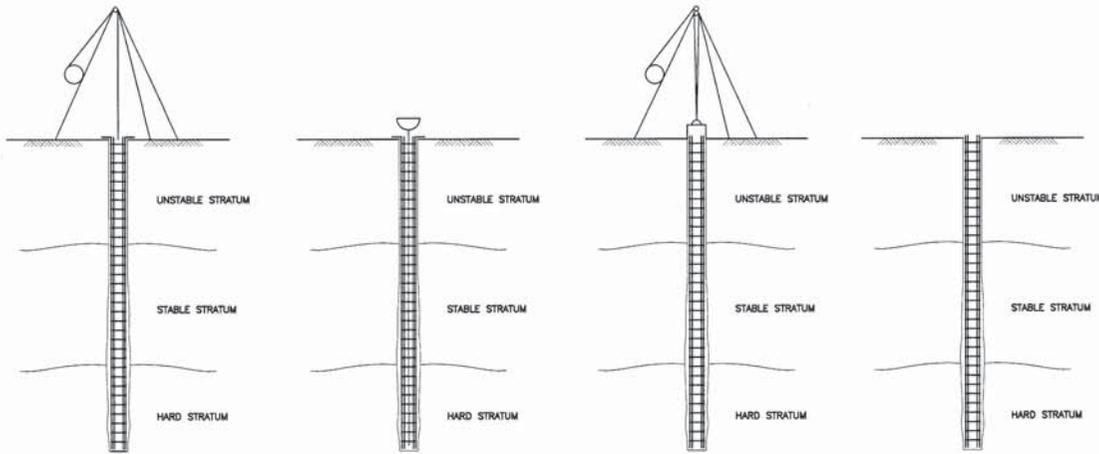
DESIGNED : D. BH & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
REV1 REVISION 1/2018	DATE 2018	DWG NO. NP2-30H/02
APPROVED :	(FOR DIRECTOR GENERAL)	SHEET NO. 99/R1

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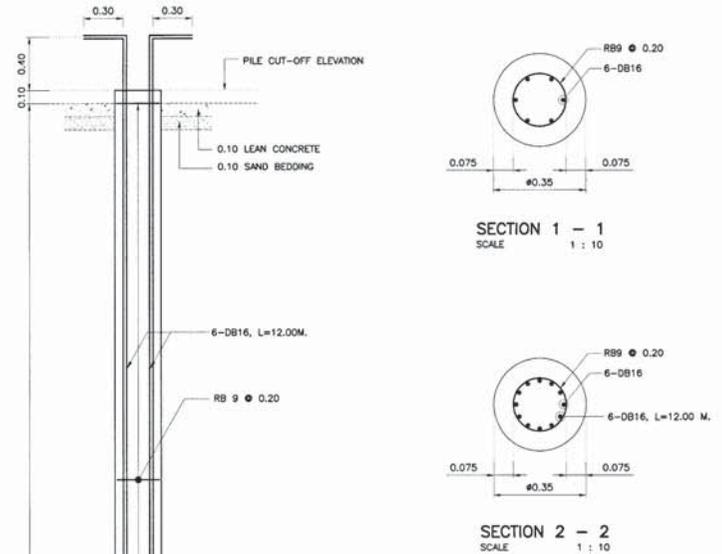
CONSTRUCTION SEQUENCES



1. PRE-BORE 2. DRIVE TEMPORARY STEEL CASING INTO STABLE STRATUM 3. BORE INTO HARD STRATUM 4. INSPECT THE HOLE



5. PLACE REINFORCEMENT 6. PLACE CONCRETE 7. EXTRACT THE TEMPORARY STEEL CASING 8. COMPLETED PILE



VARIES (-21.00 M.)

BORED PILE DETAIL
SCALE 1 : 20

NOTES

- ALL DIMENSIONS SHOWN ARE IN METER UNLESS OTHERWISE INDICATED
- BORED PILE (DRY PROCESS) SHALL HAVE A MINIMUM ULTIMATE BEARING CAPACITY AS SPECIFIED IN FOOTING DETAILS.
- FOR EVALUATE PILE CAPACITY SHALL BE USED 2 METHOD AS FOLLOWED :
3.1 PILE LOAD TEST SHALL BE CONFORMED TO ASTM D1143. TOTAL SETTLEMENT AND PERMANENT SETTLEMENT SHALL NOT BE MORE THAN 25 MM. AND 6.5 MM., RESPECTIVELY. THE LOCATION OF TESTED PILE SHALL BE APPROVED BY THE ENGINEER.
3.2 SOIL BORING TEST TO CALCULATE PILE CAPACITY HAVING SAFETY FACTOR TO 3.0.
- CLEAR CONCRETE COVERING SHALL BE 7.50 CM.
- CONCRETE SHALL HAVE CUBE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) AT 28 DAYS. CONCRETE SLUMP SHALL BE 15-20 CM.
- ROUND BAR (RB) SHALL BE CONFORMED TO TIS 20 GRADE SR24. DEFORMED BAR (DB) SHALL BE CONFORMED TO TIS 24 GRADE SD 40.

BORING PILE INSTRUCTION

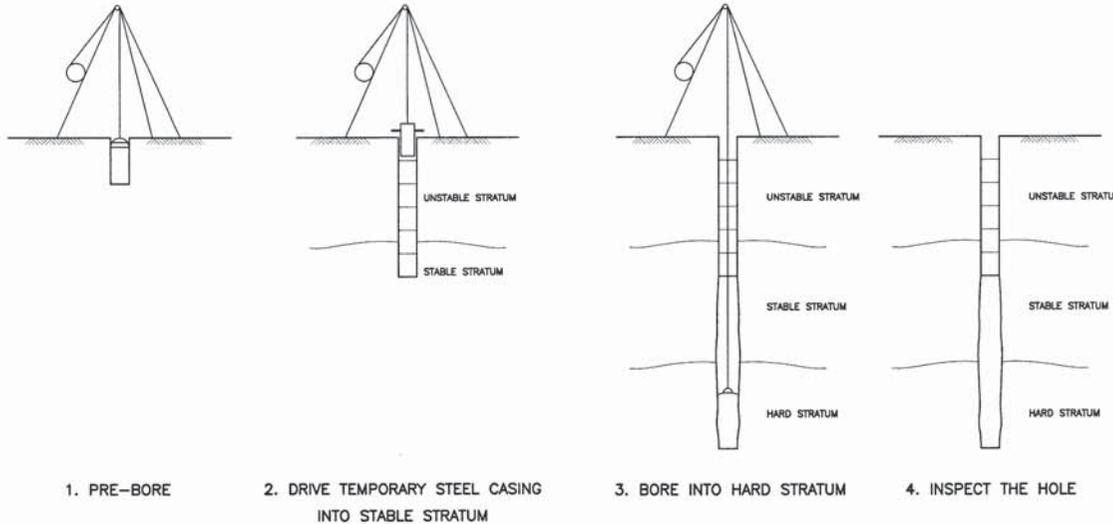
- TEMPORARY STEEL CASING SHALL BE PLACED IN VERTICAL LINE.
- CONCRETE SHALL BE PLACED THROUGH A TREMIE.
- CONCRETE SHALL BE PLACED AS SOON AS POSSIBLE AFTER REINFORCING STEEL CAGE PLACEMENT.
- CONCRETE PLACEMENT SHALL BE CONTINUOUS IN THE HOLE TO THE TOP ELEVATION OF THE HOLE AND CONTINUE AFTER THE HOLE IS FULL UNTIL GOOD QUALITY CONCRETE IS EVIDENT AT THE TOP OF THE HOLE.
- THE ELAPSED TIME FROM THE BEGINNING OF CONCRETE PLACEMENT IN THE HOLE TO THE COMPLETION OF PLACEMENT SHALL NOT EXCEED 2 HOURS.
- THE BOTTOM OF TEMPORARY STEEL CASING SHALL BE MAINTAINED AT LEAST 0.50 M. BELOW THE CONCRETE LEVEL.
- FOR AT LEAST 24 HOURS AFTER PILE CONCRETE HAS BEEN PLACED, NO CONSTRUCTION OPERATIONS WITHIN 3 M. FROM THE SHAFT SHALL BE CONDUCTED.
- TOP OF BORED PILE LEVEL SHALL BE AT LEAST 0.50 M. HIGHER THAN THE PILE CUT-OFF ELEVATION

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
0.35 M. BORED PILE (DRY PROCESS)
PILE CAPACITY AND REINFORCEMENT DETAILS

DESIGNED : D.G.K. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PL-401
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 100

CONSTRUCTION SEQUENCES

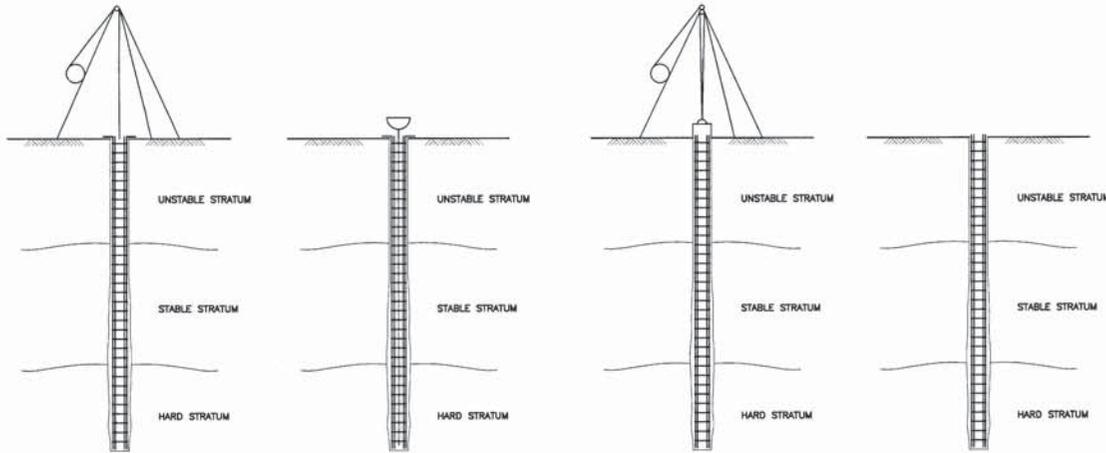


1. PRE-BORE

2. DRIVE TEMPORARY STEEL CASING INTO STABLE STRATUM

3. BORE INTO HARD STRATUM

4. INSPECT THE HOLE

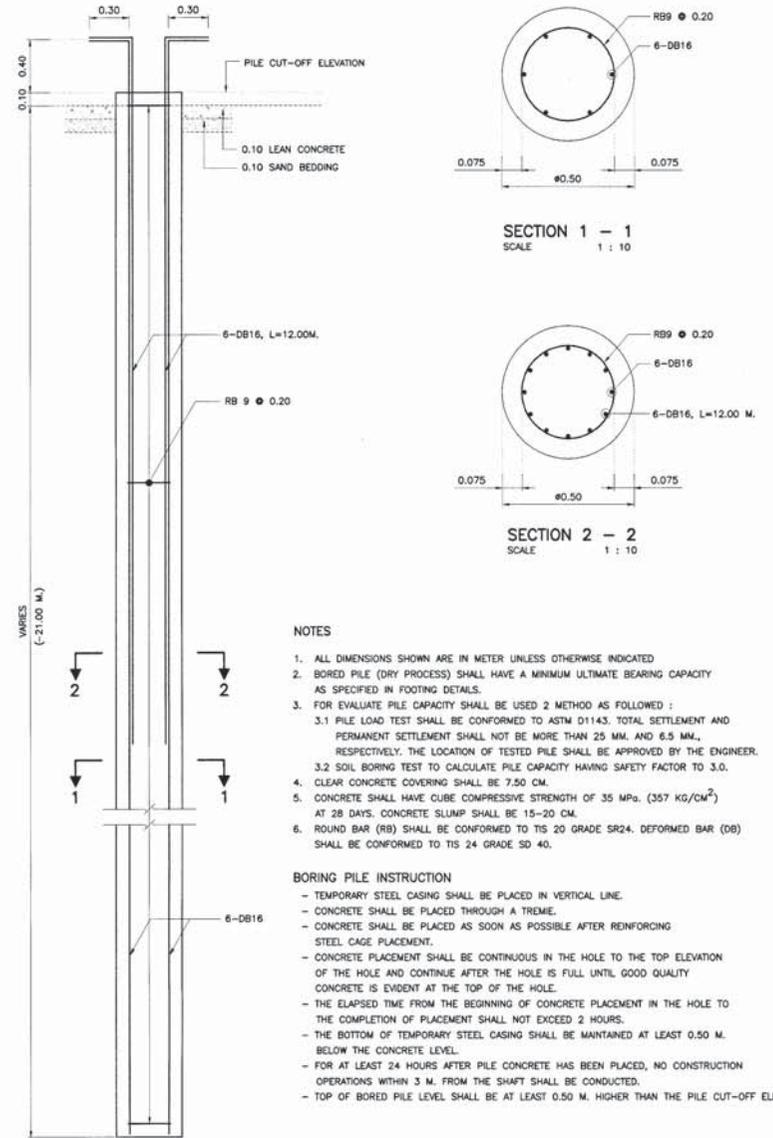


5. PLACE REINFORCEMENT

6. PLACE CONCRETE

7. EXTRACT THE TEMPORARY STEEL CASING

8. COMPLETED PILE



SECTION 1 - 1
SCALE 1 : 10

SECTION 2 - 2
SCALE 1 : 10

BORED PILE DETAIL
SCALE 1 : 20

NOTES

1. ALL DIMENSIONS SHOWN ARE IN METER UNLESS OTHERWISE INDICATED
2. BORED PILE (DRY PROCESS) SHALL HAVE A MINIMUM ULTIMATE BEARING CAPACITY AS SPECIFIED IN FOOTING DETAILS.
3. FOR EVALUATE PILE CAPACITY SHALL BE USED 2 METHOD AS FOLLOWED :
3.1 PILE LOAD TEST SHALL BE CONFORMED TO ASTM D1143. TOTAL SETTLEMENT AND PERMANENT SETTLEMENT SHALL NOT BE MORE THAN 25 MM. AND 6.5 MM., RESPECTIVELY. THE LOCATION OF TESTED PILE SHALL BE APPROVED BY THE ENGINEER.
3.2 SOIL BORING TEST TO CALCULATE PILE CAPACITY HAVING SAFETY FACTOR TO 3.0.
4. CLEAR CONCRETE COVERING SHALL BE 7.50 CM.
5. CONCRETE SHALL HAVE CUBE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) AT 28 DAYS. CONCRETE SLUMP SHALL BE 15-20 CM.
6. ROUND BAR (RB) SHALL BE CONFORMED TO TIS 20 GRADE SR24. DEFORMED BAR (DB) SHALL BE CONFORMED TO TIS 24 GRADE SD 40.

BORING PILE INSTRUCTION

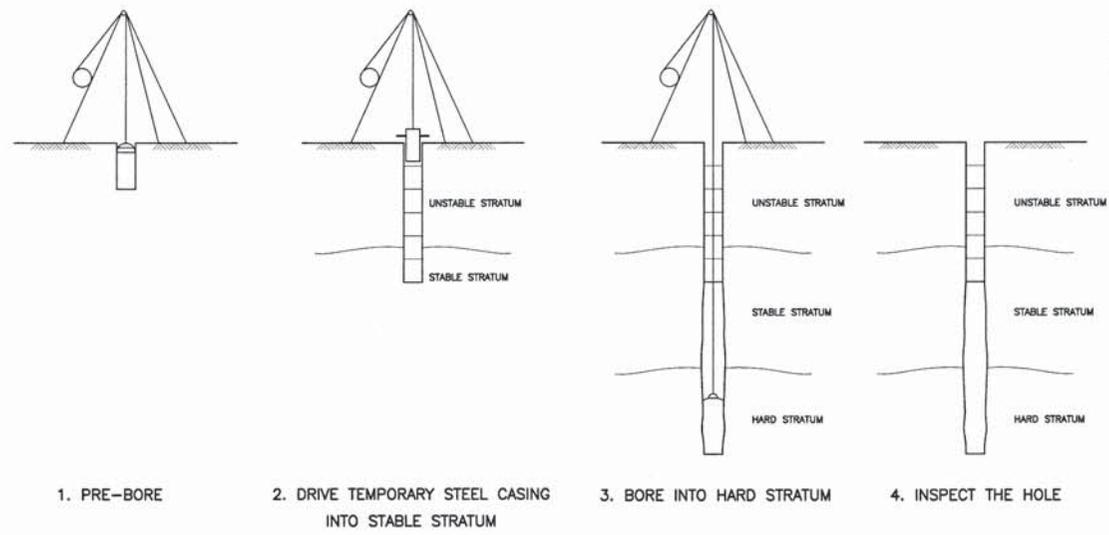
- TEMPORARY STEEL CASING SHALL BE PLACED IN VERTICAL LINE.
- CONCRETE SHALL BE PLACED THROUGH A TREMIE.
- CONCRETE SHALL BE PLACED AS SOON AS POSSIBLE AFTER REINFORCING STEEL CAGE PLACEMENT.
- CONCRETE PLACEMENT SHALL BE CONTINUOUS IN THE HOLE TO THE TOP ELEVATION OF THE HOLE AND CONTINUE AFTER THE HOLE IS FULL UNTIL GOOD QUALITY CONCRETE IS EVIDENT AT THE TOP OF THE HOLE.
- THE ELAPSED TIME FROM THE BEGINNING OF CONCRETE PLACEMENT IN THE HOLE TO THE COMPLETION OF PLACEMENT SHALL NOT EXCEED 2 HOURS.
- THE BOTTOM OF TEMPORARY STEEL CASING SHALL BE MAINTAINED AT LEAST 0.50 M. BELOW THE CONCRETE LEVEL.
- FOR AT LEAST 24 HOURS AFTER PILE CONCRETE HAS BEEN PLACED, NO CONSTRUCTION OPERATIONS WITHIN 3 M. FROM THE SHAFT SHALL BE CONDUCTED.
- TOP OF BORED PILE LEVEL SHALL BE AT LEAST 0.50 M. HIGHER THAN THE PILE CUT-OFF ELEVATION

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

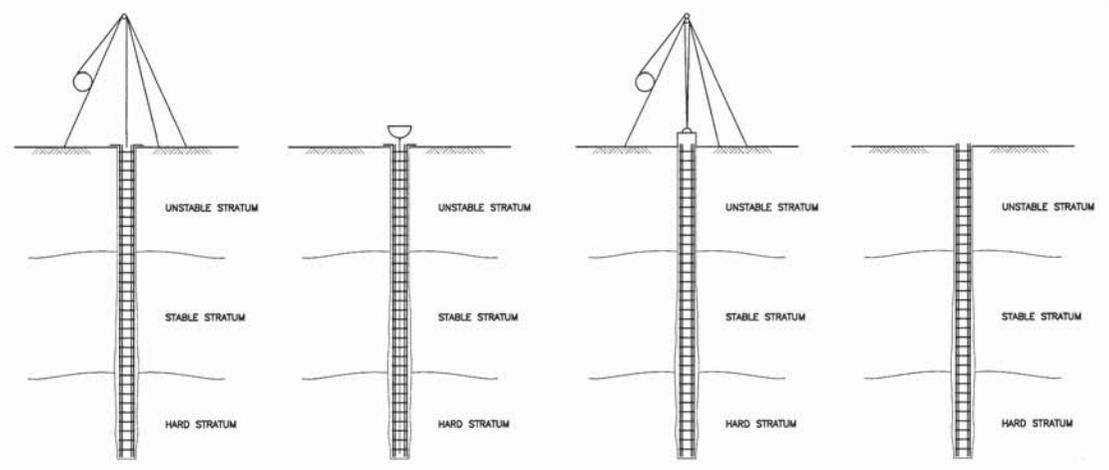
STANDARD DRAWING
0.50 M. BORED PILE (DRY PROCESS)
PILE CAPACITY AND REINFORCEMENT DETAILS

DESIGNED: D.G.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. PL-402
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 101

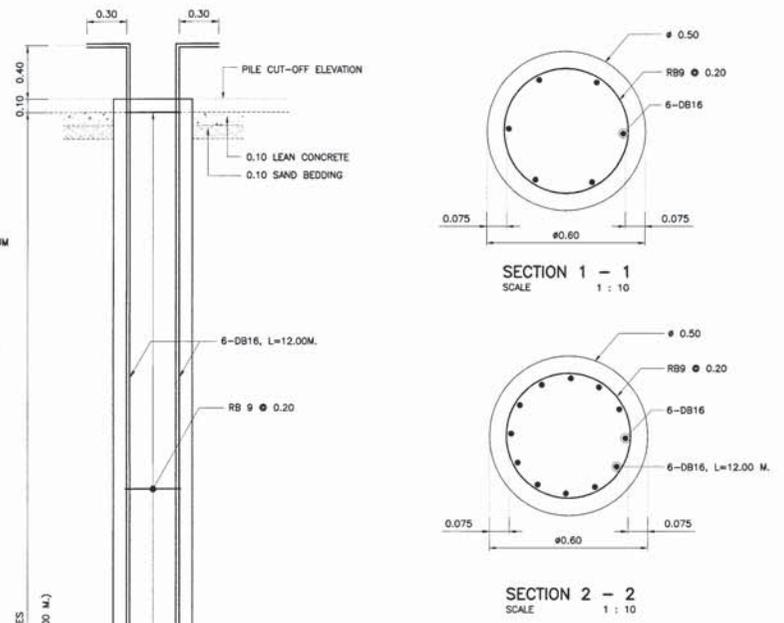
CONSTRUCTION SEQUENCES



1. PRE-BORE 2. DRIVE TEMPORARY STEEL CASING INTO STABLE STRATUM 3. BORE INTO HARD STRATUM 4. INSPECT THE HOLE



5. PLACE REINFORCEMENT 6. PLACE CONCRETE 7. EXTRACT THE TEMPORARY STEEL CASING 8. COMPLETED PILE



BORED PILE DETAIL
SCALE 1 : 20

NOTES

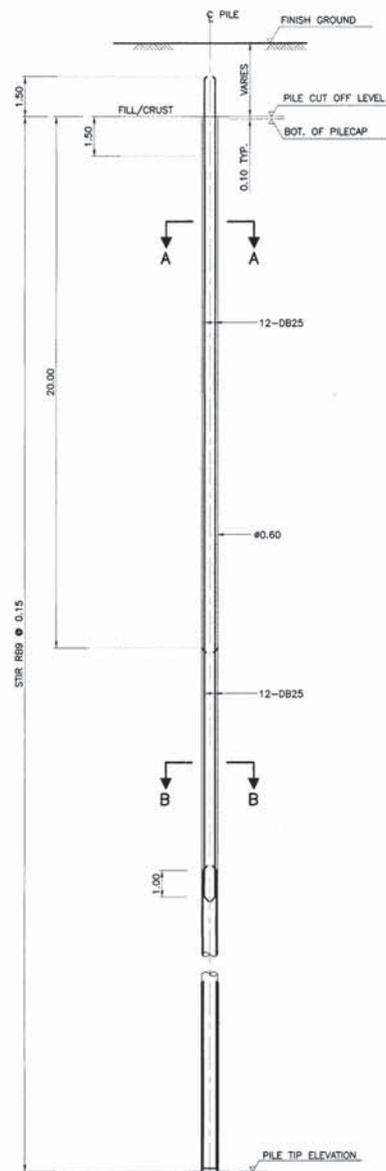
1. ALL DIMENSIONS SHOWN ARE IN METER UNLESS OTHERWISE INDICATED
 2. BORED PILE (DRY PROCESS) SHALL HAVE A MINIMUM ULTIMATE BEARING CAPACITY AS SPECIFIED IN FOOTING DETAILS.
 3. FOR EVALUATE PILE CAPACITY SHALL BE USED 2 METHOD AS FOLLOWED :
 - 3.1 PILE LOAD TEST SHALL BE CONFORMED TO ASTM D1143. TOTAL SETTLEMENT AND PERMANENT SETTLEMENT SHALL NOT BE MORE THAN 25 MM. AND 6.5 MM., RESPECTIVELY. THE LOCATION OF TESTED PILE SHALL BE APPROVED BY THE ENGINEER.
 - 3.2 SOIL BORING TEST TO CALCULATE PILE CAPACITY HAVING SAFETY FACTOR TO 3.0.
 4. CLEAR CONCRETE COVERING SHALL BE 7.50 CM.
 5. CONCRETE SHALL HAVE CUBE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) AT 28 DAYS. CONCRETE SLUMP SHALL BE 15-20 CM.
 6. ROUND BAR (RB) SHALL BE CONFORMED TO TIS 20 GRADE SR24. DEFORMED BAR (DB) SHALL BE CONFORMED TO TIS 24 GRADE SD 40.
- BORING PILE INSTRUCTION**
- TEMPORARY STEEL CASING SHALL BE PLACED IN VERTICAL LINE.
 - CONCRETE SHALL BE PLACED THROUGH A TREMIE.
 - CONCRETE SHALL BE PLACED AS SOON AS POSSIBLE AFTER REINFORCING STEEL CAGE PLACEMENT.
 - CONCRETE PLACEMENT SHALL BE CONTINUOUS IN THE HOLE TO THE TOP ELEVATION OF THE HOLE AND CONTINUE AFTER THE HOLE IS FULL UNTIL GOOD QUALITY CONCRETE IS EVIDENT AT THE TOP OF THE HOLE.
 - THE ELAPSED TIME FROM THE BEGINNING OF CONCRETE PLACEMENT IN THE HOLE TO THE COMPLETION OF PLACEMENT SHALL NOT EXCEED 2 HOURS.
 - THE BOTTOM OF TEMPORARY STEEL CASING SHALL BE MAINTAINED AT LEAST 0.50 M. BELOW THE CONCRETE LEVEL.
 - FOR AT LEAST 24 HOURS AFTER PILE CONCRETE HAS BEEN PLACED, NO CONSTRUCTION OPERATIONS WITHIN 3 M. FROM THE SHAFT SHALL BE CONDUCTED.
 - TOP OF BORED PILE LEVEL SHALL BE AT LEAST 0.50 M. HIGHER THAN THE PILE CUT-OFF ELEVATION

KINGDOM OF THAILAND

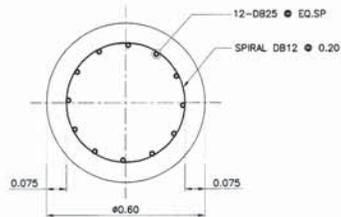
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
0.60 M. BORED PILE (DRY PROCESS)
PILE CAPACITY AND REINFORCEMENT DETAILS

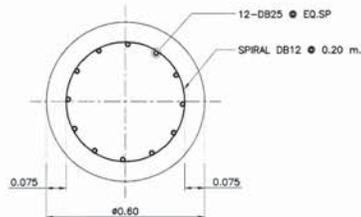
DESIGNED : D.G.H. & CONSULTANTS	CHECKED : [Signature]	BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	[Signature]	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	[Signature]	(FOR DIRECTOR GENERAL)	DWG NO. PL-403
REF.	REVISION	SIGNATURE	DATE
			SHEET NO. 102



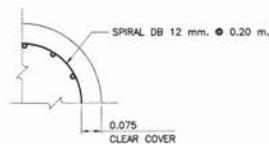
BORED PILE, ϕ 0.60 M.
SCALE 1 : 100



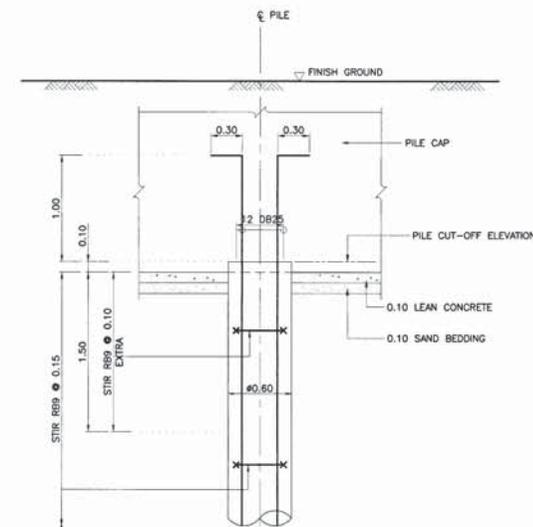
SECTION A - A
SCALE 1 : 10



SECTION B - B
SCALE 1 : 10



CLEAR COVER DETAIL
SCALE 1 : 10



PILE HEAD DETAIL
SCALE 1 : 25

NOTES

- ALL DIMENSIONS SHOWN ARE IN METER UNLESS OTHERWISE INDICATED
- CLEAR CONCRETE COVERING SHALL BE 7.50 CM.
- CONCRETE SHALL HAVE CUBE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) AT 28 DAYS. CONCRETE SLUMP SHALL BE 15-20 CM.
- ROUND BAR (RB) SHALL CONFORM TO TIS 20 GRADE SR24. DEFORMED BAR (DB) SHALL CONFORM TO TIS 24 GRADE SD 40.
- REINFORCEMENT OF THE TEST PILES AND PILES USED AS TENSION PILES DURING TESTING SHALL EXTEND TO THE BOTTOM OF THE PILE.
- PILE LOADS :

TYPE	DIAMETER (m)	DESIGN CAPACITY (kN)	ULTIMATE CAPACITY BY STATIC LOAD TEST (kN)
1	0.60	800	1,600
- FINAL PILE TIP ELEVATION SHALL BE APPROVED BY ENGINEER.
- STEEL COUPLING MAY BE USED FOR REINFORCEMENT SPLICING AS THE ENGINEER APPROVAL.
- COMPACTION GROUTING
 - COMPACTING THE SOIL AT THE PILE TOE TO A PRESSURE OF NOT LESS THAN 6 MPa. (600 TON/M²)
 - THE METHOD OF COMPACTION GROUTING SHALL BE PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
- TEST PILE SHALL NOT BE USED FOR WORKING PILE AND AT LEAST 1 PILE SHALL BE TEST TO 11,000 kN (1,122 TON) BY STATIC LOAD TEST METHOD.

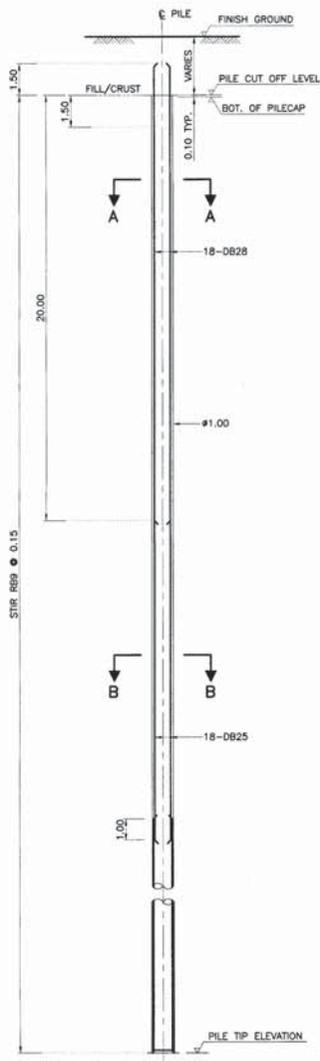
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

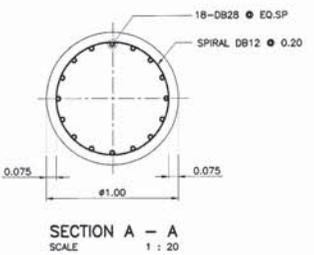
STANDARD DRAWING
0.60 M. BORED PILE (WET PROCESS)
PILE CAPACITY AND REINFORCEMENT DETAILS

DESIGNED : D.O.M. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PL-501
		SHEET NO. 103

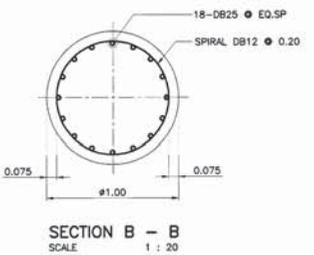
REV.	REVISION	SIGNATURE	DATE



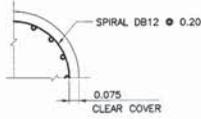
BORED PILE, Ø1.00 M.
SCALE 1 : 125



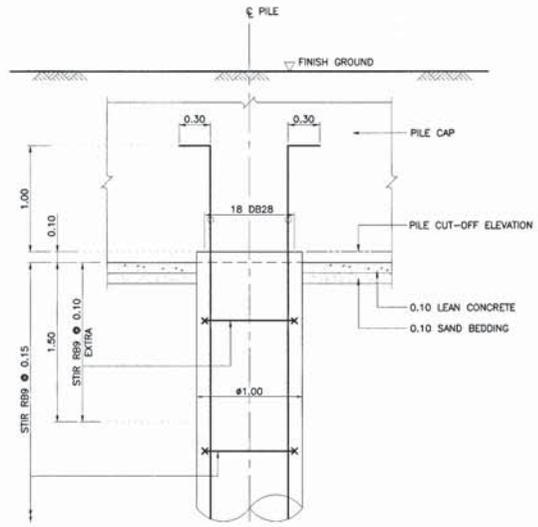
SECTION A - A
SCALE 1 : 20



SECTION B - B
SCALE 1 : 20



CLEAR COVER DETAIL
SCALE 1 : 20



PILE HEAD DETAIL
SCALE 1 : 25

NOTES

- ALL DIMENSIONS SHOWN ARE IN METER UNLESS OTHERWISE INDICATED
- CLEAR CONCRETE COVERING SHALL BE 7.50 CM.
- CONCRETE SHALL HAVE CUBE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) AT 28 DAYS. CONCRETE SLUMP SHALL BE 15-20 CM.
- ROUND BAR (RB) SHALL CONFORM TO TIS 20 GRADE SR24, DEFORMED BAR (DB) SHALL CONFORM TO TIS 24 GRADE SD 40.
- REINFORCEMENT OF THE TEST PILES AND PILES USED AS TENSION PILES DURING TESTING SHALL EXTEND TO THE BOTTOM OF THE PILE.
- PILE LOADS :

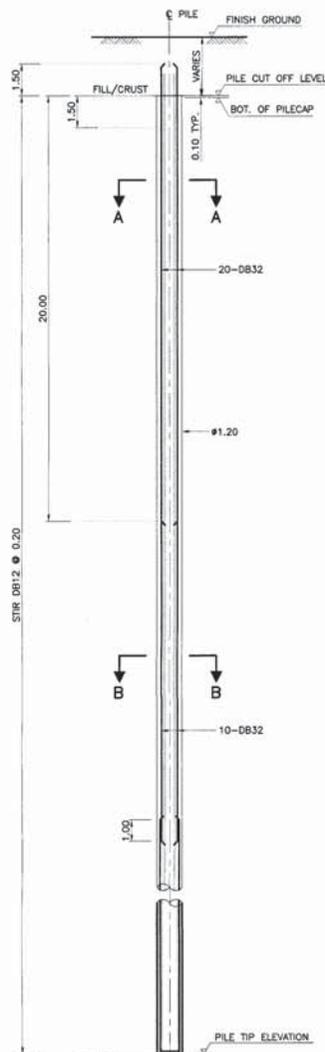
TYPE	DIAMETER (m)	DESIGN CAPACITY (kN)	ULTIMATE CAPACITY BY STATIC LOAD TEST (kN)
1	1.00	4,500	9,000
- FINAL PILE TIP ELEVATION SHALL BE APPROVED BY ENGINEER.
- STEEL COUPLING MAY BE USED FOR REINFORCEMENT SPLICING AS THE ENGINEER APPROVAL.
- COMPACTION GROUTING
 - COMPACTING THE SOIL AT THE PILE TOE TO A PRESSURE OF NOT LESS THAN 6 MPa. (600 TON/M²)
 - THE METHOD OF COMPACTION GROUTING SHALL BE PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
- TEST PILE SHALL NOT BE USED FOR WORKING PILE AND AT LESS 1 PILE SHALL BE TEST TO 11,000 kN (1,122 TON) BY STATIC LOAD TEST METHOD.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

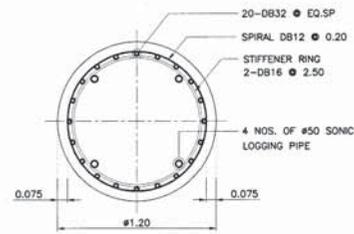
STANDARD DRAWING
1.00 M. BORED PILE (WET PROCESS)
PILE CAPACITY AND REINFORCEMENT DETAILS

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SUBMITTED :	[Signature]	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	[Signature]	(FOR DIRECTOR GENERAL)	DWG NO. PL-503 SHEET NO. 105

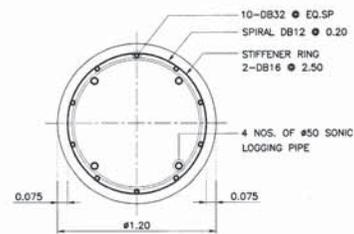
REF.	REVISION	SIGNATURE	DATE



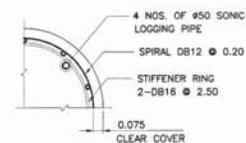
BORED PILE, ϕ 1.20 M.
SCALE 1 : 125



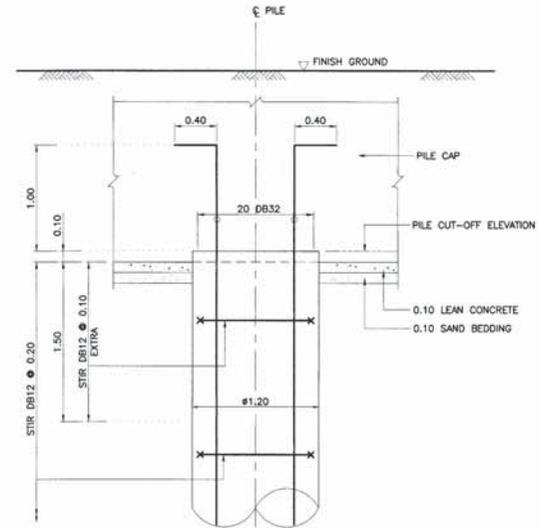
SECTION A - A
SCALE 1 : 20



SECTION B - B
SCALE 1 : 20



CLEAR COVER DETAIL
SCALE 1 : 20



PILE HEAD DETAIL
SCALE 1 : 25

NOTES

- ALL DIMENSIONS SHOWN ARE IN METER UNLESS OTHERWISE INDICATED
- CLEAR CONCRETE COVERING SHALL BE 7.50 CM.
- CONCRETE SHALL HAVE CUBE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) AT 28 DAYS. CONCRETE SLUMP SHALL BE 15-20 CM.
- ROUND BAR (RB) SHALL CONFORM TO TIS 20 GRADE SR24. DEFORMED BAR (DB) SHALL CONFORM TO TIS 24 GRADE SD 40.
- REINFORCEMENT OF THE TEST PILES AND PILES USED AS TENSION PILES DURING TESTING SHALL EXTEND TO THE BOTTOM OF THE PILE.
- PILE LOADS :

TYPE	DIAMETER (m)	DESIGN CAPACITY (kN)	ULTIMATE CAPACITY BY STATIC LOAD TEST (kN)
1	1.20	5,500	11,000

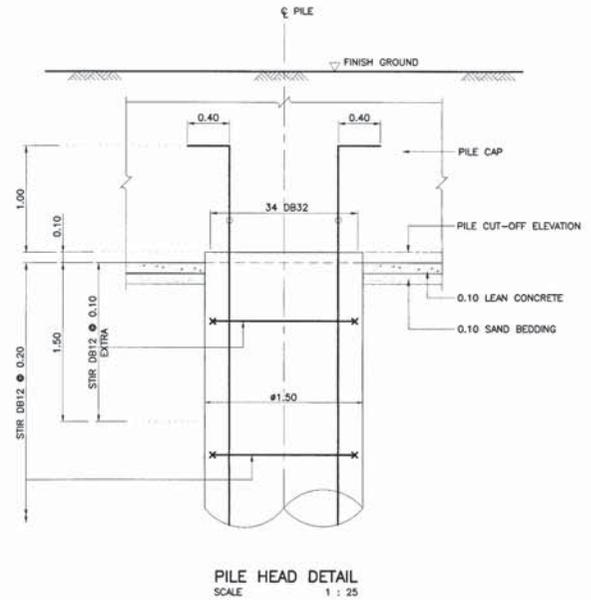
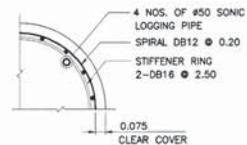
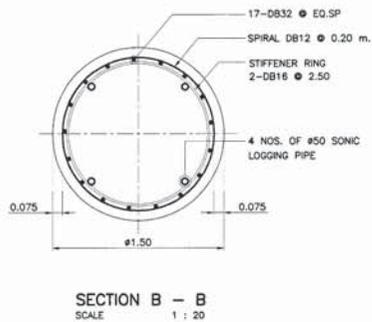
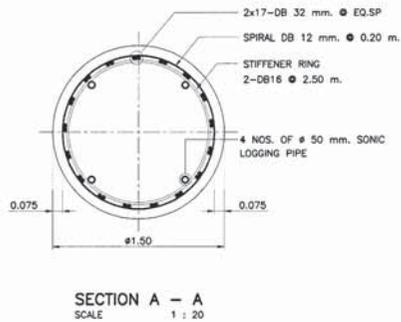
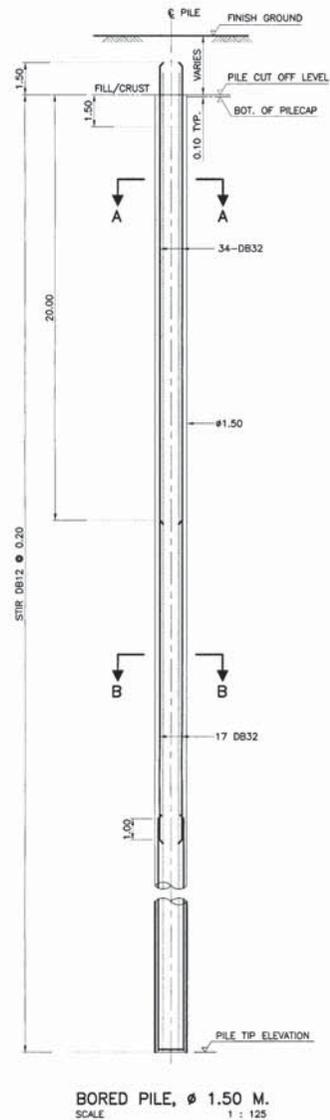
- FINAL PILE TIP ELEVATION SHALL BE APPROVED BY ENGINEER.
- STEEL COUPLING MAY BE USED FOR REINFORCEMENT SPLICING AS THE ENGINEER APPROVAL.
- AFTER BORED PILE COMPLETION, SONIC LOGGING SHALL BE PERFORMED ON 8 DIRECTIONS. IF THE QUALITY OF CONCRETE IS PERFECT, THE GROUTING SHALL BE PERFORMED TO REACH EITHER THE MAXIMUM PRESSURE OF 40 BAR OR USAGE OF MAXIMUM CEMENT GROUTING ABOUT 1,700 LITERS.
- COMPACTION GROUTING
 - COMPACTING THE SOIL AT THE PILE TOE TO A PRESSURE OF NOT LESS THAN 6 MPa. (600 TON/M.)
 - THE METHOD OF COMPACTION GROUTING SHALL BE PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
- TEST PILE SHALL NOT BE USED FOR WORKING PILE AND AT LESS 1 PILE SHALL BE TEST TO 11,000 kN (1,122 TON) BY STATIC LOAD TEST METHOD.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
1.20 M. BORED PILE (WET PROCESS)
PILE CAPACITY AND REINFORCEMENT DETAILS

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PL-504
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 106

REF.	REVISION	SIGNATURE	DATE



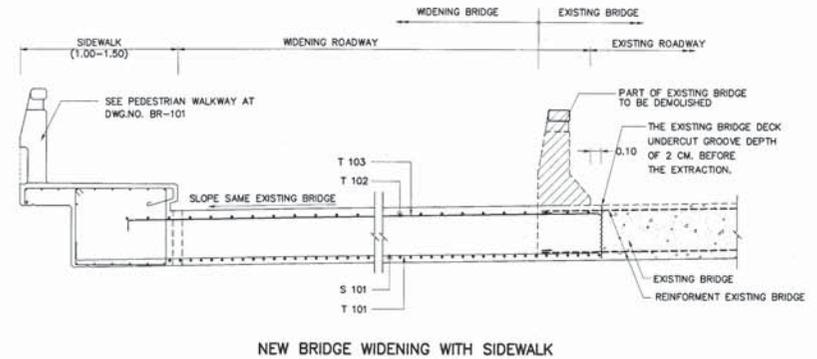
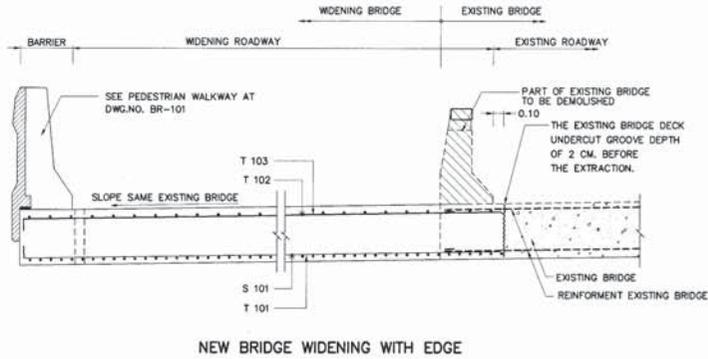
NOTES

- ALL DIMENSIONS SHOWN ARE IN METER UNLESS OTHERWISE INDICATED
- CLEAR CONCRETE COVERING SHALL BE 7.50 CM.
- CONCRETE SHALL HAVE CUBE COMPRESSIVE STRENGTH OF 35 MPa. (357 KG/CM²) AT 28 DAYS. CONCRETE SLUMP SHALL BE 15-20 CM.
- ROUND BAR (RB) SHALL CONFORM TO TIS 20 GRADE SR24. DEFORMED BAR (DB) SHALL CONFORM TO TIS 24 GRADE SD 40.
- REINFORCEMENT OF THE TEST PILES AND PILES USED AS TENSION PILES DURING TESTING SHALL EXTEND TO THE BOTTOM OF THE PILE.
- PILE LOADS :

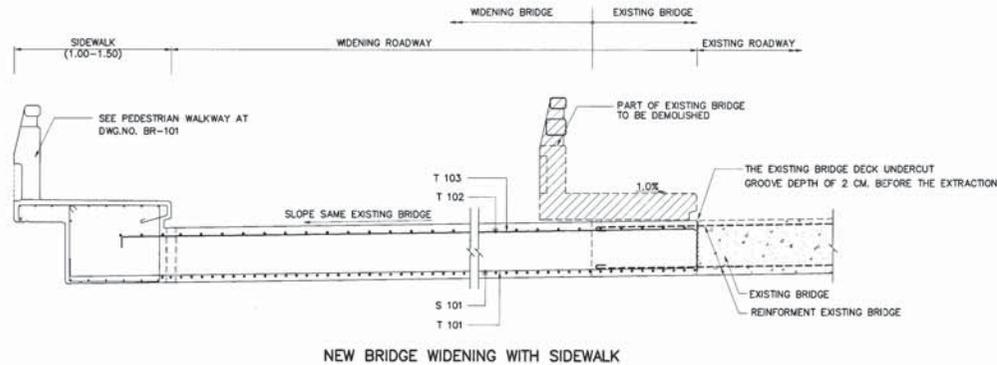
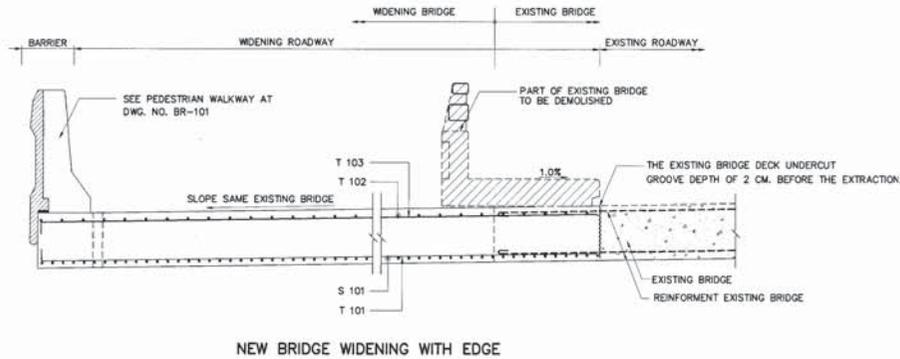
TYPE	DIAMETER (m)	DESIGN CAPACITY (kN)	ULTIMATE CAPACITY BY STATIC LOAD TEST (kN)
1	1.50	10,000	20,000
- FINAL PILE TIP ELEVATION SHALL BE APPROVED BY ENGINEER.
- STEEL COUPLING MAY BE USED FOR REINFORCEMENT SPLICING AS THE ENGINEER APPROVAL.
- AFTER BORED PILE COMPLETION, SONIC LOGGING SHALL BE PERFORMED ON 6 DIRECTIONS. IF THE QUALITY OF CONCRETE IS PERFECT, THE GROUTING SHALL BE PERFORMED TO REACH EITHER THE MAXIMUM PRESSURE OF 40 BAR OR USAGE OF MAXIMUM CEMENT GROUTING ABOUT 1,700 LITERS.
- COMPACTION GROUTING
 - COMPACTING THE SOIL AT THE PILE TOE TO A PRESSURE OF NOT LESS THAN 6 MPa. (600 TON/M.)
 - THE METHOD OF COMPACTION GROUTING SHALL BE PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
- TEST PILE SHALL NOT BE USED FOR WORKING PILE AND AT LESS 1 PILE SHALL BE TEST TO 20,000 kN (2,040 TON) BY STATIC LOAD TEST METHOD.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
1.50 M. BORED PILE (WET PROCESS)
PILE CAPACITY AND REINFORCEMENT DETAILS

DESIGNED : D.S.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PL-505
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 107



CASE I : THE EXISTING BRIDGE WITH EDGE



CASE II : THE EXISTING BRIDGE WITH SIDEWALK

WIDENING PART AS SLAB TYPE WITHOUT LONGITUDINAL JOINTS
SCALE 1 : 25

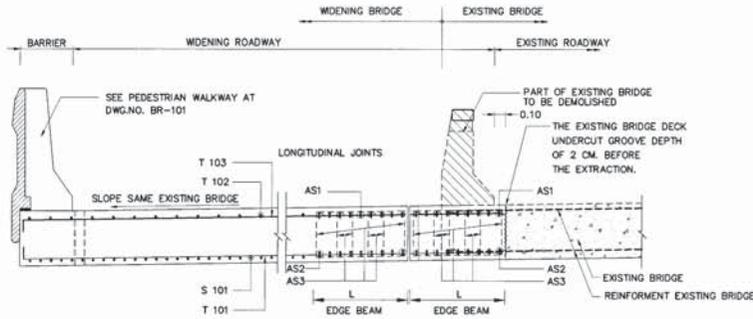
CONSTRUCTION SPECIFICATION

- BRIDGE DECK AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER SB-101 TO SB-105
- EDGE BEAM, BRIDGE RAILING, AND ALL PARTS OF CONCRETE TOPPING OF THE EXISTING BRIDGES SHALL BE REMOVED. THE CONCRETE DECK SHALL BE GROOVED AT LEAST 2 CM. DEEP ALONG THE SPECIFIC LINE PRIOR TO REMOVAL THE ITEMS. ALL EXISTING REINFORCEMENT IN CONCRETE DECK SHALL BE REMAINED.
- ALL TOP AND BOTTOM TRANSVERSE REINFORCEMENT SHALL BE CONNECTED USING LAP SPICE TO WIDEN THE EXISTING BRIDGE AS SPECIFIED IN THE DRAWING.
- ALL LONGITUDINAL AND OTHER REINFORCEMENT SHALL BE PLACED COMPLETELY AS STATED IN THE DRAWING PRIOR TO CASTING THE FRESH CONCRETE FOR THE WIDENING PART OF THE BRIDGE.
- PRIOR TO POURING CONCRETE, ALL DUST AND OIL SHALL BE REMOVED AND CLEANED FOR ALL EXPOSED SURFACE OF THE CONNECTING MEMBERS. THE EPOXY RESIN AS PER ASTM C881 TYPE II GRADE I CLASS C SHALL BE APPLIED TO THE BONDING SURFACE OF THE CONNECTING CONCRETE MEMBERS.
- THE LAP SPICE LENGTH SHALL BE ADOPTED AS FOLLOWS:
 - ROUND BAR (RB9) : THE LAP SPICE LENGTH = 0.50 M.
 - DEFORMED BAR (DB12) : THE LAP SPICE LENGTH = 0.55 M.
 - DEFORMED BAR (DB16) : THE LAP SPICE LENGTH = 0.70 M.
 - DEFORMED BAR (DB20) : THE LAP SPICE LENGTH = 0.90 M.
 - DEFORMED BAR (DB25) : THE LAP SPICE LENGTH = 1.40 M.
 - DEFORMED BAR (DB28) : THE LAP SPICE LENGTH = 1.75 M.
- THE WELDED SPICE OF REINFORCEMENT SHALL BE USED BASED ON AWS WHEN THE MECHANICAL LAP SPICE LENGTH IS NOT SUFFICIENT.
- THE PROPERTIES OF MATERIAL AND ORTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

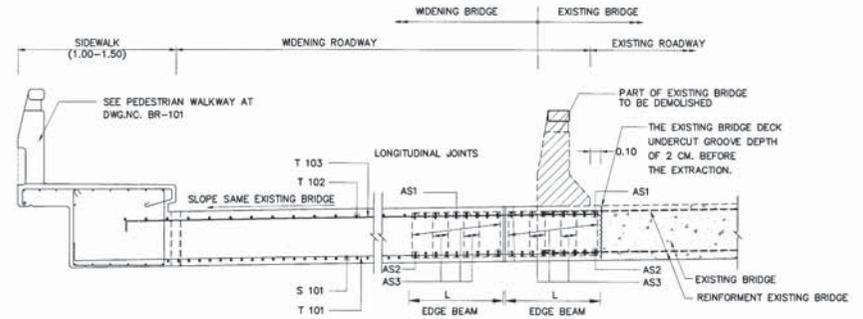
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
EXISTING SLAB TYPE BRIDGE
WIDENING BY SLAB TYPE WITHOUT LONGITUDINAL JOINTS

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. WS-101
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 108

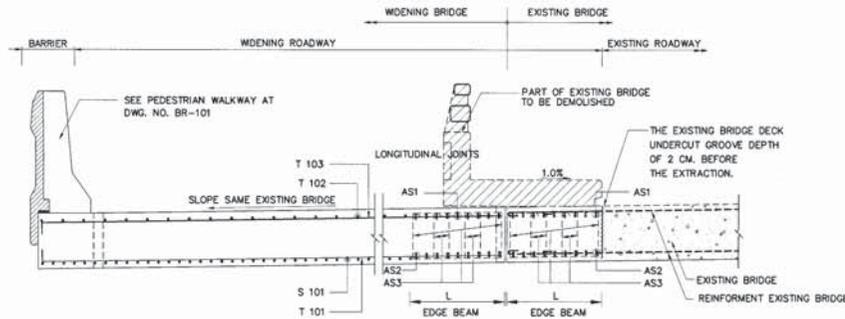


NEW BRIDGE WIDENING WITH EDGE

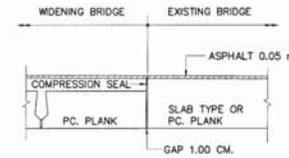


NEW BRIDGE WIDENING WITH SIDEWALK

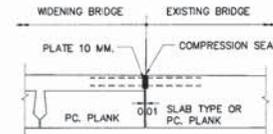
CASE I : THE EXISTING BRIDGE WITH EDGE



NEW BRIDGE WIDENING WITH EDGE



LONGITUDINAL JOINTS WITH ASPHALT 0.05
SCALE 1 : 25



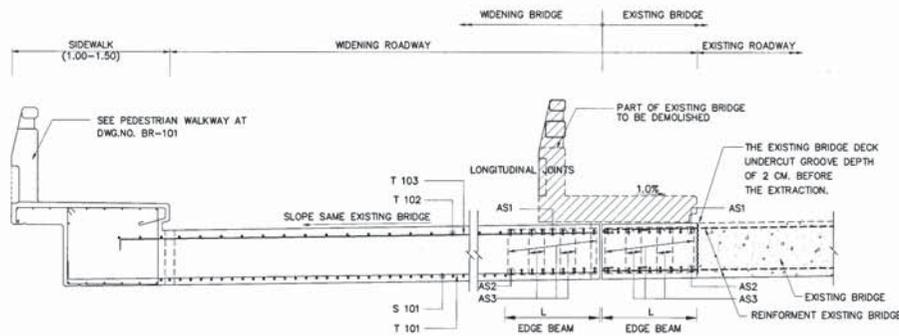
LONGITUDINAL JOINTS WITHOUT ASPHALT 0.05
SCALE 1 : 25

CONSTRUCTION SPECIFICATION

- BRIDGE DECK AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER SB-101 TO SB-105
- EDGE BEAM, BRIDGE RAILING, AND ALL PARTS OF CONCRETE TOPPING OF THE EXISTING BRIDGES SHALL BE REMOVED. THE CONCRETE SHALL BE GROOVED AT LEAST 2 CM. DEEP ALONG THE SPECIFIC LINE PRIOR TO REMOVAL OF THE ITEMS. ALL EXISTING REINFORCEMENT IN CONCRETE DECK SHALL BE REMAINED.
- ALL TOP AND BOTTOM TRANSVERSE REINFORCEMENT SHALL BE CONNECTED USING LAP SPICE TO WIDEN THE EXISTING BRIDGE AS SPECIFIED IN THE DRAWING.
- ALL LONGITUDINAL AND OTHER REINFORCEMENT SHALL BE PLACED COMPLETELY AS STATED IN THE DRAWING PRIOR TO CASTING THE FRESH CONCRETE FOR THE WIDENING PART OF THE BRIDGE.
- PRIOR TO POURING CONCRETE, ALL DUST AND OIL SHALL BE REMOVED AND CLEANED FOR ALL EXPOSED SURFACE OF THE CONNECTING MEMBERS. THE EPOXY RESIN AS PER ASTM C881 TYPE II GRADE I CLASS C SHALL BE APPLIED TO THE BONDING SURFACE OF THE CONNECTING CONCRETE MEMBERS.
- THE LAP SPICE LENGTH SHALL BE ADAPTED AS FOLLOWS:
 - 6.1 ROUND BAR (RB9) : THE LAP SPICE LENGTH = 0.50 M.
 - 6.2 DEFORMED BAR (DB12) : THE LAP SPICE LENGTH = 0.55 M.
 - 6.3 DEFORMED BAR (DB16) : THE LAP SPICE LENGTH = 0.70 M.
 - 6.4 DEFORMED BAR (DB20) : THE LAP SPICE LENGTH = 0.90 M.
 - 6.5 DEFORMED BAR (DB25) : THE LAP SPICE LENGTH = 1.40 M.
 - 6.6 DEFORMED BAR (DB28) : THE LAP SPICE LENGTH = 1.75 M.
- THE WELDED SPICE OF REINFORCEMENT SHALL BE USED BASED ON AWS WHEN THE MECHANICAL LAP SPICE LENGTH IS NOT SUFFICIENT.
- THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

TABLE 1

SPAN (M.)	EDGE BEAM L (M.)	AS1	AS2	AS3
5.00	0.50	2x4 -DB25	2x4 -DB25	2-DB12@0.15
6.00	0.60	2x5 -DB25	2x5 -DB25	2-DB12@0.15
7.00	0.70	2x6 -DB25	2x6 -DB25	2-DB12@0.15
8.00	0.80	2x7 -DB25	2x7 -DB25	2-DB12@0.15
9.00	0.90	2x8 -DB25	2x8 -DB25	3-DB12@0.15
10.00	0.90	2x9 -DB25	2x9 -DB25	3-DB12@0.15



NEW BRIDGE WIDENING WITH SIDEWALK

CASE II : THE EXISTING BRIDGE WITH SIDEWALK

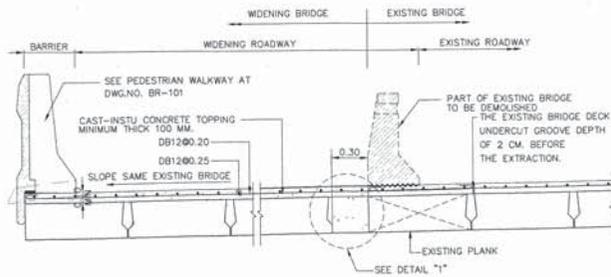
WIDENING PART AS SLAB TYPE WITH LONGITUDINAL JOINTS
SCALE 1 : 25

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

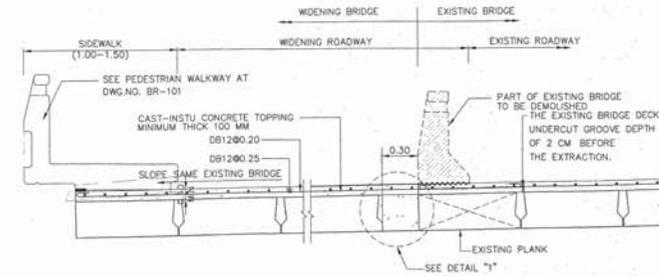
STANDARD DRAWING
EXISTING SLAB TYPE BRIDGE
WIDENING BY SLAB TYPE WITH LONGITUDINAL JOINTS

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. WS-102
		SHEET NO. 109

REF.	REVISION	SIGNATURE	DATE

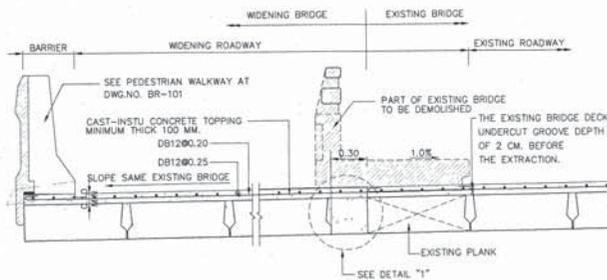


NEW BRIDGE WIDENING WITH EDGE

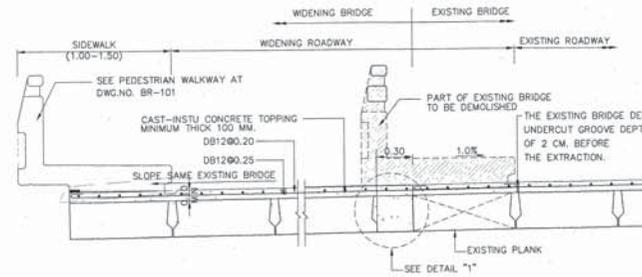


NEW BRIDGE WIDENING WITH SIDEWALK

CASE I : THE EXISTING BRIDGE WITH EDGE



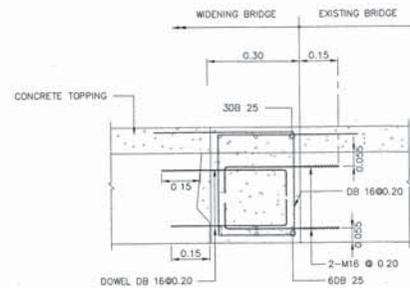
NEW BRIDGE WIDENING WITH EDGE



NEW BRIDGE WIDENING WITH SIDEWALK

CASE II : THE EXISTING BRIDGE WITH SIDEWALK

WIDENING PART AS PC. PLANK WITHOUT LONGITUDINAL JOINTS
SCALE 1 : 25



DETAIL "1"
SCALE 1 : 25

CONSTRUCTION SPECIFICATION

1. PC. PLANK ORDER AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER WS-106 TO WS-107
2. EDGE BEAM, BRIDGE RAILING, AND ALL PARTS OF CONCRETE TOPPING OF THE EXISTING BRIDGES SHALL BE REMOVED. THE CONCRETE DECK SHALL BE GROOVED AT LEAST 2 CM. DEEP ALONG THE SPECIFIC LINE PRIOR TO REMOVAL THE ITEMS. ALL EXISTING REINFORCEMENT IN CONCRETE DECK SHALL BE REMAINED.
3. CONCRETE GROOVING SHALL BE CLEANED.
4. ALL PRECAST PLANK BEAMS SHALL BE INSTALLED CORRESPONDING TO THE SPECIFIC WIDENING WIDTH. SHEAR KEY ALONG THE ADJACENT PLANK BEAMS SHALL BE WELDED.
5. ALL NEW REINFORCEMENT IN CONCRETE DECK SHALL CONNECT TO THE EXISTING ONES USING THE LAP SPUCE LENGTH SPECIFIED IN THIS DRAWING
6. POURING AND CASTING THE CONCRETE TOPPING AND WALK WAY IN THE NEW BRIDGE WIDENING PARTS.
7. PRIOR TO POURING CONCRETE, ALL DUST AND OIL SHALL BE REMOVED AND CLEANED FOR ALL EXPOSED SURFACE OF THE CONNECTING MEMBERS. THE EPOXY RESIN AS PER ASTM C881 TYPE I CLASS C SHALL BE APPLIED TO THE BONDING SURFACE OF THE CONNECTING CONCRETE MEMBERS.
8. THE LAP SPUCE LENGTH SHALL BE ADOPTED AS FOLLOWS:
 - 8.1 ROUND BAR (R09) : THE LAP SPUCE LENGTH = 0.50 M.
 - 8.2 DEFORMED BAR (DB12) : THE LAP SPUCE LENGTH = 0.55 M.
 - 8.3 DEFORMED BAR (DB16) : THE LAP SPUCE LENGTH = 0.70 M.
 - 8.4 DEFORMED BAR (DB20) : THE LAP SPUCE LENGTH = 0.90 M.
 - 8.5 DEFORMED BAR (DB25) : THE LAP SPUCE LENGTH = 1.40 M.
 - 8.6 DEFORMED BAR (DB28) : THE LAP SPUCE LENGTH = 1.75 M.
9. THE WELDED SPUCE OF REINFORCEMENT SHALL BE USED BASED ON AWS WHEN THE MECHANICAL LAP SPUCE LENGTH IS NOT SUFFICIENT.
10. THE PROPERTIES OF MATERIAL AND ORTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER QN-001 TO QN-003
11. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING

EXISTING PC. PLANK BRIDGE

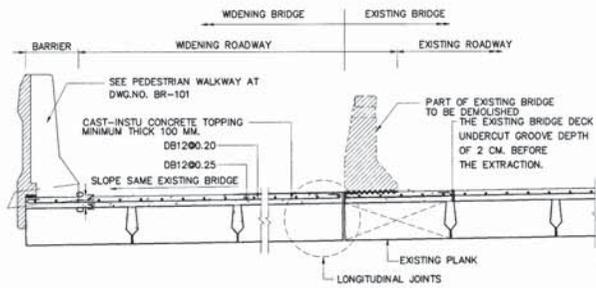
WIDENING BY PLANK WITHOUT LONGITUDINAL JOINTS (REMOVED EDGE)

DESIGNED : D.O.H. & CONSULTANTS CHECKED : BUREAU OF LOCATION & DESIGN DATE : OCT 2015

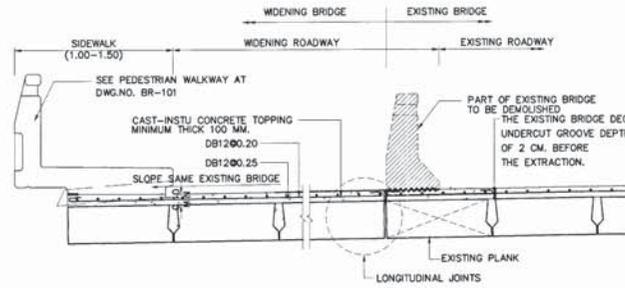
SUBMITTED : (DIRECTOR OF LOCATION & DESIGN BUREAU) SCALE : AS SHOWN

APPROVED : (FOR DIRECTOR GENERAL) DWG NO. WS-103 SHEET NO. 110

REF.	REVISION	SIGNATURE	DATE

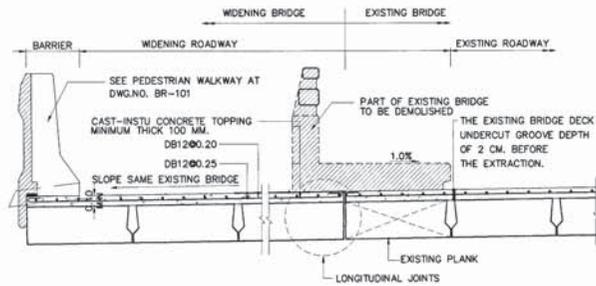


NEW BRIDGE WIDENING WITH EDGE

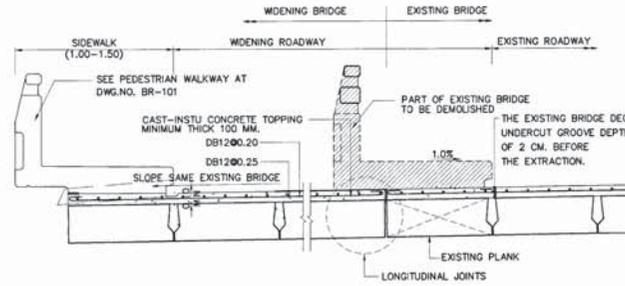


NEW BRIDGE WIDENING WITH SIDEWALK

CASE I : THE EXISTING BRIDGE WITH EDGE



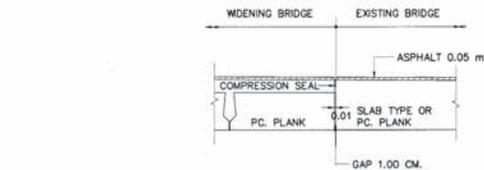
NEW BRIDGE WIDENING WITH EDGE



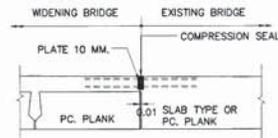
NEW BRIDGE WIDENING WITH SIDEWALK

CASE II : THE EXISTING BRIDGE WITH SIDEWALK

WIDENING PART AS PC. PLANK WITH LONGITUDINAL JOINTS
SCALE 1 : 25



LONGITUDINAL JOINTS WITH ASPHALT 0.05
SCALE 1 : 25



LONGITUDINAL JOINTS WITHOUT ASPHALT 0.05
SCALE 1 : 25

CONSTRUCTION SPECIFICATION

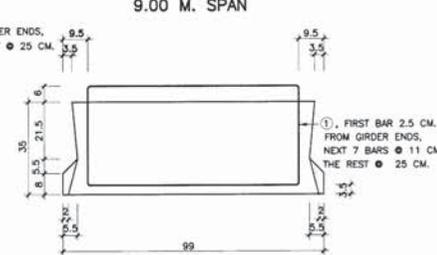
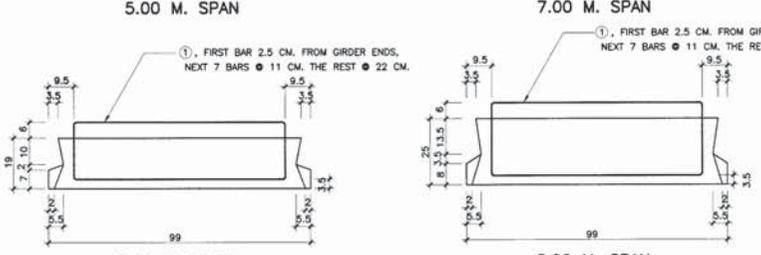
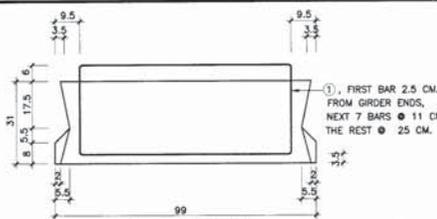
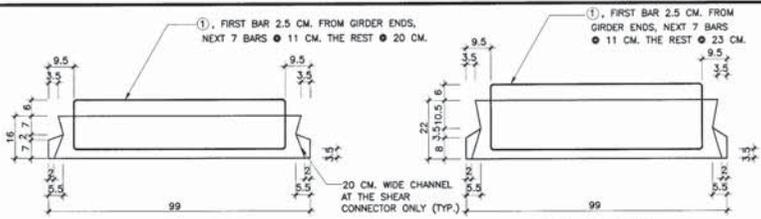
1. PC. PLANK GIRDER AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER WS-106 TO WS-107
2. EDGE BEAM, BRIDGE RAILING, AND ALL PARTS OF CONCRETE TOPPING OF THE EXISTING BRIDGES SHALL NOT BE REMOVED. THE CONCRETE DECK SHALL BE GROOVED AT LEAST 2 CM. DEEP ALONG THE SPECIFIC LINE PRIOR TO REMOVAL OF THE ITEMS. ALL EXISTING REINFORCEMENT IN CONCRETE DECK SHALL BE REMAINED.
3. CONCRETE GROOVING SHALL BE CLEANED.
4. ALL PRECAST PLANK BEAMS SHALL BE INSTALLED CORRESPONDING TO THE SPECIFIC WIDENING WIDTH. SHEAR KEY ALONG THE ADJACENT PLANK BEAMS SHALL BE WELDED.
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6. POURING AND CASTING THE CONCRETE TOPPING AND WALK WAY IN THE NEW BRIDGE WIDENING PARTS.
7. PRIOR TO POURING CONCRETE, ALL DUST AND OIL SHALL BE REMOVED AND CLEANED FOR ALL EXPOSED SURFACE OF THE CONNECTING MEMBERS. THE EPOXY RESIN AS PER ASTM C881 TYPE II GRADE I CLASS C SHALL BE APPLIED TO THE BONDING SURFACE OF THE CONNECTING CONCRETE MEMBERS.
8. THE LAP SPUCE LENGTH SHALL BE ADOPTED AS FOLLOWS:
 8.1 ROUND BAR (RB9) : THE LAP SPUCE LENGTH = 0.50 M.
 8.2 DEFORMED BAR (DB12) : THE LAP SPUCE LENGTH = 0.55 M.
 8.3 DEFORMED BAR (DB16) : THE LAP SPUCE LENGTH = 0.70 M.
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9. THE WELDED SPUCE OF REINFORCEMENT SHALL BE USED BASED ON AWS WHEN THE MECHANICAL LAP SPUCE LENGTH IS NOT SUFFICIENT.
10. THE PROPERTIES OF MATERIAL AND ORTHER DETAILS ARE NOT SHOWN IN THIS DRAWING. SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
11. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

KINGDOM OF THAILAND

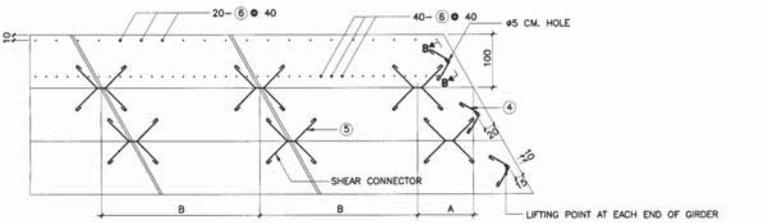
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
EXISTING PC. PLANK BRIDGE
WIDENING BY PC. PLANK WITH LONGITUDINAL JOINTS

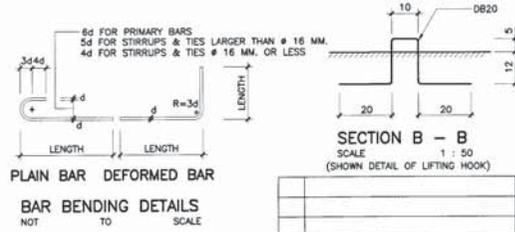
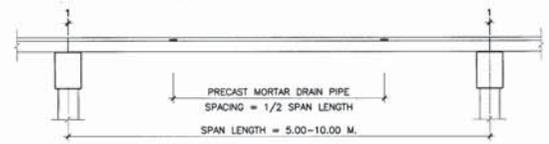
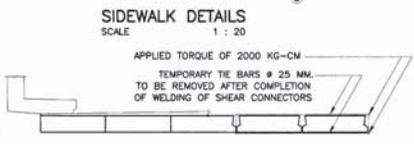
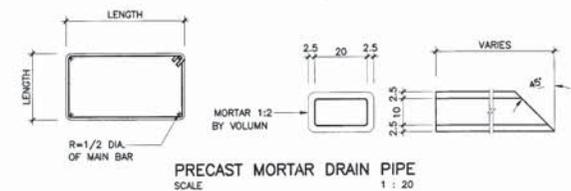
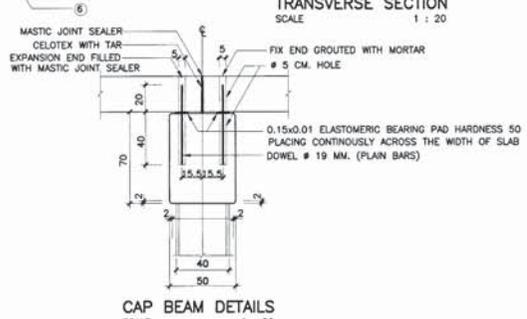
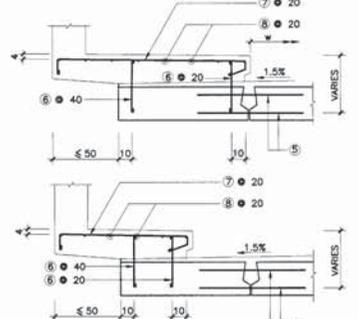
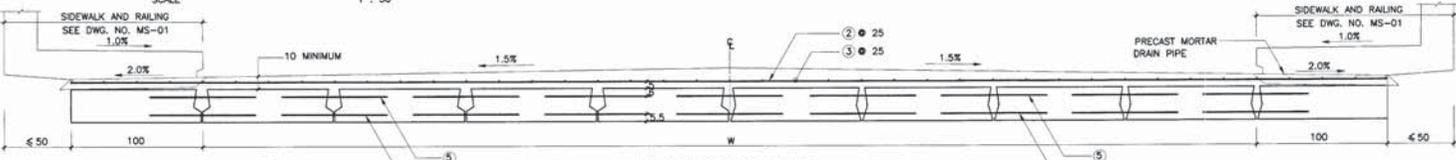
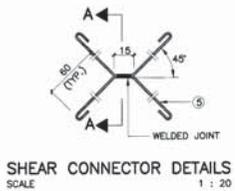
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. WS-104
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 111



GIRDER CROSS SECTIONS
SCALE 1 : 10



GIRDER ARRANGEMENT DETAIL
SCALE 1 : 50



BAR BENDING DIAGRAMS	BAR MARK	#	SPAN 5.00 M.		SPAN 6.00 M.		SPAN 7.00 M.		SPAN 8.00 M.		SPAN 9.00 M.		SPAN 10.00 M.						
			NO.	TOTAL LENGTH CM.	NO.	TOTAL LENGTH CM.													
	RB2	32	211	6752	36	217	7612	38	223	8474	40	229	9160	40	241	9640	40	249	9960
	RB4	20	100	2000	24	100	2400	28	100	2800	32	100	3200	36	100	3600	40	100	4000
	RB3	4	500	2000	4	600	2400	4	700	2800	4	800	3200	4	900	3600	4	1000	4000
	DB4	4	100	400	4	100	400	4	100	400	4	100	400	4	100	400	4	100	400
	DB5	12	172.5	2070	16	172.5	2760	16	172.5	2760	20	172.5	3450	24	172.5	4130	24	172.5	4130

RB = ROUND BARS
DB = DEFORMED BARS #2=ø1/4" OR ø6MM., #4=ø1/2" OR ø12MM., #5=ø5/8" OR ø16MM.

NO=TOTAL AMOUNT OF BARS
L=TOTAL LENGTH OF EACH BAR

BAR BENDING DIAGRAMS	SIDE WALK BAR WIDTH MARK	#	SPAN 5.00 M.		SPAN 6.00 M.		SPAN 7.00 M.		SPAN 8.00 M.		SPAN 9.00 M.		SPAN 10.00 M.							
			NO.	TOTAL LENGTH CM.	NO.	TOTAL LENGTH CM.														
	40	DB4	37	62.5	2312.5	45	65.5	2947.5	53	68.5	3630.5	60	71.5	4290.5	68	77.5	5270.5	75	81.5	6112.5
	40	RB3	25	90.6	2265.0	30	90.6	2718.0	35	90.6	3171.0	40	90.6	3624.0	45	90.6	4077.0	50	90.6	4530.0
	40	RB5	3	500	1500	3	600	1800	3	700	2100	3	800	2400	3	900	2700	3	1000	3000
	100	DB4	37	62.5	2312.5	45	65.5	2947.5	53	68.5	3630.5	60	71.5	4290	68	77.5	5270	75	81.5	6112.5
	100	RB3	25	150.6	3765	30	150.6	4518	35	150.6	5271	40	150.6	6024	45	150.6	6777	50	150.6	7530
	100	RB5	5	500	2500	5	600	3000	5	700	3500	5	800	4000	5	900	4500	5	1000	5000
	150	DB4	37	62.5	2312.5	45	65.5	2947.5	53	68.5	3630.5	60	71.5	4290	68	77.5	5270	75	81.5	6112.5
	150	RB3	25	200.6	5015	30	200.6	6018	35	200.6	7021	40	200.6	8024	45	200.6	9027	50	200.6	10030
150	RB5	8	500	4000	8	600	4800	8	700	5600	8	800	6400	8	900	7200	8	1000	8000	

NO=TOTAL AMOUNT OF BARS
L=TOTAL LENGTH OF EACH BAR

TABLE OF SHEAR CONNECTOR			
SPAN (M)	TOTAL AMOUNT FOR ONE GIRDER	A (CM)	B (CM)
5	12	70	179.50
6	16	70	153.00
7	16	70	166.36
8	20	70	164.75
9	24	50	159.80
10	24	50	178.00

- NOTES :
- WORK THIS DRAWING WITH DWG. NO. WS-107.
 - CASTING LENGTH OF A GIRDER SHALL BE 1 CM. SHORTER THAN THE SPAN LENGTH.
 - UNLESS OTHERWISE APPROVED, CEMENT USED IN THE CONCRETE MIX SHALL BE PORTLAND CEMENT TYPE 1 CONFORMING TO TIS 15.
 - MIX DESIGN OF CONCRETE FOR PRESTRESSED GIRDERS, BRIDGE TOPPING, SIDEWALK AND RAILING SHALL BE SUBMITTED FOR THE APPROVAL OF THE ENGINEER. CONCRETE SHALL HAVE A MINIMUM CEMENT CONTENT OF 350 KG/M³ AND A MINIMUM ULTIMATE COMPRESSIVE STRENGTH FOR A 0.15x0.15x0.15 M. CUBE AT 28 DAYS AS FOLLOWS:
 - A) FOR PRESTRESSED GIRDER 510 KG/CM²
 - B) FOR BRIDGE TOPPING 408 KG/CM²
 - C) FOR SIDEWALK AND RAILING 357 KG/CM²
 - PRESTRESSING TENDONS MAY BE RELEASED AFTER CONCRETE HAS ATTAINED A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 357 KG/CM² FOR THE STANDARD CUBE.
 - REBARS SMALLER THAN 9 MM. SHALL BE TIS 20 GRADE SR 24 PLAIN ROUND BARS, OTHERS SHALL BE TIS 24 GRADE SD 40 DEFORMED BARS UNLESS OTHERWISE INDICATED.
 - ALL MATERIALS SHALL BE USED UNDER THE APPROVAL OF THE ENGINEER.
 - GIRDER SHALL BE LIFTED AT BOTH ENDS, MIDSPAN LIFTING IS PROHIBITED.
 - THIS TYPE OF GIRDERS MAY BE USED WITH PIERS FOR SLAB BRIDGE HAVING THE SAME SPAN LENGTH.
 - DOWELS FOR HOLDING GIRDERS OVER PIERS SHALL BE PROVIDED AT EVERY ALTERNATE GIRDE
 - TOP AND BOTTOM SHEAR CONNECTOR SHALL BE WELDED SIMULTANEOUSLY.
 - TIGHTENING OF THE NEXT ADJACENT GIRDER THE PREVIOUS ONE SHALL BE DONE IN SUCCESSION.
 - IF PIERS FALL WITHIN THE TRANSITION OF HORIZONTAL CURVE, THE TOP OF CAP BEAM SHALL BE SUPERELEVATED IN ACCORDANCE WITH THE ROADWAY SUPERELEVATION SO THAT THE GIRDERS SHALL BE ON A SMOOTH PLANE. ELEVATION OF FINISHED SURFACE SHALL BE ATTAINED BY ADJUSTING THE CONCRETE TOPPING THIS SHALL BE DONE WITH THE APPROVAL OF THE ENGINEER.
 - THE PROPERTIES OF MATERIAL AND ORTRHER DETAILS ARE NOT SHOWN IN THIS DRAWING. SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
 - THIS DRAWING IS ADAPTED FROM DOH DWG. NO. PT-03
 - ALL DIMENSIONS SHOWN ARE IN CENTIMETERS UNLESS OTHERWISE INDICATED.

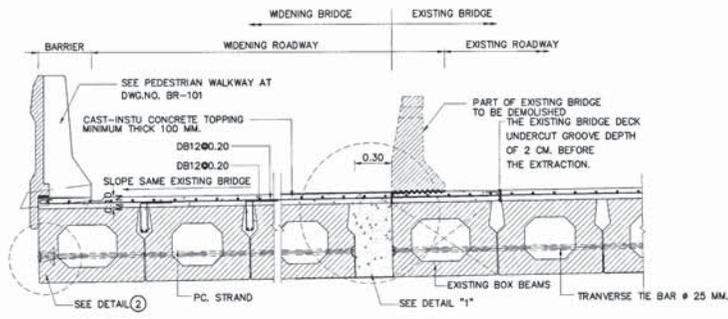
KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 0°-30° SKEW PC. BOX GIRDER BRIDGE
 GIRDER ARRANGEMENT AND DETAILS

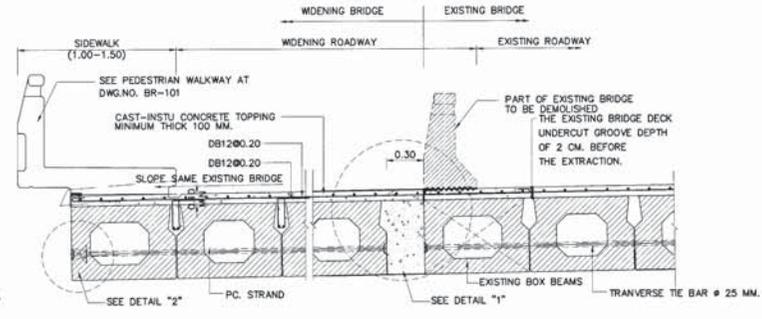
DESIGNED: D.O.H. & CONSULTANTS
 CHECKED: BUREAU OF LOCATION & DESIGN
 DATE: OCT 2015

SUBMITTED: [Signature]
 (DIRECTOR OF LOCATION & DESIGN BUREAU)
 SCALE: AS SHOWN

APPROVED: [Signature]
 (FOR DIRECTOR GENERAL)
 DWG NO. WS-106
 SHEET NO. 113

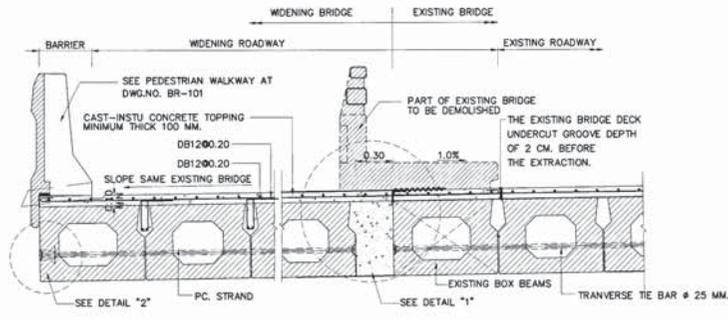


NEW BRIDGE WIDENING WITH EDGE

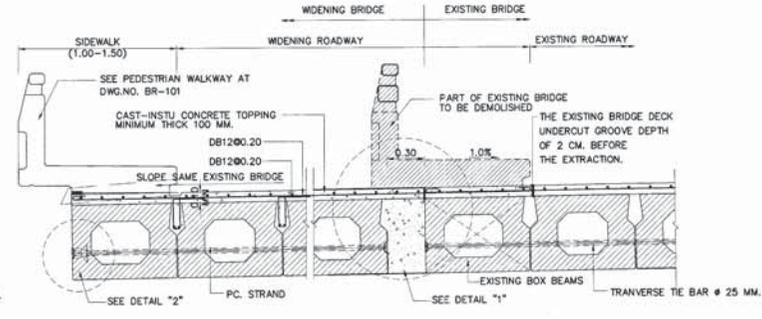


NEW BRIDGE WIDENING WITH SIDEWALK

CASE I : THE EXISTING BRIDGE WITH EDGE



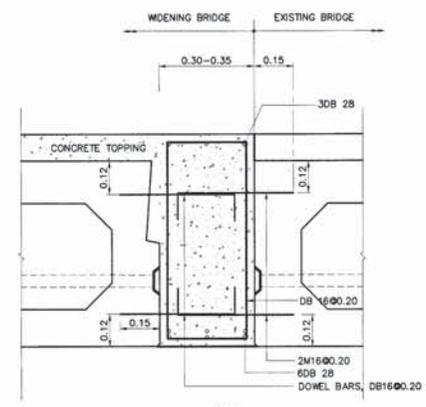
NEW BRIDGE WIDENING WITH EDGE



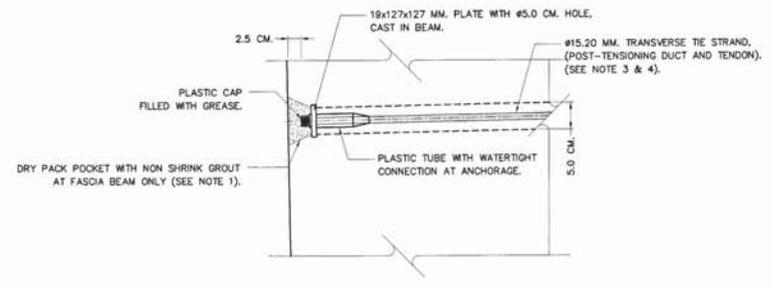
NEW BRIDGE WIDENING WITH SIDEWALK

CASE II : THE EXISTING BRIDGE WITH SIDEWALK

WIDENING PART AS BOX BEAMS BRIDGE
SCALE 1 : 25



DETAIL "1"
SCALE 1 : 10



DETAIL "2"
SCALE 1 : 5

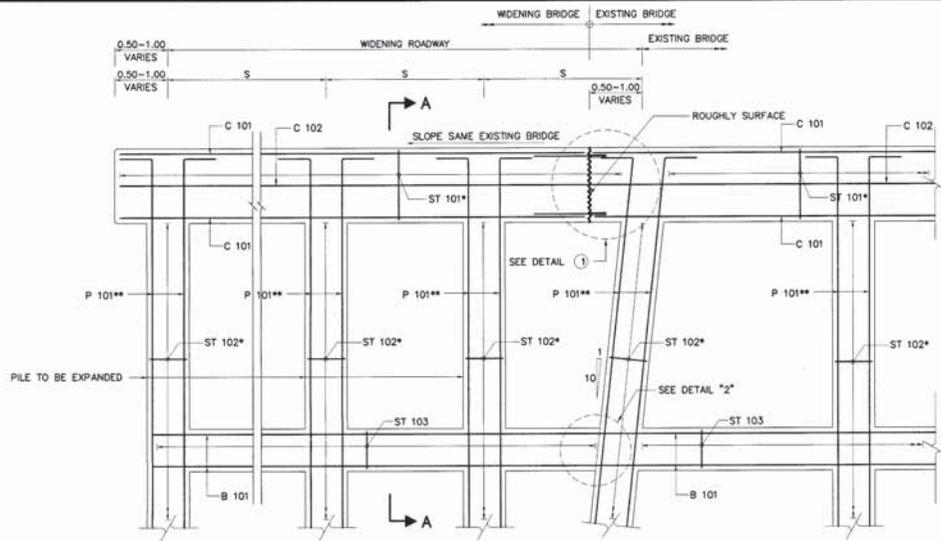
CONSTRUCTION SPECIFICATION

1. PC BOX BEAM AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER BB-101 TO BB-103
2. EDGE BEAM, BRIDGE RAILING, AND ALL PARTS OF CONCRETE TOPPING OF THE EXISTING BRIDGES SHALL BE REMOVED. THE CONCRETE DECK SHALL BE GROOVED AT LEAST 2 CM DEEP ALONG THE SPECIFIC LINE PRIOR TO REMOVAL OF THE ITEMS. ALL EXISTING REINFORCEMENT IN CONCRETE DECK SHALL BE REMAINED.
3. CONCRETE GROOVING SHALL BE CLEANED.
4. ALL PRECAST PLANK BEAMS SHALL BE INSTALLED CORRESPONDING TO THE SPECIFIC WIDENING WIDTH. SHEAR KEY ALONG THE ADJACENT PLANK BEAMS SHALL BE WELDED.
5. ALL NEW REINFORCEMENT IN CONCRETE DECK SHALL CONNECT TO THE EXISTING ONES USING THE LAP SPlice LENGTH SPECIFIED IN THIS DRAWING.
6. POURING AND CASTING THE CONCRETE TOPPING AND WALK WAY IN THE NEW BRIDGE WIDENING PARTS.
7. PRIOR TO POURING CONCRETE, ALL DUST AND OIL SHALL BE REMOVED AND CLEANED FOR ALL EXPOSED SURFACE OF THE CONNECTING MEMBERS. THE EPOXY RESIN AS PER ASTM C881 TYPE II GRADE I CLASS C SHALL BE APPLIED TO THE BONDING SURFACE OF THE CONNECTING CONCRETE MEMBERS.
8. THE LAP SPlice LENGTH SHALL BE ADOPTED AS FOLLOWS:
 8.1 ROUND BAR (RB9) : THE LAP SPlice LENGTH = 0.50 M.
 8.2 DEFORMED BAR (DB12): THE LAP SPlice LENGTH = 0.55 M.
 8.3 DEFORMED BAR (DB16): THE LAP SPlice LENGTH = 0.70 M.
 8.4 DEFORMED BAR (DB20): THE LAP SPlice LENGTH = 0.90 M.
 8.5 DEFORMED BAR (DB25): THE LAP SPlice LENGTH = 1.40 M.
 8.6 DEFORMED BAR (DB28): THE LAP SPlice LENGTH = 1.75 M.
9. THE WELDED SPlice OF REINFORCEMENT SHALL BE USED BASED ON AWS WHEN THE MECHANICAL LAP SPlice LENGTH IS NOT SUFFICIENT.
10. THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
11. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

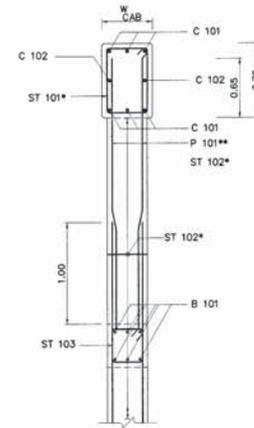
NOTES :

1. NON SHRINK GROUT FOR EXTERIOR POCKETS SHALL BE THE SAME COLOR AND TEXTURE AS THE BEAM CONCRETE.
2. OTHER ANCHORAGE SYSTEMS MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER. ALTERNATE ANCHORAGE SYSTEMS SHALL BE WATERTIGHT AND CORROSION PROOF.
3. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. NO. BB-102 AND BB-103
4. USE TRANSVERSE PC #15.2 MM 7 WIRE STANDS RUSTPROOF AFTER CONCRETE TOPPING 3 DAYS SHALL BE JACKING FORCE AFTER LOSS IS 150 KN

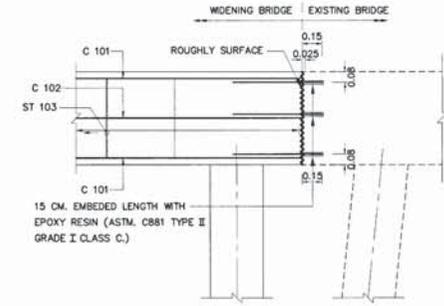
KINGDOM OF THAILAND			
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS			
STANDARD DRAWING EXISTING BOX BEAMS BRIDGE WIDENING BY BOX BEAMS			
DESIGNED : D.G.K. & CONSULTANTS	CHECKED : [Signature]	BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	[Signature]	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	[Signature]	(FOR DIRECTOR GENERAL)	DWG NO. WS-108
REF.	REVISION	SIGNATURE	DATE
			SHEET NO. 115



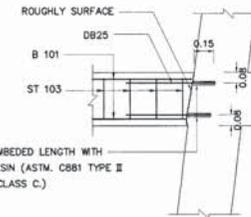
PILE BENT REINFORCEMENT DETAILS
SCALE 1 : 25



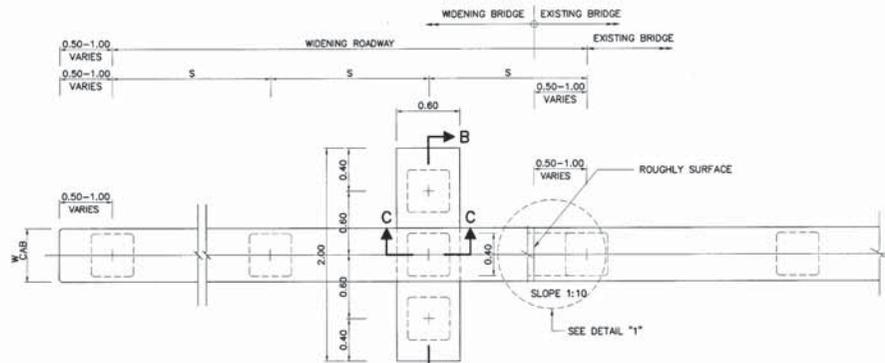
SECTION A - A
SCALE 1 : 25



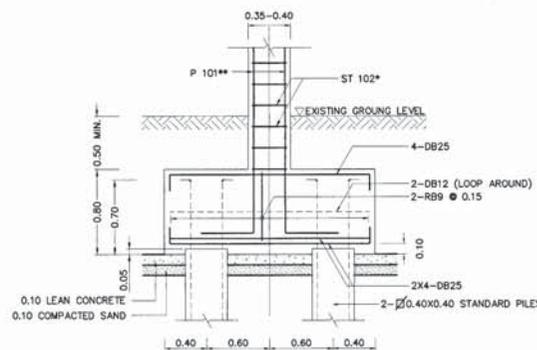
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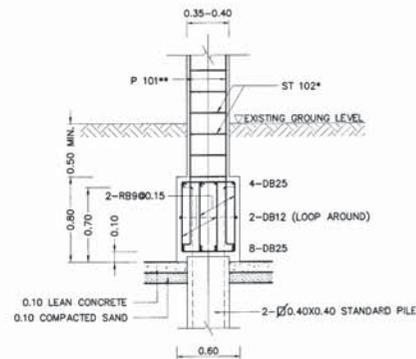
DETAIL "2"
SCALE 1 : 20



PILE BENT PLAN (TOP VIEW)
SCALE 1 : 25



SECTION B - B
SCALE 1 : 25



SECTION C - C
SCALE 1 : 25

EXPANSION PARTS OF FOOTING
SCALE 1 : 25

NOTES :

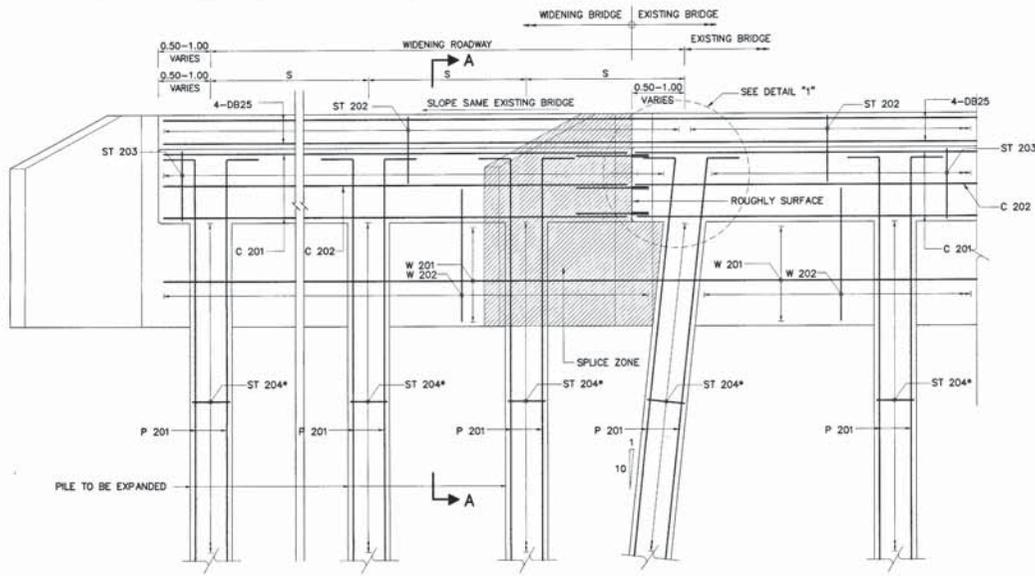
- PILE BENT DETAIL AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER PB-303
- THE PRE-CONSTRUCTION EXTENDING BRIDGE WIDTH SHALL HAVE SIGN AND TRAFFIC WARNING BOARDS BEFORE CONSTRUCTION BY DOH SPECIFICATION.
- USE BOARDS ALONG WITH LENGTH OF BRIDGE THAT EXTEND WIDTH BY DISTANCE OF BOARDS TO CURB ABOUT 1.00 M.
- BEFORE CUTTING THE EXISTING BRIDGE, DEMOLISH THE EXISTING CURB, RAIL, SLAB TOPPING AND CAP BEAM. MARK CUTTING LINE ALONG SLAB, 1 CM. WIDTH AND 2 CM. DEPTH FOR SAW CUTTING, BUT HAVE TO AVOID THE REINFORCEMENT BARS.
- CLEAN JOINTS WITHOUT DIRTY.
- PIER DETAIL AND NUMBER OF PILE BENT ARE SHOWN IN STANDARD DRAWINGS NUMBER PB-303
- CONSTRUCT EXTEND CAP BEAM ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
- CONSTRUCT EXTEND SLAB , RAILING CURB ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
- BEFORE POURING CONCRETE , CLEAN JOINT AND BARS WITHOUT DIRTY POURING WATER IN WET ARE NOT LESS THAN TWO HOURS WHILE JOINTS HAVE BEEN ALREADY DRY TO PAINT JOINTS WITH EPOXY RESIN.
- THE PROPERTIES OF EPOXY RESIN ARE ASTM. CB81 TYPE II GRADE I CLASS C.
- S = DISTANCE BETWEEN PILES, TO BE STANDARD DRAWINGS NUMBER PB-303
- THE WELDED BARS ARE THE AWS. STANDARDS.
- THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003.
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

KINGDOM OF THAILAND

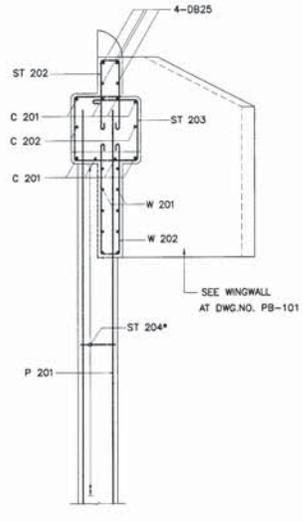
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
REINFORCEMENT DETAILS FOR EXISTING PILE BENT
WITH BATTER PILES
(THE NEW FOOTING UNDERNEATH THE RIVER BED)

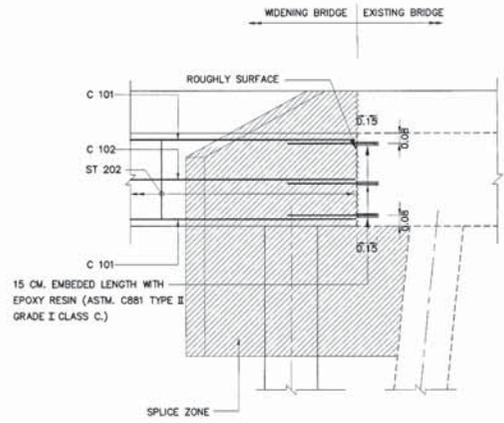
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SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. WS-201
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 118



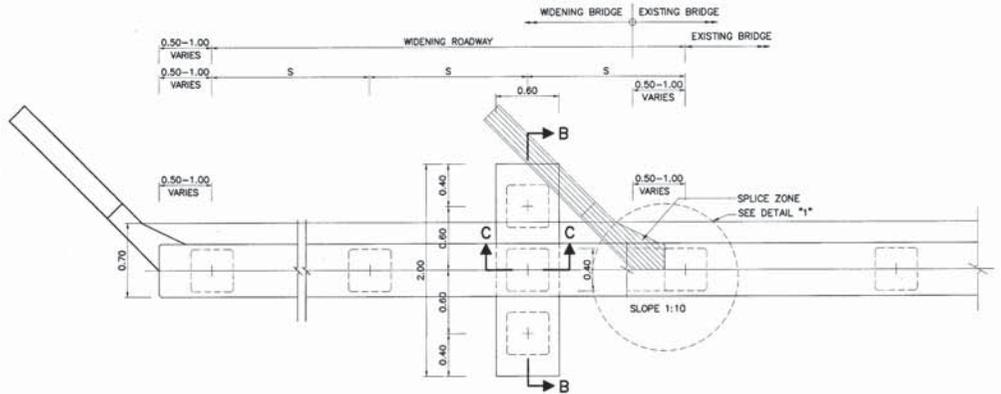
ABUTMENT REINFORCEMENT DETAILS
SCALE 1 : 25



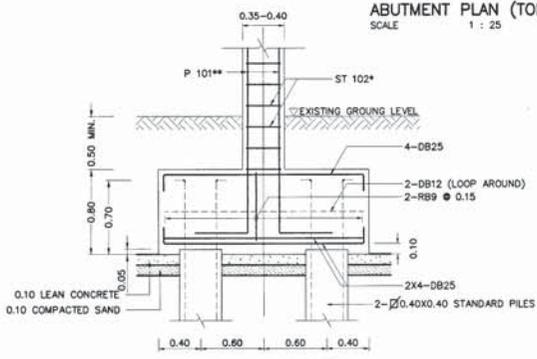
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DETAIL "1"
SCALE 1 : 20

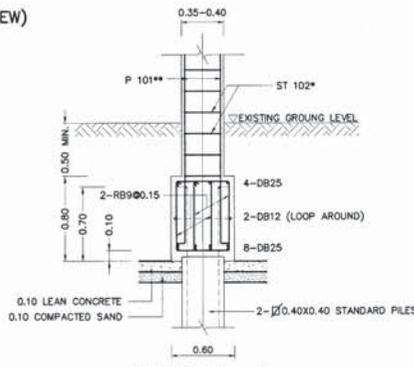


ABUTMENT PLAN (TOP VIEW)
SCALE 1 : 25



SECTION B - B
SCALE 1 : 25

EXPANSION PARTS OF FOOTING
SCALE 1 : 25



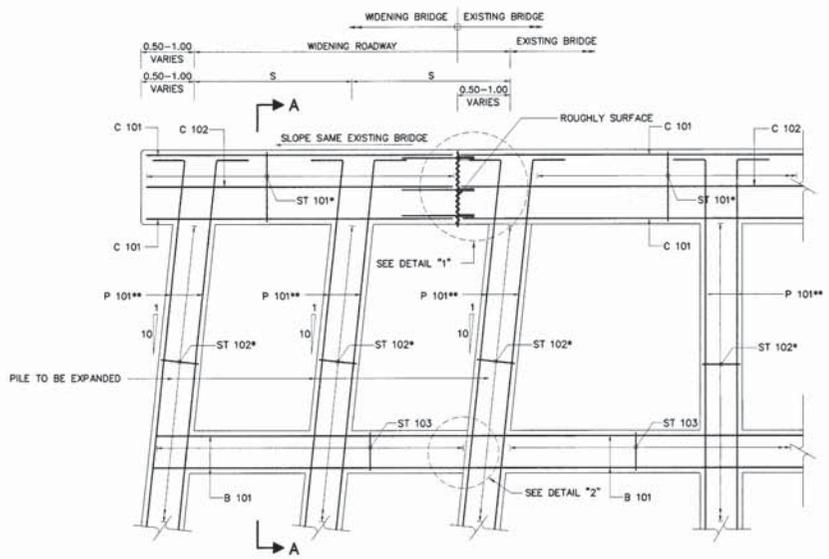
SECTION C - C
SCALE 1 : 25

- NOTES :**
1. ABUTMENT DETAIL AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER PB-303
 2. CAP BEAM AND WINGWALL OF ABUTMENT SHALL CONFORM TO THE STANDARD DRAWING NUMBER PB-101
 3. THE PRE-CONSTRUCTION EXTENDING BRIDGE WIDTH SHALL HAVE SIGN AND TRAFFIC WARNING BOARDS BEFORE CONSTRUCTION BY DOH SPECIFICATION.
 4. USE BOARDS ALONG WITH LENGTH OF BRIDGE THAT EXTEND WIDTH BY DISTANCE OF BOARDS TO CURB ABOUT 1.00 M.
 5. BEFORE CUTTING THE EXISTING BRIDGE, DEMOLISH THE EXISTING CURB, RAIL, SLAB AND CAP BEAM. MARK CUTTING LINE ALONG SLAB, 1 CM. WIDTH AND 2 CM. DEPTH FOR SAW CUTTING, BUT HAVE TO AVOID THE REINFORCEMENT BARS.
 6. CLEAN JOINTS WITHOUT DIRTY.
 7. ABUTMENT DETAIL AND NUMBER OF PILE BENT ARE SHOWN IN STANDARD DRAWINGS NUMBER PB-303
 8. CONSTRUCT EXTEND CAP BEAM ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
 9. CONSTRUCT EXTEND SLAB , RAILING CURB ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
 10. BEFORE POURING CONCRETE, CLEAN JOINT AND BARS WITHOUT DIRTY POURING WATER IN WET ARE NOT LESS THAN TWO HOURS WHILE JOINTS HAVE BEEN ALREADY DRY TO PAINT JOINTS WITH EPOXY RESIN.
 11. THE PROPERTIES OF EPOXY RESIN ARE ASTM. C881 TYPE II GRADE I CLASS C.
 12. S = DISTANCE BETWEEN PILES, TO BE STANDARD DRAWINGS NUMBER PB-303
 13. THE WELDED BARS ARE THE AWS STANDARDS.
 14. THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
 15. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

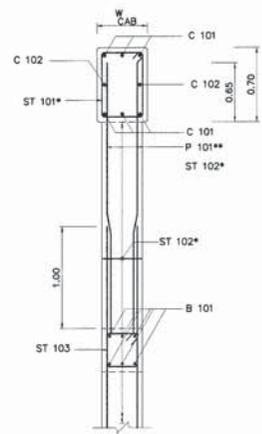
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
REINFORCEMENT DETAILS FOR EXISTING ABUTMENT OF PILE BENT WITH BATTER PILES

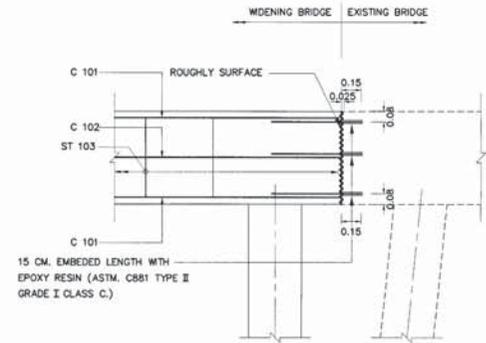
DESIGNED: D.G.M. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. WS-203
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 118



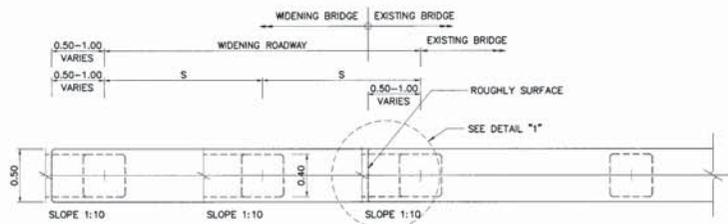
PILE BENT REINFORCEMENT DETAILS
SCALE 1 : 25



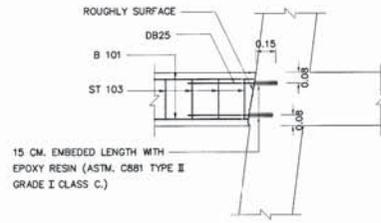
SECTION A - A
SCALE 1 : 25



DETAIL "1"
SCALE 1 : 20



PILE BENT PLAN (TOP VIEW)
SCALE 1 : 25



DETAIL "2"
SCALE 1 : 20

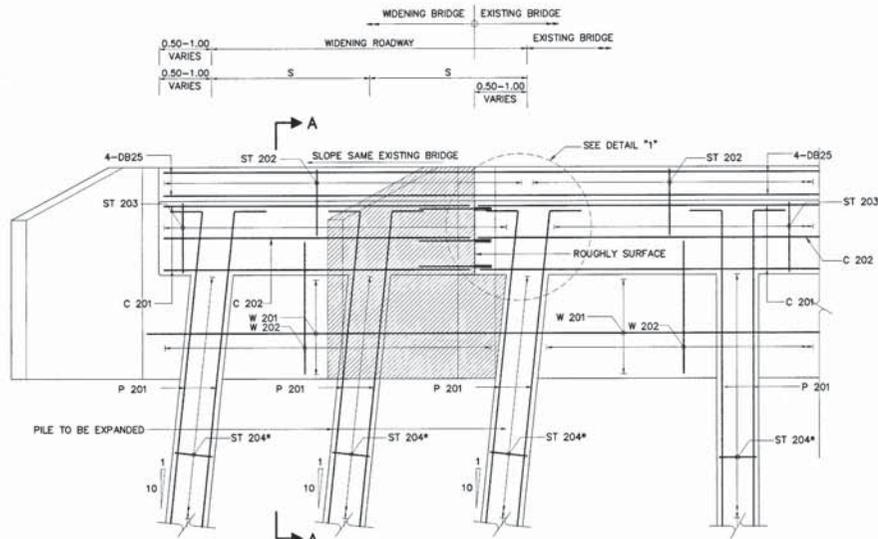
NOTES :

1. PILE BENT DETAIL AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER PB-303
2. THE PRE-CONSTRUCTION EXTENDING BRIDGE WIDTH SHALL HAVE SIGN AND TRAFFIC WARNING BOARDS BEFORE CONSTRUCTION BY DDM SPECIFICATION.
3. USE BOARDS ALONG WITH LENGTH OF BRIDGE THAT EXTEND WIDTH BY DISTANCE OF BOARDS TO CURB ABOUT 1.00 M.
4. BEFORE CUTTING THE EXISTING BRIDGE, DEMOLISH THE EXISTING CURB, RAIL, SLAB TOPPING AND CAP BEAM. MARK CUTTING LINE ALONG SLAB, 1 CM. WIDTH AND 2 CM. DEPTH FOR SAW CUTTING, BUT HAVE TO AVOID THE REINFORCEMENT BARS.
5. CLEAN JOINTS WITHOUT DIRTY.
6. PIER DETAIL AND NUMBER OF PILE BENT ARE SHOWN IN STANDARD DRAWINGS NUMBER PB-303
7. CONSTRUCT EXTEND CAP BEAM AS THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
8. CONSTRUCTION OF EXTEND SLAB, RAILING CURB AS THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
9. BEFORE POURING CONCRETE, CLEAN JOINT AND BARS WITHOUT DIRTY POURING WATER IN WET ARE NOT LESS THAN TWO HOURS WHILE JOINTS HAVE BEEN ALREADY DRY TO PAINT JOINTS WITH EPOXY RESIN.
10. THE PROPERTIES OF EPOXY RESIN ARE ASTM. C881 TYPE II GRADE I CLASS C.
11. S = DISTANCE BETWEEN PILES, TO BE STANDARD DRAWINGS NUMBER PB-303
12. THE WELDED BARS ARE THE AWS. STANDARDS.
13. THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
14. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

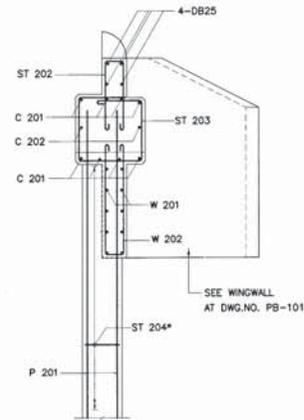
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
REINFORCEMENT DETAILS FOR EXISTING PILE BENT WITH BATTER PILES
(THE NARROW WIDENING USING NEW PILES NOT MORE THAN 2)

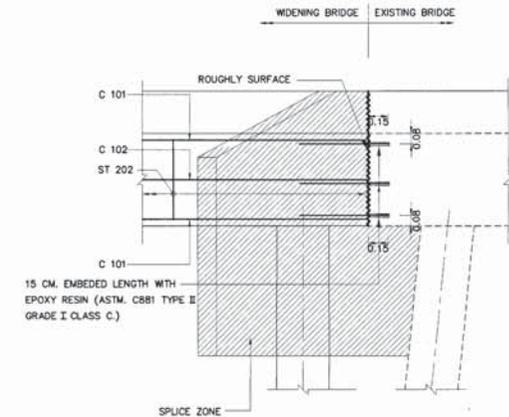
DESIGNED: D.O.M. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. WS-204
REF.	REVISION	SIGNATURE DATE



ABUTMENT REINFORCEMENT DETAILS
SCALE 1 : 25



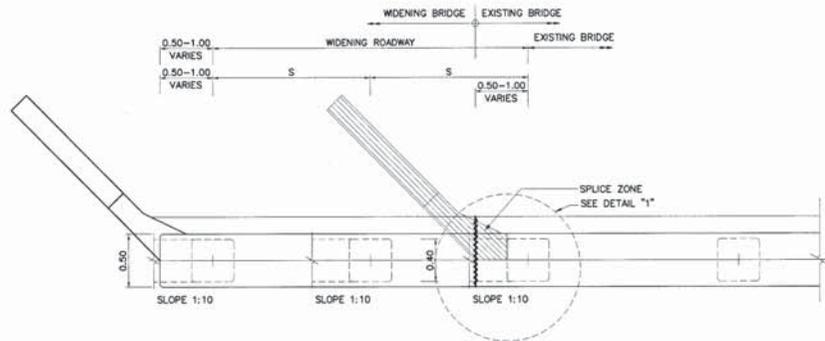
SECTION A - A
SCALE 1 : 25



DETAIL "1"
SCALE 1 : 20

NOTES :

1. ABUTMENT DETAIL AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER PB-303
2. CAP BEAM AND WINGWALL OF ABUTMENT SHALL CONFORM TO THE STANDARD DRAWING NUMBER PB-101
3. THE PRE-CONSTRUCTION EXTENDING BRIDGE WIDTH SHALL HAVE SIGN AND TRAFFIC WARNING BOARDS BEFORE CONSTRUCTION BY DOH SPECIFICATION.
4. USE BOARDS ALONG WITH LENGTH OF BRIDGE THAT EXTEND WIDTH BY DISTANCE OF BOARDS TO CURB ABOUT 1.00 M.
5. BEFORE CUTTING THE EXISTING BRIDGE, DEMOLISH THE EXISTING CURB, RAIL, SLAB TOPPING AND CAP BEAM. MARK CUTTING LINE ALONG SLAB, 1 CM. WIDTH AND 2 CM. DEPTH FOR SAW CUTTING, BUT HAVE TO AVOID THE REINFORCEMENT BARS.
6. CLEAN JOINTS WITHOUT DIRTY.
7. ABUTMENT DETAIL AND NUMBER OF PILE BENT ARE SHOWN IN STANDARD DRAWINGS NUMBER PB-303
8. CONSTRUCT EXTEND CAP BEAM ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
9. CONSTRUCT EXTEND SLAB , RAILING CURB ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
10. BEFORE POURING CONCRETE, CLEAN JOINT AND BARS WITHOUT DIRTY POURING WATER IN MET ARE NOT LESS THAN TWO HOURS WHILE JOINTS HAVE BEEN ALREADY DRY TO PAINT JOINTS WITH EPOXY RESIN.
11. THE PROPERTIES OF EPOXY RESIN ARE ASTM C881 TYPE II GRADE I CLASS C.
12. S = DISTANCE BETWEEN PILES, TO BE STANDARD DRAWINGS NUMBER PB-303
13. THE WELDED BARS ARE THE ARE STANDARDS.
14. THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
15. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.



ABUTMENT PLAN (TOP VIEW)
SCALE 1 : 25

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

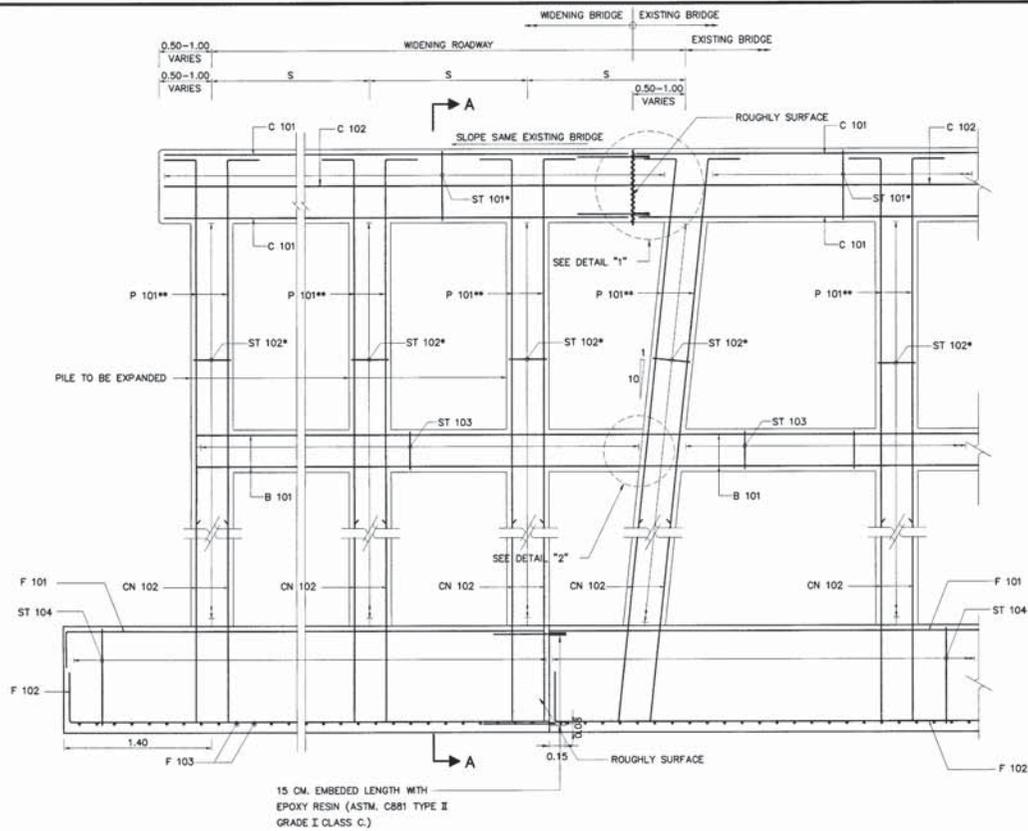
STANDARD DRAWING
REINFORCEMENT DETAILS FOR EXISTING ABUTMENT WITH BATTER PILES
(THE NARROW WIDENING USING NEW PILES NOT MORE THAN 2)

DESIGNED: D.D.H. & CONSULTANTS CHECKED: BUREAU OF LOCATION & DESIGN DATE: OCT 2015

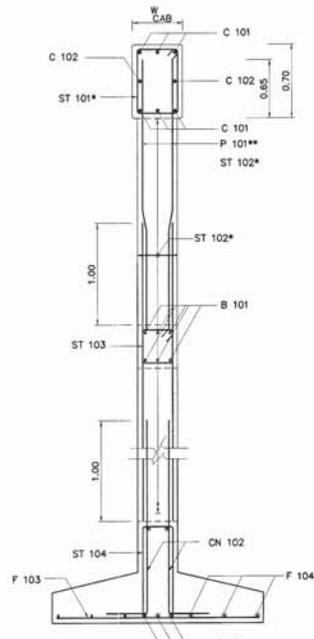
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APPROVED: (FOR DIRECTOR GENERAL) OWG NO. WS-205 SHEET NO. 120

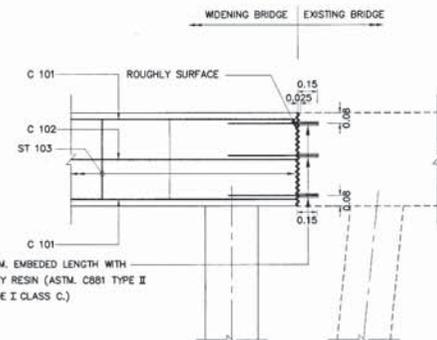
REF.	REVISION	SIGNATURE	DATE



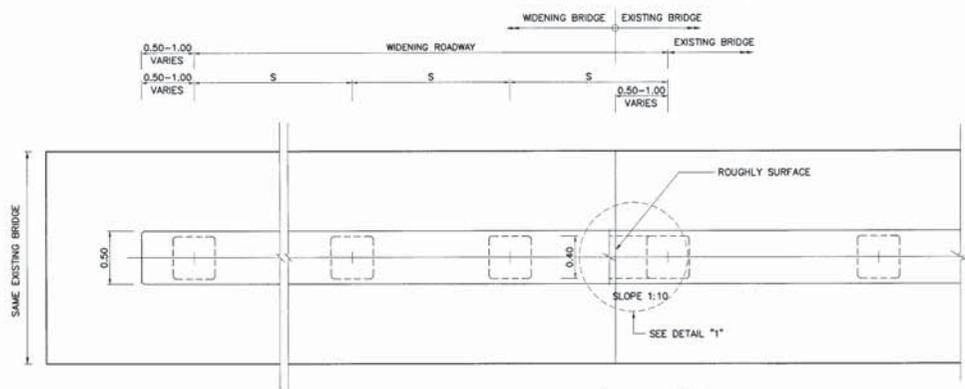
PILE BENT REINFORCEMENT DETAILS
SCALE 1 : 25



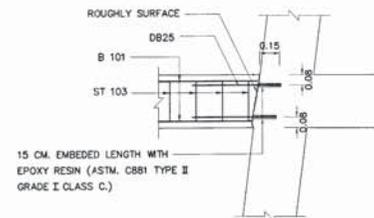
SECTION A - A
SCALE 1 : 25



DETAIL "1"
SCALE 1 : 20



PILE BENT PLAN (TOP VIEW)
SCALE 1 : 25



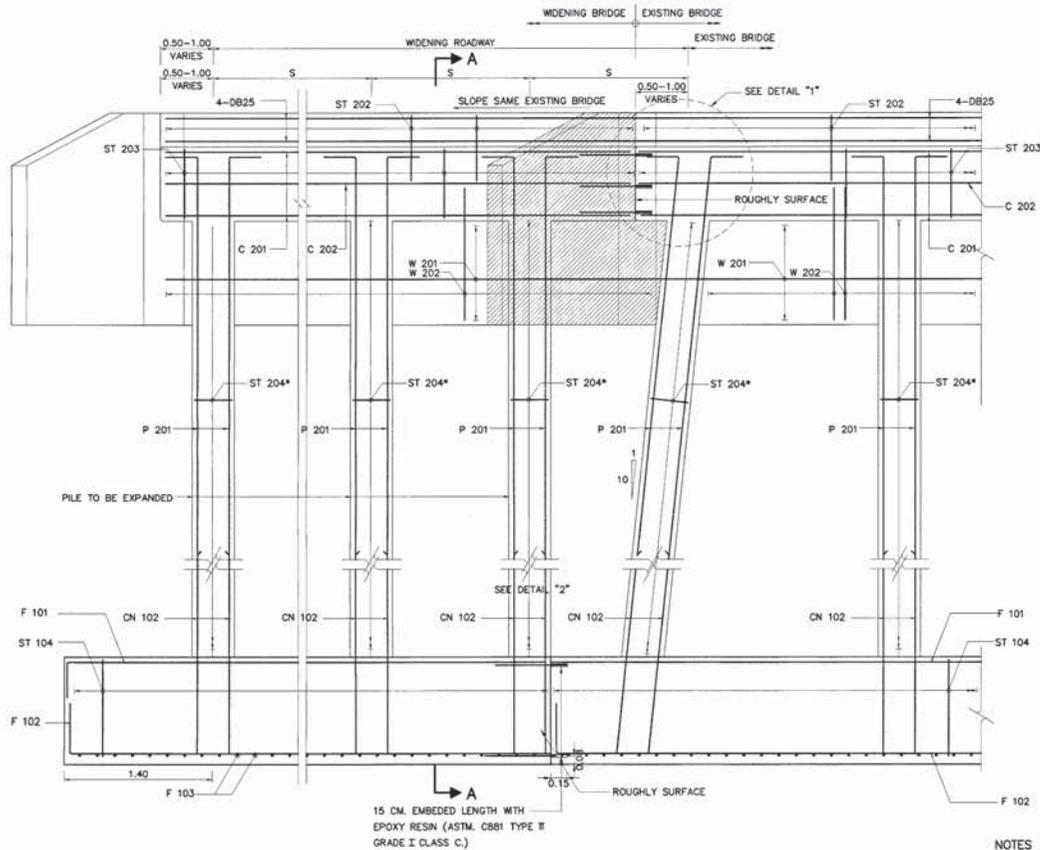
DETAIL "2"
SCALE 1 : 20

NOTES :

- PILE BENT DETAIL AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER PB-304
- THE PRE-CONSTRUCTION EXTENDING BRIDGE WIDTH SHALL HAVE SIGN AND TRAFFIC WARNING BOARDS BEFORE CONSTRUCTION BY DOH SPECIFICATION.
- USE BOARDS ALONG WITH LENGTH OF BRIDGE THAT EXTEND WIDTH BY DISTANCE OF BOARDS TO CURB ABOUT 1.00 M.
- BEFORE CUTTING THE EXISTING BRIDGE, DEMOLISH THE EXISTING CURB, RAIL SLAB AND CAP BEAM. MARK CUTTING LINE ALONG SLAB, 1 CM. WIDTH AND 2 CM. DEPTH FOR SAW CUTTING, BUT HAVE TO AVOID THE REINFORCEMENT BARS.
- CLEAN JOINTS WITHOUT DIRTY.
- SPREAD FOOTING PIER DETAIL AND NUMBER OF PILE BENT ARE SHOWN IN STANDARD DRAWINGS NUMBER PB-304
- CONSTRUCT EXTEND CAP BEAM ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
- CONSTRUCT EXTEND SLAB , RAILING CURB ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
- BEFORE POURING CONCRETE , CLEAN JOINT AND BARS WITHOUT DIRTY POURING WATER IN WET ARE NOT LESS THAN TWO HOURS WHILE JOINTS HAVE BEEN ALREADY DRY TO PAINT JOINTS WITH EPOXY RESIN.
- THE PROPERTIES OF EPOXY RESIN ARE ASTM. C881 TYPE II GRADE I CLASS C.
- S = DISTANCE BETWEEN PILES, TO BE STANDARD DRAWINGS NUMBER PB-304
- THE WELDED BARS ARE THE AWS. STANDARDS.
- THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

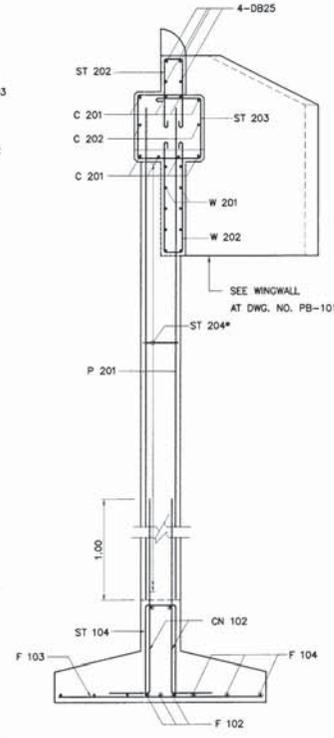
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
REINFORCEMENT DETAILS FOR EXISTING PILE BENT
WITH BATTER PILES

DESIGNED: D.G.A. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED: (DIRECTOR OF LOCATION & DESIGN BUREAU)	APPROVED: (FOR DIRECTOR GENERAL)	SCALE: AS SHOWN
REF.	REVISION	SIGNATURE DATE
		DWG NO. WS-210
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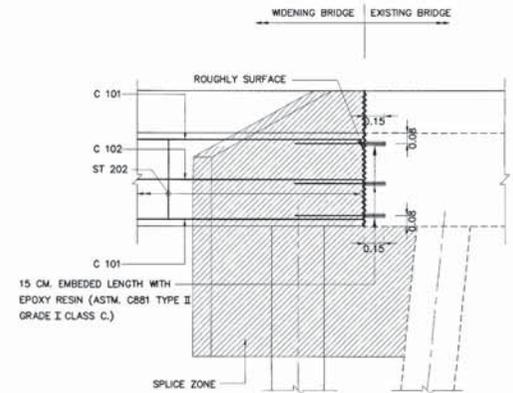


ABUTMENT REINFORCEMENT DETAILS
SCALE 1 : 25

NOTES :



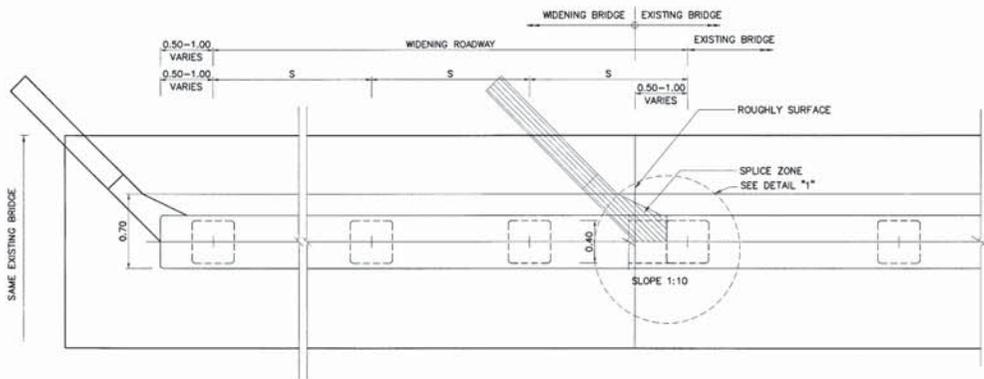
SECTION A - A
SCALE 1 : 25



DETAIL "1"
SCALE 1 : 20

NOTES :

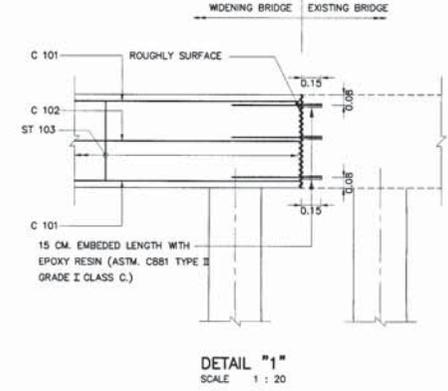
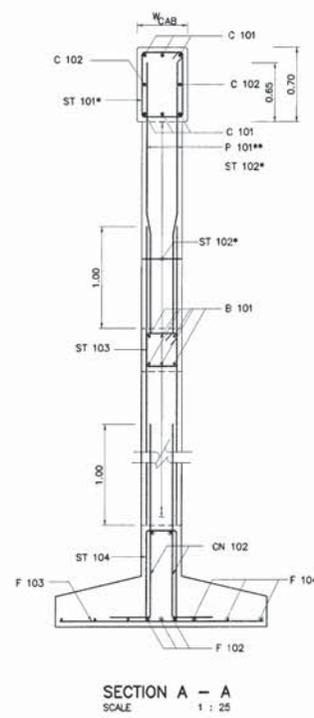
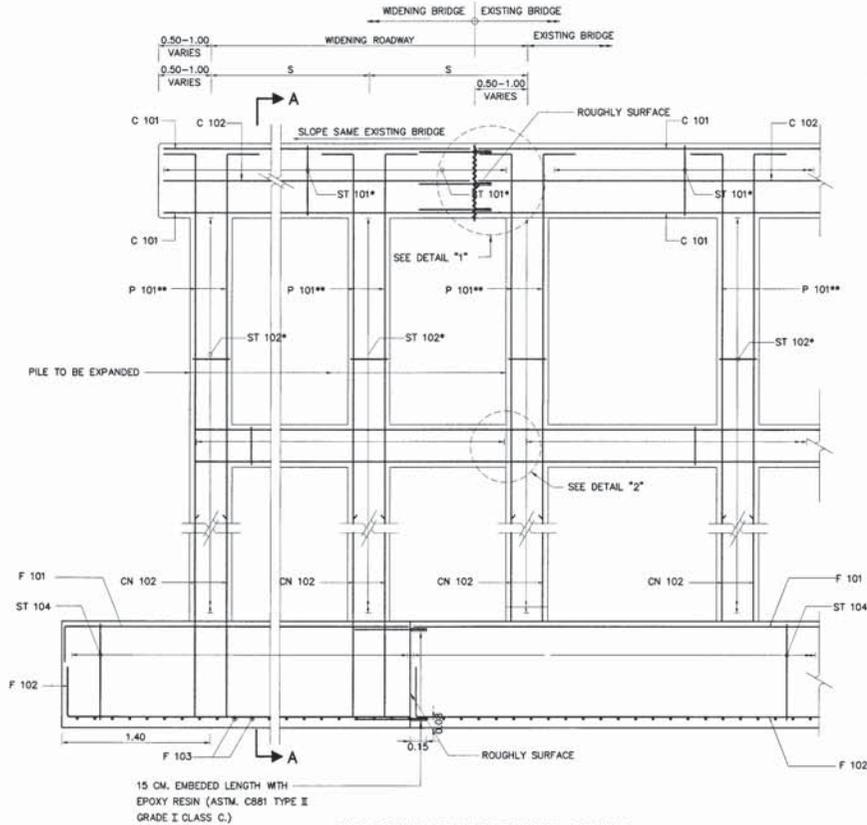
1. ABUTMENT DETAIL AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER PB-302
2. CAP BEAM AND WINGWALL OF ABUTMENT SHALL CONFORM TO THE STANDARD DRAWING NUMBER PB-101
3. THE PRE-CONSTRUCTION EXTENDING BRIDGE WIDTH SHALL HAVE SIGN AND TRAFFIC WARNING BOARDS BEFORE CONSTRUCTION BY DOH SPECIFICATION.
4. USE BOARDS ALONG WITH LENGTH OF BRIDGE THAT EXTEND WITH BY DISTANCE OF BOARDS TO CURB ABOUT 1.00 M.
5. BEFORE CUTTING THE EXISTING BRIDGE, DEMOLISH THE EXISTING CURB, RAIL, SLAB TOPPING AND CAP BEAM. MARK CUTTING LINE ALONG SLAB, 1 CM. WIDTH AND 2 CM. DEPTH FOR SAW CUTTING, BUT HAVE TO AVOID THE REINFORCEMENT BARS.
6. CLEAN JOINTS WITHOUT DIRTY.
7. SPREAD FOOTING ABUTMENT DETAIL AND NUMBER OF PILE BENT ARE SHOWN IN STANDARD DRAWINGS NUMBER PB-302
8. CONSTRUCT EXTEND CAP BEAM ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
9. CONSTRUCT EXTEND SLAB , RAILING CURB ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
10. BEFORE POURING CONCRETE , CLEAN JOINT AND BARS WITHOUT DIRTY POURING WATER IN WET ARE NOT LESS THAN TWO HOURS WHILE JOINTS HAVE BEEN ALREADY DRY TO PAINT JOINTS WITH EPOXY RESIN.
11. THE PROPERTIES OF EPOXY RESIN ARE ASTM. C881 TYPE II GRADE I CLASS C.
12. S = DISTANCE BETWEEN PILES, TO BE STANDARD DRAWINGS NUMBER PB-302
13. THE WELDED BARS ARE THE AWS. STANDARDS.
14. THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
15. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.



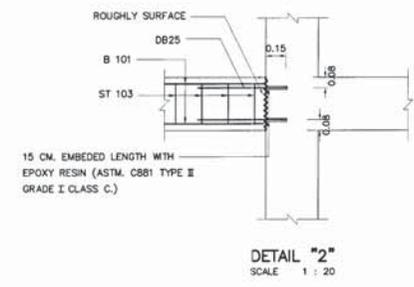
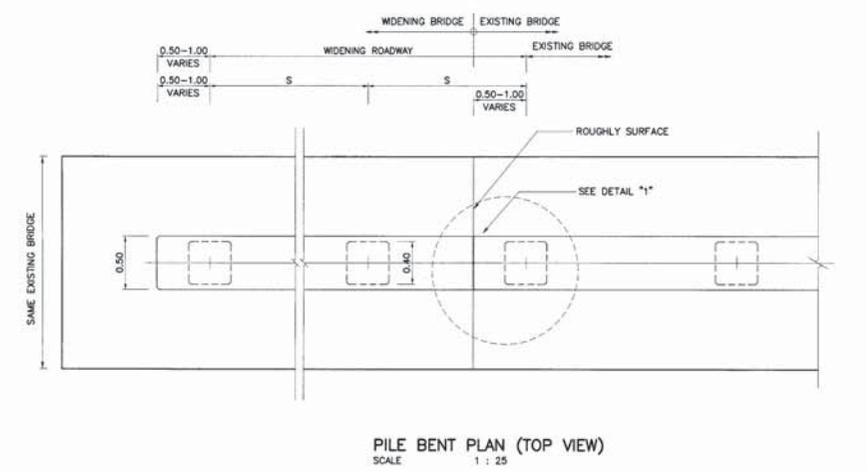
ABUTMENT PLAN (TOP VIEW)
SCALE 1 : 25

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
REINFORCEMENT DETAILS FOR EXISTING ABUTMENT
WITH BATTER PILES

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. WS-211
REF.	REVISION	SIGNATURE DATE
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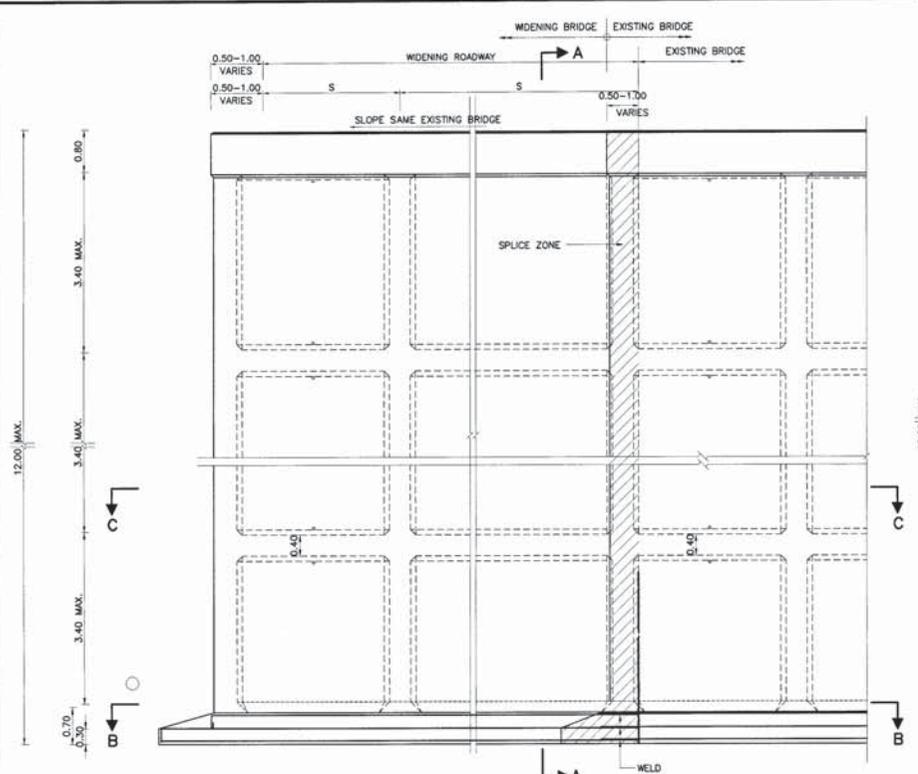


- NOTES :
- PILE BENT DETAIL AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER PB-304
 - THE PRE-CONSTRUCTION EXTENDING BRIDGE WIDTH SHALL HAVE SIGN AND TRAFFIC WARNING BOARDS BEFORE CONSTRUCTION BY DOH SPECIFICATION.
 - USE BOARDS ALONG WITH LENGTH OF BRIDGE THAT EXTEND WIDTH BY DISTANCE OF BOARDS TO CURB ABOUT 1.00 M.
 - BEFORE CUTTING THE EXISTING BRIDGE, DEMOLISH THE EXISTING CURB, RAIL, SLAB AND CAP BEAM. MARK CUTTING LINE ALONG SLAB, 1 CM. WIDTH AND 2 CM. DEPTH FOR SAW CUTTING, BUT HAVE TO AVOID THE REINFORCEMENT BARS.
 - CLEAN JOINTS WITHOUT DIRTY.
 - SPREAD FOOTING PIER DETAIL AND NUMBER OF PILE BENT ARE SHOWN IN STANDARD DRAWINGS NUMBER PB-304
 - CONSTRUCT EXTEND CAP BEAM ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
 - CONSTRUCT EXTEND SLAB , RAILING CURB ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
 - BEFORE POURING CONCRETE , CLEAN JOINT AND BARS WITHOUT DIRTY. POURING WATER IN WET ARE NOT LESS THAN TWO HOURS WHILE JOINTS HAVE BEEN ALREADY DRY TO PAINT JOINTS WITH EPOXY RESIN.
 - THE PROPERTIES OF EPOXY RESIN ARE ASTM. C881 TYPE II GRADE I CLASS C.
 - S = DISTANCE BETWEEN PILES, TO BE STANDARD DRAWINGS NUMBER PB-304
 - THE WELDED BARS ARE THE AWS. STANDARDS.
 - THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
 - ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

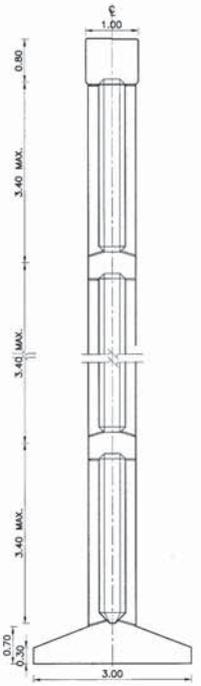


KINGDOM OF THAILAND			
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS			
STANDARD DRAWING REINFORCEMENT DETAILS FOR EXISTING PILE BENT WITHOUT BATTER PILES			
DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015	
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN	
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. WS-212	
REF.	REVISION	SIGNATURE	DATE
			SHEET NO. 127

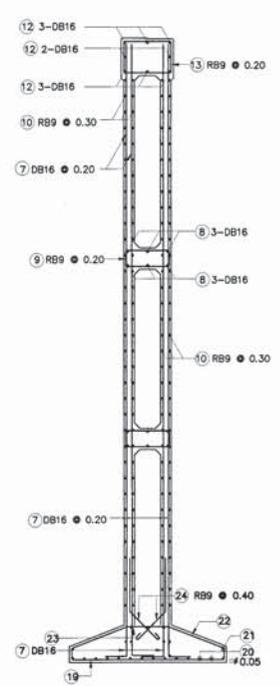
D:\1\141_001_2015\141_001_2015_001



ELEVATION
SCALE 1 : 50



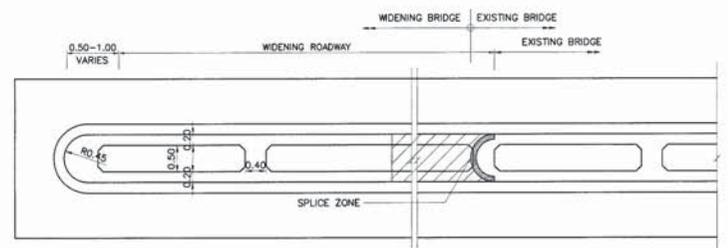
PILE FOOTING ELEVATION



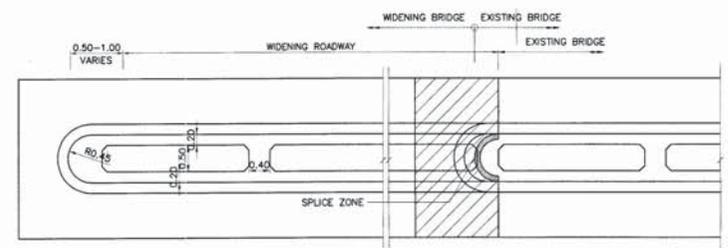
PILE FOOTING REINFORCEMENT

- NOTES :
- PILE FOOTING PIER DETAILS AND OTHER BRIDGE COMPONENTS NOT SPECIFIED IN THIS DRAWING SHALL CONFORM TO THE STANDARD DRAWING NUMBER WS-215
 - THE PRE-CONSTRUCTION EXTENDING BRIDGE WIDTH SHALL HAVE SIGN AND TRAFFIC WARNING BOARDS BEFORE CONSTRUCTION BY DDM SPECIFICATION.
 - USE BOARDS ALONG WITH LENGTH OF BRIDGE THAT EXTEND WIDTH BY DISTANCE OF BOARDS TO CURB ABOUT 1.00 M.
 - BEFORE CUTTING THE EXISTING BRIDGE, DEMOLISH THE EXISTING CURB, RAIL, SLAB AND CAP BEAM. MARK CUTTING LINE ALONG SLAB, 1 CM. WIDTH AND 2 CM. DEPTH FOR SAW CUTTING, BUT HAVE TO AVOID THE REINFORCEMENT BARS.
 - CLEAN JOINTS WITHOUT DIRTY.
 - PIILING AND NUMBER OF PILES ARE STANDARD DRAWINGS NUMBER WS-217
 - CONSTRUCT EXTEND CAP BEAM ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
 - CONSTRUCT EXTEND SLAB , RAILING CURB ARE THIS DRAWING BY ELEVATION OF EXTEND SLAB TO HAVE SLOPE SAME EXISTING SLAB
 - BEFORE POURING CONCRETE , CLEAN JOINT AND BARS WITHOUT DIRTY POURING WATER IN WET ARE NOT LESS THAN TWO HOURS WHILE JOINTS HAVE BEEN ALREADY DRY TO PAINT JOINTS WITH EPOXY RESIN.
 - THE PROPERTIES OF EPOXY RESIN ARE ASTM. C881 TYPE II GRADE I CLASS C.
 - THE WELDED BARS ARE THE AWS STANDARDS.
 - THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
 - ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

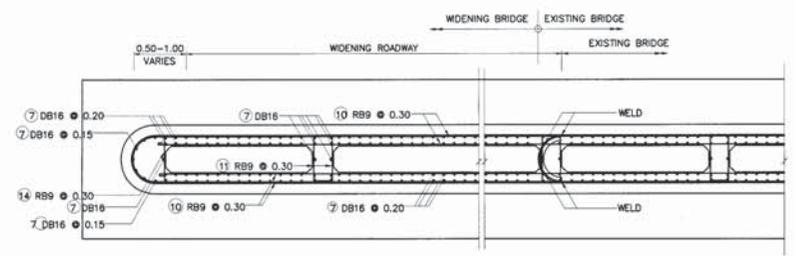
SECTION A-A
SCALE 1 : 50



SECTION C - C
SCALE 1 : 50



SECTION B - B
SCALE 1 : 50



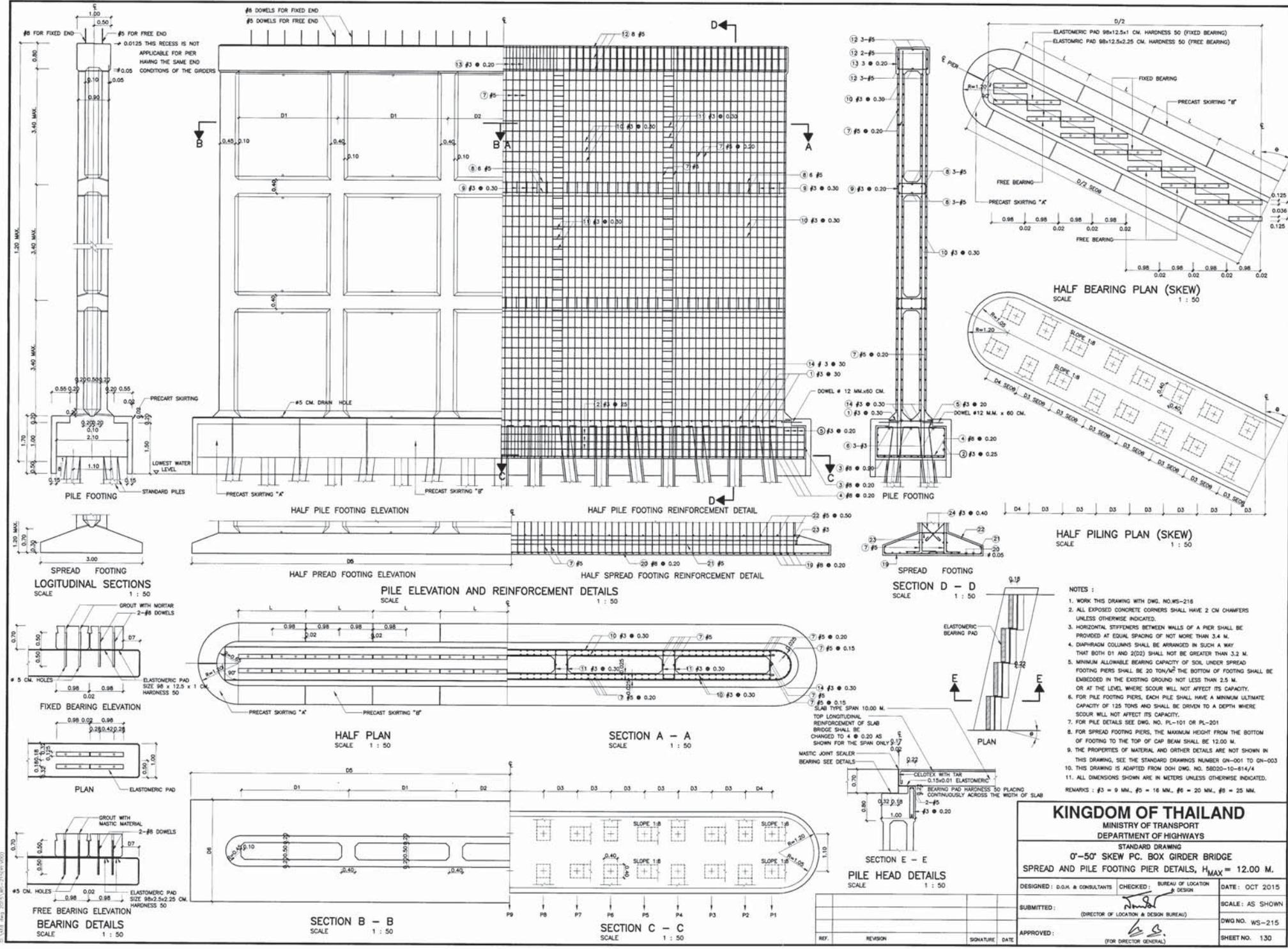
SHEAR WALL REINFORCEMENT DETAILS
SCALE 1 : 50

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
REINFORCEMENT DETAILS FOR EXISTING WALL PIER
SPREAD FOOTING FOR PC. BOX BEAM, H_{MAX} = 12.00 M.

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. WS-214
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 129

D:\1414 Area 2015\WS-214\081001



- NOTES :**
1. WORK THIS DRAWING WITH DWG. NO. WS-216
 2. ALL EXPOSED CONCRETE CORNERS SHALL HAVE 2 CM CHAMFERS UNLESS OTHERWISE INDICATED.
 3. HORIZONTAL STIFFENERS BETWEEN WALLS OF A PIER SHALL BE PROVIDED AT EQUAL SPACING OF NOT MORE THAN 3.4 M.
 4. DIAPHRAGM COLLUMS SHALL BE ARRANGED IN SUCH A WAY THAT BOTH D1 AND D2(D) SHALL NOT BE GREATER THAN 3.2 M.
 5. MINIMUM ALLOWABLE BEARING CAPACITY OF SOIL UNDER SPREAD FOOTING PIERS SHALL BE 20 TON/M² THE BOTTOM OF FOOTING SHALL BE EMBEDDED IN THE EXISTING GROUND NOT LESS THAN 2.5 M. OR AT THE LEVEL WHERE SCOUR WILL NOT AFFECT ITS CAPACITY.
 6. FOR PILE FOOTING PIERS, EACH PILE SHALL HAVE A MINIMUM ULTIMATE CAPACITY OF 125 TONS AND SHALL BE DRIVEN TO A DEPTH WHERE SCOUR WILL NOT AFFECT ITS CAPACITY.
 7. FOR PILE DETAILS SEE DWG. NO. PL-101 OR PL-201
 8. FOR SPREAD FOOTING PIERS, THE MAXIMUM HEIGHT FROM THE BOTTOM OF FOOTING TO THE TOP OF CAP BEAM SHALL BE 12.00 M.
 9. THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GH-001 TO GH-003
 10. THIS DRAWING IS ADAPTED FROM DOH DWG. NO. 58200-10-614/4
 11. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
- REMARKS : #3 = 9 MM, #5 = 16 MM, #6 = 20 MM, #8 = 25 MM.

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
0°-50° SKEW PC. BOX GIRDER BRIDGE
 SPREAD AND PILE FOOTING PIER DETAILS, H_{MAX} = 12.00 M.

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. WS-215
REF.	REVISION	SIGNATURE DATE

SHEET NO. 130

TABLE OF REINFORCEMENT

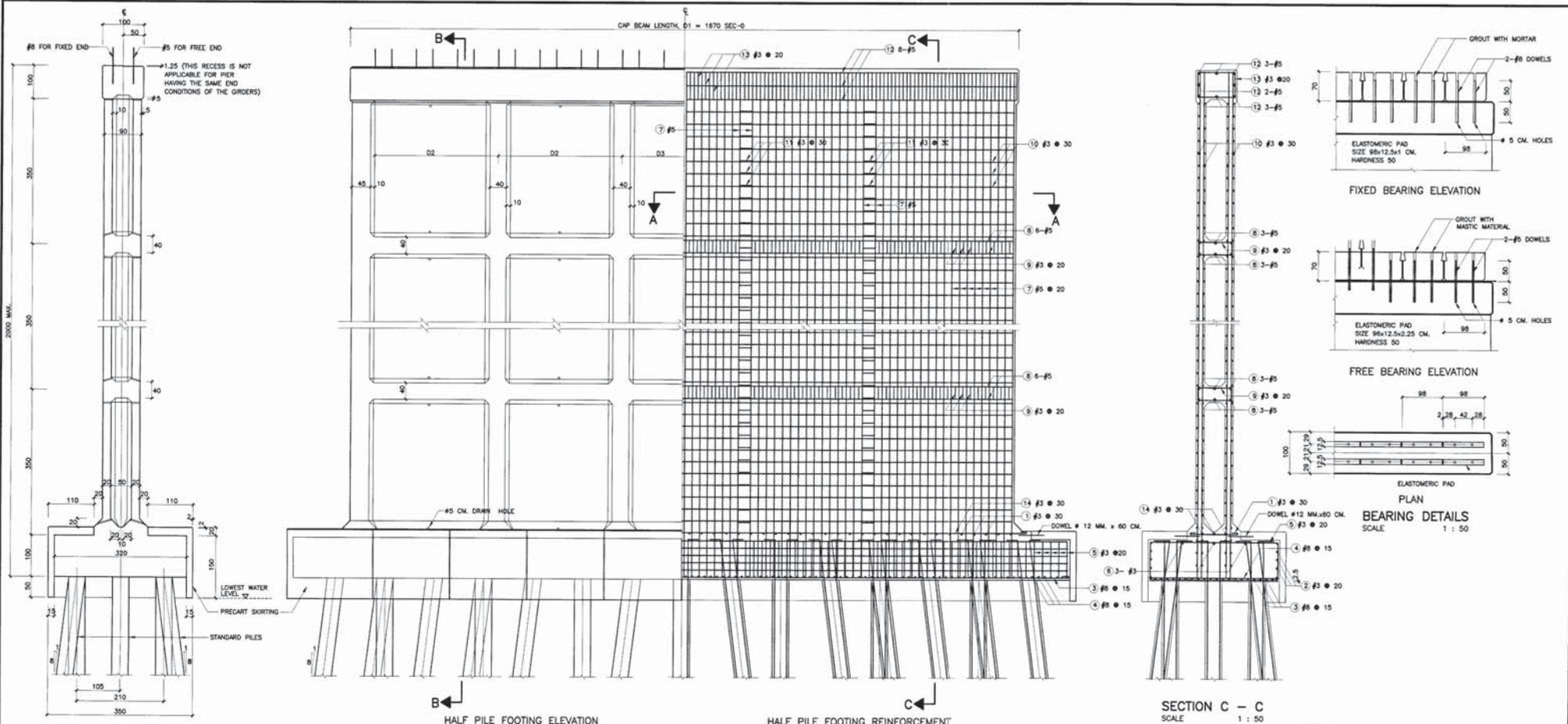
BAR MARK	#	7-BOX GIRDER		8-BOX GIRDER		9-BOX GIRDER		10-BOX GIRDER		11-BOX GIRDER		12-BOX GIRDER		13-BOX GIRDER		14-BOX GIRDER		15-BOX GIRDER		16-BOX GIRDER																					
		NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH																
		CM.																																							
1	3	Ø30	-	141	3,807	Ø30	-	141	4,230	Ø30	-	141	4,794	Ø30	-	141	5,217	Ø30	-	141	5,640	Ø30	-	141	6,073	Ø30	-	141	7,060	Ø30	-	141	7,483	Ø30	-	141	8,047				
2	3	Ø20	845	2,188	10,940	Ø20	945	2,388	11,940	Ø20	1,045	2,588	12,940	Ø20	1,145	2,788	13,940	Ø20	1,255	2,988	14,940	Ø20	1,355	3,218	16,090	Ø20	1,475	3,438	17,190	Ø20	1,595	3,678	18,390	Ø20	1,695	3,978	19,390	Ø20	1,805	4,098	20,940
3	8	11	845	1,080	11,990	11	945	1,190	13,090	11	1,045	1,290	14,190	11	1,145	1,390	15,290	11	1,255	1,500	16,500	11	1,365	1,610	17,710	11	1,475	1,720	18,920	11	1,585	1,830	20,130	11	1,695	1,940	21,340	11	1,805	2,050	22,550
4	8	44	-	200	8,800	44	-	200	9,800	54	-	200	10,800	59	-	200	11,800	64	-	200	12,800	69	-	200	13,800	74	-	200	14,800	79	-	200	15,800	84	-	200	16,800	89	-	200	17,800
5	3	44	-	811	26,884	49	-	811	29,839	54	-	811	32,994	59	-	811	36,094	64	-	811	39,104	69	-	811	42,159	74	-	811	45,214	79	-	811	48,269	84	-	811	55,324	89	-	811	58,379
6	3	3	845	904	2,712	3	945	1,004	3,012	3	1,045	1,104	3,312	3	1,145	1,204	3,612	3	1,255	1,314	3,942	3	1,365	1,424	4,272	3	1,475	1,534	4,602	3	1,585	1,644	4,932	3	1,695	1,754	5,262	3	1,805	1,864	5,592
7	5	148	-	1,232.5	182,410	172	-	1,232.5	211,990	196	-	1,232.5	241,570	220	-	1,232.5	271,150	244	-	1,232.5	300,730	268	-	1,232.5	330,310	292	-	1,232.5	359,890	316	-	1,232.5	389,470	340	-	1,232.5	419,050	364	-	1,232.5	448,630
8	5	12	845	882.5	10,590	12	945	982.5	11,790	12	1,045	1,082.5	12,990	12	1,145	1,182.5	14,190	12	1,255	1,292.5	15,310	12	1,365	1,402.5	16,530	12	1,475	1,512.5	17,750	12	1,585	1,622.5	18,970	12	1,695	1,732.5	20,190	12	1,805	1,842.5	22,110
9	3	58	-	228	13,108	68	-	228	15,368	78	-	228	17,288	88	-	228	19,888	98	-	228	22,148	108	-	228	24,408	118	-	228	26,668	128	-	228	28,928	138	-	228	31,188	148	-	228	33,448
10	3	37	825	3,384	125,578	37	925	3,794	141,000	37	1,025	4,194	154,900	37	1,125	4,594	170,000	37	1,235	4,994	184,998	37	1,345	5,394	199,800	37	1,455	5,794	214,000	37	1,565	6,194	229,000	37	1,675	6,594	244,000	37	1,785	6,994	258,988
11	3	96	-	228	21,696	96	-	228	21,696	96	-	228	21,696	96	-	228	21,696	128	-	228	28,476	128	-	228	28,476	128	-	228	28,476	160	-	228	35,160	160	-	228	36,160	160	-	228	38,160
12	5	8	735	772.5	6,180	8	835	872.5	6,980	8	935	972.5	7,780	8	1,035	1,072.5	8,580	8	1,145	1,182.5	9,480	8	1,255	1,292.5	10,380	8	1,365	1,402.5	11,280	8	1,475	1,512.5	12,180	8	1,585	1,622.5	13,080	8	1,695	1,732.5	13,980
13	3	40	-	356	14,240	45	-	356	16,020	50	-	356	17,900	55	-	356	19,880	60	-	356	21,760	65	-	356	23,740	70	-	356	25,620	75	-	356	27,500	80	-	356	29,380	85	-	356	31,260
14	3	Ø30	-	776	4,656	Ø30	-	876	5,256	Ø30	-	976	5,856	Ø30	-	1,076	6,456	Ø30	-	1,186	7,116	Ø30	-	1,286	7,776	Ø30	-	1,408	8,436	Ø30	-	1,516	9,096	Ø30	-	1,626	9,756	Ø30	-	1,736	10,416
15	3	88	-	-	16,072	88	-	-	16,072	88	-	-	16,072	88	-	-	16,072	88	-	-	16,072	88	-	-	16,072	88	-	-	16,072	88	-	-	16,072	88	-	-	16,072	88	-	-	16,072
16	3	178	-	171	30,096	178	-	198	34,496	220	-	179	39,300	220	-	199	43,700	264	-	198	49,104	264	-	204	53,868	308	-	192	59,136	308	-	208	64,064	352	-	197	69,344	352	-	211	74,272
17	3	40	-	471	18,840	40	-	471	18,840	40	-	471	18,840	40	-	471	18,840	40	-	471	18,840	40	-	471	18,840	40	-	471	18,840	40	-	471	18,840	40	-	471	18,840	40	-	471	18,840
18	3	Ø20	-	471	33,912	Ø20	-	471	38,622	Ø20	-	471	43,332	Ø20	-	471	48,042	Ø20	-	471	52,752	Ø20	-	471	57,462	Ø20	-	471	62,172	Ø20	-	471	66,882	Ø20	-	471	71,592	Ø20	-	471	76,302
19	8	40	-	345	13,800	44	-	345	15,180	48	-	345	16,560	52	-	345	17,940	56	-	345	19,320	60	-	345	20,700	64	-	345	22,080	68	-	345	23,460	72	-	345	24,840	76	-	345	26,220
20	8	16	930	1,085	17,040	16	1,030	1,185	18,640	16	1,130	1,285	20,240	16	1,230	1,385	21,840	16	1,340	1,475	23,600	16	1,450	1,585	25,360	16	1,560	1,695	27,120	16	1,670	1,805	28,880	16	1,780	1,915	30,640	16	1,890	2,025	32,400
21	5	1	930	2,680	2,680	1	1,030	2,880	2,880	1	1,130	3,080	3,080	1	1,230	3,280	3,280	1	1,340	3,500	3,500	1	1,450	3,840	3,840	1	1,560	4,214	4,214	1	1,670	4,634	4,634	1	1,780	5,054	5,054	1	1,890	5,474	5,474
22	5	17	-	293	4,981	19	-	293	5,587	21	-	293	6,153	23	-	293	6,738	25	-	293	7,325	27	-	293	7,911	29	-	293	8,497	31	-	293	9,083	33	-	293	9,669	35	-	293	10,255
23	3	1	930	985	985	1	1,030	1,085	1,085	1	1,130	1,195	1,195	1	1,230	1,305	1,305	1	1,340	1,415	1,415	1	1,450	1,525	1,525	1	1,560	1,635	1,635	1	1,670	1,745	1,745	1	1,780	1,855	1,855	1	1,890	1,965	1,965
24	3	28	-	111	3,108	34	-	111	3,774	40	-	111	4,440	46	-	111	5,106	52	-	111	5,772	58	-	111	6,438	64	-	111	7,104	70	-	111	7,770	76	-	111	8,436	82	-	111	9,102

#3=Ø3/8" OR 9 MM, #5=Ø5/8" OR 16 MM, #6=Ø3/4" OR 20 MM, #8=Ø1" OR 25 MM. NO = TOTAL AMOUNT OF BARS, L = TOTAL LENGTH OF EACH BAR.

NUMBER OF BOX GIRDER	D CM.	D1 CM.	D7 CM.	D2 CM.	PIER FOOTING												SPREAD FOOTING			
					NUMBER OF PILES												PILE HEAD SPACING C-C		WIDTH OF FOOTING	
					P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	SKREW Ø-30/30'-50'	SKREW Ø-30/30'-50'		D3
7	740	206	206	104	4	4	4	-	-	-	2	16	16	94	80	80	80	80	320	300
8	840	240	240	-	4	4	4	-	-	-	2	16	18	110	95	98	76	370	300	
9	940	273	273	137	4	4	4	-	-	-	2	18	20	110	90	98	77	420	300	
10	1,040	306	306	154	4	4	4	-	-	-	2	20	22	110	85	98	78	470	300	
11	1,150	357.5	357.5	-	4	4	4	-	-	-	2	22	24	110	85	98	75	525	300	
12	1,260	390	390	-	4	4	4	-	-	-	2	24	26	110	80	98	80	580	300	
13	1,370	423	423	-	4	4	4	-	-	-	2	26	28	110	85	98	80	635	300	
14	1,480	456	456	-	4	4	4	-	-	-	2	28	30	110	85	98	78	690	300	
15	1,590	489	489	-	4	4	4	-	-	-	2	30	32	110	85	98	75	745	300	
16	1,700	522	522	-	4	4	4	-	-	-	2	32	34	110	85	98	79	800	300	

TABLE OF SEC Ø

SEC Ø	SKEW ANGLE (Ø)									
	0	5'	10'	15'	20'	25'	30'	35'	40'	50'
1.0000	1.0038	1.0154	1.0353	1.0642	1.1034	1.1547	1.2208	1.3054	1.4142	1.5557



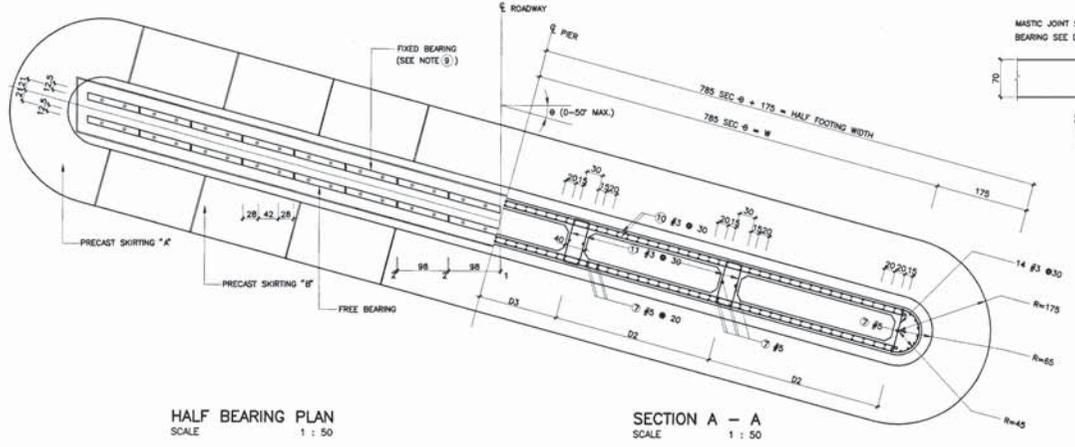
SECTION B - B
SCALE 1 : 50

ELEVATION AND REINFORCEMENT DETAIL
SCALE 1 : 50

SECTION C - C
SCALE 1 : 50

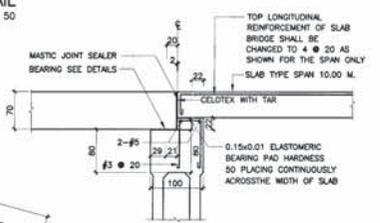
PLAN BEARING DETAILS
SCALE 1 : 50

- NOTES :
1. WORK THIS DRAWING WITH DWG. NO. WS-218 AND WS-219.
 2. FOR SHORT DETAILS SEE DWG. NO. WS-219.
 3. ALL EXPOSED CONCRETE CORNERS SHALL HAVE 2 CM CHAMFERS UNLESS OTHERWISE INDICATED.
 4. HORIZONTAL STIFFENERS BETWEEN WALLS OF A PIER SHALL BE PROVIDED AT EQUAL SPACING OF NOT MORE THAN 3.50 M.
 5. DIAPHRAGM COLUMNS SHALL BE ARRANGED IN SUCH A WAY THAT BOTH D_2 AND $2D_2$ SHALL NOT BE GREATER THAN 3.20 M.
 6. FOR PILE DETAILS SEE DWG. NO. PL-101 OR PL-201.
 7. THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING. SEE THE STANDARD DRAWINGS NUMBER CN-001 TO CN-003.
 8. THIS DRAWING IS ADAPTED FROM DOH DWG. NO. SB020-10-414/2.
 9. PIER IS FOR SUPPORTING BOX GIRDERS.
 10. ALL DIMENSIONS SHOWN ARE IN CENTIMETERS UNLESS OTHERWISE INDICATED.
- REMARKS : #3 = 9 MM, #5 = 16 MM, #6 = 20 MM, #8 = 25 MM.

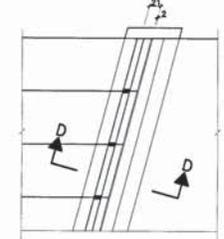


HALF BEARING PLAN
SCALE 1 : 50

SECTION A - A
SCALE 1 : 50



SECTION D - D
SCALE 1 : 50

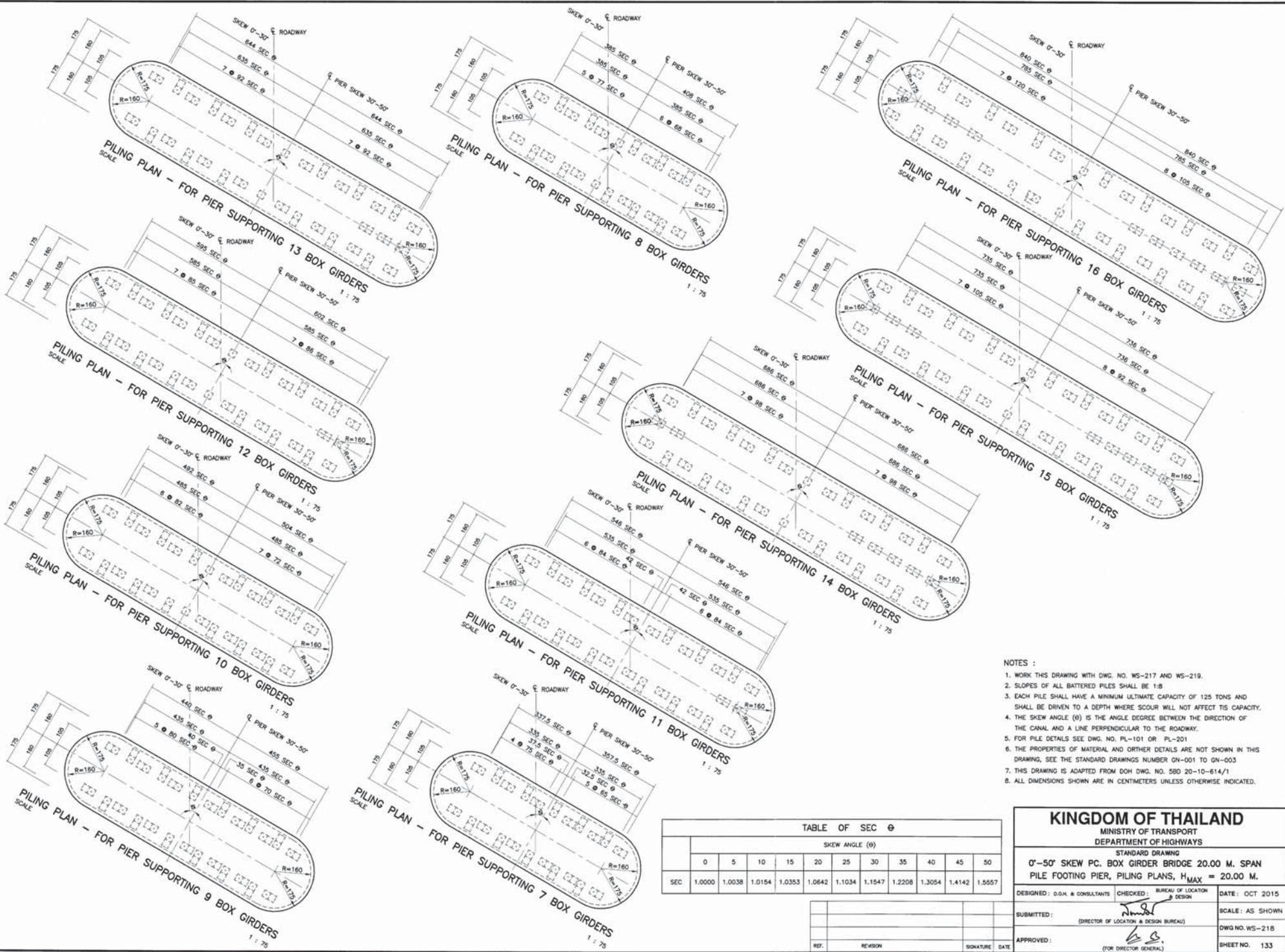


PILE HEAD DETAILS
SCALE 1 : 50

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
0°-50° SKEW PC. BOX GIRDER BRIDGE 20.00 M. SPAN
PILE FOOTING PIER DETAILS, $H_{MAX} = 20.00$ M.

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. WS-217
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 132



- NOTES :
1. WORK THIS DRAWING WITH DWG. NO. WS-217 AND WS-219.
 2. SLOPES OF ALL BATTERED PILES SHALL BE 1:8
 3. EACH PILE SHALL HAVE A MINIMUM ULTIMATE CAPACITY OF 125 TONS AND SHALL BE DRIVEN TO A DEPTH WHERE SCOUR WILL NOT AFFECT ITS CAPACITY.
 4. THE SKEW ANGLE (θ) IS THE ANGLE DEGREE BETWEEN THE DIRECTION OF THE CANAL AND A LINE PERPENDICULAR TO THE ROADWAY.
 5. FOR PILE DETAILS SEE DWG. NO. PL-101 OR PL-201
 6. THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
 7. THIS DRAWING IS ADAPTED FROM DOH DWG. NO. SBD 20-10-614/1
 8. ALL DIMENSIONS SHOWN ARE IN CENTIMETERS UNLESS OTHERWISE INDICATED.

SEC	SKEW ANGLE (θ)										
	0	5	10	15	20	25	30	35	40	45	50
SEC	1.0000	1.0038	1.0154	1.0353	1.0642	1.1034	1.1547	1.2208	1.3054	1.4142	1.5557

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 0°-50° SKEW PC. BOX GIRDER BRIDGE 20.00 M. SPAN
 PILE FOOTING PIER, PILING PLANS, $H_{MAX} = 20.00$ M.

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. WS-218
REF.	REVISION	SIGNATURE DATE

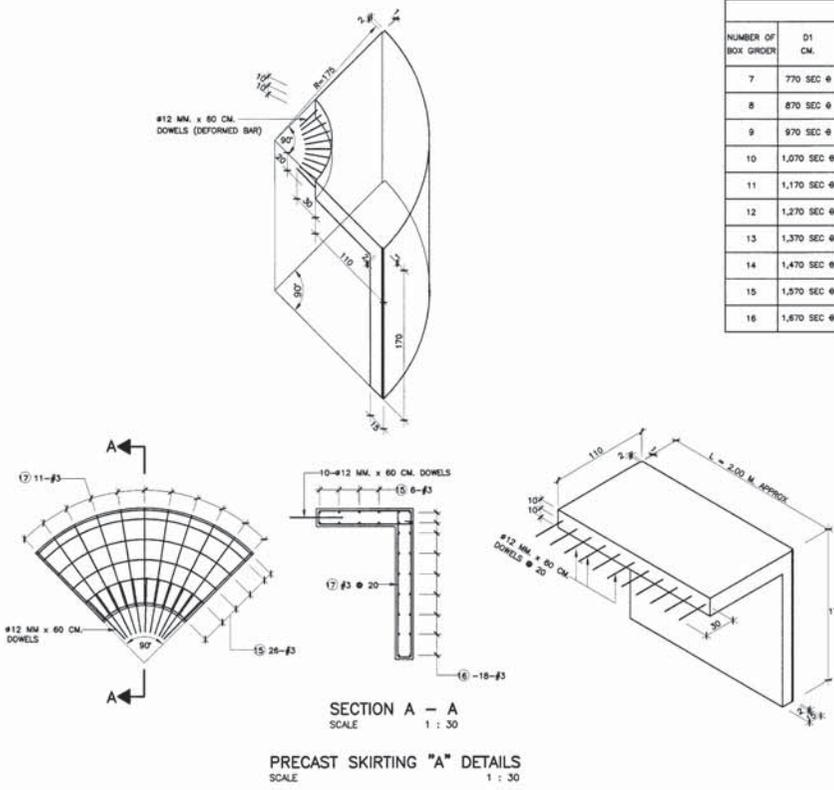
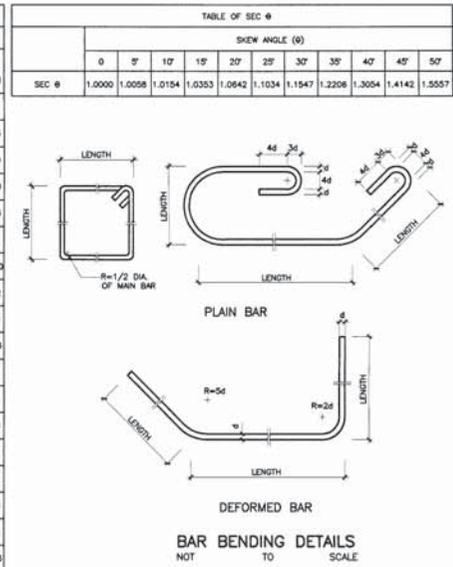
SHEET NO. 133

D:\151-444-3045\151-218\151-218.dwg

TABLE OF REINFORCEMENT

BAR MARK	#	7-BOX GIRDER			8-BOX GIRDER			9-BOX GIRDER			10-BOX GIRDER			11-BOX GIRDER			12-BOX GIRDER			13-BOX GIRDER			14-BOX GIRDER			15-BOX GIRDER			16-BOX GIRDER												
		NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH	NO	D	L	TOTAL LENGTH												
1	3	30	-	141	3,907	30	-	141	4,230	30	-	141	4,796	30	-	141	5,217	30	-	141	5,640	30	-	141	6,037	30	-	141	7,080	30	-	141	7,483	30	-	141	8,047				
2	3	30	905	2,533	12,645	30	1,086	2,733	13,685	30	1,183	2,933	14,665	30	1,285	3,133	15,665	30	1,385	3,333	16,595	30	1,495	3,533	17,665	30	1,585	3,733	18,645	30	1,685	3,933	19,665	30	1,795	4,135	20,665	30	1,880	4,333	21,665
3	8	23	1,015	1,280	28,980	23	1,115	1,360	31,280	23	1,215	1,460	33,580	23	1,315	1,560	35,880	23	1,415	1,660	38,180	23	1,515	1,760	40,480	23	1,615	1,860	42,790	23	1,715	1,960	45,080	23	1,815	2,060	47,360	23	1,915	2,160	49,680
4	8	68	-	375	25,500	75	-	375	28,125	82	-	375	30,750	88	-	375	33,300	95	-	375	35,825	101	-	375	37,875	108	-	375	40,000	115	-	375	43,125	122	-	375	45,750	128	-	375	48,000
5	3	51	-	836	42,636	56	-	836	46,816	61	-	836	50,996	66	-	836	55,176	71	-	836	59,356	76	-	836	63,536	81	-	836	67,716	85	-	836	71,896	91	-	836	76,076	96	-	836	80,256
6	3	3	1,015	-	3,045	3	1,115	-	3,348	3	1,215	-	3,645	3	1,315	-	3,946	3	1,415	-	4,248	3	1,515	-	4,548	3	1,615	-	4,846	3	1,715	-	5,146	3	1,815	-	5,446	3	1,915	-	5,746
7	5	190	-	2,061	391,590	200	-	2,061	412,200	210	-	2,061	432,810	220	-	2,061	453,420	230	-	2,061	474,030	240	-	2,061	494,640	250	-	2,061	515,250	260	-	2,061	535,860	270	-	2,061	556,470	280	-	2,061	577,080
8	5	24	750	-	18,912	24	850	-	21,312	24	950	-	23,712	24	1,050	-	26,112	24	1,150	-	28,512	24	1,250	-	30,912	24	1,350	-	33,312	24	1,450	-	35,712	24	1,550	-	38,112	24	1,650	-	40,512
9	3	120	-	236	28,320	140	-	236	33,040	160	-	236	37,760	180	-	236	42,480	200	-	236	47,200	220	-	236	51,920	240	-	236	56,640	260	-	236	61,360	280	-	236	66,080	300	-	236	70,800
10	3	58	735	3,442	199,636	58	855	3,842	222,836	58	955	4,242	246,036	58	1,055	4,642	269,236	58	1,155	5,042	292,436	58	1,255	5,442	315,636	58	1,386	5,842	338,836	58	1,455	6,242	362,036	58	1,555	6,642	385,236	58	1,686	7,042	408,436
11	3	116	-	236	27,376	116	-	236	27,376	116	-	236	27,376	116	-	236	27,376	116	-	236	27,376	116	-	236	27,376	116	-	236	27,376	116	-	236	27,376	116	-	236	27,376	116	-	236	27,376
12	5	8	765	840	6,720	8	865	940	7,520	8	965	1,040	8,320	8	1,065	1,140	9,120	8	1,165	1,240	9,920	8	1,265	1,340	10,720	8	1,365	1,440	11,520	8	1,465	1,540	12,320	8	1,565	1,640	13,120	8	1,665	1,740	13,920
13	3	38	-	356	13,528	43	-	356	15,308	48	-	356	17,088	53	-	356	18,868	56	-	356	20,648	63	-	356	22,428	68	-	356	24,208	73	-	356	25,988	78	-	356	27,768	83	-	356	29,548
14	3	30	-	804	4,020	30	-	904	4,520	30	-	1,004	5,020	30	-	1,104	5,520	30	-	1,204	6,020	30	-	1,304	6,520	30	-	1,404	7,020	30	-	1,504	7,520	30	-	1,604	8,020	30	-	1,704	8,520
15	3	104	-	-	26,348	104	-	-	26,348	104	-	-	26,348	104	-	-	26,348	104	-	-	26,348	104	-	-	26,348	104	-	-	26,348	104	-	-	26,348	104	-	-	26,348	104	-	-	26,348
16	3	208	-	185	38,480	208	-	204	42,432	260	-	185	48,100	260	-	205	53,300	312	-	191	59,592	312	-	206	64,272	364	-	193	70,252	364	-	207	75,348	416	-	195	81,120	416	-	208	86,528
17	3	44	-	581	25,564	44	-	581	25,564	44	-	581	25,564	44	-	581	25,564	44	-	581	25,564	44	-	581	25,564	44	-	581	25,564	44	-	581	25,564	44	-	581	25,564	44	-	581	25,564
18	3	30	-	581	41,832	30	-	581	51,128	30	-	581	58,100	30	-	581	63,910	30	-	581	69,720	30	-	581	76,692	30	-	581	81,340	30	-	581	89,474	30	-	581	92,960	30	-	581	102,256

#3 = #3/8" OR 9 MM. #4 = #1/2" OR 12 MM. #5 = #5/8" OR 16 MM. #6 = #1" OR 25 MM. NO = TOTAL AMOUNT OF BARS. L = TOTAL LENGTH OF EACH BAR.



PILE FOOTING

NUMBER OF BOX GIRDER	D1 CM.	D2 CM.	D3 CM.	HALF LENGTH OF FOOTING CM.	WIDTH OF FOOTING CM.	NUMBER OF PILES			PILE HEAD SPACING C-C			W (CM.)
						0-30' SKEW	30-50' SKEW	50-50' SKEW	0-30' SKEW	30-50' SKEW	50-50' SKEW	
7	770 SEC #	216 SEC #	108 SEC #	335 SEC # + 175	350	20	24	24	75 SEC #	85 SEC #	335 SEC #	
8	870 SEC #	250 SEC #	-	385 SEC # + 175	350	22	26	26	77 SEC #	88 SEC #	385 SEC #	
9	970 SEC #	283 SEC #	142 SEC #	435 SEC # + 175	350	24	28	28	80 SEC #	90 SEC #	435 SEC #	
10	1,070 SEC #	318 SEC #	169 SEC #	485 SEC # + 175	350	26	30	30	82 SEC #	92 SEC #	485 SEC #	
11	1,170 SEC #	362.5 SEC #	-	535 SEC # + 175	350	28	32	32	84 SEC #	94 SEC #	535 SEC #	
12	1,270 SEC #	387.5 SEC #	-	585 SEC # + 175	350	30	34	34	85 SEC #	96 SEC #	585 SEC #	
13	1,370 SEC #	412.5 SEC #	-	635 SEC # + 175	350	32	36	36	87 SEC #	98 SEC #	635 SEC #	
14	1,470 SEC #	470 SEC #	-	685 SEC # + 175	350	34	40	40	98 SEC #	98 SEC #	685 SEC #	
15	1,570 SEC #	490 SEC #	-	735 SEC # + 175	350	36	44	44	105 SEC #	92 SEC #	735 SEC #	
16	1,670 SEC #	510 SEC #	-	785 SEC # + 175	350	38	46	46	120 SEC #	105 SEC #	785 SEC #	

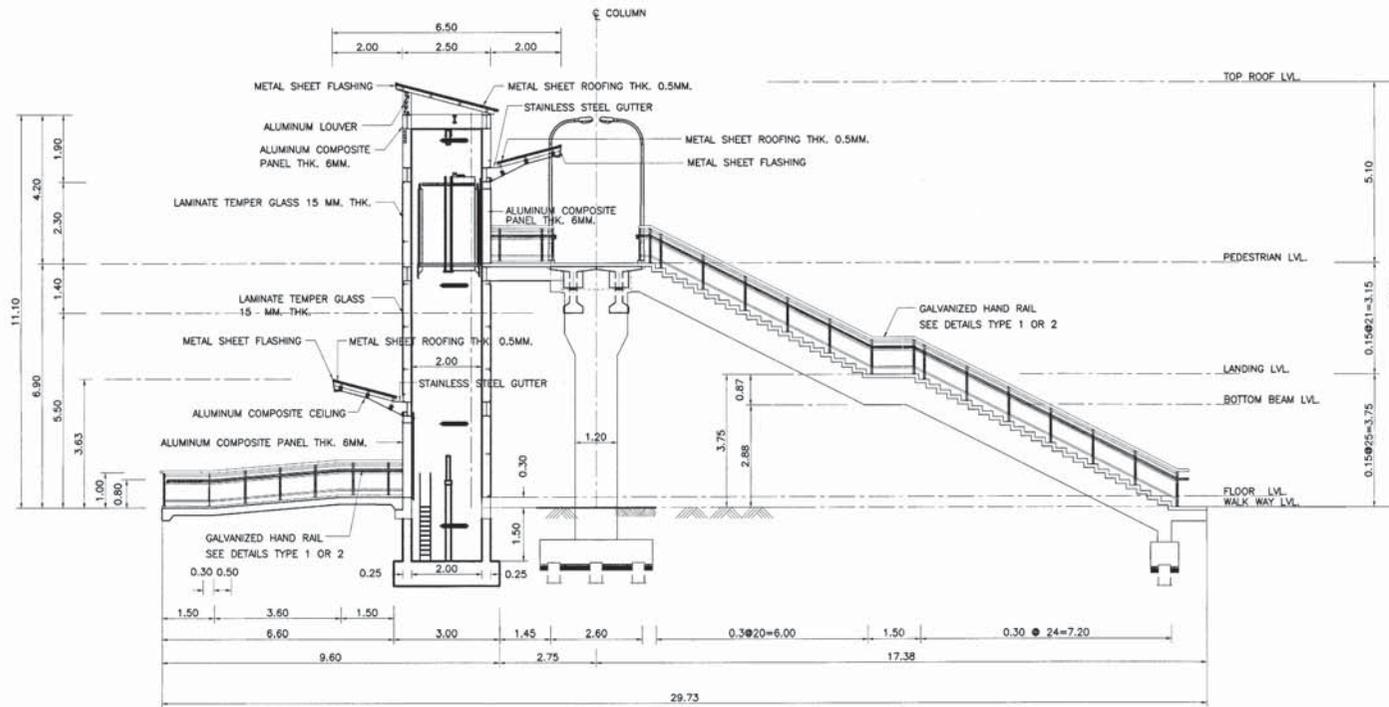
- NOTES:
- WORK THIS DRAWING WITH DWG. NO. WS-217 AND WS-218
 - CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 352 KG/CM² FOR 0.15x0.15x0.15 CUBE AT 28 DAYS.
 - CLEAR CONCRETE COVER SHALL BE 2.5 CM.
 - REBARS DB12 OR LARGER SHALL BE TS24 GRADE SD40 DEFORMED BARS, OTHERS SHALL BE TS20 GRADE SR24 PLAIN BARS, UNLESS OTHERWISE INDICATED.
 - LOCATIONS OF LAP SPICE OF REBARS SHALL BE APPROVED BY THE ENGINEER.
 - LAP LENGTH SHALL NOT BE LESS THAN 40 DIAMETERS OF BIGGER BAR FOR PLAIN BARS AND 24 DIAMETERS OF BIGGER BAR FOR DEFORMED BARS.
 - IN CASE OF NON-SKEW BRIDGE, BEARINGS UNDER 10.00 M. SPAN SLAB BRIDGE SHALL BE CONSTANTLY 22 CM. WIDE
 - ALL MATERIALS SHALL BE USED UNDER THE APPROVAL OF THE ENGINEER. FOR ELASTOMERIC PADS, CONTRACTOR SHALL SUBMIT A CERTIFICATE FROM THE MANUFACTURER SHOWING THAT THEY WILL PERFORM IN ACCORDANCE WITH THE SPECIFICATIONS.
 - QUANTITIES OF REBARS SHOWN IN THE TABLE ARE BASED ON THE TOTAL PIER HEIGHT OF 20.00 M.
 - LENGTH AND AMOUNT OF REBARS SHOWN IN THE TABLE MAY VARY ACCORDING TO PIER SHAPE BUT SPACING SHALL BE AS SHOWN ON THE DRAWINGS.
 - THE PROPERTIES OF MATERIAL AND OTHER DETAILS ARE NOT SHOWN IN THIS DRAWING, SEE THE STANDARD DRAWINGS NUMBER GN-001 TO GN-003
 - THIS DRAWING IS ADAPTED FROM DOH DWG. NO. 58020-10-614/3
 - ALL DIMENSIONS SHOWN ARE IN CENTIMETERS UNLESS OTHERWISE INDICATED.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
0'-50' SKEW PC. BOX GIRDER BRIDGE 20.00 M. SPAN
PIER REINFORCING AND SKIRTING DETAILS, H_{MAX} = 20.00 M.

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. WS-219
REF.	REVISION	SIGNATURE DATE

SHEET NO. 134



STRAIGHT STAIR SECTION
SCALE 1 : 75

NOTES :

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. WALL IS FINISHED BY ALUMINUM COMPOSITE PANEL.
3. LIFT SHAFT SHALL BE CLEARLY SEEN THROUGH THE LIFT CAR FROM WALKWAY. ELEVATOR SHALL BE MACHINE ROOM LESS TYPE, AND MEET ALL UNIVERSAL DESIGN STANDARD CODE OF PRACTICE.
4. WALL AT ROAD SIDE SHOULD BE SET BACK FROM CURB OR CURB AND GUTTER AT LEAST 0.50 M. AND WALKWAY SHOULD BE CLEAR BETWEEN WALL AND R.O.W. AT LEAST 1.50 M.
5. HANDICAP RAMP SLOPE MUST BE 1:12 FLAT SURFACE WITHOUT JOINT AND PROVIDE FLAT AREA 1.50 M. EVERY 6.00 M. (6.00 M. MAXIMUM LONG SLOPE)
6. WALK WAY, SLOPE AND STAIR WIDTH MUST BE AT LEAST 1.50 M. CLEAR WAY
7. FLOOR MUST BE PROVIDED CLEAR AND NON-SLIP TEXTURE. WARNING DETECTABLE DEVICES MUST BE INSTALLED IN SINGLE LINE ACROSS WALKWAY ON FLAT FLOOR AS WIDE AS WALKWAY WIDTH. INSTALLATION SHALL PROVIDE 0.30 M. SPACING FROM STEP OR SLOPE. (DETECTABLE DEVICE SEE STANDARD DRAWING HIGHWAY DESIGN DWG-NO. EN-401)
8. STAIR MUST PROVIDE 0.15 M. MAXIMUM RISERS AND 0.30 M. MINIMUM TREADS, WHICH IS NON-SLIP TEXTURE. STAIR NOSING COLOR MUST BE DIFFERENT FROM STEP COLOR. LANDING MUST BE FLAT AREA 1.50 x 1.50 M. AND INSTALL EVERY 3.50 M. MAXIMUM HIGH
9. HANDICAP HAND RAILS MUST HAVE 2 LEVELS WHICH SHALL BE HIGH 0.80 - 0.90 M. WITH 30-40 MM. DIAMETERS WITH SMOOTH SURFACE THAT CAN BE HELD TIGHT. AT THE END OF SLOPE OR STEP, HANDRAIL MUST BE STRETCH OUT 0.30 M. IT MUST BE INSTALLED ON BOTH SIDES. WALL MOUNT HAND RAIL SHALL BE PROVIDED 50 MM. SPACING FROM WALL AND MINIMUM 120 MM. HIGH FROM SCREWED WALL TEXTURE SHALL BE SMOOTH.
10. DETAILS OF ELEVATOR IS REFER TO DWG. ELO-101

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

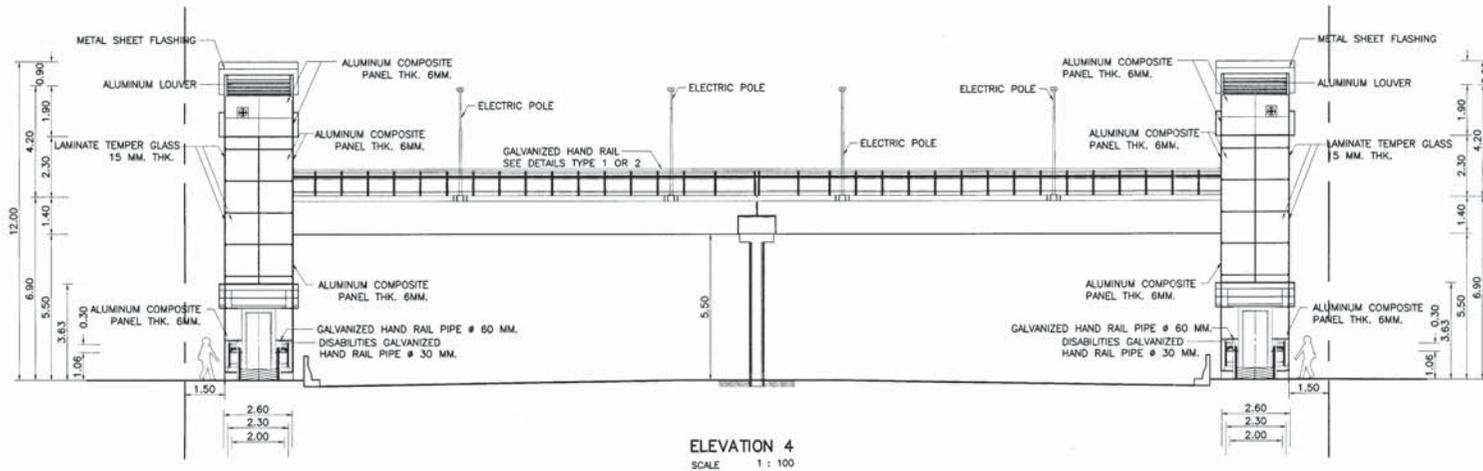
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS ARCHITECTURAL TYPE 1
SECTION

DESIGNED: D.G.M. & CONSULTANTS CHECKED: BUREAU OF LOCATION & DESIGN DATE: OCT 2015

SUBMITTED: (DIRECTOR OF LOCATION & DESIGN BUREAU) SCALE: AS SHOWN

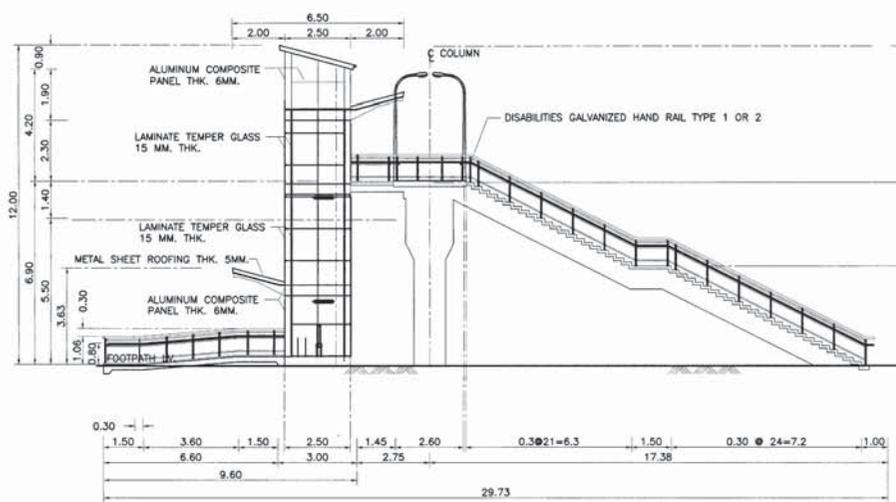
APPROVED: (FOR DIRECTOR GENERAL) DWG NO. APH-102
SHEET NO. 136

REF.	REVISION	SIGNATURE	DATE

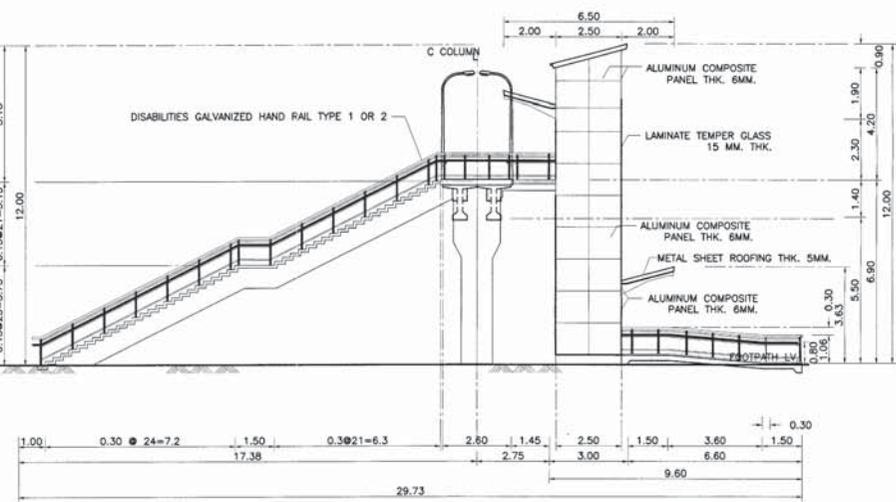


ELEVATION 4
SCALE 1 : 100

- NOTES :
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. WALL IS FINISHED BY ALUMINUM COMPOSITE PANEL.
 3. LIFT SHAFT SHALL BE CLEARLY SEEN THROUGH THE LIFT CAR FROM WALKWAY. ELEVATOR SHALL BE MACHINE ROOM LESS TYPE AND MEET ALL UNIVERSAL DESIGN STANDARD CODE OF PRACTICE.
 4. WALL AT ROAD SIDE SHOULD BE SET BACK FROM CURB OR CURB AND GUTTER AT LEAST 0.50 M. AND WALKWAY SHOULD BE CLEAR BETWEEN WALL AND R.O.W. AT LEAST 1.50 M.
 5. HANDICAP RAMP SLOPE MUST BE 1:12 FLAT SURFACE WITHOUT JOINT AND PROVIDE FLAT AREA 1.50 M. EVERY 6.00 M. (6.00 M. MAXIMUM LONG SLOPE)
 6. WALK WAY, SLOPE AND STAIR WIDTH MUST BE AT LEAST 1.50 M. CLEAR WAY
 7. FLOOR MUST BE PROVIDED CLEAR AND NON-SLIP TEXTURE. INSTALLATION SHALL PROVIDE 0.30 M. SPACING FROM STEP OR SLOPE. (DETECTABLE DEVICE SEE STANDARD DRAWING HIGHWAY DESIGN DWG-NO. EN-401)
 8. STAIR MUST PROVIDE 0.15 M. MAXIMUM RISERS AND 0.30 M. MINIMUM TREADS, WHICH IS NON-SLIP TEXTURE. STAIR NOSING COLOR MUST BE DIFFERENT FROM STEP COLOR. LANDING MUST BE FLAT AREA 1.50 x 1.50 M. AND INSTALL EVERY 3.50 M. MAXIMUM HIGH
 9. HANDICAP HAND RAILS MUST HAVE 2 LEVELS WHICH SHALL BE HIGH 0.80 - 0.90 M. WITH 30-40 MM. DIAMETERS WITH SMOOTH SURFACE THAT CAN BE HELD TIGHT. AT THE END OF SLOPE OR STEP, HANDRAIL MUST BE STRETCH OUT 0.30 M. IT MUST BE INSTALLED ON BOTH SIDES. WALL MOUNT HAND RAIL SHALL BE PROVIDED 50 MM. SPACING FROM WALL AND MINIMUM 120 MM. HIGH FROM SCREWED WALL TEXTURE SHALL BE SMOOTH.
 10. DETAILS OF ELEVATOR IS REFER TO DWG. ELO-101



WALK-WAY SIDE ELEVATION
SCALE 1 : 100



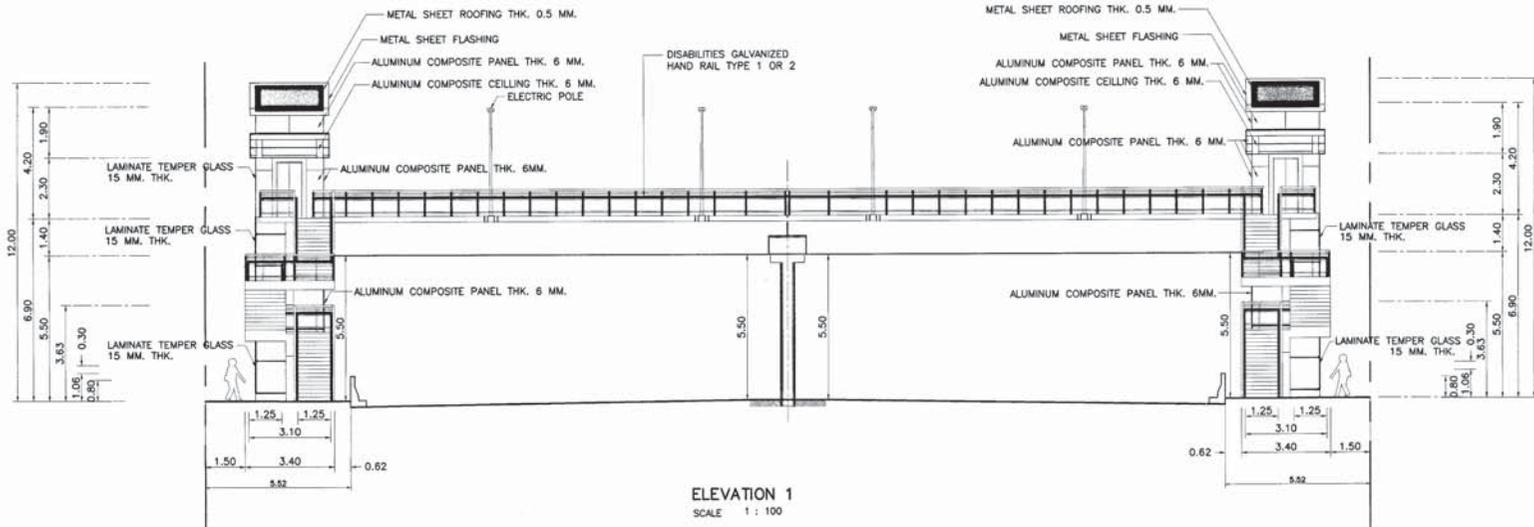
TRAFFIC SIDE ELEVATION
SCALE 1 : 100

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

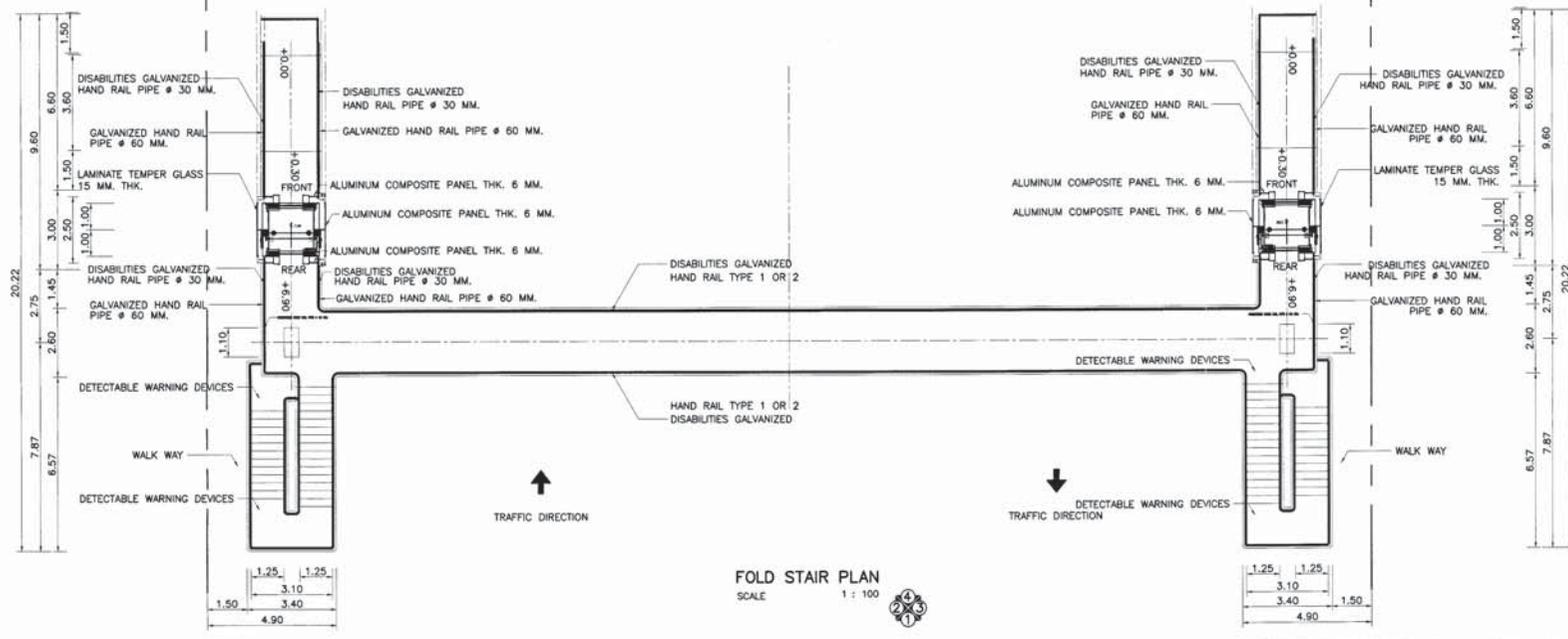
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS ARCHITECTURAL TYPE 1
ELEVATION 4 AND SIDE VIEWS

DESIGNED: D.O.A. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. APH-103
REF.	REVISION	SIGNATURE DATE

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ELEVATION 1
SCALE 1 : 100



FOLD STAIR PLAN
SCALE 1 : 100

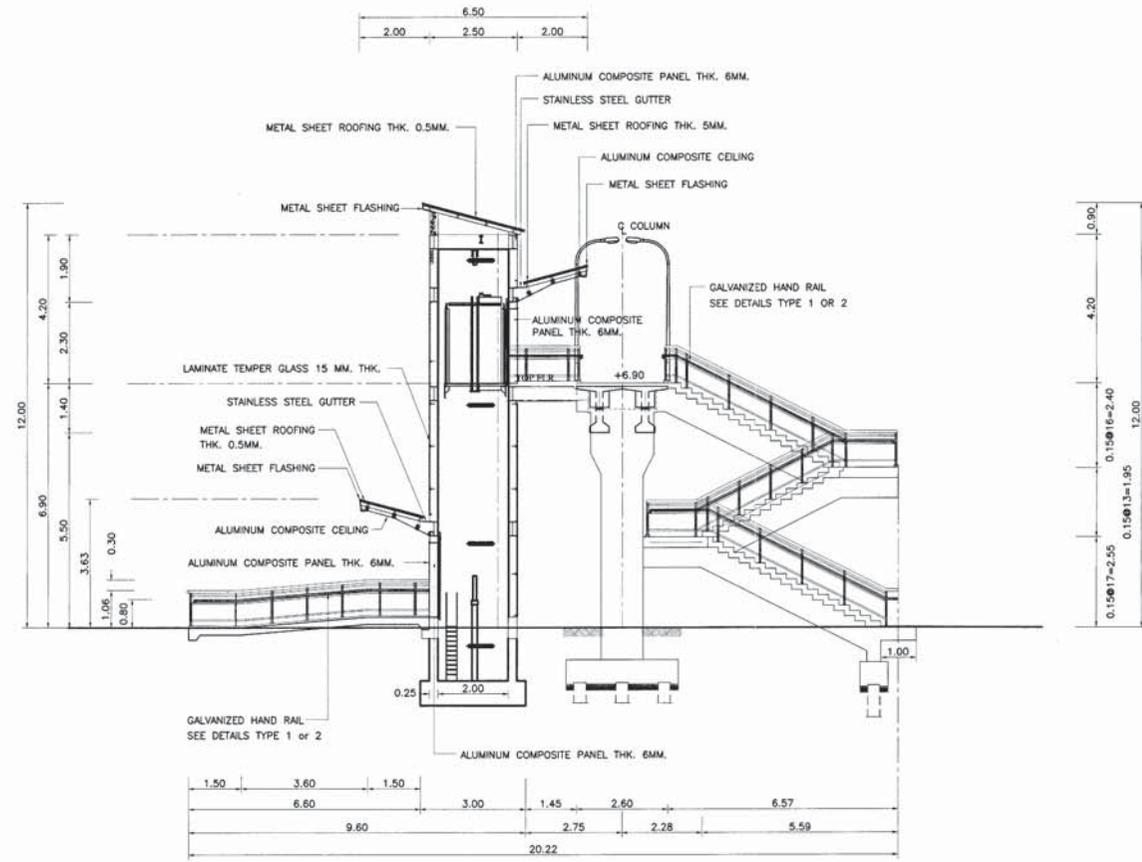
- NOTES :
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. WALL IS FINISHED BY ALUMINUM COMPOSITE PANEL
 3. LIFT SHAFT SHALL BE CLEARLY SEEN THROUGH THE LIFT CAR FROM WALKWAY. ELEVATOR SHALL BE MACHINE ROOM LESS TYPE. AND MEET ALL UNIVERSAL DESIGN STANDARD CODE OF PRACTICE.
 4. WALL AT ROAD SIDE SHOULD BE SET BACK FROM CURB OR CURB AND GUTTER AT LEAST 0.50 M. AND WALKWAY SHOULD BE CLEAR BETWEEN WALL AND R.O.W. AT LEAST 1.50 M.
 5. HANDICAP RAMP SLOPE MUST BE 1:12 FLAT SURFACE WITHOUT JOINT AND PROVIDE FLAT AREA 1.50 M. EVERY 6.00 M. (6.00 M. MAXIMUM LONG SLOPE)
 6. WALK WAY, SLOPE AND STAIR WIDTH MUST BE AT LEAST 1.50 M. CLEAR WAY
 7. FLOOR MUST BE PROVIDED CLEAR AND NON-SLIP TEXTURE. WARNING DETECTABLE DEVICES MUST BE INSTALLED IN SINGLE LINE ACROSS WALKWAY ON FLAT FLOOR AS WIDE AS WALKWAY WIDTH. INSTALLATION SHALL PROVIDE 0.30 M. SPACING FROM STEP OR SLOPE. (DETECTABLE DEVICE SEE STANDARD DRAWING HIGHWAY DESIGN DWG-NO. EN-401)
 8. STAIR MUST PROVIDE 0.15 M. MAXIMUM RISERS AND 0.30 M. MINIMUM TREADS, WHICH IS NON-SLIP TEXTURE. STAR NOSING COLOR MUST BE DIFFERENT FROM STEP COLOR. LANDING MUST BE FLAT AREA 1.50 x 1.50 M. AND INSTALL EVERY 3.50 M. MAXIMUM HIGH
 9. HANDICAP HAND RAILS MUST HAVE 2 LEVELS WHICH SHALL BE HIGH 0.80 - 0.90 M. WITH 30-40 MM. DIAMETERS WITH SMOOTH SURFACE THAT CAN BE HELD TIGHT. AT THE END OF SLOPE OR STEP, HANDRAIL MUST BE STRETCH OUT 0.30 M. IT MUST BE INSTALLED ON BOTH SIDES. WALL MOUNT HAND RAIL SHALL BE PROVIDED 50 MM. SPACING FROM WALL AND MINIMUM 120 MM. HIGH FROM SCREWED WALL TEXTURE SHALL BE SMOOTH.
 10. DETAILS OF ELEVATOR IS REFER TO DWG. ELO-101

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS ARCHITECTURAL TYPE 2
ELEVATION 1 AND PLAN

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. APH-104
REF.	REVISION	SIGNATURE DATE

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FOLD STAIR SECTION
SCALE 1 : 75

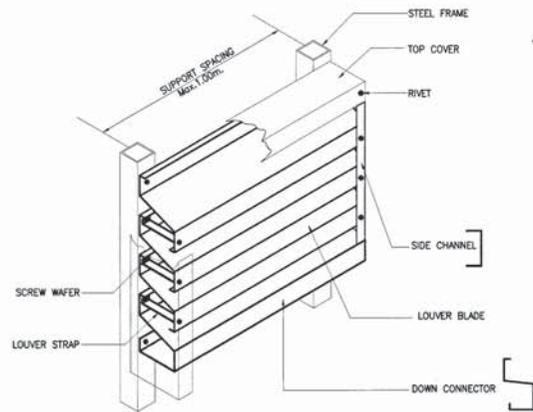
NOTES :

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. WALL IS FINISHED BY ALUMINUM COMPOSITE PANEL.
3. LIFT SHAFT SHALL BE CLEARLY SEEN THROUGH THE LIFT CAR FROM WALKWAY. ELEVATOR SHALL BE MACHINE ROOM LESS TYPE AND MEET ALL UNIVERSAL DESIGN STANDARD CODE OF PRACTICE.
4. WALL AT ROAD SIDE SHOULD BE SET BACK FROM CURB OR CURB AND GUTTER AT LEAST 0.50 M. AND WALKWAY SHOULD BE CLEAR BETWEEN WALL AND R.O.W. AT LEAST 1.50 M.
5. HANDICAP RAMP SLOPE MUST BE 1:12 FLAT SURFACE WITHOUT JOINT AND PROVIDE FLAT AREA 1.50 M. EVERY 6.00 M. (6.00 M. MAXIMUM LONG SLOPE)
6. WALK WAY, SLOPE AND STAIR WIDTH MUST BE AT LEAST 1.50 M. CLEAR WAY
7. FLOOR MUST BE PROVIDED CLEAR AND NON-SLIP TEXTURE. WARNING DETECTABLE DEVICES MUST BE INSTALLED IN SINGLE LINE ACROSS WALKWAY ON FLAT FLOOR AS WIDE AS WALKWAY WIDTH. INSTALLATION SHALL PROVIDE 0.30 M. SPACING FROM STEP OR SLOPE. (DETECTABLE DEVICE SEE STANDARD DRAWING HIGHWAY DESIGN DWG-NO. EN-401)
8. STAIR MUST PROVIDE 0.15 M. MAXIMUM RISERS AND 0.30 M. MINIMUM TREADS, WHICH IS NON-SLIP TEXTURE. STAIR NOSING COLOR MUST BE DIFFERENT FROM STEP COLOR. LANDING MUST BE FLAT AREA 1.50 x 1.50 M. AND INSTALL EVERY 3.50 M. MAXIMUM HIGH
9. HANDICAP HAND RAILS MUST HAVE 2 LEVELS WHICH SHALL BE HIGH 0.80 - 0.90 M. WITH 30-40 MM. DIAMETERS WITH SMOOTH SURFACE THAT CAN BE HELD TIGHT. AT THE END OF SLOPE OR STEP, HANDRAIL MUST BE STRETCH OUT 0.30 M. IT MUST BE INSTALLED ON BOTH SIDES. WALL MOUNT HAND RAIL SHALL BE PROVIDED 50 MM. SPACING FROM WALL AND MINIMUM 120 MM. HIGH FROM SCREWED WALL TEXTURE SHALL BE SMOOTH.
10. DETAILS OF ELEVATOR IS REFER TO DWG. ELO-101

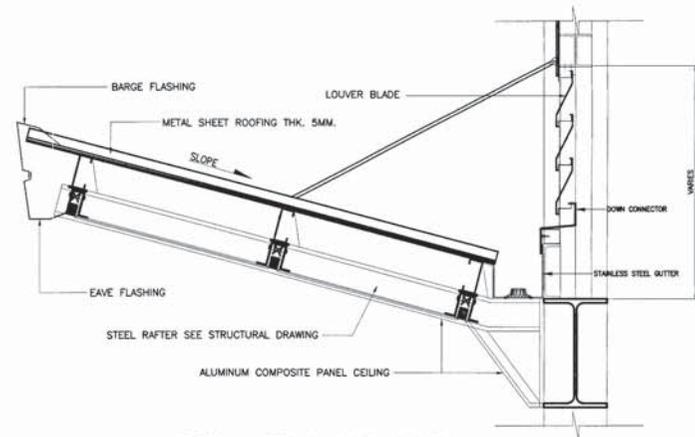
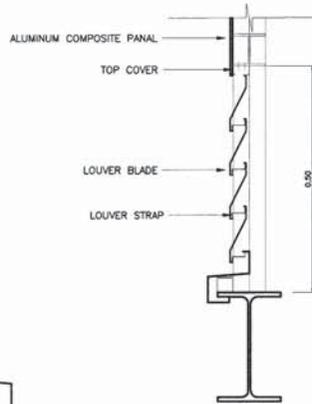
REF.	REVISION	SIGNATURE	DATE

KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT		
DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING		
HANDICAPPED PEDESTRIAN OVERPASS ARCHITECTURAL TYPE 2		
SECTION		
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. APH-105
		SHEET NO. 139

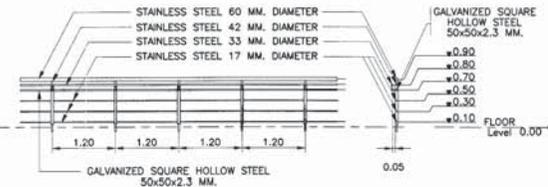
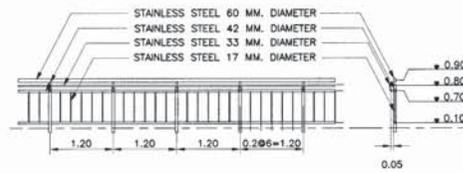
D. VALLI 043 2015 VAPN-10507-001



TYPICAL LOUVER DETAIL
SCALE NOT TO SCALE



TYPICAL APPROACH ROOFING DETAIL
SCALE 1:100

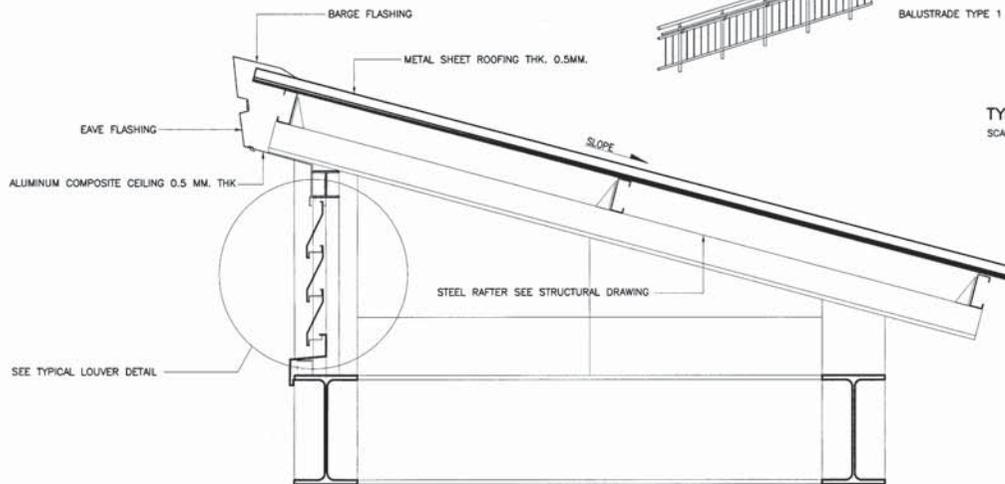


BALUSTRADE TYPE 1



BALUSTRADE TYPE 2

TYPICAL BALUSTRADE DETAILS
SCALE 1:50



TYPICAL LIFT SHAFT ROOFING DETAIL
SCALE 1:100

NOTES :

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. HOT ROLLED STRUCTURAL STEEL SECTIONS SHALL CONFORM TO TIS. 1227 GRADE SM 400.
3. HOLLOW STRUCTURAL STEEL SECTIONS SHALL CONFORM TO TIS. 107 GRADE HS 41.
4. METAL SHEET ROOFING SHALL CONFORM TO TIS. 1128 AND COLORED IN GREEN.
5. ANTI-CORROSIVE PRIMER PAINT SHALL CONFORM TO TIS.2387
6. STAINLESS STEEL BALUSTRADE PIPE SHALL CONFORM TO TIS 1006
STAINLESS STEEL COLUMN SHALL BE 60 AND 40 MM. DIAMETER AND MINIMUM 2.77 MM. THK
STAINLESS STEEL HANDRAIL SHALL BE 60 AND 33 MM. DIAMETER AND 1.65 MM. THK
7. STAINLESS SIEVE SHALL CONFORM TO TIS. 1378
8. LOUVER SHALL CONFORM TO TIS. 2223
9. TEMPERED GLASS SHALL CONFORM TO TIS. 965
10. LAMINATED GLASS SHALL CONFORM TO TIS. 1222
11. ALUMINUM COMPOSITE PANEL SHALL CONFORM TO TIS. 2314
12. STEEL ROLLING SHUTTER SHALL CONFORM TO TIS. 593
13. TEMPERED GLASS INSTALLATION SEE DWG. AUH-107 FOR DETAIL

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

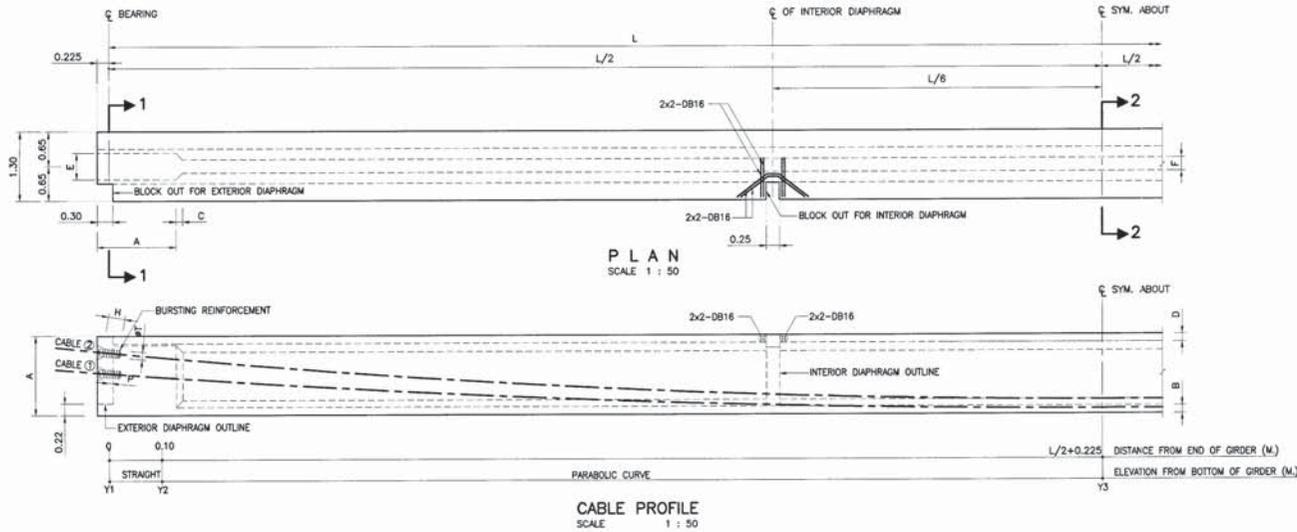
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS ARCHITECTURAL
ACCESSORY DETAILS

DESIGNED : D.O.H. & CONSULTANTS CHECKED : BUREAU OF LOCATION & DESIGN DATE : OCT 2015

SUBMITTED : (DIRECTOR OF LOCATION & DESIGN BUREAU) SCALE : AS SHOWN

APPROVED : (FOR DIRECTOR GENERAL) DWG NO. APH-107 SHEET NO. 141

REF.	REVISION	SIGNATURE	DATE



BURSTING REINFORCEMENT

NO. OF STRANDS IN CABLE	DIAMETER OF REINFORCEMENT (MM.)	H (CM.)	ℓE (CM.)	PITCH, P (CM.)
13-19	DB16	33.00	35.00	5.50
8-12	DB16	28.50	27.00	5.50
4-7	DB12	21.00	20.00	5.00

NOTE :

- GENERAL
 - 1.1 ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
 - CONCRETE
 - 2.1 HAVING A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 15x15x15 CM. STANDARD CUBE TEST AT 28 DAYS NOT LESS THAN 45 MPa.
 - 2.2 HAVING A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 15x15x15 CM. STANDARD CUBE AT TRANSFER STRESS OF NOT LESS THAN 0.8 OF CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS.
 - 2.3 ALL EXPOSED CORNERS SHALL BE CHAMFERED OF 10x10 MM.
 - REINFORCEMENT
 - 3.1 DEFORM BARS (DB) SHALL CONFORM TO TIS 24 GRADE SD04.
 - 3.2 ROUND BARS (RB) SHALL CONFORM TO TIS 20 GRADE SD24.
 - 3.3 CONCRETE COVER TO THE REINFORCEMENT TO BE 30 MM.
 - PRESTRESSING
 - 4.1 THE PRESTRESSING SYSTEM SHALL BE POST TENSION MULTI STRAND SYSTEM MEETING THE REQUIREMENTS OF THE LATEST ASHTO STANDARD SPECIFICATIONS. THE PRESTRESSING SYSTEM SHALL BE VSL, DYWIDAG, FREYSSINET, COL OR OTHER EQUIVALENT.
 - 4.2 PRESTRESSING STEEL SHALL BE #12.7 MM. LOW RELAXATION SEVEN WIRE STRANDS CONFORMING TO TIS 420-1991 GRADE 1860 HAVING A BREAKING STRENGTH OF 184 KN/STRAND.
 - 4.3 REINFORCEMENT AT ANCHORAGE FOR POST TENSION SYSTEM SHALL BE MODIFIED TO MEET THE REQUIREMENT AND RECOMMENDATION OF THE SPECIFICATIONS AND THE ANCHORAGE MANUFACTURER TO BE USED.
 - 4.4 JACKING FORCE OF EACH CABLE SHALL BE 75% OF ULTIMATE STRENGTH OF PRESTRESSING STEEL EXCLUSIVE OF LOSSES DUE TO FRICTION IN THE JACK, ANCHORAGE AND ANCHORAGE SET

4 #12.7 MM. ULTIMATE TENSION	=	735 KN.
JACKING FORCE	=	551 KN.
7 #12.7 MM. ULTIMATE TENSION	=	1,288 KN.
JACKING FORCE	=	965 KN.
9 #12.7 MM. ULTIMATE TENSION	=	1,653 KN.
JACKING FORCE	=	1,241 KN.
12 #12.7 MM. ULTIMATE TENSION	=	2,205 KN.
JACKING FORCE	=	1,654 KN.
19 #12.7 MM. ULTIMATE TENSION	=	3,490 KN.
JACKING FORCE	=	2,618 KN.
- PRESTRESSING LOSSES ARE BASED ON THE FOLLOWING ASSUMPTIONS
- | | | |
|--------------------------------|---|-----------|
| COEFFICIENT OF FRICTION, μ | = | 0.30 |
| WOBBLE FRICTION COEFFICIENT, K | = | 0.0066/M. |
| ANCHORAGE SEATING LOSS | = | 0.25 INCH |

- 4.5 DUCT SHALL BE GROUTED WITH CEMENT SLURRY APPLY EPOXY RESIN IMMEDIATELY AFTER THE STRESSING OF ALL TENDONS HAD BEEN COMPLETED AND APPROVED BY THE ENGINEER. THE GROUTING METHODOLOGY SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE ANCHORAGE MANUFACTURER UPON APPROVAL OF THE ENGINEER. AFTER GROUTING MATERIAL GAINED STRENGTH AS REQUIRED, THE RECESSES FOR ANCHORAGE AT ENDS OF GIRDER SHALL BE FILLED IN WITH CONCRETE OF NON-SHRINK MATERIAL HAVING THE SAME STRENGTH AS THE GIRDER.
5. BEARING
 - 5.1 BEARING SHALL BE LAMINATED ELASTOMERIC BEARING CONFORMING TO THE LATEST ASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGE AND AS SPECIFIED IN THIS DRAWING THE BEARING SHALL BE DESIGNED TO ACCOMMODATE THE LOADS AND DEFORMATIONS AS SPECIFIED IN THE TABLE BELOW.
- 5.2 NON-SHRINK MATERIALS FOR LEVELING BEARING PLINTH OR BEARING SUPPORT SHALL BE USED IF ANY ADJUSTMENT TO THE BRIDGE BEARING SEATS ARE REQUIRED FOR BEARING BE PLACED HORIZONTALLY.

DESCRIPTION	GIRDER TYPE						
	1	2	3	4	5	6	7
MAX. VERT. LOAD (KN.)	480	450	380	350	280	280	220
MIN. VERT. LOAD (KN.)	270	250	200	180	130	120	100
HOR. LONG LOAD (FIXED) (KN.)	23	22	18	17	13	11	10
HOR. MOVEMENT (FREE)							
- EXPANSION (MM.)	6	6	6	5	5	4	4
- CONTRACTION (MM.)	14	13	12	11	10	9	9
ROTATION (RAD.)	0.006	0.005	0.006	0.006	0.006	0.005	0.006

GIRDER & CABLE SCHEDULE

GIRDER TYPE	SPAN, L (M.)	DIMENSION (MM.)							CABLE NO.	NO. OF STRANDS IN CABLE	CABLE PROFILE (MM.)			TENSIONING SEQUENCE
		A	B	C	D	E	F	R			Y1	Y2	Y3	
1	35.26-37.75	1500	150	125	150	500	250	200	1	19	800	728	100	2
									2	19	1200	1104	270	1
2	32.76-35.25	1500	150	125	150	500	250	200	1	19	800	723	100	2
									2	12	1200	1097	270	1
3	30.26-32.75	1300	150	115	150	450	220	200	1	19	700	629	100	2
									2	9	1100	1002	270	1
4	27.76-30.25	1300	150	115	150	450	220	200	1	12	700	623	100	2
									2	12	1100	994	270	1
5	25.26-27.75	1100	120	100	120	400	200	150	1	12	500	444	100	2
									2	9	800	725	260	1
6	22.76-25.25	1100	120	100	120	400	200	150	1	12	500	439	100	2
									2	4	800	716	250	1
7	20.26-22.75	1000	120	60	120	300	180	150	1	7	400	350	100	2
									2	7	700	624	250	1

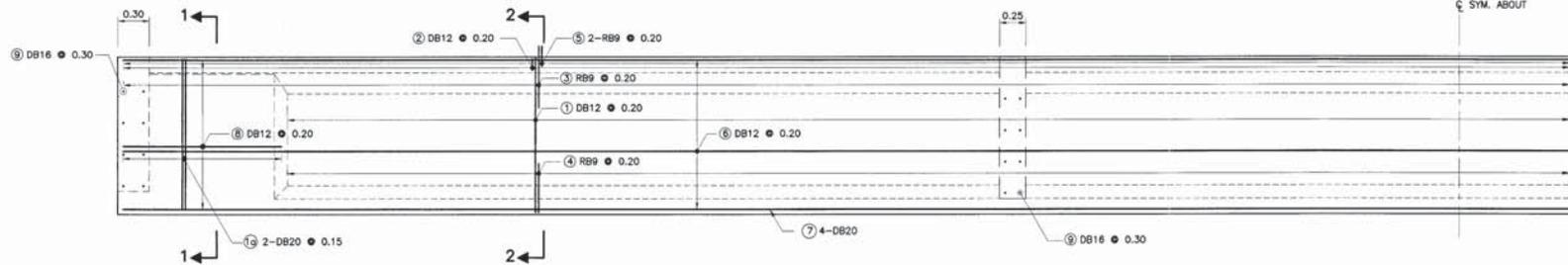
KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS (TYPICAL)
 POST-TENSIONED CONCRETE GIRDER TYPE 1-7 DETAILS (1/2)

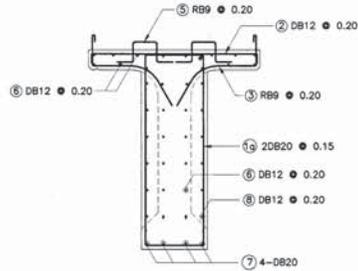
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SUBMITTED : (DIRECTOR OF LOCATION & DESIGN BUREAU)		SCALE : AS SHOWN
APPROVED : (FOR DIRECTOR GENERAL)		DWG NO. PH-001
REF.	REVISION	SIGNATURE DATE

TABLE OF REINFORCEMENT

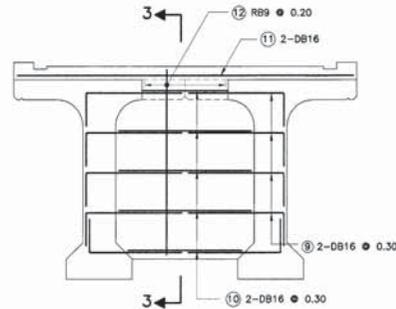
BAR MARK	BAR DIAMETER (MM.)	BAR BENDING DIAGRAM (MM.)
①	DB12	
⑩	DB20	
②	DB12	
③	RB9	
④	RB9	
⑤	RB9	
⑥	DB12	VARIES
⑦	DB20	VARIES
⑧	DB12	
⑨	DB16	250 VARIES
⑩	DB16	VARIES
⑪	DB16	2500
⑫	RB9	90 190 VARIES
⑬	RB9	90 240 VARIES
⑭	RB6	2540 60 60
⑮	RB6	VARIES 60 60
⑯	RB6	90 170



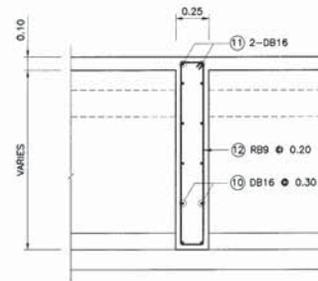
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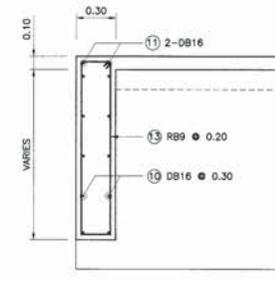
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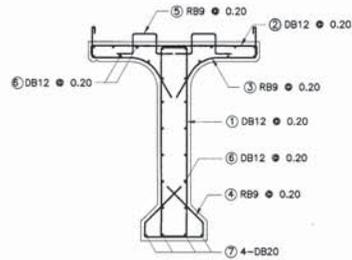
INTERIOR DIAPHRAGM REINFORCEMENT
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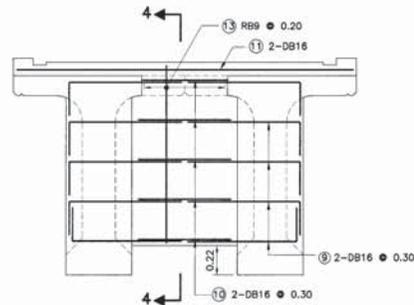
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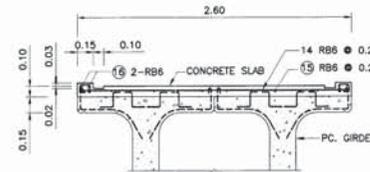
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SECTION 2 - 2
SCALE 1 : 25



EXTERIOR DIAPHRAGM REINFORCEMENT
SCALE 1 : 25



SLAB REINFORCEMENT
SCALE 1 : 25

NOTES :

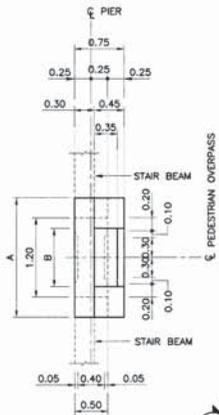
- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
- CONCRETE SLAB AND DIAPHRAGM SHALL HAVE THE 28 DAYS MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 15x15x15 CM. STANDARD CUBE TEST AT 28 DAYS NOT LESS THAN 40 MPa.

KINGDOM OF THAILAND

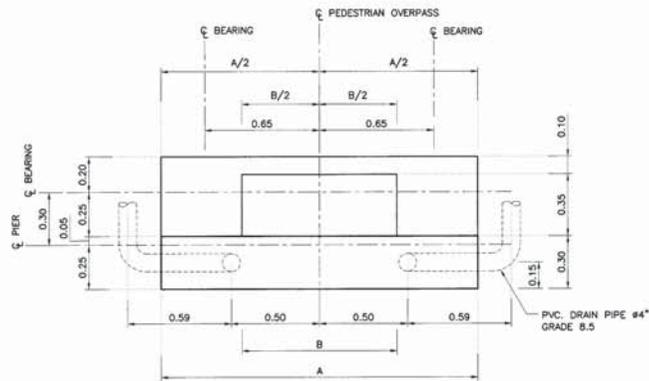
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS (TYPICAL)
POST-TENSIONED CONCRETE GIRDER TYPE 1-7 DETAILS (2/2)

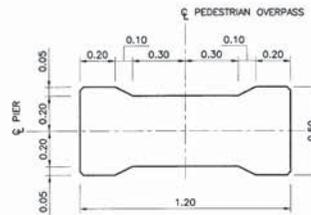
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SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PH-002
REF.	REVISION	SIGNATURE DATE



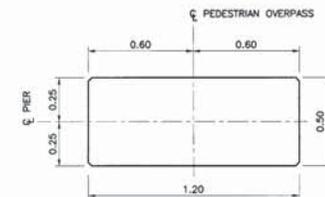
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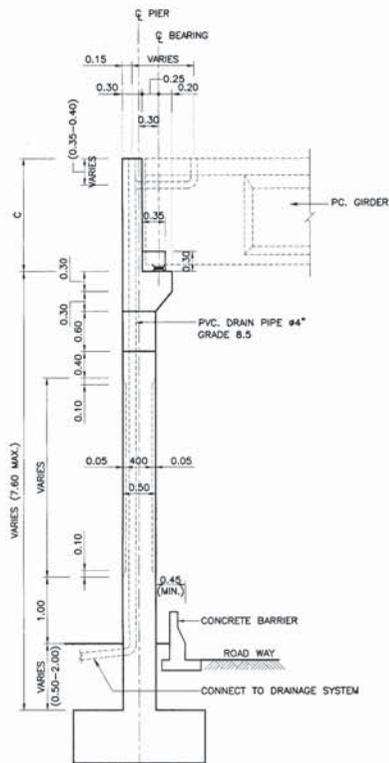
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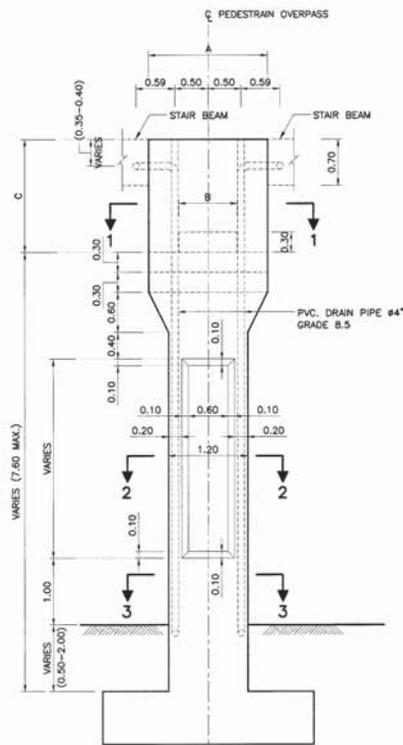
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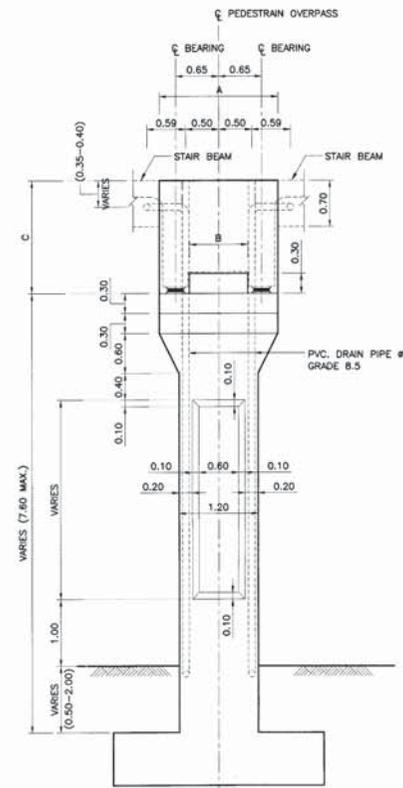
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ELEVATION 1
SCALE 1 : 40



ELEVATION 2
SCALE 1 : 40



ELEVATION 3
SCALE 1 : 40

PIER TYPE	A	B	C	REMARK
1	1.90	0.78	1.70	FOR GIRDER TYPE 1,2
2	1.85	0.83	1.50	FOR GIRDER TYPE 3,4
3	1.80	0.88	1.30	FOR GIRDER TYPE 5,6
4	1.70	0.98	1.20	FOR GIRDER TYPE 7

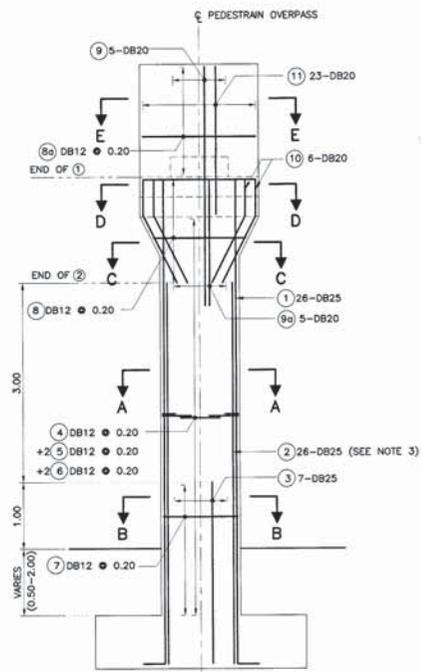
NOTES :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. FOR STAIR BEAM AND STAIR DETAILS SEE DWG. NO. PH-109 TO 110 AND PH-209 TO 210.
3. FOR PILE FOOTING DETAILS SEE DWG. NO. PH-007.
4. FOR SPREAD FOOTING DETAILS SEE DWG. NO. PH-008.
5. MINIMUM SLOPE FOR DRAIN PIPE = 1:50.

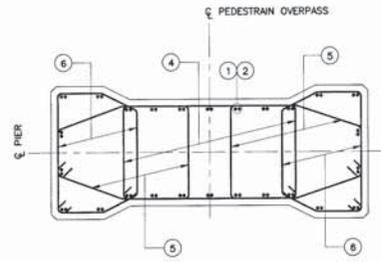
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS (TYPICAL)
OUTSIDE PIER TYPE 1-4 DETAILS (1/2)

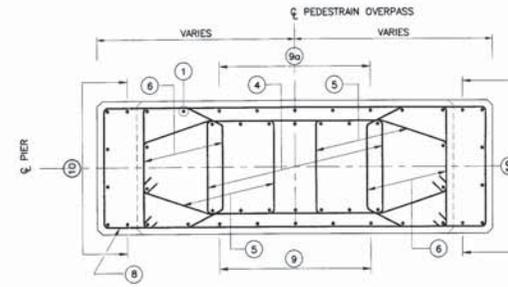
DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. PH-005
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 146



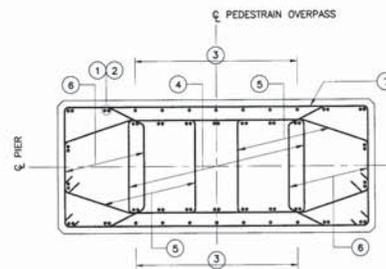
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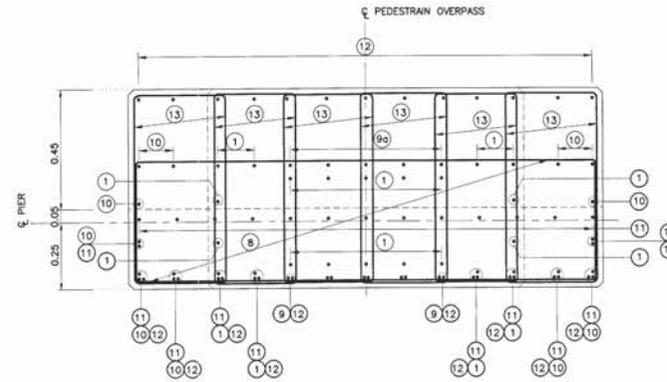
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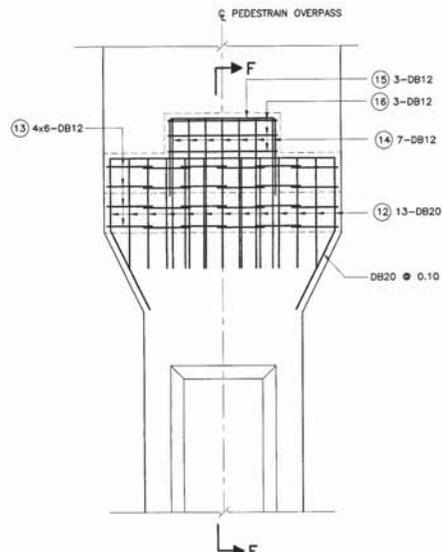
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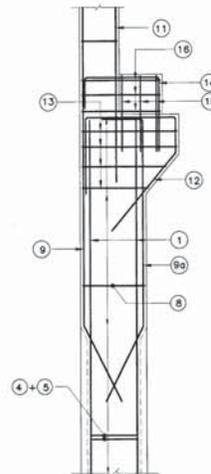
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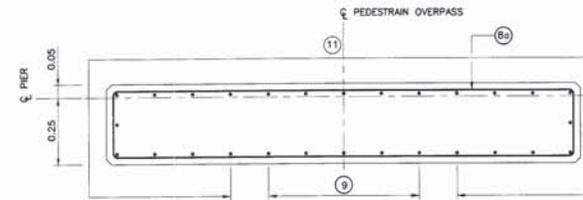
SECTION D - D
SCALE 1 : 10



CORBEL DETAIL
SCALE 1 : 20



SECTION F - F
SCALE 1 : 20



SECTION E - E
SCALE 1 : 10

BAR BENDING SCHEDULE

BAR MARK	BAR SIZE (MM.)	BAR BENDING (MM.)
1	DB25	VARIES
2	DB25	VARIES 200
3	DB25	VARIES 200
4	DB12	VARIES 120 340
5	DB12	VARIES 160 110 120 340
6	DB12	VARIES 220 270 170 120 340
7	DB12	VARIES 114 120 440
8	DB12	VARIES 120 440 (114-184)
9a	DB12	VARIES 120 240
9	DB20	VARIES 250 700
9b	DB20	VARIES 250 700
10	DB20	VARIES 80 105 54
11	DB20	VARIES 250
12	DB20	VARIES 660 600 240 600
13	DB12	VARIES 120 VARIES
14	DB12	VARIES 580 100 600
15	DB12	VARIES 600 600
16	DB12	VARIES 580 VARIES

NOTES :

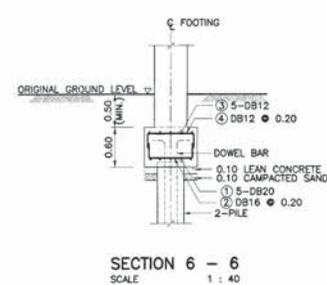
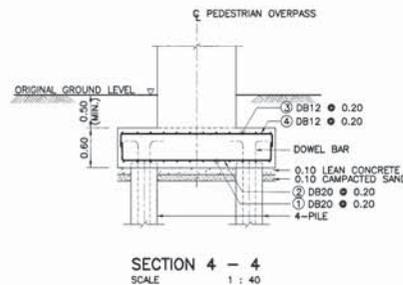
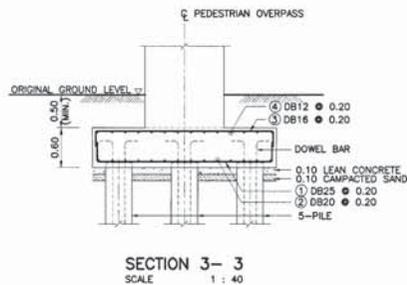
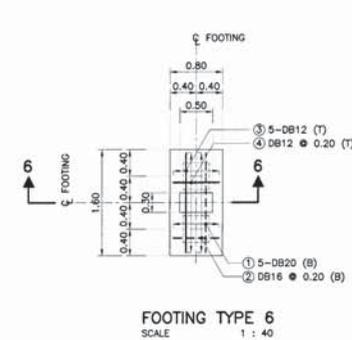
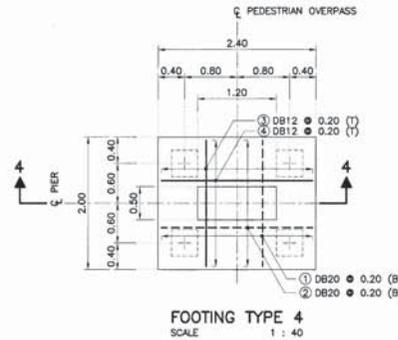
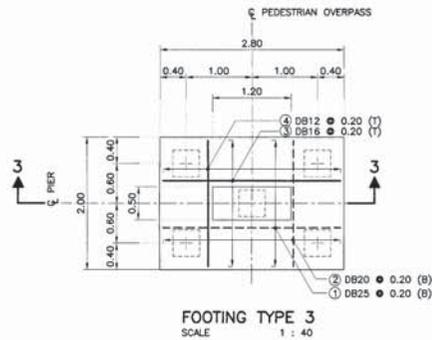
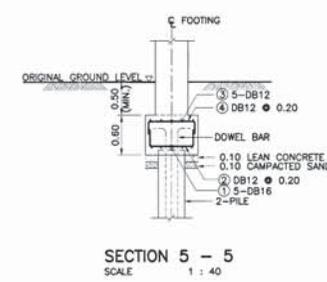
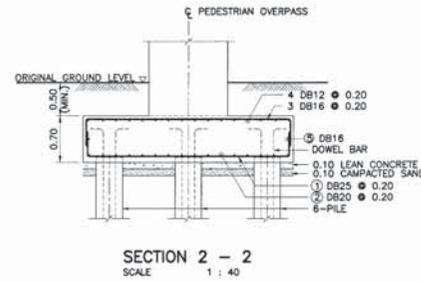
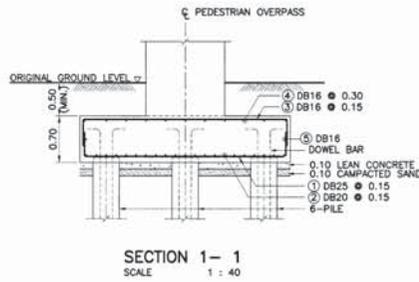
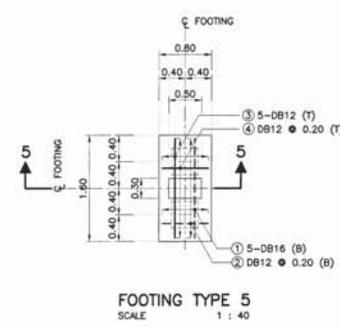
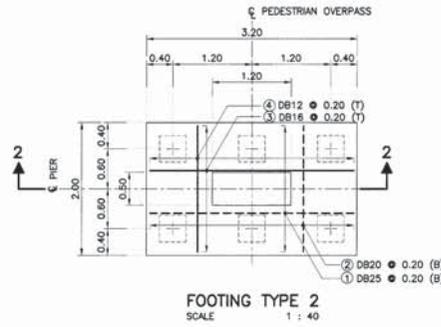
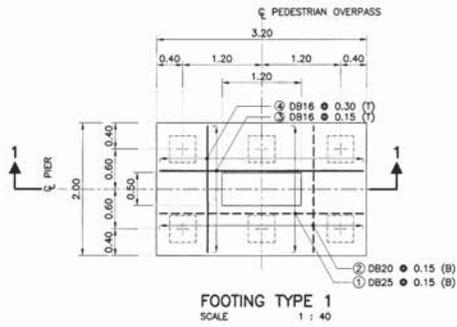
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. CONCRETE PIER SHALL HAVE THE 28 DAYS MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 15x15x15 CM. STANDARD CUBE TEST AT 28 DAYS NOT LESS THAN 40 MPa.
3. BAR MARK (2) IS ADDITIONAL REBAR FOR PIER TYPE 1 AND PIER TYPE 2 ONLY.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS (TYPICAL)
OUTSIDE PIER TYPE 1-4 DETAILS (2/2)

DESIGNED BY: B.G.H. & CONSULTANTS	CHECKED BY: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED BY:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED BY:	(FOR DIRECTOR GENERAL)	DWG NO. PH-006
REF.	REVISION	SIGNATURE DATE

SHEET NO. 147



FOOTING TYPE	BAR MARK	BAR DIAMETER (MM.)	BAR BENDING DIAGRAM (MM.)
FOOTING TYPE 1	①	DB25	500 3100 500
	②	DB20	500 1900 500
	③	DB16	500 3100 500
	④	DB16	500 1900 500
	⑤	DB16	3050 11200
FOOTING TYPE 2	①	DB25	500 3100 500
	②	DB20	500 1900 500
	③	DB16	500 3100 500
	④	DB12	500 1900 500
	⑤	DB16	3050 11200
FOOTING TYPE 3	①	DB25	400 2700 400
	②	DB20	400 1900 400
	③	DB16	400 2700 400
	④	DB12	400 1900 400
FOOTING TYPE 4	①	DB20	400 1900 400
	②	DB20	400 2300 400
	③	DB12	400 1900 400
	④	DB12	400 2300 400
FOOTING TYPE 5	①	DB16	400 1500 400
	②	DB12	400 700 400
	③	DB12	400 1500 400
	④	DB12	400 700 400
FOOTING TYPE 6	①	DB20	400 1500 400
	②	DB16	400 700 400
	③	DB12	400 1500 400
	④	DB12	400 700 400

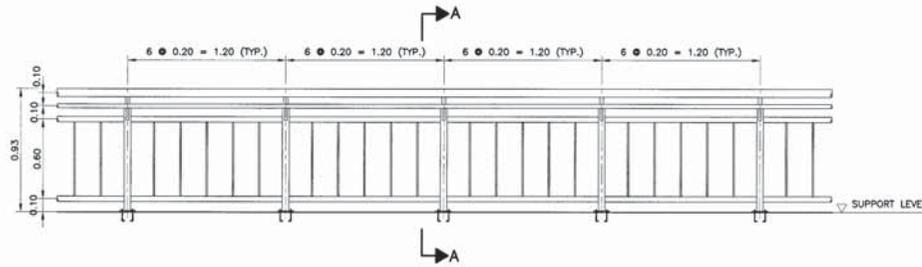
- NOTES :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 15x15x15 CM. STANDARD CUBE TEST AT 28 DAYS NOT LESS THAN 40 MPa.
 - FOR PILE DETAILS SEE DOH STANDARD DRAWING NO. PL-001 AND PL-101 EACH PILE SHALL HAVE A MINIMUM ULTIMATE BEARING CAPACITY NOT LESS THAN 125 TONNE (FACTOR OF SAFETY 2.5)

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

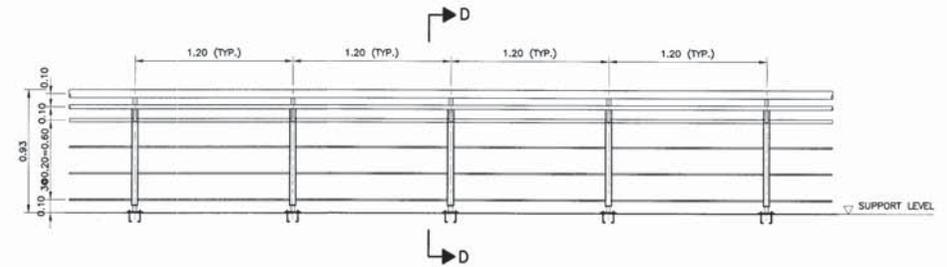
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS (TYPICAL)
PILE FOOTING TYPE 1-4 DETAILS

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. PH-007
		SHEET NO. 148

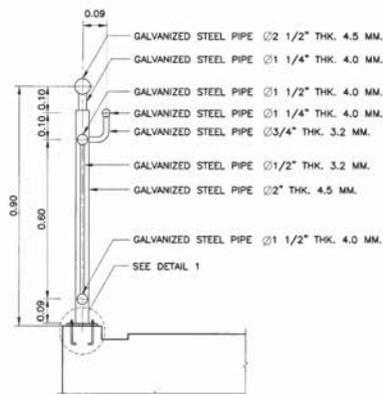
REF.	REVISION	SIGNATURE	DATE



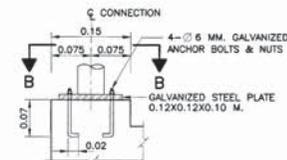
RAILING TYPE 1 DETAILS
SCALE 1:20



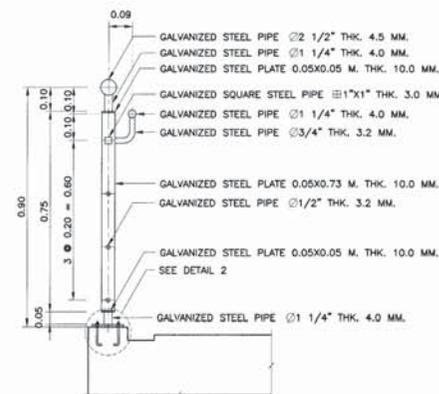
RAILING TYPE 2 DETAILS
SCALE 1:20



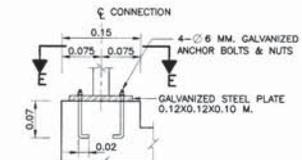
SECTION A - A
SCALE 1:10



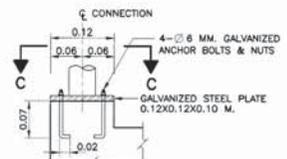
DETAIL 1 (ON PC. GIRDER)
SCALE 1:5



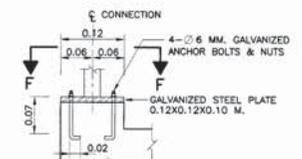
SECTION D - D
SCALE 1:10



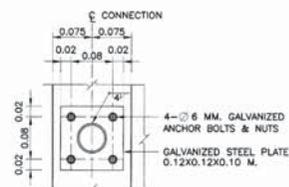
DETAIL 2 (ON PC. GIRDER)
SCALE 1:5



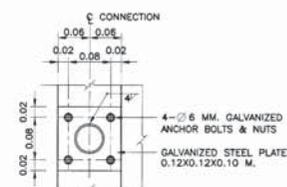
DETAIL 1 (ON STAIR AND RAMP)
SCALE 1:5



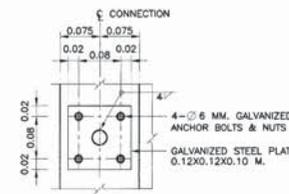
DETAIL 2 (ON STAIR AND RAMP)
SCALE 1:5



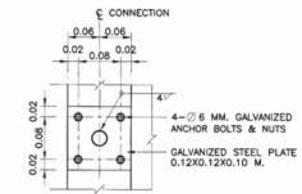
SECTION B - B
SCALE 1:5



SECTION C - C
SCALE 1:5



SECTION E - E
SCALE 1:5



SECTION F - F
SCALE 1:5

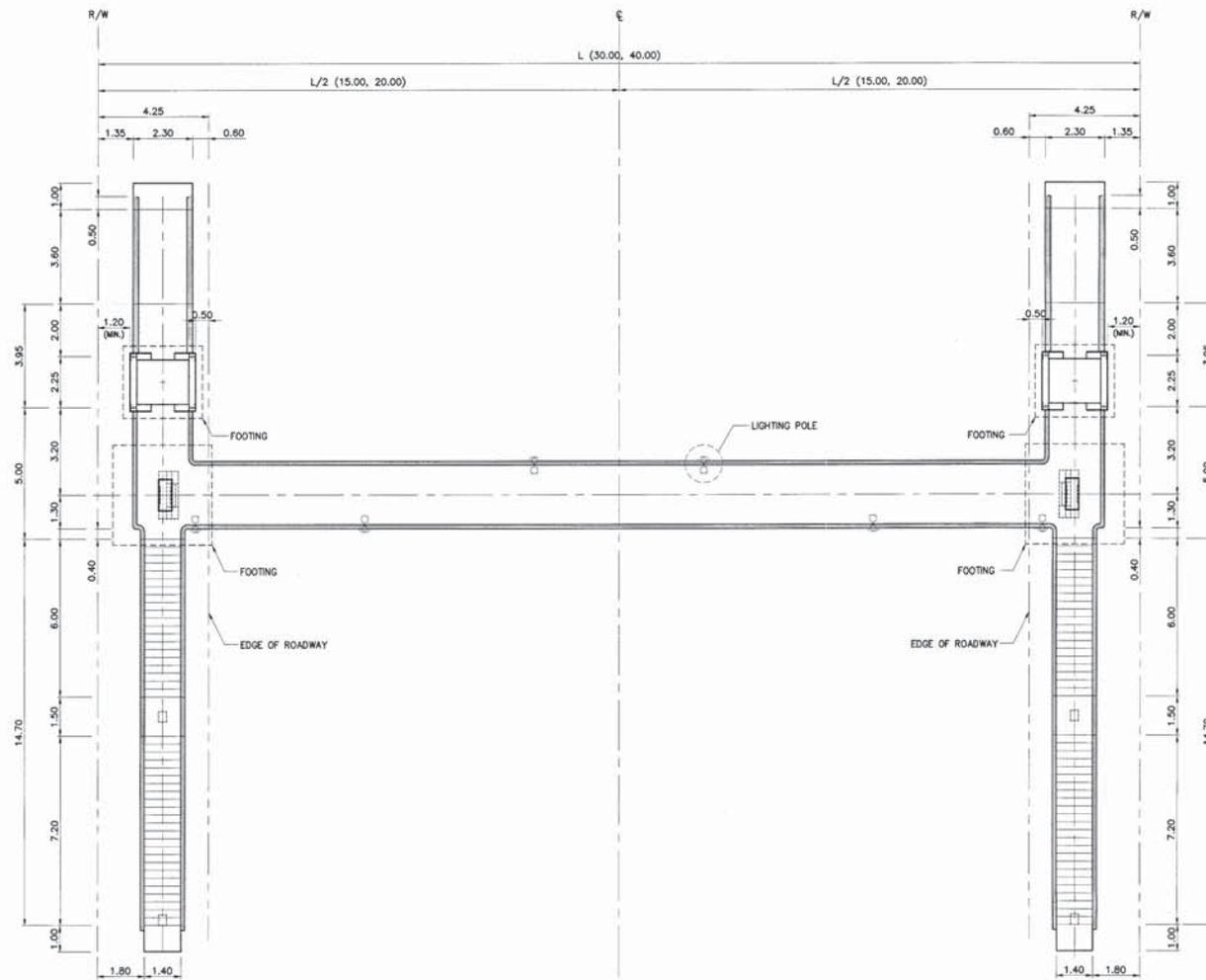
- NOTES :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. ALL ANCHOR BOLTS AND NUTS SHALL BE GALVANIZED TYPE.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS (TYPICAL)
RAILING TYPE 1 AND TYPE 2 DETAILS

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED: (DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN	DWG NO. PH-010
APPROVED: (FOR DIRECTOR GENERAL)	SHEET NO. 151	

REF.	REVISION	SIGNATURE	DATE



PLAN 30.00, 40.00 M. R.O.W.
SCALE 1 : 100

TABLE OF LIGHTING POLE

R.O.W. (m.)	NO. OF LIGHTING POLES	LIGHTING POLE ARRANGEMENT
30.00	4	
40.00	6	

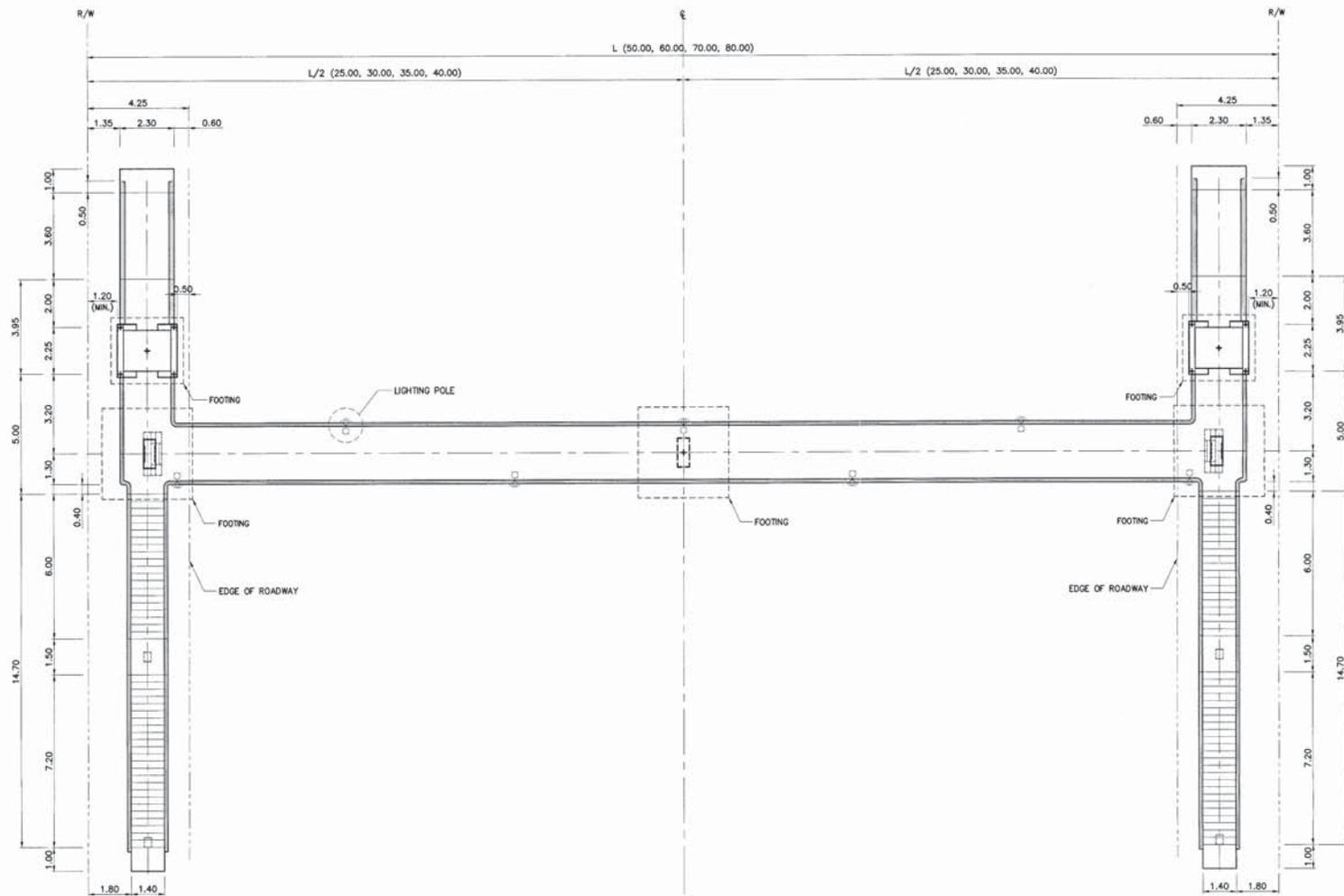
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 1
PLAN (R.O.W. 30.00, 40.00 M.)

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:		SCALE: AS SHOWN
APPROVED:		DWG NO. PH-101
	(FOR DIRECTOR GENERAL)	SHEET NO. 152

REF.	REVISION	SIGNATURE	DATE



PLAN 50.00, 60.00, 70.00, 80.00 M. R.O.W.
SCALE 1 : 100

TABLE OF LIGHTING POLE

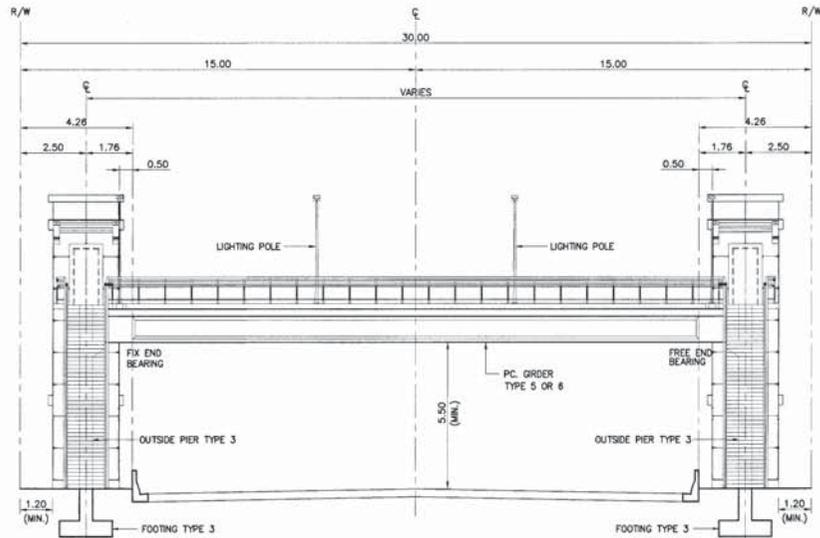
R.O.W. (m.)	NO. OF LIGHTING POLES	LIGHTING POLE ARRANGEMENT
50.00	7	
60.00	8	
70.00	9	
80.00	10	

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

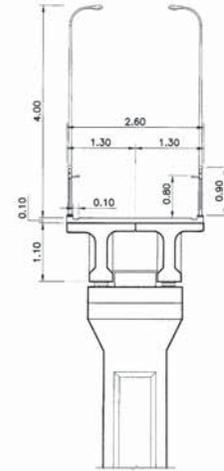
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 1
PLAN (R.O.W. 50.00, 60.00, 70.00, 80.00 M.)

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :		SCALE : AS SHOWN
	(DIRECTOR OF LOCATION & DESIGN BUREAU)	DWG NO. PH-102
APPROVED :		SHEET NO. 153
	(FOR DIRECTOR GENERAL)	

REF.	REVISION	SIGNATURE	DATE



ELEVATION 30.00 R.O.W.
SCALE 1 : 100



TYPICAL CROSS SECTION
SCALE 1 : 50

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. FOR PC GIRDER SEE DWG. NO. PH-001 AND PH-002.
3. FOR INSIDE PIER SEE DWG. NO. PH-003 AND PH-004.
4. FOR OUTSIDE PIER SEE DWG. NO. PH-005 AND PH-006.
5. FOR LIGHTING POLE SUPPORT SEE DWG. NO. PH-008.
6. FOR PILE FOOTING SEE DWG. NO. PH-007.
7. FOR SPREAD FOOTING SEE DWG. NO. PH-008.
8. FOR FIX END BEARING AND FREE END BEARING SEE DWG. NO. PH-009.
9. FOR STAIR AND ELEVATOR SEE DWG. NO. PH-109 TO PH-112.

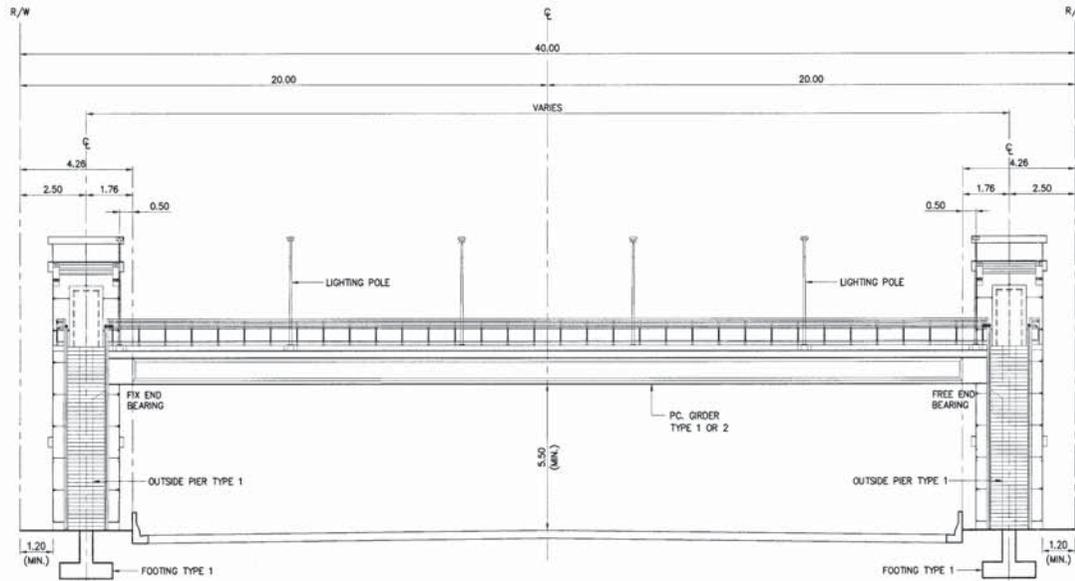
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

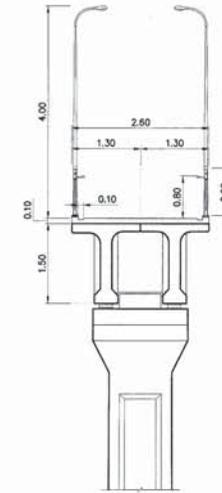
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 1
ELEVATION (R.O.W. 30.00 M.)

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PH-103
		SHEET NO. 154

REF.	REVISION	SIGNATURE	DATE



ELEVATION 40.00 R.O.W.
SCALE 1 : 100



TYPICAL CROSS SECTION
SCALE 1 : 50

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. FOR PC GIRDER SEE DWG. NO. PH-001 AND PH-002.
3. FOR INSIDE PIER SEE DWG. NO. PH-003 AND PH-004.
4. FOR OUTSIDE PIER SEE DWG. NO. PH-005 AND PH-006.
5. FOR LIGHTING POLE SUPPORT SEE DWG. NO. PH-009.
6. FOR PILE FOOTING SEE DWG. NO. PH-007.
7. FOR SPREAD FOOTING SEE DWG. NO. PH-008.
8. FOR FIX END BEARING AND FREE END BEARING SEE DWG. NO. PH-009.
9. FOR STAIR AND ELEVATOR SEE DWG. NO. PH-109 TO PH-112.

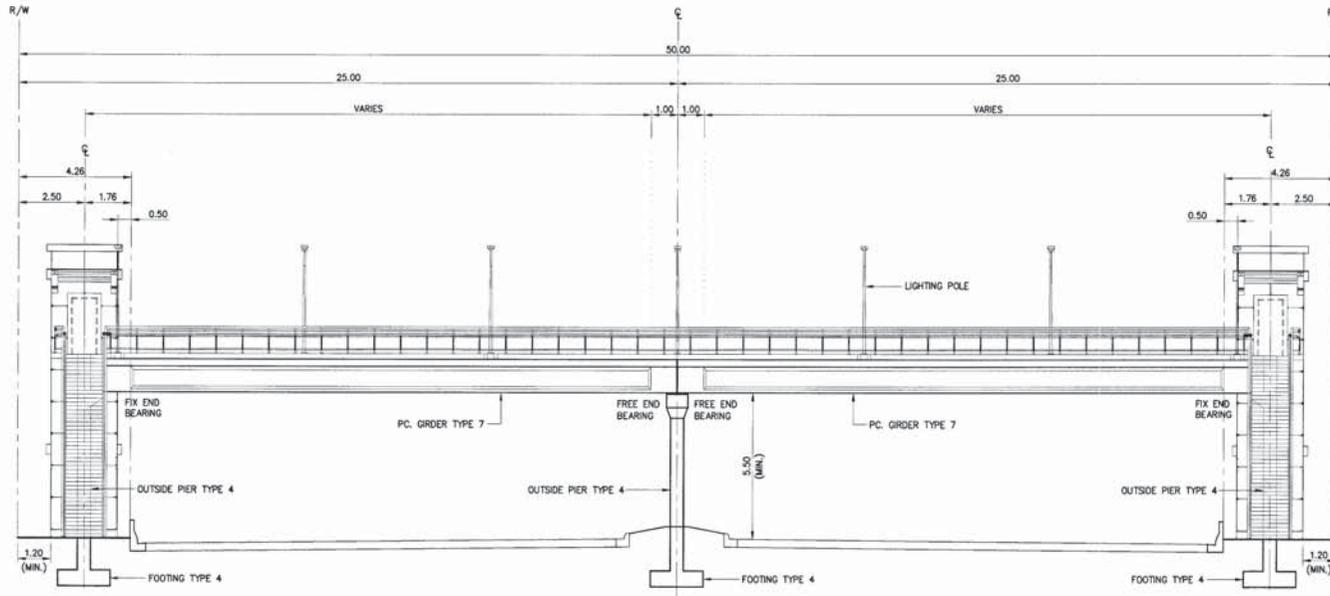
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

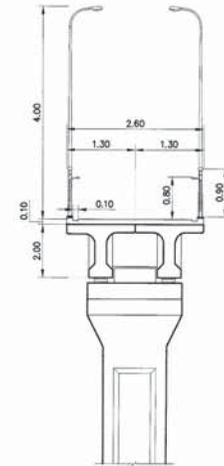
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 1
ELEVATION (R.O.W. 40.00 M.)

DESIGNED: B.G.M. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. PH-104
		SHEET NO. 155

REF.	REVISION	SIGNATURE	DATE



ELEVATION 50.00 R.O.W.
SCALE 1 : 100



TYPICAL CROSS SECTION
SCALE 1 : 50

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. FOR PC. GIRDER SEE DWG. NO. PH-001 AND PH-002.
3. FOR INSIDE PIER SEE DWG. NO. PH-003 AND PH-004.
4. FOR OUTSIDE PIER SEE DWG. NO. PH-005 AND PH-006.
5. FOR LIGHTING POLE SUPPORT SEE DWG. NO. PH-009.
6. FOR PILE FOOTING SEE DWG. NO. PH-007.
7. FOR SPREAD FOOTING SEE DWG. NO. PH-008.
8. FOR FIX END BEARING AND FREE END BEARING SEE DWG. NO. PH-009.
9. FOR STAIR AND ELEVATOR SEE DWG. NO. PH-109 TO PH-112.

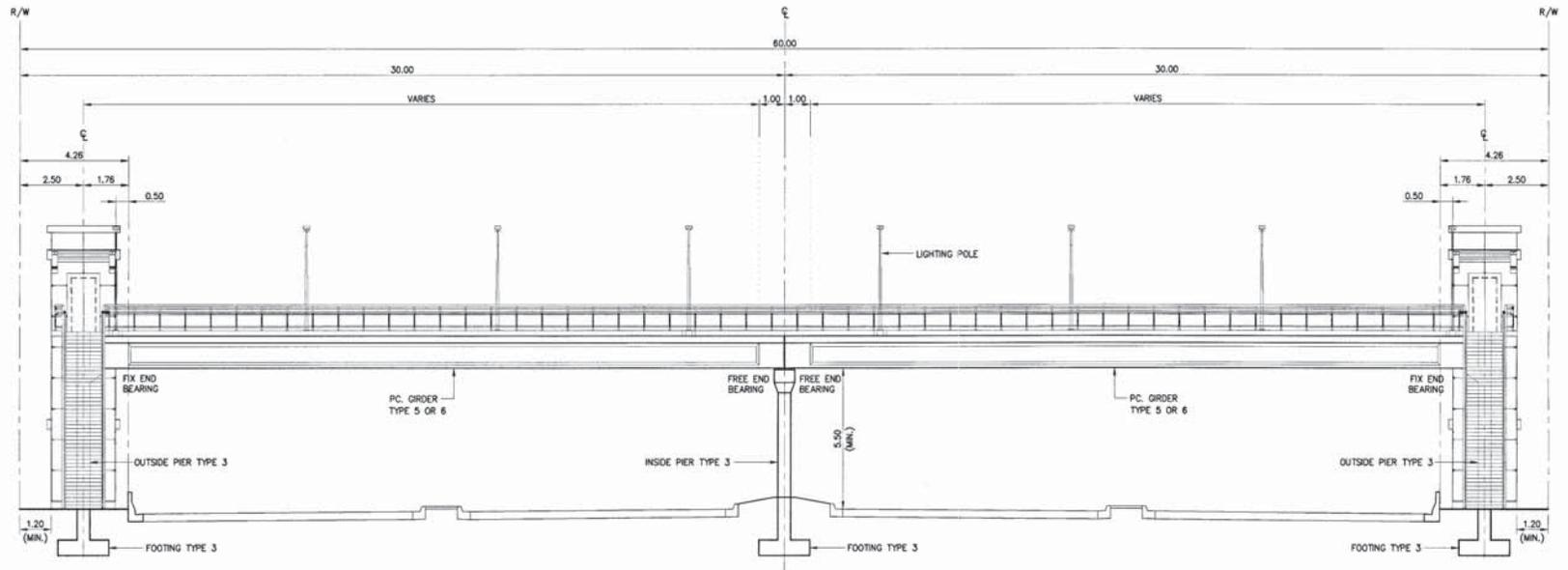
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

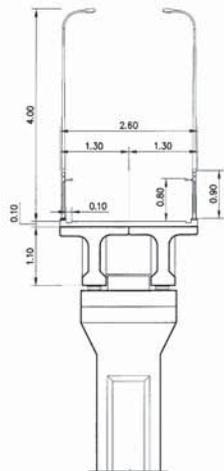
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 1
ELEVATION (R.O.W. 50.00 M.)

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED: (DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN	DWG NO. PH-105
APPROVED: (FOR DIRECTOR GENERAL)	SHEET NO. 156	

REF.	REVISION	SIGNATURE	DATE



ELEVATION 60.00 R.O.W.
SCALE 1 : 100



TYPICAL CROSS SECTION
SCALE 1 : 50

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. FOR PC GIRDER SEE DWG. NO. PH-001 AND PH-002.
3. FOR INSIDE PIER SEE DWG. NO. PH-003 AND PH-004.
4. FOR OUTSIDE PIER SEE DWG. NO. PH-005 AND PH-006.
5. FOR LIGHTING POLE SUPPORT SEE DWG. NO. PH-009.
6. FOR PILE FOOTING SEE DWG. NO. PH-007.
7. FOR SPREAD FOOTING SEE DWG. NO. PH-008.
8. FOR FIX END BEARING AND FREE END BEARING SEE DWG. NO. PH-009.
9. FOR STAIR AND ELEVATOR SEE DWG. NO. PH-109 TO PH-112.

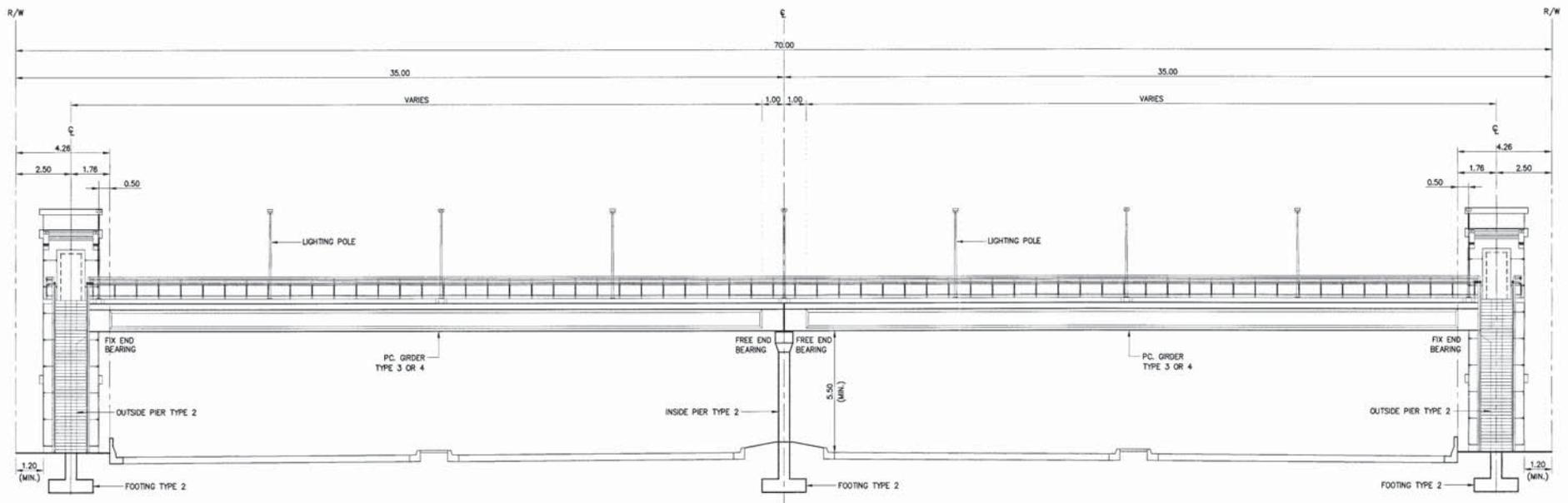
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

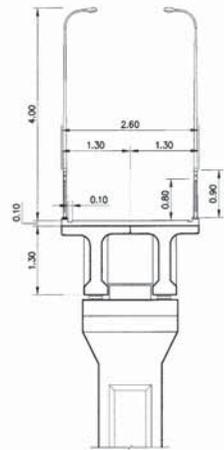
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 1
ELEVATION (R.O.W. 60.00 M.)

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. PH-106
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 157

REF.	REVISION	SIGNATURE	DATE



ELEVATION 70.00 R.O.W.
SCALE 1 : 100



TYPICAL CROSS SECTION
SCALE 1 : 50

NOTE :

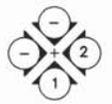
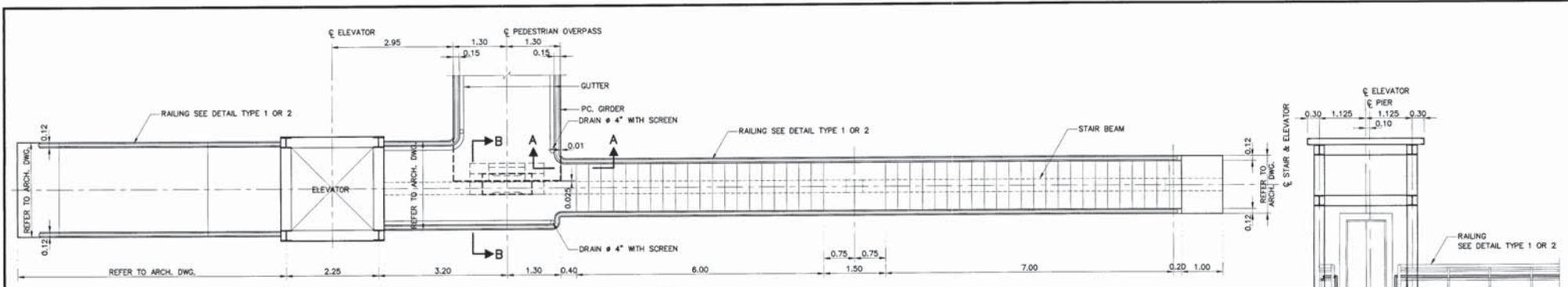
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. FOR PC GIRDER SEE DWG. NO. PH-001 AND PH-002.
3. FOR INSIDE PIER SEE DWG. NO. PH-003 AND PH-004.
4. FOR OUTSIDE PIER SEE DWG. NO. PH-005 AND PH-006.
5. FOR LIGHTING POLE SUPPORT SEE DWG. NO. PH-009.
6. FOR PILE FOOTING SEE DWG. NO. PH-007.
7. FOR SPREAD FOOTING SEE DWG. NO. PH-008.
8. FOR FIX END BEARING AND FREE END BEARING SEE DWG. NO. PH-009.
9. FOR STAIR AND ELEVATOR SEE DWG. NO. PH-109 TO PH-112.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

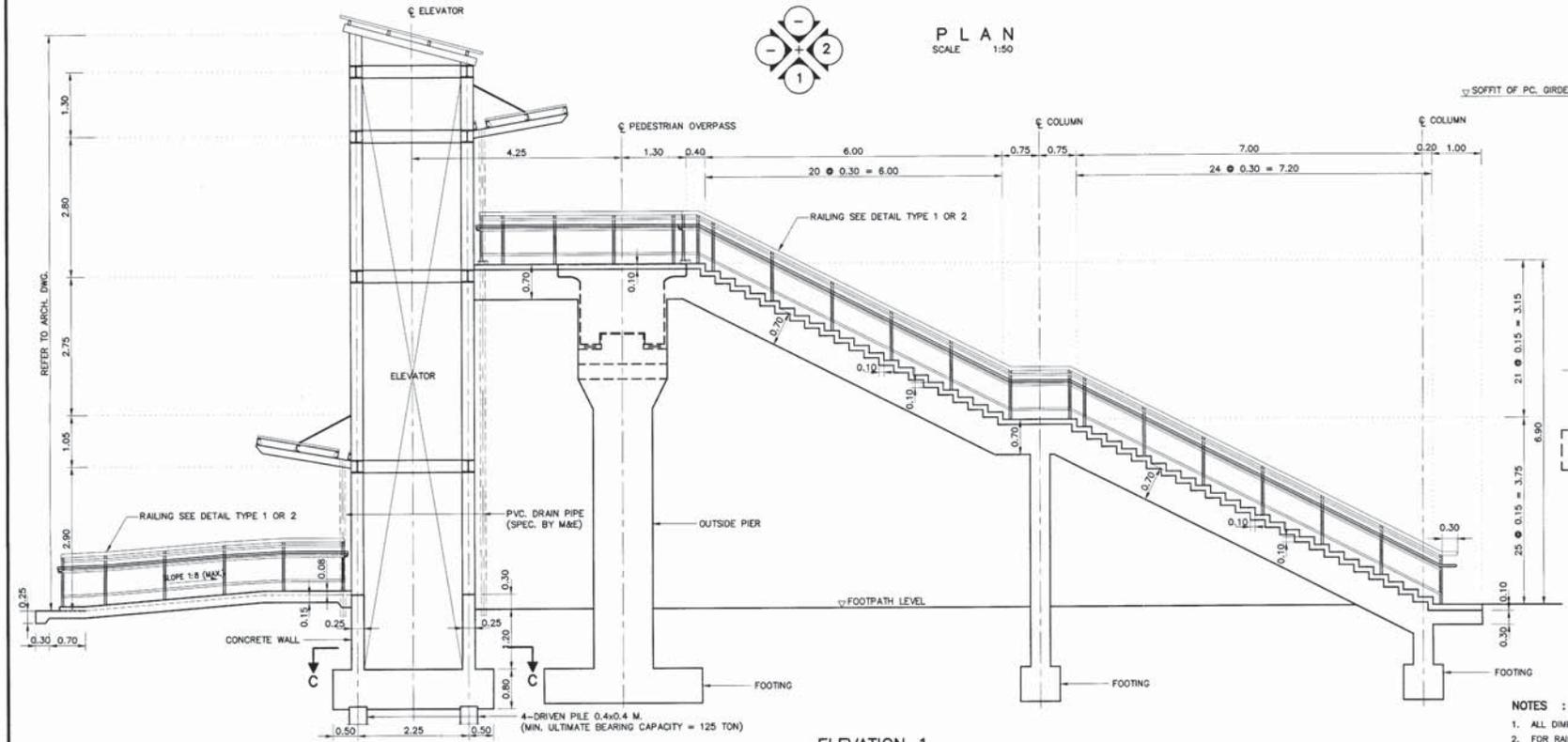
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 1
ELEVATION (R.O.W. 70.00 M.)

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PH-107
		SHEET NO. 158

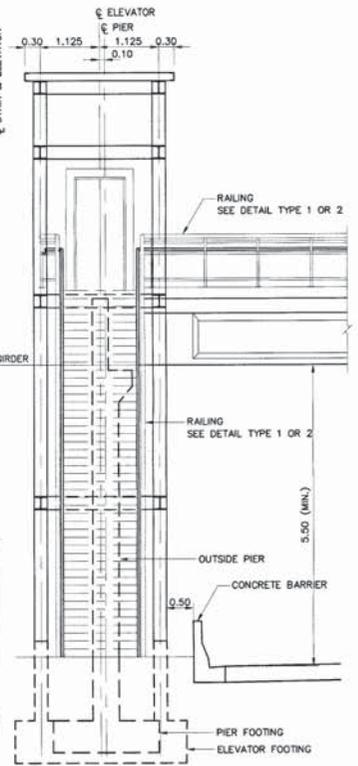
REF.	REVISION	SIGNATURE	DATE



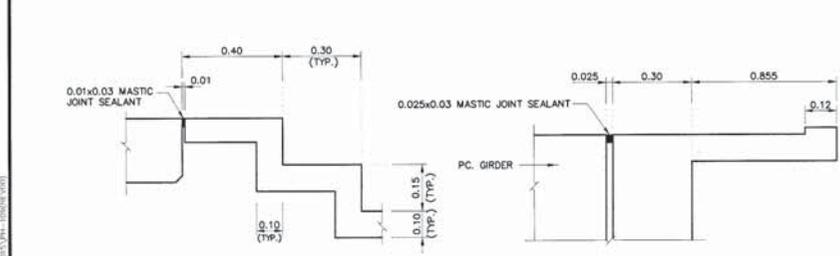
PLAN
SCALE 1:50



ELEVATION 1
SCALE 1:50

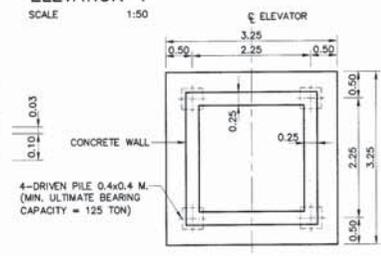


ELEVATION 2
SCALE 1:50



SECTION A-A
SCALE 1:10

SECTION B-B
SCALE 1:10



SECTION C-C
SCALE 1:50

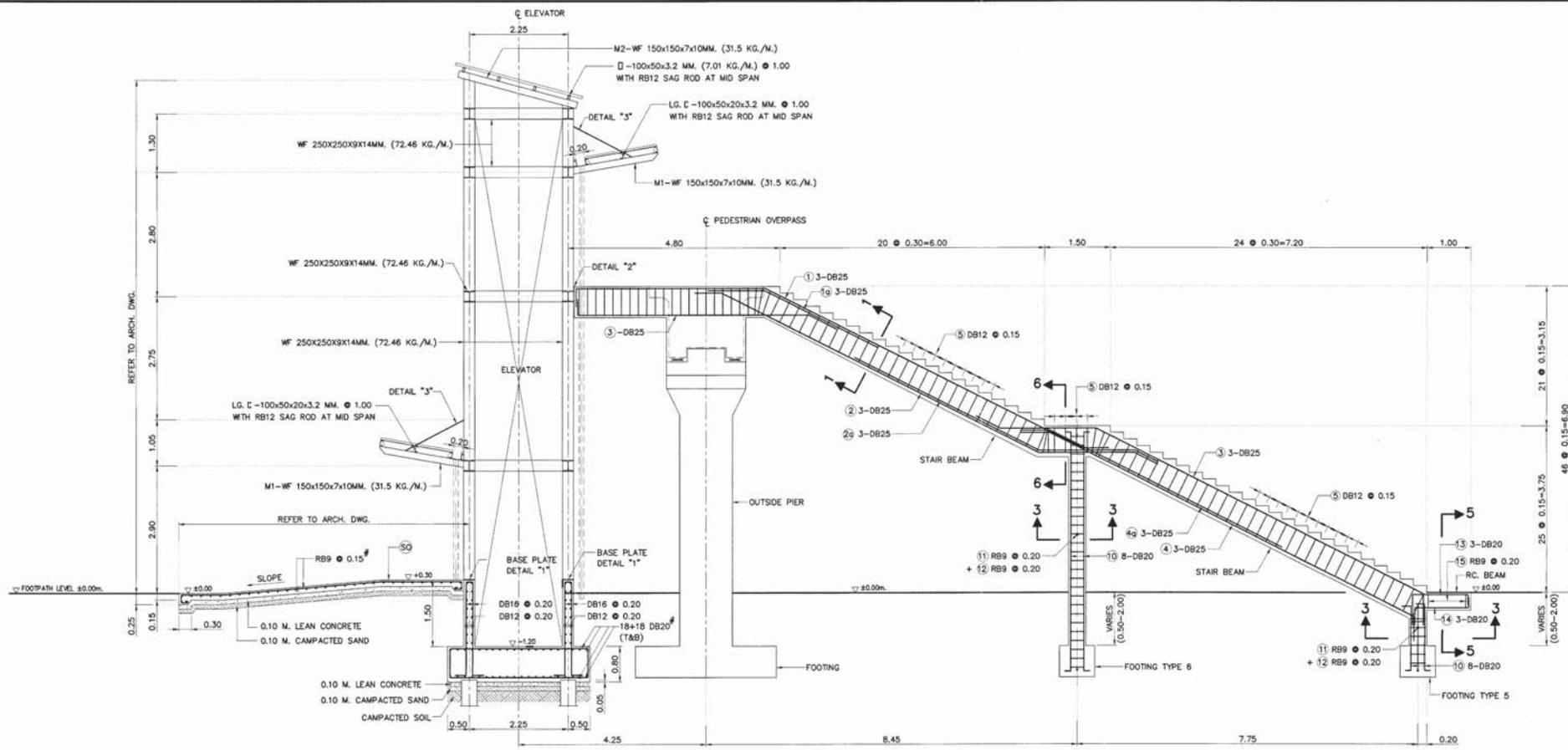
- NOTES :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. FOR RAILING DETAILS, SEE DWG. NO. PH-010.
 3. FOR PILE DETAILS OF ELEVATOR FOOTING, SEE DOH STANDARD DRAWING NO. PL-001 AND PL-101.
 4. FOR CONCRETE BARRIER DETAILS, SEE DWG. NO. PH-009.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 1
STAIR AND ELEVATOR DETAILS (1/4)

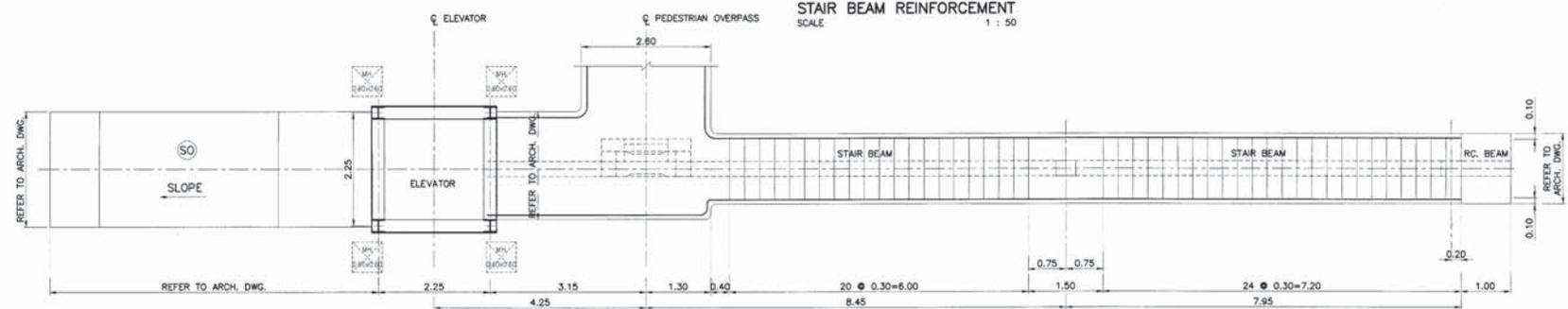
DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :		SCALE : AS SHOWN
(DIRECTOR OF LOCATION & DESIGN BUREAU)		DWG NO. PH-109
APPROVED :		SHEET NO. 160
(FOR DIRECTOR GENERAL)		

REF.	REVISION	SIGNATURE	DATE

D:\1\14\1401\1401001\1401001.dwg



STAIR BEAM REINFORCEMENT
SCALE 1 : 50



GROUND FLOOR PLAN
SCALE 1 : 50

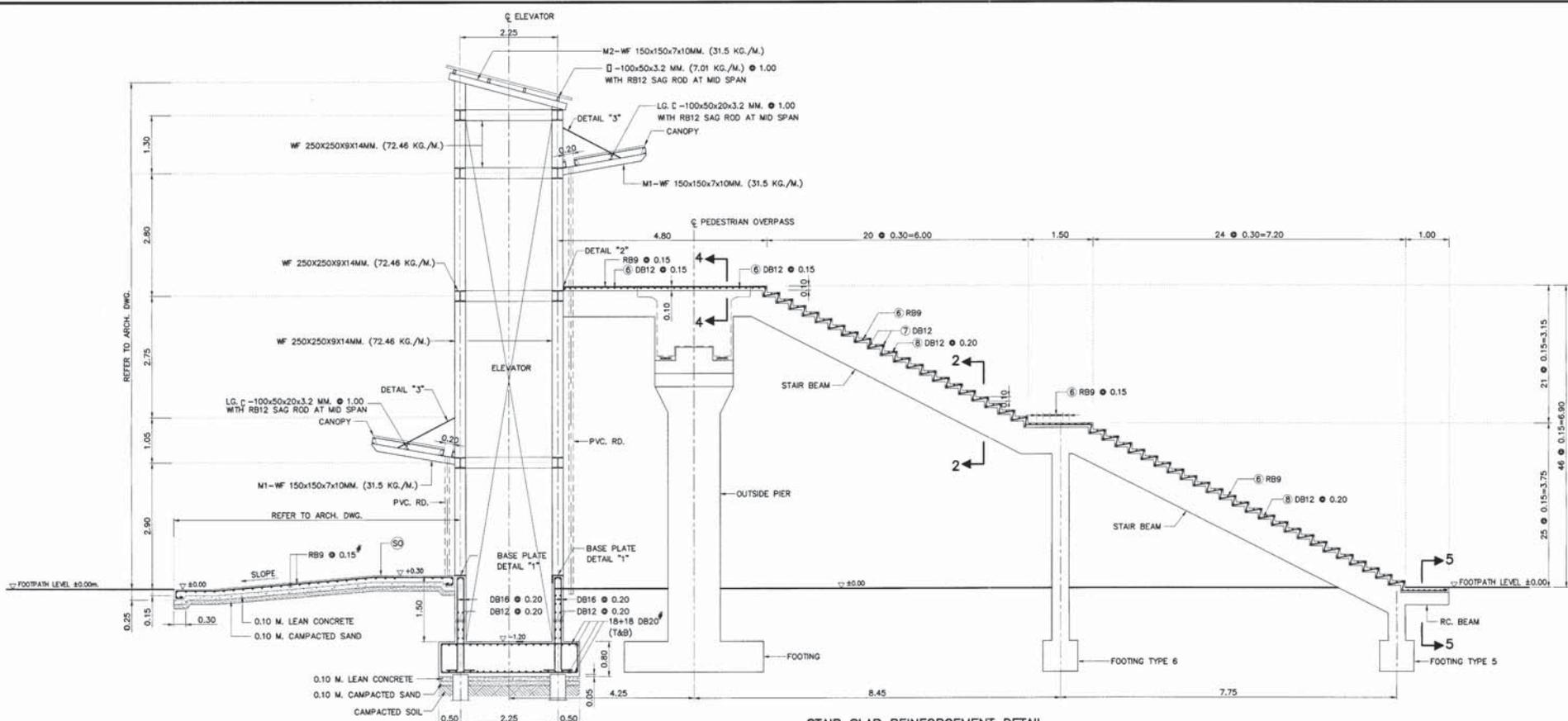
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 1
STAIR AND ELEVATOR DETAILS (2/4)

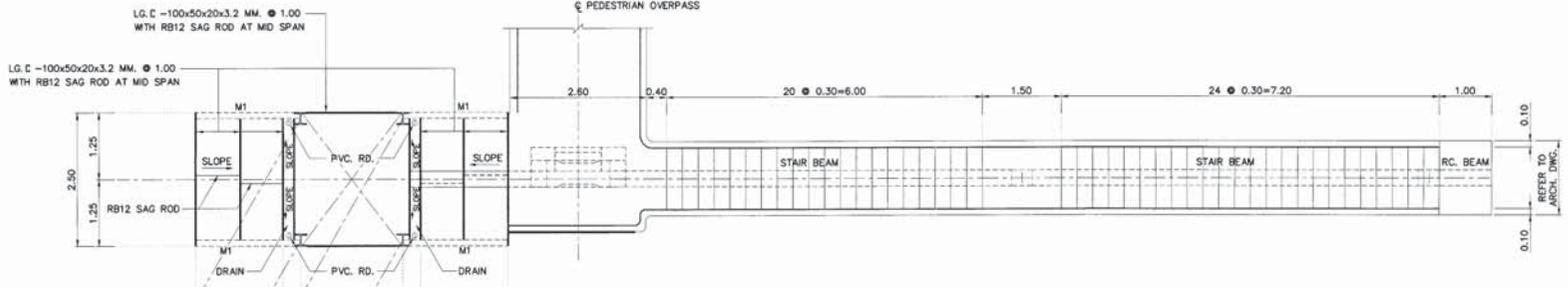
DESIGNED: D.O.M. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED: (DIRECTOR OF LOCATION & DESIGN BUREAU)	SIGNATURE: [Signature]	SCALE: AS SHOWN
APPROVED: (FOR DIRECTOR GENERAL)	SIGNATURE: [Signature]	DWG NO. PH-110
		SHEET NO. 161

REF.	REVISION	SIGNATURE	DATE

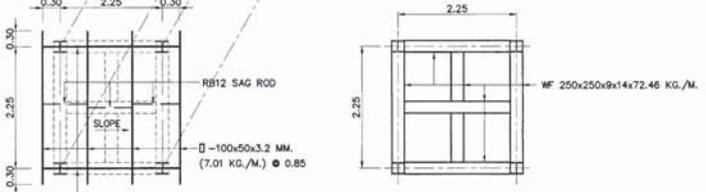
D:\work\ph-110\2015\ph-110\REV001



STAIR SLAB REINFORCEMENT DETAIL
SCALE 1 : 50



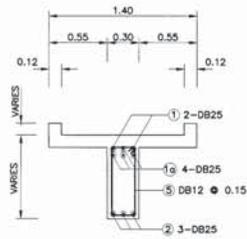
CANOPY PLAN
SCALE 1 : 50



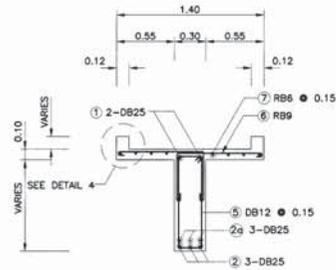
ELEVATOR ROOF DETAILS
SCALE 1 : 50

KINGDOM OF THAILAND			
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS			
STANDARD DRAWING HANDICAPPED PEDESTRIAN OVERPASS TYPE 1 STAIR AND ELEVATOR DETAILS (3/4)			
DESIGNED: D.G.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015	
SUBMITTED: (DIRECTOR OF LOCATION & DESIGN BUREAU)		SCALE: AS SHOWN	
APPROVED: (FOR DIRECTOR GENERAL)		OWG NO. PH-111	
REF.	REVISION	SIGNATURE	DATE

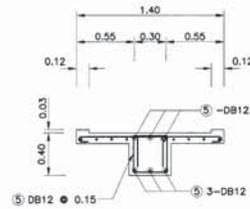
D:\Veh Des\2015\PH-111\PH-111\DWG



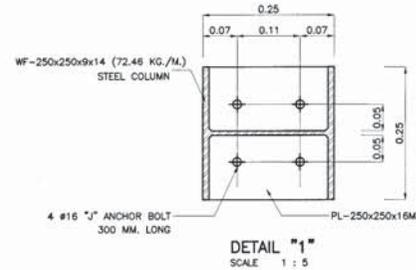
SECTION 1-1
SCALE 1:25



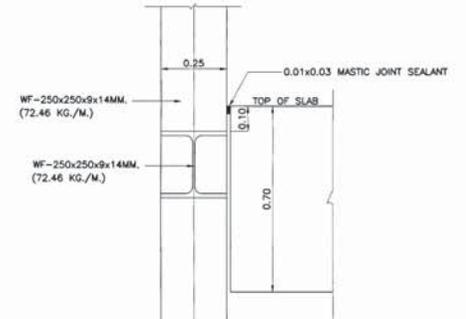
SECTION 2-2
SCALE 1:25



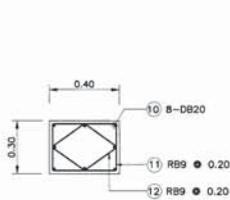
SECTION 5-5
SCALE 1:25



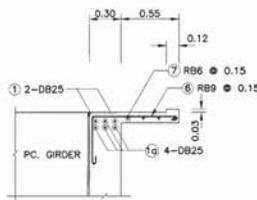
DETAIL "1"
SCALE 1 : 5



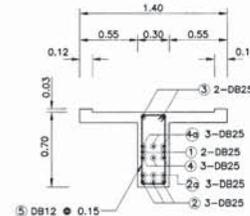
DETAIL "2"
SCALE 1 : 10



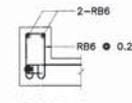
SECTION 3-3
SCALE 1:25



SECTION 4-4
SCALE 1:25



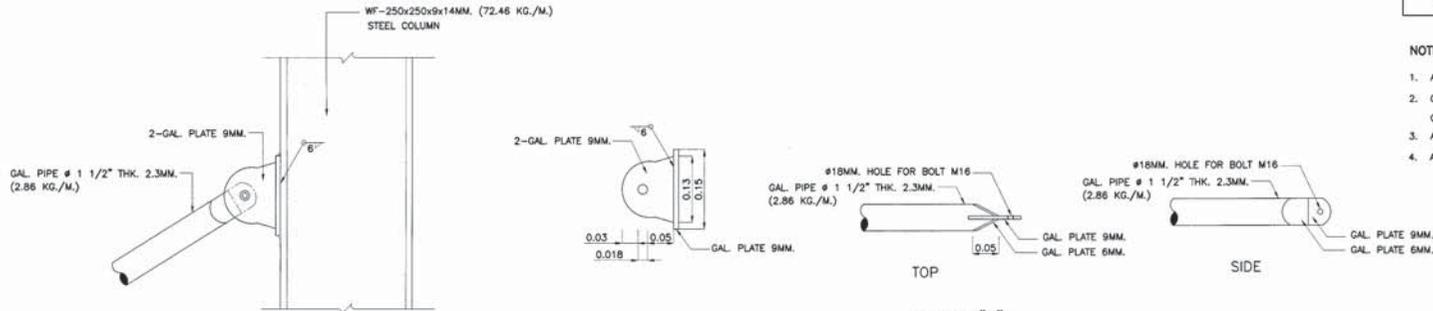
SECTION 6-6
SCALE 1:25



DETAIL 4
SCALE 1:10

TABLE OF REINFORCEMENT		
BAR MARK	BAR DIA.(MM.)	BAR BENDING DIAGRAM
①	DB 25	
①a	DB 25	
②	DB 25	
②a	DB 25	
③	DB 25	
④	DB 25	
④a	DB 25	
⑤	DB 12	
⑥	RB 9, DB 12	
⑦	RB 6	
⑧	RB 6	
⑨	DB 25	
⑩	DB 20	
⑪	RB 9	
⑫	RB 9	
⑬	DB 20	
⑭	DB 20	
⑮	RB 9	

- NOTES :
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - CONCRETE STAIR AND PIER SHALL HAVE THE 28 DAYS MINIMUM ULTIMATE CYLINDRICAL COMPRESSIVE STRENGTH OF 35 MPa., BASED ON 15.0x15.0x15.0cm. STANDARD CUBE AT 20 DAYS.
 - ALL WELDING THK. ARE 0.75xPLATE THK. BUT NOT LESS THAN 3 MM.
 - ALL BOLTS AND NUTS SHALL BE GALVANIZED TYPE



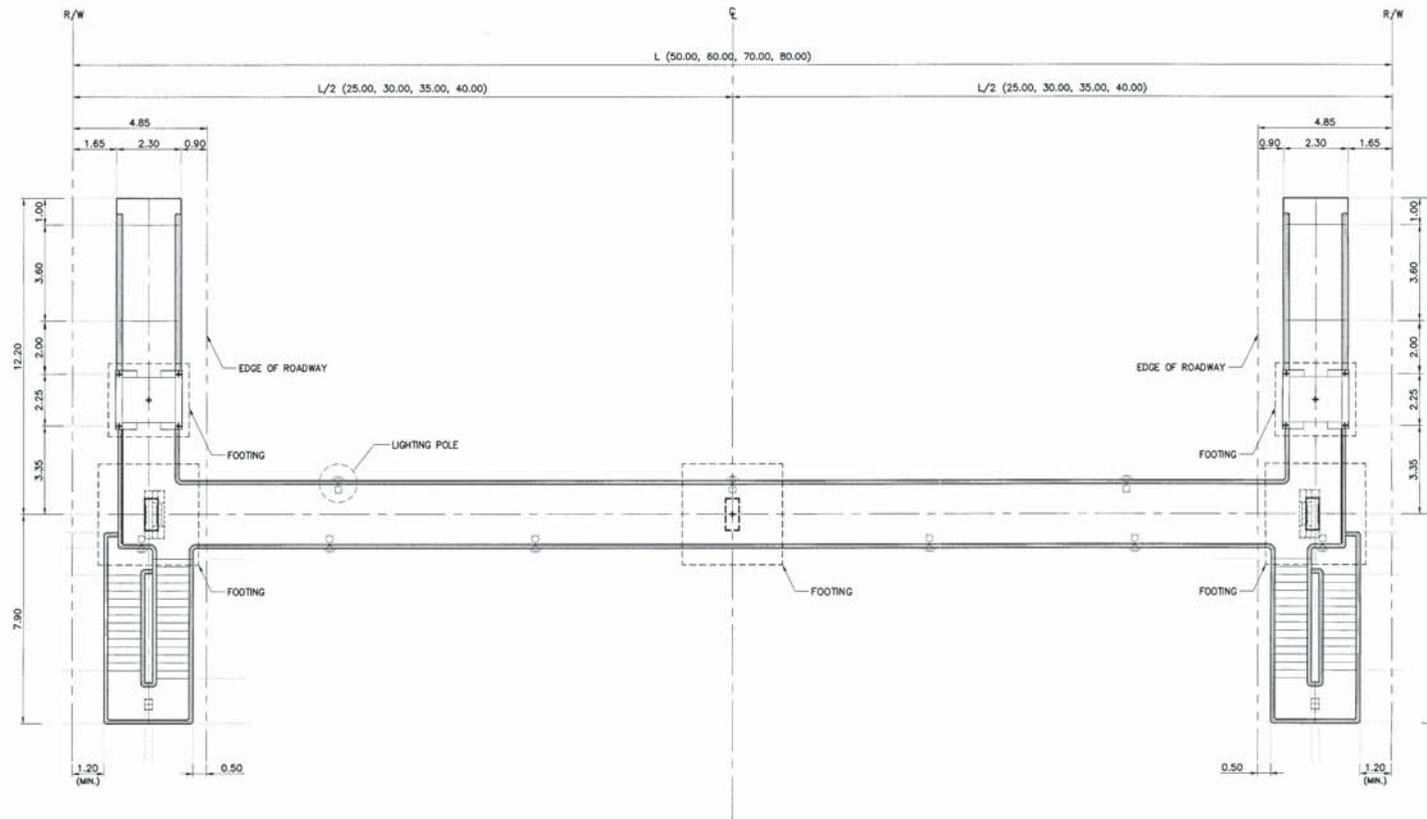
DETAIL "3"
SCALE 1 : 5

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
 HANDICAPPED PEDESTRIAN OVERPASS TYPE 1
 STAIR AND ELEVATOR DETAILS (4/4)

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. PH-112
REF.	REVISION	SIGNATURE DATE

SHEET NO. 163



PLAN 50.00, 60.00, 70.00, 80.00 M. R.O.W.
SCALE 1 : 100

TABLE OF LIGHTING POLE

R.O.W. (m.)	NO. OF LIGHTING POLES	LIGHTING POLE ARRANGEMENT
50.00	7	
60.00	8	
70.00	9	
80.00	10	

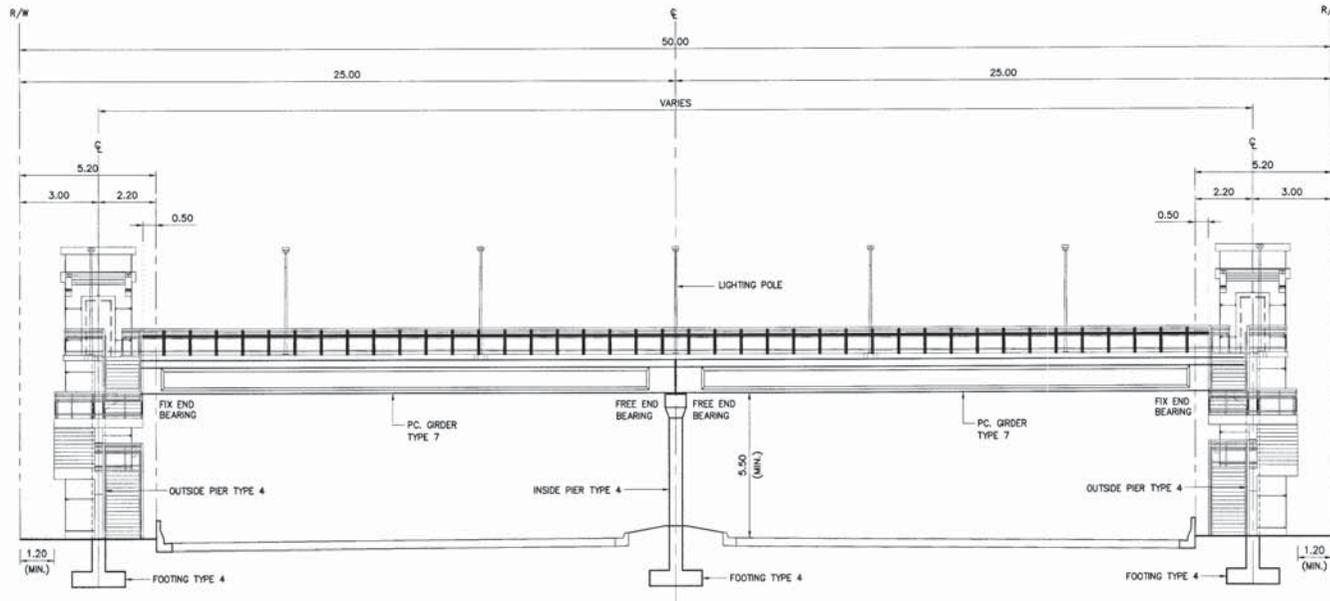
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

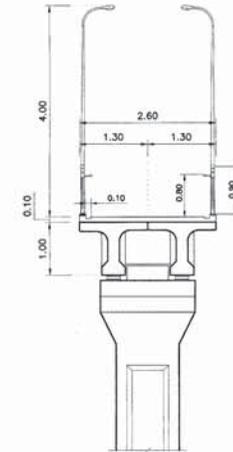
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 2
PLAN (R.O.W. 50.00, 60.00, 70.00, 80.00 M.)

DESIGNED: D.O.M. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:		SCALE: AS SHOWN
	(DIRECTOR OF LOCATION & DESIGN BUREAU)	DWG NO. PH-202
APPROVED:		SHEET NO. 165
	(FOR DIRECTOR GENERAL)	

REF.	REVISION	SIGNATURE	DATE



ELEVATION 50.00 M. R.O.W.
SCALE 1 : 100



TYPICAL CROSS SECTION
SCALE 1 : 50

NOTE :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. FOR PC GIRDER SEE DWG. NO. PH-001 AND PH-002.
3. FOR INSIDE PIER SEE DWG. NO. PH-003 AND PH-004.
4. FOR OUTSIDE PIER SEE DWG. NO. PH-005 AND PH-006.
5. FOR LIGHTING POLE SUPPORT SEE DWG. NO. PH-009.
6. FOR PILE FOOTING SEE DWG. NO. PH-007.
7. FOR SPREAD FOOTING SEE DWG. NO. PH-008.
8. FOR FIX END BEARING AND FREE END BEARING SEE DWG. NO. PH-009.
9. FOR STAIR AND ELEVATOR SEE DWG. NO. PH-209 TO PH-212.

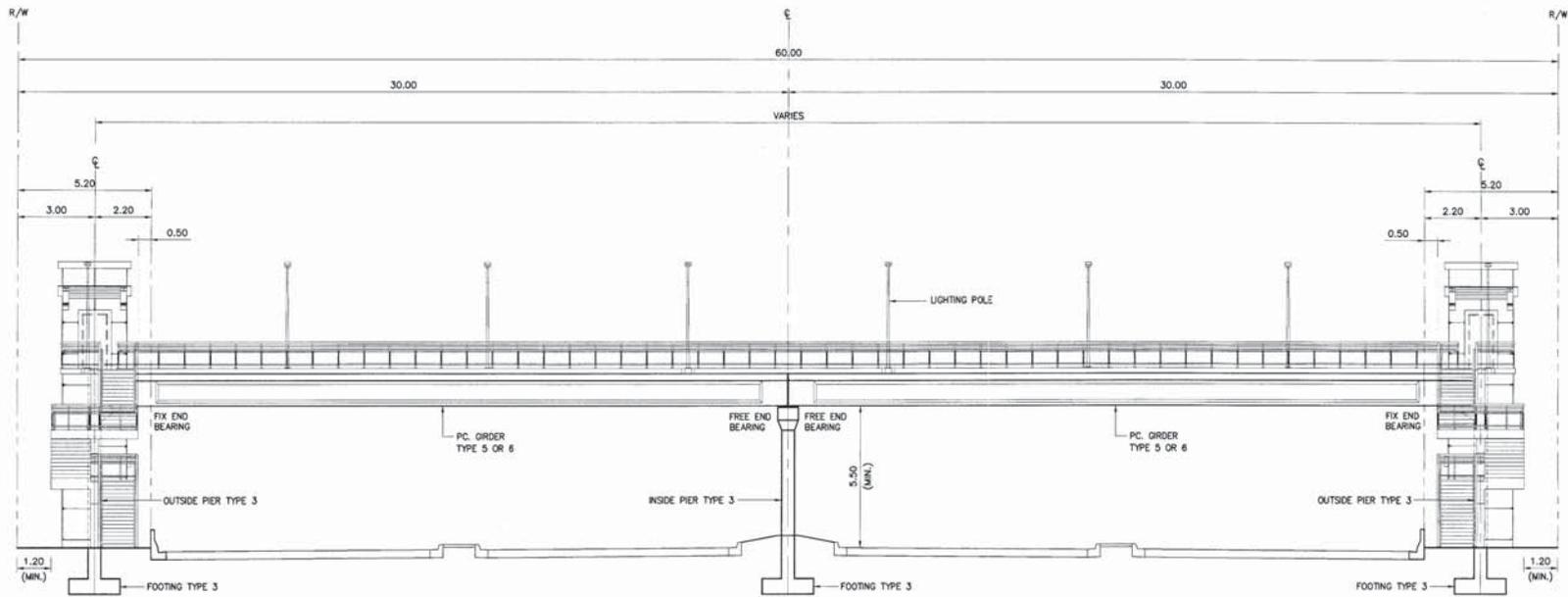
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

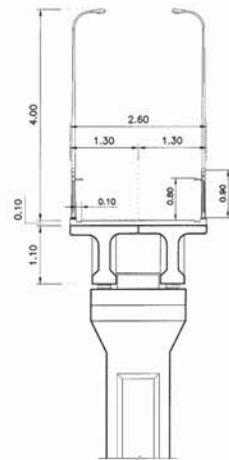
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 2
ELEVATION (R.O.W. 50.00 M.)

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : <i>[Signature]</i> BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED : <i>[Signature]</i> (FOR DIRECTOR GENERAL)		DWG NO. PH-205
		SHEET NO. 168

REF.	REVISION	SIGNATURE	DATE



ELEVATION 60.00 M. R.O.W.
SCALE 1 : 100



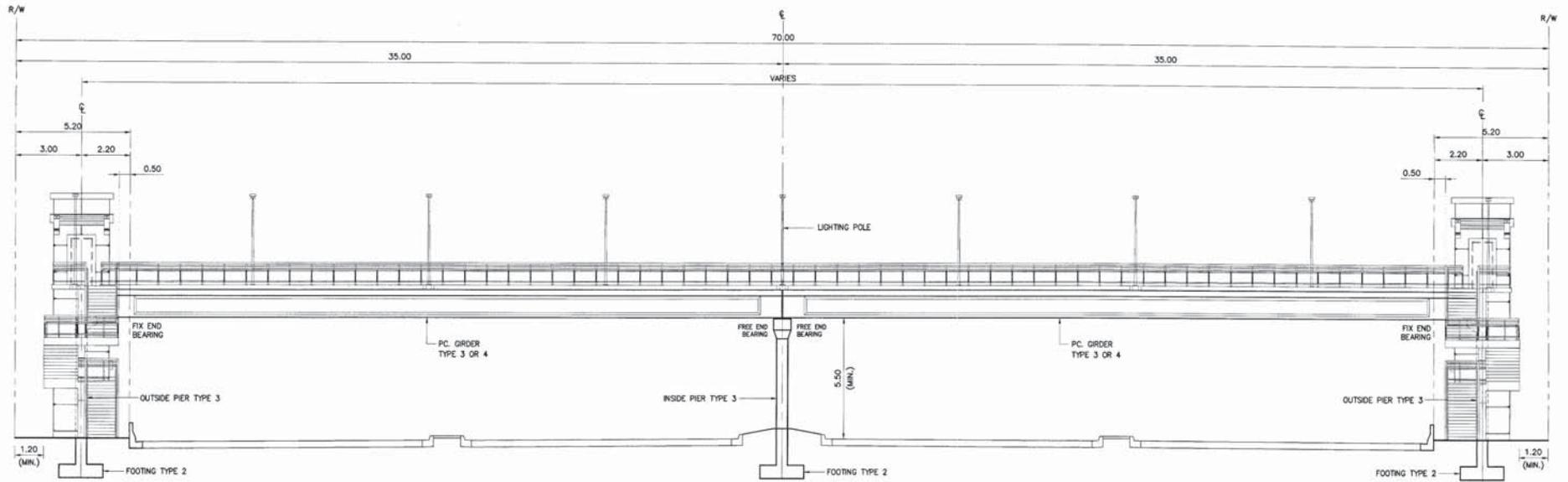
TYPICAL CROSS SECTION
SCALE 1 : 50

NOTE :

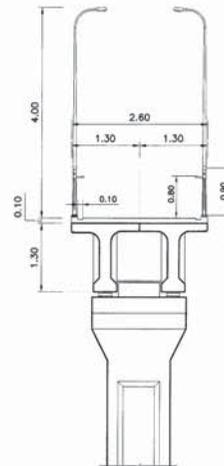
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. FOR PC. GIRDER SEE DWG. NO. PH-001 AND PH-002.
3. FOR INSIDE PIER SEE DWG. NO. PH-003 AND PH-004.
4. FOR OUTSIDE PIER SEE DWG. NO. PH-005 AND PH-006.
5. FOR LIGHTING POLE SUPPORT SEE DWG. NO. PH-009.
6. FOR PILE FOOTING SEE DWG. NO. PH-007.
7. FOR SPREAD FOOTING SEE DWG. NO. PH-008.
8. FOR FIX END BEARING AND FREE END BEARING SEE DWG. NO. PH-009.
9. FOR STAIR AND ELEVATOR SEE DWG. NO. PH-209 TO PH-212.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 2
ELEVATION (R.O.W. 60.00 M.)

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PH-206
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 189



ELEVATION 70.00 M. R.O.W.
SCALE 1 : 100

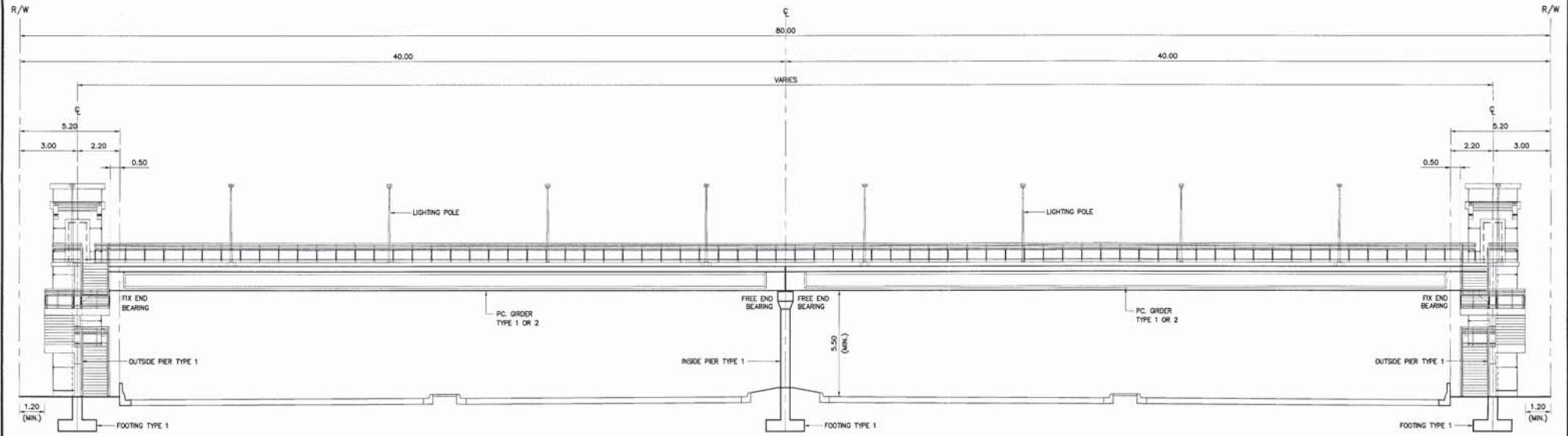


TYPICAL CROSS SECTION
SCALE 1 : 50

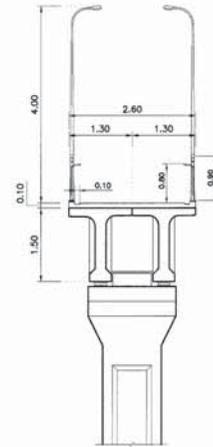
- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. FOR PC GIRDER SEE DWG. NO. PH-001 AND PH-002.
 3. FOR INSIDE PIER SEE DWG. NO. PH-003 AND PH-004.
 4. FOR OUTSIDE PIER SEE DWG. NO. PH-005 AND PH-006.
 5. FOR LIGHTING POLE SUPPORT SEE DWG. NO. PH-007.
 6. FOR PILE FOOTING SEE DWG. NO. PH-008.
 7. FOR SPREAD FOOTING SEE DWG. NO. PH-009.
 8. FOR FIX END BEARING AND FREE END BEARING SEE DWG. NO. PH-009.
 9. FOR STAIR AND ELEVATOR SEE DWG. NO. PH-209 TO PH-212.

KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING HANDICAPPED PEDESTRIAN OVERPASS TYPE 2 ELEVATION (R.O.W. 70,00 M.)		
DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	<i>[Signature]</i> (DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	<i>[Signature]</i> (FOR DIRECTOR GENERAL)	DWG NO. PH-207 SHEET NO. 170

REF.	REVISION	SIGNATURE	DATE



ELEVATION 80.00 M. R.O.W.
SCALE 1 : 100



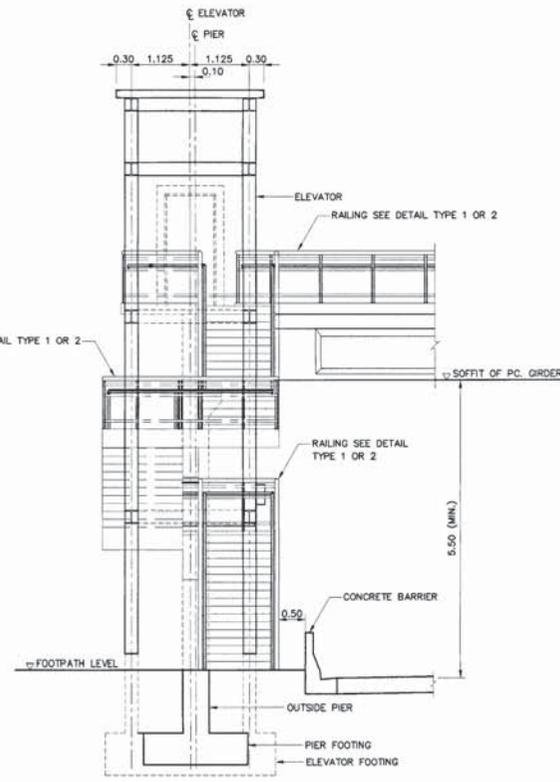
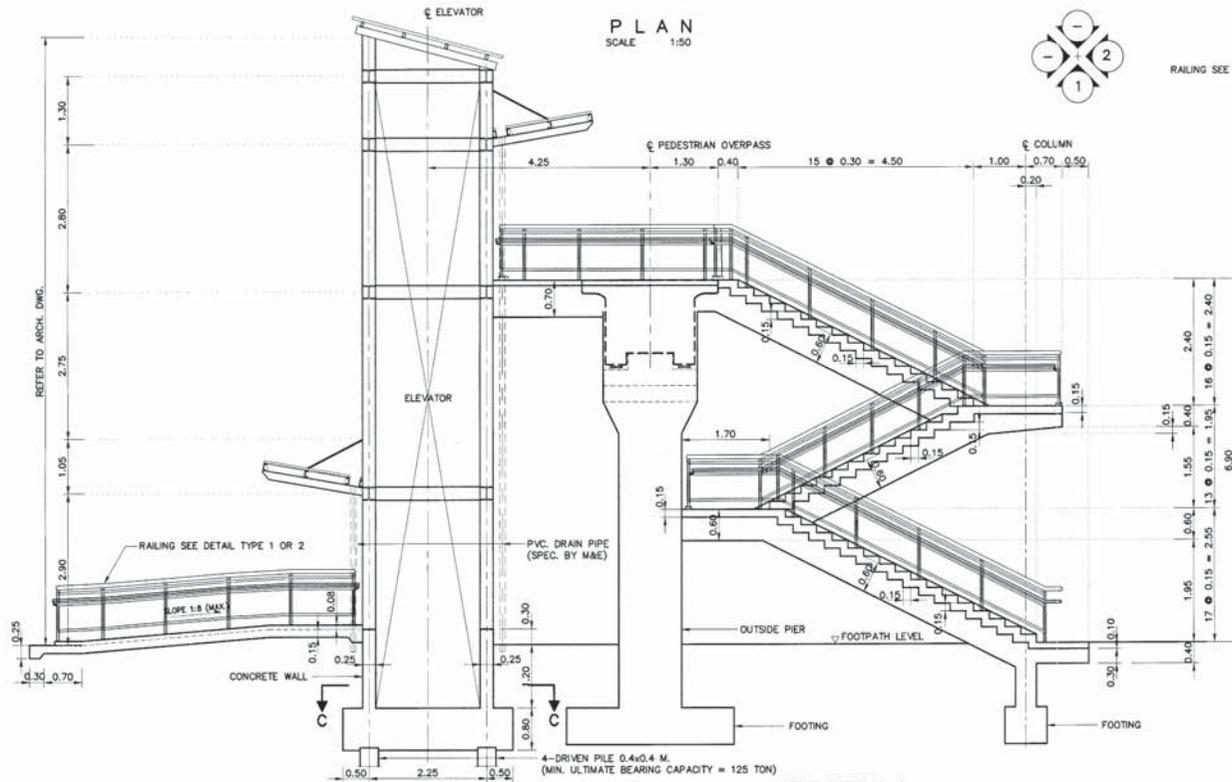
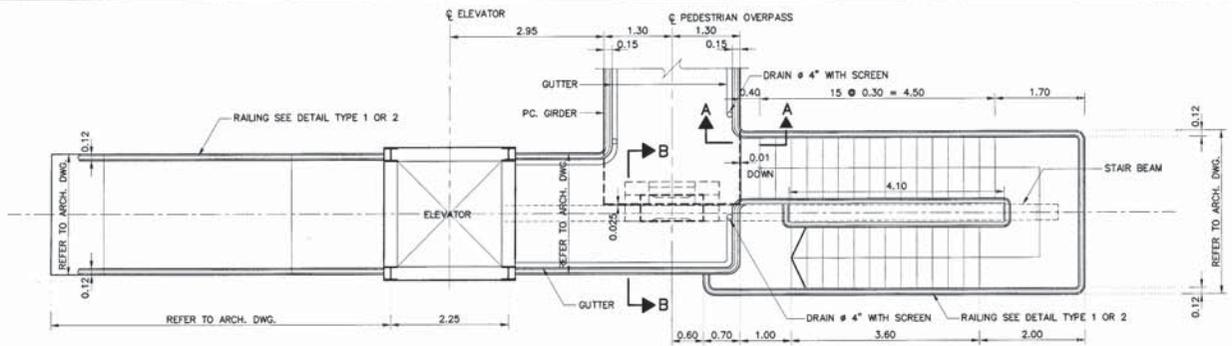
TYPICAL CROSS SECTION
SCALE 1 : 50

- NOTE :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. FOR PC GIRDER SEE DWG. NO. PH-001 AND PH-002.
 3. FOR INSIDE PIER SEE DWG. NO. PH-003 AND PH-004.
 4. FOR OUTSIDE PIER SEE DWG. NO. PH-005 AND PH-006.
 5. FOR LIGHTING POLE SUPPORT SEE DWG. NO. PH-009.
 6. FOR PILE FOOTING SEE DWG. NO. PH-007.
 7. FOR SPREAD FOOTING SEE DWG. NO. PH-008.
 8. FOR FIX END BEARING AND FREE END BEARING SEE DWG. NO. PH-009.
 9. FOR STAIR AND ELEVATOR SEE DWG. NO. PH-209 TO PH-212.

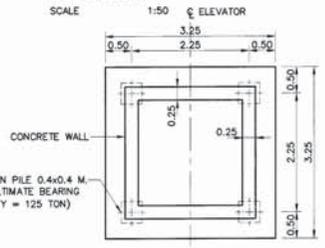
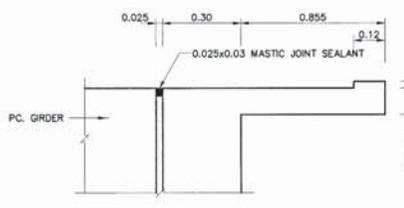
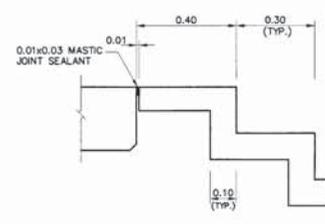
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 2
ELEVATION (R.O.W. 80.00 M.)

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PH-208
		SHEET NO. 171

REF.	REVISION	SIGNATURE	DATE

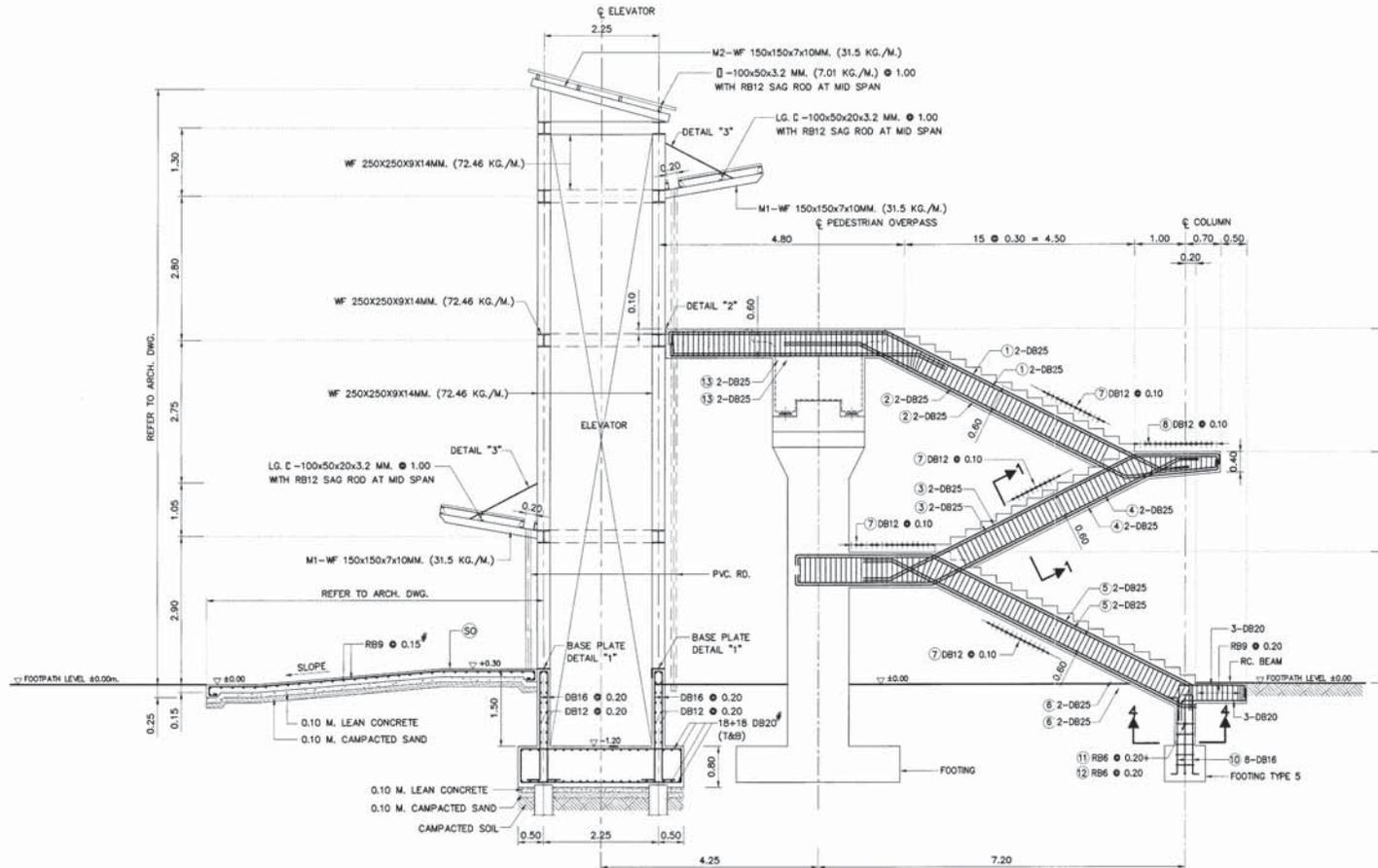


- NOTES :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. FOR RAILING DETAILS, SEE DWG. NO. PH-010.
 3. FOR PILE DETAILS OF ELEVATOR FOOTING, SEE DOH STANDARD DRAWING NO. PL-001 AND PL-101.
 4. FOR CONCRETE BARRIER DETAILS, SEE DWG. NO. PH-009.

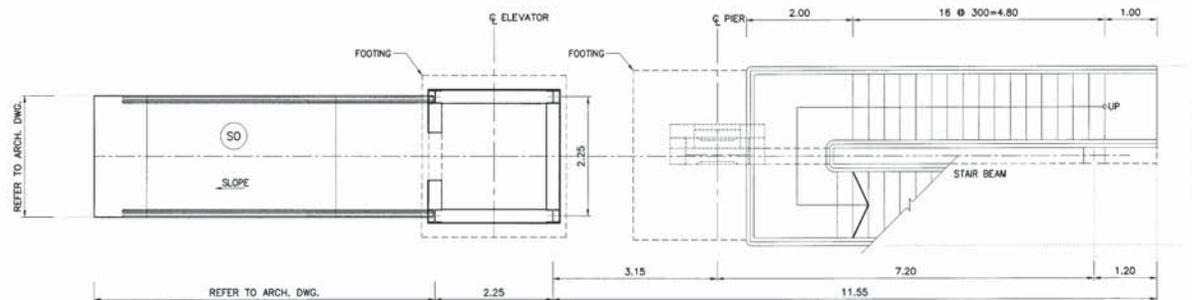


KINGDOM OF THAILAND MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS			
STANDARD DRAWING HANDICAPPED PEDESTRIAN OVERPASS TYPE 2 STAIR AND ELEVATOR DETAILS (1/4)			
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015	
SUBMITTED :	SIGNATURE : <i>[Signature]</i> (DIRECTOR OF LOCATION & DESIGN BUREAU)		SCALE : AS SHOWN
APPROVED :	SIGNATURE : <i>[Signature]</i> (FOR DIRECTOR GENERAL)		DWG NO. PH-209
REF.	REVISION	SIGNATURE	DATE
			SHEET NO. 172

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STAIR BEAM REINFORCEMENT
SCALE 1 : 50



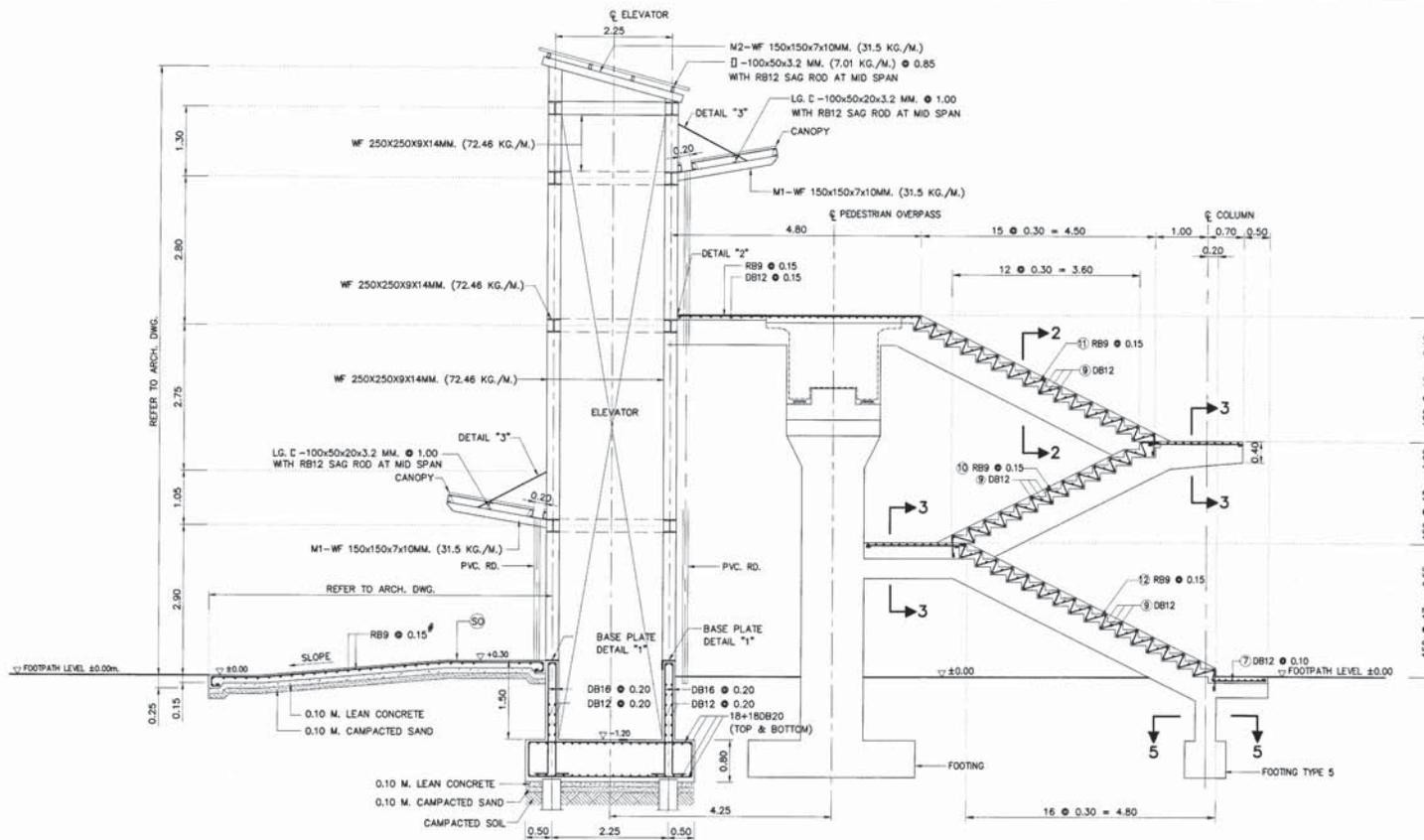
GROUND FLOOR PLAN
SCALE 1 : 50

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

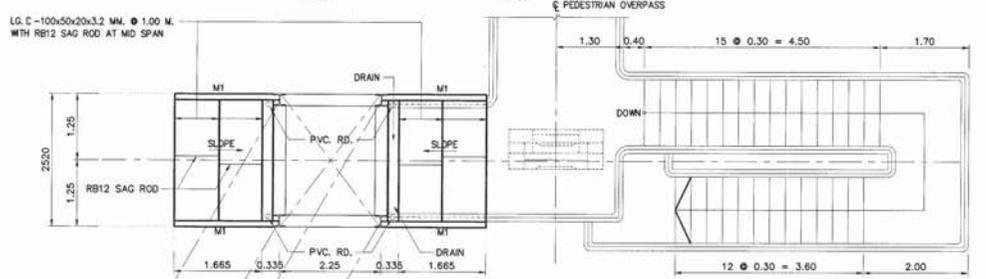
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS TYPE 2
STAIR AND ELEVATOR DETAILS (2/4)

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. PH-210
		SHEET NO. 173

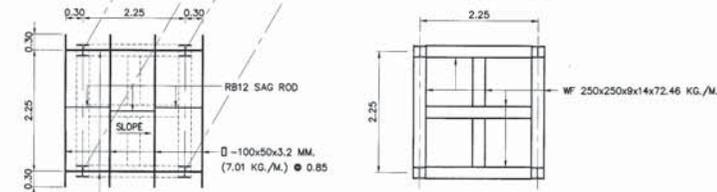
REF.	REVISION	SIGNATURE	DATE



STAIR SLAB REINFORCEMENT
SCALE 1 : 50



CANOPY PLAN
SCALE 1 : 50

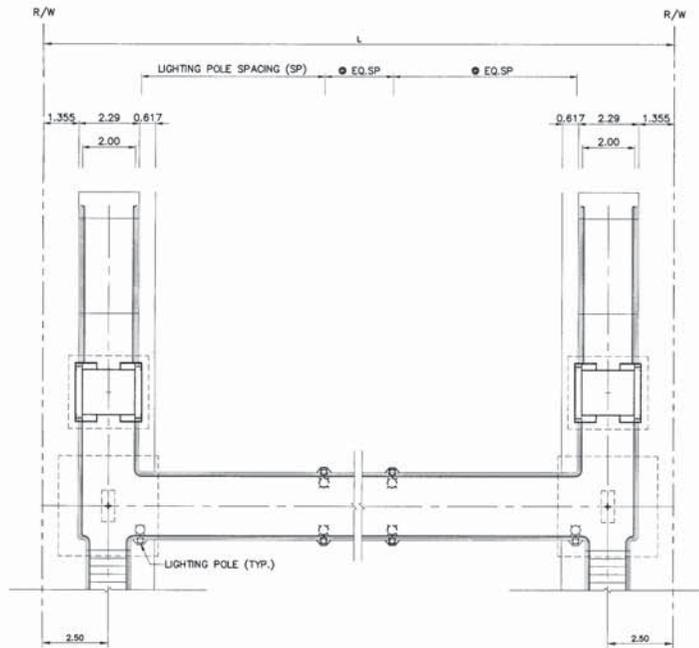


ELEVATOR ROOF DETAILS
SCALE 1 : 50

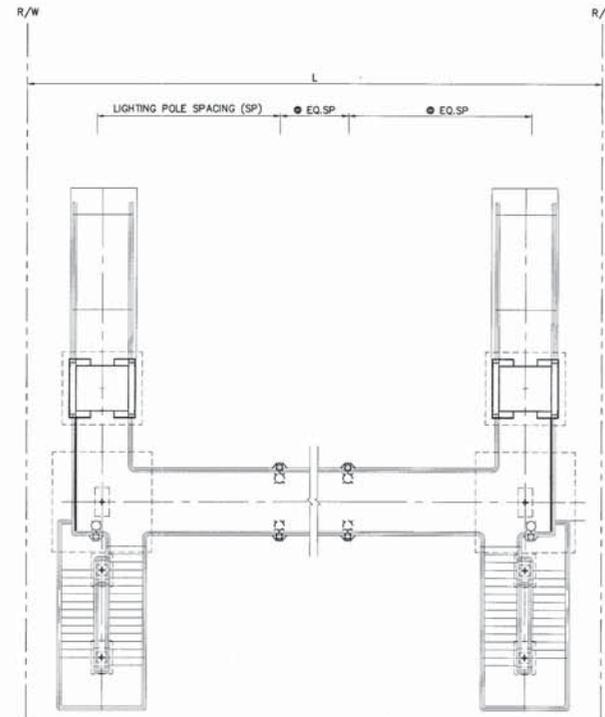
KINGDOM OF THAILAND			
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS			
STANDARD DRAWING HANDICAPPED PEDESTRIAN OVERPASS TYPE 2 STAIR AND ELEVATOR DETAILS (3/4)			
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015	
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN	DWG NO. PH-211
APPROVED :	(FOR DIRECTOR GENERAL)	SHEET NO. 174	

REF.	REVISION	SIGNATURE	DATE

D:\LSP\DWG\2015\PH-211\PH-211-003



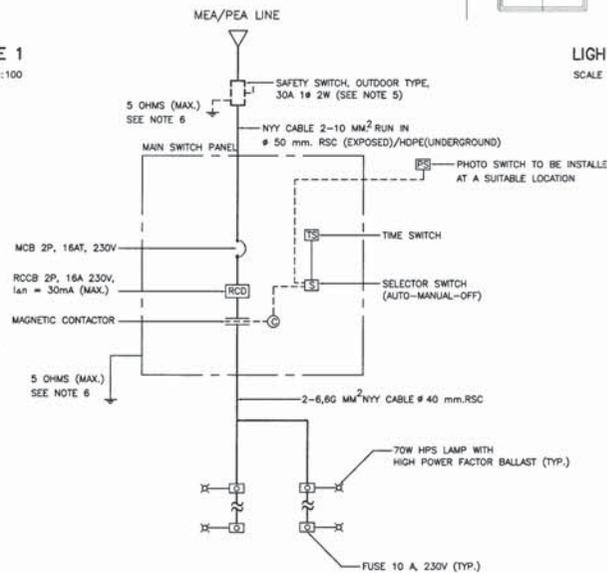
LIGHTING PLAN OF PEDESTRIAN BRIDGE TYPE 1
SCALE 1:100



LIGHTING PLAN OF PEDESTRIAN BRIDGE TYPE 2
SCALE 1:100

TABLE

L (m.)	NUMBER OF LIGHT	LIGHTING POLE ARRANGEMENT
30	4	
40	6	
50	7	
60	8	
70	9	
80	10	



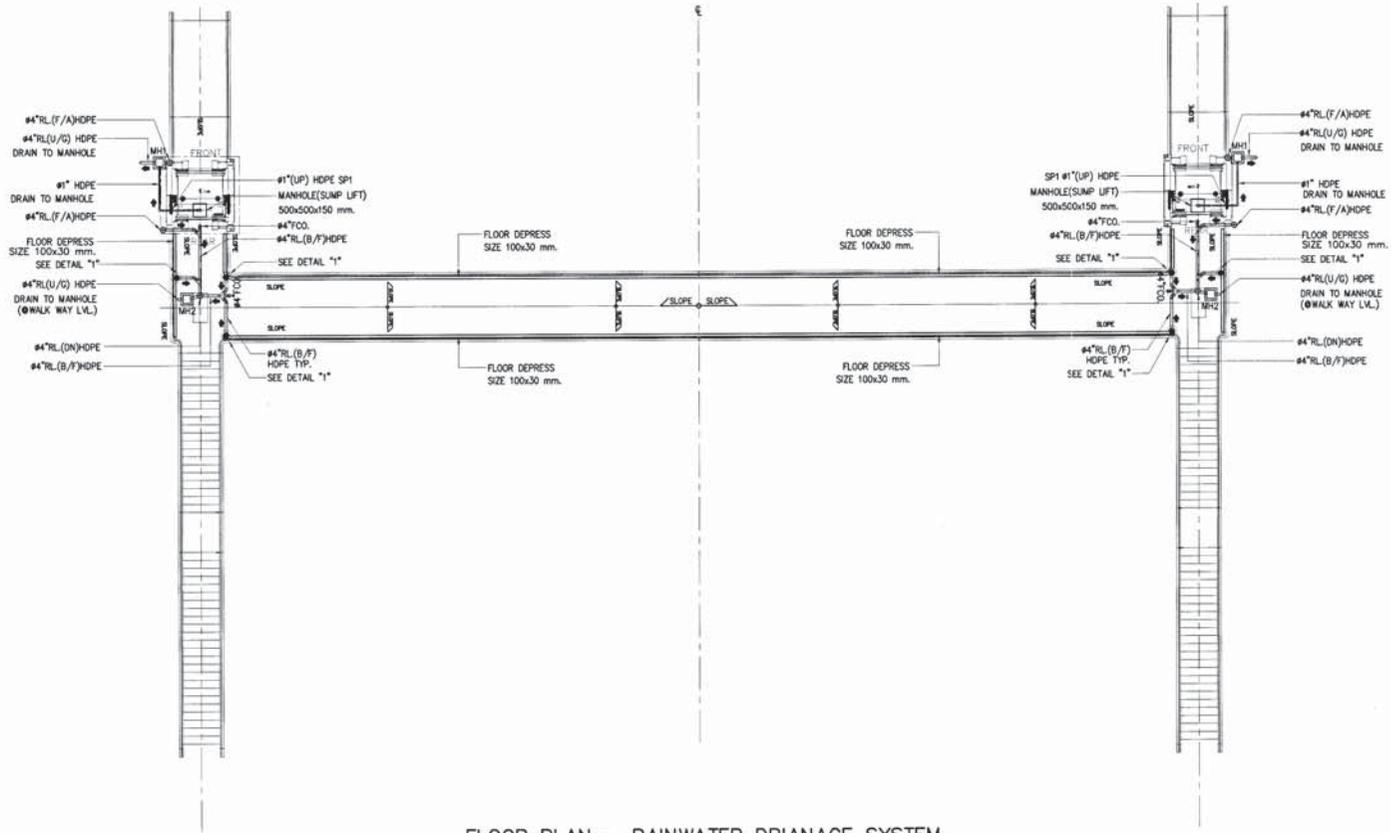
SINGLE LINE DIAGRAM
NOT TO SCALE

NOTES :

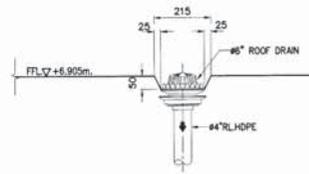
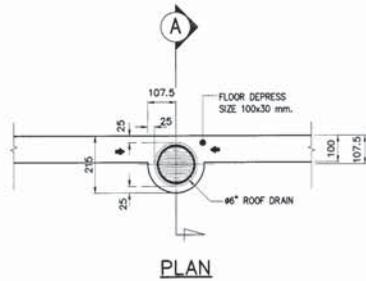
1. ALL DIMENSION SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. THE LAMP SHALL BE HIGH PRESSURE SODIUM LAMP, 70 WATT WITH HIGH POWER FACTOR BALLAST.
3. THE MINIMUM HORIZONTAL ILLUMINATION LEVEL ($E_{h,min}$) SHALL NOT BE LESS THAN 50 LUX. THE UNIFORMITY RATIO ($E_{h,min}/E_{h,ave}$) SHALL NOT BE LESS THAN 0.3 ALSO.
4. ALL STAINLESS STEEL RAILINGS AND METALLIC PARTS SHALL BE CONTINUOUS GROUNDED TO THE GROUND ROD(S) AT THE BOTH SIDE OF BRIDGE.
5. FOR THE MAIN SWITCH PANEL INSTALLED AT THE MEA/PEA METERING POLE OR SERVED IN THE MEA/PEA UNDERGROUND SERVICE AREA, THE SAFETY SWITCH IS NOT INSTALLED.
6. FOR THE AREA DIFFICULTLY TO MAINTENANCE WITH APPROVAL OF MEA/PEA, THE RESISTANCE BETWEEN GROUND AND GROUND ROD ALLOWED BE MORE THAN 5 OHMS BUT NOT EXCEED TO 25 OHMS.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
HANDICAPPED PEDESTRIAN OVERPASS (TYPICAL)
LIGHTING SYSTEM

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. PH-213
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 176



FLOOR PLAN – RAINWATER DRAINAGE SYSTEM
SCALE 1:100



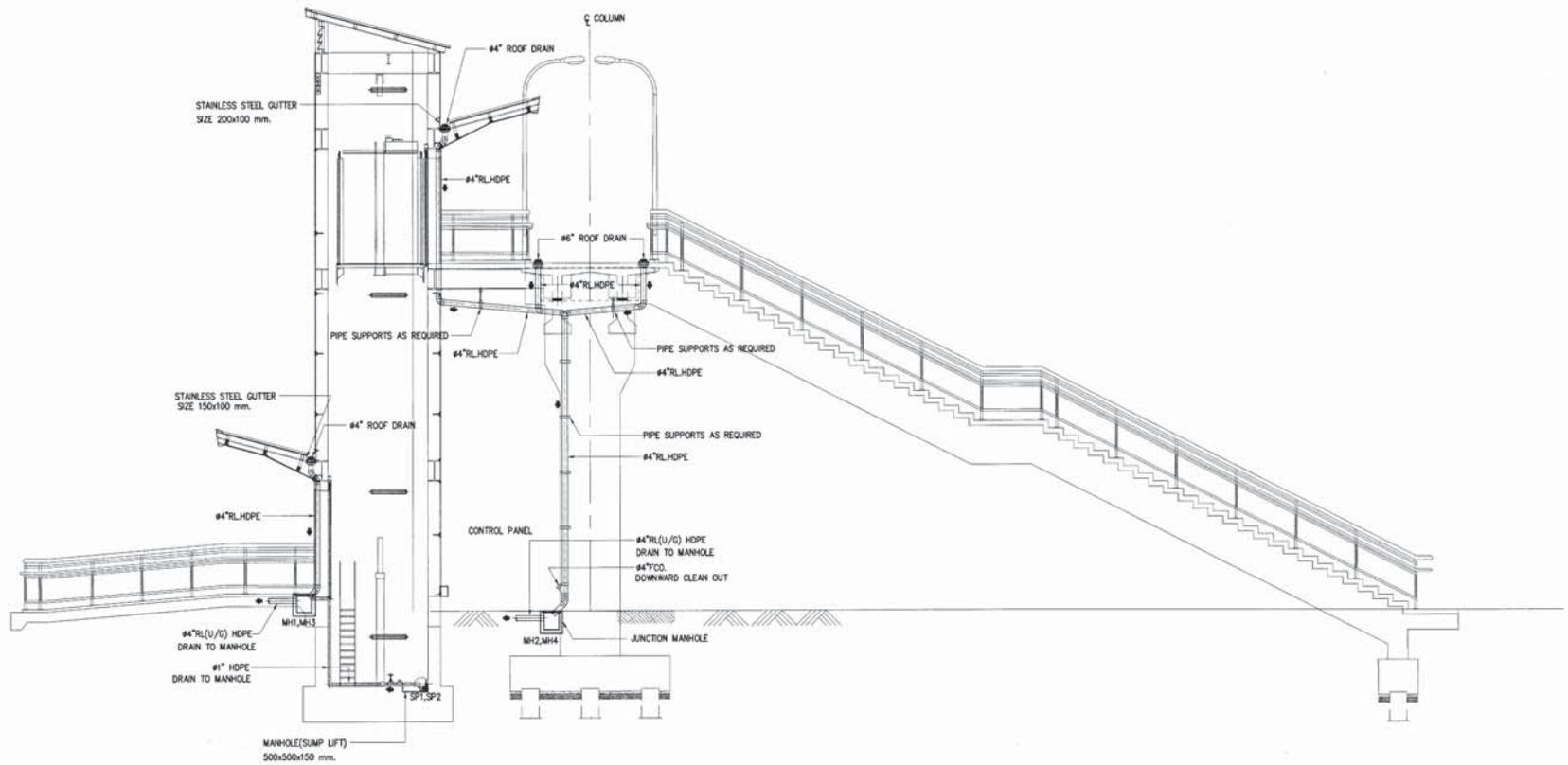
DETAIL "1"
NOT TO SCALE

- NOTE:**
- SUBMERSIBLE PUMP(SP1,SP2) ARE CONTROL BY FLOAT LEVEL SWITCH CAPACITY 75 LITER PER SECOND AT 6.5 M.THD DRIVING MOTOR 120 W, 220-240 V,1P/50 HZ.
 - MANHOLE (MH1-MH4) SIZE 0.30x0.30 m.
 - RAINWATER PIPE AND PIPE FOR PUMP ARE HDPE PN10.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
PEDESTRIAN OVERPASS TYPE-1
FLOOR PLAN – RAINWATER DRAINAGE SYSTEM

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	<i>[Signature]</i> (DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	<i>[Signature]</i> (FOR DIRECTOR GENERAL)	DWG NO. SNO-101 SHEET NO. 177

REF.	REVISION	SIGNATURE	DATE



SECTION – RAINWATER DRAINAGE SYSTEM

SCALE 1:50

NOTE:

1. SUBMERSIBLE PUMP (SP1,SP2) ARE CONTROL BY FLOAT LEVEL SWITCH CAPACITY 75 LITER PER SECOND AT 8.5 M.THD DRIVING MOTOR 120 W., 220–240 V./P/50 Hz.
2. MANHOLE (MH1–MH4) SIZE 0.30x0.30 m.
3. RAINWATER PIPE AND PIPE FOR PUMP ARE HDPE PN10.

D:\Vard Area 2015\506-10706\001

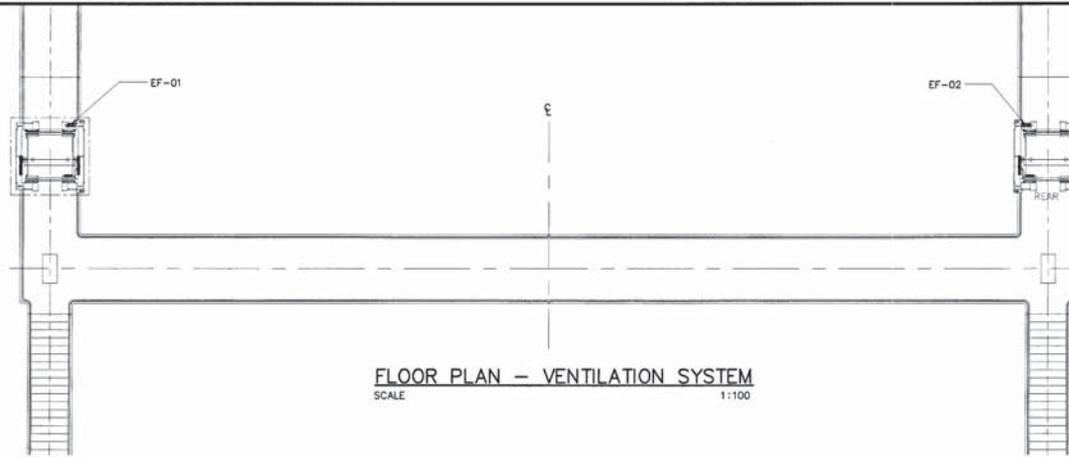
KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

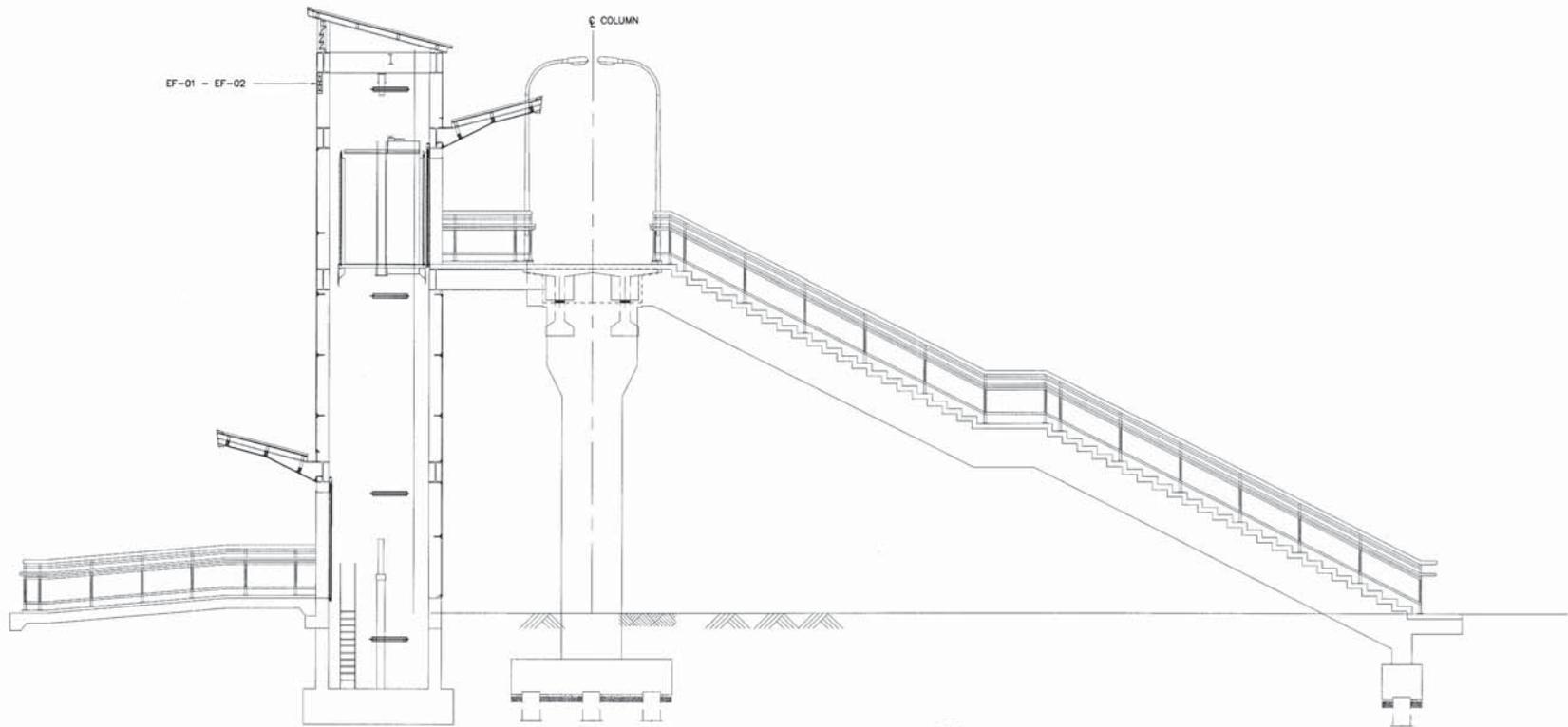
STANDARD DRAWING
PEDESTRIAN OVERPASS TYPE-1
SECTION – RAINWATER DRAINAGE SYSTEM

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. SHD-102
REF.	REVISION	SIGNATURE DATE

SHEET NO. 178



FLOOR PLAN - VENTILATION SYSTEM
SCALE 1:100



SECTION - VENTILATION SYSTEM
SCALE 1:50

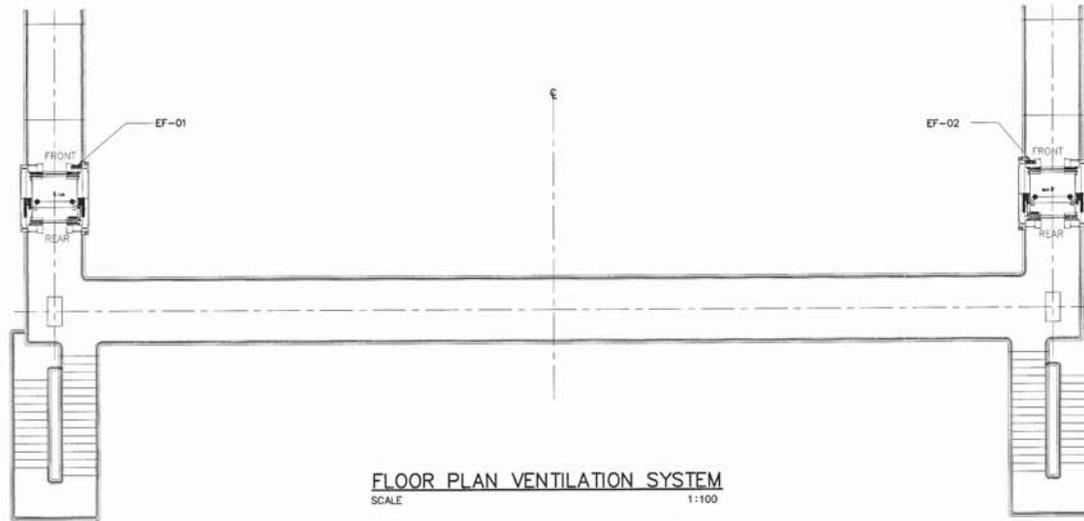
NOTE:

1. EXHAUST FANS (EF-01,EF-02) ARE CAPACITY 750 CFM., DRIVING MOTOR 0.5 kw.,220V./1P/50 Hz.

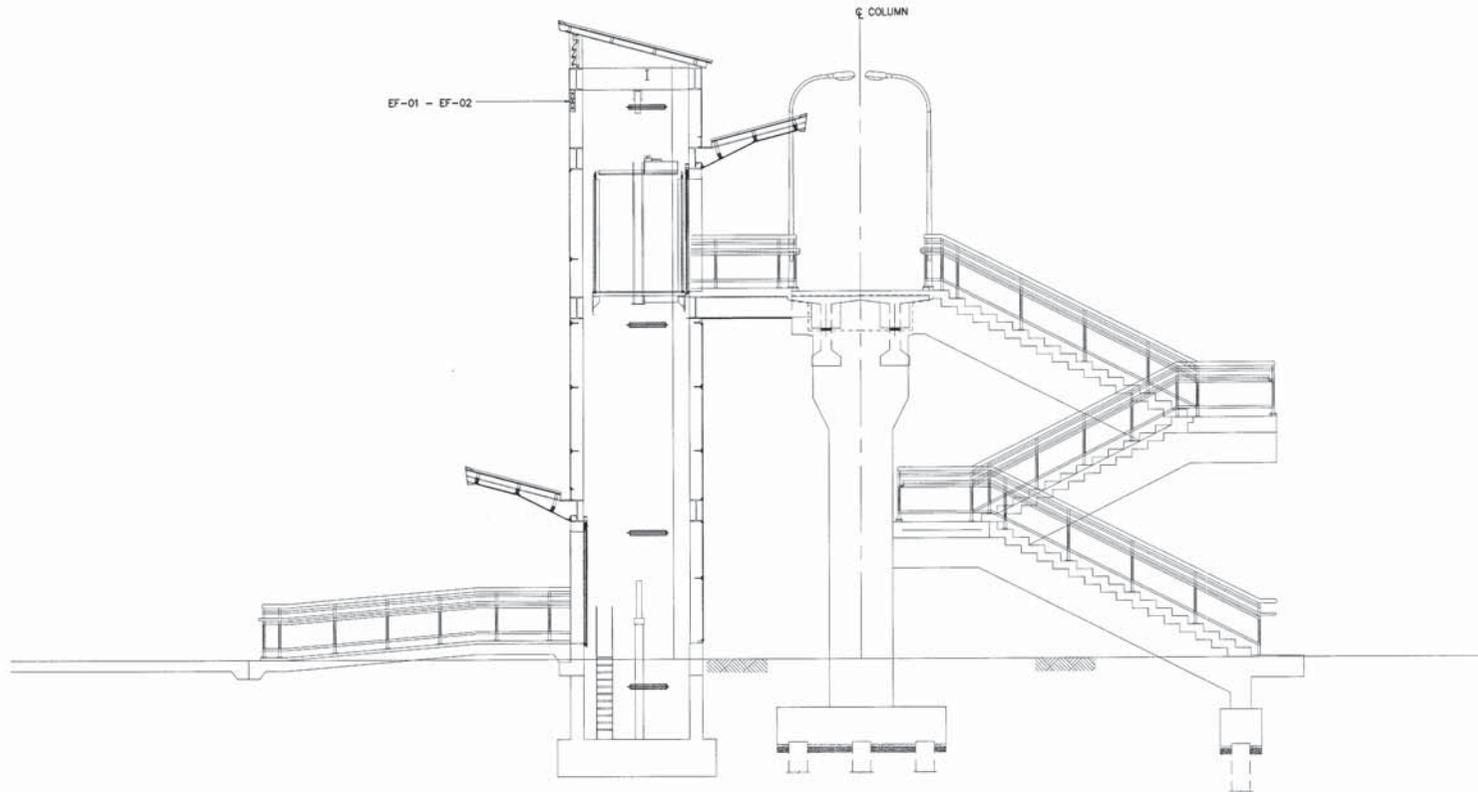
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
PEDESTRIAN OVERPASS TYPE-1
VENTILATION SYSTEM

DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. MED-101
		SHEET NO. 181

REF.	REVISION	SIGNATURE	DATE



FLOOR PLAN VENTILATION SYSTEM
SCALE 1:100

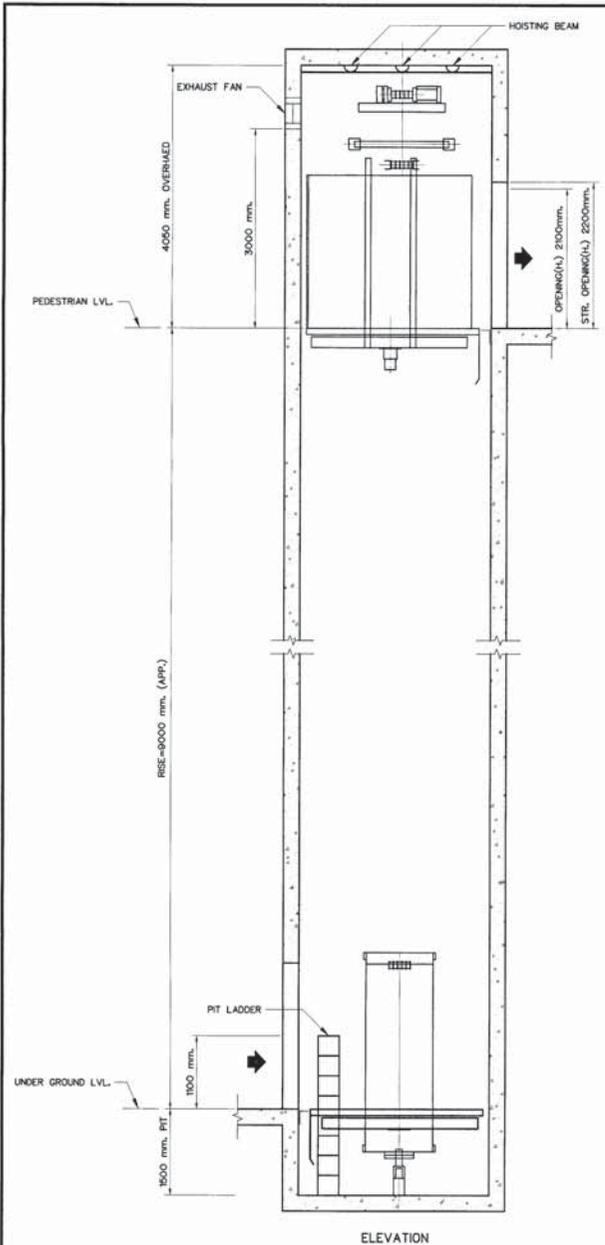


SECTION VENTILATION SYSTEM
SCALE 1:50

NOTE:
1. EXHAUST FANS (EF-01,EF-02) ARE CAPACITY 750 CFM,
DRIVING MOTOR 0.5 kw.,220V./1P/50 Hz.

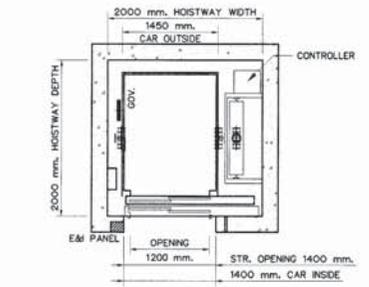
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
PEDESTRIAN OVERPASS TYPE-2
VENTILATION SYSTEM

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	<i>[Signature]</i> (DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	<i>[Signature]</i> (FOR DIRECTOR GENERAL)	DWG NO. MED-102
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 182

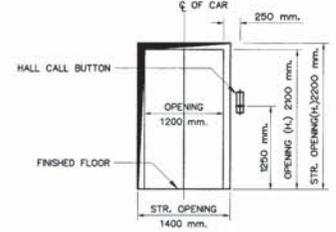


ELEVATION

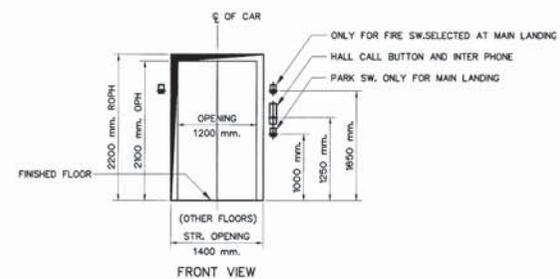
PASSENGER ELEVATOR
NOT TO SCALE



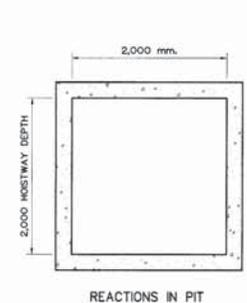
HOISTWAY PLAN



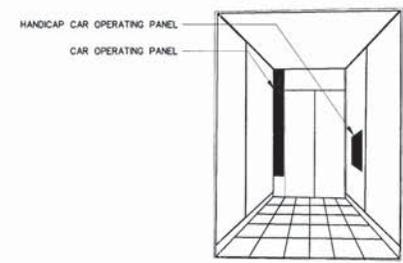
AT TOP LEVEL



FRONT VIEW



REACTIONS IN PIT



CAR OPERATING PANEL POSITION
NOT TO SCALE

TECHNICAL DATA	
USE	PASSENGER/FREIGHT
DUTY LOAD	> 700 Kg.
SPEED	1.0m/s
CONTROL	VVVF
MOTOR POWER	-
RATED CURRENT	-
MAXIMAL CURRENT	< 50 A
POWER SUPPLY	380V 3P/5W 50HZ
LIGHTING SUPPLY	220V 50HZ

ELEVATOR SCHEDULES

TYPE OF LIFT (PL)	Q'TY (PL)	CAPACITY (Kgs)	SPEED (m/s)	CAR SIZE (mm)	DOOR WIDTH (mm)	TRAVEL DISTANCE (mm)	MOTOR APPROX. (kw)	V/P/Hz	REMARK
PASSENGER/FREIGHT	2	> 700	1	BY MANUFACTURER	1200x2,100	-	-	380/3/50	MACHINE ROOMLESS

NOTE:
1. ALL DIMENSION ARE IN MILLIMETER UNLESS OTHERWISE INDICATED.

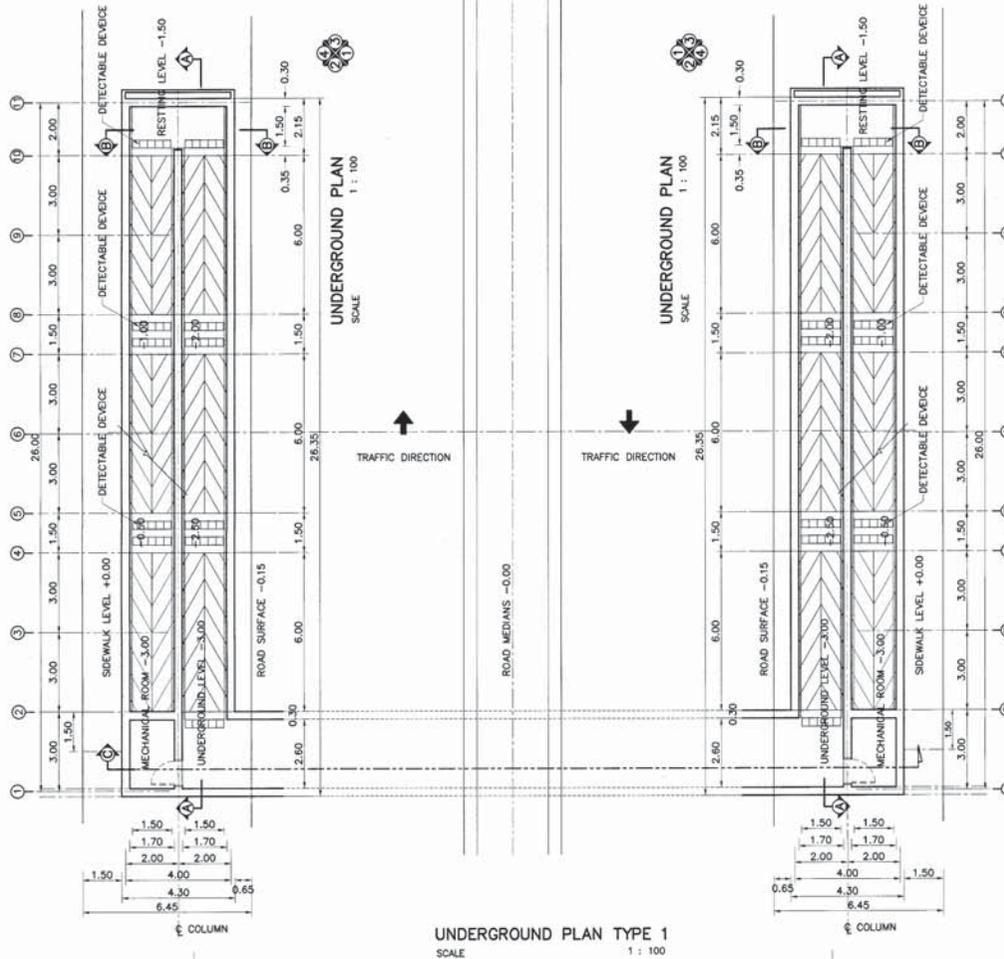
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
PEDESTRIAN OVERPASS AND UNDERPASS
ELEVATOR

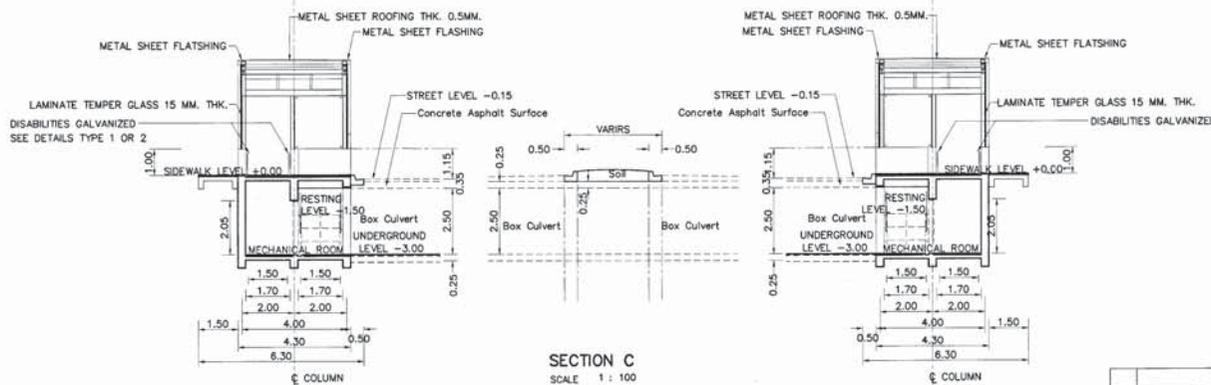
DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. ELD-101 SHEET NO. 183

REF.	REVISION	SIGNATURE	DATE

D:\Aut\Eng\2015\ELD-101\REF-001



UNDERGROUND PLAN TYPE 1
SCALE 1 : 100



SECTION C
SCALE 1 : 100

NOTES :

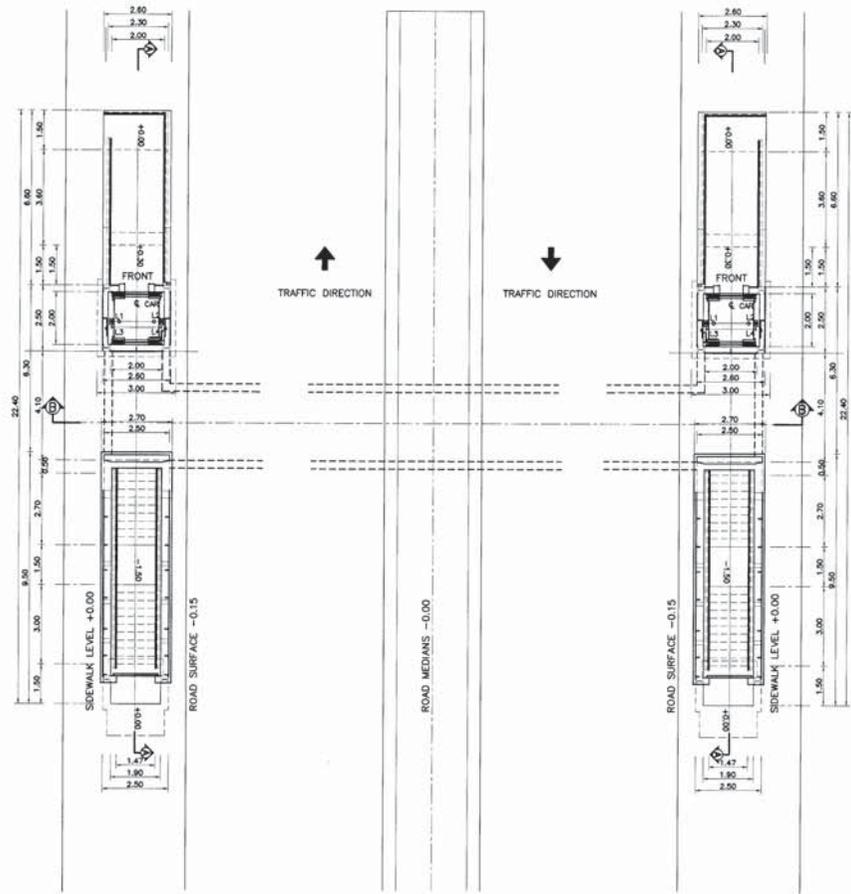
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. CONCRETE WALL IS FINISHED BY GRANITE TILE OR ADVISED BY ENGINEER
3. LIFT SHAFT SHALL BE CLEARLY SEEN THROUGH THE LIFT CAR FROM WALKWAY. ELEVATOR SHALL BE MACHINE ROOM LESS TYPE. AND MEET ALL UNIVERSAL DESIGN STANDARD CODE OF PRACTICE.
4. WALL AT ROAD SIDE SHOULD BE SET BACK FROM CURB OR CURB AND GUTTER AT LEAST 0.50 M. AND WALKWAY SHOULD BE KEPT CLEAR BETWEEN LIFT SHAFT WALL AND R.O.W. AT LEAST 1.50 M.
5. HANDICAP RAMP SLOPE MUST BE 1:12 FLAT SURFACE WITHOUT JOINT AND PROVIDE FLAT AREA 1.50 M. EVERY 6.00 M. (6.00 M. MAXIMUM LONG SLOPE)
6. SLOPE AND STAIR MUST BE AT LEAST 1.50 M. WIDTH CLEAR WAY
7. FLOOR MUST BE PROVIDED CLEAR AND NON-SLIP TEXTURE. WARNING DETECTABLE DEVICES MUST BE INSTALLED IN SINGLE LINE ACROSS WALKWAY ON FLAT FLOOR AS WIDE AS WALKWAY WIDTH. INSTALLATION SHALL PROVIDE 0.30 M. SPACING FROM STEP OR SLOPE. (DETECTABLE DEVICE SEE STANDARD DRAWING HIGHWAY DESIGN DWG-NO. EN-401)
8. STAIR MUST PROVIDE 0.15 M. MAXIMUM RISERS AND 0.30 M. MINIMUM TREADS, WHICH IS NON-SLIP TEXTURE. STAIR NOSING COLOR MUST BE DIFFERENT FROM STEP COLOR. LANDING SHALL BE FLAT AREA 1.50 x 1.50 M. AND INSTALL EVERY 3.50 M. MAXIMUM HIGH
9. HANDICAP HAND RAILS MUST HAVE 2 LEVELS WHICH SHALL BE HIGH 0.80 - 0.90 M. WITH 30-40 MM. DIAMETERS WITH SMOOTH SURFACE THAT CAN BE HELD TIGHT. AT THE END OF SLOPE OR STEP, HANDRAIL MUST BE STRETCH OUT 0.30 M. IT MUST BE INSTALLED ON BOTH SIDES. WALL MOUNT HAND RAIL SHALL BE PROVIDED 50 MM. SPACING FROM WALL AND MINIMUM 120 MM. HIGH FROM SCREWED. WALL TEXTURE SHALL BE SMOOTH

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS ARCHITECTURAL TYPE 1
UNDERGROUND PLAN AND SECTION C

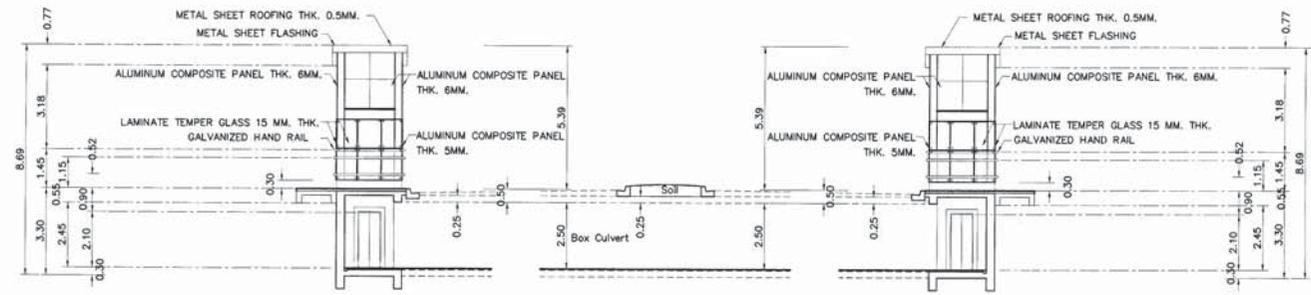
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. ALH-101
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 154



FOOTPATH PLAN
SCALE 1 : 100

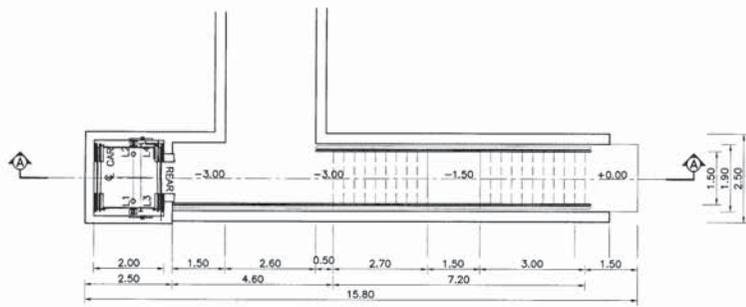
NOTES :

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. CONCRETE WALL IS FINISHED BY GRANITE TILE OR ADVISED BY ENGINEER
3. LIFT SHAFT SHALL BE CLEARLY SEEN THROUGH THE LIFT CAR FROM WALKWAY. ELEVATOR SHALL BE MACHINE ROOM LESS TYPE. AND MEET ALL UNIVERSAL DESIGN STANDARD CODE OF PRACTICE.
4. WALL AT ROAD SIDE SHOULD BE SET BACK FROM CURB OR GUTTER AT LEAST 0.50 M. AND WALKWAY SHOULD BE KEPT CLEAR BETWEEN LIFT SHAFT WALL AND R.O.W. AT LEAST 1.50 M.
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6. SLOPE AND STAR MUST BE AT LEAST 1.50 M. WIDTH CLEAR WAY
7. FLOOR MUST BE PROVIDED CLEAR AND NON-SLIP TEXTURE. WARNING DETECTABLE DEVICES MUST BE INSTALLED IN SINGLE LINE ACROSS WALKWAY ON FLAT FLOOR AS WIDE AS WALKWAY WIDTH. INSTALLATION SHALL PROVIDE 0.30 M. SPACING FROM STEP OR SLOPE. (DETECTABLE DEVICE SEE STANDARD DRAWING HIGHWAY DESIGN DWG-NO. EN-401)
8. STAIR MUST PROVIDE 0.15 M. MAXIMUM RISERS AND 0.30 M. MINIMUM TREADS, WHICH IS NON-SLIP TEXTURE. STAIR NOSING COLOR MUST BE DIFFERENT FROM STEP COLOR. LANDING SHALL BE FLAT AREA 1.50 x 1.50 M. AND INSTALL EVERY 3.50 M. MAXIMUM HIGH
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10. DETAILS OF ELEVATOR IS REFER TO DWG. ELO-101

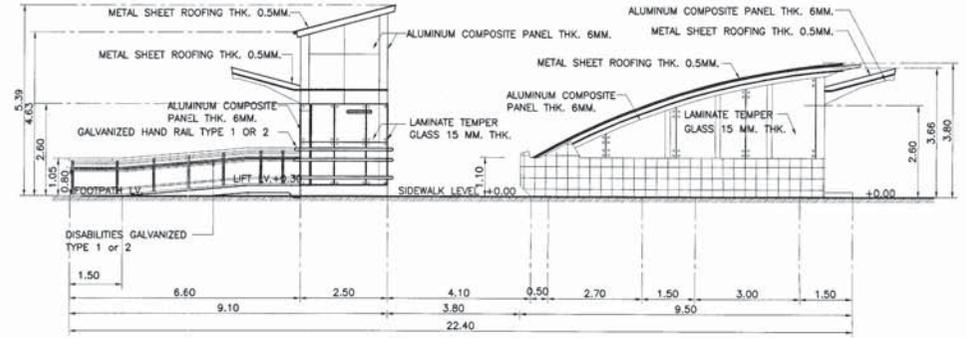


SECTION B - B
SCALE 1 : 100

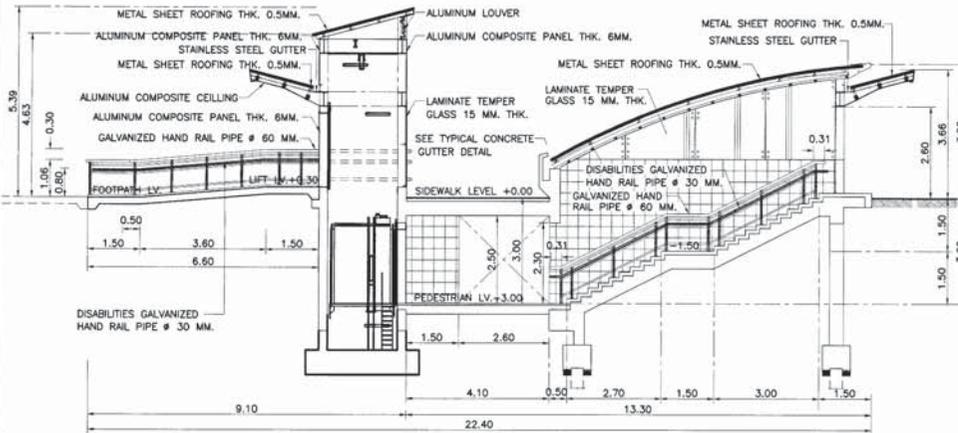
KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING HANDICAPPED PEDESTRIAN UNDERPASS ARCHITECTURAL TYPE 2 FOOTPATH PLAN AND SECTION B		
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : <i>[Signature]</i> BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
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APPROVED :	<i>[Signature]</i> (FOR DIRECTOR GENERAL)	DWG NO. AJH-104
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 187



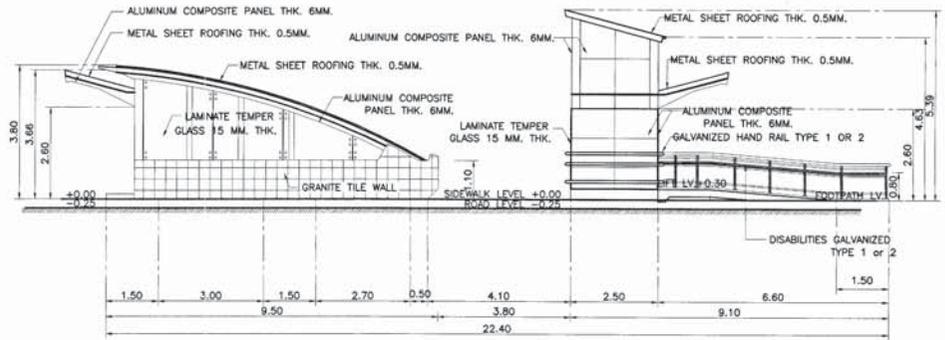
UNDERGROUND PLAN
SCALE 1 : 75



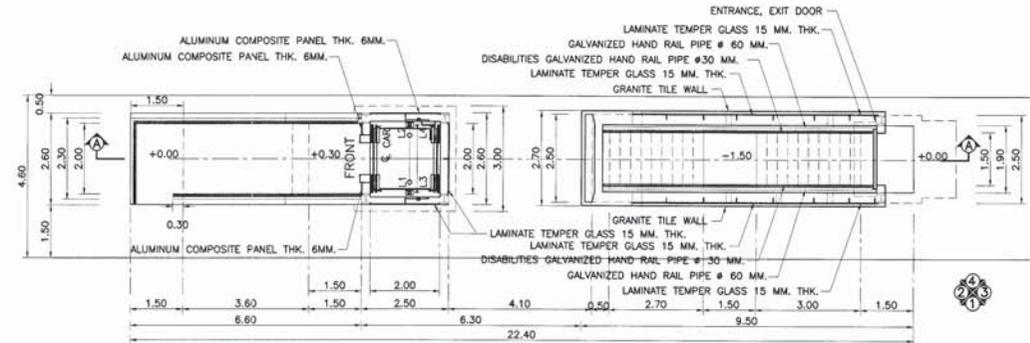
ELEVATION 1
SCALE 1 : 75



SECTION A - A
SCALE 1 : 75



ELEVATION 4
SCALE 1 : 75



FOOTPATH PLAN
SCALE 1 : 75

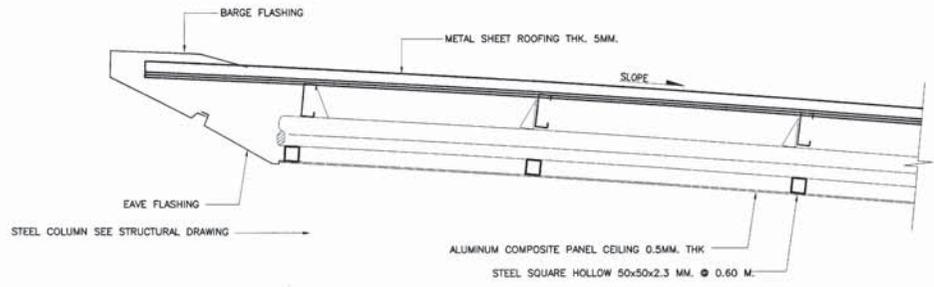
NOTES :

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. CONCRETE WALL IS FINISHED BY GRANITE TILE OR ADVISED BY ENGINEER
3. LIFT SHAFT SHALL BE CLEARLY SEEN THROUGH THE LIFT CAR FROM WALKWAY. ELEVATOR SHALL BE MACHINE ROOM LESS TYPE. AND MEET ALL UNIVERSAL DESIGN STANDARD CODE OF PRACTICE.
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8. STAIR MUST PROVIDE 0.15 M. MAXIMUM RISERS AND 0.30 M. MINIMUM TREADS, WHICH IS NON-SLIP TEXTURE. STAIR NOSING COLOR MUST BE DIFFERENT FROM STEP COLOR. LANDING SHALL BE FLAT AREA 1.50 x 1.50 M. AND INSTALL EVERY 3.50 M. MAXIMUM HIGH
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10. DETAILS OF ELEVATOR IS REFER TO DWG. ELO-101

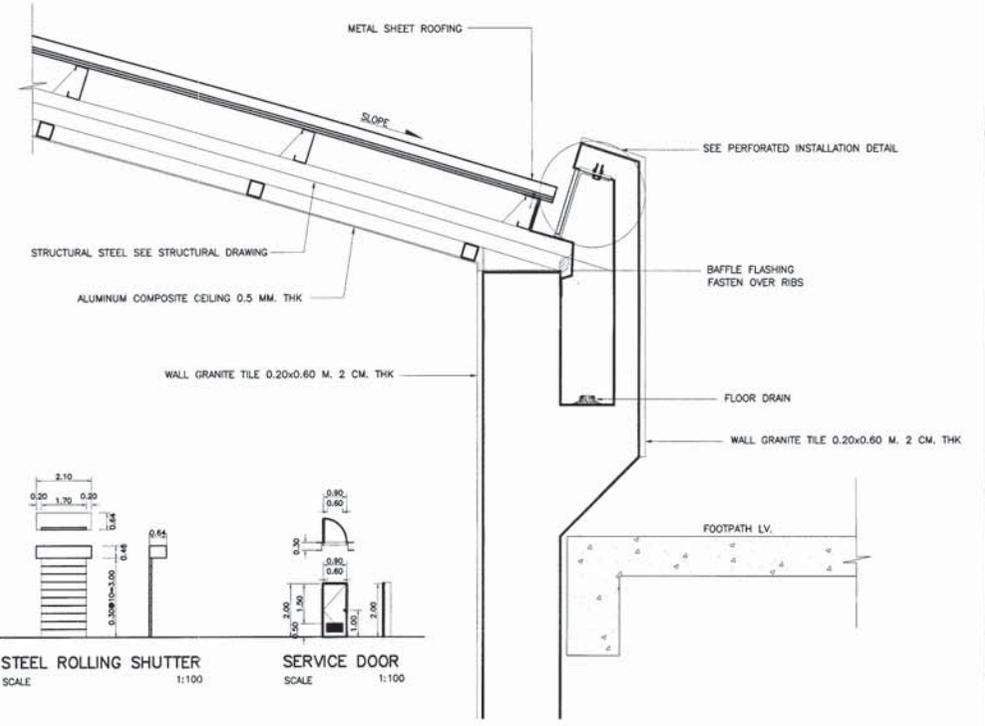
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS ARCHITECTURAL TYPE 2
PLAN, ELEVATIONS AND SECTION A

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
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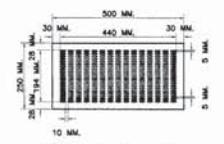
REF.	REVISION	SIGNATURE	DATE



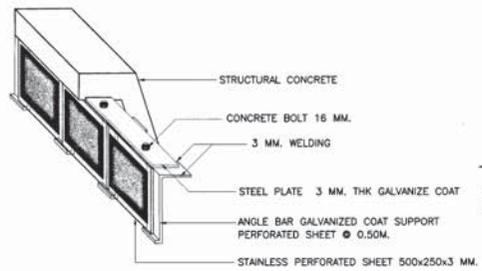
TYPICAL ROOFING UNDER GROUND WALK WAY
SCALE 1:100



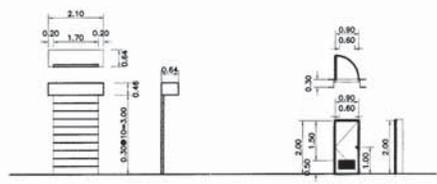
CONCRETE GUTTER DETAIL
SCALE 1:100



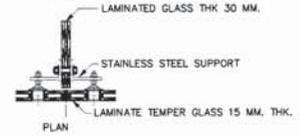
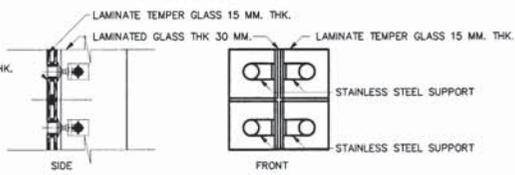
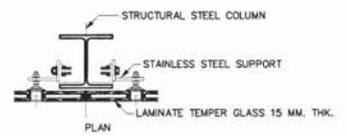
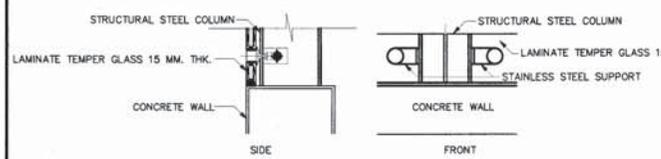
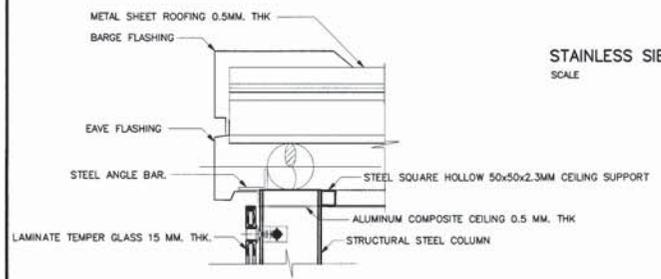
PERFORATED DETAIL
SCALE 1:10



STAINLESS SIEVE INSTALLATION DETAIL
SCALE NOT TO SCALE



STEEL ROLLING SHUTTER SCALE 1:100
SERVICE DOOR SCALE 1:100



LAMINATE TEMPERED GLASS INSTALLATION DETAIL
SCALE NOT TO SCALE

- NOTES :
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. HOT ROLLED STRUCTURAL STEEL SECTIONS SHALL CONFORM TO TIS. 1227 GRADE SM 400.
 3. HOLLOW STRUCTURAL STEEL SECTIONS SHALL CONFORM TO TIS. 107 GRADE HS 41.
 4. METAL SHEET ROOFING SHALL CONFORM TO TIS. 112B AND COLORED IN GREEN.
 5. ANTI-CORROSIVE PRIMER PAINT SHALL CONFORM TO TIS.2387
 6. STAINLESS STEEL BALUSTRADE PIPE SHALL CONFORM TO TIS 1006
STAINLESS STEEL COLUMN SHALL BE 60 AND 40 MM. DIAMETER AND MINIMUM 2.77 MM. THK
STAINLESS STEEL HANDRAIL SHALL BE 60 AND 33 MM. DIAMETER AND 1.65 MM. THK
 7. STAINLESS SIEVE SHALL CONFORM TO TIS. 1378
 8. LOUVER SHALL CONFORM TO TIS. 2223
 9. TEMPERED GLASS SHALL CONFORM TO TIS. 965
 10. LAMINATED GLASS SHALL CONFORM TO TIS. 1222
 11. ALUMINUM COMPOSITE PANEL SHALL CONFORM TO TIS. 2314
 12. STEEL ROLLING SHUTTER SHALL CONFORM TO TIS. 593
 13. TYPICAL ROOFING AND APPROACH SEE DWG. APH-107 FOR DETAILS

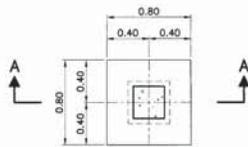
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS ARCHITECTURAL
ACCESSORY DETAILS

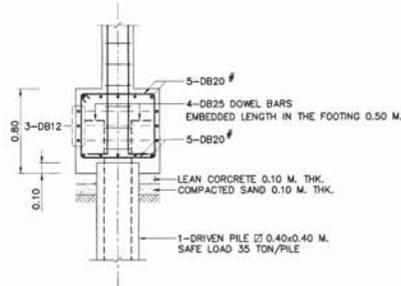
DESIGNED: D.O.M. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. ALJH-107 SHEET NO. 190

REF.	REVISION	SIGNATURE	DATE

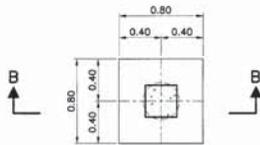
D:\VMS - Aug 2015\AUM-107(ME)001



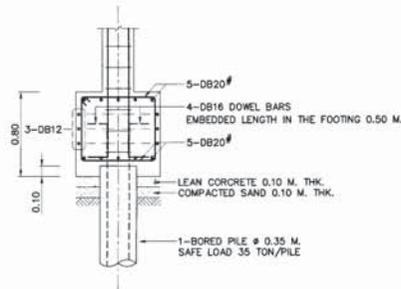
PLAN F1 (DRIVEN PILE)
SCALE 1 : 25



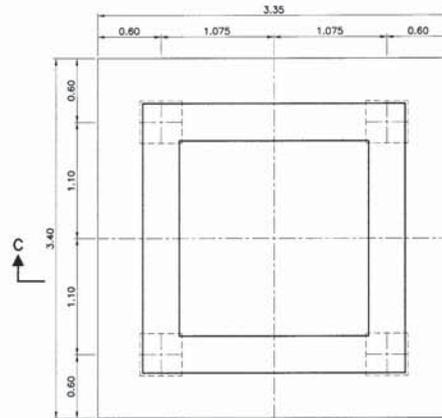
SECTION A - A
SCALE 1 : 25



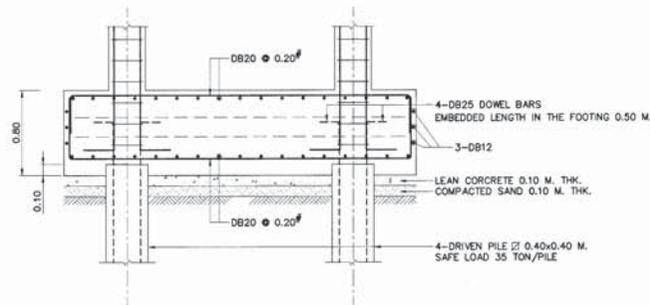
PLAN F1 (BORED PILE)
SCALE 1 : 25



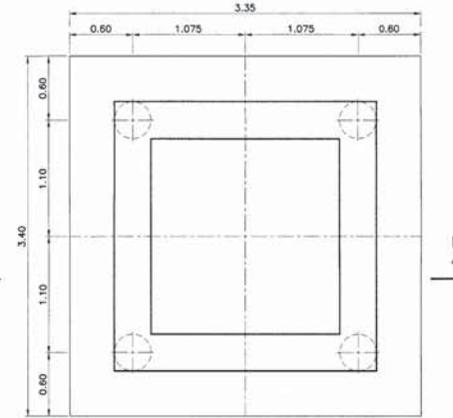
SECTION B - B
SCALE 1 : 25



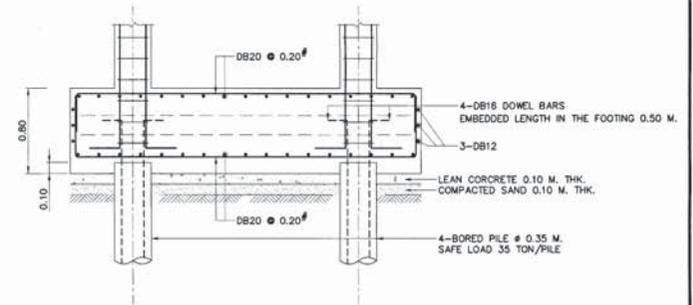
PLAN (DRIVEN PILE)
SCALE 1 : 25



SECTION C - C
SCALE 1 : 25



PLAN F4 (BORED PILE)
SCALE 1 : 25



SECTION D - D
SCALE 1 : 25

NOTES :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 0.15x0.15x0.15 M. CUBE AT 28 DAYS.
3. REBARS SMALLER THAN R89 MM. SHALL BE TIS.20 GRADE SR24 PLAIN ROUND BARS, OTHERS SHALL BE TIS.24 GRADE S40 DEFORMED BARS UNLESS OTHERWISE INDICATED.
4. EACH PILE SHALL BE DRIVEN TO A DEPTH WHERE SCOUR WILL NOT AFFECT CAPACITY, THE MINIMUM ALLOWABLE CAPACITY OF 0.35 MN (35 TON) FOR EACH PILE AND A MINIMUM 3.50 M. EMBEDDED LENGTH UNDER A DEPTH ARE REQUIRED
5. CLEAR CONCRETE COVER SHALL BE 0.05 M. EXCEPT THE BOTTOM OF SLABS OR WALL WHERE CLEAR COVER OF 0.075 M. SHALL BE PROVIDED.
6. THE RESISTANCE OF WELDED REBAR IS AT LEAST 125 PERCENT OF THE YIELD STRENGTH OF REBARS
7. LOCATIONS OF LAP SPLICE OF REBARS SHALL BE APPROVED BY THE ENGINEER.
8. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. UH-101 AND UH-201

TABLE OF STEEL COLUMN

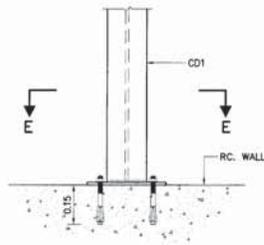
TYPE	DIMENSION OF STEEL COLUMN
CD1	WF 150x150x7x10x31.5 KG/M.
CD2	WF 200x200x8x12x49.9 KG/M.
CD3	WF 250x250x9x14x72.4 KG/M.

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

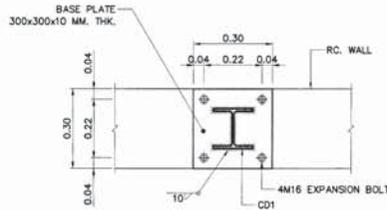
STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS TYPICAL
FOOTING DETAILS

DESIGNED: D.O.M. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED: (DIRECTOR OF LOCATION & DESIGN BUREAU)	APPROVED: (FOR DIRECTOR GENERAL)	SCALE: AS SHOWN
		DWG NO. UH-001
		SHEET NO. 191

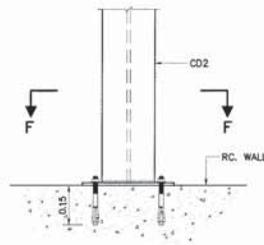
REF.	REVISION	SIGNATURE	DATE



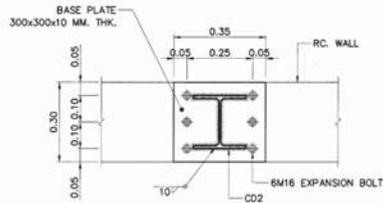
DETAIL "1" (CD1)
SCALE 1 : 10



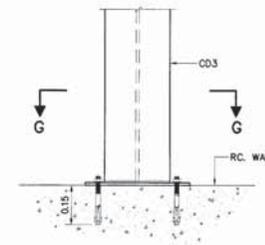
SECTION E - E
SCALE 1 : 10



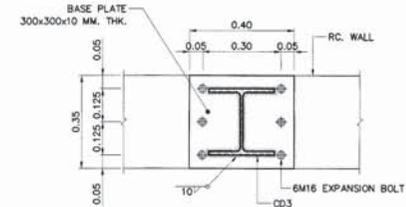
DETAIL "2" (CD2)
SCALE 1 : 10



SECTION F - F
SCALE 1 : 10



DETAIL "3" (CD3)
SCALE 1 : 10



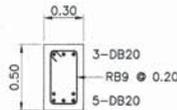
SECTION G - G
SCALE 1 : 10

TABLE OF STEEL COLUMN

TYPE	DIMENSION OF STEEL COLUMN
CD1	WF 150x150x7x10x31.5 KG/M.
CD2	WF 200x200x8x12x49.9 KG/M.
CD3	WF 250x250x9x14x72.4 KG/M.

TABLE OF COLUMN

LEVELS	C0	C1	C2
GROUND FLOOR			
FOUNDATION			
COLUMN NO.	C0	C1	C2



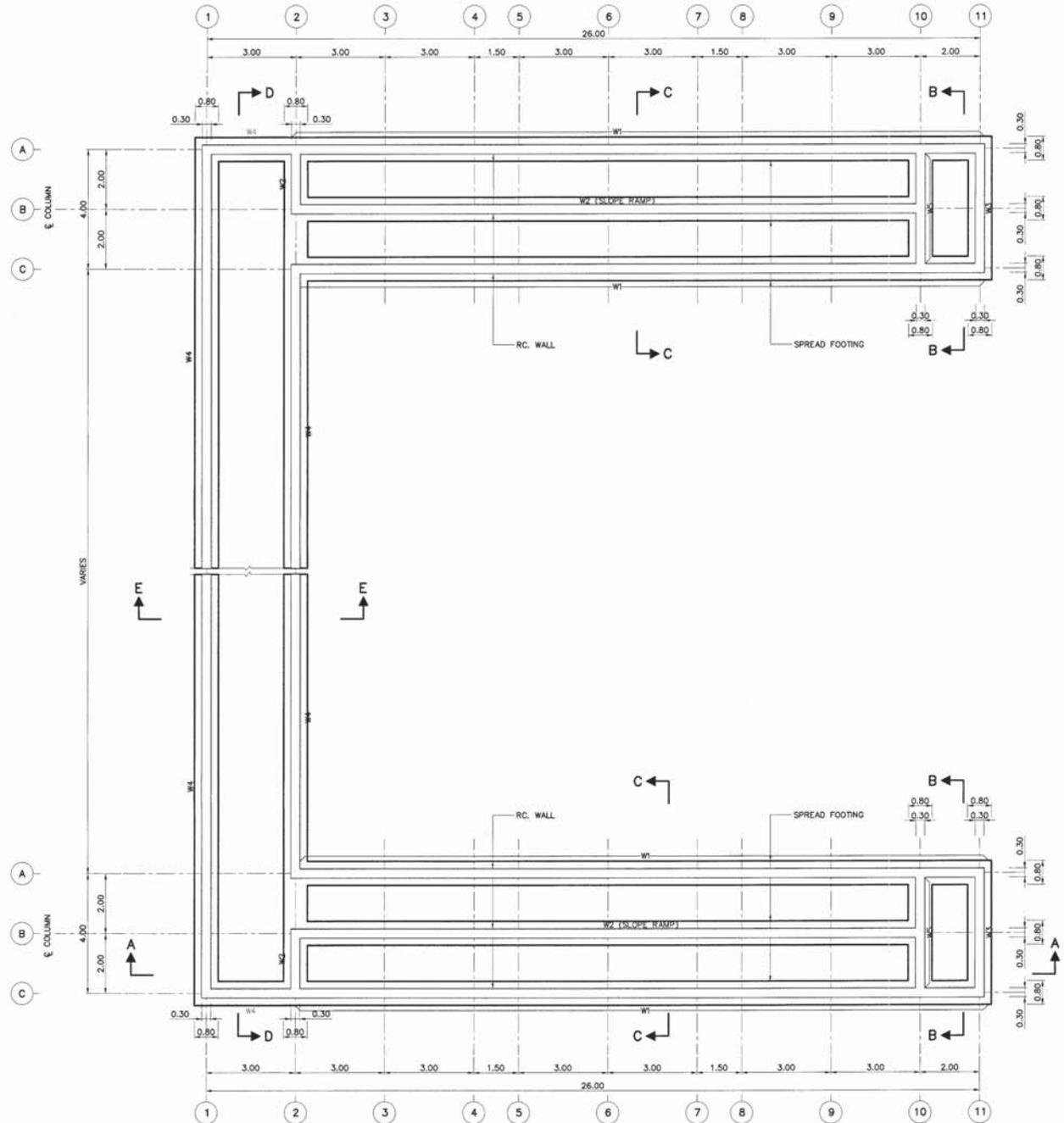
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SCALE 1 : 20

NOTES :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 0.15x0.15x0.15 M. CUBE AT 28 DAYS.
3. REBARS SMALLER THAN RB9 MM. SHALL BE TIS.20 GRADE SR24 PLAIN ROUND BARS, OTHERS SHALL BE TIS.24 GRADE SD40 DEFORMED BARS UNLESS OTHERWISE INDICATED.
4. STRUCTURAL STEEL SHALL CONFORM TO TIS 1227 GRADE SM400.
5. ANCHOR BOLTS SHALL CONFORM TO ASTM-A307.
6. WELD AND WELDING ELECTRODE (TYPE E70) SHALL CONFORM TO AWS STANDARDS.
7. ALL STEEL AND BOLT ASSEMBLY SHALL BE GALVANIZED

KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS
STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS TYPICAL
COLUMN AND BEAM DETAILS

DESIGNED : D.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. UH-002
REF.	REVISION	SIGNATURE DATE



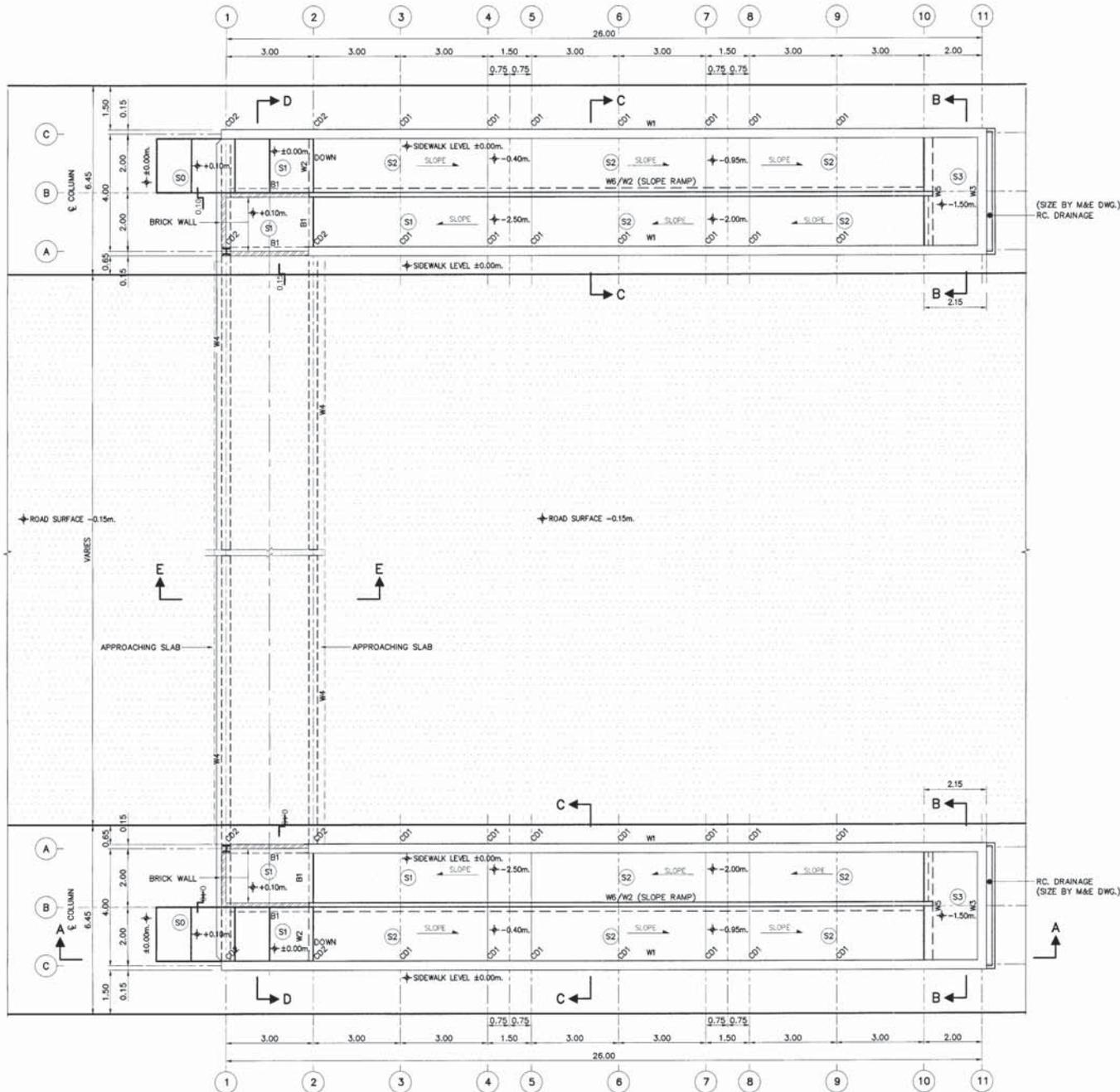
SPREAD FOOTING PLAN
SCALE 1 : 75

- NOTES :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. EACH SPREAD FOOTING SHALL BE LOCATED BELOW TO A DEPTH WHERE SCOUR WILL NOT AFFECT CAPACITY, THE MINIMUM ALLOWABLE BEARING CAPACITY OF 0.10 MPa (10 TON/M²)

KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING HANDICAPPED PEDESTRIAN UNDERPASS TYPE 1 SPREAD FOOTING PLAN		
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. UH-102
REF.	REVISION	SHEET NO. 194

REF.	REVISION	SIGNATURE	DATE

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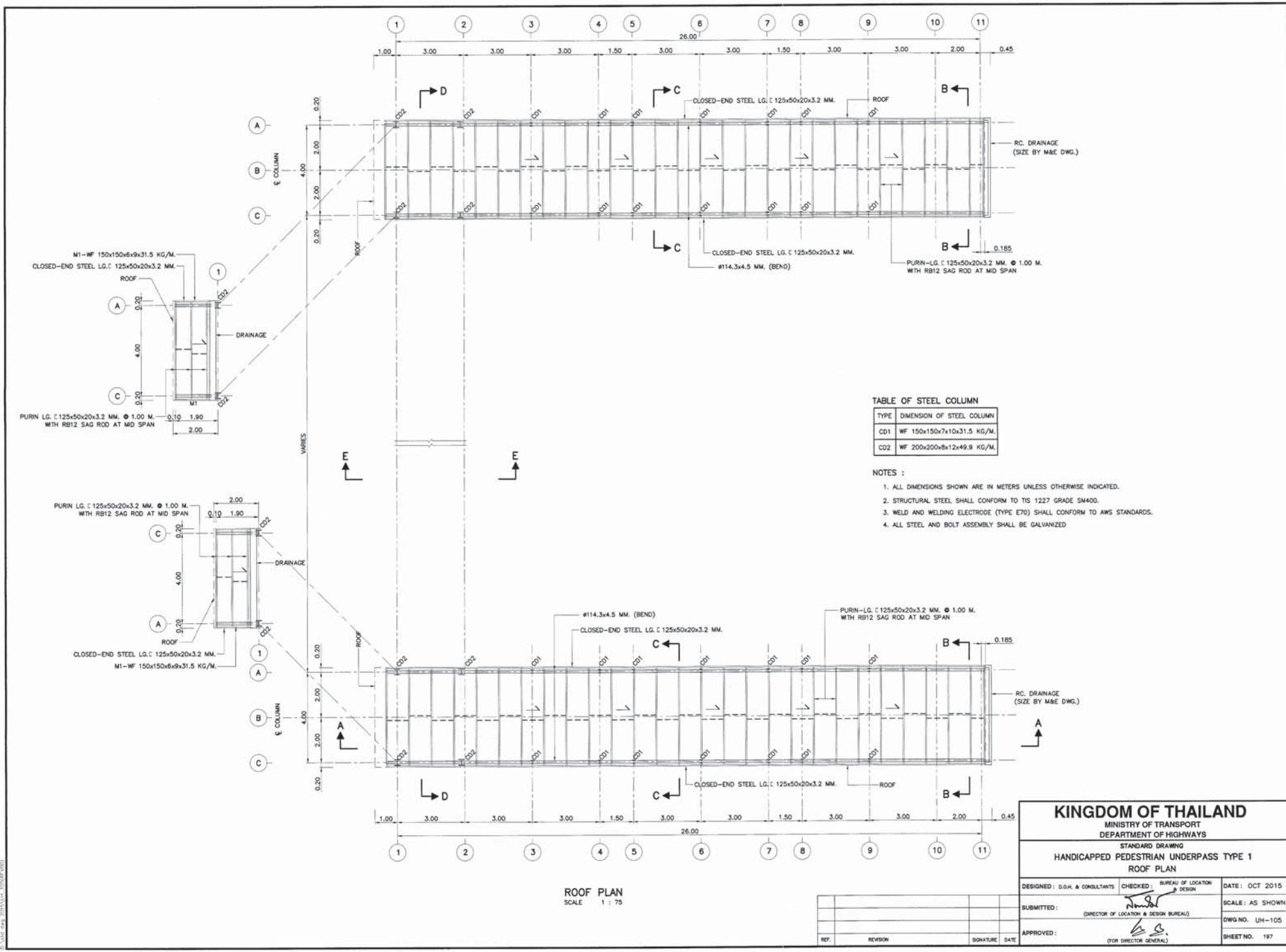


NOTES :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

KINGDOM OF THAILAND			
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS			
STANDARD DRAWING HANDICAPPED PEDESTRIAN UNDERPASS TYPE 1 GROUND FLOOR PLAN			
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015	
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN	DWG NO. UH-104
APPROVED :	(FOR DIRECTOR GENERAL)	SHEET NO. 196	

REF.	REVISION	SIGNATURE	DATE

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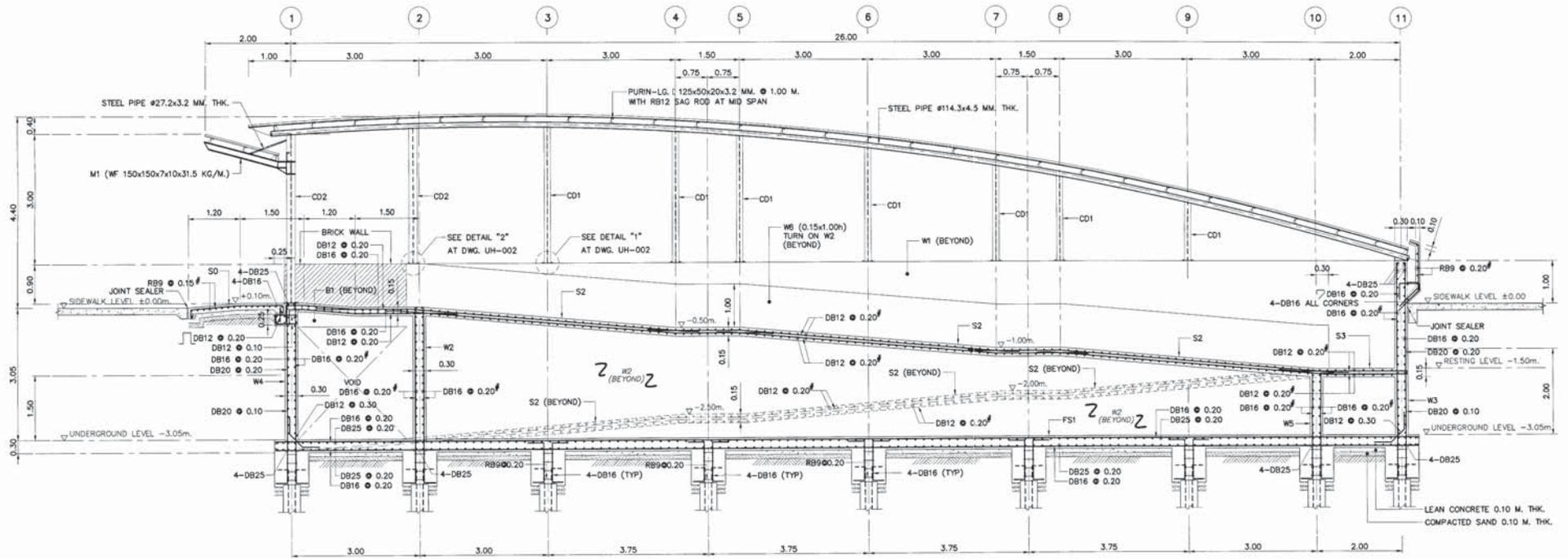
ROOF PLAN
SCALE 1 : 75

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

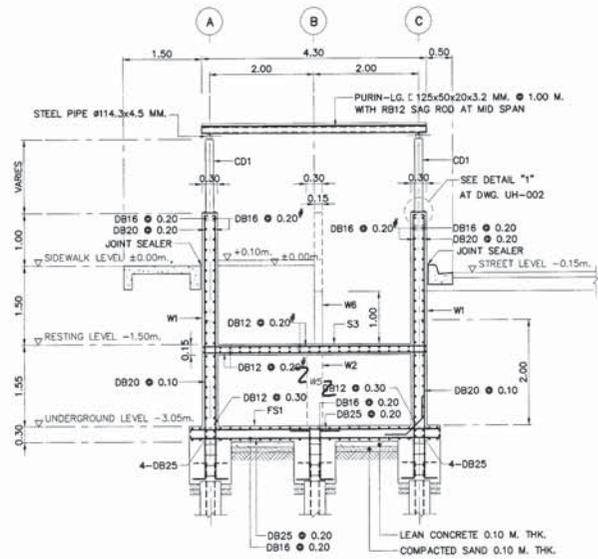
STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS TYPE 1
 ROOF PLAN

DESIGNED: D.G.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. UH-105
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 197

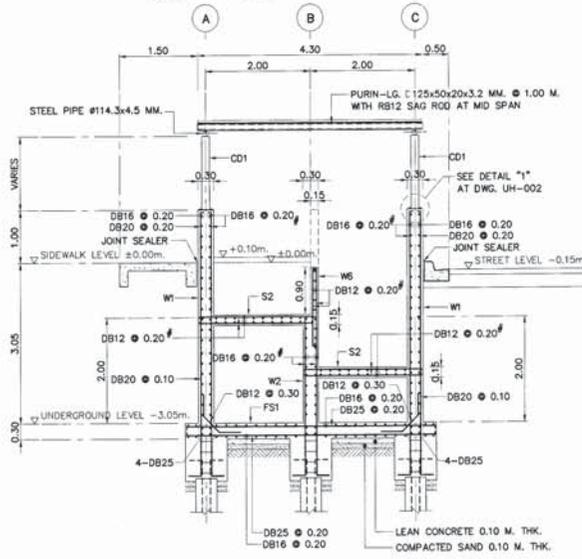
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SECTION A - A
SCALE 1 : 50



SECTION B - B
SCALE 1 : 50



SECTION C - C
SCALE 1 : 50

TYPE	DIMENSION OF STEEL COLUMN
CD1	WF 150x150x7x10x31.5 KG/M.
CD2	WF 200x200x8x12x49.9 KG/M.

- NOTES :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 0.15x0.15x0.15 M. CUBE AT 28 DAYS.
 3. REBARS SMALLER THAN R89 MM. SHALL BE TIS.20 GRADE SR24 PLAIN ROUND BARS, OTHERS SHALL BE TIS.24 GRADE S40 DEFORMED BARS UNLESS OTHERWISE INDICATED.
 4. EACH PILE SHALL BE DRIVEN TO A DEPTH WHERE SCOUR WILL NOT AFFECT CAPACITY, THE MINIMUM ALLOWABLE CAPACITY OF 0.35 MN (35 TON) FOR EACH PILE AND A MINIMUM 3.50 M. EMBEDDED LENGTH UNDER A DEPTH ARE REQUIRED
 5. CLEAR CONCRETE COVER SHALL BE 0.05 M. EXCEPT THE BOTTOM OF SLABS OR WALL WHERE CLEAR COVER OF 0.10 M. SHALL BE PROVIDED.
 6. THE RESISTANCE OF WELDED REBAR IS AT LEAST 125 PERCENT OF THE YIELD STRENGTH OF REBARS
 7. LOCATIONS OF LAP SPLICE OF REBARS SHALL BE APPROVED BY THE ENGINEER.
 8. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. UH-001 AND UH-101.

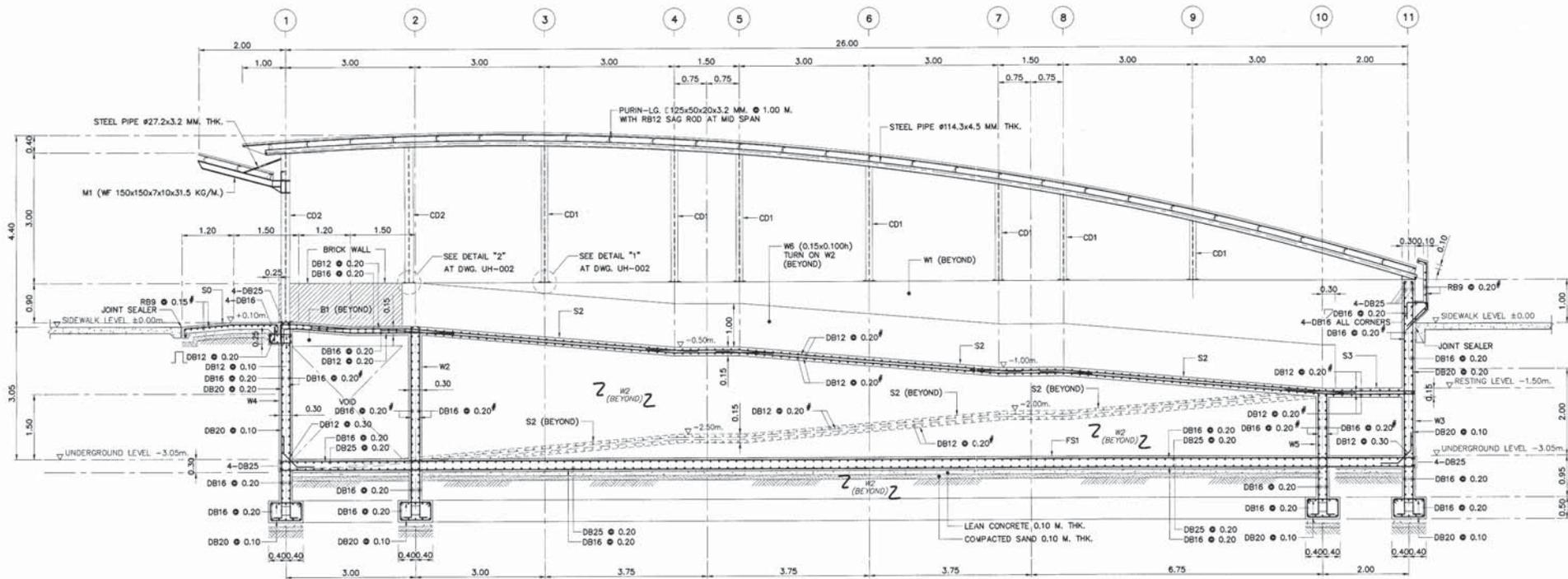
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS TYPE 1
PILE FOOTING DETAILS (SECTION A, B AND C)

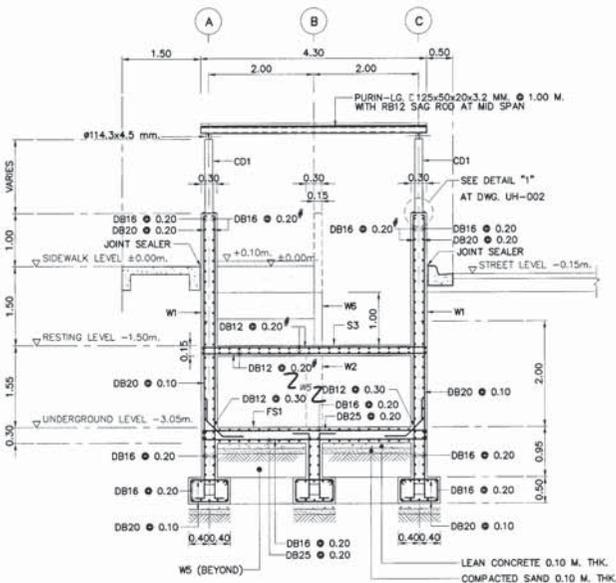
DESIGNED: D.O.M. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. UH-106 SHEET NO. 198

REF.	REVISION	SIGNATURE	DATE

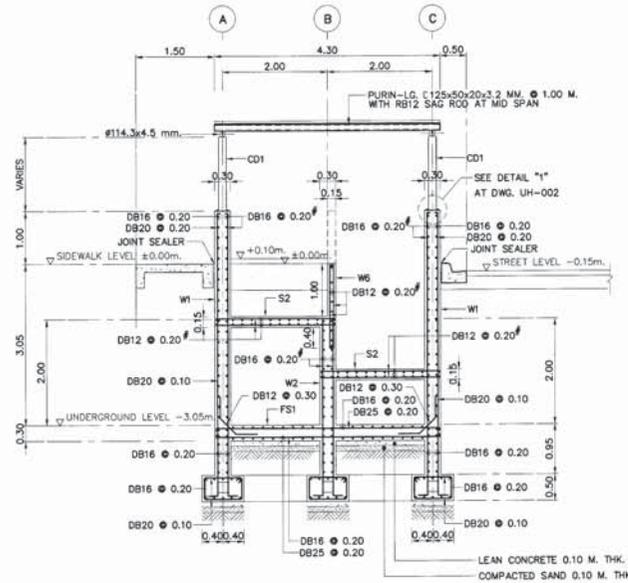
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SECTION A - A
SCALE 1 : 50



SECTION B - B
SCALE 1 : 50



SECTION C - C
SCALE 1 : 50

TABLE OF STEEL COLUMN	
TYPE	DIMENSION OF STEEL COLUMN
CD1	WF 150x150x7x10x31.5 KG/M.
CD2	WF 200x200x8x12x49.9 KG/M.

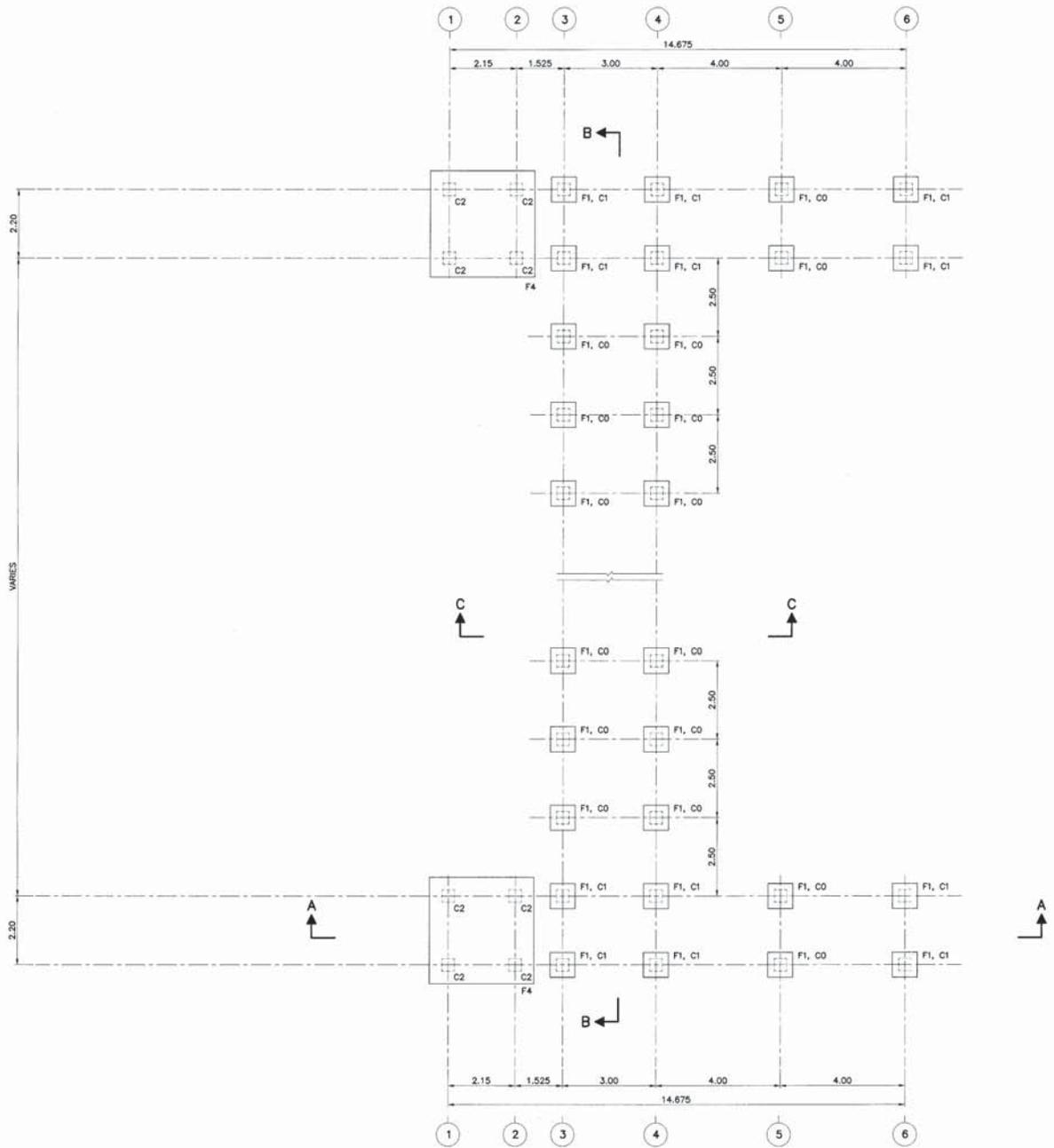
- NOTES :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 0.15x0.15x0.15 M. CUBE AT 28 DAYS.
 3. REBARS SMALLER THAN R89 MM. SHALL BE TIS-20 GRADE SR24 PLAIN ROUND BARS, OTHERS SHALL BE TIS-24 GRADE S40 DEFORMED BARS UNLESS OTHERWISE INDICATED.
 4. EACH SPREAD FOOTING SHALL BE LOCATED BELOW TO A DEPTH WHERE SCOUR WILL NOT AFFECT CAPACITY, THE MINIMUM ALLOWABLE BEARING CAPACITY OF 0.10 MPa (10 TON/M²)
 5. CLEAR CONCRETE COVER SHALL BE 0.05 M. EXCEPT THE BOTTOM OF SLABS OR WALL WHERE CLEAR COVER OF 0.10 M. SHALL BE PROVIDED.
 6. THE RESISTANCE OF WELDED REBAR IS AT LEAST 125 PERCENT OF THE YIELD STRENGTH OF REBARS
 7. LOCATIONS OF LAP SPLICE OF REBARS SHALL BE APPROVED BY THE ENGINEER.
 8. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. UH-102

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS TYPE 1
SPREAD FOOTING DETAILS (SECTION A, B AND C)

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. UH-108
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 200

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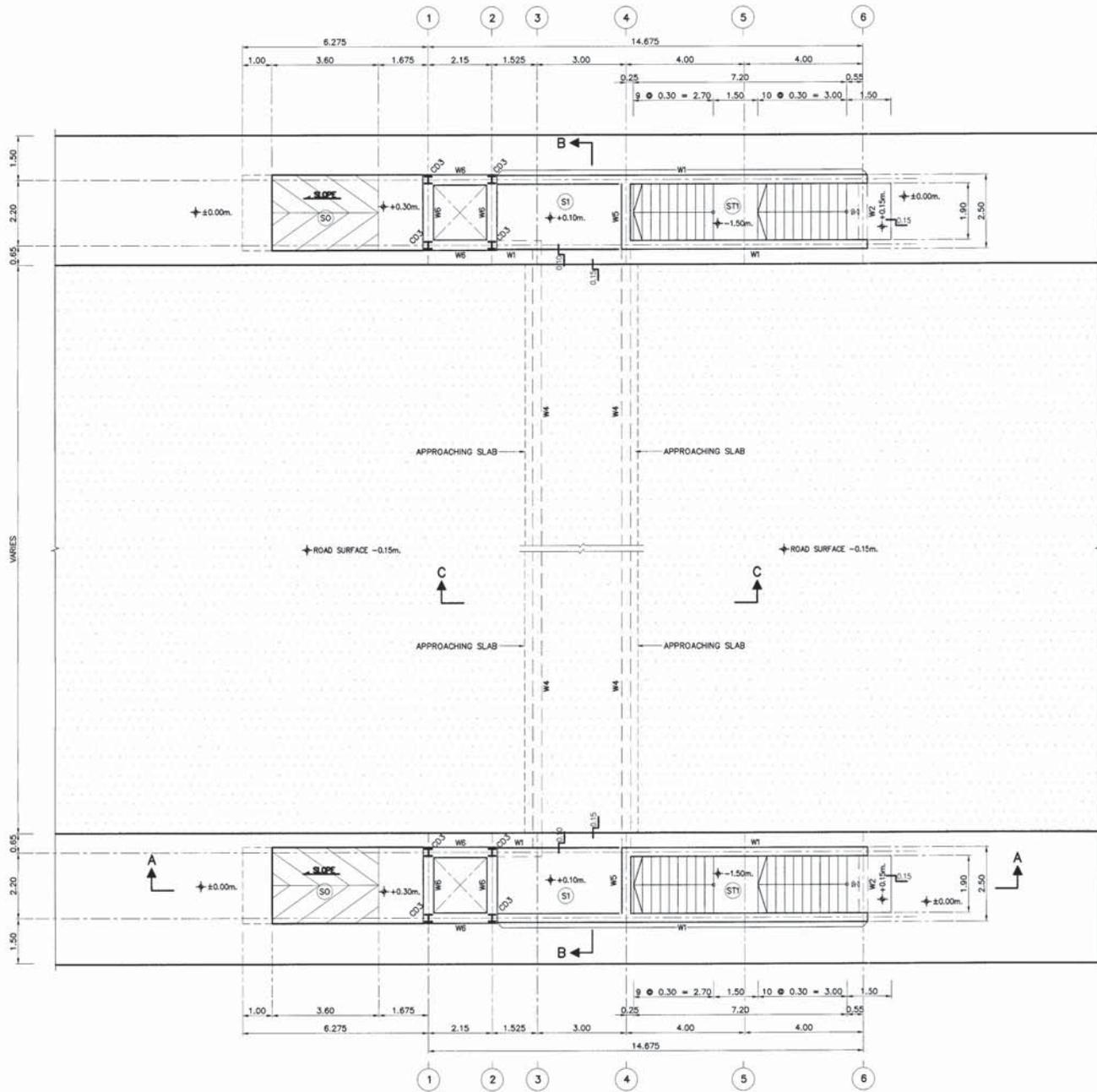


PILE FOOTING PLAN
SCALE 1 : 75

- NOTES :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. EACH PILE SHALL BE DRIVEN TO A DEPTH WHERE SCOUR WILL NOT AFFECT CAPACITY, THE MINIMUM ALLOWABLE CAPACITY OF 0.35 MN (35 TON) FOR EACH PILE AND A MINIMUM 3.50 M. EMBEDDED LENGTH UNDER A DEPTH ARE REQUIRED

KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 PILE FOOTING PLAN		
DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. LH-201
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 202

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GROUND FLOOR PLAN
SCALE 1 : 75

NOTES :
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.

KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 GROUND FLOOR PLAN		
DESIGNED : D.O.M. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. UH-204
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 205

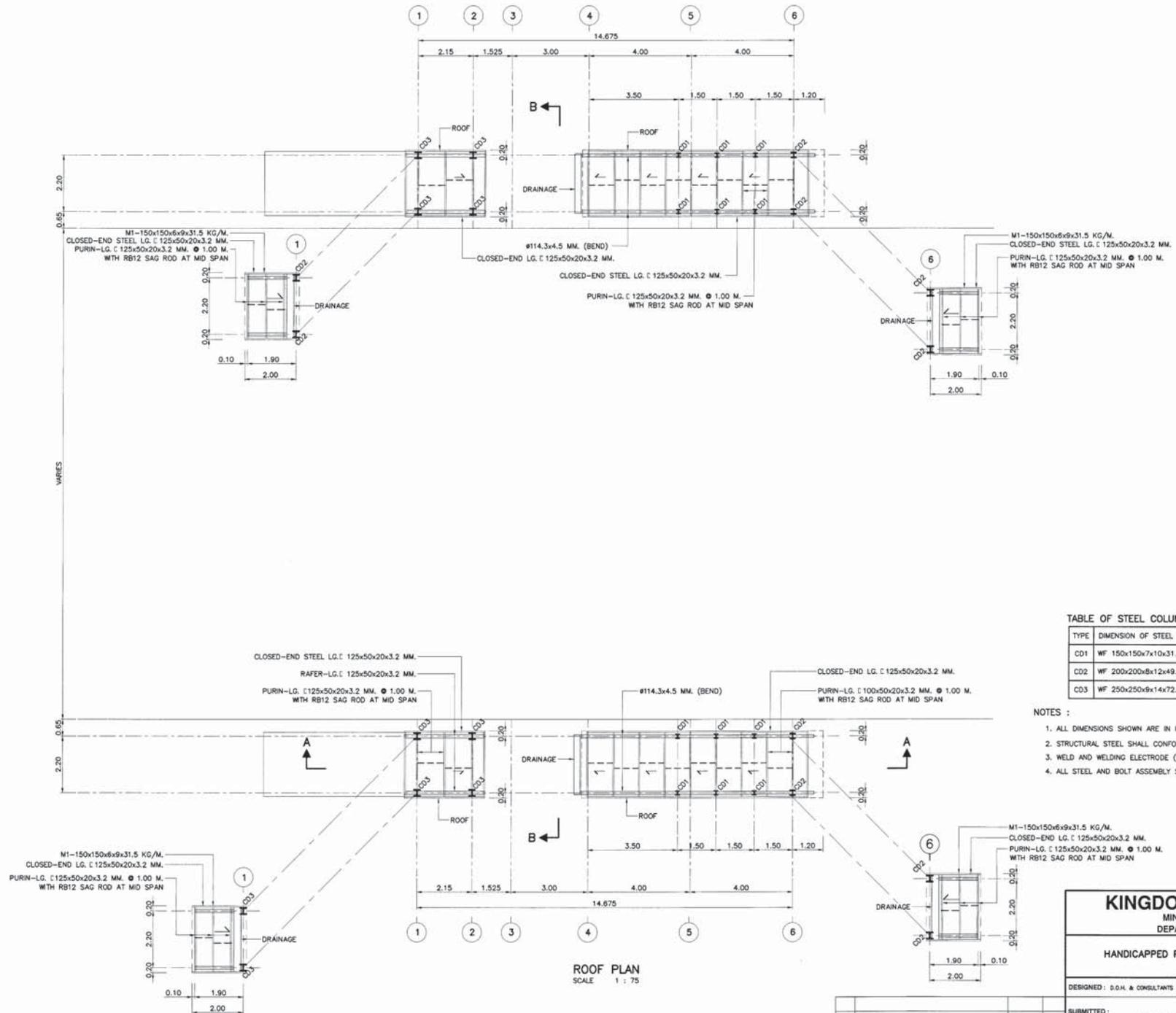


TABLE OF STEEL COLUMN

TYPE	DIMENSION OF STEEL COLUMN
CD1	WF 150x150x7x10x31.5 KG/M.
CD2	WF 200x200x8x12x49.9 KG/M.
CD3	WF 250x250x9x14x72.4 KG/M.

NOTES :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. STRUCTURAL STEEL SHALL CONFORM TO TIS 1227 GRADE SM400.
3. WELD AND WELDING ELECTRODE (TYPE E70) SHALL CONFORM TO AWS STANDARDS.
4. ALL STEEL AND BOLT ASSEMBLY SHALL BE GALVANIZED

ROOF PLAN
SCALE 1 : 75

KINGDOM OF THAILAND
 MINISTRY OF TRANSPORT
 DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2
 ROOF PLAN

DESIGNED : D.O.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. UH-205
REF.	REVISION	SIGNATURE DATE
		SHEET NO. 206

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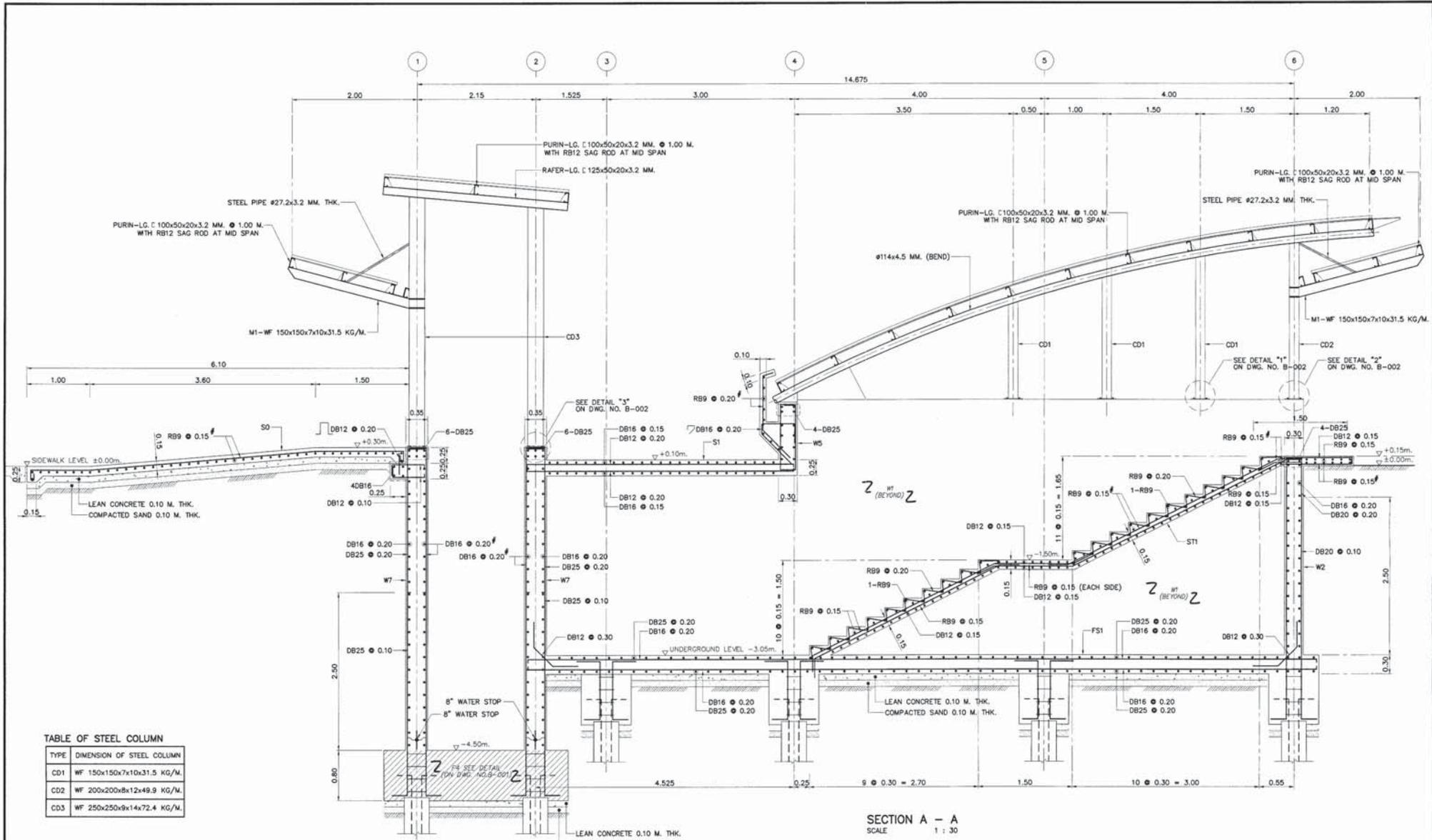


TABLE OF STEEL COLUMN

TYPE	DIMENSION OF STEEL COLUMN
CD1	WF 150x150x7x10x31.5 KG/M.
CD2	WF 200x200x8x12x49.9 KG/M.
CD3	WF 250x250x9x14x72.4 KG/M.

- NOTES :**
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 - CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 0.15x0.15x0.15 M. CUBE AT 28 DAYS.
 - REBARS SMALLER THAN RB9 MM. SHALL BE TIS-20 GRADE SR24 PLAIN ROUND BARS, OTHERS SHALL BE TIS-24 GRADE SD40 DEFORMED BARS UNLESS OTHERWISE INDICATED.
 - EACH PILE SHALL BE DRIVEN TO A DEPTH WHERE SCOUR WILL NOT AFFECT CAPACITY, THE MINIMUM ALLOWABLE CAPACITY OF 0.35 MN (35 TON) FOR EACH PILE AND A MINIMUM 3.50 M. EMBEDDED LENGTH UNDER A DEPTH ARE REQUIRED
 - CLEAR CONCRETE COVER SHALL BE 0.05 M, EXCEPT THE BOTTOM OF SLABS OR WALL WHERE CLEAR COVER OF 0.10 M. SHALL BE PROVIDED.
 - THE RESISTANCE OF WELDED REBAR IS AT LEAST 125 PERCENT OF THE YIELD STRENGTH OF REBARS
 - LOCATIONS OF LAP SPLICE OF REBARS SHALL BE APPROVED BY THE ENGINEER.
 - THIS DRAWING IS USED IN CONJUNCTION WITH DWG. UH-201

SECTION A - A
SCALE 1 : 30

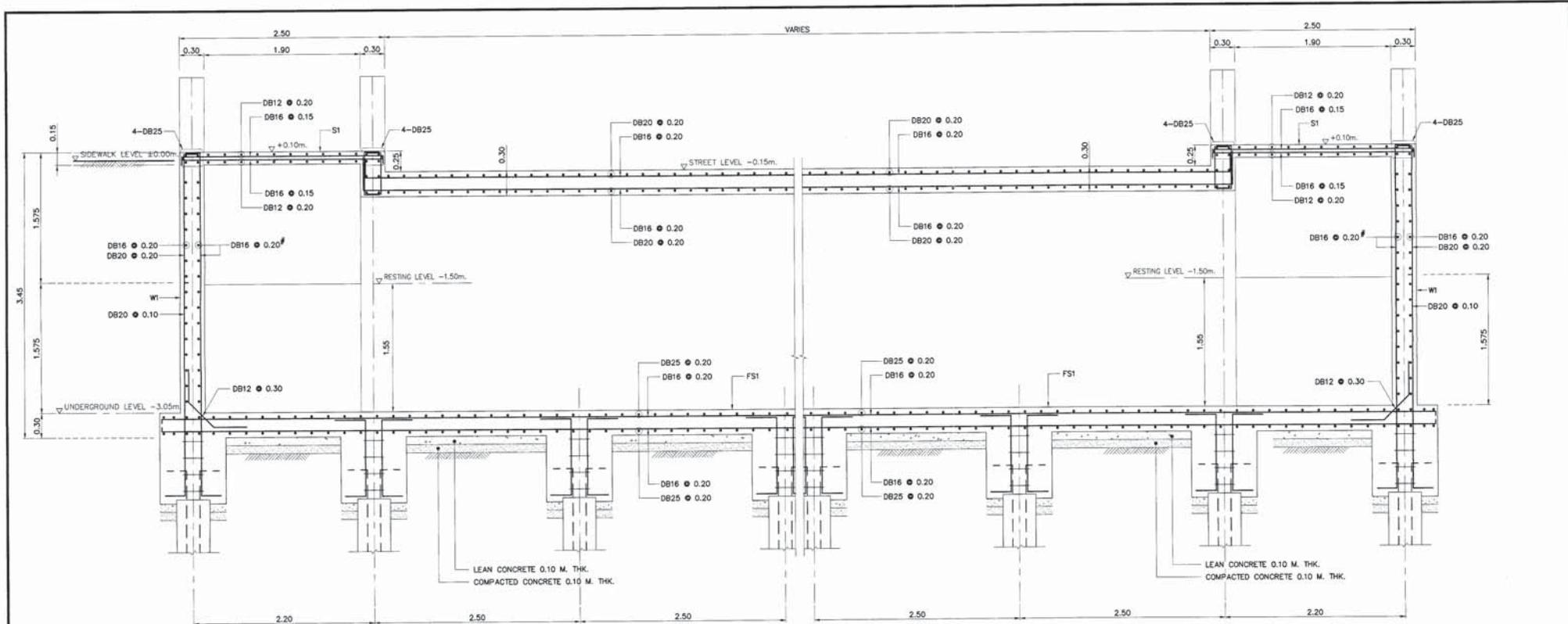
KINGDOM OF THAILAND
MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2
PILE FOOTING DETAILS (SECTION A)

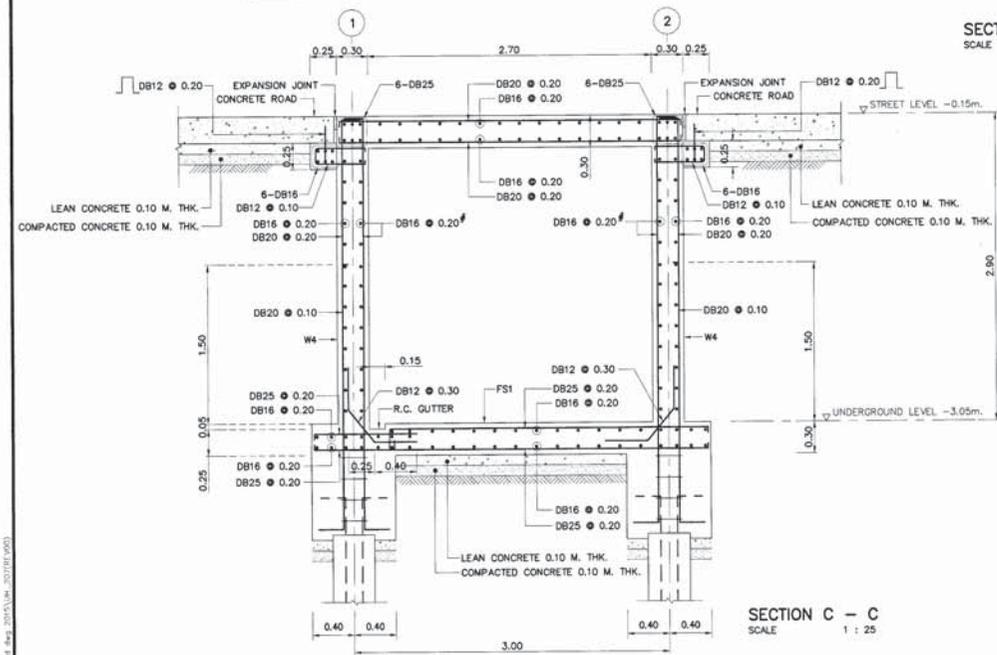
DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015
SUBMITTED:	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE: AS SHOWN
APPROVED:	(FOR DIRECTOR GENERAL)	DWG NO. UH-206
REF.	REVISION	SIGNATURE DATE

SHEET NO. 207

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SECTION B - B
SCALE 1 : 25



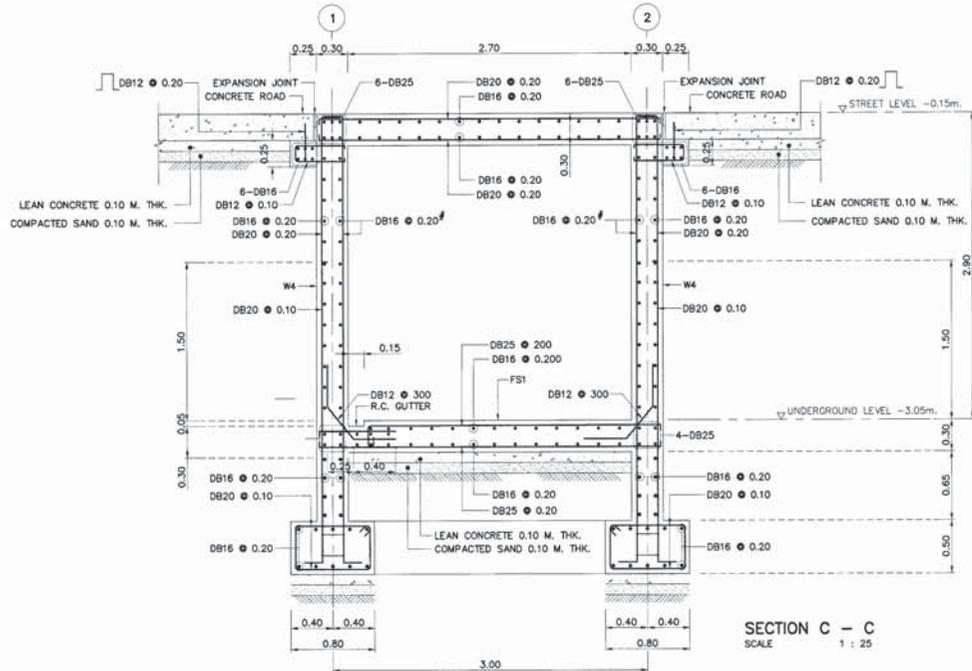
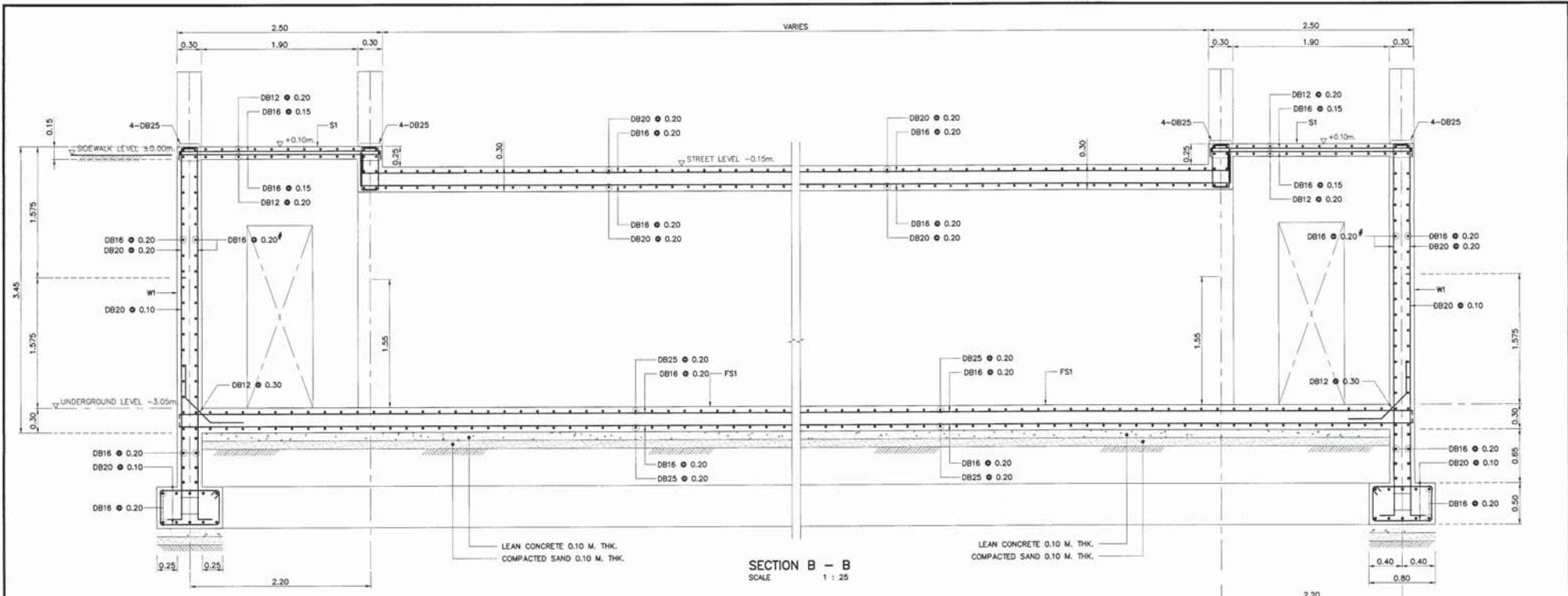
SECTION C - C
SCALE 1 : 25

NOTES :

1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 0.15x0.15x0.15 M. CUBE AT 28 DAYS.
3. REBARS SMALLER THAN RB9 MM. SHALL BE TIS.20 GRADE SR24 PLAIN ROUND BARS, OTHERS SHALL BE TIS.24 GRADE SD40 DEFORMED BARS UNLESS OTHERWISE INDICATED.
4. EACH PILE SHALL BE DRIVEN TO A DEPTH WHERE SCOUR WILL NOT AFFECT CAPACITY. THE MINIMUM ALLOWABLE CAPACITY OF 0.35 MN (35 TON) FOR EACH PILE AND A MINIMUM 3.50 M. EMBEDDED LENGTH UNDER A DEPTH ARE REQUIRED.
5. CLEAR CONCRETE COVER SHALL BE 0.05 M. EXCEPT THE BOTTOM OF SLABS OR WALL WHERE CLEAR COVER OF 0.10 M. SHALL BE PROVIDED.
6. THE RESISTANCE OF WELDED REBAR IS AT LEAST 125 PERCENT OF THE YIELD STRENGTH OF REBARS.
7. LOCATIONS OF LAP SPLICE OF REBARS SHALL BE APPROVED BY THE ENGINEER.
8. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. UH-001 AND UH-201

KINGDOM OF THAILAND			
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS			
STANDARD DRAWING HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2 PILE FOOTING DETAILS (SECTION B AND C)			
DESIGNED BY: D.O.M. & CONSULTANTS	CHECKED BY: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015	
SUBMITTED BY: (DIRECTOR OF LOCATION & DESIGN BUREAU)		SCALE: AS SHOWN	
APPROVED BY: (FOR DIRECTOR GENERAL)		DWG NO. UH-207	
REF.	REVISION	SIGNATURE	DATE

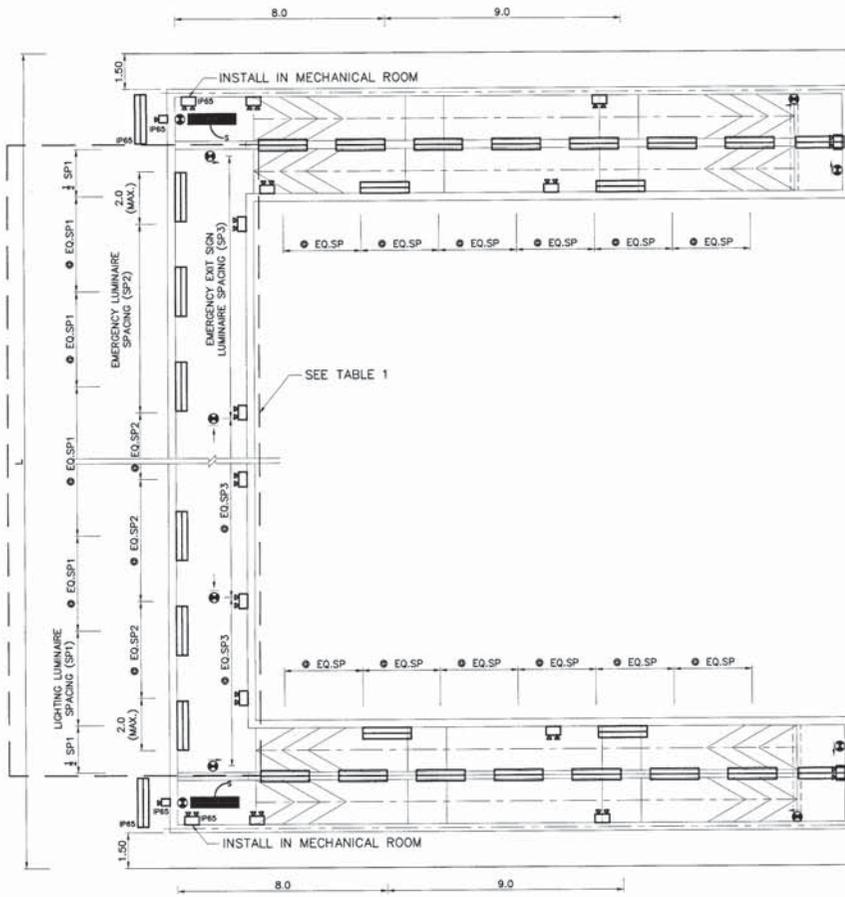
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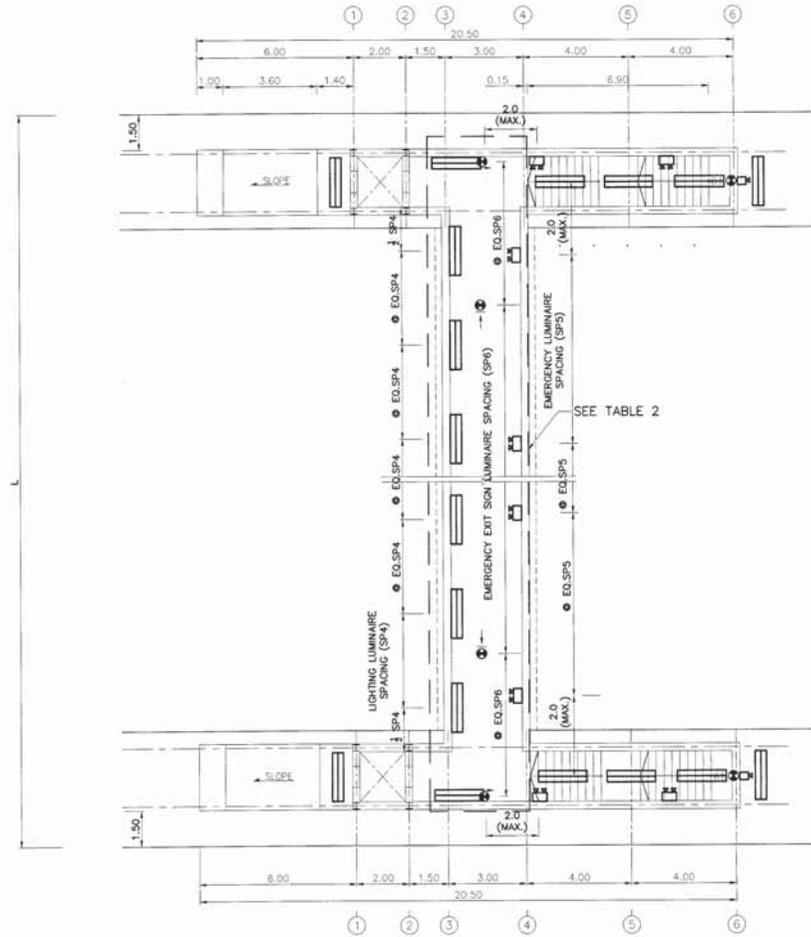
- NOTES :**
1. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
 2. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 35 MPa (357 KG/CM²) FOR 0.15x0.15x0.15 M. CUBE AT 28 DAYS.
 3. REBARS SMALLER THAN R99 MM. SHALL BE TIS.24 GRADE SR24 PLAIN ROUND BARS, OTHERS SHALL BE TIS.24 GRADE SD40 DEFORMED BARS UNLESS OTHERWISE INDICATED.
 4. EACH SPREAD FOOTING SHALL BE LOCATED BELOW TO A DEPTH WHERE SCOUR WILL NOT AFFECT CAPACITY, THE MINIMUM ALLOWABLE BEARING CAPACITY OF 0.10 MPa (10 TON/M²)
 5. CLEAR CONCRETE COVER SHALL BE 0.05 M. EXCEPT THE BOTTOM OF SLABS OR WALL WHERE CLEAR COVER OF 0.10 M. SHALL BE PROVIDED.
 6. THE RESISTANCE OF WELDED REBAR IS AT LEAST 125 PERCENT OF THE YIELD STRENGTH OF REBARS
 7. LOCATIONS OF LAP SPLICE OF REBARS SHALL BE APPROVED BY THE ENGINEER.
 8. THIS DRAWING IS USED IN CONJUNCTION WITH DWG. UH-202

KINGDOM OF THAILAND			
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS			
STANDARD DRAWING			
HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2			
SPREAD FOOTING DETAILS (SECTION B AND C)			
DESIGNED :	CHECKED :	BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)		SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)		DWG NO. UH-209
REF.	REVISION	SIGNATURE	DATE

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LIGHTING PLAN FOR HANDICAPPED PEDESTRIAN UNDERPASS TYPE 1
SCALE 1:100



LIGHTING PLAN FOR HANDICAPPED PEDESTRIAN UNDERPASS TYPE 2
SCALE 1:100

LEGEND :

- WEATHER PROOF LIGHTING LUMINAIRE, IP54, MADE OF METALLIC HOUSING, ANTI-CORROSION PROOF WITH COVER, FITTED WITH ANODIZED ALUMINUM SHEET REFLECTOR, 2-36WATT FLUORESCENT LAMPS.
- DITTO BUT IP65.
- WEATHER PROOF LIGHTING LUMINAIRE, IP65, MADE OF POLYCARBONATE HOUSING WITH COVER, COMPLETED WITH STAINLESS STEEL CLIPS, 2-36WATT FLUORESCENT LAMPS, ON-OFF BY A SWITCH, INSTALL IN MECHANICAL ROOM.
- EMERGENCY LUMINAIRE, HOUSING MADE OF METAL, ANTI-CORROSION PROOF, 2 LAMPS.
- EMERGENCY LUMINAIRE, HOUSING MADE OF METAL, ANTI-CORROSION PROOF, IP65, 1 AND 2 LAMP(S) RESPECTIVELY.
- EMERGENCY EXIT SIGN LUMINAIRE, HOUSING MADE OF METAL, ANTI-CORROSION PROOF

REFERENCE STANDARD :

1. EMERGENCY LUMINAIRE : EIT STANDARD 2004-15
2. EMERGENCY EXIT SIGN LUMINAIRE : TIS 2430, EIT STANDARD 2004-15

NOTE :

1. ALL DIMENSION SHOWN ARE IN METERS UNLESS OTHERWISE INDICATED.
2. THE MINIMUM AVERAGE MAINTAINED ILLUMINANCE SHOULD BE 100 LUX.

TABLE 1

L (m.)	RECOMMENDED NUMBER OF LUMINAIRE (SETS)		
	LIGHTING*	EMERGENCY	EMERGENCY EXIT SIGN
30 - LESS THAN 34	6	3	4
34 - LESS THAN 39	7	3	4
39 - LESS THAN 43	8	4	4
43 - LESS THAN 47	9	4	4
47 - LESS THAN 53	10	4	4
53 - LESS THAN 57	11	4	4
57 - LESS THAN 60	12	5	4
60 - LESS THAN 65	13	5	4
65 - LESS THAN 70	14	5	4
70 - LESS THAN 75	15	6	6
75 - 80	16	6	6

REMARK* : SEE NOTE 2

TABLE 2

L (m.)	RECOMMENDED NUMBER OF LUMINAIRE (SETS)		
	LIGHTING*	EMERGENCY	EMERGENCY EXIT SIGN
30 - LESS THAN 34	8	3	4
34 - LESS THAN 39	9	4	4
39 - LESS THAN 43	10	4	4
43 - LESS THAN 47	11	4	4
47 - LESS THAN 53	12	4	4
53 - LESS THAN 57	13	5	4
57 - LESS THAN 60	14	5	4
60 - LESS THAN 65	15	5	4
65 - LESS THAN 70	16	6	4
70 - LESS THAN 75	17	6	6
75 - 80	18	6	6

KINGDOM OF THAILAND

MINISTRY OF TRANSPORT
DEPARTMENT OF HIGHWAYS

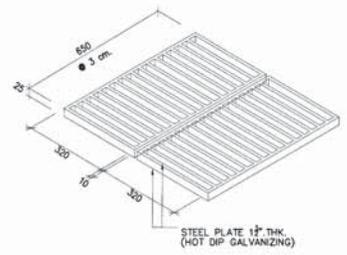
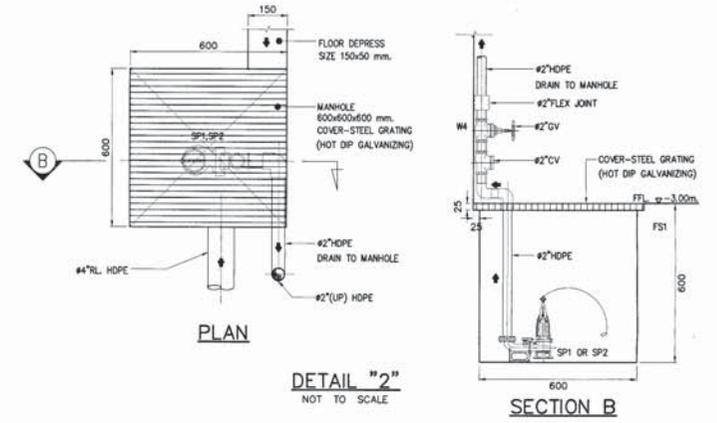
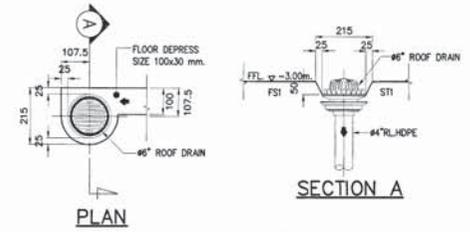
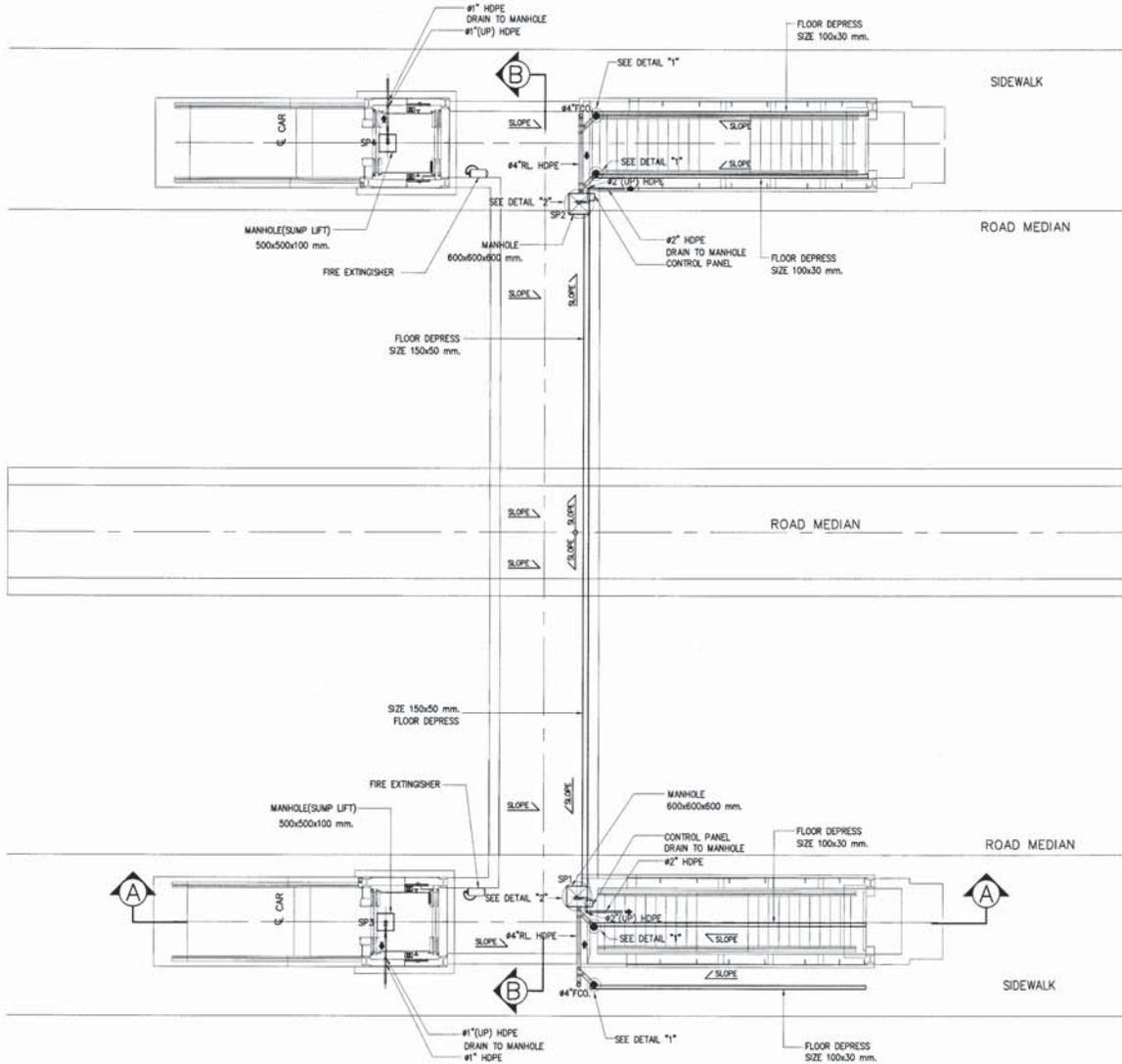
STANDARD DRAWING
HANDICAPPED PEDESTRIAN UNDERPASS
LIGHTING

DESIGNED : D.O.H. & CONSULTANTS CHECKED : BUREAU OF LOCATION & DESIGN DATE : OCT 2015

SUBMITTED : (DIRECTOR OF LOCATION & DESIGN BUREAU) SCALE : AS SHOWN

APPROVED : (FOR DIRECTOR GENERAL) DWG NO. UH-210
SHEET NO. 211

REF.	REVISION	SIGNATURE	DATE

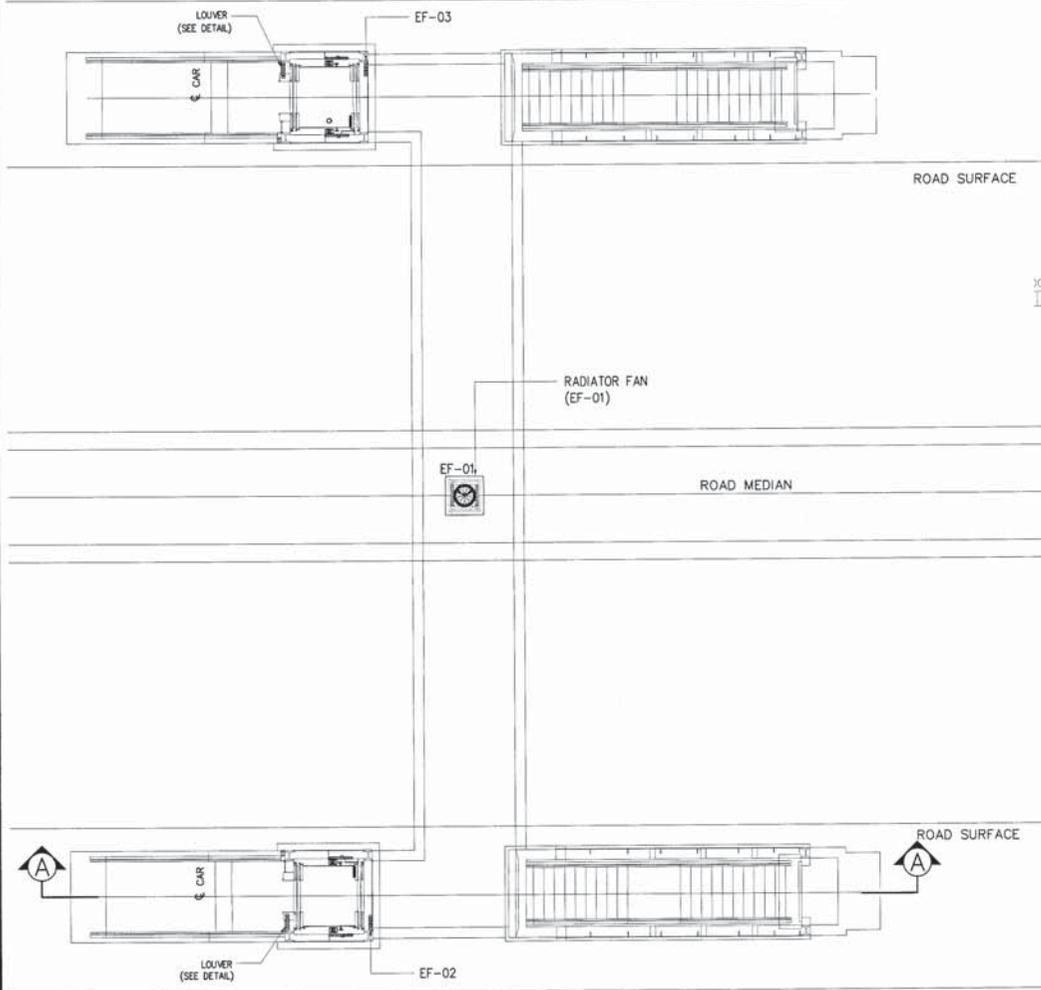


UNDERGROUND PLAN-RAINWATER DRAINAGE SYSTEM
SCALE 1:75

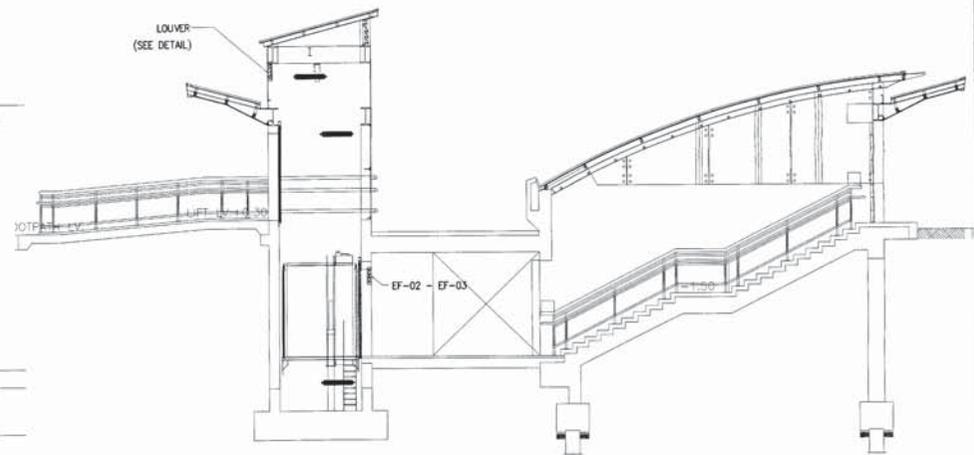
- NOTE:**
- ALL DIMENSION ARE IN MILLIMETER UNLESS OTHERWISE INDICATED.
 - SUBMERSIBLE PUMP(SP1,SP2) ARE CONTROL BY FLOAT LEVEL SWITCH
CAPACITY 300 LITER PER SECOND AT 10 M.THD,
DRIVING MOTOR 400 W., 220-240 V./1P/50 Hz.
 - SUBMERSIBLE PUMP (SP3,SP4) ARE CONTROL BY FLOAT LEVEL SWITCH
CAPACITY 70 LITER PER SECOND AT 6.5 M.THD,
DRIVING MOTOR 120 W., 220-240 V./1P/50 Hz.
 - ABC DRYCHEMICAL FIRE EXTINGUISHER 4.5 Kg. ARE
INSTALLED 1.50 METER HEIGHT.

KINGDOM OF THAILAND		
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS		
STANDARD DRAWING		
HANDICAPPED PEDESTRIAN UNDERPASS TYPE-2 UNDERGROUND PLAN-RAINWATER DRAINAGE SYSTEM		
DESIGNED : S.G.H. & CONSULTANTS	CHECKED : BUREAU OF LOCATION & DESIGN	DATE : OCT 2015
SUBMITTED :	(DIRECTOR OF LOCATION & DESIGN BUREAU)	SCALE : AS SHOWN
APPROVED :	(FOR DIRECTOR GENERAL)	DWG NO. SNU-102
REV.	REVISION	SIGNATURE DATE
		SHEET NO. 213

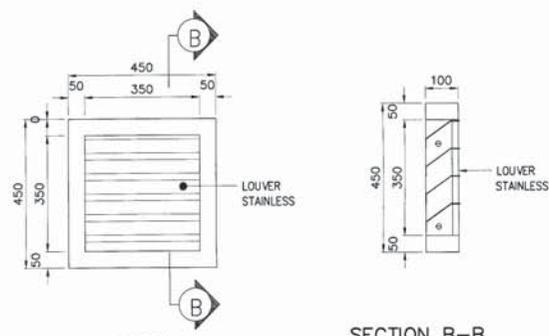
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PLAN OF VENTILATION SYSTEM
SCALE 1:75



SECTION A - A
SCALE 1:75



PLAN SECTION B-B
LOUVER DETAIL
NOT TO SCALE

- NOTE:**
1. ALL DIMENSION ARE IN MILLIMETER UNLESS OTHERWISE INDICATED.
 2. RADIATOR FAN (EF-01) ARE AXIAL FLOW AS FOLLOWING
 - FOR UNDERPASS SIZE 50-60 m.(LONG) SHALL BE CAPACITY 1,017 CFM., DRIVING MOTOR 1 Kw., 220v./1P/50 Hz.
 - FOR UNDERPASS SIZE 70-80 m.(LONG) SHALL BE CAPACITY 1,356 CFM., DRIVING MOTOR 1.5 Kw., 220v./1P/50 Hz.
 3. EXHAUST FANS (EF-02,EF-03) ARE AXIAL FLOW SHALL BE CAPACITY 750 CFM., DRIVING MOTOR 0.5 Kw., 220v./1P/50Hz.

KINGDOM OF THAILAND			
MINISTRY OF TRANSPORT DEPARTMENT OF HIGHWAYS			
STANDARD DRAWING HANDICAPPED PEDESTRIAN UNDERPASS TYPE-2 VENTILATION SYSTEM			
DESIGNED: D.O.H. & CONSULTANTS	CHECKED: BUREAU OF LOCATION & DESIGN	DATE: OCT 2015	
SUBMITTED:	 (DIRECTOR OF LOCATION & DESIGN BUREAU)		SCALE: AS SHOWN
APPROVED:	 (FOR DIRECTOR GENERAL)		DRWG NO. MEU-102 SHEET NO. 215

REF.	REVISION	SIGNATURE	DATE

