

CLIENT:-



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED

(Ministry of Road Transport & Highways)

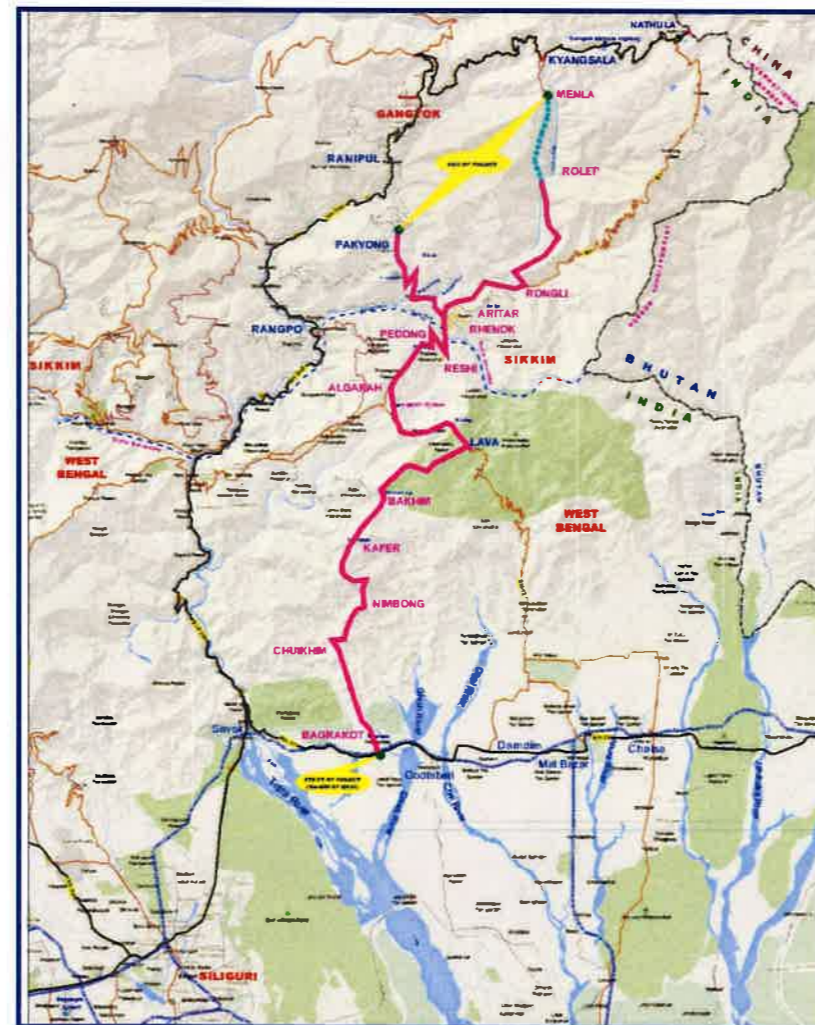
Against Supplementary Agreement dated 05.12.2019 - To execute the work of preparation of DPR as 'Additional work' for Package-II, III, IV-C and V which forms part of the original Contract Agreement dated 30.09.2014 for Preparation of Feasibility Report cum Preliminary Design for alternative Highway to Gangtok in Sikkim via Bagrakot-Chuikhim -Nimbong-Kafer-Bakhim-Algarah-Rhenok in the State of West Bengal and from Rhenok-Rorathang-Pakyong along with spur from Aritar-Rolep-Menla in the State of Sikkim.

DRAFT DETAILED PROJECT REPORT

PACKAGE- II (A)

(Km 20.340 To Km 26.588)

DRAWING VOLUME: STRUCTURE (GAD)



October -2020




CONSULTANT :-

SA INFRASTRUCTURE CONSULTANTS PVT. LTD.



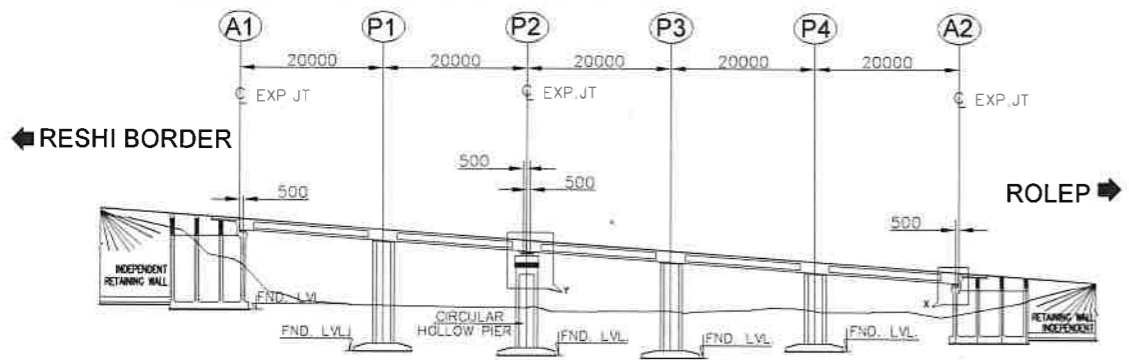
In Association with
Specialized Engineering Service Pvt. Ltd.
1101A, 11th Floor, Tower A-II, Corporate Park,
Plot No. 7A/1, Sector-142, Noida 201301, Uttar Pradesh.

| Sl. No. | Start Chainage (Km) | End Chainage (Km) | Length | |
|----------------------|---------------------|-------------------|--------|-------|
| For Pkg. II A | | | | |
| 1 | 20+880 | 20+980 | 100 | 5X20 |
| 2 | 21+260 | 21+820 | 560 | 28X20 |
| 3 | 23+463 | 23+743 | 280 | 14X20 |
| 4 | 24+133 | 24+553 | 420 | 21X20 |
| 5 | 24+653 | 24+833 | 180 | 9X20 |
| 6 | 24+923 | 24+963 | 40 | 2X20 |
| 7 | 25+623 | 25+863 | 240 | 12X20 |
| 8 | 26+083 | 26+443 | 360 | 18X20 |

| | | | | | | | | |
|-----|------|---|----------|--|--|---|--|---|
| | | CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED <small>(Ministry of Road Transport & Highways)</small> | | PROJECT: Against Supplementary Agreement dated 05.12.2019 - To execute the work of preparation of DPR as 'Additional work' for Package-II, III, IV-C and V which forms part of the original Contract Agreement dated 30.09.2014 for Preparation of Feasibility Report cum Preliminary Design for alternative Highway to Gangtok in Sikkim via Dagrakot- Chuikhim -Nimbong-Kafer-Bakhim-Algarah-Rhenok in the State of West Bengal and from Rhenok-Rorathang-Pakyong along with spur from Antar-Rolep-Menla in the State of Sikkim. (Package- II-A) | | DATE: SEP-2020 | REVISION: R0 | INDEX |
| | | CONSULTANT: S.A. Infrastructure Consultants Pvt. Ltd. <small>1101A, 11 Floor Tower A-II, Ansal Corporate Park, Plot No. 7A/1, Sector 142, Noida-201301 (Uttar Pradesh)</small> <small>Phone No- 0120-6148000 Fax-0120-6148090 Email: info@sainfra.com</small> | | DESIGNED BY:  <small>RAVI KUMAR</small> | | DRAWN BY:  <small>A SEN</small> | CHECKED BY:  <small>A REHMAN</small> | |
| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS | | | SCALE:- AS SHOWN | SHEET:- 01 OF 01 | DWG. NO. :- SAICPL-SESPL/NHIDC/WB-SKM/INDEX |

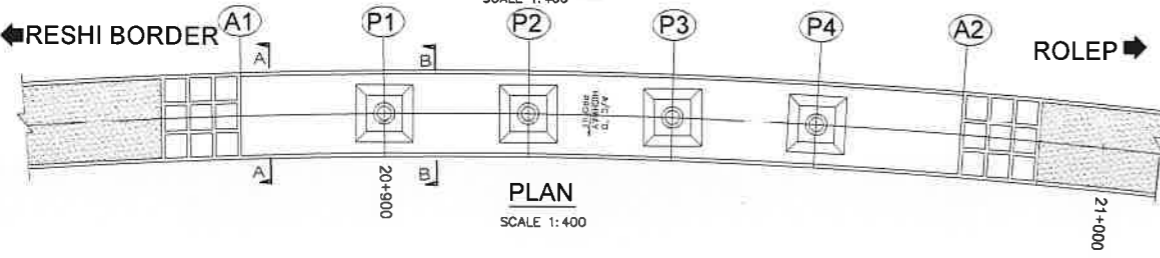
NOTES

1. ALL DIMENSIONS ARE IN METERS AND LEVELS ARE IN METERS.
2. DIMENSIONS ARE NOT TO SCALE. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. THE DIMENSION OF THE FOUNDATION SHOWN HERE TENTATIVE ONLY. THIS SHALL BE FINALIZED AFTER DETAILED SUBSOIL INVESTIGATION.
4. BRIDGE HAS BEEN DESIGNED FOR CARRIAGEWAY LIVE LOAD OF 1 LANE 70R + 1 LANE CLASS A 3 LANES OF CLASS A WHICHEVER GIVES WORST EFFECT.
5. GRADE OF CONCRETE FOR VARIOUS ELEMENTS ARE AS FOLLOWS:-
 - (i) SUPERSTRUCTURE (VOIDED) ----- M40
 - (ii) RCC SUBSTRUCTURE & FOUNDATION --- M35
 - (iii) RCC RAILING ----- M30
 - (iv) RCC CRASH BARRIER ----- M40
 - (v) APPROACH SLAB ----- M30
 - (vi) PEDESTAL ----- M40
6. TYPE OF BEARING PROPOSED HERE IS POT-PTFE AS PER IRC:83, PART-III
7. SINGLE STRIP SEAL EXPANSION JOINT IS USED.
8. GRADE OF CEMENT IS USED HERE IS OPC 43/OPC 53.
9. ALL REINFORCEMENT BARS ARE TMT BARS (GRADE DESIGNATION Fe500D) AS PER IS:1786.
10. BRIDGE HAS BEEN DESIGNED CONSIDERING SEISMIC ZONE AS IV.
11. SUPERELEVATION SHALL BE MAINTAINED AS PER HIGHWAY PLAN & PROFILE.
12. SAFE BEARING CAPACITY FOR PRELIMINARY DESIGN AT FOUNDING LEVEL IS CONSIDERED AS 40t/m²
13. CONSTRUCTION JOINT

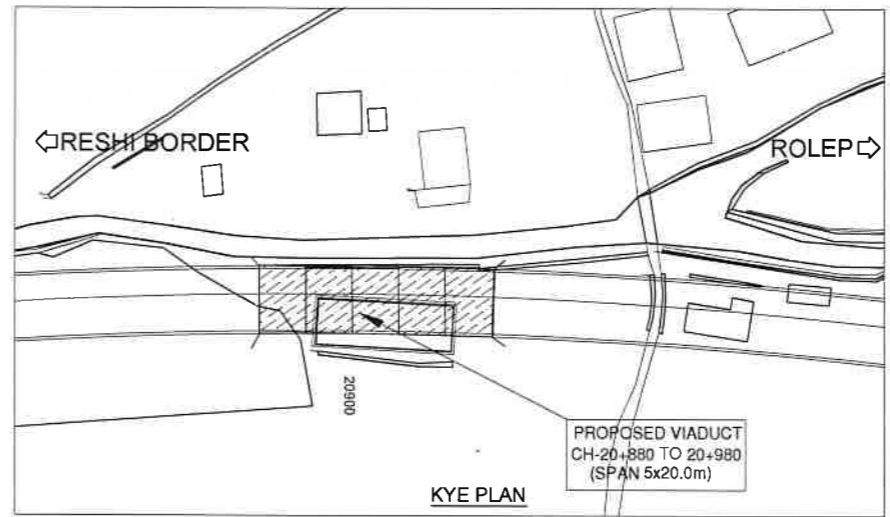


| | | | | | | |
|------------------|---------|---------|---------|---------|---------|---------|
| FORMATION LEVEL | 807.674 | 806.474 | 805.274 | 804.074 | 802.875 | 801.675 |
| EX. GROUND LEVEL | 804.482 | 795.878 | 795.133 | 796.986 | 799.036 | 802.906 |
| CHAINAGE | 20+880 | 20+900 | 20+920 | 20+940 | 20+960 | 20+980 |

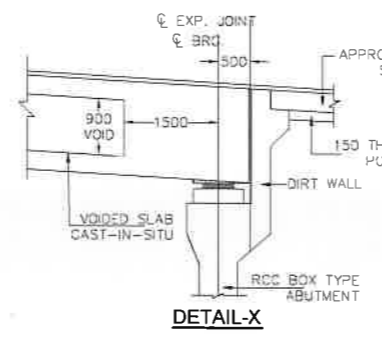
ELEVATION
SCALE 1:400



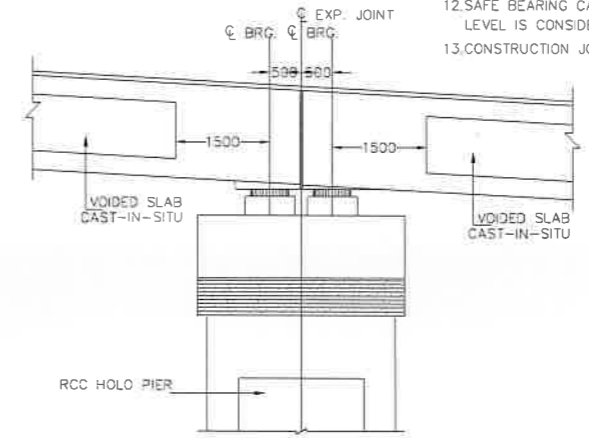
PLAN
SCALE 1:400



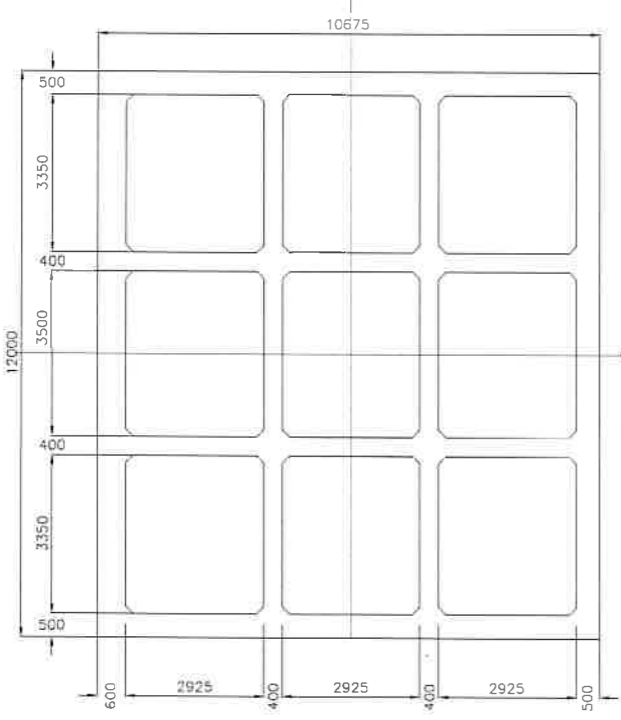
KYE PLAN



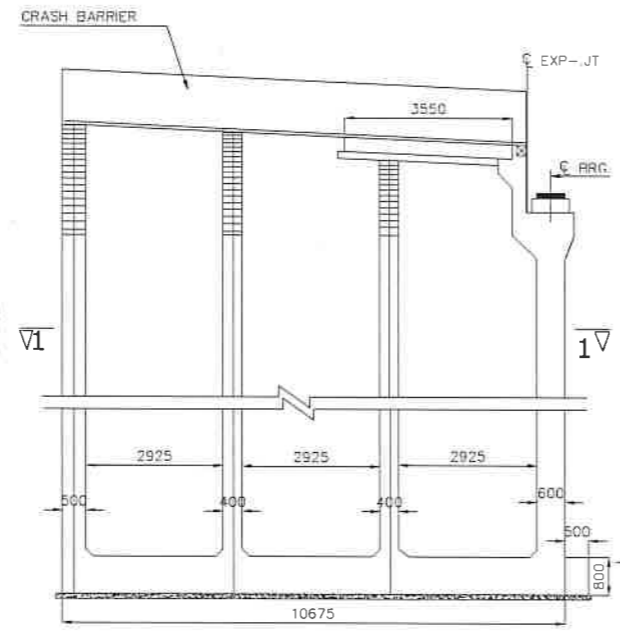
DETAIL-X



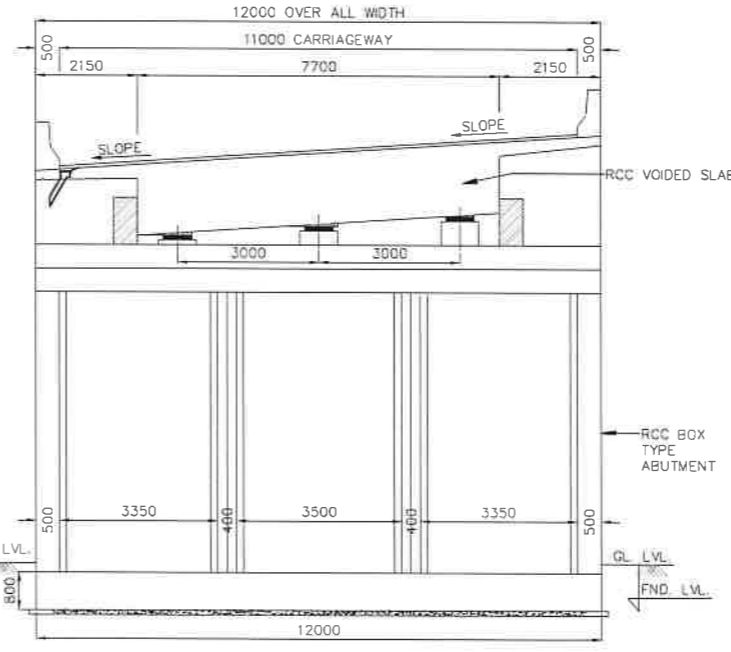
DETAIL-Y



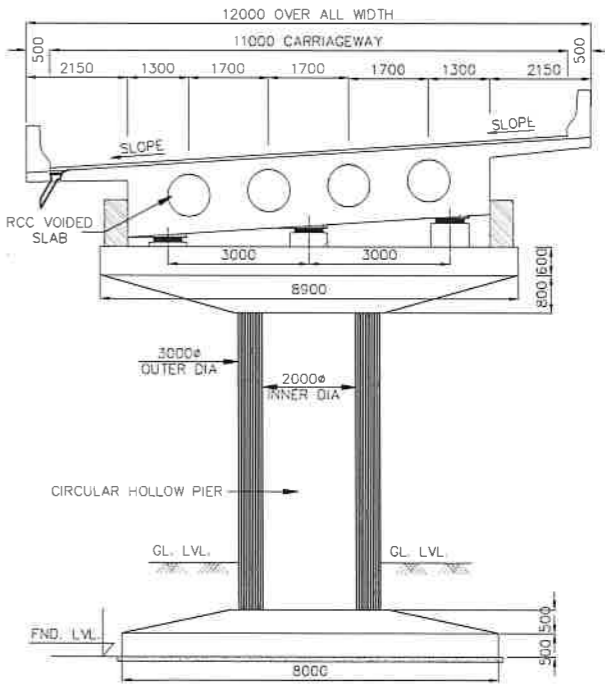
SECTION-1-1
SCALE 1:100



BOX ABUTMENT
SCALE 1:100



SECTION-A-A
SCALE 1:100



SECTION-B-B
SCALE 1:100

| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS |
|-----|------|--------------------------|----------|
| | | | |

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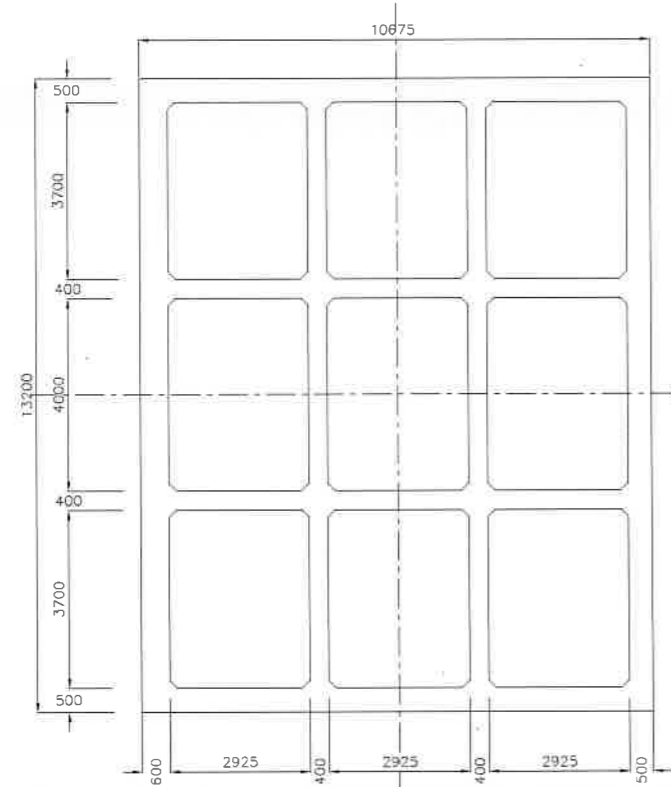
CONSULTANT: S.A. Infrastructure Consultants Pvt. Ltd.
1101A, 11 Floor Tower A-II, Ansal Corporate Park,
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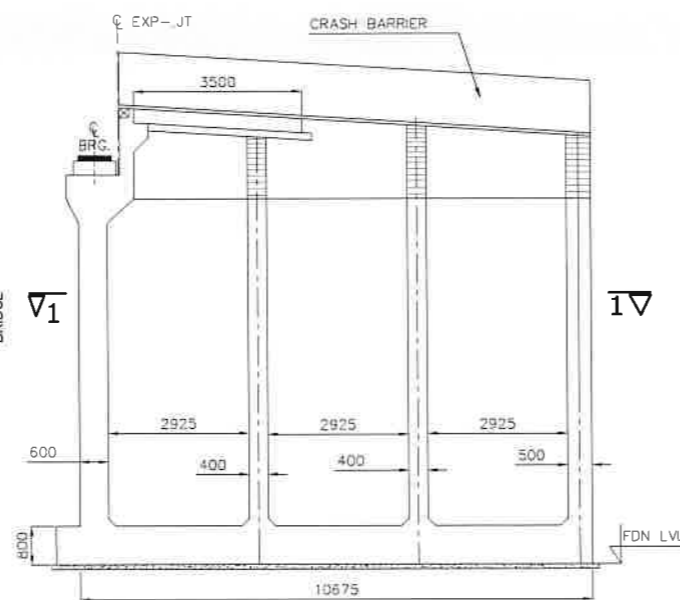
| | |
|---------------------------------|--------------------------------|
| DATE : SEP-2020 | REVISION R0 |
| DESIGNED BY RAVIKUNAR | DRAWN BY ASEN |
| CHECKED BY AREHMAN | APPROVED BY S.Shukla |
| SCALE:- AS SHOWN | SHEET:- 01 OF 01 |

GENERAL ARRANGEMENT DRAWINGS
VIADUCT AT Km 20+880 To Km 20+980
(SPAN 5x20.0m)

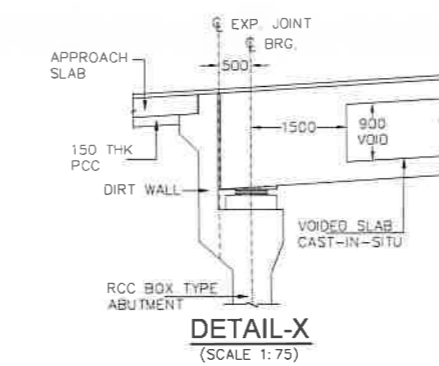
DWG. NO. :- SAICPL-SESPL/NHDC/WB-SKM/20+930/GAD-01



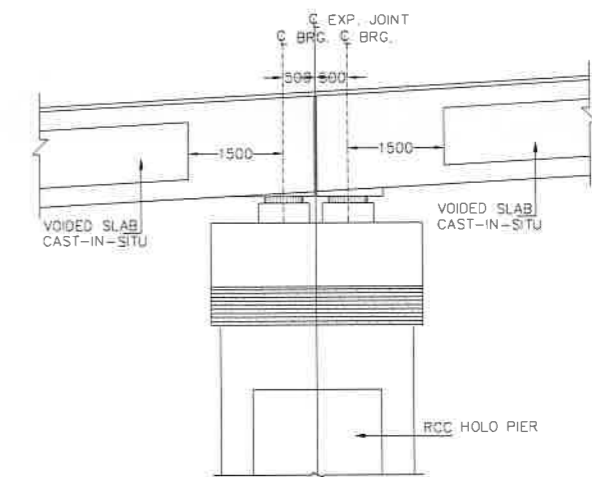
SECTION 1-1
SCALE 1:100



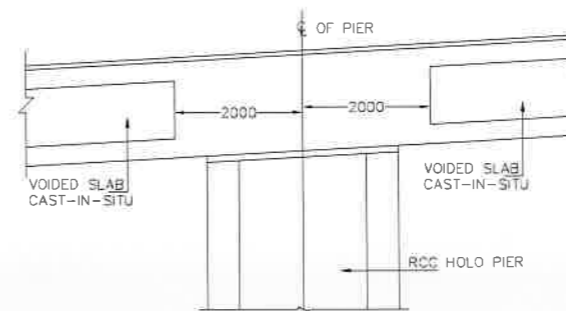
BOX ABUTMENT
SCALE 1:100



DETAIL-X
(SCALE 1:75)

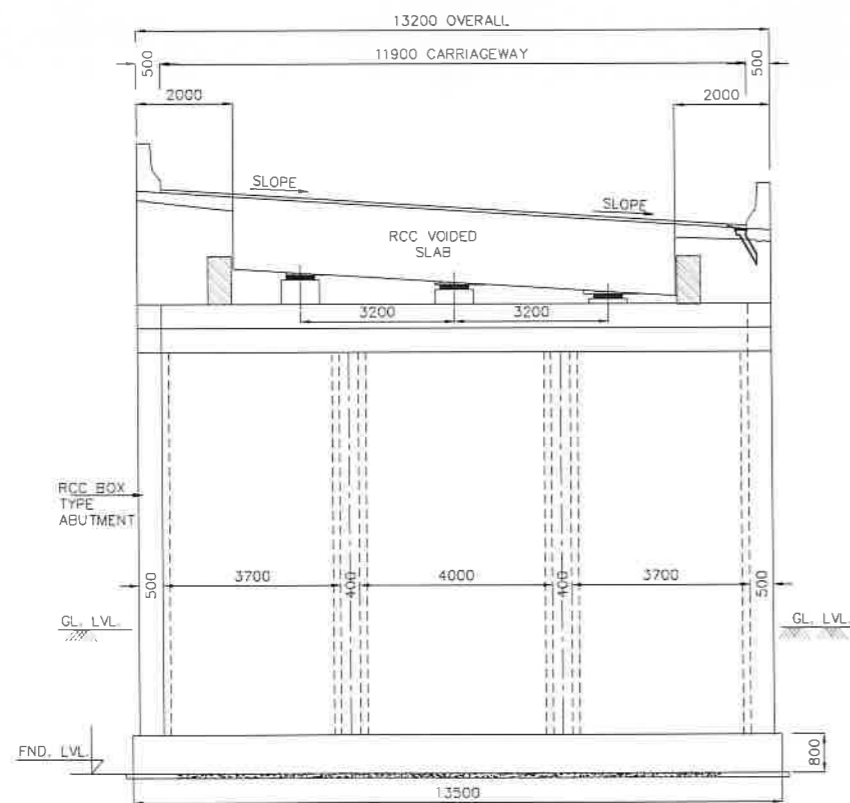


DETAIL-Y
(SCALE 1:75)

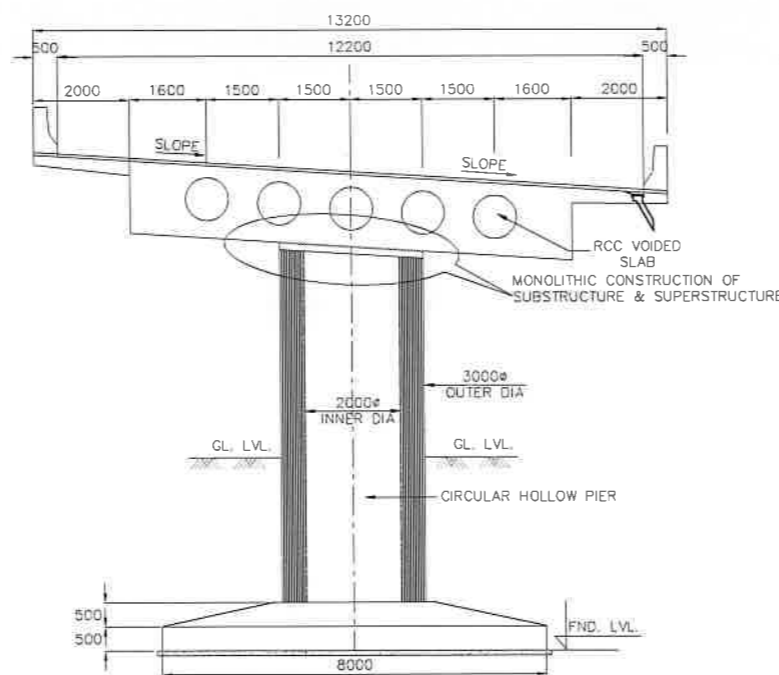


DETAIL-Z
(SCALE 1:75)

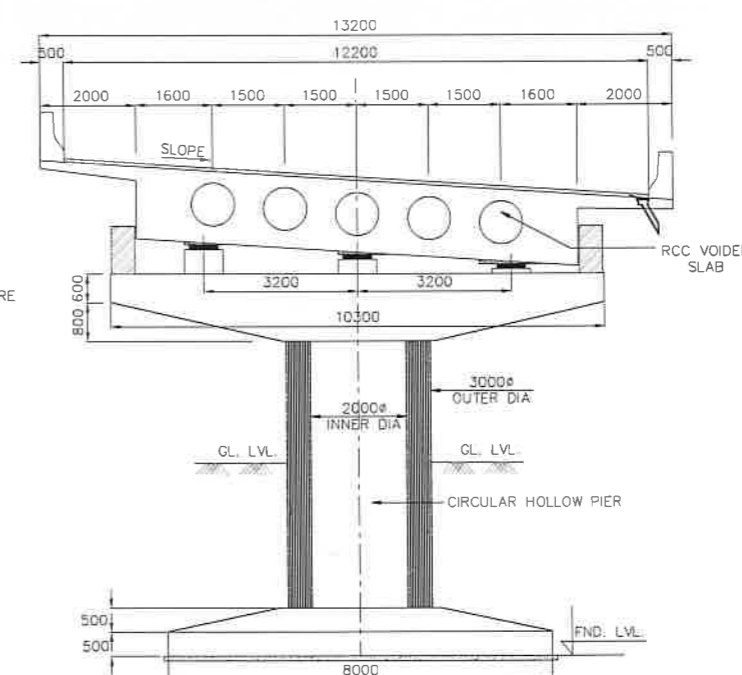
- NOTES:**
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SECTION A-A
SCALE 1:100



SECTION B-B
SCALE 1:100



SECTION C-C
SCALE 1:100

| | | | | | | |
|-----|---------|-------------------------------|----------|---|---|---|
| NO | SEPT-20 | DRAFT DETAILED PROJECT REPORT | A | B | C | D |
| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS | | | |

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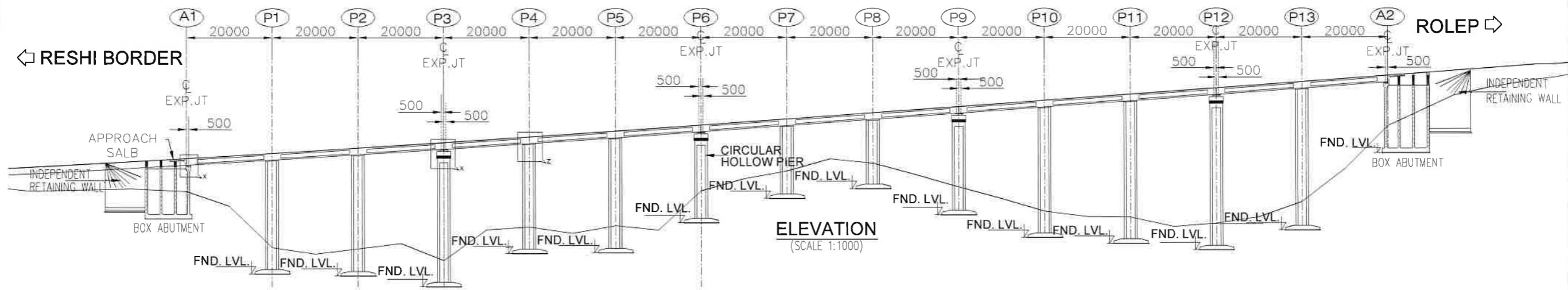
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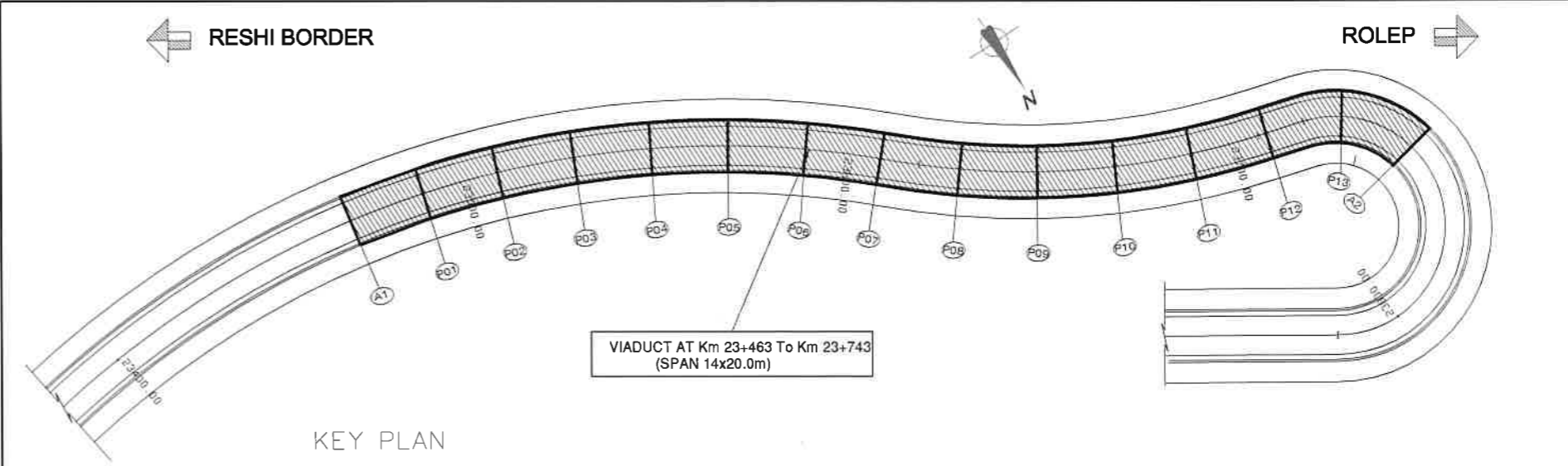
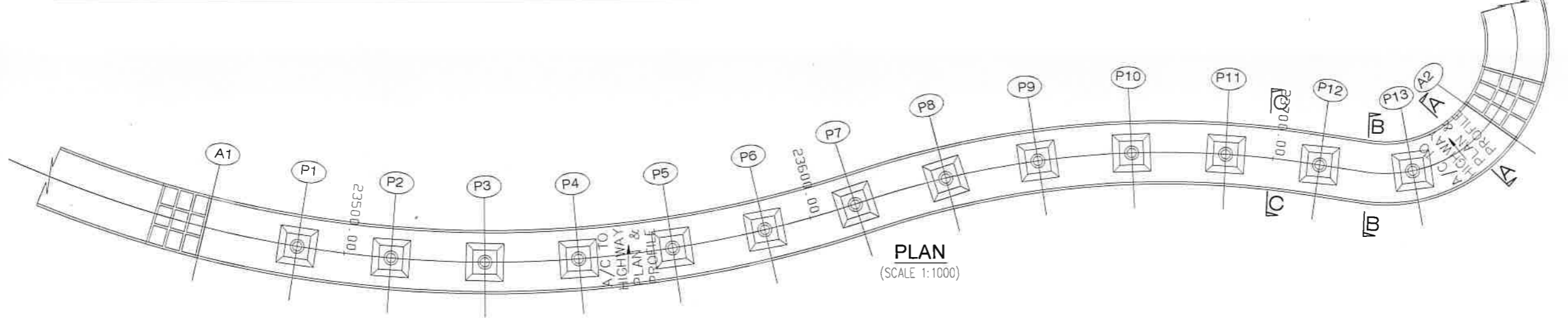
| | | | |
|--------------------------------|-----------------------|-----------------------|-------------------------|
| DATE : SEPTEMBER- 2020 | | REVISION R0 | |
| DESIGNED BY B RAVI KUMAR | DRAWN BY A ASEN | CHECKED BY AREHMAN | APPROVED BY S.Shukla |
| SCALE:- AS SHOWN | | SHEET:- 02 OF 02 | |

GENERAL ARRANGEMENT DRAWINGS
VIADUCT AT Km 21+260 To Km 21+820
(SPAN 28x20.0m)

DWG. NO. :-
SAICPL-SESPL/NHIDC/WB-SKM/21+540/GAD-01



| | | | | | | | | | | | | | | | |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| FORMATION LEVEL | 854.294 | 855.294 | 856.327 | 857.394 | 858.495 | 859.629 | 860.796 | 861.991 | 863.187 | 864.384 | 865.581 | 866.778 | 867.974 | 869.171 | 870.368 |
| EX.GROUND LEVEL | 844.856 | 834.150 | 832.093 | 835.152 | 833.142 | 839.042 | 849.267 | 853.241 | 851.512 | 846.857 | 842.893 | 840.014 | 842.009 | 850.242 | 866.562 |
| CHAINAGE | 23+463 | 23+483 | 23+503 | 23+523 | 23+543 | 23+563 | 23+583 | 23+603 | 23+623 | 23+643 | 23+663 | 26+683 | 23+703 | 23+723 | 23+743 |



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| RD | SEPT-20 | DRAFT DETAILED PROJECT REPORT | A | B | C | D |
| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS | | | |

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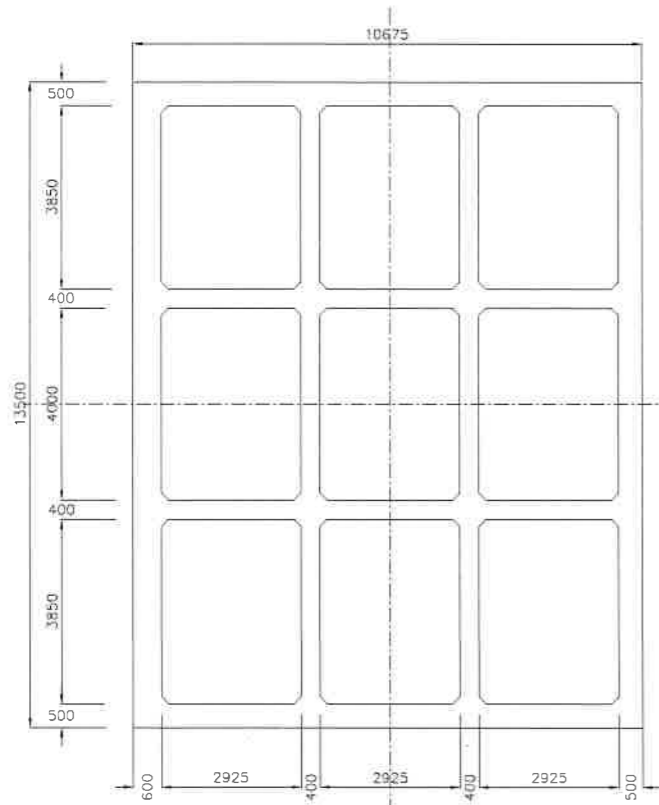
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 1101A, 11 Floor Tower A-II, Ansal Corporate Park,
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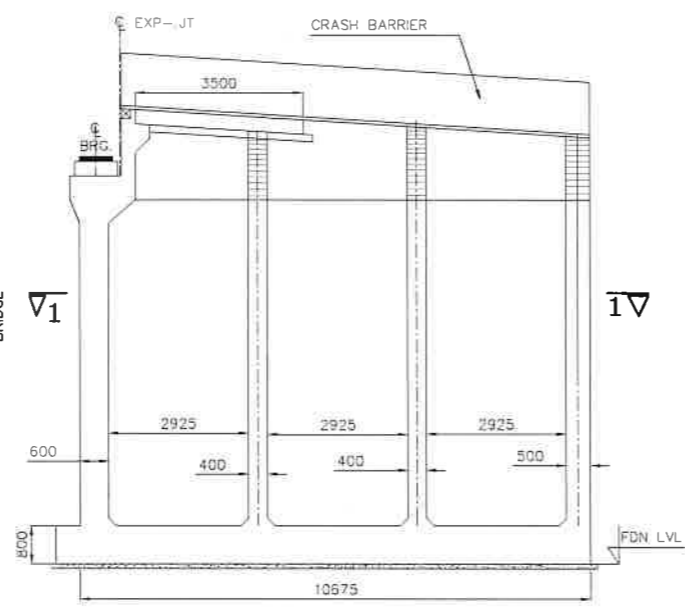
| | | | |
|-------------|------------------|-------------|----------|
| DATE : | SEPTEMBER - 2020 | REVISION | R0 |
| DESIGNED BY | RAVI KUMAR | DRAWN BY | A SEN |
| CHECKED BY | A REHMAN | APPROVED BY | S.Shukla |
| SCALE:- | AS SHOWN | SHEET:- | 01 OF 02 |

PROJECT : GENERAL ARRANGEMENT DRAWINGS
 VIADUCT AT Km 23+463 To Km 23+743
 (SPAN 14x20.0m)

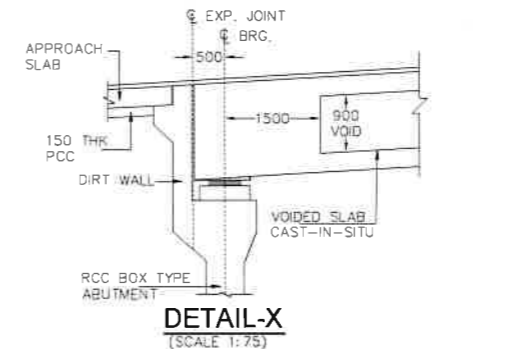
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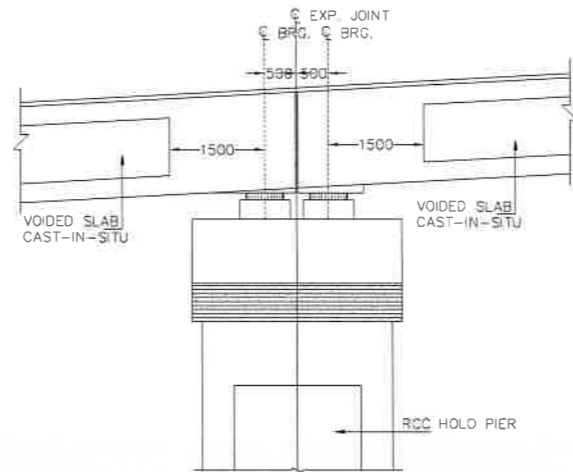
SECTION 1-1
SCALE 1:100



BOX ABUTMENT
SCALE 1:100



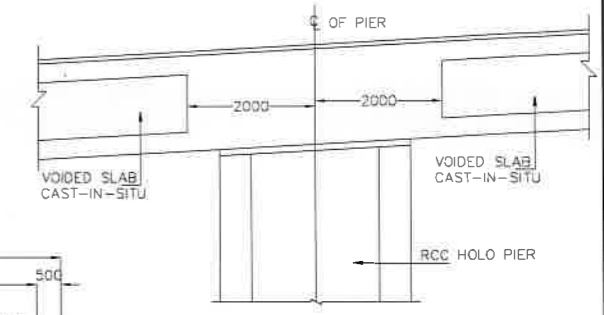
DETAIL-X
(SCALE 1:75)



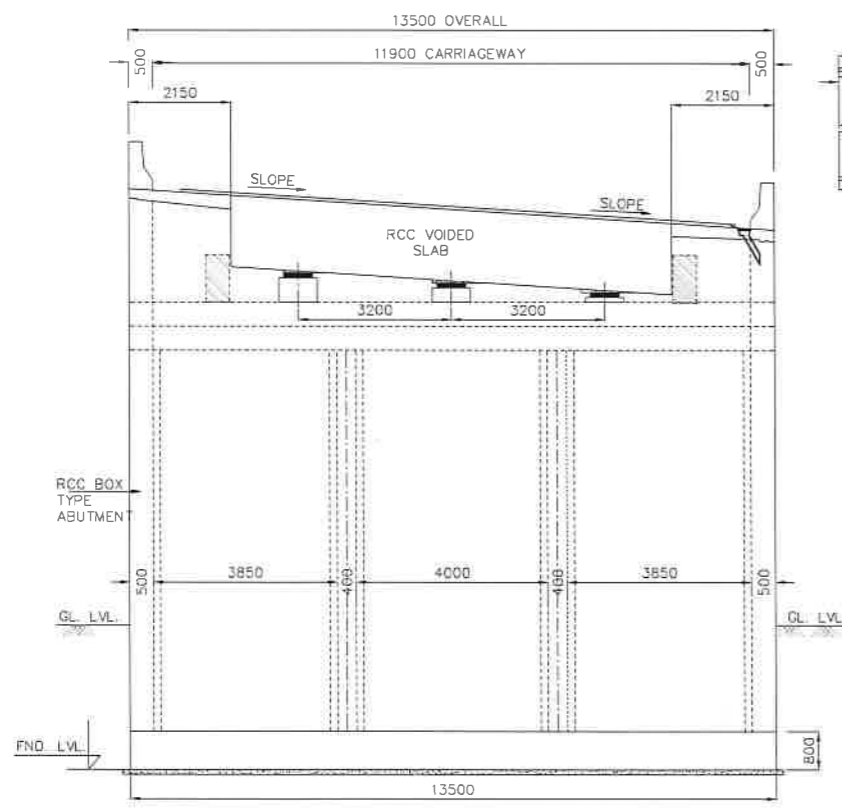
DETAIL-Y
(SCALE 1:75)

NOTES

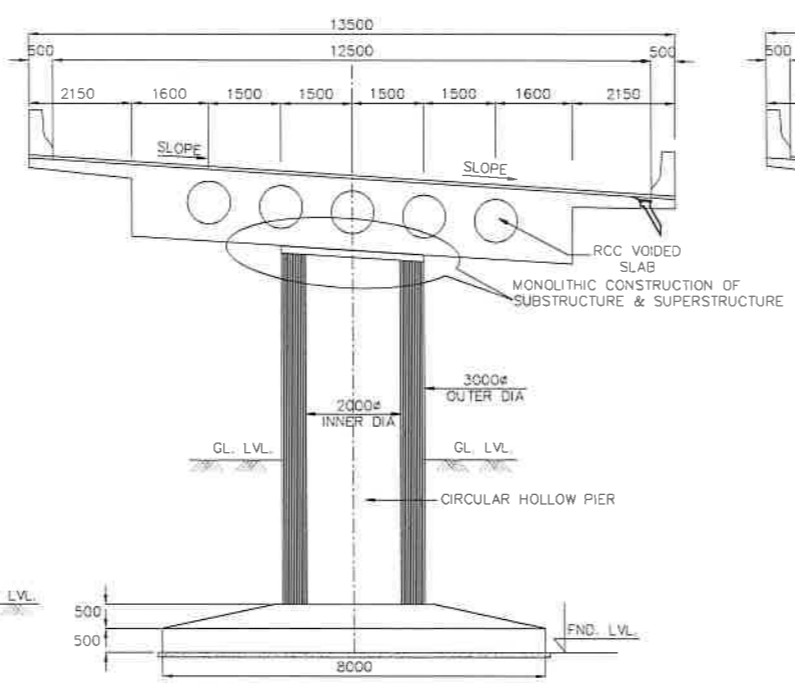
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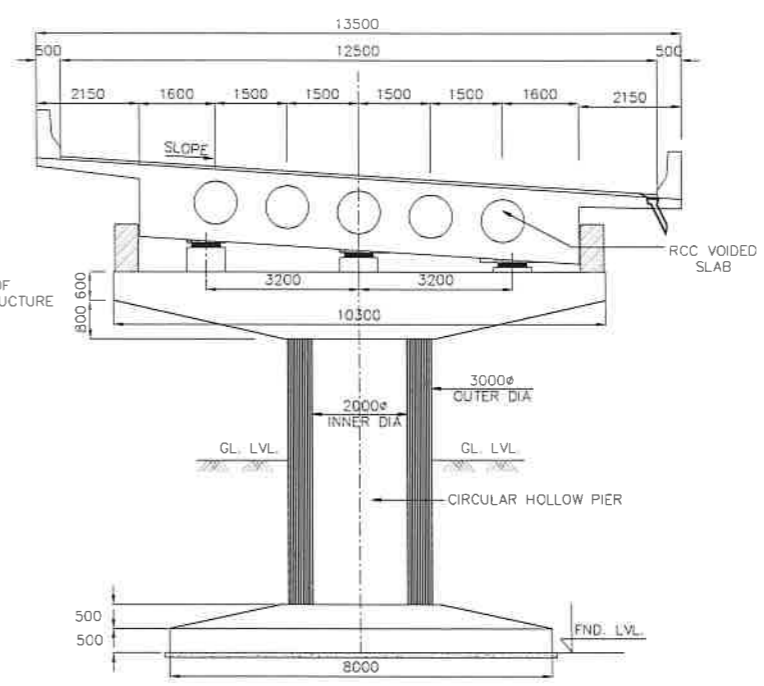
DETAIL-Z
(SCALE 1:75)



SECTION A-A
SCALE 1:100



SECTION B-B
SCALE 1:100



SECTION C-C
SCALE 1:100

| | | | |
|----|------|--------------------------|----------|
| NO | DATE | DESCRIPTION OF REVISIONS | INITIALS |
| | | | |
| | | | |

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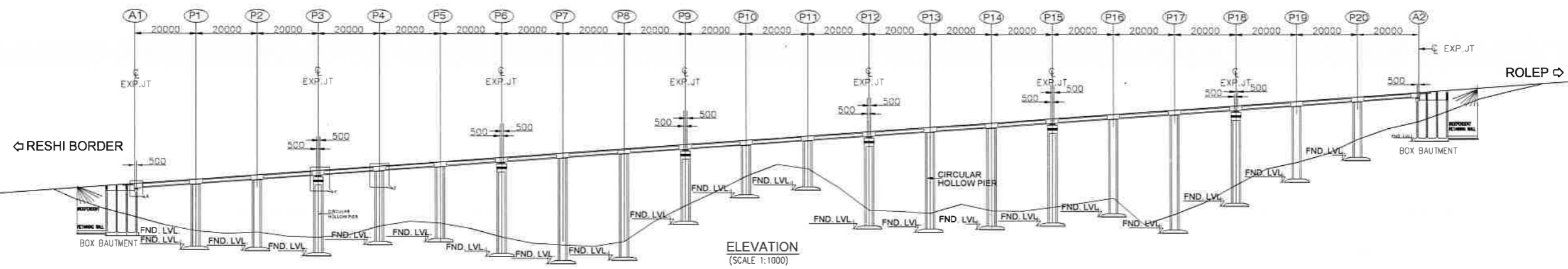
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| CHECKED BY | A REHMAN | APPROVED BY | S.Shukla |
| SCALE:- | AS SHOWN | SHEET:- | 02 OF 02 |

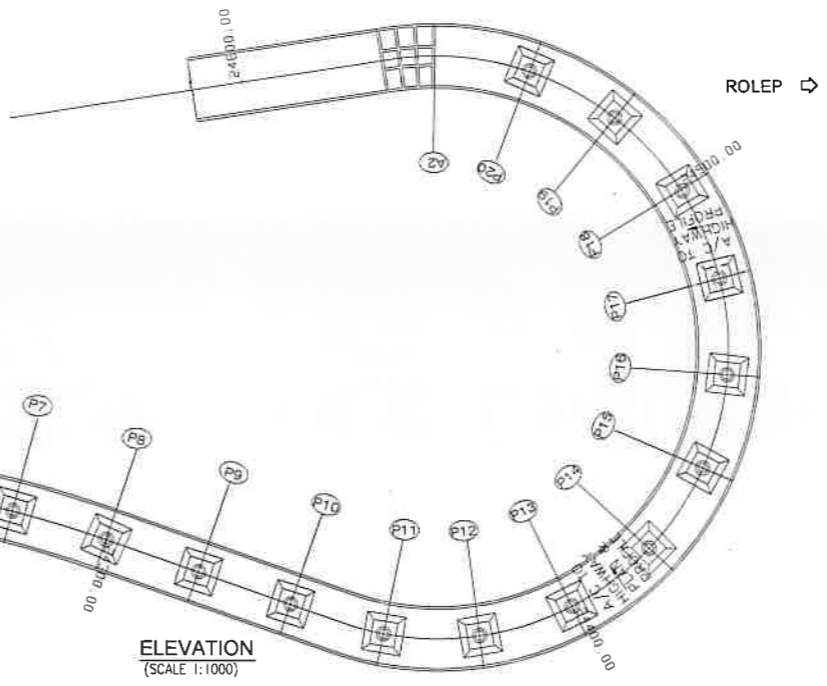
GENERAL ARRANGEMENT DRAWINGS
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(SPAN 14x20.0m)

DWG. NO. :- SAICPL-SESPL/NHIDC/WB-SKM/23+603/GAD-01

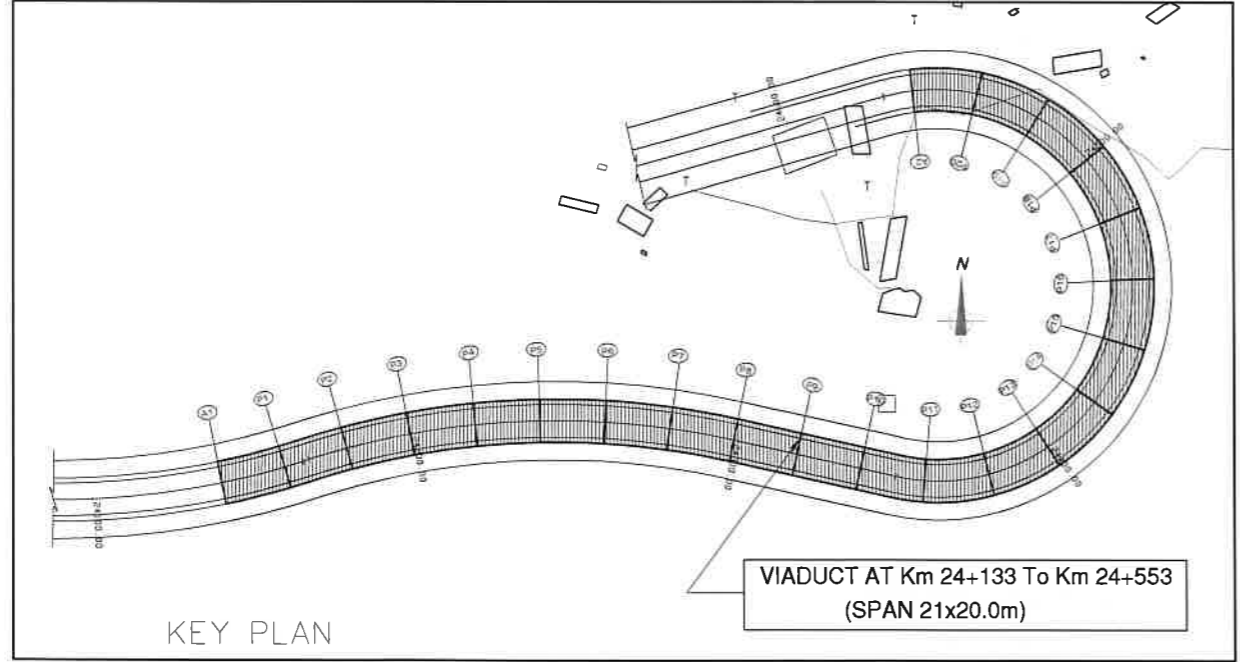
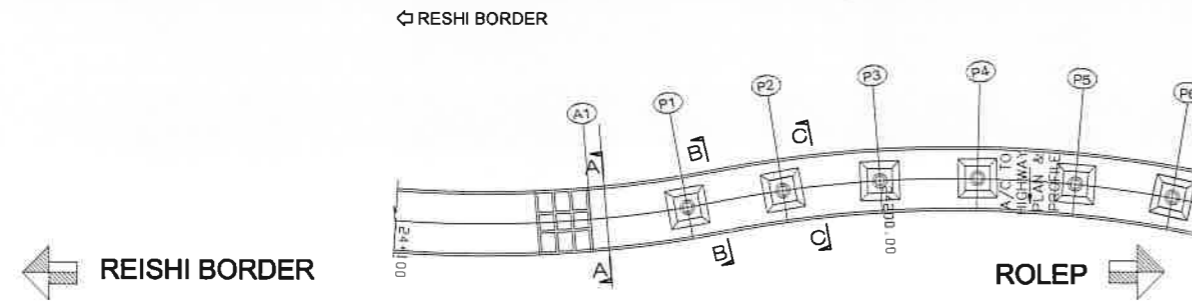


ELEVATION
(SCALE 1:1000)

| | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| FORMATION LEVEL | 893.703 | 894.900 | 896.096 | 897.293 | 898.490 | 899.686 | 900.883 | 902.080 | 903.276 | 904.473 | 905.670 | 906.867 | 908.063 | 909.260 | 910.457 | 911.653 | 912.850 | 914.047 | 915.243 | 916.440 | 917.637 | 918.833 |
| EX. GROUND LEVEL | 883.330 | 881.015 | 879.309 | 879.026 | 882.771 | 881.613 | 877.469 | 876.707 | 881.859 | 889.936 | 897.896 | 894.402 | 882.889 | 878.558 | 875.990 | 878.345 | 881.471 | 887.736 | 896.419 | 901.203 | 907.853 | 912.484 |
| CHAINAGE | 24+133 | 24+153 | 24+173 | 24+193 | 24+213 | 24+233 | 24+253 | 24+273 | 24+293 | 24+313 | 24+333 | 24+353 | 24+373 | 24+393 | 24+413 | 24+433 | 24+453 | 24+473 | 24+493 | 24+513 | 24+533 | 24+553 |



ELEVATION
(SCALE 1:1000)

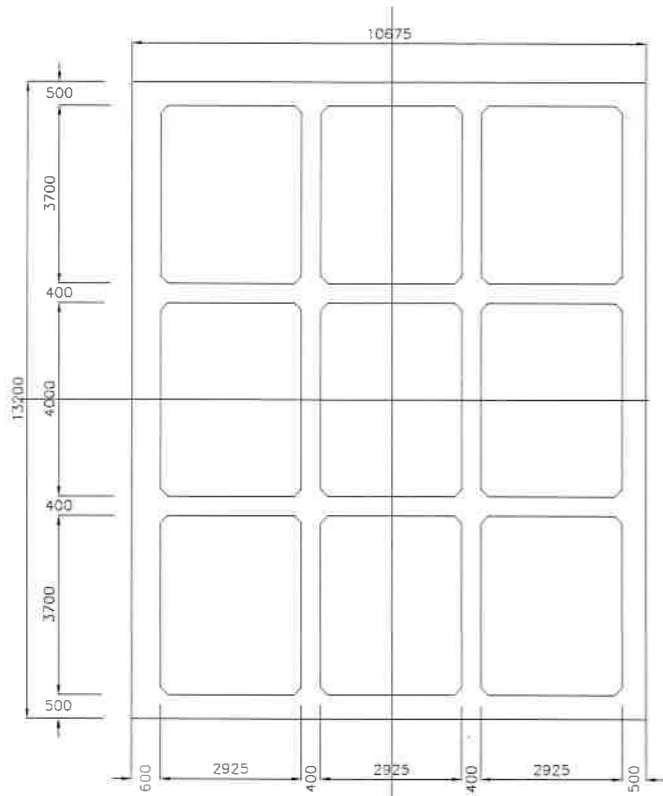


KEY PLAN

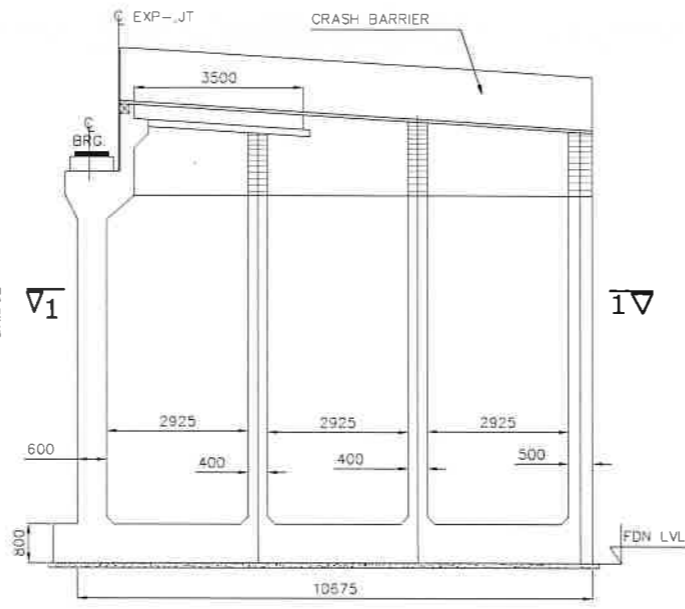
NOTES

1. ALL DIMENSIONS ARE MILLIMETERS AND LEVELS ARE IN METERS.
2. DIMENSIONS ARE NOT TO SCALED, ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
3. THE DIMENSION OF THE FOUNDATION SHOWN HERE TENTATIVE ONLY. THIS SHALL BE FINALIZED AFTER DETAILED SUBSOIL INVESTIGATION.

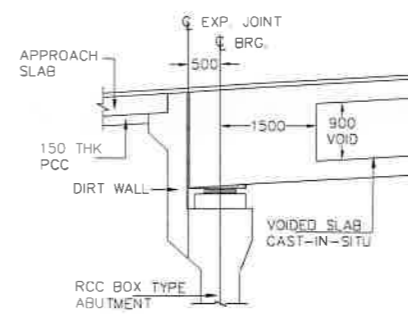
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|---|------|--------------------------|----------|--|--|-------------------|--|-------------------------|--|-------------------------|--|--|--|
| CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (Ministry of Road Transport & Highways) | | | | PROJECT : Against Supplementary Agreement dated 05.12.2019 - To execute the work of preparation of DPR as 'Additional work' for Package-II, III, IV-C and V which forms part of the original Contract Agreement dated 30.09.2014 for Preparation of Feasibility Report cum Preliminary Design for alternative Highway to Gangtok in Sikkim via Bagrakot- Chuikhim -Nimbong-Kafer-Bakhim-Algarah-Rhenok in the State of West Bengal and from Rhenok-Rorathang-Pakyong along with spur from Aritar-Rolep-Menla in the State of Sikkim. (Package:- [I-A]) | | | | DATE : SEPTEMBER - 2020 | | REVISION R0 | | GENERAL ARRANGEMENT DRAWINGS VIADUCT AT Km 24+133 To Km 24+553 (SPAN 21X20.0m) | |
| CONSULTANT: S.A. Infrastructure Consultants Pvt. Ltd. 1101A, 11 Floor Tower A-II, Ansal Corporate Park, Plot No. 7A/1, Sector 142, Noida-201301 (Uttar Pradesh) Phone No- 0120-6148000 Fax-0120-6148090 Email: info@sainfra.com | | | | DESIGNED BY RAVI KUMAR | | DRAWN BY A SEN | | CHECKED BY A REHMAN | | APPROVED BY S Shukla | | DWG. NO. :- SAICPL-SESPL/NHIDC/WB-SKM/24+343/GAD-01 | |
| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS | SCALE:- AS SHOWN | | | | SHEET:- 01 OF 02 | | | | | |



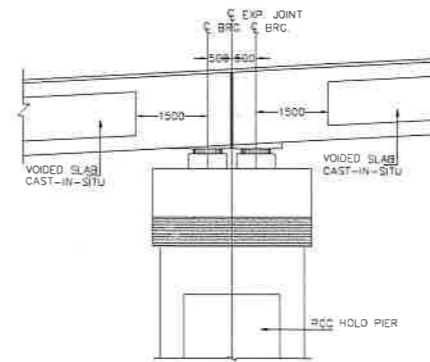
SECTION 1-1
SCALE 1:100



BOX ABUTMENT
SCALE 1:100



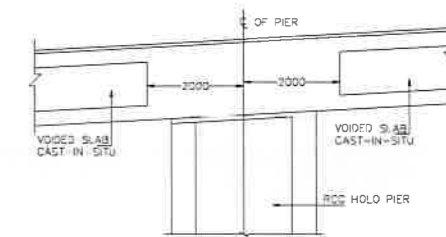
DETAIL-X
(SCALE 1:75)



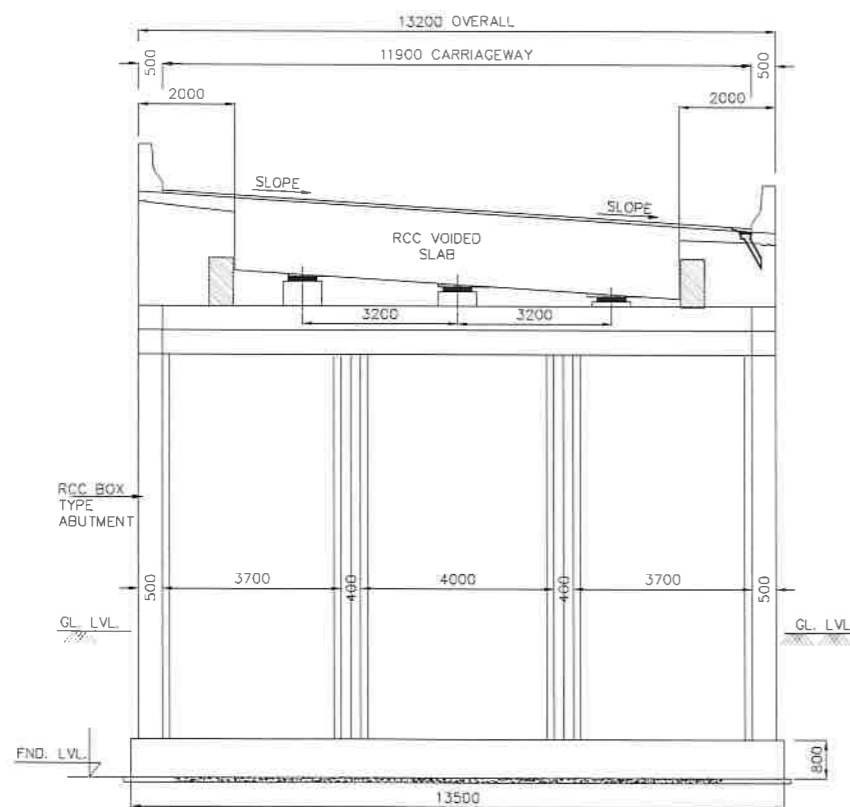
DETAIL-Y
(SCALE 1:75)

NOTES

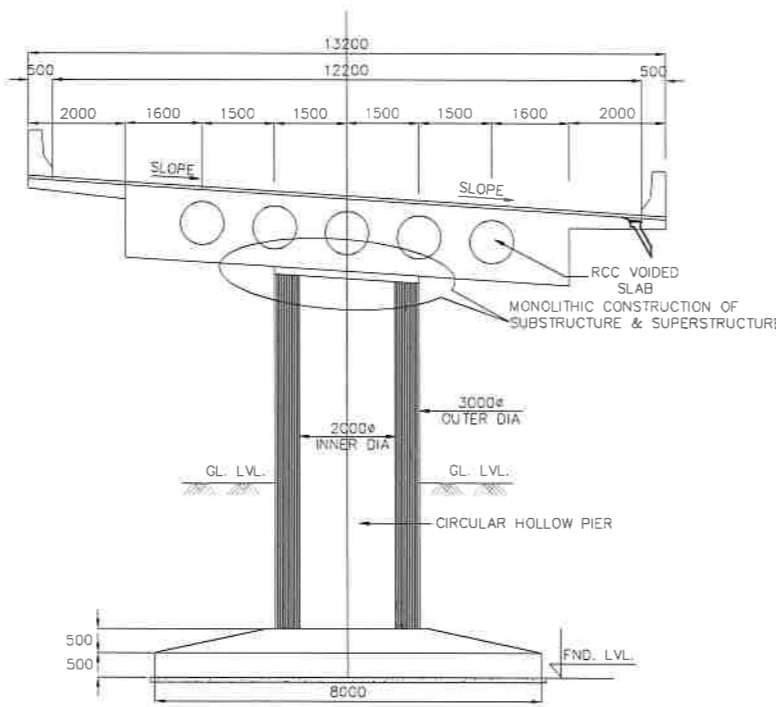
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- THE DIMENSION OF THE FOUNDATION SHOWN HERE TENTATIVE ONLY. THIS SHALL BE FINALIZED AFTER DETAILED SUBSOIL INVESTIGATION.
- BRIDGE HAS BEEN DESIGNED FOR CARRIAGEWAY LIVE LOAD OF 1 LANE 70R + 1 LANE CLASS A 3 LANES OF CLASS A WHICHEVER GIVES WORST EFFECT.
- GRADE OF CONCRETE FOR VARIOUS ELEMENTS ARE AS FOLLOWS: -
(i) SUPERSTRUCTURE(VOIDED) ----- M40
(ii) RCC SUBSTRUCTURE & FOUNDATION --- M35
(iii) RCC RAILING -----M30
(iv) RCC CRASH BARRIER ----- M40
(v) APPROACH SLAB ----- M30
(vi) PEDESTAL ----- M40
- TYPE OF BEARING PROPOSED HERE IS POT-PTEE AS PER IRC:83, PART-III
- SINGLE STRIP SEAL EXPANSION JOINT IS USED.
- GRADE OF CEMENT IS USED HERE IS OPC 43/OPc 53.
- ALL REINFORCEMENT BARS ARE TMT BARS (GRADE DESIGNATION Fe500D) AS PER IS:1786
- BRIDGE HAS BEEN DESIGNED CONSIDERING SEISMIC ZONE AS IV.
- SUPERELEVATION SHALL BE MAINTAINED AS PER HIGHWAY PLAN & PROFILE.
- SAFE BEARING CAPACITY FOR PRILIMINARY DESIGN AT FOUNDING LEVEL IS CONSIDERED AS 40t/m²
- CONSTRUCTION JOINT



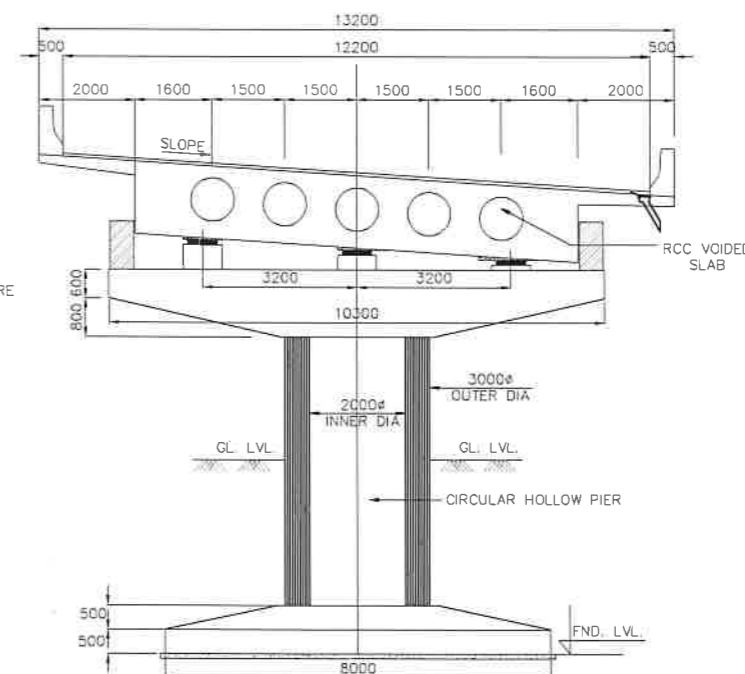
DETAIL-Z
(SCALE 1:75)



SECTION A-A
SCALE 1:100



SECTION C-C
SCALE 1:100



SECTION B-B
SCALE 1:100

| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS |
|-----|---------|-------------------------------|----------|
| R0 | SEPT-20 | DRAFT DETAILED PROJECT REPORT | A B C D |

CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED
(Ministry of Road Transport & Highways)

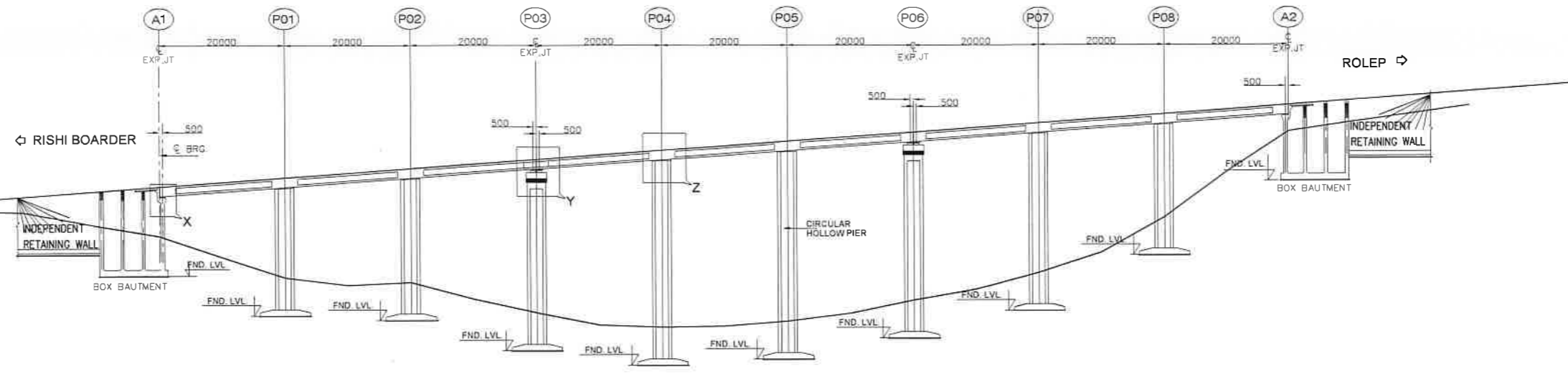
CONSULTANT: S.A. Infrastructure Consultants Pvt. Ltd.
1101A, 11 Floor Tower A-II, Ansal Corporate Park,
Plot No. 7A/1, Sector 142, Noida-201301 (Uttar Pradesh)
Phone No- 0120-6148000 Fax-0120-6148090
Email: Info@salnra.com

PROJECT : Against Supplementary Agreement dated 05.12.2019 - To execute the work of preparation of DPR as 'Additional work' for Package-II, III, IV-C and V which forms part of the original Contract Agreement dated 30.09.2014 for Preparation of Feasibility Report cum Preliminary Design for alternative Highway to Gangtok in Sikkim via Bagrakot- Chukkhim -Nimbung-Kafer-Bakhim-Algarah-Rhenok in the State of West Bengal and from Rhenok-Rorathang-Pakyong along with spur from Aritar-Rolep-Menta in the State of Sikkim. (Package - II-A)

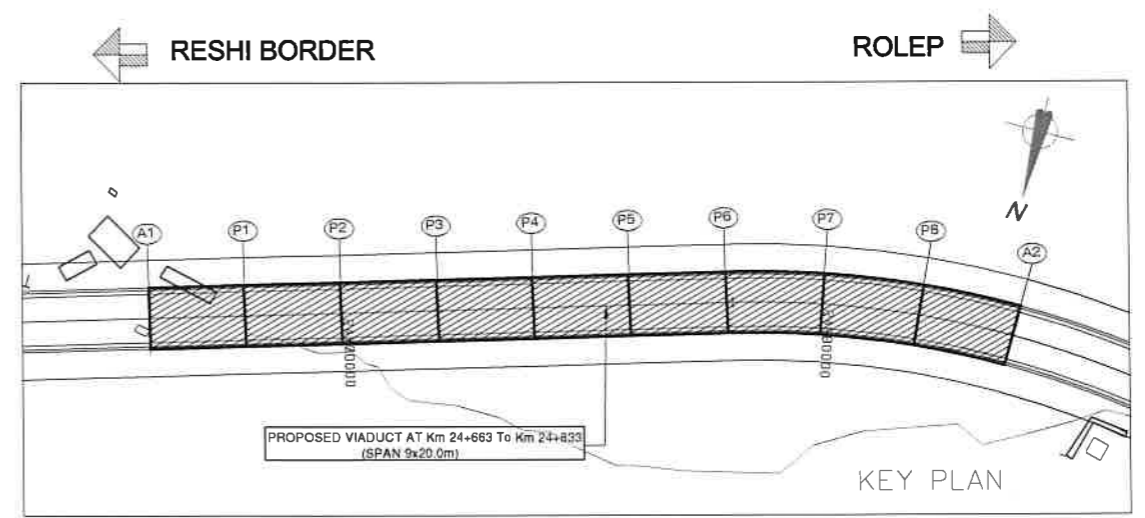
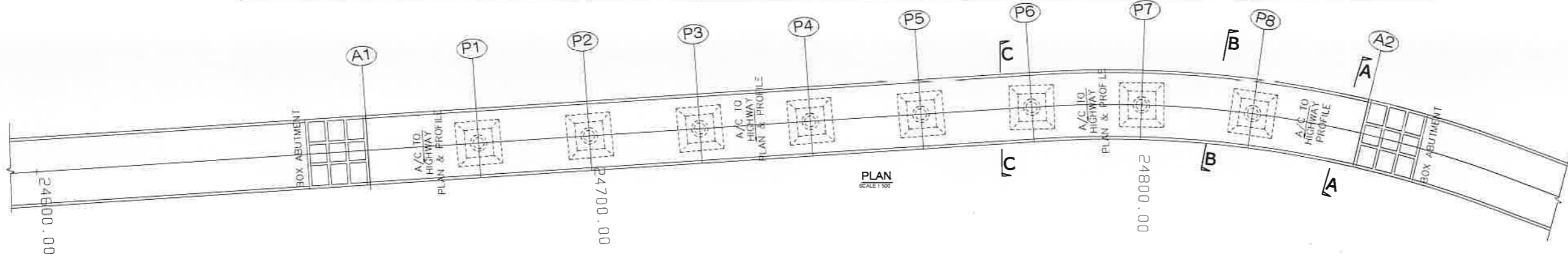
| DATE | SEPTEMBER-2020 | REVISION | R0 |
|------------------|----------------|------------------|----------|
| DESIGNED BY | RAVI KUMAR | CHECKED BY | A REHMAN |
| DRAWN BY | A SEN | APPROVED BY | S.Shukla |
| SCALE:- AS SHOWN | | SHEET:- 02 OF 02 | |

GENERAL ARRANGEMENT DRAWINGS
VIADUCT AT Km 24+133 To Km 24+553
(SPAN 21X20.0m)

DWG. NO. :- SAICPL-SESPL/NHIDC/WB-SKM/24+343/GAD-01

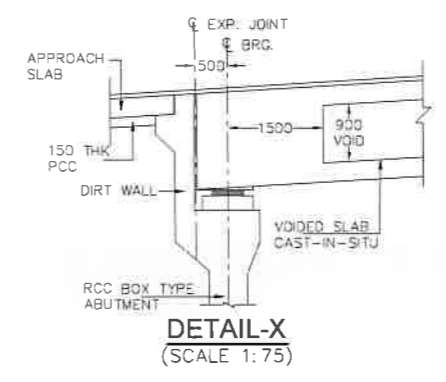
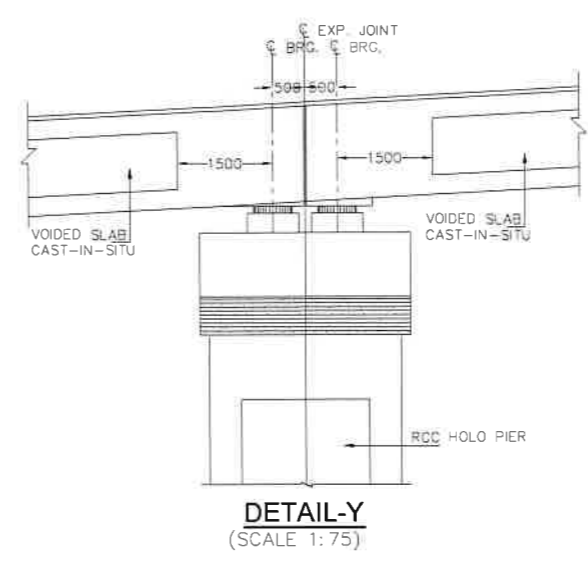
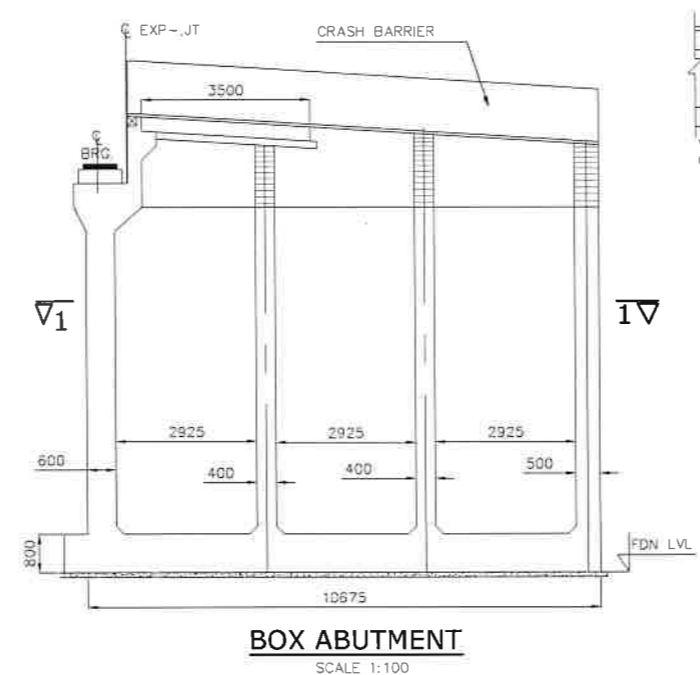
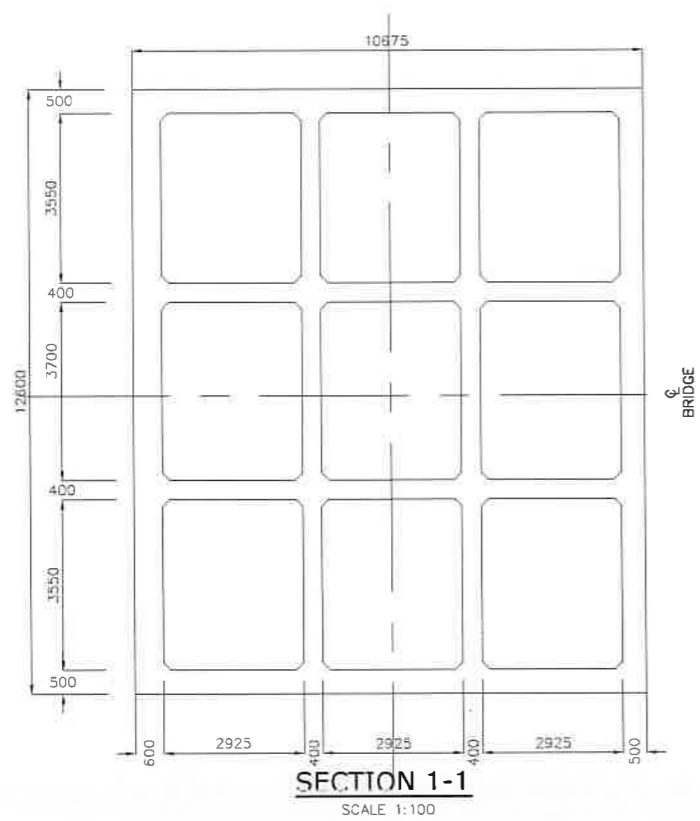


| | | | | | | | | | | |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| FORMATION LEVEL | 924.817 | 926.014 | 927.210 | 928.407 | 929.604 | 930.800 | 931.997 | 933.194 | 934.390 | 935.587 |
| EX.GROUND LEVEL | 916.066 | 911.740 | 910.435 | 906.500 | 905.680 | 907.005 | 910.533 | 914.539 | 923.472 | 933.273 |
| CHAINAGE | 24+653 | 24+673 | 24+693 | 24+713 | 24+733 | 24+753 | 24+773 | 24+793 | 24+813 | 24+833 |

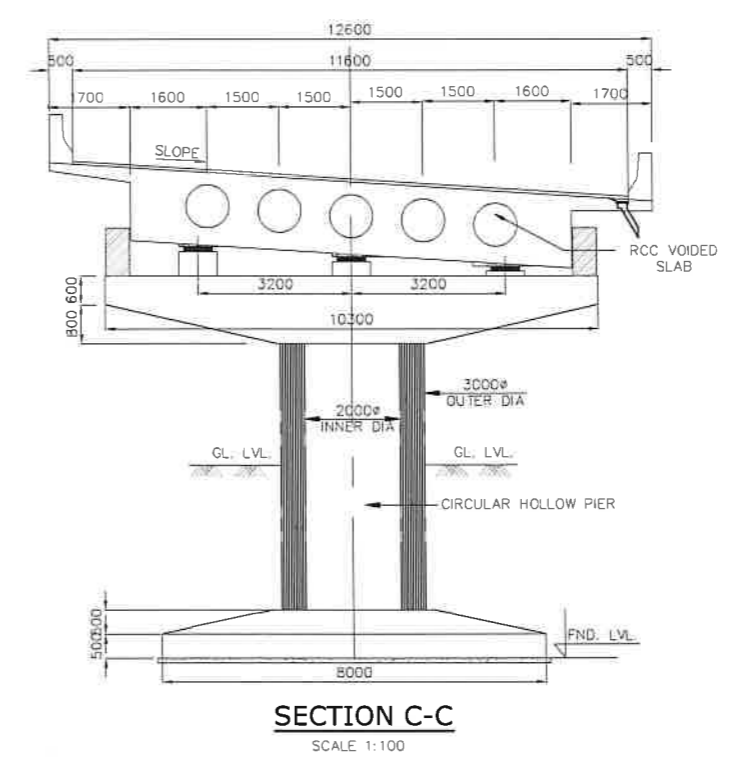
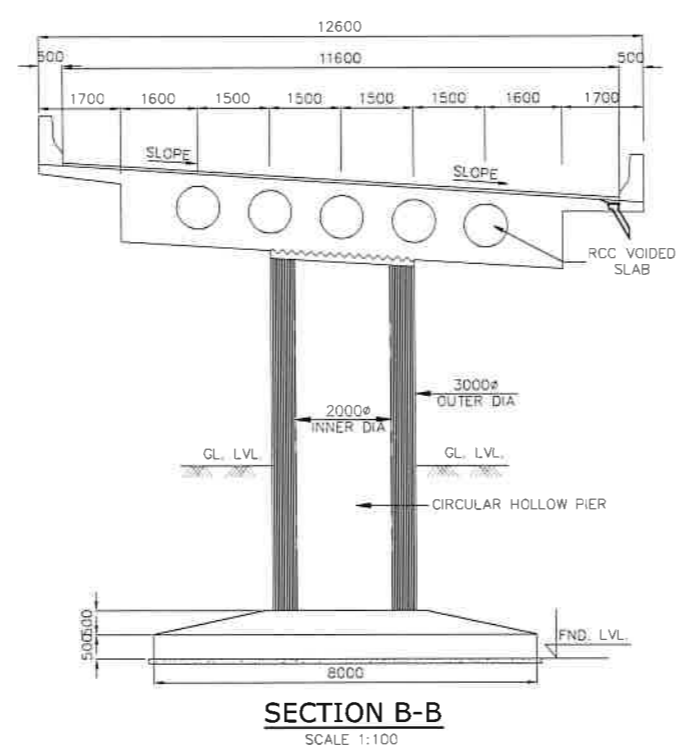
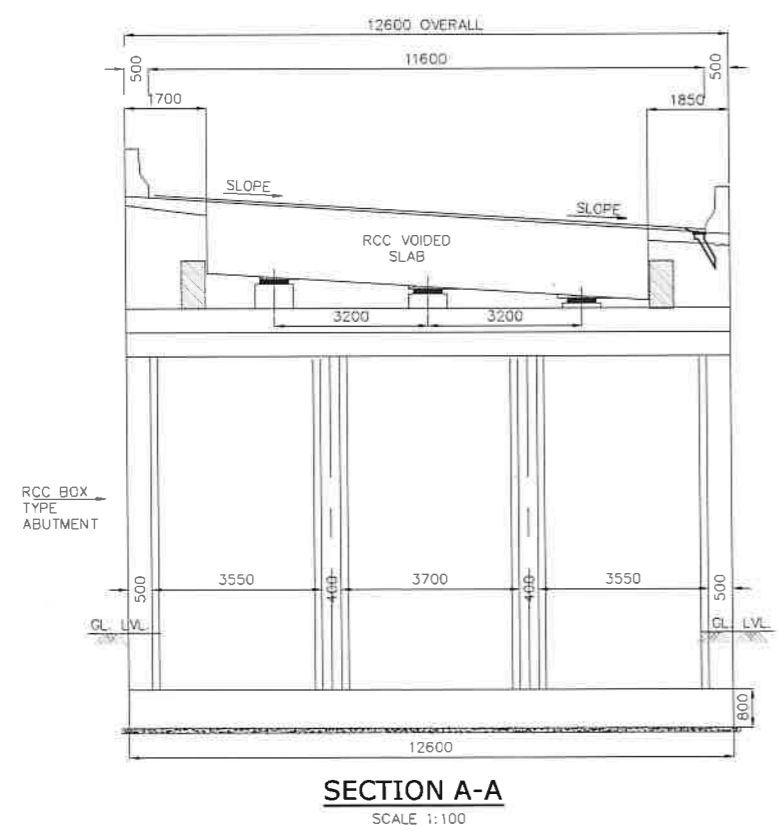
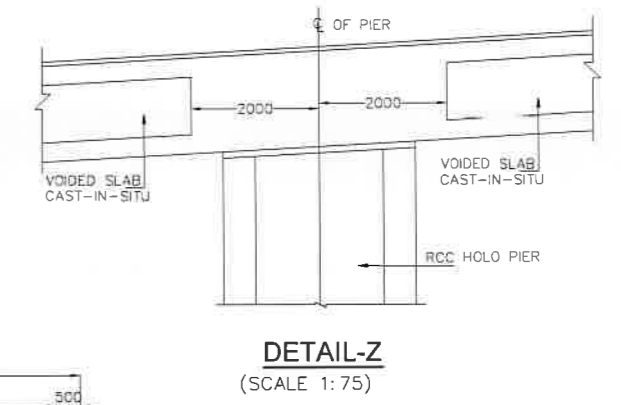


- NOTES
1. ALL DIMENSIONS ARE MILLIMETERS AND LEVELS ARE IN METERS.
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| | | | | | | | | | | | | | |
|-----|------|--------------------------|----------|---|---|---|---|--------------------------------------|--|--|--|---|--|
| | | | | CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED (Ministry of Road Transport & Highways) | | PROJECT : Against Supplementary Agreement dated 05.12.2019 - To execute the work of preparation of DPR as 'Additional work' for Package-II, III, IV-C and V which forms part of the original Contract Agreement dated 30.09.2014 for Preparation of Feasibility Report cum Preliminary Design for alternative Highway to Gangtok in Sikkim via Bagrakot- Chuikhim -Nimbong-Kafer-Bakhim-Algarah-Rhenok in the State of West Bengal and from Rhenok-Rorathang-Pakyong along with spur from Aritar-Rolep-Menta in the State of Sikkim. (Package-II-A) | | | | DATE : SEPTEMBER - 2020 REVISION : R0 | | GENERAL ARRANGEMENT DRAWINGS PROPOSED VIADUCT AT Km 24+653 To Km 24+833 (SPAN 9x20.0m) | |
| | | | | CONSULTANT : S.A. Infrastructure Consultants Pvt. Ltd. 1101A, 11 Floor Tower A-II, Ansal Corporate Park, Plot No. 7A/1, Sector 142, Noida-201301 (Uttar Pradesh) Phone No- 0120-6148000 Fax-0120-6148090 Email: Info@sainfra.com | | DESIGNED BY : RAVI KUMAR DRAWN BY : A SEN CHECKED BY : A REHMAN APPROVED BY : S. Shukla | | SCALE:- AS SHOWN SHEET:- 01 OF 02 | | DWG. NO. :- SAICPL-SESPLNHIDC/WB-SKM/24+743/GAD-01 | | | |
| NO | DATE | DESCRIPTION OF REVISIONS | INITIALS | A | B | C | D | | | | | | |
| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS | | | | | | | | | | |



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 5. GRADE OF CONCRETE FOR VARIOUS ELEMENTS ARE AS FOLLOWS: -
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(ii) RCC SUBSTRUCTURE & FOUNDATION ---- M35
(iii) RCC RAILING -----M30
(iv) RCC CRASH BARRIER ----- M40
(v) APPROACH SLAB ----- M30
(vi) PEDESTAL ----- M40
 6. TYPE OF BEARING PROPOSED HERE IS POT-PTFE AS PER IRC:83, PART-III
 7. SINGLE STRIP SEAL EXPANSION JOINT IS USED.
 8. GRADE OF CEMENT IS USED HERE IS OPC 43/OPc 53.
 9. ALL REINFORCEMENT BARS ARE TMT BARS (GRADE DESIGNATION Fe500D) AS PER IS:1786.
 10. BRIDGE HAS BEEN DESIGNED CONSIDERING SEISMIC ZONE AS IV.
 11. SUPERELEVATION SHALL BE MAINTAINED AS PER HIGHWAY PLAN & PROFILE.
 12. SAFE BEARING CAPACITY FOR PRILIMINARY DESIGN AT FOUNDING LEVEL IS CONSIDERED AS 40t/m²
 13. CONSTRUCTION JOINT



| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS |
|-----|---------|-------------------------------|----------|
| RD | SEPT-20 | DRAFT DETAILED PROJECT REPORT | A B C D |

CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED
(Ministry of Road Transport & Highways)

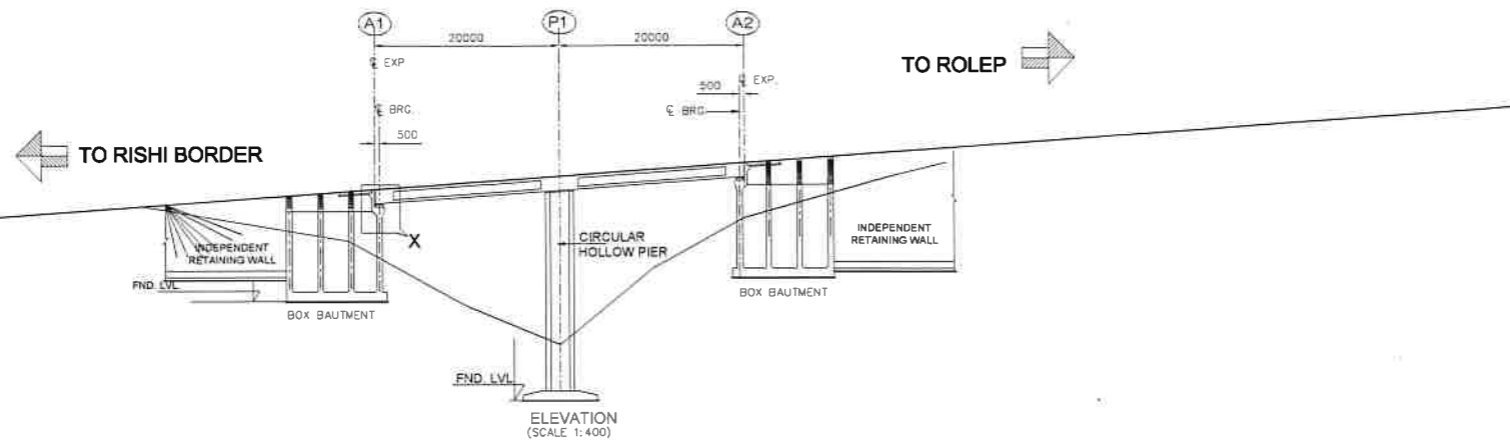
CONSULTANT: S.A. Infrastructure Consultants Pvt. Ltd.
1101A, 11 Floor Tower A-II, Ansal Corporate Park,
Plot No. 7A/1, Sector 142, Noida-201301 (Uttar Pradesh)
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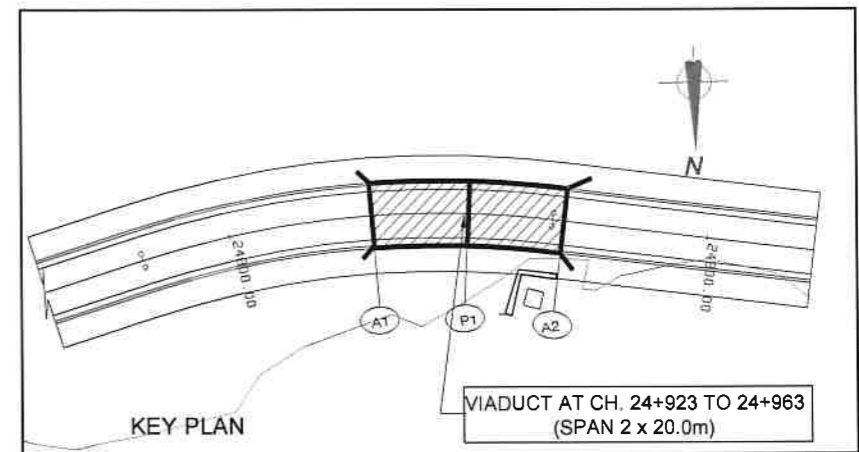
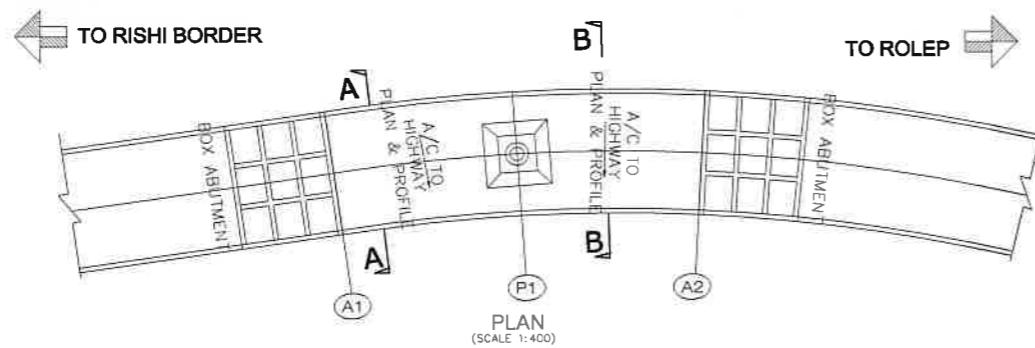
| DATE : | SEPTEMBER - 2020 | REVISION | R0 |
|-------------|------------------|-------------|----------|
| DESIGNED BY | RAVI KUMAR | DRAWN BY | A SEN |
| CHECKED BY | AREHMAN | APPROVED BY | S.Shukla |
| SCALE:- | AS SHOWN | SHEET:- | 02 OF 02 |

GENERAL ARRANGEMENT DRAWINGS
PROPOSED VIADUCT AT Km 24+660 To Km 24+840
(SPAN 9x20.0m)

DWG. NO. :- SAICPL-SESPL/NHDC/WB-SKM/24+743/GAD-01



| | | | |
|-----------------|---------|---------|---------|
| FORMATION LEVEL | 940.972 | 942.169 | 943.365 |
| EX GROUND LEVEL | 932.417 | 930.730 | 941.969 |
| CHAINAGE | 24+923 | 24+943 | 24+963 |



NOTES

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|-----|---------|-------------------------------|----------|---|---|
| RO | SEPT-20 | DRAFT DETAILED PROJECT REPORT | | | |
| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS | A | B |

CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED
(Ministry of Road Transport & Highways)

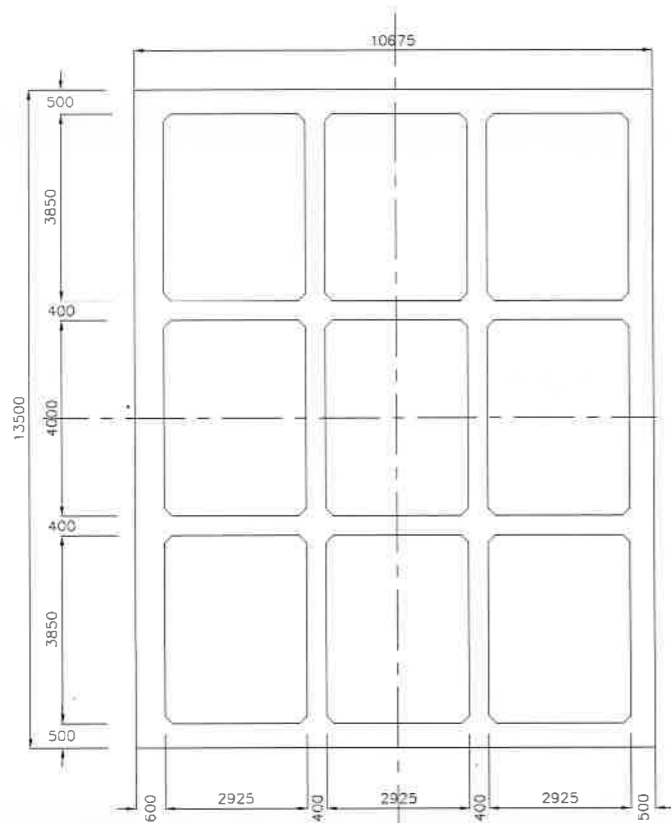
CONSULTANT: S.A. Infrastructure Consultants Pvt. Ltd.
1101A, 11 Floor Tower A-II, Ansal Corporate Park,
Plot No. 7A/1, Sector 142, Noida-201301 (Uttar Pradesh)
Phone No- 0120-6148000 Fax-0120-6148090
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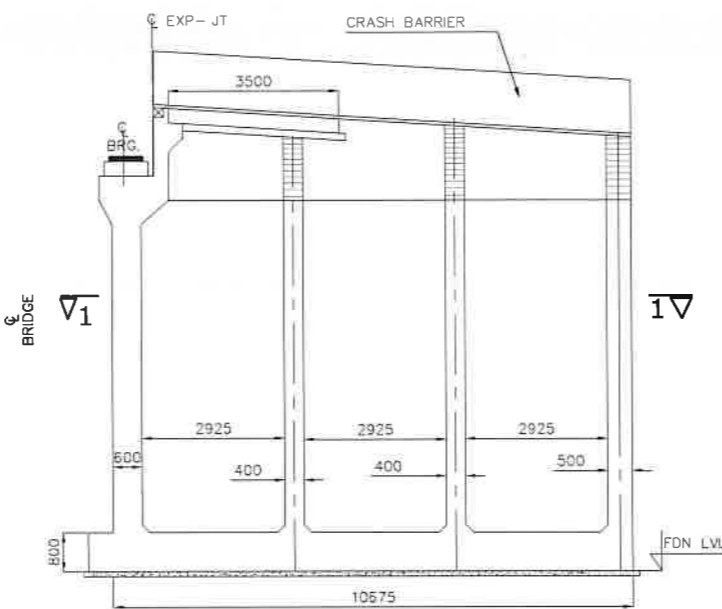
| | |
|-------------------------|-----------------------|
| DATE: SEPTEMBER - 2020 | REVISION: R0 |
| DESIGNED BY: RAVI KUMAR | DRAWN BY: A SEN |
| CHECKED BY: AREHMAN | APPROVED BY: S.Shukla |
| SCALE:- AS SHOWN | SHEET:- 01 OF 02 |

GENERAL ARRANGEMENT DRAWINGS OF VIADUCT AT CH- 24+923 TO 24+963 (SPAN-2X20.0M)

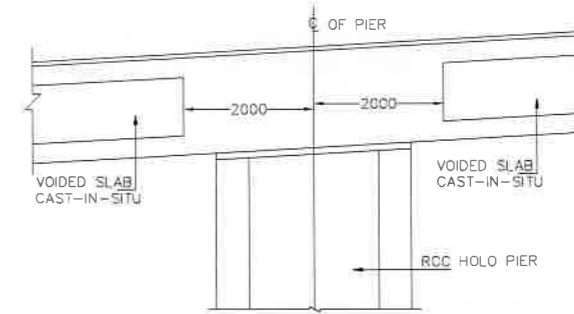
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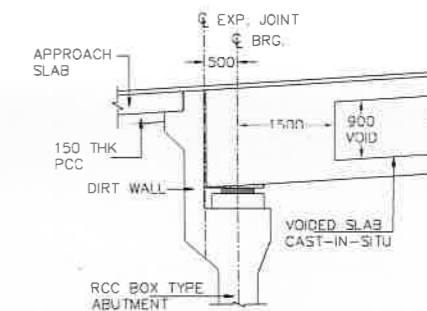
SECTION 1-1
SCALE 1:100



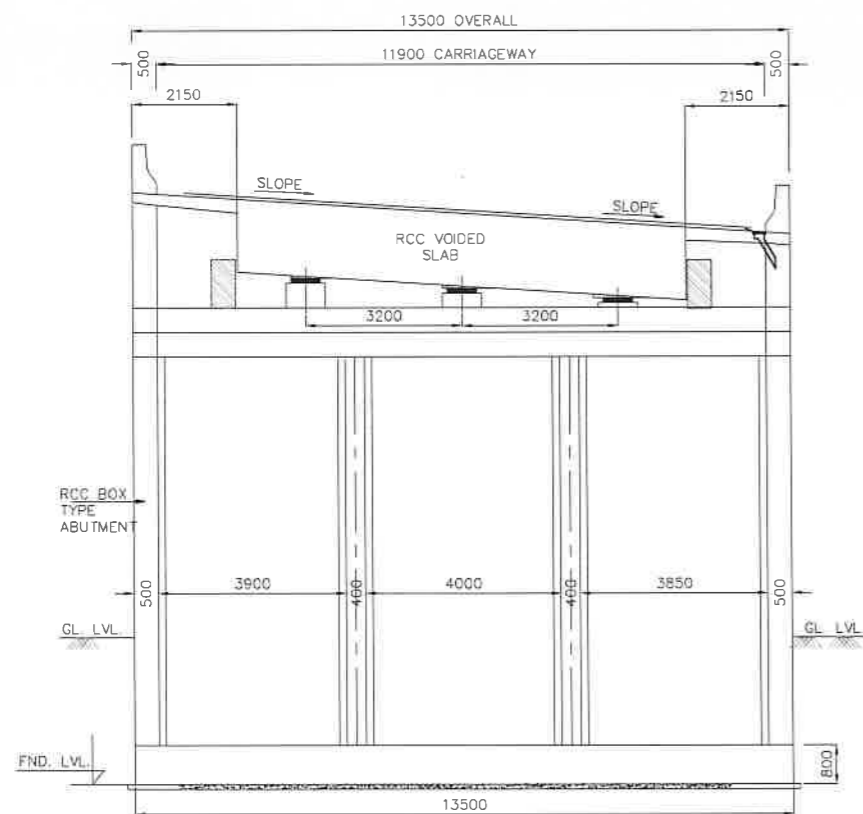
BOX ABUTMENT
SCALE 1:100



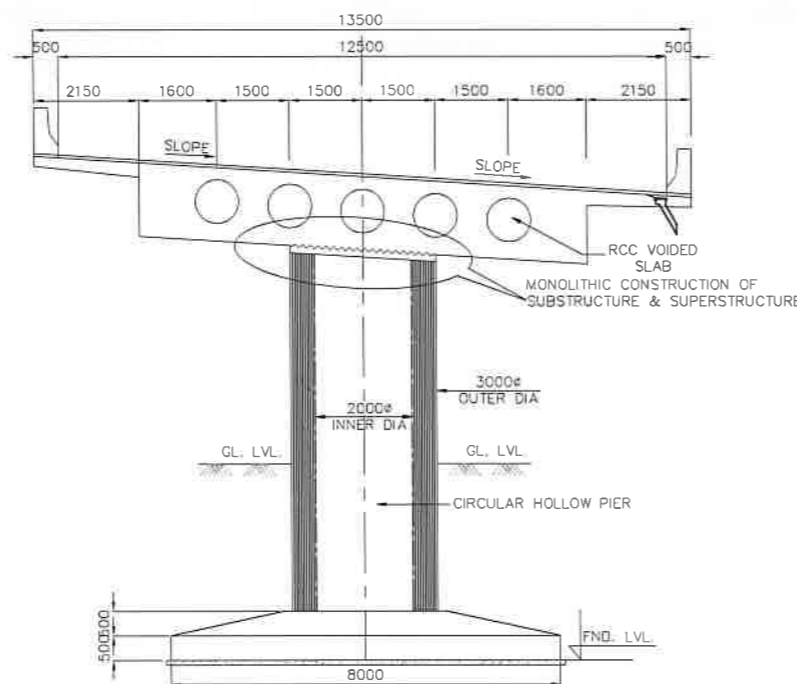
DETAIL-Y
(SCALE 1:100)



DETAIL-X
(SCALE 1:100)



SECTION A-A
SCALE 1:100



SECTION B-B
SCALE 1:100

- NOTES**
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| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS |
|-----|---------|-------------------------------|----------|
| R0 | SEPT-20 | DRAFT DETAILED PROJECT REPORT | |

CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED
(Ministry of Road Transport & Highways)

CONSULTANT : S.A. Infrastructure Consultants Pvt. Ltd.
1101A, 11 Floor Tower A-II, Ansal Corporate Park,
Plot No. 7A/1, Sector 142, Noida-201301 (Uttar Pradesh)
Phone No - 0120-6148000 Fax-0120-6148090
Email: info@salinfra.com

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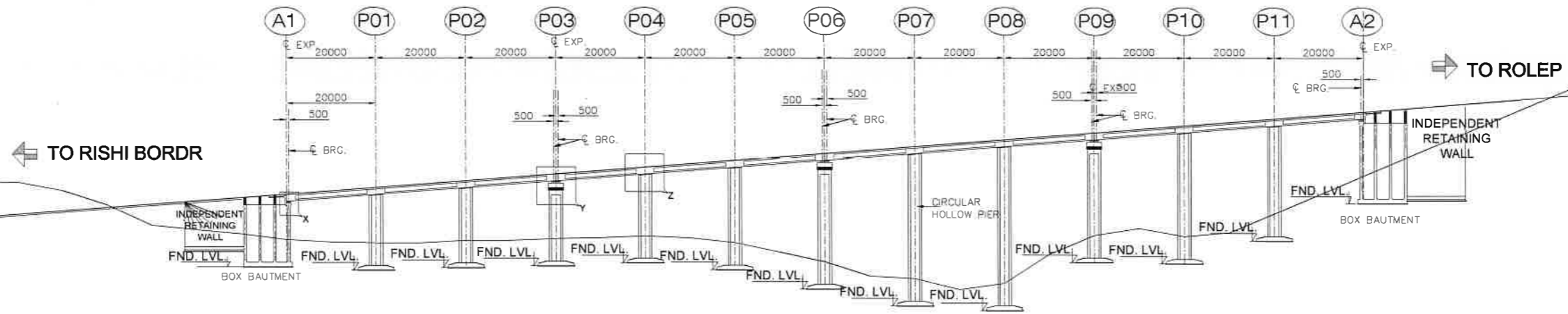
| DESIGNED BY | DRAWN BY | CHECKED BY | APPROVED BY |
|-------------|----------|------------|-------------|
| RAVI KUMAR | A SEN | AREHMAN | S.Shukla |

DATE: SEPTEMBER - 2020
REVISION: R0

SCALE:- AS SHOWN
SHEET:- 02 OF 02

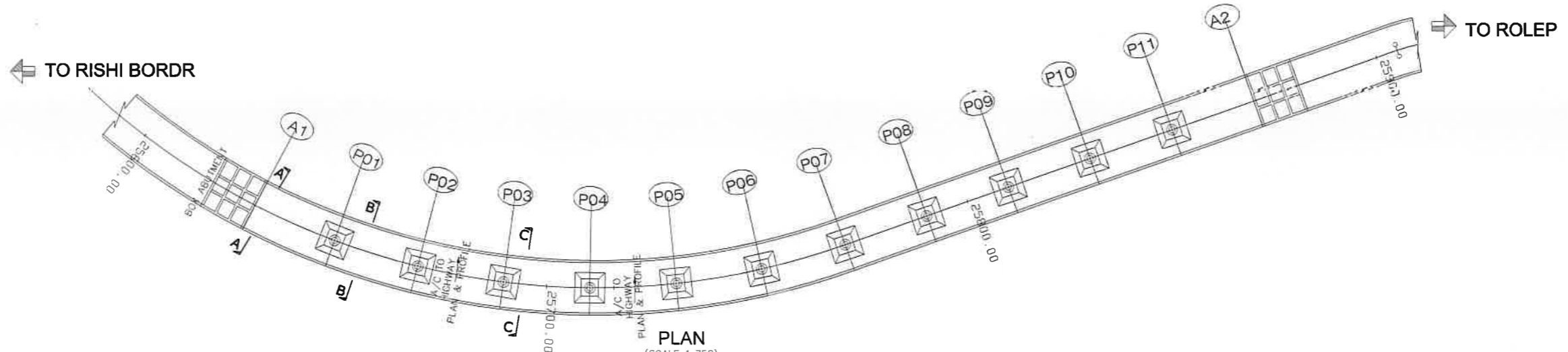
GENERAL ARRANGEMENT DRAWINGS OF VIADUCT AT CH- 24+930 TO 24+070 (SPAN-2X20.0M)

DWG. NO. :- SAICPL-SESPL/NHIDC/WB-SKM/24+943/GAD-01



ELEVATION
(SCALE 1:750)

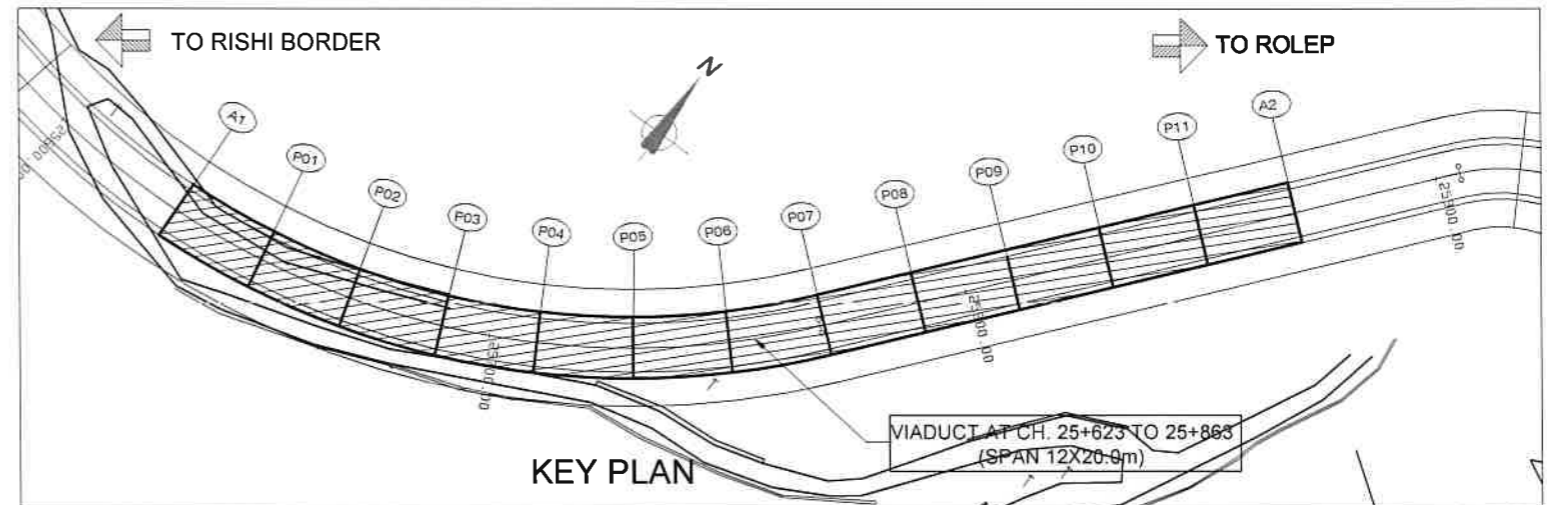
| | | | | | | | | | | | | | |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| FORMATION LEVEL | 983.093 | 984.342 | 985.596 | 986.855 | 988.120 | 989.389 | 990.664 | 991.943 | 993.228 | 994.518 | 995.814 | 997.113 | 998.413 |
| EX.GROUND LEVEL | 973.930 | 973.593 | 973.610 | 974.556 | 974.738 | 972.544 | 968.158 | 965.918 | 970.501 | 976.785 | 974.502 | 981.502 | 988.501 |
| CHAINAGE | 25+623 | 25+643 | 25+663 | 25+683 | 25+703 | 25+723 | 25+743 | 25+763 | 25+783 | 25+803 | 25+823 | 25+843 | 25+863 |



PLAN
(SCALE 1:750)

NOTES

- ALL DIMENSIONS ARE MILLIMETERS AND LEVELS ARE IN METERS.
- DIMENSIONS ARE NOT TO SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- THE DIMENSION OF THE FOUNDATION SHOWN HERE TENTATIVE ONLY. THIS SHALL BE FINALIZED AFTER DETAILED SUBSOIL INVESTIGATION.
- BRIDGE HAS BEEN DESIGNED FOR CARRIAGEWAY LIVE LOAD OF 1 LANE 70R OR 2 LANES OF CLASS A WHICHEVER GIVES WORST EFFECT.
- GRADE OF CONCRETE FOR VARIOUS ELEMENTS ARE AS FOLLOWS:-
 - (i) SUPERSTRUCTURE(VOIDED) ----- M40
 - (ii) RCC SUBSTRUCTURE & FOUNDATION ---- M40
 - (iii) RCC RAILING -----M30
 - (iv) RCC CRASH BARRIER ----- M40
 - (v) APPROACH SLAB ----- M30
 - (vi) PEDESTAL ----- M40
- TYPE OF BEARING PROPOSED HERE IS POT-PTEF AS PER IRC:83, PART-III
- SINGLE STRIP SEAL EXPANSION JOINT IS USED.
- GRADE OF CEMENT IS USED HERE IS OPC 43/OPC 53.
- ALL REINFORCEMENT BARS ARE TMT BARS (GRADE DESIGNATION Fe5000) AS PER IS:1786.
- BRIDGE HAS BEEN DESIGNED CONSIDERING SEISMIC ZONE AS IV.
- SUPERELEVATION SHALL BE MAINTAINED AS PER HIGHWAY PLAN & PROFILE.
- SAFE BEARING CAPACITY FOR PRELIMINARY DESIGN AT FOUNDING LEVEL IS CONSIDERED AS 40t/m²



KEY PLAN

| | | | |
|-----|---------|-------------------------------|----------|
| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS |
| R0 | SEPT-20 | DRAFT DETAILED PROJECT REPORT | |

CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED
(Ministry of Road Transport & Highways)

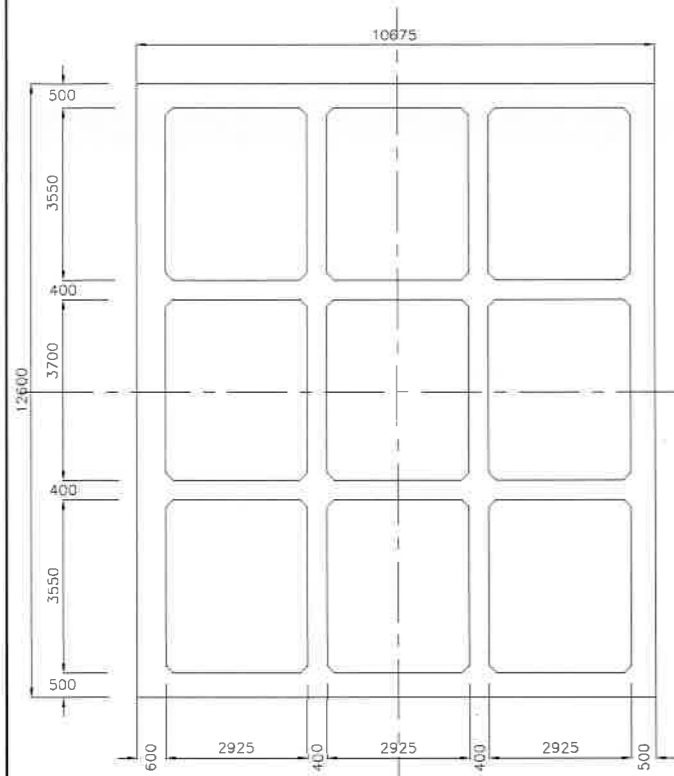
CONSULTANT: S.A. Infrastructure Consultants Pvt. Ltd.
1101A, 11 Floor Tower A-II, Ansal Corporate Park,
Plot No. 7A/1, Sector 142, Noida-201301 (Uttar Pradesh)
Phone No- 0120-6148000 Fax-0120-6148090
Email: info@salnfra.com

PROJECT : Against Supplementary Agreement dated 05.12.2019 - To execute the work of preparation of DPR as 'Additional work' for Package-II, III, IV-C and V which forms part of the original Contract Agreement dated 30.09.2014 for Preparation of Feasibility Report cum Preliminary Design for alternative Highway to Gangtok in Sikkim via Bagrakot- Chuikhim -Nimbong-Kafer-Bakhim-Algarah-Rhenok in the State of West Bengal and from Rhenok-Rorathang-Pakyong along with spur from Antar-Rolep-Mentla in the State of Sikkim. (Package- II-A)

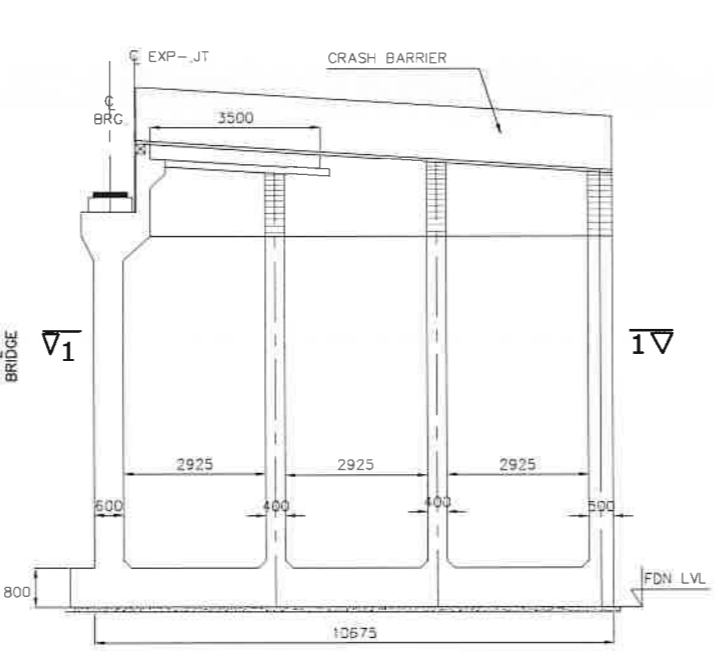
| | |
|---------------------------|-------------------------|
| DATE: SEPTEMBER-2020 | REVISION R0 |
| DESIGNED BY RAWI KUMAR | DRAWN BY A SEN |
| CHECKED BY AREHMAN | APPROVED BY S.Shukla |
| SCALE:- AS SHOWN | SHEET:- 01 OF 02 |

GENERAL ARRANGEMENT DRAWINGS OF VIADUCT AT CH- 25+623 TO 25+863 (SPAN-12X20.0)

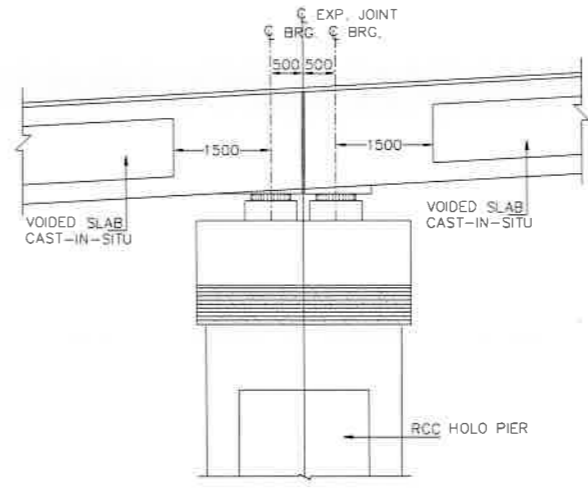
DWG. NO. :- SAICPL-SESPL/NHIDC/WB-SKM/25+743/GAD-01



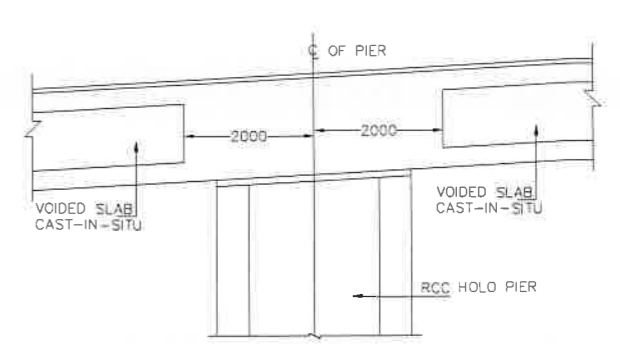
SECTION 1-1
SCALE 1:100



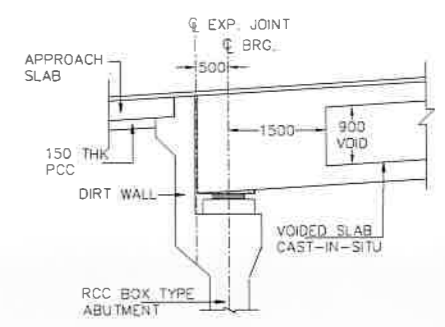
BOX ABUTMENT
SCALE 1:100



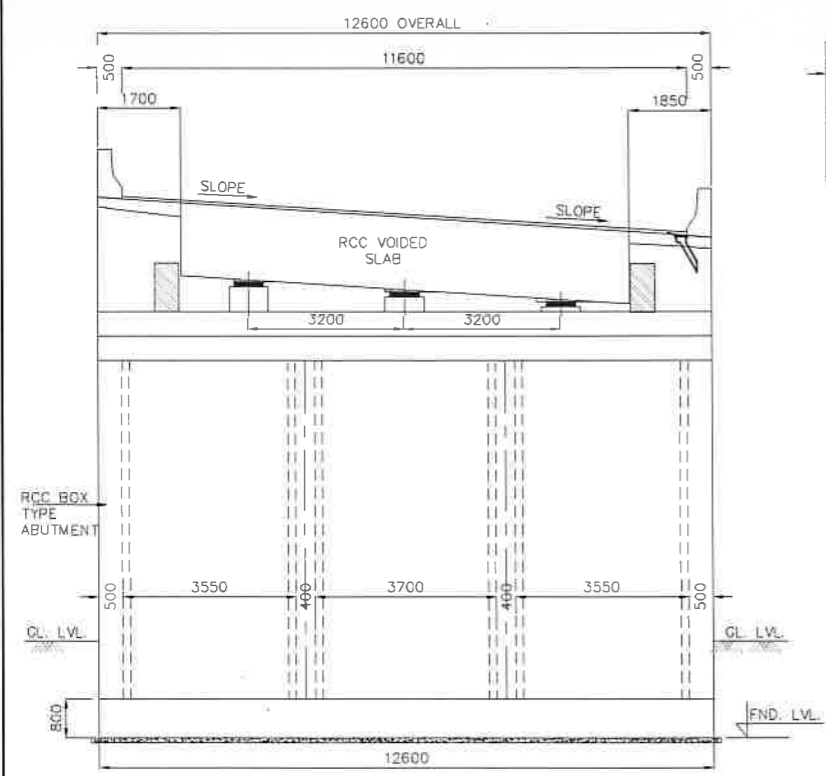
DETAIL-Y
(SCALE 1:75)



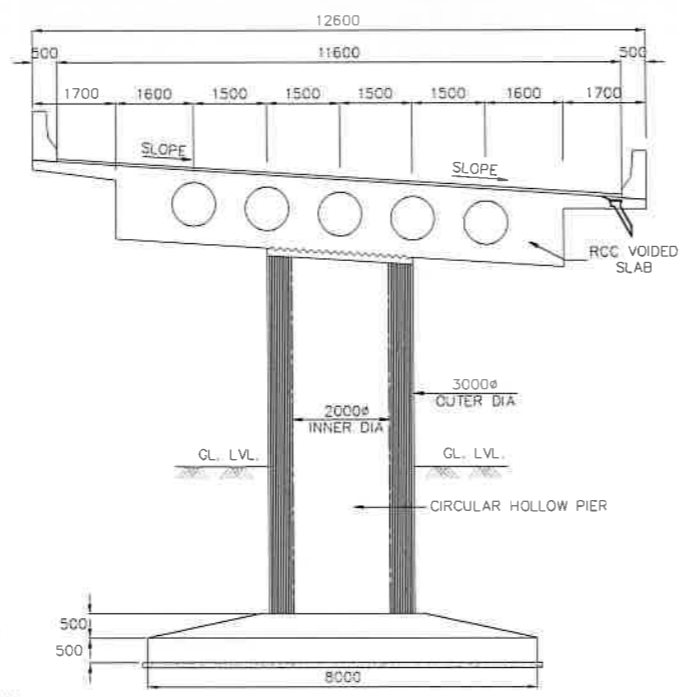
DETAIL-Z
(SCALE 1:75)



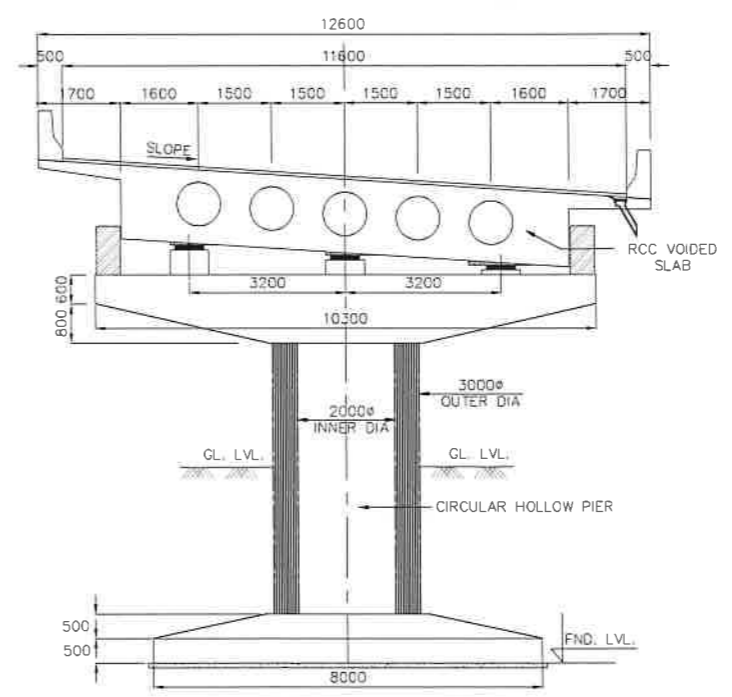
DETAIL-X
(SCALE 1:75)



SECTION A-A
SCALE 1:100



SECTION B-B
SCALE 1:100



SECTION C-C
SCALE 1:100

- NOTES**
1. ALL DIMENSIONS ARE MILLIMETERS AND LEVELS ARE IN METERS.
 2. DIMENSIONS ARE NOT TO SCALE, ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
 3. THE DIMENSION OF THE FOUNDATION SHOWN HERE TENTATIVE ONLY, THIS SHALL BE FINALIZED AFTER DETAILED SUBSOIL INVESTIGATION.

| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS |
|-----|---------|-------------------------------|----------|
| R0 | SEPT-20 | DRAFT DETAILED PROJECT REPORT | |

CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED
(Ministry of Road Transport & Highways)

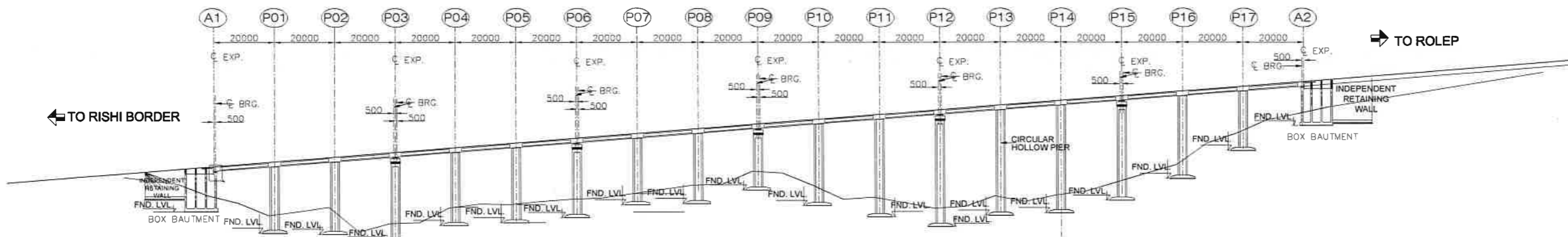
CONSULTANT : S.A. Infrastructure Consultants Pvt. Ltd.
1101A, 11 Floor Tower A-II, Ansal Corporate Park,
Plot No. 7A/1, Sector 142, Noida-201301 (Uttar Pradesh)
Phone No- 0120-6148000 Fax-0120-6148090
Email: info@salnfra.com

PROJECT : Against Supplementary Agreement dated 05.12.2019 - To execute the work of preparation of DPR as 'Additional work' for Package-II, III, IV-C and V which forms part of the original Contract Agreement dated 30.09.2014 for Preparation of Feasibility Report cum Preliminary Design for alternative Highway to Gangtok in Sikkim via Bagrakot- Chui khim -Nimbong-Kafer-Bakhim-Algarah-Rhenok in the State of West Bengal and from Rhenok-Rorathang-Pakyong along with spur from Antar-Rolep-Menla in the State of Sikkim. (Package:- II-A)

| DATE : | SEPTEMBER - 2020 | REVISION | R0 |
|-------------|------------------|-------------|----------|
| DESIGNED BY | RAVI KUMAR | DRAWN BY | A SEN |
| CHECKED BY | AREHMAN | APPROVED BY | S.Shukla |
| SCALE:- | AS SHOWN | SHEET:- | 02 OF 02 |

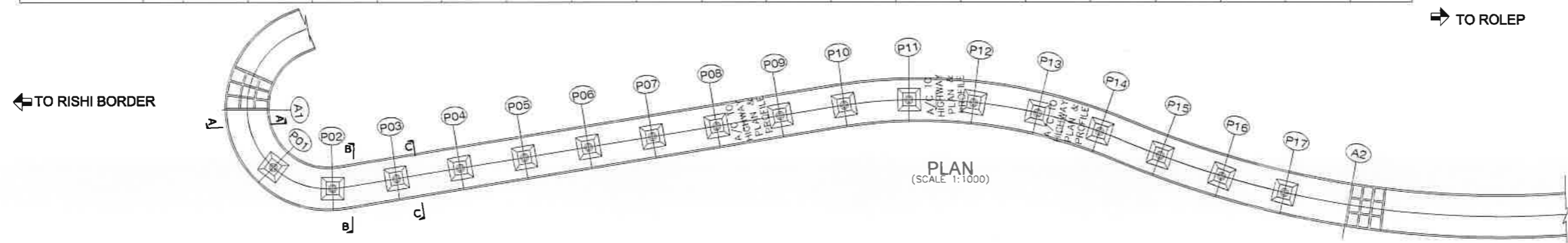
GENERAL ARRANGEMENT DRAWINGS OF VIADUCT AT CH- 25+623 TO 25+863 (SPAN-12X20.0)

DWG. NO. :- SAICPL-SESPL/NHIDC/WB-SKM/25+743/GAD-01

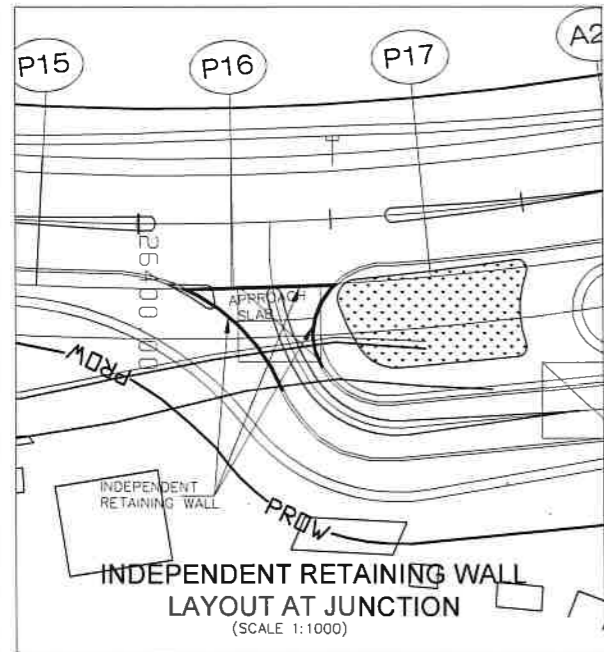


ELEVATION
(SCALE 1:1000)

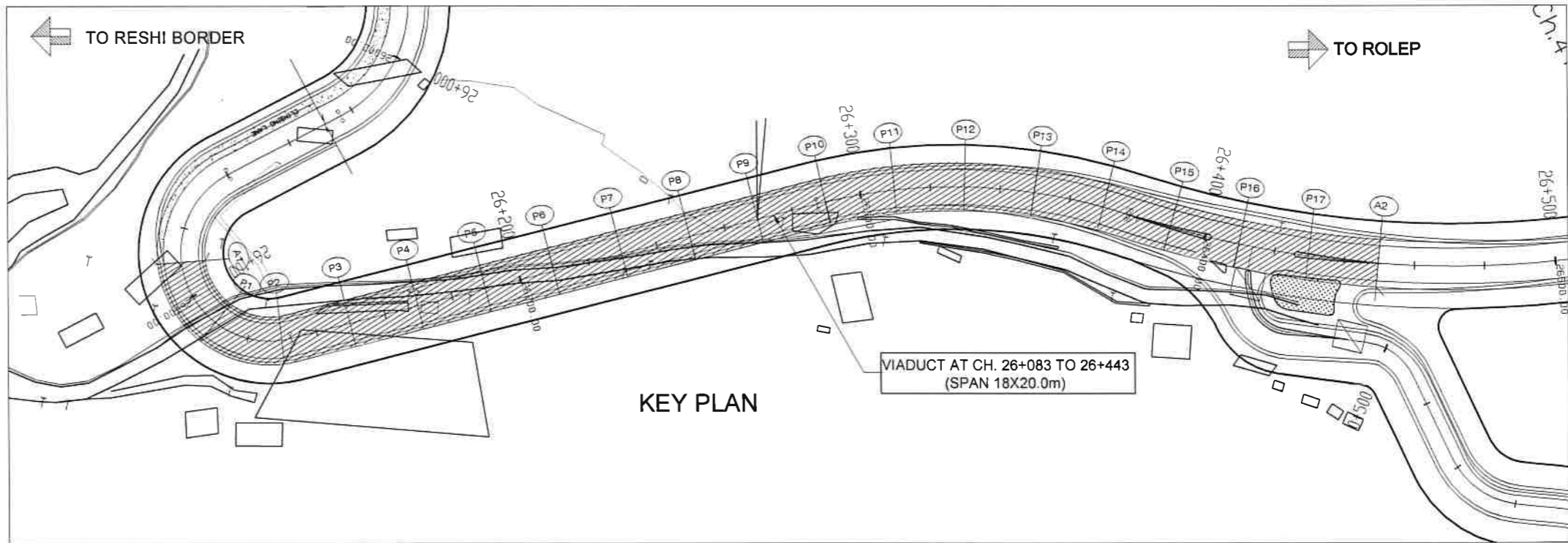
| | | | | | | | | | | | | | | | | | | | |
|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| FORMATION LEVEL | 1012.713 | 1014.013 | 1015.313 | 1016.613 | 1017.913 | 1019.213 | 1020.513 | 1021.813 | 1023.113 | 1024.413 | 1025.713 | 1027.013 | 1028.313 | 1029.613 | 1030.913 | 1032.213 | 1033.513 | 1034.813 | 1036.113 |
| EX.GROUND LEVEL | 1001.830 | 1000.479 | 995.051 | 997.353 | 1002.066 | 1002.551 | 1003.467 | 1005.920 | 1012.019 | 1010.175 | 1004.983 | 1002.584 | 1004.932 | 1002.660 | 998.402 | 1009.636 | 1016.858 | 1024.804 | 1031.888 |
| CHAINAGE | 26+083 | 26+103 | 26+123 | 26+143 | 26+163 | 26+183 | 26+203 | 26+223 | 26+243 | 26+263 | 26+283 | 26+303 | 26+323 | 26+343 | 26+363 | 26+383 | 26+403 | 26+423 | 26+443 |



PLAN
(SCALE 1:1000)



INDEPENDENT RETAINING WALL LAYOUT AT JUNCTION
(SCALE 1:1000)



KEY PLAN

VIADUCT AT CH. 26+083 TO 26+443
(SPAN 18X20.0m)

- NOTES
1. ALL DIMENSIONS ARE MILLIMETERS AND LEVELS ARE IN METERS.
 2. DIMENSIONS ARE NOT TO SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
 3. THE DIMENSION OF THE FOUNDATION SHOWN HERE TENTATIVE ONLY. THIS SHALL BE FINALIZED AFTER DETAILED SUBSOIL INVESTIGATION.

| | | | |
|-----|---------|-------------------------------|----------|
| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS |
| R0 | SEPT-20 | DRAFT DETAILED PROJECT REPORT | |

CLIENT: NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED
(Ministry of Road Transport & Highways)

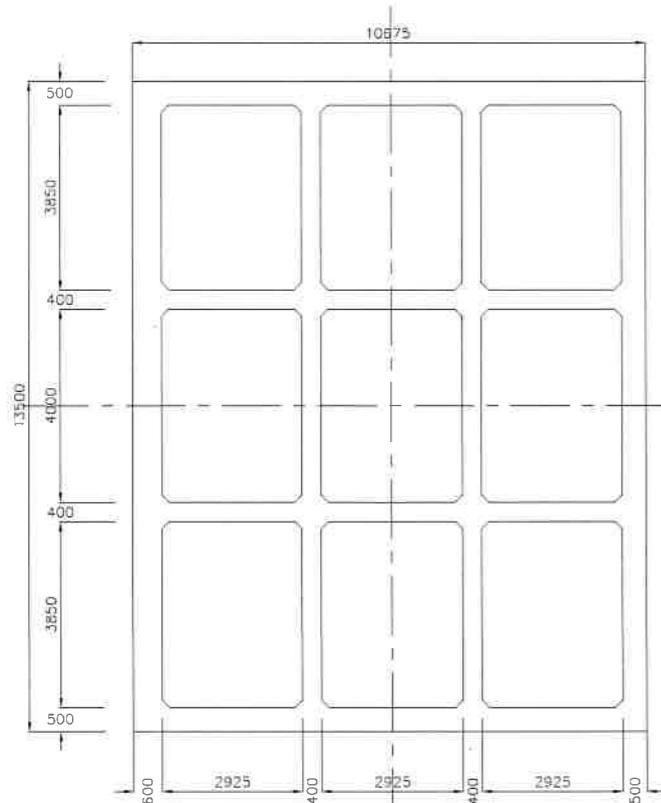
CONSULTANT: S.A. Infrastructure Consultants Pvt. Ltd.
1101A, 11 Floor Tower A-II, Ansal Corporate Park,
Plot No. 7A/1, Sector 142, Noida-201301 (Uttar Pradesh)
Phone No- 0120-6148000 Fax-0120-6148090
Email: info@sainfra.com

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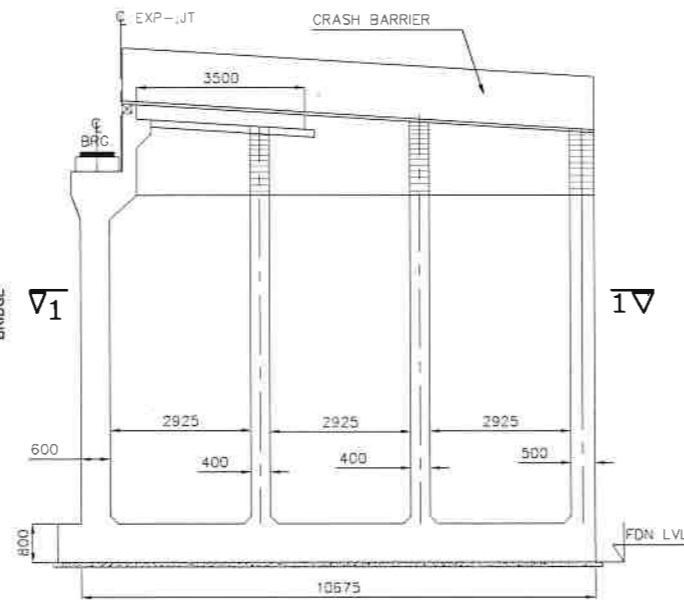
| | |
|-------------------------|-----------------------|
| DATE: SEPTEMBER- 2020 | REVISION: R0 |
| DESIGNED BY: RAVI KUMAR | DRAWN BY: A SEN |
| CHECKED BY: A.REHMAN | APPROVED BY: S.Shukla |
| SCALE:- AS SHOWN | SHEET:- 01 OF 02 |

GENERAL ARRANGEMENT DRAWINGS OF VIADUCT AT CH- 26+083 TO 26+443 (SPAN-18X20.0)

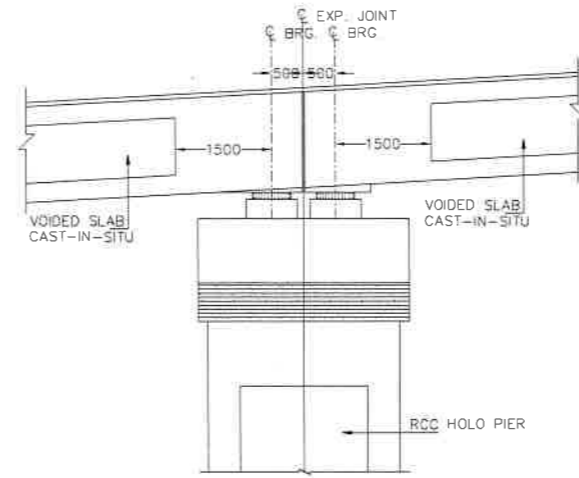
DWG. NO. :- SAICPL-SESPL/NHIDC/WB-SKM/26+263/GAD-01



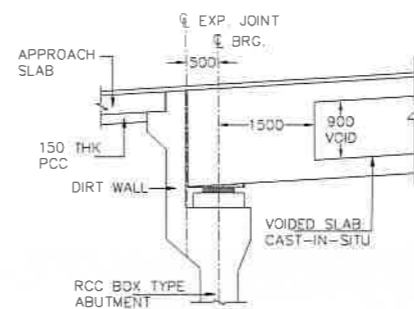
SECTION 1-1
SCALE 1:100



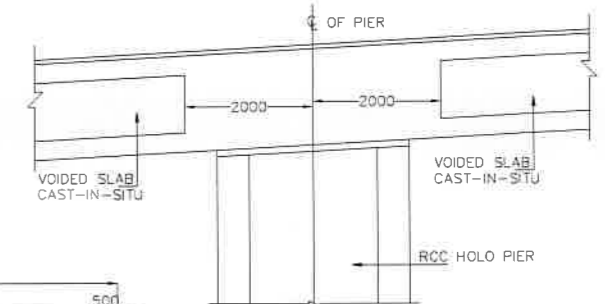
BOX ABUTMENT
SCALE 1:100



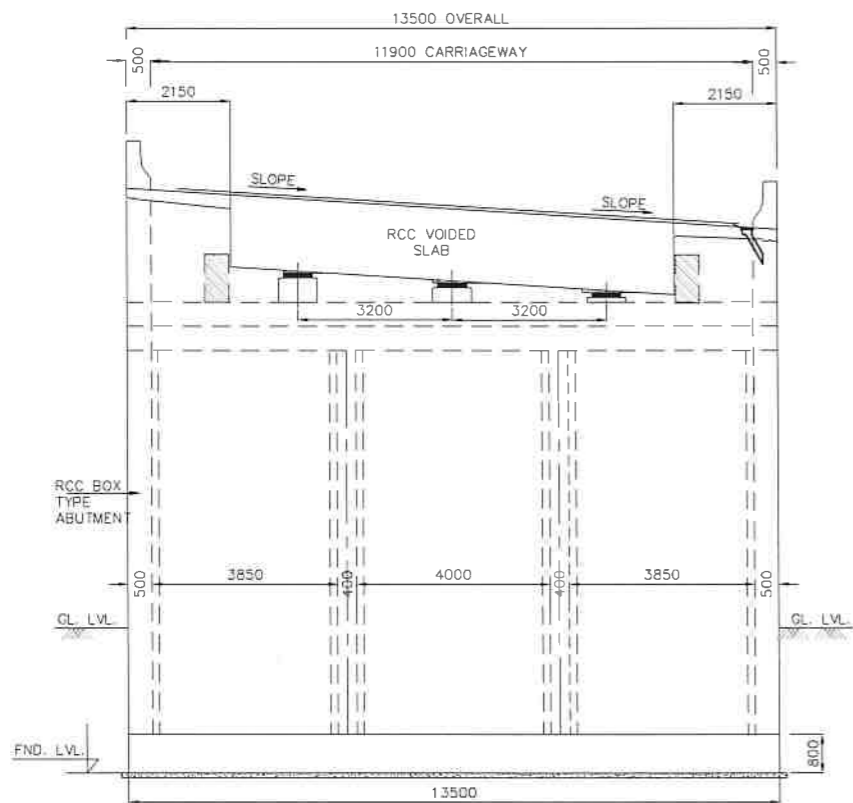
DETAIL-Y
(SCALE 1:75)



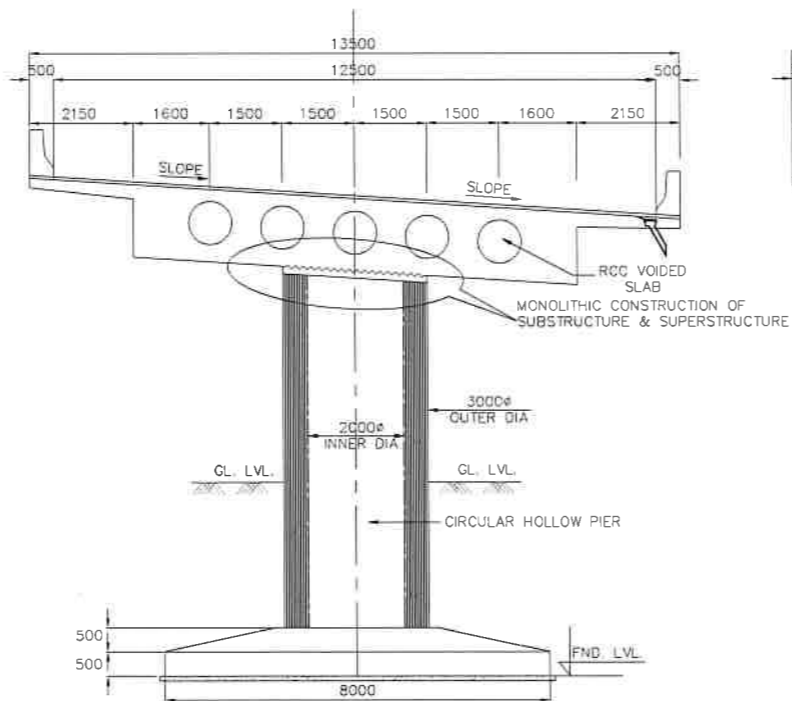
DETAIL-X
(SCALE 1:75)



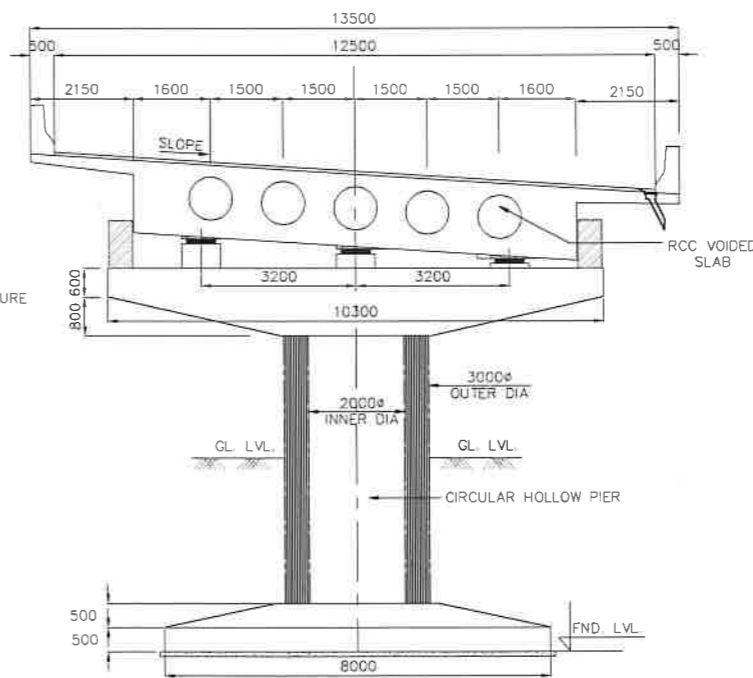
DETAIL-Z
(SCALE 1:75)



SECTION A-A
SCALE 1:100



SECTION B-B
SCALE 1:100



SECTION C-C
SCALE 1:100

NOTES

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THE DIMENSION OF THE FOUNDATION SHOWN HERE TENTATIVE ONLY. THIS SHALL BE FINALIZED AFTER DETAILED SUBSOIL INVESTIGATION.

BRIDGE HAS BEEN DESIGNED FOR CARRIAGEWAY LIVE LOAD OF 1 LANE 70R + 1 LANE CLASS A 3 LANES OF CLASS A WHICHEVER GIVES WORST EFFECT. GRADE OF CONCRETE FOR VARIOUS ELEMENTS ARE AS FOLLOWS:-

- i) SUPERSTRUCTURE(PSC) ----- M45
- i) SUPERSTRUCTURE(VOIDED) ----- M40
- ii) RCC SUBSTRUCTURE & FOUNDATION --- M35
- iii) RCC RAILING -----M30
- v) RCC CRASH BARRIER ----- M40
- v) APPROACH SLAB ----- M30
- vi) PEDESTAL ----- M40

TYPE OF BEARING PROPOSED HERE IS POT-PITFE AS PER IRC:83, PART-III SINGLE STRIP SEAL EXPANSION JOINT IS USED.

GRADE OF CEMENT IS USED HERE IS OPC 43/OPc 53.

ALL REINFORCEMENT BARS ARE TMT BARS (GRADE DESIGNATION Fe5000) AS PER IS:1786.

BRIDGE HAS BEEN DESIGNED CONSIDERING SEISMIC ZONE AS IV.

SUPERELEVATION SHALL BE MAINTAINED AS PER HIGHWAY PLAN & PROFILE.

SAFE BEARING CAPACITY FOR PRILIMINARY DESIGN AT FOUNDING LEVEL IS CONSIDERED AS 40t/m²

CONSTRUCTION JOINT

| | | | |
|-----|---------|-------------------------------|----------|
| REV | DATE | DESCRIPTION OF REVISIONS | INITIALS |
| R0 | SEPT-20 | DRAFT DETAILED PROJECT REPORT | |

CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED
(Ministry of Road Transport & Highways)

CONSULTANT: S.A. Infrastructure Consultants Pvt. Ltd.
1101A, 11 Floor Tower A-II, Ansal Corporate Park,
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| | |
|-----------------------------|--------------------------|
| DATE : AUGUST-2020 | REVISION R0 |
| DESIGNED BY K RAVI KUMAR | DRAWN BY A SEN |
| CHECKED BY AREHMAN | APPROVED BY S. Shukla |
| SCALE:- AS SHOWN | SHEET:- 02 OF 02 |

GENERAL ARRANGEMENT DRAWINGS OF VIADUCT AT CH- 26+083 TO 26+443 (SPAN-18X20.0)

DWG. NO. :- SAICPL-SESPL/NHIDC/WB-SKM/26+263/GAD-01