

**REPUBLIC OF THE UNION OF MYANMAR
MINISTRY OF CONSTRUCTION
DEPARTMENT OF BRIDGE**

**DETAILED DESIGN STUDY ON
THE BAGO RIVER BRIDGE
CONSTRUCTION PROJECT**

FINAL REPORT ATTACHMENTS

**VOLUME I DRAWINGS
PART II PACKAGE 2**

DECEMBER 2017

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

NIPPON KOEI CO., LTD.

ORIENTAL CONSULTANTS GLOBAL CO., LTD.

METROPOLITAN EXPRESSWAY COMPANY LIMITED.

CHODAI CO., LTD.

NIPPON ENGINEERING CONSULTANTS CO., LTD.

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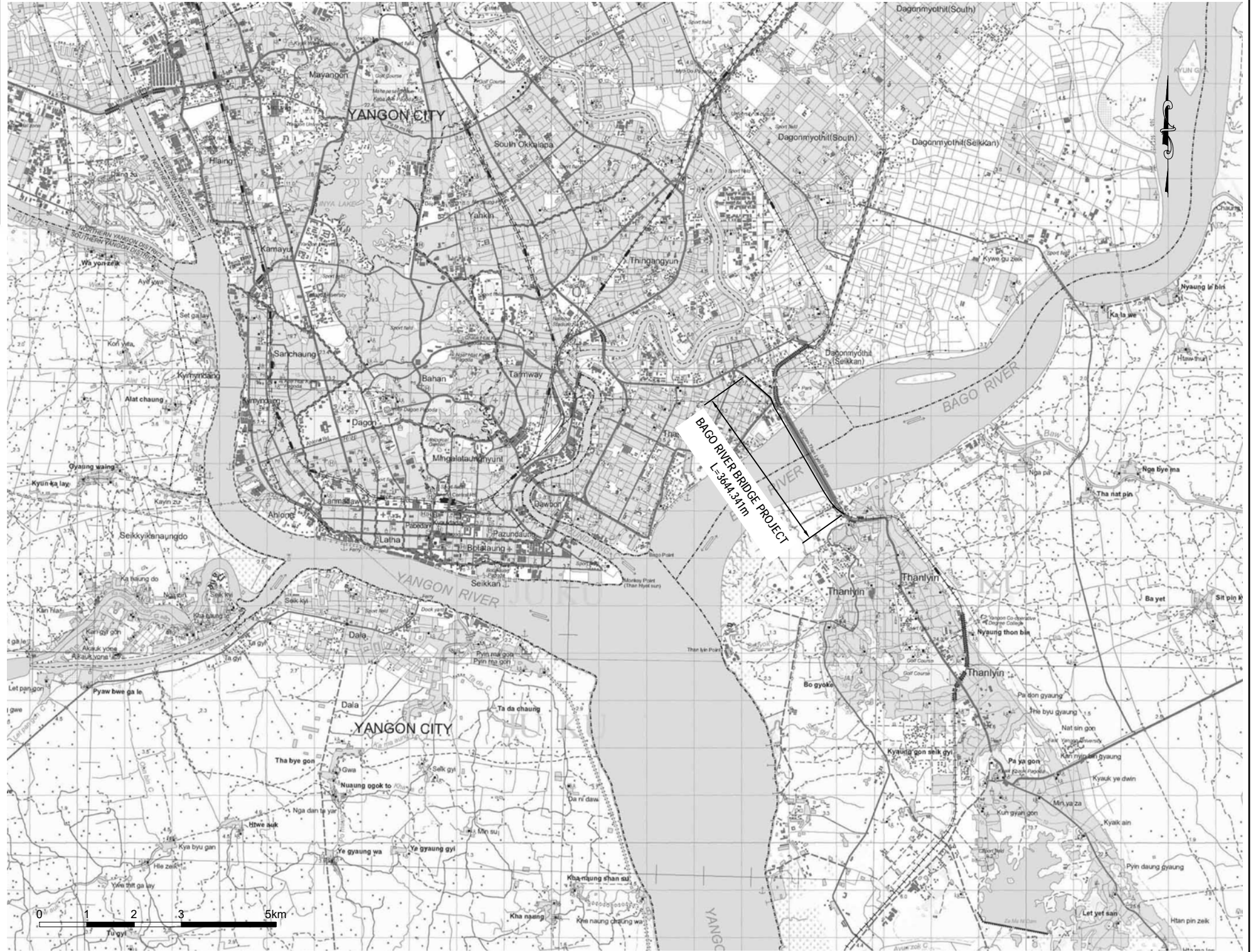
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A. GENERAL

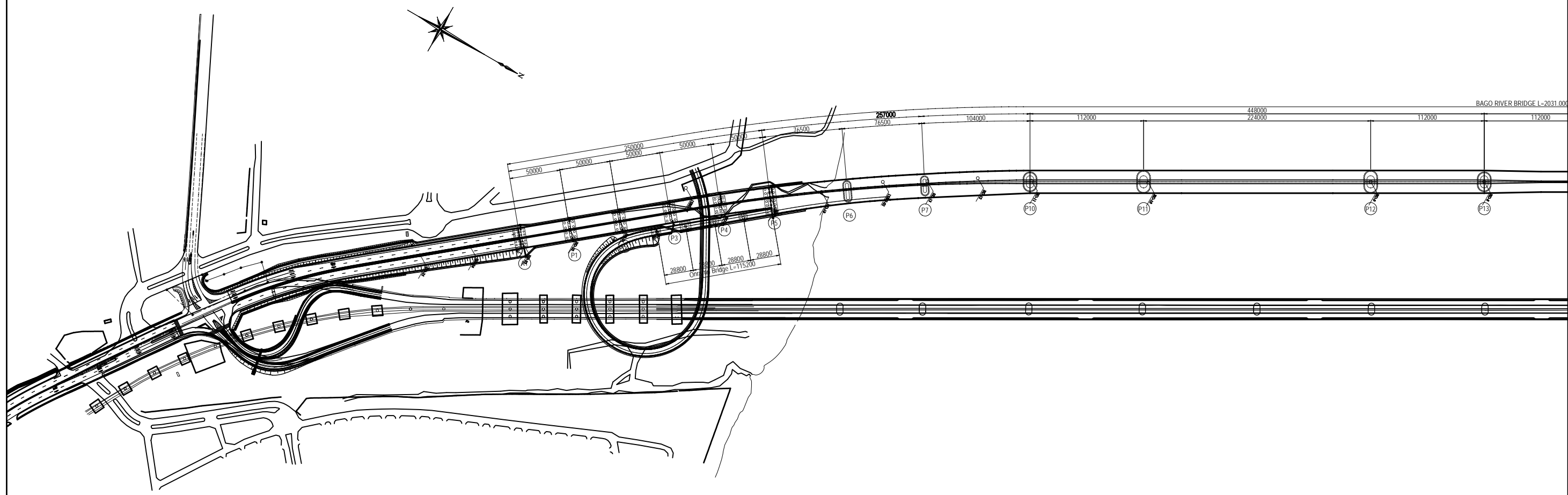
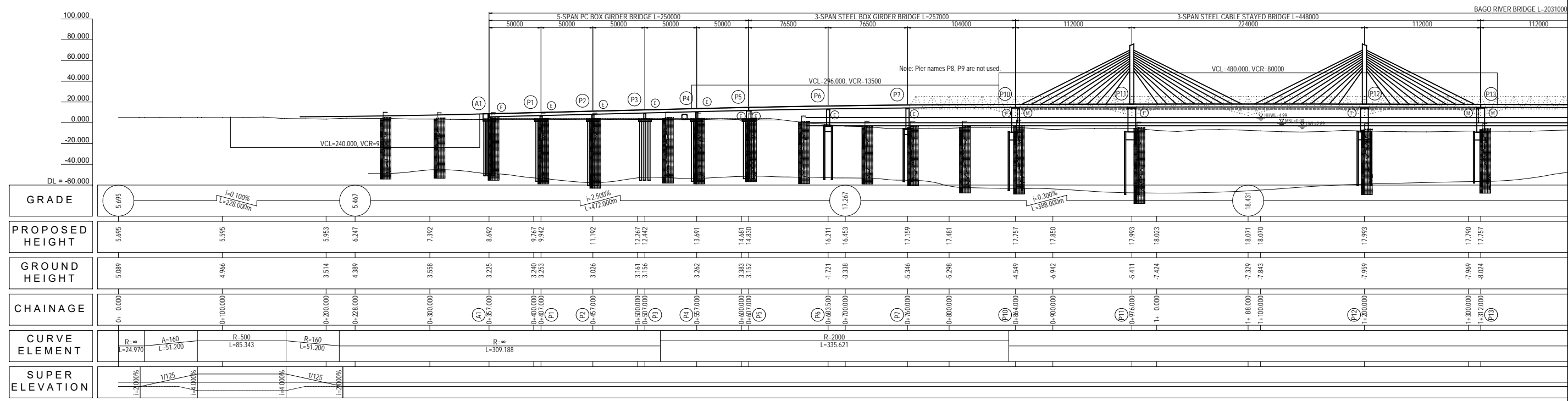


LOCATION MAP

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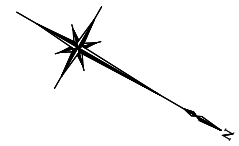
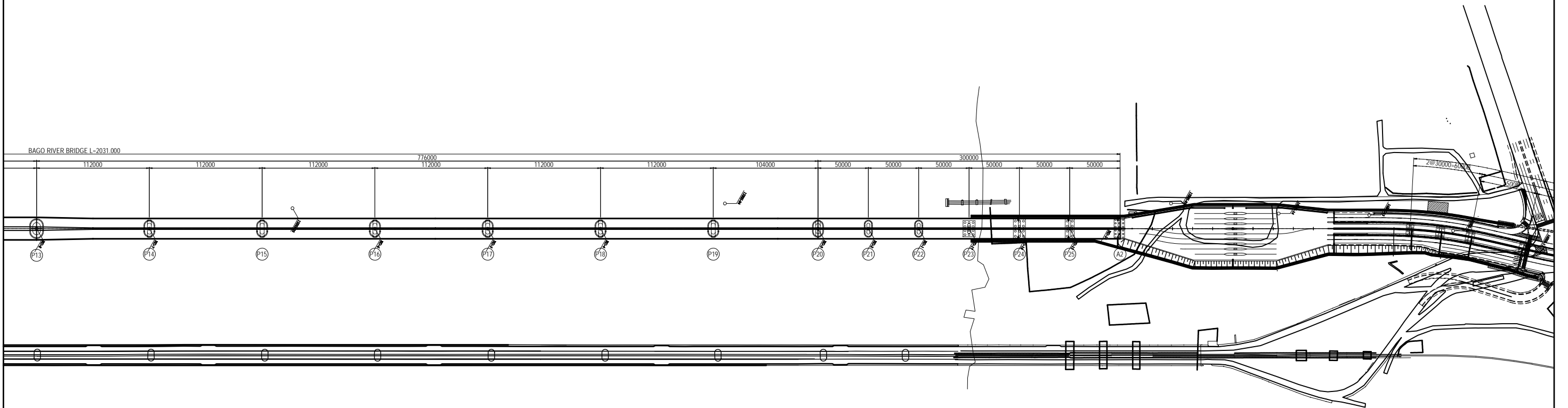
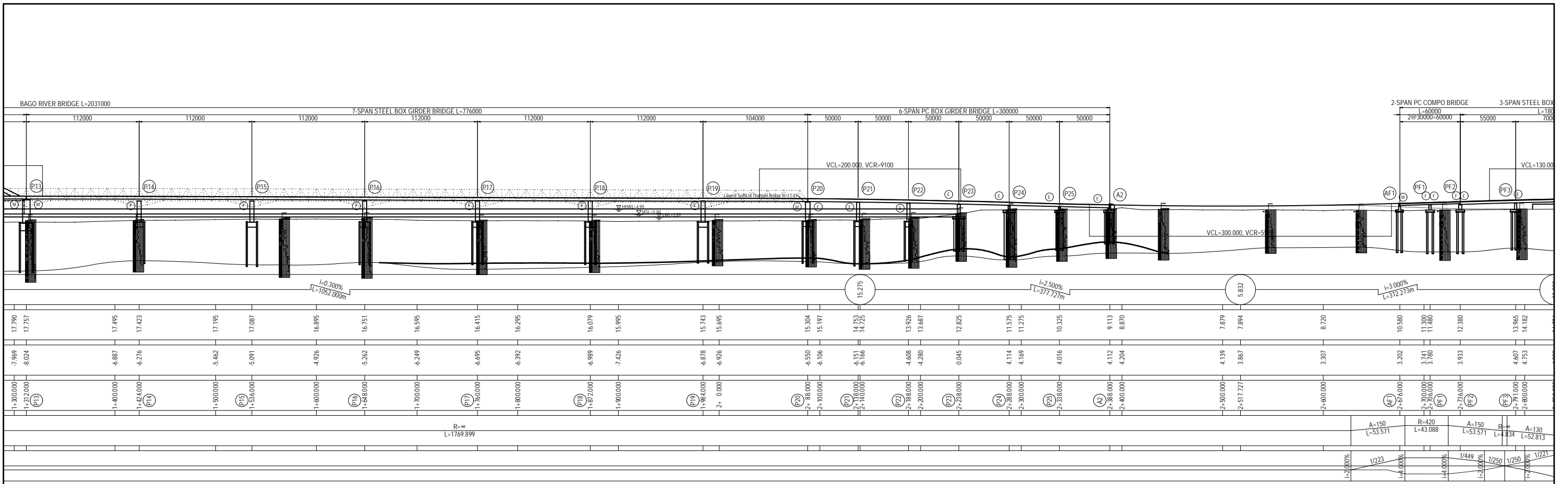


PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE LOCATION MAP	PACKAGE 2 DWG No. P2-GE-0001	
				PREPARED BY	T. HAYAKAWA				15 Sep.2017
				CHECKED BY	T. HAYAKAWA				22 Sep.2017
				APPROVED BY	Y. SANO				29 Sep.2017



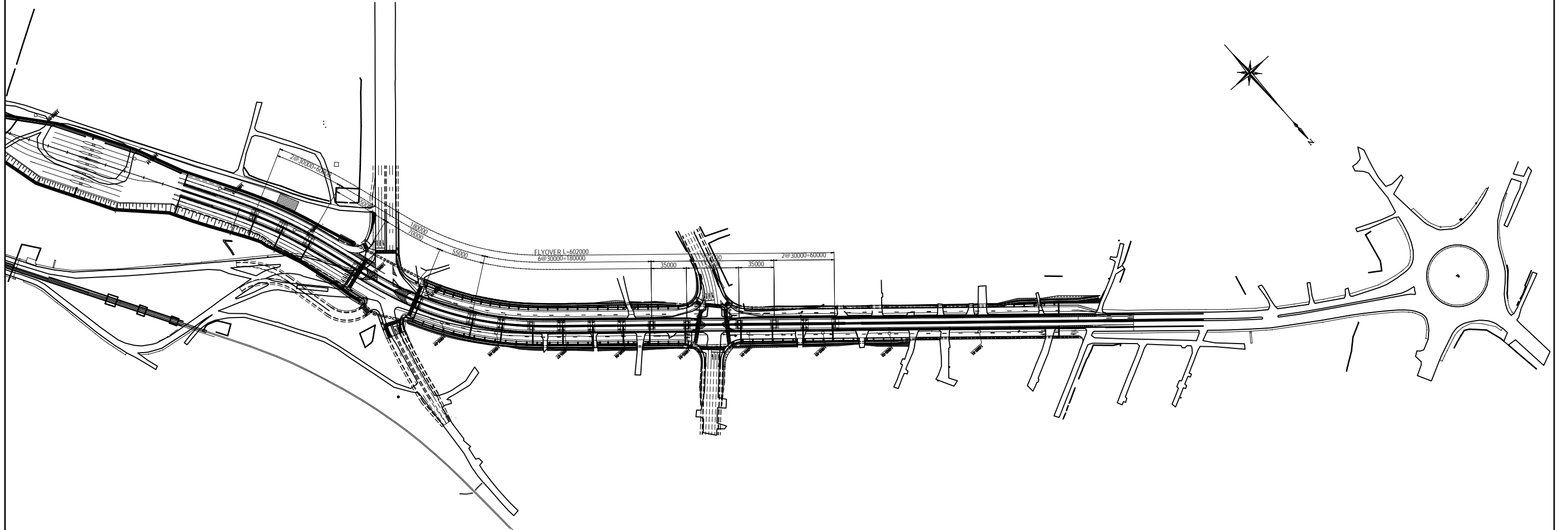
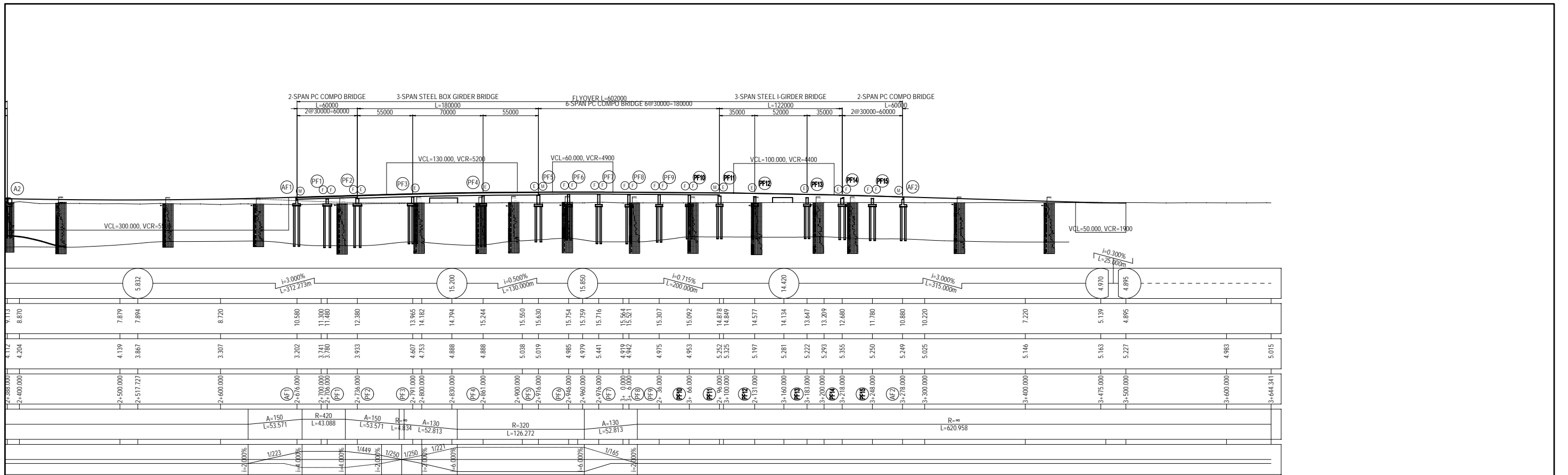
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PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE GENERAL VIEW OF BAGO RIVER BRIDGE (1)	PACKAGE 2 DWG No. P2-GE-0002	
				PREPARED BY	T. HAYAKAWA				27 Nov. 2017
				CHECKED BY	T. HAYAKAWA				28 Nov. 2017
				APPROVED BY	Y. SANO				29 Nov. 2017



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PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE GENERAL VIEW OF BAGO RIVER BRIDGE (2)	PACKAGE 2 DWG No. P2-GE-0003	
				PREPARED BY	T. HAYAKAWA				27 Nov. 2017
				CHECKED BY	T. HAYAKAWA				28 Nov. 2017
				APPROVED BY	Y. SANO				29 Nov. 2017



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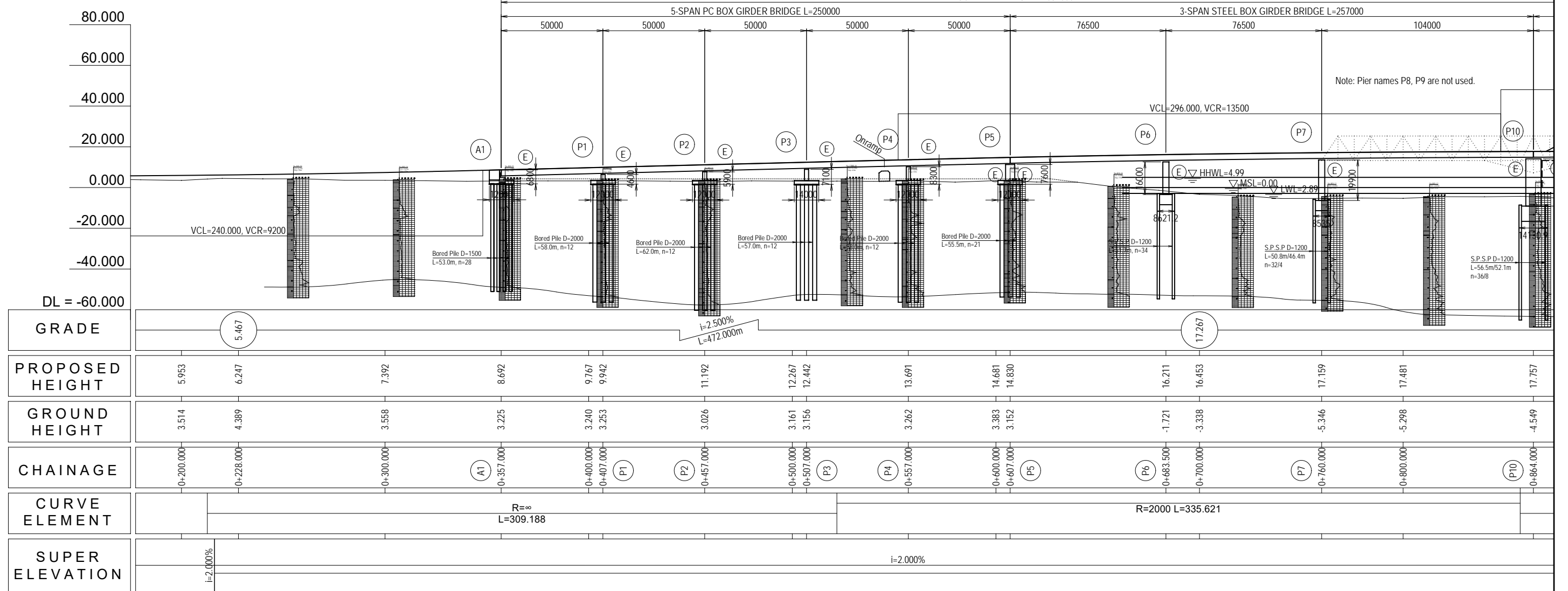
PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE GENERAL VIEW OF BAGO RIVER BRIDGE (3)	PACKAGE 2 DWG No. P2-GE-0004	
				PREPARED BY	T. HAYAKAWA				27 Nov. 2017
				CHECKED BY	T. HAYAKAWA				28 Nov. 2017
				APPROVED BY	Y. SANO				29 Nov. 2017

GENERAL VIEW OF BAGO RIVER BRIDGE (4)

LONGITUDINAL SECTION

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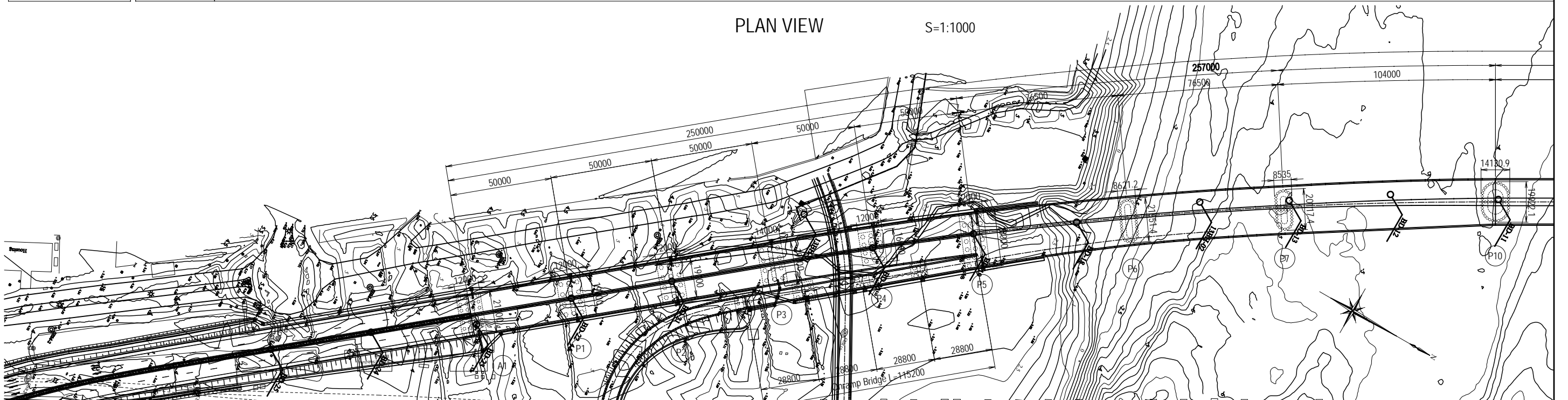
BAGO RIVER BRIDGE L=2031000



Note: Pier names P8, P9 are not used.

PLAN VIEW

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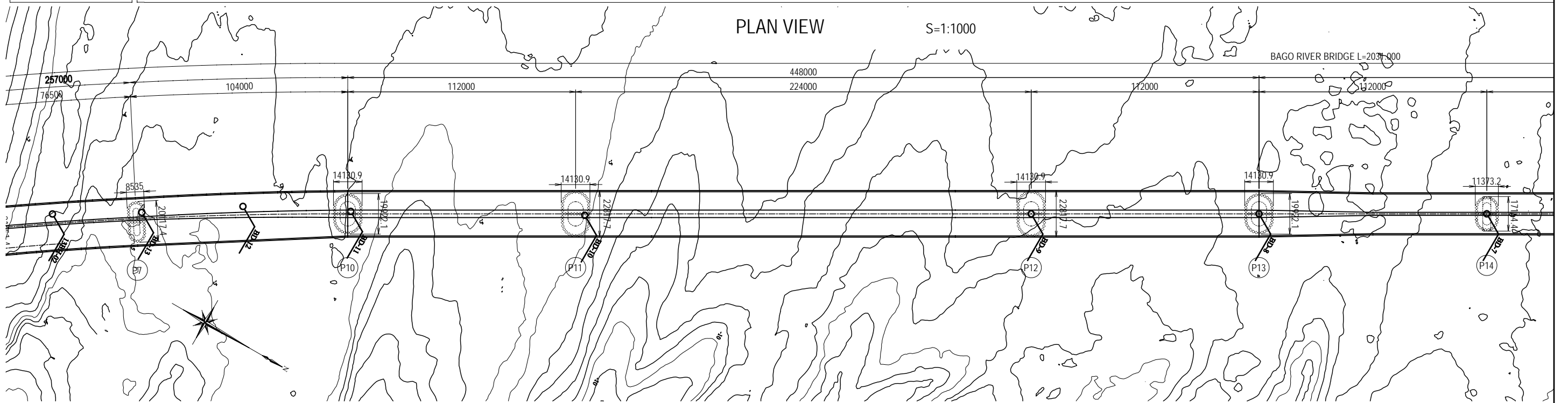
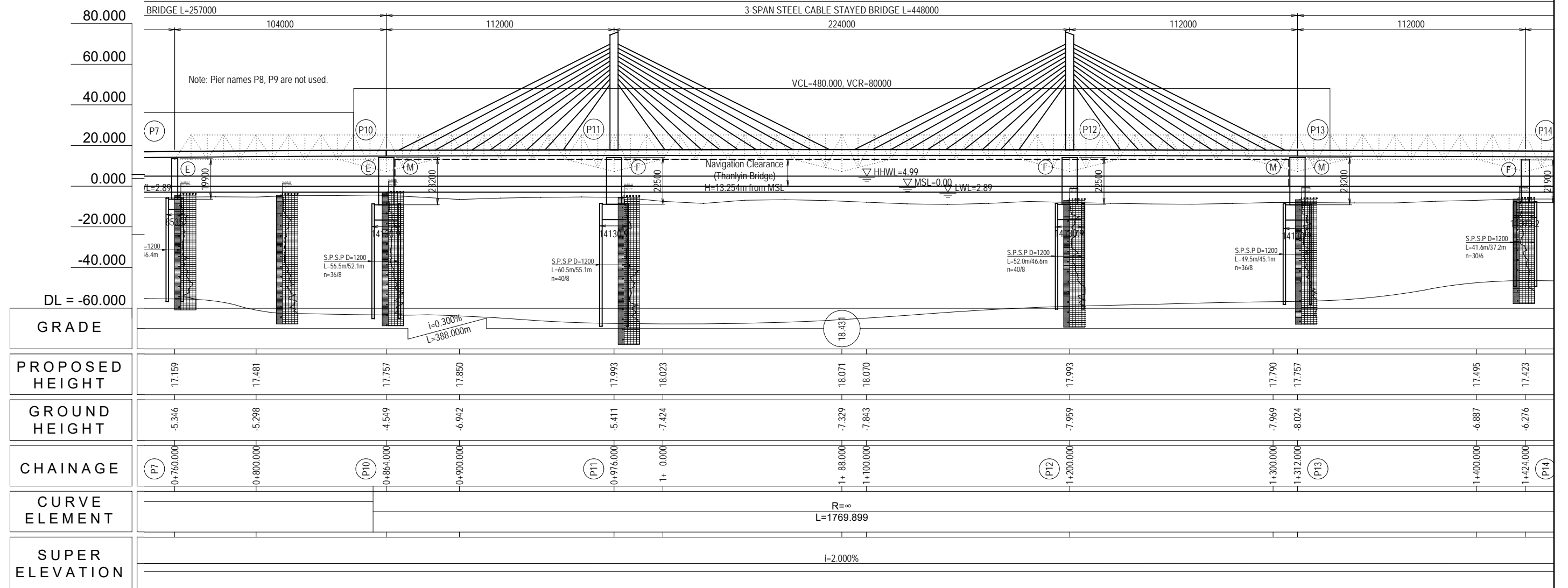
PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE GENERAL VIEW OF BAGO RIVER BRIDGE (4)	PACKAGE 2 DWG No. P2-GE-0005	
				PREPARED BY	T. HAYAKAWA				27 Nov. 2017
				CHECKED BY	T. HAYAKAWA				28 Nov. 2017
				APPROVED BY	Y. SANO				29 Nov. 2017

GENERAL VIEW OF BAGO RIVER BRIDGE (5)

LONGITUDINAL SECTION S=1:1000

BAGO RIVER BRIDGE L=2031000

3-SPAN STEEL CABLE STAYED BRIDGE L=448000



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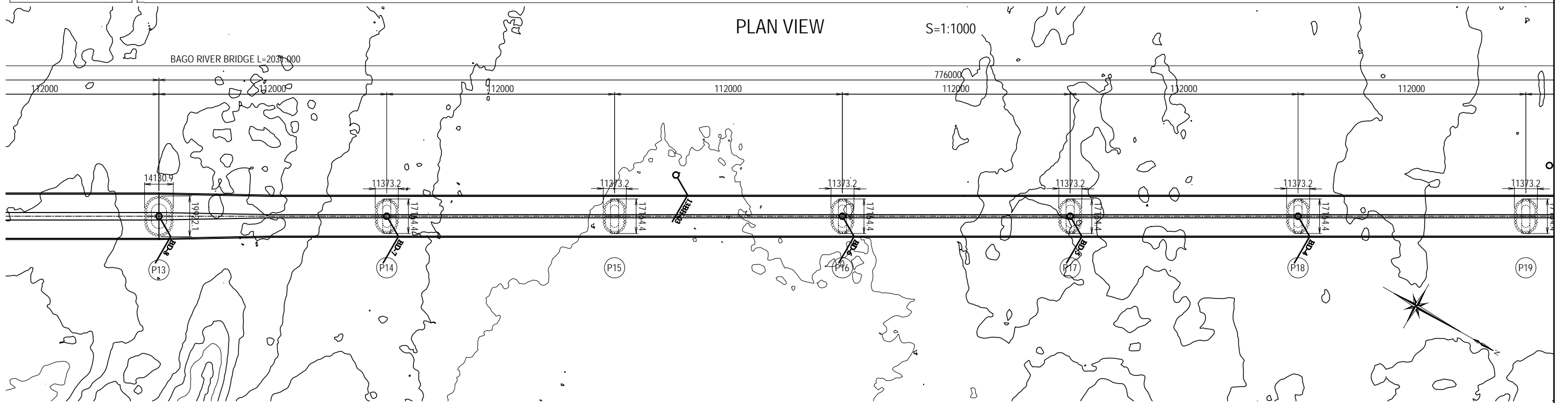
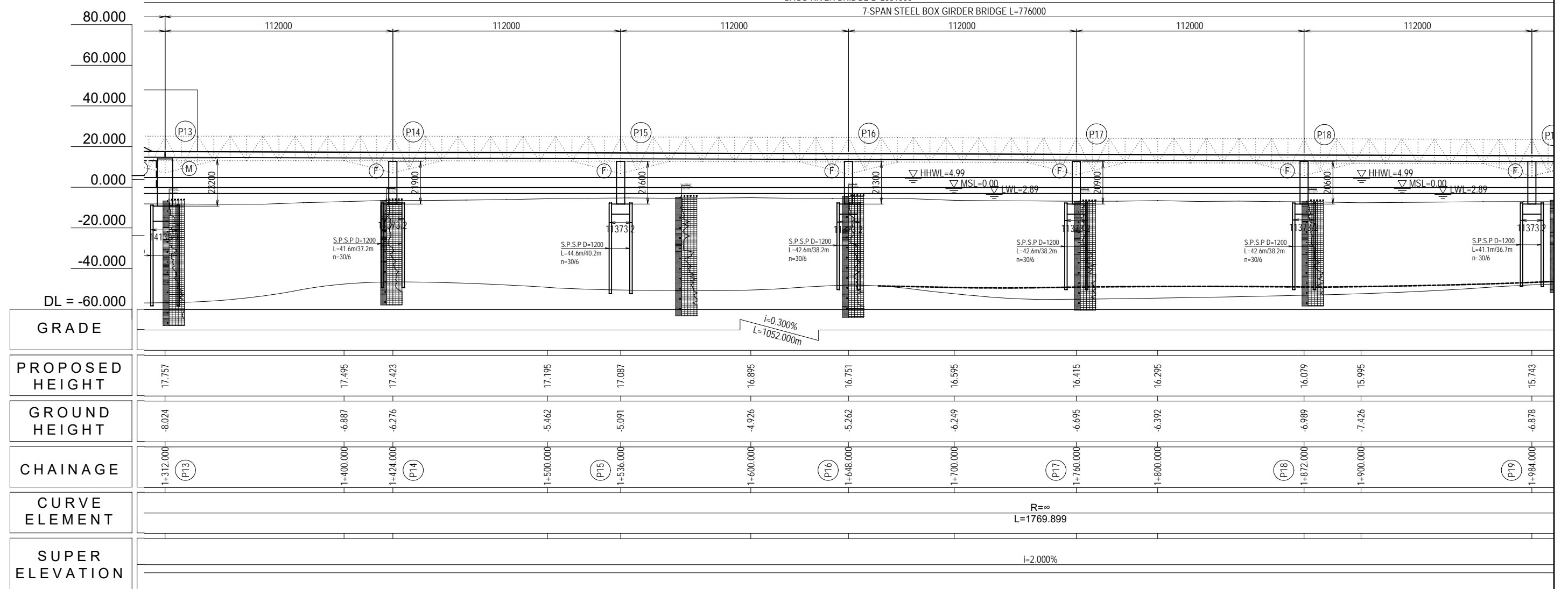
PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE GENERAL VIEW OF BAGO RIVER BRIDGE (5)	PACKAGE 2 DWG No. P2-GE-0006	
				PREPARED BY	T. HAYAKAWA				27 Nov. 2017
				CHECKED BY	T. HAYAKAWA				28 Nov. 2017
				APPROVED BY	Y. SANO				29 Nov. 2017

GENERAL VIEW OF BAGO RIVER BRIDGE (6)

LONGITUDINAL SECTION S=1:1000

BAGO RIVER BRIDGE L=2031000

7-SPAN STEEL BOX GIRDER BRIDGE L=776000



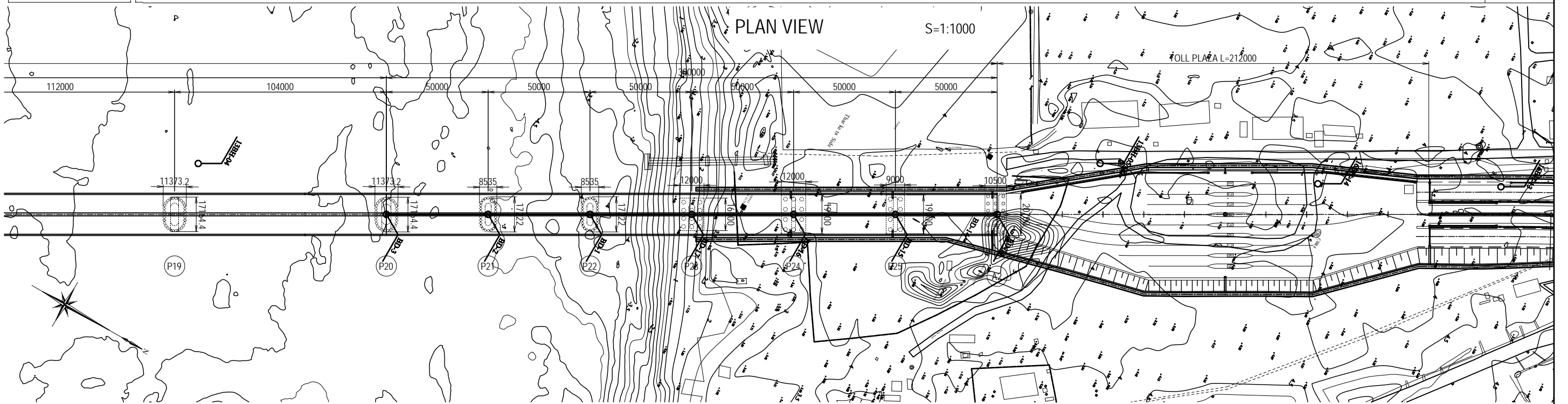
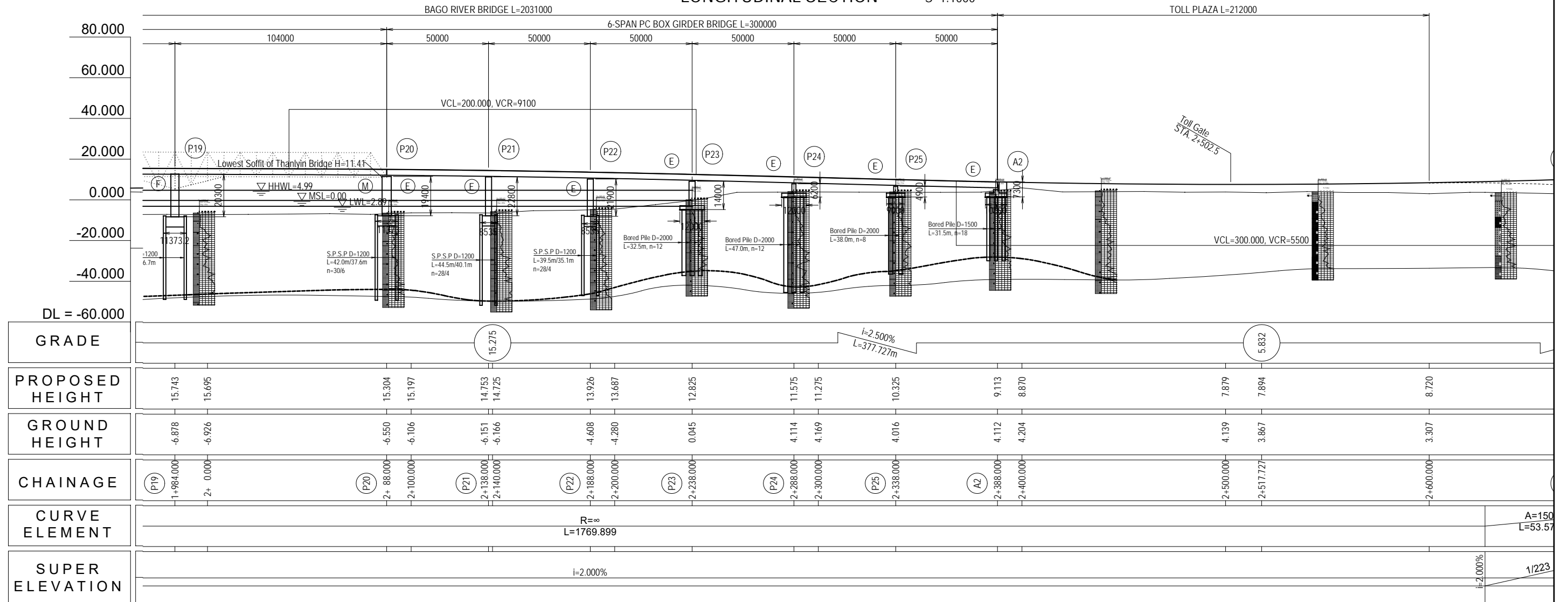
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PROJECT NAME	FINANCED BY	COUNTERPART	JICA STUDY TEAM	NAME	SIGNATURE	DATE	DRAWING TITLE	PACKAGE
DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	T. HAYAKAWA	平川 知邦	27 Nov. 2017	GENERAL VIEW OF BAGO RIVER BRIDGE (6)	2
				T. HAYAKAWA	平川 知邦	28 Nov. 2017		DWG No.
				Y. SANO	佐野 祐一	29 Nov. 2017		P2-GE-0007

GENERAL VIEW OF BAGO RIVER BRIDGE (7)

LONGITUDINAL SECTION

S=1:1000



GENERAL NOTES (ROAD DESIGN)

1.0 SPECIFICATIONS

- 1.1 ALL WORKS SHALL COMPLY WITH THE AASHTO STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, AND WITH THE SPECIAL PROVISIONS & SUPPLEMENTAL SPECIFICATIONS PERTAINING TO THIS PROJECT.

2.0 DIMENSIONS

- 2.1 DISTANCES AND ELEVATIONS SHOWN ON THE PLANS ARE IN METERS (m) UNLESS OTHERWISE SPECIFIED.
2.2 DIMENSIONS OF CULVERTS, BRIDGES AND OTHER STRUCTURES ARE MEASURED AND EXPRESSED IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

3.0 STATIONING

- 3.1 STATIONING OF ROAD, BRIDGE, ELEMENTS OF CURVE FOR BOTH HORIZONTAL AND VERTICAL ALIGNMENTS ARE RECKONED FROM THE ROAD CENTERLINE.
3.2 STATION TICK MARKS ARE SHOWN AT 20m INTERVAL AND STATION LABELS AT 100m INTERVAL. STATIONS ARE SHOWN ALSO AT LOCATIONS OF HORIZONTAL AND VERTICAL GEOMETRY.

4.0 HORIZONTAL AND VERTICAL ALIGNMENT

- 4.1 NO ALTERATION/CHANGE IN ALIGNMENT SHALL BE MADE UNLESS EXISTING FIELD CONDITIONS SO WARRANT AND ONLY UPON APPROVAL OF THE ENGINEER.
4.2 FINISHED GRADE ELEVATIONS SHOWN ON THE PLAN AND PROFILE SHEET REFER TO THE FINISHED GRADE LEVEL AT ROAD CENTERLINE SHOWN ON THE TYPICAL ROADWAY SECTIONS. MODIFICATIONS CAN BE DONE ON DESIGN GRADES AND ELEVATIONS ONLY UPON APPROVAL OF THE ENGINEER.
4.3 GROUND LEVEL SHOWN ON THE PLAN AND PROFILE SHEET REFERS TO THE ELEVATION OF THE ORIGINAL GROUND ALONG THE DESIGN ROAD CENTERLINE.

5.0 ROAD CONNECTIONS AND SHOULDER IMPROVEMENT

- 5.1 ROAD CONNECTIONS SHALL BE CONSTRUCTED BY THE CONTRACTOR AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER IN SUCH MANNER AS TO ENSURE SMOOTH CONNECTION AND GOOD RIDING QUALITY.
5.2 THE SHOULDER STRUCTURE IS ASPHALT CONCRETE WITH VARYING WIDTHS. THE WIDTH MAY BE ADJUSTED DURING CONSTRUCTION TO SUIT EXISTING FIELD CONDITION UPON APPROVAL OF THE ENGINEER.

6.0 REMOVAL OF EXISTING UTILITIES, STRUCTURES AND OBSTRUCTIONS

- 6.1 ALL WORKS SHALL COMPLY WITH THE REQUIREMENTS AND CONDITIONS OF CONTRACT OF THE MINISTRY OF CONSTRUCTION.
6.2 EXTREME PRECAUTION SHALL BE EXERCISED BY THE CONTRACTOR NOT TO DAMAGE ANY PORTION OF EXISTING UTILITIES DURING CONSTRUCTION. ANY DAMAGE THEREOF SHALL BE REPAIRED OR COMPENSATED ON THE ACCOUNT OF THE CONTRACTOR.

7.0 DRAINAGE STRUCTURES

- 7.1 EXACT LOCATIONS, SLOPES, OUTFALLS, AND INVERT ELEVATIONS OF DRAINAGE STRUCTURES SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR BEFORE MAKING ANY REMOVAL OR IMPROVEMENT. MINOR ADJUSTMENTS MAY BE MADE TO SUIT ACTUAL FIELD CONDITIONS UPON APPROVAL OF THE ENGINEER.
7.2 EXISTING DRAINAGE STRUCTURES THAT ARE FAULTY, BROKEN DOWN, OR NOT IN GOOD WORKING CONDITION SHALL BE DETERMINED IN THE FIELD. RECONSTRUCTION, REPAIR AND/OR REPLACEMENT OF SAME SHALL BE DIRECTED BY THE ENGINEER, AND SHALL CONFORM TO THE STANDARDS SHOWN IN THE DRAWINGS.
7.3 EXISTING DRAINAGE STRUCTURES OR PARTS THEREOF REMOVED BY THE CONTRACTOR THAT ARE STILL SERVICEABLE SHALL BE TURNED OVER TO THE GOVERNMENT AND SHALL BE DEPOSITED AT A PLACE DESIGNATED BY THE ENGINEER WITHOUT ANY EXTRA COMPENSATION. EXTREME PRECAUTIONS SHALL BE EXERCISED BY THE CONTRACTOR NOT TO DAMAGE THESE MATERIALS DURING THE REMOVAL AND HANDLING OPERATION.
7.4 PRIOR TO INSTALLATION OF PIPE CULVERTS AND OTHER DRAINAGE STRUCTURES, ALL MATERIALS SHALL BE TESTED TO CHECK ANY DEFECT AND CONFORMITY WITH TECHNICAL SPECIFICATIONS.
7.5 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF MATERIALS INSTALLED AND FOUND TO BE DEFICIENT IN WORKMANSHIP AND QUALITY.
7.6 INLETS AND OUTLETS OF NEW AND OPERATIONAL EXISTING CULVERTS SHALL BE CHANNELIZED AND CLEARED OF DEBRIS AND OBSTRUCTIONS. THIS SHALL BE CONSIDERED AS SUBSIDIARY WORK OF OTHER DRAINAGE PAY ITEMS.
7.7 ANY REVISION, REMOVAL, CLEANING, UNCLOGGING AND/OR RE-LAYING OF DRAINAGE STRUCTURES AS DIRECTED BY THE ENGINEER TO SUIT EXISTING FIELD CONDITION SHALL BE CONSIDERED AS SUBSIDIARY WORK PERTAINING TO OTHER CONTRACT ITEMS. NO DIRECT PAYMENT SHALL BE MADE FOR THIS WORK UNLESS OTHERWISE SPECIFICALLY IDENTIFIED FOR PAYMENT IN THE BID SCHEDULE.

8.0 OPEN DITCHES (LINED CANAL AND EARTH DITCH)

- 8.1 ALL DITCHES SHALL COMPLY WITH THE REQUIRED STANDARDS.
8.2 INVERT ELEVATIONS AND EXACT LOCATION AND DIMENSION OF OPEN DITCHES MAYBE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

9.0 MISCELLANEOUS STRUCTURES

- 9.1 LOCATION AND LENGTH OF GUARDRAILS, SLOPE PROTECTIONS SUCH AS GROUTED RIPRAP, STONE MASONRY RETAINING WALLS AND OTHER STRUCTURES ARE SUBJECT TO ADJUSTMENT TO SUIT EXISTING FIELD CONDITIONS UPON APPROVAL OF THE ENGINEER.
9.2 GROUTED RIPRAP AND/OR RIPRAP, STONE MASONRY SHOULD BE WELL CONSTRUCTED AS SPECIFIED IN THE STANDARD SPECIFICATION FOR THE SAID ITEM.
9.3 CUT SLOPE CONSTRUCTION SHALL BE DONE AT PACE WITH EMBANKMENT CONSTRUCTION TO AVOID SLIDING OF FILL MATERIALS.

10.0 OTHERS

- 10.1 ALL SCHEDULES/LISTINGS FOR GUARDRAILS, SLOPE PROTECTION STRUCTURES, PAVEMENT MARKINGS, ROAD SIGNS AND ALL OTHER RELATED SCHEDULES/LISTINGS SHOWN ON THE PLANS ARE SUBJECT TO ADJUSTMENT/MODIFICATION TO SUIT ACTUAL FIELD CONDITION. THE ENGINEER MAY ORDER IN WRITING THE CONSTRUCTION/INSTALLATION OF NEW STRUCTURES/OR MISCELLANEOUS ITEMS IF IN HIS OPINION IS DEEMED NECESSARY IN ADDITION TO THE APPROVED SCHEDULES AND LISTINGS.
10.2 ADEQUATE ROAD SIGNAGE AND SAFETY PRECAUTION SHALL BE PROVIDED TO INFORM, WARN AND ALERT MOTORISTS DURING CONSTRUCTION.

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY  JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART  REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM  NIPPON KOEI CO., LTD.  ORIENTAL CONSULTANTS GLOBAL CO., LTD.  METROPOLITAN EXPRESSWAY COMPANY LIMITED  CHODAI CO., LTD.  NIPPON ENGINEERING CONSULTANTS CO.,LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE GENERAL NOTES (ROAD DESIGN)	PACKAGE	
				PREPARED BY	T. HAYAKAWA			15 Sep.2017	2
				CHECKED BY	T. HAYAKAWA			22 Sep.2017	DWG No.
			APPROVED BY	Y. SANO		29 Sep.2017		P2-GE-1011	

GENERAL NOTES (STEEL BOX GIRDER BRIDGE)

1. GENERAL DESCRIPTION

- 1) A bridge with 4-lane road with width 3.5m/lane have been provided.
- 2) All drawings are to be read in conjunction with the technical specification.
- 3) All chainages, coordinates and elevations are shown in meter.
- 4) All dimensions are shown in millimeters.
- 5) WGS84 UTM coordinate system is applied.
- 6) Vertical control is based on the BM. 76097 established by Myanmar Survey Department.

2. DESIGN CODES

The structure shall be designed in accordance with Specifications for Highway Bridges of Japan Road Associations (JSHB, 2012).

3. DESIGN LOADS

- 1) Dead loads
- 2) Live loads
AASHTO HL-93
- 3) Effect of temperature
+10°C to +40°C (25°C ± 15°C)
- 4) Wind load
W=44.7m/sec
- 5) Effect of earthquake
Horizontal seismic coefficient K=0.30
- 6) Earth pressure
- 7) Water pressure
- 8) Buoyant Force
- 9) Collision Load

4. RIVER CONDITION

	Elevation	Remarks
High Water Level (H.W.L.)	MSL +4.990	100 year flood
H.W.L. for temporary work	MSL +4.340	5 year flood
Low Water Level (L.W.L.)	MSL -2.39	Designed River Bed Level
River Bed Level	P14 MSL-6.276m	
	P15 MSL-5.091m	
	P16 MSL-5.262m	
	P17 MSL-6.695m	
	P18 MSL-6.989m	
	P19 MSL-6.878m	

5. CONCRETE

- 1) Unless otherwise indicated the strength of concrete shall be of the following grade based on 28 days cylinder strength.

Strength (MPa)	Structural member
30	Pier head and column : P14 through P19
24	RC concrete: concrete curb, foundation of lighting pole, connection with expansion joint Footing : P14 through P19
21	Seal concrete (Bottom slab concrete, Filling inside of SPSP)

- 2) All exposed edges of concrete shall be chamfered 20x20 mm unless noted otherwise.

6. REINFORCEMENT

- 1) Unless otherwise indicated reinforcement bar shall be high strength deformed bar confirming to the requirement of JIS G 3112.

Class	Yield point or 0.2% proof stress (MPa)	Tensile stress (MPa)	Structural member
SD390	>>390	>>560	Pier column axial rebar :P14 through P29
SD345	>>345	>>490	Superstructure, substructure, Stud rebar

- 2) Clear cover to reinforcement as follows unless otherwise stated on the component of drawings.

Structural member	Cover (mm)
Footing, Pier	70
Pier beam	50
Concrete curb etc.	30

- 3) Minimum requirements for development length and lap length for reinforcement bar shall be comply to the JSHB. Mechanical splice shall be used for the connection of reinforcement bars 35mm of diameter or exceeded instead of lap joint.

		SD345									
Diameter		D13	D16	D19	D22	D25	D29	D32	D35	D38	
Length la (mm)	$\sigma=40\text{N/mm}^2$	330	400	480	550	630	730	800	1160		
	$\sigma=36\text{N/mm}^2$	340	420	500	580	660	760	840	1210		
	$\sigma=30\text{N/mm}^2$	370	450	530	620	700	810	890	980	1060	
	$\sigma=24\text{N/mm}^2$	410	510	600	690	790	910	1010	1100	1190	
		SD390									
	$\sigma=30\text{N/mm}^2$	420	520	610	710	800	930	1030	1120	1220	
	$\sigma=24\text{N/mm}^2$	470	580	690	790	900	1050	1150	1260	1370	

7. STRUCTURAL STEEL

Structural steel for steel box girder shall comply with the below, unless otherwise indicated on the drawings.

Standard	Designation(Class)	Structural Member
JIS G 3101	SS400	Fabricated steel for main girder
JIS G 3106	SM400	Ditto
	SM490Y	Ditto
	SM520	Ditto
	SM570	Ditto
	SM570	Ditto
	SM570-H	Ditto
JS G 3444	STK400	Shapes
	STK490	Shapes
*	S10T	High strength bolt for splice joints
JIS B 1186	F8T	Galvanized high strength bolt
	F10T	High strength bolt

* Applied to Technical Specification

8. STEEL PIPE SHEET PILE

- 1) Unless otherwise indicated steel pipe sheet pile shall be confirming to the requirement of JIS A 5530 or JIS G 3444.

Class	Yield point or proof stress (MPa)	Tensile stress (MPa)	Structural member
SKY490	>>315	>>490	Steel pipe sheet pile
SKY400	>>235	>>400	Steel pipe sheet pile
STK400	>>235	>>400	Joint pipe for steel pipe sheet pile

9. OTHER STRUCTURE

- 1) Bearings and Anchor bars shall satisfy the requirement of the force and displacement stated on the Drawings.
- 2) Expansion joint shall satisfy the requirement of the displacement stated on the Drawings.

PROJECT NAME	FINANCED BY	COUNTERPART	JICA STUDY TEAM	NAME	SIGNATURE	DATE	DRAWING TITLE	PACKAGE
DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO.,LTD. NIPPON ENGINEERING CONSULTANTS CO.,LTD.	S. IMADA		15 Jun.2017	GENERAL NOTES (STEEL BOX GIRDER BRIDGE)	2
				T. HAYAKAWA		20 Jun.2017		DWG No.
				Y. SANO		21 Jun.2017		P2-GE-1021

GENERAL NOTES (PC BOX GIRDER BRIDGE)

1. GENERAL DESCRIPTION

- 1) A bridge with 4-lane road with width 3.5m/lane have been provided.
- 2) All drawings are to be read in conjunction with the technical specification.
- 3) All chainages, coordinates and elevations are shown in meter.
- 4) All dimensions are shown in millimeters.
- 5) WGS84 UTM coordinate system is applied.
- 6) Vertical control is based on the BM. 76097 established by Myanmar Survey Department.
- 7) Dimensions shown in the drawing are ones after the period of calculation of creep and/or shrinkage.

2. DESIGN CODES

The structure shall be designed in accordance with Specifications for Highway Bridges of Japan Road Associations (JSHB, 2012).

3. DESIGN LOADS

- 1) Dead loads
- 2) Live loads
AASHTO HL-93
- 3) Shrinkage and creep
- 4) Effect of temperature
+10°C to +40°C (25°C ± 15°C)
- 5) Wind load
W=44.7m/sec
- 6) Effect of earthquake
Horizontal seismic coefficient K=0.30
- 7) Earth pressure
- 8) Water pressure
- 9) Buoyant Force

4. RIVER CONDITION

	Elevation	Remarks
High Water Level (H.W.L.)	MSL +4.990	100 year flood
H.W.L. for temporary work	MSL +4.340	5 year flood
Low Water Level (L.W.L.)	MSL -2.39	Designed River Bed Level
River Bed Level	A1 N/A	
	A2 side or P20~P22 MSL -7.490	

5. CONCRETE

- 1) Unless otherwise indicated the strength of concrete shall be of the following grade based on 28 days cylinder strength.

Strength (MPa)	Structural member
50	Precast segment & CIP portion for PC box girder
40	Main girder for PC-I GIRDER
30	RC CIP slab, crossbeam and connection for PC-I girder Pier head and column : P4 through P23 Cast-In-Place RC pile
24	RC concrete: general, wheel guard.... Abutment A1 , A2 and AO1 Pier for P1 to P3,P24,P25,PO1 to PO3 Footing : P4 through P23
21	Seal concrete (Bottom slab concrete, Filling inside of SPSP)
18	Blinding concrete, etc

- 2) Grouting mortar with $f_{Dck} = 45\text{MPa}$ is used .
- 3) All exposed edges of concrete shall be chamfered 20x20 mm unless noted otherwise.

6. REINFORCEMENT

- 1) Unless otherwise indicated reinforcement bar shall be high strength deformed bar confirming to the requirement of JIS G 3112.

Class	Yield point or 0.2% proof stress (MPa)	Tensile stress (MPa)	Structural member
SD390	>>390	>>560	Pier column axial rebar :P4 through P23
SD345	>>345	>>490	Superstructure, substructure, Stud rebar
SD295	>>295	>>440	Accessories (saddle)

- 2) Clear cover to reinforcement as follows unless otherwise stated on the component of drawings.

Structural member	Cover (mm)
Cast in situ pile	120
Pile cap	70
Pier, abutment and approach slab	70
Pier beam	50
Main girder	35
Slab, wheel guard	30

- 3) Minimum requirements for development length and lap length for reinforcement bar shall be comply to the JSHB. Mechanical splice shall be used for the connection of reinforcement bars 35mm of diameter or exceeded instead of lap joint.

		SD345									
Diameter		D13	D16	D19	D22	D25	D29	D32	D35	D38	
Length la (mm)	$\sigma = 40\text{N/mm}^2$	330	400	480	550	630	730	800	1160		
	$\sigma = 36\text{ N/mm}^2$	340	420	500	580	660	760	840	1210		
	$\sigma = 30\text{ N/mm}^2$	370	450	530	620	700	810	890	980	1060	
	$\sigma = 24\text{ N/mm}^2$	410	510	600	690	790	910	1010	1100	1190	
		SD390									
Length la (mm)	$\sigma = 30\text{N/mm}^2$	420	520	610	710	800	930	1030	1120	1220	
	$\sigma = 24\text{ N/mm}^2$	470	580	690	790	900	1050	1150	1260	1370	

7. PRESTRESSING STEEL

- 1) Unless otherwise indicated prestressing steel shall be low relaxation strand confirming to the requirement of JIS G 3536 or JIS G 3109.

Class	Grade	Structural member
19S15.2mm ECF strand	SWPR7BL	External tendon for PC box girder
12S15.2mm strand	SWPR7BL	Internal tendon for PC box girder(longitudinal)
3S12.7mm strand	SWPR7BL	Internal tendon for PC box girder(transverse)
4S15.2mm strand	SWPR7BL	Internal tendon for PC box girder(crossbeam)
$\phi 32$ bar	SWPR930/1080	Internal tendon for PC box girder(crossbeam)
12S12.7mm strand	SWPR7BL	Internal tendon for PC-I girder(longitudinal)
1S19.3mm strand	SWPR7A	Internal tendon for precast PC panel of PC -I girder
$\phi 32$ bar	SWPR930/1080	Internal tendon for PC-I girder(crossbeam)

8. STEEL PIPE SHEET PILE

- 1) Unless otherwise indicated steel pipe sheet pile shall be confirming to the requirement of JIS A 5530 or JIS G 3444.

Class	Yield point or proof stress (MPa)	Tensile stress (MPa)	Structural member
SKY490	>>315	>>490	Steel pipe sheet pile
SKY400	>>235	>>400	Steel pipe sheet pile
STK400	>>235	>>400	Joint pipe for steel pipe sheet pile

9. OTHER STRUCTURE

- 1) Bearings and Anchor bars shall satisfy the requirement of the force and displacement stated on the Drawings.
- 2) Expansion joint shall satisfy the requirement of the displacement stated on the Drawings.

















Note : This general notes is not applicable to the following structures;

- Cable stayed bridge
- Piers P10 through P13

PROJECT NAME	FINANCED BY	COUNTERPART	JICA STUDY TEAM	NAME	SIGNATURE	DATE	DRAWING TITLE	PACKAGE
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				CHECKED BY T. HAYAKAWA		20 Jun.2017		DWG No.
				APPROVED BY Y. SANO		21 Jun.2017		P2-GE-1031

GENERAL NOTES (LIGHTING)

LEGEND



























-  : Concrete pole
-  : Steel pole
-  : Traffic signal controller
-  : Vehicle traffic signal
-  : Arrow sign traffic signal
-  : Pedestrian signal
-  : Push-button switch
-  : Junction box
-  : Power supply box
-  : Pull box
-  : Hand hole
-  : Raising underground pipe
-  : Base mounted pole signal head pole (with arm)
-  : Pedestrian signal head pole (with push-button)
-  : Underground piping
-  : Underground wiring
- SVV : Control -use vinyl insulated vinyl sheathed cable
- IV : Indoor PVC
- E : Grounding
- G : Vehicle traffic signal : Green light
- Y : Vehicle traffic signal : Yellow light
- R : Vehicle traffic signal : Red light
- A : Arrow traffic signal : Green light
- PG : Pedestrian signal lamp : Green light
- PR : Pedestrian signal lamp : Red light
- COM : Common for all indication

GENERAL NOTES

1. THE ELECTRICAL WORKS SHALL BE DONE UNDER THE DIRECT SUPERVISION OF THE DUTY REGISTERED ELECTRICAL ENGINEER.
2. THE CONTRACTOR SHALL SECURE ALL PERMITS AND PAY ALL FEES REQUIRED FOR ELECTRICAL INSTALLATION WORKS AND FURNISH THE OWNER, THROUGH THE ENGINEER, THE FINAL CERTIFICATE OF ELECTRICAL INSPECTION AND APPROVAL FROM PROPER GOVERNMENT AUTHORITIES FOR THE COMPLETE ELECTRICAL WORKS.
3. ALL ELECTRICAL MATERIALS TO BE USED SHALL BE BRAND NEW AND APPROVED TYPES.
4. ALL UNDERGROUND CONDUIT PIPES AND CONDUIT RUN EMBEDDED IN CONCRETE SHALL BE HIGH-DENSITY POLYETHYLENE (HDPE)..
5. UNPROTECTED CONDUIT RISERS AND EXPOSED CONDUIT SHALL BE GAS PIPE(GP).
6. ALL CONDUIT RUN SHALL BE PROVIDED WITH A 14mm² BARE COPPER GROUND WIRE AND SHALL BE TERMINATED AT MAIN DISTRIBUTION PANEL BOARD, ALL EQUIPMENT, METALLIC PARTS AND SURFACES SHALL BE EFFECTIVELY GROUNDED.
7. ALL STREET LUMINAIRE ASSEMBLIES INCLUDING POLES SHALL WITHSTAND UP TO 180 KpH GUSTING WINDS WITHOUT PERMANENT DEFORMATION.
8. THE ELECTRICAL SERVICE VOLTAGE FOR THAKETA SIDE SHALL BE 11KV/240V SECONDARY, 3-PHASE 4 WIRE, 50 HERTZ AC.
9. THE ELECTRICAL SERVICE VOLTAGE FOR THANLYIN SIDE SHALL BE 6.6KV/240V SECONDARY, 3-PHASE 4 WIRE, 50 HERTZ AC.
10. THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN REMOVING EXISTING INSTALLATIONS, APPROPRIATE TOOLS AND EQUIPMENT SHALL BE UTILIZED TO MINIMIZED DAMAGE.
11. ALL FEEDER LINES AND BRANCH CIRCUITS SHALL BE INSTALLED AS INDICATED ON PLANS, INDIVIDUAL FEEDER AND BRANCH CIRCUIT AND HOMERUNS SHALL NOT BE COMBINED IN THE SAME RACEWAY UNLESS SPECIFIED.
12. LOCATIONS OF ELECTRICAL EQUIPMENT AND DEVICES INCLUDING CONDUIT ROUTINGS SHOWN IN THE DRAWINGS ARE APPROXIMATE LOCATION ONLY. CONTRACTOR SHALL ALLOW FOR NECESSARY FIELD ADJUSTMENTS TO SUIT ACTUAL CONDITION AT SITE.
13. SUBMIT COMPLETE TECHNICAL TECHNICAL SPECIFICATIONS OF MATERIALS/EQUIPMENTS AND SHOP DRAWINGS FOR APPROVAL BY THE ENGINEER PRIOR TO START OF INSTALLATION.

ABBREVIATIONS:

- A : AMPERE
- AC : ALTERNATING CURRENT
- AF : AMPERE FRAME
- AT : AMPERE TRIP
- BCW : BARE COPPER WIRE
- C : CONDUIT
- CB : CIRCUIT BREAKER
- CHH : COMMUNICATION HANDHOLE
- CT : CURRENT TRANSFORMER
- DF : DEMAND FACTOR
- DIA : DIAMETER
- ECB : ENCLOSED CIRCUIT BREAKER
- EHH : ELECTRICAL HANDHOLE
- EL : ELEVATION
- (GND) : GROUND
- ATS : AUTOMATIC TRANSFER SWICH
- HID : HIGH INTENSITY DISCHARGE LAMP
- HZ : HERTZ
- IMC : INTERMEDIATE METAL CONDUIT
- IND'L : INDUSTRIAL
- KVA : KILOVOLT AMPERE
- KW : KILOWATT
- KWHR : KILOWATT HOUR
- KAIC : KILOAMPERE INTERRUPTIG CAPACITY
- LED : LIGHT EMITTING DIODE
- LP : LIGHTING PANEL BOARD
- LTG : LIGHTING
- MDP : MAIN DISTRIBUTION PANEL BOARD
- MTD : MOUNTED
- P,Ø : POLE, PHASE
- PVC : POLYVINYL CHLORIDE
- uPVC : UNPLASTICIZED POLYVINYL CHLORIDE
- ROW : RIGHT OF WAY
- STA : STATION
- SDBC : SOFT DRAWN BARE COPPER WIRE
- TW : THERMOPLASTIC MOISTURE RESISTANT
- TYP : TYPICAL
- THW : THERMOPLASTIC HEAT AND MOISTURE RESISTANT
- V : VOLT / VOLTAGE
- VA : VOLT - AMPERE
- W : WATT
- XLPE : CORSS-LINKED POLYETHYLENE INSULATED CABLES
- TEI : TARLAC ELECTRIC INCORPORATED

-  : MOLD-CASE CIRCUIT BREAKER
-  : AMPERE TRIPPING
-  : GROUNDING
-  : CONTACTOR
-  : VOLTMETER CHANGE OVER SWITCH
-  : AMMETER CHANGOVER SWITCH
-  : CURRENT TRANSFORMER
-  : DIESEL ENGINE
-  : GENERATOR
-  : EXITER
-  : AMPERE METER
-  : VOLTAGE METER
-  : FREQUENCY METER
-  : BATTERY
-  : AUTOMATIC VOLTAGE LEGULATOR
-  : LOW VOLTAGE RELAY
-  : OVER VOLTAGE
-  : OVERCURRENT RELAY
-  : LIGHTING PANEL
-  : KILOWATT HR.METER
-  : POWER TRANSFORMER
-  : PRIMARY CUTOUT (PE) WITH POWER FUSE (PF)
-  : LIGHTING ARRESTER (LA)
-  : CURRENT FUSE
-  : MAIN DISTRIBUTION PANEL
-  : POWER FUSE

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY  JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART  REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM  NIPPON KOEI CO., LTD.  ORIENTAL CONSULTANTS GLOBAL CO., LTD.  METROPOLITAN EXPRESSWAY COMPANY LIMITED  CHODAI CO.,LTD. NIPPON ENGINEERING CONSULTANTS CO.,LTD.		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">NAME</th> <th style="width: 20%;">SIGNATURE</th> <th style="width: 20%;">DATE</th> </tr> <tr> <td>PREPARED BY</td> <td>T. HAYAKAWA</td> <td>15 Sep.2017</td> </tr> <tr> <td>CHECKED BY</td> <td>T. HAYAKAWA</td> <td>22 Sep.2017</td> </tr> <tr> <td>APPROVED BY</td> <td>Y. SANO</td> <td>29 Sep.2017</td> </tr> </table>	NAME	SIGNATURE	DATE	PREPARED BY	T. HAYAKAWA	15 Sep.2017	CHECKED BY	T. HAYAKAWA	22 Sep.2017	APPROVED BY	Y. SANO	29 Sep.2017	DRAWING TITLE GENERAL NOTES (LIGHTING)	PACKAGE 2 DWG No. P2-GE-1041
NAME	SIGNATURE	DATE																	
PREPARED BY	T. HAYAKAWA	15 Sep.2017																	
CHECKED BY	T. HAYAKAWA	22 Sep.2017																	
APPROVED BY	Y. SANO	29 Sep.2017																	

DESIGN ELEMENTS OF HORIZONTAL ALIGNMENT

1. MAIN HIGHWAY

POINT NAME	STATION	NORTHING X-COORDINATE	EASTING Y-COORDINATE	ELEMENT	AZIMUTH ANGLE	ELEMENT LENGTH	ACCUMULATED DISTANCE
BP	0+000.000000	1857219.291051	205789.549518				0.000000
KE 1-1	0+024.969805	1857233.508737	205769.022741	STRAIGHT LINE	304° 42' 29.009669"	24.969805	24.969805
KA 1-1	0+076.169805	1857263.372323	205727.441550	CLOTHOID A=160	307° 38' 29.767749"	51.200000	76.169805
KA 1-2	0+161.512727	1857320.993624	205664.628061	CIRCLE R=500	317° 25' 16.250510"	85.342923	161.512727
KE 1-2	0+212.712727	1857359.850350	205631.296633	CLOTHOID A=160	320° 21' 17.008590"	51.200000	212.712727
BC 2	0+521.900231	1857597.927606	205434.024909	STRAIGHT LINE	320° 21' 17.008590"	309.187504	521.900231
EC 2	0+857.521703	1857873.073202	205242.524037	CIRCLE R=2000	329° 58' 10.457547"	335.621472	857.521703
KA 3-1	2+627.420376	1859405.380223	204356.760802	STRAIGHT LINE	329° 58' 10.457547"	1769.898673	2627.420376
KE 3-1	2+680.991804	1859452.311131	204330.947038	CLOTHOID A=150	333° 37' 25.100803"	53.571429	2680.991804
KE 3-2	2+724.079800	1859491.826837	204313.816465	CIRCLE R=420	339° 30' 5.903241"	43.087995	2724.079800
KA 3-2	2+777.651228	1859542.749064	204297.209619	CLOTHOID A=150	343° 9' 20.546495"	53.571429	2777.651228
KA 4-1	2+782.485673	1859547.376091	204295.808734	STRAIGHT LINE	343° 9' 20.546495"	4.834445	2782.485673
KE 4-1	2+835.298173	1859597.467560	204279.125895	CLOTHOID A=130	338° 25' 39.671372"	52.812500	2835.298173
KE 4-2	2+961.570619	1859702.829467	204211.024695	CIRCLE R=320	315° 49' 7.291643"	126.272446	2961.570619
KA 4-2	3+014.383119	1859738.611303	204172.202890	CLOTHOID A=130	311° 5' 26.416517"	52.812500	3014.383119
EP	3+575.000000	1860107.078174	203749.682533	STRAIGHT LINE	311° 5' 26.416517"	560.616881	3575.000000

2. ACCESS ROAD FROM STAR CITY TO THE PROJECT HIGHWAY

POINT NAME	STATION	NORTHING X-COORDINATE	EASTING Y-COORDINATE	ELEMENT	AZIMUTH ANGLE	ELEMENT LENGTH	ACCUMULATED DISTANCE
BP	0+000.000000	1857586.250773	205393.281977				0.000000
BC-1	0+004.471511	1857589.735828	205396.083549	STRAIGHT LINE	38° 47' 42.593542"	4.471511	4.471511
EC-1	0+058.044963	1857624.134584	205436.728193	CIRCLE R=140	60° 43' 13.433109"	53.573451	58.044963
KA 2-1	0+105.007058	1857647.102428	205477.690573	STRAIGHT LINE	60° 43' 13.433109"	46.962095	105.007058
KE 2-1	0+148.110506	1857663.282883	205517.356898	CLOTHOID A=50	82° 0' 37.609033"	43.103448	148.110506
KE 2-2	0+367.483423	1857554.981013	205497.547926	CIRCLE R=58	298° 43' 11.268296"	219.372917	367.483423
KA 2-2	0+410.586871	1857584.154535	205466.177078	CLOTHOID A=50	320° 0' 35.444221"	43.103448	410.586871
BC-3	0+535.778322	1857680.070576	205385.722045	STRAIGHT LINE	320° 0' 35.444221"	125.191450	535.778322
EP	0+643.083345	1857765.821505	205321.300759	CIRCLE R=1000	326° 9' 28.675974"	107.305023	643.083345

3. ACCESS ROAD FROM TOLL PLAZA TO SHUKHINTHAR MAYOPAT ROAD

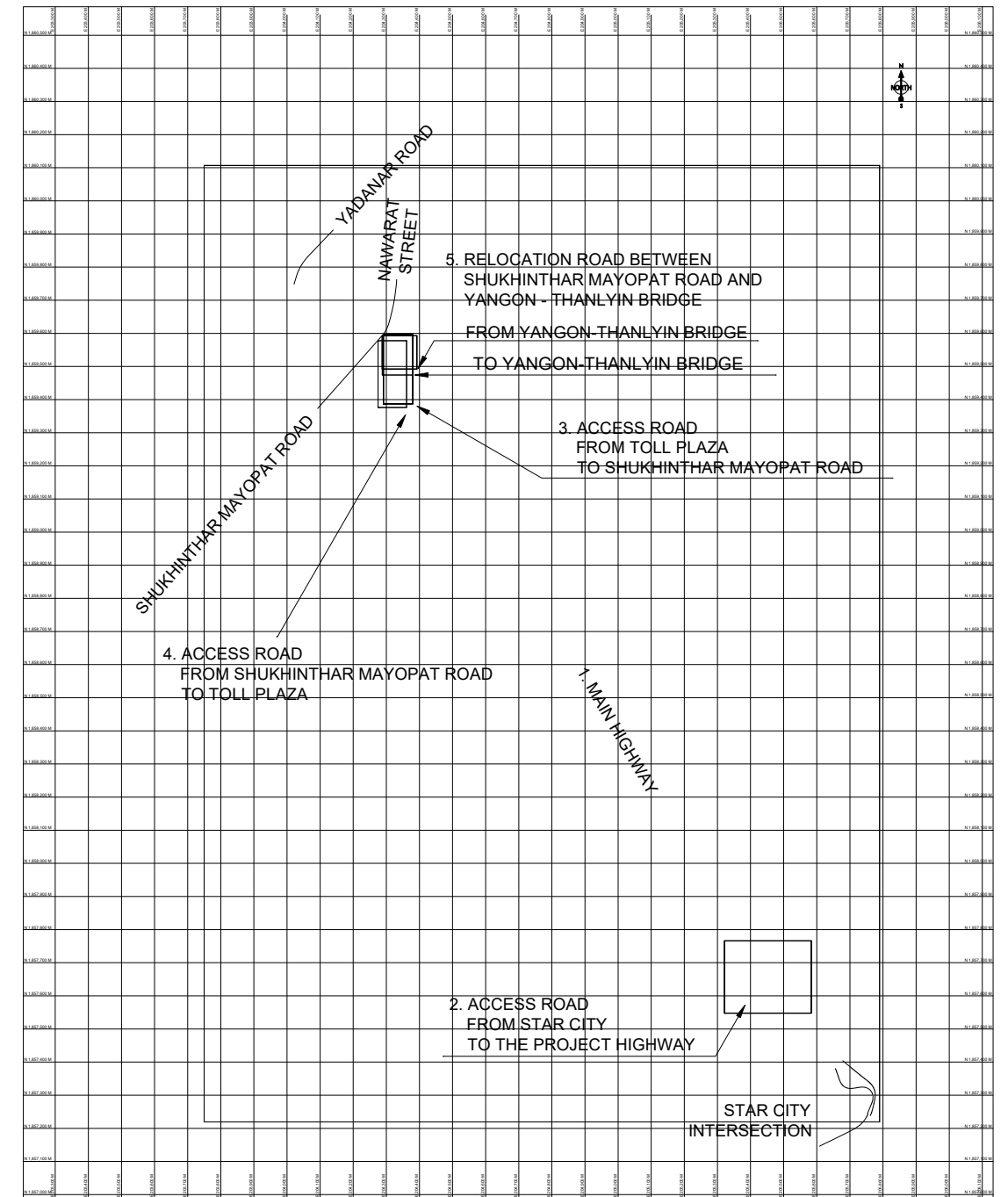
POINT NAME	STATION	NORTHING X-COORDINATE	EASTING Y-COORDINATE	ELEMENT	AZIMUTH ANGLE	ELEMENT LENGTH	ACCUMULATED DISTANCE
BP	0+000.000000	1859387.083266	204379.898737				0.000000
KA 1-1	0+027.420376	1859410.822724	204366.175940	STRAIGHT LINE	329° 58' 10.457547"	27.420376	27.420376
KE 1-1	0+080.298246	1859457.142519	204340.689898	CLOTHOID A=147.083849	333° 40' 19.933366"	52.877870	80.298246
KE 1-2	0+122.270570	1859495.635051	204324.002884	CIRCLE R=409.125000	339° 33' 0.735807"	41.972324	122.270570
KA 1-2	0+175.148440	1859545.900332	204307.618036	CLOTHOID A=147.083849	343° 9' 20.546495"	52.877870	175.148440
KA 2-1	0+179.982885	1859550.527359	204306.217150	STRAIGHT LINE	343° 9' 20.546495"	4.834445	179.982885
EP	0+228.545623	1859596.665312	204291.095464	CLOTHOID A=132.996909	341° 1' 10.050264"	48.562738	228.545623

4. ACCESS ROAD FROM SHUKHINTHAR MAYOPAT ROAD TO TOLL PLAZA

POINT NAME	STATION	NORTHING X-COORDINATE	EASTING Y-COORDINATE	ELEMENT	AZIMUTH ANGLE	ELEMENT LENGTH	ACCUMULATED DISTANCE
BP	0+000.000000	1859376.198265	204361.068463				0.000000
KA 1-1	0+027.420376	1859399.937722	204347.345665	STRAIGHT LINE	329° 58' 10.457547"	27.420376	27.420376
KE 1-1	0+081.685363	1859447.479743	204321.204179	CLOTHOID A=152.909864	333° 34' 39.093555"	54.264987	81.685363
KE 1-2	0+125.889030	1859488.018623	204303.630046	CIRCLE R=430.875000	339° 27' 19.895993"	44.203667	125.889030
KA 1-2	0+180.154017	1859539.597796	204286.801203	CLOTHOID A=152.909864	343° 9' 20.546495"	54.264987	180.154017
KA 2-1	0+184.988462	1859544.224823	204285.400317	STRAIGHT LINE	343° 9' 20.546495"	4.834445	184.988462
EP	0+219.973050	1859577.579400	204274.853056	CLOTHOID A=127.777631	341° 0' 29.487429"	34.984588	219.973050

5. RELOCATION ROAD BETWEEN SHUKHINTHAR MAYOPAT ROAD AND YANGON - THANLYIN BRIDGE

POINT NAME	STATION	NORTHING X-COORDINATE	EASTING Y-COORDINATE	ELEMENT	AZIMUTH ANGLE	ELEMENT LENGTH	ACCUMULATED DISTANCE
BP	0+000.000000	1859592.452945	204287.866125				0.000000
BC 1	0+024.306092	1859591.810075	204312.163713	STRAIGHT LINE	91° 30' 56.114217"	24.306092	24.306092
EC-1	0+063.975512	1859568.426887	204340.633817	CIRCLE R=30	167° 16' 42.957166"	39.669420	63.975512
TO YANGON-THANLYIN BRIDGE							
BC-2	0+115.859871	1859517.816166	204352.059301	STRAIGHT LINE	167° 16' 42.957166"	51.884359	115.859871
EP	0+168.655834	1859474.391353	204380.139144	CIRCLE R=75	126° 56' 43.638429"	52.795963	168.655834
FROM YANGON-THANLYIN BRIDGE							
BC-2	0+102.399065	1859530.946541	204349.095089	STRAIGHT LINE	167° 16' 42.957166"	38.423553	102.399065
EP	0+164.083776	1859492.287742	204392.126807	CIRCLE R=50	96° 35' 35.259250"	61.684711	164.083776

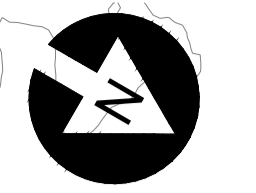


ALIGNMENT DIAGRAM SCALE = 1:20,000

NOTE: 1. STAR CITY INTERSECTION CONSISTS OF FOUR (4) ROADS, I.E., MAIN HIGHWAY, YANGON ACCESS LINE, THILAWA ACCESS LINE AND STAR CITY ACCESS LINE. SEE STAR CITY INTERSECTION DRAWINGS FOR THE HORIZONTAL ALIGNMENT DATA OF YANGON ACCESS LINE, THILAWA ACCESS LINE AND STAR CITY ACCESS LINE.
 2. SEE THE DESIGN DATA OF HORIZONTAL ALIGNMENT OF SHUKHINTHAR MAYOPAT ROAD AND NAWARAT STREET IN THE DRAWING INCLUDED IN PACKAGE 3 DRAWINGS.
 3. SEE THE DESIGN DATA OF HORIZONTAL ALIGNMENT OF YADANAR ROAD IN THE DRAWING INCLUDED IN PACKAGE 3 DRAWINGS.

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE ALIGNMENT LAYOUT AND GEOMETRIC DATA	PACKAGE	
				PREPARED BY	T. HAYAKAWA			15 Jun.2017	2
				CHECKED BY	T. HAYAKAWA			20 Jun.2017	DWG No.
				APPROVED BY	Y. SANO			21 Jun.2017	P2-GE-2001

B. ROAD DESIGN



BAGO RIVER

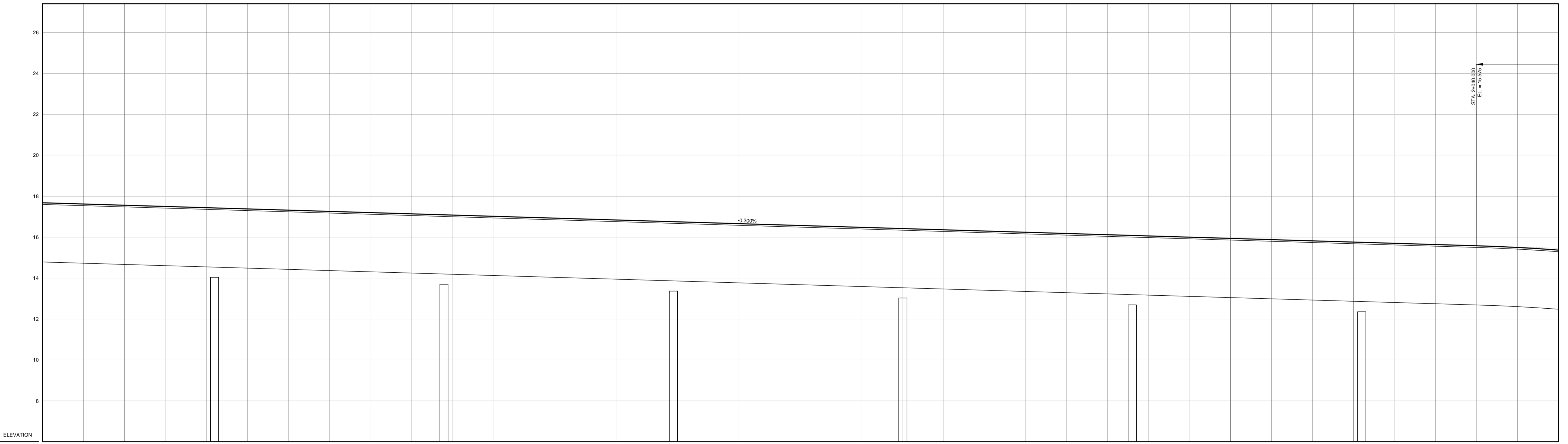
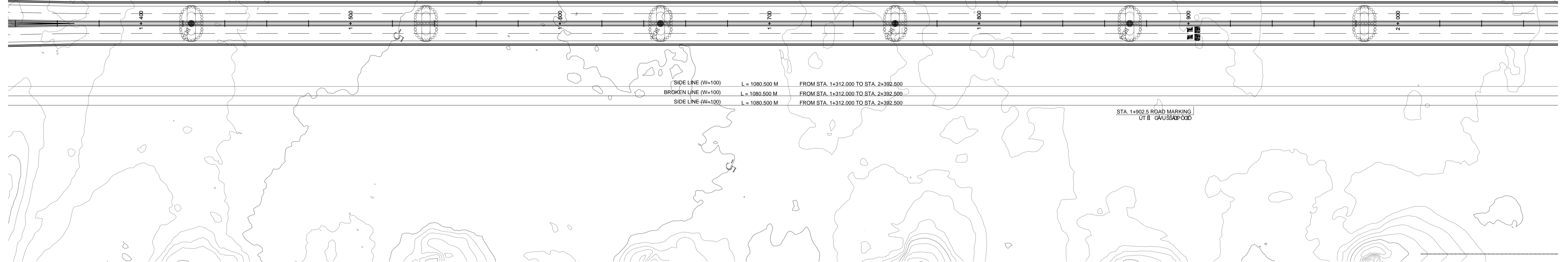
Span Width Difference
56,000 M

PACKAGE 2 L = 1,364,000 M FROM STA. 1+312,000 TO STA. 2+676,000

SIDE LINE (W=100) L = 1080,500 M FROM STA. 1+312,000 TO STA. 2+392,500
 BROKEN LINE (W=100) L = 1080,500 M FROM STA. 1+312,000 TO STA. 2+392,500
 SIDE LINE (W=100) L = 1080,500 M FROM STA. 1+312,000 TO STA. 2+392,500

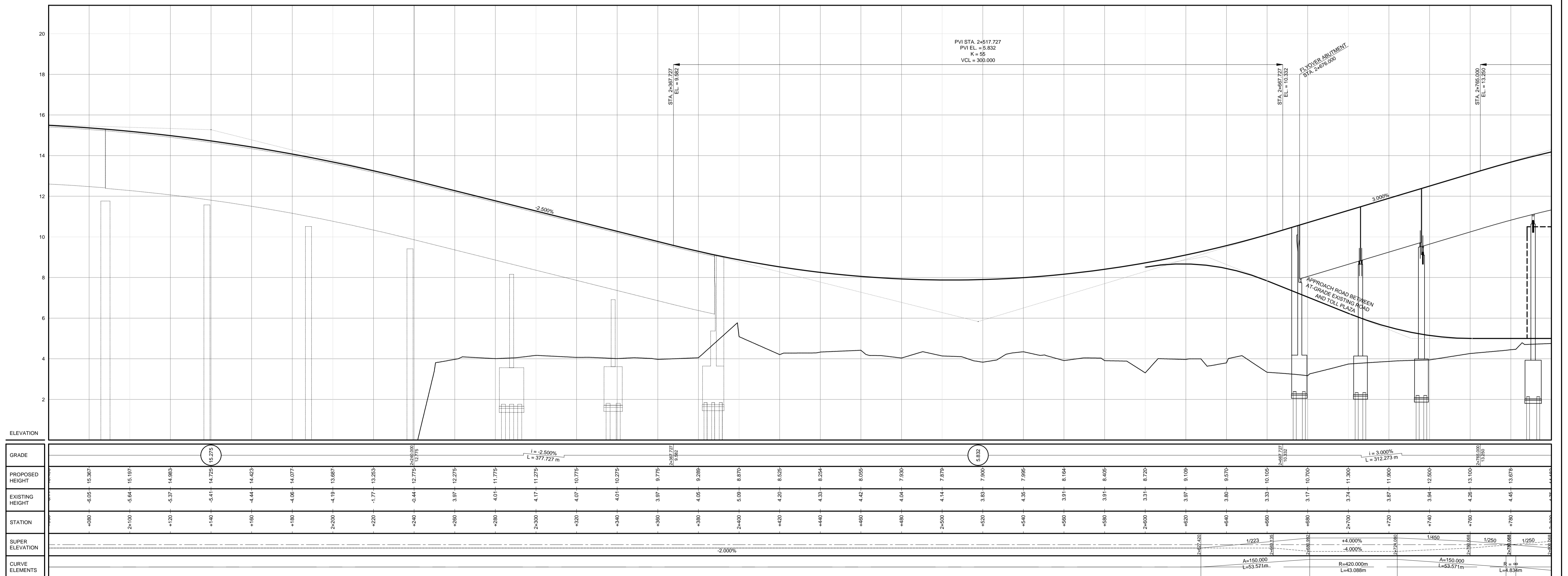
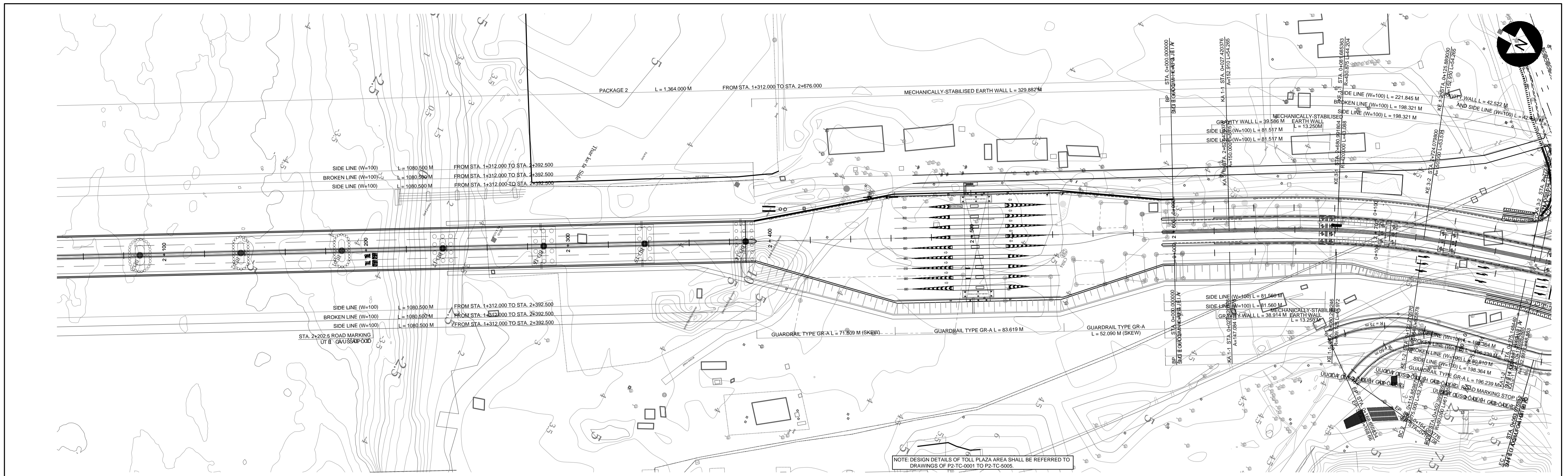
SIDE LINE (W=100) L = 1080,500 M FROM STA. 1+312,000 TO STA. 2+392,500
 BROKEN LINE (W=100) L = 1080,500 M FROM STA. 1+312,000 TO STA. 2+392,500
 SIDE LINE (W=100) L = 1080,500 M FROM STA. 1+312,000 TO STA. 2+392,500

STA. 1+902.5 ROAD MARKING
UTB GAUSSAPOOD



GRADE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
PROPOSED HEIGHT	17.615	17.555	17.495	17.435	17.375	17.315	17.255	17.195	17.135	17.075	17.015	16.955	16.895	16.835	16.775	16.715	16.655	16.595	16.535	16.475	16.415	16.355	16.295	16.235	16.175	16.115	16.055	15.995	15.935	15.875	15.815	15.755	15.695	15.635	15.575	15.515	15.455	15.395	15.335	15.275	15.215	15.155	15.095	15.035	14.975	14.915	14.855	14.795	14.735	14.675	14.615	14.555	14.495	14.435	14.375	14.315	14.255	14.195	14.135	14.075	14.015	13.955	13.895	13.835	13.775	13.715	13.655	13.595	13.535	13.475	13.415	13.355	13.295	13.235	13.175	13.115	13.055	12.995	12.935	12.875	12.815	12.755	12.695	12.635	12.575	12.515	12.455	12.395	12.335	12.275	12.215	12.155	12.095	12.035	11.975	11.915	11.855	11.795	11.735	11.675	11.615	11.555	11.495	11.435	11.375	11.315	11.255	11.195	11.135	11.075	11.015	10.955	10.895	10.835	10.775	10.715	10.655	10.595	10.535	10.475	10.415	10.355	10.295	10.235	10.175	10.115	10.055	9.995	9.935	9.875	9.815	9.755	9.695	9.635	9.575	9.515	9.455	9.395	9.335	9.275	9.215	9.155	9.095	9.035	8.975	8.915	8.855	8.795	8.735	8.675	8.615	8.555	8.495	8.435	8.375	8.315	8.255	8.195	8.135	8.075	8.015	7.955	7.895	7.835	7.775	7.715	7.655	7.595	7.535	7.475	7.415	7.355	7.295	7.235	7.175	7.115	7.055	6.995	6.935	6.875	6.815	6.755	6.695	6.635	6.575	6.515	6.455	6.395	6.335	6.275	6.215	6.155	6.095	6.035	5.975	5.915	5.855	5.795	5.735	5.675	5.615	5.555	5.495	5.435	5.375	5.315	5.255	5.195	5.135	5.075	5.015	4.955	4.895	4.835	4.775	4.715	4.655	4.595	4.535	4.475	4.415	4.355	4.295	4.235	4.175	4.115	4.055	3.995	3.935	3.875	3.815	3.755	3.695	3.635	3.575	3.515	3.455	3.395	3.335	3.275	3.215	3.155	3.095	3.035	2.975	2.915	2.855	2.795	2.735	2.675	2.615	2.555	2.495	2.435	2.375	2.315	2.255	2.195	2.135	2.075	2.015	1.955	1.895	1.835	1.775	1.715	1.655	1.595	1.535	1.475	1.415	1.355	1.295	1.235	1.175	1.115	1.055	1.015	1.000	0.985	0.970	0.955	0.940	0.925	0.910	0.895	0.880	0.865	0.850	0.835	0.820	0.805	0.790	0.775	0.760	0.745	0.730	0.715	0.700	0.685	0.670	0.655	0.640	0.625	0.610	0.595	0.580	0.565	0.550	0.535	0.520	0.505	0.490	0.475	0.460	0.445	0.430	0.415	0.400	0.385	0.370	0.355	0.340	0.325	0.310	0.295	0.280	0.265	0.250	0.235	0.220	0.205	0.190	0.175	0.160	0.145	0.130	0.115	0.100	0.085	0.070	0.055	0.040	0.025	0.010	0.000	-0.015	-0.030	-0.045	-0.060	-0.075	-0.090	-0.105	-0.120	-0.135	-0.150	-0.165	-0.180	-0.195	-0.210	-0.225	-0.240	-0.255	-0.270	-0.285	-0.300	-0.315	-0.330	-0.345	-0.360	-0.375	-0.390	-0.405	-0.420	-0.435	-0.450	-0.465	-0.480	-0.495	-0.510	-0.525	-0.540	-0.555	-0.570	-0.585	-0.600	-0.615	-0.630	-0.645	-0.660	-0.675	-0.690	-0.705	-0.720	-0.735	-0.750	-0.765	-0.780	-0.795	-0.810	-0.825	-0.840	-0.855	-0.870	-0.885	-0.900	-0.915	-0.930	-0.945	-0.960	-0.975	-0.990	-1.005	-1.020	-1.035	-1.050	-1.065	-1.080	-1.095	-1.110	-1.125	-1.140	-1.155	-1.170	-1.185	-1.200	-1.215	-1.230	-1.245	-1.260	-1.275	-1.290	-1.305	-1.320	-1.335	-1.350	-1.365	-1.380	-1.395	-1.410	-1.425	-1.440	-1.455	-1.470	-1.485	-1.500	-1.515	-1.530	-1.545	-1.560	-1.575	-1.590	-1.605	-1.620	-1.635	-1.650	-1.665	-1.680	-1.695	-1.710	-1.725	-1.740	-1.755	-1.770	-1.785	-1.800	-1.815	-1.830	-1.845	-1.860	-1.875	-1.890	-1.905	-1.920	-1.935	-1.950	-1.965	-1.980	-1.995	-2.010	-2.025	-2.040	-2.055	-2.070	-2.085	-2.100	-2.115	-2.130	-2.145	-2.160	-2.175	-2.190	-2.205	-2.220	-2.235	-2.250	-2.265	-2.280	-2.295	-2.310	-2.325	-2.340	-2.355	-2.370	-2.385	-2.400	-2.415	-2.430	-2.445	-2.460	-2.475	-2.490	-2.505	-2.520	-2.535	-2.550	-2.565	-2.580	-2.595	-2.610	-2.625	-2.640	-2.655	-2.670	-2.685	-2.700	-2.715	-2.730	-2.745	-2.760	-2.775	-2.790	-2.805	-2.820	-2.835	-2.850	-2.865	-2.880	-2.895	-2.910	-2.925	-2.940	-2.955	-2.970	-2.985	-3.000
EXISTING HEIGHT	7.88	7.53	6.54	6.18	6.08	5.91	5.61	5.55	5.11	4.79	4.88	4.88	5.01	5.16	5.12	5.13	5.34	5.88	6.16	6.31	5.82	6.44	6.17	6.23	6.40	6.48	6.38	7.04	7.10	6.77	6.46	6.38	6.23	6.37	6.32	6.57	6.51	6.11	6.43																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
STATION	4380	4380	14400	4420	4440	4480	4480	14500	4520	4540	4560	4580	14600	4620	4640	4660	4680	14700	4720	4740	4760	4780	14800	4820	4840	4860	14900	4920	4940	4960	14980	5000	5020	5040	5060	5080	5100	5120	5140	5160	5180	5200	5220	5240	5260	5280	5300	5320	5340	5360	5380	5400	5420	5440	5460	5480	5500	5520	5540	5560	5580	5600	5620	5640	5660	5680	5700	5720	5740	5760	5780	5800	5820	5840	5860	5880	5900	5920	5940	5960	5980	6000	6020	6040	6060	6080	6100	6120	6140	6160	6180	6200	6220	6240	6260	6280	6300	6320	6340	6360	6380	6400	6420	6440	6460	6480	6500	6520	6540	6560	6580	6600	6620	6640	6660	6680	6700	6720	6740	6760	6780	6800	6820	6840	6860	6880	6900	6920	6940	6960	6980	7000	7020	7040	7060	7080	7100	7120	7140	7160	7180	7200	7220	7240	7260	7280	7300	7320	7340	7360	7380	7400	7420	7440	7460	7480	7500	7520	7540	7560	7580	7600	7620	7640	7660	7680	7700	7720	7740	7760	7780	7800	7820	7840	7860	7880	7900	7920	7940	7960	7980	8000	8020	8040	8060	8080	8100	8120	8140	8160	8180	8200	8220	8240	8260	8280	8300	8320	8340	8360	8380	8400	8420	8440	8460	8480	8500	8520	8540	8560	8580	8600	8620	8640	8660	8680	8700	8720	8740	8760	8780	8800	8820	8840	8860	8880	8900	8920	8940	8960	8980	9000	9020	9040	9060	9080	9100	9120	9140	9160	9180	9200	9220	9240	9260	9280	9300	9320	9340	9360	9380	9400	9420	9440	9460	9480	9500	9520	9540	9560	9580	9600	9620	9640	9660	9680	9700	9720	9740	9760	9780	9800	9820	9840	9860	9880	9900	9920	9940	9960	9980	10000																																																																																																																																																																																																																																																																								
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PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE PLAN AND PROFILE (1/3)	PACKAGE 2 DWG No. P2-RD-0100	
				PREPARED BY	E. YOKOTA				15 JUNE 2017
				CHECKED BY	T. HAYAKAWA				20 JUNE 2017
APPROVED BY	Y. SANO		21 JUNE 2017						



PROJECT NAME
**DETAILED DESIGN ON
 BAGO RIVER BRIDGE
 CONSTRUCTION PROJECT**

FINANCED BY
**JAPAN INTERNATIONAL
 COOPERATION AGENCY**

COUNTERPART
**REPUBLIC OF THE UNION OF MYANMAR
 MINISTRY OF CONSTRUCTION
 DEPARTMENT OF BRIDGE**

JICA STUDY TEAM
**NIPPON KOEI CO., LTD.
 ORIENTAL CONSULTANTS GLOBAL CO., LTD.
 METROPOLITAN EXPRESSWAY COMPANY LIMITED
 CHODAI CO., LTD.
 NIPPON ENGINEERING CONSULTANTS CO., LTD.**

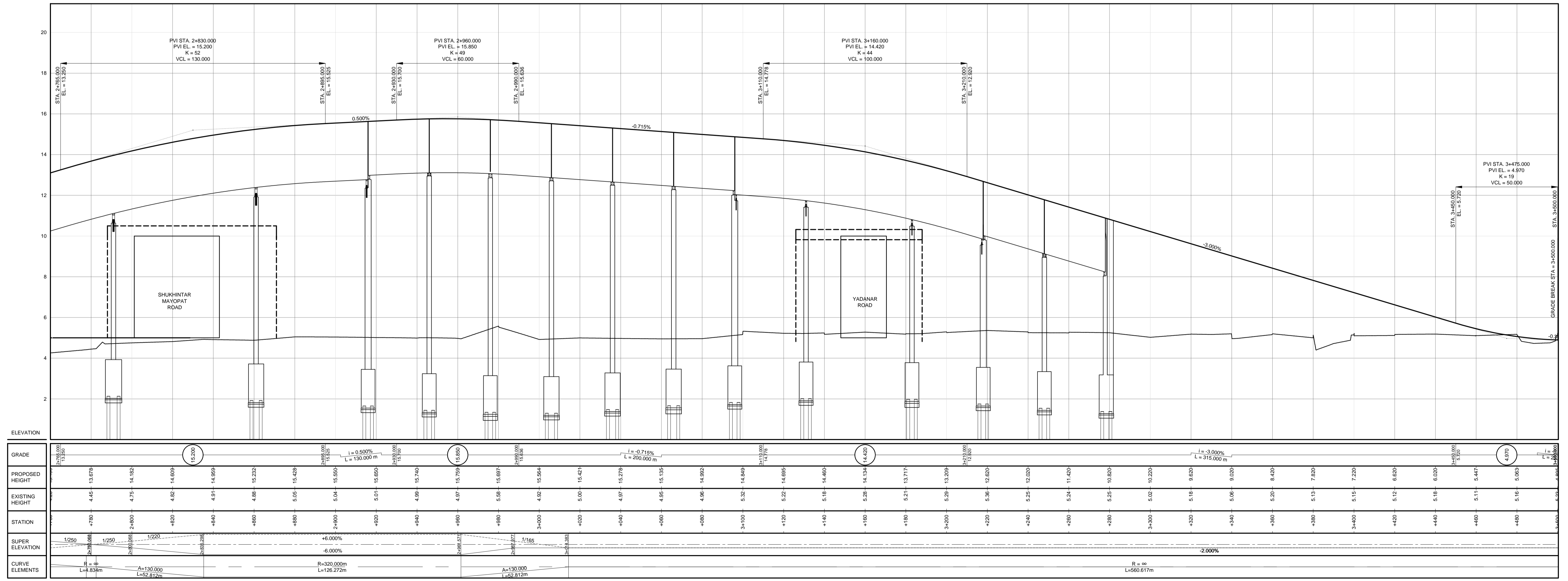
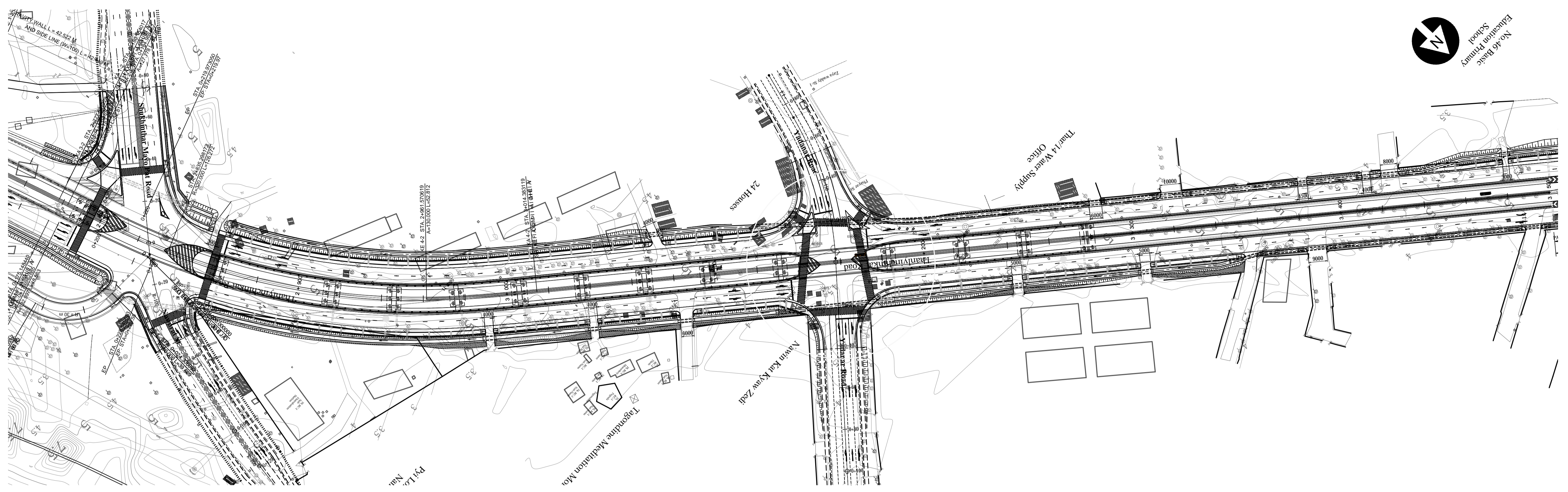
	NAME	SIGNATURE	DATE
PREPARED BY	E. YOKOTA		15 JUNE 2017
CHECKED BY	T. HAYAKAWA		20 JUNE 2017
APPROVED BY	Y. SANO		21 JUNE 2017

DRAWING TITLE
PLAN AND PROFILE (2/3)

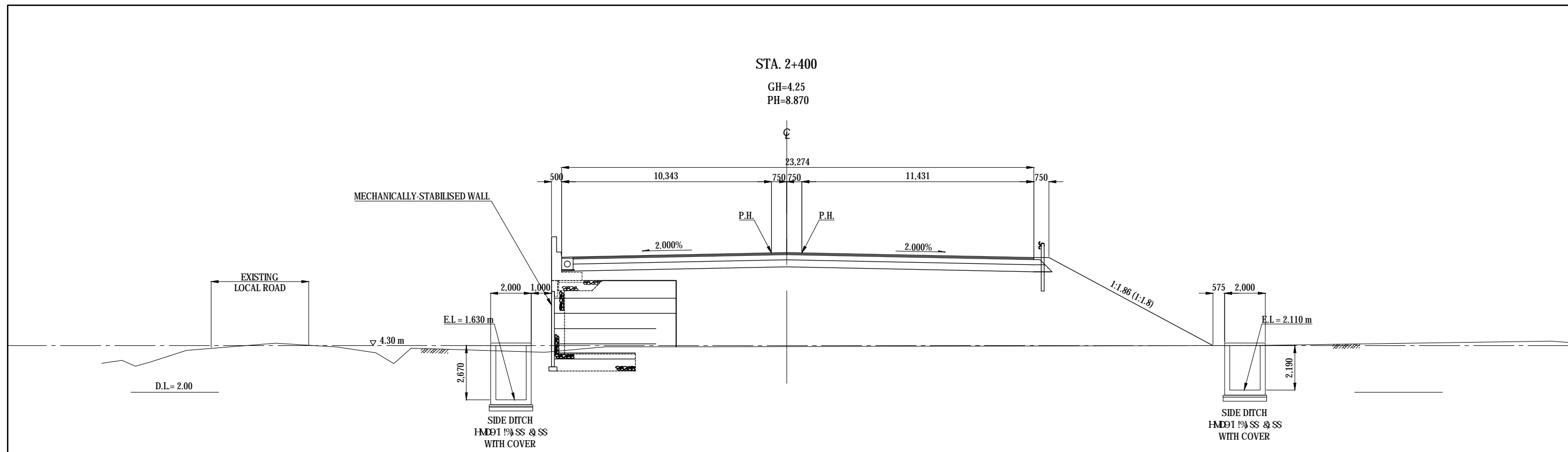
PACKAGE
 2
 DWG No.
 P2-RD-0110



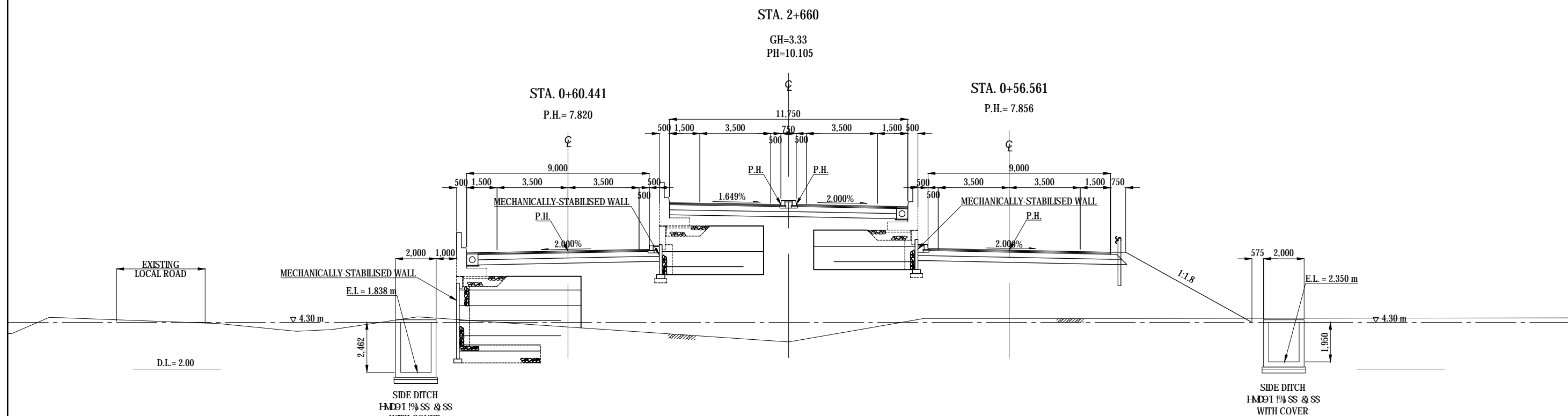
No.46 Basic
Education Primary
School



PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME E. YOKOTA	SIGNATURE 	DATE 15 JUNE 2017	DRAWING TITLE PLAN AND PROFILE (3/3)	PACKAGE 2 DWG No. P2-RD-0120
				PREPARED BY T. HAYAKAWA	SIGNATURE 	DATE 20 JUNE 2017		
				APPROVED BY Y. SANO	SIGNATURE 	DATE 21 JUNE 2017		



TRANSITION SECTION BETWEEN BAGO RIVER BRIDGE AND TOLL PLAZA WITH MECHANICALLY-STABILISED WALL AT THE LEFT SIDE



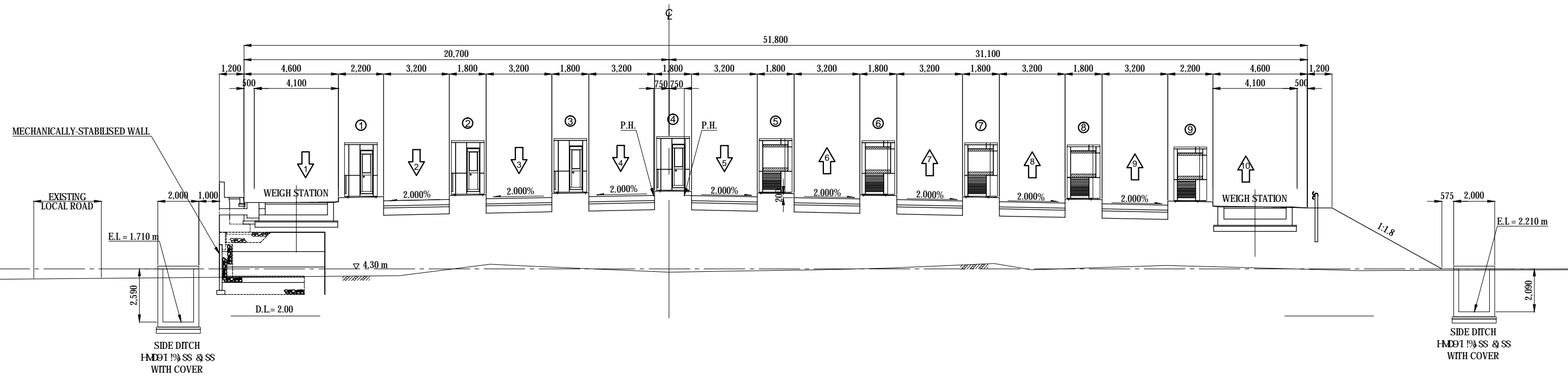
EMBANKMENT SECTION BETWEEN THE TOLL PLAZA AND FLYOVER WITH THE APPLICATION OF MECHANICALLY-STABILISED WALL

NOTE: ELEVATION IS BASED ON MSL (MEAN SEA LEVEL).
ELEVATION OF 4.30 M SHOWN IN THE DRAWING IS THE PROPOSED HEIGHT OF CONSTRUCTION YARD.

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE TYPICAL CROSS SECTION (1/2)	PACKAGE	
				PREPARED BY	E. YOKOTA			15 JUNE 2017	2
				CHECKED BY	T. HAYAKAWA			20 JUNE 2017	DWG No.
				APPROVED BY	Y. SANO			21 JUNE 2017	P2-RD-0200

STA. 2+500

GH=4.14
PH=7.879



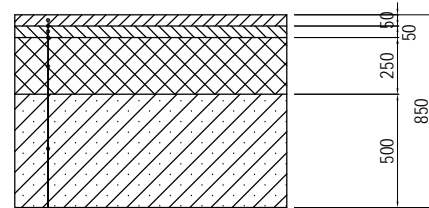
TOLLBOOTH SECTION WITH MECHANICALLY-STABILISED WALL AT THE LEFT SIDE S = 1:200

NOTE: ELEVATION IS BASED ON MSL (MEAN SEA LEVEL).
ELEVATION OF 4.30 M SHOWN IN THE DRAWING IS THE PROPOSED HEIGHT OF CONSTRUCTION YARD.

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE TYPICAL CROSS SECTION (2/2)	PACKAGE	
				PREPARED BY	E. YOKOTA			15 JUNE 2017	2
				CHECKED BY	T. HAYAKAWA			20 JUNE 2017	DWG No.
				APPROVED BY	Y. SANO			21 JUNE 2017	P2-RD-0210

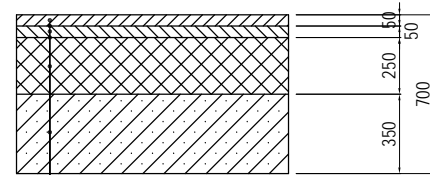
PAVEMENT LAYER S=1:30

Type E1



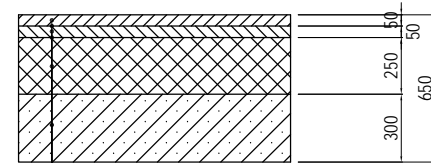
AC SURFACE COURSE (t=50mm)
TACK COAT 0.4 l/m²
AC SURFACE BASE (t=50mm)
PRIME COAT 0.4 l/m²
BASE COURSE (t=250mm)
SUB BASE (t=500mm)

Type E2



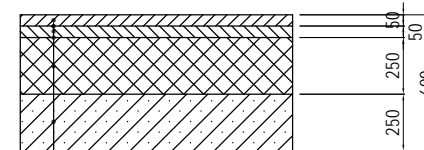
AC SURFACE COURSE (t=50mm)
TACK COAT 0.4 l/m²
AC SURFACE BASE (t=50mm)
PRIME COAT 0.4 l/m²
BASE COURSE (t=250mm)
SUB BASE (t=350mm)

Type E3



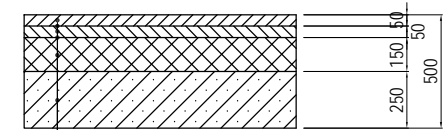
AC SURFACE COURSE (t=50mm)
TACK COAT 0.4 l/m²
AC SURFACE BASE (t=50mm)
PRIME COAT 0.4 l/m²
BASE COURSE (t=250mm)
SUB BASE (t=300mm)

Type E4



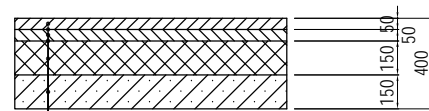
AC SURFACE COURSE (t=50mm)
TACK COAT 0.4 l/m²
AC SURFACE BASE (t=50mm)
PRIME COAT 0.4 l/m²
BASE COURSE (t=250mm)
SUB BASE (t=250mm)

Type E5



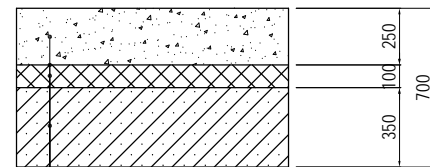
AC SURFACE COURSE (t=50mm)
TACK COAT 0.4 l/m²
AC SURFACE BASE (t=50mm)
PRIME COAT 0.4 l/m²
BASE COURSE (t=150mm)
SUB BASE (t=250mm)

Type E6



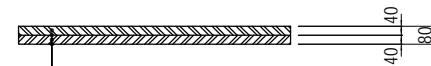
AC SURFACE COURSE (t=50mm)
TACK COAT 0.4 l/m²
AC SURFACE BASE (t=50mm)
PRIME COAT 0.4 l/m²
BASE COURSE (t=150mm)
SUB BASE (t=150mm)

Type C



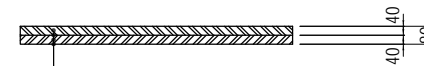
CONCRETE (t=250mm)
PRIME COAT 0.4 l/m²
BASE COURSE (t=100mm)
SUB BASE (t=350mm)

Type B1
(FOR CONCRETE DECK)



AC SURFACE COURSE (t=40mm)
TACK COAT 0.4 l/m²
AC SURFACE BASE (t=40mm)
WATERPROOFING
BONDING COAT

Type B2
(FOR STEEL DECK)



POLYMER-MODIFIED ASPHALT II (t=40mm)
TACK COAT 0.4 l/m²
POLYMER-MODIFIED ASPHALT III-WF (t=40mm)
WATERPROOFING
BONDING COAT

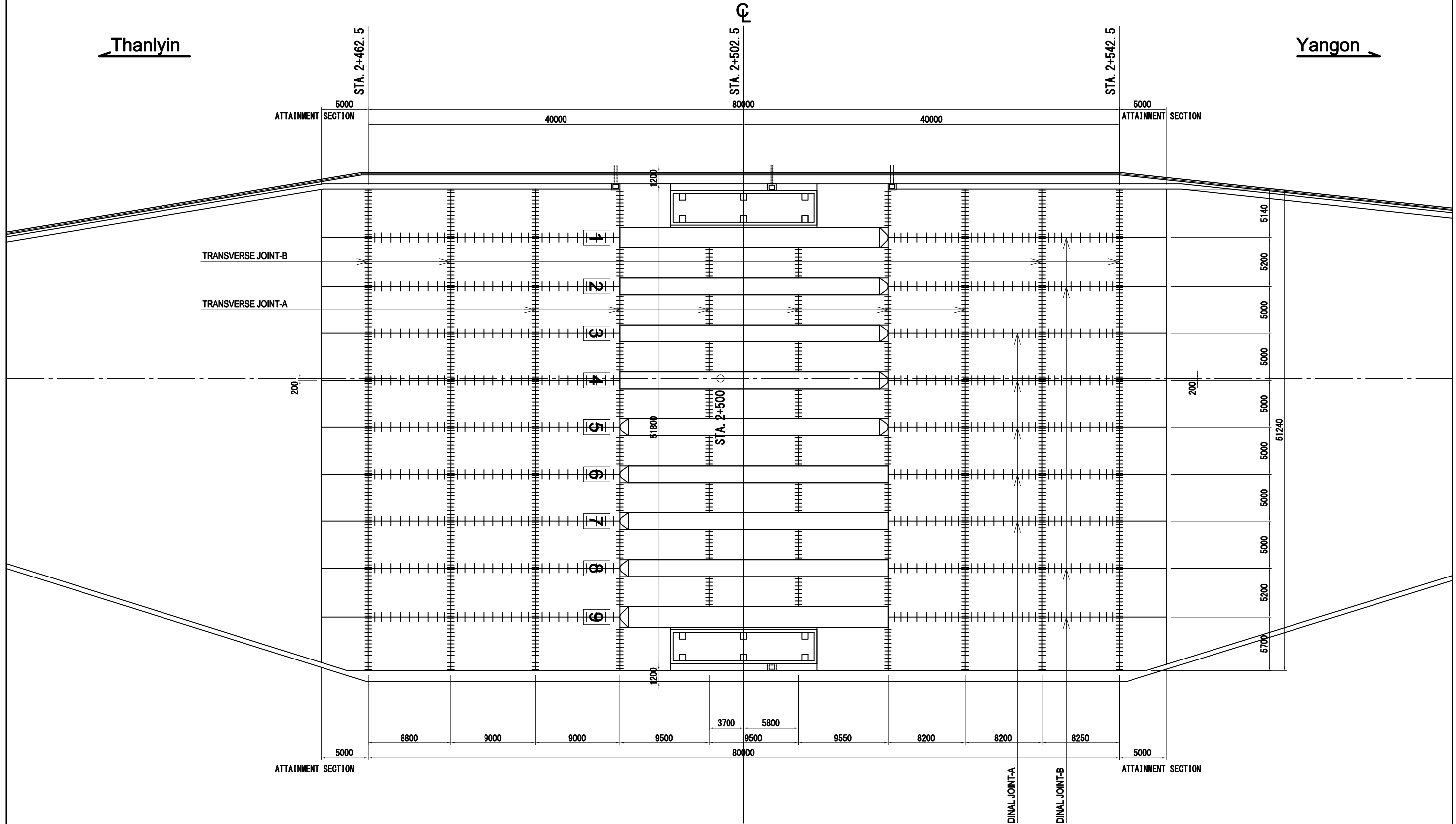
Side Walk




PRECAST CONCRETE PAVING BLOCK (300x300mm x t=60mm)
SAND (t=30mm)
SOIL AGGREGATE: C-30 (t=100mm)

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO. LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE PAVEMENT LAYER	PACKAGE	
				PREPARED BY	J.TSUCHIYA			15 Jun. 2017	2
				CHECKED BY	T. HAYAKAWA			20 Jun. 2017	DWG No.
				APPROVED BY	Y. SANO			21 Jun. 2017	P2-RD-0300


DETAIL OF CEMENT CONCRETE PAVEMENT(1) S=1:400



FINANCED BY
 JAPAN INTERNATIONAL
 COOPERATION AGENCY

COUNTERPART
 REPUBLIC OF THE UNION OF MYANMAR
 MINISTRY OF CONSTRUCTION
 DEPARTMENT OF BRIDGE

JICA STUDY TEAM
 NIPPON KOEI CO., LTD.
 ORIENTAL CONSULTANTS GLOBAL CO., LTD.
 METROPOLITAN EXPRESSWAY COMPANY LIMITED
 CHODAI CO. LTD.
 NIPPON ENGINEERING CONSULTANTS CO., LTD.

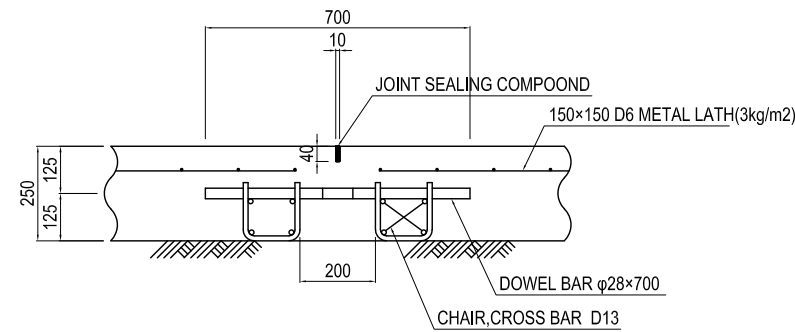
	NAME	SIGNATURE	DATE
PREPARED BY	J.TSUCHIYA		15 Jun. 2017
CHECKED BY	T. HAYAKAWA		20 Jun. 2017
APPROVED BY	Y. SANO		21 Jun. 2017

DRAWING TITLE
 DETAIL OF CEMENT CONCRETE PAVEMENT(1)

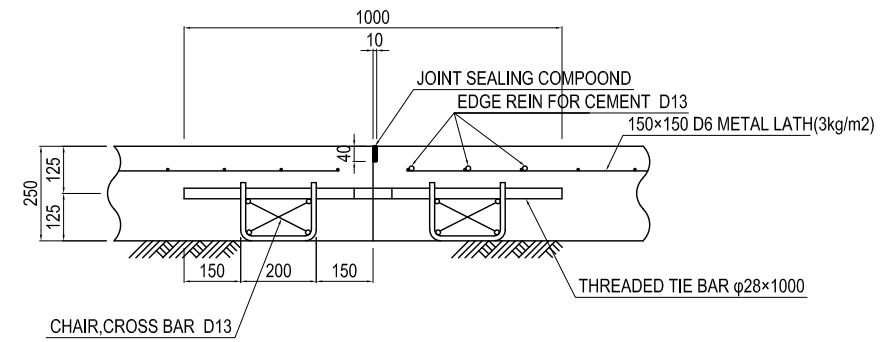
PACKAGE
 2
 DWG No.
 P2-RD-0310

DETAIL OF CEMENT CONCRETE PAVEMENT(2) S=1:20

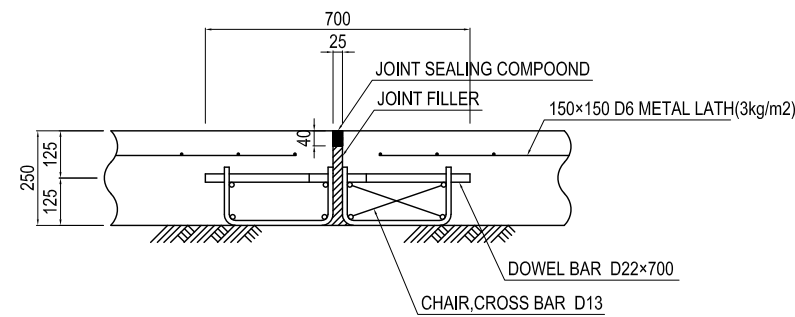
TRANSVERSE JOINT-A



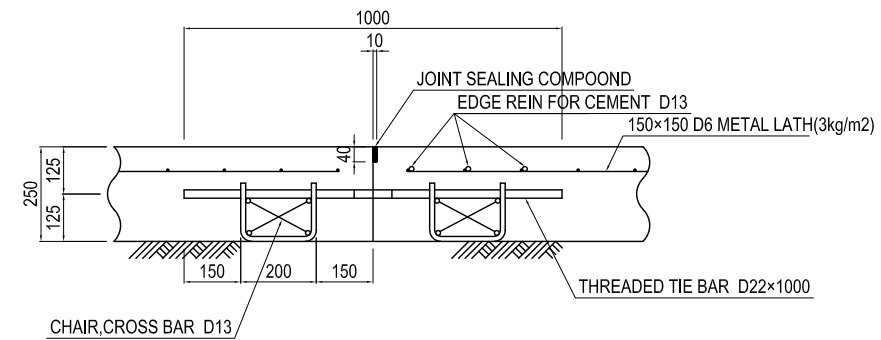
LONGITUDINAL JOINT-A



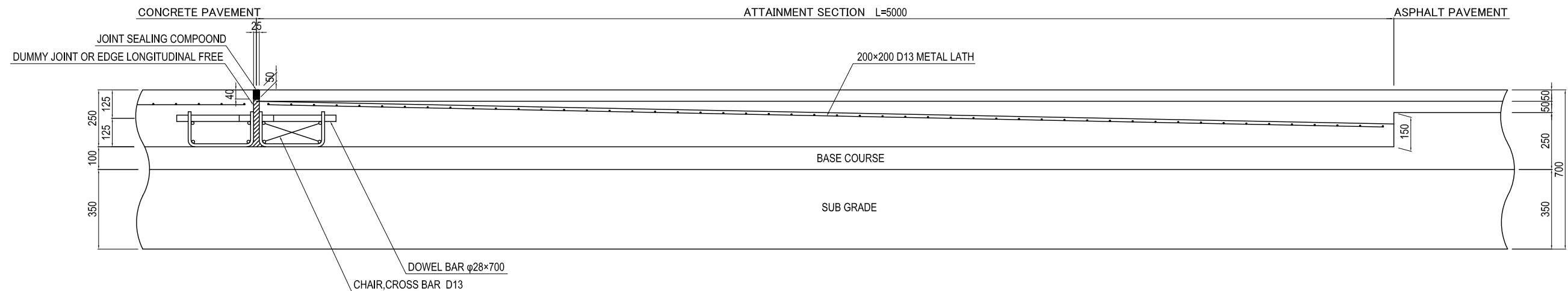
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LONGITUDINAL JOINT-B

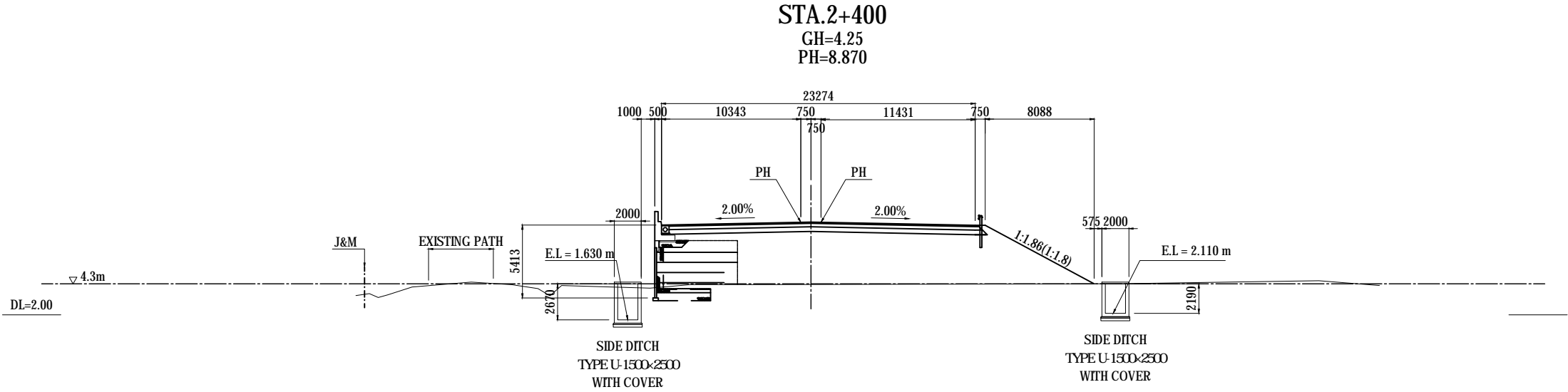
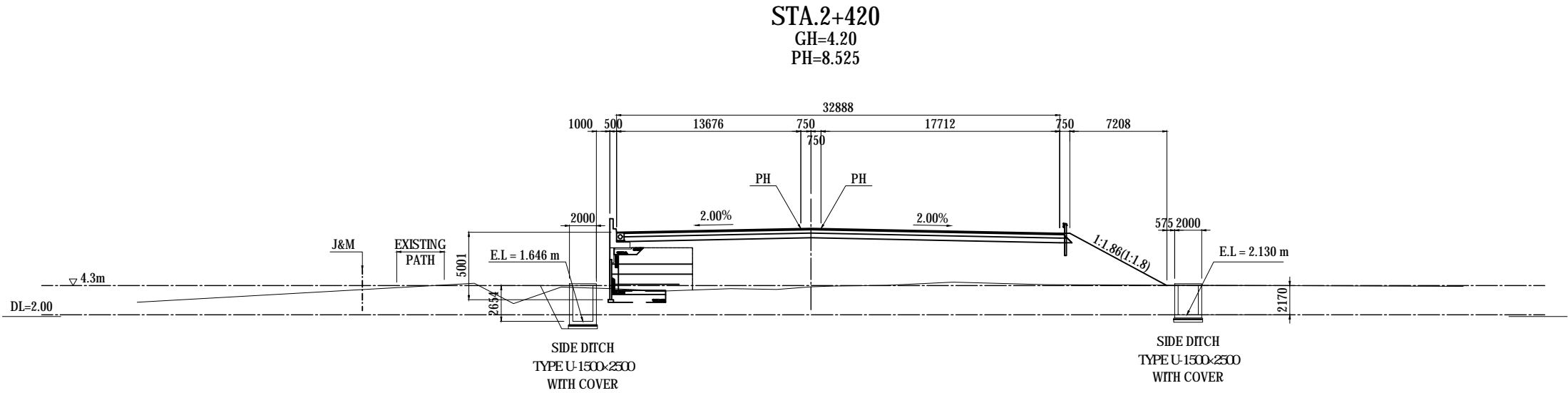


ATTAINMENT SECTION



PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME PREPARED BY J.TSUCHIYA CHECKED BY T. HAYAKAWA APPROVED BY Y. SANO	SIGNATURE 	DATE 15 Jun. 2017 20 Jun. 2017 21 Jun. 2017	DRAWING TITLE DETAIL OF CEMENT CONCRETE PAVEMENT(2)	PACKAGE 2 DWG No. P2-RD-0320
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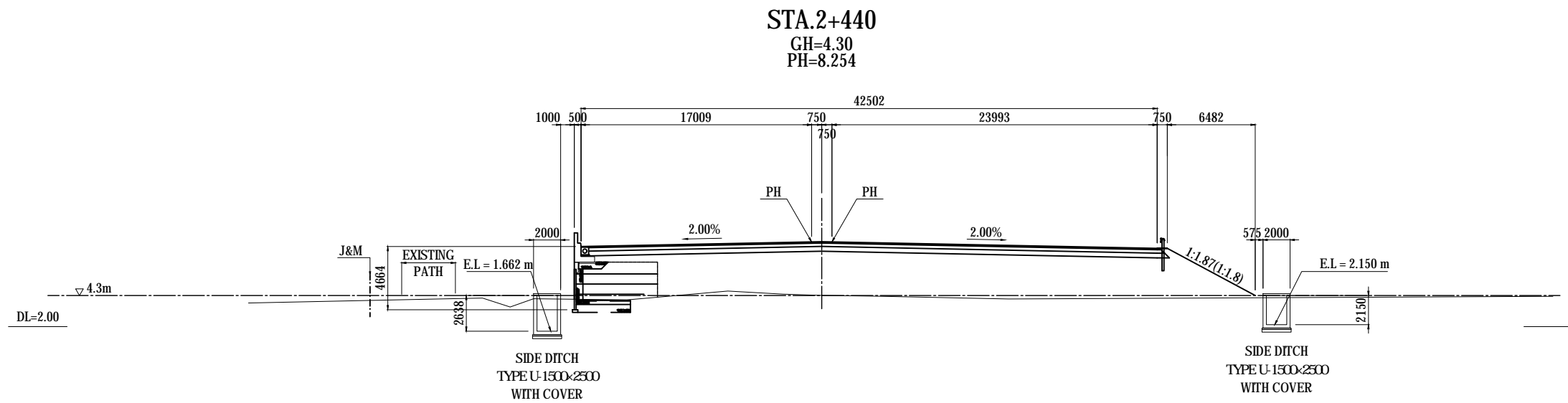
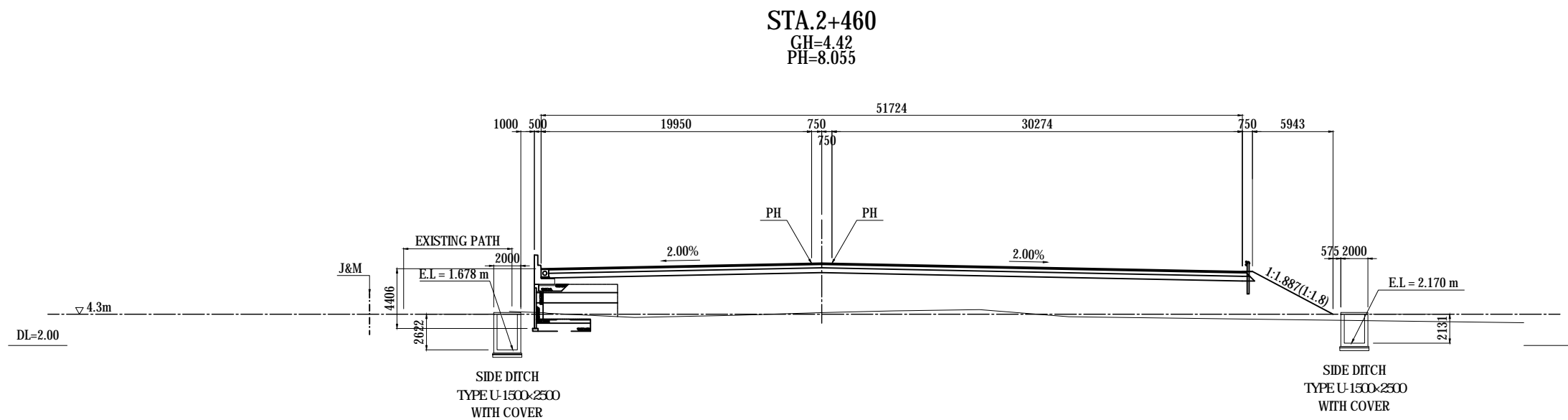
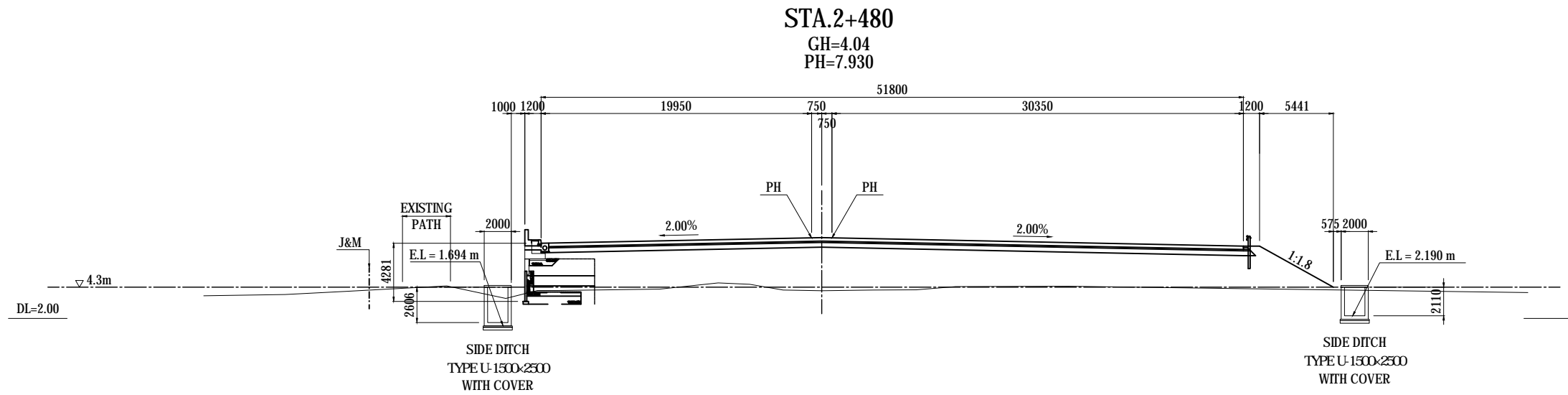
CROSS SECTION MAIN ROAD (1) S=1:400



Note: Elevation is based on MSL (Mean Sea Level)

<small>PROJECT NAME</small> DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	<small>FINANCED BY</small> JAPAN INTERNATIONAL COOPERATION AGENCY	<small>COUNTERPART</small> REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	<small>JICA STUDY TEAM</small> NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 20%;">NAME</th> <th style="width: 20%;">SIGNATURE</th> <th style="width: 10%;">DATE</th> </tr> </thead> <tbody> <tr> <td>PREPARED BY</td> <td>M. TORIU</td> <td></td> <td>15 Jun. 2017</td> </tr> <tr> <td>CHECKED BY</td> <td>T. HAYAKAWA</td> <td></td> <td>20 Jun. 2017</td> </tr> <tr> <td>APPROVED BY</td> <td>Y. SANO</td> <td></td> <td>21 Jun. 2017</td> </tr> </tbody> </table>		NAME	SIGNATURE	DATE	PREPARED BY	M. TORIU		15 Jun. 2017	CHECKED BY	T. HAYAKAWA		20 Jun. 2017	APPROVED BY	Y. SANO		21 Jun. 2017	<small>DRAWING TITLE</small> CROSS SECTION MAIN ROAD (1)	<small>PACKAGE</small> 2 DWG No. P2-RD-0400
	NAME	SIGNATURE	DATE																			
PREPARED BY	M. TORIU		15 Jun. 2017																			
CHECKED BY	T. HAYAKAWA		20 Jun. 2017																			
APPROVED BY	Y. SANO		21 Jun. 2017																			

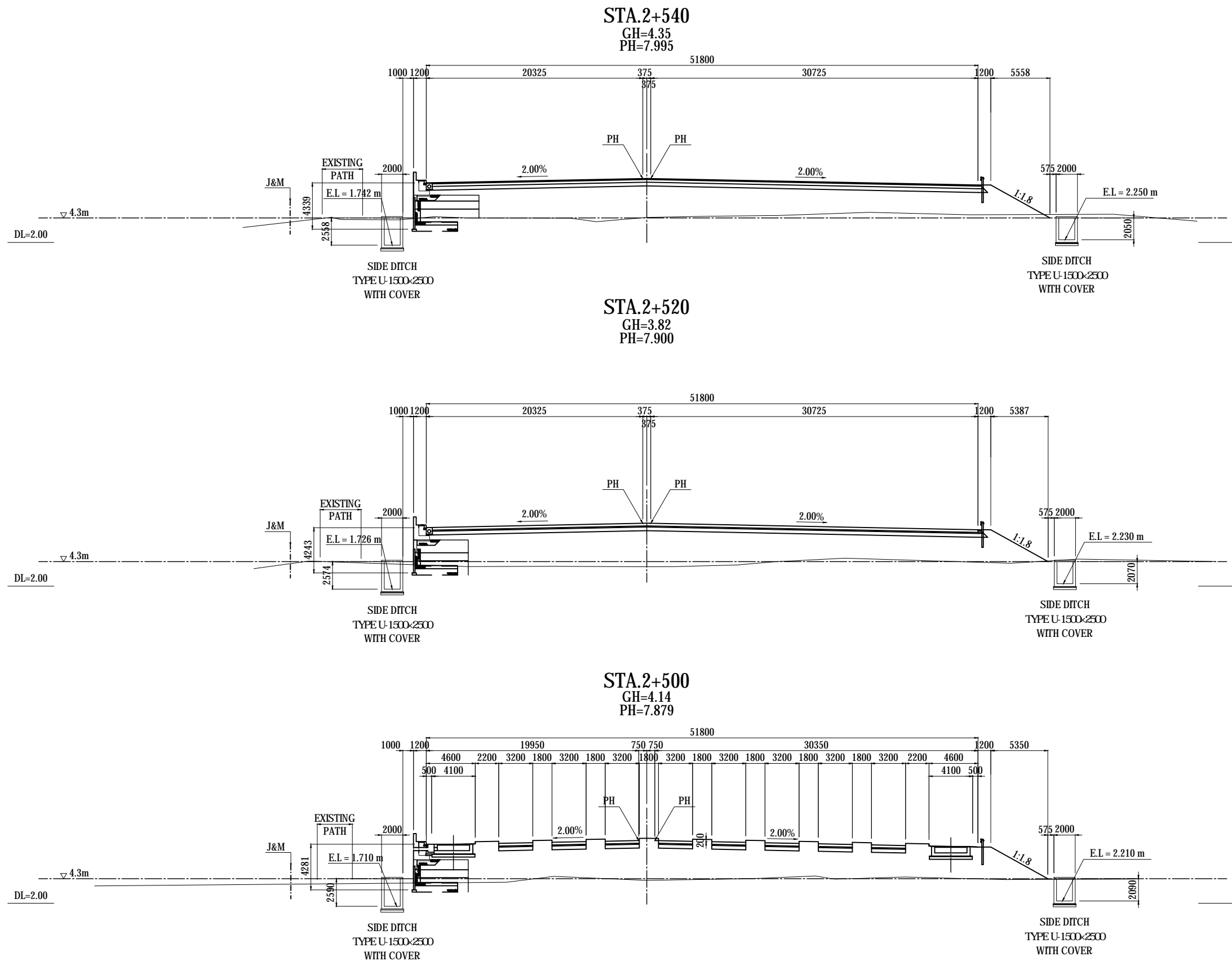
CROSS SECTION MAIN ROAD (2) S=1:400



Note: Elevation is based on MSL (Mean Sea Level)

PROJECT NAME	FINANCED BY	COUNTERPART	JICA STUDY TEAM	NAME	SIGNATURE	DATE	DRAWING TITLE	PACKAGE
DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	PREPARED BY M. TORIU	<i>M. Toriu</i>	15 Jun. 2017	CROSS SECTION MAIN ROAD (2)	2
				CHECKED BY T. HAYAKAWA	<i>T. Hayakawa</i>	20 Jun. 2017		DWG No.
				APPROVED BY Y. SANO	<i>Y. Sano</i>	21 Jun. 2017		P2-RD-0410

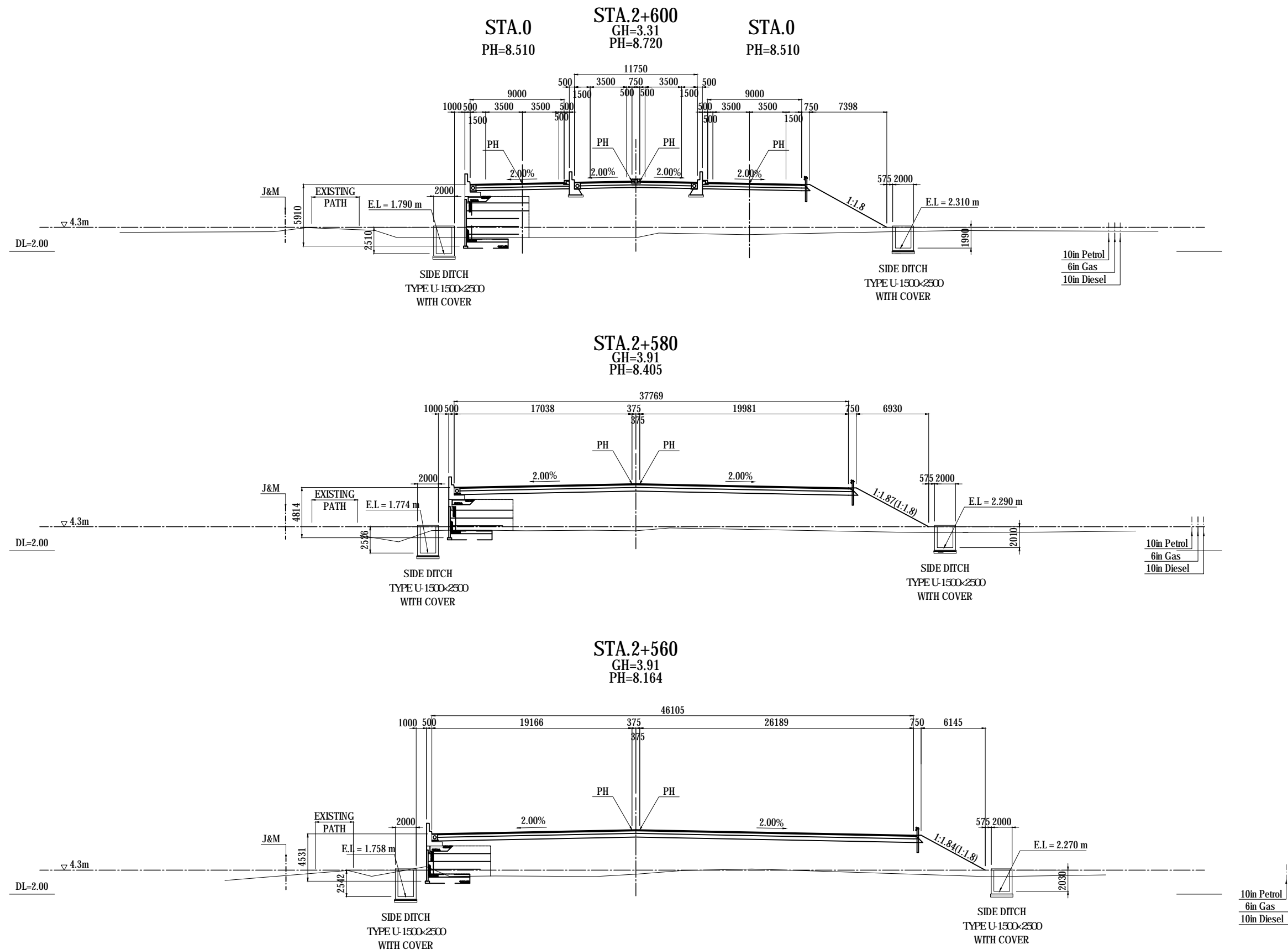
CROSS SECTION MAIN ROAD (3) S=1:400



Note: Elevation is based on MSL (Mean Sea Level)

PROJECT NAME	FINANCED BY	COUNTERPART	JICA STUDY TEAM	NAME	SIGNATURE	DATE	DRAWING TITLE	PACKAGE
DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	M. TORIU		15 Jun. 2017	CROSS SECTION MAIN ROAD (3)	2
				T. HAYAKAWA		20 Jun. 2017		DWG No.
				Y. SANO		21 Jun. 2017		P2-RD-0420

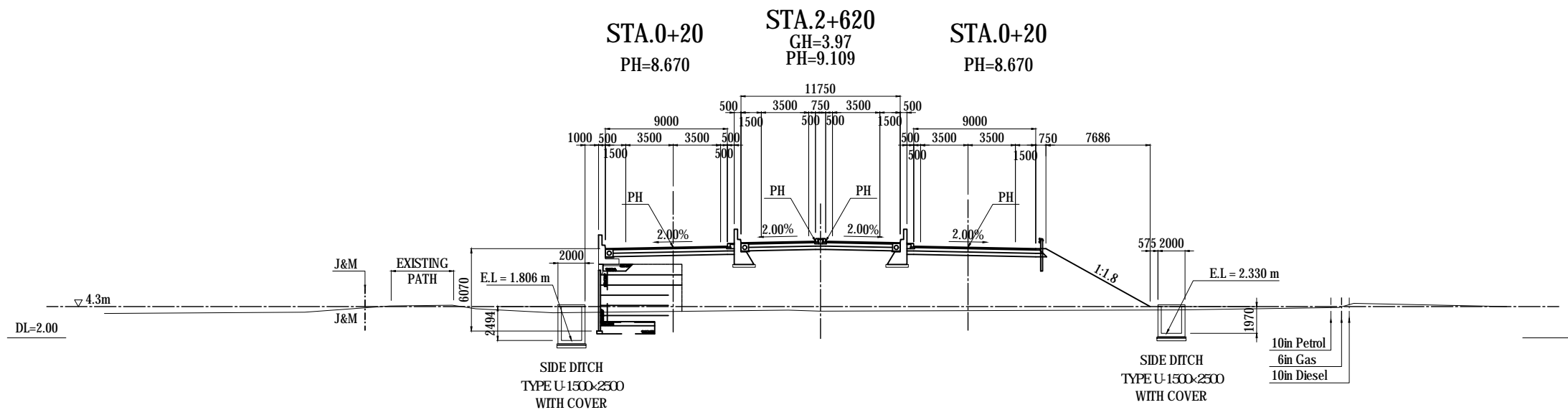
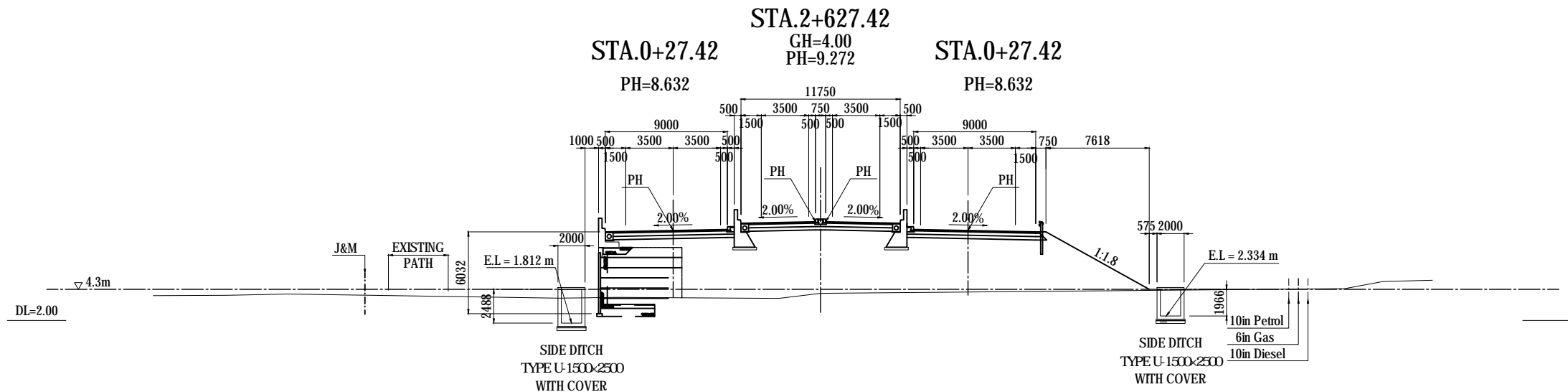
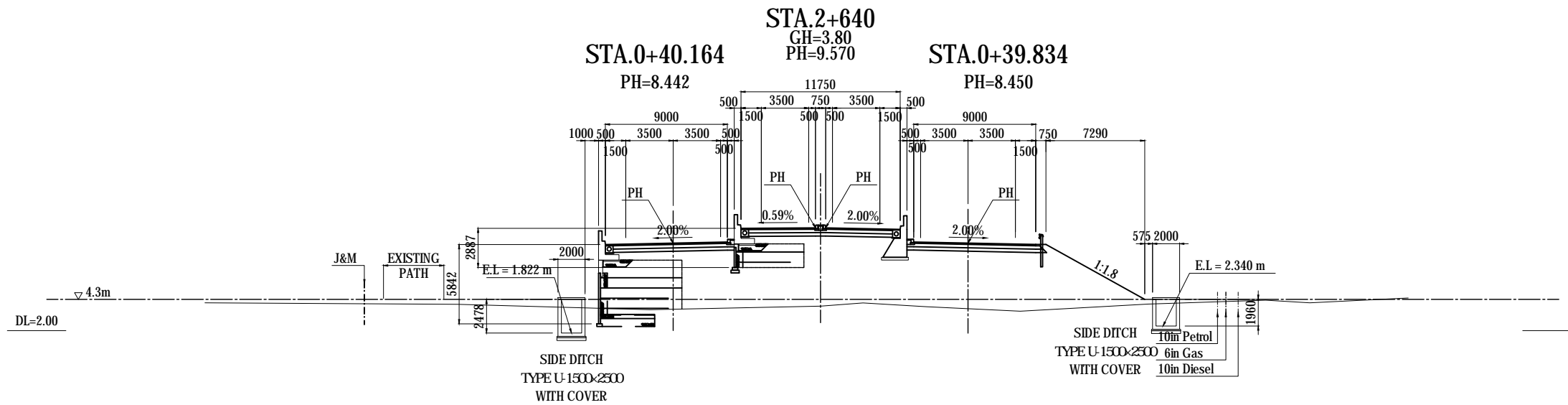
CROSS SECTION MAIN ROAD (4) S=1:400



Note: Elevation is based on MSL (Mean Sea Level)

<small>PROJECT NAME</small> DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	<small>FINANCED BY</small> JAPAN INTERNATIONAL COOPERATION AGENCY	<small>COUNTERPART</small> REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	<small>JICA STUDY TEAM</small> NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 30%;">NAME</th> <th style="width: 30%;">SIGNATURE</th> <th style="width: 30%;">DATE</th> </tr> </thead> <tbody> <tr> <td>PREPARED BY</td> <td>M. TORIU</td> <td></td> <td>15 Jun. 2017</td> </tr> <tr> <td>CHECKED BY</td> <td>T. HAYAKAWA</td> <td></td> <td>20 Jun. 2017</td> </tr> <tr> <td>APPROVED BY</td> <td>Y. SANO</td> <td></td> <td>21 Jun. 2017</td> </tr> </tbody> </table>		NAME	SIGNATURE	DATE	PREPARED BY	M. TORIU		15 Jun. 2017	CHECKED BY	T. HAYAKAWA		20 Jun. 2017	APPROVED BY	Y. SANO		21 Jun. 2017	<small>DRAWING TITLE</small> <h2 style="text-align: center;">CROSS SECTION MAIN ROAD (4)</h2>	<small>PACKAGE</small> 2 <small>DWG No.</small> P2-RD-0430
	NAME	SIGNATURE	DATE																			
PREPARED BY	M. TORIU		15 Jun. 2017																			
CHECKED BY	T. HAYAKAWA		20 Jun. 2017																			
APPROVED BY	Y. SANO		21 Jun. 2017																			

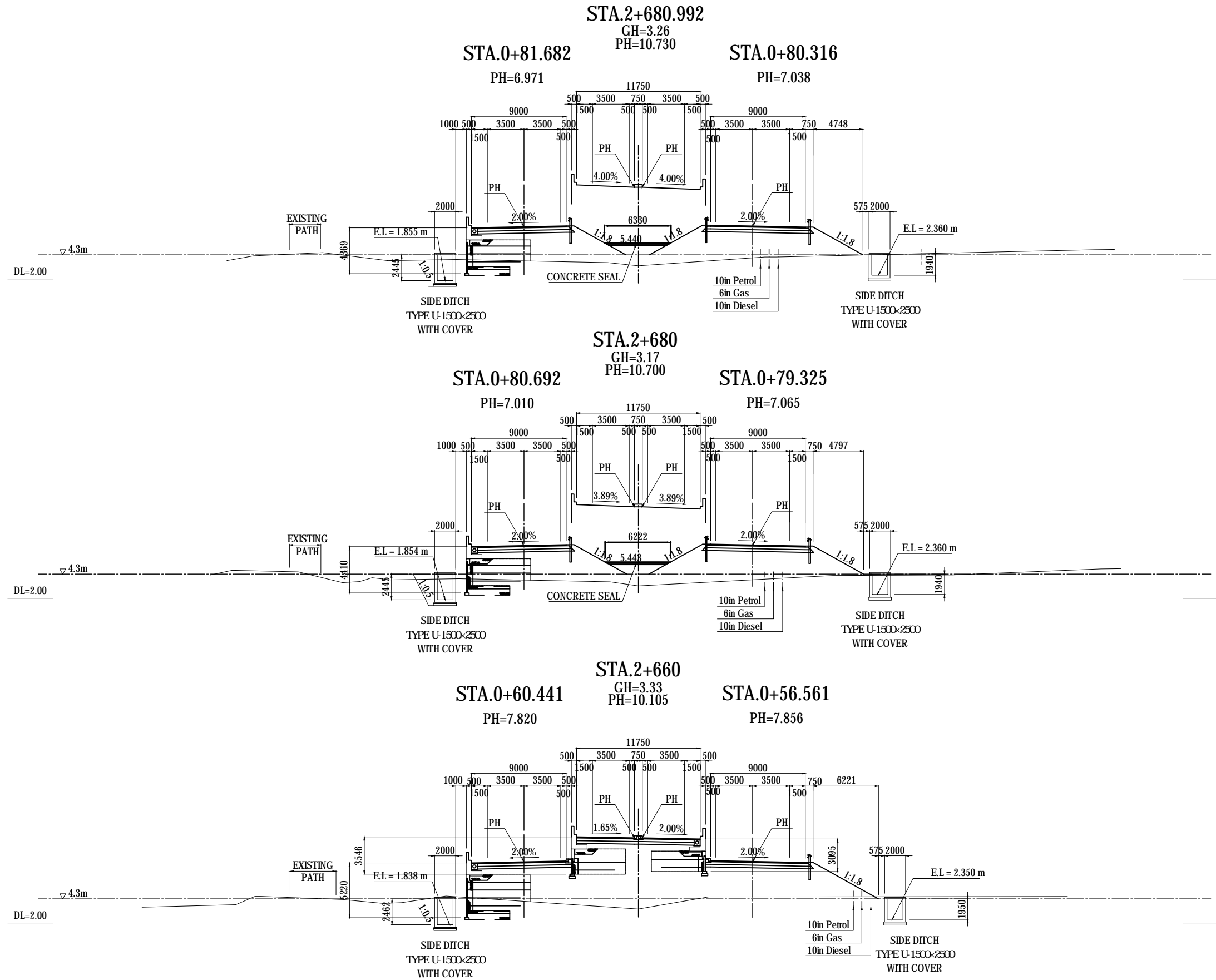
CROSS SECTION MAIN ROAD (5) S=1:400



Note: Elevation is based on MSL (Mean Sea Level)

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME M. TORIU T. HAYAKAWA Y. SANO	SIGNATURE 	DATE 15 Jun. 2017 20 Jun. 2017 21 Jun. 2017	DRAWING TITLE CROSS SECTION MAIN ROAD (5)	PACKAGE 2 DWG No. P2-RD-0440
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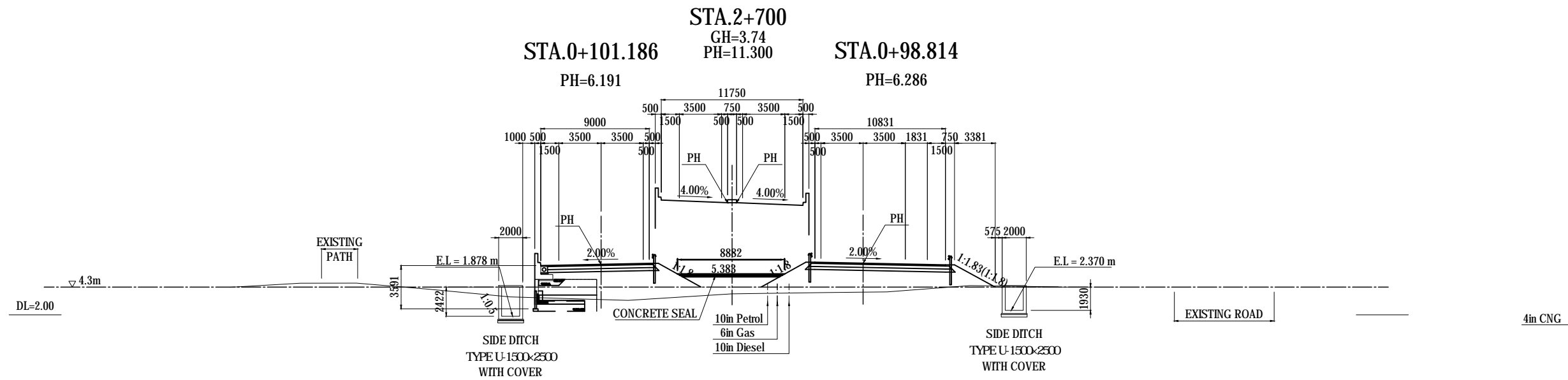
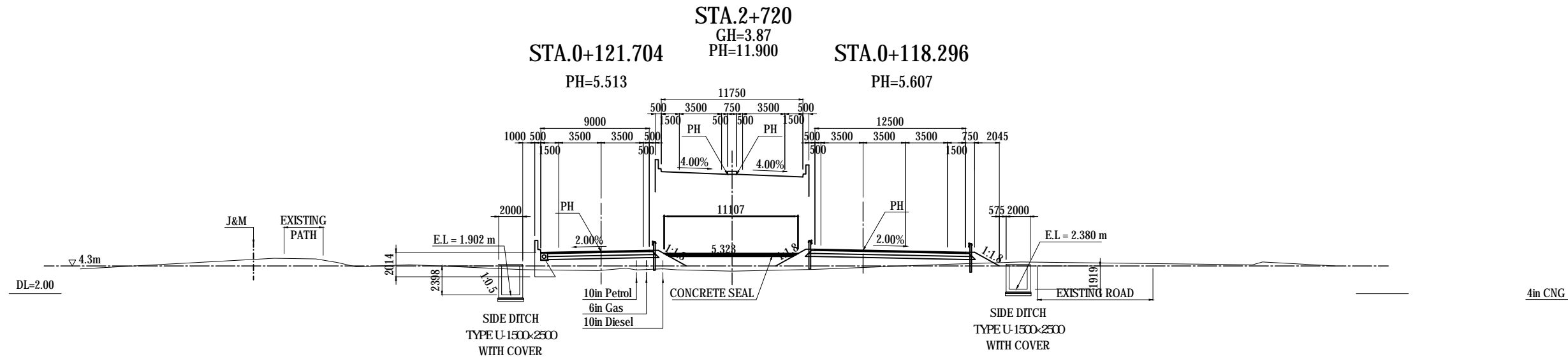
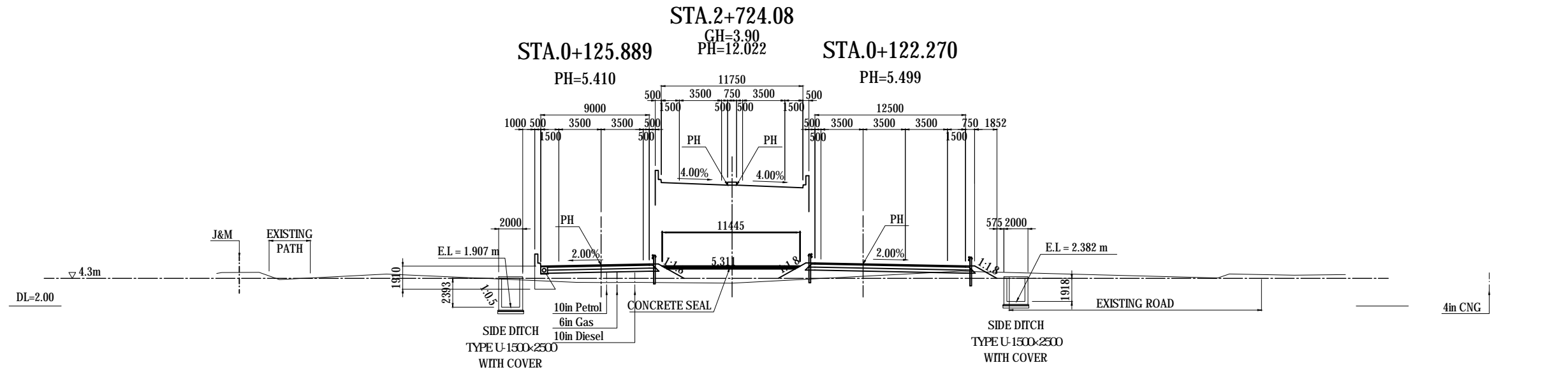
CROSS SECTION MAIN ROAD (6) S=1:400



Note: Elevation is based on MSL (Mean Sea Level)

PROJECT NAME	FINANCED BY	COUNTERPART	JICA STUDY TEAM	NAME	SIGNATURE	DATE	DRAWING TITLE	PACKAGE
DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	JICA JAPAN INTERNATIONAL COOPERATION AGENCY	REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	PREPARED BY CHECKED BY APPROVED BY	M. TORIU T. HAYAKAWA Y. SANO	15 Jun. 2017 20 Jun. 2017 21 Jun. 2017	CROSS SECTION MAIN ROAD (6)	2 DWG No. P2-RD-0450

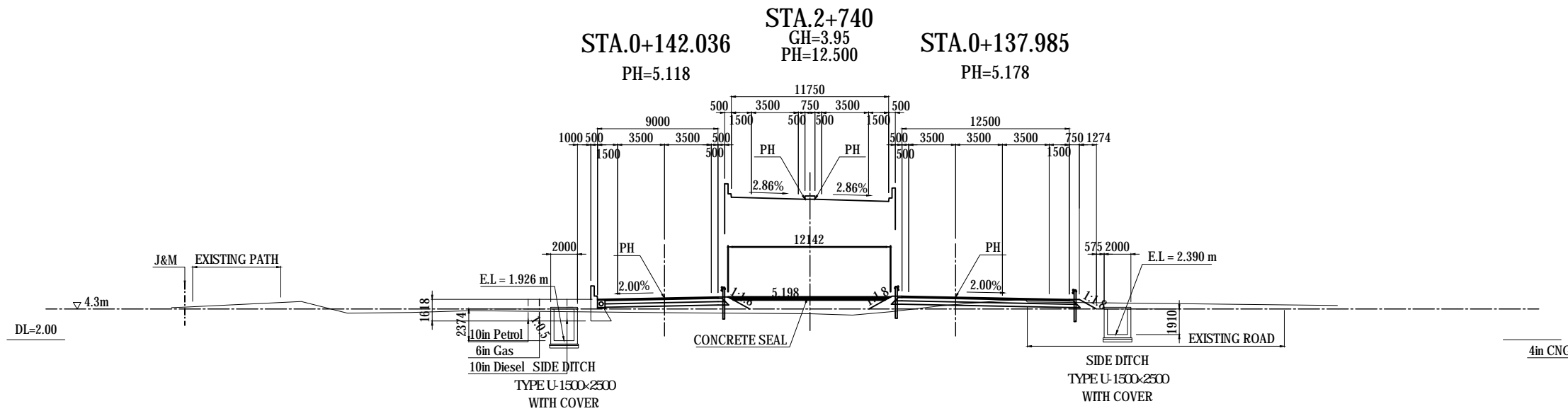
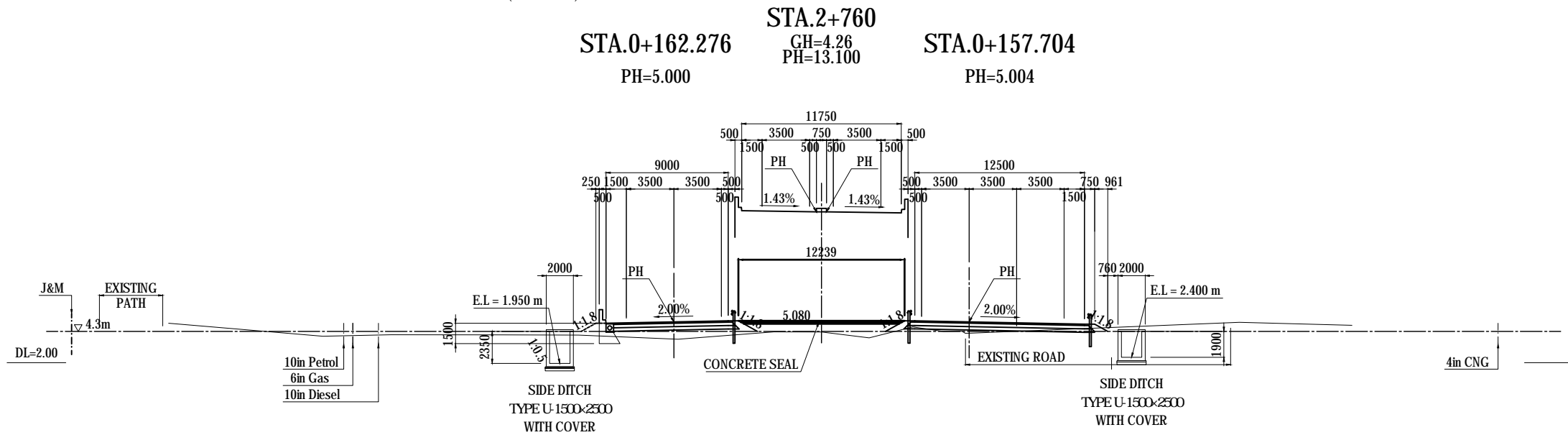
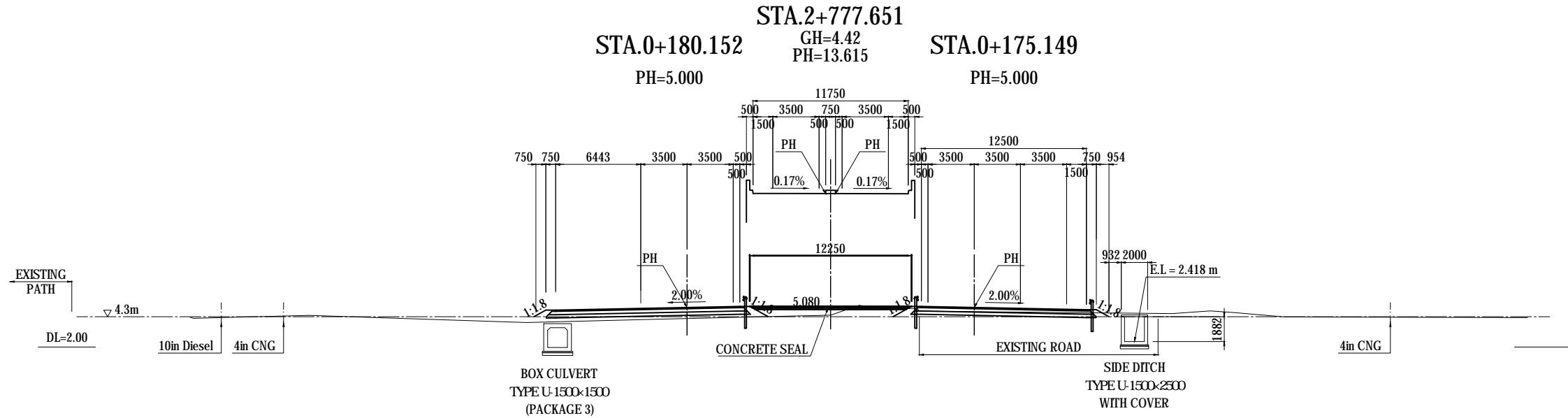
CROSS SECTION MAIN ROAD (7) S=1:400



Note: Elevation is based on MSL (Mean Sea Level)

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 30%;">NAME</th> <th style="width: 20%;">SIGNATURE</th> <th style="width: 20%;">DATE</th> </tr> </thead> <tbody> <tr> <td>PREPARED BY</td> <td>M. TORIU</td> <td></td> <td>15 Jun. 2017</td> </tr> <tr> <td>CHECKED BY</td> <td>T. HAYAKAWA</td> <td></td> <td>20 Jun. 2017</td> </tr> <tr> <td>APPROVED BY</td> <td>Y. SANO</td> <td></td> <td>21 Jun. 2017</td> </tr> </tbody> </table>		NAME	SIGNATURE	DATE	PREPARED BY	M. TORIU		15 Jun. 2017	CHECKED BY	T. HAYAKAWA		20 Jun. 2017	APPROVED BY	Y. SANO		21 Jun. 2017	DRAWING TITLE <p style="text-align: center;">CROSS SECTION MAIN ROAD (7)</p>	PACKAGE 2 DWG No. P2-RD-0460
	NAME	SIGNATURE	DATE																			
PREPARED BY	M. TORIU		15 Jun. 2017																			
CHECKED BY	T. HAYAKAWA		20 Jun. 2017																			
APPROVED BY	Y. SANO		21 Jun. 2017																			

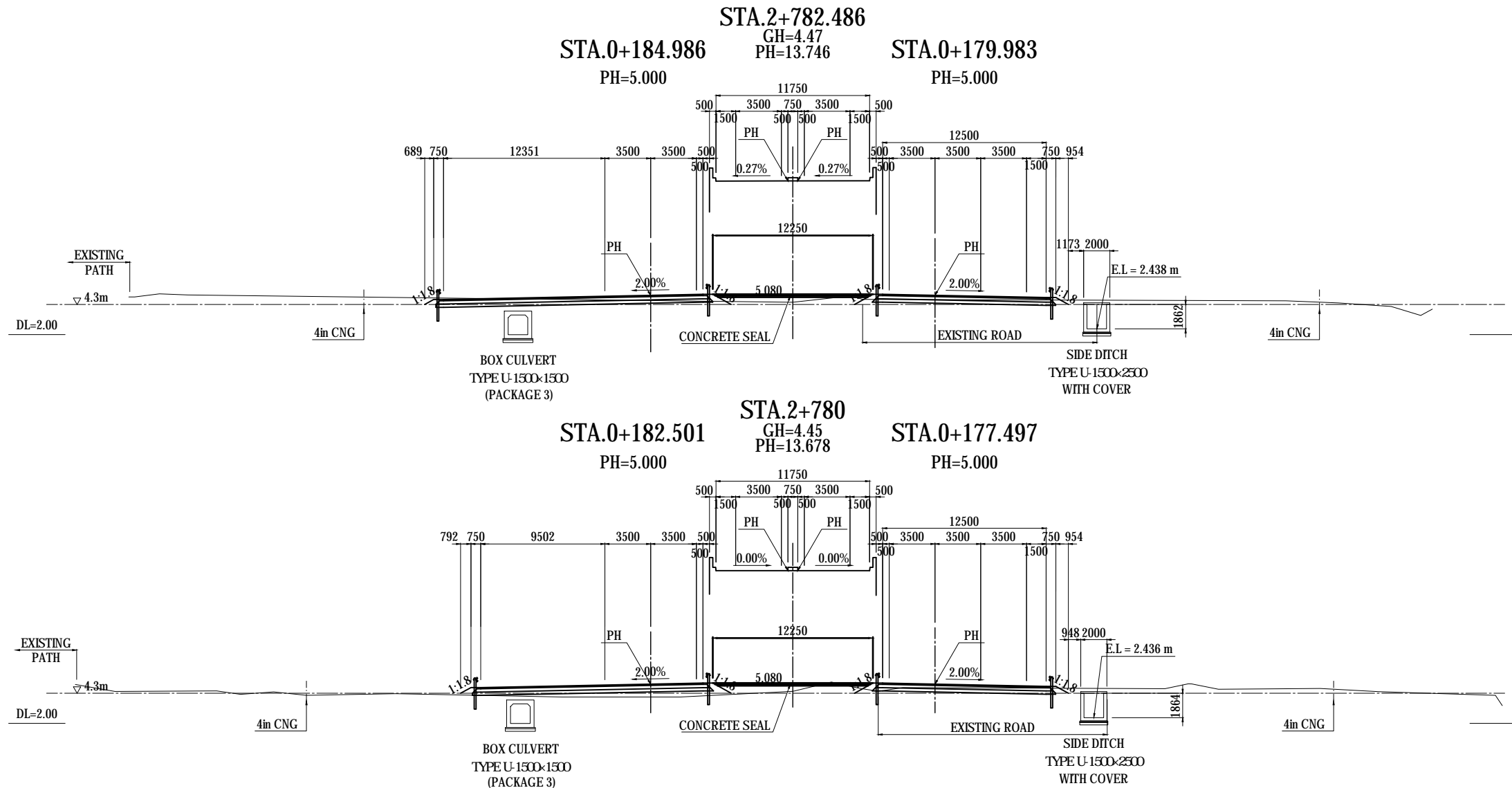
CROSS SECTION MAIN ROAD (8) S=1:400



Note: Elevation is based on MSL (Mean Sea Level)

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE CROSS SECTION MAIN ROAD (8)	PACKAGE 2 DWG No. P2-RD-0470	
				PREPARED BY	M. TORIU				15 Jun. 2017
				CHECKED BY	T. HAYAKAWA				20 Jun. 2017
				APPROVED BY	Y. SANO				21 Jun. 2017

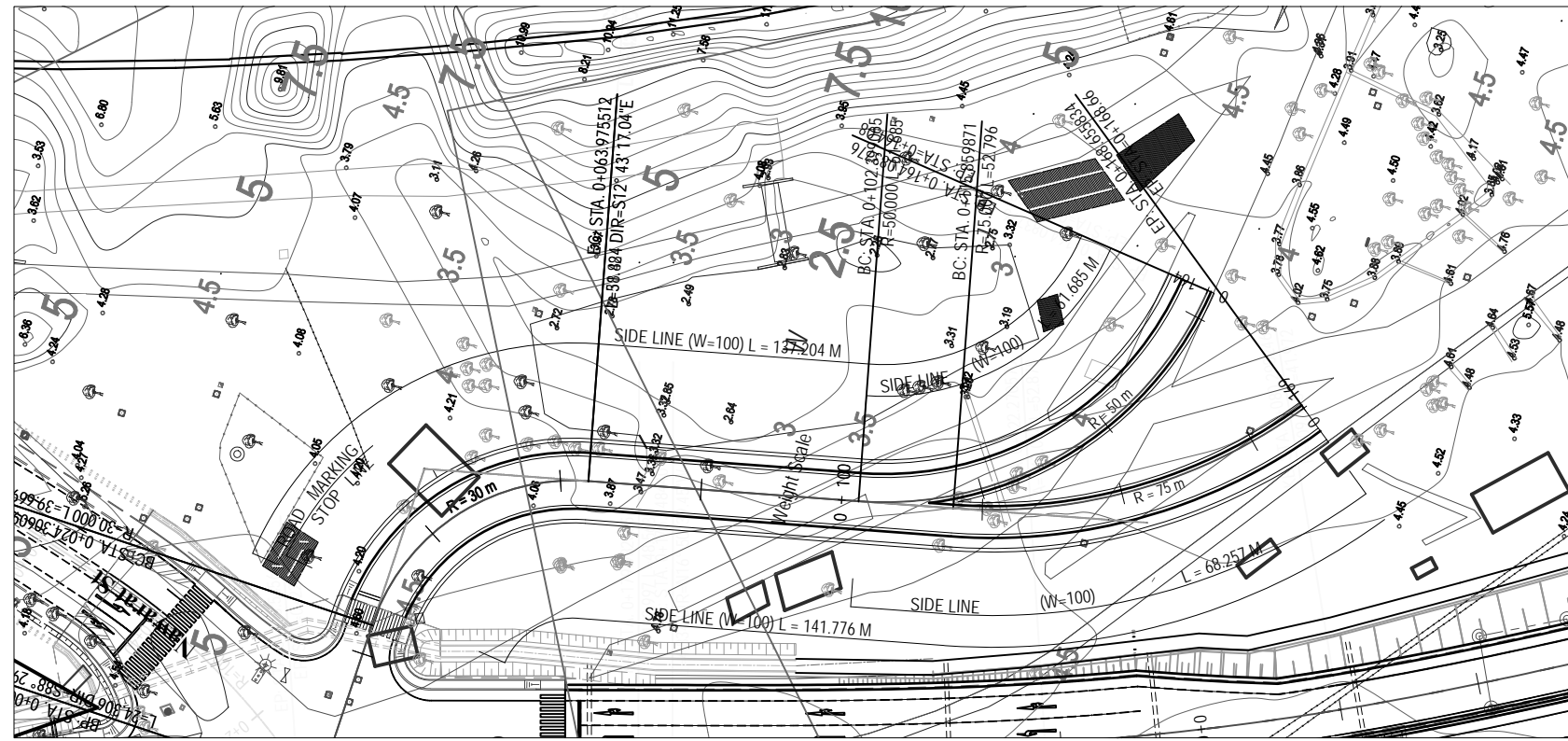
CROSS SECTION MAIN ROAD (9) S=1:400



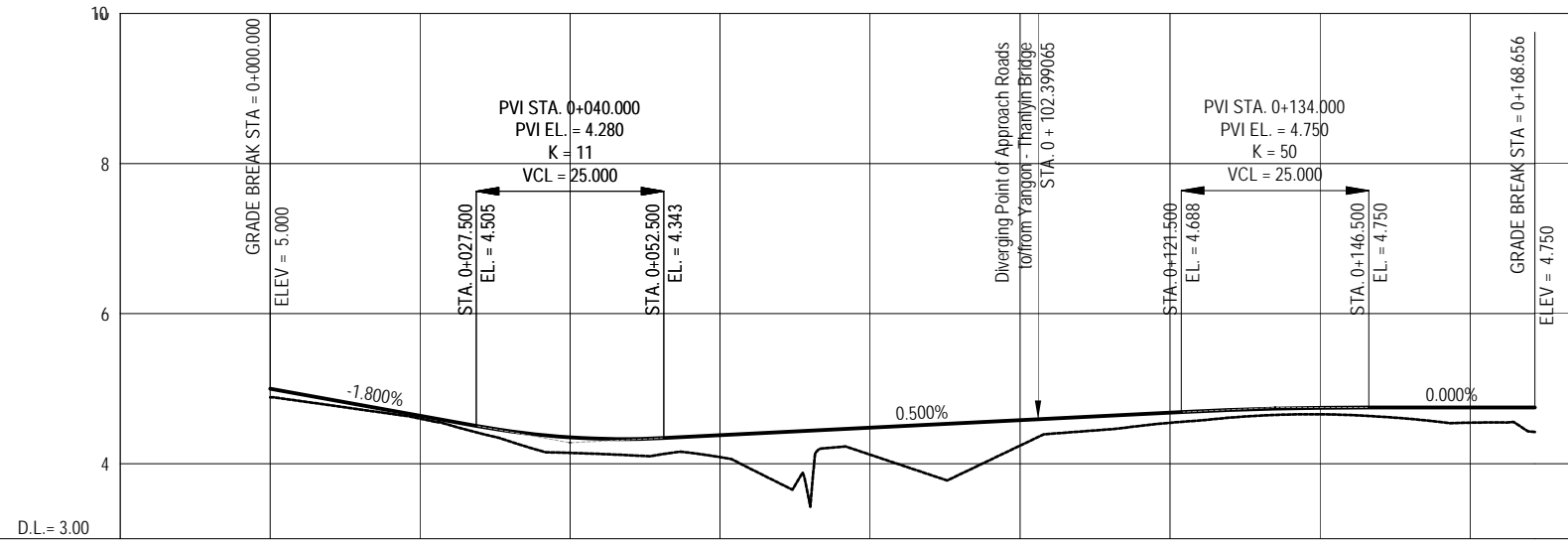
Note: Elevation is based on MSL (Mean Sea Level)

<small>PROJECT NAME</small> DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	<small>FINANCED BY</small> JAPAN INTERNATIONAL COOPERATION AGENCY	<small>COUNTERPART</small> REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	<small>JICA STUDY TEAM</small> NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">NAME</th> <th style="text-align: left;">SIGNATURE</th> <th style="text-align: left;">DATE</th> </tr> <tr> <td>PREPARED BY</td> <td>M. TORIU</td> <td>15 Jun. 2017</td> </tr> <tr> <td>CHECKED BY</td> <td>T. HAYAKAWA</td> <td>20 Jun. 2017</td> </tr> <tr> <td>APPROVED BY</td> <td>Y. SANO</td> <td>21 Jun. 2017</td> </tr> </table>	NAME	SIGNATURE	DATE	PREPARED BY	M. TORIU	15 Jun. 2017	CHECKED BY	T. HAYAKAWA	20 Jun. 2017	APPROVED BY	Y. SANO	21 Jun. 2017	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">DRAWING TITLE</th> <th style="text-align: left;">PACKAGE</th> </tr> <tr> <td rowspan="3" style="text-align: center; vertical-align: middle;">CROSS SECTION MAIN ROAD (9)</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">DWG No.</td> </tr> <tr> <td style="text-align: center;">P2-RD-0480</td> </tr> </table>	DRAWING TITLE	PACKAGE	CROSS SECTION MAIN ROAD (9)	2	DWG No.	P2-RD-0480
NAME	SIGNATURE	DATE																					
PREPARED BY	M. TORIU	15 Jun. 2017																					
CHECKED BY	T. HAYAKAWA	20 Jun. 2017																					
APPROVED BY	Y. SANO	21 Jun. 2017																					
DRAWING TITLE	PACKAGE																						
CROSS SECTION MAIN ROAD (9)	2																						
	DWG No.																						
	P2-RD-0480																						

PLAN SCALE = 1:1000

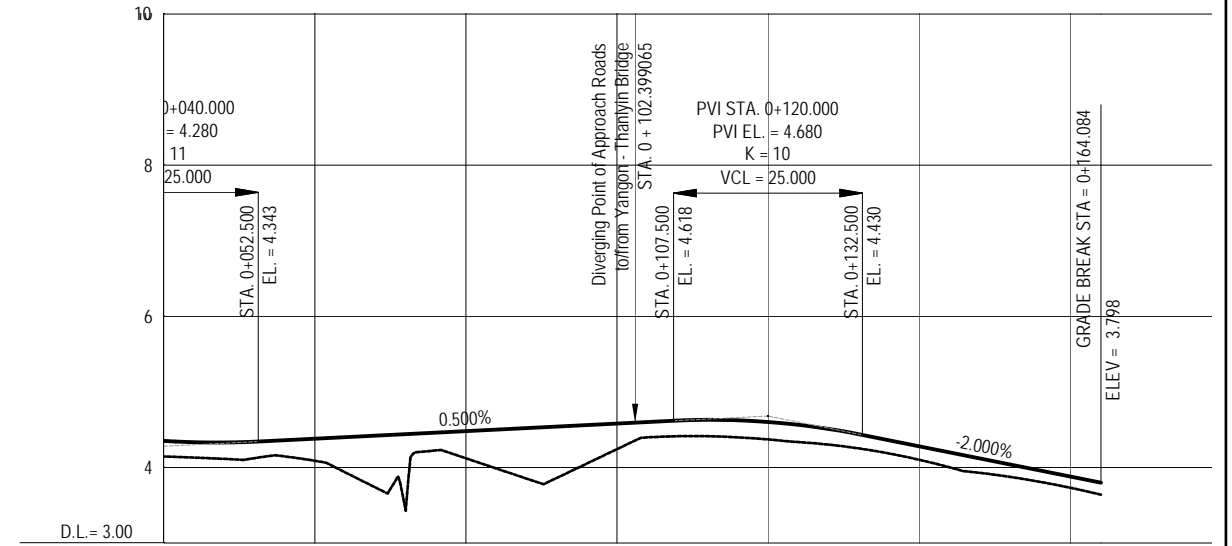


PROFILE SCALE H = 1:1000
RELOCATION ROAD FROM SHUKHINTHAR MAYOPAT ROAD TO YANGON-THANLYIN BRIDGE



GRADE	5.000	4.640	4.352	4.380	4.480	4.580	4.680	4.746	4.750
PROPOSED HEIGHT	5.000	4.640	4.352	4.380	4.480	4.580	4.680	4.746	4.750
EXISTING HEIGHT	4.88	4.50	4.14	4.09	4.12	4.24	4.55	4.66	4.55
STATION	0+000	+020	+040	+060	+080	+100	+120	+140	+160
CURVE ELEMENTS	R = ∞ L = 24.306m		R = 30.000m L = 39.669m		R = ∞ L = 51.884m		R = 75.000m L = 52.796m		

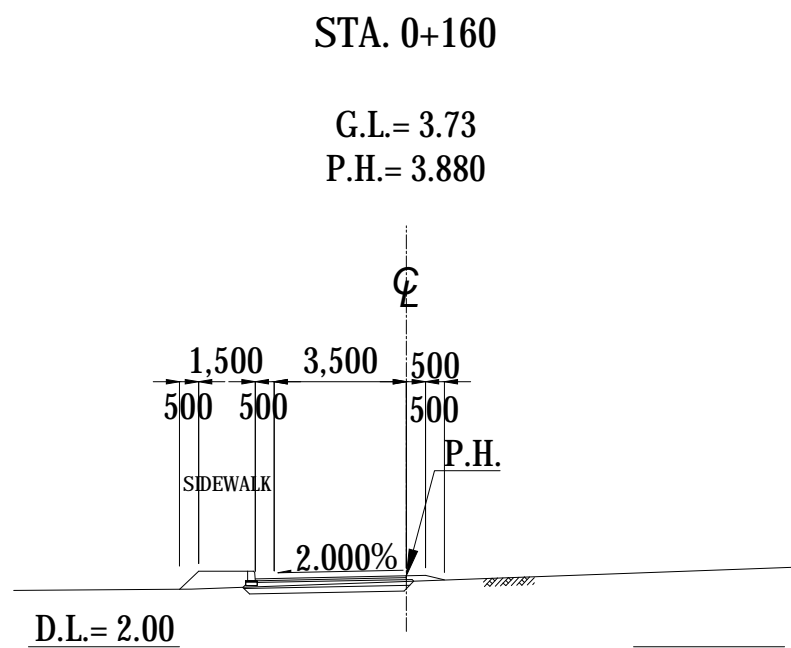
PROFILE SCALE H = 1:1000
RELOCATION ROAD FROM YANGON-THANLYIN BRIDGE TO SHUKHINTHAR MAYOPAT ROAD



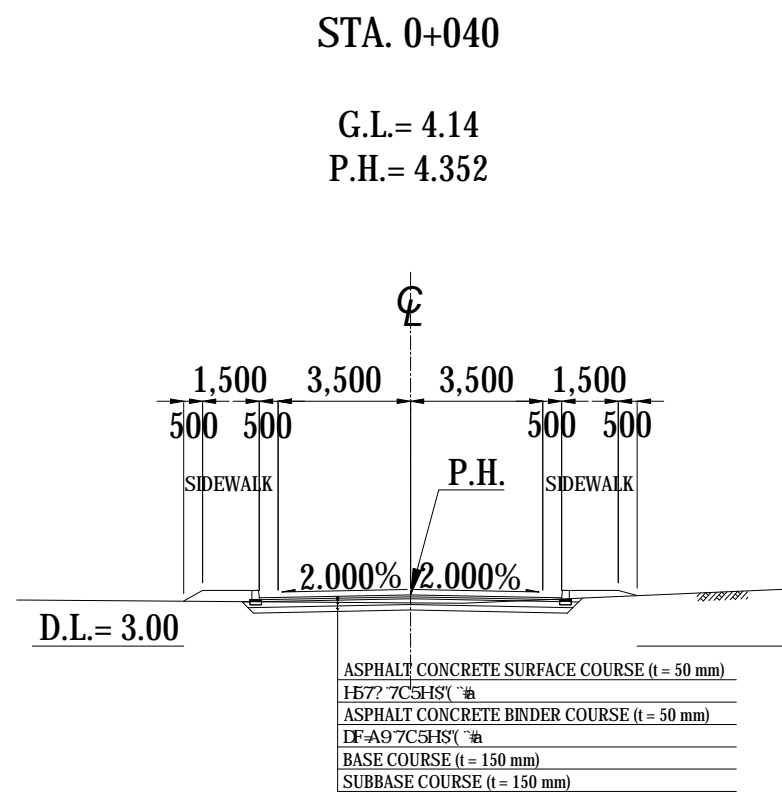
GRADE	4.280	4.380	4.480	4.580	4.602	4.280	3.880
PROPOSED HEIGHT	4.280	4.380	4.480	4.580	4.602	4.280	3.880
EXISTING HEIGHT	4.14	4.09	4.12	4.24	4.37	4.10	3.73
STATION	0+000	+060	+080	+100	+120	+140	+160
CURVE ELEMENTS	R = 30.000m L = 39.669m		R = ∞ L = 38.424m		R = 50.000m L = 61.685m		

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO. LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME E. YOKOTA	SIGNATURE 	DATE 15 JUNE 2017	DRAWING TITLE RELOCATION ROAD BETWEEN SHUKHINTHAR MAYOPAT ROAD AND YANGON-THANLYIN BRIDGE PLAN AND PROFILE	PACKAGE 2 DWG No. P2-RD-1000
				CHECKED BY T. HAYAKAWA	SIGNATURE 	DATE 20 JUNE 2017		
				APPROVED BY Y. SANO	SIGNATURE 	DATE 21 JUNE 2017		

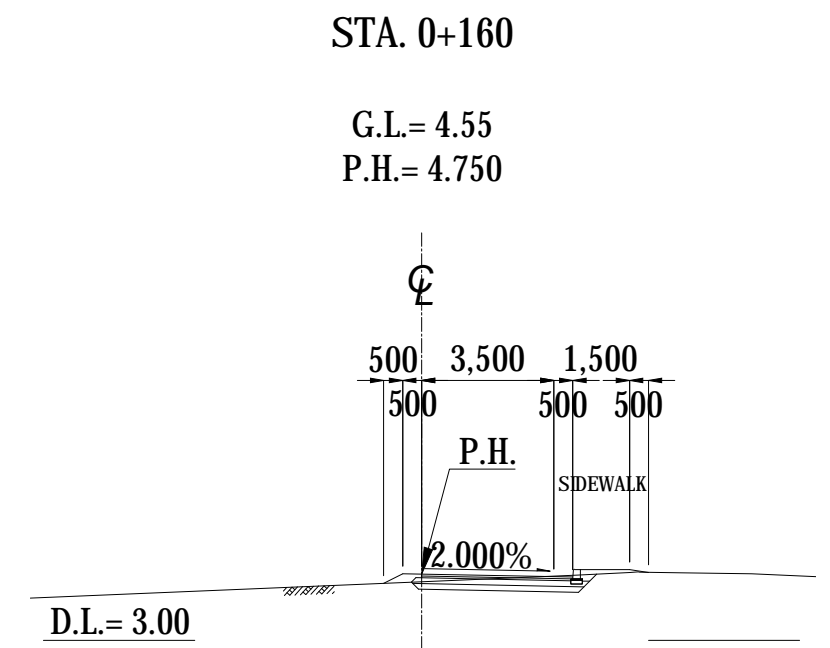
TYPICAL CROSS SECTION OF RELOCATION ROAD SCALE = 1:200



TYPICAL CROSS SECTION OF RELOCATION ROAD
FROM YANGON - THANLYIN BRIDGE TO SHUKHINTHAR MAYOPAT ROAD
AFTER STA. 0+102.399



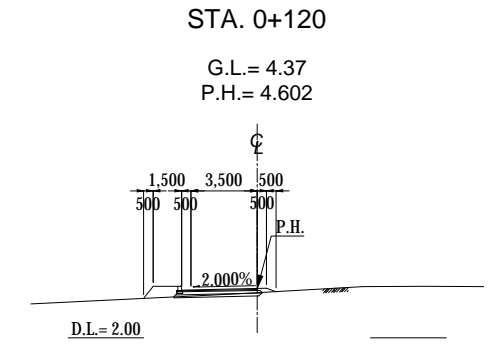
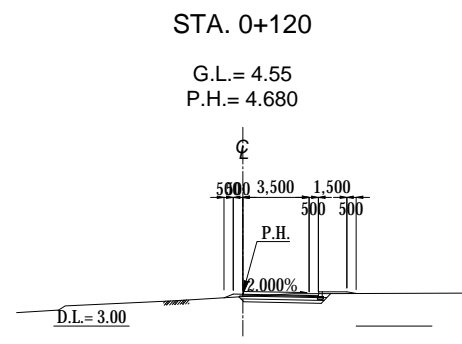
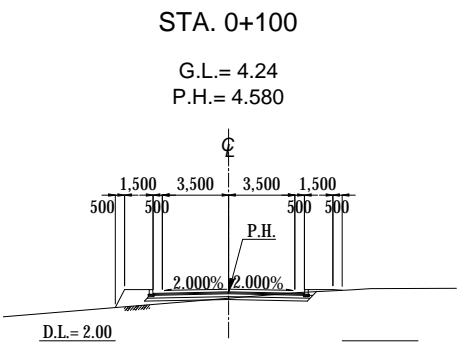
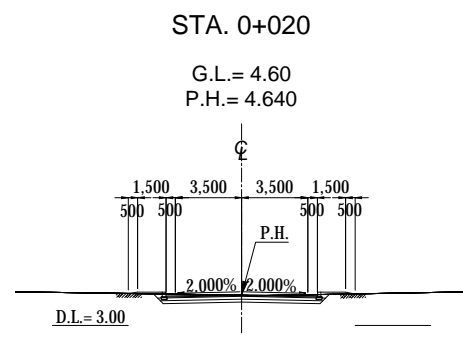
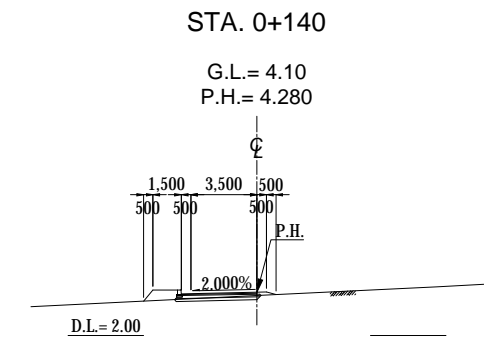
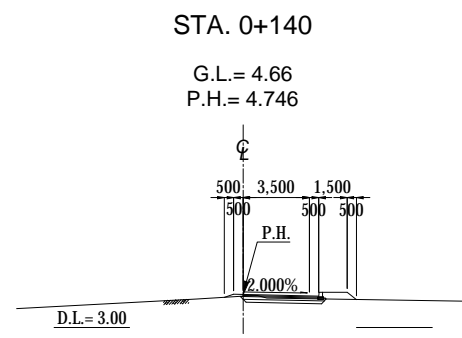
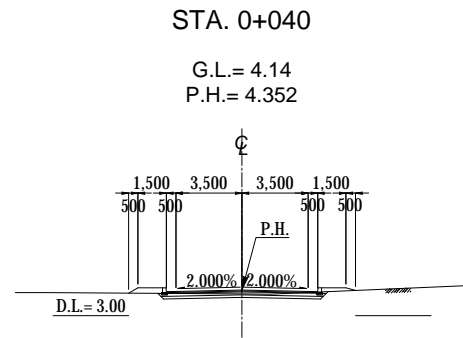
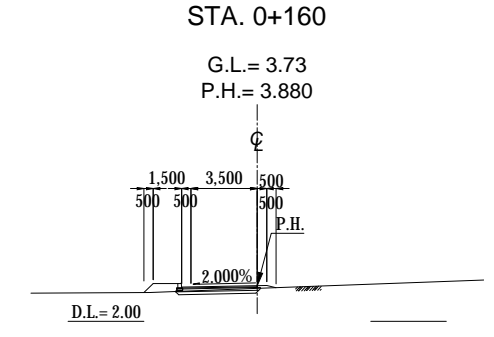
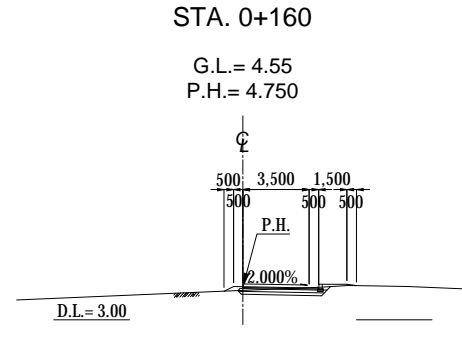
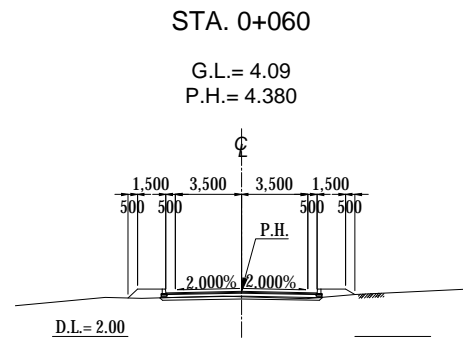
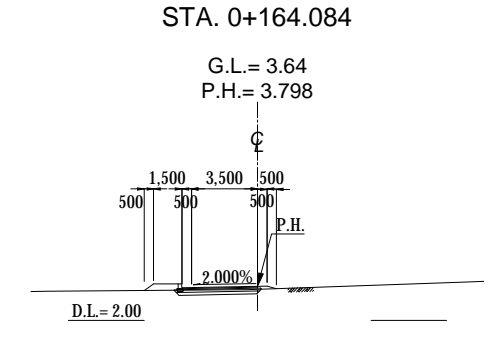
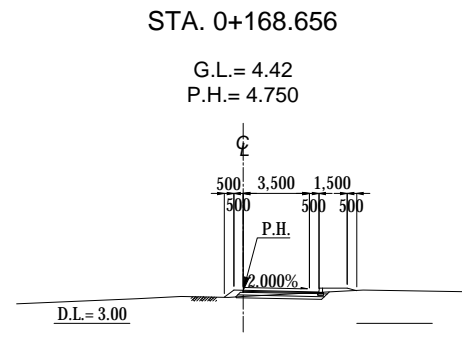
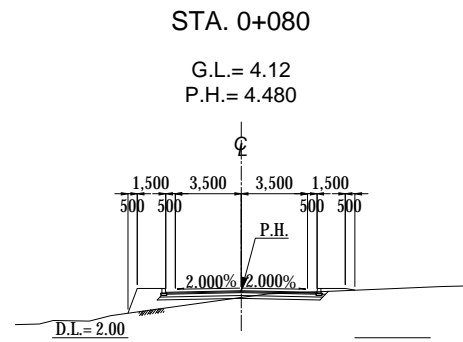
TYPICAL CROSS SECTION OF RELOCATION ROAD
FROM SHUKHINTHAR MAYOPAT ROAD TO STA. 0+102.399



TYPICAL CROSS SECTION OF RELOCATION ROAD
FROM SHUKHINTHAR MAYOPAT ROAD TO YANGON - THANLYIN BRIDGE
AFTER STA. 0+102.399

NOTE: ELEVATION IS BASED ON MSL (MEAN SEA LEVEL).

PROJECT NAME	FINANCED BY	COUNTERPART	JICA STUDY TEAM	NAME	SIGNATURE	DATE	DRAWING TITLE	PACKAGE
DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	JAPAN INTERNATIONAL COOPERATION AGENCY	REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	PREPARED BY	E. YOKOTA	15 JUNE 2017	RELOCATION ROAD BETWEEN SHUKHINTHAR MAYOPAT ROAD AND YANGON-THANLYIN BRIDGE TYPICAL CROSS SECTION	2
				CHECKED BY	T. HAYAKAWA	20 JUNE 2017		DWG No.
				APPROVED BY	Y. SANO	21 JUNE 2017		P2-RD-1010



CROSS SECTION OF RELOCATION ROAD FROM SHUKHINTHAR MAYOPAT ROAD TO STA. 0+102.399

CROSS SECTION OF RELOCATION ROAD FROM SHUKHINTHAR MAYOPAT ROAD TO YANGON - THANLYN BRIDGE AFTER STA. 0+102.399

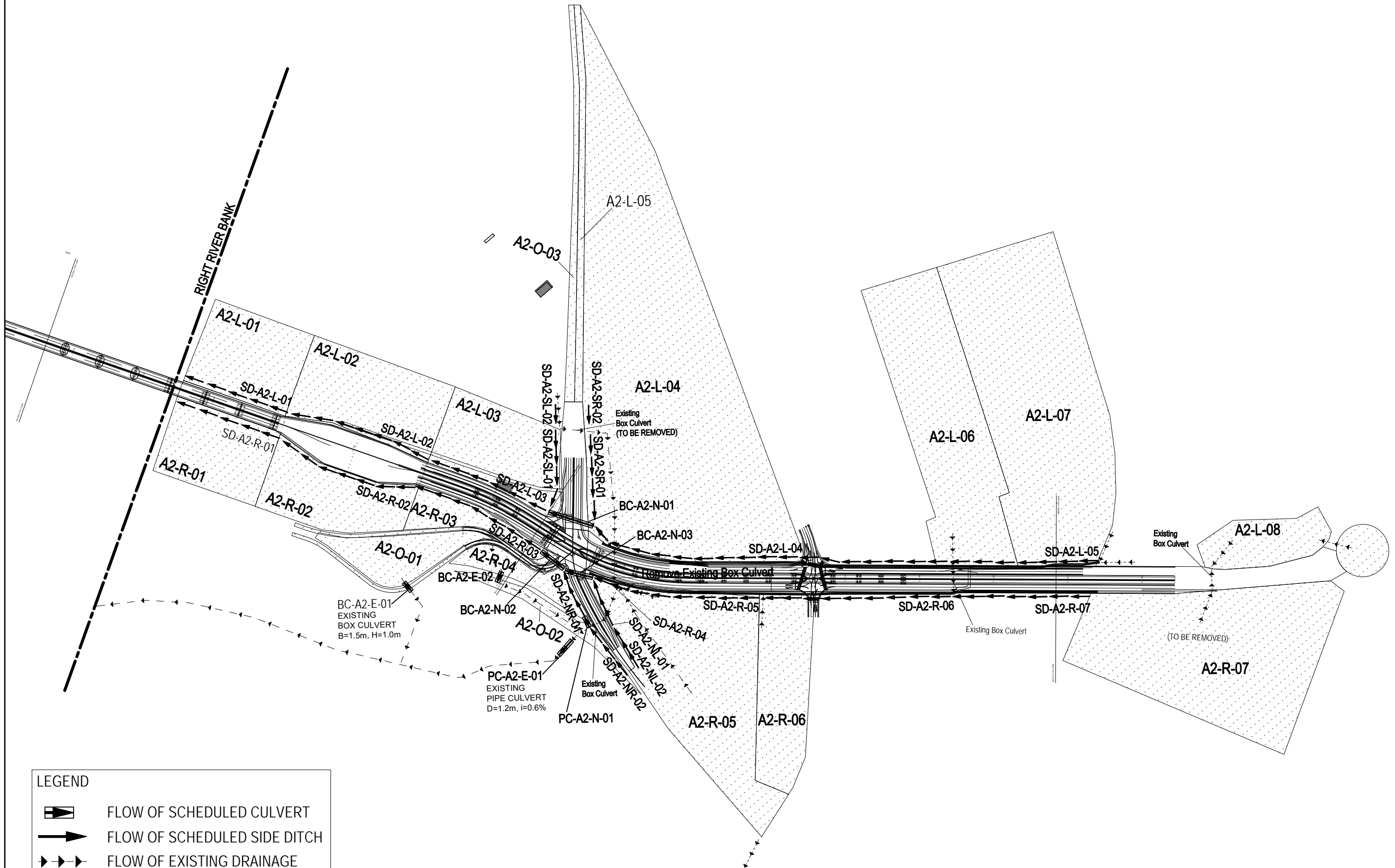
CROSS SECTION OF RELOCATION ROAD FROM YANGON - THANLYN BRIDGE TO SHUKHINTHAR MAYOPAT ROAD AFTER STA. 0+102.399

NOTE: ELEVATION IS BASED ON MSL (MEAN SEA LEVEL).

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO.,LTD. NIPPON ENGINEERING CONSULTANTS CO.,LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE RELOCATION ROAD BETWEEN SHUKHINTHAR MAYOPAT ROAD AND YANGON-THANLYN BRIDGE CROSS SECTION	PACKAGE	
				PREPARED BY	E. YOKOTA			15 JUNE 2017	2
				CHECKED BY	T. HAYAKAWA			20 JUNE 2017	DWG No.
				APPROVED BY	Y. SANO			21 JUNE 2017	P2-RD-1020

DRAINAGE SYSTEM PLAN AND OUTLETS (RIGHT RIVER BANK)

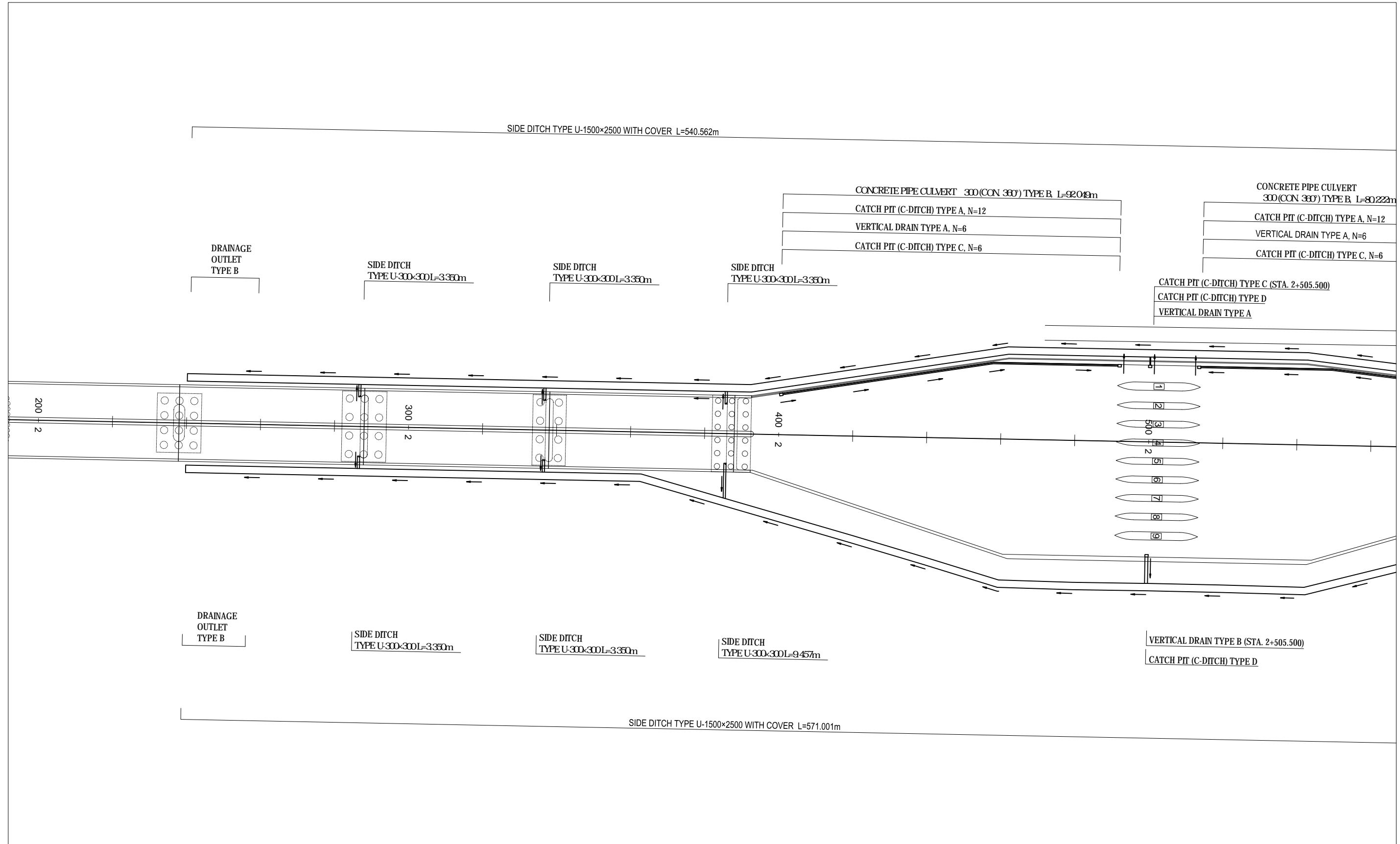
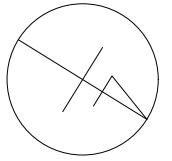
S= 1:5000



LEGEND	
	FLOW OF SCHEDULED CULVERT
	FLOW OF SCHEDULED SIDE DITCH
	FLOW OF EXISTING DRAINAGE
	CATCHMENT AREA

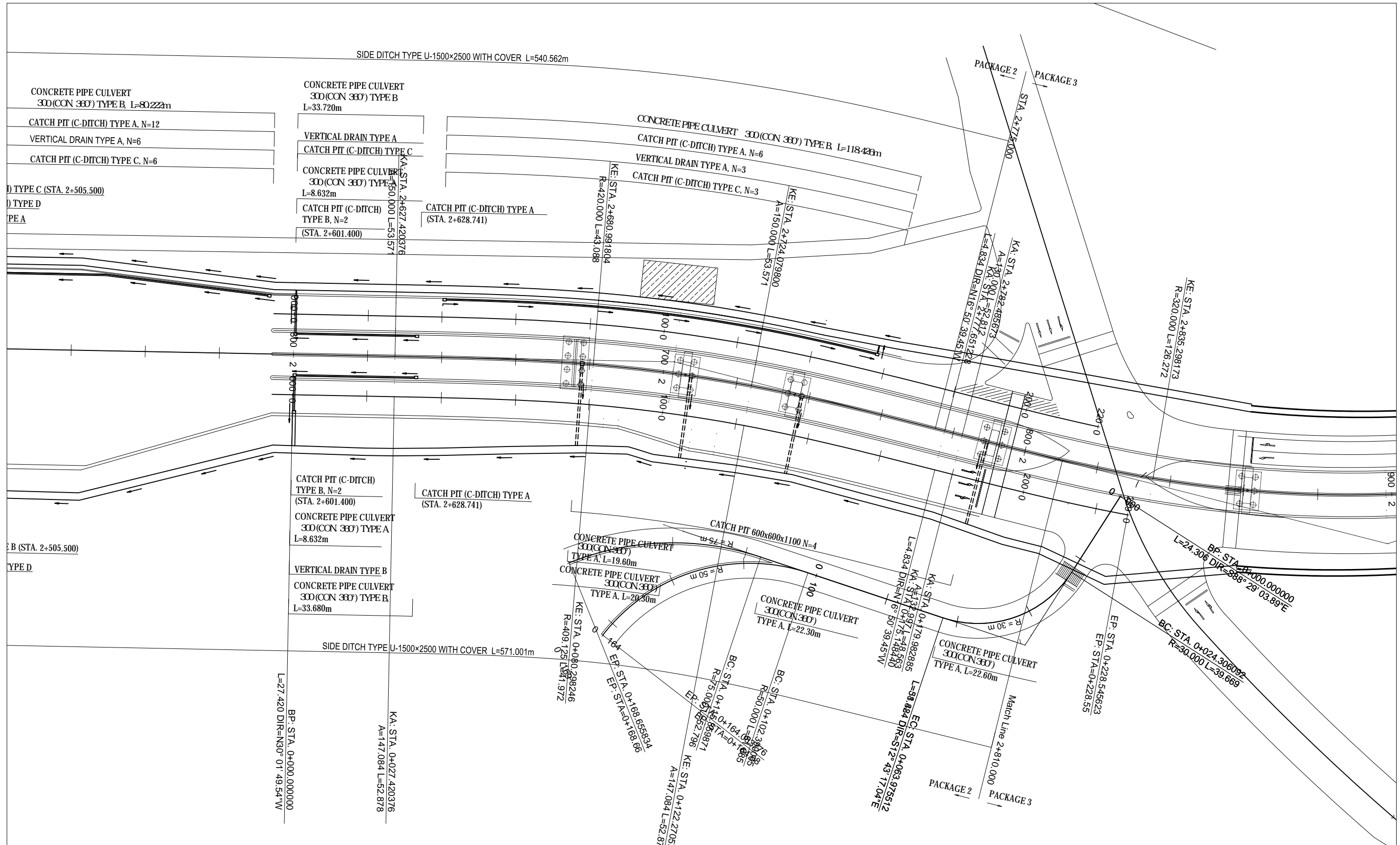
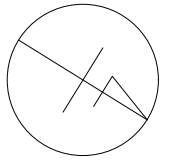
PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME EMO	SIGNATURE 	DATE 15 Jun. 2017	DRAWING TITLE DRAINAGE SYSTEM PLANS AND OUTLETS (RIGHT RIVER BANK) S= 1:5000	PACKAGE 2
PREPARED BY	CHECKED BY	APPROVED BY	T. HAYAKAWA		20 Jun. 2017	DWG No.		
			Y. SANO		21 Jun. 2017	P2-RD-3000		

DRAINAGE SYSTEM PLAN (1) S= 1:1000



<small>PROJECT NAME</small> DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	<small>FINANCED BY</small> JAPAN INTERNATIONAL COOPERATION AGENCY	<small>COUNTERPART</small> REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	<small>JICA STUDY TEAM</small> NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">NAME</th> <th style="text-align: left;">SIGNATURE</th> <th style="text-align: left;">DATE</th> </tr> <tr> <td>PREPARED BY</td> <td>M. TORIU</td> <td>15 Jun. 2017</td> </tr> <tr> <td>CHECKED BY</td> <td>T. HAYAKAWA</td> <td>20 Jun. 2017</td> </tr> <tr> <td>APPROVED BY</td> <td>Y. SANO</td> <td>21 Jun. 2017</td> </tr> </table>	NAME	SIGNATURE	DATE	PREPARED BY	M. TORIU	15 Jun. 2017	CHECKED BY	T. HAYAKAWA	20 Jun. 2017	APPROVED BY	Y. SANO	21 Jun. 2017	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">DRAWING TITLE</th> <th style="text-align: left;">PACKAGE</th> </tr> <tr> <td style="text-align: center;">DRAINAGE SYSTEM PLAN(1) S=1:1000</td> <td style="text-align: center;">2 DWG No. P2-RD-3010</td> </tr> </table>	DRAWING TITLE	PACKAGE	DRAINAGE SYSTEM PLAN(1) S=1:1000	2 DWG No. P2-RD-3010
NAME	SIGNATURE	DATE																			
PREPARED BY	M. TORIU	15 Jun. 2017																			
CHECKED BY	T. HAYAKAWA	20 Jun. 2017																			
APPROVED BY	Y. SANO	21 Jun. 2017																			
DRAWING TITLE	PACKAGE																				
DRAINAGE SYSTEM PLAN(1) S=1:1000	2 DWG No. P2-RD-3010																				

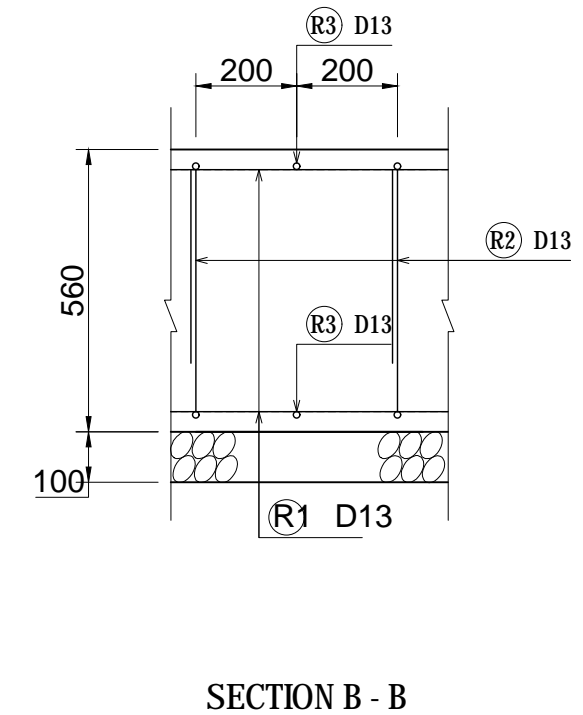
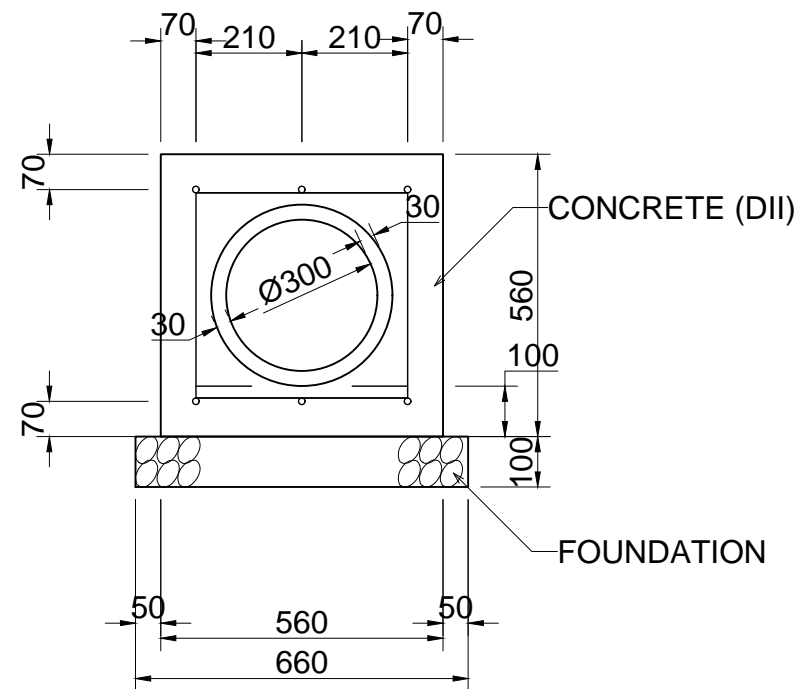
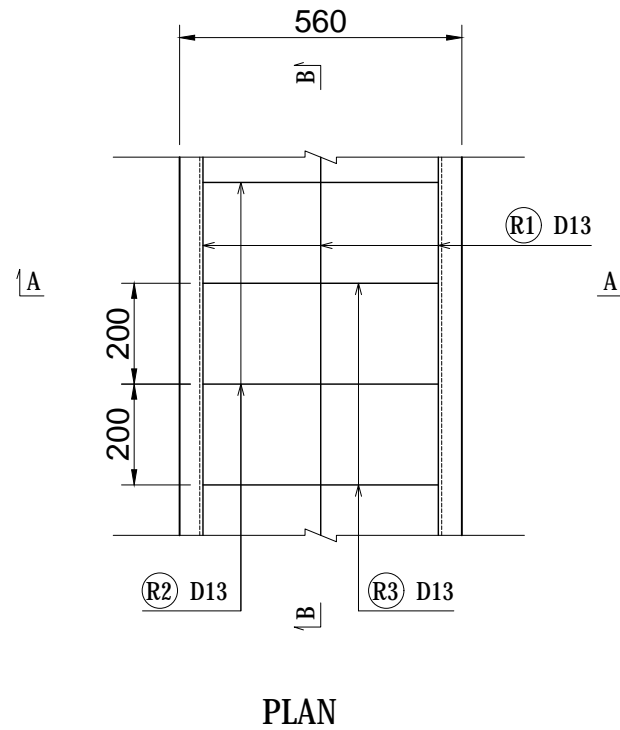
DRAINAGE SYSTEM PLAN (2) S= 1:1000



DETAIL OF CONCRETE PIPE CULVERT 300 (CON 360°) TYPE A S= 1:15

CONCRETE PIPE CULVERT 300 (CON 360°) TYPE A

A - A



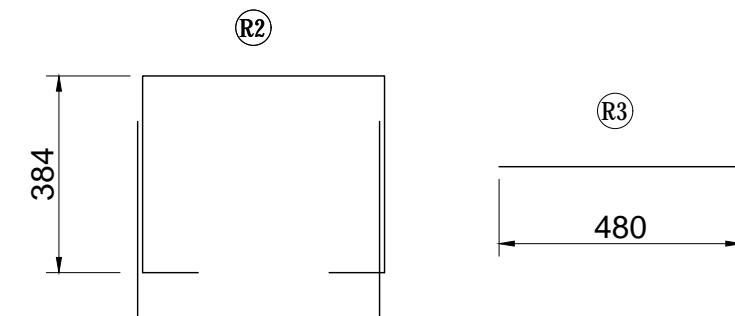
WORK QUANTITIES PER UNIT (PER 10m)

ITEM	UNIT	QUANTITY	REMARKS
R.C.PIPE 300	m	10.000	JIS A 5303 CLASS 1
CONCRETE (DII)	m ³	2.118	28 days = 240 kg/cm ²
FOUNDATION	m ²	6.600	GRAVEL / t=100mm
FORM	m ²	11.200	

WORK QUANTITIES PER UNIT FOR REINFORCEMENT BAR (PER 1.0m)

Dia	Nos	Length (mm/nos)	Unit Weight (kg/m)	Weight (kg)	Remarks
D13	6	1,000	0.995	5.970	(R1) / SD345
D13	5	420	0.995	2.090	(R2) / SD345
D13	5	1,310	0.995	6.517	(R3) / SD345
TOTAL				14.557	

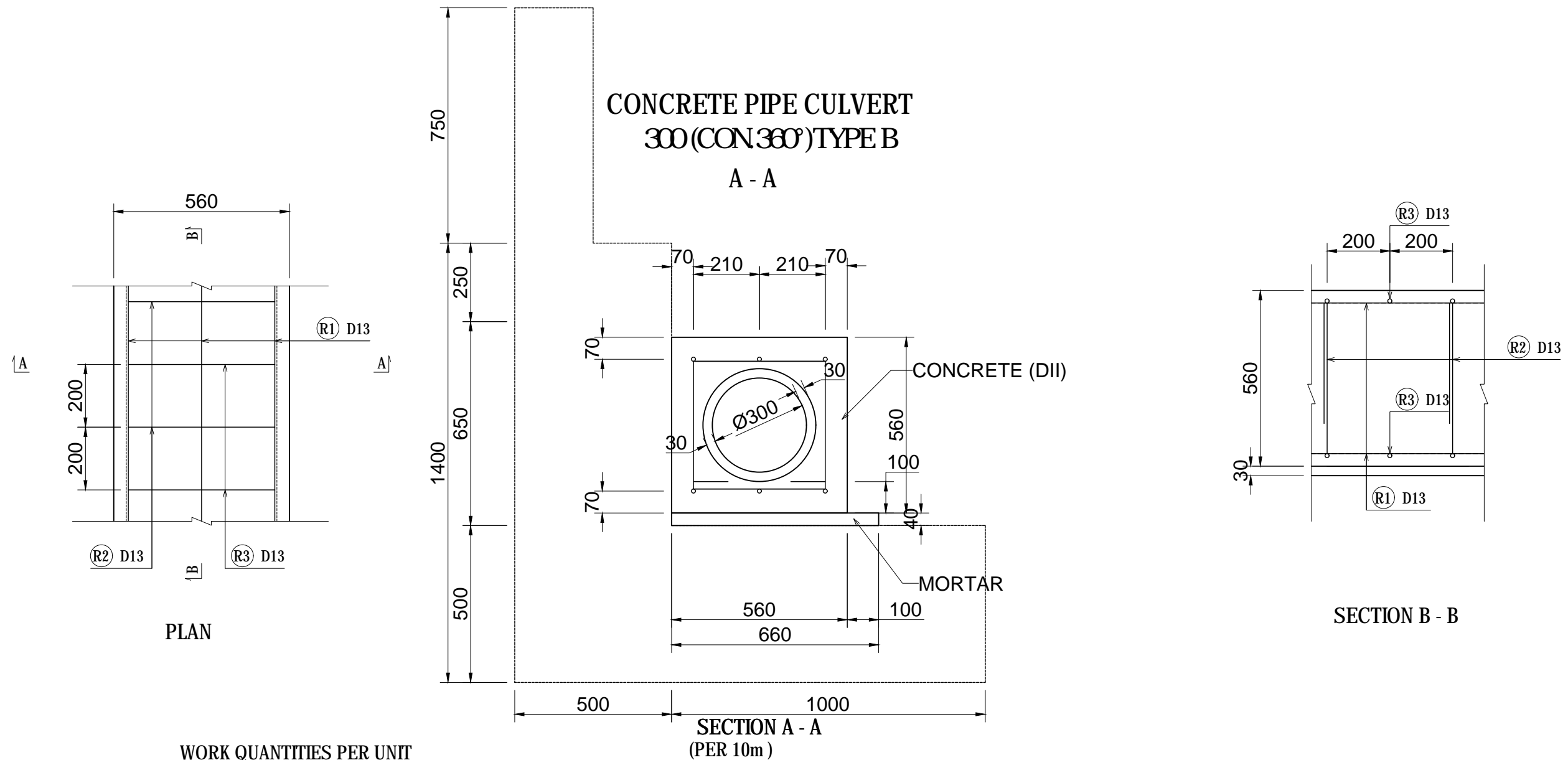
DETAIL OF STEEL REINFORCEMENT



Note: Precast R.C. Pipe 300 Reinforced Spun and Centrifugal Reinforced Concrete Pipes shall be Selected.

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME PREPARED BY M. TORIU CHECKED BY T. HAYAKAWA APPROVED BY Y. SANO	SIGNATURE 	DATE 15 Jun. 2017 20 Jun. 2017 21 Jun. 2017	DRAWING TITLE DETAIL OF CONCRETE PIPE CULVERT 300 (CON 360°) TYPE A S=1:15	PACKAGE 2 DWG No. P2-RD-3020
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DETAIL OF CONCRETE PIPE CULVERT 300 (CON 360°) TYPE B S= 1:15



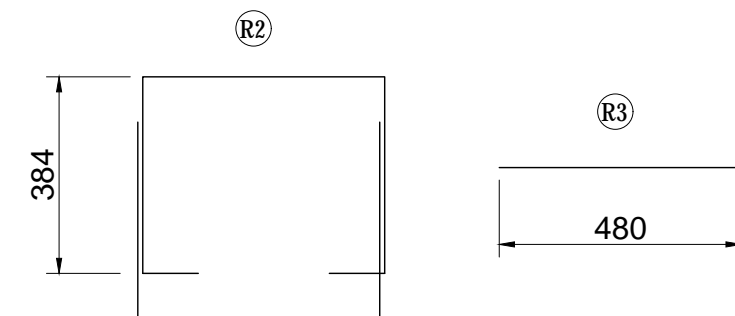
WORK QUANTITIES PER UNIT

ITEM	UNIT	QUANTITY	REMARKS
R.C.PIPE 300	m	10.000	JIS A 5303 CLASS 1
CONCRETE (DII)	m ³	2.118	28 days = 240 kg/cm ²
MORTAR	m ²	0.264	
FORM	m ²	11.200	

WORK QUANTITIES PER UNIT FOR REINFORCEMENT BAR (PER 1.0m)

Dia	Nos	Length (mm/nos)	Unit Weight (kg/m)	Weight (kg)	Remarks
D13	6	1,000	0.995	5.970	(R1) / SD345
D13	5	420	0.995	2.090	(R2) / SD345
D13	5	1,310	0.995	6.517	(R3) / SD345
TOTAL				14.557	

DETAIL OF STEEL REINFORCEMENT

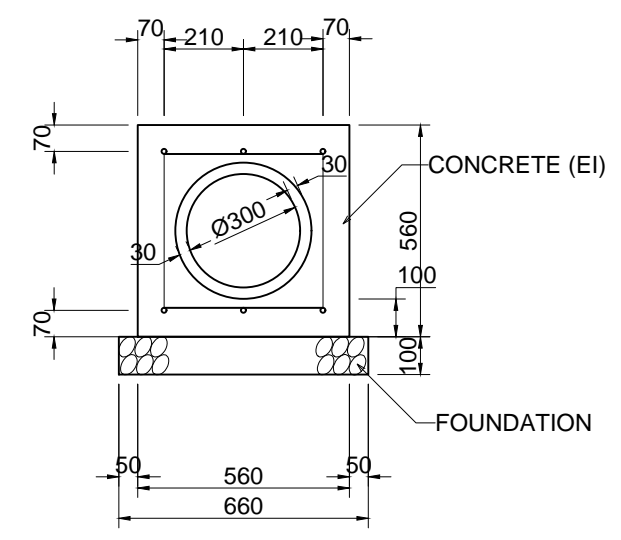
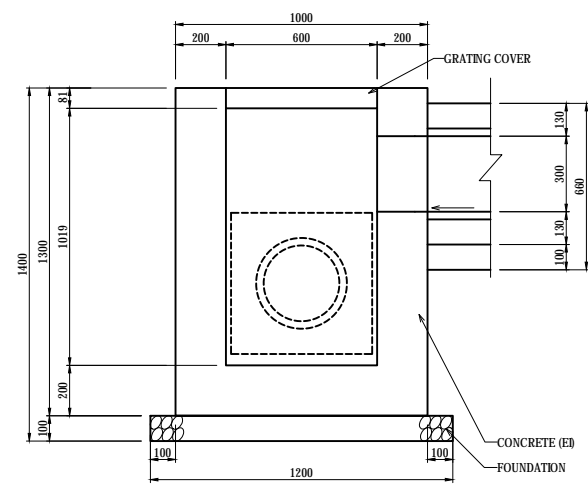
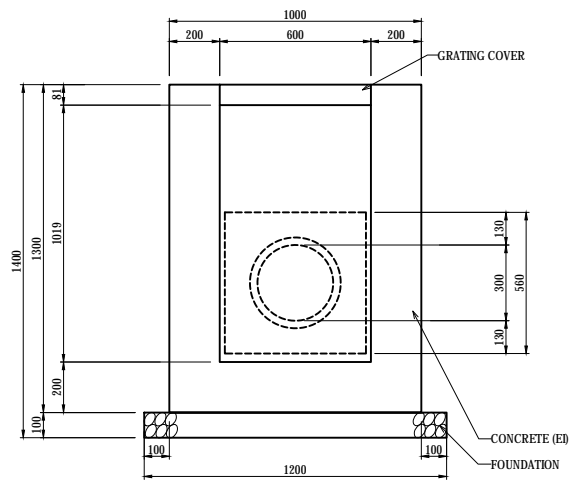
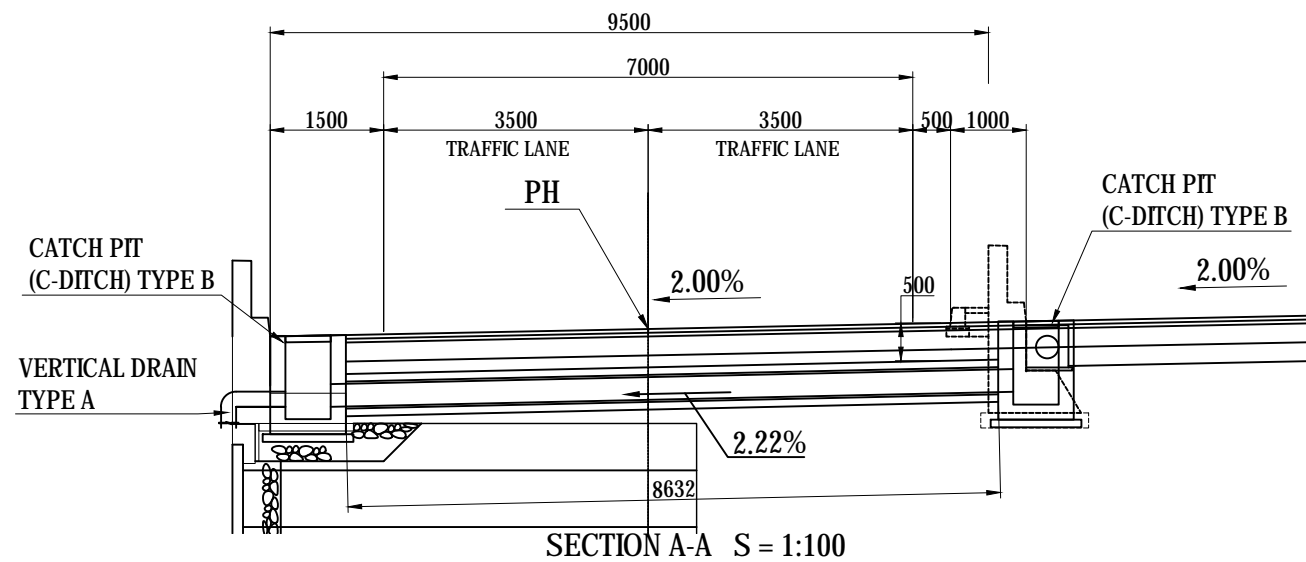
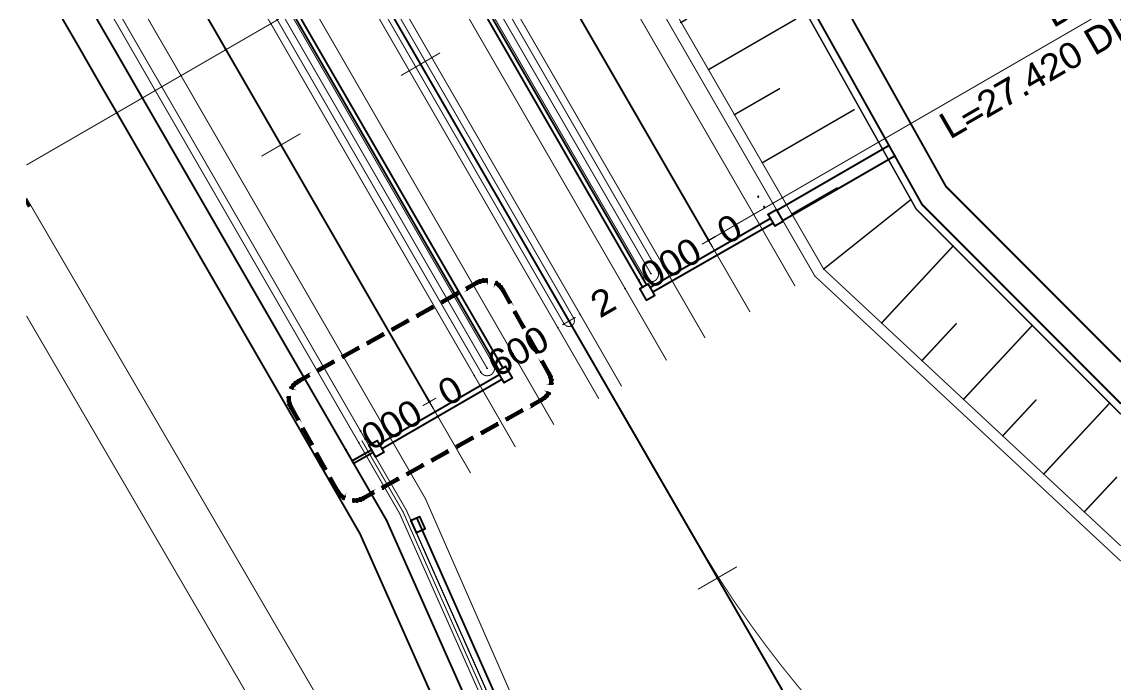
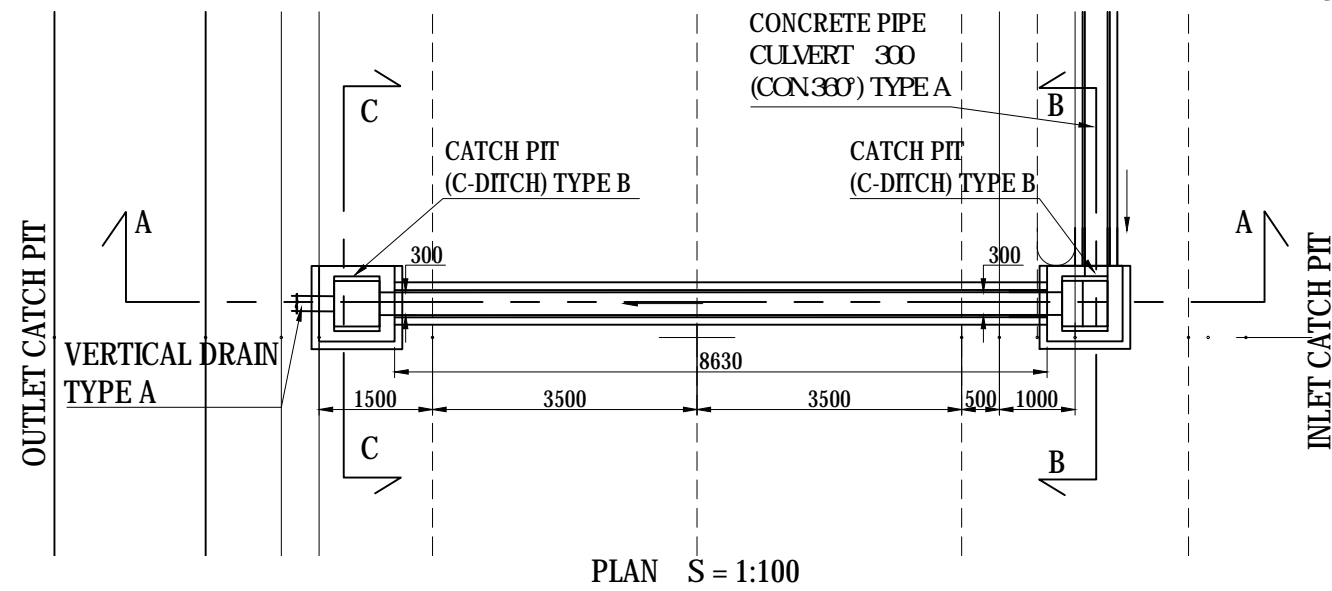
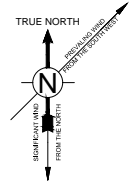


Note: Precast R.C. Pipe 300 Reinforced Spun and Centrifugal Reinforced Concrete Pipes shall be Selected.

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME PREPARED BY M. TORIU CHECKED BY T. HAYAKAWA APPROVED BY Y. SANO	SIGNATURE 	DATE 15 Jun. 2017 20 Jun. 2017 21 Jun. 2017	DRAWING TITLE DETAIL OF CONCRETE PIPE CULVERT 300 (CON 360°) TYPE B S=1:15	PACKAGE 2 DWG No. P2-RD-3021
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GENERAL VIEW OF CONCRETE PIPE CULVERT (1)

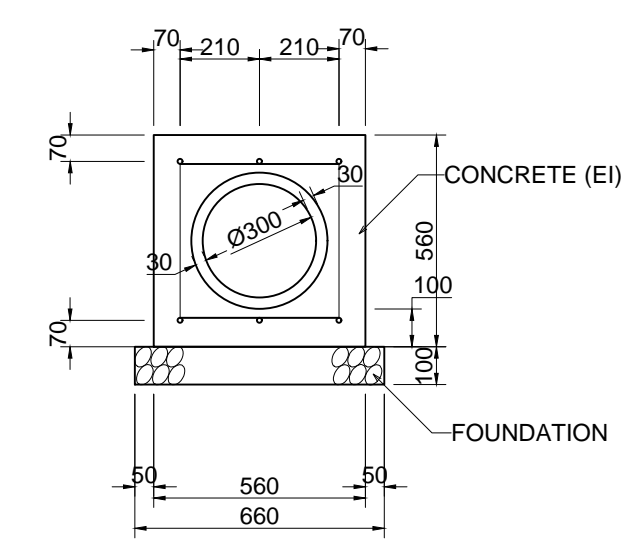
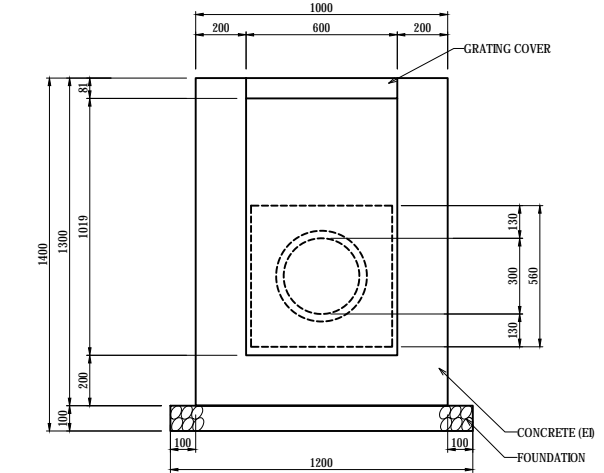
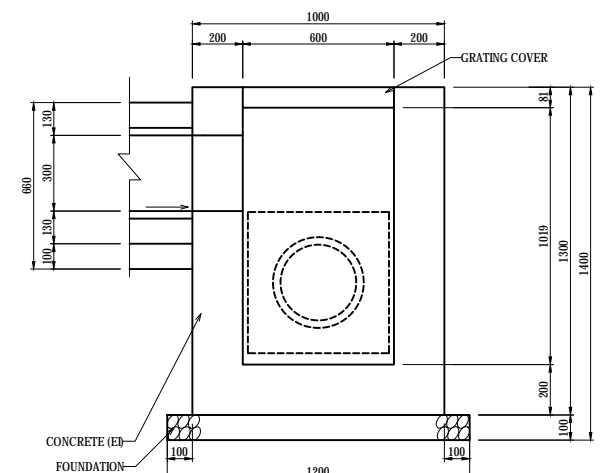
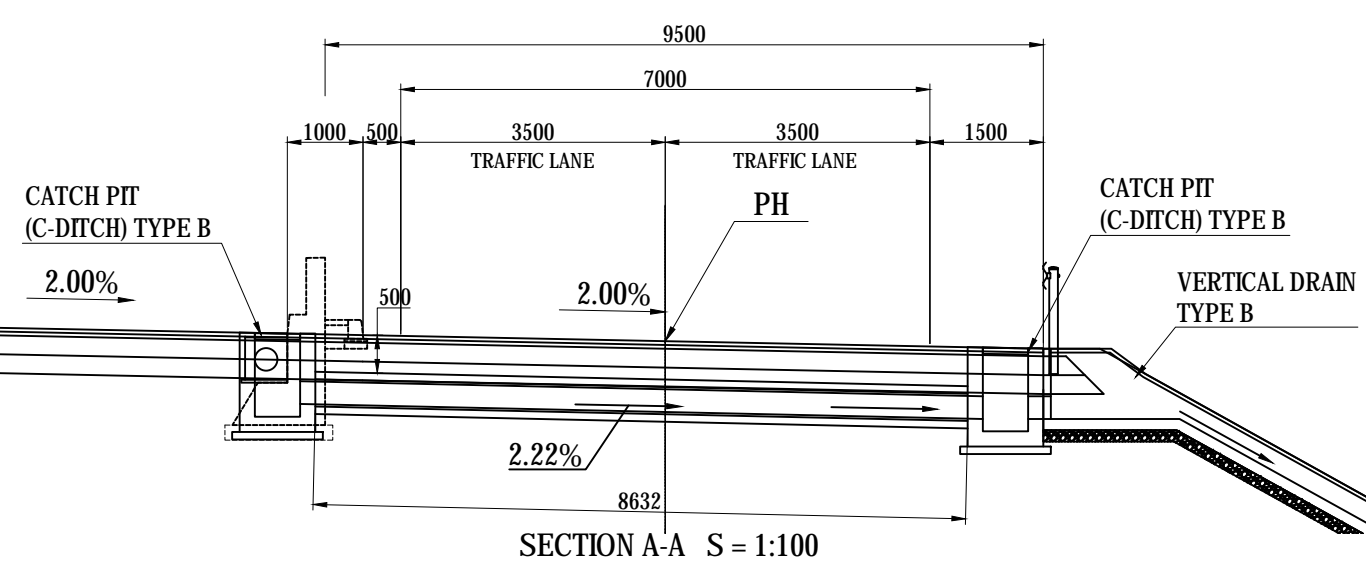
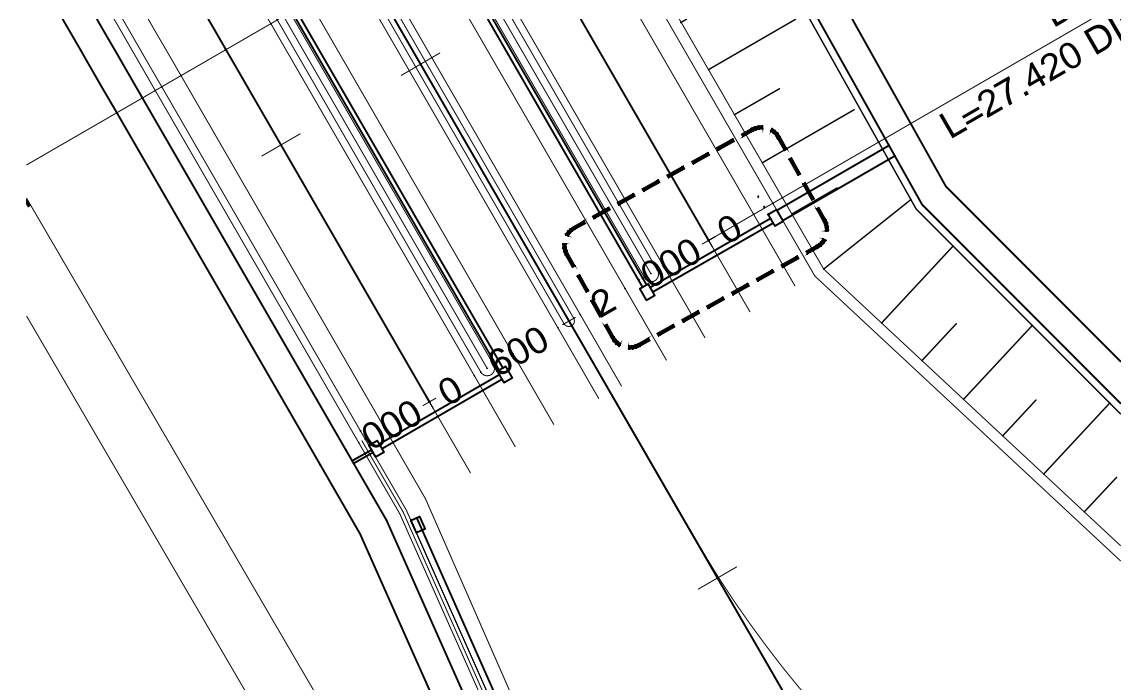
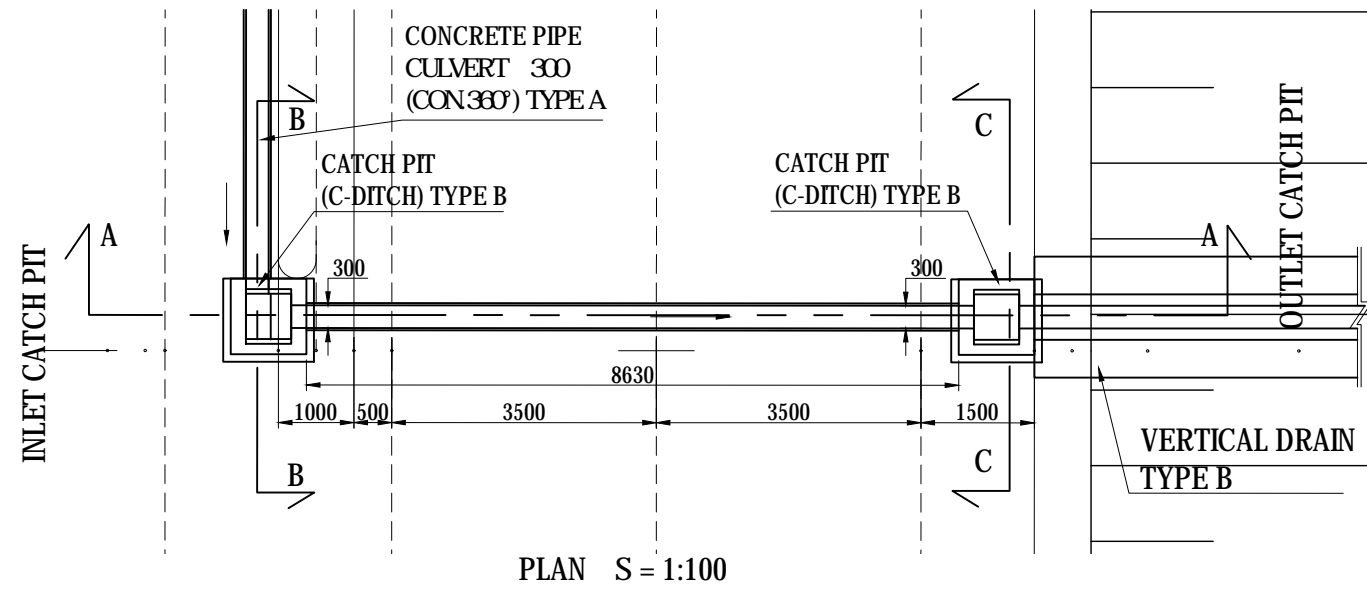
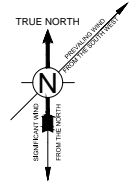
STA. 2+601.400 (L)



PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE GENERAL VIEW OF CONCRETE PIPE CULVERT (1) STA. 2+600 (L)	PACKAGE	
				PREPARED BY	M. TORIU			15 Jun. 2017	2
				CHECKED BY	T. HAYAKAWA			20 Jun. 2017	DWG No.
				APPROVED BY	Y. SANO			21 Jun. 2017	P2-RD-3030

GENERAL VIEW OF CONCRETE PIPE CULVERT (2)

STA.2+601.400 (R)

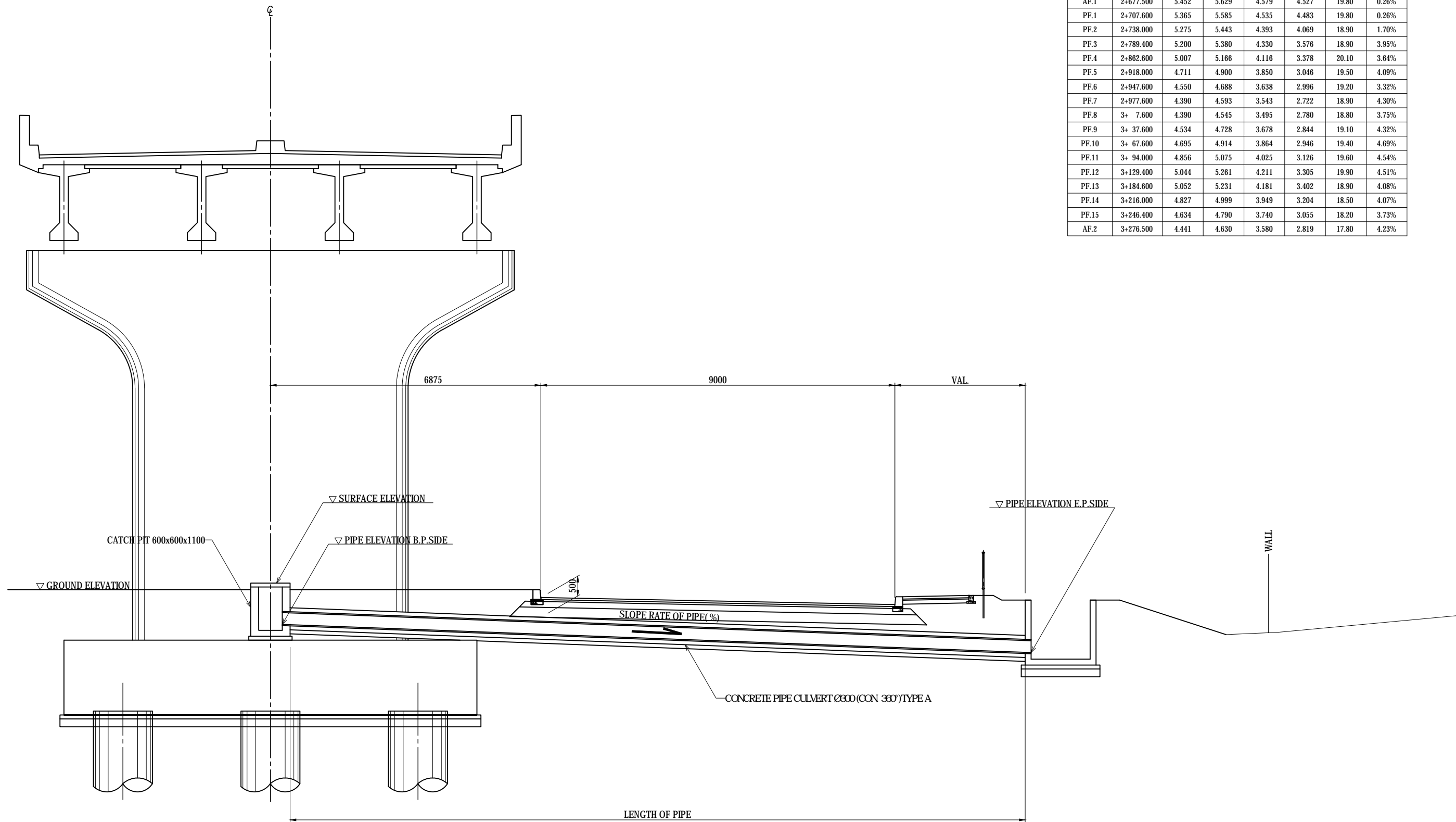


PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE GENERAL VIEW OF CONCRETE PIPE CULVERT (2) STA. 2+600 (R)	PACKAGE	
				PREPARED BY	M. TORIU			15 Jun. 2017	DWG No.
				CHECKED BY	T. HAYAKAWA			20 Jun. 2017	P2-RD-3031
				APPROVED BY	Y. SANO			21 Jun. 2017	

GENERAL VIEW OF CONCRETE PIPE CULVERT (3) S=1:100

CONCRETE PIPE CULVERT Ø300 (CON 360°) TYPE A

No.	STA.	GROUND ELEVATION (EL.m)	SURFACE ELEVATION (EL.m)	PIPE ELEVATION B.P.SIDE (EL.m)	PIPE ELEVATION E.P.SIDE (EL.m)	LENGTH OF PIPE (m)	SLOPE RATE OF PIPE (%)
AF.1	2+677.500	5.452	5.629	4.579	4.527	19.80	0.26%
PF.1	2+707.600	5.365	5.585	4.535	4.483	19.80	0.26%
PF.2	2+738.000	5.275	5.443	4.393	4.069	18.90	1.70%
PF.3	2+789.400	5.200	5.380	4.330	3.576	18.90	3.95%
PF.4	2+862.600	5.007	5.166	4.116	3.378	20.10	3.64%
PF.5	2+918.000	4.711	4.900	3.850	3.046	19.50	4.09%
PF.6	2+947.600	4.550	4.688	3.638	2.996	19.20	3.32%
PF.7	2+977.600	4.390	4.593	3.543	2.722	18.90	4.30%
PF.8	3+ 7.600	4.390	4.545	3.495	2.780	18.80	3.75%
PF.9	3+ 37.600	4.534	4.728	3.678	2.844	19.10	4.32%
PF.10	3+ 67.600	4.695	4.914	3.864	2.946	19.40	4.69%
PF.11	3+ 94.000	4.856	5.075	4.025	3.126	19.60	4.54%
PF.12	3+129.400	5.044	5.261	4.211	3.305	19.90	4.51%
PF.13	3+184.600	5.052	5.231	4.181	3.402	18.90	4.08%
PF.14	3+216.000	4.827	4.999	3.949	3.204	18.50	4.07%
PF.15	3+246.400	4.634	4.790	3.740	3.055	18.20	3.73%
AF.2	3+276.500	4.441	4.630	3.580	2.819	17.80	4.23%



PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE GENERAL VIEW OF CONCRETE PIPE CULVERT (3) CONCRETE PIPE CULVERT Ø300 (CON. 360°)TYPE A	PACKAGE	
				PREPARED BY	K. TACHIBANA			15 JUNE 2017	2
				CHECKED BY	T. HAYAKAWA			20 JUNE 2017	DWG No.
				APPROVED BY	Y. SANO			21 JUNE 2017	P2-RD-3032

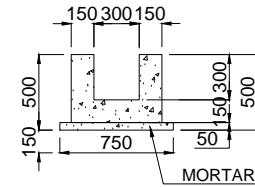
DETAIL OF SIDE DITCH (1)

S=1:50

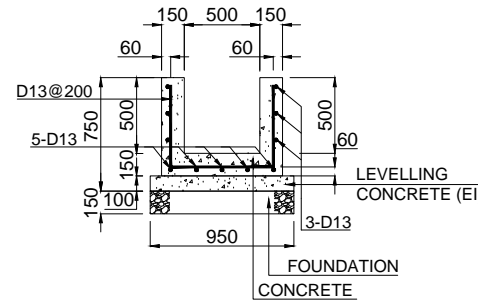
NOTES:

1. Concrete Class DII
(240kg/cm³)
2. Steel Reinforcement
SD345
3. Pit of Steel Reinforcement
is 200mm

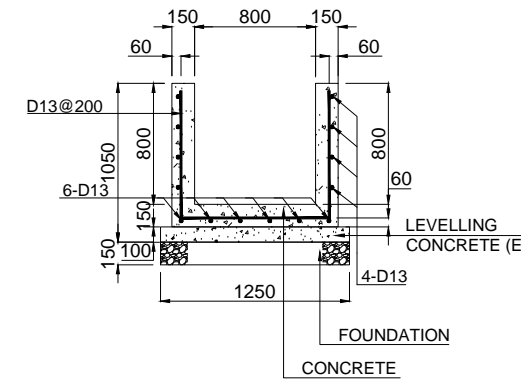
SIDE DITCH TYPE U-300×300



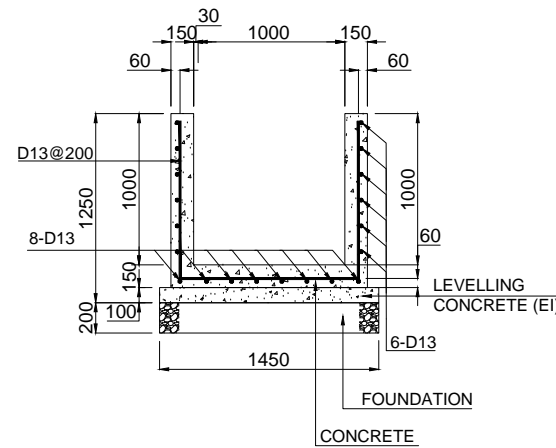
SIDE DITCH TYPE U-500×500



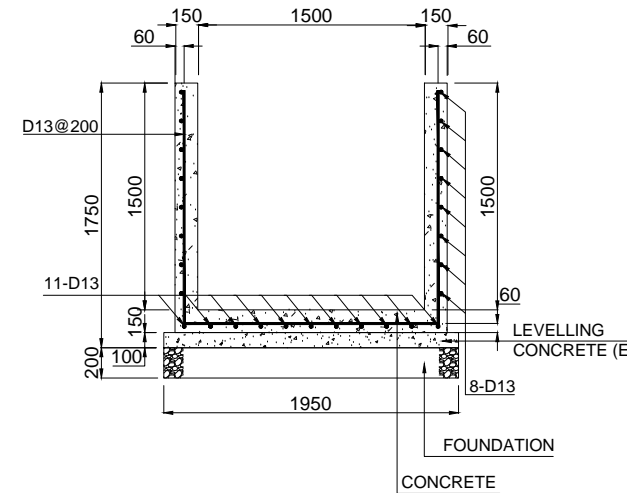
SIDE DITCH TYPE U-800×800



SIDE DITCH TYPE U-1000×1000



SIDE DITCH TYPE U-1500×1500



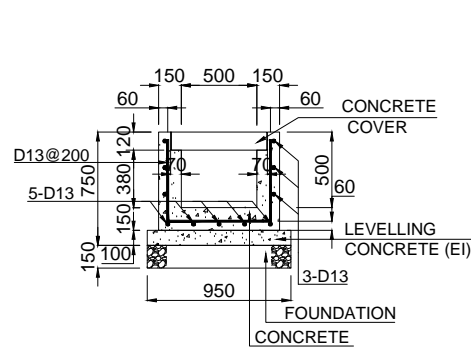
PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY jica JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE DETAIL OF SIDE DITCH (1) S=1:50	PACKAGE 2 DWG No. P2-RD-3040
				PREPARED BY	M. TORIU	15 Jun. 2017		
				CHECKED BY	T. HAYAKAWA	20 Jun. 2017		
				APPROVED BY	Y. SANO	21 Jun. 2017		

DETAIL OF SIDE DITCH (2)

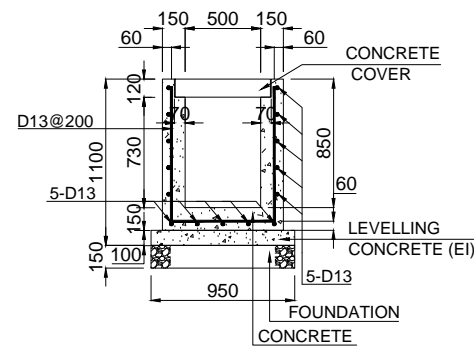
S=1:50

- NOTES:**
- Concrete Class DII (240 kg/cm²)
 - Steel Reinforcement SD345
 - Pit of Steel Reinforcement is 200mm

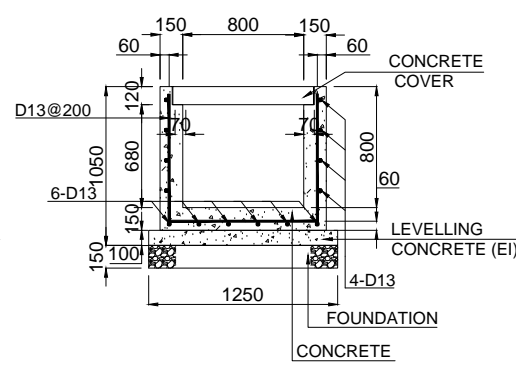
SIDE DITCH TYPE U-500x500 WITH COVER



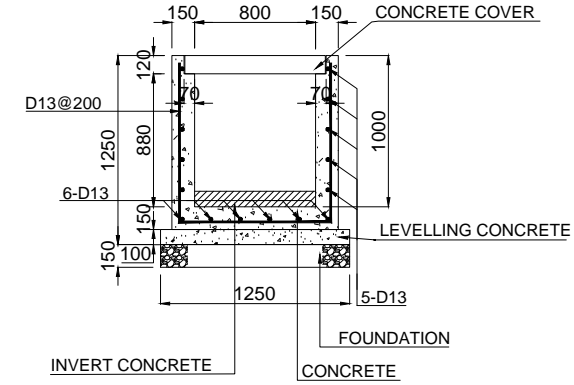
SIDE DITCH TYPE U-500x850 WITH COVER



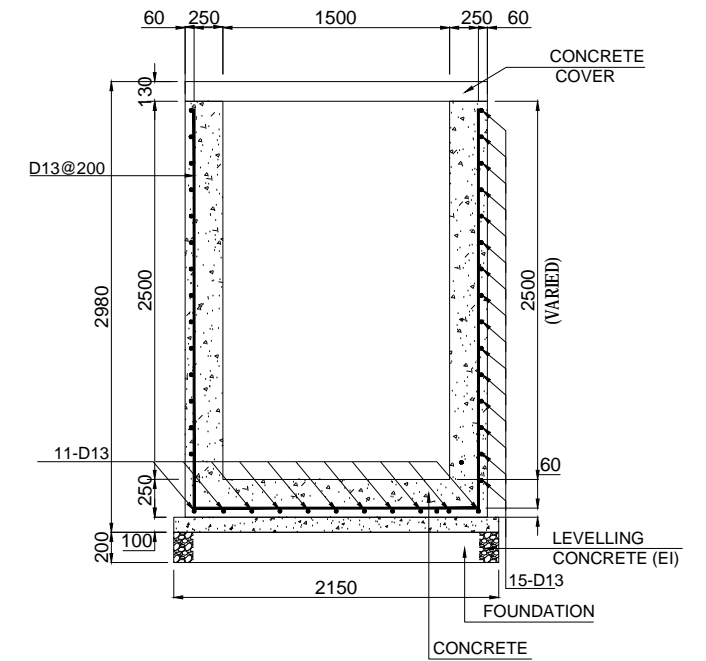
SIDE DITCH TYPE U-800x800 WITH COVER



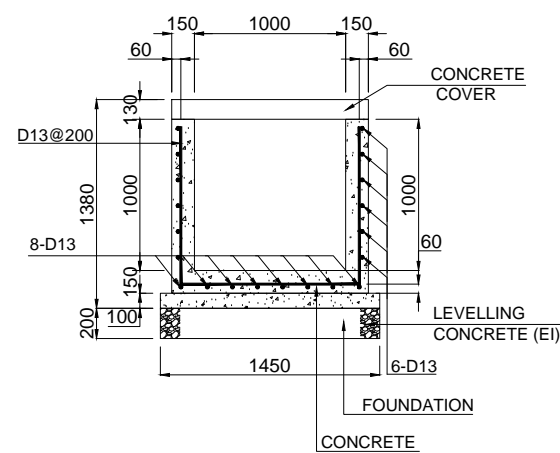
SIDE DITCH TYPE U-800x1000 WITH COVER



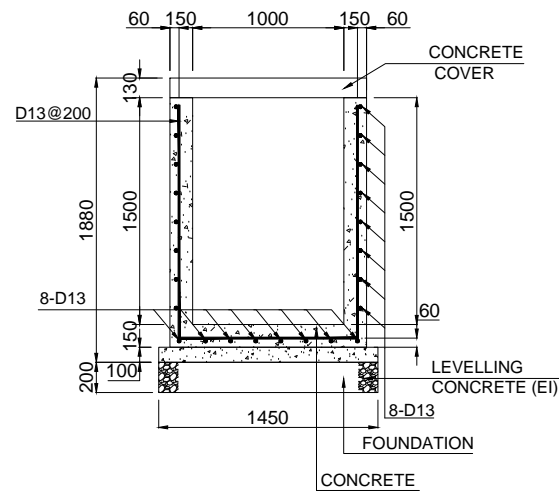
SIDE DITCH TYPE U-1500x2500 WITH COVER



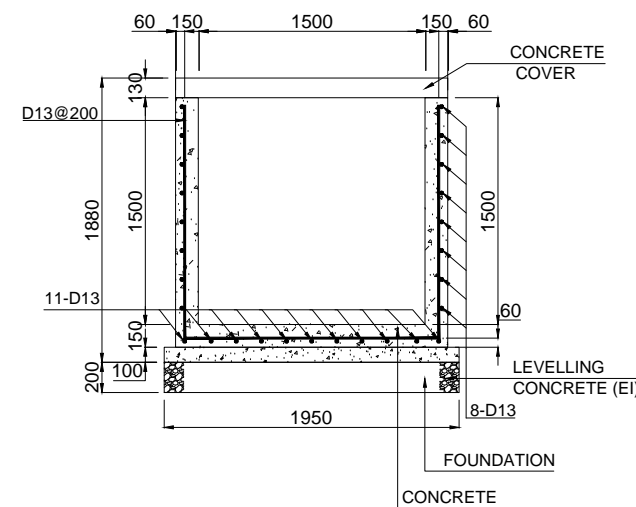
SIDE DITCH TYPE U-1000x1000 WITH COVER



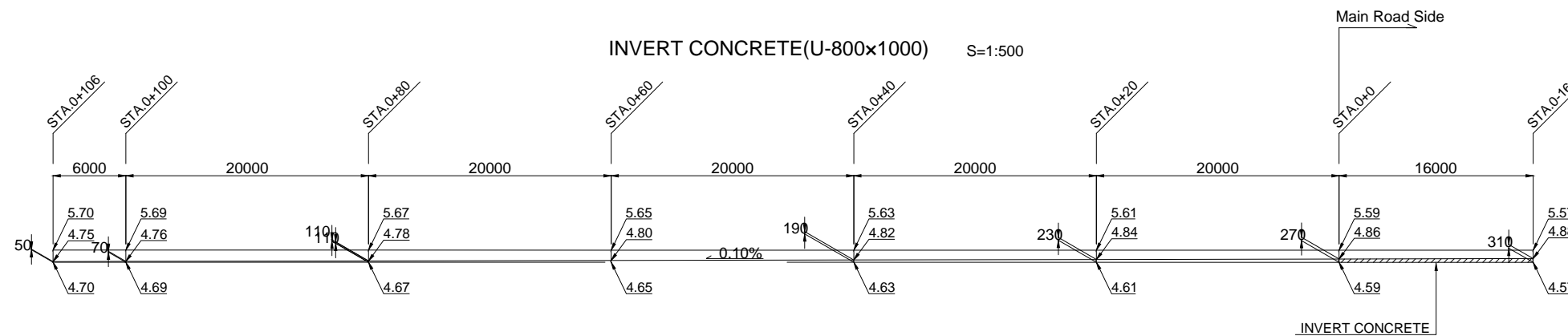
SIDE DITCH TYPE U-1000x1500 WITH COVER



SIDE DITCH TYPE U-1500x1500 WITH COVER



INVERT CONCRETE (U-800x1000) S=1:50

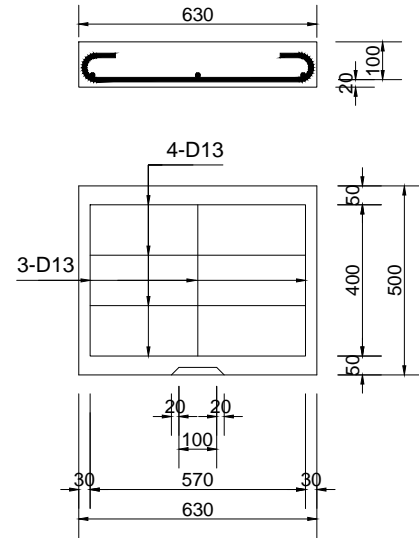


PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE DETAIL OF SIDE DITCH (2) S=1:50, 1:500	PACKAGE 2 DWG No. P2-RD-3041
				PREPARED BY	M. TORIU	15 Jun. 2017		
				CHECKED BY	T. HAYAKAWA	20 Jun. 2017		
				APPROVED BY	Y. SANO	21 Jun. 2017		

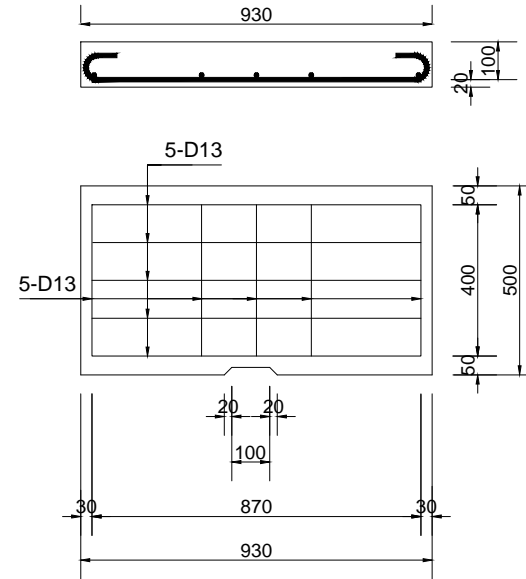
DETAIL OF SIDE DITCH (3)

S=1:20

CONCRETE COVER
SIDE DITCH TYPE U-500×500 WITH COVER



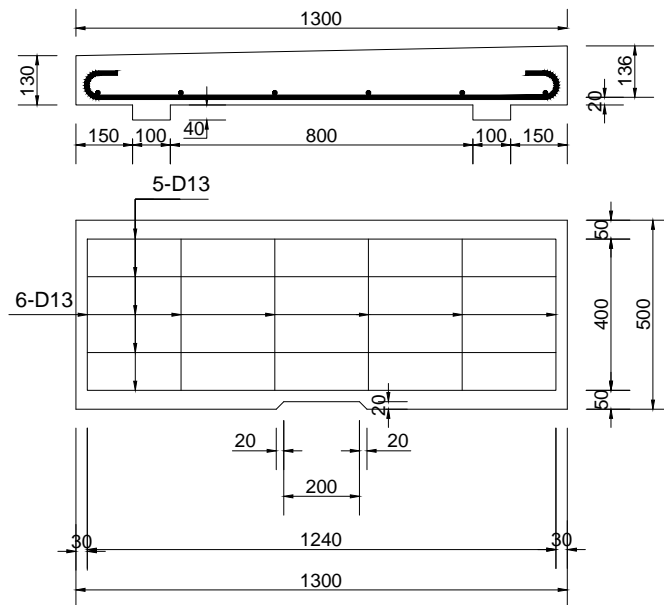
CONCRETE COVER
SIDE DITCH TYPE U-800×800 WITH COVER
SIDE DITCH TYPE U-800×1000 WITH COVER



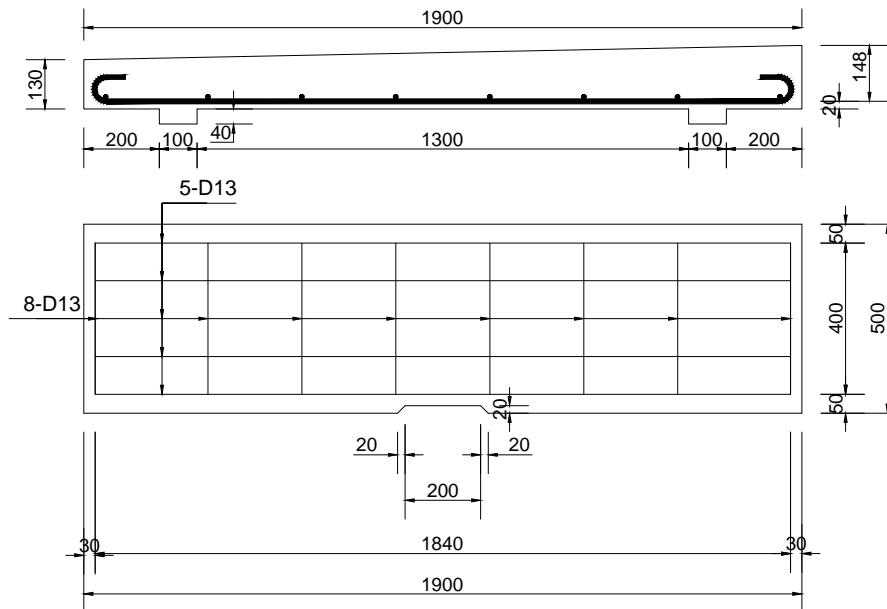
NOTES:

1. Concrete Class DII (240kg/cm³)
2. Steel Reinforcement SD345
3. Pit of Steel Reinforcement is 200mm

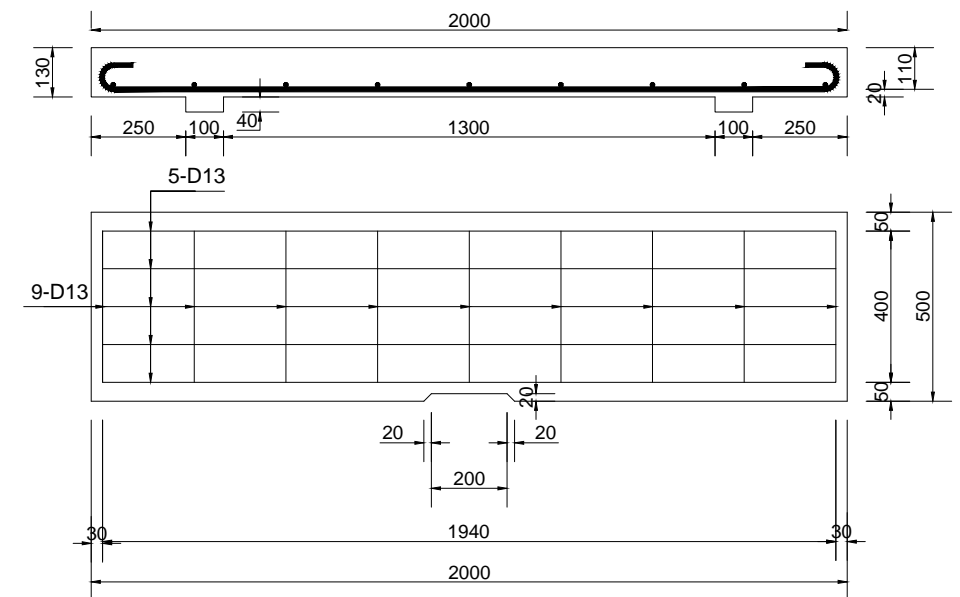
CONCRETE COVER
SIDE DITCH TYPE U-1000×1000 WITH COVER
SIDE DITCH TYPE U-1000×1500 WITH COVER



CONCRETE COVER
SIDE DITCH TYPE U-1500×1700 WITH COVER



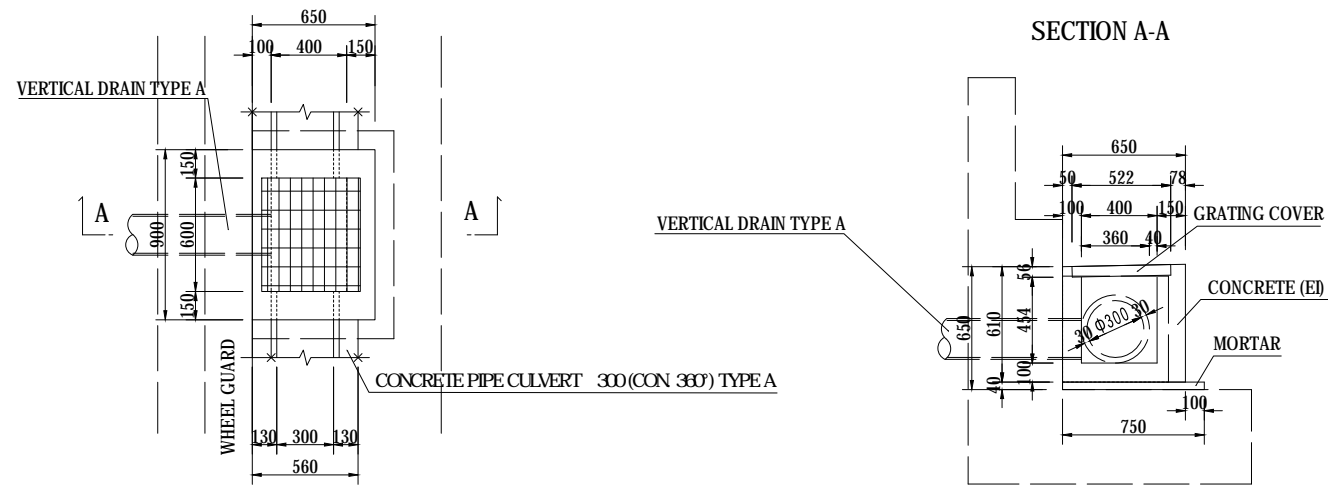
CONCRETE COVER
SIDE DITCH TYPE U-1500×2500 WITH COVER



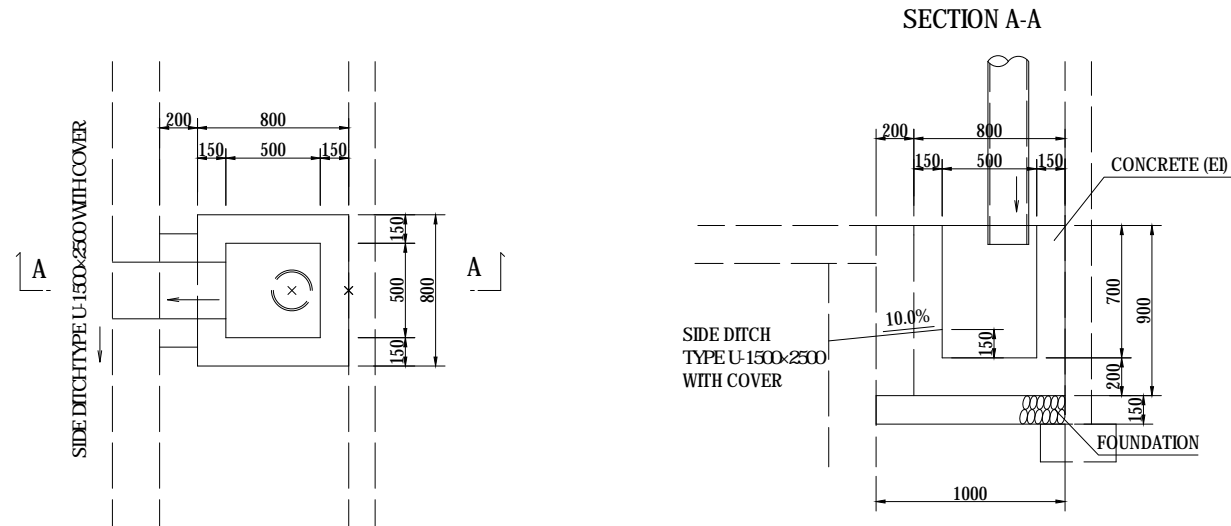
PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY jica JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE DETAIL OF SIDE DITCH (3) S=1:20	PACKAGE 2 DWG No. P2-RD-3042
				PREPARED BY	M. TORIU	15 Jun. 2017		
				CHECKED BY	T. HAYAKAWA	20 Jun. 2017		
				APPROVED BY	Y. SANO	21 Jun. 2017		

DETAIL OF CATCH PIT (1)

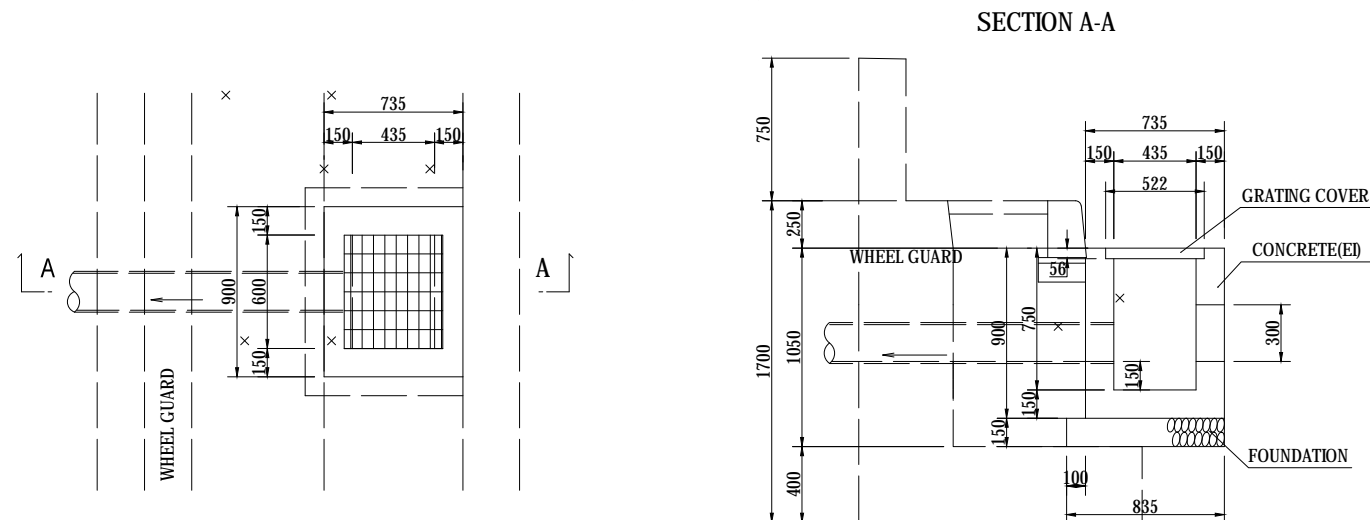
DETAIL OF CATCH PIT (C-DITCH) TYPE A S=1:40



DETAIL OF CATCH PIT (C-DITCH) TYPE C S=1:40



DETAIL OF CATCH PIT (C-DITCH) TYPE D S=1:40



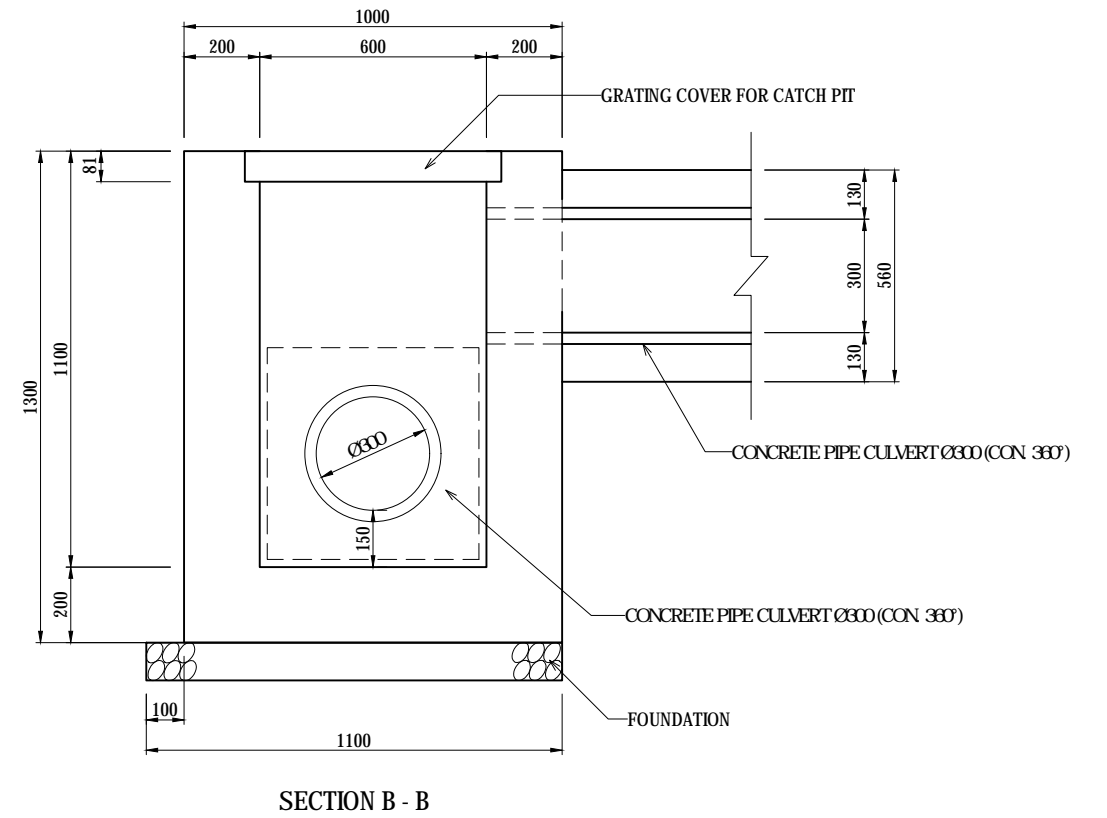
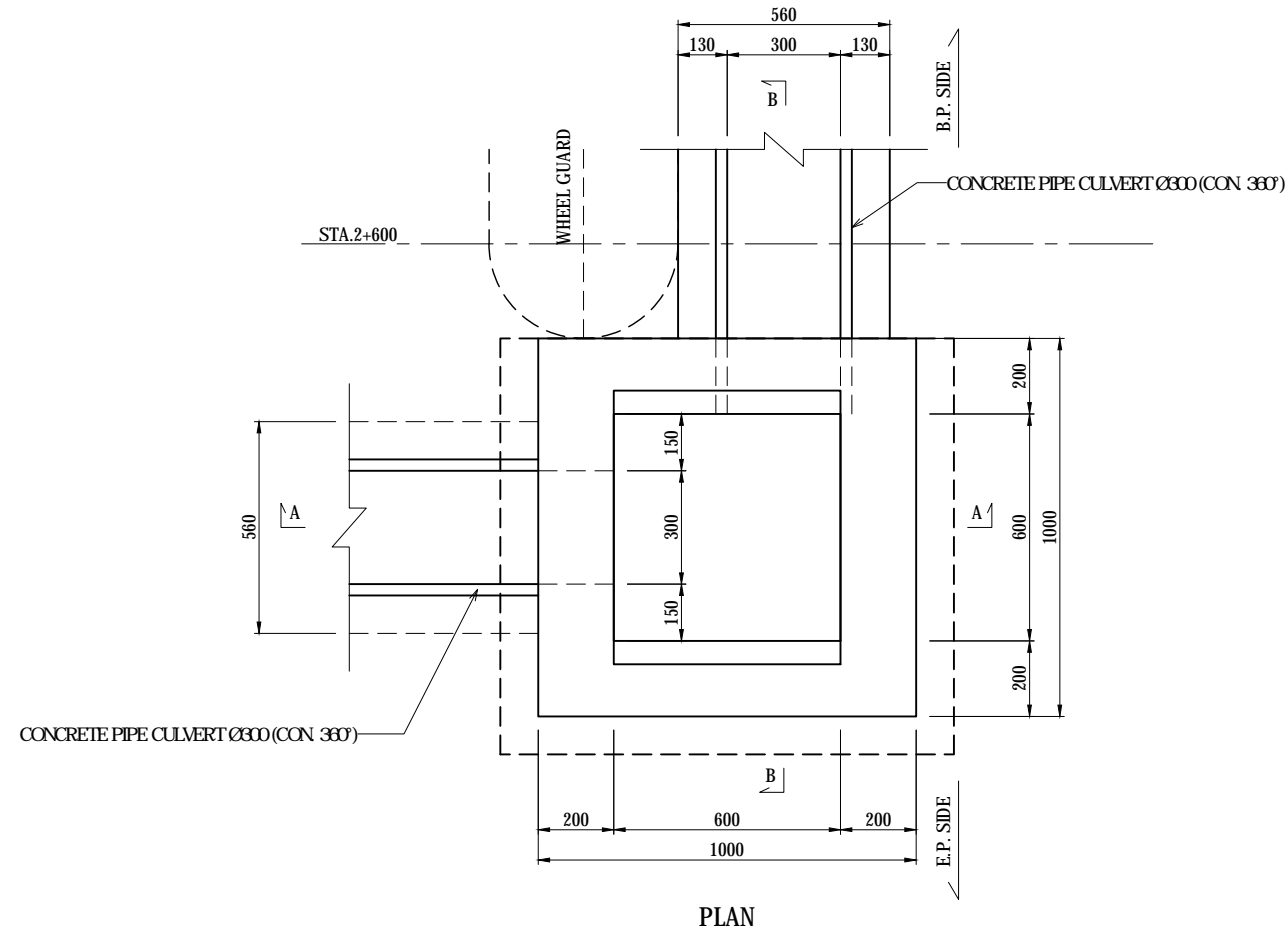
SCHEDULE OF CATCH PIT & VERTICAL DRAIN

PACKAGE	ROAD	SIDE	STATION	CATCH PIT (C-DITCH)				VERTICAL DRAIN TYPE A	VERTICAL DRAIN TYPE B			
				TYPE A	TYPE B	TYPE C	TYPE D					
				Nos.	Nos.	Nos.	Nos.	Nos.	Nos.			
1	MAIN	LEFT	325.000	1	-	1	-	1	-			
			305.000	1	-	-	-	-	-			
			285.000	1	-	1	-	1	-			
			270.000	1	-	-	-	-	-			
			260.000	1	-	1	-	1	-			
TOTAL				5	-	3	-	3	-			
2	MAIN	LEFT	2413.416	1	-	-	-	-	-			
			2428.416	1	-	1	-	1	-			
			2438.416	1	-	-	-	-	-			
			2448.416	1	-	1	-	1	-			
			2453.416	1	-	-	-	-	-			
			2458.416	1	-	1	-	1	-			
			2463.416	1	-	-	-	-	-			
			2468.416	1	-	1	-	1	-			
			2473.416	1	-	-	-	-	-			
			2478.416	1	-	1	-	1	-			
			2483.416	1	-	-	-	-	-			
			2488.416	1	-	1	-	1	-			
			2505.500	-	-	1	1	1	-			
			2518.741	1	-	1	-	1	-			
			2523.741	1	-	-	-	-	-			
			2528.741	1	-	1	-	1	-			
			2533.741	1	-	-	-	-	-			
			2538.741	1	-	1	-	1	-			
			2543.741	1	-	-	-	-	-			
			2548.741	1	-	1	-	1	-			
			2553.741	1	-	-	-	-	-			
			2558.741	1	-	1	-	1	-			
			2568.741	1	-	-	-	-	-			
			2578.741	1	-	1	-	1	-			
			2588.741	1	-	-	-	-	-			
					RIGHT	2505.500	-	-	-	1	-	1
			FLYOVER	LEFT		2601.400	-	2	1	-	1	-
					2628.741	1	-	-	-	-	-	
RIGHT		2601.400		-	2	-	-	-	1			
		2628.741		1	-	-	-	-	-			
ON-RAMP	LEFT		2645.000	1	-	-	-	-	-			
			2675.000	1	-	-	-	-	-			
			2705.000	1	-	1	-	1	-			
			2730.000	1	-	1	-	1	-			
			2745.000	1	-	-	-	-	-			
			2755.000	1	-	1	-	1	-			
TOTAL				32	4	17	2	17	2			

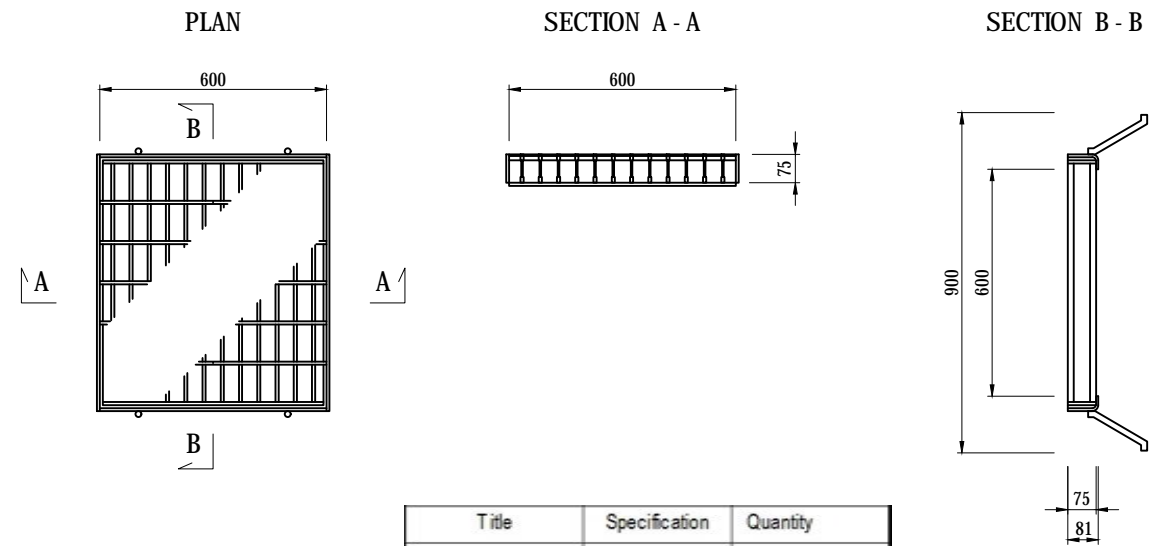
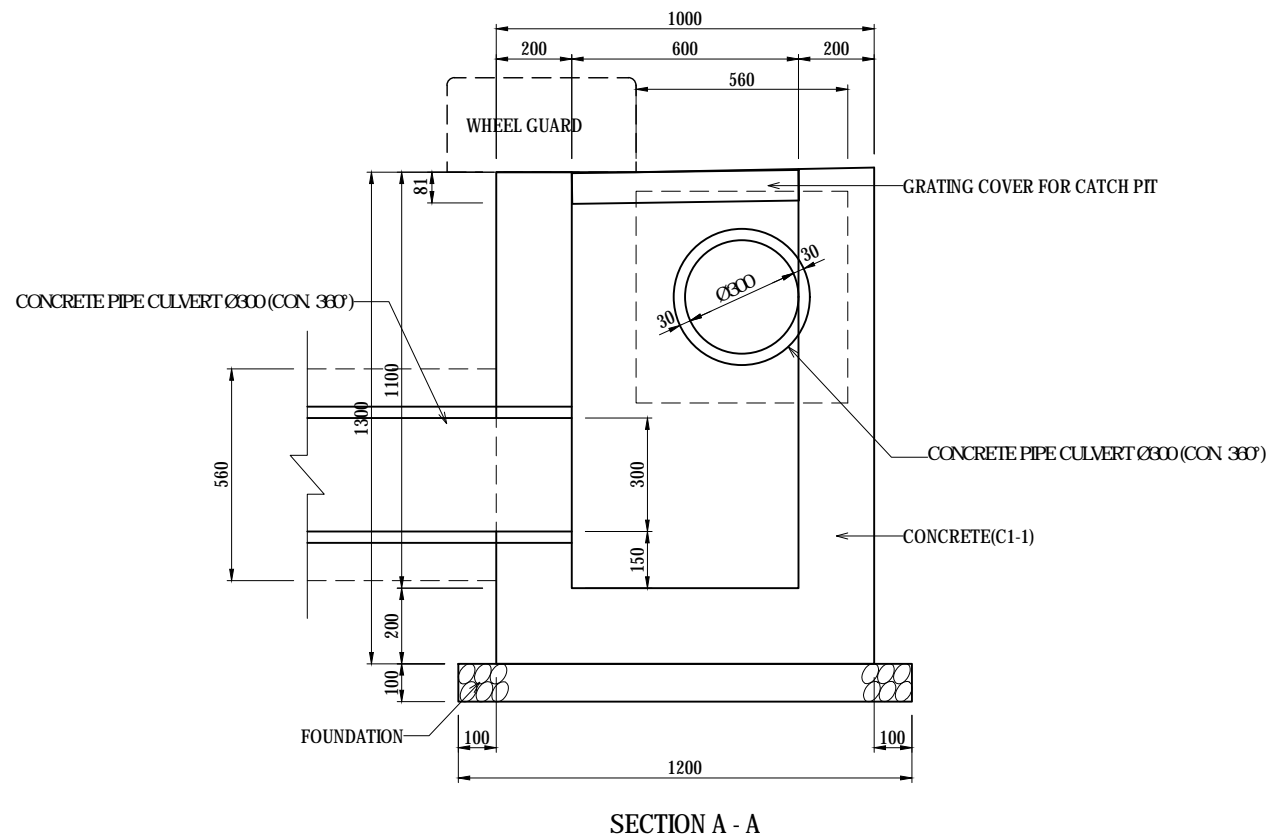
DETAIL OF CATCH PIT (2) S=1:20

CATCH PIT (C-DITCH) TYPE B

Note
1. Specification of Plain Concrete should be CLASS EI



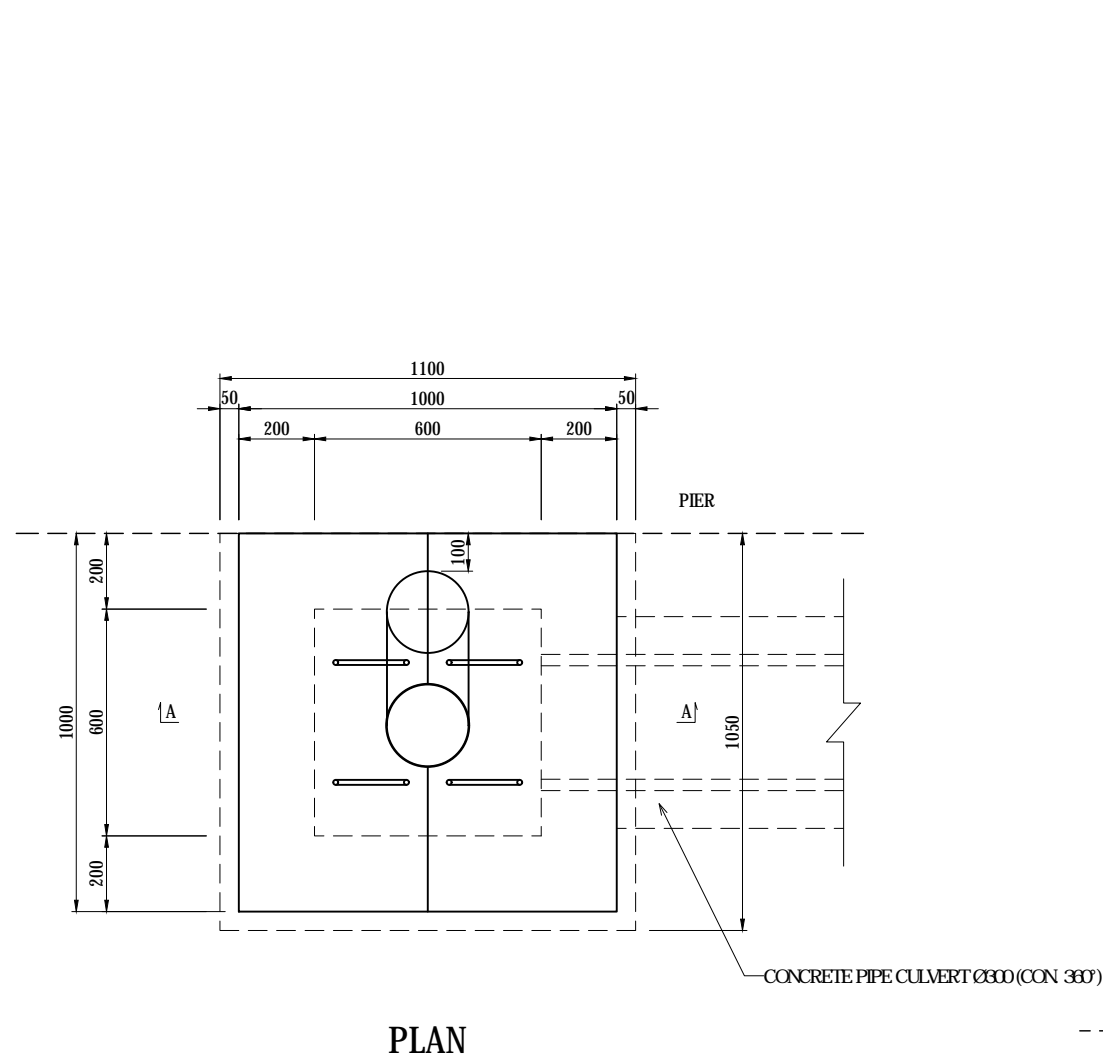
DETAIL OF GRATING COVER FOR CATCH PIT



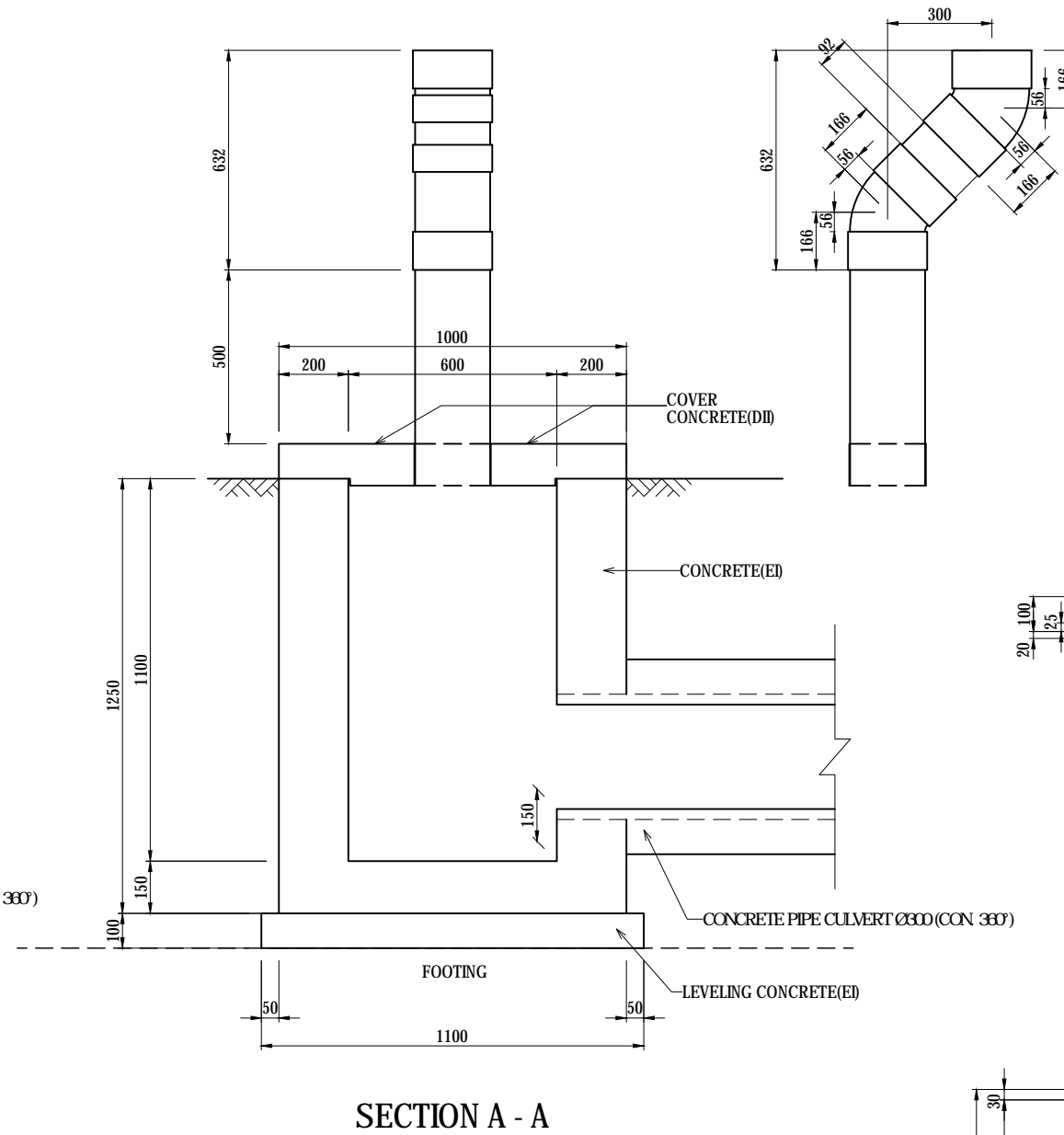
Title	Specification	Quantity
Body		
Concrete	18N/mm ²	8.570 m ³
Reinforcing bar		kg
Form		78.40 m ²
Foundation	t=100	13.20 m ²
Cover		
Grating Cover		10 each

DETAIL OF CATCH PIT (3) S=1:20

CATCH PIT 600x600x1100



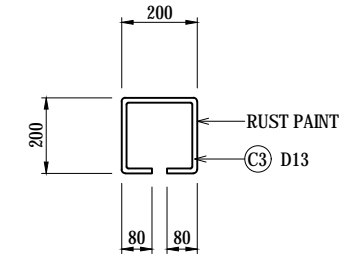
QUANTITY		Per 10 each	
Title	Specification	Quantity	
Body			
Concrete	18 N/mm ²	8.40	m ³
Form		80.60	m ²
Leveling Concrete	t=100	11.55	m ²
Cover			
Concrete	DII	1.03	m ³
Reinforcing Bar	D13	150.73	kg
Form		7.20	m ²
Pipe	VP 200	8.50	m
Peipe Elbow	45°	20	each



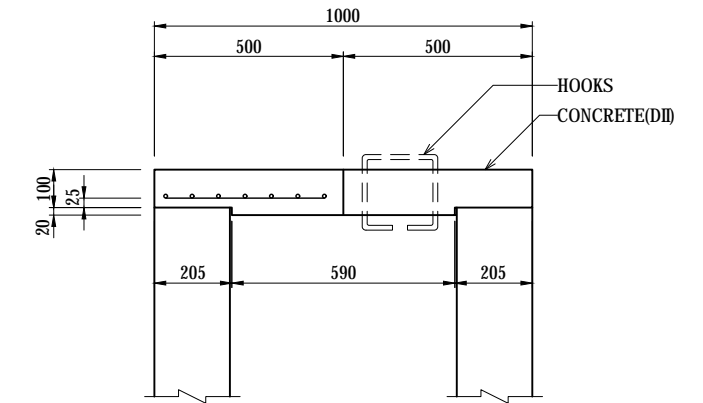
SECTION A - A

- Note
1. Specification of Plain Concrete should be CLASS EI
 2. Specification of Reinforced Concrete should be CLASS DII
 3. Specification of Steel reinforcement bar should be SD345

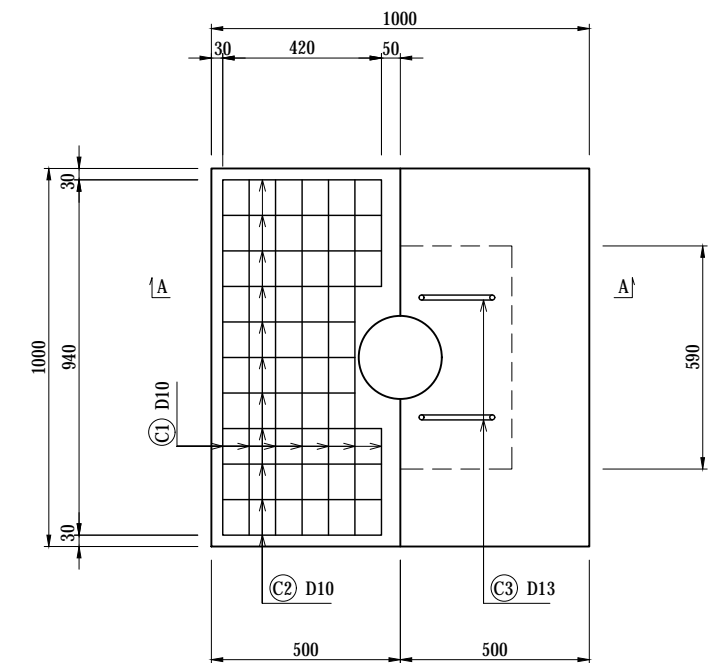
DETAIL OF HOOKS



DETAIL OF COVER SECTION A - A

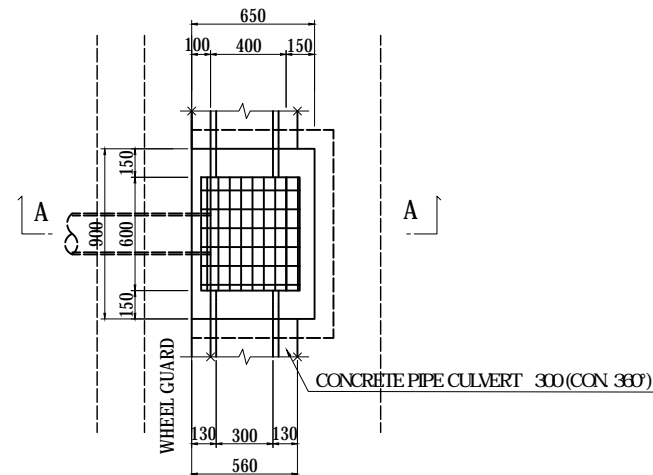


PLAN

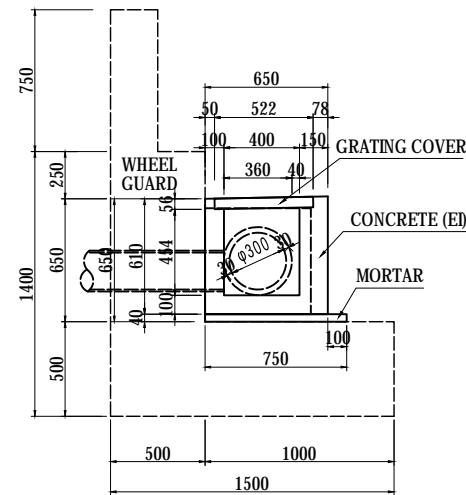


VERTICAL DRAIN TYPE A (1)

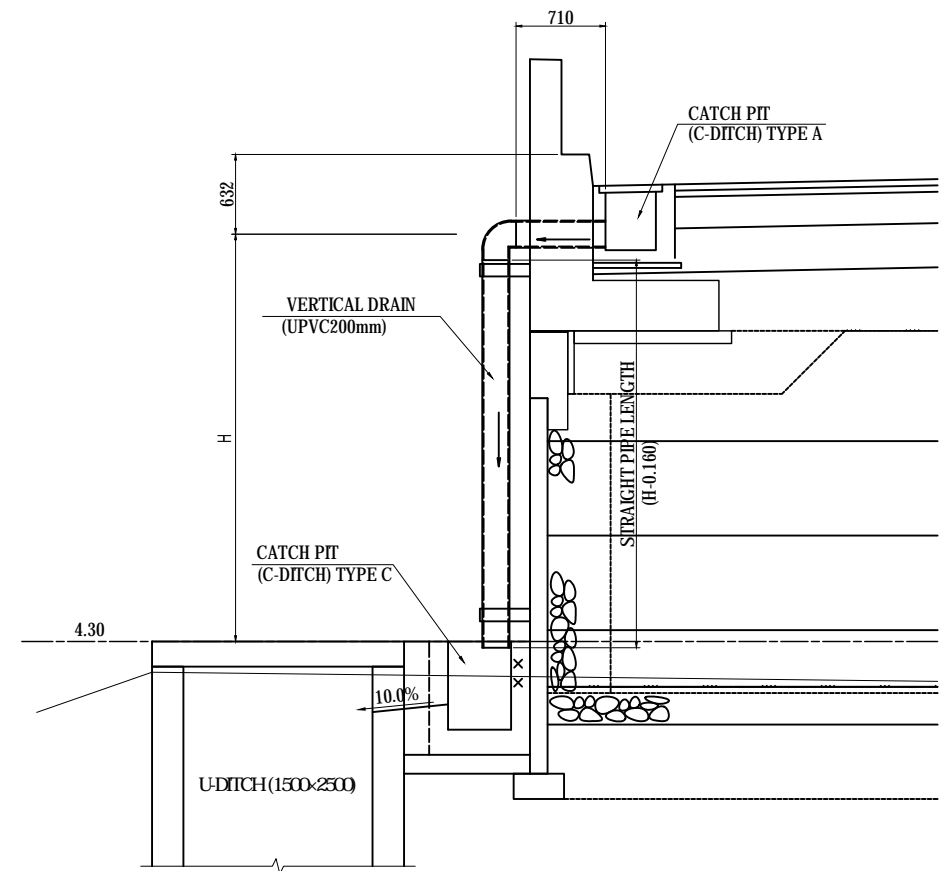
DETAIL OF CATCH PIT (C-DITCH) TYPE A S=1:20



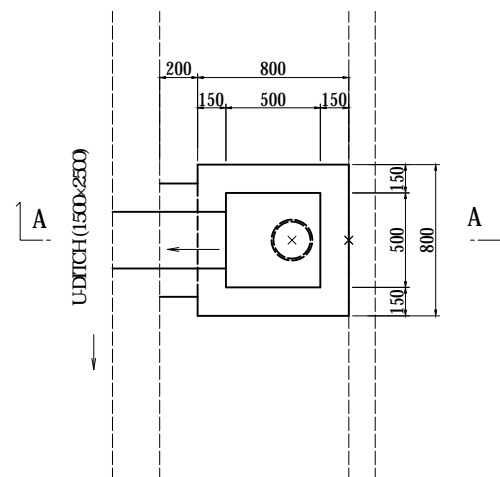
SECTION A-A



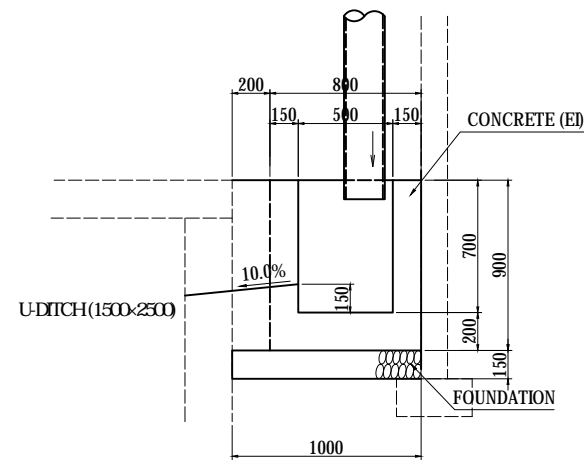
DETAIL OF VERTICAL DRAIN S=1:30



DETAIL OF CATCH PIT (C-DITCH) TYPE C S=1:20



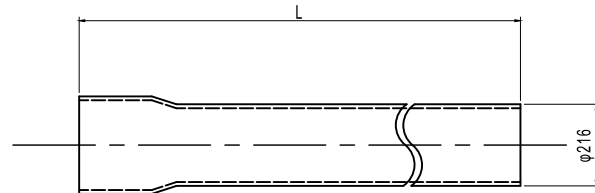
SECTION A-A



<small>PROJECT NAME</small>	<small>FINANCED BY</small>	<small>COUNTERPART</small>	<small>JICA STUDY TEAM</small>		<small>NAME</small>	<small>SIGNATURE</small>	<small>DATE</small>	<small>DRAWING TITLE</small>	<small>PACKAGE</small>
DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	JAPAN INTERNATIONAL COOPERATION AGENCY	REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.		PREPARED BY CHECKED BY APPROVED BY	M. TORIU T. HAYAKAWA Y. SANO	15 Jun. 2017 20 Jun. 2017 21 Jun. 2017	VERTICAL DRAIN TYPE A (1)	2 DWG No. P2-RD-3060

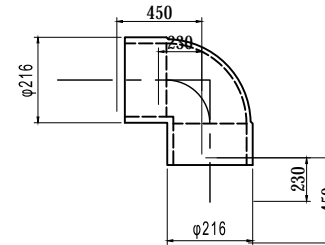
VERTICAL DRAIN TYPE A (2)

UPVC200mm(8inch) S=1:10
(O.D.216mm)

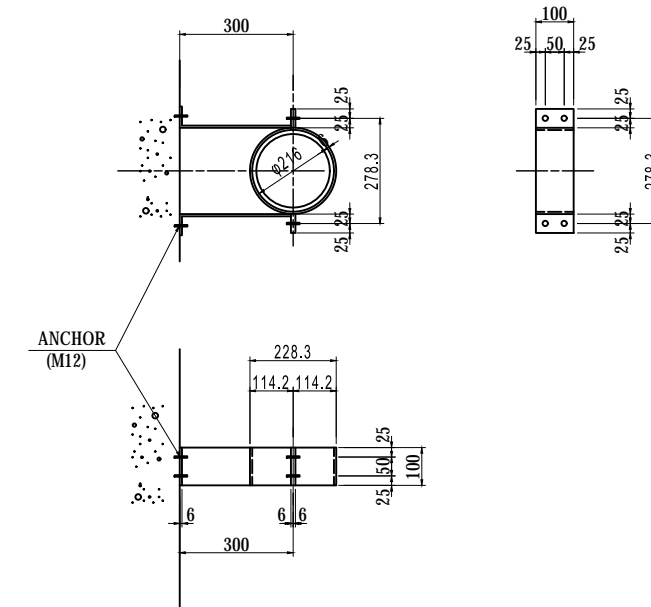


Note: UPVC pipes one end with Socket shape

JOINT (90°) 200mm(8inch) S=1:10



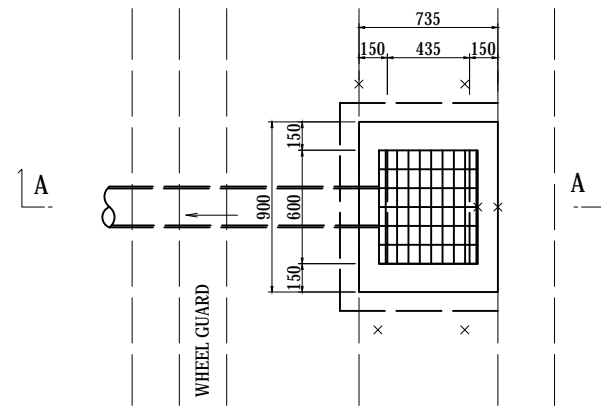
PIPE BRACE S=1:10
(200mm)



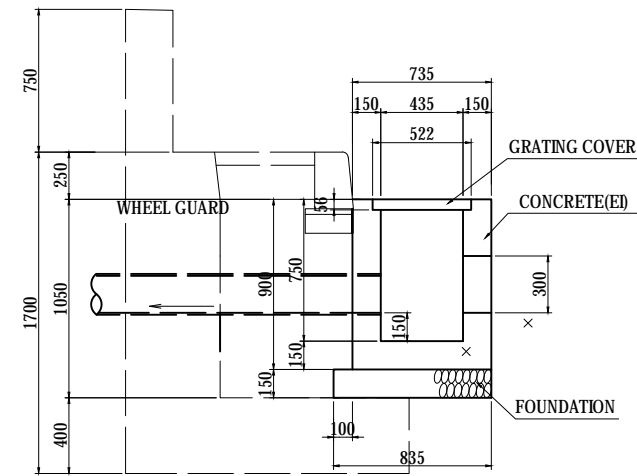
Vertical Drain Location	Ground	H	Pipe Length (m)			JOINT (nos.)	Remark	
			Straight	Cross	Total			
PK1(Thanlyin side)	0+260.000	4.30	1.684	1.524	0.710	2.8570	1	
	0+285.000	4.30	2.261	2.101	0.710	3.434	1	
	0+325.000	4.30	3.074	2.914	0.710	4.247	1	
				Total		10.538	3	
PK2(Thaketa side)	2+428.400	4.30	3.429	3.268	0.710	4.601	1	
	2+448.400	4.30	3.125	2.965	0.710	4.298	1	
	2+458.400	4.30	2.996	2.836	0.710	4.169	1	
	2+468.400	4.30	2.920	2.760	0.973	4.356	1	
	2+478.400	4.30	2.859	2.699	0.973	4.295	1	
	2+488.400	4.30	2.849	2.689	0.973	4.285	1	
	2+505.500	4.30	2.719	2.559	0.973	4.155	1	CATCH PIT TYPE C
	2+518.700	4.30	2.814	2.654	0.973	4.250	1	
	2+528.700	4.30	2.853	2.693	0.973	4.289	1	
	2+538.700	4.30	2.901	2.741	0.973	4.337	1	
	2+548.700	4.30	2.987	2.827	0.710	4.160	1	
	2+558.700	4.30	3.086	2.926	0.710	4.259	1	
	2+578.700	4.30	3.363	3.203	0.710	4.536	1	
	2+600.000	4.30	3.728	3.568	0.710	4.901	1	
	2+705.000	4.30	1.246	1.086	0.710	2.419	1	
2+730.000	4.30	0.277	0.117	0.710	1.450	1		
2+755.000	4.30	0.218	0.058	0.710	1.391	1		
				Total		66.151	17	

VERTICAL DRAIN TYPE A (3)

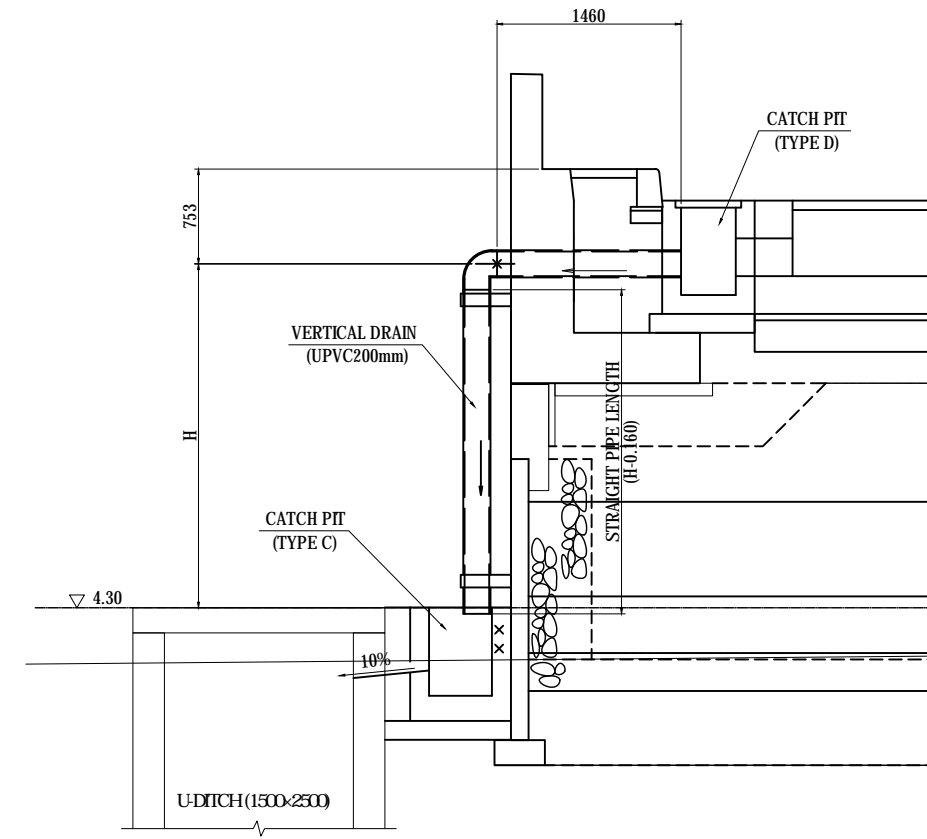
DETAIL OF CATCH PIT (C-DITCH) TYPE D S=1:20
(STA.2+505.500)



SECTION A-A



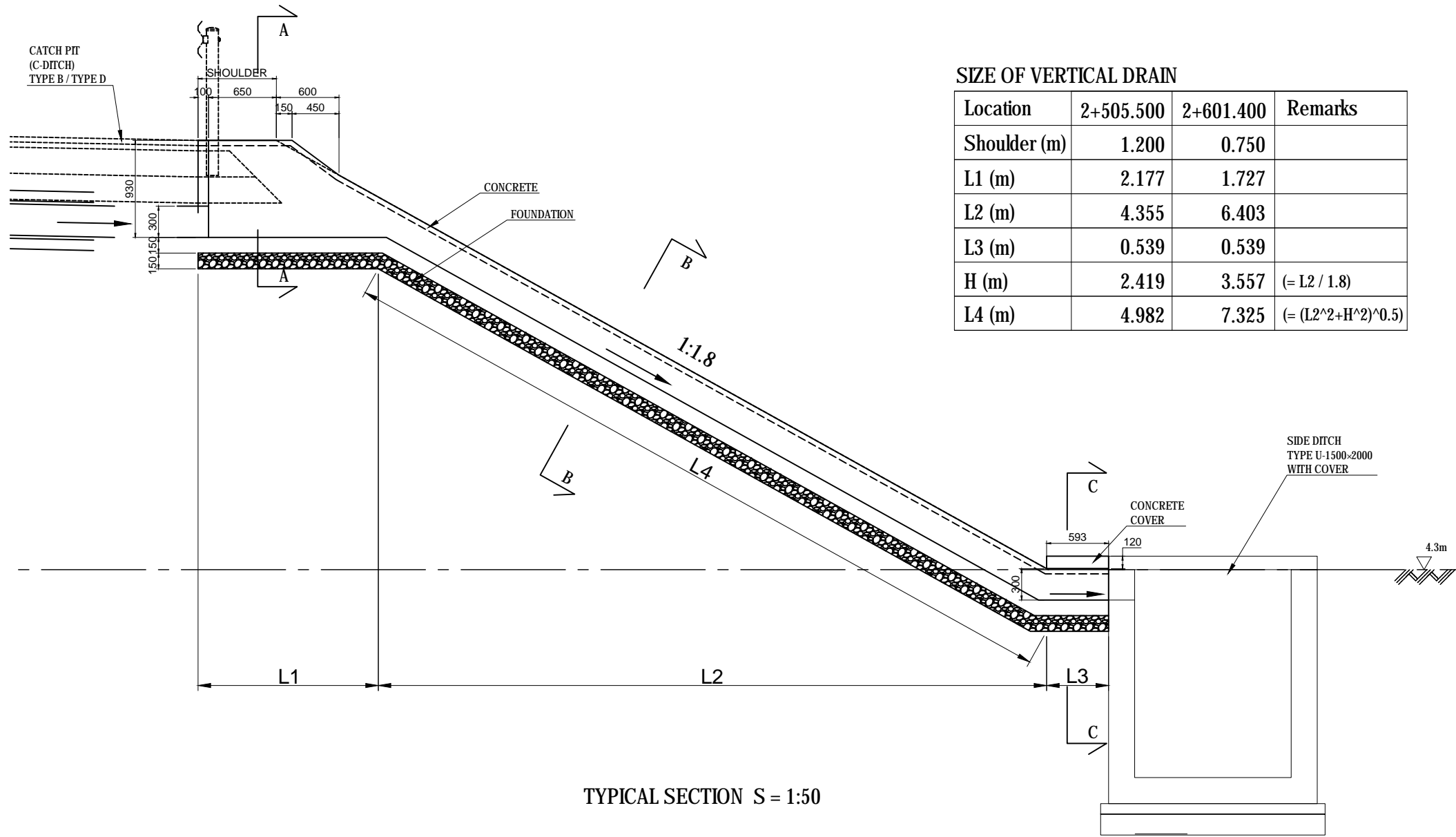
DETAIL OF VERTICAL DRAIN S=1:30
(STA.2+505.500)



PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE VERTICAL DRAIN TYPE A (3)	PACKAGE	
				PREPARED BY	M. TORIU			15 Jun. 2017	2
				CHECKED BY	T. HAYAKAWA			20 Jun. 2017	DWG No.
				APPROVED BY	Y. SANO			21 Jun. 2017	P2-RD-3062

VERTICAL DRAIN TYPE B

Note : Steel Reinforcement SD345



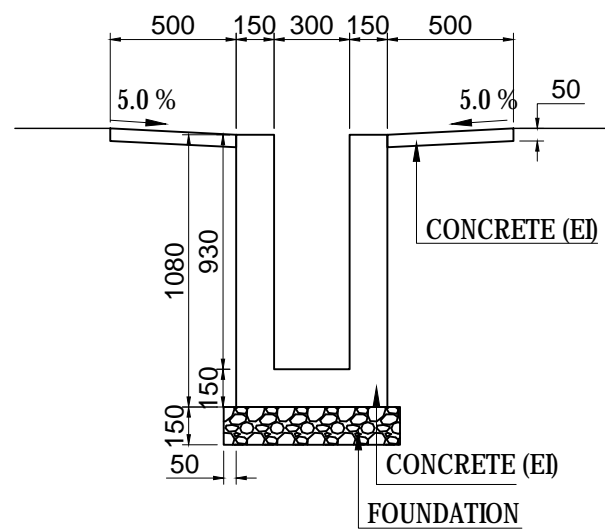
SIZE OF VERTICAL DRAIN			
Location	2+505.500	2+601.400	Remarks
Shoulder (m)	1.200	0.750	
L1 (m)	2.177	1.727	
L2 (m)	4.355	6.403	
L3 (m)	0.539	0.539	
H (m)	2.419	3.557	(= L2 / 1.8)
L4 (m)	4.982	7.325	(= (L2^2+H^2)^0.5)

UNIT QUANTITY (SECTION A-A) Per 1.0m		
Item	Qty	Remarks
Concrete (m3)	0.419	180 kg/cm2
Foundation (m3)	0.105	Gravel / t=150mm
Form (m2)	4.120	

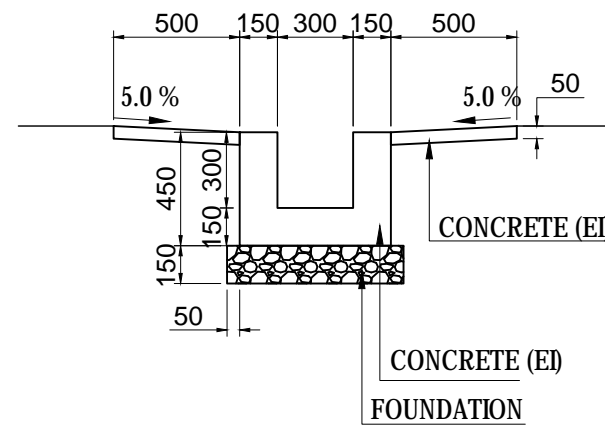
UNIT QUANTITY (SECTION B-B) Per 1.0m		
Item	Qty	Remarks
Concrete (m3)	0.230	180 kg/cm2
Foundation (m3)	0.105	Gravel / t=150mm
Form (m2)	1.600	

UNIT QUANTITY (SECTION C-C) Per 1.0m		
Item	Qty	Remarks
Concrete (m3)	0.302	180 kg/cm2
Foundation (m3)	0.105	Gravel / t=150mm
Form (m2)	1.600	
Reinforcement Bar (kg)	7.012	D13, SD345

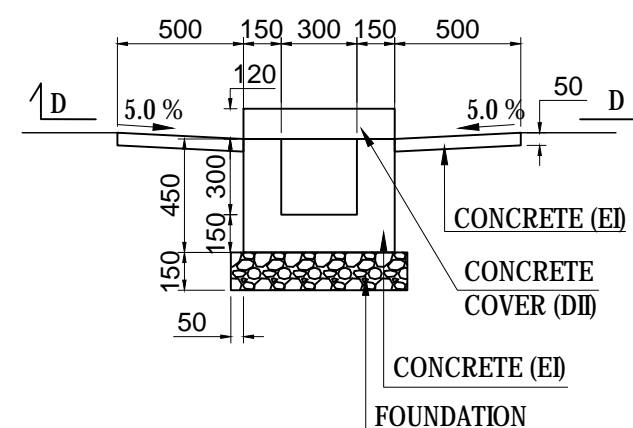
TYPICAL SECTION S = 1:50



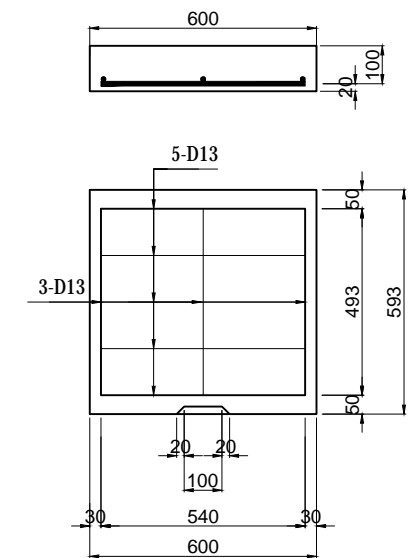
SECTION A-A S = 1:30



SECTION B-B S = 1:30



SECTION C-C S = 1:30

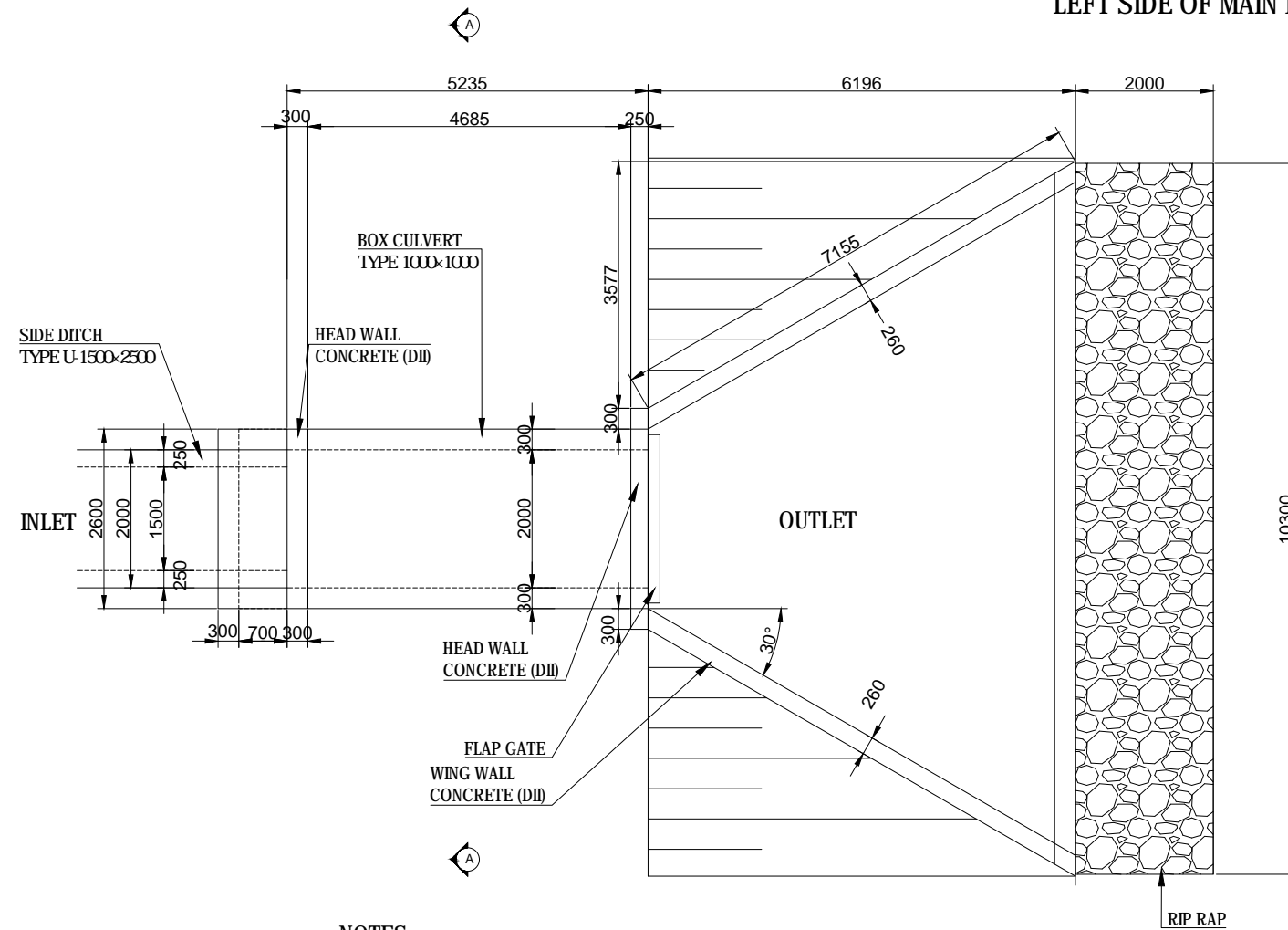


SECTION D-D CONCRETE COVER S = 1:20

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME M. TORIU SIGNATURE T. HAYAKAWA DATE 15 Jun. 2017 20 Jun. 2017 21 Jun. 2017	DRAWING TITLE VERTICAL DRAIN TYPE B	PACKAGE 2 DWG No. P2-RD-3063
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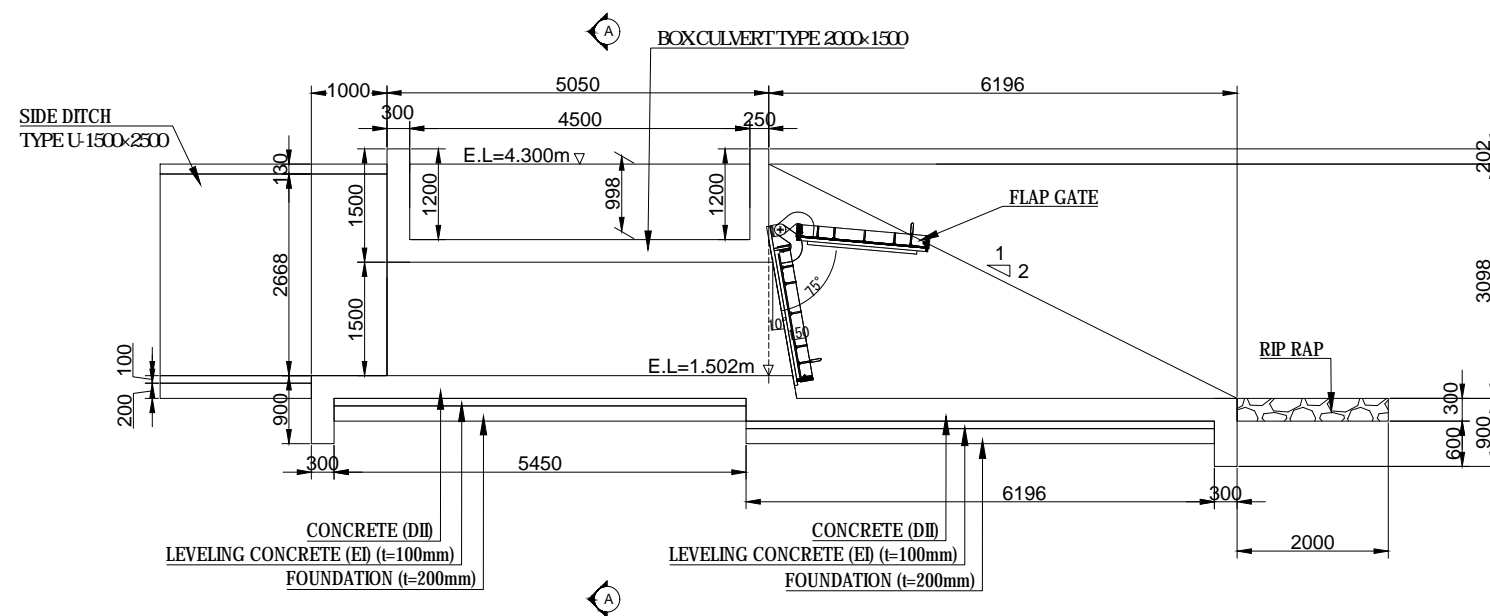
DRAINAGE OUTLET TYPE-B (1)

LEFT SIDE OF MAIN ROAD S=1:100



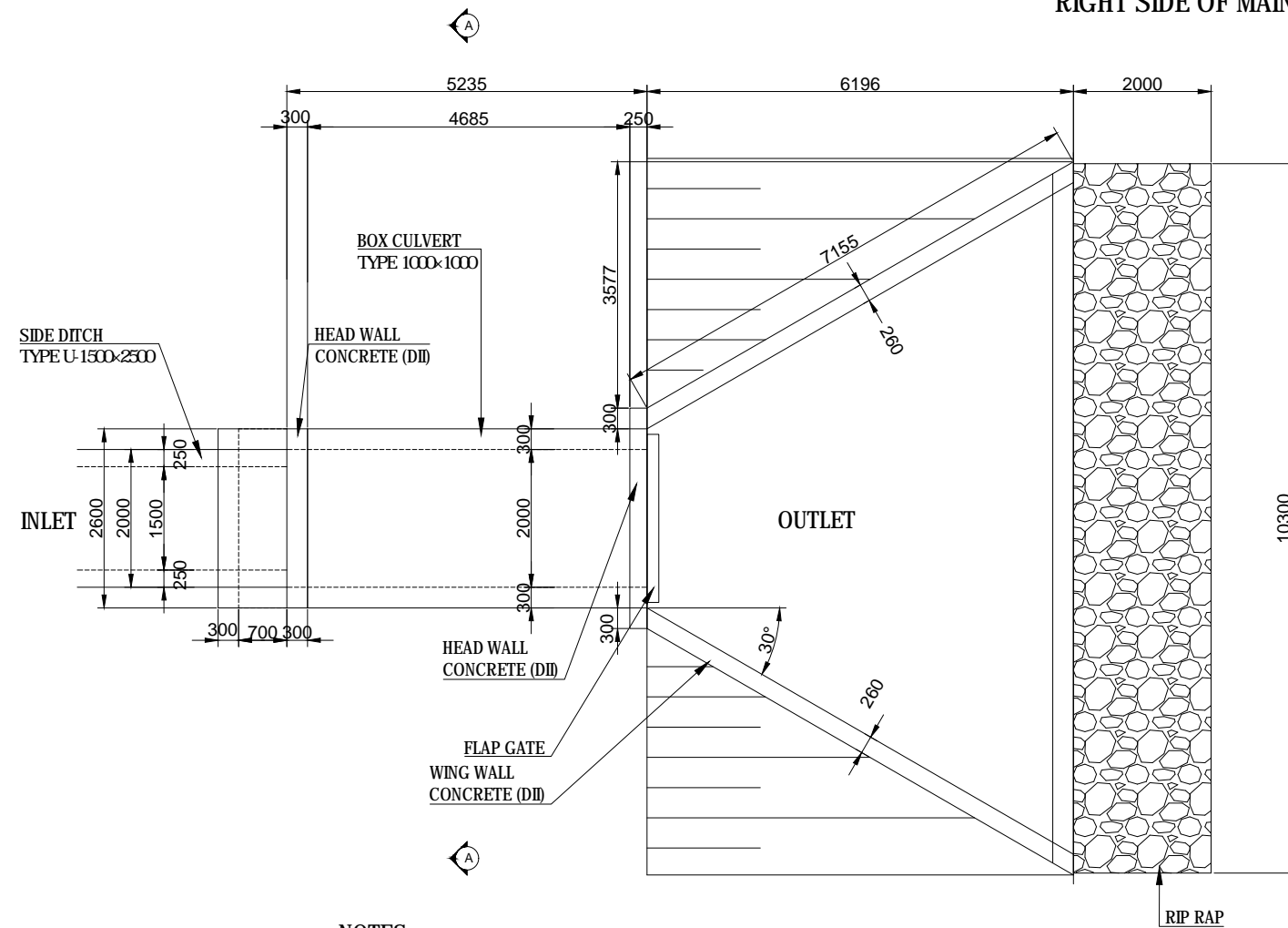
- NOTES:
 1. Concrete Class DII (240 kg/cm²)
 2. Steel Reinforcement SD345

LOCATION		RIGHT RIVER BANK
INSIDE DIMENSION	WIDTH	2.000 m
	HEIGHT	1.500 m
TOTAL BOX CULVERT LENGTH		5.050 m
UNIT WEIGHT	REINFORCED CONCRETE	24.5 kN/m ³
	SOIL	18.0 kN/m ³
CONCRETE DESIGN STRENGTH		24.0 N/mm ²
ALLOWABLE STRESS	COMPRESSIVE STRESS DUE TO BENDING	8 N/mm ²
	SHEARING STRESS	0.39 N/mm ²
	TENSILE STRESS (SD345)	160 N/mm ²
COEFFICIENT OF EARTH PRESSURE		0.5000
IMPACT COEFFICIENT		-
SEISMIC COEFFICIENT		-
ANGLE OF SKEW		90°00
RADIUS OF CURVATURE		R=
GRADIENT OF BOX CULVERT		i = 0.080 %



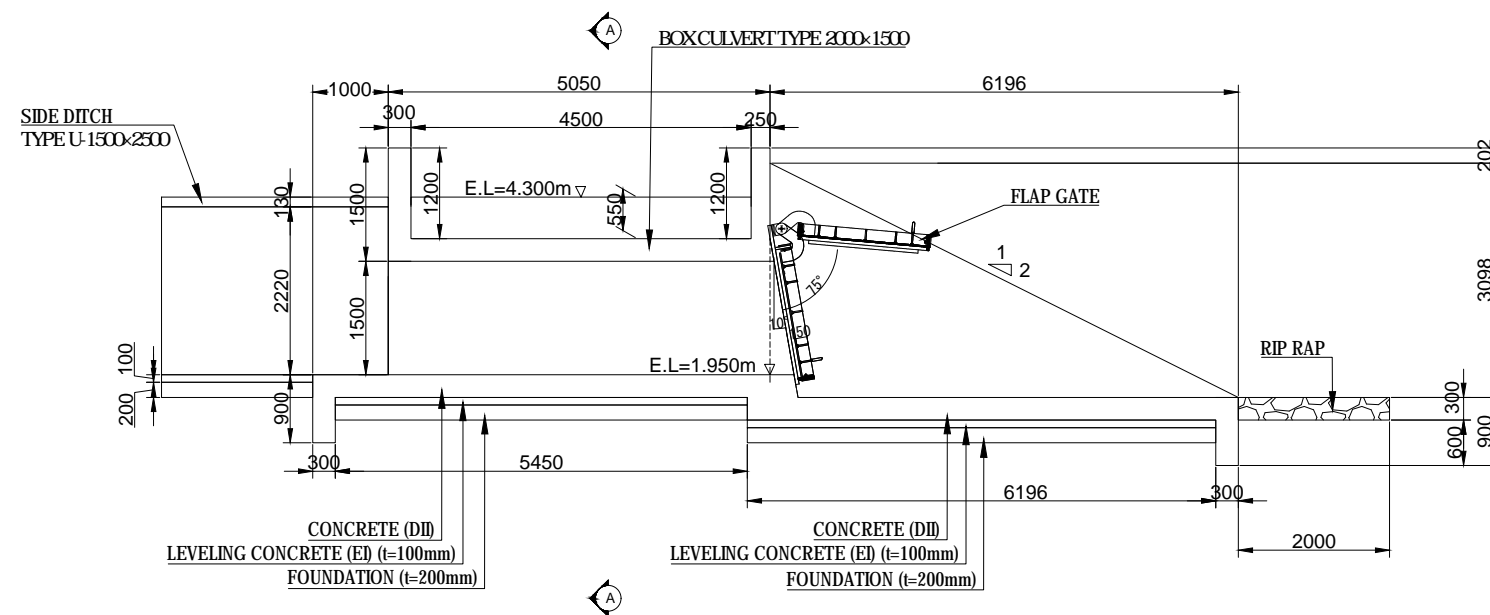
DRAINAGE OUTLET TYPE-B (2)

RIGHT SIDE OF MAIN ROAD S=1:100



- NOTES:**
- Concrete Class DII (240 kg/cm³)
 - Steel Reinforcement SD345

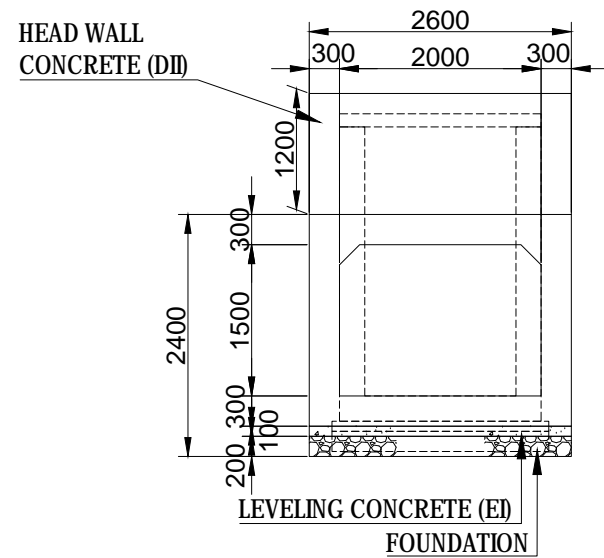
LOCATION		RIGHT RIVER BANK
INSIDE DIMENSION	WIDTH	2.000 m
	HEIGHT	1.500 m
TOTAL BOX CULVERT LENGTH		5.050 m
UNIT WEIGHT	REINFORCED CONCRETE	24.5 kN/m ³
	SOIL	18.0 kN/m ³
CONCRETE DESIGN STRENGTH		24.0 N/mm ³
ALLOWABLE STRESS	COMPRESSIVE STRESS DUE TO BENDING	8 N/mm ³
	SHEARING STRESS	0.39 N/mm ³
	TENSILE STRESS (SD345)	160 N/mm ³
COEFFICIENT OF EARTH PRESSURE		0.5000
IMPACT COEFFICIENT		-
SEISMIC COEFFICIENT		-
ANGLE OF SKEW		90°00
RADIUS OF CURVATURE		R=
GRADIENT OF BOX CULVERT		i= 0.100 %



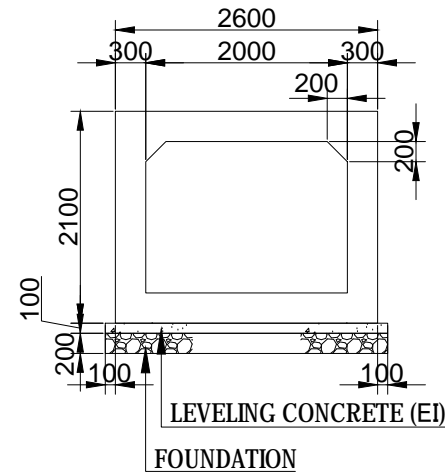
DRAINAGE OUTLET TYPE-B (3)

INLET AND OUTLET FOR TYPE B S=1:100, S=1:75

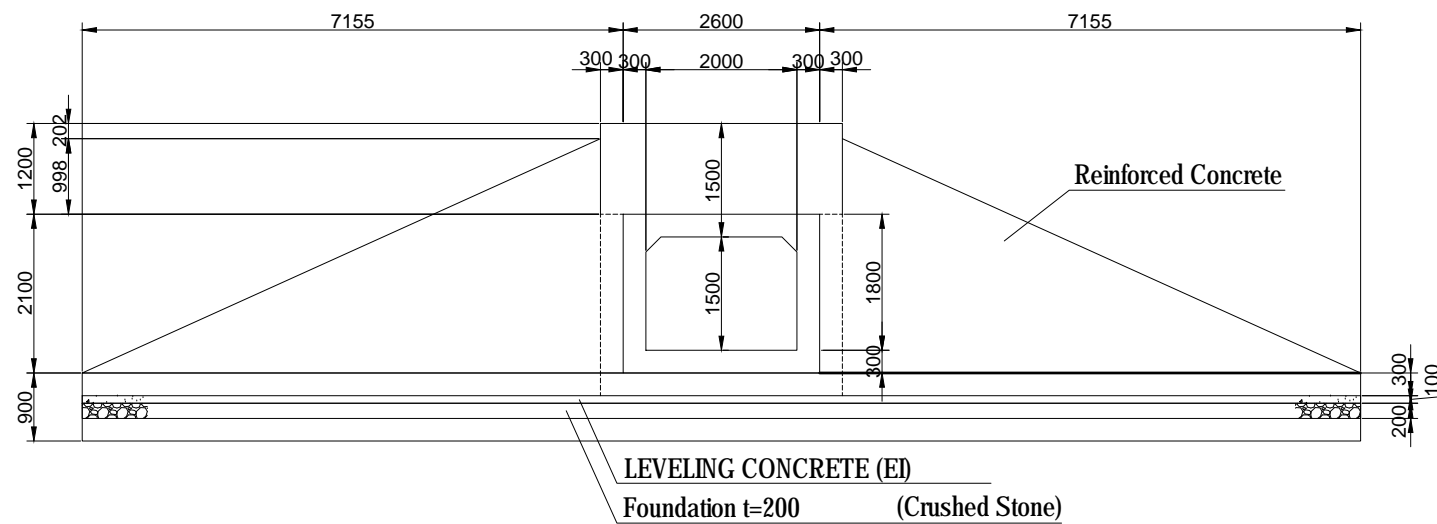
FRONT ELEVATION (INLET) S=1:75



SECTION A-A S=1:75



FRONT ELEVATION (OUTLET) S=1:100

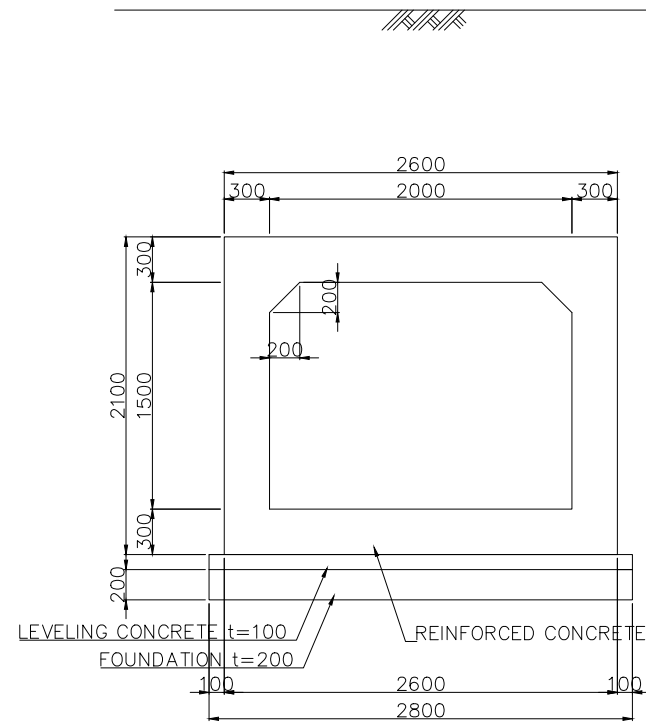


No.	Description	Width	Length	Thickness	Height	Number	Unit	Quantity
		W	L	T	H			
1	Box 2000x1500		5.050				m	5.050
2	Leveling concrete						m ³	4.258
	Outlet Slab1	3.200	6.146	0.100		1	m ³	1.967
	Outlet Slab2	3.577	5.896	0.100		1	m ³	2.109
	Inlet Slab	2.600	0.700	0.100		1	m ³	0.182
3	Foundation						m ³	8.515
	Outlet Slab1	3.200	6.146	0.200		1	m ³	3.933
	Outlet Slab2	3.577	5.896	0.200		1	m ³	4.218
	Inlet Slab	2.600	0.700	0.200		1	m ³	0.364
4	Reinforced Concrete (DII)						m ³	26.919
	Inlet Front Slab	2.600	0.700	0.300		1	m ³	0.546
	Inlet Head Wall1	2.600		0.300	3.900	1	m ³	3.042
	Inlet Head Wall2	2.600		0.300	1.500	-1	m ³	-1.170
	Outlet Slab1	3.200	6.446	0.300		1	m ³	6.188
	Outlet Slab2	3.577	6.196	0.300		1	m ³	6.649
	Outlet Slab3	3.200	0.500	0.300		1	m ³	0.480
	Outlet Wing Wall1	7.155		0.260	3.098	1	m ³	5.763
	Outlet Wing Wall2	10.300		0.300	0.900	1	m ³	2.781
	Outlet Wing Wall3	0.300		0.250	3.300	2	m ³	0.495
	Outlet Head Wall	2.600		0.250	3.300	1	m ³	2.145
5	Formwork of out-let						m ²	90.673
	Inlet Wall1	2.600			3.900	2	m ²	20.280
	Inlet Wall2	2.600			1.500	-2	m ²	-7.800
	Outlet Slab	10.300			0.900	2	m ²	18.540
	Outlet Wing Wall1	7.155			3.098	2	m ²	44.332
	Outlet Wing Wall2	0.300			3.400	4	m ²	4.080
	Outlet Head Wall	2.600			1.500	2	m ²	7.800
	Leveling Concrete1	3.300			0.100	2	m ²	0.660
	Leveling Concrete2	27.810			0.100	1	m ²	2.781
6	Riprap for Bedding Stone	10.300	2.000	0.300		1	m ³	6.180

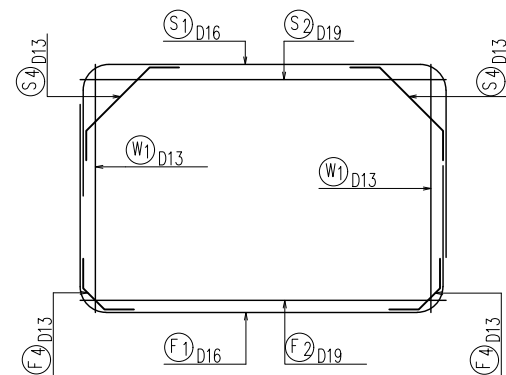
DRAINAGE OUTLET TYPE-B (4)

BAR ARRANGEMENT OF BOX CULVERT S=1:50

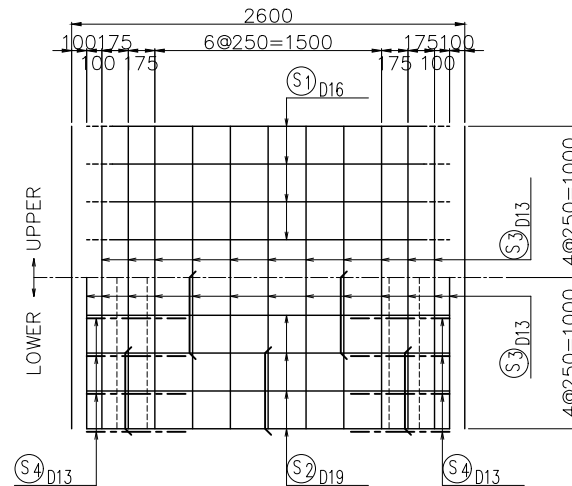
GENERAL DRAWING S=1:50



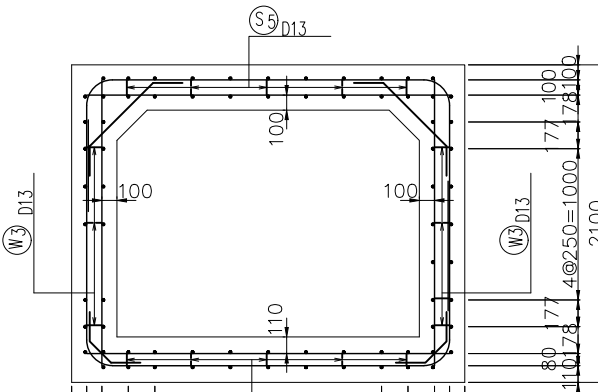
ERECTION DIAGRAM OF MAIN REINFORCEMENT



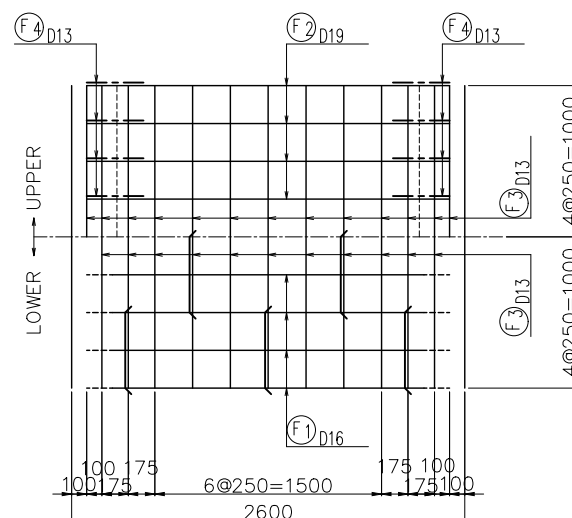
TOP SLAB



SECTION S=1:50



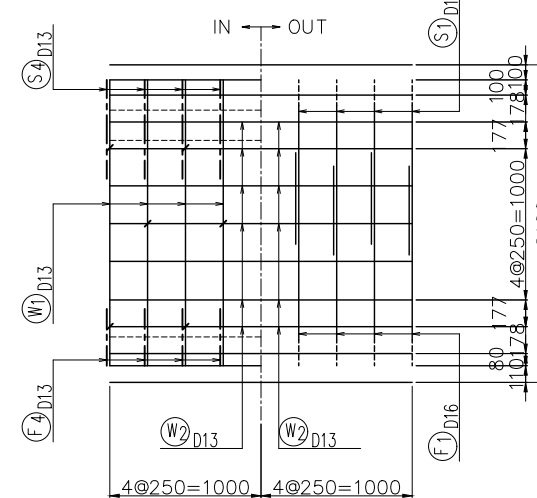
BOTTOM SLAB



DESIGN CRITERIA

INSIDE DIMENSION	WIDTH	2.00 m
	HEIGHT	1.50 m
LIVE LOAD	T-TYPE LIVE LOAD	
UNIT WEIGHT	REINFORCED CONCRETE	24.5 kN/m ³
	SOIL	18 kN/m ³
CONCRETE DESIGN STRENGTH	24 N/mm ²	
ALLOWABLE STRESS		
	COMPRESSIVE STRESS DUE TO BENDING	8 N/mm ²
	SHEARING STRESS	0.39 N/mm ²
	TENSILE STRESS (SD345)	160 N/mm ²
COEFFICIENT OF EARTH PRESSURE	0.5	
IMPACT COEFFICIENT	-	
SEISMIC COEFFICIENT	-	
ANGLE OF SKEW	90°00'00"	
RADIUS OF CURVATURE	R=∞	
GRADIENT OF BOX CULVERT	i=0.100%	

SIDE SLAB



MATERIALS

KIND		UNIT	QUANTITY
CONCRETE	TOP	m ³	0.780
	SIDE	m ³	0.940
	BOTTOM	m ³	0.780
	TOTAL	m ³	2.500
FORM		m ²	8.966
REINFORCING BAR	D19	kg	44
	D16	kg	59
	D13	kg	118
	TOTAL	kg	221
LEVELING CONCRETE (E) t=100		m ²	0.280
FOUNDATION t=200		m ²	0.560

(PER 1m)

MARK	No.	SEC.	EACH	LENGTH (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	H (mm)	R (mm)
S 1	4	D16	4	4500	900	267	2060	1006		170
S 2	1	D19	4	2400	2400					
S 3	1	D13	24	1000	1000					
S 4	5	D13	8	1040	195	649			459	
S 5	3	D13	5	1000	—	131	—			
W 1	1	D13	8	1890	1890					
W 2	1	D13	28	1000	1000					
W 3	2	D13	12	360	—	154				
F 1	4	D16	4	5000	1150	267	2060	1256		170
F 2	1	D19	4	2400	2400					
F 3	1	D13	24	1000	1000					
F 4	5	D13	8	650	195	255			180	
F 5	3	D13	5	960	—	111	—			

LIST OF REINFORCEMENT

MARK	SEC.	LENGTH (mm)	EACH	WEIGHT (kg/m)	WEIGHT/one (kg)	WEIGHT (kg)	REMARKS
S 1	D16	4500	4	1.56	7.020	28.080	⌋
S 2	D19	2400	4	2.25	5.400	21.600	⌋
S 3	D13	1000	24	0.995	0.995	23.880	⌋
S 4	D13	1040	8	0.995	0.995	8.280	⌋
S 5	D13	1000	5	0.995	0.995	4.975	⌋
W 1	D13	1890	8	0.995	1.881	15.048	⌋
W 2	D13	1000	28	0.995	0.995	27.860	⌋
W 3	D13	360	12	0.995	0.358	4.296	⌋
F 1	D16	5000	4	1.56	7.800	31.200	⌋
F 2	D19	2400	4	2.25	5.400	21.600	⌋
F 3	D13	1000	24	0.995	0.995	23.880	⌋
F 4	D13	650	8	0.995	0.647	5.176	⌋
F 5	D13	960	5	0.995	0.955	5.000	⌋

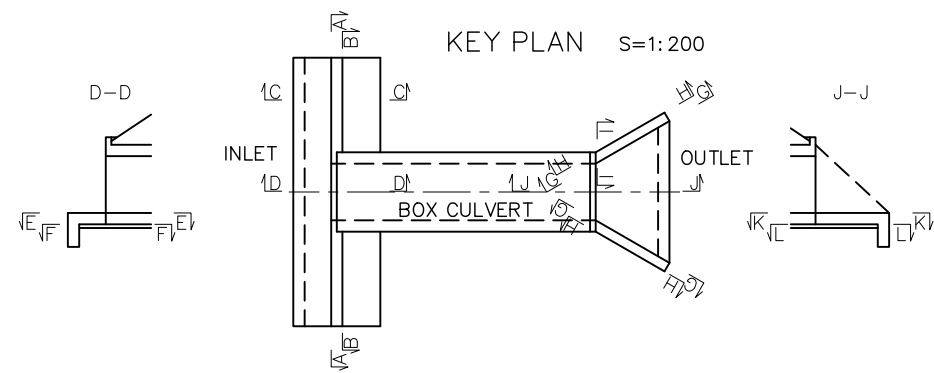
	D	a (mm)	b (mm)	c (mm)	R (mm)	L (mm)
D13	66	164	230	42	410	
D16	75	195	270	48	500	
D19	94	236	330	60	600	
D22	104	266	370	66	690	
D25	122	308	430	78	790	
D29	141	349	490	90	910	
D32	151	389	540	96	1000	

Note1: Size of Box Culvert and Bar Arrangement are based on Standard Drawing of Ministry of Land, Infrastructure, Transport and Tourism of Japan
 Note2: Specification of Steel Reinforcement Bar shall comply with SD345 (JIS G3112) or equivalent

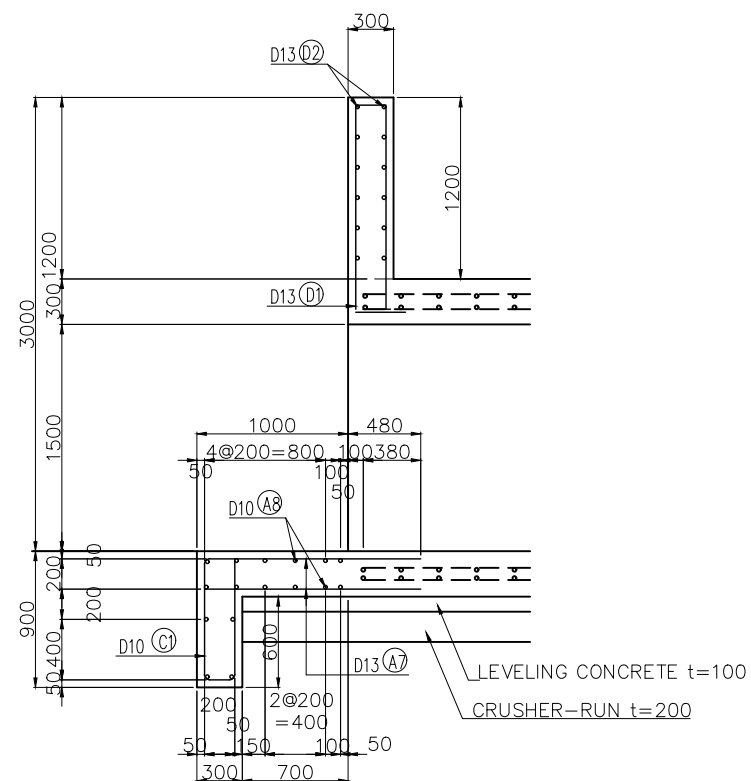
DRAINAGE OUTLET TYPE-B (5)

BAR ARRANGEMENT OF INLET S=1:50

(2000x1500)

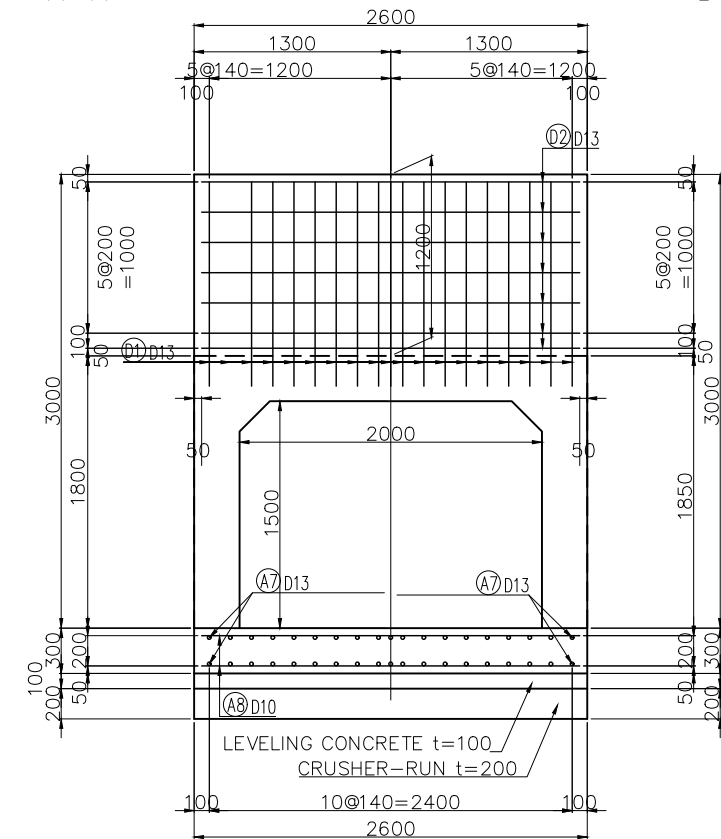


D-D



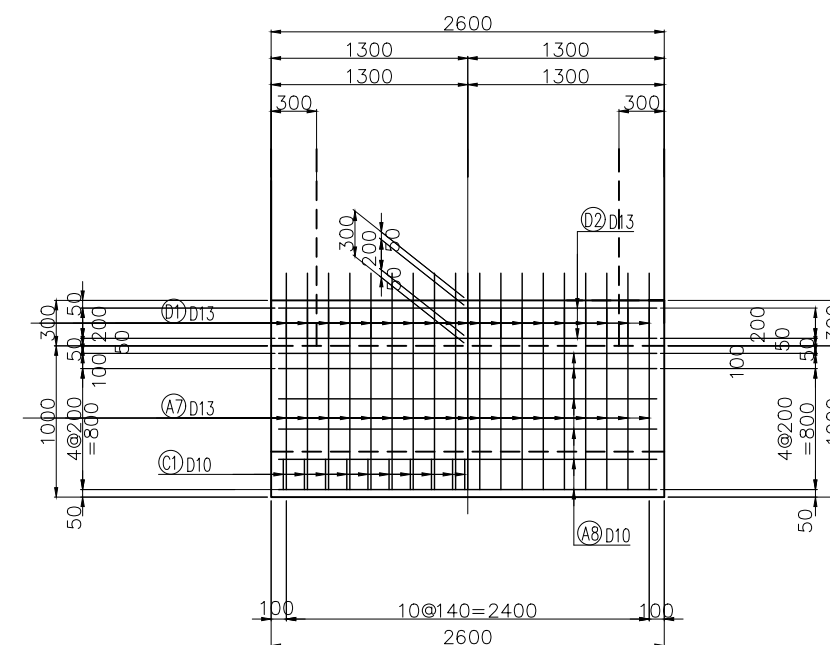
A-A

B-B



E-E

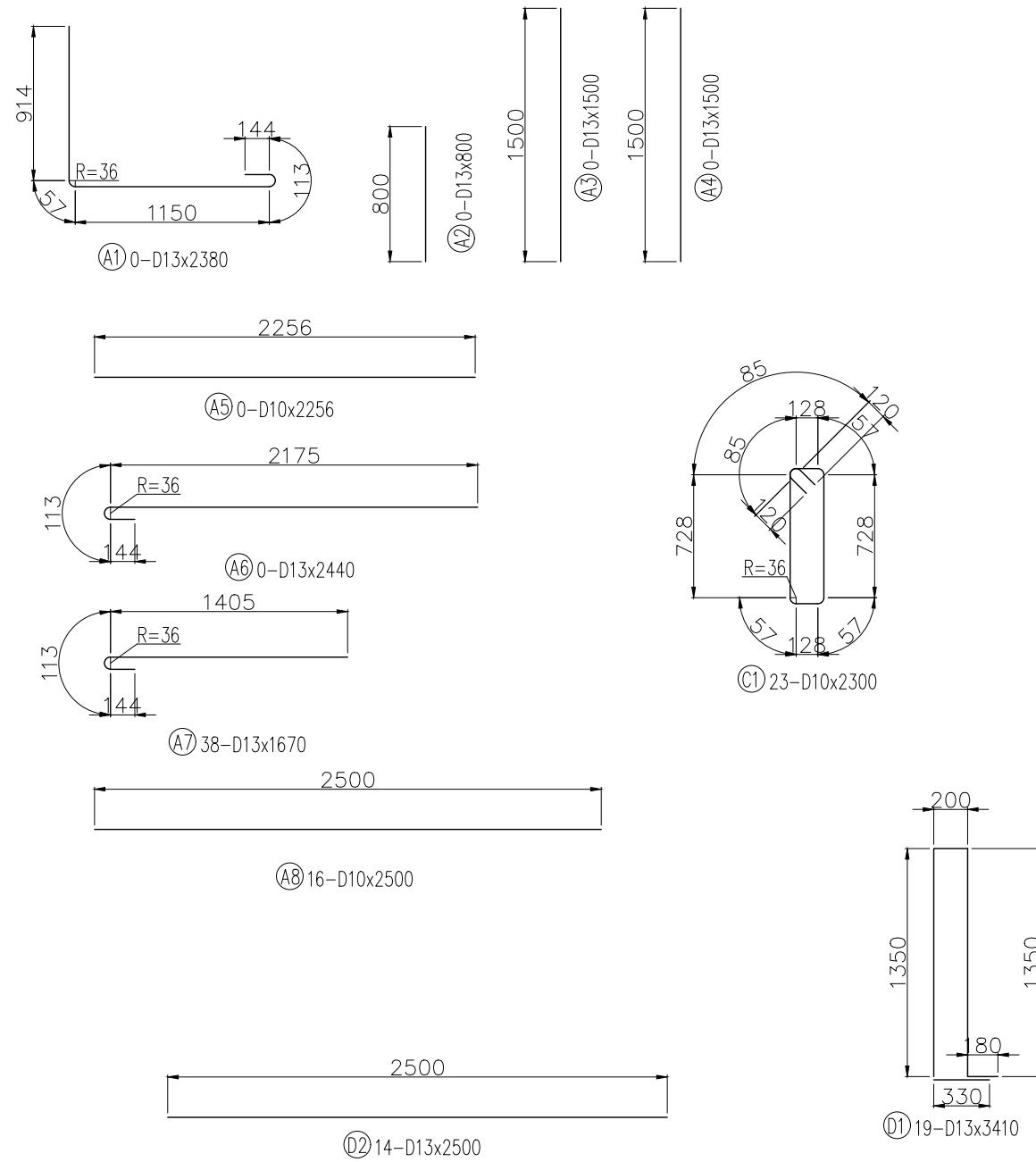
F-F



PROJECT NAME	FINANCED BY	COUNTERPART	JICA STUDY TEAM	NAME	SIGNATURE	DATE	DRAWING TITLE	PACKAGE
DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	JAPAN INTERNATIONAL COOPERATION AGENCY	REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	PREPARED BY CHECKED BY APPROVED BY	M. TORIU T. HAYAKAWA Y. SANO	15 Jun. 2017 20 Jun. 2017 21 Jun. 2017	DRAINAGE OUTLET TYPE-B (5)	2 DWG No. P2-RD-3074

DRAINAGE OUTLET TYPE-B (6) BAR ARRANGEMENT OF INLET S=1:40

INLET



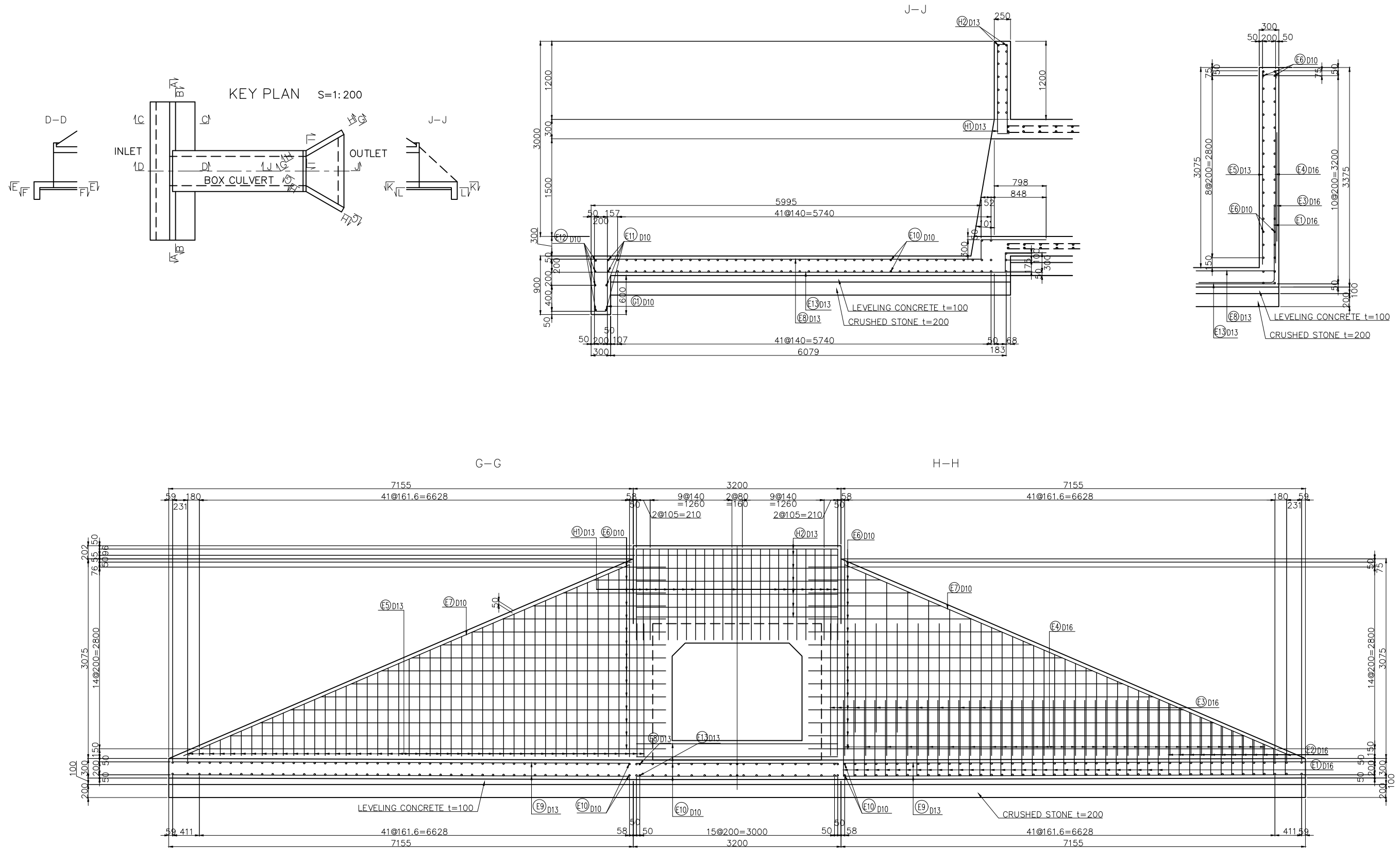
LIST OF REINFORCEMENT(INLET)

MARK	SEC.	LENGTH (mm)	EACH	WEIGHT (kg/m)	WEIGHT/one (kg)	WEIGHT (kg)	REMARKS
A 1	D13	2 380	0	0.995	2.368	0	└
A 2	"	800	0	"	0.796	0	
A 3	"	1 500	0	"	1.493	0	
A 4	"	1 500	0	"	1.493	0	
A 5	D10	2 256	0	0.560	1.263	0	—
A 6	D13	2 440	0	0.995	2.428	0	└
A 7	"	1 670	38	"	1.662	63	└
A 8	D10	2 500	16	0.560	1.400	22	—
C 1	"	2 300	23	"	1.288	30	└
D 1	D13	3 410	19	0.995	3.393	64	└
D 2	"	2 500	14	"	2.488	35	—
SUB TOTAL						214	kg
D10						52	kg
D13						162	kg
Total						214	kg

D	a (mm)	b (mm)	c (mm)	R (mm)	L (mm)
D10	47	120	167	30	320
D13	57	144	201	36	380
D16	75	195	270	48	500
D19	94	240	334	60	630
L AND OVER					

DRAINAGE OUTLET TYPE-B (7)

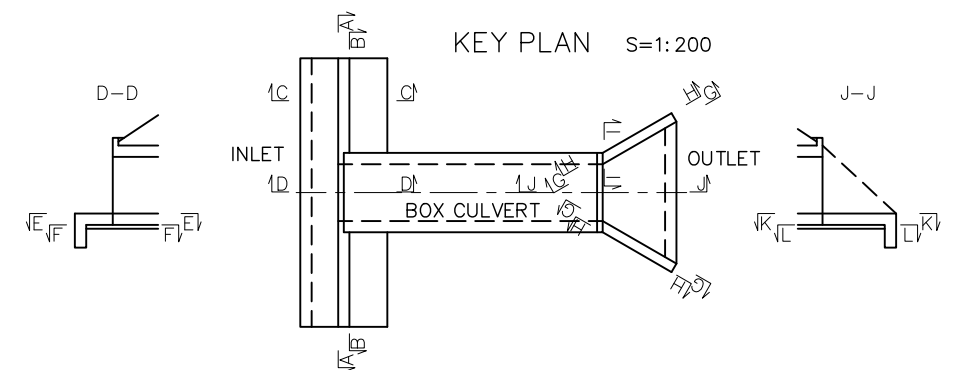
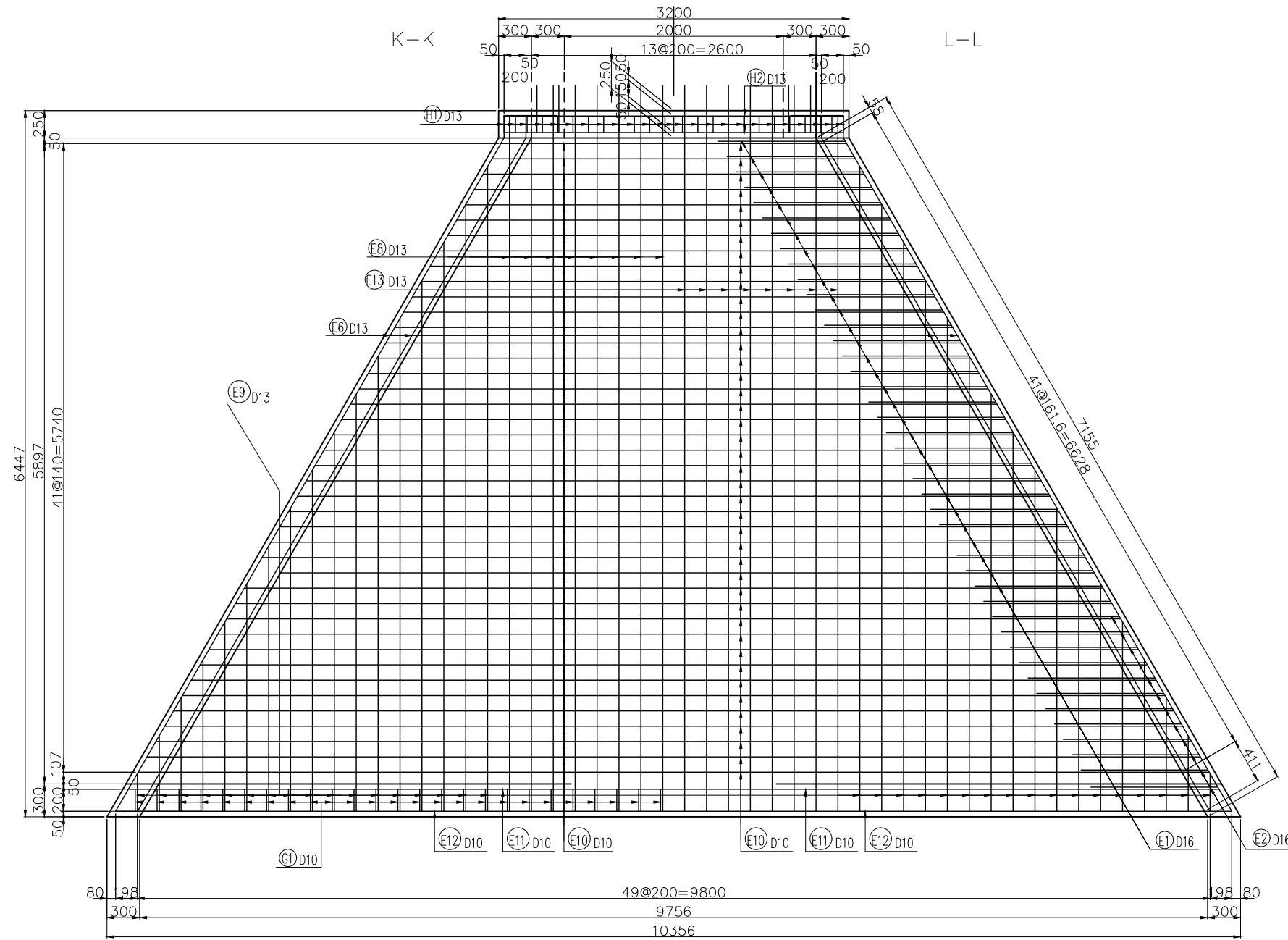
BAR ARRANGEMENT OF OUTLET S=1:60



PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 20%;">NAME</th> <th style="width: 20%;">SIGNATURE</th> <th style="width: 10%;">DATE</th> </tr> </thead> <tbody> <tr> <td>PREPARED BY</td> <td>M. TORIU</td> <td></td> <td>15 Jun. 2017</td> </tr> <tr> <td>CHECKED BY</td> <td>T. HAYAKAWA</td> <td></td> <td>20 Jun. 2017</td> </tr> <tr> <td>APPROVED BY</td> <td>Y. SANO</td> <td></td> <td>21 Jun. 2017</td> </tr> </tbody> </table>		NAME	SIGNATURE	DATE	PREPARED BY	M. TORIU		15 Jun. 2017	CHECKED BY	T. HAYAKAWA		20 Jun. 2017	APPROVED BY	Y. SANO		21 Jun. 2017	DRAWING TITLE DRAINAGE OUTLET TYPE-B (7)	PACKAGE 2 DWG No. P2-RD-3076
	NAME	SIGNATURE	DATE																			
PREPARED BY	M. TORIU		15 Jun. 2017																			
CHECKED BY	T. HAYAKAWA		20 Jun. 2017																			
APPROVED BY	Y. SANO		21 Jun. 2017																			

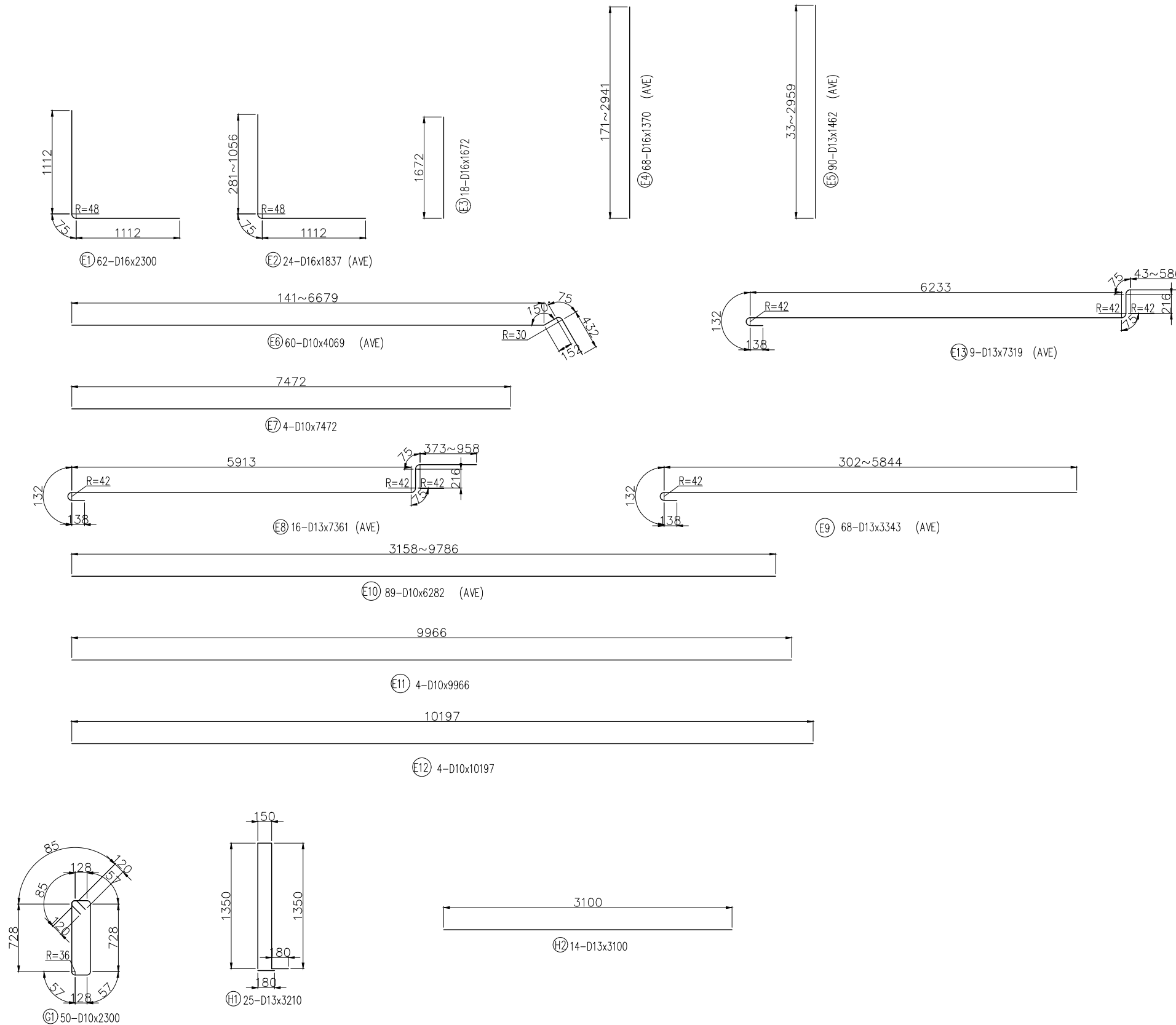
DRAINAGE OUTLET TYPE-B (8)

BAR ARRANGEMENT OF OUTLET S=1:50



<small>PROJECT NAME</small> DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	<small>FINANCED BY</small> JAPAN INTERNATIONAL COOPERATION AGENCY	<small>COUNTERPART</small> REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	<small>JICA STUDY TEAM</small> NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 20%;">NAME</th> <th style="width: 20%;">SIGNATURE</th> <th style="width: 10%;">DATE</th> </tr> </thead> <tbody> <tr> <td>PREPARED BY</td> <td>M. TORIU</td> <td></td> <td>15 Jun. 2017</td> </tr> <tr> <td>CHECKED BY</td> <td>T. HAYAKAWA</td> <td></td> <td>20 Jun. 2017</td> </tr> <tr> <td>APPROVED BY</td> <td>Y. SANO</td> <td></td> <td>21 Jun. 2017</td> </tr> </tbody> </table>		NAME	SIGNATURE	DATE	PREPARED BY	M. TORIU		15 Jun. 2017	CHECKED BY	T. HAYAKAWA		20 Jun. 2017	APPROVED BY	Y. SANO		21 Jun. 2017	<small>DRAWING TITLE</small> DRAINAGE OUTLET TYPE-B (8)	<small>PACKAGE</small> 2 <small>DWG No.</small> P2-RD-3077
	NAME	SIGNATURE	DATE																			
PREPARED BY	M. TORIU		15 Jun. 2017																			
CHECKED BY	T. HAYAKAWA		20 Jun. 2017																			
APPROVED BY	Y. SANO		21 Jun. 2017																			

DRAINAGE OUTLET TYPE-B (9) BAR ARRANGEMENT OF OUTLET S=1:50



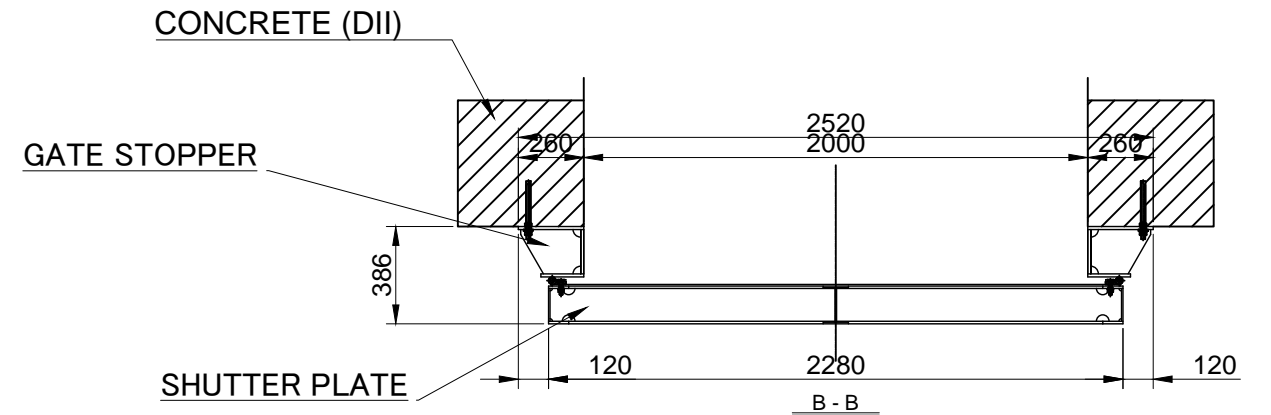
LIST OF REINFORCEMENT(INLET)

MARK	SEC.	LENGTH (mm)	EACH	WEIGHT (kg/m)	WEIGHT/one (kg)	WEIGHT (kg)	REMARKS
E 1	D16	2 300	62	1.560	3.588	222	L
E 2	"	1 837	24	"	2.866	69	L (AVE)
E 3	"	1 672	18	"	2.608	47	
E 4	"	1 370	68	"	2.137	145	(AVE)
E 5	D13	1 462	90	0.995	1.455	131	(AVE)
E 6	D10	4 069	60	0.560	2.279	137	— (AVE)
E 7	"	7 472	4	"	4.184	17	—
E 8	D13	4 880	16	0.995	4.856	78	— (AVE)
E 9	"	3 363	68	"	3.346	228	— (AVE)
E 10	D10	6 282	89	0.560	3.518	313	— (AVE)
E 11	"	9 966	4	"	5.581	22	—
E 12	"	10 197	4	"	5.710	23	—
E 13	D13	7 319	16	0.995	7.282	117	—
G 1	"	2 300	50	"	2.289	114	—
H 1	D13	3 210	25	0.995	3.194	80	—
H 2	"	3 100	14	"	3.085	43	—
SUB TOTAL						1 786	kg
					D10	512	kg
					D13	791	kg
					D16	483	kg
					Total	1 786	kg

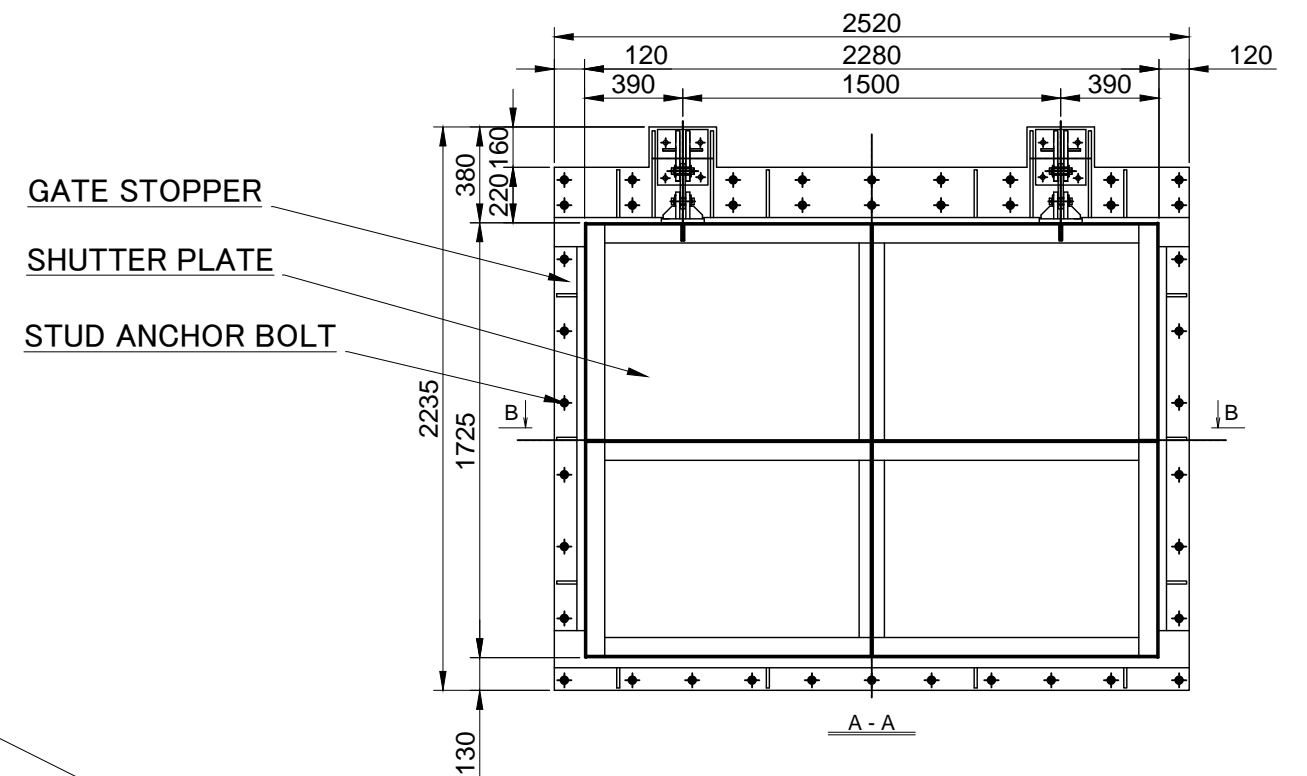
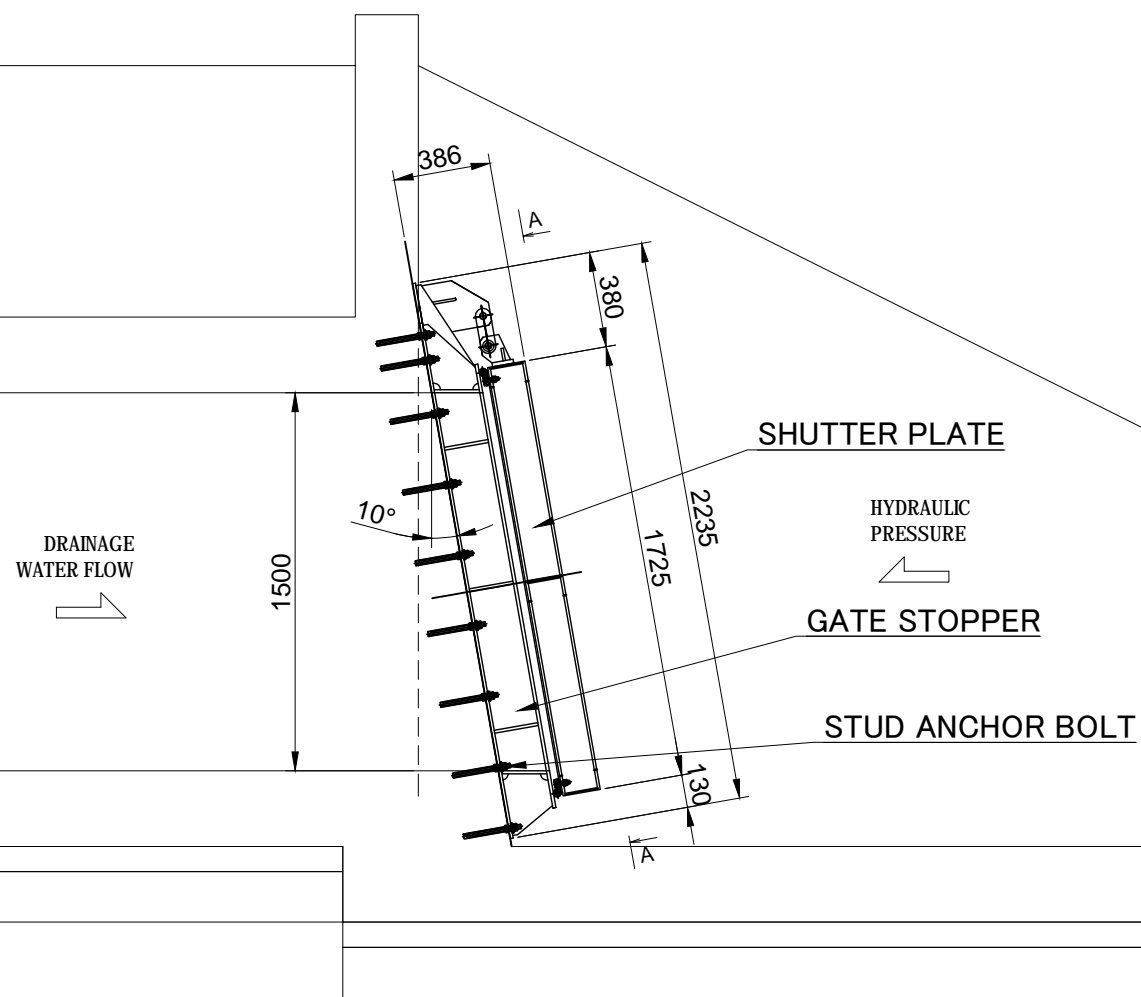
	D	a (mm)	b (mm)	c (mm)	R (mm)	L (mm)
	D10	47	120	167	30	320
	D13	66	164	230	42	410
	D16	75	195	270	48	500
	D19	94	236	330	60	600

DRAINAGE OUTLET TYPE-B (10)

DETAIL OF FLAP GATE S=1/30



SIDE VIEW



RIP RAP

PROJECT NAME DETAILED DESIGN ON BAGO RIVER BRIDGE CONSTRUCTION PROJECT	FINANCED BY JAPAN INTERNATIONAL COOPERATION AGENCY	COUNTERPART REPUBLIC OF THE UNION OF MYANMAR MINISTRY OF CONSTRUCTION DEPARTMENT OF BRIDGE	JICA STUDY TEAM NIPPON KOEI CO., LTD. ORIENTAL CONSULTANTS GLOBAL CO., LTD. METROPOLITAN EXPRESSWAY COMPANY LIMITED CHODAI CO., LTD. NIPPON ENGINEERING CONSULTANTS CO., LTD.	NAME	SIGNATURE	DATE	DRAWING TITLE DRAINAGE OUTLET TYPE-B (10)	PACKAGE	
				PREPARED BY	M. TORIU			15 Jun. 2017	2
				CHECKED BY	T. HAYAKAWA			20 Jun. 2017	DWG No.
				APPROVED BY	Y. SANO			21 Jun. 2017	P2-RD-3079