

TENDER NO: WAP/NK/JHK/RMC-PKG-1/BALANCE/2026

TENDER DOCUMENT

FOR

**Lining, Repair and Construction of Balance Works of Right Main Canal
& its Structures of Package-1 (RD 0 to 17.16 km) under North Koel
Reservoir Project, Jharkhand**

Estimated Cost (Rs. 50.40 Crores)

TENDER NO: WAP/NK/JHK/RMC-PKG-1/BALANCE/2026

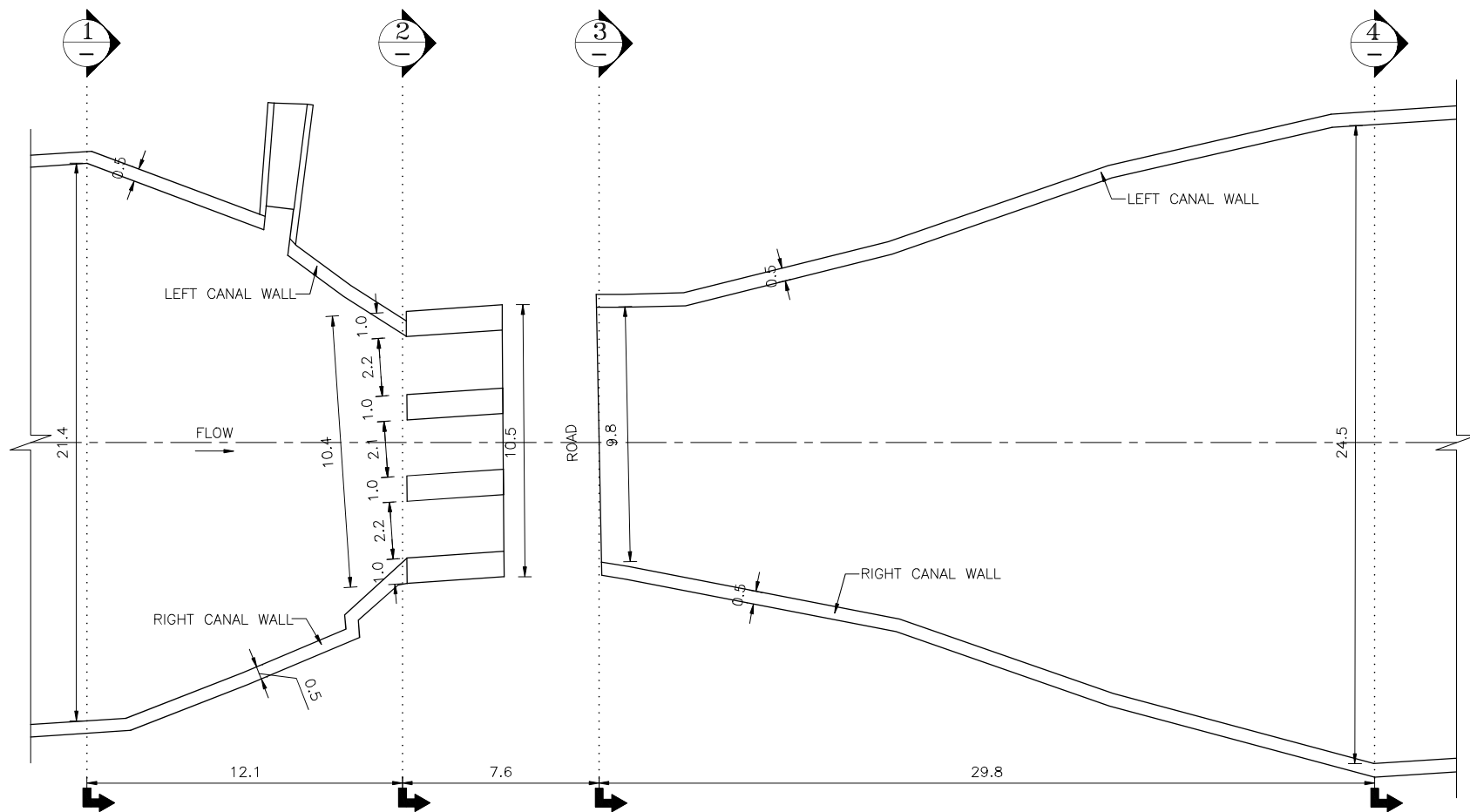
TENDER DRAWINGS



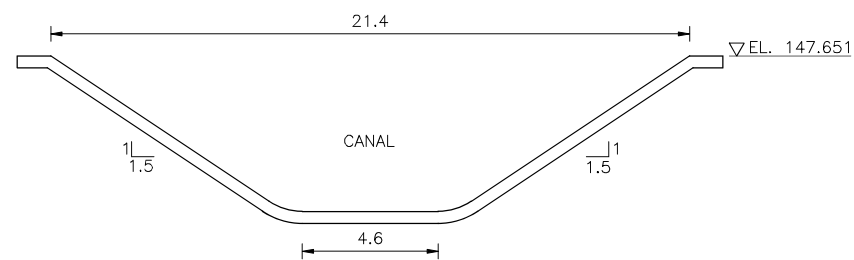
CROSS-REGULATOR



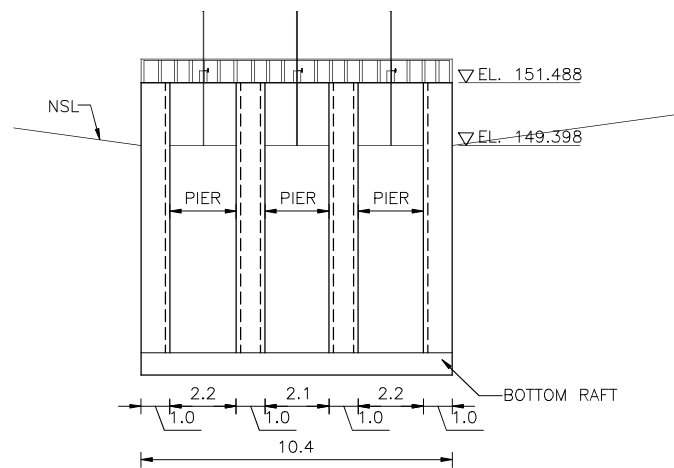
RD 8.99 HEADREGULATOR



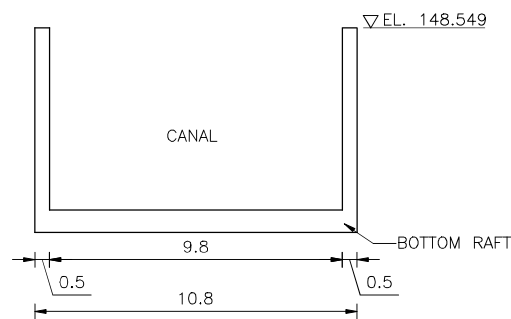
PLAN
(SCALE:- 1:250)



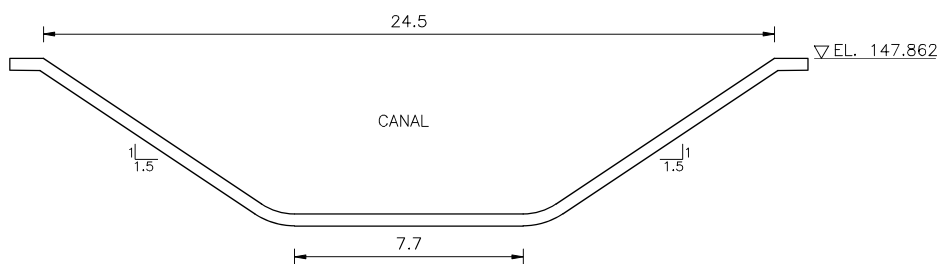
SECTION 1
(SCALE:- 1:250)



SECTION 2
(SCALE:- 1:250)



SECTION 3
(SCALE:- 1:250)



SECTION 4
(SCALE:- 1:250)

NOTES:-

1. ALL DIMENSIONS & ELEVATION ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. TOP WIDTH OF CANAL & LENGTH OF TRANSITION IN THIS DRAWING ARE AS MEASURED AT SITE.
4. BED WIDTH /BED LEVEL IS ARRIVED BY ASSUMING 1:1.5 SIDE SLOPE.

TENDER DRAWING



IMPLEMENTING AGENCY :-

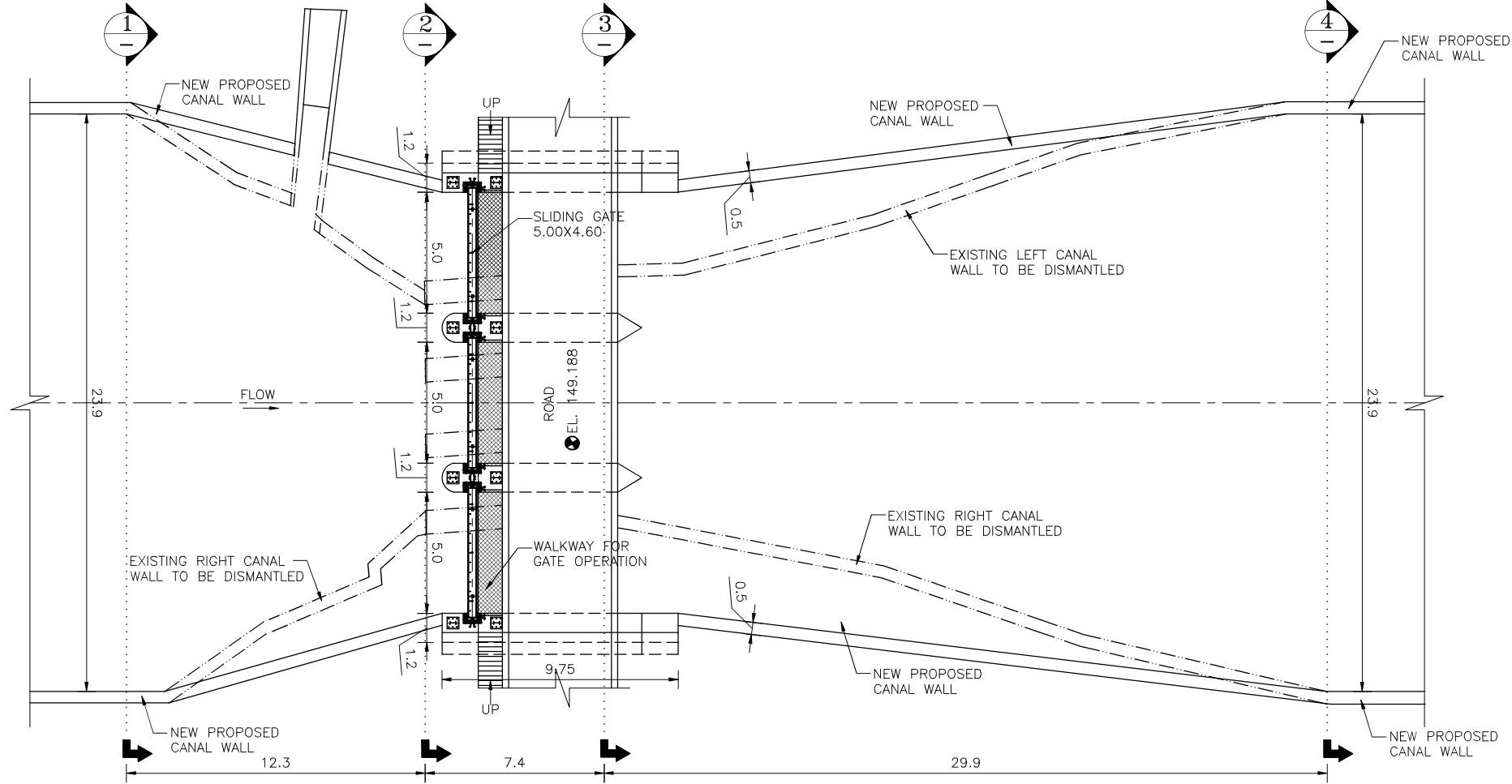


PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT,
BIHAR & JHARKHAND

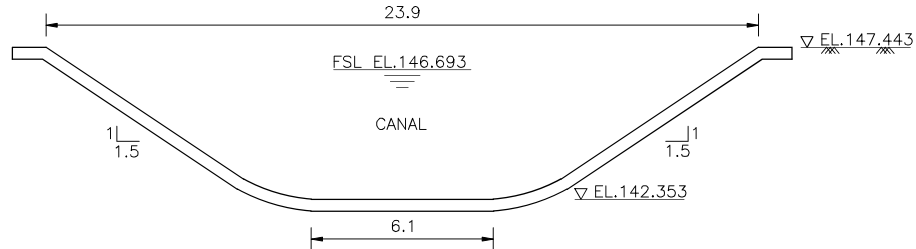
DRAWING TITLE :- HR + CR (MINOR) AT RD: 8.99
GENERAL ARRANGEMENT- ORIGINAL

DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-002 (1/7)

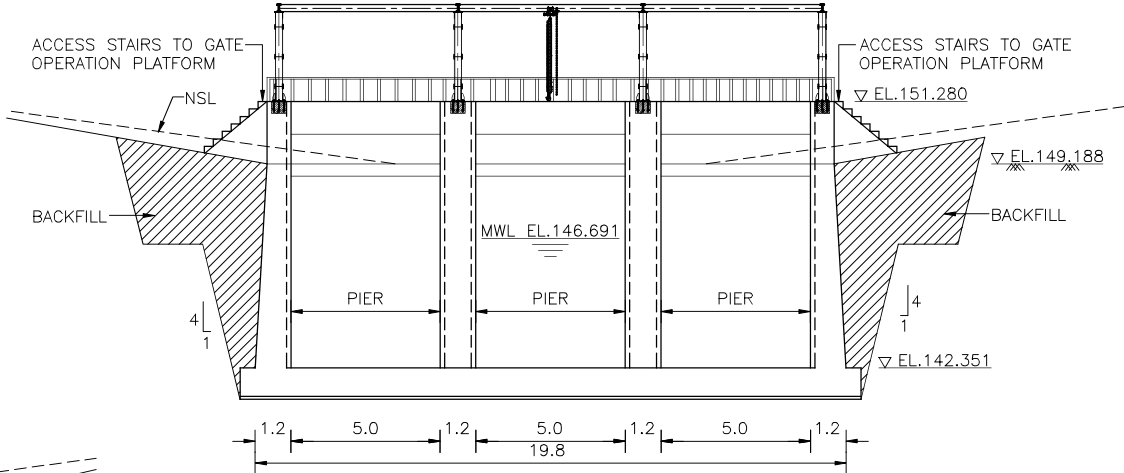
DRAWN BY:- CHECKED BY:- APPROVED BY:-



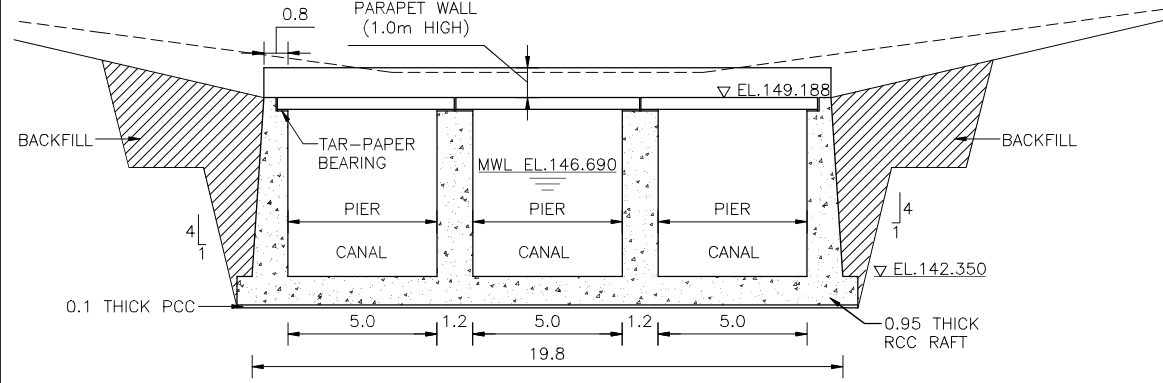
PLAN
(SCALE:- 1:250)



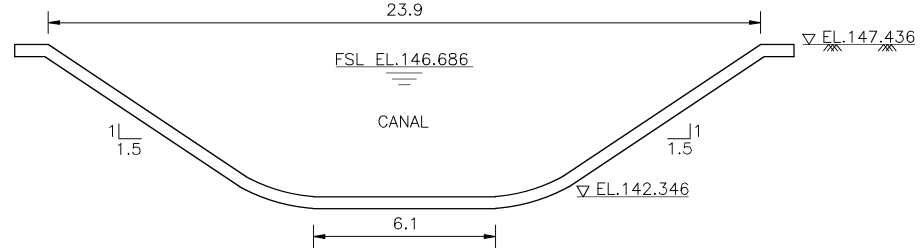
SECTION 1
(SCALE:- 1:250)



SECTION 2
(SCALE:- 1:250)



SECTION 3
(SCALE:- 1:250)



SECTION 4
(SCALE:- 1:250)

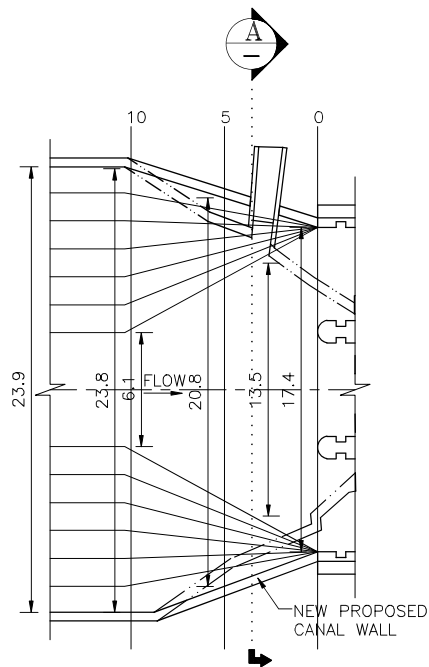
- NOTES:-**
1. ALL DIMENSIONS & ELEVATION ARE IN METER UNLESS OTHERWISE SPECIFIED.
 2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. BED WIDTH/FULL SUPPLY DEPTH ARE OBTAINED FROM THE HYDRAULIC ANALYSIS CARRIED OUT FOR THE PROJECT.
 4. RCC SHALL BE OF GRADE M25 A20 AND PCC SHALL BE OF GRADE M10 A40 CONFORMING TO IS: 456-2000.

HEAD REGULATOR PARTICULARS		
S.NO.	PARAMETERS	PARTICULARS
1	FSL (m)	146.691
2	BED LEVEL (m)	142.351
3	FSD (m)	4.340
4	DISCHARGE (m³/s)	84.15
5	VELOCITY (m/s)	1.29

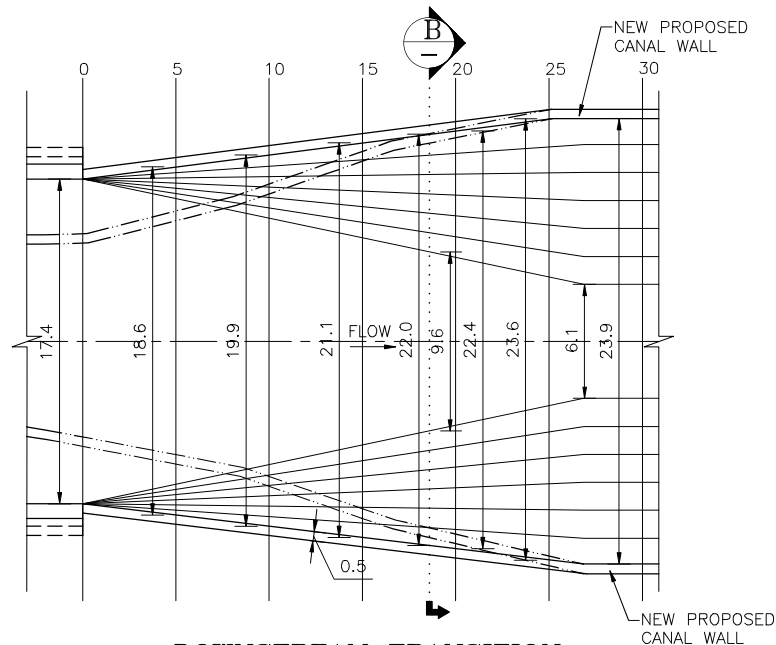
TENDER DRAWING



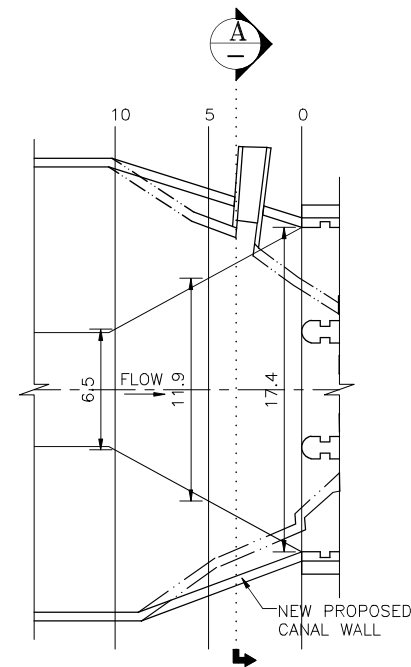
IMPLEMENTING AGENCY :-  WAPCOS LIMITED		
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND		
DRAWING TITLE :- HR + CR (MINOR) AT RD: 8.99 GENERAL ARRANGEMENT- MODIFIED		
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-002 (2/7)		
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-



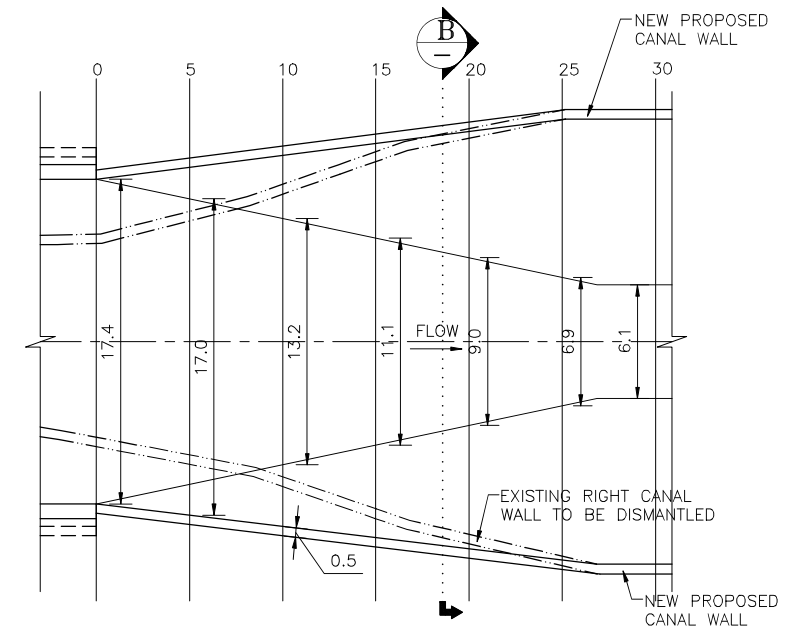
**UPSTREAM TRANSITION
TOP WIDTH KEY PLAN-1**
(SCALE:- 1:400)



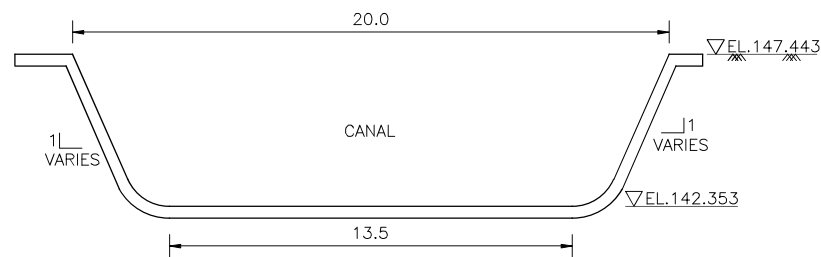
**DOWNSTREAM TRANSITION
TOP WIDTH KEY PLAN-2**
(SCALE:- 1:400)



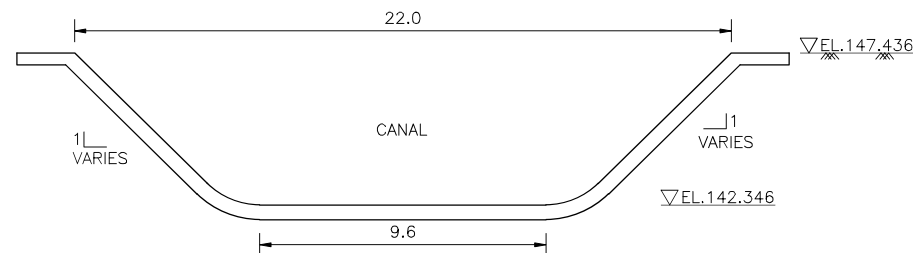
**UPSTREAM TRANSITION PLAN
AT BED LEVEL KEY PLAN-1**
(SCALE:- 1:400)



**DOWNSTREAM TRANSITION PLAN
AT BED LEVEL KEY PLAN-2**
(SCALE:- 1:400)



SECTION A-A
(SCALE:- 1:250)



SECTION B-B
(SCALE:- 1:250)

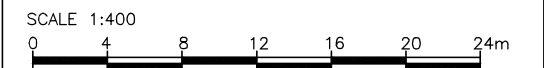
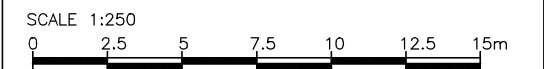
DISTANCE FROM CANAL SECTION 2-2 (m)	UPSTREAM TRANSITION	
	"TOP WIDTH (REFER KEY PLAN 1)"	"BED WIDTH (REFER KEY PLAN 2)"
0	17.4	17.4
5	20.8	11.9
10	23.8	6.7

DISTANCE FROM CANAL SECTION 3-3 (m)	DOWNSTREAM TRANSITION	
	"TOP WIDTH (REFER KEY PLAN 1)"	"BED WIDTH (REFER KEY PLAN 2)"
0	17.4	17.4
5	18.6	17.0
10	19.9	13.2
15	21.1	11.1
20	22.4	9.0
25	23.6	6.9
30	23.9	6.1

NOTES:-

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3. BED WIDTH/FULL SUPPLY DEPTH ARE OBTAINED FROM THE HYDRAULIC ANALYSIS CARRIED OUT FOR THE PROJECT.

TENDER DRAWING



IMPLEMENTING AGENCY :-

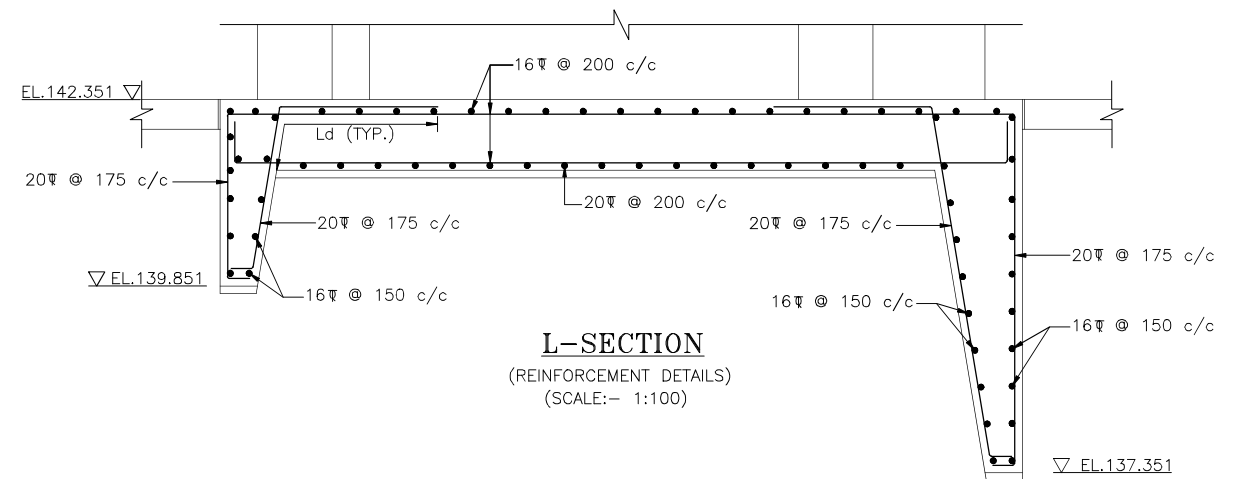


PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT,
BIHAR & JHARKHAND

DRAWING TITLE :- HR + CR (MINOR) AT RD: 8.99
MODIFIED TRANSITION DETAILS

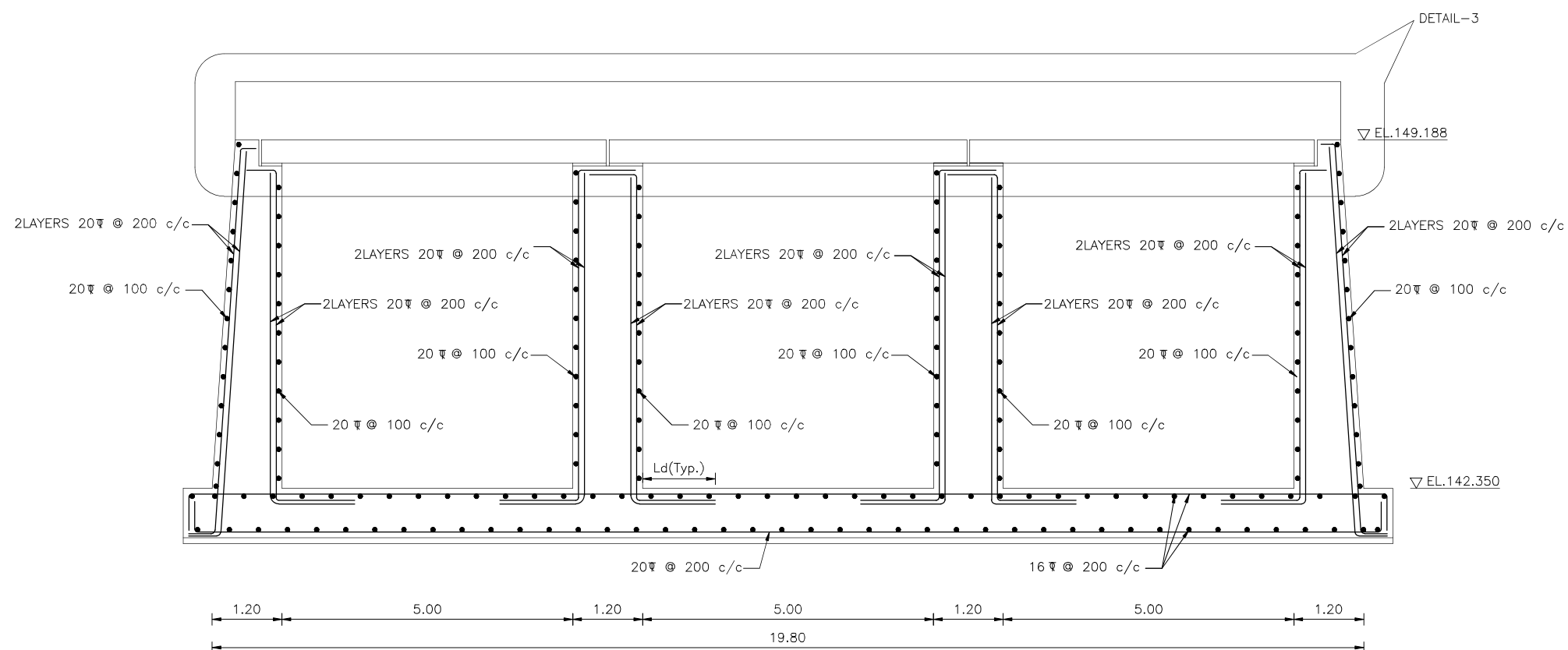
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-002 (4/7)

DRAWN BY:- CHECKED BY:- APPROVED BY:-

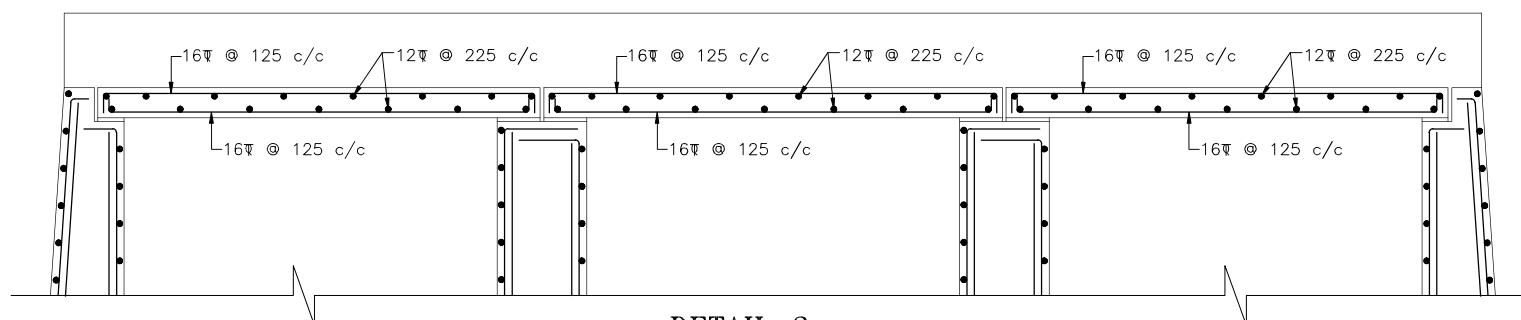


MID PIER
(SCALE:- 1:50)

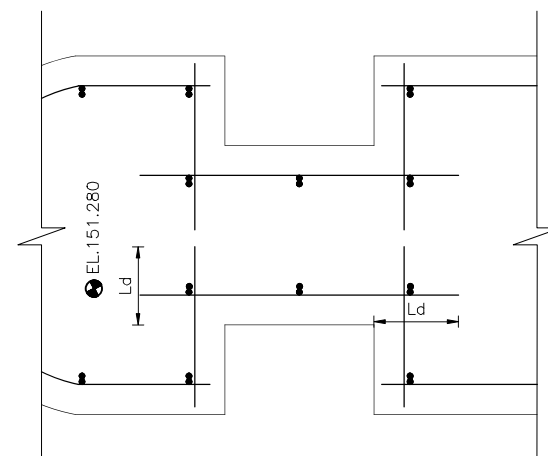
L-SECTION
(REINFORCEMENT DETAILS)
(SCALE:- 1:100)



SECTION-3
(SCALE:- 1:100)



DETAIL-3
(SCALE:- 1:100)



DETAIL-2
(SCALE:- 1:25)

1. ALL DIMENSIONS & ELEVATION ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. CONSIDERABLE CARE SHOULD BE TAKEN WHILE PROVIDING SEALING BETWEEN EXISTING CANAL LINING AND RAFT.
4. A CLEAR COVER TO THE REINFORCEMENT SHOULD BE AS FOLLOWS:

4:1 SLAB	25mm
4:2 SLAB	75mm
4:3 SLAB	75mm
5. LAP LENGTH OF BARS SHALL NOT BE LESS THAN 50 TIMES DIA. OF LARGER DIA. BARS TO BE LAPPED. NOT MORE THAN 50% OF LAP IS DONE AT ONE LOCATION.
6. DETAILING OF REINFORCEMENT SHALL BE DONE AS PER CODAL PROVISIONS AND STANDARD DESIGN PRACTICES.
7. REINFORCEMENT SHALL BE OF GRADE Fe 500 CONFORMING TO IS: 1786.
8. SBC OF THE SOIL IS 231 kN/m² CONSIDERED AT 2m DEPTH FOR RAFT FOUNDATION SUBMITTED BY IIT(INDIAN SCHOOL OF MINES)DANBAD.

0 0.25 0.5 0.75 1 1.25 1.5m

A horizontal line with tick marks at 0, 0.5, 1, 1.5, 2, 2.5, and 3m. The segments between tick marks are shaded with diagonal lines.

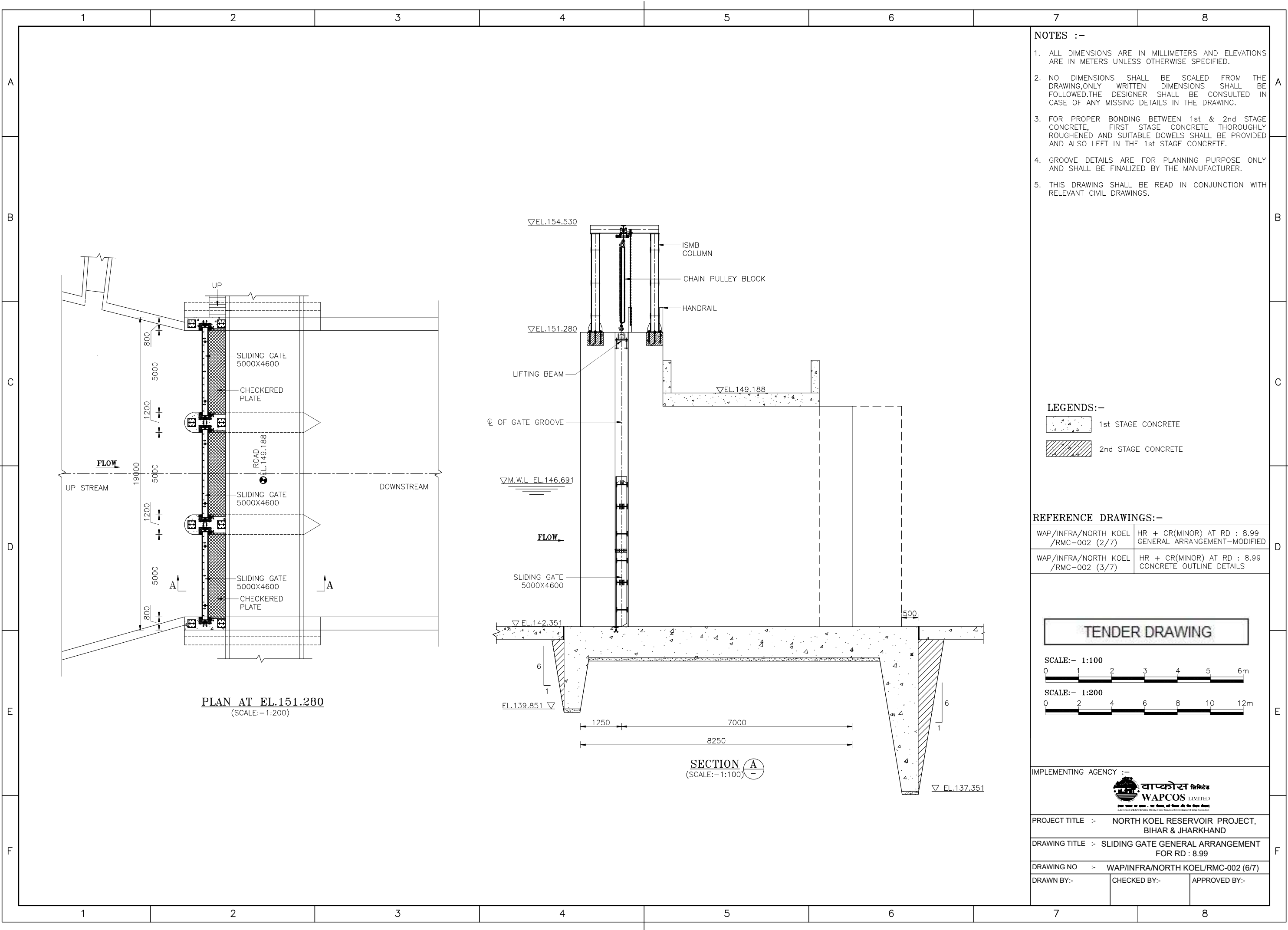
Diagram of a beam of length 6m with a uniformly distributed load of 10 kN/m. The beam is divided into segments of 1m, 2m, 1m, 1m, and 1m. The load is represented by a thick black line along the top of the beam.

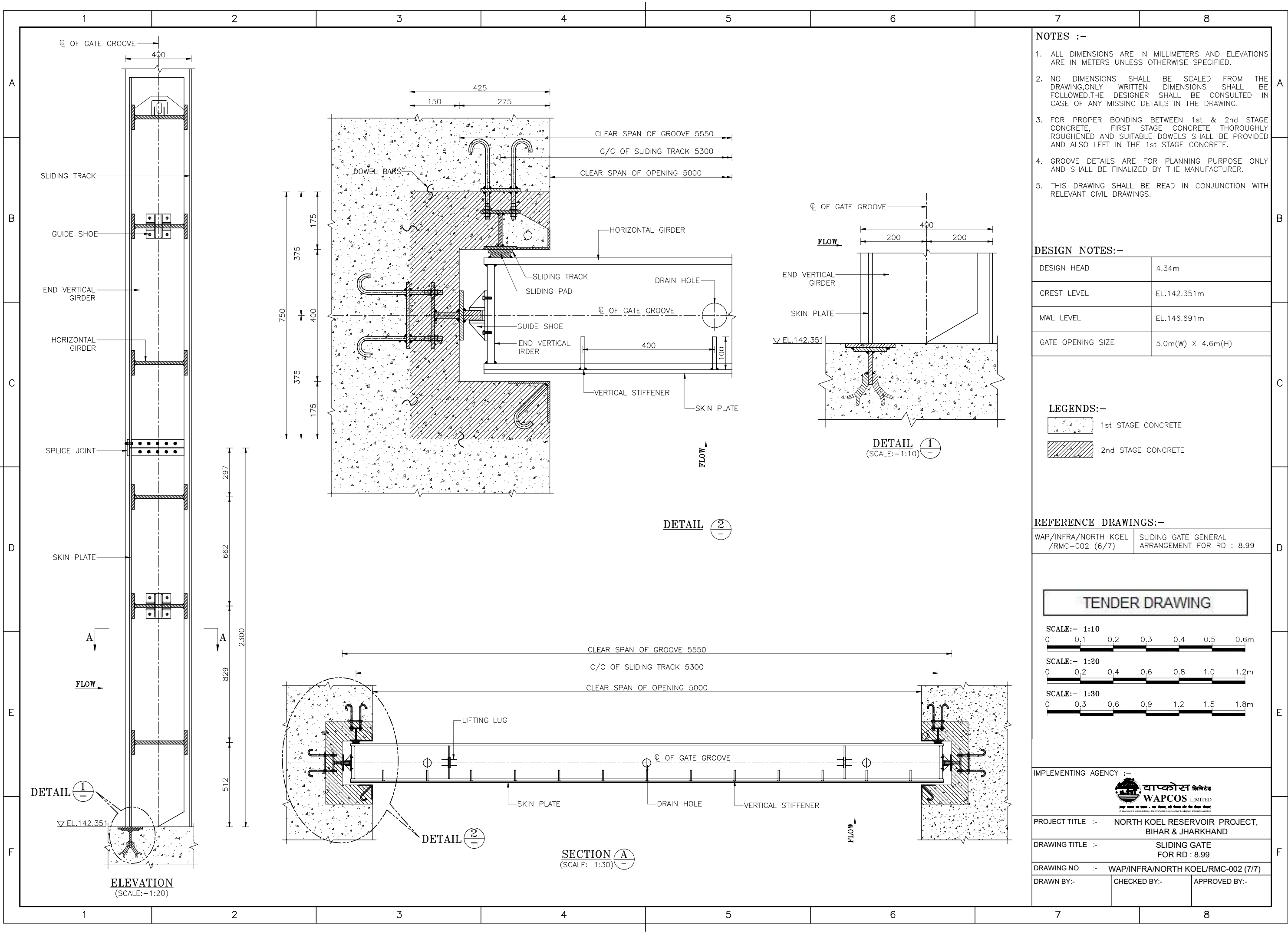
TENDER DRAWING



वाप्कोस लिमिटेड
WAPCOS LIMITED
 (एकमात्र उद्योग वा वापस - एका वित्तिय, एका वित्तिय एका वित्तिय वित्तिय)

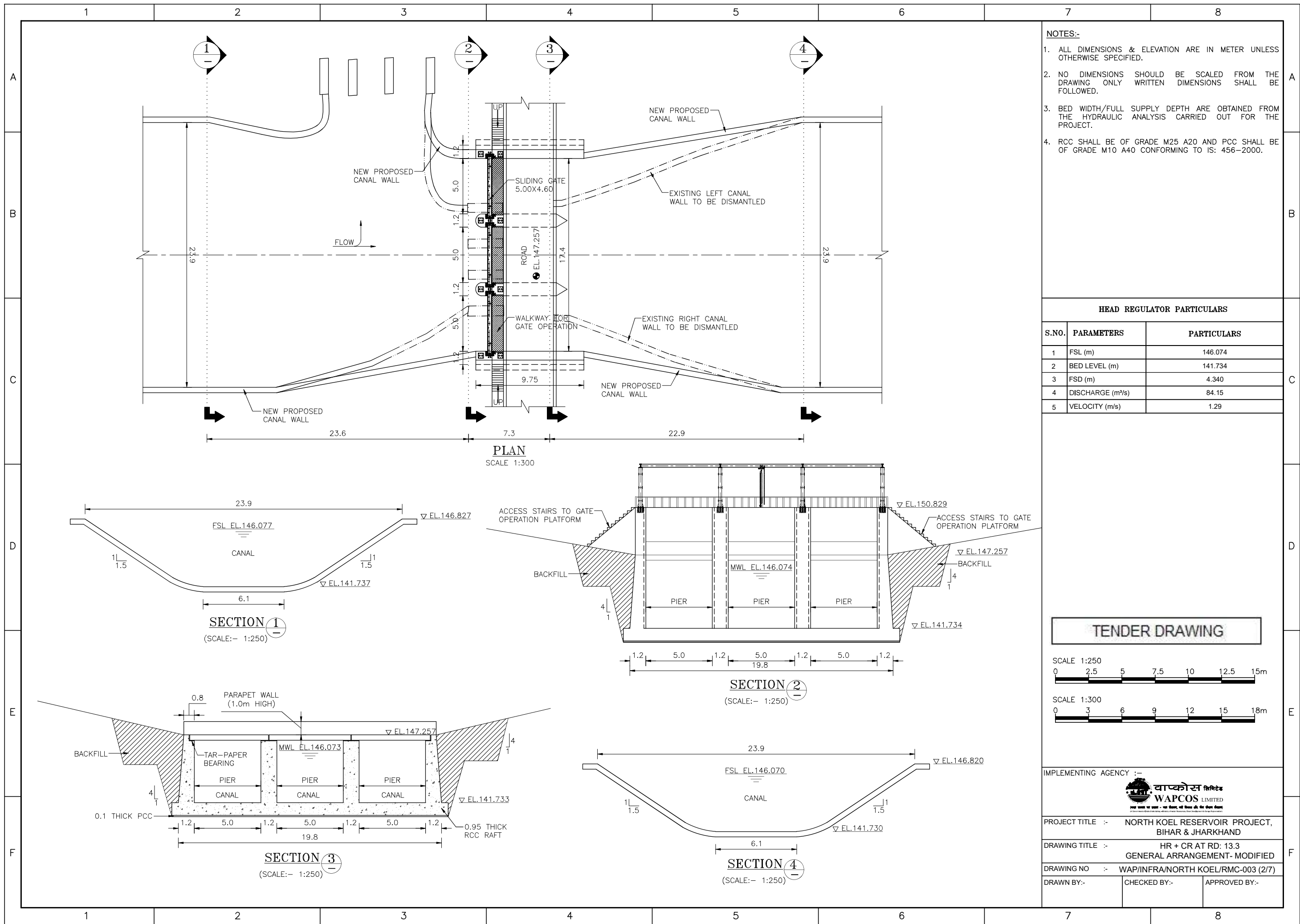
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-
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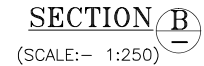
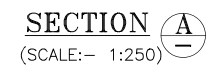
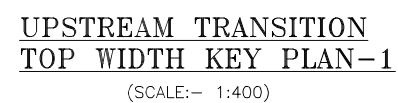






RD 13.3 HEADREGULATOR





DISTANCE FROM CANAL SECTION 3-3 (m)	DOWNSTREAM TRANSITION	
	"TOP WIDTH (REFER KEY PLAN 1)"	"BED WIDTH (REFER KEY PLAN 2)"
0	17.4	17.4
5	19.0	14.5
10	20.7	11.7
15	22.3	8.8
20	23.9	6.1
25	23.9	6.1

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 3. BED WIDTH/FULL SUPPLY DEPTH ARE OBTAINED FROM THE HYDRAULIC ANALYSIS CARRIED OUT FOR THE PROJECT.



TENDER DRAWING

IMPLEMENTING AGENCY :-



PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND	
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DRAWING TITLE :-	HR + CR AT RD: 13.3 MODIFIED TRANSITION DETAILS
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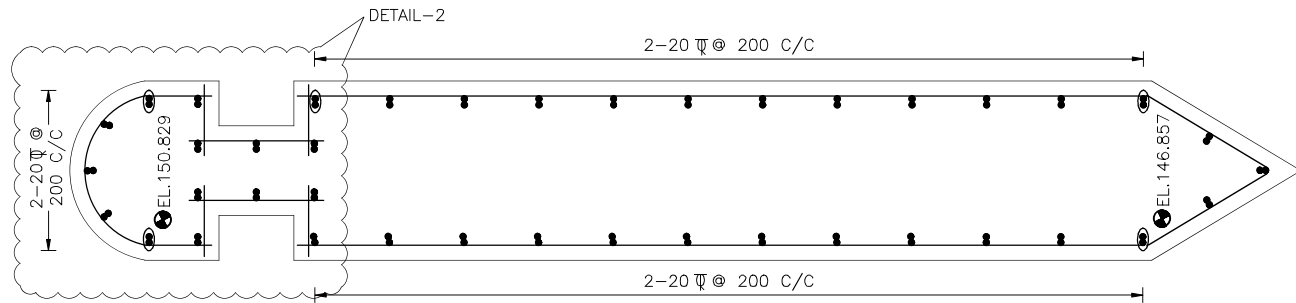
DRAWING NO	:-	WAP/INFRA/NORTH KOEL/RMC-003 (4/7)
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DRAWN BY:-	CHECKED BY:-	APPROVED BY:-
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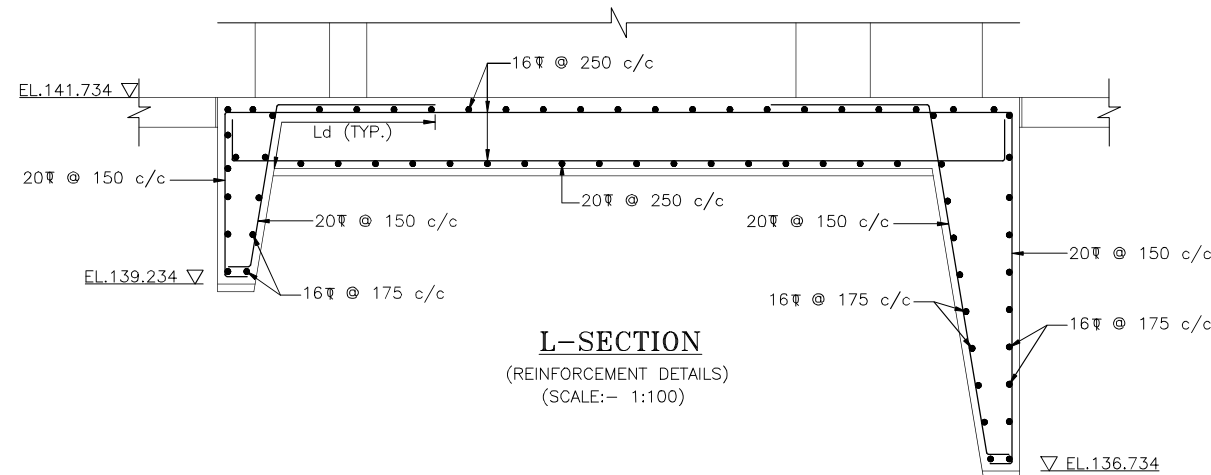
1 2 3 4 5 6 7 8

A

A



MID PIER
(SCALE:- 1:50)



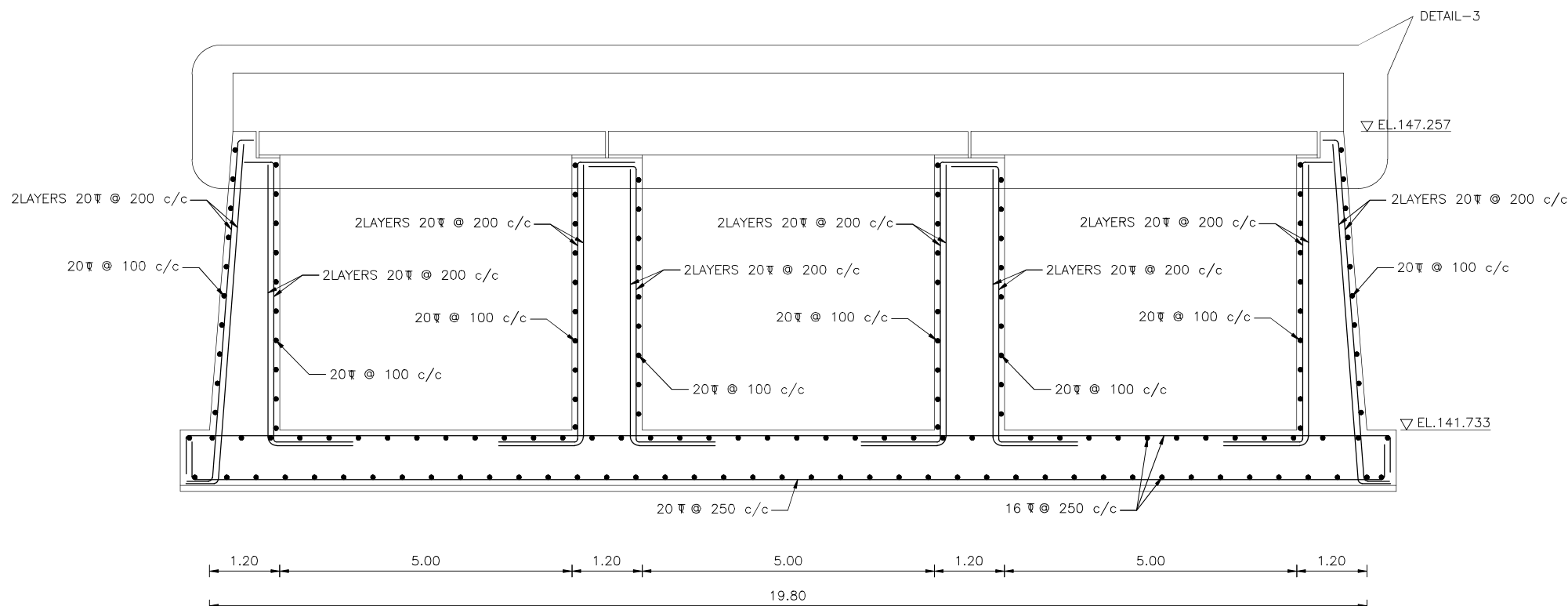
L-SECTION
(REINFORCEMENT DETAILS)
(SCALE:- 1:100)

B

B

C

C



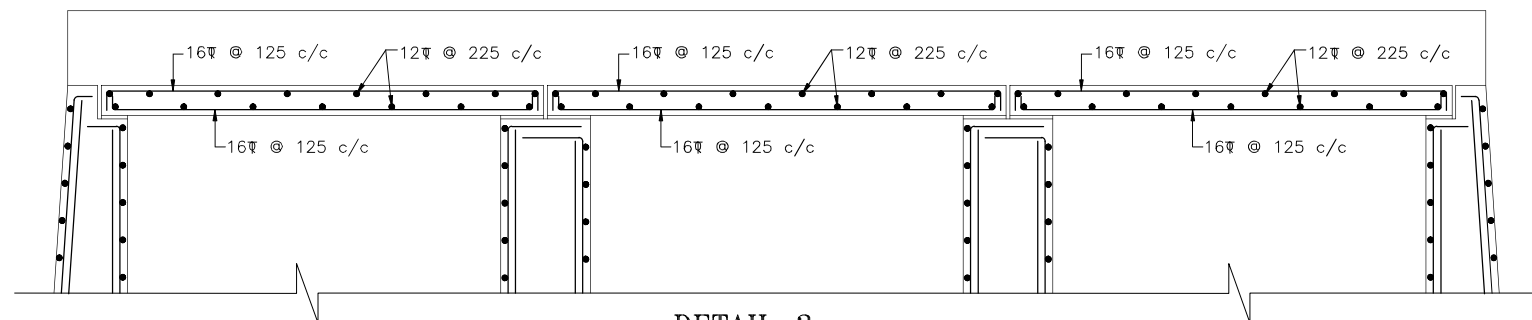
SECTION-3
(SCALE:- 1:100)

D

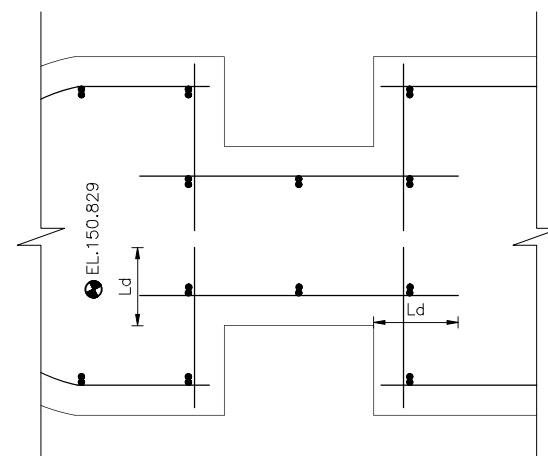
D

E

E



DETAIL-3
(SCALE:- 1:100)



DETAIL-2
(SCALE:- 1:25)

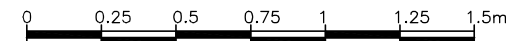
NOTES:-

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- CONSIDERABLE CARE SHOULD BE TAKEN WHILE PROVIDING SEALING BETWEEN EXISTING CANAL LINING AND RAFT.
- A CLEAR COVER TO THE REINFORCEMENT SHOULD BE AS FOLLOWS:

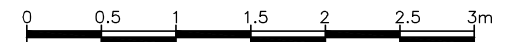
4:1 SLAB	25mm
4:2 SLAB	75mm
4:3 SLAB	75mm
- LAP LENGTH OF BARS SHALL NOT BE LESS THAN 50 TIMES DIA. OF LARGER DIA. BARS TO BE LAPPED, NOT MORE THAN 50% OF LAP IS DONE AT ONE LOCATION.
- DETAILING OF REINFORCEMENT SHALL BE DONE AS PER CODAL PROVISIONS AND STANDARD DESIGN PRACTICES.
- REINFORCEMENT SHALL BE OF GRADE Fe 500 CONFORMING TO IS: 1786.
- SBC OF THE SOIL IS 223.9 kN/m² CONSIDERED AT 2m DEPTH FOR RAFT FOUNDATION SUBMITTED BY IIT(INDIAN SCHOOL OF MINES)DNANBAD.

TENDER DRAWING

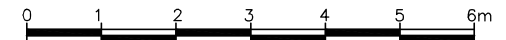
SCALE 1:25



SCALE 1:50



SCALE 1:100



IMPLEMENTING AGENCY :-



PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT,
BIHAR & JHARKHAND

DRAWING TITLE :- HR + CR AT RD: 13.3
REINFORCEMENT DETAILS

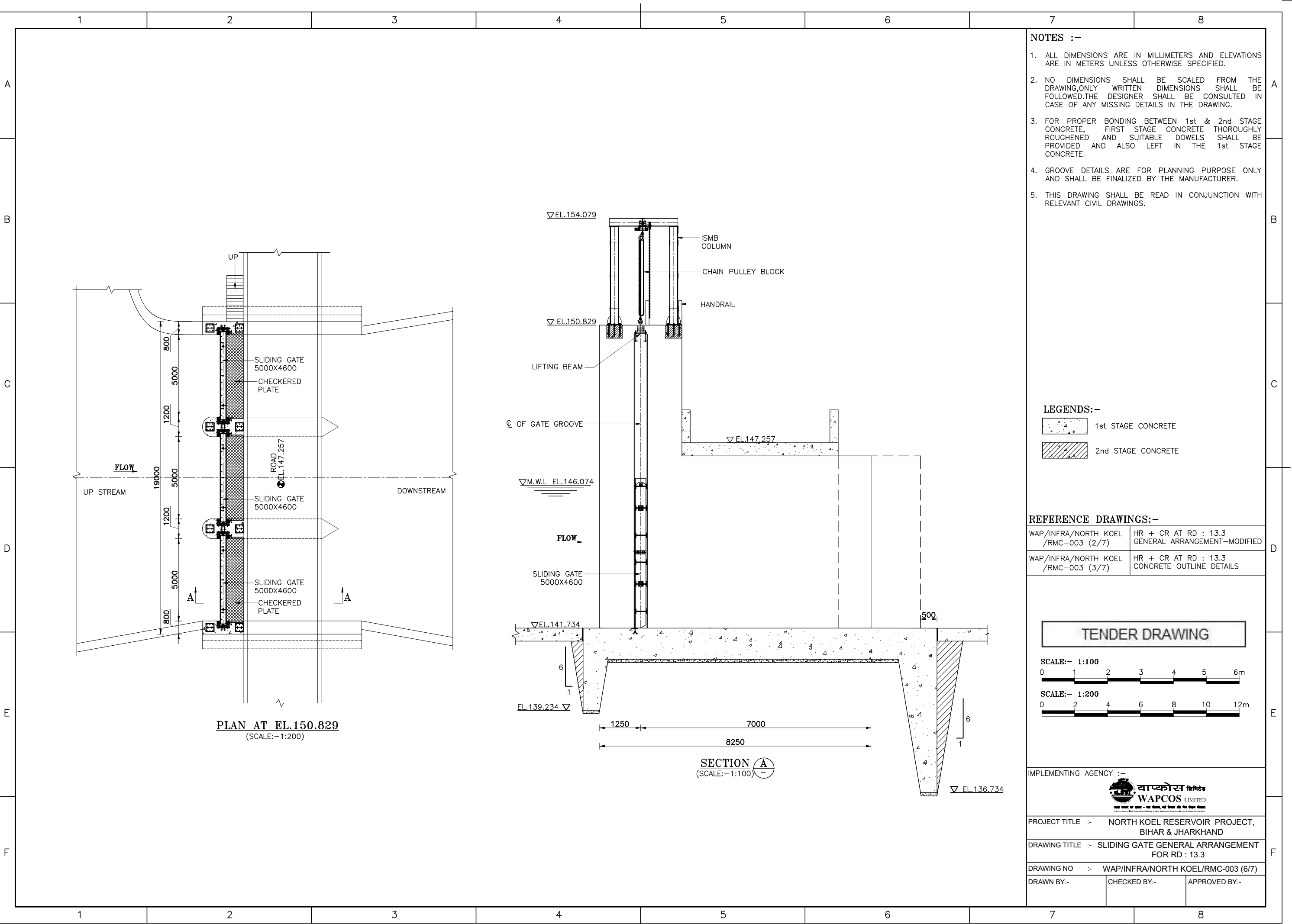
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-003 (5/7)

DRAWN BY:- CHECKED BY:- APPROVED BY:-

1 2 3 4 5 6 7 8

F

F



NOTES :-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHALL BE SCALED FROM THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. THE DESIGNER SHALL BE CONSULTED IN CASE OF ANY MISSING DETAILS IN THE DRAWING.
3. FOR PROPER BONDING BETWEEN 1st & 2nd STAGE CONCRETE, FIRST STAGE CONCRETE THOROUGHLY ROUGHENED AND SUITABLE DOWELS SHALL BE PROVIDED AND ALSO LEFT IN THE 1st STAGE CONCRETE.
4. GROOVE DETAILS ARE FOR PLANNING PURPOSE ONLY AND SHALL BE FINALIZED BY THE MANUFACTURER.
5. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT CIVIL DRAWINGS.

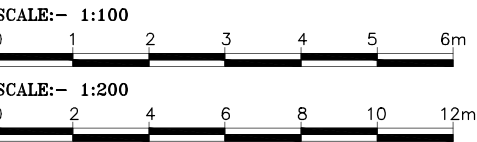
LEGENDS:-

- 1st STAGE CONCRETE
- 2nd STAGE CONCRETE

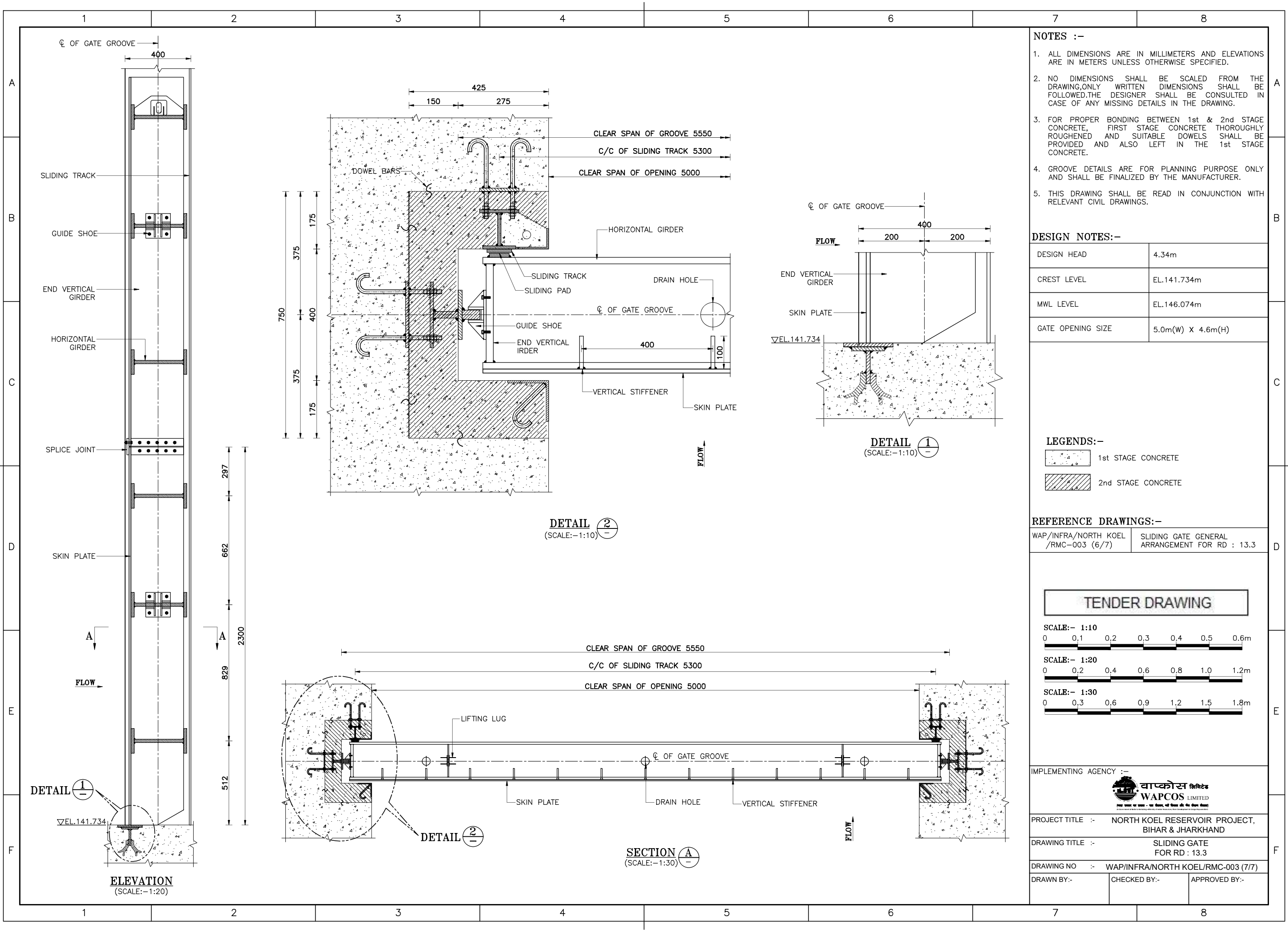
REFERENCE DRAWINGS:-

WAP/INFRA/NORTH KOEL /RMC-003 (2/7)	HR + CR AT RD : 13.3 GENERAL ARRANGEMENT-MODIFIED
WAP/INFRA/NORTH KOEL /RMC-003 (3/7)	HR + CR AT RD : 13.3 CONCRETE OUTLINE DETAILS

TENDER DRAWING



IMPLEMENTING AGENCY :-  WAPCOS LIMITED वापकोस लिमिटेड		
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND		
DRAWING TITLE :- SLIDING GATE GENERAL ARRANGEMENT FOR RD : 13.3		
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-003 (6/7)		
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-



- NOTES :-**
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 - NO DIMENSIONS SHALL BE SCALED FROM THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. THE DESIGNER SHALL BE CONSULTED IN CASE OF ANY MISSING DETAILS IN THE DRAWING.
 - FOR PROPER BONDING BETWEEN 1st & 2nd STAGE CONCRETE, FIRST STAGE CONCRETE THOROUGHLY ROUGHENED AND SUITABLE DOWELS SHALL BE PROVIDED AND ALSO LEFT IN THE 1st STAGE CONCRETE.
 - GROOVE DETAILS ARE FOR PLANNING PURPOSE ONLY AND SHALL BE FINALIZED BY THE MANUFACTURER.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT CIVIL DRAWINGS.

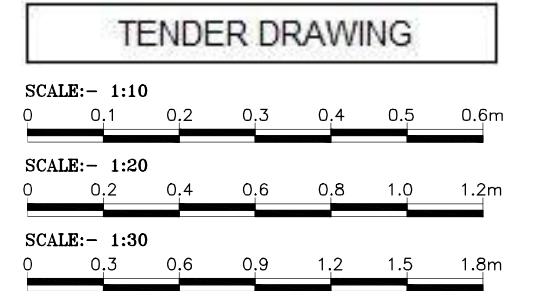
DESIGN NOTES:-

DESIGN HEAD	4.34m
CREST LEVEL	EL.141.734m
MWL LEVEL	EL.146.074m
GATE OPENING SIZE	5.0m(W) X 4.6m(H)

- LEGENDS:-**
- 1st STAGE CONCRETE
 - 2nd STAGE CONCRETE

REFERENCE DRAWINGS:-

WAP/INFRA/NORTH KOEL /RMC-003 (6/7)	SLIDING GATE GENERAL ARRANGEMENT FOR RD : 13.3
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IMPLEMENTING AGENCY :-

वापकोस लिमिटेड
WAPCOS LIMITED
एक शक्ति का नाम - वापकोस, वह शक्ति जो देश को शक्ति देती है।

PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND

DRAWING TITLE :- SLIDING GATE FOR RD : 13.3

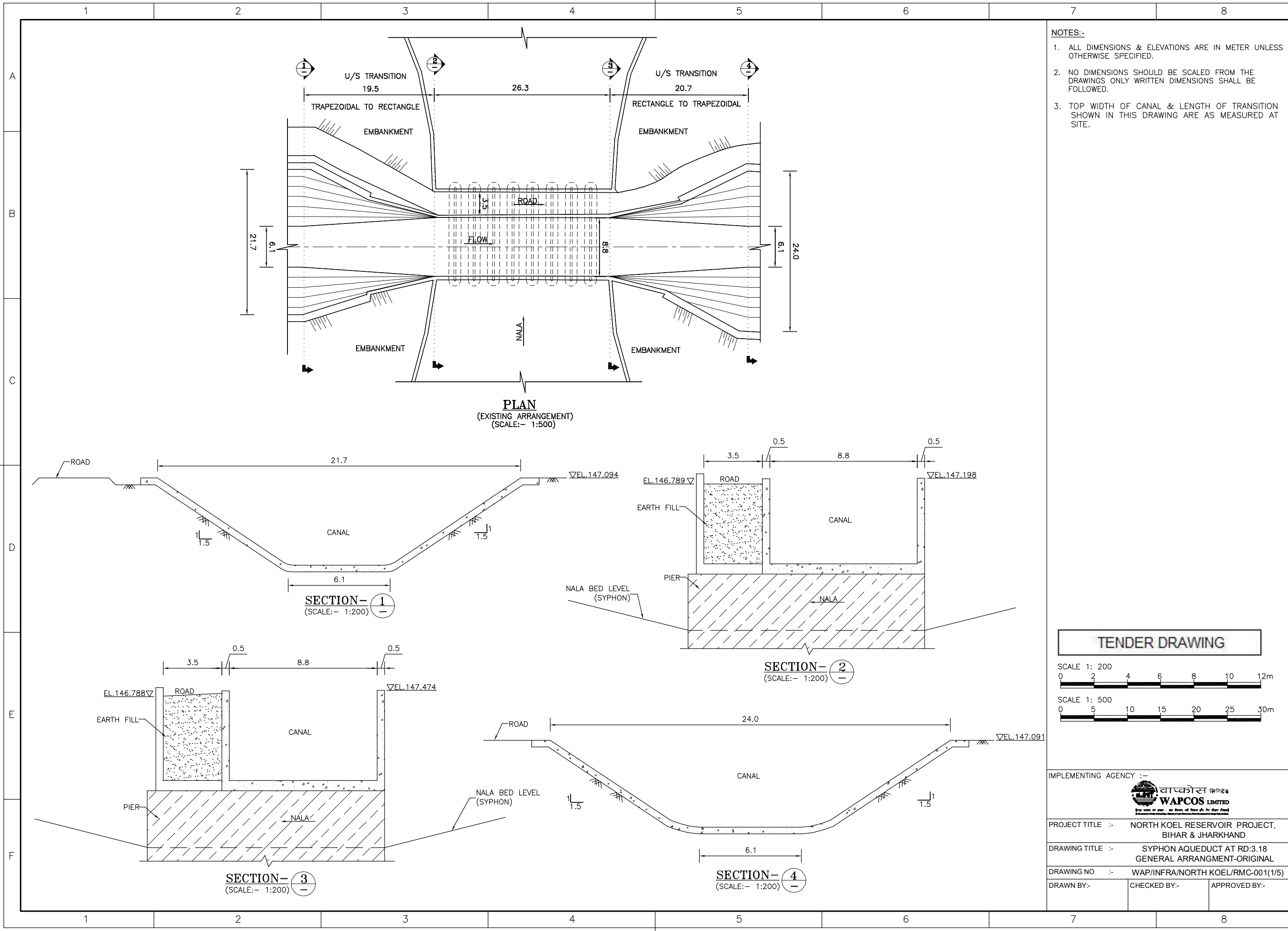
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-003 (7/7)

DRAWN BY:- CHECKED BY:- APPROVED BY:-

AQUEDUCT

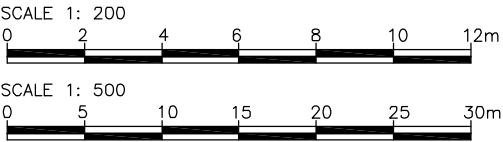


RD 3.18 SYPHON AQUEDUCT

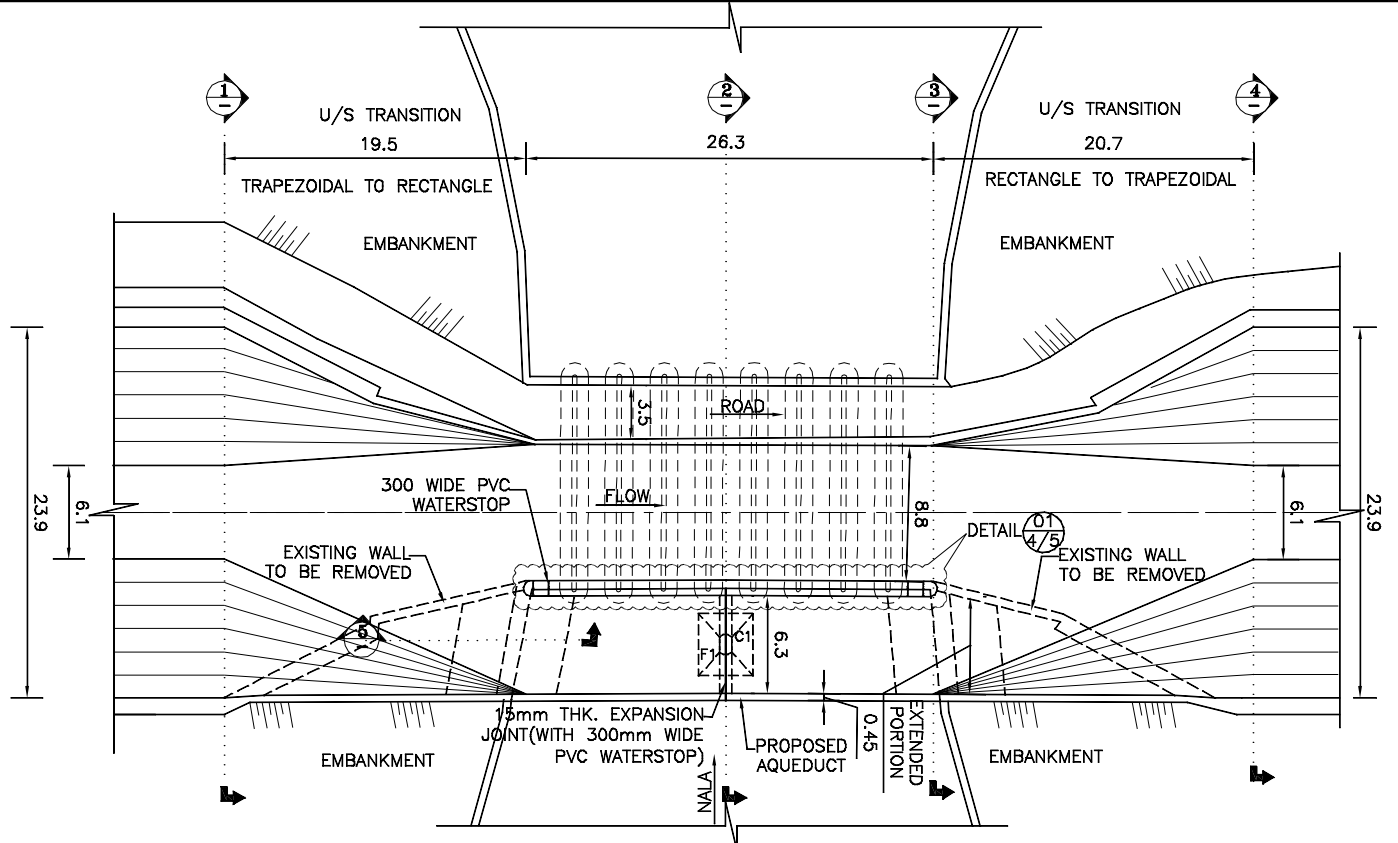


- NOTES:-**
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 2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWINGS ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. TOP WIDTH OF CANAL & LENGTH OF TRANSITION SHOWN IN THIS DRAWING ARE AS MEASURED AT SITE.

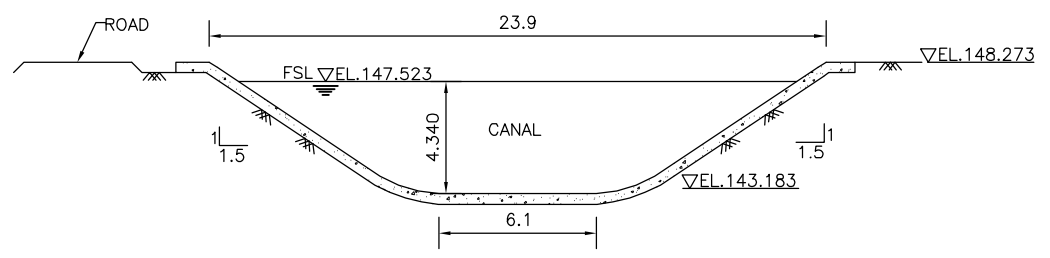
TENDER DRAWING



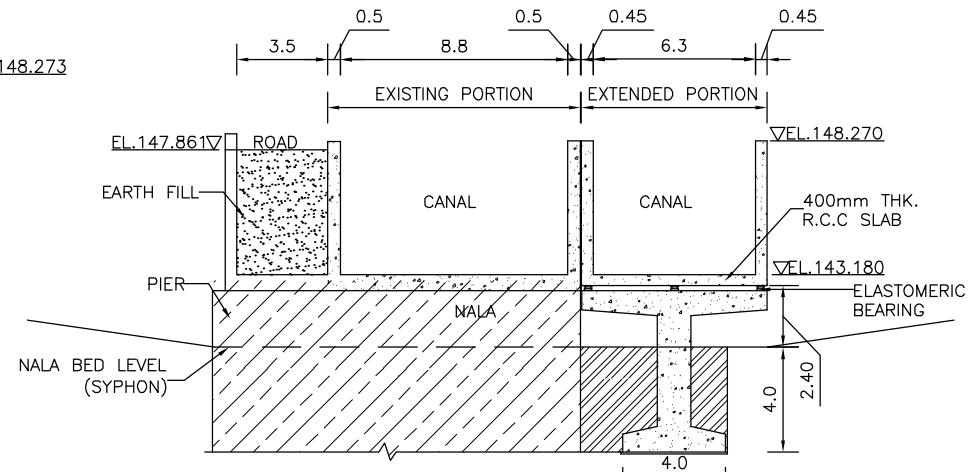
IMPLEMENTING AGENCY :-  वापकोस लिमिटेड WAPCOS LIMITED (एन.सी.डी.ए. के अंतर्गत - एन.सी.डी.ए. के अंतर्गत, एन.सी.डी.ए. के अंतर्गत)		
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND		
DRAWING TITLE :- SYPHON AQUEDUCT AT RD:3.18 GENERAL ARRANGMENT-ORIGINAL		
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-001(1/5)		
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-



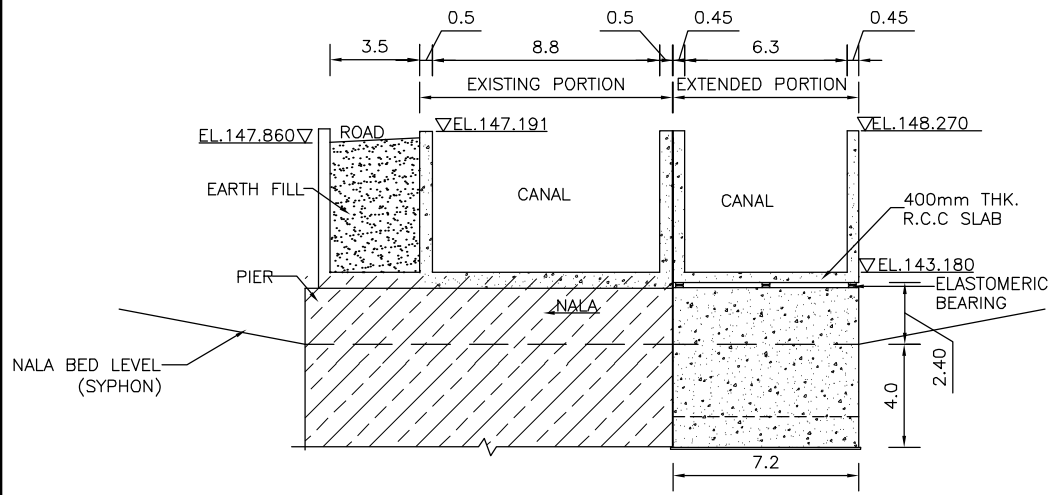
PLAN
(MODIFIED ARRANGEMENT)
(SCALE:- 1:500)



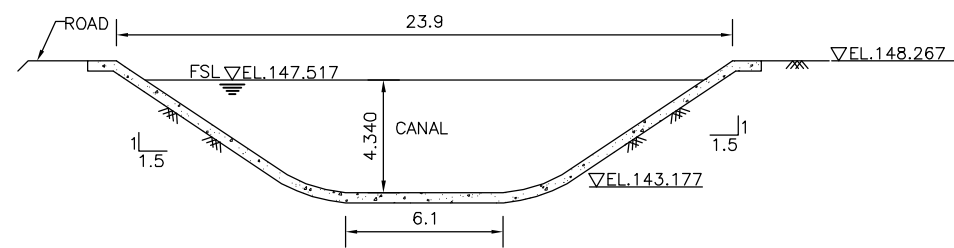
SECTION- 1
(SCALE:- 1:300)



SECTION- 2
(SCALE:- 1:300)



SECTION- 3
(SCALE:- 1:300)

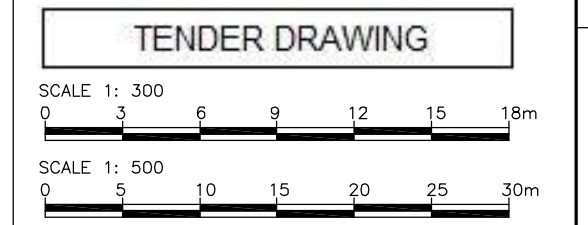


SECTION- 4
(SCALE:- 1:300)

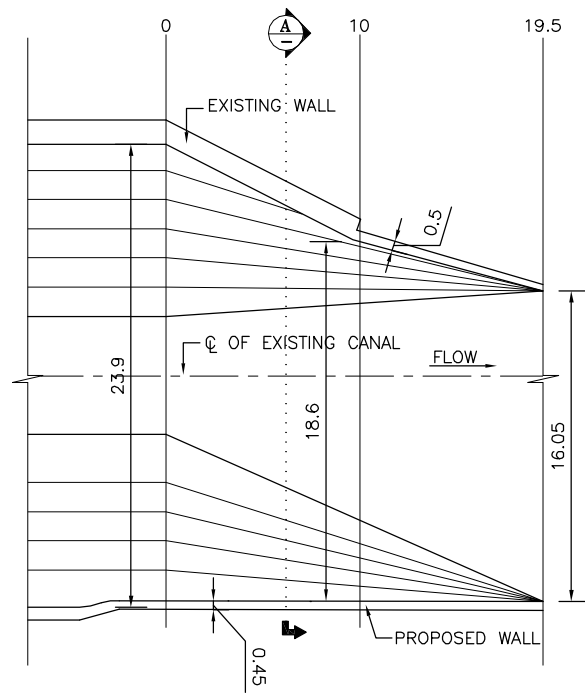
- NOTES:-**
1. ALL DIMENSIONS & ELEVATION ARE IN METER UNLESS OTHERWISE SPECIFIED.
 2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. SBC IS CONSIDERED AT 4m DEPTH AS 242KN/m² WITH REFERENCE TO GEO-TECHNICAL REPORT.
 4. EXCAVATION IN NALA FOR COLUMNS & ABUTMENTS SHALL BE CARRIED OUT WITH SHORING WITH HIGH PRECAUTIONS TO AVOID DISTURBANCE TO THE FOUNDATION OF THE EXISTING STRUCTURE.
 5. BED WIDTH/FULL SUPPLY DEPTH ARE OBTAINED FROM THE HYDRAULIC CALCULATIONS CARRIED OUT FOR THE PROJECT.

CANAL PARTICULARS			
S.NO.	PARAMETERS	CANAL	AQUEDUCT
1	FSL (m)	147.523	147.520
2	BED LEVEL (m)	143.183	143.180
3	BED WIDTH (m)	6.1	16.05
4	FSD (m)	4.34	4.34
5	BED SLOPE	1 IN 7000	—
6	SIDE SLOPE	1:1.5	—
7	DISCHARGE (m ³ /s)	84.15	84.15
8	VELOCITY (m/s)	1.29	1.29
9	FREE BOARD (m)	0.75	0.75

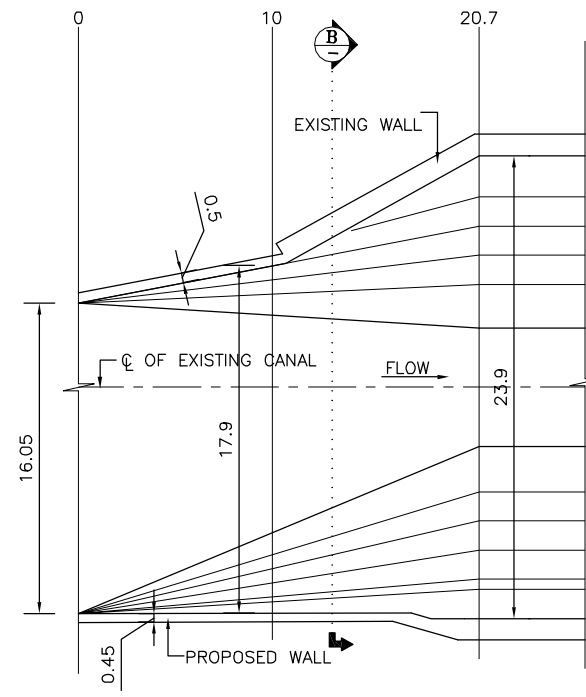
DRAINAGE PARTICULARS	
1	SILT FACTOR
2	BEARING PRESSURE (kN/m ²)
3	CATCHMENT AREA (sq.km)
4	LOWEST BED LEVEL (m)
5	AVERAGE BED LEVEL (m)
6	DESIGNED HFL (m)
7	MAXIMUM DISCHARGE (m ³ /s)



IMPLEMENTING AGENCY :-  WAPCOS LIMITED एन सी ई सी - एन सी ई सी - एन सी ई सी		
PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND	
DRAWING TITLE :-	SYPHON AQUEDUCT AT RD:3.18 GENERAL ARRANGEMENT-MODIFIED	
DRAWING NO :-	WAP/INFRA/NORTH KOEL/RMC-001 (2/5)	
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-



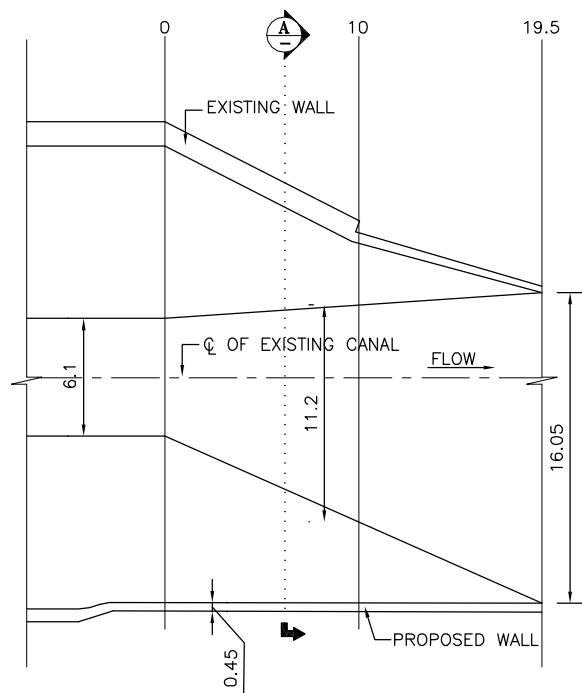
UPSTREAM TRANSITION
PLAN-1 AT TOP
(SCALE:- 1:400)



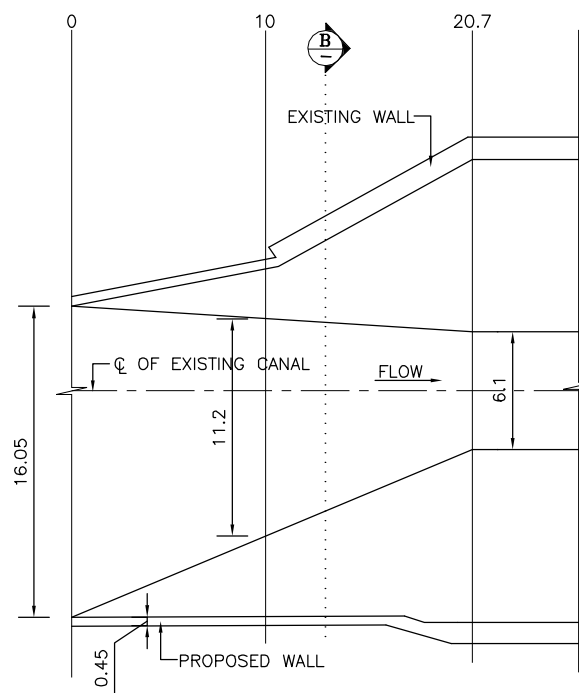
DOWNSTREAM TRANSITION
PLAN-1 AT TOP
(SCALE:- 1:400)

DISTANCE FROM CANAL SECTION 1-1 (m)	UPSTREAM TRANSITION	
	TOP WIDTH (REFER PLAN-1)	BED WIDTH (REFER PLAN-2)
	DISTANCE FROM EXISTING WALL (m)	DISTANCE FROM EXISTING BED (m)
0	23.9	6.1
10	18.6	11.2
19.5	16.05	16.05

DISTANCE FROM CANAL SECTION 3-3 (m)	DOWNSTREAM TRANSITION	
	TOP WIDTH (REFER PLAN-1)	BED WIDTH (REFER PLAN-2)
	DISTANCE FROM EXISTING WALL (m)	DISTANCE FROM EXISTING BED (m)
0	16.05	16.05
10	17.9	11.2
20.7	23.9	6.1



UPSTREAM TRANSITION
PLAN-2 AT BED LEVEL
(SCALE:- 1:400)

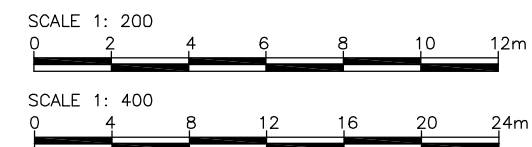


DOWNSTREAM TRANSITION
PLAN-2 AT BED LEVEL
(SCALE:- 1:400)

NOTES:-

- ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
- NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWINGS ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.

TENDER DRAWING



IMPLEMENTING AGENCY :-

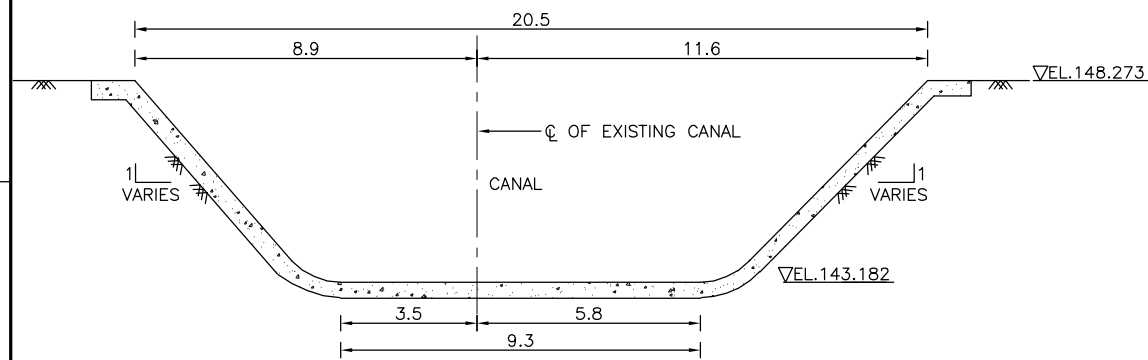


PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND

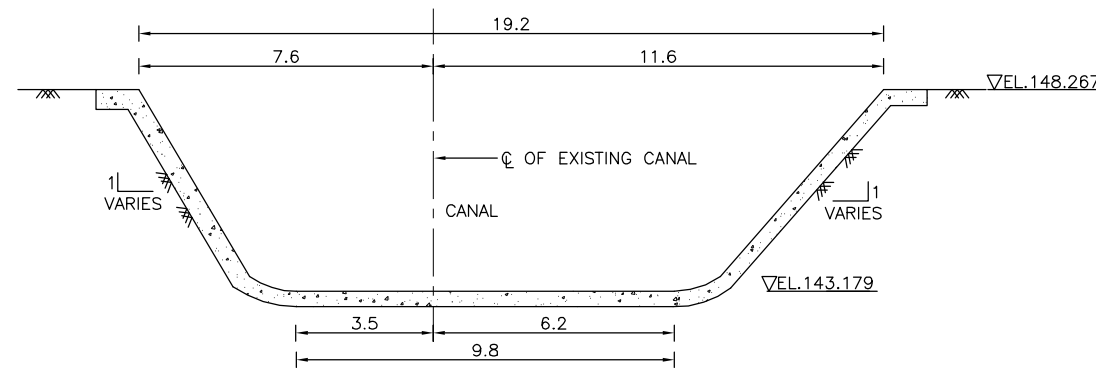
DRAWING TITLE :- SYPHON AQUEDUCT AT RD:3.18 MODIFIED TRANSITION DETAILS

DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-001 (3/5)

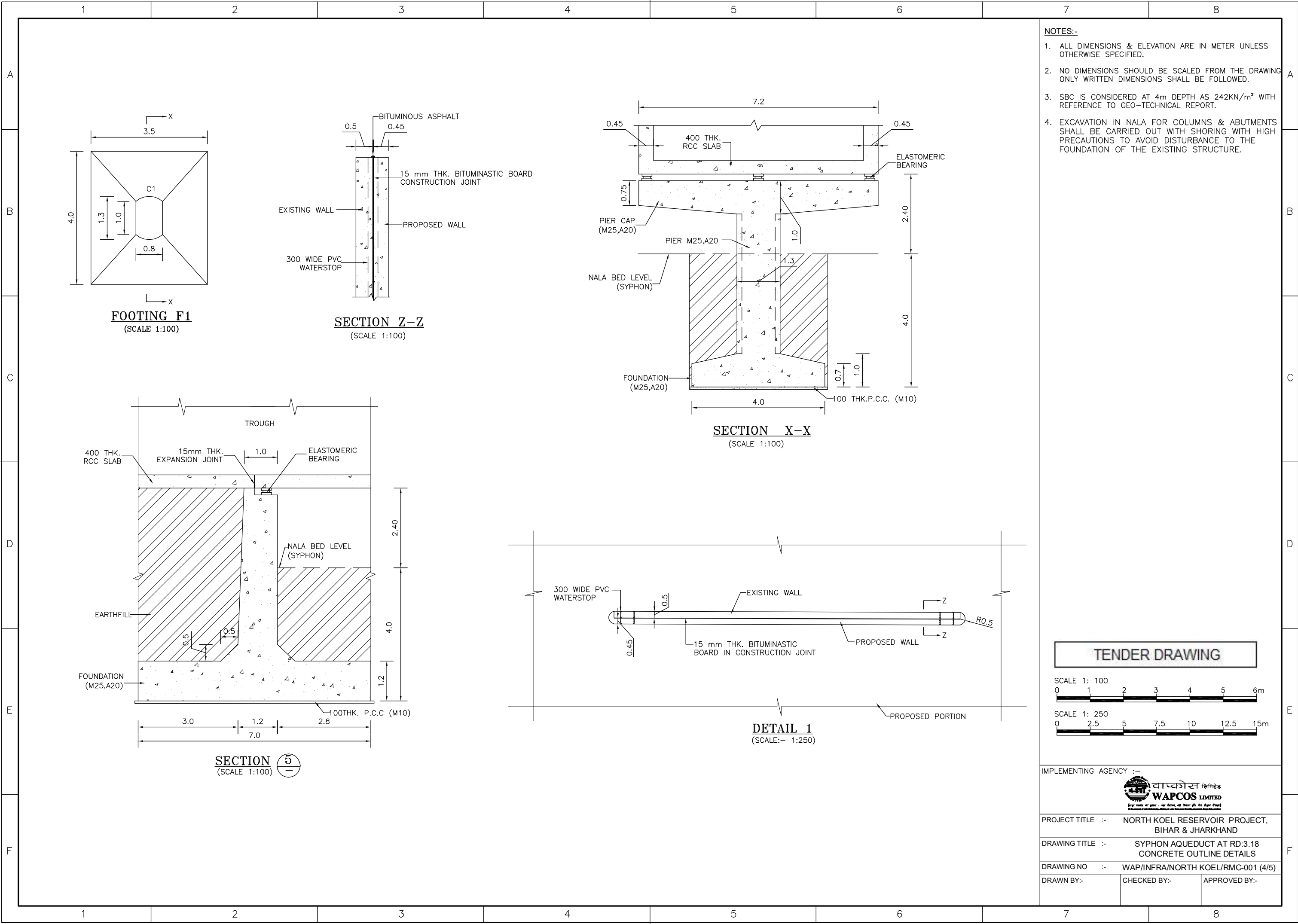
DRAWN BY:- CHECKED BY:- APPROVED BY:-

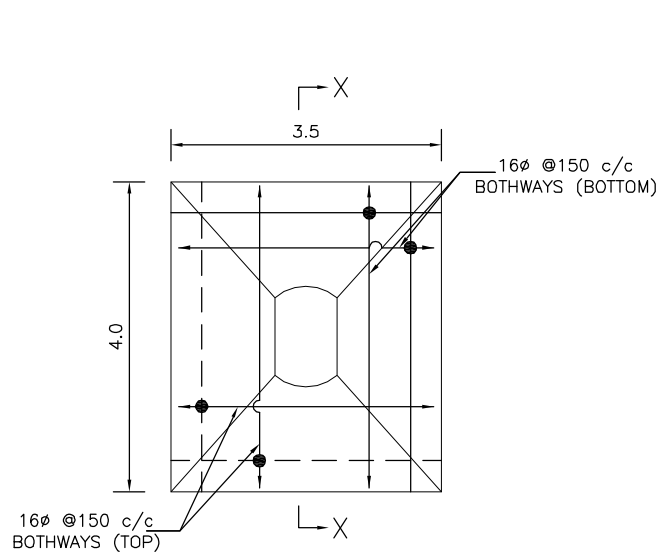


SECTION-A
(SCALE:- 1:200)

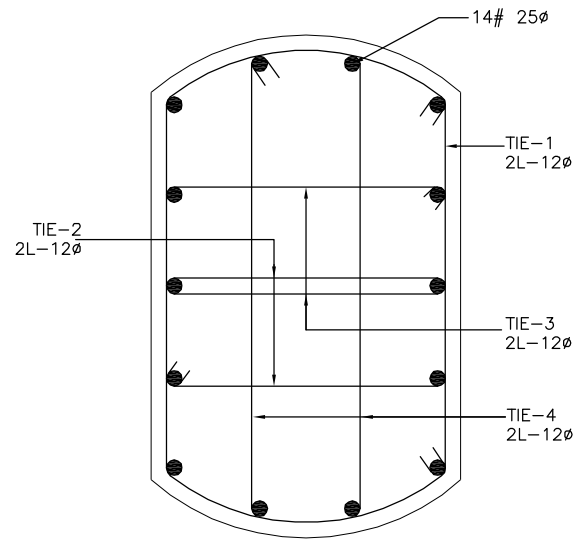


SECTION-B
(SCALE:- 1:200)

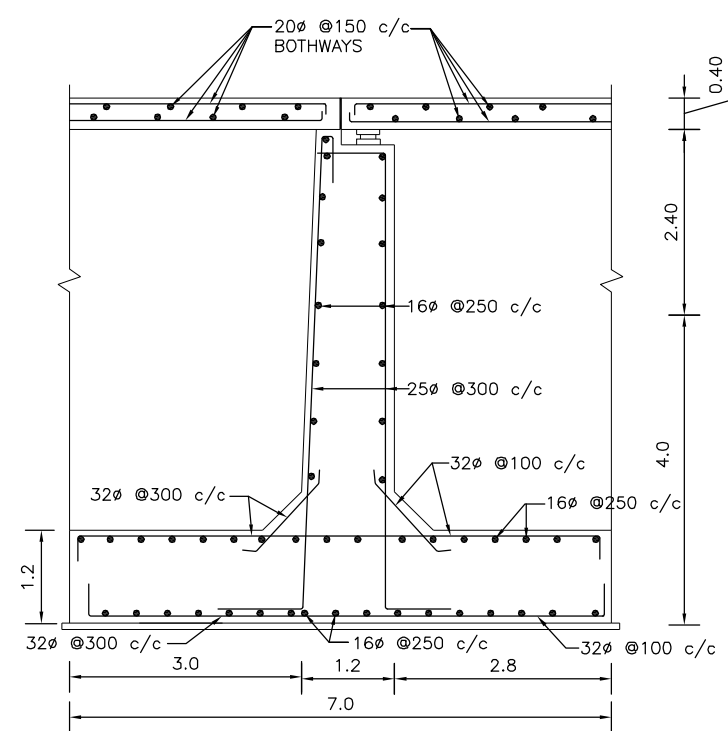




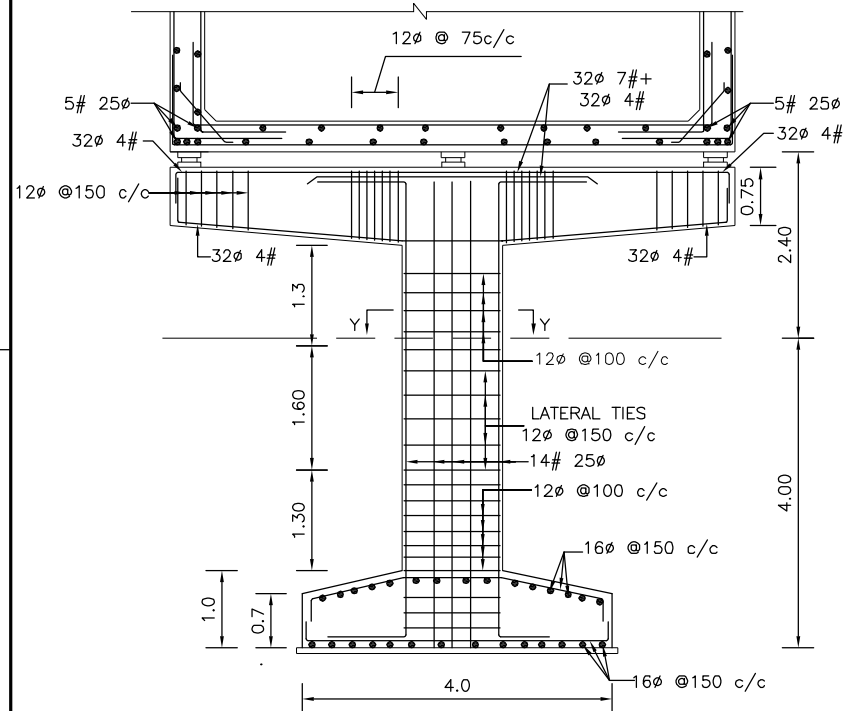
FOOTING F1
(SCALE 1:100)



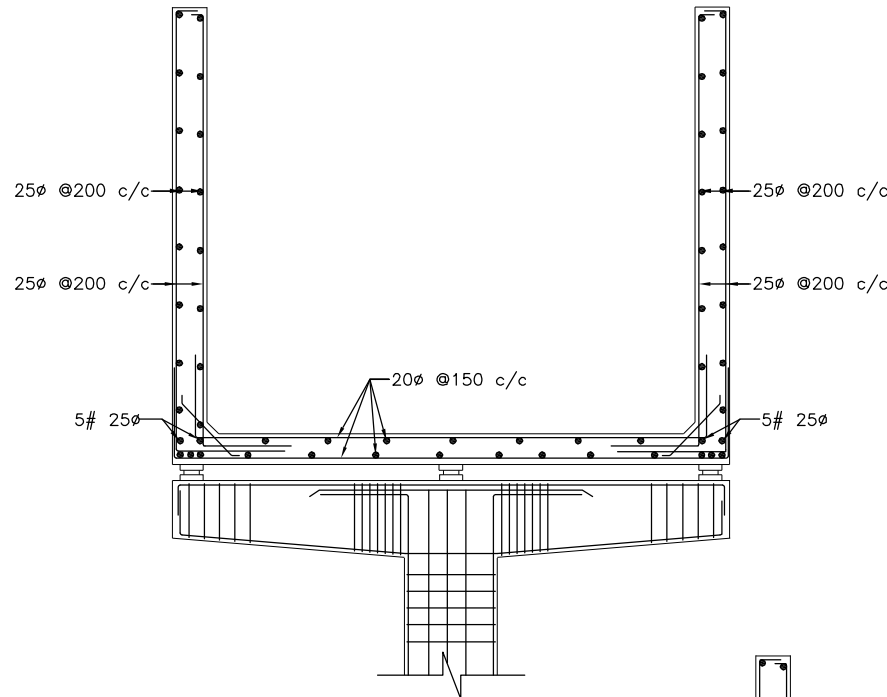
SECTION Y-Y
(SCALE:- 1:20)



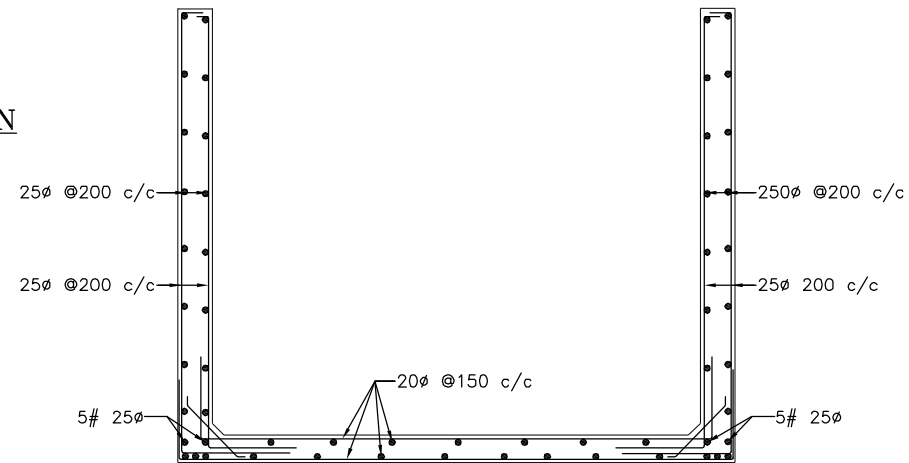
SECTION 5
(SCALE 1:100)



SECTION X-X
(PIER AND PIER CAP CONNECTION DETAILS)
(SCALE:- 1:100)



AQUEDUCT-SECTION
(AT SUPPORT)
(SCALE:- 1:100)



AQUEDUCT-SECTION
(MID SPAN)
(SCALE:- 1:100)

NOTES:-

1. THIS DRAWING SHOWS THE REINFORCEMENT DETAILS OF AQUEDUCT.
2. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
3. NO DIMENSIONS SHALL BE MEASURED FROM THE DRAWING; ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
4. REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH COLD TWISTED DEFORMED BARS OF GRADE Fe-500 CONFORMING TO IS:1786.
5. REINFORCEMENT BARS SHALL NOT BE COUNTED.
6. DEVELOPMENT LENGTH AND LAP LENGTH OF REINFORCEMENT BARS SHALL BE AS PER SP 34.

S. NO.	MEMBER	MINIMUM COVER OF REINFORCEMENT
1.	FOOTING	75mm FOR CONCRETE DEPOSITED AGAINST THE GROUND AND 50mm FOR OTHER SURFACES.
2.	PIER	50mm
3.	PIER CAP	25mm
4.	SLAB & WALL	50mm

TENDER DRAWING



IMPLEMENTING AGENCY :-



PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND

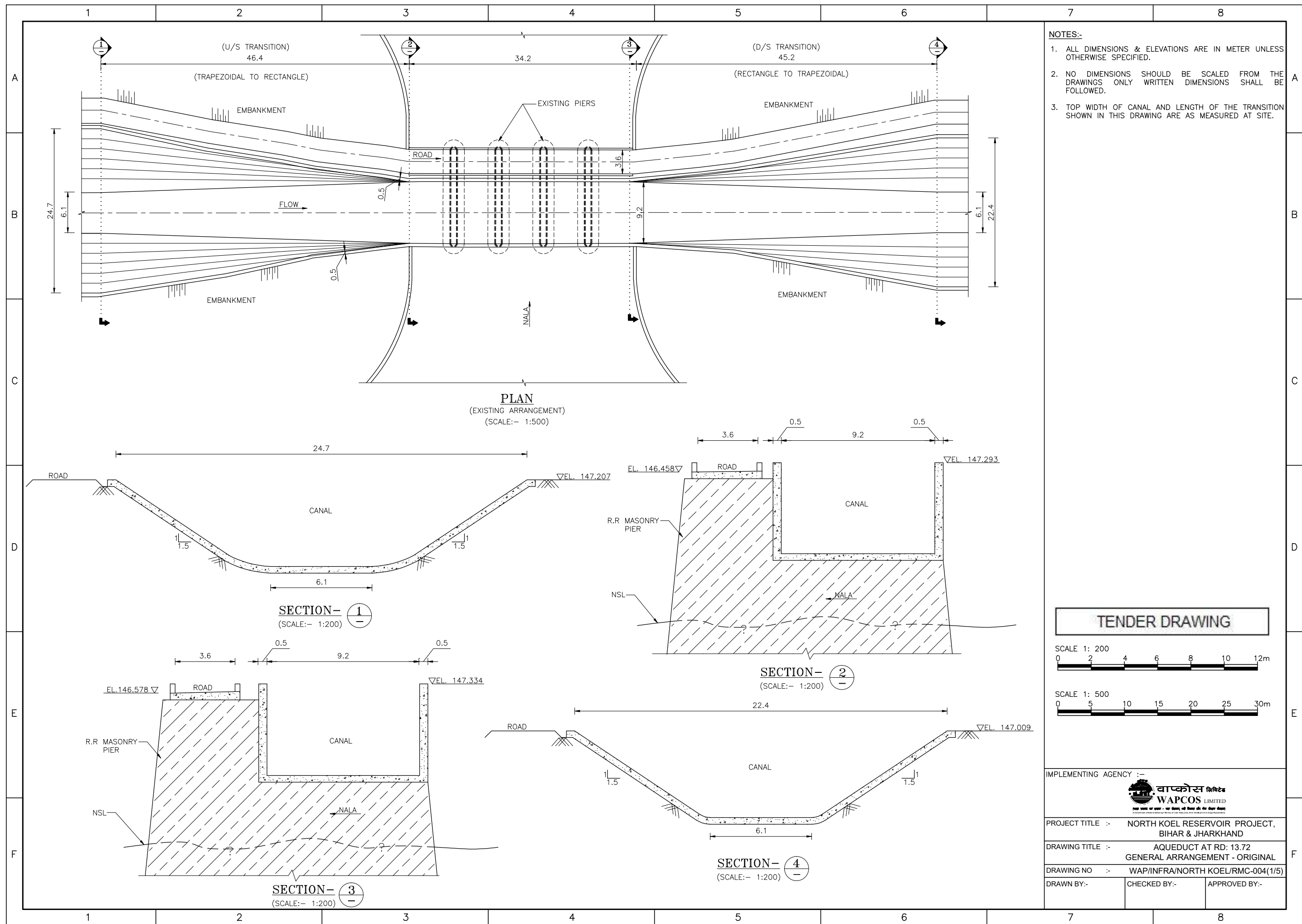
DRAWING TITLE :- SYPHON AQUEDUCT AT RD:3.18 REINFORCEMENT DETAILS

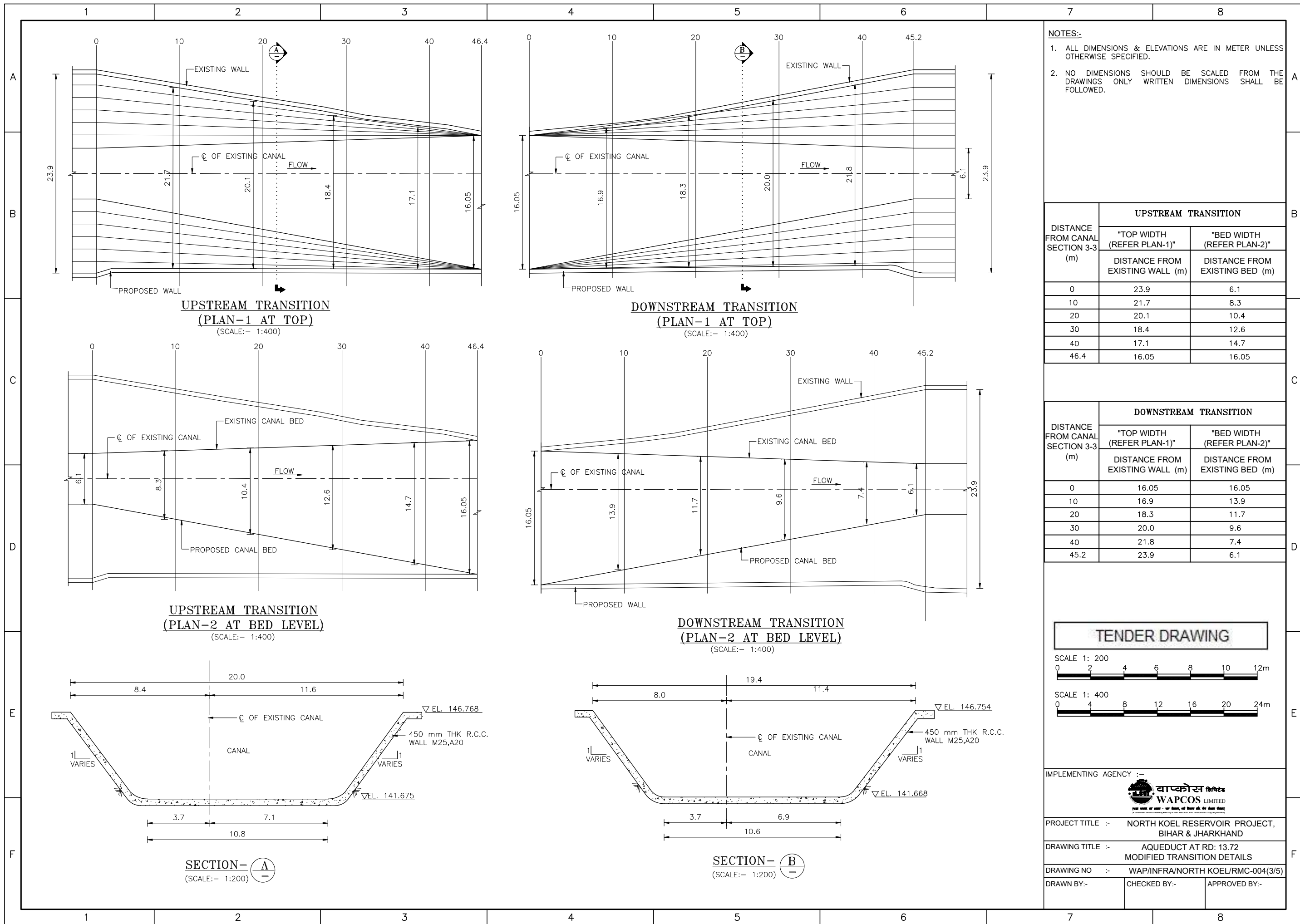
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-001 (5/5)

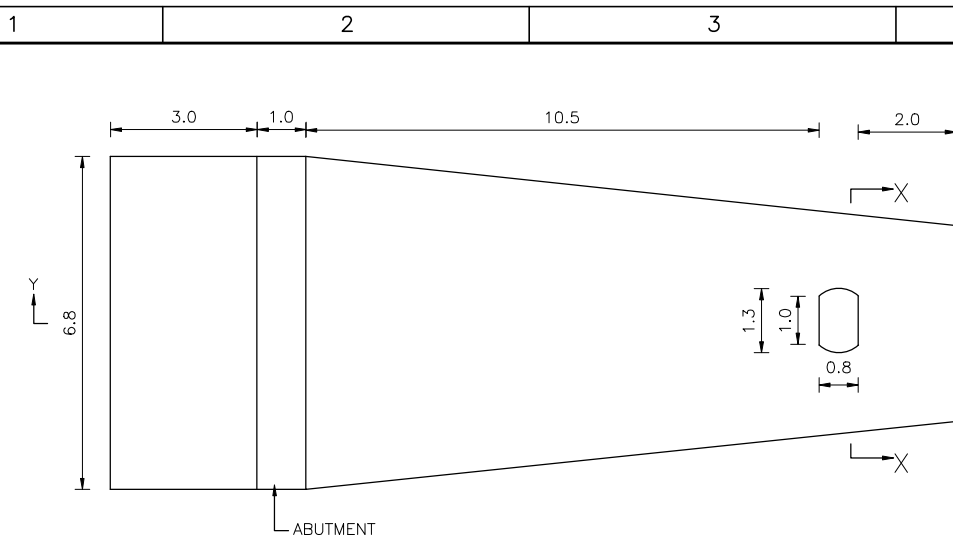
DRAWN BY:- CHECKED BY:- APPROVED BY:-



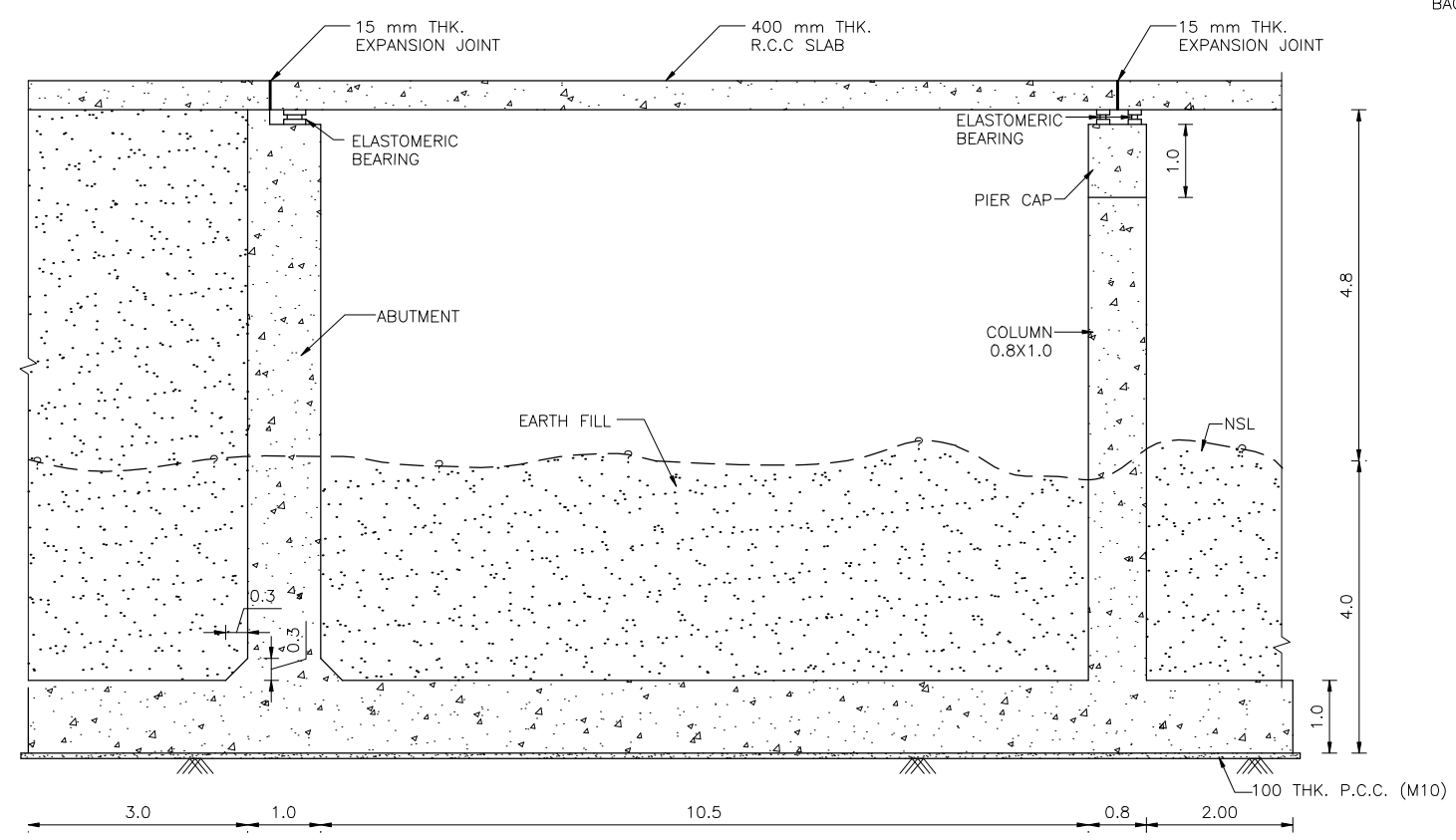
RD 13.72 AQUEDUCT OVER NALLA CROSSING



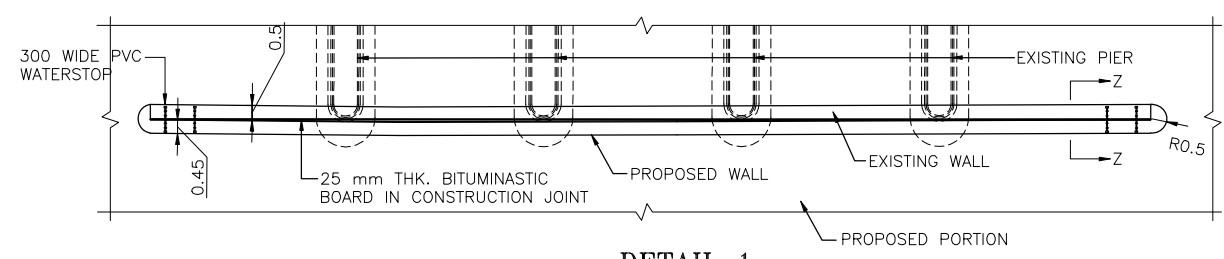




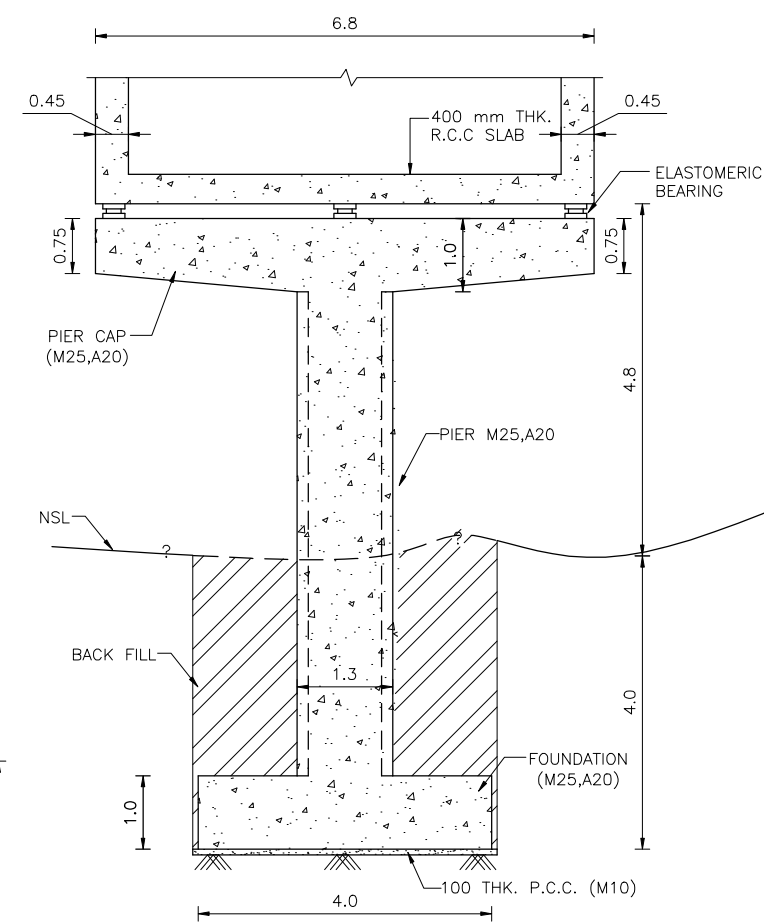
COMBINED FOOTING-PLAN
(SCALE:- 1:150)



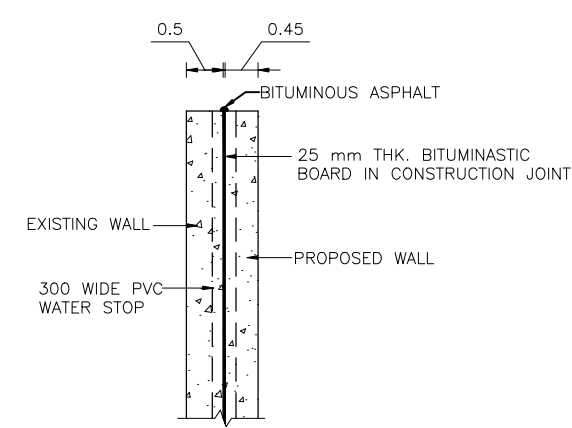
COMBINED FOOTING-L-SECTION
(SCALE:- 1:100)



DETAIL 1
(SCALE:- 1:250)

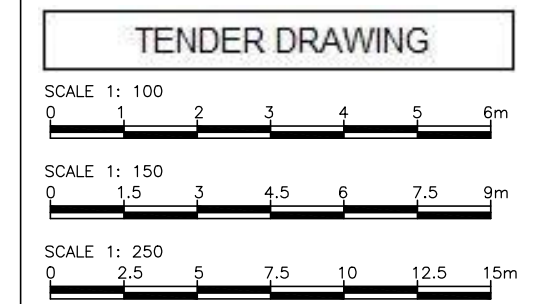


SECTION X-X
(SCALE 1:100)



SECTION Z-Z
(SCALE 1:100)

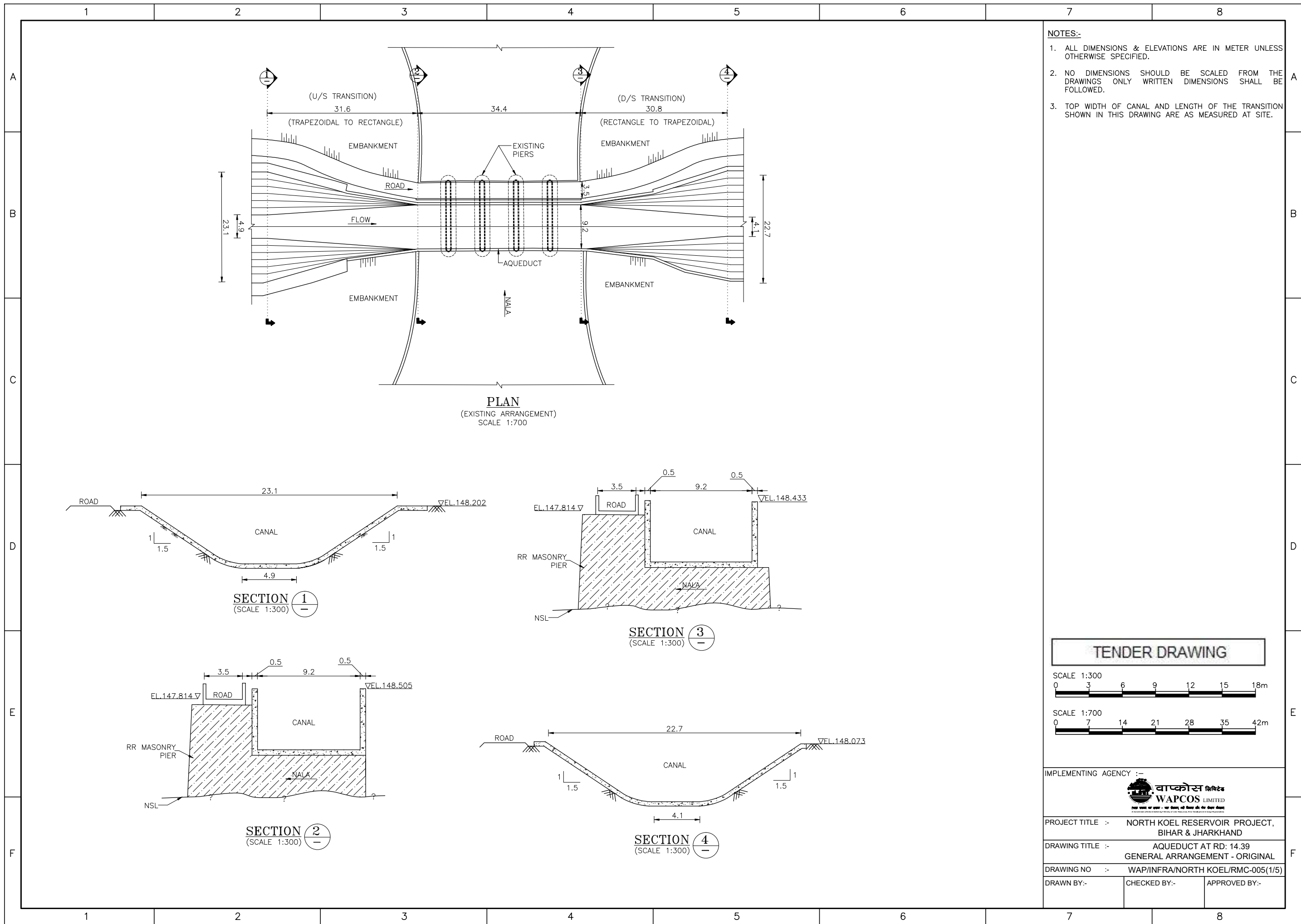
- NOTES:-**
1. ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
 2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWINGS ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. SBC IS CONSIDERED AT 4m DEPTH AS 217KN/m² WITH REFERENCE TO GEO-TECHNICAL REPORT.
 4. EXCAVATION ON NALLAH FOR COLUMNS, ABUTMENTS SHALL BE CARRIED OUT WITH SHORING WITH HIGH PRECAUTIONS TO AVOID DISTURBANCE TO THE FOUNDATION OF THE EXISTING STRUCTURE.

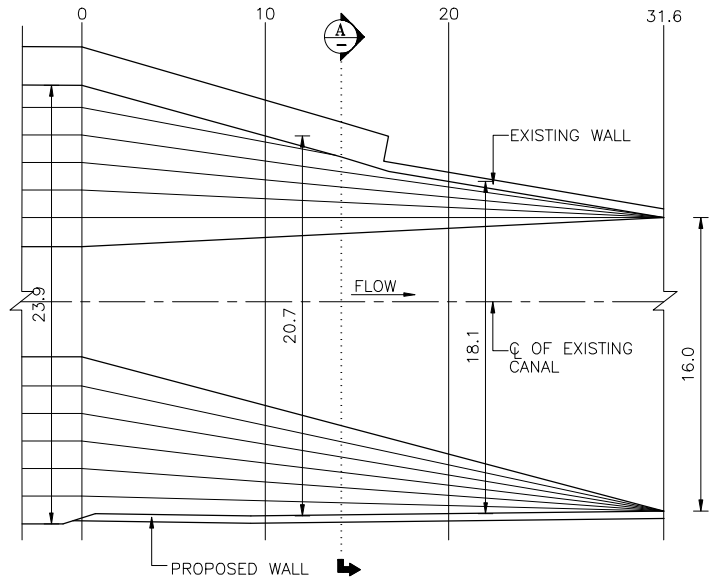


IMPLEMENTING AGENCY :-		
		
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND		
DRAWING TITLE :- AQUEDUCT AT RD: 13.72 CONCRETE OUTLINE DETAILS		
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-004(4/5)		
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-

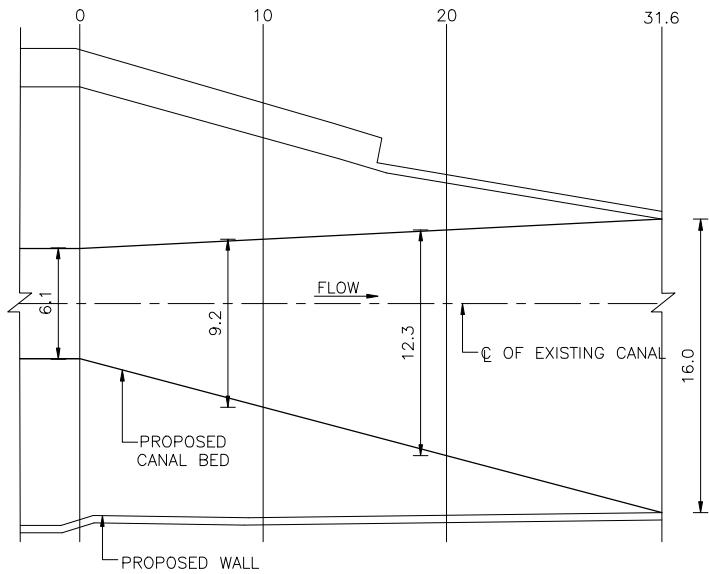


RD 14.39 AQUEDUCT OVER NALLA

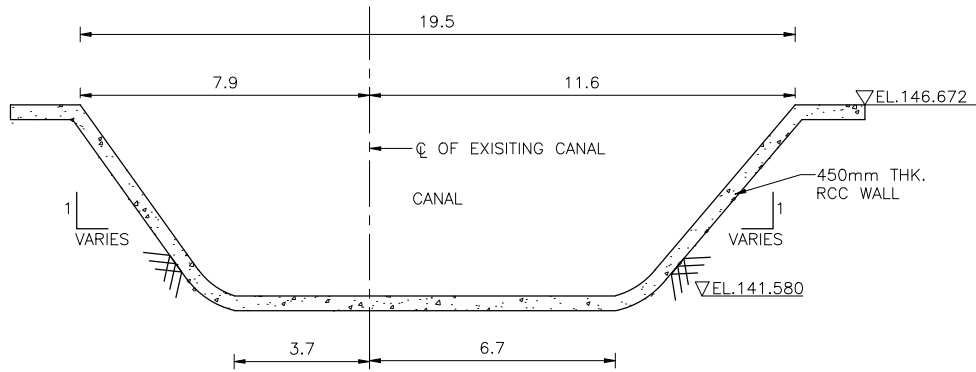




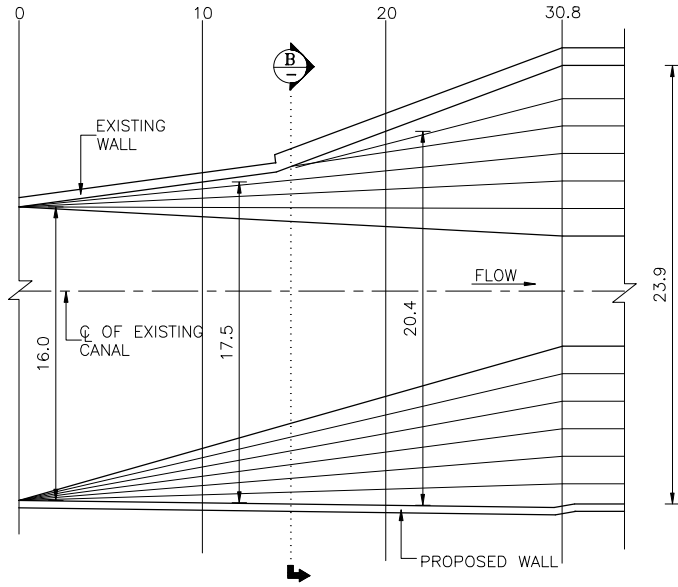
UPSTREAM TRANSITION
(PLAN-1 AT TOP)
(SCALE:- 1:400)



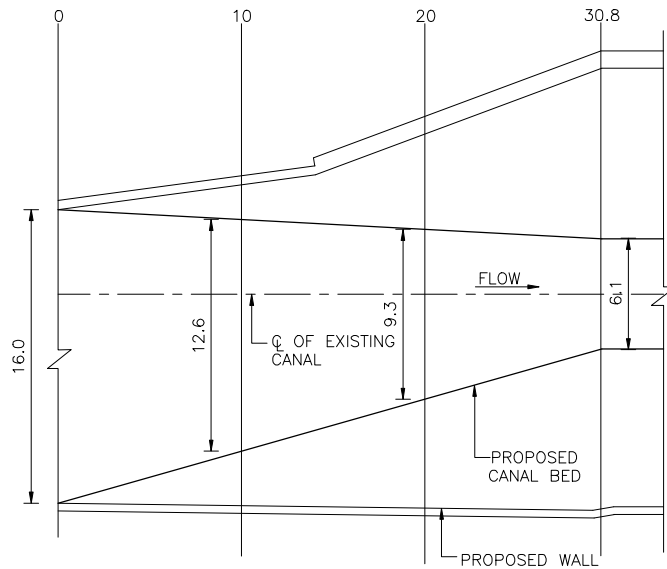
UPSTREAM TRANSITION
PLAN-2 AT BED LEVEL
(SCALE:- 1:400)



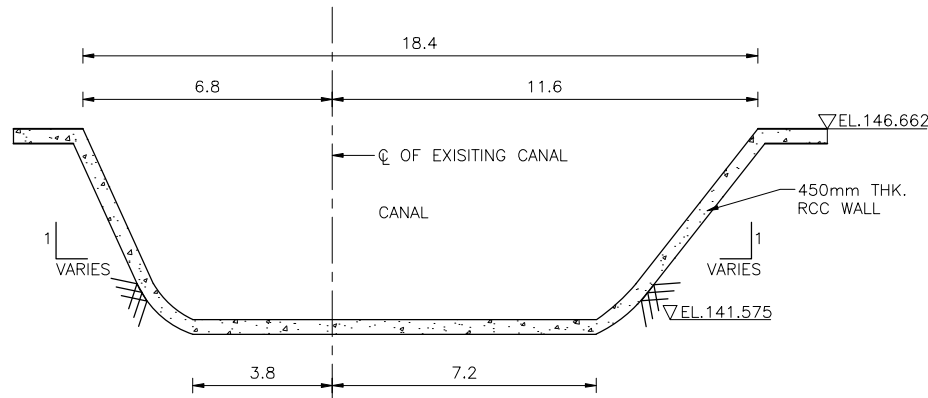
SECTION-A
(SCALE:- 1:200)



DOWNSTREAM TRANSITION
(PLAN-1 AT TOP)
(SCALE:- 1:400)



DOWNSTREAM TRANSITION
PLAN-2 AT BED LEVEL
(SCALE:- 1:400)

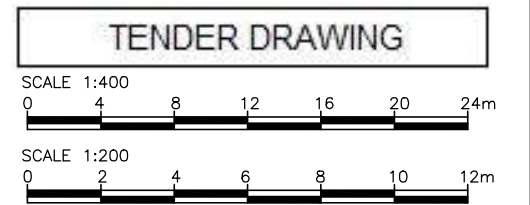


SECTION-B
(SCALE:- 1:200)

- NOTES:-
1. ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
 2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWINGS ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.

DISTANCE FROM CANAL SECTION 1-1 (m)	UPSTREAM TRANSITION	
	"TOP WIDTH (REFER PLAN 1)"	"BED WIDTH (REFER PLAN 2)"
	DISTANCE FROM EXISTING WALL (m)	DISTANCE FROM EXISTING BED (m)
0	23.9	6.1
10	20.7	9.2
20	18.1	12.3
31.7	16.0	16.0

DISTANCE FROM CANAL SECTION 3-3 (m)	DOWNSTREAM TRANSITION	
	"TOP WIDTH (REFER PLAN 1)"	"BED WIDTH (REFER PLAN 2)"
	DISTANCE FROM EXISTING WALL (m)	DISTANCE FROM EXISTING BED (m)
0	16.0	16.0
10	17.5	12.6
20	20.4	9.3
29.6	23.9	6.1



IMPLEMENTING AGENCY :-

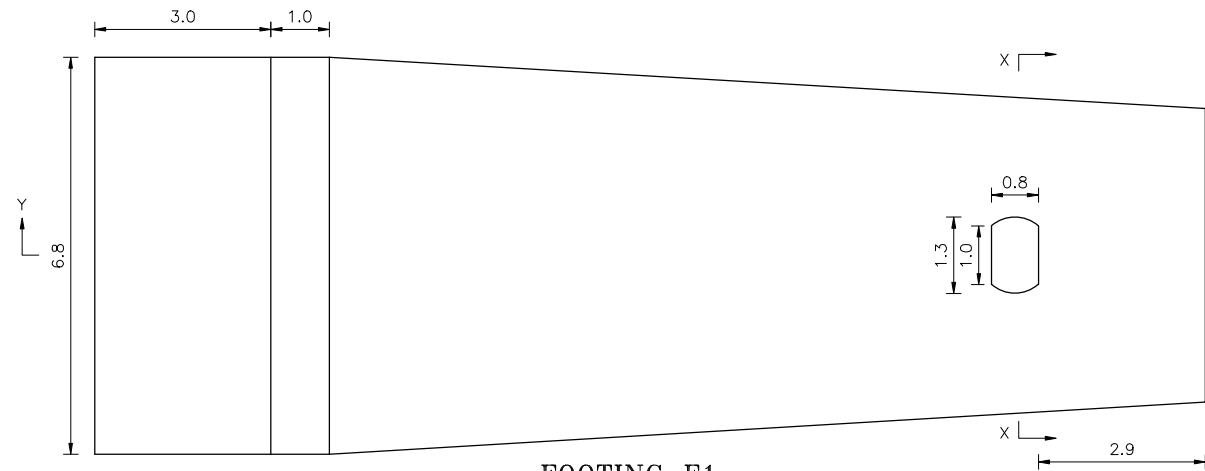
वापकोस लिमिटेड
WAPCOS LIMITED

PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND

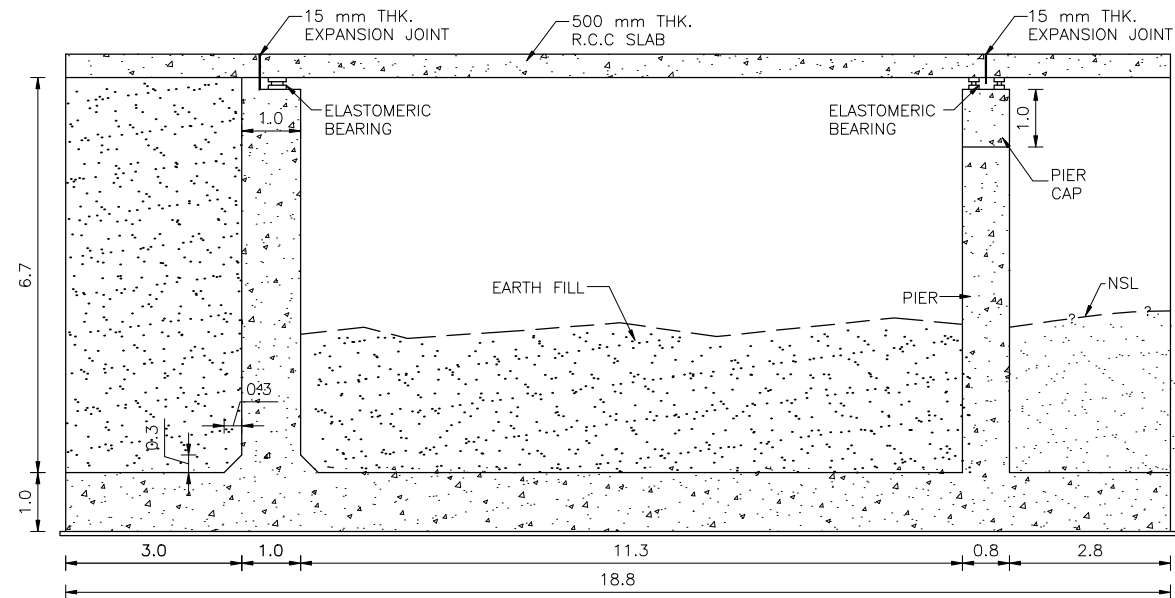
DRAWING TITLE :- AQUEDUCT AT RD: 14.39 MODIFIED TRANSITION DETAILS

DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-005 (3/5)

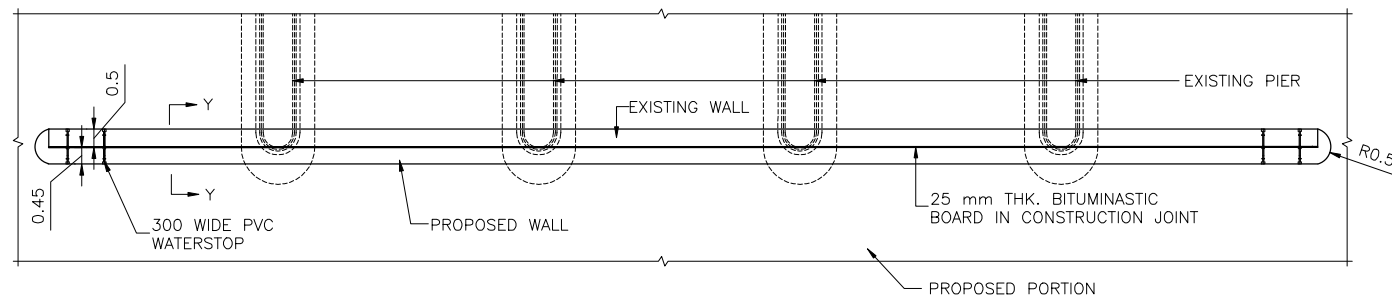
DRAWN BY:- CHECKED BY:- APPROVED BY:-



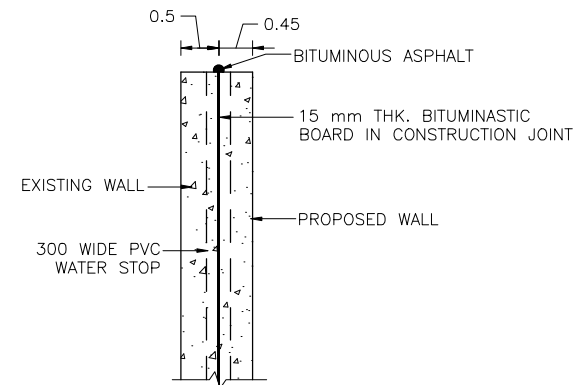
FOOTING F1
(SCALE 1:125)



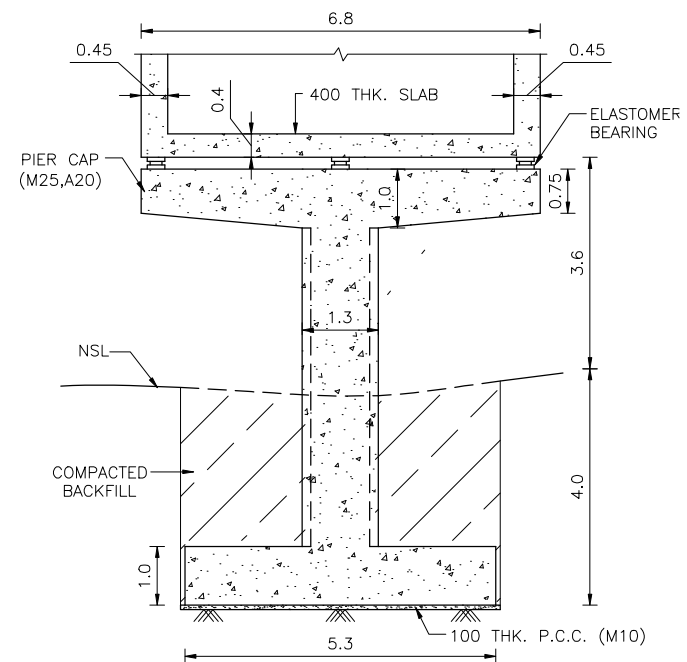
SECTION Y-Y
(SCALE:- 1:125)



DETAIL-1
(SCALE:-1:200)



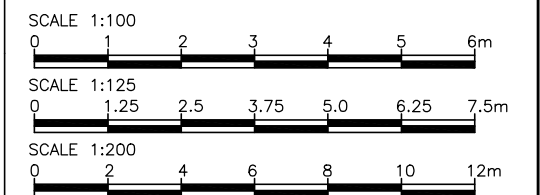
SECTION Y-Y
(SCALE 1:100)



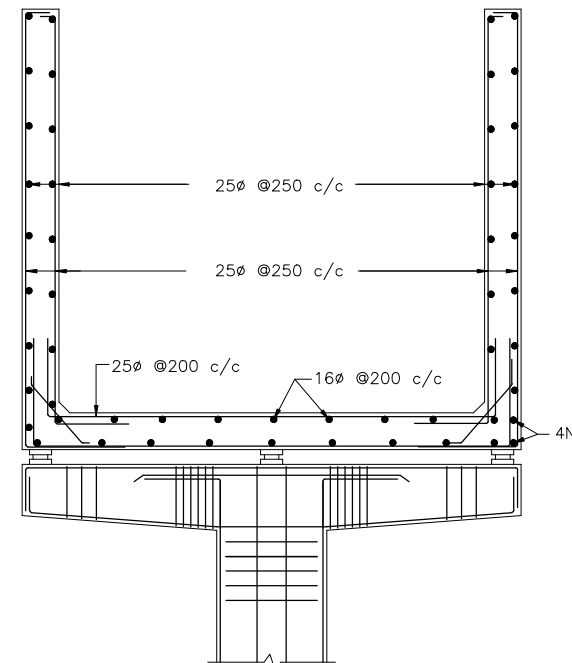
SECTION X-X
(SCALE:- 1:125)

- NOTES:-**
1. ALL DIMENSIONS & ELEVATIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
 2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWINGS ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 3. SBC IS CONSIDERED AT 4m DEPTH AS 153KN/m² WITH REFERENCE TO GEO-TECHNICAL REPORT.
 4. EXCAVATION ON NALLAH FOR COLUMNS, ABUTMENTS SHALL BE CARRIED OUT WITH SHORING WITH HIGH PRECAUTIONS TO AVOID DISTURBANCE TO THE FOUNDATION OF THE EXISTING STRUCTURE.

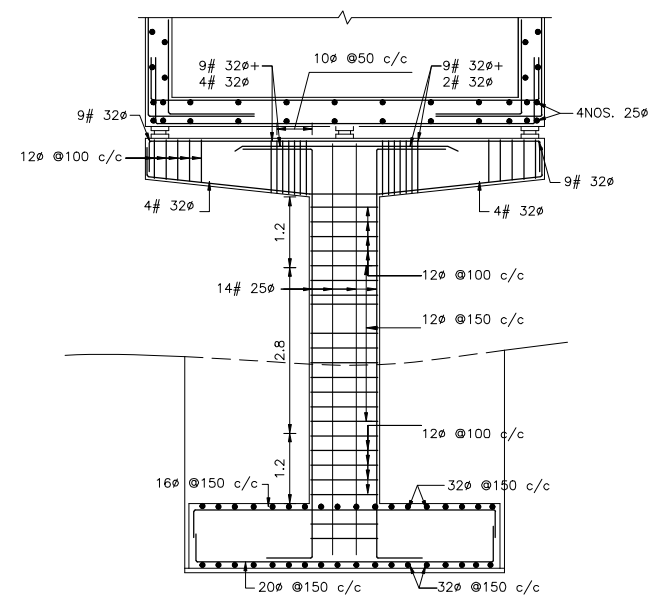
TENDER DRAWING



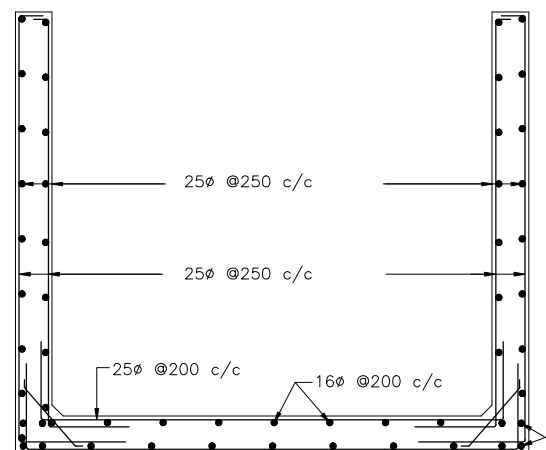
IMPLEMENTING AGENCY :-		
		
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND		
DRAWING TITLE :- AQUEDUCT AT RD: 14.39 CONCRETE OUTLINE DETAILS		
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-005 (4/5)		
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-



FOOTING F1
(SCALE 1:125)



SECTION Y-Y
(SCALE:- 1:125)



AQUEDUCT-SECTION
(MID SPAN)
(SCALE:- 1:100)

- TENDER DRAWING

SCALE 1: 30
0 .3 .6 .9 1.2 1.5 1.8m

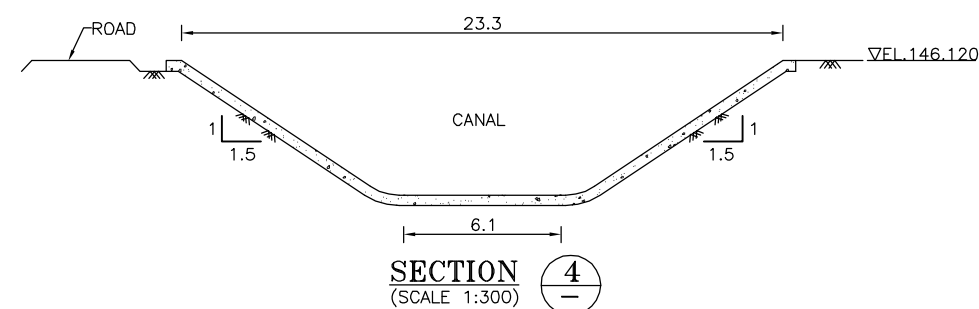
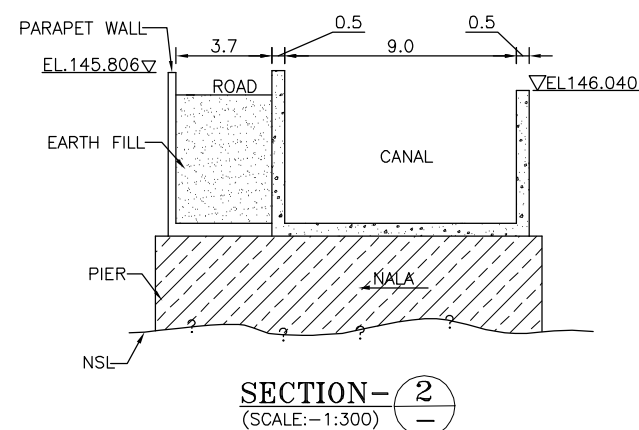
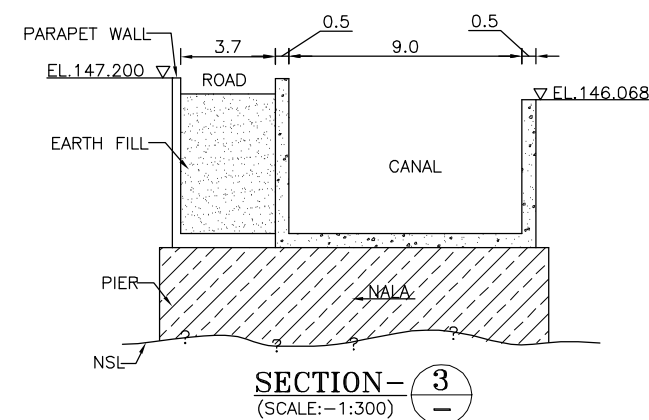
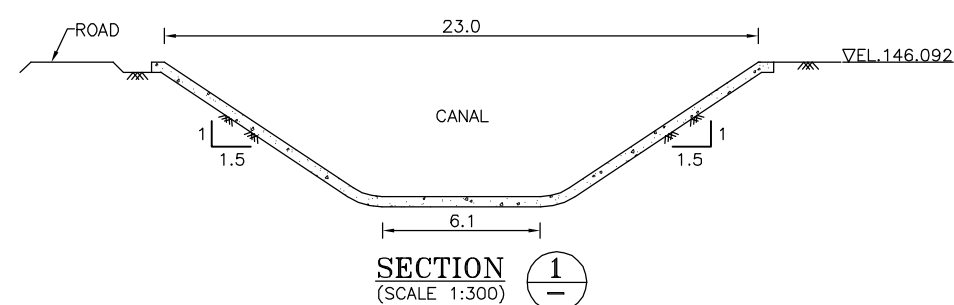
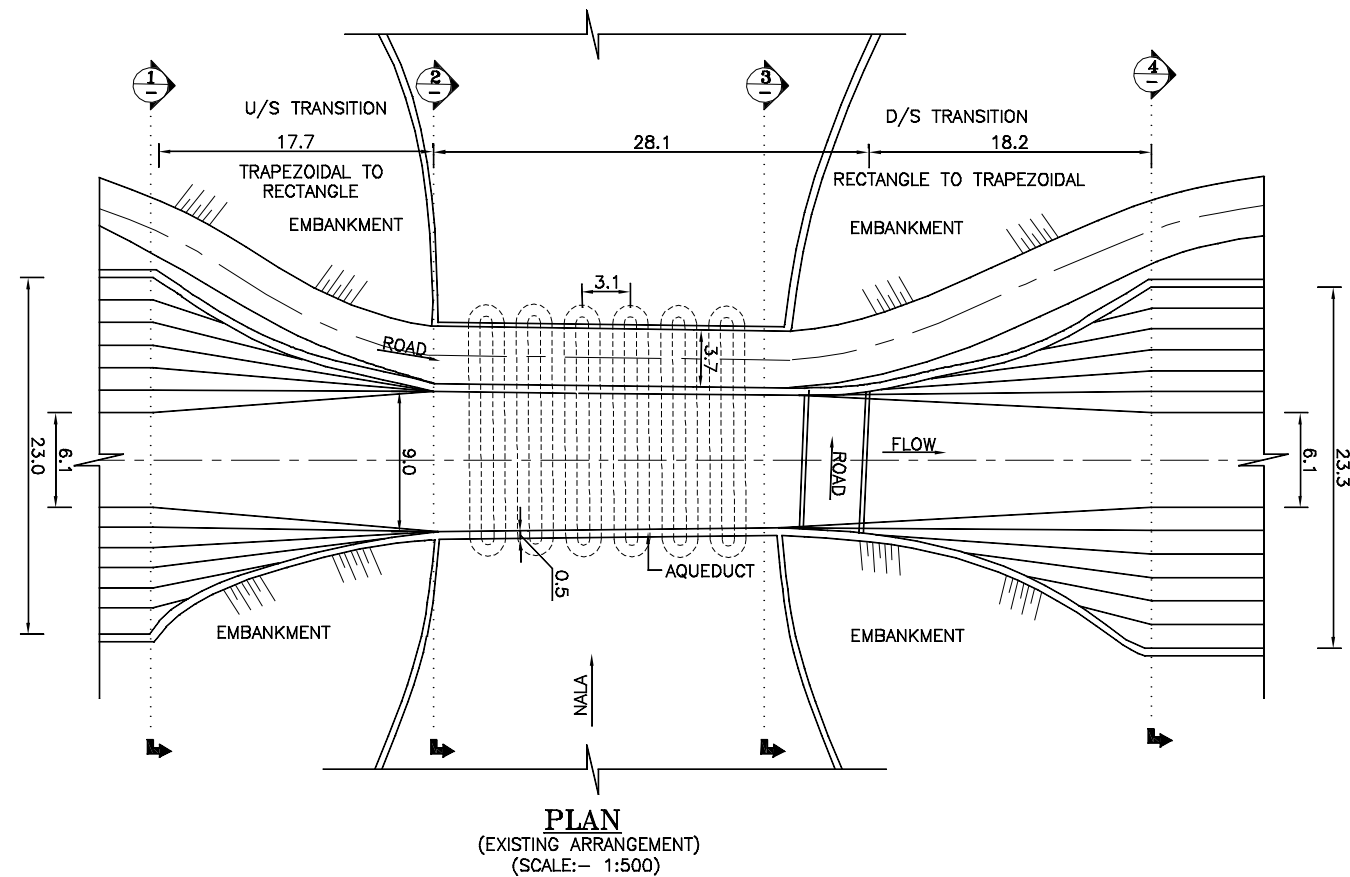
SCALE 1: 100
0 1 2 3 4 5 6m

SCALE 1:125
0 1.25 2.5 3.75 5.0 6.25 7.5m

IMPLEMENTING AGENCY :-  वापकोस लिमिटेड WAPCOS LIMITED एक सार्वजनिक निगम - एक कंपनी, जो भारत की दो राज्य सरकारों के सम्मिलित निवेश के माध्यम से स्थापित की गई है।		
PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND	
DRAWING TITLE :-	AQUEDUCT AT RD: 14.39 REINFORCEMENT DETAILS	
DRAWING NO :-	WAP/INFRA/NORTH KOEL/RMC-004 (5/5)	
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-



RD 16.62 AQUEDUCT

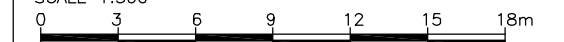


- NOTES:-

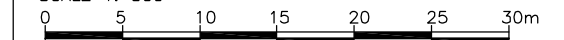
1. ALL DIMENSIONS & ELEVATION ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. TOP WIDTH OF CANAL & LENGTH OF TRANSITION SHOWN IN THIS DRAWING ARE AS MEASURED AT SITE.

TENDER DRAWING

SCALE 1:300



SCALE 1: 500



IMPLEMENTING AGENCY :-

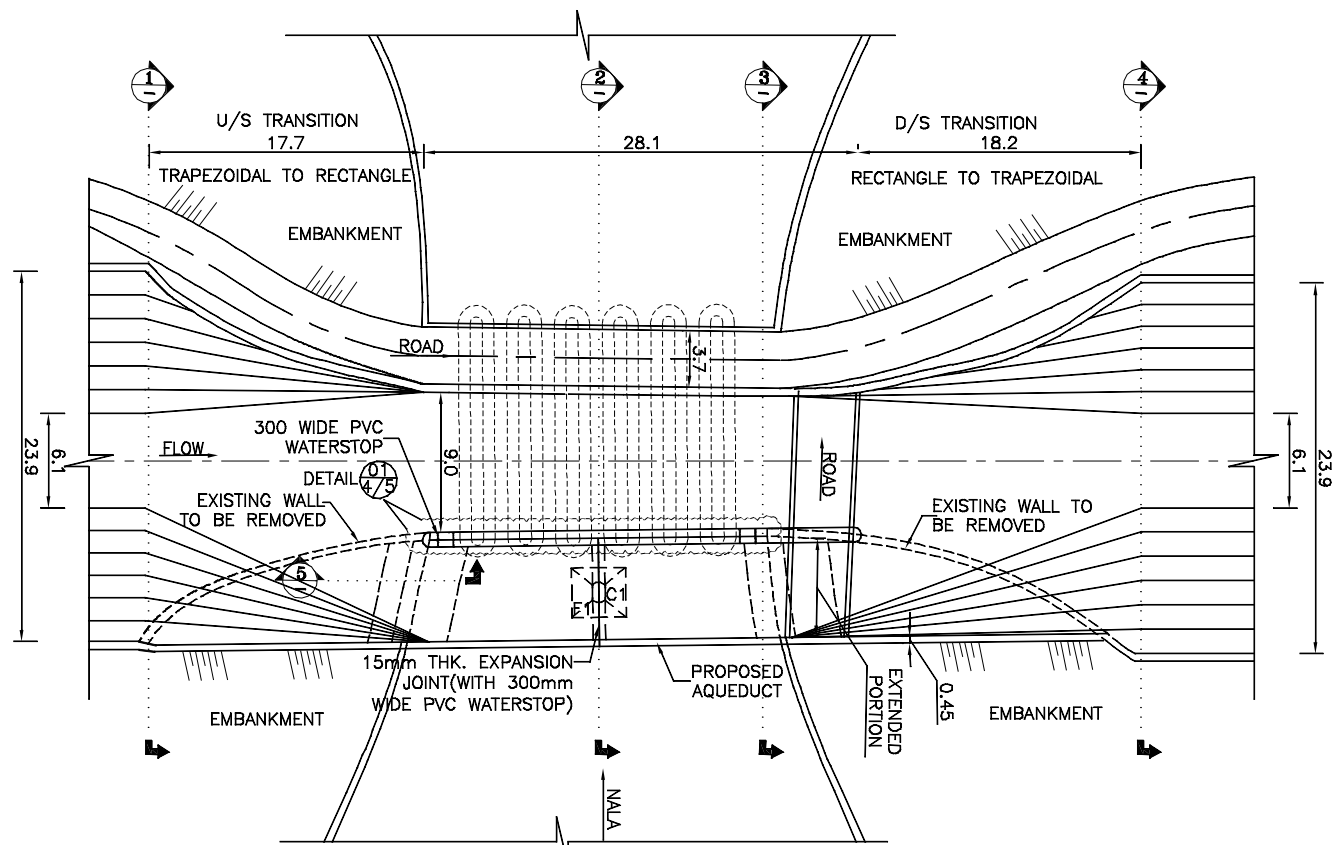


PROJECT TITLE :-	NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND
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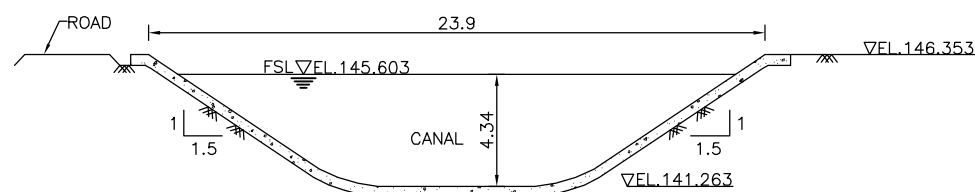
DRAWING TITLE :-	AQUEDUCT AT RD:16.62 GENERAL ARRANGMENT-ORIGINAL
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DRAWING NO	:-	WAP/INFRA/NORTH KOEL/RMC-006 (1/5)
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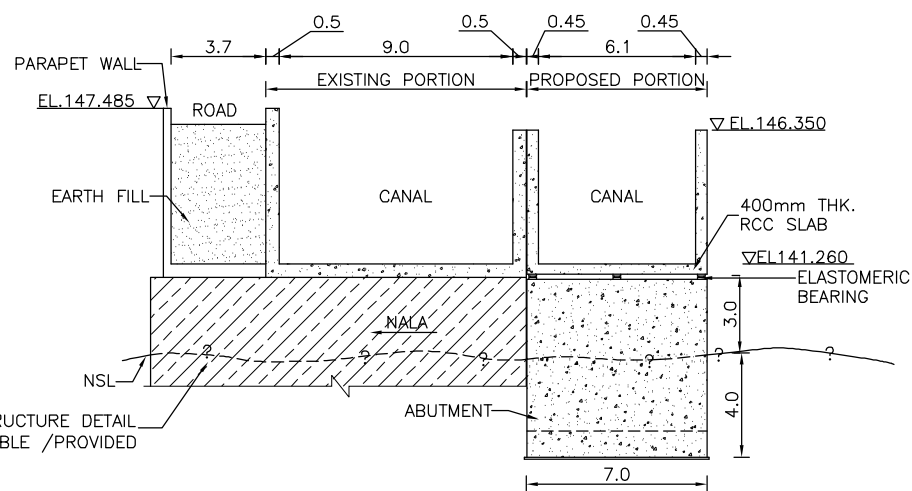
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-
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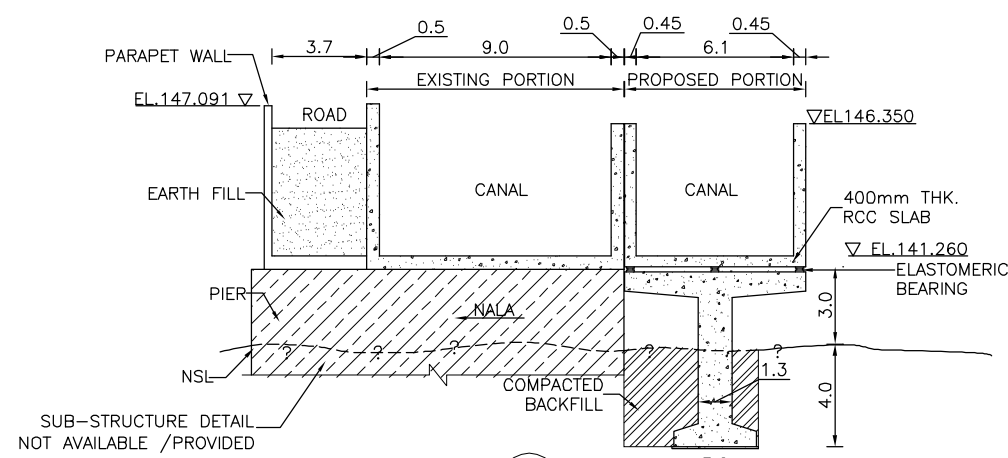
PLAN
(MODIFIED ARRANGEMENT)
(SCALE:-1:500)



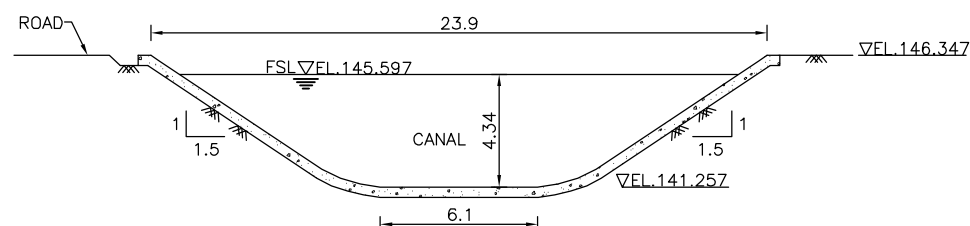
SECTION 1
(SCALE 1:300)



SECTION- 3
(SCALE:-1:300)



SECTION- 2
(SCALE:-1:300)



SECTION 4
(SCALE 1:300)

NOTES:-

1. ALL DIMENSIONS & ELEVATION ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. SBC IS CONSIDERED AT 4m DEPTH AS 275.6KN/m² WITH REFERENCE TO GEO-TECHNICAL REPORT.
4. EXCAVATION IN NALA FOR COLUMNS & ABUTMENTS SHALL BE CARRIED OUT WITH SHORING WITH HIGH PRECAUTIONS TO AVOID DISTURBANCE TO THE FOUNDATION OF THE EXISTING STRUCTURE.
5. BED WIDTH/FULL SUPPLY DEPTH ARE OBTAINED FROM THE HYDRAULIC CALCULATIONS CARRIED OUT FOR THE PROJECT.

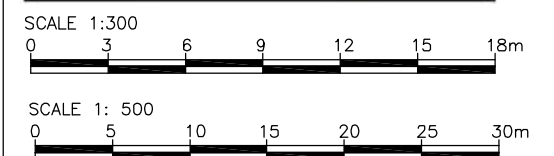
CANAL PARTICULARS

S.NO.	PARAMETERS	CANAL	AQUEDUCT
1	FSL (m)	145.603	145.600
2	BED LEVEL (m)	141.263	141.260
3	BED WIDTH (m)	6.1	16.05
4	FSD (m)	4.34	4.34
5	BED SLOPE	1 IN 7000	—
6	SIDE SLOPE	1:1.5	—
7	DISCHARGE (m ³ /s)	84.15	84.15
8	VELOCITY (m/s)	1.29	1.29
9	FREE BOARD (m)	0.75	0.75

DRAINAGE PARTICULARS

1	SILT FACTOR	1.79
2	BEARING PRESSURE (kN/m ²)	275.6

TENDER DRAWING



IMPLEMENTING AGENCY :-

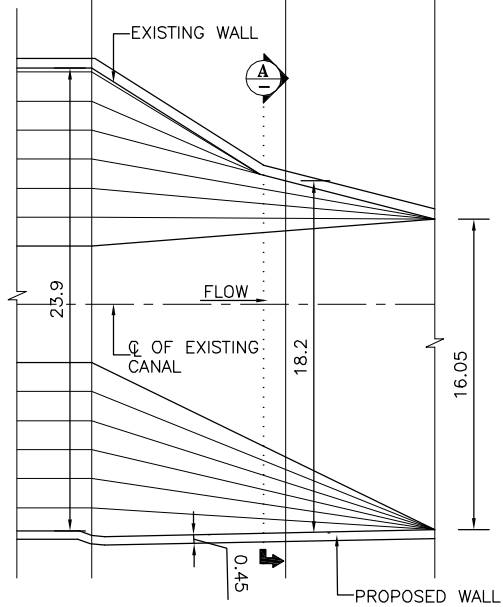


PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND

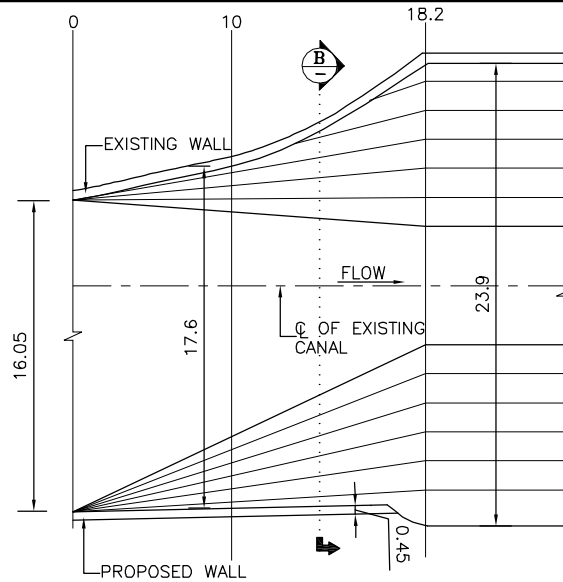
DRAWING TITLE :- AQUEDUCT AT RD:16.62
GENERAL ARRANGMENT-MODIFIED

DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-006 (2/5)

CHECKED BY:- APPROVED BY:-



**UPSTREAM TRANSITION
PLAN-1 AT TOP**
(SCALE:- 1:400)

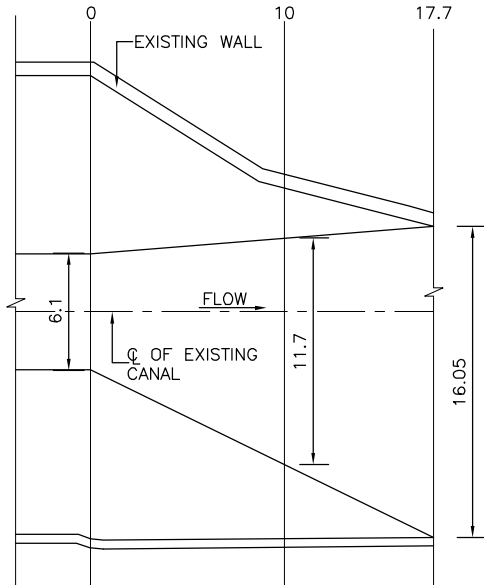


**DOWNSTREAM TRANSITION
PLAN-1 AT TOP**
(SCALE:- 1:400)

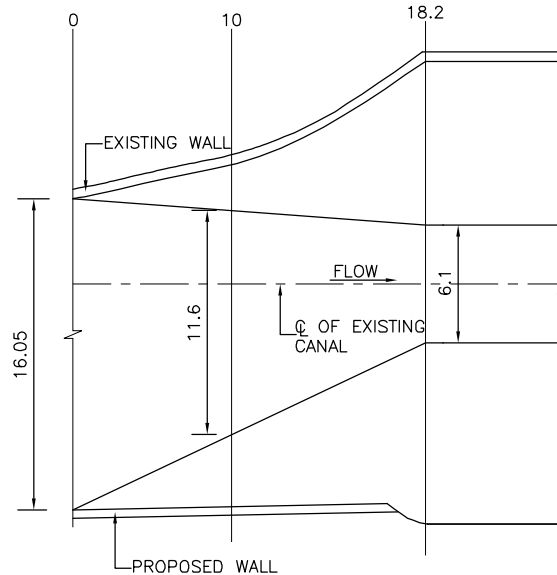
NOTES:-

1. ALL DIMENSIONS & ELEVATION ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.

DISTANCE FROM CANAL SECTION 1-1 (m)	UPSTREAM TRANSITION	
	TOP WIDTH (REFER PLAN-1)	BED WIDTH (REFER PLAN-2)
	DISTANCE FROM EXISTING WALL (m)	DISTANCE FROM EXISTING BED (m)
0	23.9	6.1
10	18.2	11.7
17.7	16.05	16.05



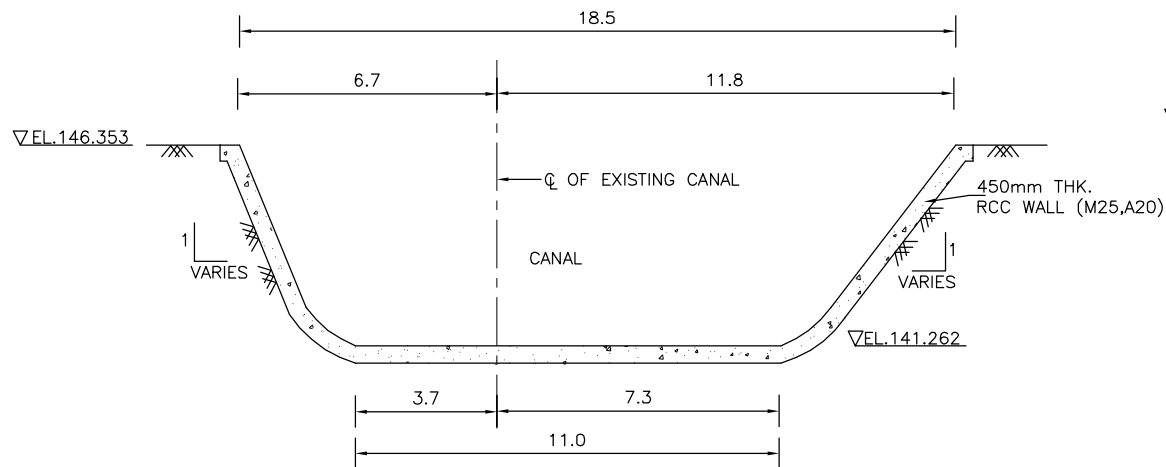
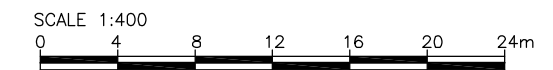
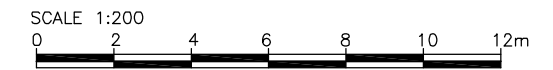
**UPSTREAM TRANSITION
PLAN-2 AT BED LEVEL**
(SCALE:- 1:400)



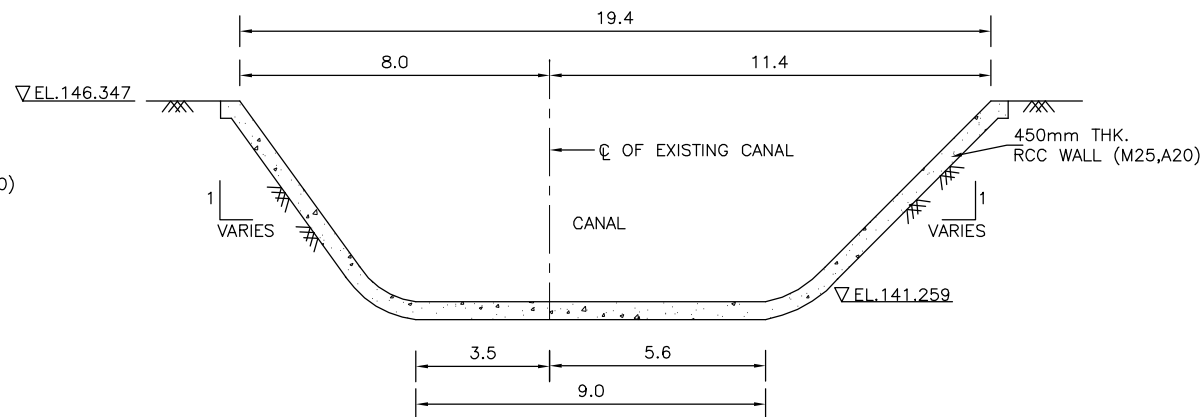
**DOWNSTREAM TRANSITION
PLAN-2 AT BED LEVEL**
(SCALE:- 1:400)

DISTANCE FROM CANAL SECTION 3-3 (m)	DOWNSTREAM TRANSITION	
	TOP WIDTH (REFER PLAN-1)	BED WIDTH (REFER PLAN-2)
	DISTANCE FROM EXISTING WALL (m)	DISTANCE FROM EXISTING BED (m)
0	16.05	16.05
10	17.6	11.6
18.2	23.9	6.1

TENDER DRAWING

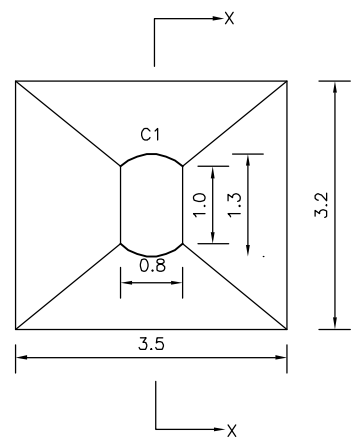


SECTION-A
(SCALE:- 1:200)

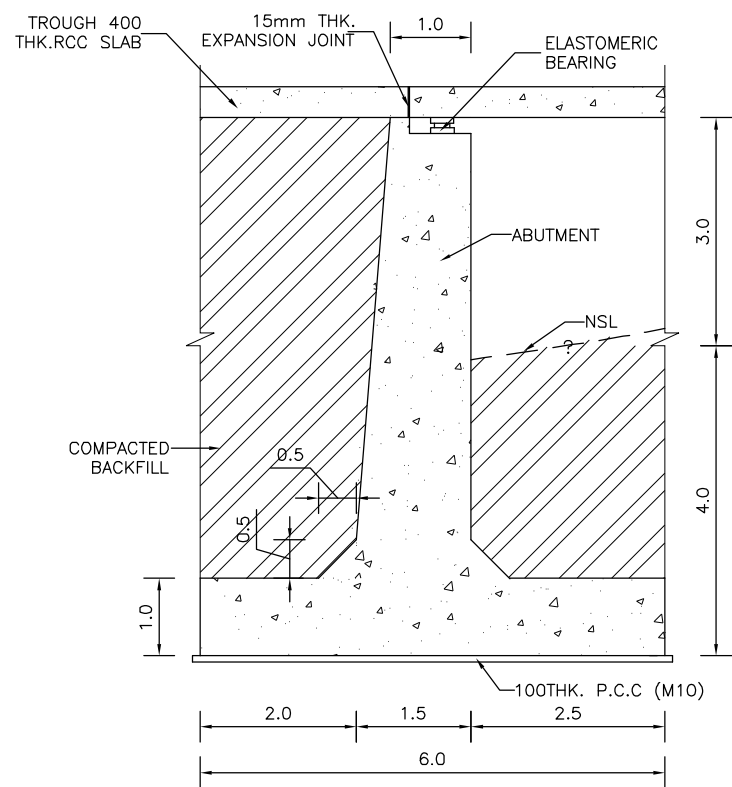


SECTION-B
(SCALE:- 1:200)

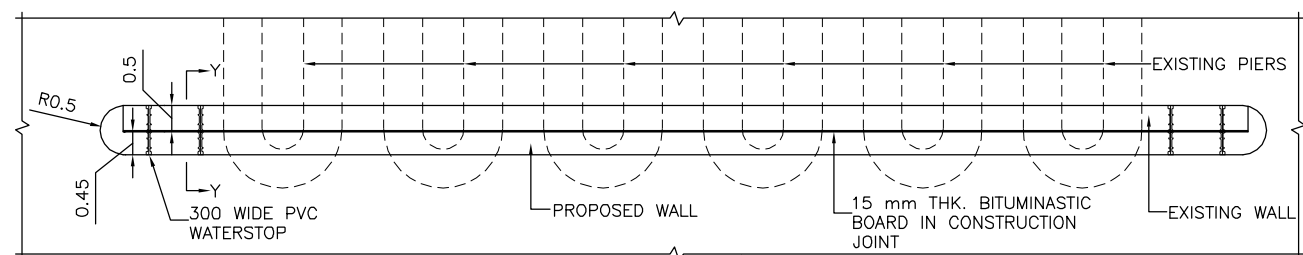
IMPLEMENTING AGENCY :-  WAPCOS LIMITED एन सी ई सी - एन सी ई सी, एन सी ई सी, एन सी ई सी		
PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND		
DRAWING TITLE :- AQUEDUCT AT RD:16.62 MODIFIED TRANSITION DETAILS		
DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-006 (3/5)		
DRAWN BY:-	CHECKED BY:-	APPROVED BY:-



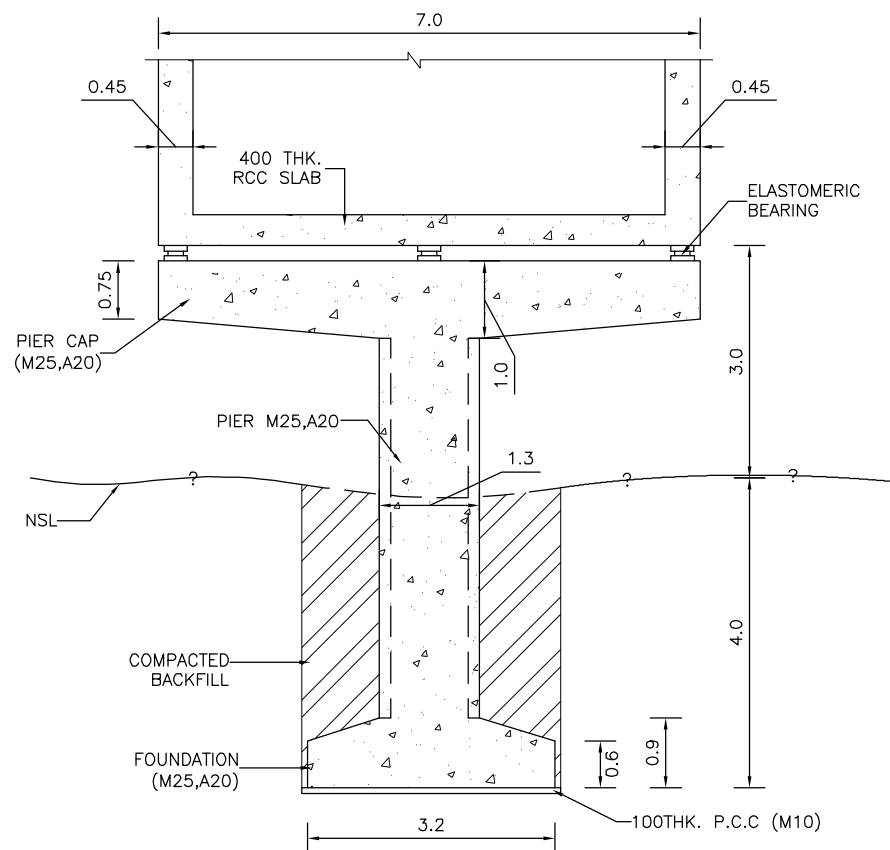
FOOTING F1
(SCALE 1:100)



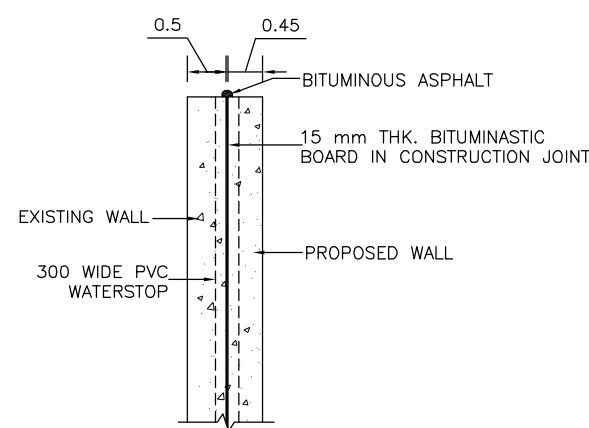
SECTION 5
(SCALE 1:100)



DETAIL-1
(SCALE 1:150)



SECTION X-X
(SCALE 1:100)

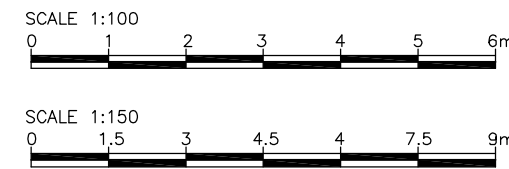


SECTION Y-Y
(SCALE 1:100)

NOTES:-

1. ALL DIMENSIONS & ELEVATION ARE IN METER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSIONS SHOULD BE SCALED FROM THE DRAWING ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. SBC IS CONSIDERED AT 4m DEPTH AS 275.6KN/m² WITH REFERENCE TO GEO-TECHNICAL REPORT.
4. EXCAVATION IN NALA FOR COLUMNS & ABUTMENTS SHALL BE CARRIED OUT WITH SHORING WITH HIGH PRECAUTIONS TO AVOID DISTURBANCE TO THE FOUNDATION OF THE EXISTING STRUCTURE.

TENDER DRAWING



IMPLEMENTING AGENCY :-

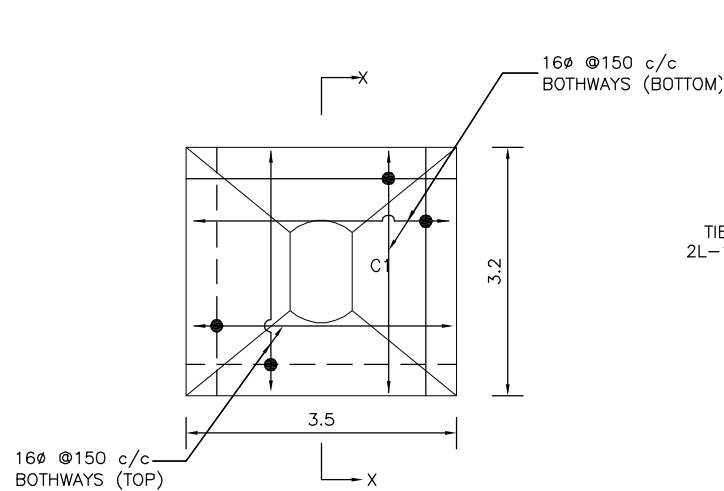


PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND

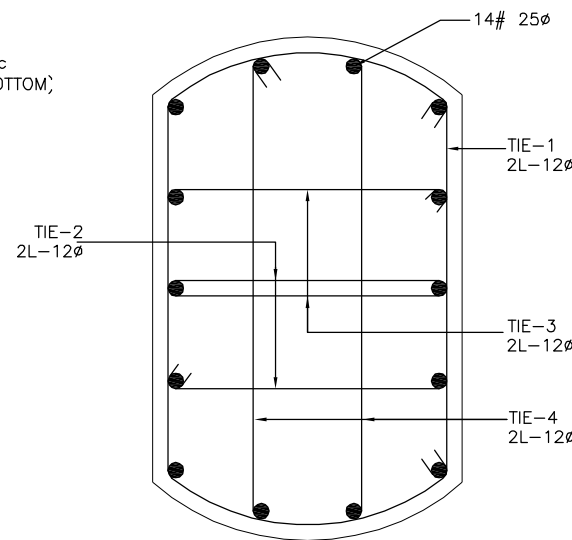
DRAWING TITLE :- AQUEDUCT AT RD:16.62 CONCRETE OUTLINE DETAILS

DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-006 (4/5)

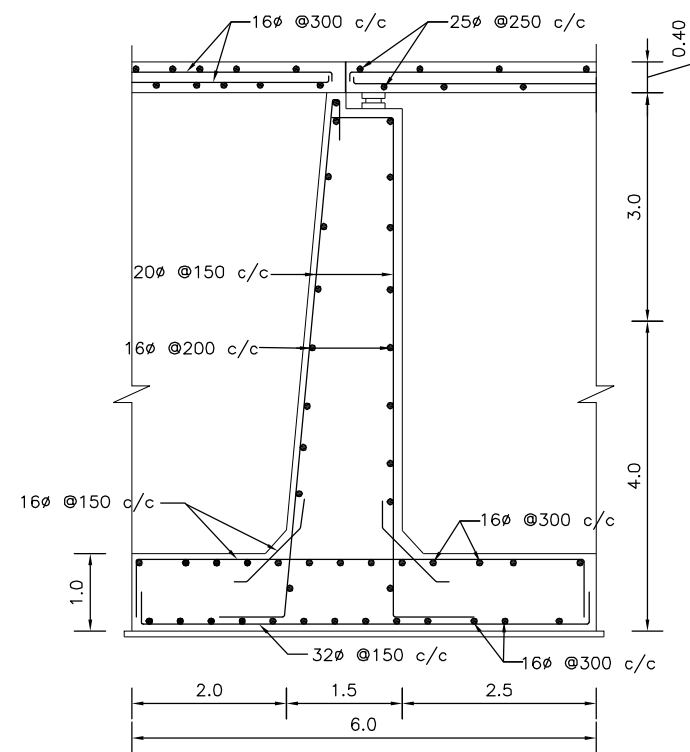
DRAWN BY:- CHECKED BY:- APPROVED BY:-



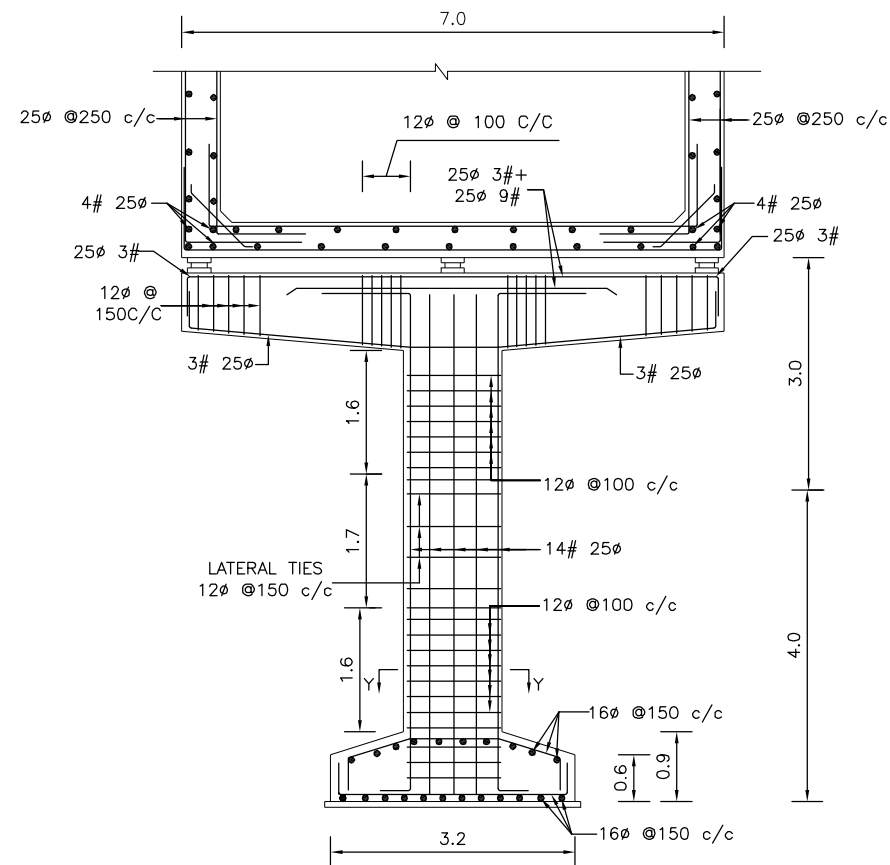
FOOTING F1
(SCALE 1:100)



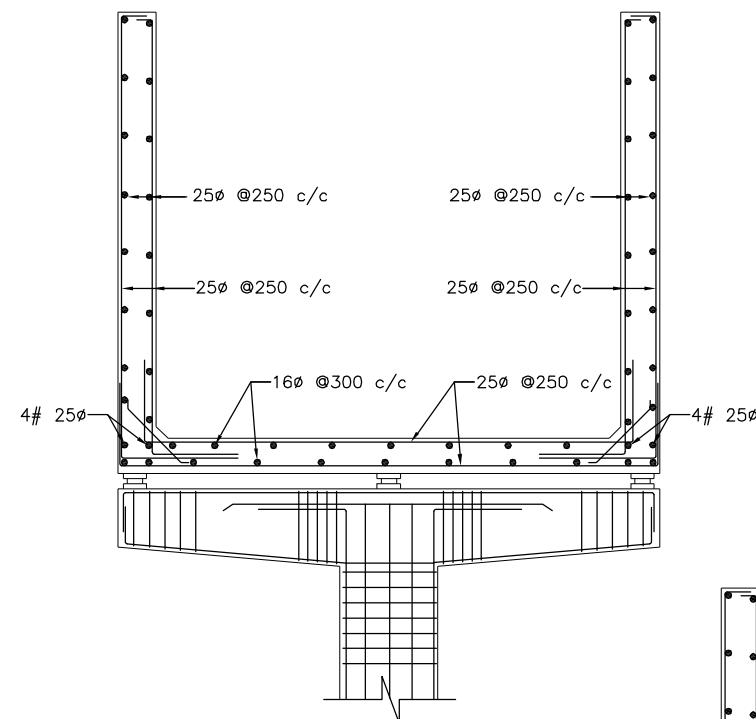
SECTION Y-Y
(SCALE:- 1:20)



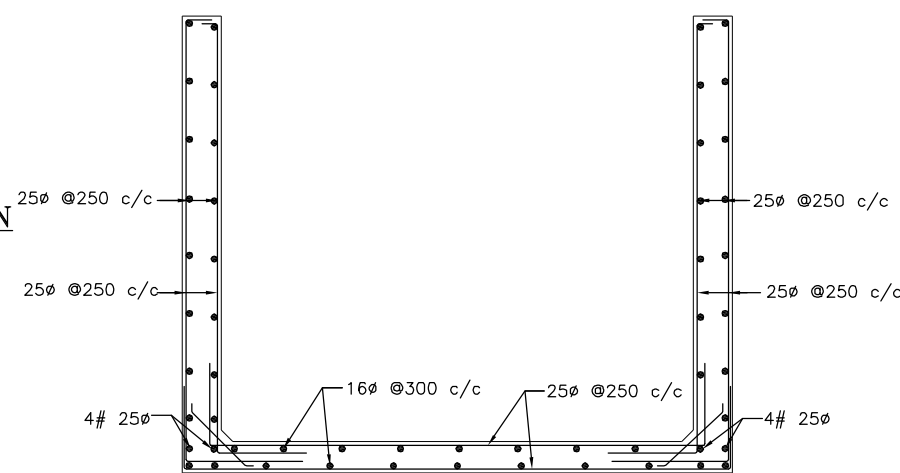
SECTION 5
(SCALE 1:100)



SECTION X-X
(PIER AND PIER CAP CONNECTION DETAILS)
(SCALE 1:100)



AQUEDUCT-SECTION
(AT SUPPORT)
(SCALE:- 1:100)



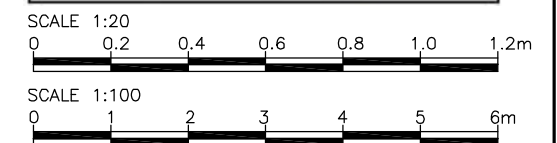
AQUEDUCT-SECTION
(MID SPAN)
(SCALE:- 1:100)

NOTES:-

1. THIS DRAWING SHOWS THE REINFORCEMENT DETAILS OF AQUEDUCT.
2. ALL DIMENSIONS ARE IN METER UNLESS OTHERWISE SPECIFIED.
3. NO DIMENSIONS SHALL BE MEASURED FROM THE DRAWING; ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
4. REINFORCEMENT BARS SHALL BE OF HIGH YIELD STRENGTH COLD TWISTED DEFORMED BARS OF GRADE Fe-500 CONFORMING TO IS:1786.
5. REINFORCEMENT BARS SHALL NOT BE COUNTED.
6. DEVELOPMENT LENGTH AND LAP LENGTH OF REINFORCEMENT BARS SHALL BE AS PER SP 34.

S. NO.	MEMBER	MINIMUM COVER OF REINFORCEMENT
1.	FOOTING	75mm FOR CONCRETE DEPOSITED AGAINST THE GROUND AND 50mm FOR OTHER SURFACES.
2.	PIER	50mm
3.	PIER CAP	25mm
4.	SLAB & WALL	50mm

TENDER DRAWING



IMPLEMENTING AGENCY :-



PROJECT TITLE :- NORTH KOEL RESERVOIR PROJECT, BIHAR & JHARKHAND

DRAWING TITLE :- AQUEDUCT AT RD:16.62 REINFORCEMENT DETAILS

DRAWING NO :- WAP/INFRA/NORTH KOEL/RMC-006 (5/5)

DRAWN BY:- CHECKED BY:- APPROVED BY:-