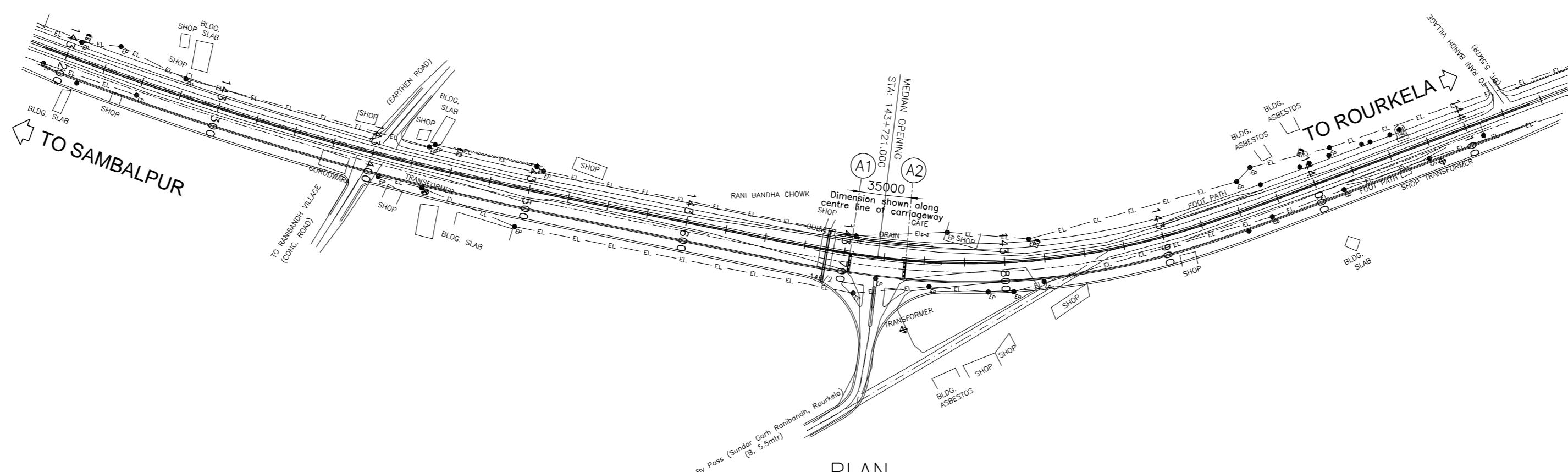


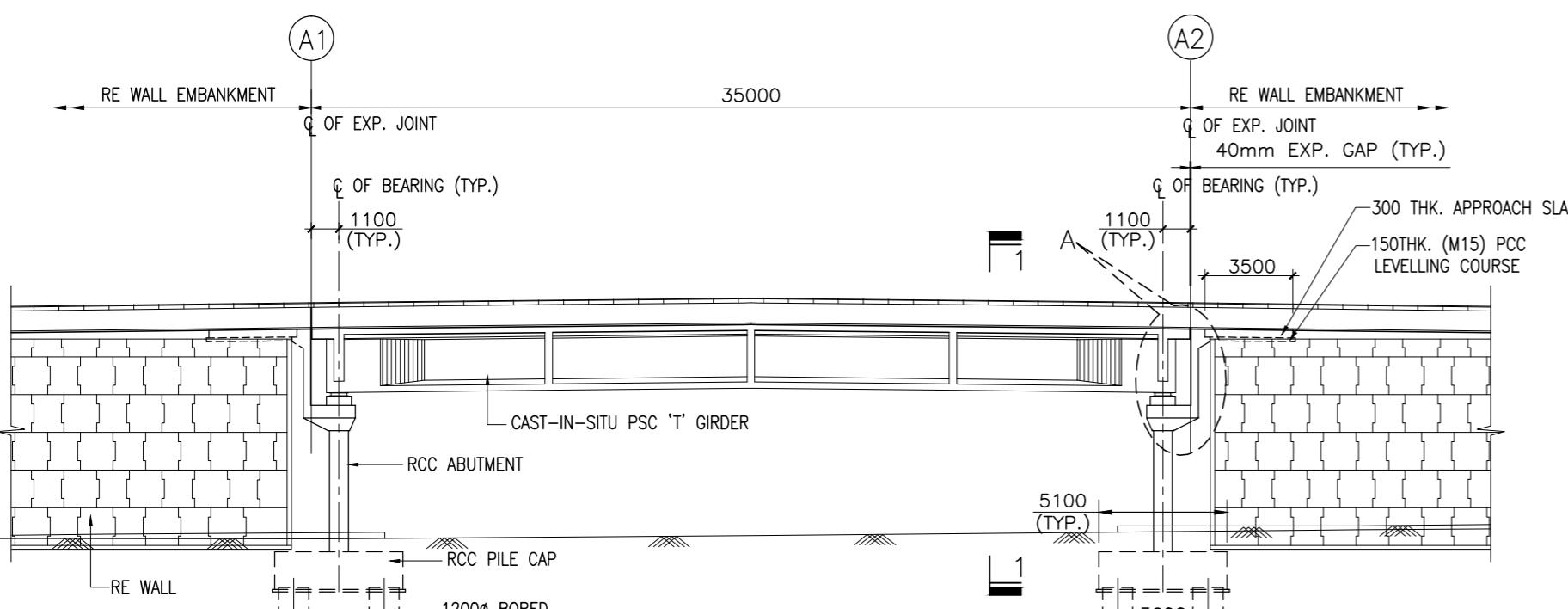
ELEVATION

SCALE 1:2500



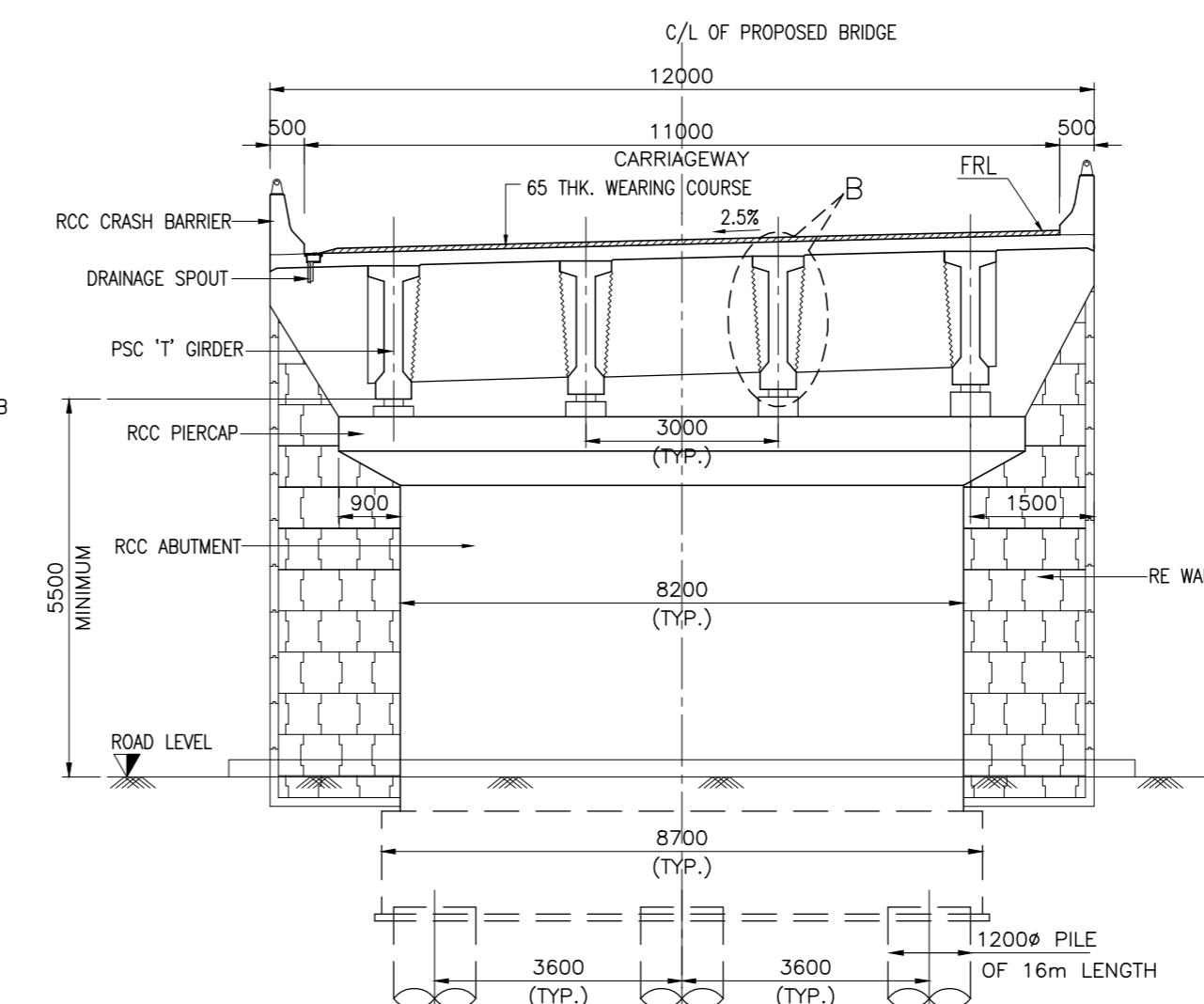
PLAN

PLAN



PART ELEVATION

SCALE 1



SECTION 1-1

SCALE 1:100



CONSULTANTS: Pricewaterhouse Coopers Pvt. Lt

PRICEWATERHOUSECOOPERS Building 8, 7th & 8th Floor,
Tower B, DLF Cyber City,
Gurgaon-122001

Gurgaon-122001
In JV With
LEA Associates South Asia Pvt. Ltd.
B-1/E-27, Mohan Co-operative Industrial Estate,

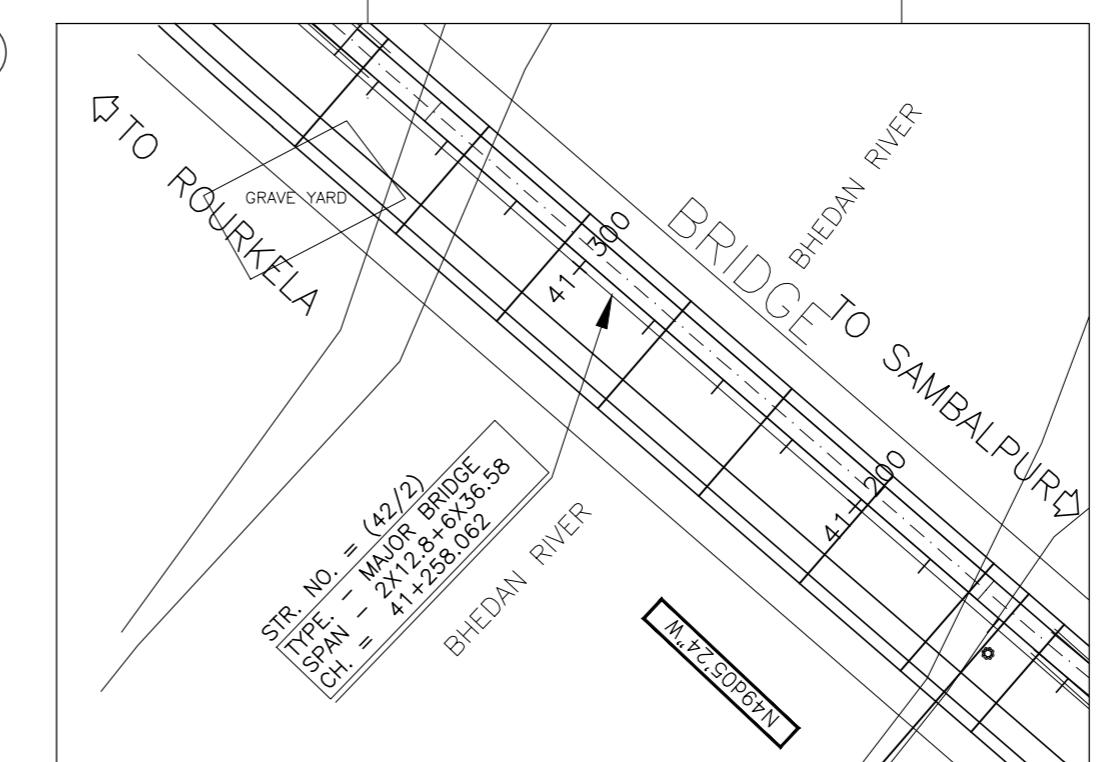
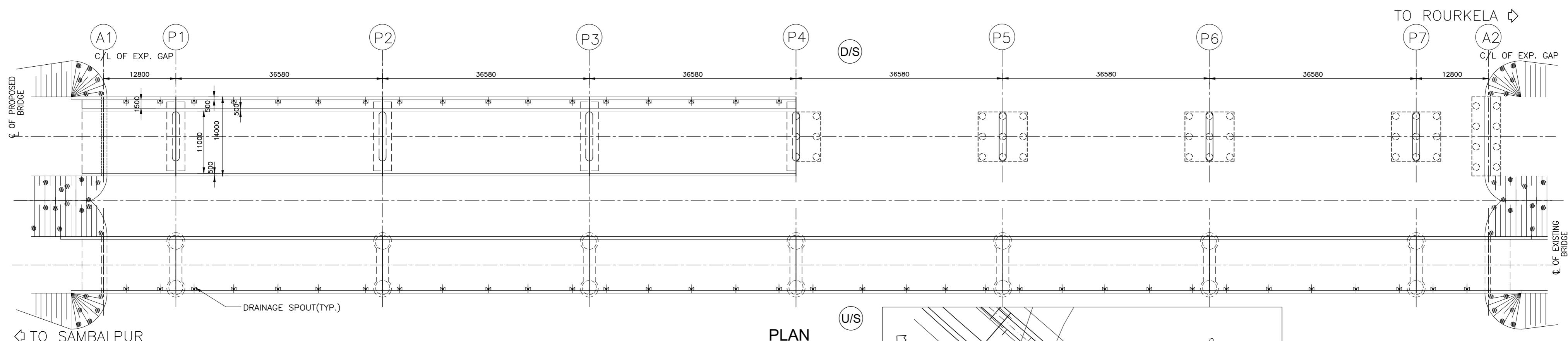
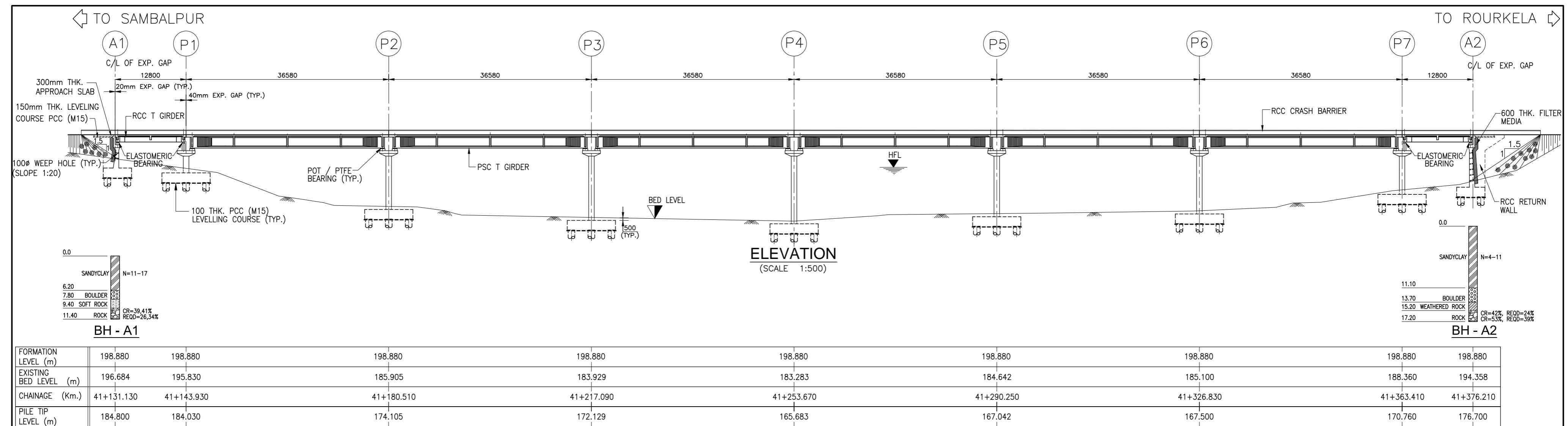
NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
4. CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE FLYOVER.
5. PILE CAPACITY HAS BEEN ASUMED 300t AS PER GEOTECHNICAL REPORT.

GOVERNMENT OF ORISSA
WORKS DEPARTMENT

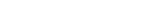
**TECHNO-ECONOMIC FEASIBILITY STUDY AND
TRANSACTION ADVISOR FOR SELECTED
STATE ROADS IN THE STATE OF ORISSA**

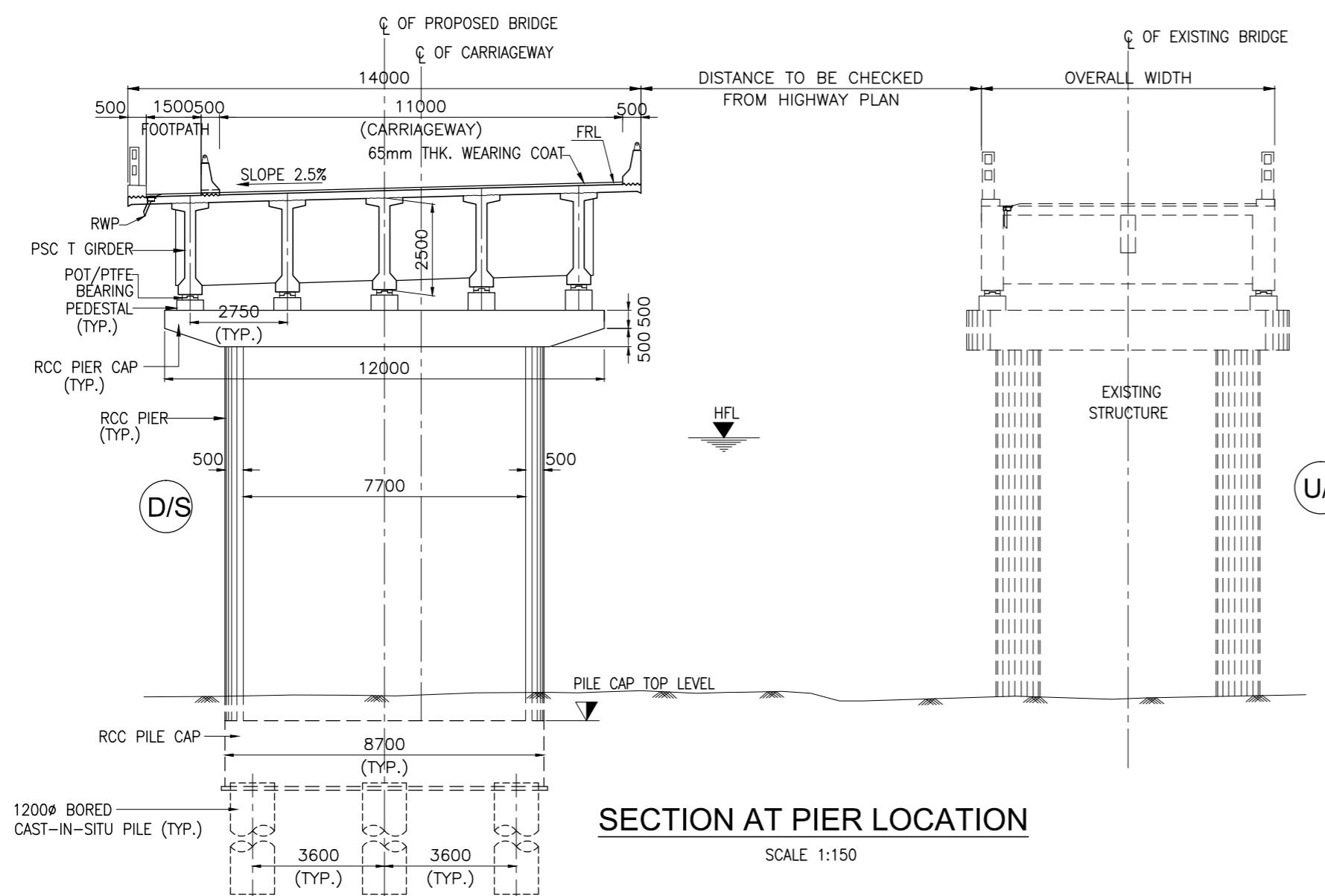
| | | | | | | | | | | |
|------|--------------|------|----|-------------|---------------|---|-------------------------|--|--|--|
| | | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF FLYOVER AT CH. 143+721.013 | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. In JV With LEA Associates South Asia Pvt. Ltd. | SCALE 1:100 | 3. FILE CAPACITY HAS BEEN REDUCED TO 100 KB FOR THIS REPORT. |
| | | | | Drawn By | Joy | | | | | |
| | | | | Designed By | Sanjay Mandal | | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | | | |
| | REVISION | | | Approved By | Avadesh | | | | Drawing Number : 73231\LASA\PPP\SR\FLY\GA-02 | |



NOTES:-

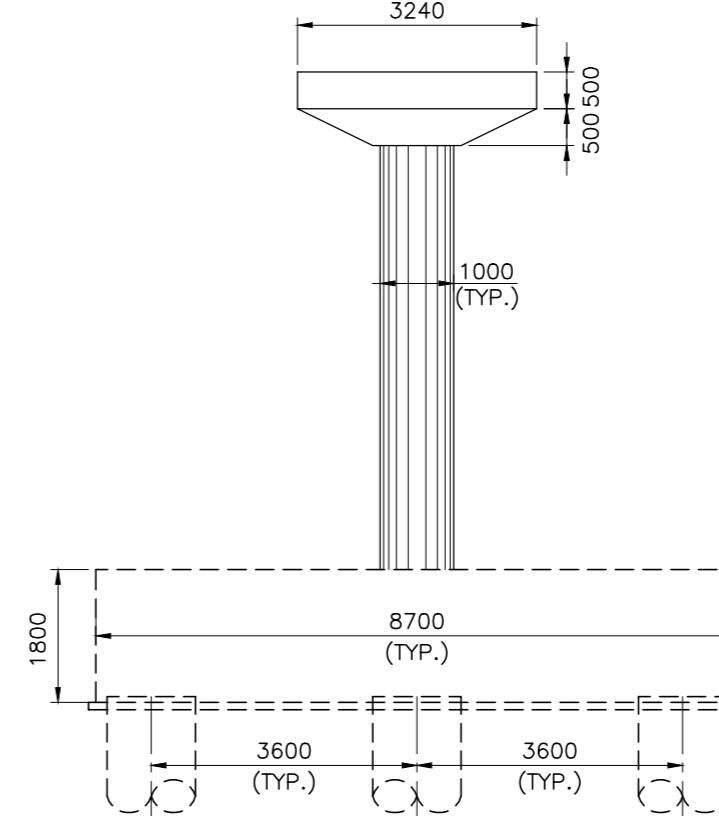
1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
 3. FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
 4. THE PILE SHOULD BE SOCKETED MINIMUM 2X1200≈2500mm. INTO THE HARD ROCK, AS PER IS 14593, TAB-1, CL-6.5.1 (NOTE-1).
 5. CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
 6. ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | | | | | | | | |
|----------|--------------|------|-------------|---------------|--|---|---|--|------------------|---|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MAJOR BRIDGE NO. 42/1 | Scale : AS SHOWN | CONSULTANTS: | Pricewaterhouse Coopers Pvt. Ltd. | Client: | GOVERNMENT OF ORISSA |
| | | | Drawn By | Joy | | |  | Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 | WORKS DEPARTMENT | |
| | | | Designed By | Sanjay Mandal | | | | In JV With | Project: | PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED |
| Mkd. | Descriptions | Date | By | Checked By | | |  | LEA Associates South Asia Pvt. Ltd. | | STATE ROADS IN THE STATE OF ORISSA |
| REVISION | | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\MJBR\GA-01 | (SHEET 1 OF 2) | B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | | |



SECTION AT PIER LOCATION

SCALE 1:150



DETAIL OF PIER

SCALE 1:1

| SL. NO. | DESCRIPTION | VALUES |
|-----------------------|--------------------|-------------|
| HYDRAULIC DATA | | |
| 1. | DISCHARGE | 8281 cumecs |
| 2. | HFL | 194.415 |
| 3. | VELOCITY | 4.432m/s |
| 4. | SCOUR LEVEL :- | |
| (a) | ABUTMENT (A1 & A2) | 192.000 |
| (b) | P1FR (P1 TO P7) | 176.114 |

GEOTECHNICAL DATA

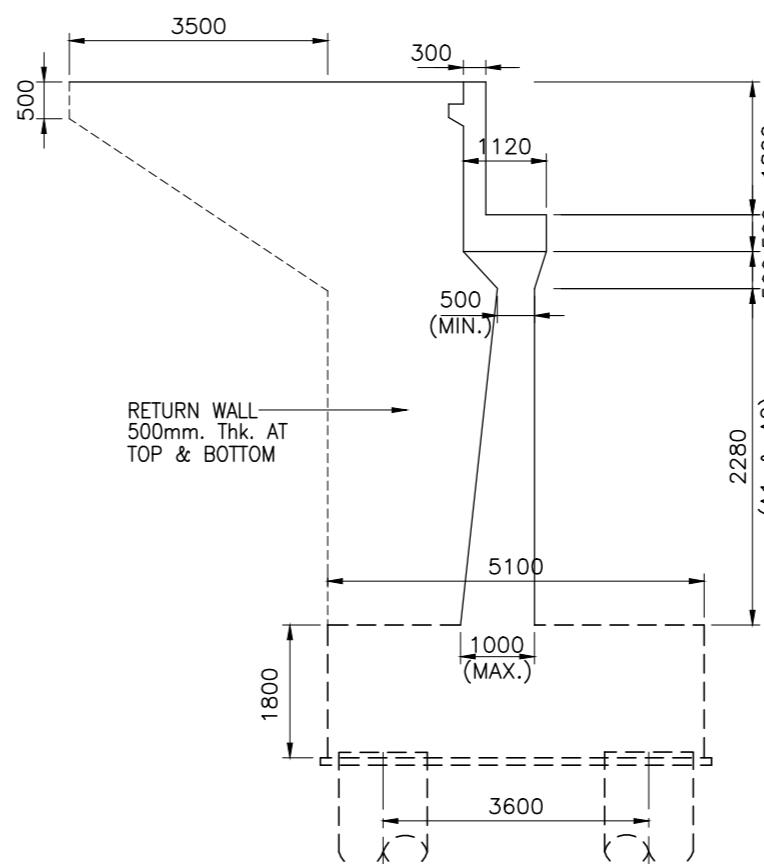
PILE CAPACITY :-

STRUCTURAL DATA

| | |
|----------------------|---------------------------|
| GRADE OF CONCRETE :- | |
| | SUPERSTRUCTURE :- |
| | CRASH BARRIER - M40 |
| | DECK SLAB - M30 |
| | PSC GIRDER - M40 |
| | RCC GIRDER - M35 |
| | SUBSTRUCTURE - M35 |
| | RETURN WALL - M30 |
| | FOUNDATION :- |
| | PILE CAP - M35 |
| | PILE - M35 |
| | GRADE OF STEEL - Fe 500 |
| BEARING TYPE :- | |
| | POT. PTFE - PSC SPAN |
| | ELASTOMERIC - RCC SPAN |
| EXPANSION JOINT :- | |
| | STRIP SEAL - PIER |
| | ASPHALTIC PLUG - ABUTMENT |

SECTION AT ABUTMENT LOCATION

SCALE - 1:15

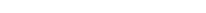


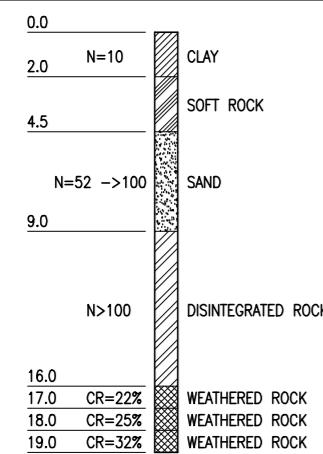
DETAIL OF ABUTMENT

SCALE 1:100

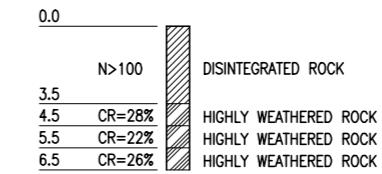
NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
 3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SHEET 1 OF 2 OF THIS DRAWING.

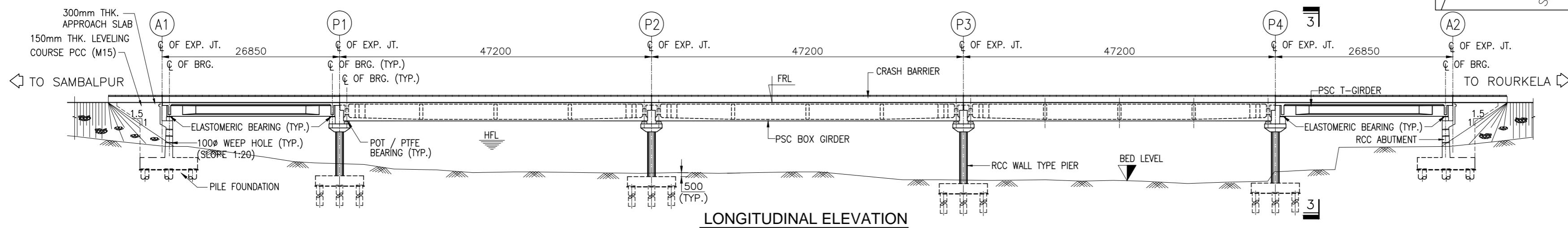
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|----------|--------------|------|-------------|---------------|--|------------------------------|---|--|------------------|---|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MAJOR BRIDGE NO. 42/1 | Scale : AS SHOWN | CONSULTANTS: | Pricewaterhouse Coopers Pvt. Ltd. | Client: | GOVERNMENT OF ORISSA |
| | | | Drawn By | Joy | | |  | Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With | WORKS DEPARTMENT | PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| | | | Designed By | Sanjay Mandal | | |  | LEA Associates South Asia Pvt. Ltd. | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | | | |
| REVISION | | | Approved By | Avadesh | Drawing Number : | 73231\LASA\PPP\SR\MJBR\GA-01 | (SHEET 2 OF 2) | | | |



BH - A1

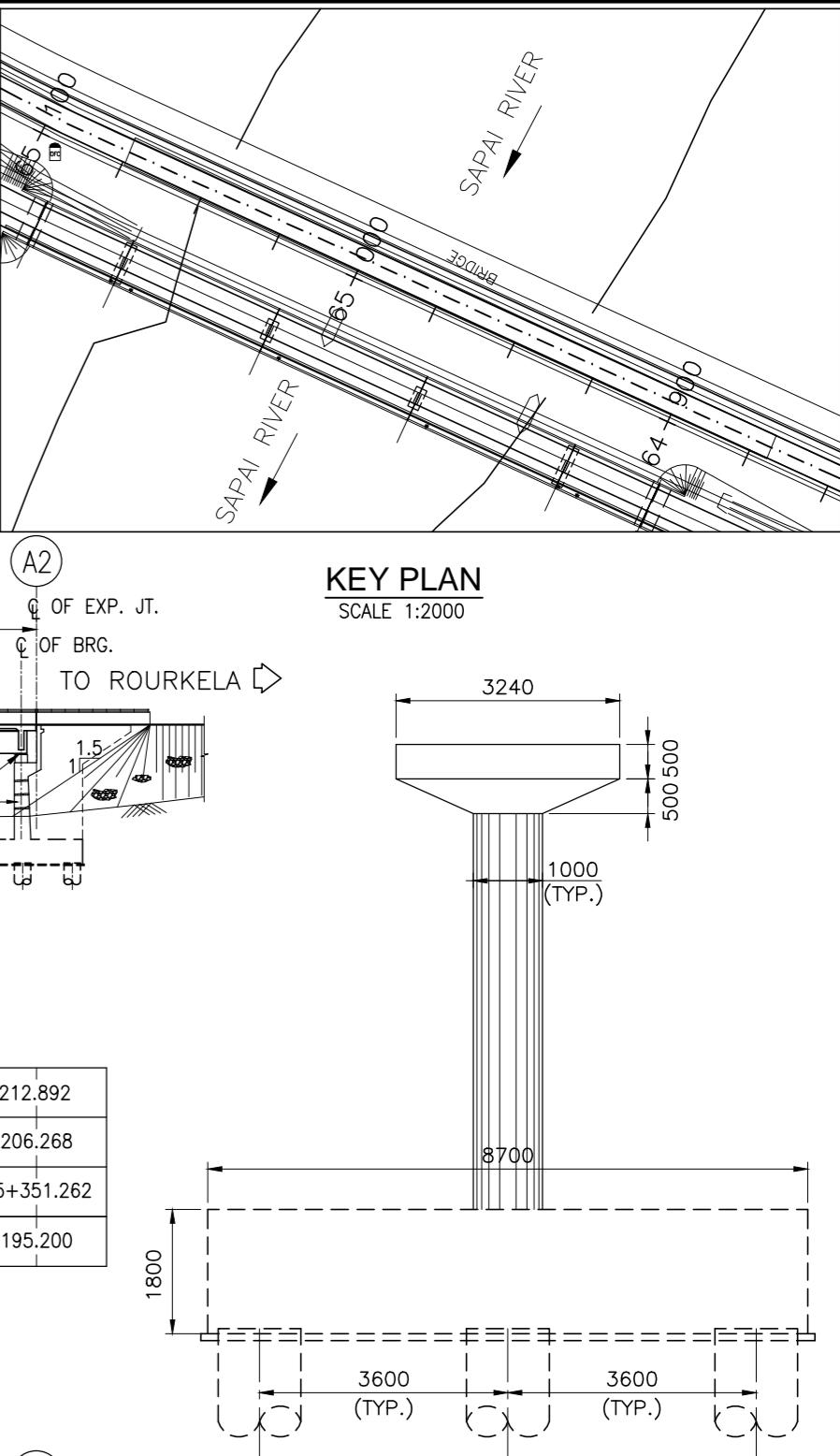


BH - P4



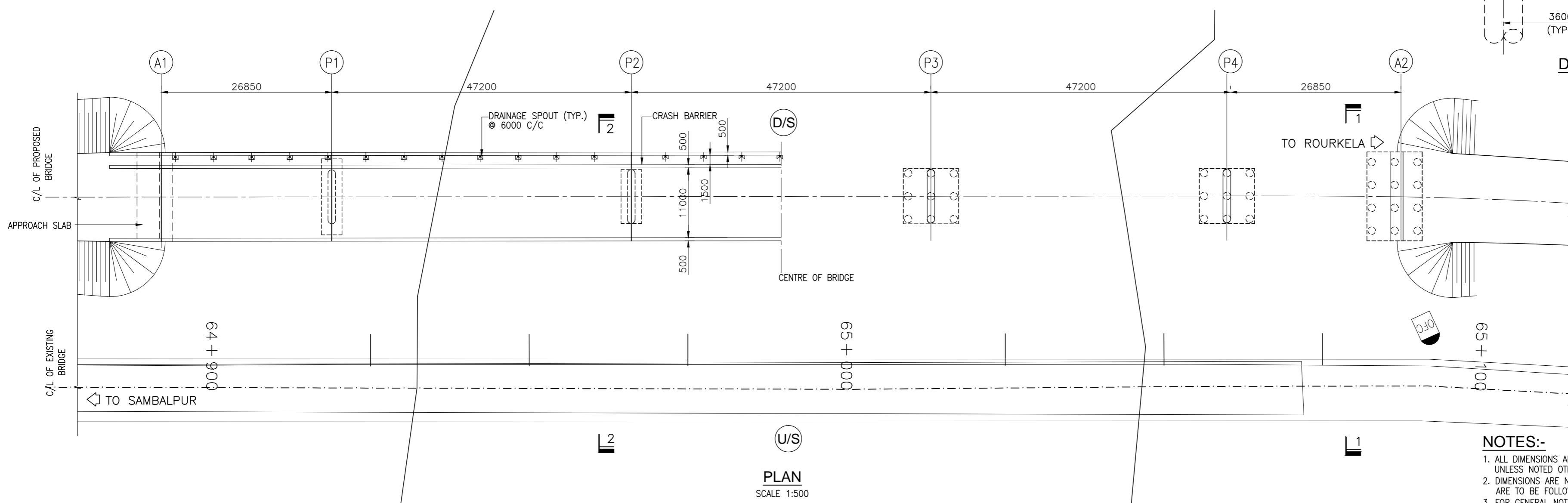
LONGITUDINAL ELEVATION

| | | | | | | |
|---------------------------|------------|------------|------------|------------|------------|------------|
| FORMATION LEVEL (m) | 212.863 | 212.884 | 212.886 | 212.888 | 212.891 | 212.892 |
| EXISTING BED LEVEL (m) | 206.239 | 203.614 | 201.190 | 201.137 | 202.378 | 206.268 |
| CHAINAGE (Km.) | 65+155.962 | 65+182.812 | 65+230.012 | 65+277.212 | 65+324.412 | 65+351.262 |
| PILE TIP LEVEL (m) | 187.800 | 188.800 | 191.400 | 193.900 | 196.400 | 195.200 |



KEY PLAN

CALE 1:2000



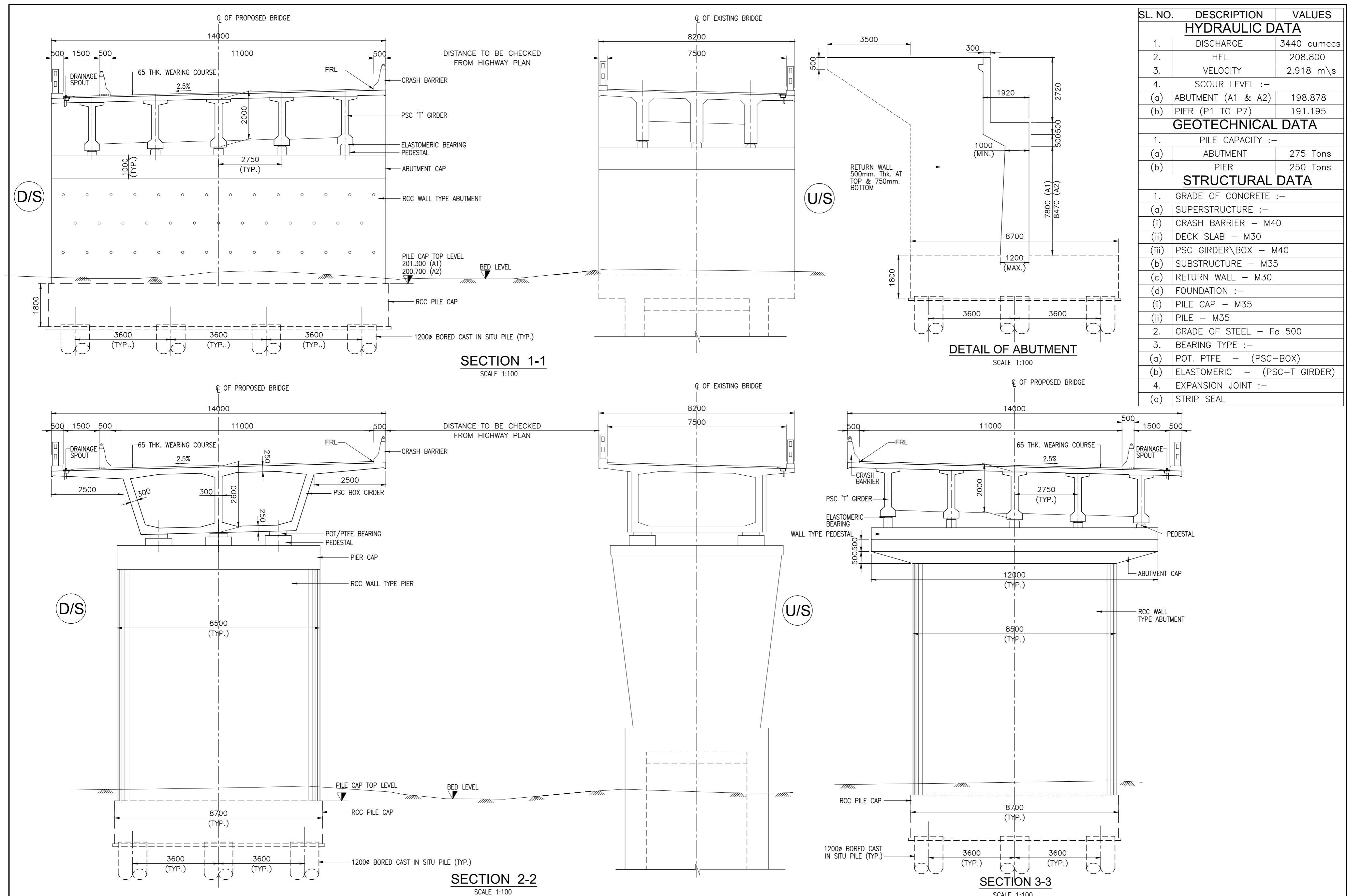
DETAIL OF PIER

SCALE 1:100

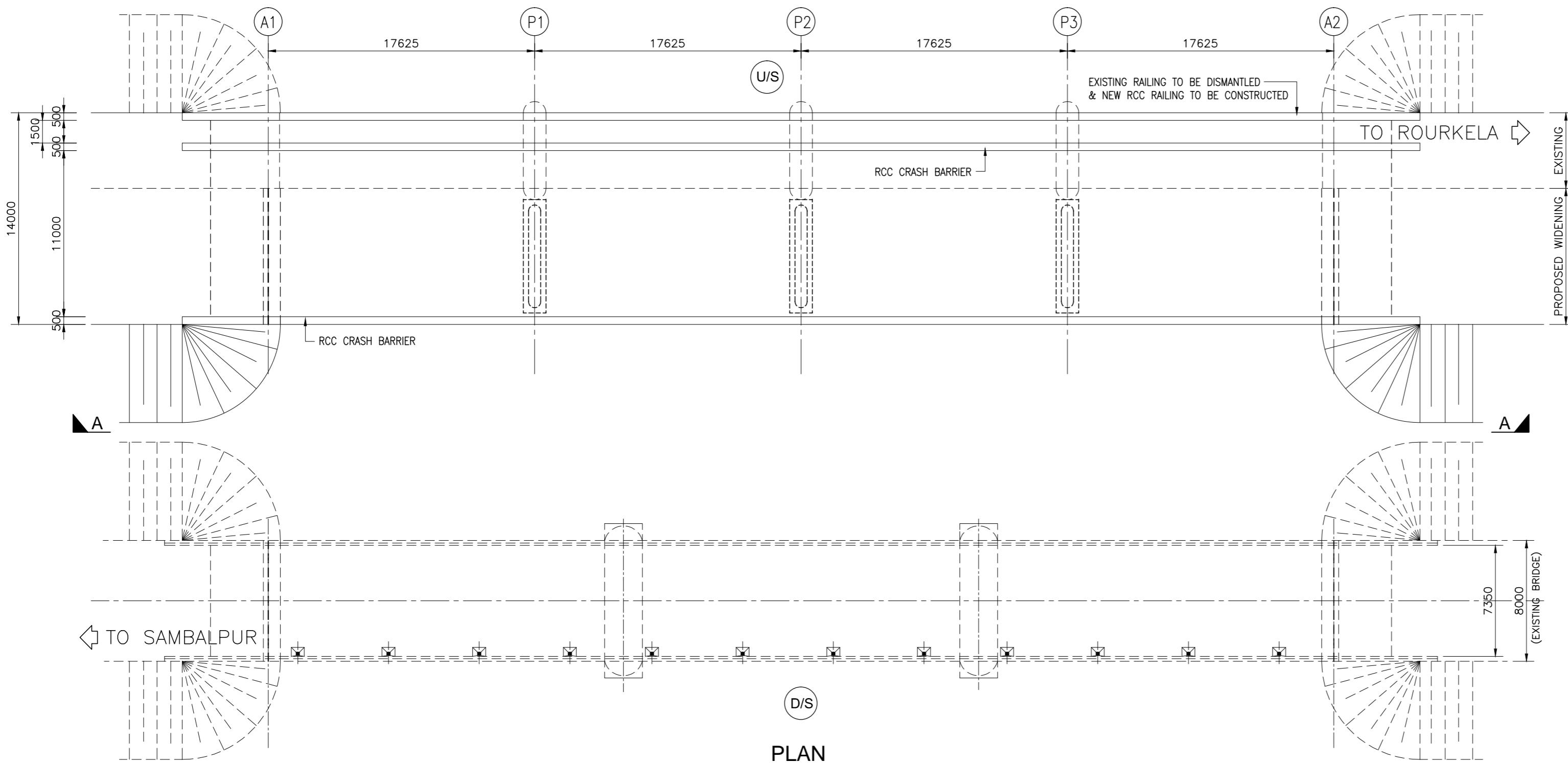
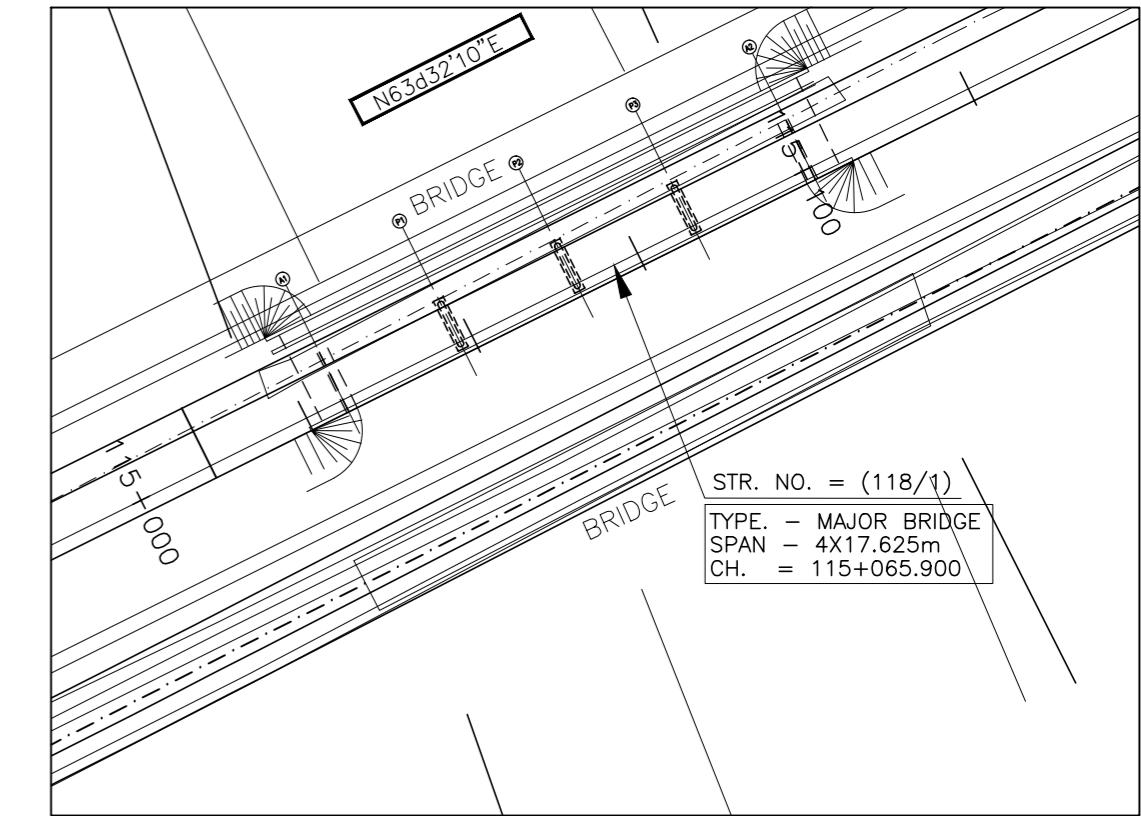
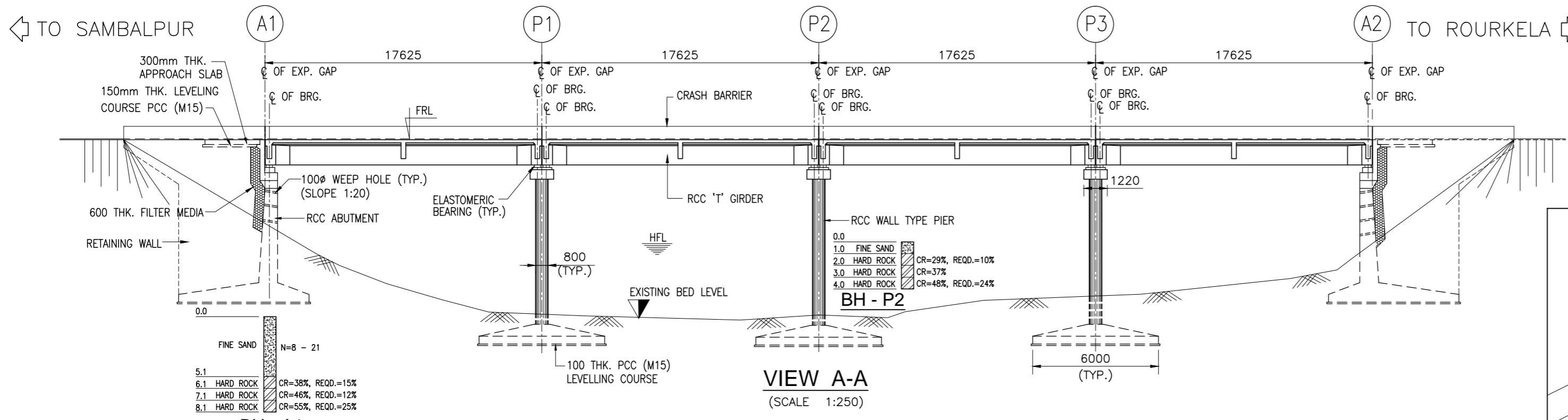
NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
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 4. THE PILE SHOULD BE SOCKETED MINIMUM 2X1200≈2500mm. INTO THE HARD ROCK, AS PER IS 14593, TAB-1, CL-6.5.1 (NOTE-1).
 5. CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
 6. ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | | | | | | | | | | |
|----------|--------------|------|-------------|---------------|--|-------------------------|--|---|---|--|--|--|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MAJOR BRIDGE NO. 66/1 | Scale : AS SHOWN | CONSULTANTS: PRICEMATERHOUSE COOPERS  In JV With  | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT | 0. ERODIBILITY TEST SHOULD BE DONE DURING CONSTRUCTION. | | | |
| | | | Drawn By | Joy | | | | | | | | |
| | | | Designed By | Sanjay Mandal | | | | | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | | | | | |
| REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\MJBR\GA-02 | (SHEET 1 OF 2) | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA | | | | | |



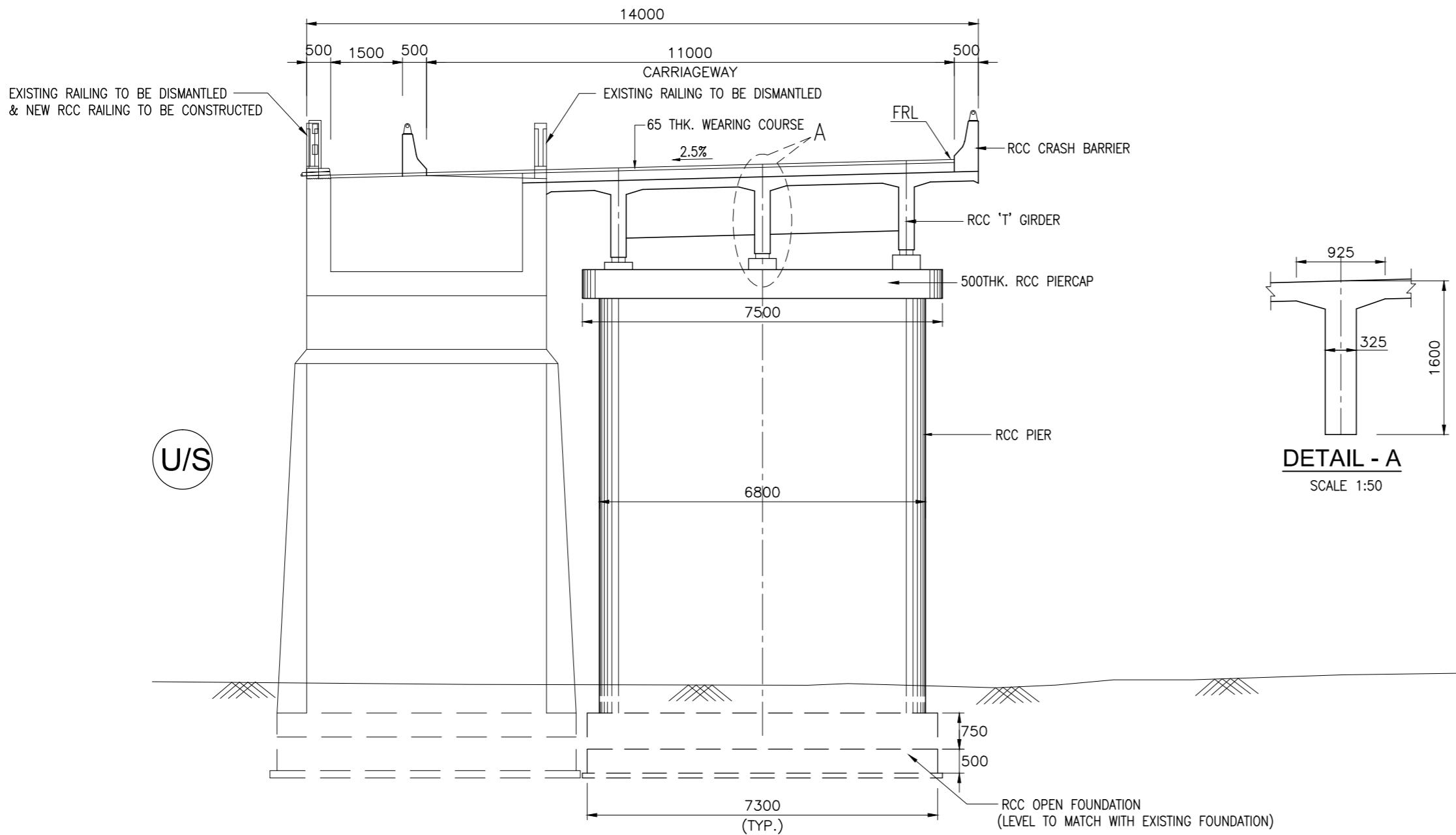
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|------|--------------|-------------|---------------|--|------------|--|------------------|---|
| | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MAJOR BRIDGE NO. 66/1 | Scale : | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: | GOVERNMENT OF ORISSA |
| | | Drawn By | Joy | | AS SHOWN | | WORKS DEPARTMENT | |
| | | Designed By | Sanjay Mandal | | | | Project: | PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| Mkd. | Descriptions | Date | By | | Checked By | | | |
| | REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SRMJBR\GA-02 | (SHEET 2 OF 2) | LEA |



NOTES:-

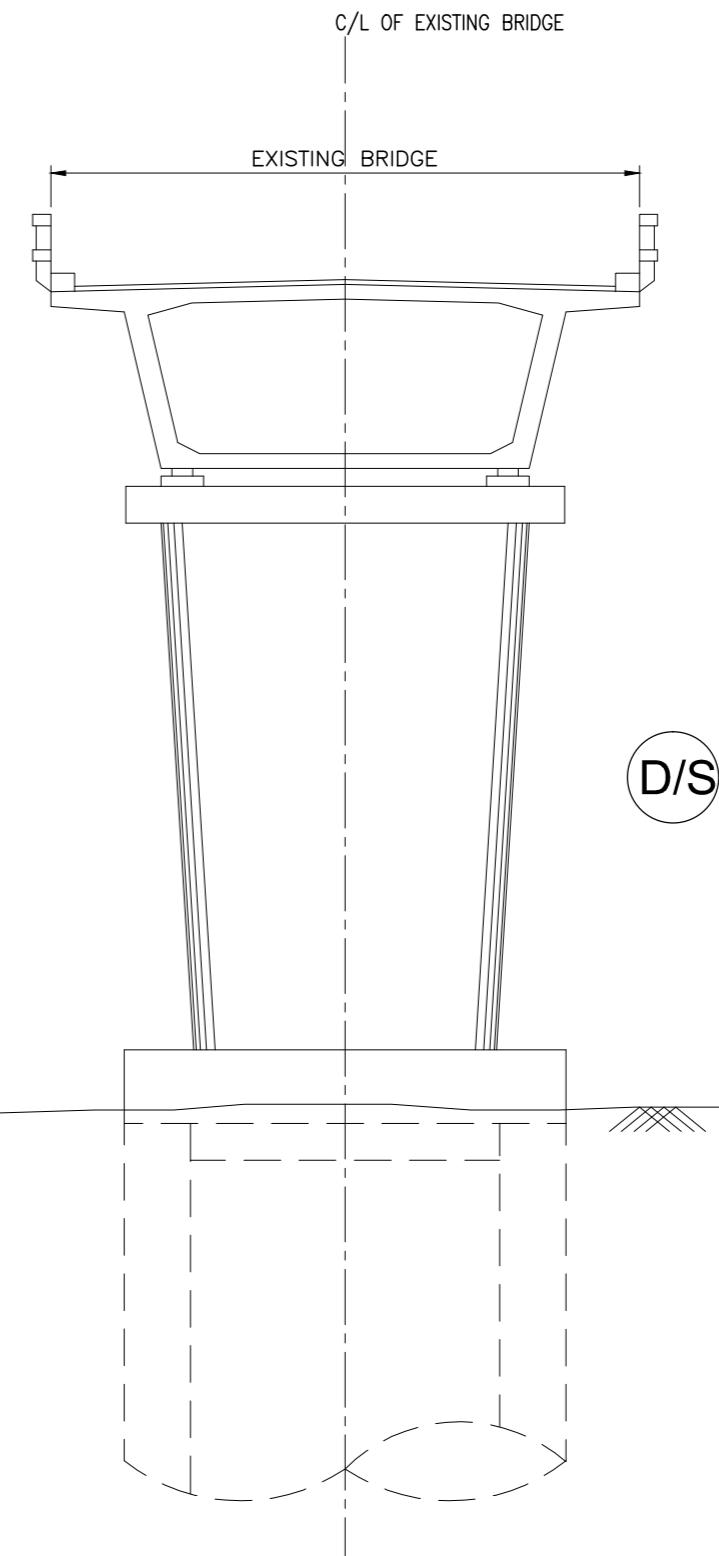
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
- CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SHEET 2 OF 2 OF THIS DRAWING.
- ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | Date | March 2010 | Drawing Title : | Scale : | CONSULTANTS: | Client: | GOVERNMENT OF ORISSA |
|------|--------------|------|-------------|---------------|--|---|--|--|----------------------|
| | | | Drawn By | Joy | GENERAL ARRANGEMENT OF MAJOR BRIDGE NO. 116/2 | AS SHOWN |  Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With  LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | WORKS DEPARTMENT | GOVERNMENT OF ORISSA |
| | | | Designed By | Sanjay Mandal | | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | | |
| | REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\MJBR\GA-03 | (SHEET 1 OF 2) | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA | |

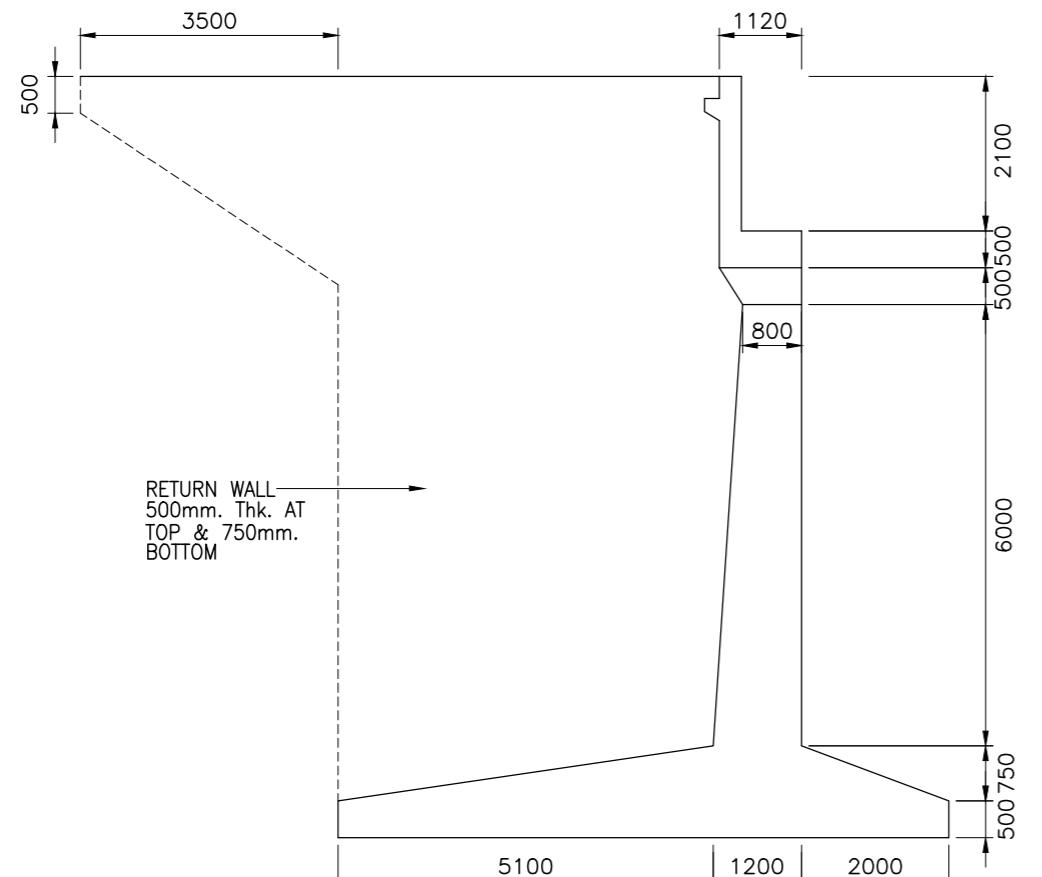


DETAIL - A

SCALE 1:50



D/S



SECTION AT PIER LOCATION

SCALE 1:100

DETAIL OF ABUTMENT

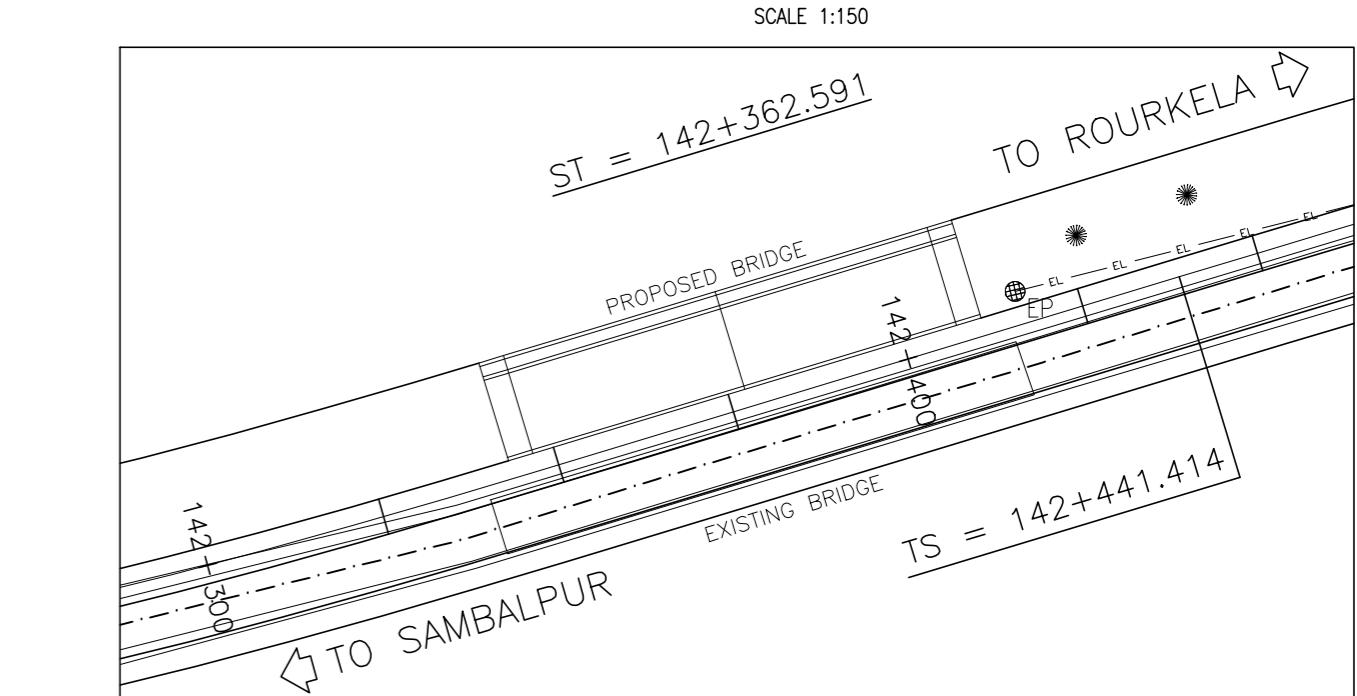
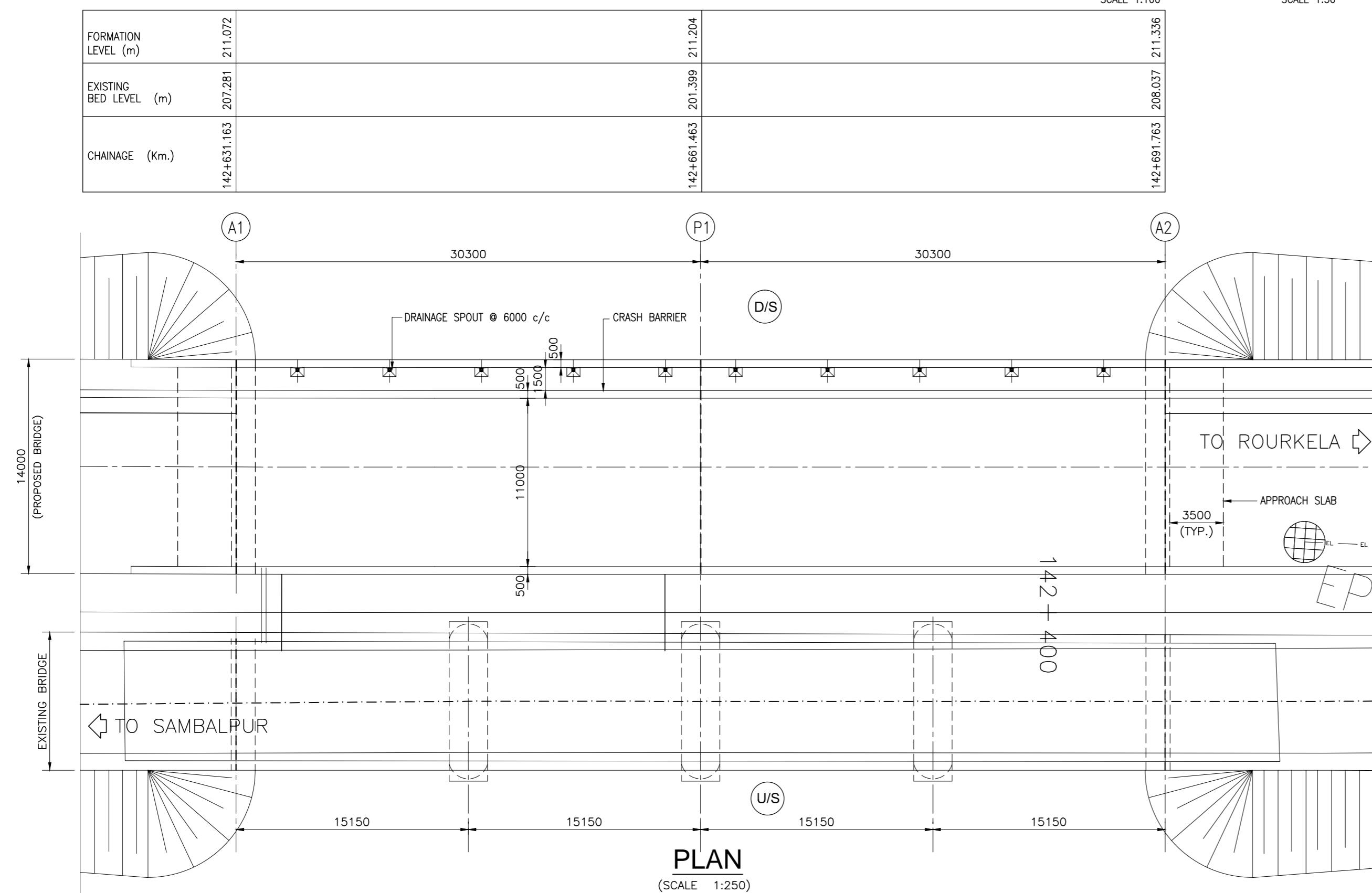
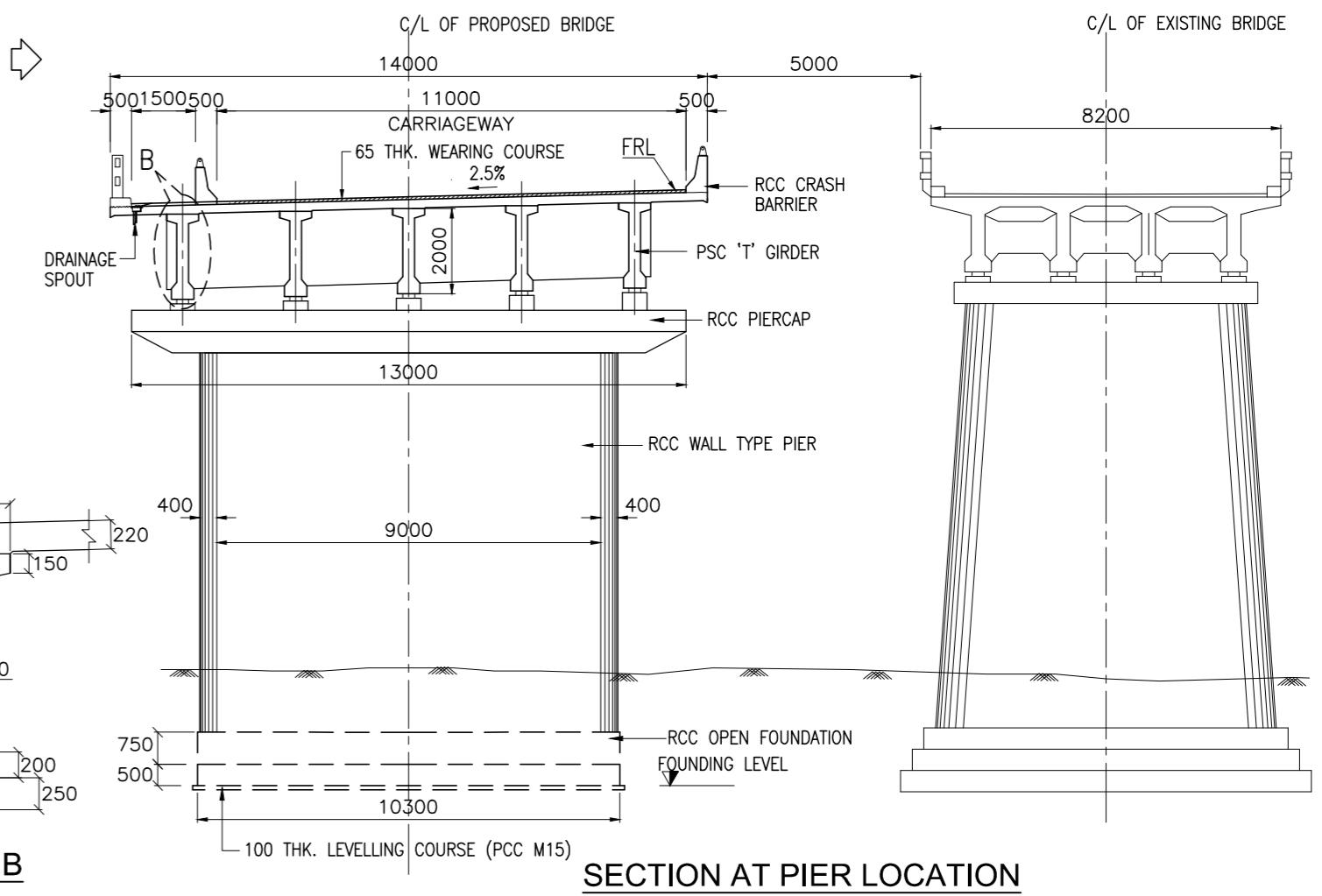
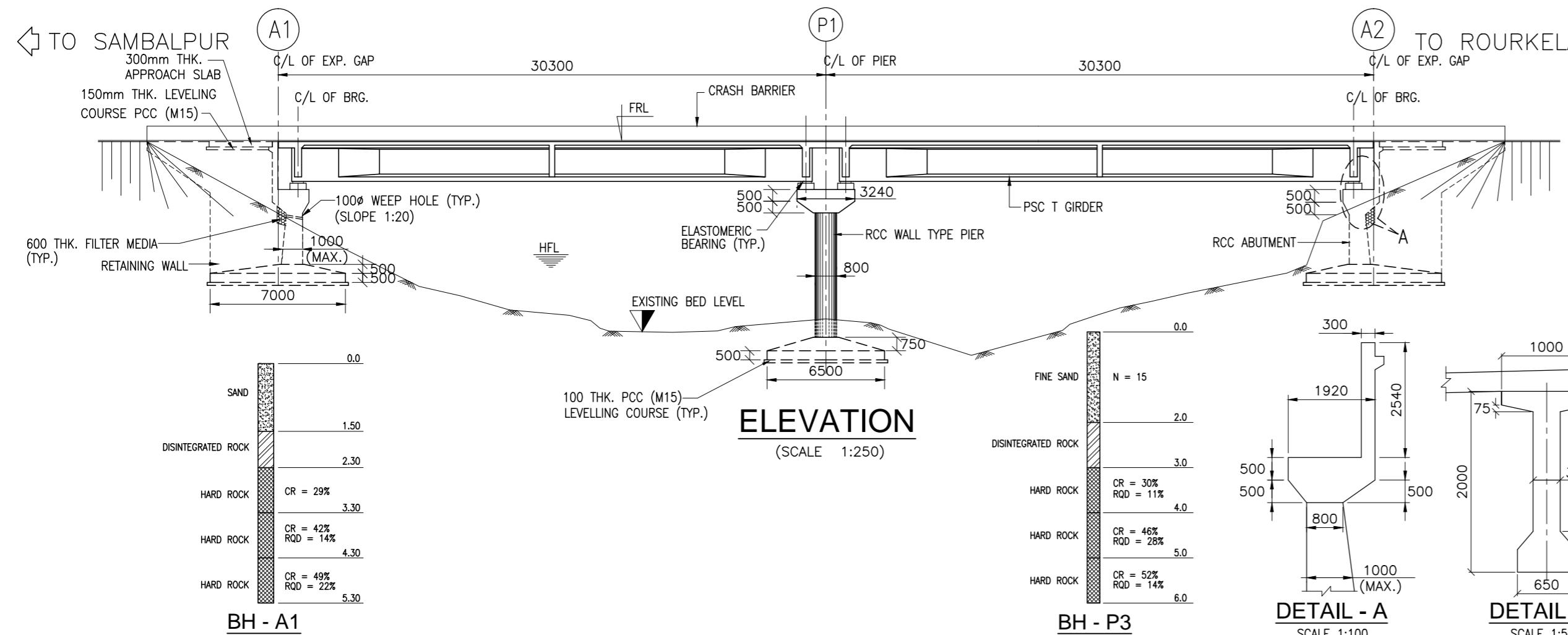
SCALE 1:100

| SL. NO. | DESCRIPTION | VALUES |
|--------------------------|-------------------------|---------------------|
| HYDRAULIC DATA | | |
| 1. | DISCHARGE | 1324 cumecs |
| 2. | HFL | 242.822 |
| 3. | VELOCITY | 2.967m/s |
| 4. | SCOUR LEVEL :- | |
| (a) | ABUTMENT (A1 & A2) | 237.000 |
| (b) | PIER (P1 TO P3) | 234.000 |
| GEOTECHNICAL DATA | | |
| 1. | SBC | 35 t/m ² |
| 2. | FOUNDING LEVEL :- | |
| (a) | ABUTMENT | 236.4 |
| (b) | PIER | 233.2 |
| STRUCTURAL DATA | | |
| 1. | GRADE OF CONCRETE :- | |
| (a) | SUPERSTRUCTURE :- | |
| (i) | CRASH BARRIER - M40 | |
| (ii) | DECK SLAB - M30 | |
| (iii) | RCC GIRDER - M35 | |
| (b) | SUBSTRUCTURE - M35 | |
| (c) | RETURN WALL - M30 | |
| (d) | FOUNDATION - M35 | |
| 2. | GRADE OF STEEL - Fe 500 | |
| 3. | BEARING TYPE :- | |
| (a) | ELASTOMERIC BEARING | |
| 4. | EXPANSION JOINT :- | |
| (a) | ASPHALTIC PLUG | |

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
4. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SHEET 1 OF 2 OF THIS DRAWING.

| | | | | | | | | |
|----------|--------------|------|-------------|---------------|---|------------------------------|--|---|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MAJOR BRIDGE NO. 116/2 | Scale : | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| | | | Drawn By | Joy | | AS SHOWN | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | | | | |
| REVISION | | | Approved By | Avadesh | Drawing Number : | 73231\LASA\PPP\SRM\JBR\GA-03 | (SHEET 2 OF 2) | LEA |

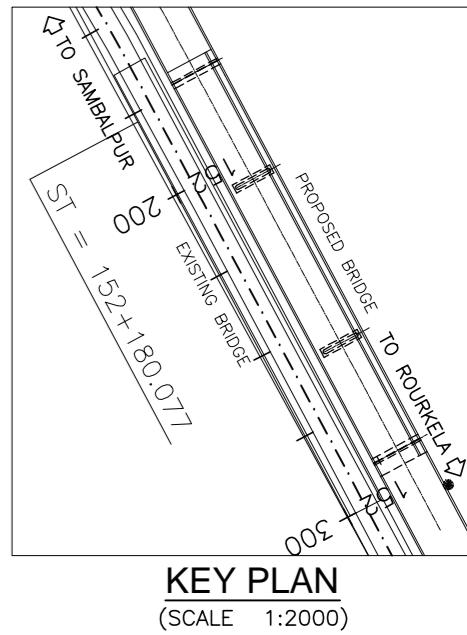
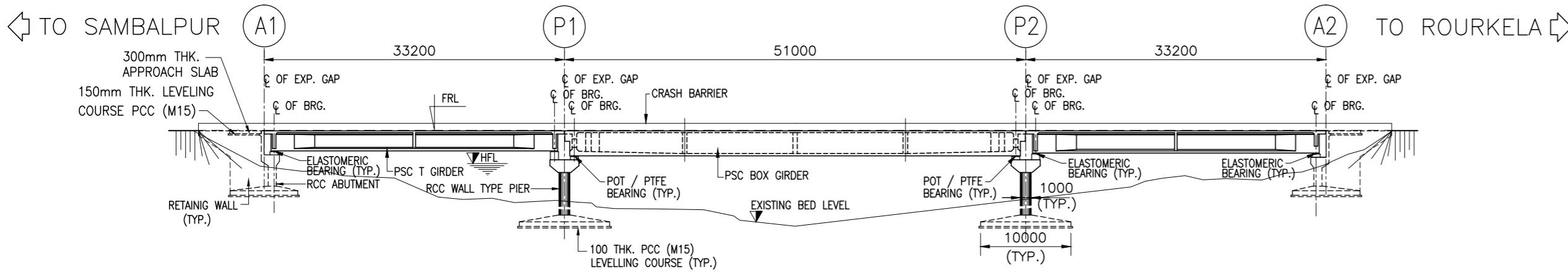


| SL. NO. | DESCRIPTION | VALUES | HYDRAULIC DATA |
|-------------------|-------------------------|---------------------|----------------|
| | | | |
| 1. | DISCHARGE | 671.055 cumec | |
| 2. | HFL | 207.356 | |
| 3. | VELOCITY | 2.623m/s | |
| 4. | SCOUR LEVEL :- | | |
| (a) | ABUTMENT (A1 & A2) | 204.900 | |
| (b) | PIER (P1) | 198.400 | |
| GEOTECHNICAL DATA | | | |
| 1. | SBC | 35 t/m ² | |
| 2. | FOUNDING LEVEL :- | | |
| (a) | ABUTMENT (A1 & A2) | 204.300 | |
| (b) | PIER (P1) | 197.800 | |
| STRUCTURAL DATA | | | |
| 1. | GRADE OF CONCRETE :- | | |
| (a) | SUPERSTRUCTURE :- | | |
| (i) | CRASH BARRIER - M40 | | |
| (ii) | DECK SLAB - M30 | | |
| (iii) | PSC GIRDER - M40 | | |
| (b) | SUBSTRUCTURE - M35 | | |
| (c) | RETURN WALL - M30 | | |
| (d) | FOUNDATION - M35 | | |
| 2. | GRADE OF STEEL - Fe 500 | | |
| 3. | BEARING TYPE :- | | |
| (a) | ELASTOMERIC BEARING | | |
| 4. | EXPANSION JOINT :- | | |
| (a) | STRIP SEAL | | |

NOTES:-

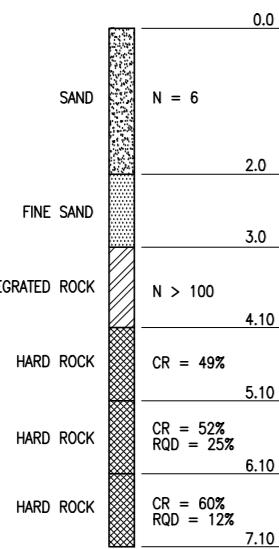
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- ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | | | | | | |
|----------|--------------|-------------|---------------|--|--|--|--|----------------------|
| | | Date | March 2010 | Drawing Title : | Scale : | CONSULTANTS: | Client: | GOVERNMENT OF ORISSA |
| | | Drawn By | Joy | GENERAL ARRANGEMENT OF MAJOR BRIDGE NO. 143/2 | AS SHOWN |  Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With  LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA | WORKS DEPARTMENT |
| | | Designed By | Sanjay Mandal | | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | |
| REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LSA\PPP\SRM\JBR\GA-04 | | | |

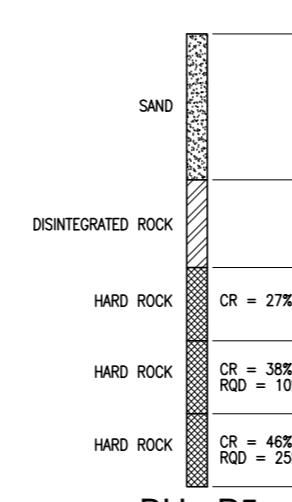


ELEVATION

(SCALE 1:500)

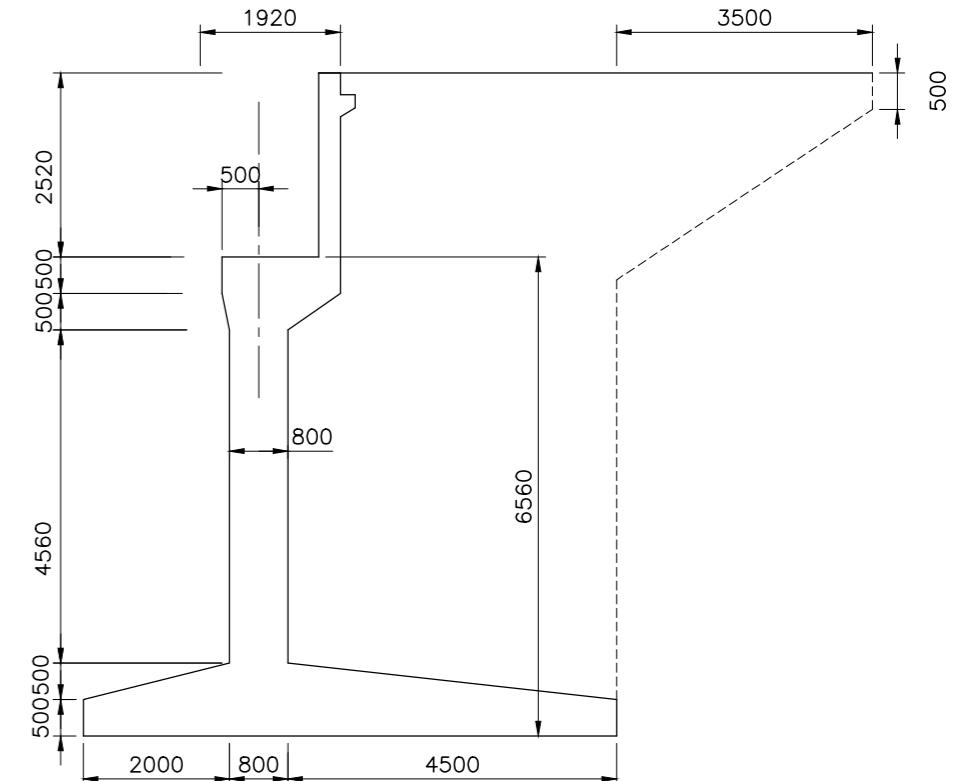


BH - A1



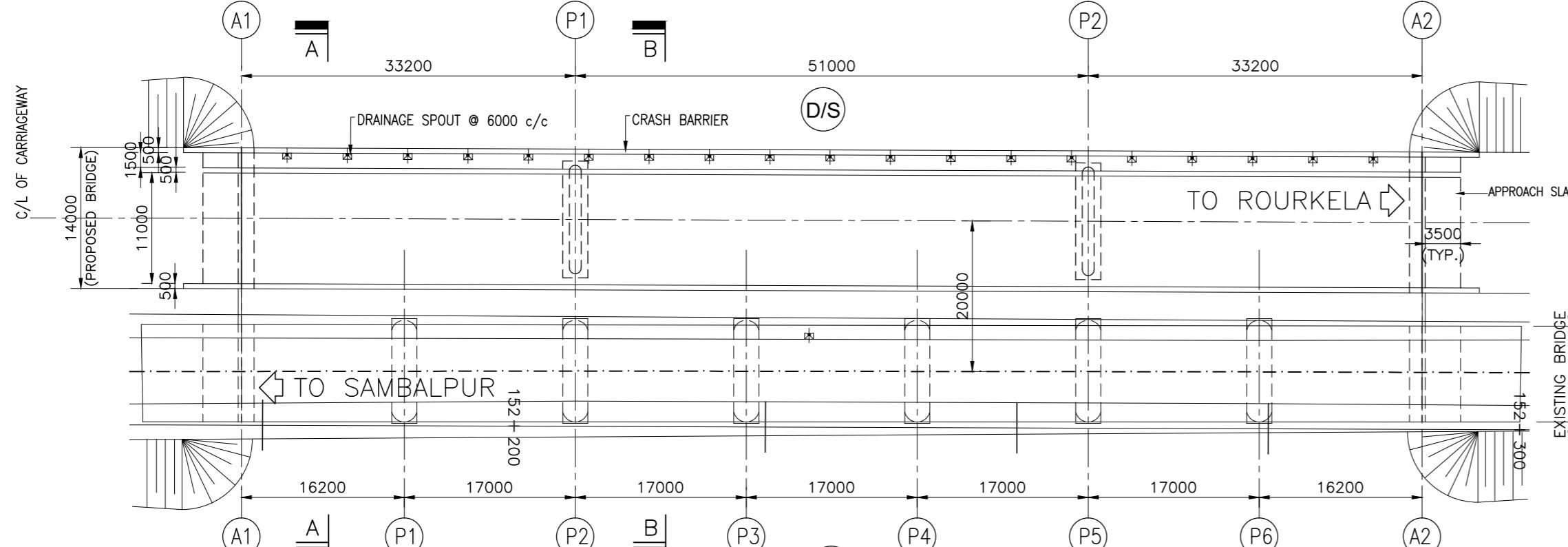
BH - P5

| FORMATION LEVEL (m) | 192.650 | 192.650 | 192.650 | 192.650 | 192.650 | 192.650 | 192.650 | 192.650 |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| EXISTING BED LEVEL (m) | 188.630 | 188.630 | 184.825 | 184.825 | 185.037 | 185.037 | 186.918 | 186.918 |
| CHAINAGE (Km.) | 152+461.385 | 152+494.585 | 152+545.585 | 152+578.785 | 152+578.785 | 152+578.785 | 152+578.785 | 152+578.785 |



DETAIL OF ABUTMENT

SCALE 1:100



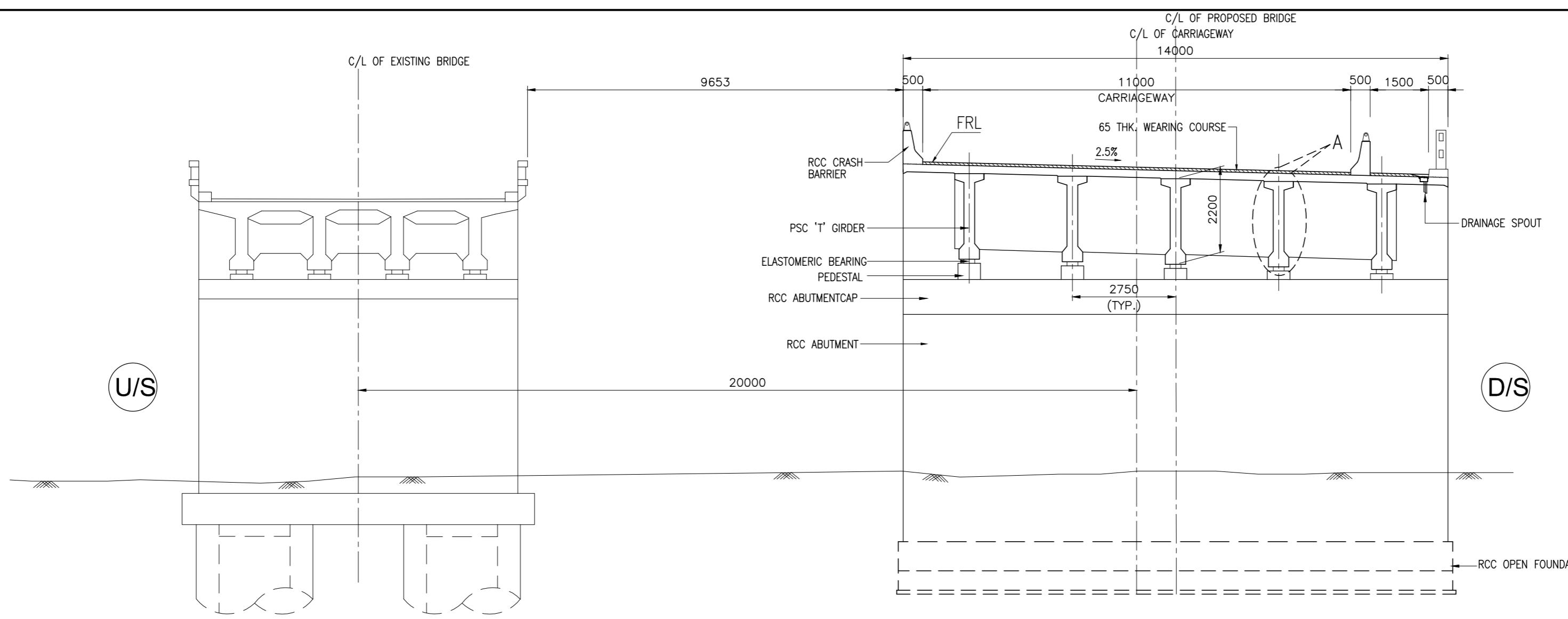
PLAN

(SCALE 1:500)

NOTES:-

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- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
- CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SHEET 1 OF 2 OF THIS DRAWING.
- ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

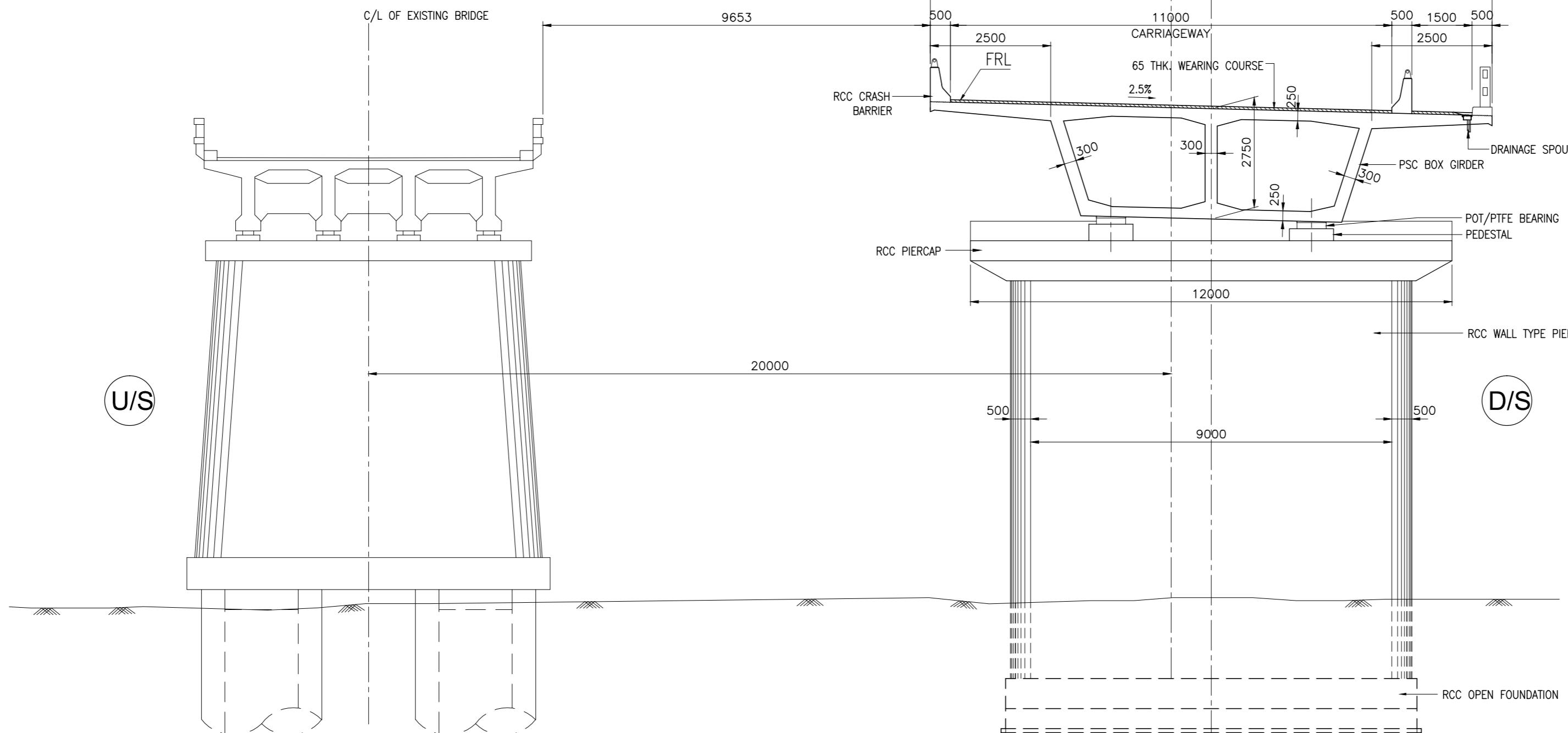
| | | | | | | | | |
|------|--------------|------|-------------|---------------|---|--|--|--|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MAJOR BRIDGE NO. 153/2 | Scale : | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | Drawn By | Joy | | | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | | | | |
| | REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\IMJBR\GA-05 | (SHEET 1 OF 2) | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |



SECTION A-A AT ABUTMENT LOCATION

SCALE 1:100

| SL. NO. | DESCRIPTION | VALUES |
|--------------------------|---------------------------------|---------------------|
| HYDRAULIC DATA | | |
| 1. | DISCHARGE | 1116 cumecs |
| 2. | HFL | 185.717 |
| 3. | VELOCITY | 2.737m/s |
| 4. | SCOUR LEVEL :- | |
| (a) | ABUTMENT (A1 & A2) | 184.500 |
| (b) | PIER (P1 & P2) | 181.800 |
| GEOTECHNICAL DATA | | |
| 1. | SBC | 35 t/m ² |
| 2. | FOUNDING LEVEL :- | |
| (a) | ABUTMENT | 183.900 |
| (b) | PIER | 181.000 |
| STRUCTURAL DATA | | |
| 1. | GRADE OF CONCRETE :- | |
| (a) | SUPERSTRUCTURE :- | |
| (i) | CRASH BARRIER - M40 | |
| (ii) | DECK SLAB - M30 | |
| (iii) | PSC GIRDER\BOX - M40 | |
| (b) | SUBSTRUCTURE - M35 | |
| (c) | RETURN WALL - M30 | |
| (d) | FOUNDATION - M35 | |
| 2. | GRADE OF STEEL - Fe 500 | |
| 3. | BEARING TYPE :- | |
| (a) | POT-PTFE (PSC BOX-GIRDER SPAN) | |
| (b) | ELASTOMERIC (PSC-T GIRDER SPAN) | |
| 4. | EXPANSION JOINT :- | |
| (a) | STRIP SEAL | |



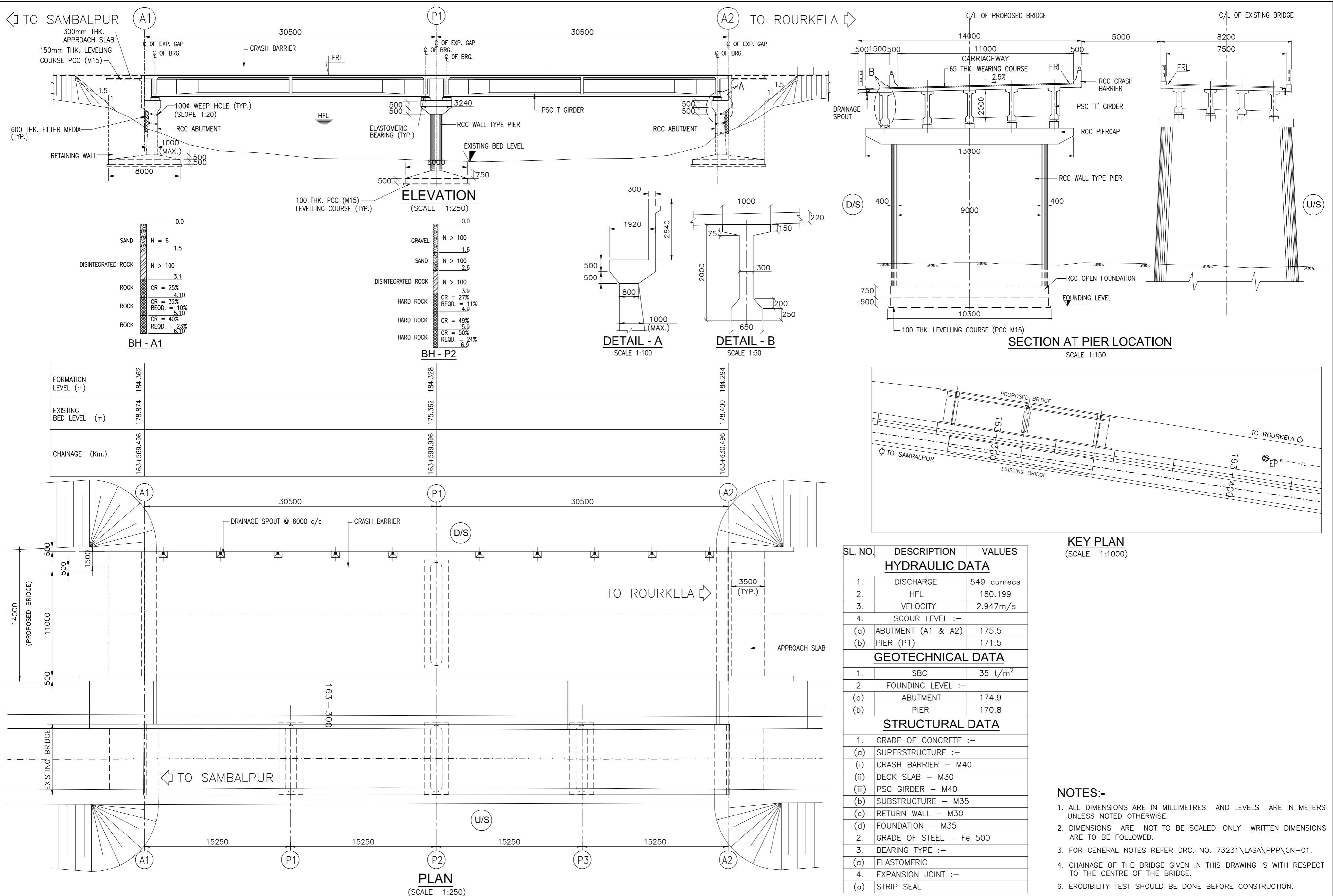
SECTION B-B AT PIER LOCATION

SCALE 1:100

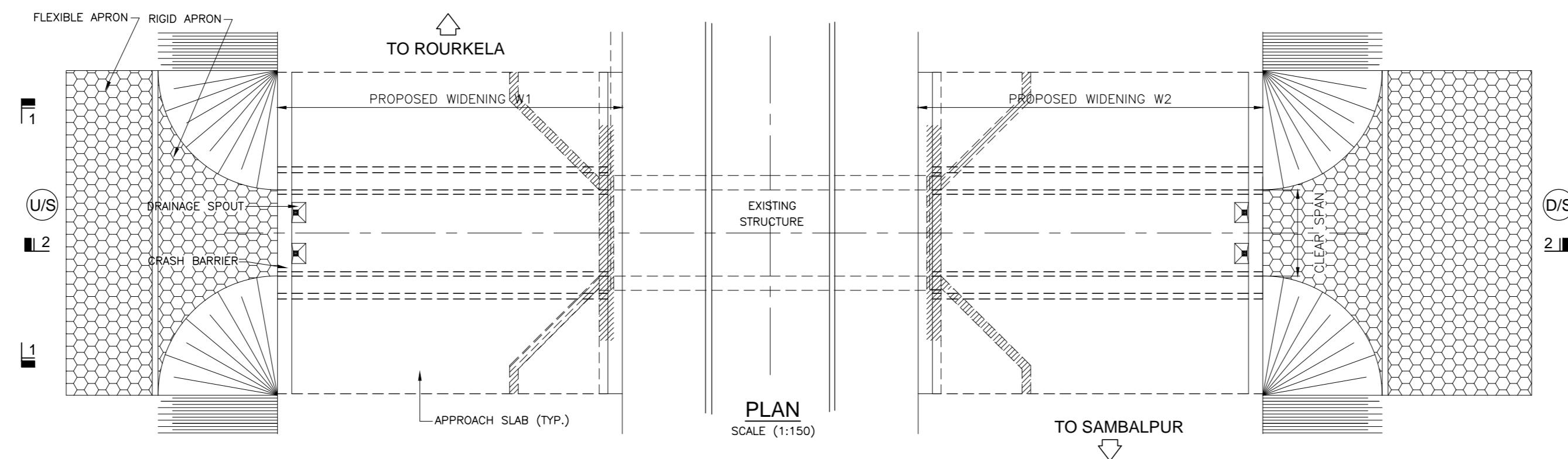
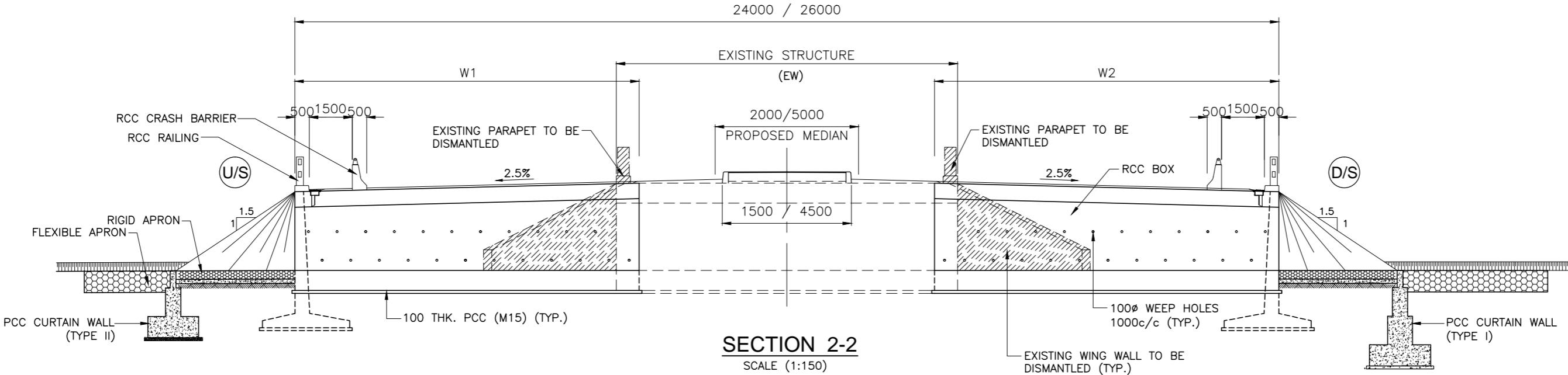
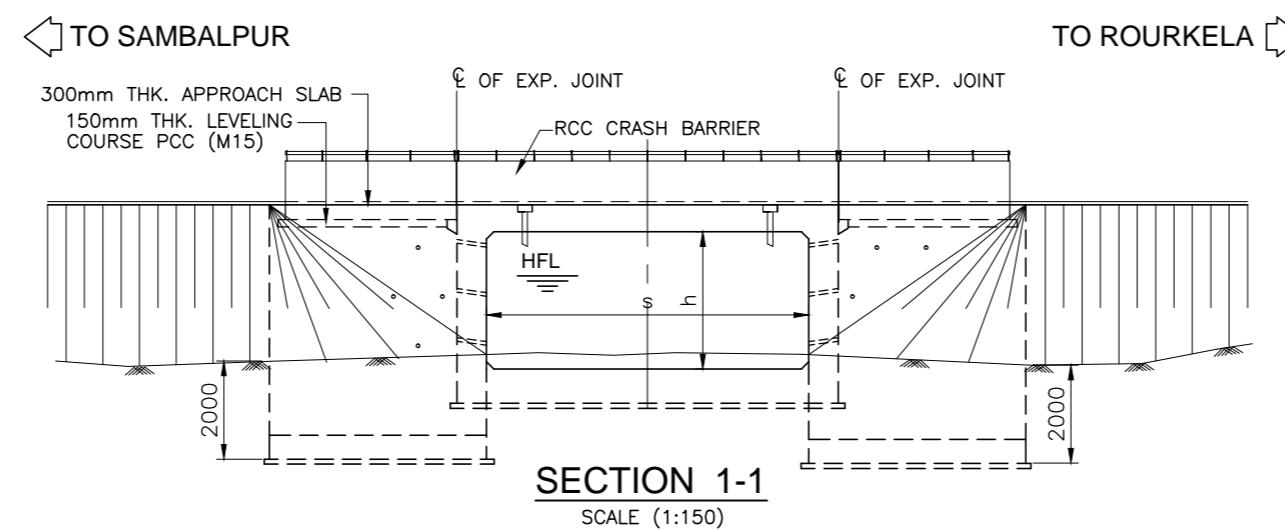
NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SHEET 2 OF 2 OF THIS DRAWING.

| | | | | | | | | | |
|----------|--------------|------|-------------|---------------|--|----------------|--|---|--|
| | | | Date | March 2010 | Drawing Title : | Scale : | CONSULTANTS: | Client: | GOVERNMENT OF ORISSA |
| | | | Drawn By | Joy | GENERAL ARRANGEMENT OF MAJOR BRIDGE NO. 153/2 | AS SHOWN | Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/F-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: WORKS DEPARTMENT Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA | WORKS DEPARTMENT Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| | | | Designed By | Sanjay Mandal | | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | | |
| REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SRMJBR\GA-05 | (SHEET 2 OF 2) | | | |



| | | | | | | | | | | |
|------|--------------|------|-------------|---------------|-----------------|------------------|-----------------------------|--|------------|---|
| | | | Date | March 2010 | Drawing Title : | | CONSULTANTS: | | Client: | GOVERNMENT OF ORISSA |
| | | | Drawn By | Joy | | | PRICEWATERHOUSECOOPERS | Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 | In Jt With | WORKS DEPARTMENT |
| | | | Designed By | Sanjay Mandal | | AS SHOWN | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | | | |
| | REVISION | | | Approved By | Avadesh | Drawing Number : | 73231\LASA\PPP\SRMJBR\GA-06 | LEA | Project: | PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |



SCHEDULE OF MINOR BRIDGES TO BE WIDENED

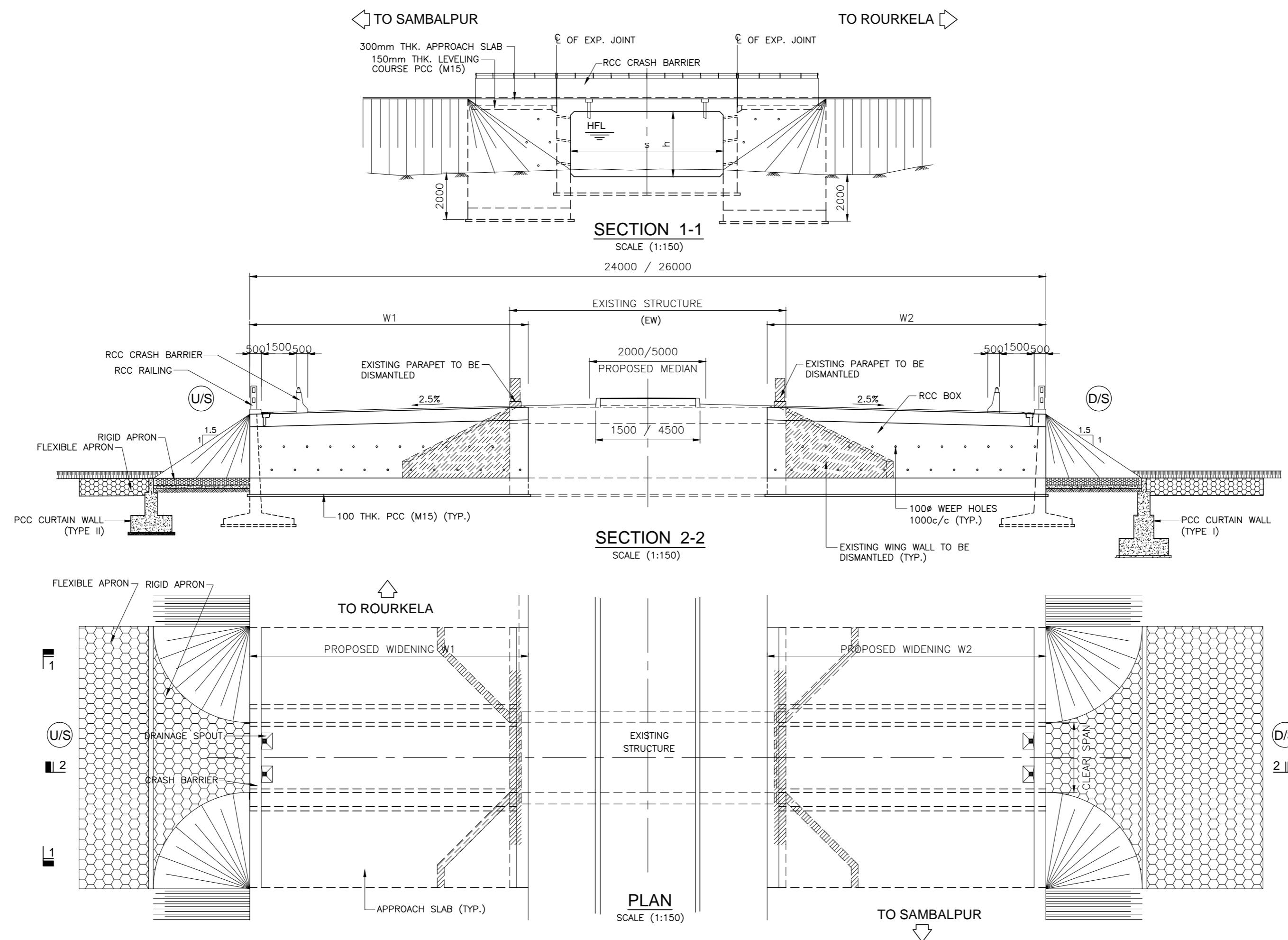
| SL. NO. | STRUCTURE NO. | PROPOSED CHAINAGE | EXISTING STRUCTURE DESCRIPTION | EXISTING SPAN ARRANGEMENT | LENGTH OF PROPOSED WIDENING | | WIDTH AFTER WIDENING (m) | PROPOSED SIZE OF BOX | | |
|---------|---------------|-------------------|--------------------------------|---------------------------|-----------------------------|-----------------------|--------------------------|----------------------|-----------|--|
| | | | | | W1 LEFT SIDE* (m) | W2 RIGHT SIDE* (m) | | s (mm) | h (mm) | |
| | | | | | | | | | | |
| 1 | 6/1 | 5+473.149 | RCC Box | 1 x 7.50 | 5.830 | 6.586 | 24.000 | 6500 | 2000 | |
| 2 | 89/1 | 88+716.424 | Solid Slab | 1 x 7.50 | 13.090 | 1.385 | 26.000 | 6500 | 2000 | |
| 3 | 90/1 | 89+017.051 | Solid Slab | 1 x 7.50 | 12.675 | 2.105 | 26.000 | 6500 | 2000 | |
| 4 | 117/3 | 116+795.021 | RCC Box | 1 x 8.00 | 1.609 | 13.197 | 26.000 | 7000 | 3500 | |
| 5 | 134/2 | 133+740.627 | RCC Box | 1 x 8.00 | 3.060 | 11.340 | 26.000 | 7000 | 3500 | |

NOTE: (*) SIDES ARE MARKED WITH RESPECT TO INCREASING CHAINAGE. LEFT & RIGHT SIDE DIMENSIONS ARE TO BE CHECKED AT SITE BEFORE COMMENCEMENT OF WORK.

NOTES:-

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- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
- CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTER OF THE BRIDGE.

| | | | | | | | | |
|------|--------------|------|-------------|---------------|--|-------------------------|--|--|
| | | | Date | March 2010 | Drawing Title : TYPICAL GENERAL ARRANGEMENT OF EXISTING MINOR BRIDGE WITH RCC BOX TO BE WIDENED BOTH SIDE WITH RCC BOX | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | Drawn By | Vivek | | | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| | REVISION | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\MBR\GA-01 | | | |



SCHEDULE OF MINOR BRIDGES TO BE WIDENED

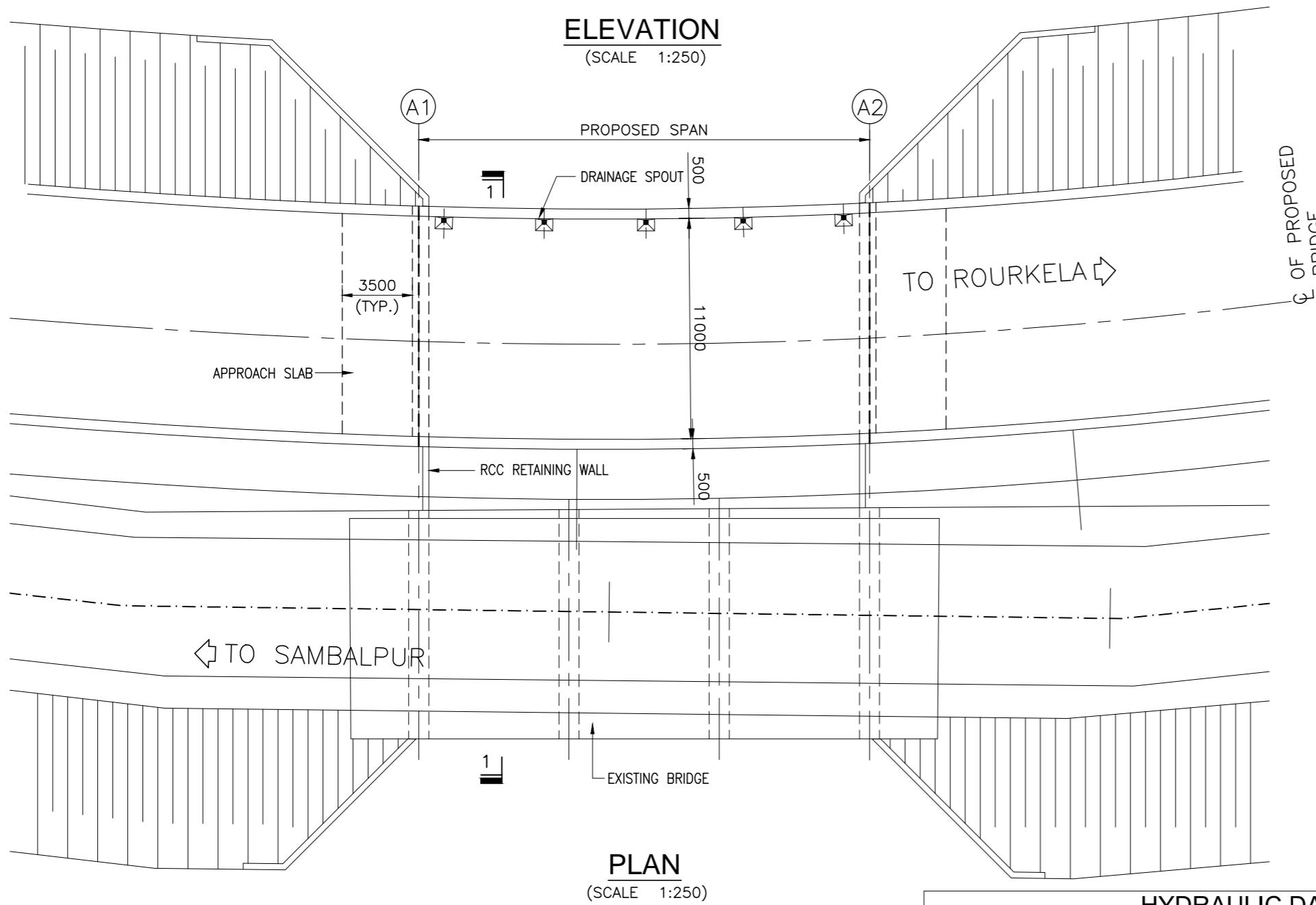
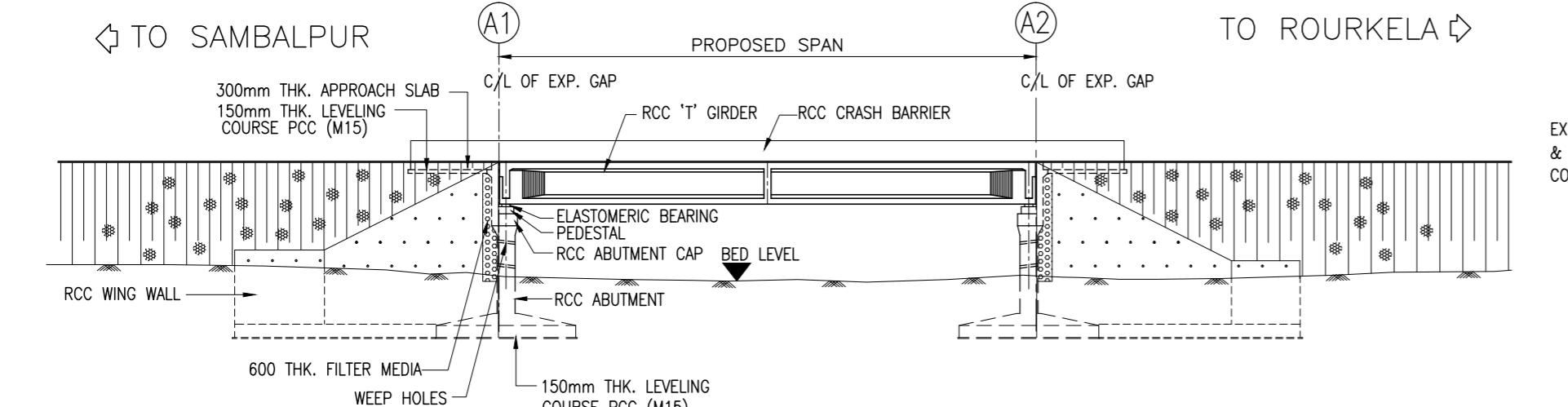
| SL. NO. | STRUCTURE NO. | PROPOSED CHAINAGE | EXISTING STRUCTURE DESCRIPTION | EXISTING SPAN ARRANGEMENT | LENGTH OF PROPOSED WIDENING | | WIDTH AFTER WIDENING (m) | PROPOSED SIZE OF BOX | |
|---------|---------------|-------------------|--|---------------------------|-----------------------------|-----------------------|--------------------------|----------------------|-----------|
| | | | | | W1 LEFT SIDE* (m) | W2 RIGHT SIDE* (m) | | s (mm) | h (mm) |
| 1 | 8/1 | 7+047.775 | RCC Slab with SM Abutment on open foundation | 1 x 7.70 | 6.162 | 5.501 | 23.00 | 6500 | 2500 |
| 2 | 21/4 | 20+944.126 | RCC Slab with SM Abutment on open foundation | 1 x 7.20 | 4.330 | 7.905 | 24.00 | 6200 | 4800 |
| 3 | 43/1 | 42+211.737 | RCC Slab with SM Abutment on open foundation | 1 x 6.90 | 13.420 | 1.622 | 26.00 | 6100 | 3600 |
| 4 | 137/1 | 136+740.627 | RCC Slab with SM Abutment on open foundation | 1 x 8.00 | 1.379 | 15.544 | 28.466 | 7000 | 2500 |
| 5 | 143/1 | 141+226.244 | RCC Slab with SM Abutment on open foundation | 1 x 7.20 | 13.083 | 1.607 | 26.00 | 6200 | 2000 |
| 6 | 144/1 | 142+086.470 | RCC Slab with SM Abutment on open foundation | 1 x 7.00 | 6.187 | 5.800 | 24.00 | 6000 | 2500 |
| 7 | 153/1 | 152+150.858 | RCC Slab with SM Abutment on open foundation | 1 x 7.20 | 1.301 | 13.021 | 26.00 | 6200 | 5000 |

NOTE: (*) SIDES ARE MARKED WITH RESPECT TO INCREASING CHAINAGE. LEFT & RIGHT SIDE DIMENSIONS ARE TO BE CHECKED AT SITE BEFORE COMMENCEMENT OF WORK.

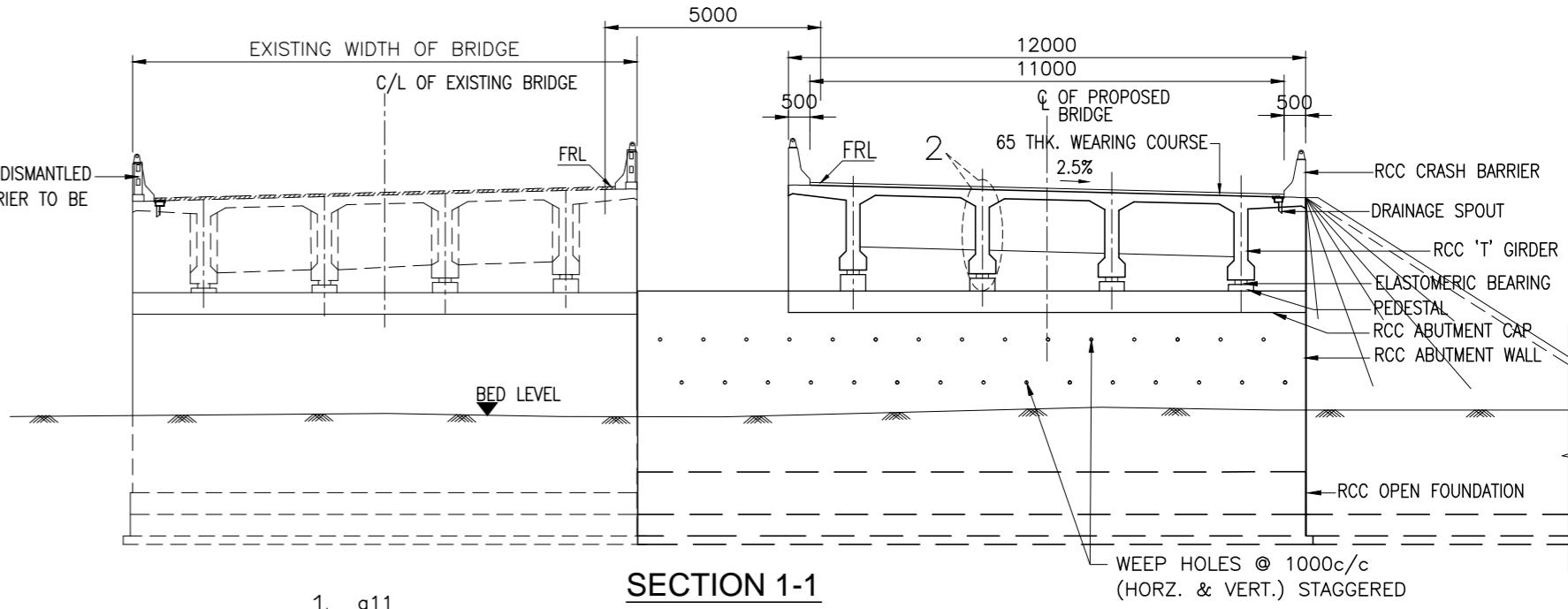
NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
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- FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
- CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTER OF THE BRIDGE.

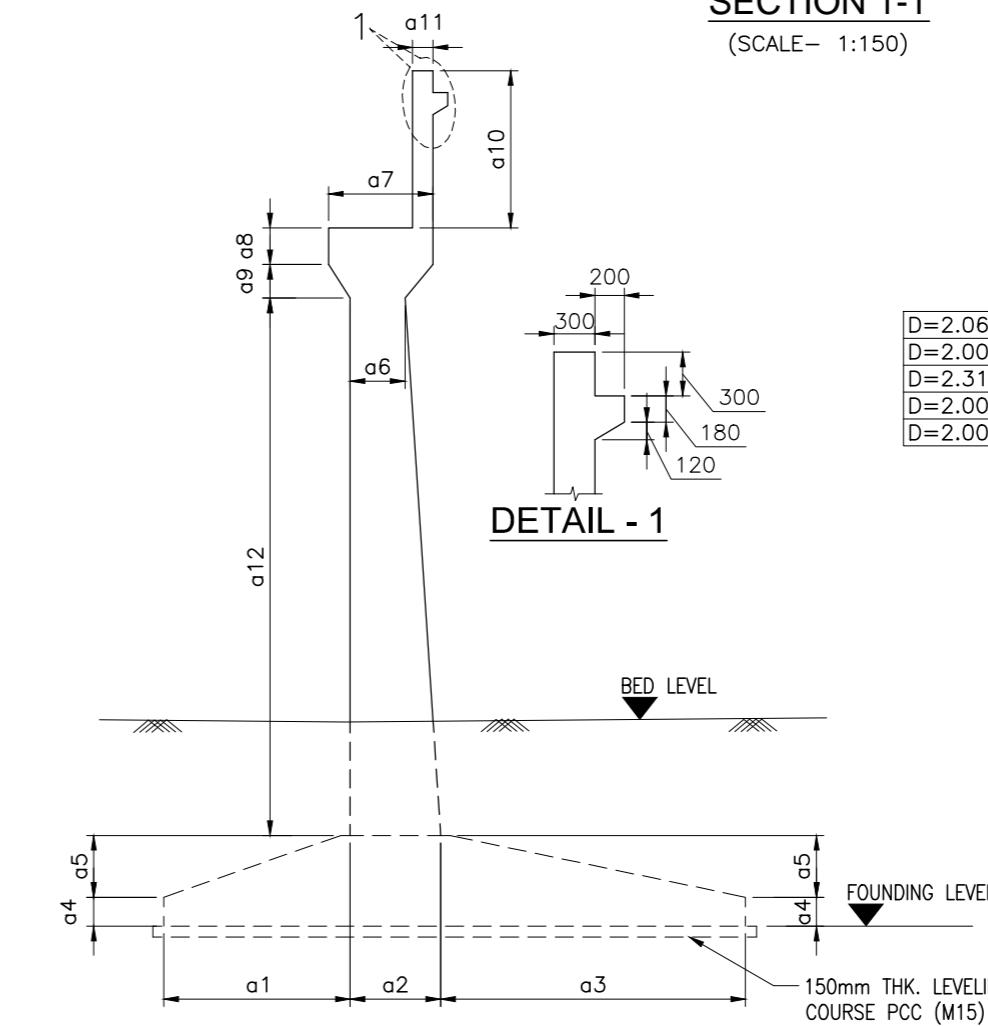
| | | | | | | | |
|------|--------------|-------------|---------------|--|---------------------|--|---|
| | | Date | March 2010 | Drawing Title : TYPICAL GENERAL ARRANGEMENT OF EXISTING MINOR BRIDGE WITH RCC SOLID SLAB & STONE MASONRY SUBSTRUCTURE TO BE WIDENED BOTH SIDE WITH RCC BOX | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/F-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | Designed By | Sanjay Mandal | | | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | |
| | REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\MBR\GA-02 | |



EXISTING RAILING TO BE DISMANTLED
& NEW RCC CRASH BARRIER TO BE
CONSTRUCTED (TYP.)



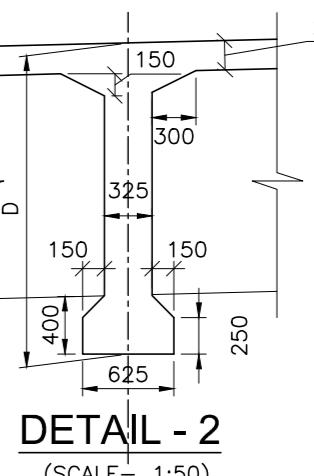
SECTION 1-1
(SCALE- 1:150)



TYPICAL DIMENSION DETAIL OF ABUTMENT

(SCALE 1:100)

D=2.066m. FOR 17/1
D=2.000m. FOR 80/1
D=2.316m. FOR 109/1
D=2.000m. FOR 120/2
D=2.000m. FOR 142/2



DETAIL - 2
(SCALE- 1:50)

| SL. NO. | STR. NO. | FRL | HYDRAULIC DATA | | | | GEOTECHNICAL DATA | | |
|---------|----------|---------|--------------------|---------|----------------|-----------------|-------------------------|-------------------|--------------------|
| | | | DISCHARGE (CUMECS) | HFL (M) | VELOCITY (M/S) | SCOUR LEVEL (M) | SBC (T/M ²) | LOW BED LEVEL (M) | FOUNDING LEVEL (M) |
| 1 | 17/1 | 177.153 | 149.678 | 175.643 | 2.794 | 170.117 | 35 | 171.653 | 168.053 |
| 2 | 78/1 | 233.106 | 300.172 | 228.950 | 2.518 | 219.821 | 25 | 222.529 | 219.029 |
| 3 | 107/2 | 273.869 | 47.793 | 269.691 | 2.346 | 267.291 | 30 | 268.578 | 264.578 |
| 4 | 119/1 | 247.676 | 121.649 | 245.295 | 1.882 | 240.287 | 35 | 242.370 | 237.770 |
| 5 | 141/1 | 217.559 | 86.985 | 218.450 | 1.064 | 214.283 | 15 | 214.947 | 210.447 |

SCHEDULE OF MINOR BRIDGES TO BE WIDENED

| SL. NO. | STRUCTURE NO. | PROPOSED CHAINAGE | EXISTING STRUCTURE DESCRIPTION | PROPOSED STRUCTURE DESCRIPTION | EXISTING SPAN ARRANGEMENT | PROPOSED SPAN ARRANGEMENT | DIMENSIONS FOR ABUTMENT | | | | | | | | | | | |
|---------|---------------|-------------------|--------------------------------|--------------------------------|---------------------------|---------------------------|-------------------------|------|------|-----|------|-----|------|-----|-----|------|-----|------|
| | | | | | | | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 | A11 | A12 |
| 1 | 17/1 | 16+029.626 | RCC Solid Slab & Arch | RCC 'T' Girder with RCC Slab | 3 x 6.56 | 1 x 20.0 | 3000 | 1200 | 6000 | 500 | 750 | 800 | 1120 | 500 | 500 | 2300 | 300 | 4550 |
| 2 | 78/1 | 77+388.354 | RCC Solid Slab | RCC 'T' Girder with RCC Slab | 3 x 6.45 | 1 x 19.35 | 3650 | 1400 | 7250 | 500 | 1000 | 800 | 1120 | 500 | 500 | 2300 | 300 | 9450 |
| 3 | 107/2 | 106+612.607 | RCC Solid Slab | RCC 'T' Girder with RCC Slab | 3 x 7.50 | 1 x 22.5 | 3000 | 1200 | 6000 | 500 | 750 | 800 | 1120 | 500 | 500 | 2300 | 300 | 4750 |
| 4 | 119/1 | 118+106.010 | RCC Solid Slab | RCC 'T' Girder with RCC Slab | 3 x 6.45 | 1 x 19.35 | 3000 | 1200 | 6000 | 500 | 750 | 800 | 1120 | 500 | 500 | 2300 | 300 | 5350 |
| 5 | 141/1 | 140+271.767 | RCC Solid Slab | RCC 'T' Girder with RCC Slab | 3 x 6.45 | 1 x 19.35 | 2400 | 800 | 5000 | 500 | 750 | 800 | 1120 | 500 | 500 | 2300 | 300 | 2550 |

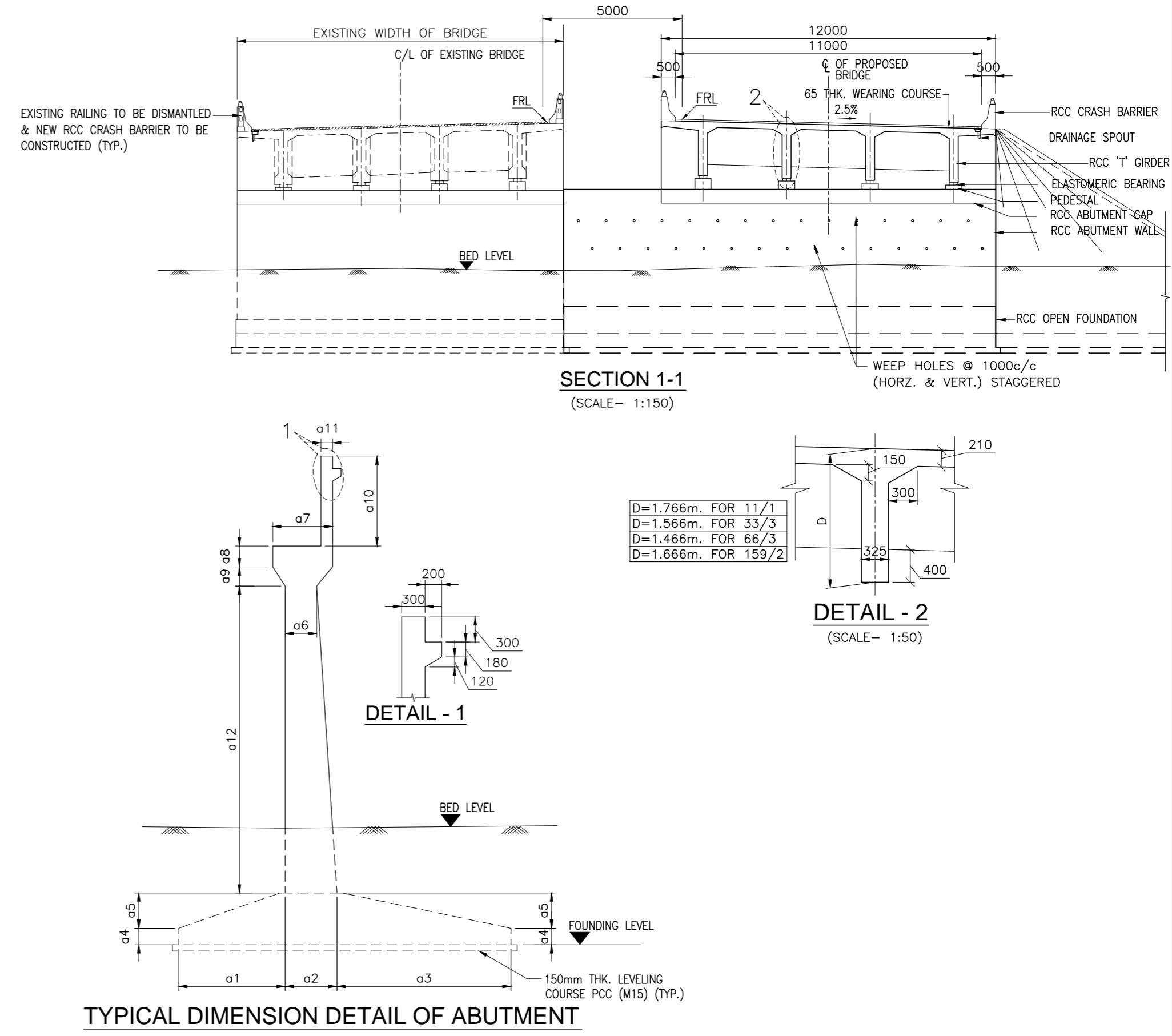
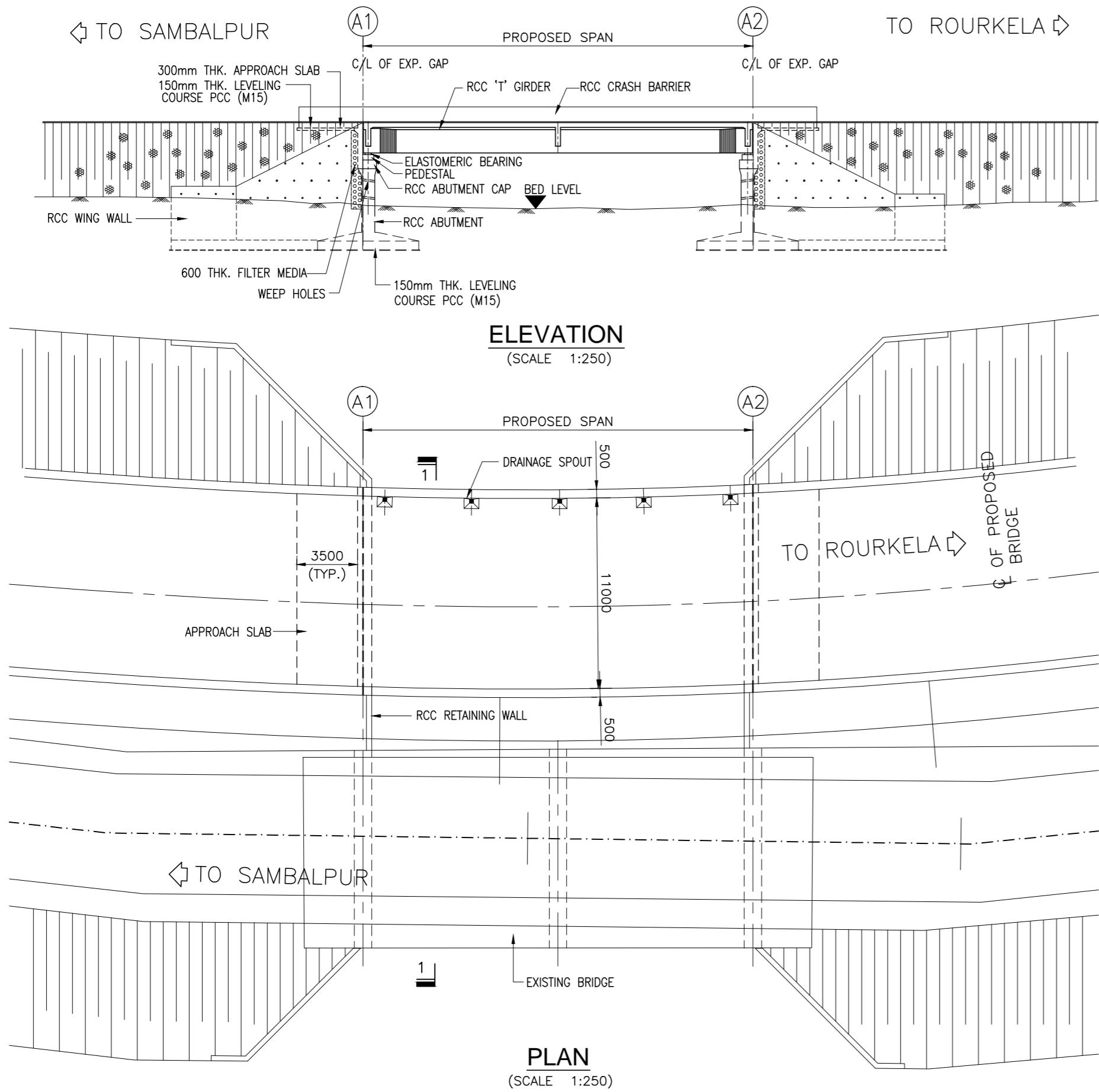
| | | | | | | | |
|------|--------------|------|------------|---|---------------------|---|---|
| | | Date | March 2010 | Drawing Title : TYPICAL GENERAL ARRANGEMENT OF MINOR BRIDGE (NEW STRUCTURE WITH RCC 'T' GIRDER SUPERSTRUCTURE AND RETENTION OF OLD STRUCTURE) | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. PRICEMANAGEMENT CONSULTANTS Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA | |
| | REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\SRMNB\GA-03 | (SHEET 1 OF 2) |

STRUCTURAL DATA

- GRADE OF CONCRETE :-
 - SUPERSTRUCTURE :-
 - CRASH BARRIER - M40
 - DECK SLAB - M30
 - GIRDER - M35
 - SUBSTRUCTURE - M25
 - WING WALL - M30
 - FOUNDATION - M25
- GRADE OF STEEL - Fe 500
- BEARING TYPE :-
 - ELASTOMERIC BEARING
- EXPANSION JOINT :-
 - ASPHALTIC PLUG

NOTES:-

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- FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
- CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
- ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.



SCHEDULE OF MINOR BRIDGES TO BE WIDENED

| SL. NO. | STRUCTURE NO. | PROPOSED CHAINAGE | EXISTING STRUCTURE DESCRIPTION | PROPOSED STRUCTURE DESCRIPTION | EXISTING SPAN ARRANGEMENT | PROPOSED SPAN ARRANGEMENT | DIMENSIONS FOR ABUTMENT | | | | | | | | | | | |
|---------|---------------|-------------------|--------------------------------|--------------------------------|---------------------------|---------------------------|-------------------------|------|------|-----|------|-----|------|-----|-----|------|-----|------|
| | | | | | | | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 | A11 | A12 |
| 1 | 11/1 11/1 | 10+670.330 | RCC Solid Slab | RCC 'T' Girder with RCC Slab | 2 x 8.55 | 1 x 17.1 | 2750 | 1200 | 6000 | 500 | 750 | 800 | 1120 | 500 | 500 | 2300 | 300 | 5950 |
| 2 | 33/1 32/2 | 31+822.090 | RCC 'T' Girder with RCC Slab | RCC 'T' Girder with RCC Slab | 2 x 7.70 | 1 x 15.4 | 3650 | 1400 | 7250 | 500 | 1000 | 800 | 1120 | 500 | 500 | 2300 | 300 | 9650 |
| 3 | 66/3 64/5 | 63+922.006 | RCC Solid Slab | RCC 'T' Girder with RCC Slab | 2 x 6.90 | 1 x 13.80 | 2750 | 1200 | 6000 | 500 | 750 | 800 | 1120 | 500 | 500 | 2300 | 300 | 5950 |
| 4 | 159/2 157/3 | 156+557.416 | RCC Solid Slab | RCC 'T' Girder with RCC Slab | 2 x 8.40 | 1 x 16.8 | 2400 | 800 | 5000 | 500 | 750 | 800 | 1120 | 500 | 500 | 2300 | 300 | 4320 |

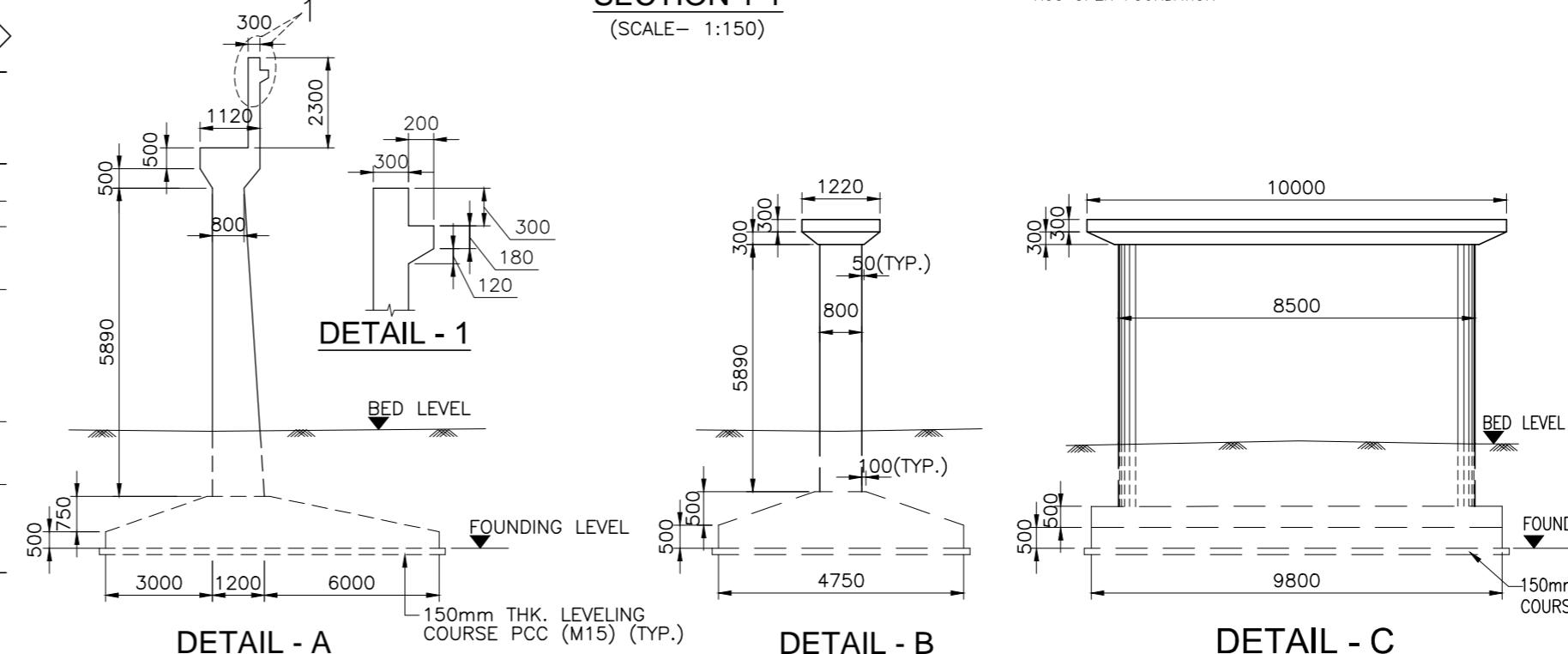
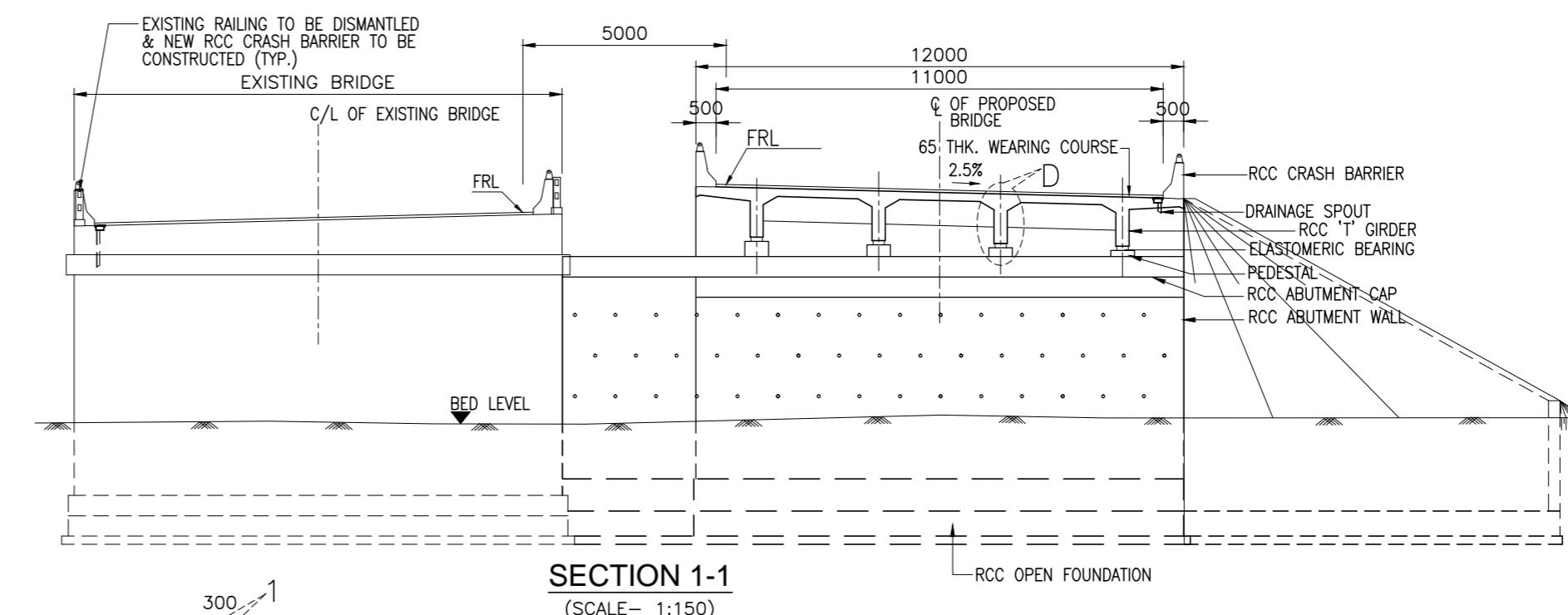
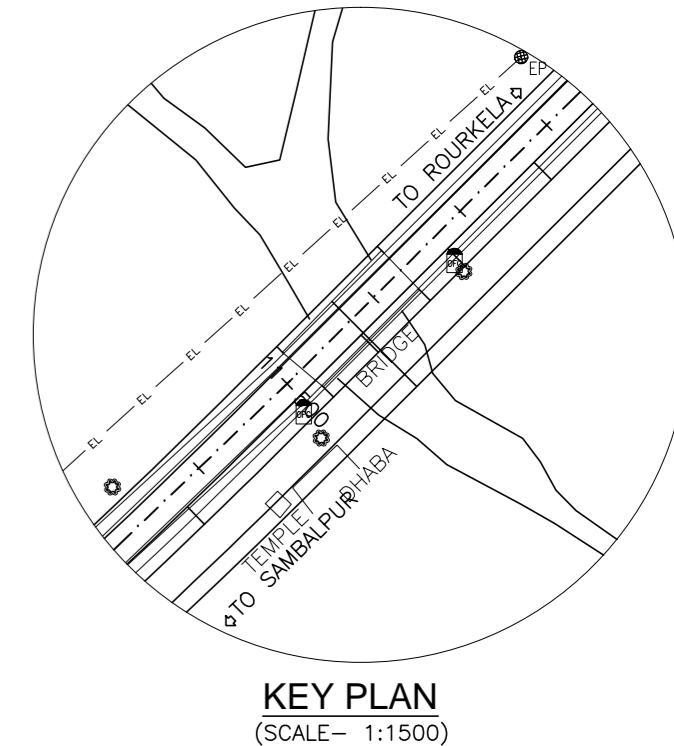
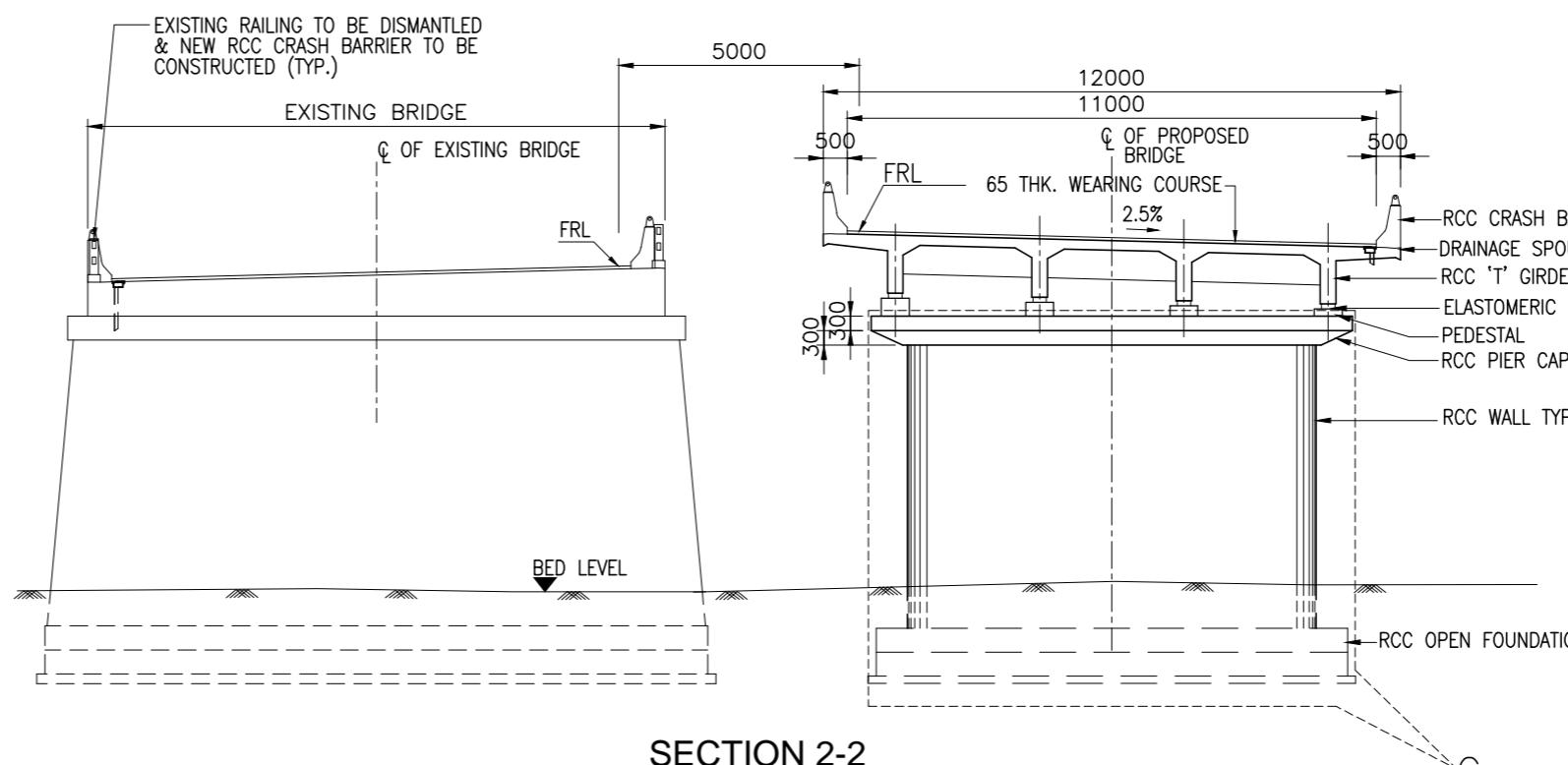
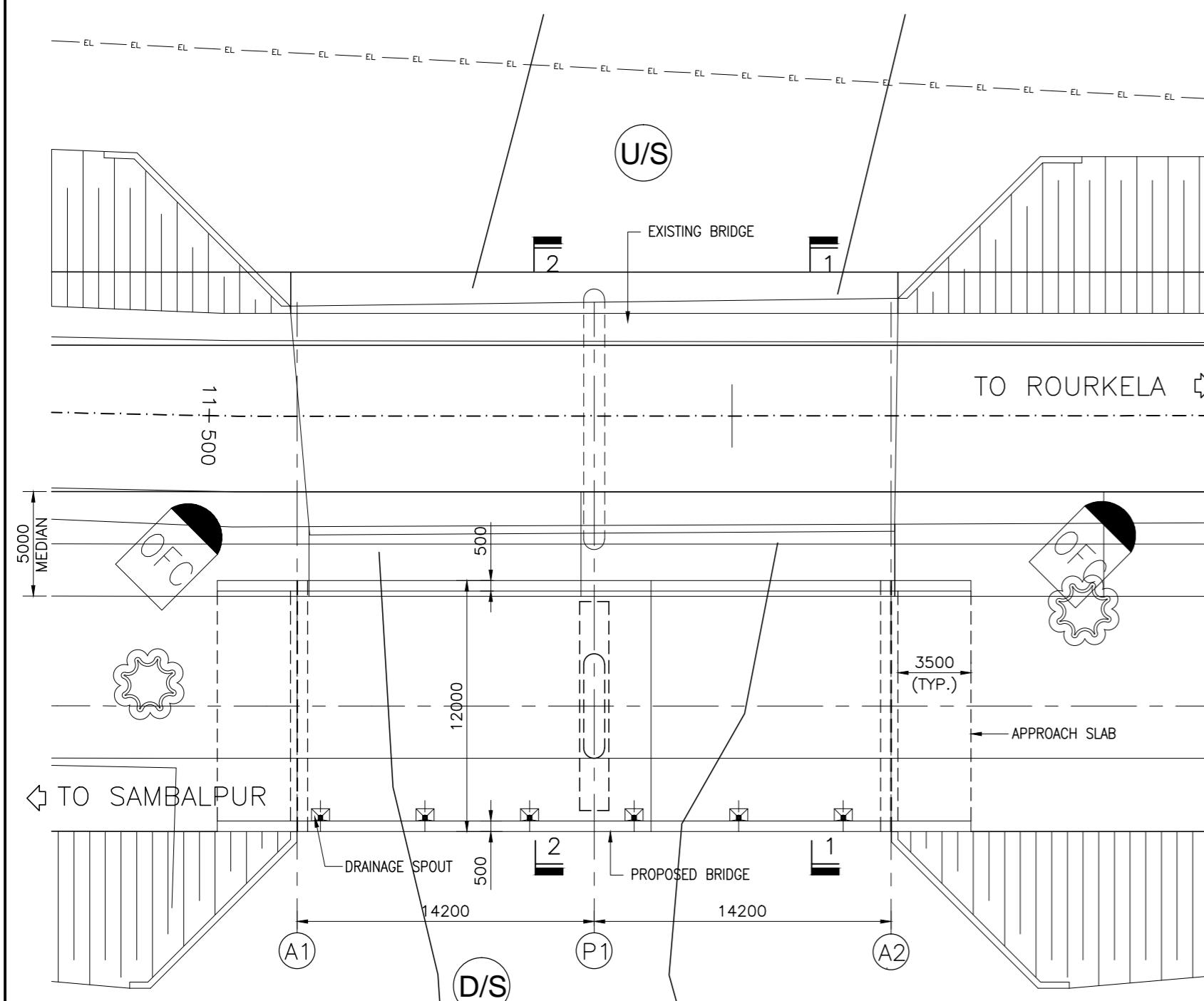
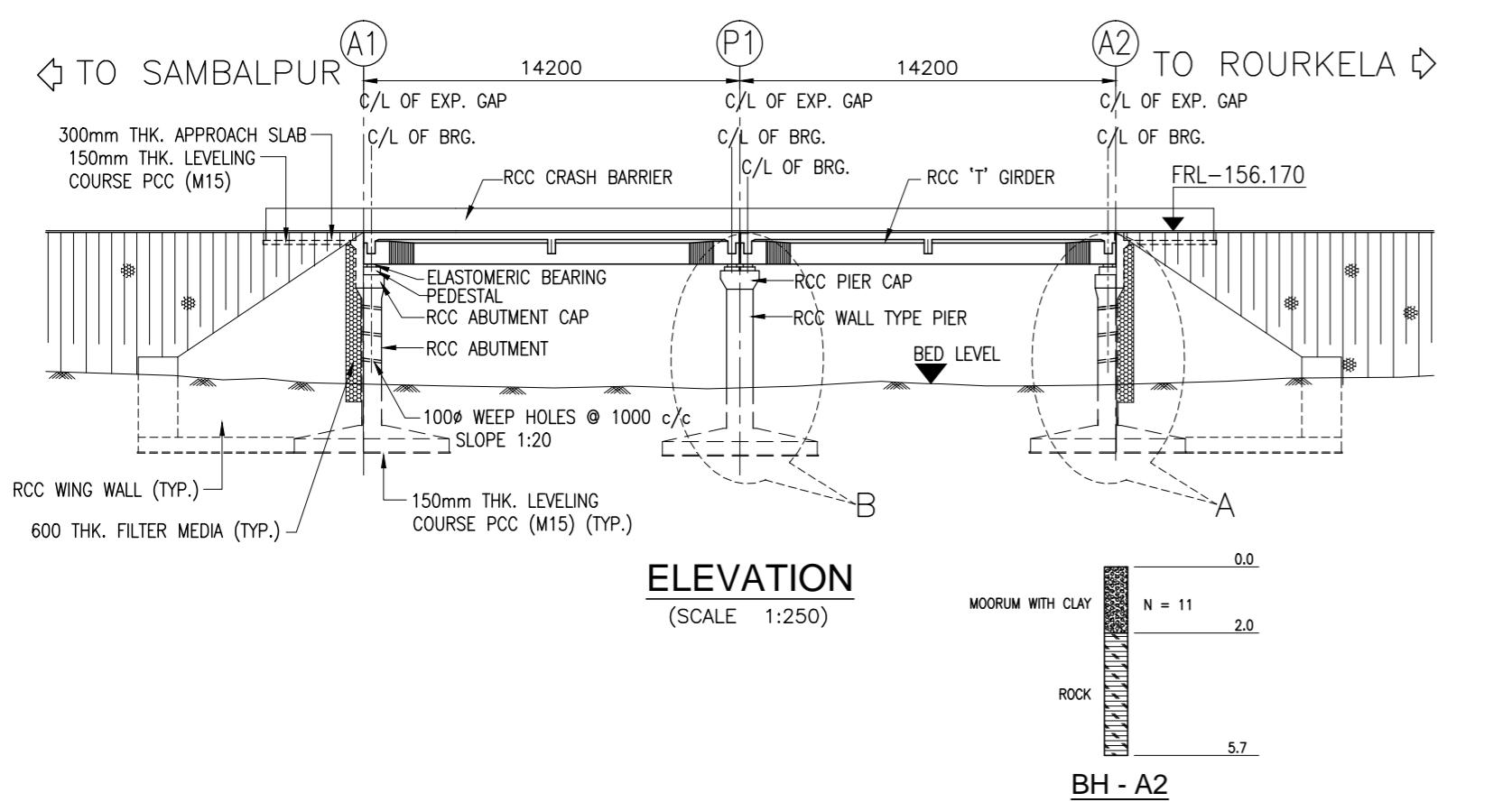
| SL. NO. | STR. NO. | FRL | DISCHARGE (CUMECS) | HFL (M) | VELOCITY (M/S) | SCOUR LEVEL (M) | HYDRAULIC DATA | | | GEOTECHNICAL DATA | | |
|---------|-------------|---------|--------------------|---------|----------------|-----------------|-------------------------|-------------------|--------------------|-------------------------|-------------------|--------------------|
| | | | | | | | SBC (T/M ²) | LOW BED LEVEL (M) | FOUNDING LEVEL (M) | SBC (T/M ²) | LOW BED LEVEL (M) | FOUNDING LEVEL (M) |
| 1 | 11/1 11/1 | 159.588 | 128.964 | 155.625 | 2.616 | 149.682 | 30 | 152.554 | 149.054 | 30 | 152.554 | 149.054 |
| 2 | 32/2 32/2 | 190.524 | 217.502 | 186.523 | 2.882 | 177.738 | 30 | 181.423 | 176.323 | 30 | 181.423 | 176.323 |
| 3 | 64/5 64/5 | 211.334 | 139.734 | 208.064 | 2.847 | 200.990 | 30 | 204.164 | 199.664 | 30 | 204.164 | 199.664 |
| 4 | 157/3 157/3 | 189.563 | 179.181 | 188.370 | 2.441 | 181.151 | 35 | 185.589 | 181.089 | 35 | 185.589 | 181.089 |

| STRUCTURAL DATA | | | | | | | | | | | | |
|----------------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| 1. GRADE OF CONCRETE :- | | | | | | | | | | | | |
| (a) SUPERSTRUCTURE :- | | | | | | | | | | | | |
| (i) CRASH BARRIER - M40 | | | | | | | | | | | | |
| (ii) DECK SLAB - M30 | | | | | | | | | | | | |
| (iii) GIRDER - M35 | | | | | | | | | | | | |
| (b) SUBSTRUCTURE - M25 | | | | | | | | | | | | |
| (c) WING WALL - M30 | | | | | | | | | | | | |
| (d) FOUNDATION - M25 | | | | | | | | | | | | |
| 2. GRADE OF STEEL - Fe 500 | | | | | | | | | | | | |
| 3. BEARING TYPE :- | | | | | | | | | | | | |
| (a) ELASTOMERIC BEARING | | | | | | | | | | | | |
| 4. EXPANSION JOINT :- | | | | | | | | | | | | |
| (a) ASPHALTIC PLUG | | | | | | | | | | | | |

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
- CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
- ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | | Drawing Title : TYPICAL GENERAL ARRANGEMENT OF MINOR BRIDGE (NEW STRUCTURE WITH RCC 'T' GIRDER SUPERSTRUCTURE AND RETENTION OF OLD STRUCTURE) | | | | Scale : AS SHOWN | | | | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. | | Client: GOVERNMENT OF ORISSA | |
|----------|--------------|------|----|---|---------|-------------|---------|------------------|-----------------------------|----------------|-----|--|---|--|--|
| | | | | | | | | | | | | | | WORKS DEPARTMENT | |
| | | | | | | | | | | | | Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 | | GOVERNMENT OF ORISSA | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | Approved By | Avadesh | Drawing Number : | 73231\LASA\PPP\SRMNBR\GA-03 | (SHEET 2 OF 2) | LEA | LEA Associates South Asia Pvt. Ltd. | B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA | |
| REVISION | | | | | | | | | | | | | | | |



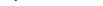
| HYDRAULIC DATA | | | | | | GEOTECHNICAL DATA | | |
|----------------|----------|-----------------------|----------------|-------------------|--------------------|----------------------------|----------------------|-----------------------|
| SL. NO. | STR. NO. | DISCHARGE (CUMECS) | HFL (M) | VELOCITY (M/S) | SCOUR LEVEL (M) | SBC (T/M ²) | LOW BED LEVEL (M) | FOUNDING LEVEL (M) |
| 1 | 12/2 | CANAL PASSING | REGULATED FLOW | | | 30 | 151.170 | 147.670 |

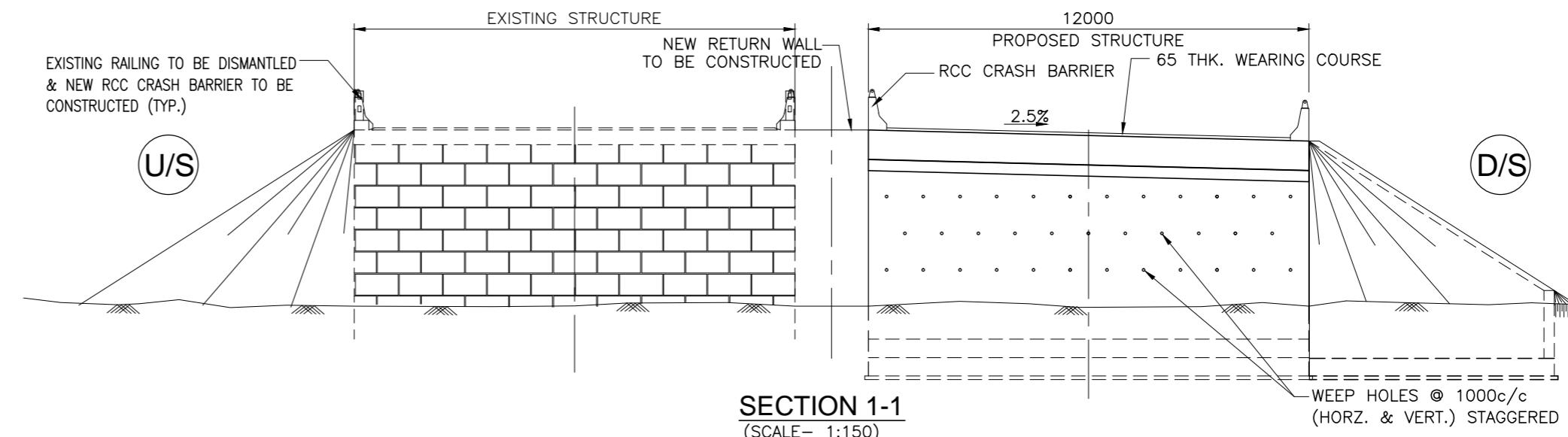
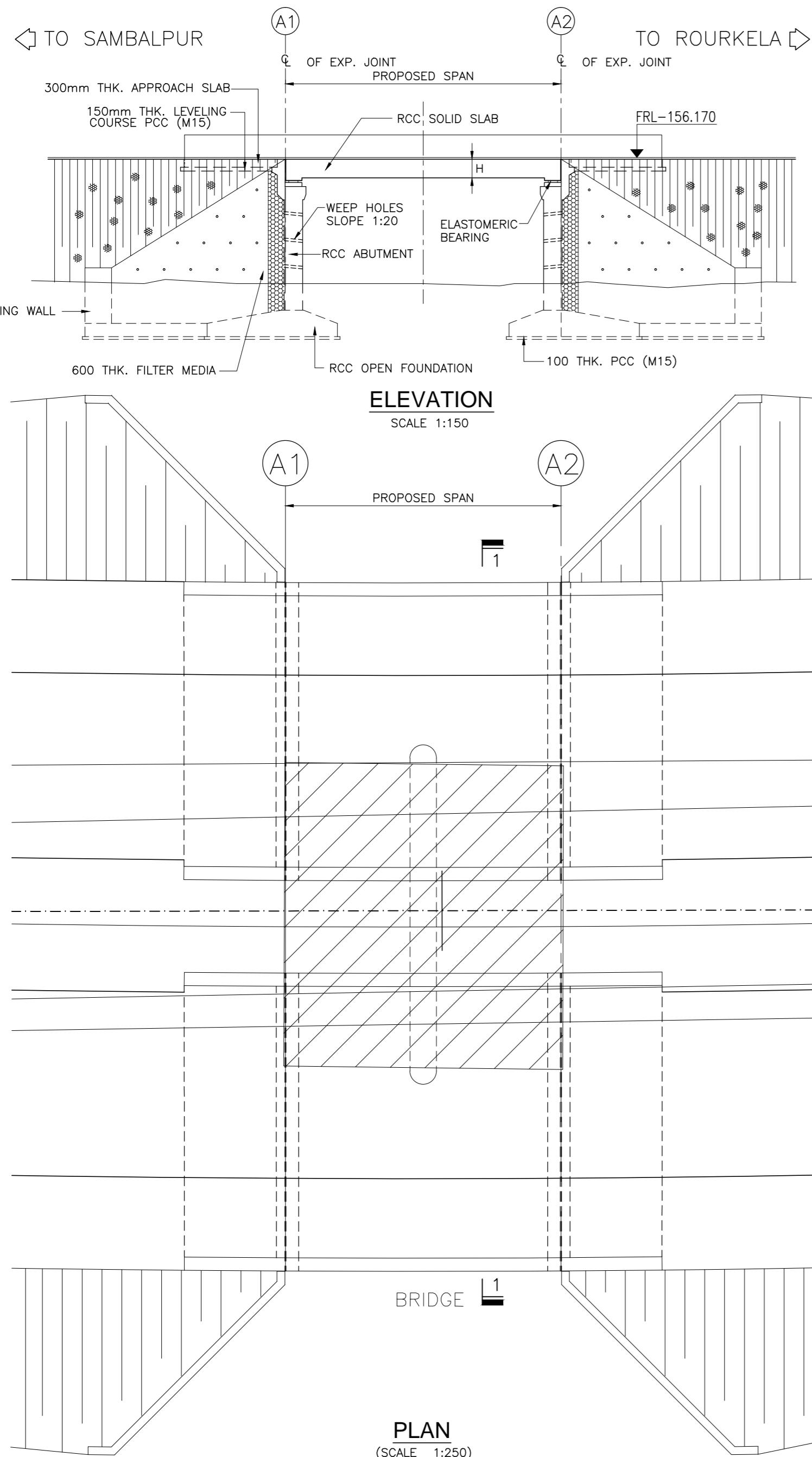
STRUCTURAL DATA

- | |
|-------------------------|
| GRADE OF CONCRETE :- |
| SUPERSTRUCTURE :- |
| CRASH BARRIER - M40 |
| DECK SLAB - M30 |
| GIRDER - M35 |
| SUBSTRUCTURE - M25 |
| WING WALL - M30 |
| FOUNDATION - M25 |
| GRADE OF STEEL - Fe 500 |
| BEARING TYPE :- |
| ELASTOMERIC BEARING |
| EXPANSION JOINT :- |
| ASPHALTIC PLUG |

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
4. CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
5. ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | | | | | | | |
|----------|--------------|------|-------------|-------------|------------------|---|-------------------------|---|---|
| | | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MINOR BRIDGE NO. 12/2 AT CH. 11+526.512 | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. PRICEMATERHOUSE COOPERS  Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA  LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044 | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | | Drawn By | Joy | | | | |
| | | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | | |
| REVISION | | | Approved By | Avadesh | Drawing Number : | 73231\LASA\PPP\SR\MNBR\GA-04 | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA | |



SCHEDULE OF MINOR BRIDGES TO BE WIDENED

| SL. NO. | STRUCTURE NO. | PROPOSED CHAINAGE | EXISTING STRUCTURE DESCRIPTION | EXISTING SPAN ARRANGEMENT | PROPOSED SPAN ARRANGEMENT | LENGTH OF PROPOSED WIDENING | | WIDTH AFTER WIDENING (m) | H (mm.) |
|---------|---------------|-------------------|--|---------------------------|---------------------------|-----------------------------|--------------------|--------------------------|---------|
| | | | | | | W1 LEFT SIDE* (m) | W2 RIGHT SIDE* (m) | | |
| 1 | 35/1 | 34+293.639 | RCC Slab with SM Abutment on open foundation | 2 x 5.2 | 1 x 10.4 | 6.792 | 7.740 | 26.000 | 950 |
| 2 | 73/1 | 72+410.542 | RCC Slab with SM Abutment on open foundation | 1 x 8.30 | 1 x 8.30 | — | 12.0+MEDIAN | 26.000 | 820 |
| 3 | 97/1 | 96+018.193 | RCC Slab with SM Abutment on open foundation | 1 x 11.70 | 1 x 9.25 | 12.0+MEDIAN | — | 26.000 | 900 |
| 4 | 105/1 | 103+748.472 | RCC Slab with SM Abutment on open foundation | 1 x 10.5 | 1 x 10.5 | 12.0+MEDIAN | — | 26.000 | 950 |

NOTE: (*) SIDES ARE MARKED WITH RESPECT TO INCREASING CHAINAGE. LEFT & RIGHT SIDE DIMENSIONS ARE TO BE CHECKED AT SITE BEFORE COMMENCEMENT OF WORK.

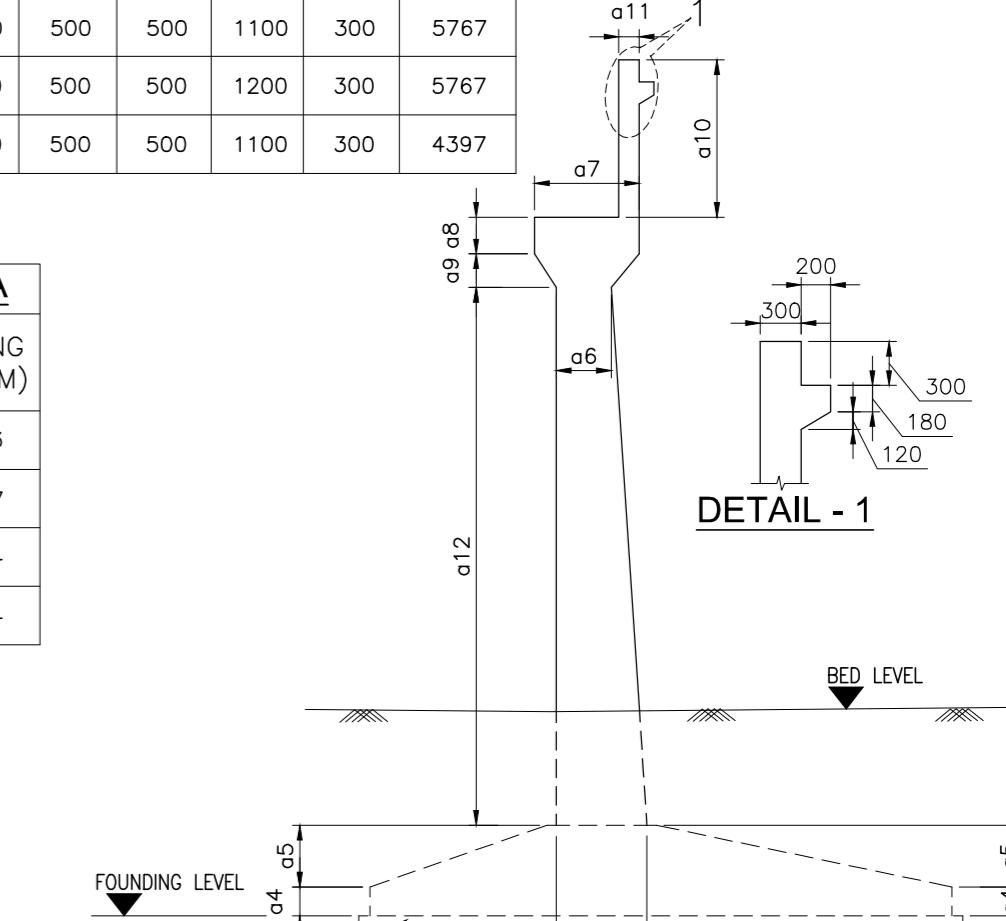
SCHEDULE FOR ABUTMENTS

| SL. NO. | STRUCTURE NO. | PROPOSED CHAINAGE | FRL (ABUT) | DIMENSIONS FOR ABUTMENT | | | | | | | | | | | |
|---------|---------------|-------------------|------------|-------------------------|------|------|-----|-----|-----|------|-----|-----|------|-----|------|
| | | | | a1 | a2 | a3 | a4 | a5 | a6 | a7 | a8 | a9 | a10 | a11 | a12 |
| 1 | 35/1 | 34+298.031 | 190.303 | 2000 | 800 | 4750 | 500 | 750 | 800 | 1120 | 500 | 500 | 1100 | 300 | 6155 |
| 2 | 73/1 | 72+198.933 | 235.029 | 2000 | 800 | 4250 | 500 | 750 | 800 | 1120 | 500 | 500 | 1100 | 300 | 5767 |
| 3 | 97/1 | 95+736.584 | 269.969 | 3000 | 1200 | 4250 | 500 | 750 | 800 | 1120 | 500 | 500 | 1200 | 300 | 5767 |
| 4 | 105/1 | 103+748.472 | 275.136 | 2000 | 800 | 3000 | 500 | 750 | 800 | 1120 | 500 | 500 | 1100 | 300 | 4397 |

| SL. NO. | STR. NO. | HYDRAULIC DATA | | | GEOTECHNICAL DATA | | | |
|---------|----------|--------------------|---------|----------------|-------------------|-------------------------|-------------------|--------------------|
| | | DISCHARGE (CUMECS) | HFL (M) | VELOCITY (M/S) | SCOUR LEVEL (M) | SBC (T/M ²) | LOW BED LEVEL (M) | FOUNDING LEVEL (M) |
| 1 | 35/1 | 54.912 | 187.540 | 2.428 | 182.736 | 29 | 185.733 | 180.733 |
| 2 | 73/1 | 19.541 | 231.853 | 1.782 | 229.222 | 25 | 230.347 | 225.847 |
| 3 | 97/1 | 46.919 | 268.500 | 1.767 | 264.699 | 25 | 265.854 | 261.354 |
| 4 | 105/1 | 12.175 | 271.383 | 1.063 | 269.649 | 35 | 270.324 | 267.324 |

STRUCTURAL DATA

- GRADE OF CONCRETE :-
 - (a) SUPERSTRUCTURE :-
 - (i) CRASH BARRIER - M40
 - (ii) DECK SLAB - M30
 - (iii) RCC SOLID SLAB - M35
 - (b) SUBSTRUCTURE - M25
 - (c) WING WALL - M30
 - (d) FOUNDATION - M25
- GRADE OF STEEL - Fe 500
- BEARING TYPE :-
 - (a) ELASTOMERIC BEARING
- EXPANSION JOINT :-
 - (a) ASPHALTIC PLUG



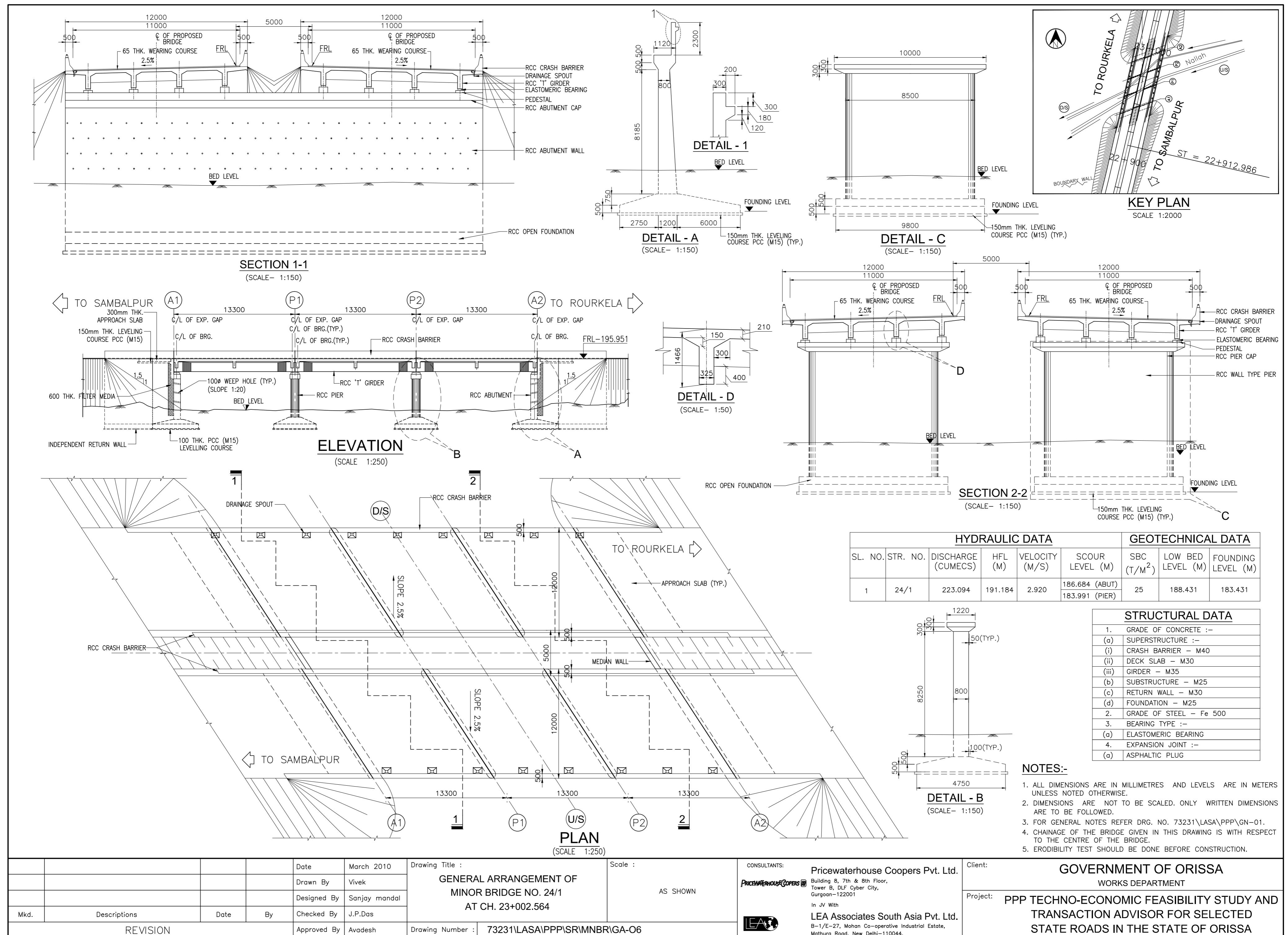
TYPICAL DIMENSION DETAIL OF ABUTMENT

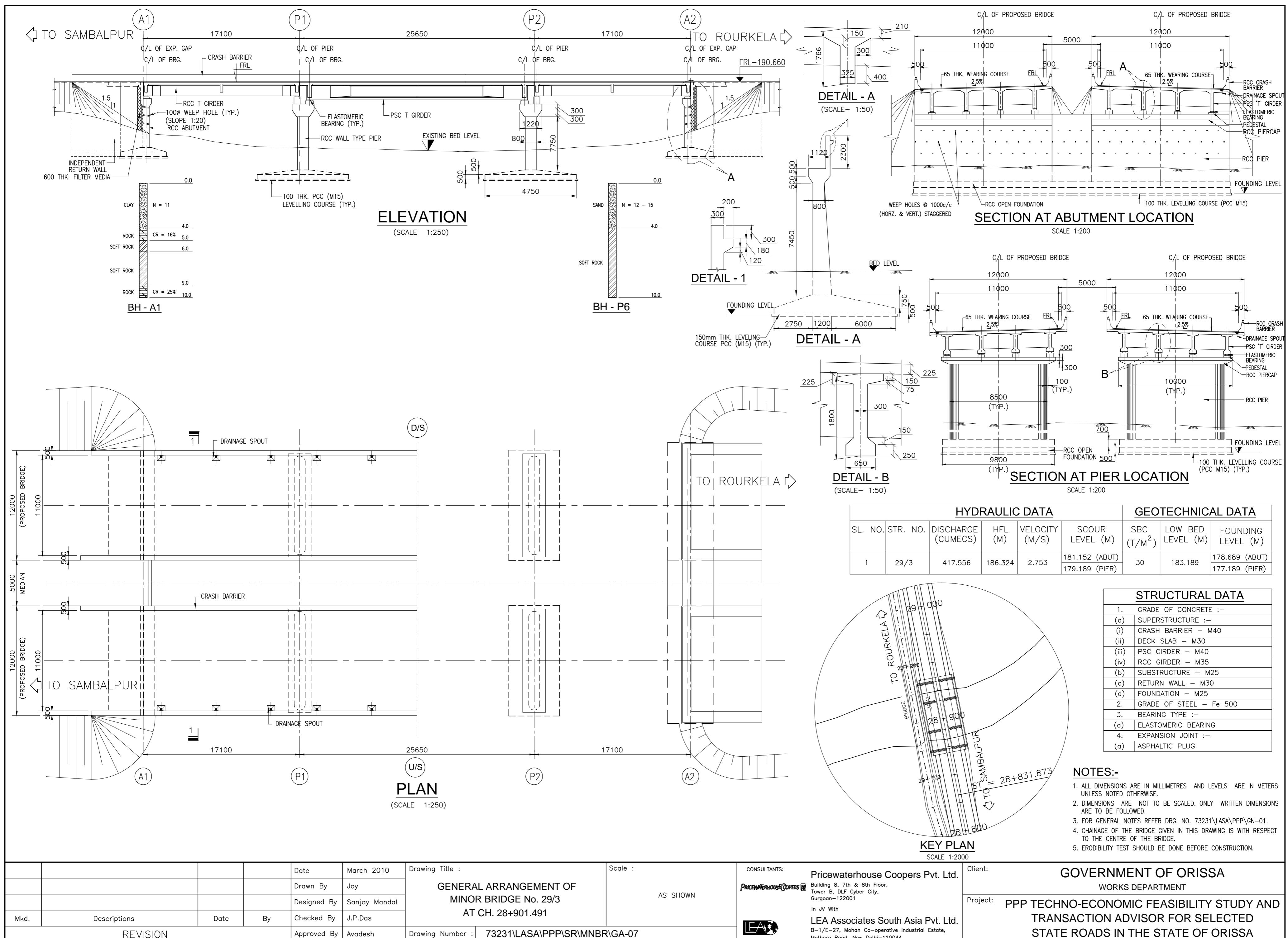
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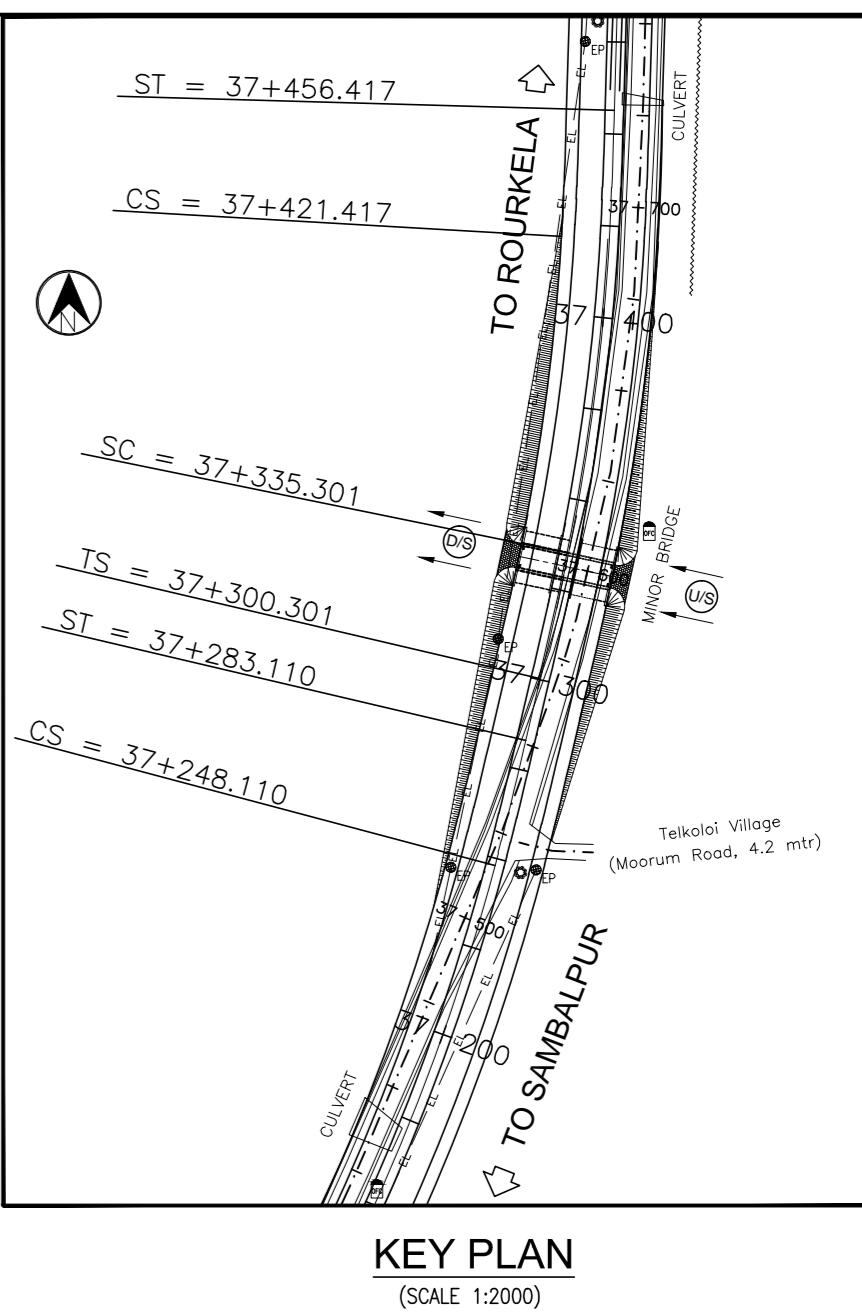
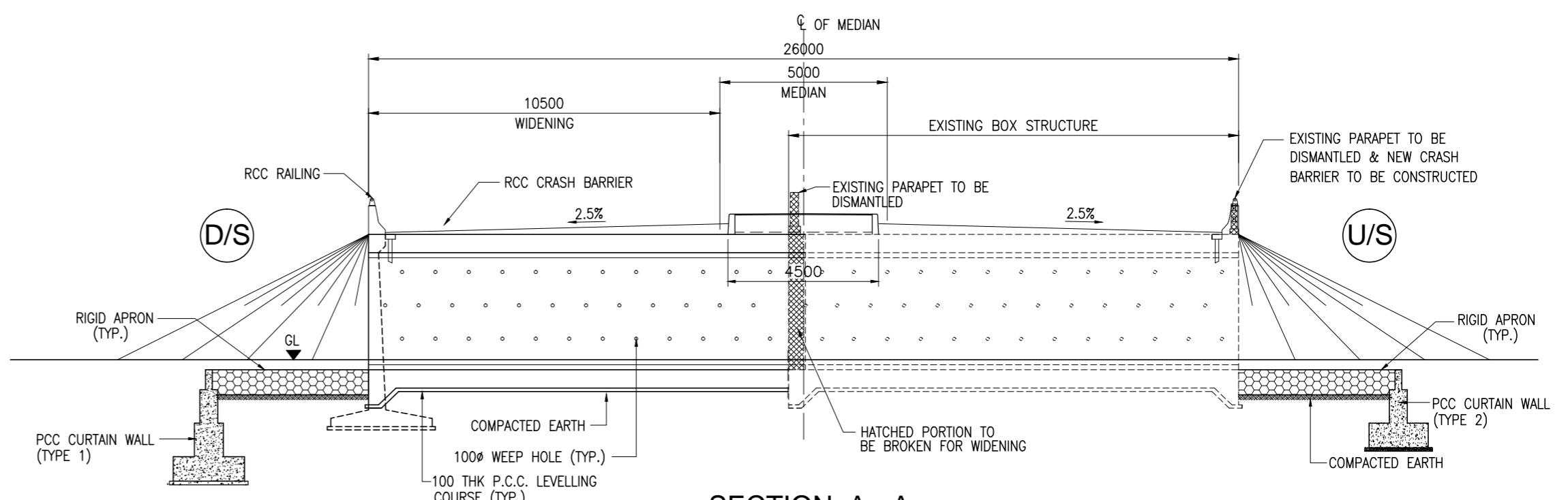
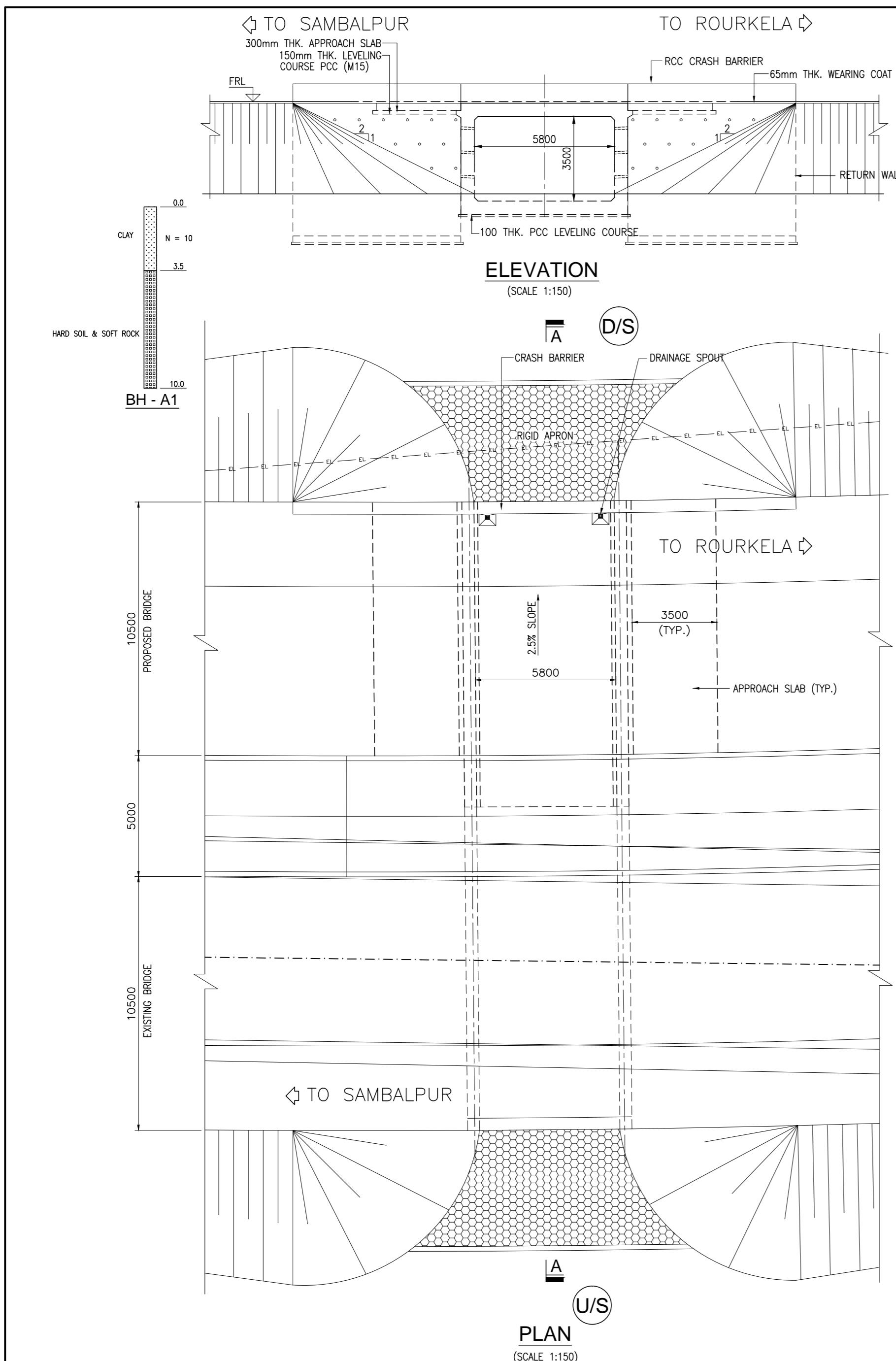
NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
- CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
- ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | | | | | |
|------|--------------|-------------|---------------|---|----------------------------|--|---|
| | | Date | March 2010 | Drawing Title : TYPICAL GENERAL ARRANGEMENT OF MINOR BRIDGE (NEW STRUCTURE WITH RCC SLAB SUPERSTRUCTURE AND RETENTION OF OLD STRUCTURE) | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. PRICEMANWERS COOPERS Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | Drawn By | Joy | | | | |
| | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | | | | |
| | | Checked By | J.P.Das | | | | |
| | REVISION | Approved By | Avadesh | Drawing Number : | 73231\LASA\PPP\SRMNB\GA-05 | | |



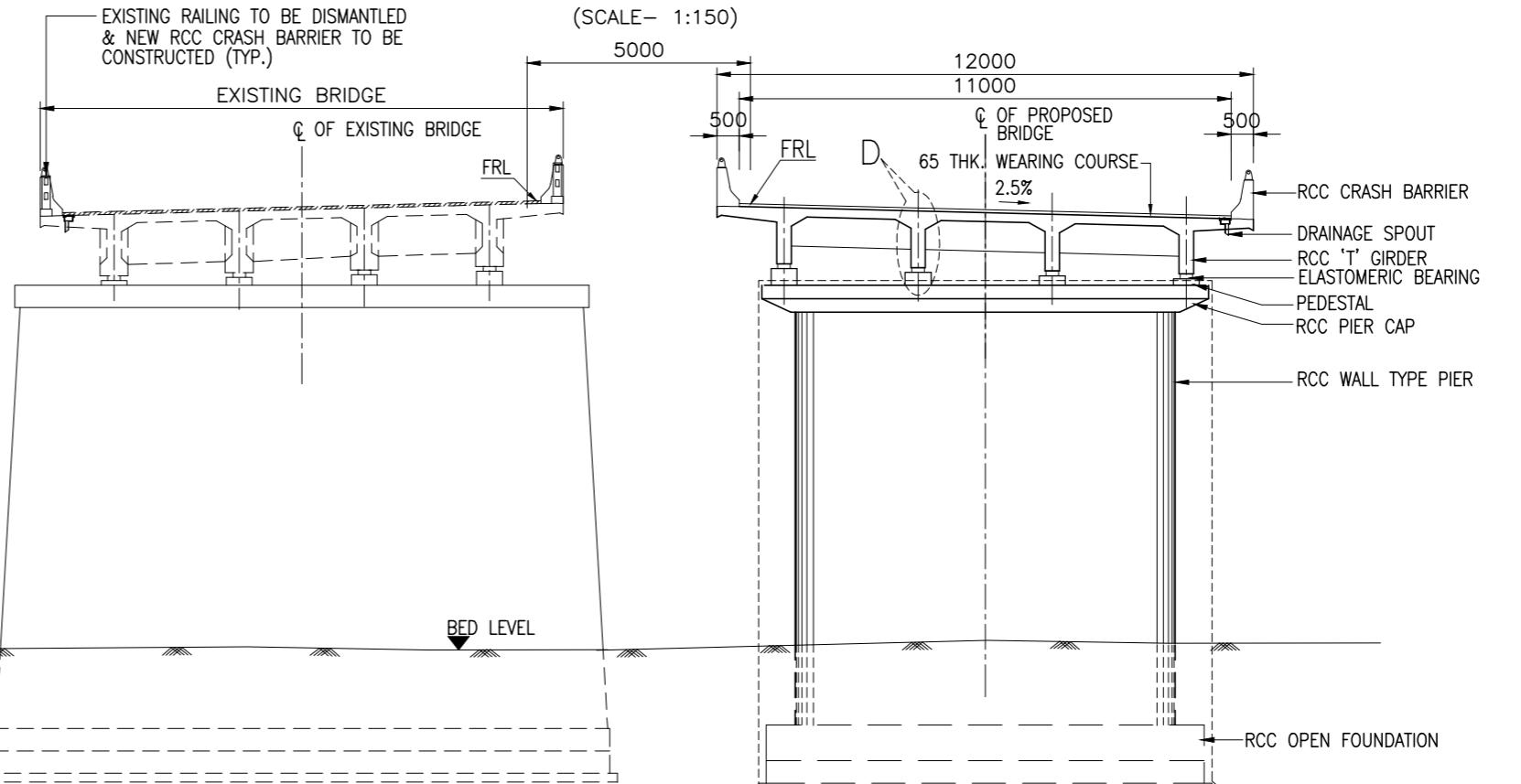
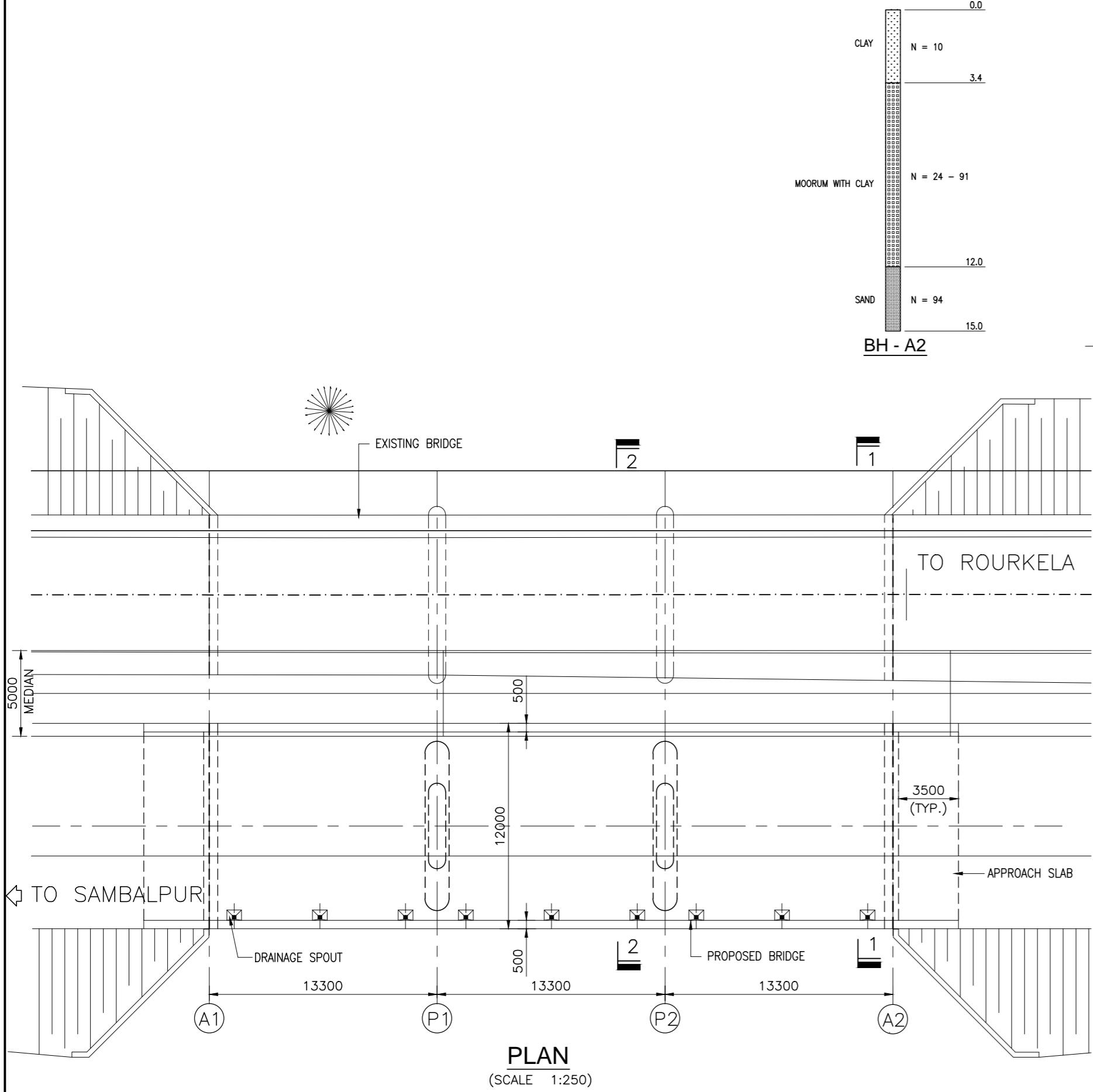
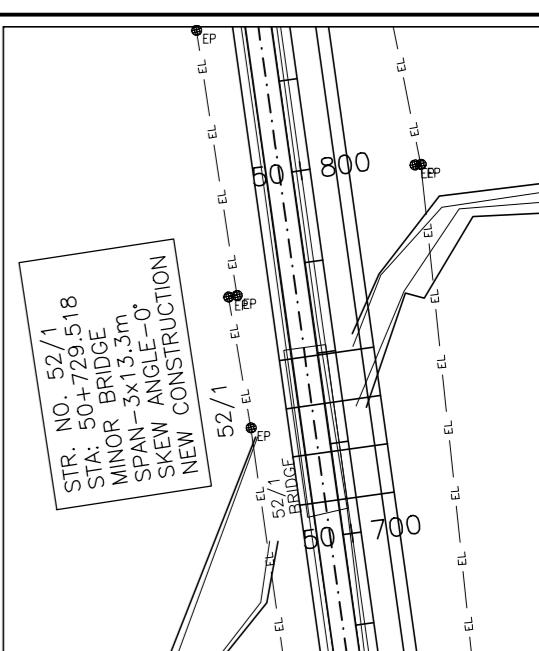
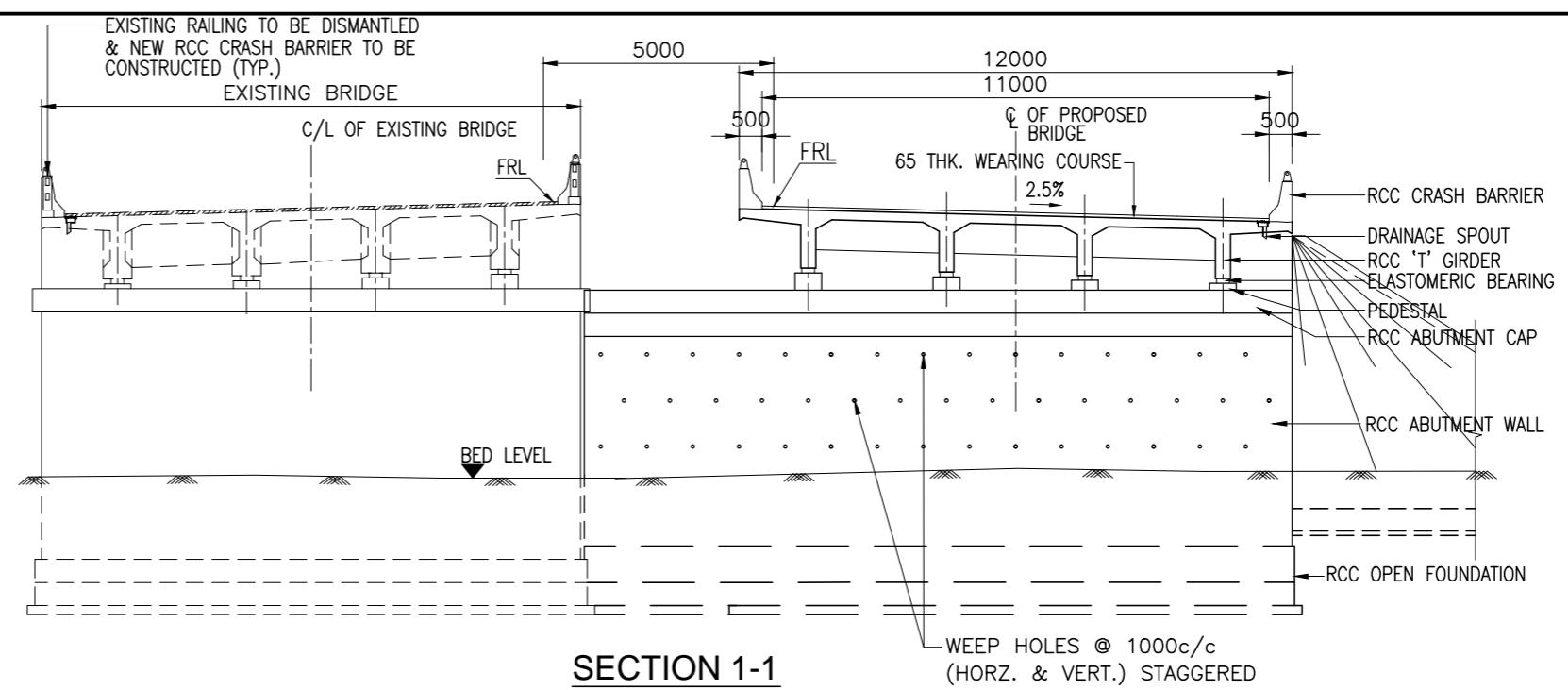
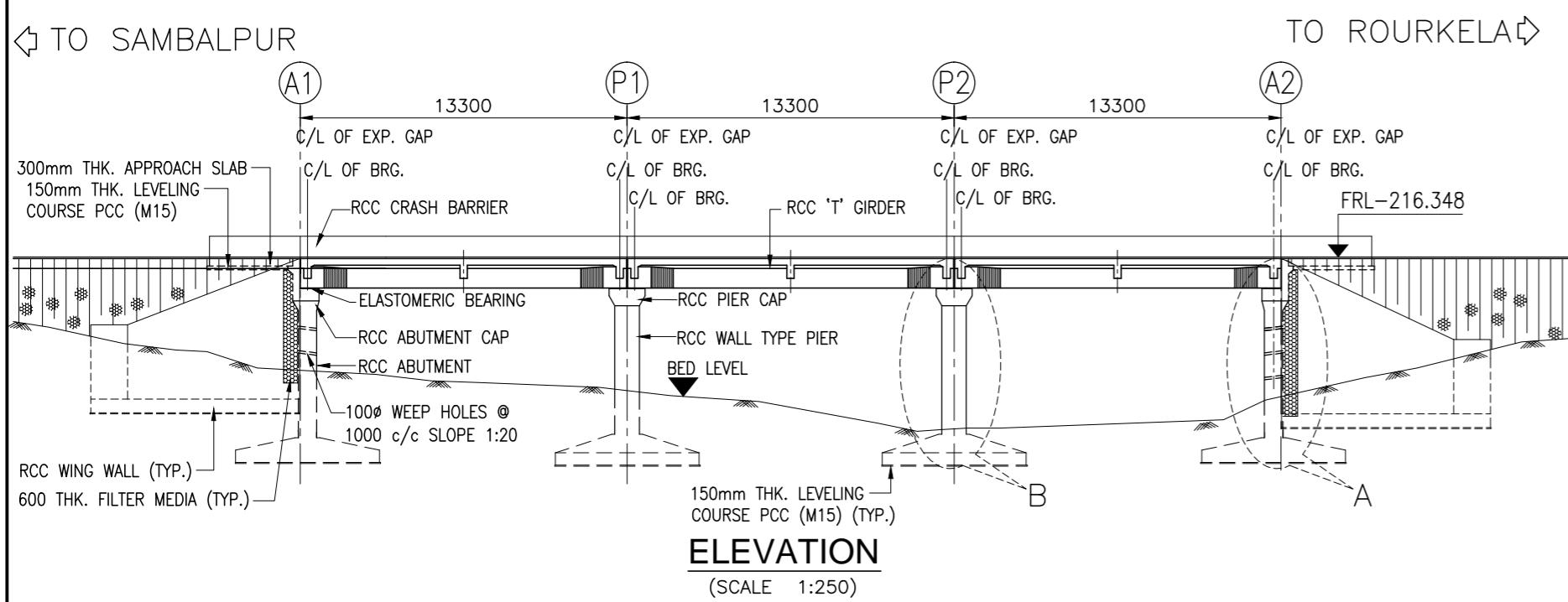




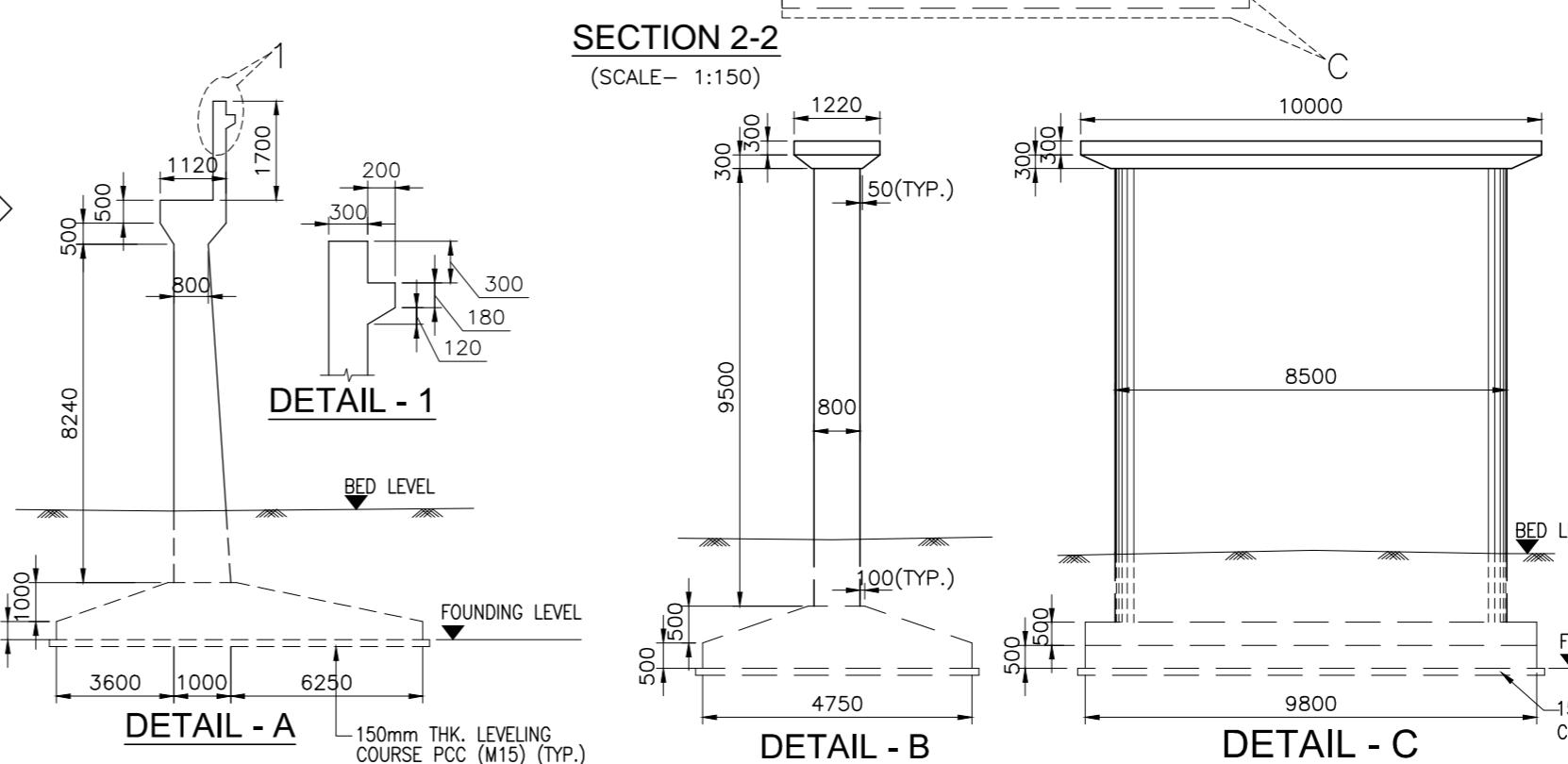
NOTES:-

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- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
- CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
- ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MINOR BRIDGE NO. 38/2 AT CH. 37+329.357 | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
|------|--------------|------|-------------|---------------|---|---------------------|--|--|
| | | | Drawn By | Vivek | | | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| | REVISION | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\MBR\GA-08 | | | |



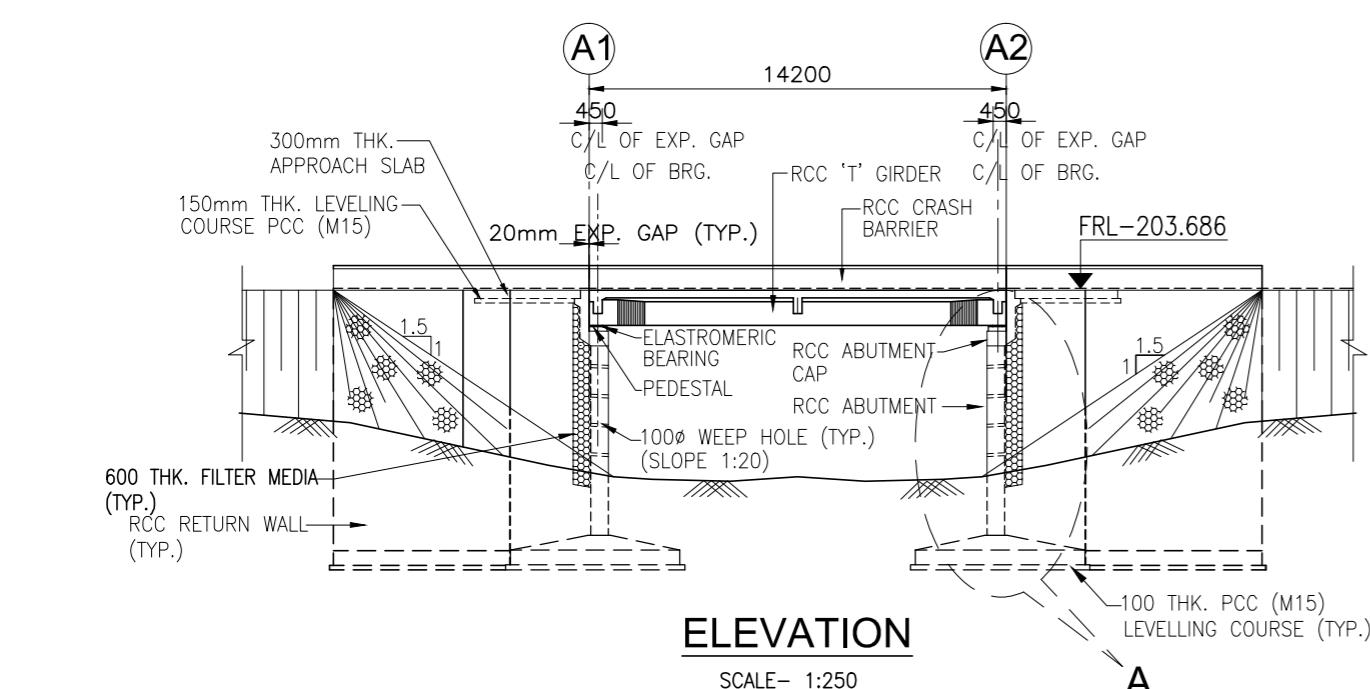
| STRUCTURAL DATA | |
|----------------------------|-------------------------|
| 1. GRADE OF CONCRETE :- | |
| (a) SUPERSTRUCTURE :- | (i) CRASH BARRIER - M40 |
| | (ii) DECK SLAB - M30 |
| | (iii) GIRDER - M35 |
| | (b) SUBSTRUCTURE - M25 |
| (c) WING WALL - M30 | (c) FOUNDATION - M25 |
| | (d) FOUNDATION - M25 |
| 2. GRADE OF STEEL - Fe 500 | |
| 3. BEARING TYPE :- | |
| (a) ELASTOMERIC BEARING | |
| | |
| 4. EXPANSION JOINT :- | |
| (a) ASPHALTIC PLUG | |
| | |



| HYDRAULIC DATA | | | | | GEOTECHNICAL DATA | | | |
|----------------|----------|--------------------|---------|----------------|----------------------------------|-------------------------|-------------------|----------------------------------|
| SL. NO. | STR. NO. | DISCHARGE (CUMECS) | HFL (M) | VELOCITY (M/S) | SCOUR LEVEL (M) | SBC (T/M ²) | LOW BED LEVEL (M) | FOUNDING LEVEL (M) |
| 1 | 51/2 | 171.335 | 212.355 | 2.761 | 208.560 (ABUT) 206.378 (PIER) | 20 | 210.210 | 204.100 (ABUT) 203.100 (PIER) |

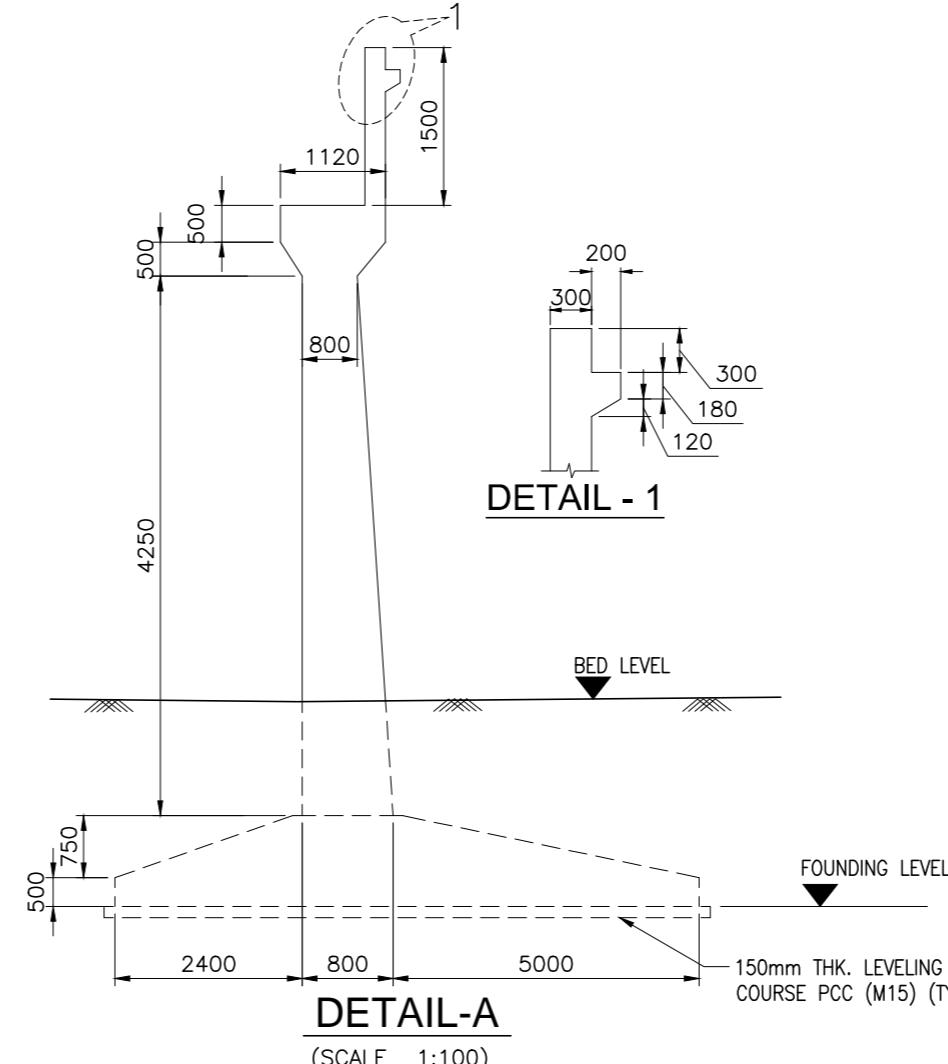
- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 - DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
 - FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
 - CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
 - ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | | | | | | |
|------|--------------|------|-------------|---------------|--|---------------------|--|---|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MINOR BRIDGE NO. 51/2 AT CH. 50+725.126 | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | Drawn By | Joy | | | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | |
| | REVISION | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\MNBR\GA-09 | | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |



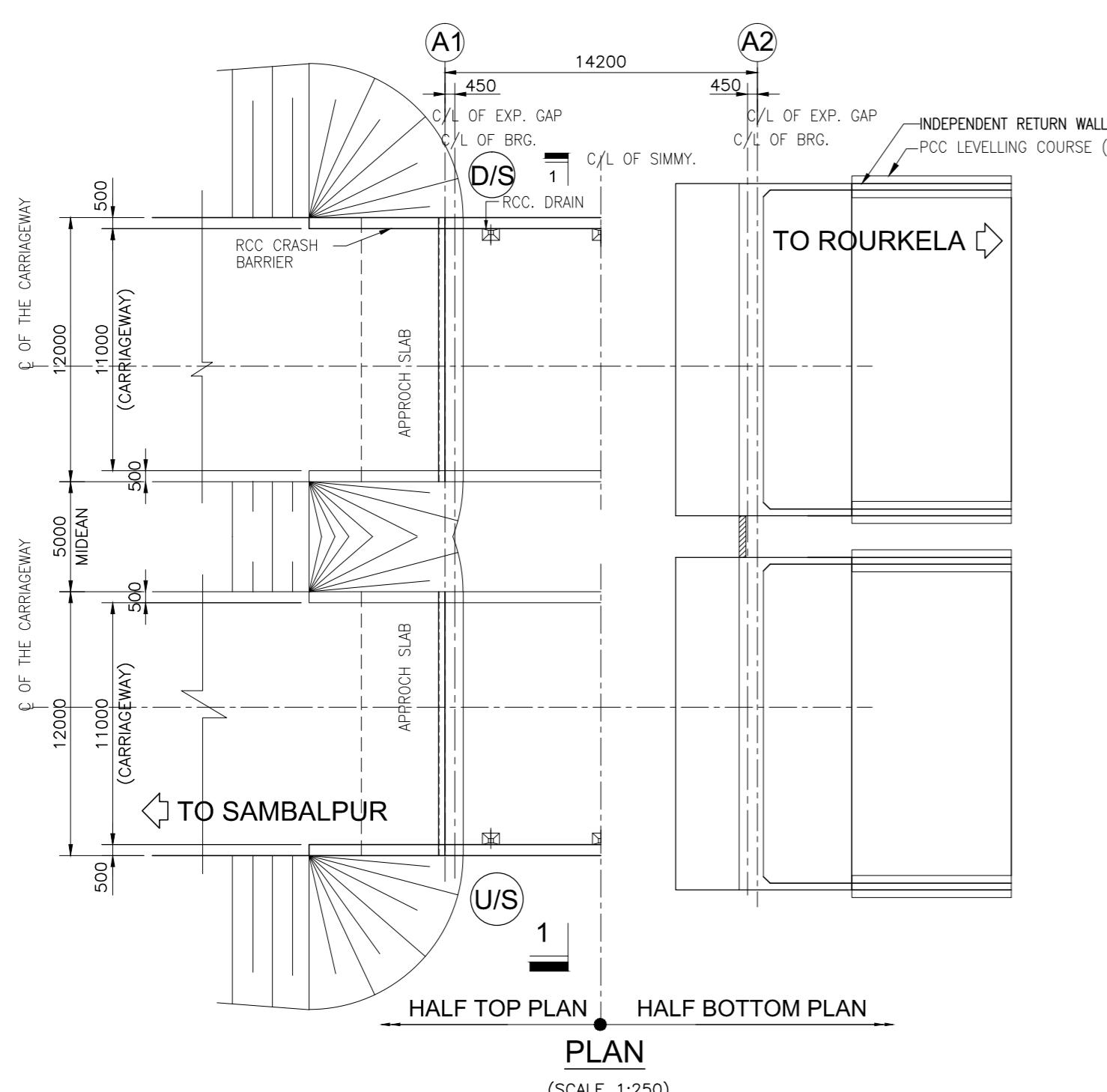
ELEVATION

SCALE- 1:250



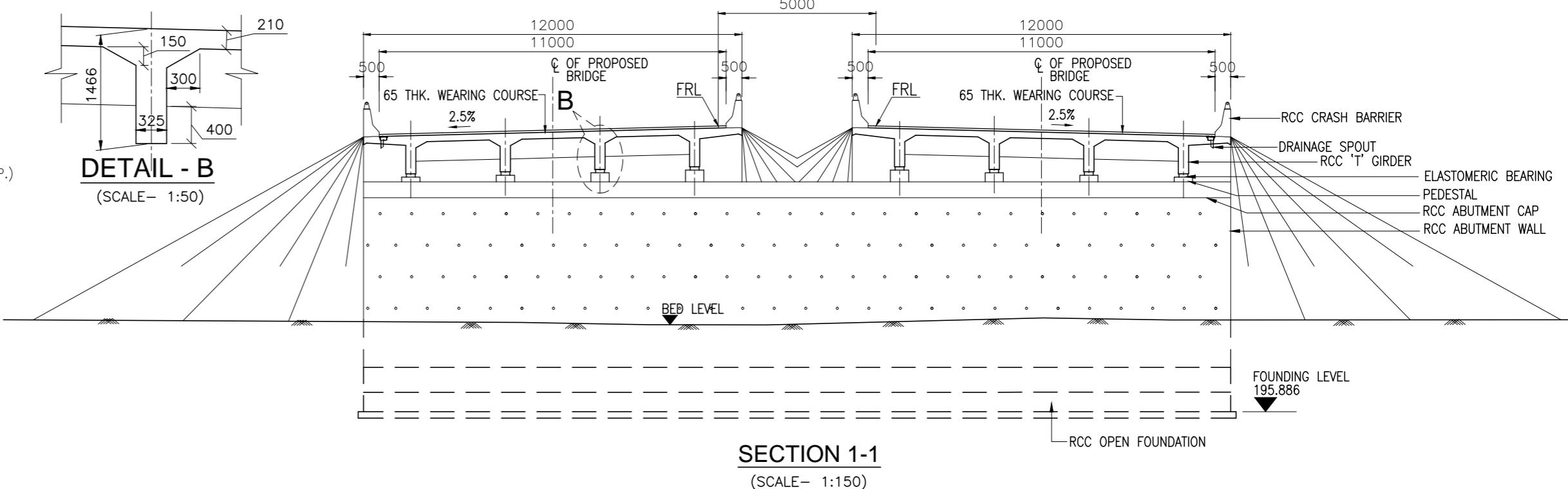
DETAIL-A

(SCALE 1:100)



PLAN

(SCALE 1:250)



SECTION 1-1

(SCALE- 1:150)

| HYDRAULIC DATA | | | | GEOTECHNICAL DATA | | | | |
|----------------|----------|--------------------|---------|-------------------|-----------------|-------------------------|-------------------|--------------------|
| SL. NO. | STR. NO. | DISCHARGE (CUMECS) | HFL (M) | VELOCITY (M/S) | SCOUR LEVEL (M) | SBC (T/M ²) | LOW BED LEVEL (M) | FOUNDING LEVEL (M) |
| 1 | 57/2 | 74.046 | 202.036 | 2.721 | 197.420 | 20 | 199.686 | 194.686 |

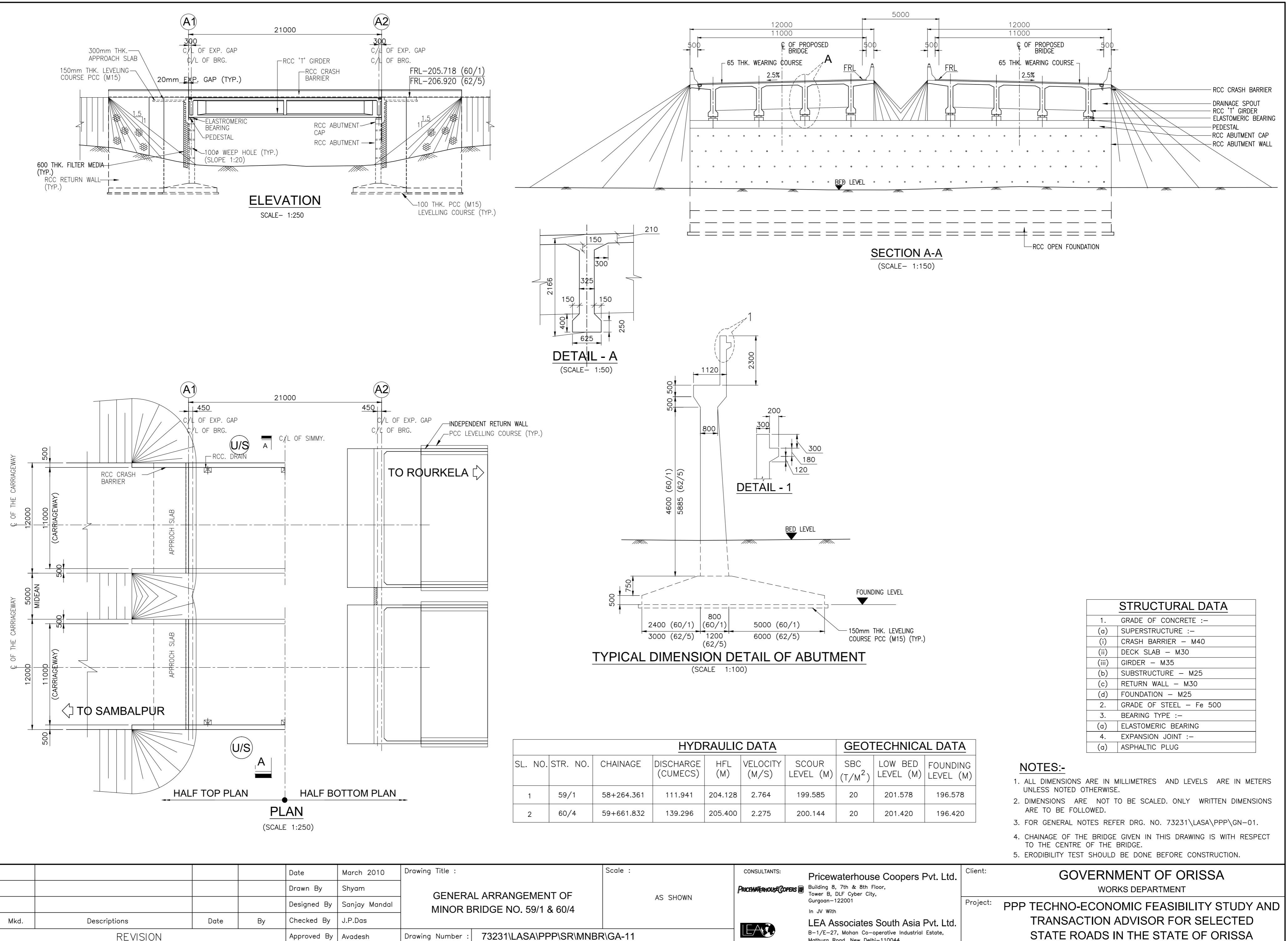
STRUCTURAL DATA

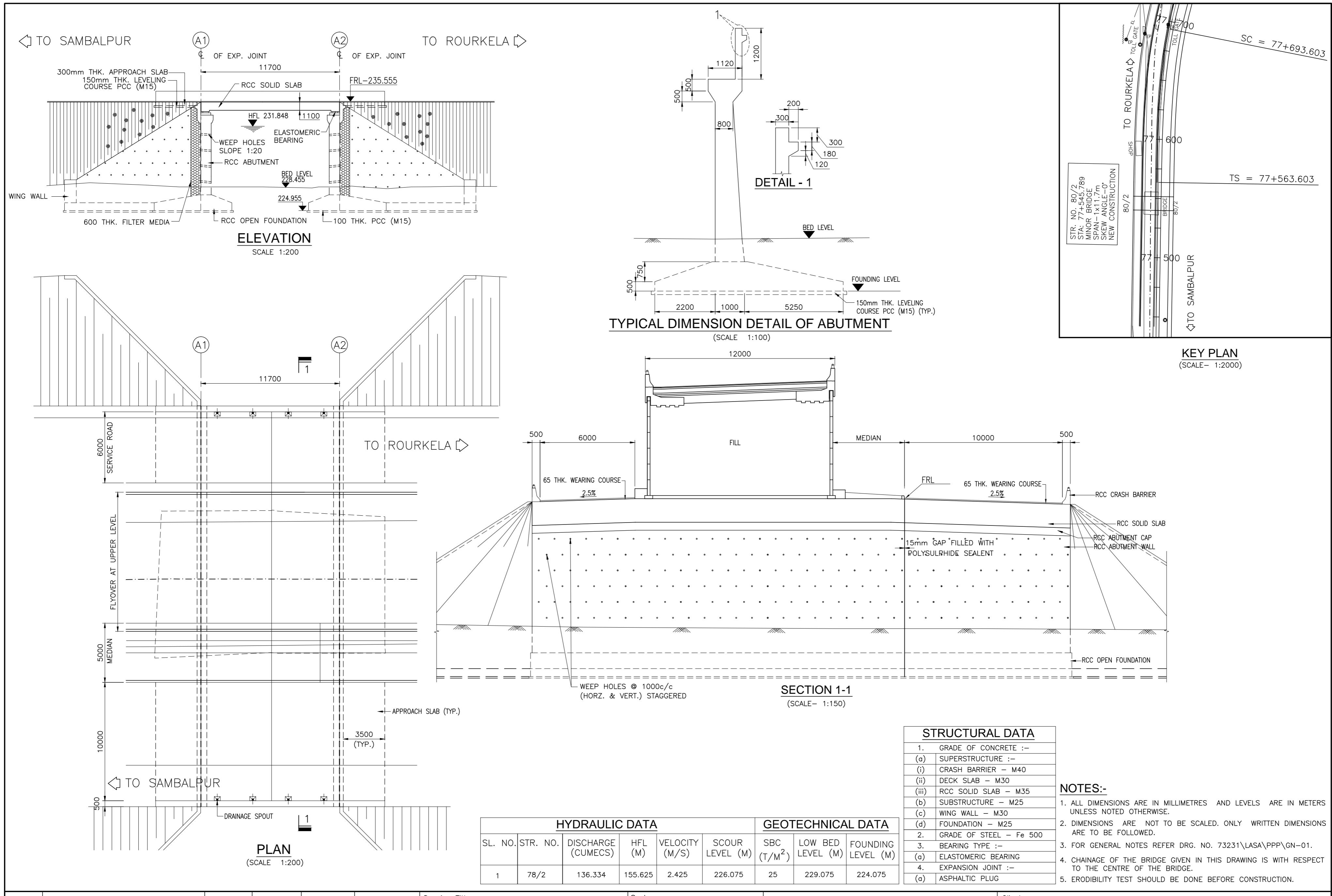
- GRADE OF CONCRETE :-
 - SUPERSTRUCTURE :-
 - CRASH BARRIER - M40
 - DECK SLAB - M30
 - GIRDER - M35
 - SUBSTRUCTURE - M25
 - RETURN WALL - M30
 - FOUNDATION - M25
- GRADE OF STEEL - Fe 500
- BEARING TYPE :-
 - ELASTOMERIC BEARING
- EXPANSION JOINT :-
 - ASPHALTIC PLUG

NOTES:-

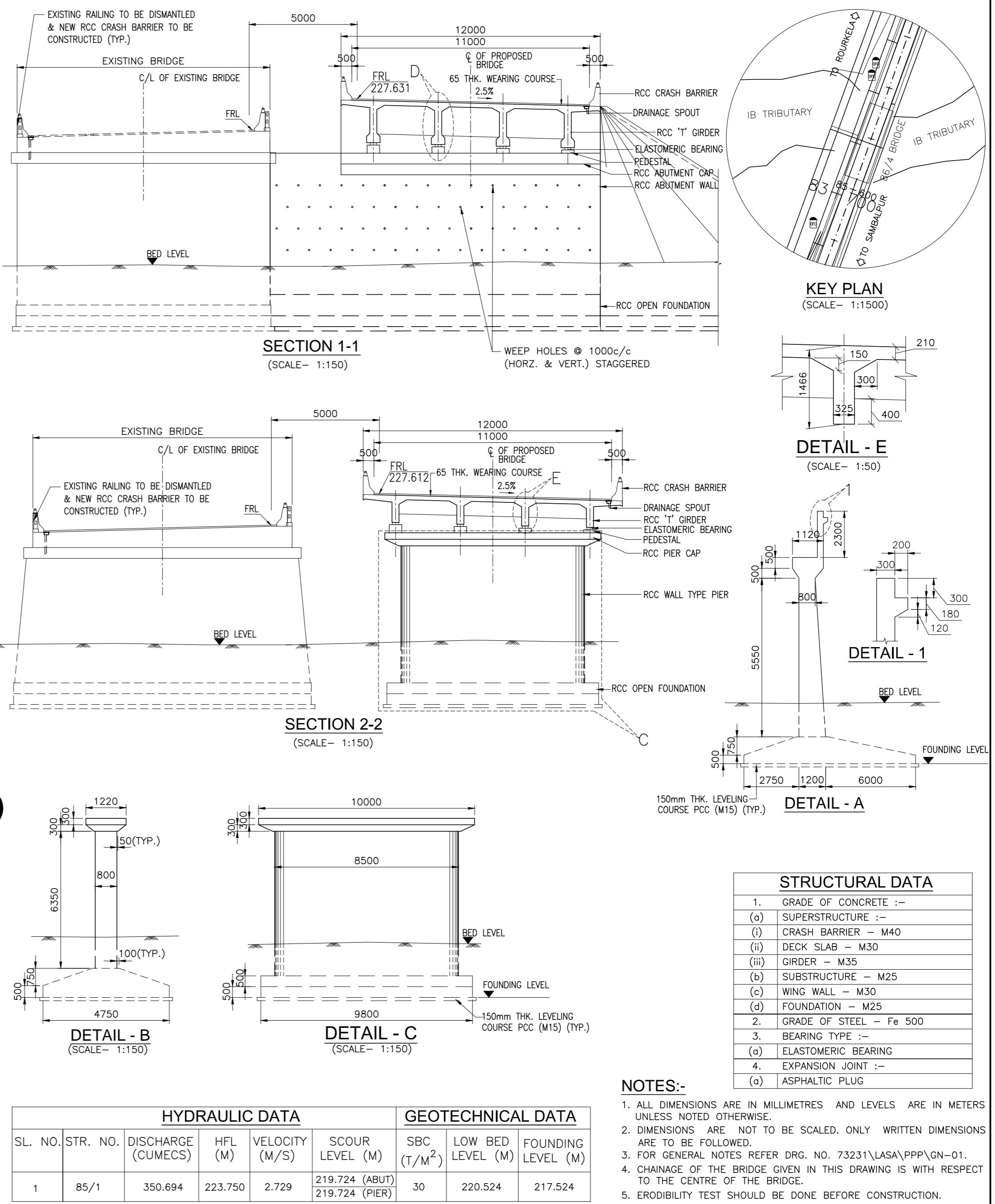
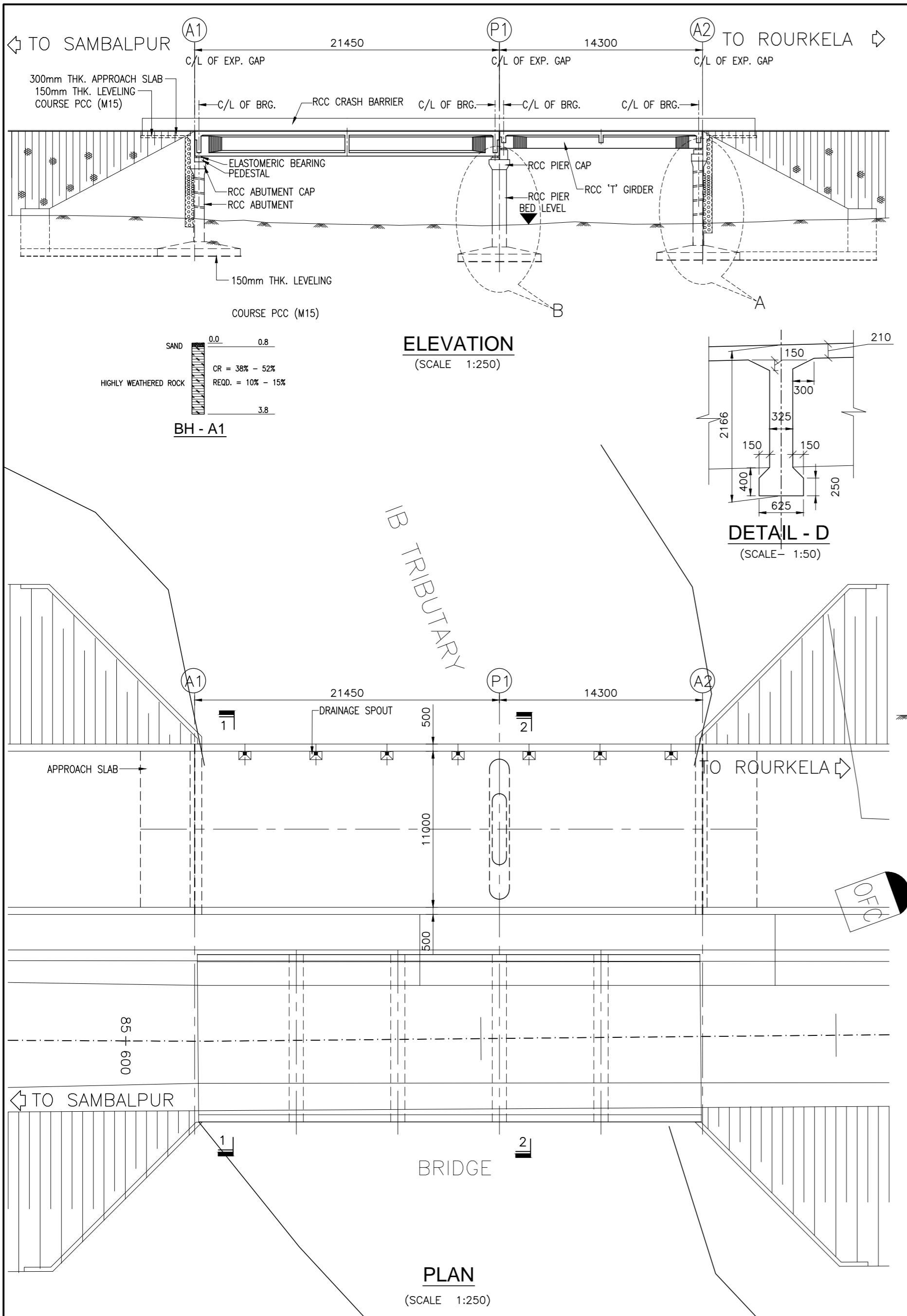
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
- CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
- ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | | | | | | |
|------|--------------|------|-------------|------------|---|---------------------|--|--|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MINOR BRIDGE NO. 57/2 AT CH: 56+720.762 | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| | REVISION | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\MBR\GA-10 | | | |

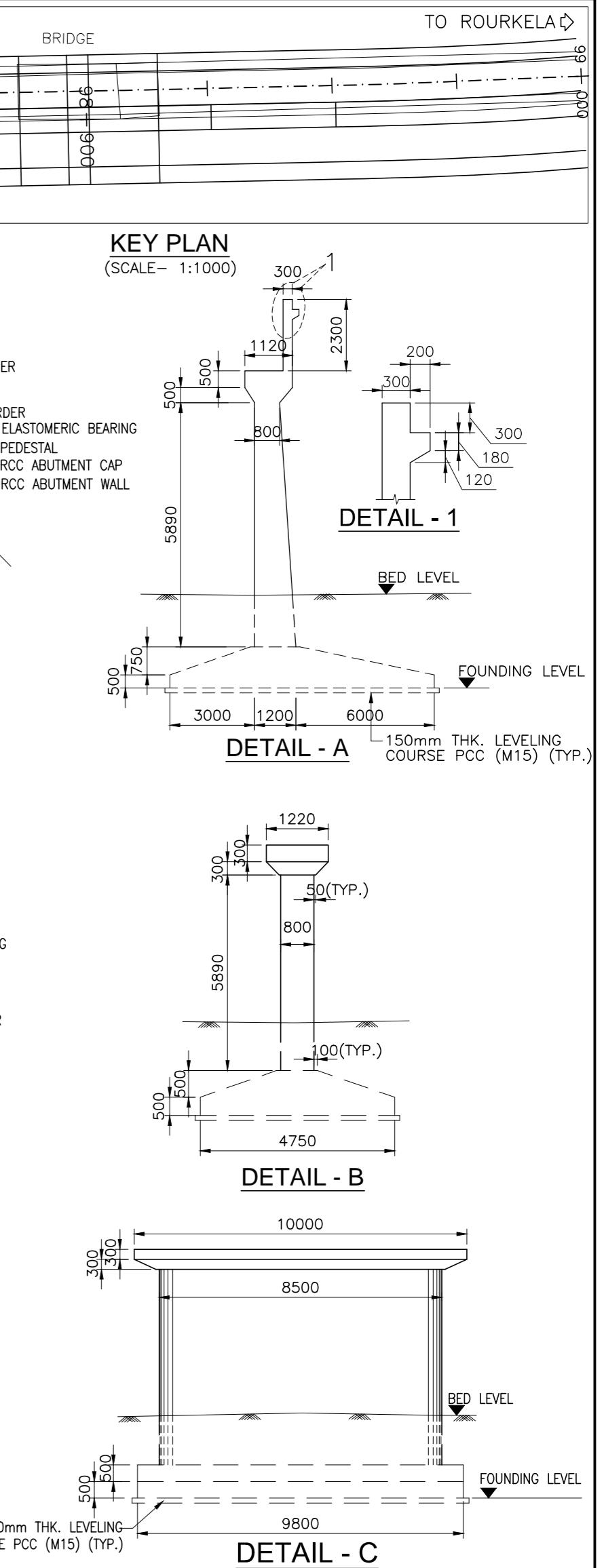
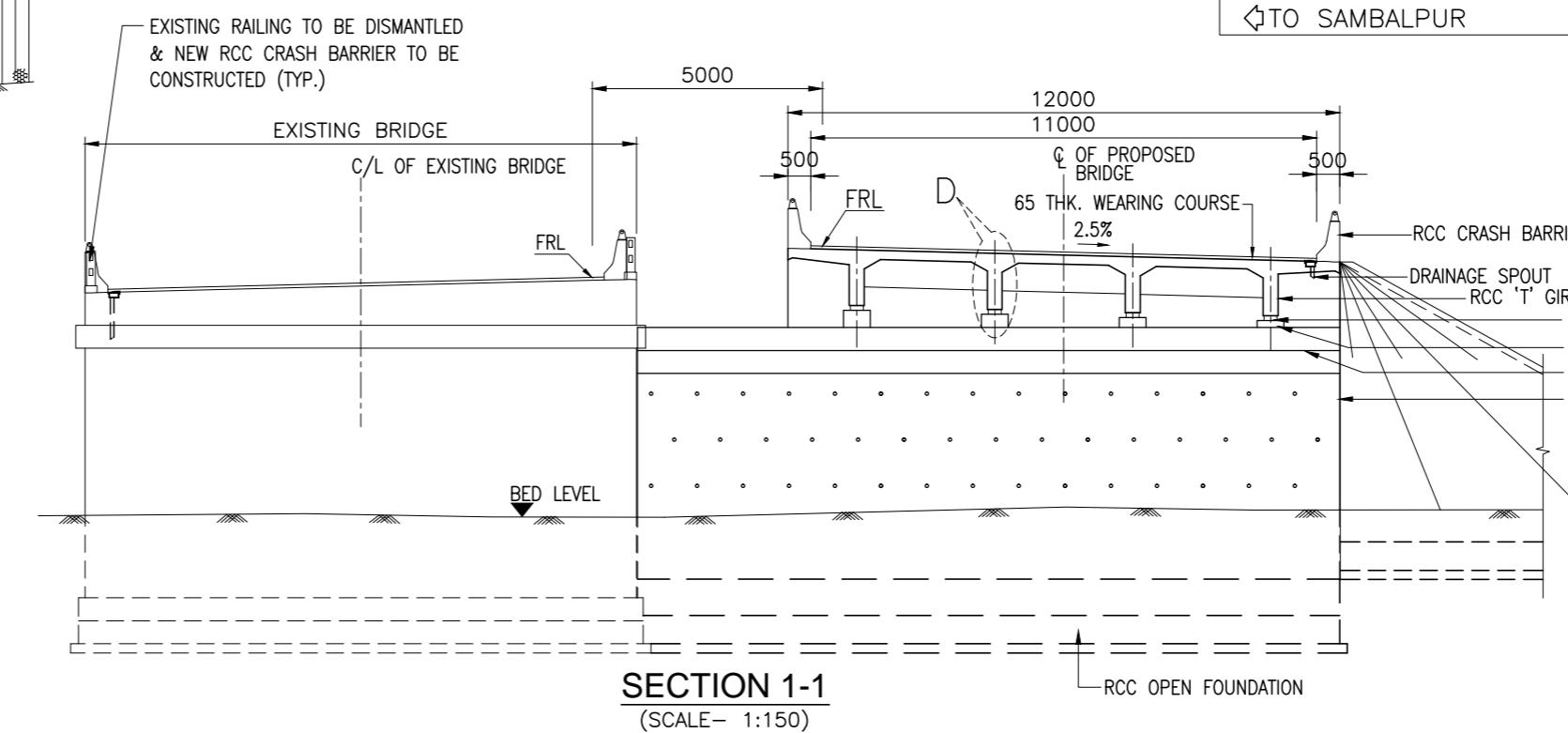
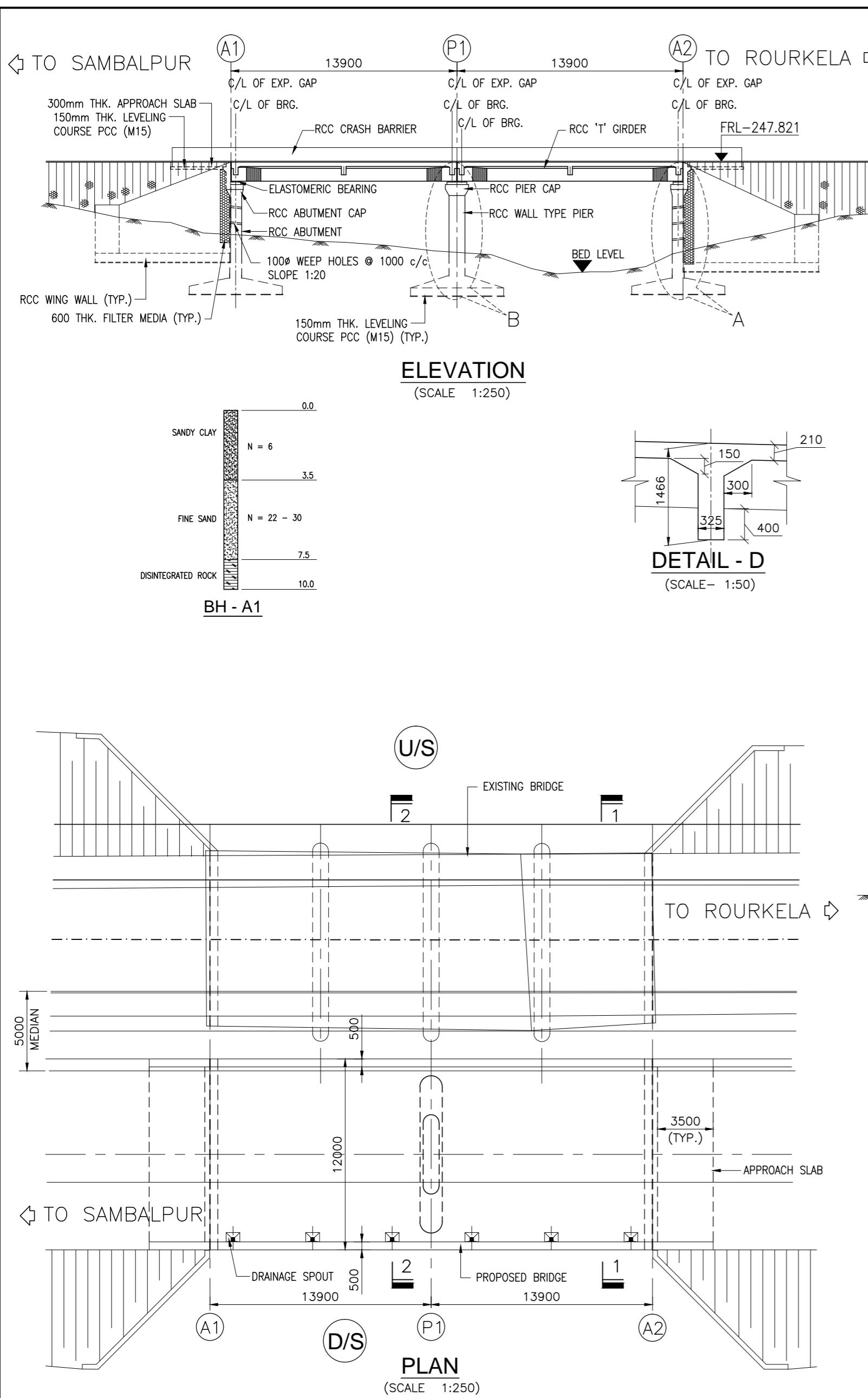




| | | | | | | | | | | |
|------|--------------|-------------|---------------|---|----------------|-----------------------------|--------------|--|---------|--|
| | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MINOR BRIDGE NO. 78/2 AT CH. 77+827.634 | Drawing Number | 73231\LASA\PPP\SR\MBR\GA-12 | CONSULTANTS: | Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Majlana Road, New Delhi-110044. | Client: | GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | Drawn By | Joy | | Scale : | AS SHOWN | | | | |
| | | Designed By | Sanjay Mandal | | | | | | | |
| Mkd. | Descriptions | Date | By | | Checked By | J.P.Das | | | | |
| | REVISION | | | | Approved By | Avadesh | | | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |



| | | | | | | | | |
|------|--------------|-------------|---------------|---|-------------------------|--|-------------------------|---|
| | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MINOR BRIDGE NO. 85/1 AT CH. 84+011.251 | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: Project: | GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | Drawn By | Joy | | | | | PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| | | Designed By | Sanjay Mandal | | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | |
| | REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LSA\PPP\SR\MBR\GA-13 | | |

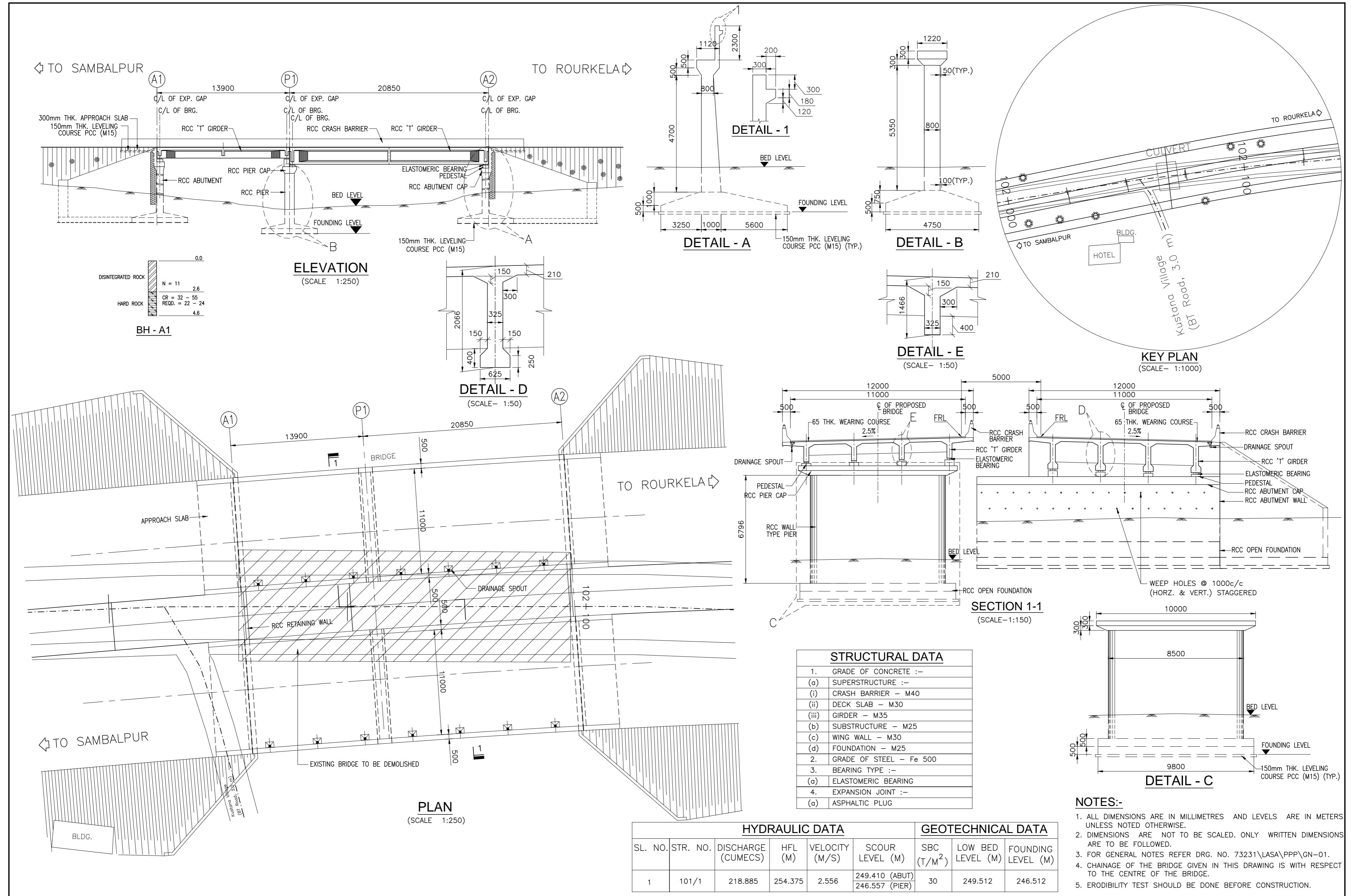


| HYDRAULIC DATA | | | | GEOTECHNICAL DATA | | | | |
|----------------|----------|--------------------|---------|-------------------|----------------------------------|-------------------------|---|--------------------|
| SL. NO. | STR. NO. | DISCHARGE (CUMECS) | HFL (M) | VELOCITY (M/S) | SCOUR LEVEL (M) | SBC (T/M ²) | LOW BED LEVEL (M) | FOUNDING LEVEL (M) |
| 1 | 100/1 | 241.187 | 246.188 | 2.697 | 241.983 (ABUT) 239.566 (PIER) | 20 | 242.831 238.331 (ABUT) 237.331 (PIER) | |

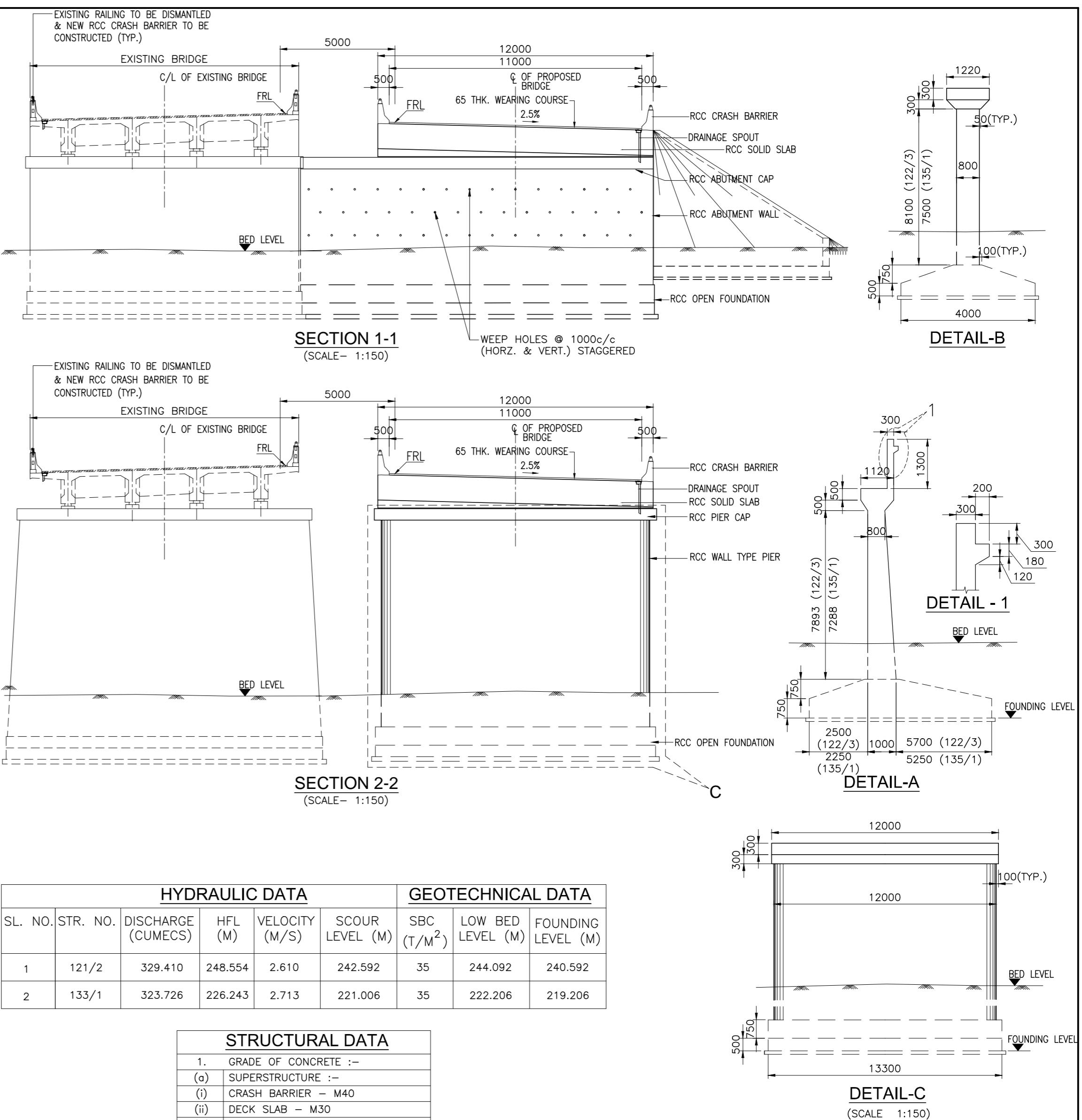
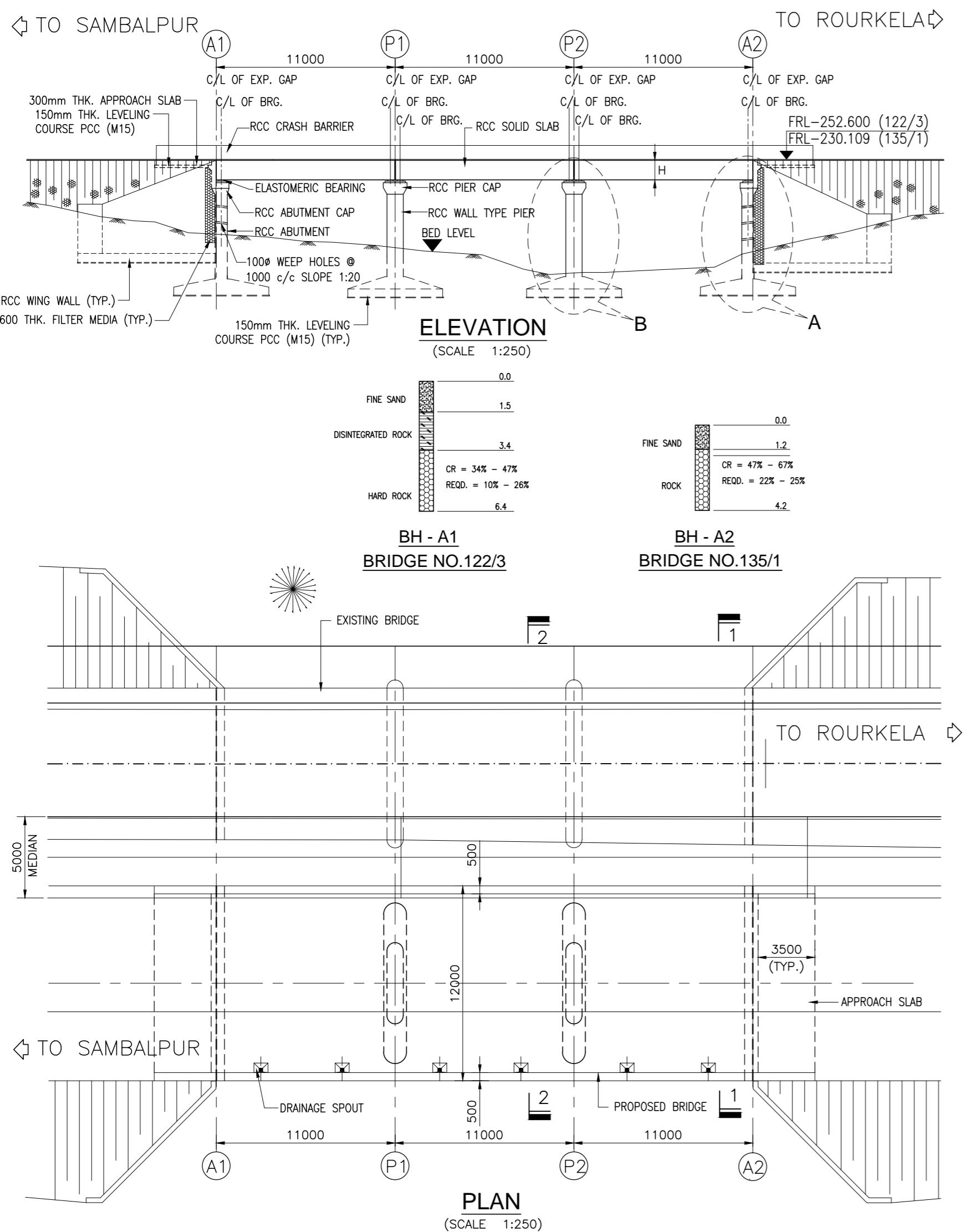
| STRUCTURAL DATA | | | | | | | | | | |
|----------------------------|--|--|--|--|--|--|--|--|--|--|
| 1. GRADE OF CONCRETE :- | | | | | | | | | | |
| (a) SUPERSTRUCTURE :- | | | | | | | | | | |
| (i) CRASH BARRIER - M40 | | | | | | | | | | |
| (ii) DECK SLAB - M30 | | | | | | | | | | |
| (iii) GIRDER - M35 | | | | | | | | | | |
| (b) SUBSTRUCTURE - M25 | | | | | | | | | | |
| (c) WING WALL - M30 | | | | | | | | | | |
| (d) FOUNDATION - M25 | | | | | | | | | | |
| 2. GRADE OF STEEL - Fe 500 | | | | | | | | | | |
| 3. BEARING TYPE :- | | | | | | | | | | |
| (a) ELASTOMERIC BEARING | | | | | | | | | | |
| 4. EXPANSION JOINT :- | | | | | | | | | | |
| (a) ASPHALTIC PLUG | | | | | | | | | | |

- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 - DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
 - FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
 - CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.
 - ERODIBILITY TEST SHOULD BE DONE BEFORE CONSTRUCTION.

| | | | | | | | | |
|------|--------------|------|-------------|---------------|--|--|--|--|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MINOR BRIDGE NO. 100/1 AT CH. 99+184.769 | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | Drawn By | Joy | | | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| | REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SRMNBR\GA-14 | | |



| | | | | | | | | | |
|----------|--------------|------|-------------|---------------|---|------------------------------|--|--|---|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MINOR BRIDGE NO. 101/1 AT CH. 100+451.594 | Scale : AS SHOWN | CONSULTANTS: PRICEMATERHOUSE COOPERS  In JV With LEA  | Client: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| | | | Drawn By | Joy | | | | | |
| | | | Designed By | Sanjay Mandal | | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | | |
| REVISION | | | Approved By | Avadesh | Drawing Number : | 73231\LASA\PPP\SR\MNBR\GA-15 | | | |



| HYDRAULIC DATA | | | | GEOTECHNICAL DATA | | | | |
|----------------|----------|--------------------|---------|-------------------|-----------------|-------------------------|-------------------|--------------------|
| SL. NO. | STR. NO. | DISCHARGE (CUMECS) | HFL (M) | VELOCITY (M/S) | SCOUR LEVEL (M) | SBC (T/M ²) | LOW BED LEVEL (M) | FOUNDING LEVEL (M) |
| 1 | 121/2 | 329.410 | 248.554 | 2.610 | 242.592 | 35 | 244.092 | 240.592 |
| 2 | 133/1 | 323.726 | 226.243 | 2.713 | 221.006 | 35 | 222.206 | 219.206 |

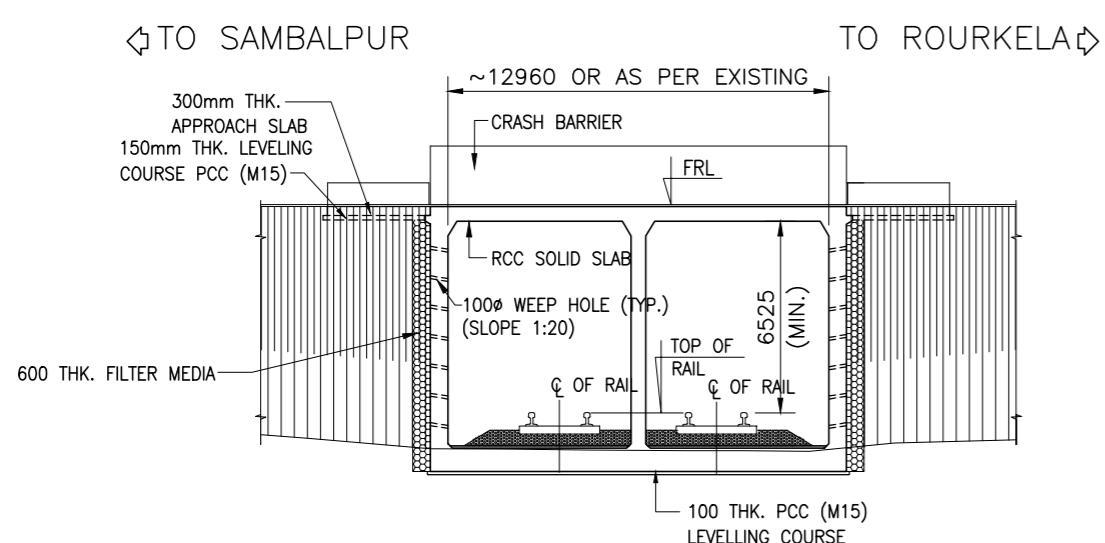
| STRUCTURAL DATA | |
|-----------------|-------------------------|
| 1. | GRADE OF CONCRETE :- |
| (a) | SUPERSTRUCTURE :- |
| (i) | CRASH BARRIER - M40 |
| (ii) | DECK SLAB - M30 |
| (iii) | RCC SOLID SLAB - M35 |
| (b) | SUBSTRUCTURE - M25 |
| (c) | WING WALL - M30 |
| (d) | FOUNDATION - M25 |
| 2. | GRADE OF STEEL - Fe 500 |
| 3. | BEARING TYPE :- |
| (a) | ELASTOMERIC BEARING |
| 4. | EXPANSION JOINT :- |
| (a) | ASPHALTIC PLUG |

SCHEDULE OF MINOR BRIDGES TO BE WIDENED

| SL. NO. | STRUCTURE NO. | PROPOSED CHAINAGE | EXISTING STRUCTURE DESCRIPTION | EXISTING SPAN ARRANGEMENT | WIDTH OF PROPOSED BRIDGE | | H (mm.) |
|---------|---------------|-------------------|---|---------------------------|--------------------------|-----------------|---------|
| | | | | | LEFT SIDE* (m) | RIGHT SIDE* (m) | |
| 1 | 121/2 | 120+323.524 | RCC 'T' Girder & RCC Slab with SM Abutment, Pier on open foundation | 3 x 11.0 | 12.0 | - | 1000 |
| 2 | 133/1 | 132+825.377 | RCC 'T' Girder & RCC Slab with SM Abutment, Pier on open foundation | 3 x 11.0 | - | 12.0 | 1000 |

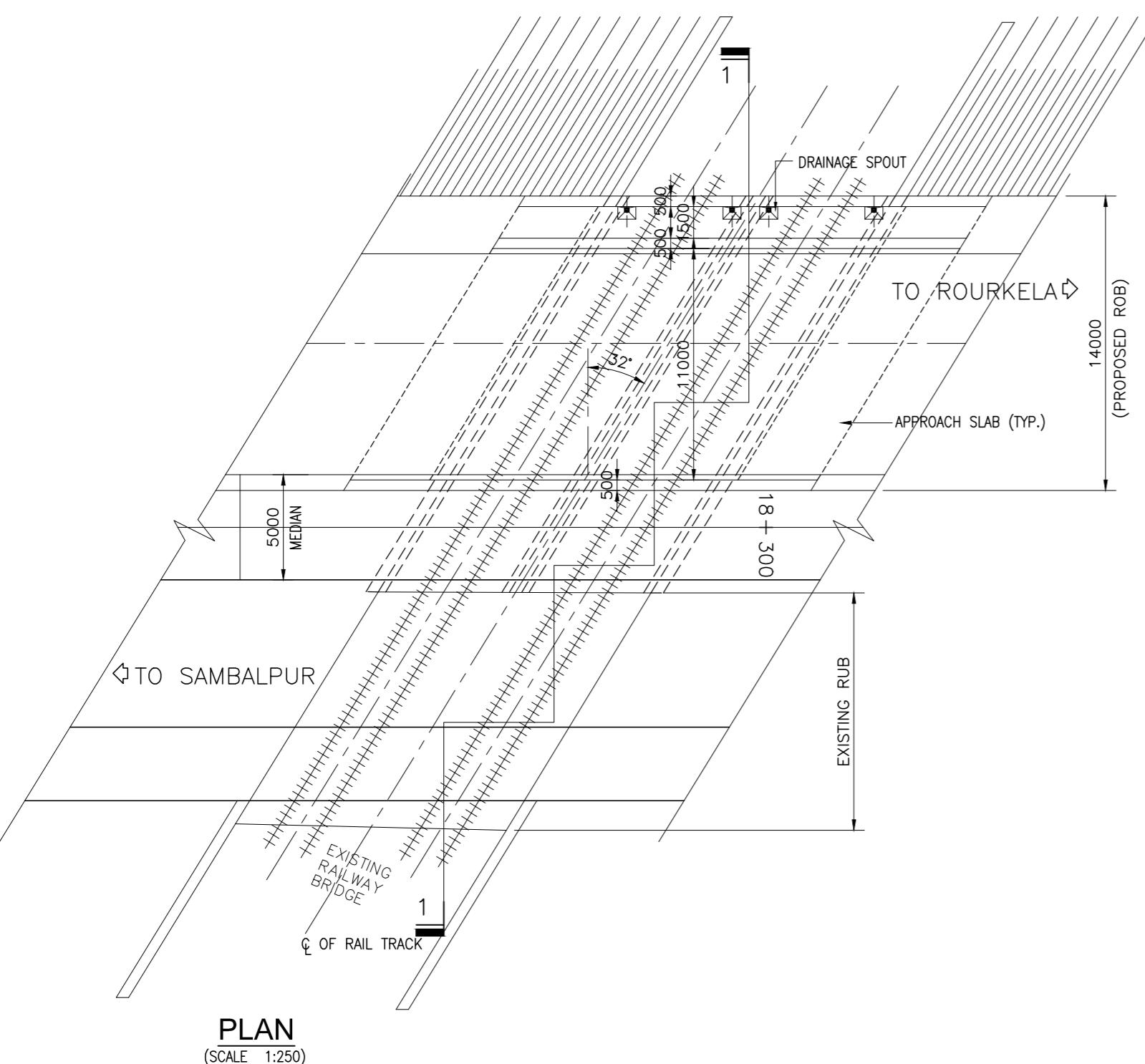
NOTE: (*) SIDES ARE MARKED WITH RESPECT TO INCREASING CHAINAGE. LEFT & RIGHT SIDE DIMENSIONS ARE TO BE CHECKED AT SITE BEFORE COMMENCEMENT OF WORK.

| | | | | | | | |
|------|--------------|------|------------|---|------------------------------|--|--|
| | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF MINOR BRIDGE NO. 122/3 & 135/1 | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | |
| | REVISION | | | Approved By | Avadesh | | |
| | | | | Drawing Number : | 73231\LASA\PPP\SRM\NBR\GA-16 | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |

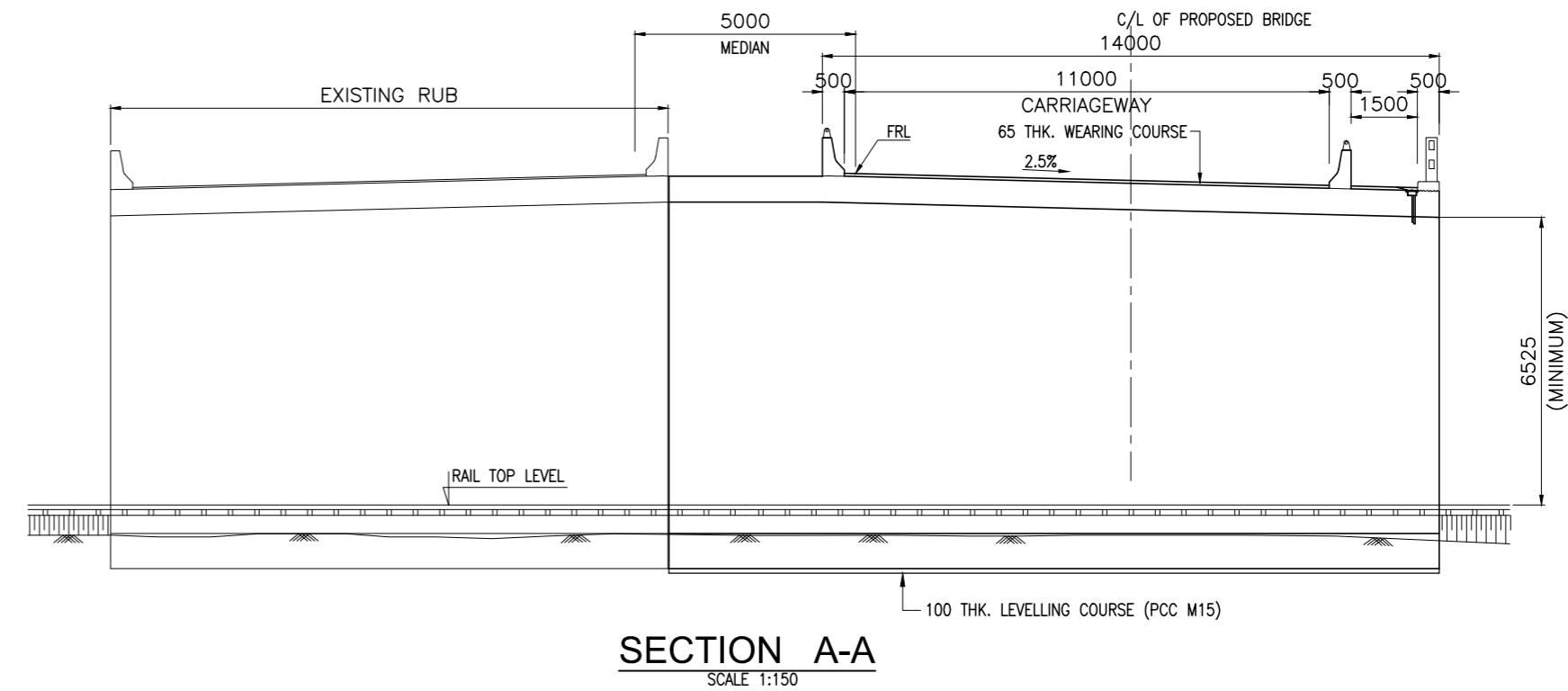


ELEVATION

(SCALE 1:250)



PLAN

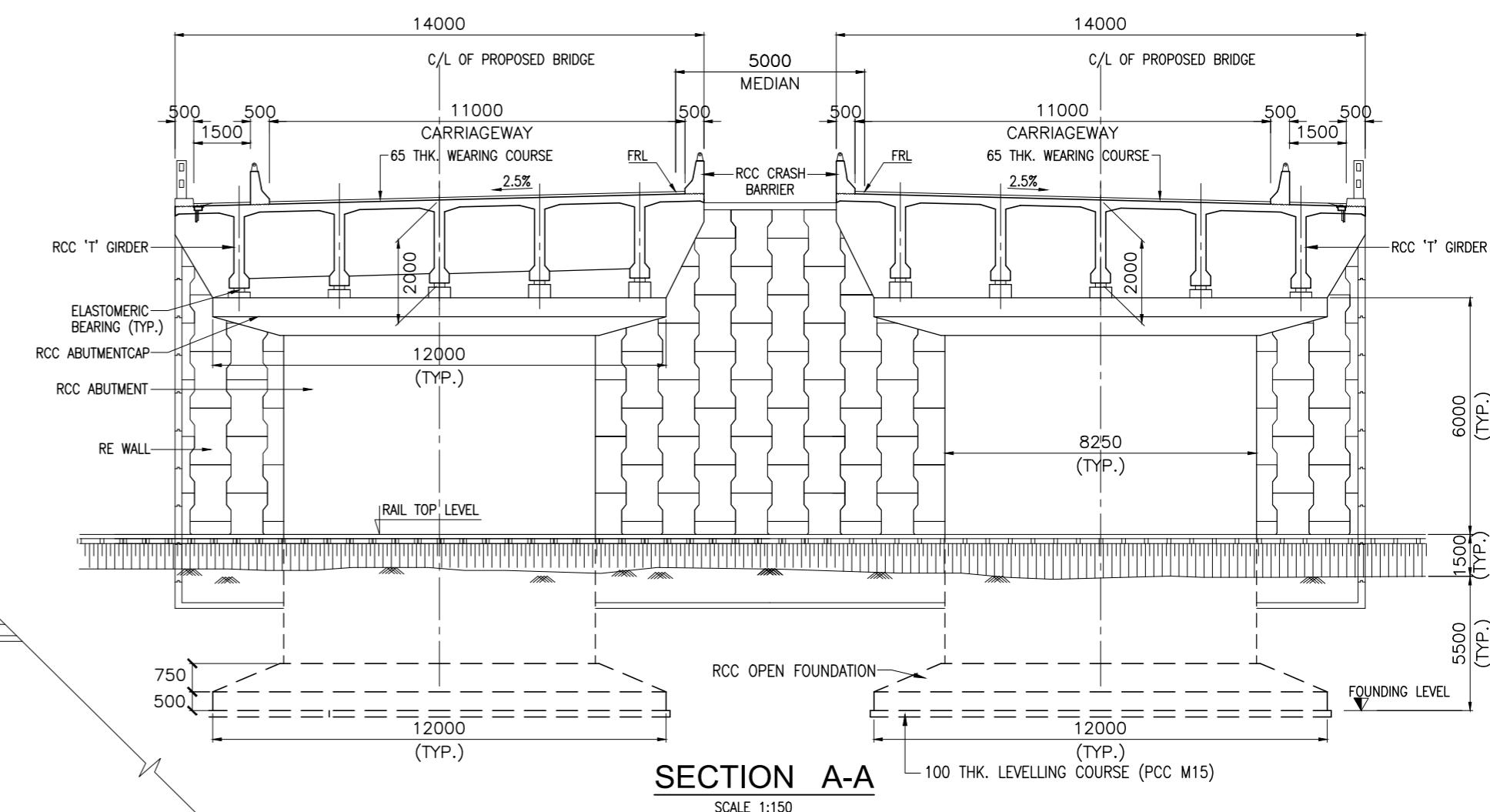
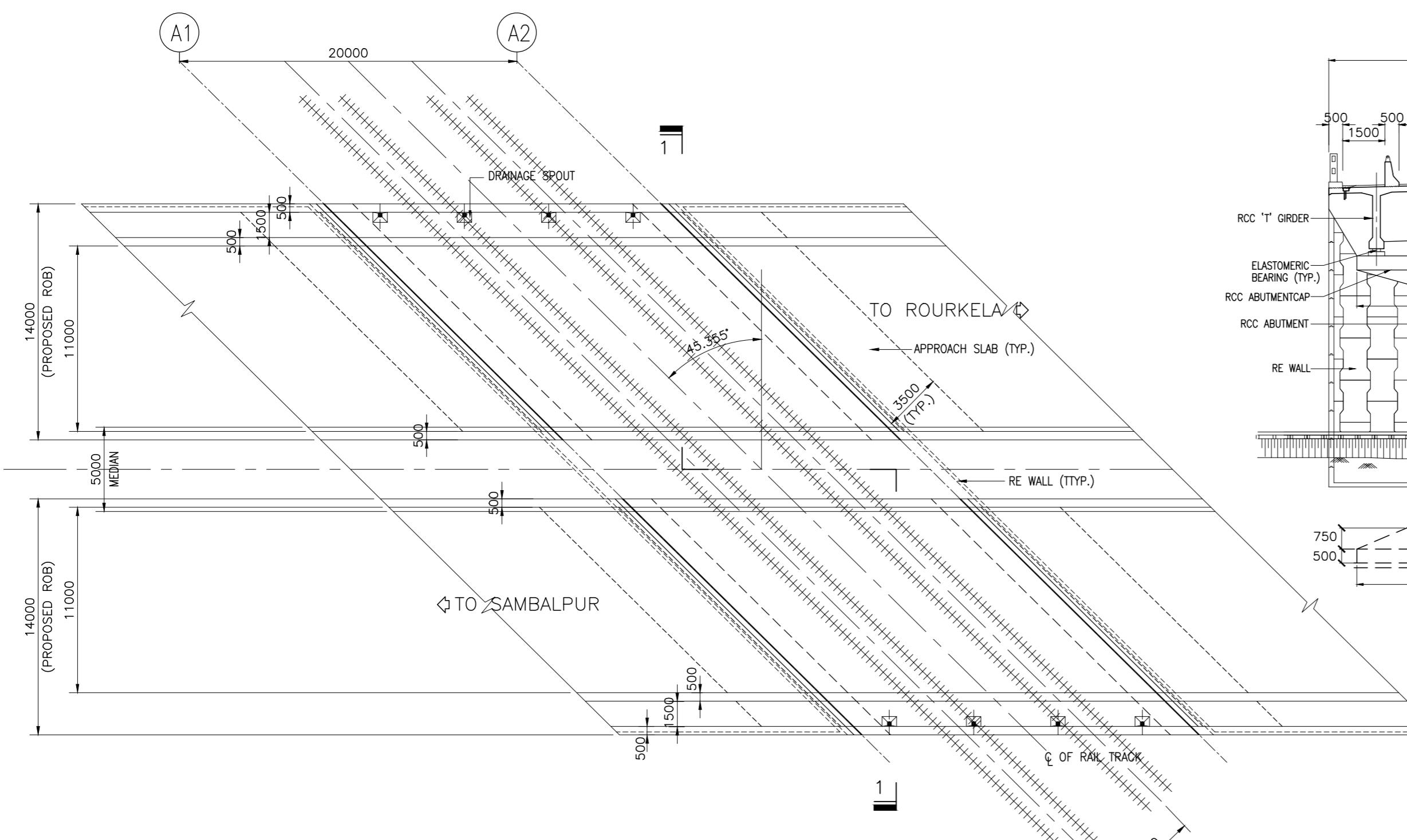
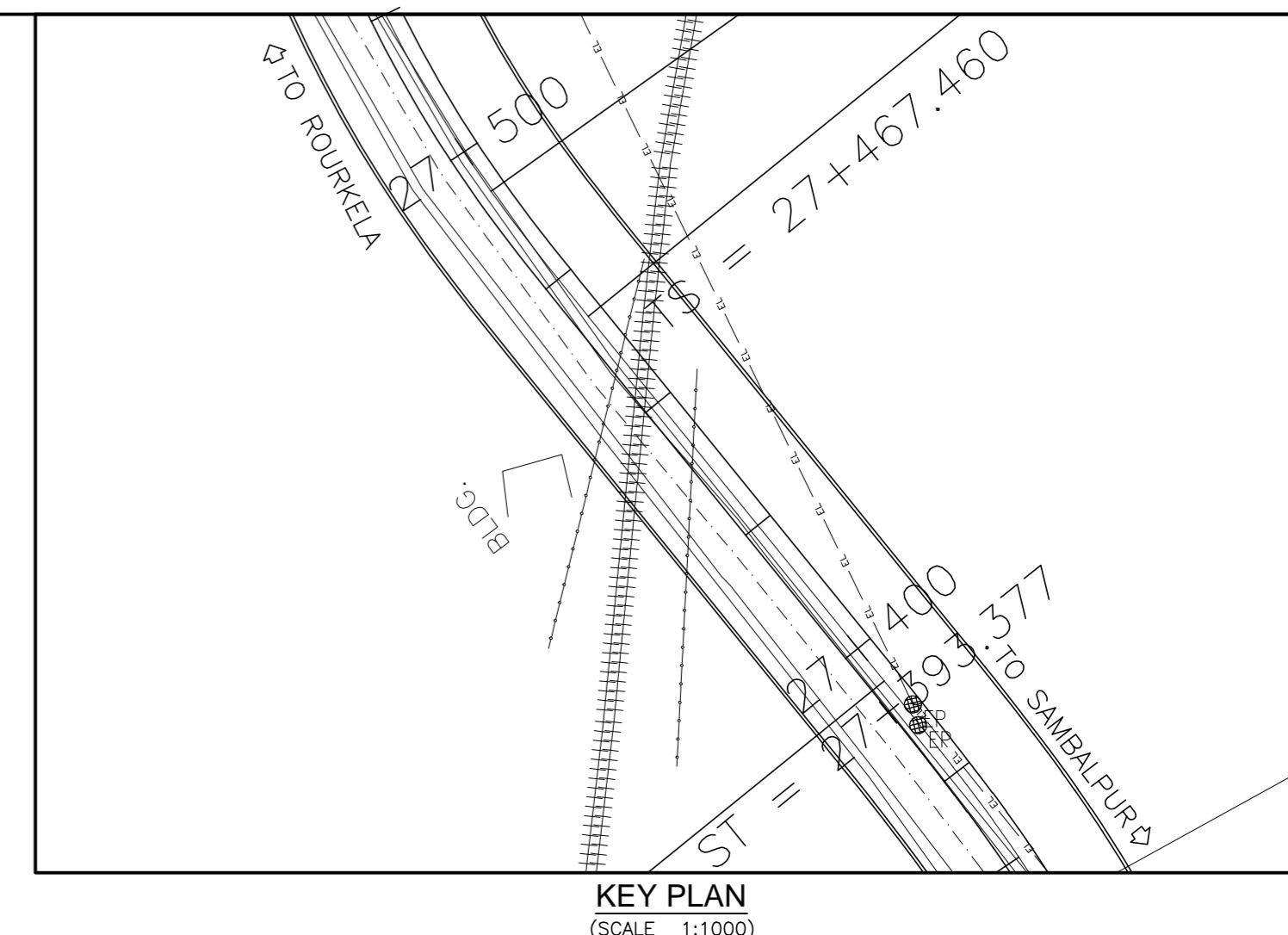
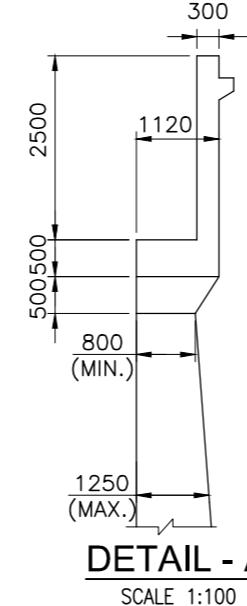
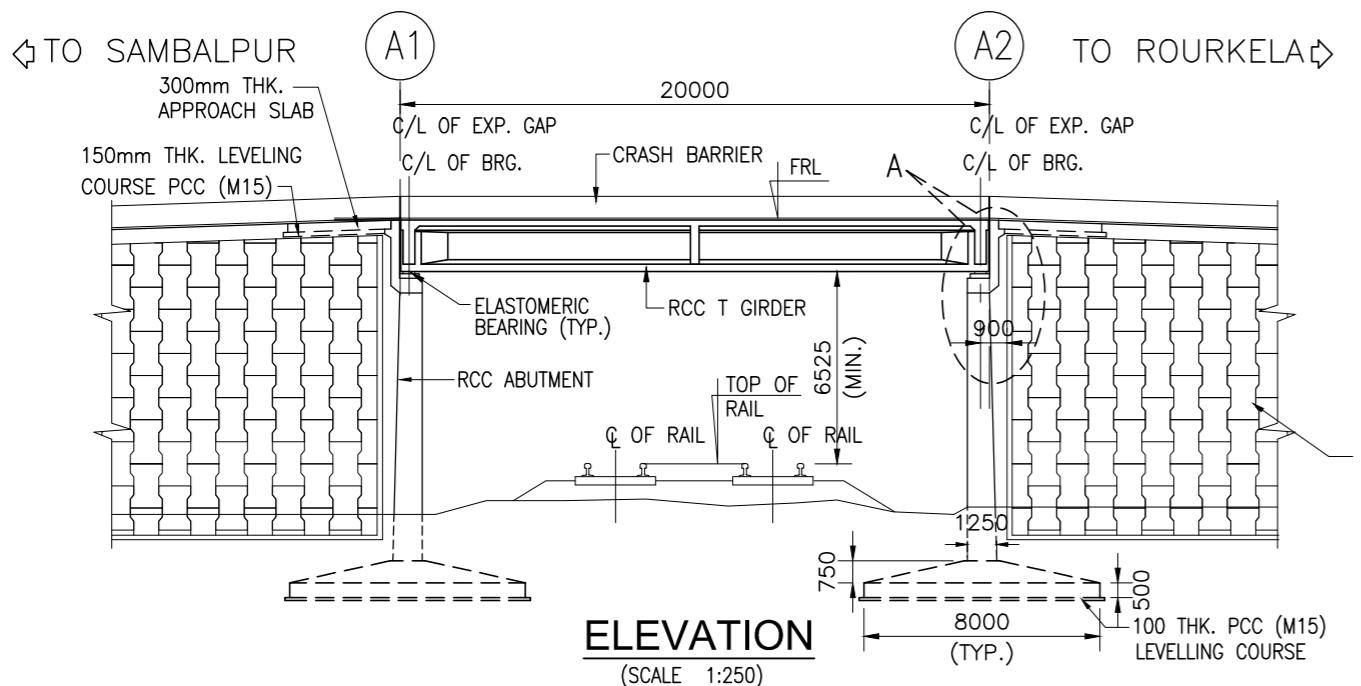


SECTION A-A

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
 3. FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
 4. CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.

| | | | | | | | | | |
|----------|--------------|------|----|-------------|---------------|---|-----------------------------|---|--|
| | | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF ROB - 1 AT CHAINAGE 18+270.350 | Scale : AS SHOWN | CONSULTANTS: PricewaterhouseCoopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| | | | | Drawn By | Joy | | | | |
| | | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | | |
| REVISION | | | | Approved By | Avadesh | Drawing Number : | 73231\LASA\PPP\SR\ROB\GA-01 | | |



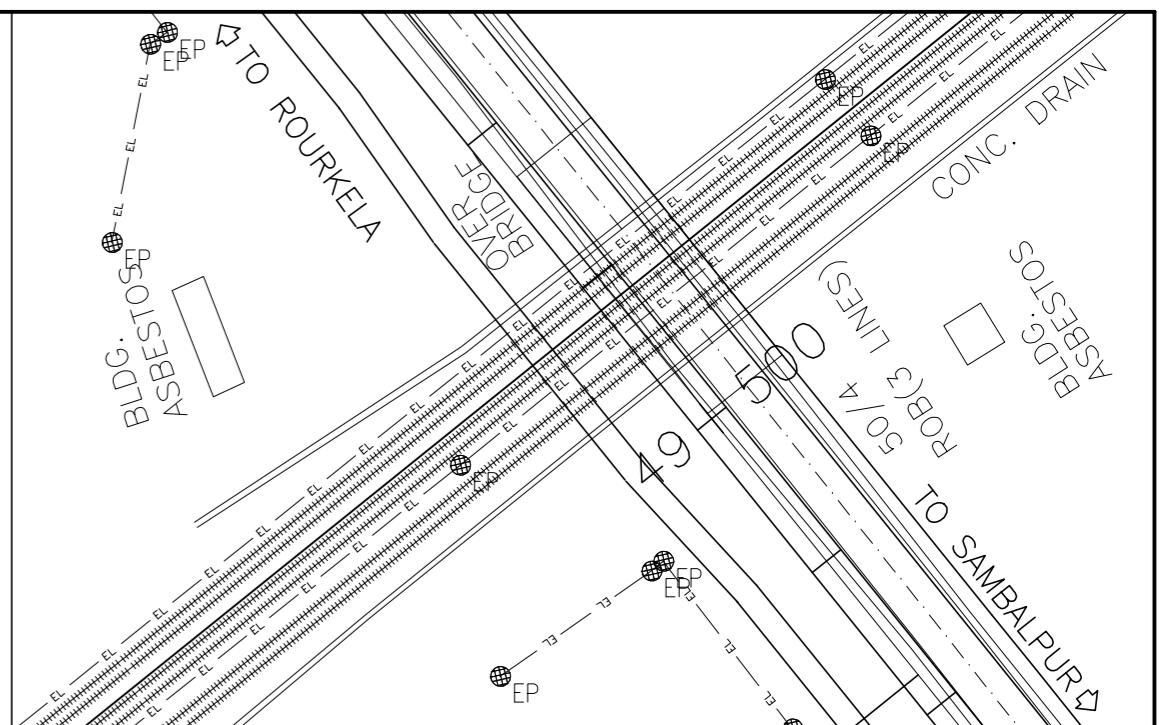
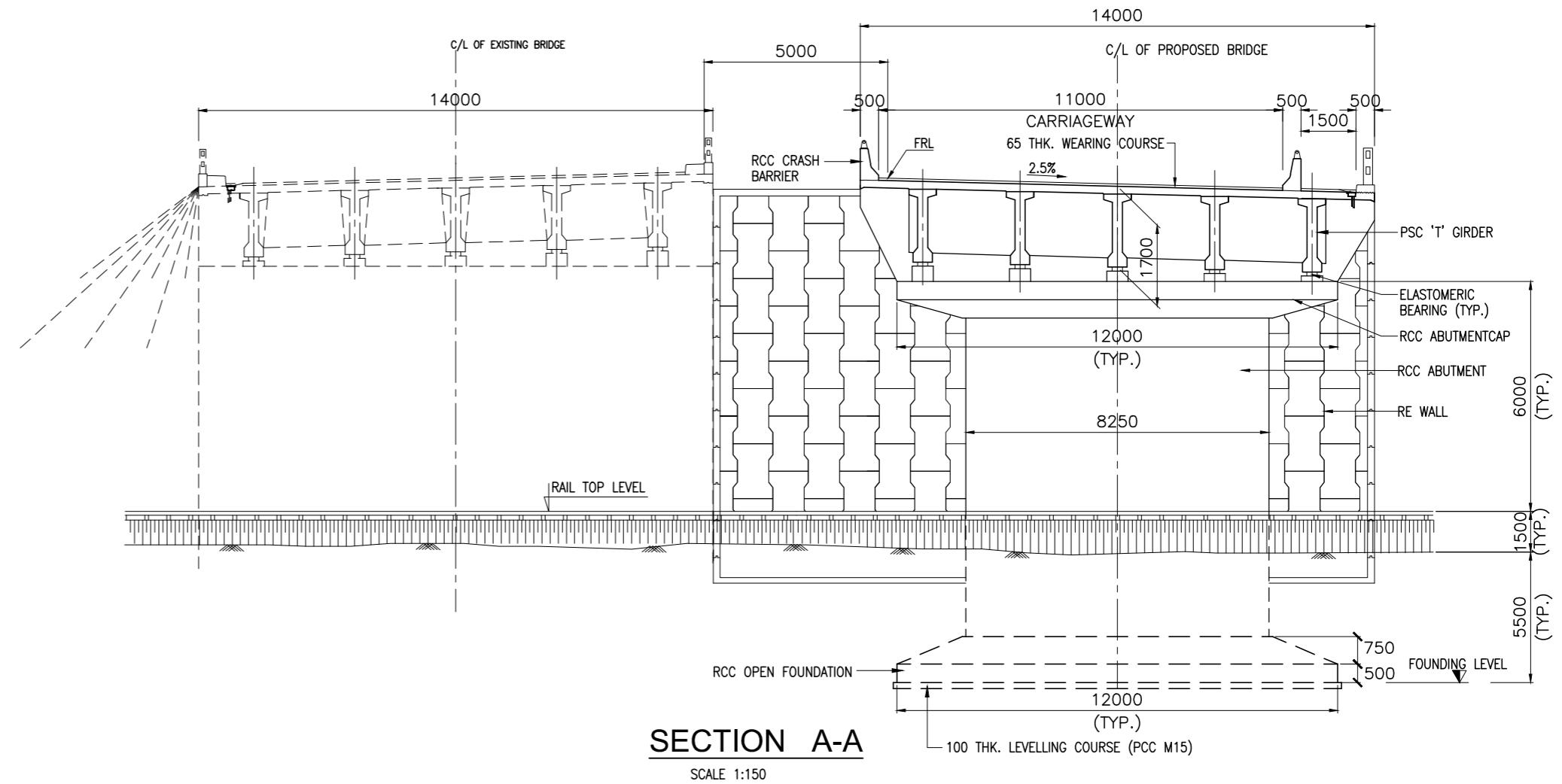
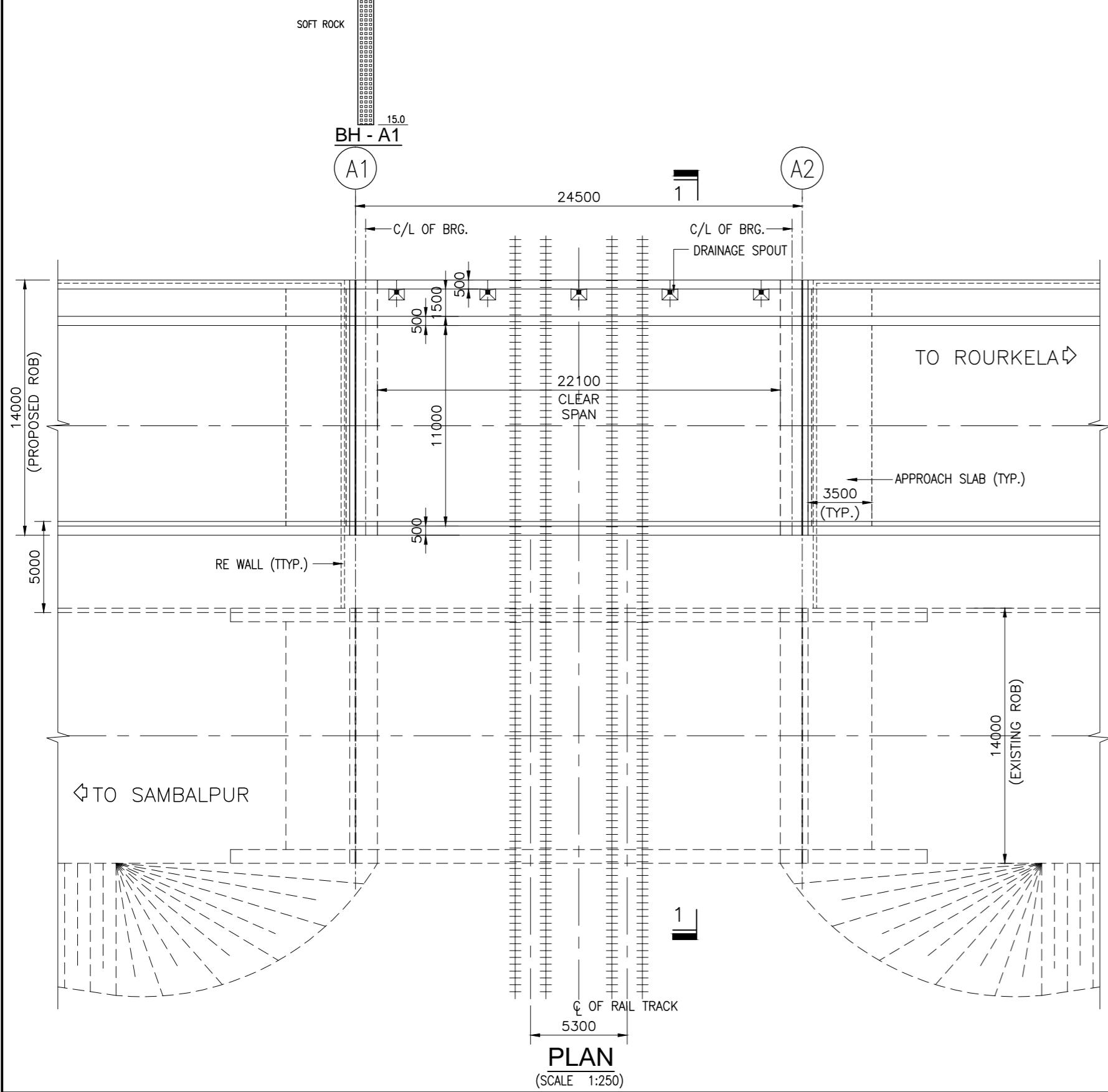
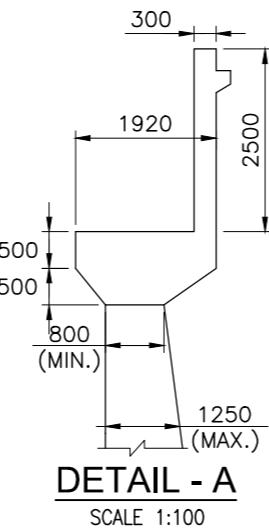
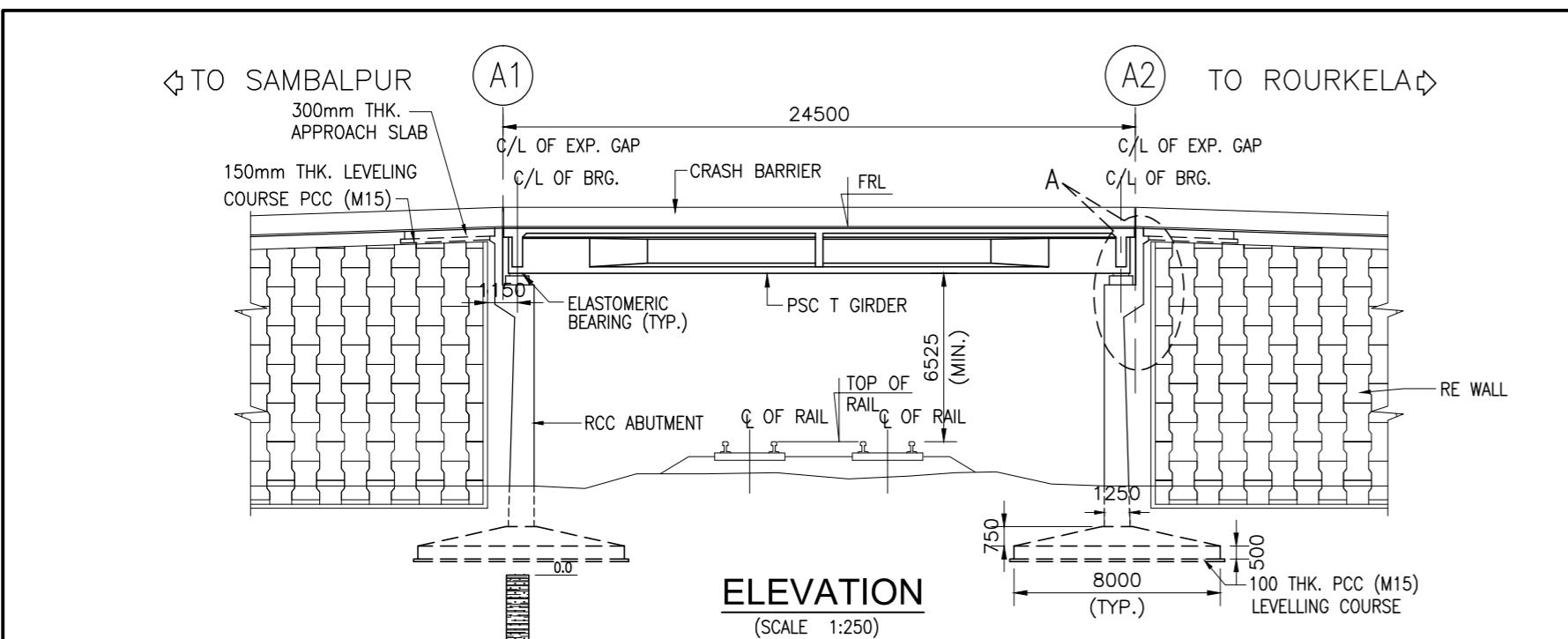
PLAN

NOTES:-

- NOTES:**

 1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
 3. FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
 4. SBC CONSIDERED AS $35t/m^2$ AT 5.5m BELOW GROUND LEVEL, SAME SHALL BE VARIFIED BEFORE CONSTRUCTION.
 5. CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.

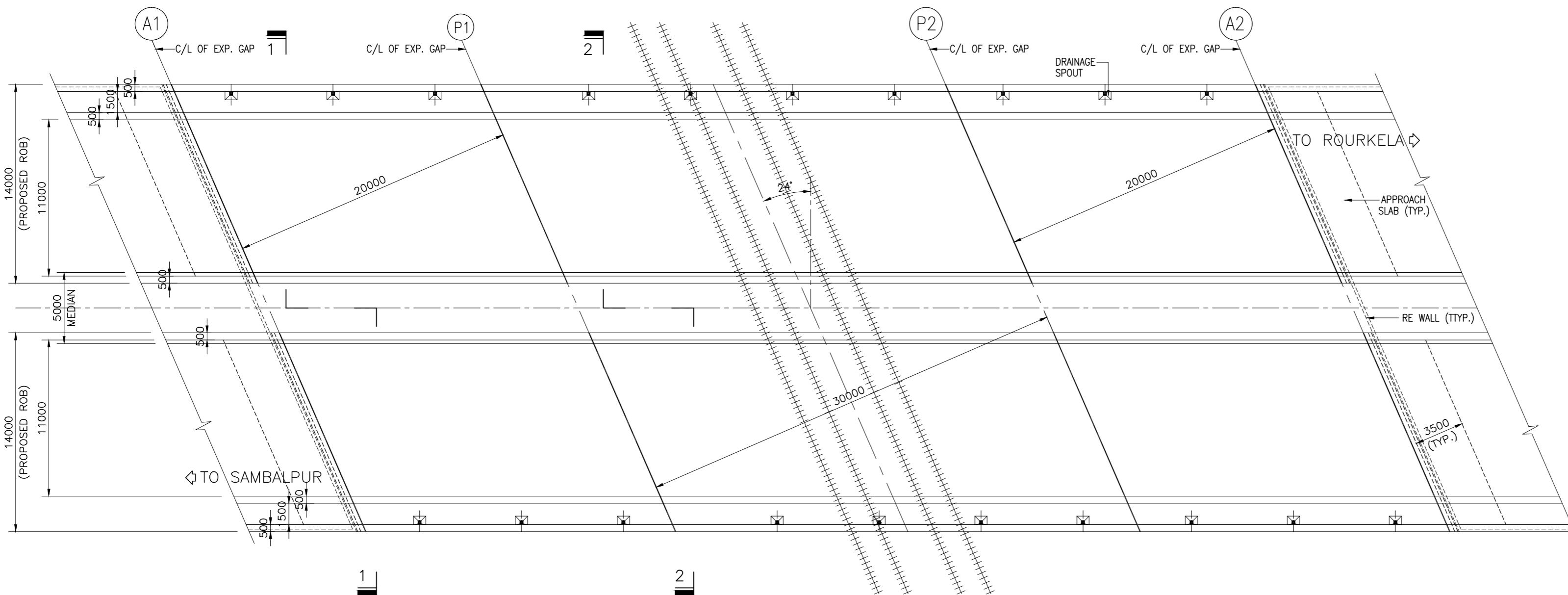
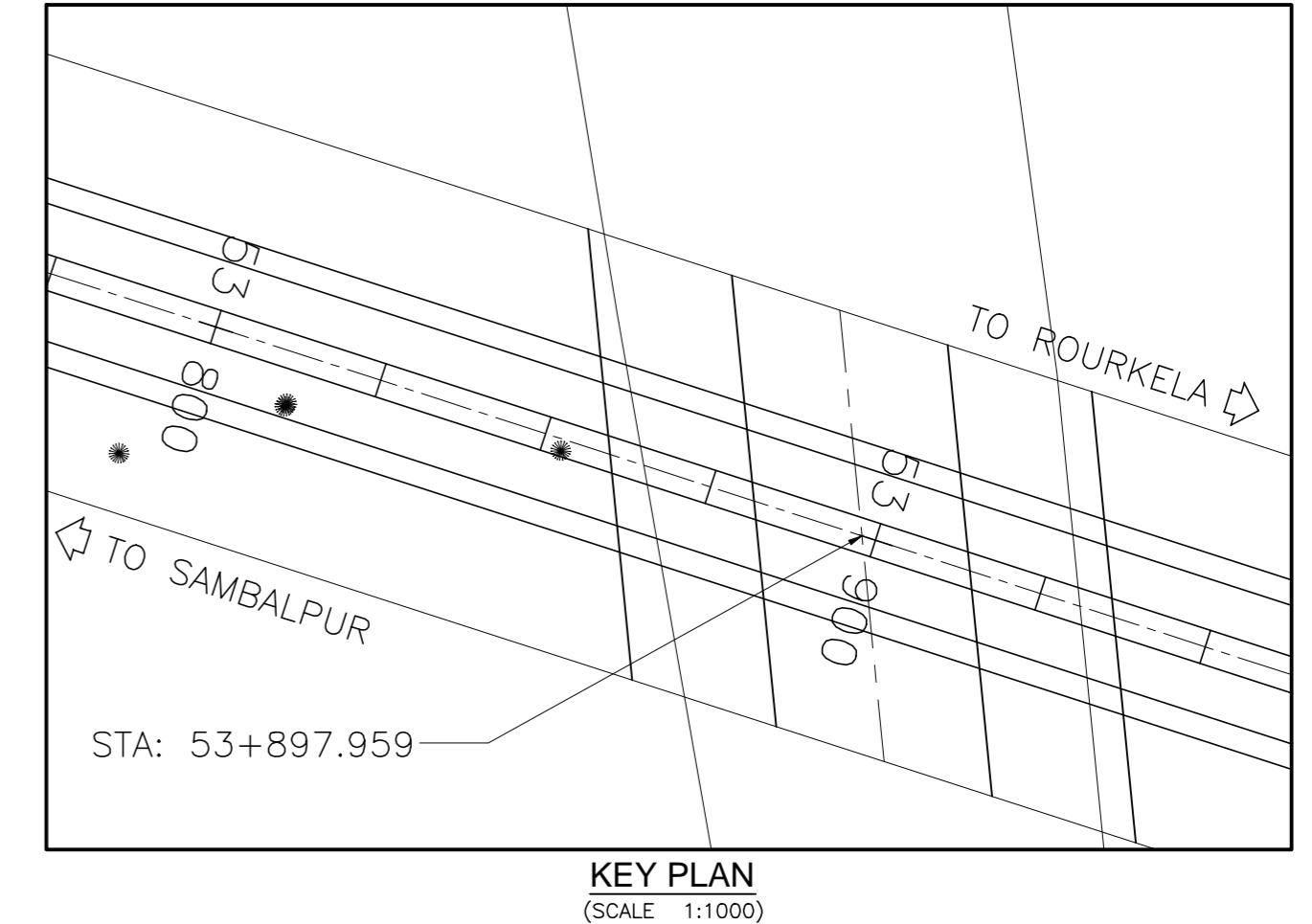
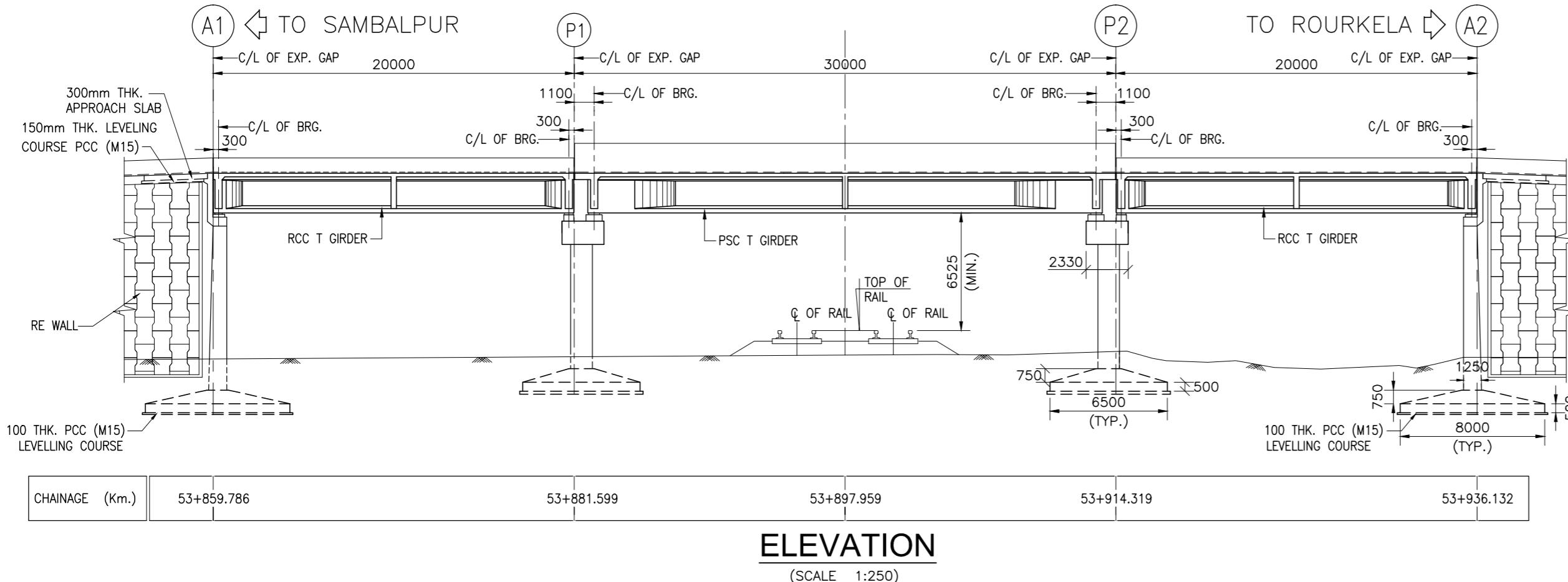
| | | | | | | | | |
|----------|--------------|------|-------------|---------------|---|-----------------------------|---|---|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF ROB - 2 AT CHAINAGE 27+449.672 | Scale : AS SHOWN | CONSULTANTS:  Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With  LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044 | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | Drawn By | Joy | | | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | |
| REVISION | | | Approved By | Avadesh | Drawing Number : | 73231\LASA\PPP\SR\ROB\GA-02 | Project: | PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
4. SBC CONSIDERED AS $35t/m^2$ AT 5.5m BELOW GROUND LEVEL, SAME SHALL BE VARIFIED BEFORE CONSTRUCTION.
5. CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.

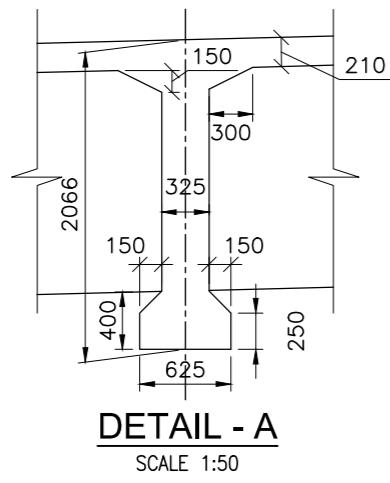
| | | | | | | | | |
|----------|--------------|------|-------------|---------------|---|-------------------------|--|--|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF ROB - 3 AT CHAINAGE 49+517.278 | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | Drawn By | Joy | | | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\ROB\GA-03 | | | |



NOTES:-

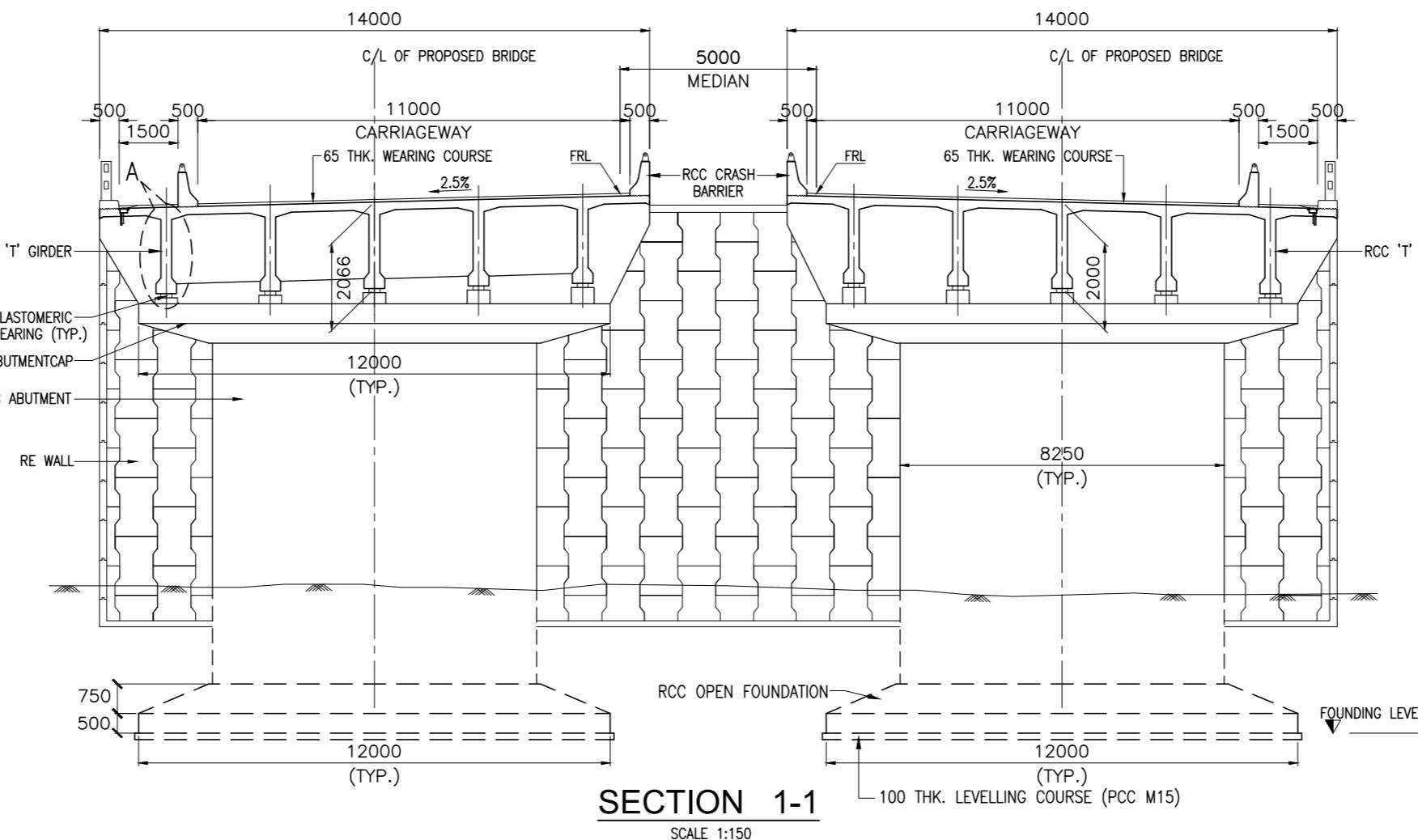
1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. FOR GENERAL NOTES REFER DRG. NO. 73231\LASA\PPP\GN-01.
4. SBC CONSIDERED AS $35t/m^2$ AT 5.5m BELOW GROUND LEVEL, SAME SHALL BE VARIFIED BEFORE CONSTRUCTION.
5. CHAINAGE OF THE BRIDGE GIVEN IN THIS DRAWING IS WITH RESPECT TO THE CENTRE OF THE BRIDGE.

| Mkd. | Descriptions | Date | By | Checked By | Approved By | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF ROB - 4 AT CHAINAGE 53+897.959 | | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. In JV With LEA Associates South Asia Pvt. Ltd. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
|----------|--------------|------|----|-------------|-------------|-------------|---------------|---|----------------|-------------------------|--|--|
| | | | | | | Drawn By | Vivek | | | | | |
| | | | | | | Designed By | Sanjay Mandal | | | | | |
| Mkd. | Descriptions | Date | By | Checked By | Approved By | Avadesh | | Drawing Number : 73231\LASA\PPP\SR\ROB\GA-04 | (SHEET 1 OF 2) | | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| REVISION | | | | Approved By | | Avadesh | | | | | | |



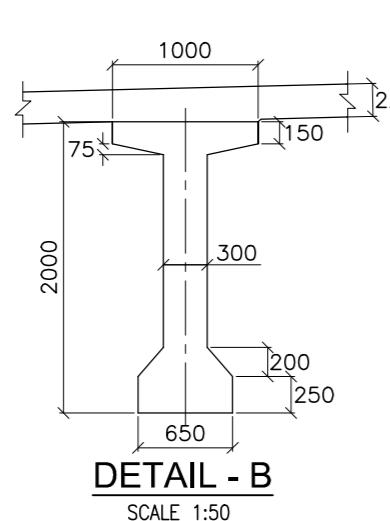
DETAIL - A

SCALE 1:50



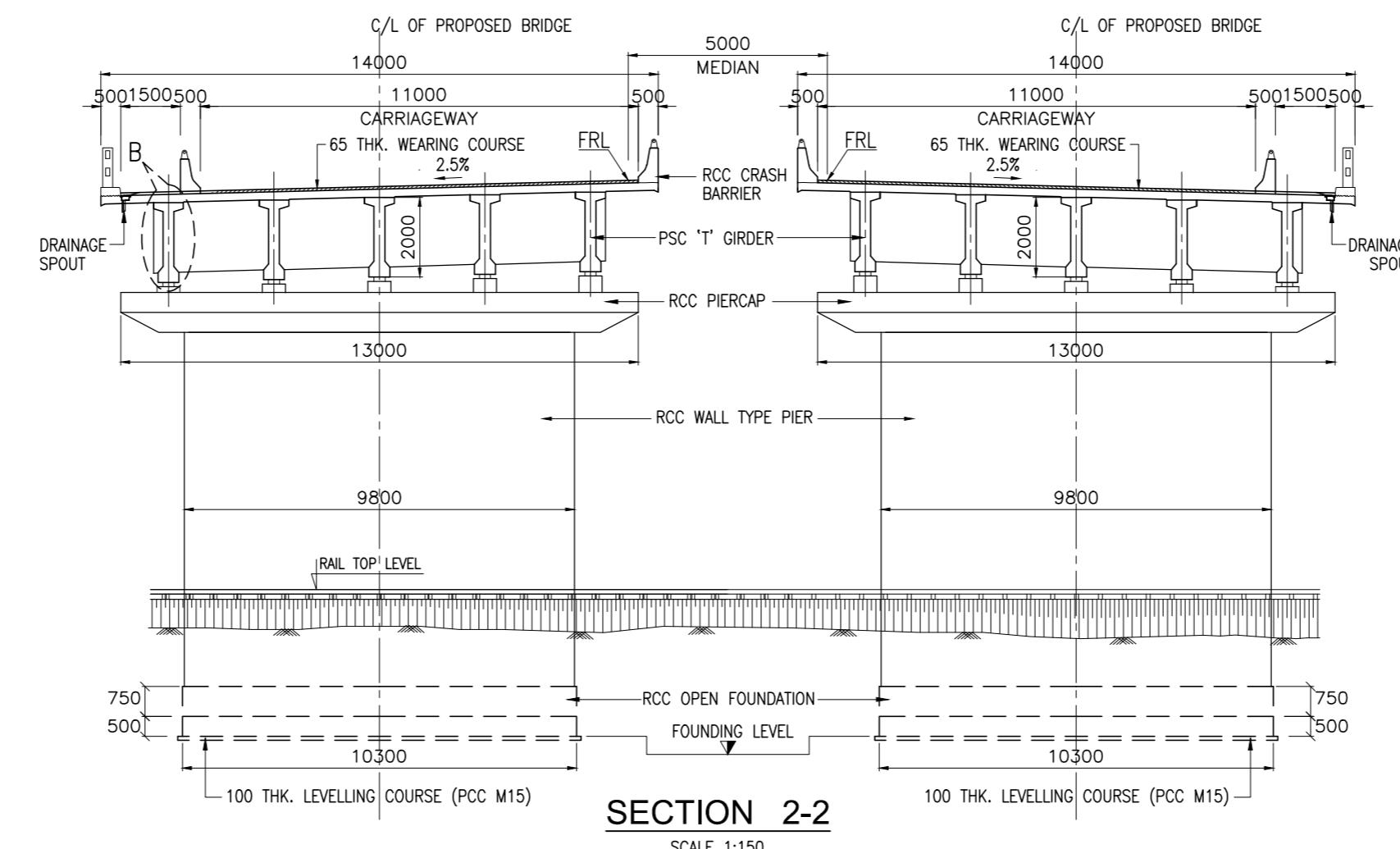
SECTION 1-1

SCALE 1:150



DETAIL - B

SCALE 1:50



SECTION 2-2

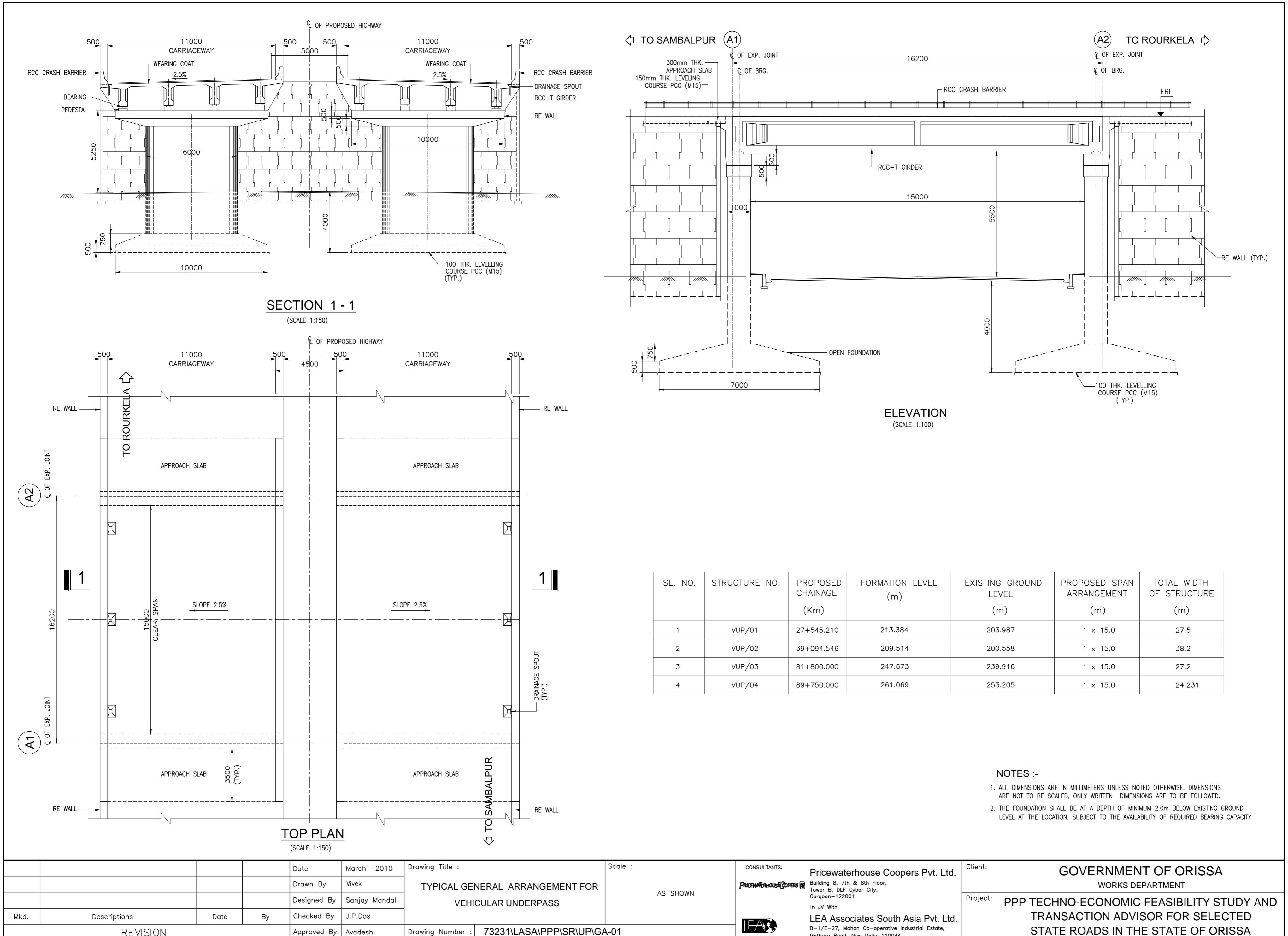
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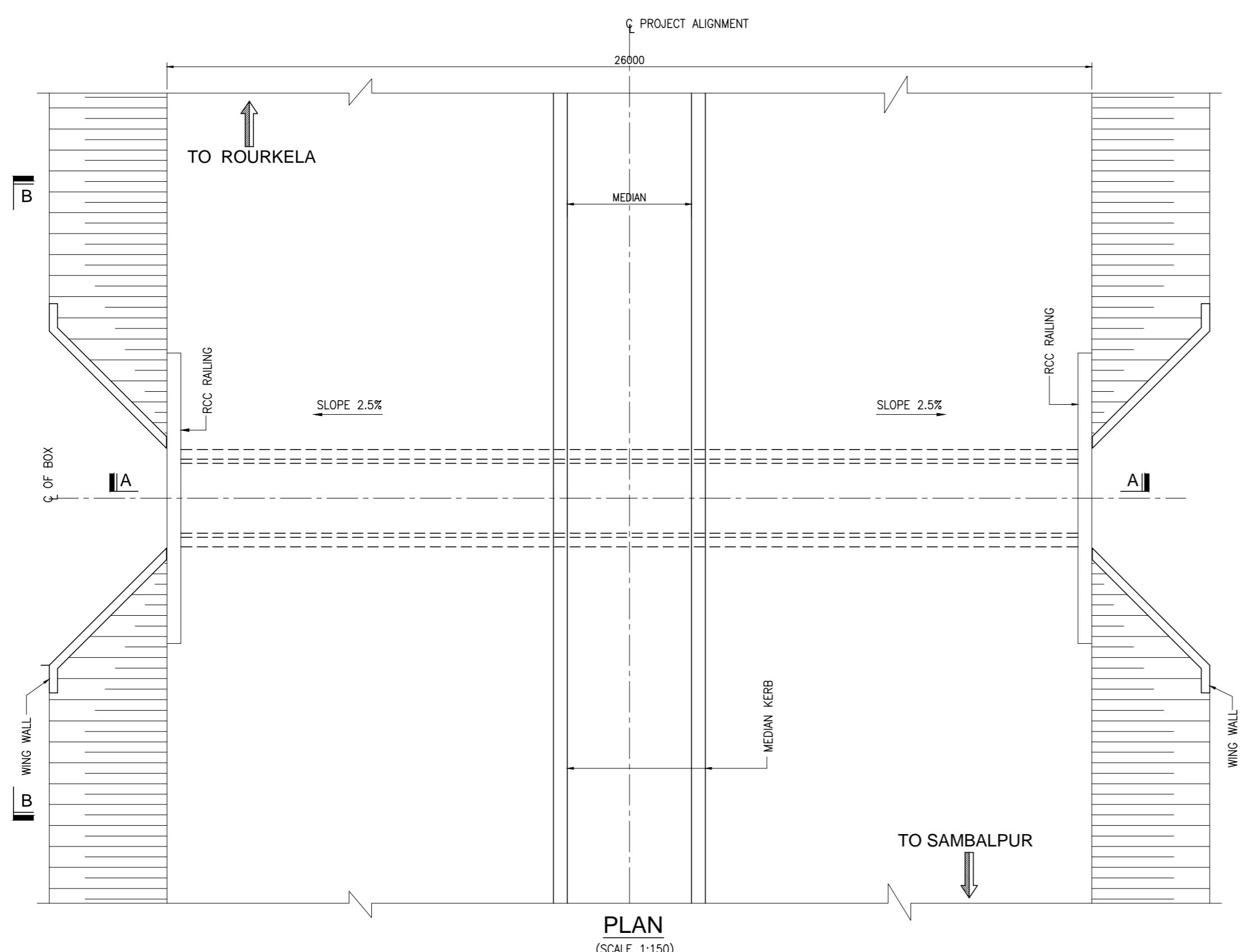
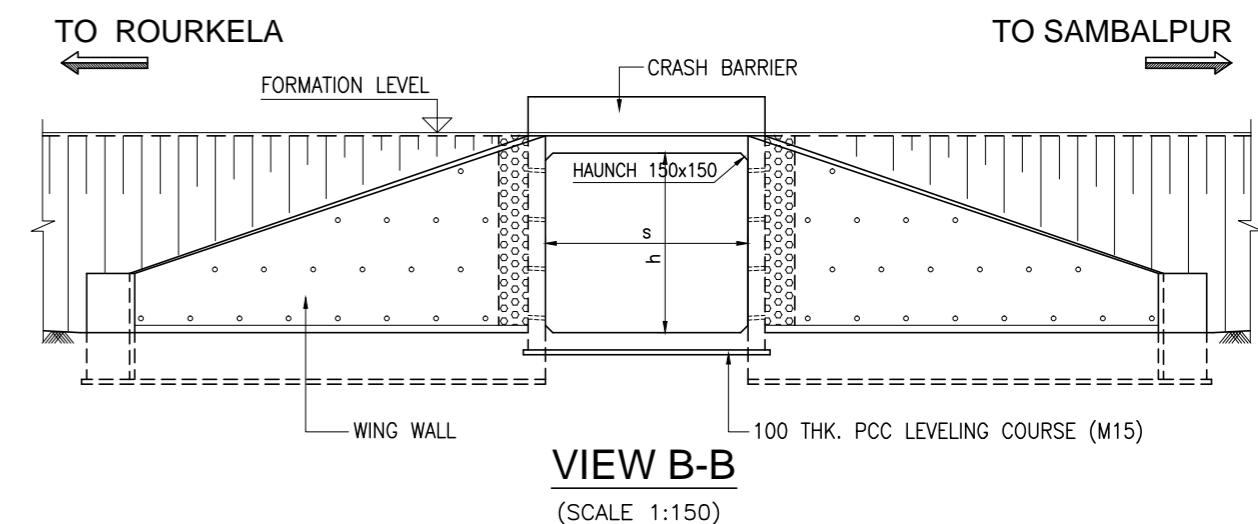
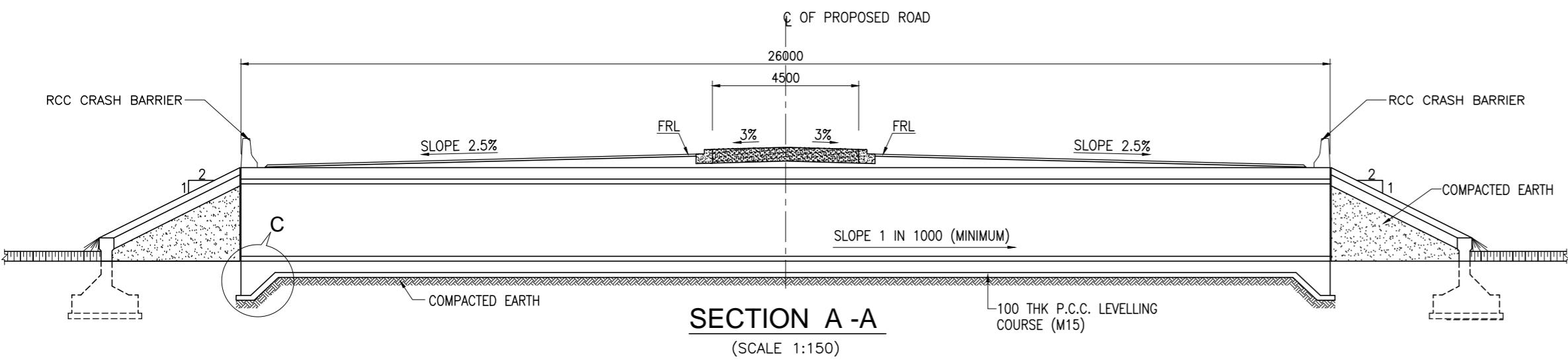
NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.

2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.

| | | | | | | | | |
|------|--------------|------|-------------|---------------|---|---------------------|--|--|
| | | | Date | March 2010 | Drawing Title : GENERAL ARRANGEMENT OF ROB - 4 AT CHAINAGE 53+897.959 | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Pricewaterhouse Coopers | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | Drawn By | Vivek | | | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | |
| | REVISION | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\ROB\GA-04 | (SHEET 2 OF 2) | LEA | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |





SCHEDULE FOR ELEPHANT UNDERPASS & REPTILE UNDERPASS

| SL. NO. | STRUCTURE NO. | PROPOSED CHAINAGE | STRUCTURE TYPE | STRUCTURE DESCRIPTION | TOTAL WIDTH (m) | PROPOSED SIZE OF BOX | |
|---------|---------------|-------------------|----------------|-----------------------|-----------------|----------------------|--------|
| | | | | | | s (mm) | h (mm) |
| 1 | 27/1 | 26+000.00 | RCC Box | REPTILE UNDERPASS | 26.00 | 3000 | 3000 |
| 2 | 47/2 | 46+970.285 | RCC Box | REPTILE UNDERPASS | 26.00 | 3000 | 3000 |
| 3 | 58/1 | 57+150.000 | RCC Box | REPTILE UNDERPASS | 26.00 | 3000 | 3000 |
| 4 | 97/2 | 96+441.053 | RCC Box | ELEPHANT UNDERPASS | 26.00 | 10000 | 6000 |
| 5 | 108/1 | 107+171.995 | RCC Box | REPTILE UNDERPASS | 26.00 | 3000 | 3000 |

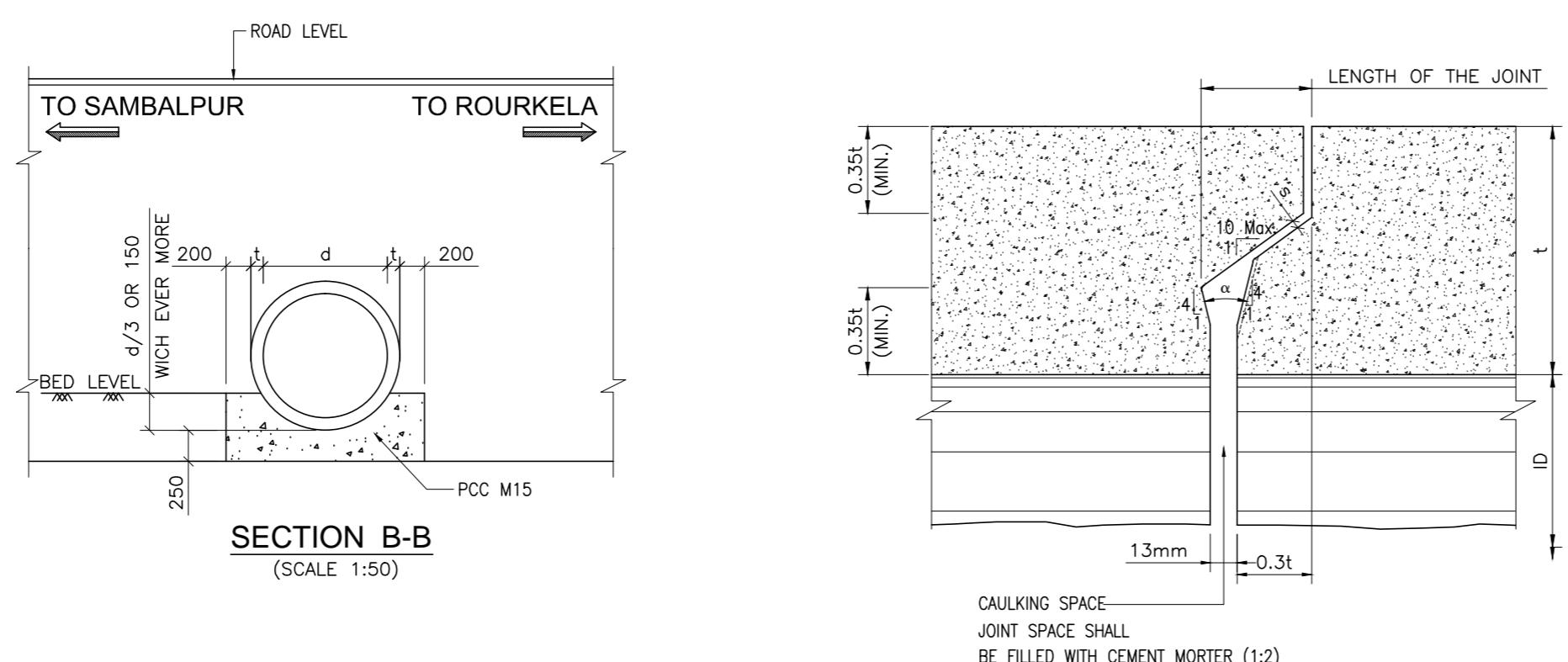
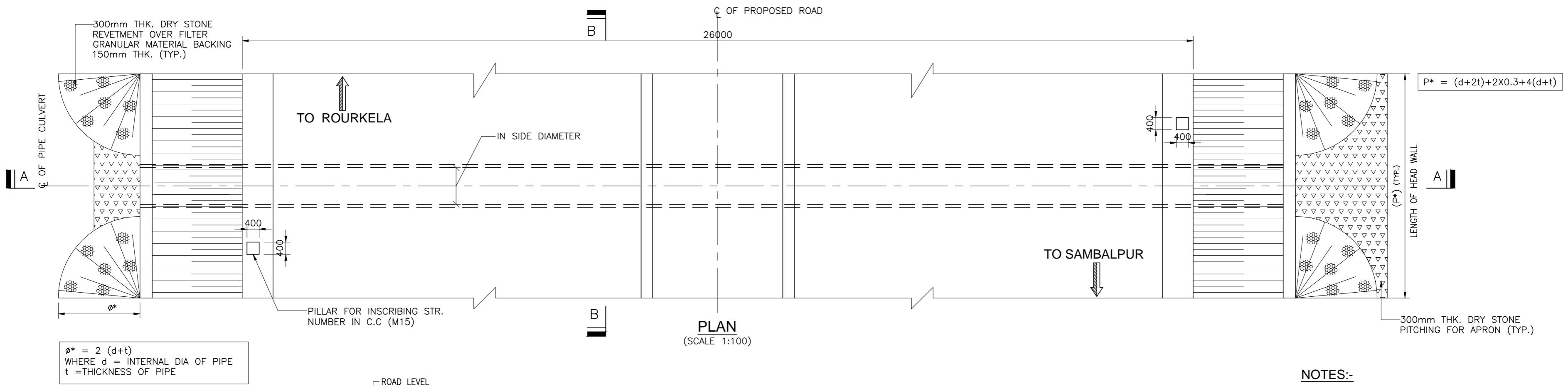
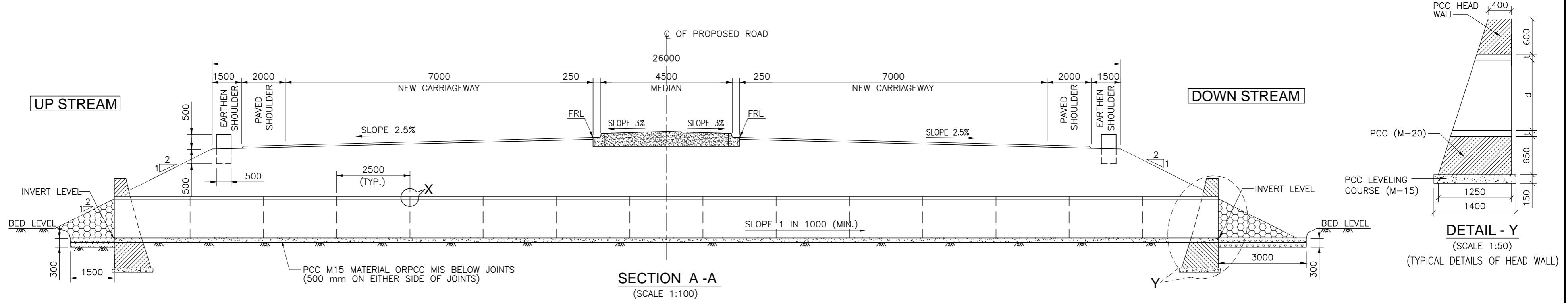
NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND CHAINAGES ARE IN KILOMETRES, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT HIGHWAY PLAN AND PROFILE DRAWING.
- RAFT SHALL BE PLACED OVER A FIRM STRATA TO THE SATISFACTION OF ENGINEER. LOOSE OR SOFT PATCHES SHALL BE REPLACED WITH MECHANICALLY COMPACTED GRANULAR MATERIAL. BACK FILL BELOW RAFT SHALL BE DONE WITH GRANULAR MATERIALS COMPACTED TO 95% MODIFIED PROCTOR DENSITY IN LAYERS USING TAMPER HAMMER, REFERING CLAUSE 305 OF MORT&H SPECIFICATION.
- U/S END SHALL BE CONFIRMED AT SITE BEFORE CONSTRUCTION.
- THE TYPE OF WING WALL SHALL BE FINALIZED BASED ON THE ACTUAL HEIGHT OF FILLING.
- FOR CAMBER/SUPERELEVATION AND CROSS SECTION OF HIGHWAY AT SPECIFIC CULVERT LOCATIONS RELEVANT HIGHWAY DRAWING SHALL BE REFERRED.

REFERENCE DRAWINGS:-

GENERAL NOTES _____ 73231\LASA\PPP\SR\GN-01
MISCELLANEOUS DETAILS _____ 73231\LASA\PPP\SR\MISC-01 TO 05

| | | | | | | | | |
|------|--------------|------|-------------|---------------|--|-------------------------|--|--|
| | | | Date | March 2010 | Drawing Title : TYPICAL GENERAL ARRANGEMENT FOR ELEPHANT UNDERPASS & REPTILE UNDERPASS | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | Drawn By | Vivek | | | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | | | | |
| | REVISION | | | Approved By | Avadesh | Drawing Number : | 73231\LASA\PPP\SR\UP\GA-02 | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |



SCHEDULE FOR REPTILE UNDERPASS

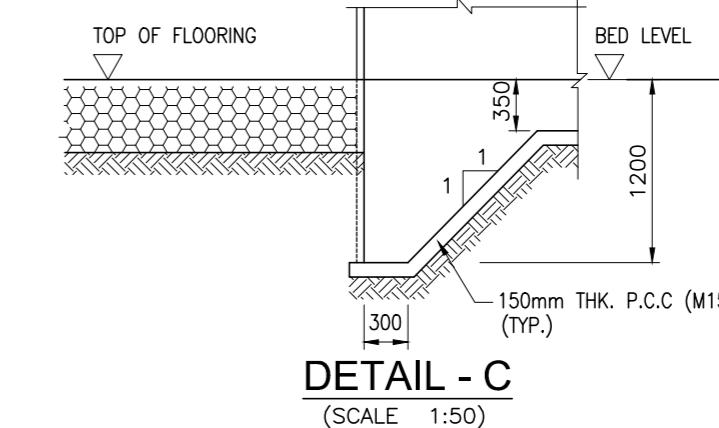
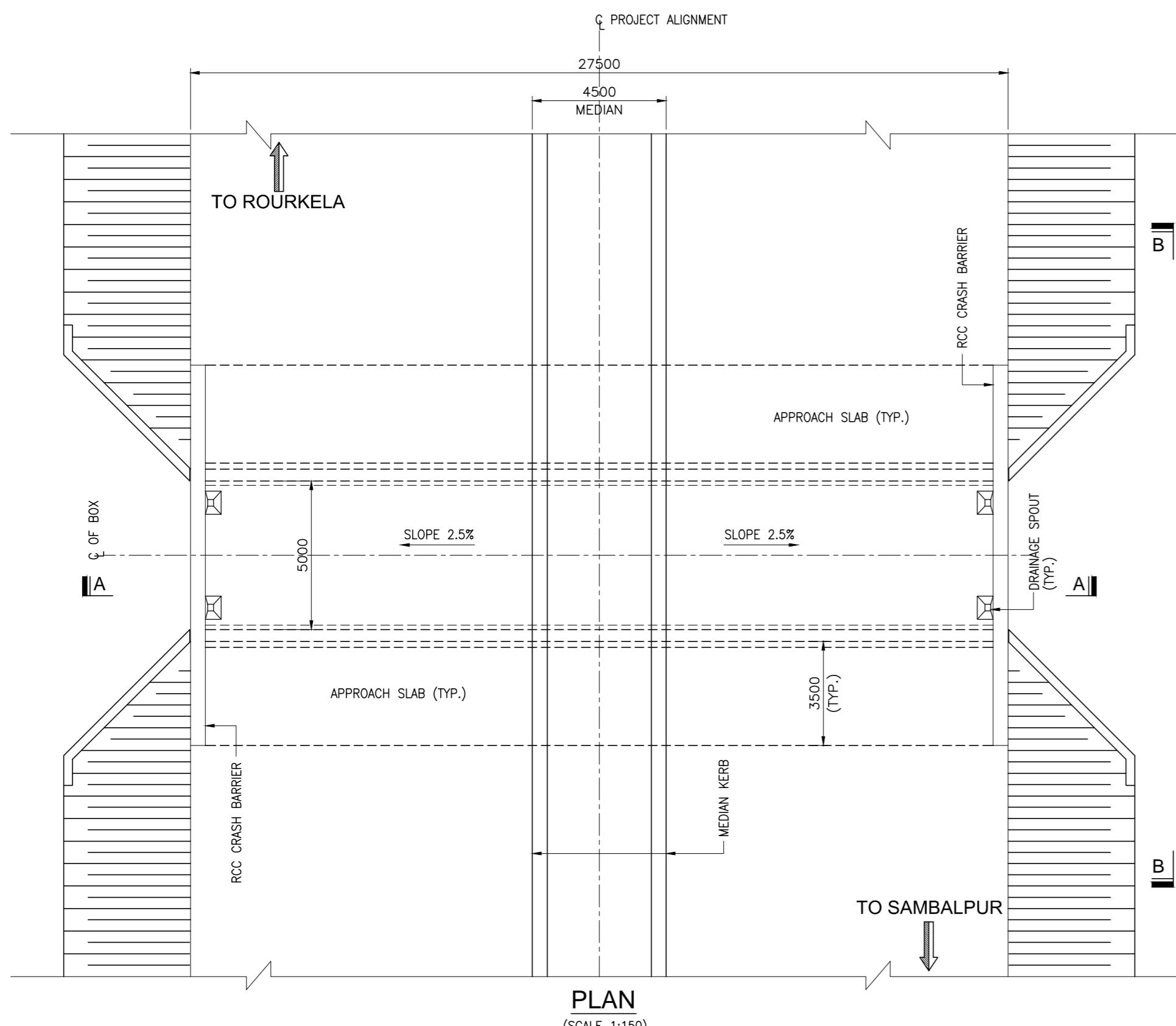
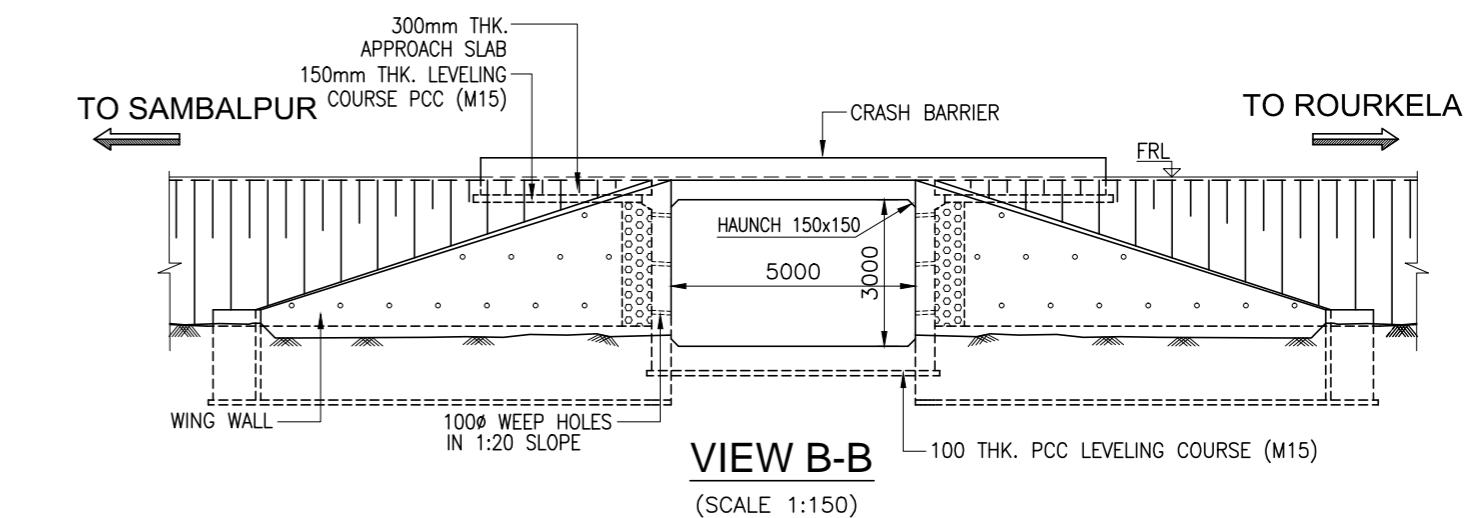
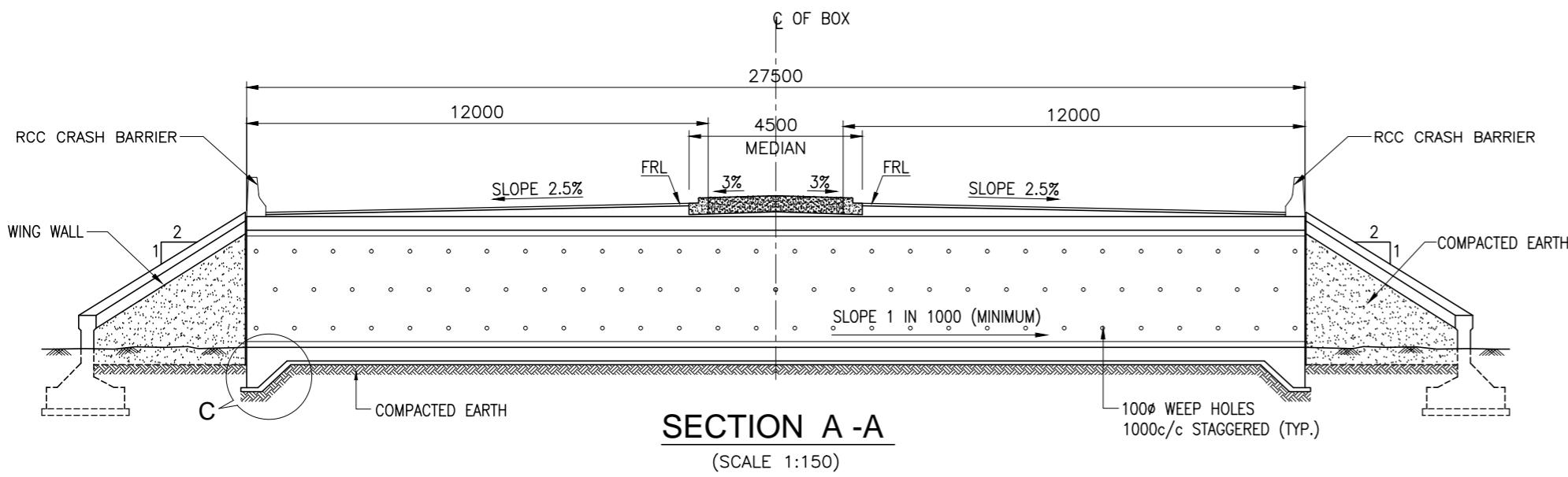
| SL. NO. | STRUCTURE NO. | PROPOSED CHAINAGE | STRUCTURE TYPE | STRUCTURE DESCRIPTION | TOTAL WIDTH (m) | DIAMETER OF PIPE |
|---------|---------------|-------------------|----------------|-----------------------|-----------------|-------------------|
| 1 | 61/2 | 60+750.000 | HPC | REPTILE UNDERPASS | 26.000 | 1 x 1200mm ϕ |

- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS MENTIONED OTHERWISE.
 2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY DRAWINGS. FRL & CAMBER / SUPER ELEVATION AT PARTICULAR LOCATION SHALL BE VERIFIED. WITH THE HIGHWAY DWG. DISCREPANCY, IF ANY, IS TO BE IMMEDIATELY BROUGHT TO THE NOTICE OF ENGINEER FOR NECESSARY MODIFICATION IN THE DRAWING.
 4. WIDTH OF MEDIAN SHALL BE CHECKED AS PER ROAD CROSS SECTION AT THAT PARTICULAR STRUCTURE LOCATION.
 5. ALL PIPES SHALL BE OF CLASS NP4 FOR NEW CONSTRUCTION.
 6. LONGITUDINAL SLOPE OF WIDENED PIPE SHALL BE 1 : 1000 (MIN.)
 7. LENGTH, LOCATION, ORIENTATION & INVERT LEVEL OF PIPE CULVERT SHALL BE ADJUSTED TO SUIT SITE CONDITION AND AS APPROVED BY THE ENGINEER.
 8. TRENCHES SHALL BE BACKFILLED IMMEDIATELY AFTER THE PIPES HAVE BEEN LAID AND THE JOINING MATERIAL HAS HARDENED.
 9. PIPE SHALL BE JOINTED BY FLUSH JOINT METHOD AS PER THE DETAILS GIVEN IN SECTION 2906 OF MORT&H SPECIFICATIONS OF ROAD & BRIDGE WORKS.
 10. SKIN REINFORCEMENT @ 2.5kg/m² IN BOTH HOR. & VERTICAL DIRECTION IS TO BE PROVIDED FOR PCC HEAD WALL.
 11. * RELAVENT HIGHWAY PLAN AND PROFILE DWG. SHALL BE REFERED.

REFERENCE DRAWINGS:-

| NO. | DESCRIPTION | DWG. NO. |
|-----|----------------------|---------------------------------|
| 1 | GENERAL NOTES | 73231\LASA\PPP\SR\GN-01 |
| 2 | MISCELLANOUS DETAILS | 73231\LASA\PPP\SR\MISC-01 TO 05 |

| | | | | | | | | | |
|----------|--------------|------|-------------|---------------|--|-------------------------|-------------------------------------|--|--|
| | | | Date | March 2010 | Drawing Title : TYPICAL GENERAL ARRANGEMENT FOR REPTILE UNDERPASS AT CH:60+750.000 | Scale : AS SHOWN | CONSULTANTS: | Pricewaterhouse Coopers Pvt. Ltd. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | Drawn By | Vivek | | | In JV With | Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 | |
| | | | Designed By | Sanjay Mandal | | | LEA Associates South Asia Pvt. Ltd. | B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |
| REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\UP\GA-03 | | | | |



| SL. NO. | STRUCTURE NO. | PROPOSED CHAINAGE (Km) | FORMATION LEVEL (m) | EXISTING GROUND LEVEL (m) | PROPOSED SPAN ARRANGEMENT (m) | TOTAL WIDTH OF STRUCTURE (m) |
|---------|---------------|------------------------|---------------------|---------------------------|-------------------------------|------------------------------|
| 1 | PUP/01 | 11+075.000 | 164.353 | 160.329 | 1 x 5.0 | 27.2 |
| 2 | PUP/02 | 62+875.000 | 216.696 | 212.334 | 1 x 5.0 | 27.2 |
| 3 | PUP/03 | 71+000.000 | 239.789 | 235.506 | 1 x 5.0 | 27.2 |
| 4 | PUP/04 | 73+200.000 | 245.747 | 241.273 | 1 x 5.0 | 27.2 |
| 5 | PUP/05 | 97+650.000 | 258.589 | 254.048 | 1 x 5.0 | 27.2 |
| 6 | PUP/06 | 102+800.000 | 294.403 | 290.255 | 1 x 5.0 | 27.2 |
| 7 | PUP/07 | 105+902.703 | 286.512 | 281.943 | 1 x 5.0 | 30.142 |
| 8 | PUP/08 | 109+525.000 | 262.884 | 258.493 | 1 x 5.0 | 27.2 |
| 9 | PUP/09 | 112+300.000 | 259.141 | 254.984 | 1 x 5.0 | 24.2 |
| 10 | PUP/10 | 135+600.000 | 243.398 | 239.238 | 1 x 5.0 | 27.2 |
| 11 | PUP/11 | 151+500.000 | 196.328 | 191.732 | 1 x 5.0 | 27.2 |
| 12 | PUP/12 | 156+900.000 | 211.823 | 207.312 | 1 x 5.0 | 27.2 |

NOTES:-

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- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT HIGHWAY PLAN AND PROFILE DRAWING.

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|------|--------------|------|-------------|---------------|---|--|--|--|
| | | | Date | March 2010 | Drawing Title : TYPICAL GENERAL ARRANGEMENT OF PEDESTRIAN UNDERPASS | Scale : AS SHOWN | CONSULTANTS: Pricewaterhouse Coopers Pvt. Ltd. Building 8, 7th & 8th Floor, Tower B, DLF Cyber City, Gurgaon-122001 In JV With LEA Associates South Asia Pvt. Ltd. B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110044. | Client: GOVERNMENT OF ORISSA WORKS DEPARTMENT |
| | | | Drawn By | Vivek | | | | |
| | | | Designed By | Sanjay Mandal | | | | |
| Mkd. | Descriptions | Date | By | Checked By | J.P.Das | | | |
| | REVISION | | | Approved By | Avadesh | Drawing Number : 73231\LASA\PPP\SR\PUP\GA-01 | | Project: PPP TECHNO-ECONOMIC FEASIBILITY STUDY AND TRANSACTION ADVISOR FOR SELECTED STATE ROADS IN THE STATE OF ORISSA |