

# Draft Environmental Impact Assessment

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Project Number: 43253-026  
June 2018

## India: Karnataka Integrated and Sustainable Water Resources Management Investment Program – Project 2 Vijayanagara Channels

Annex 3 (Part 4)

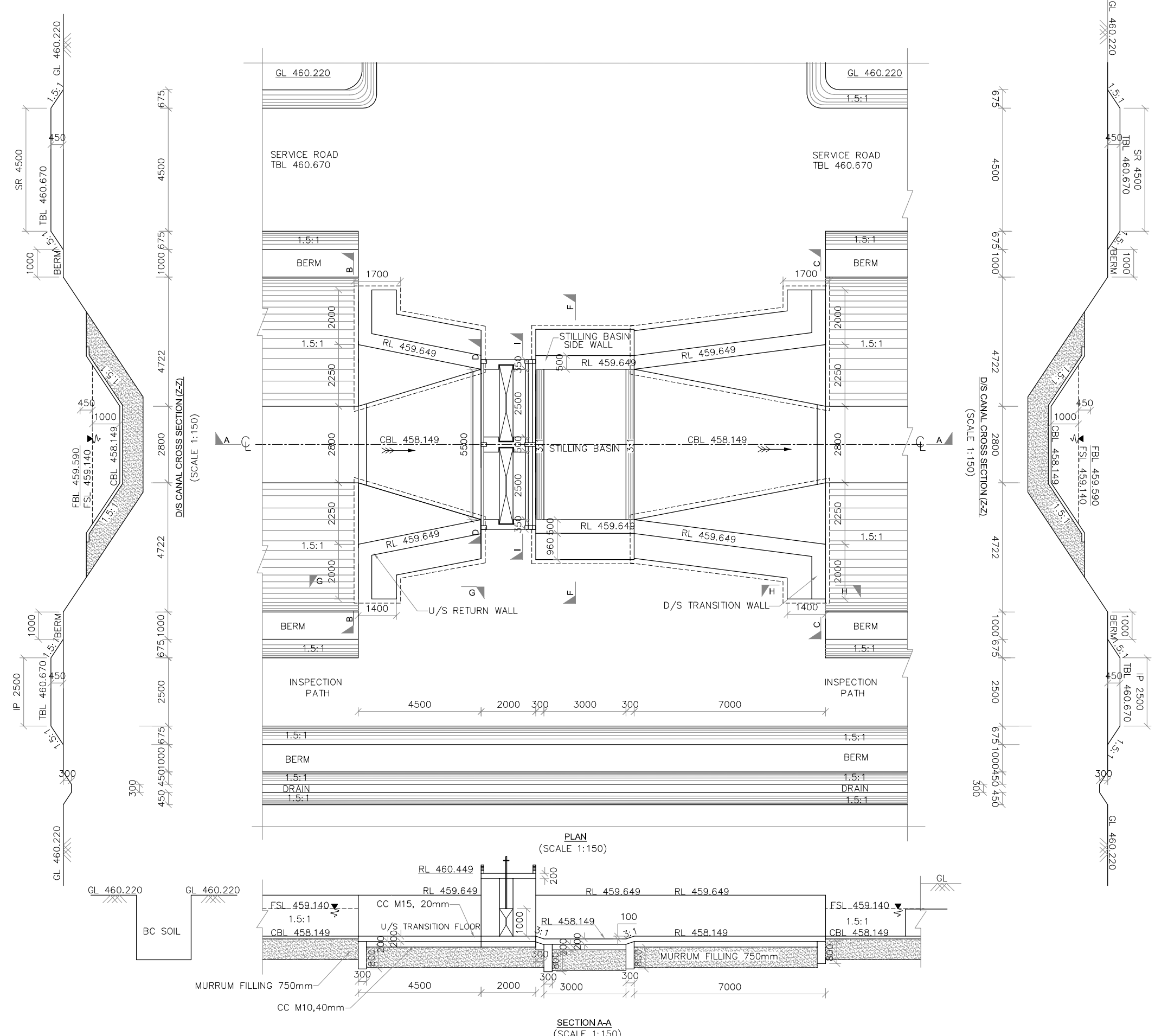
Prepared by the Karnataka Neeravari Nigam Limited for the State Government of Karnataka and the Asian Development Bank.

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*Annexure 3*

**STRUCTURES UNDERGOING  
REHABILITATION AND  
TYPICAL DRAWINGS**



- NOTES**
- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
  - 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
  - 3) THE BRIDGE IS DESIGNED ADOPTING THE FOLLOWING IRC AND IS CODES.  
IRC-5-1998.  
IRC-6-2000.  
IRC-21-2000.  
IRC-78-2000.  
IRC-83-2000.  
IS 456-2000.

SL NO.	ELEMENTS	CONCRETE GRADE
1	BOX, CANTILEVEL WALL, HAND RAILS, AND STILLING BASIN.	M20 WITH 20MM AND D/S METAL
2	CUTOFF WALLS AND FLOOR.	M15 WITH 20MM AND D/S METAL
3	BASIN SIDE WALLS, RETURN WALLS, ABUTMENTS, TRANSITION WALLS.	M15 WITH 40MM AND D/S METAL
4	FOUNDATION BED CONCRETE	M10 WITH 40MM AND D/S METAL

- 4) ALL REINFORCEMENT SHALL BE OF HIGH YIELD STRENGTH DE FORMED BARS (GRADE DESIGNATION Fe415).
- 5) SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- 6) FILLING BEHIND TRANSITIONS AND RETURNS SHALL BE AS PER RELEVANT IRC SPECIFICATIONS.
- 7) REINFORCEMENT SHALL BE HIGH YIELD STRENGTH DEFORMED BARS OF GRADE Fe 415 CONFORMING TO IS 1786 - 1985.
- 8) MINIMUM COVER TO ANY REINFORCEMENT SHALL BE 50mm UNLESS OTHERWISE MENTIONED.
- 9) SKIN REINFORCEMENT OF 10φ @200MM C/C BOTH WAYS IS PROVIDED
- 10) SUITABLE RAMP SHOULD BE PROVIDED TO MEET THE REQUIRED LEVELS.
- 11) HAND RAIL: AS PER MOST.
- 12) STEEL LADDER IS PROVIDED FOR THE PURPOSE OF GATE OPERATION.
- 13) THE ESTIMATES FOR THE GATES, EMBEDDED PARTS AND SCREW TYPE HOIST ARE BASED ON THE SCHEDULE OF RATES FOR THE YEAR 2007 - 2008.
- 14) DRY STONE PITCHING IS PROVIDED WHEREVER NECESSARY.
- 15) CATCH WATER DRAIN SHOULD BE SUITABLY DIVERTED TO NATURAL STREAMS OR NALAS.
- 16) ALL BANK WORKS SHALL BE COMPACTED THOROUGHLY AS PER STANDARDS.

0	For Approval				
Rev.	Description.	Date.	Drw.	Pre.	Chk.

**CLIENT**  
**KARNATAKA NEERAVARI NIGAM LIMITED**  
 (A GOVT. OF KARNATAKA UNDERTAKING)  
 BANGALORE - 560 001

**CONSULTANT**  
**E I Technologies Pvt. Ltd.,**  
 (ISO 9001 : 2008 Certified)  
 # 1149, 26th Main, Jayanagar 4th 'T' Block,  
 Bengaluru-560 041, India.  
 Ph. +91.80.40914714, Fax: +91.80.26650912  
 info@eitech.in, www.eitech.in

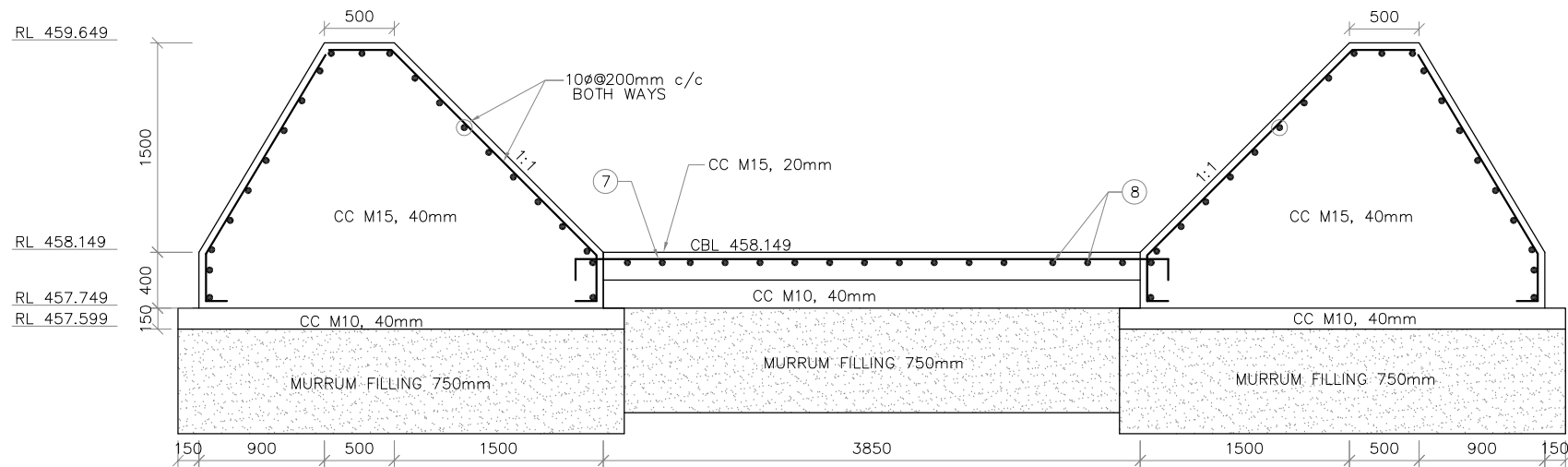
**PROJECT TITLE**  
**MODERNIZATION OF VIJAYANAGARA CHANNELS**  
**IN TUNGABHADRA PROJECT**

**DRAWING TITLE**  
**CONSTRUCTION OF CROSS REGULATOR AT**  
**CH: 0+184 Km FOR BELLA CANAL**

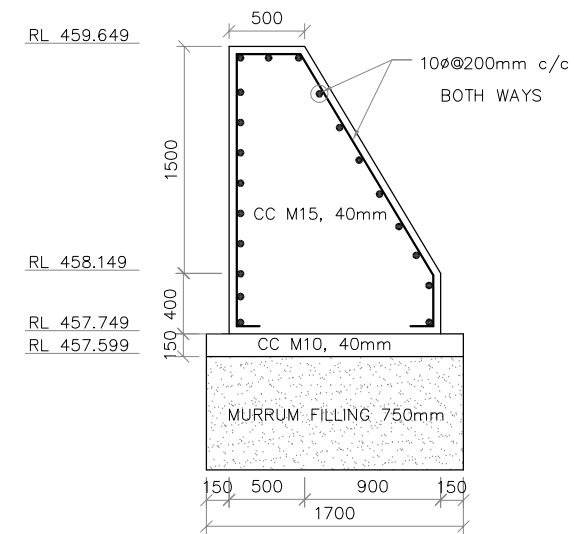
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					AS SHOWN	FOR APPROVAL

Project No.	Drawing No.	Sheet No.	Rev.
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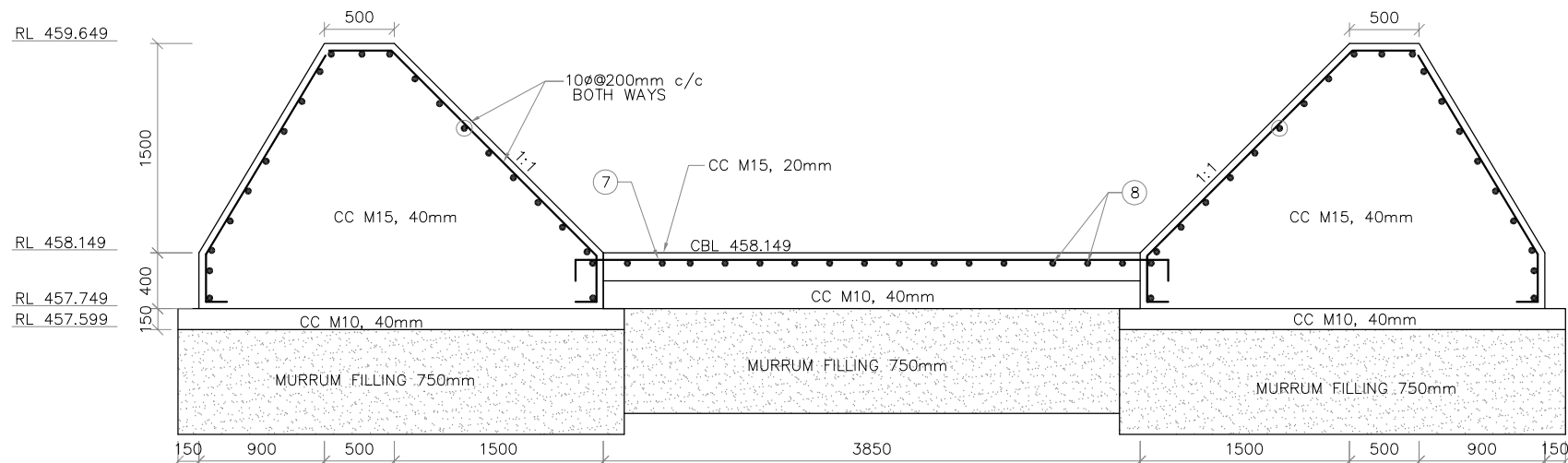
 Consultant E I Technologies Pvt. Ltd. Bangalore	 Asst. Executive Engineer VNC Sub-Division Kamalapur	 Executive Engineer TR Division No.1 Muribad
 Superintending Engineer Tungabhadra Project Circle Muribad	 Chief Engineer Irrigation Central Zone Muribad	



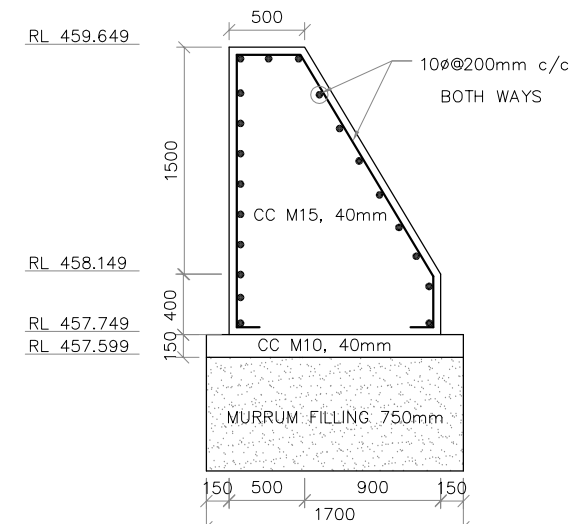
SECTION B-B  
(SCALE 1:50)



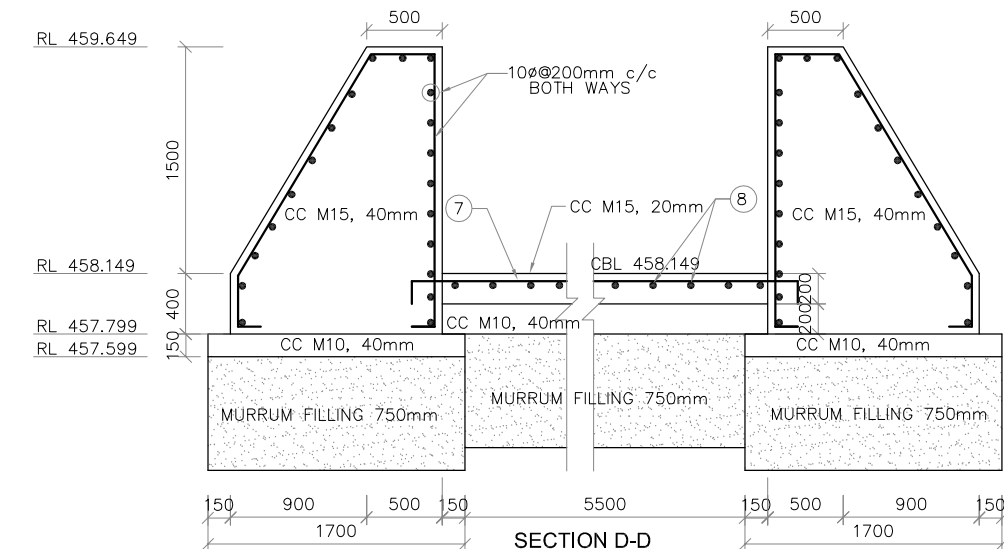
SECTION G-G  
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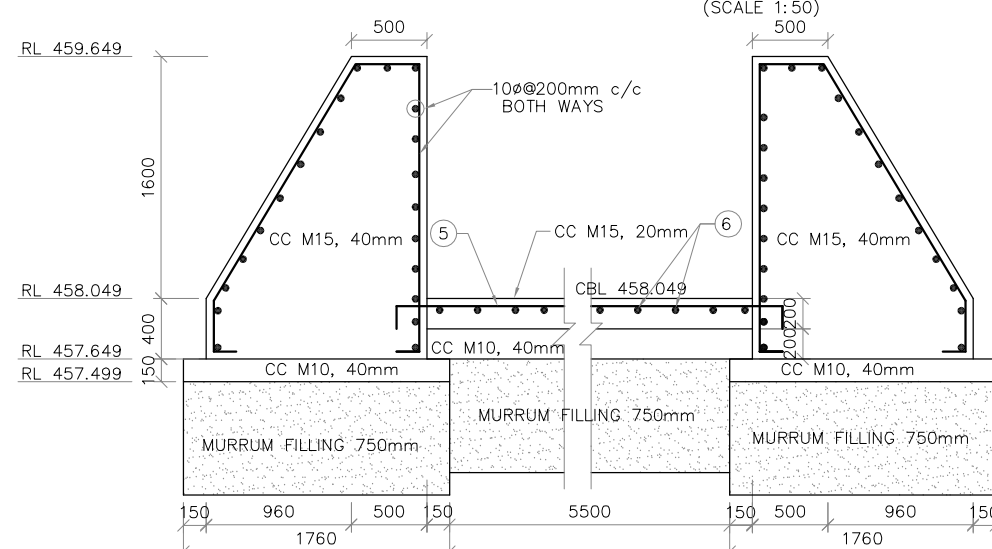
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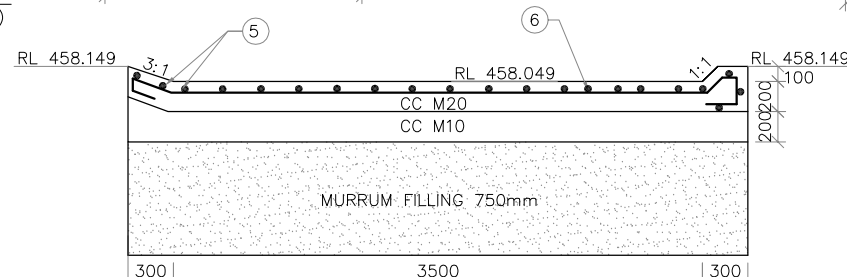
SECTION H-H  
(SCALE 1:50)



SECTION D-D  
(SCALE 1:50)



SECTION F-F  
(SCALE 1:50)

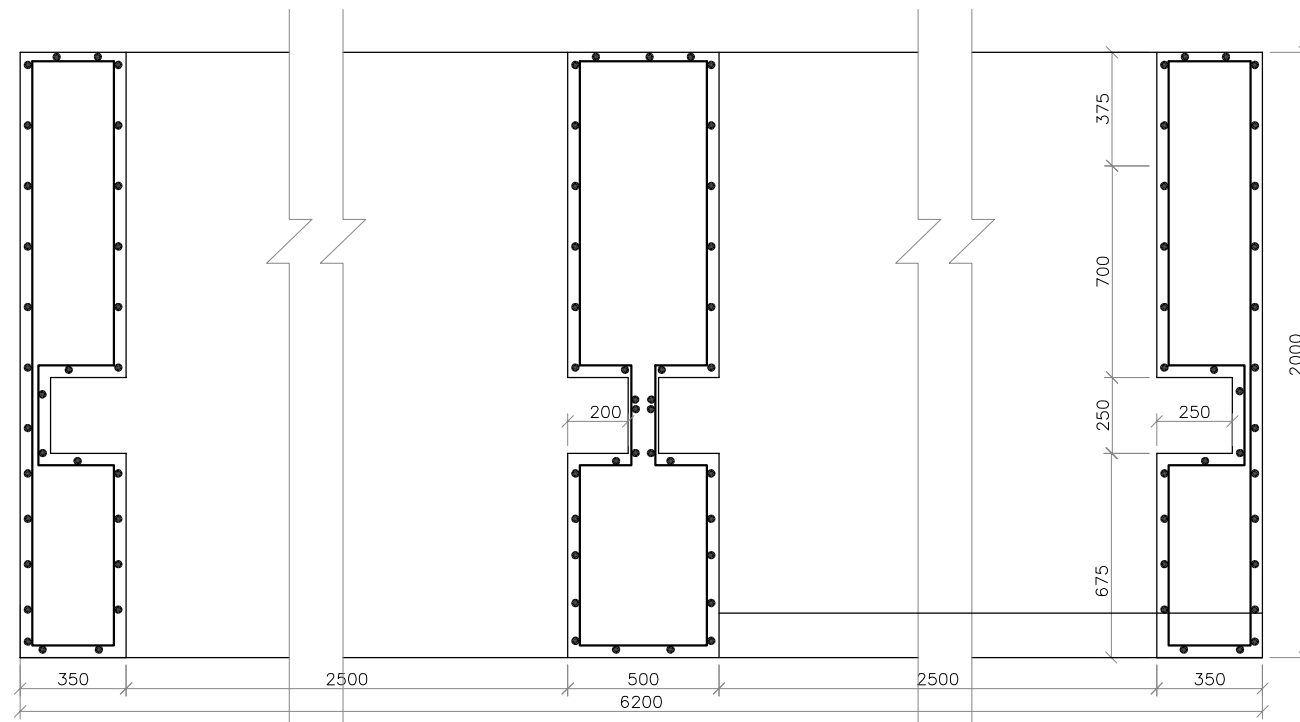


REINFORCEMENT DETAILS OF STILLING BASIN OF CROSS REGULATOR  
(SCALE 1:50)

**NOTES**

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.

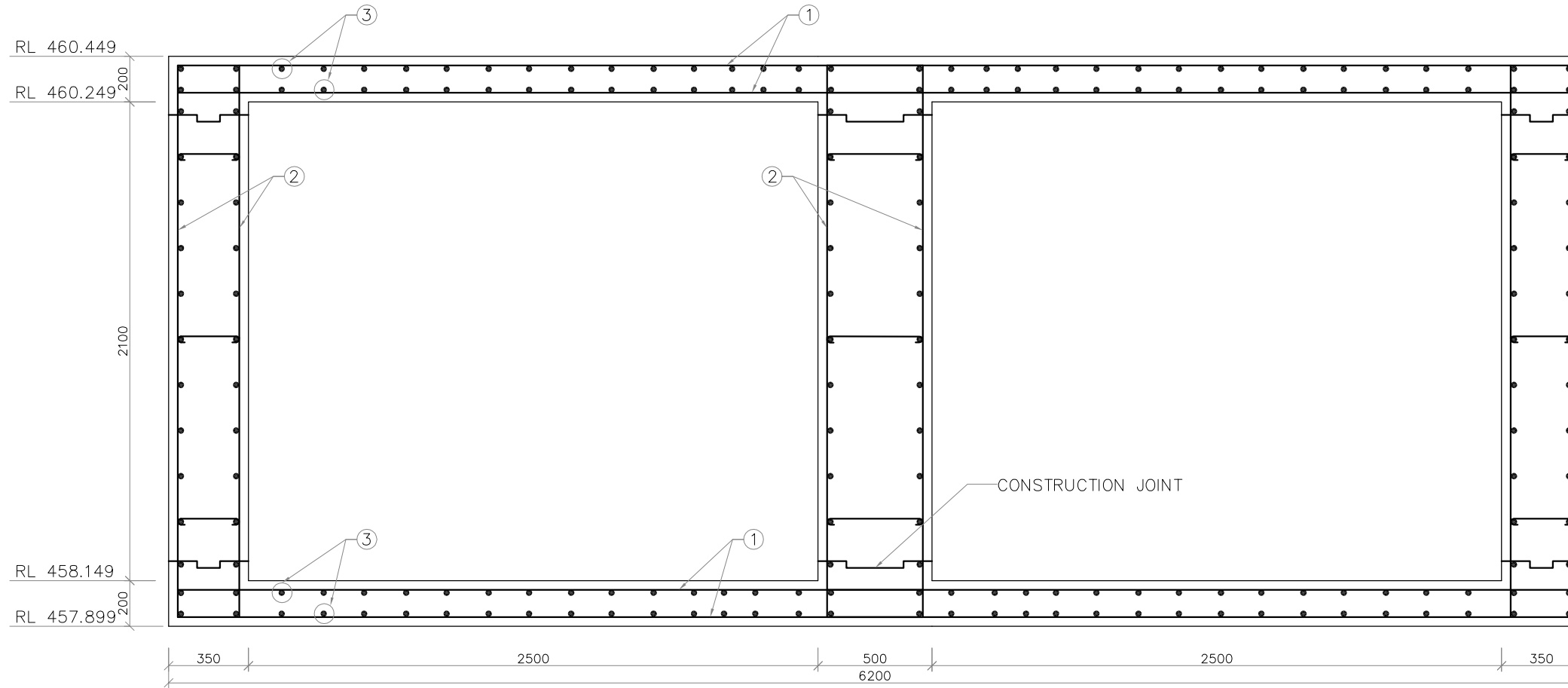
0	For Approval					
Rev.	Description	Date	Drw.	Pre.	Chk.	App.
<b>CLIENT</b> KARNATAKA NEERAVARI NIGAM LIMITED (A GOVT. OF KARNATAKA UNDERTAKING) BANGALORE - 560 001						
<b>CONSULTANT</b> E I Technologies Pvt. Ltd., (ISO 9001 : 2008 Certified) # 1149, 26th Main, Jayanagar 4th 'T' Block, Bengaluru-560 041, India. Ph.+91.80.40914714, Fax: +91.80.26650912 info@eitech.in www.eitech.in						
<b>PROJECT TITLE</b> MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT						
<b>DRAWING TITLE</b> CONSTRUCTION OF CROSS REGULATOR AT CH: 0+184 Km FOR BELLA CANAL						
Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.		Rev.		
	KNNL-VNC-BLC-STR-CR-007	02 of 05		0		
Consultant E I Technologies Pvt. Ltd. Bangalore		Asst. Executive Engineer VNC Sub-Division Kamalapur		Executive Engineer TR Division No.1 Murrabad		
Superintending Engineer Tungabhadra Project Circle Murrabad				Chief Engineer Irrigation Central Zone Murrabad		



**SECTION PLAN OF CROSS REGULATOR**  
(SCALE 1:25)

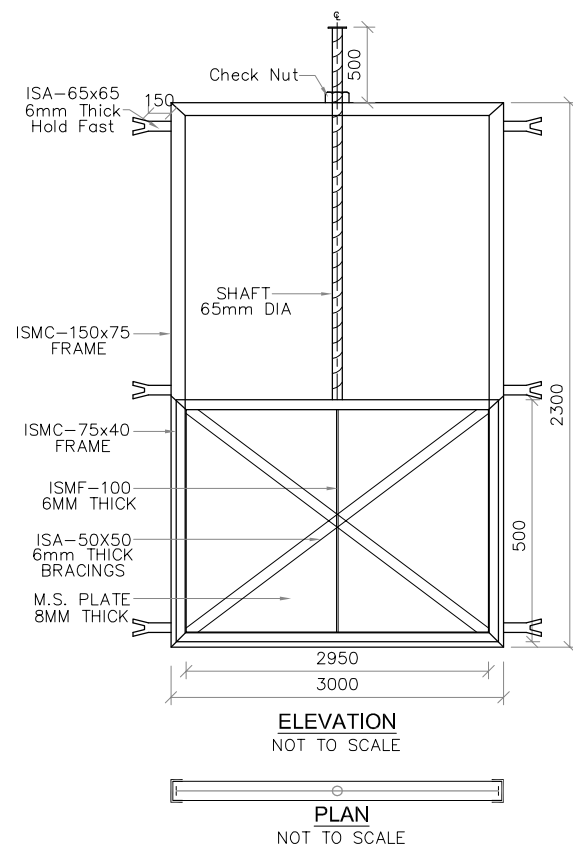
BAR BENDING SCHEDULE										
MEMBER	BAR MARK	BAR DIA (mm)	SPACING (mm)	TOTAL SPACING	No.OF BARS	SHAPE OF BARS (ALL DIMENSIONS ARE IN mm) (NOT TO SCALE)	LENGTH OF EACH BAR(mm)	TOTAL LENGTH (m)	UNIT WT (kg/m)	TOTAL WT (kg)
CROSS REGULATOR BOX PORTION	1	10	150	2000	14X4		6300	325.8	0.617	617.67
	2	10	150	2000	14X6		2650	222.6	0.617	137.34
	3	10	200	6200	31X4		2100	260.40	0.617	160.66
	4	10	200	2550	13X2		4700	122.2	0.617	75.39
	4'	10	200	2550	13		4600	59.8	0.617	36.89
STILLING BASIN	5	10	200	3600	18		5900	106.2	0.617	65.52
	6	10	200	5700	29		3932	114.03	0.617	70.35
INLET TRANSITION FLOOR	7	10	200	4500	23X2		4450	204.7	0.617	126.3
	8	10	200	4450	23X2		4500	207	0.617	127.72
EXIT TRANSITION FLOOR	9	10	200	7000	35X2		4450	311.5	0.617	192.195
	10	10	200	4450	23X2		7000	322	0.617	198.67

TOTAL = 1808.70Kg  
Add 5% WASTAGE = 90.43  
TOTAL = 1899.13Kg  
SAY = 1900Kgs



**SECTION I-I**  
(SCALE 1:25)

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Rev.	Description	Date	Drw.	Pre.	Chk.	App.			
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CONSULTANT <b>E I Technologies Pvt. Ltd.,</b> (ISO 9001 : 2008 Certified) # 1149, 26th Main, Jayanagar 4th 'T' Block, Bengaluru-560 041, India. Ph.+91.80.40914714, Fax: +91.80.26650912 info@eitech.in • www.eitech.in									
PROJECT TITLE <b>MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT</b>									
DRAWING TITLE <b>CONSTRUCTION OF CROSS REGULATOR AT CH: 0+184 Km FOR BELLA CANAL</b>									
Date	Drw.	Pre.	Chk.	App.	Scale	AS SHOWN	Drawing Status	FOR APPROVAL	
Project No.	Drawing No.		Sheet No.		Rev.				
	KNNL-VNC-BLC-STR-CR-007		03 of 05		0				
Consultant E I Technologies Pvt. Ltd. Bangalore			Asst. Executive Engineer VNC Sub-Division Kamalapur			Executive Engineer TR-Division No.1 Munirabad			
Superintending Engineer Tungabhadra Project Circle Munirabad					Chief Engineer Irrigation Central Zone Munirabad				



**DOUBLE LOCKING SYSTEM GATE**

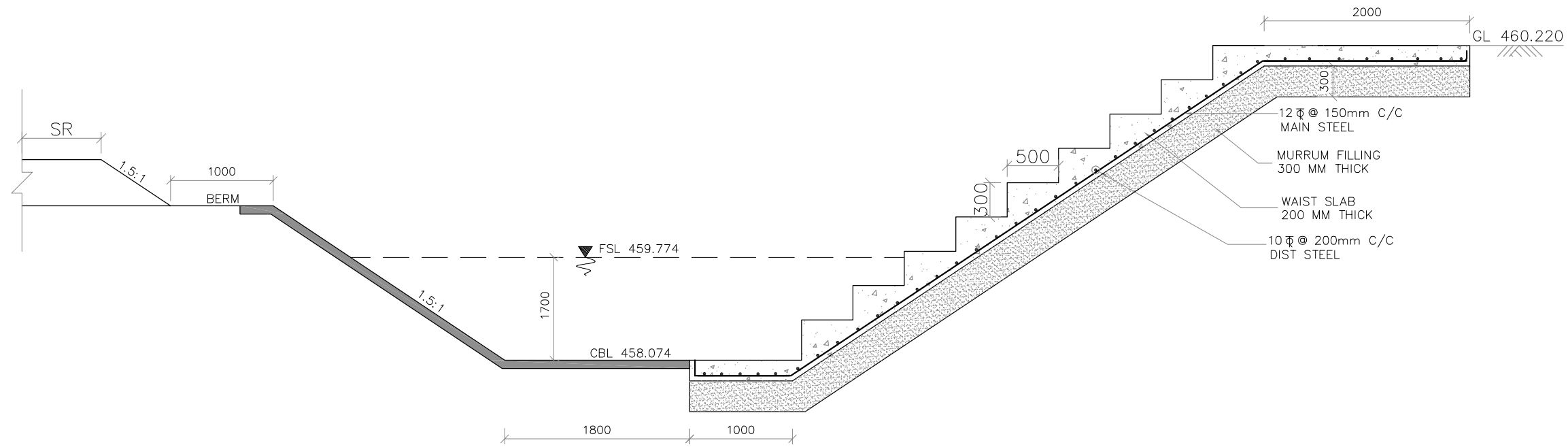
SL. NO.	ITEMS	UNIT	DIMENSION	WT./M (kg/sqm)	TOTAL WT. (kg)
1	ISMC-125 X 65 FRAME	RMT	10.60	13.10	138.86
2	ISMC-100 X 50 FRAME	RMT	6.90	9.56	65.96
3	ISA-50x50; 6mm THICK. FOR BRACINGS	RMT	8.94	4.90	43.81
4	ISA-65x65; 6mm THICK. FOR HOLD FASTS	RMT	1.50x2	5.80	17.40
5	M.S. PLATE 8mm THICK	SQM	1.48	62.80	92.63
6	SHAFT 65mm f M.S.	RMT	2.28	26.05	59.26
7	CHECK NUT M.S.	NO.	1.00	4.00	4.00
8	WHEEL M.S.	NO.	1.00	30.00	30.00

TOTAL Wt. = 451.924 Kgs  
SAY = 452 Kgs  
FOR 1 GATE = 0.452 MT  
FOR 2 GATES = 0.904 MT

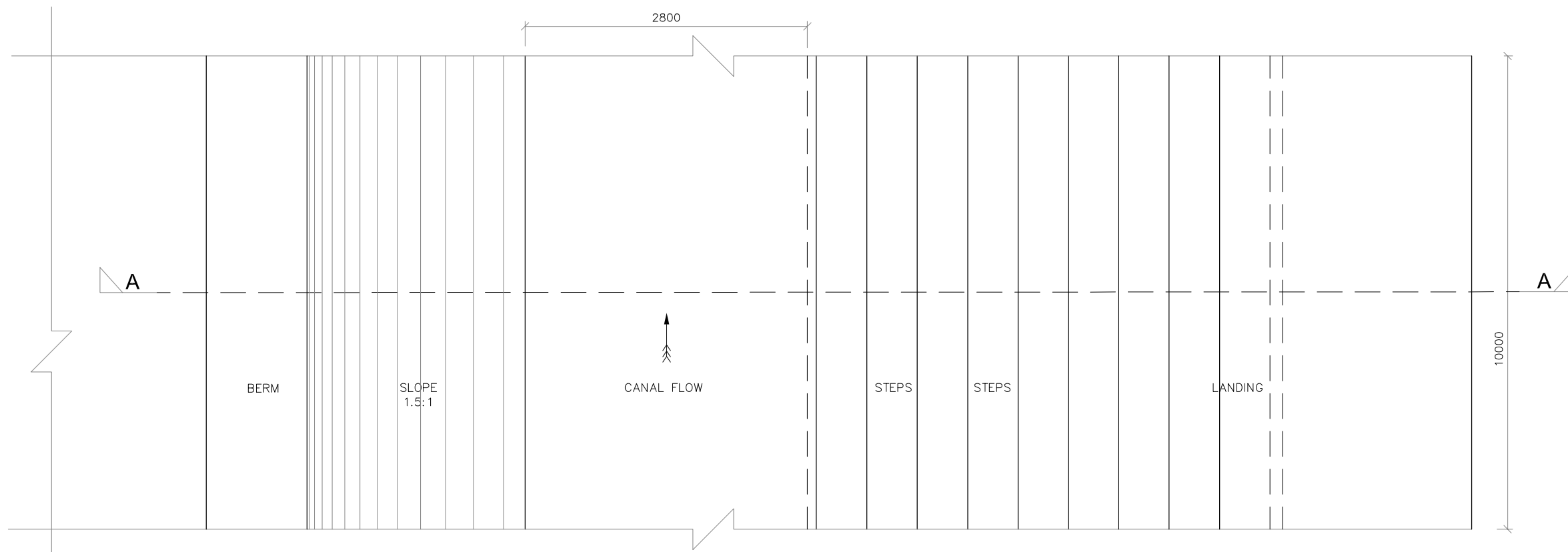
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Project No.	Drawing No.				Sheet No.	Rev.
.	KNNL-VNC-BLC-STR-CR-007				04 of 05	0
 Consultant E I Technologies Pvt. Ltd. Bangalore		 Asst. Executive Engineer WNC Sub-Division Kamalapur		 Executive Engineer TR-Division No.1 Munirabad		
 Superintending Engineer Tungabhadra Project Circle Munirabad				 Chief Engineer Irrigation Central Zone Munirabad		



**SECTION OF A-A**  
(SCALE 1:50)



**PLAN OF SOPANAM**  
(SCALE 1:50)

**NOTES**

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info@eitech.in, www.eitech.in

PROJECT TITLE  
**MODERNISATION OF VIJAYANAGARA CHANNELS  
IN TUNGABHADRA PROJECT**

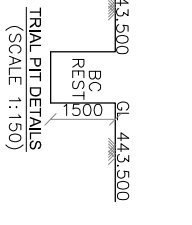
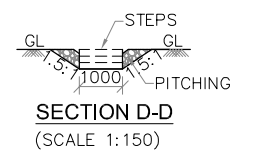
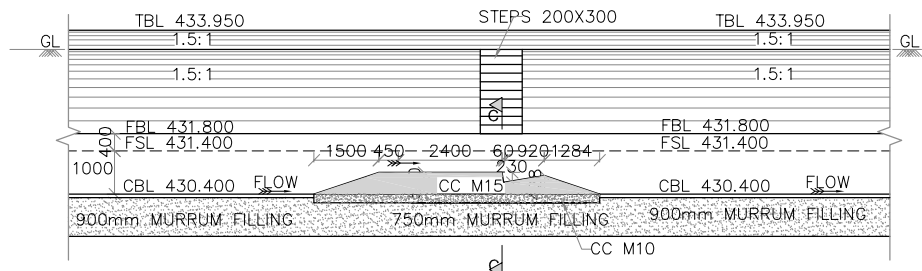
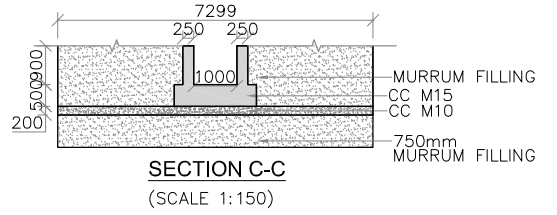
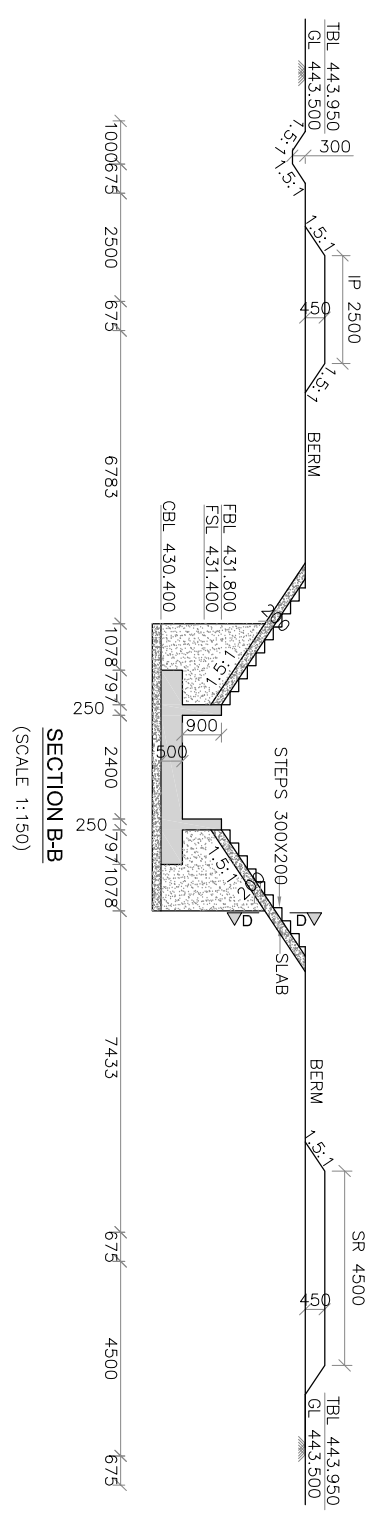
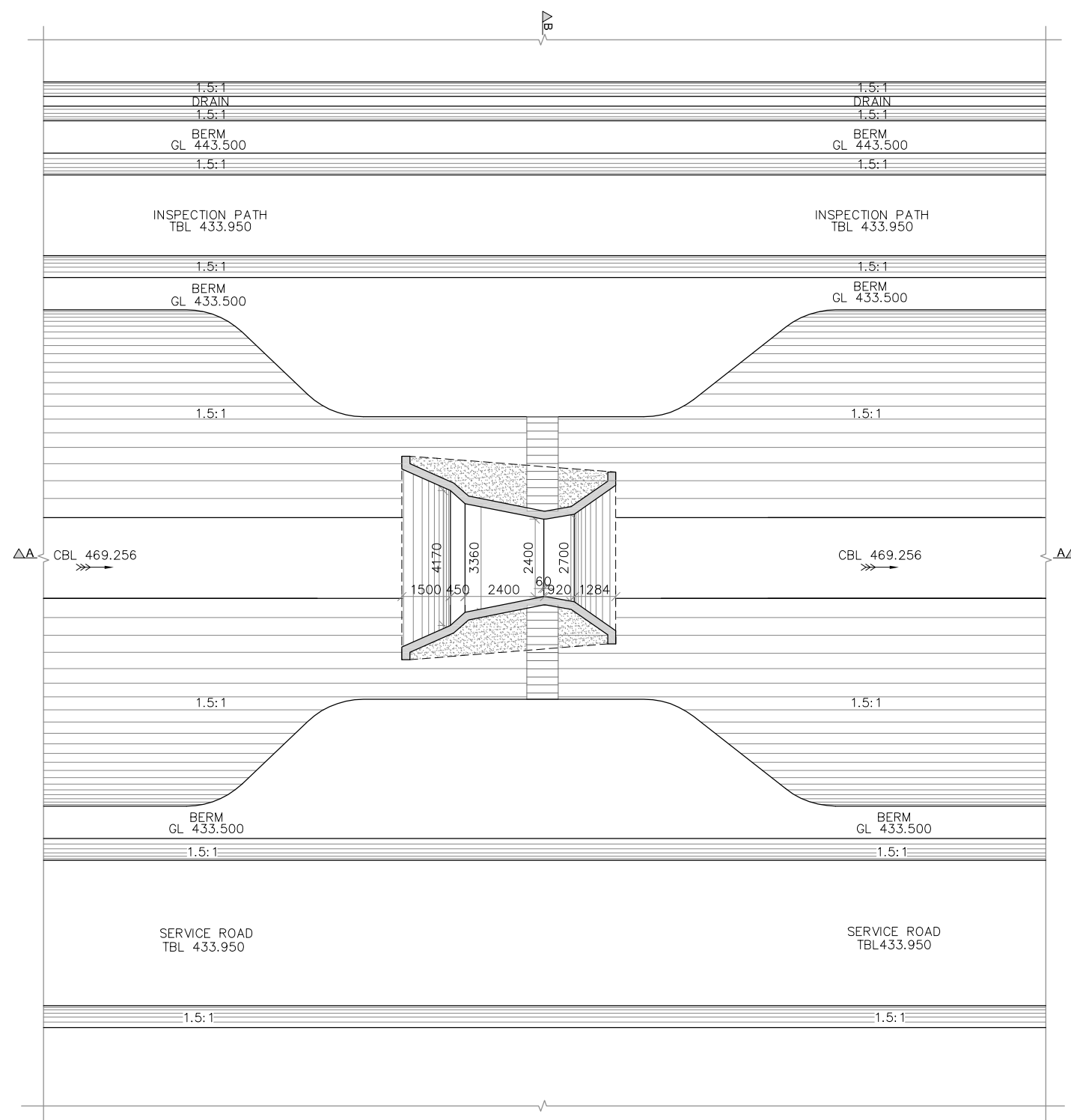
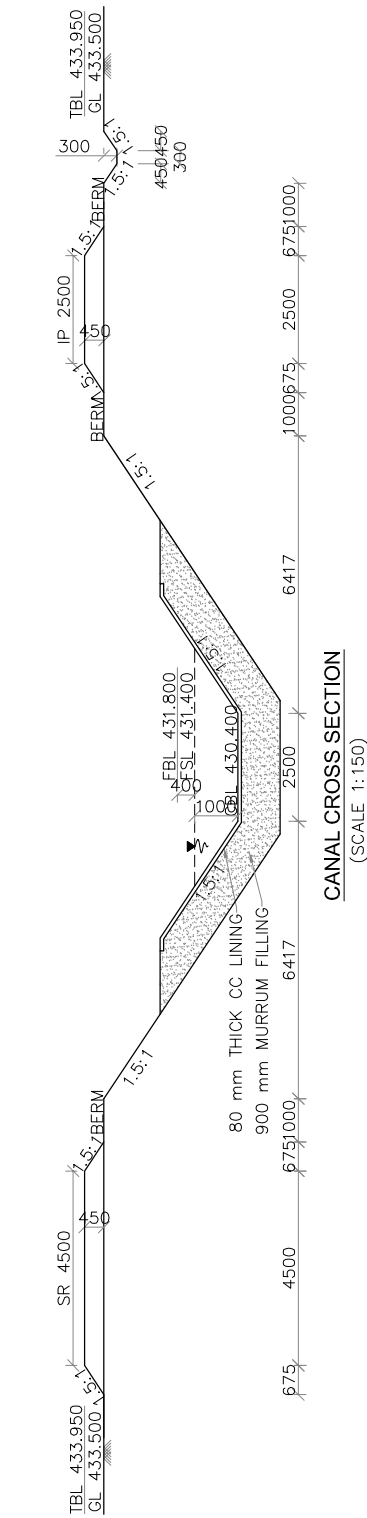
DRAWING TITLE  
**CONSTRUCTION OF CROSS REGULATOR AT  
CH: 0+184 Km FOR BELLA CANAL**

Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.	Rev.			
	KNNL-VNC-BLC-STR-CR-007	05 of 05	0			

 Consultant E I Technologies Pvt. Ltd. Bangalore	 VNC Sub-Division Engineer Kamalapur	 Executive Engineer TR Division No.1 Muribabad
 Superintending Engineer Tungabhadra Project Circle Muribabad	 Chief Engineer Irrigation Central Zone Muribabad	

**NOTES AND SPECIFICATIONS**

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- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
- 3) GRADE OF CONCRETE : CONFORMING TO IS 456-2000
  - (i) LEVELLING COURSE IN FOUNDATION – CC M10 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.
  - (ii) HUMP, STEPS AND WAIST SLAB – CC M15 WITH 20mm AND DOWN SIZE COARSE AGGREGATE.
  - (iii) PITCHING IS PROVIDED IN 1.5:1 SLOPE ACROSS THE STEPS



0	For Approval				
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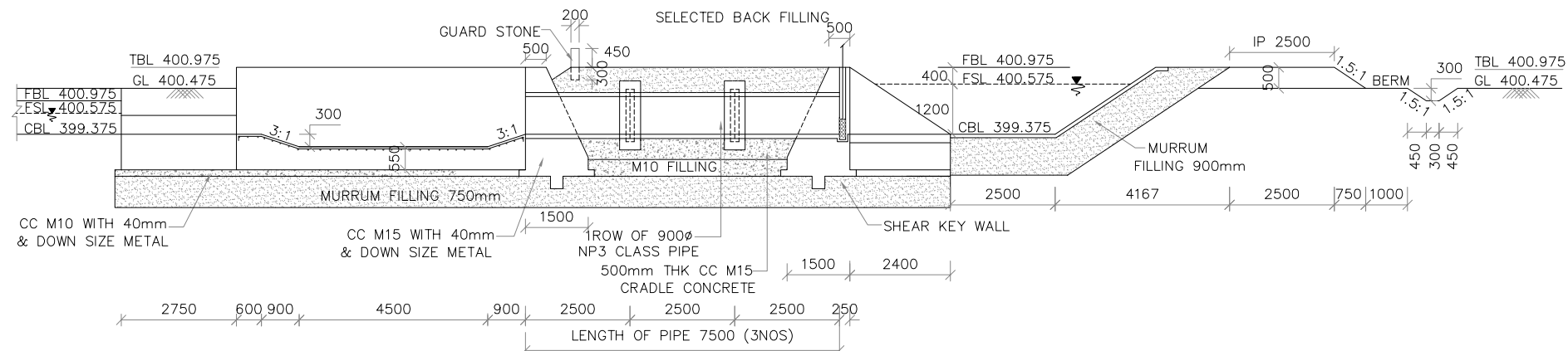
**DRAWING TITLE**  
**Construction of Measuring Device at CH:0+50 km of**  
**Ramsagar Channel**

Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
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Project No.	Drawing No.	Sheet No.	Rev.			
	KNNL-VNC-RC-STR-MD-007	01 of 01	0			

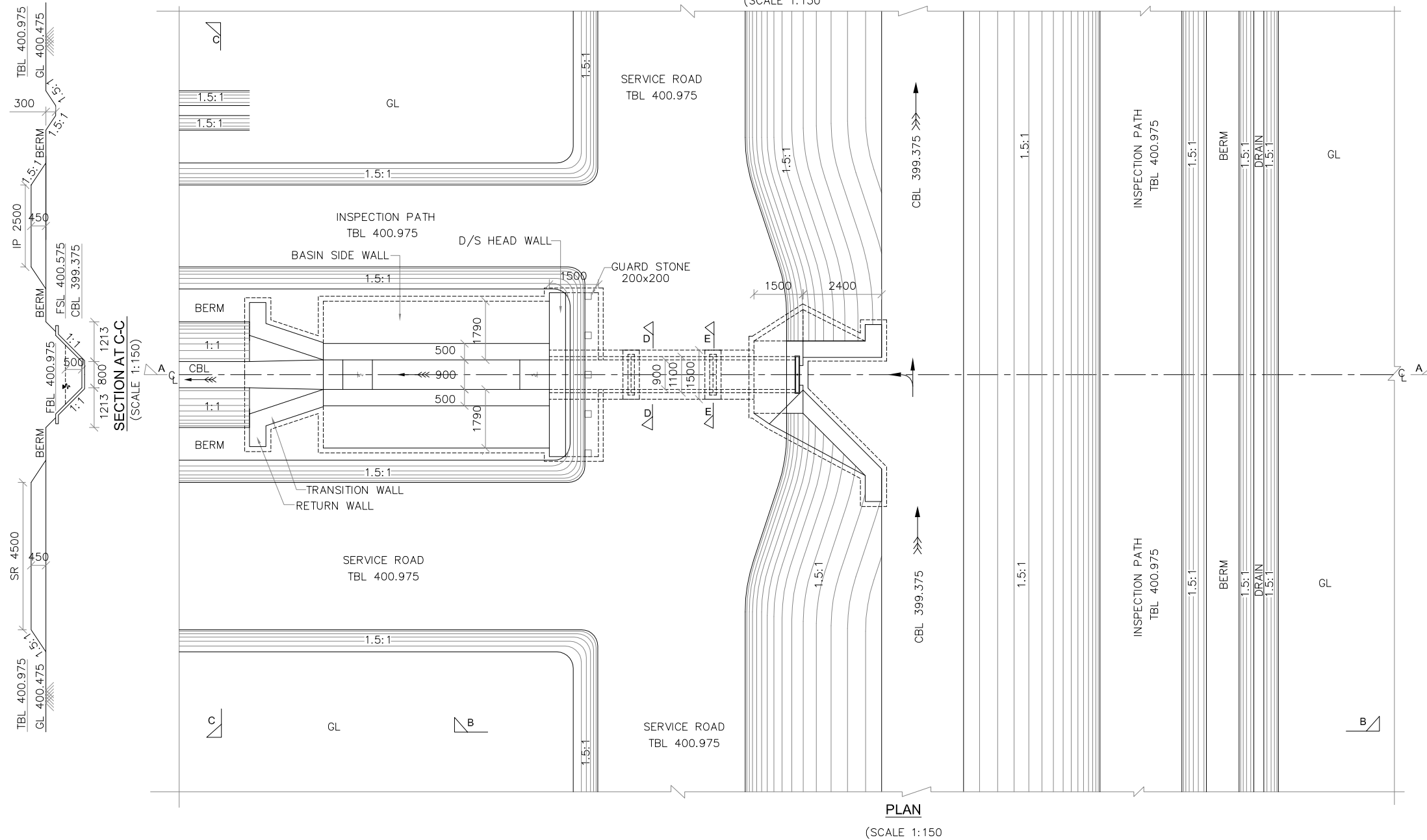
Consultant E I Technologies Pvt. Ltd. Bangalore	Asst. Executive Engineer VNC Sub-Division Kamalgapur	Executive Engineer TR Division No.1 Munirabad

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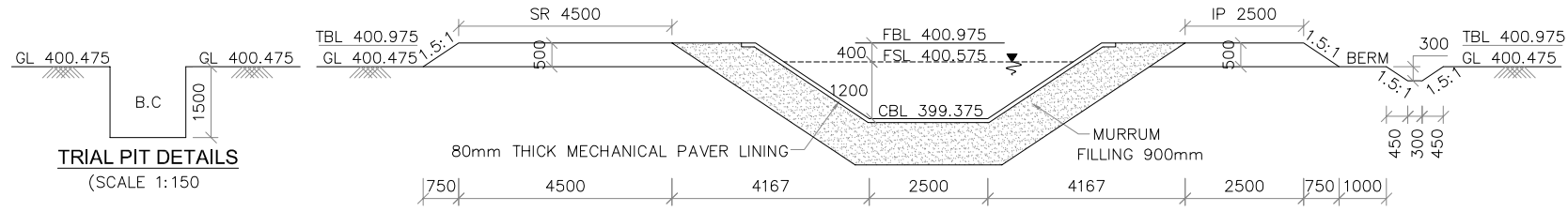




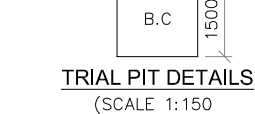
SECTION A-A  
(SCALE 1:150)



PLAN  
(SCALE 1:150)



CANAL SECTION AT B-B  
(SCALE 1:150)



TRIAL PIT DETAILS  
(SCALE 1:150)

- NOTES**
- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
  - 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
  - 3) GRADE OF CONCRETE :  
(i). CC M10 WITH 40mm DOWNSIZE METAL - FOUNDATION BED CONCRETE.  
(ii). CC M15 WITH 40mm DOWN SIZE METAL - GUIDE WALLS, U/S & D/S HEAD WALLS, SHEAR KEY WALL, BASIN SIDE WALLS, TRANSITION WALLS, RETURN WALLS & CRADLE. CONCRETE BELOW PIPE.  
(iii). CC M15 WITH 20mm DOWN SIZE METAL - U/S BASIN, STILLING BASIN, SLAB, STEPS, AND CANAL LINING.
  - 4) 80mm THICK CC LINING IS PROVIDED FOR MAIN CANAL.
  - 5) SKIN REINFORCEMENT OF 10# AT 200mm C/C BOTH WAYS IS PROVIDED.
  - 6) MINIMUM CLEAR COVER TO THE REINFORCEMENT SHALL BE 50mm UNLESS OTHERWISE MENTIONED.
  - 7) NP3 CLASS HUMER PIPES ARE PROPOSED.
  - 8) CATCH WATER DRAIN SHOULD BE SUITABLY DIVERTED TO NATURAL STREAM OR NALA.
  - 9) DRY STONE PITCHING IS PROVIDED WHEREVER NECESSARY.

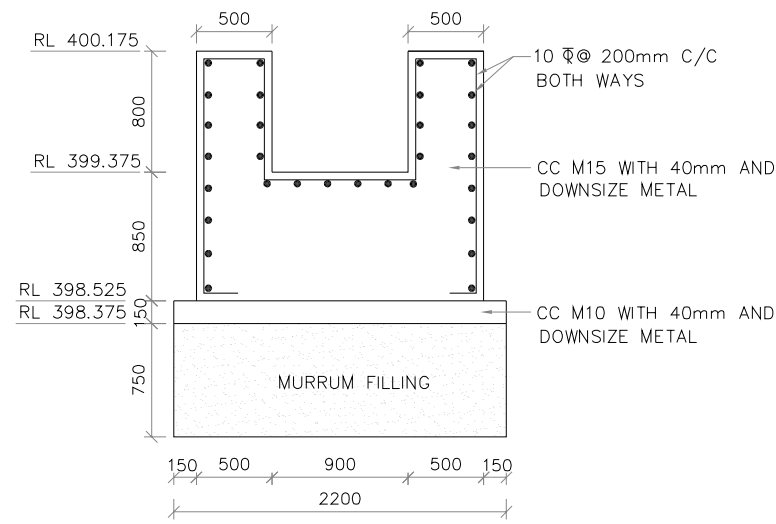
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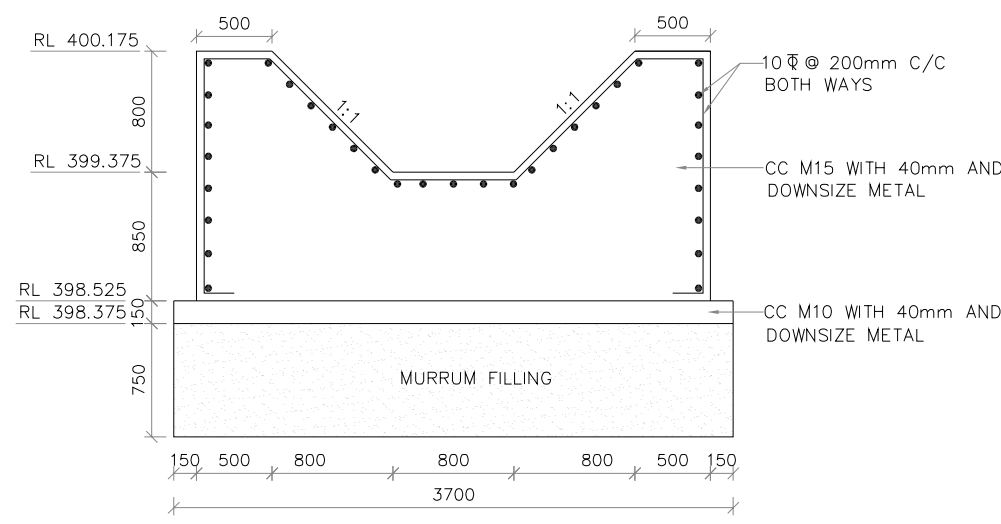
DRAWING TITLE  
**CONSTRUCTION OF HEAD REGULATOR FOR DIST-1 AT CH : 6+738 Km OF RAMSAGARA CHANNEL**

Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.	Rev.			
	KNNL-VNC-RSC-STR-HR-007	01 of 04	0			

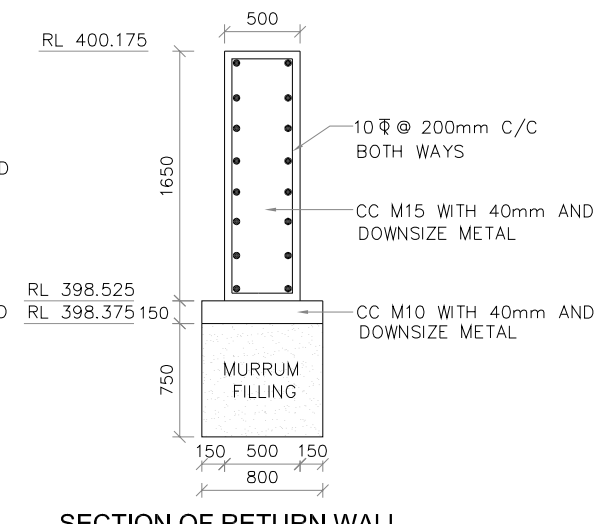
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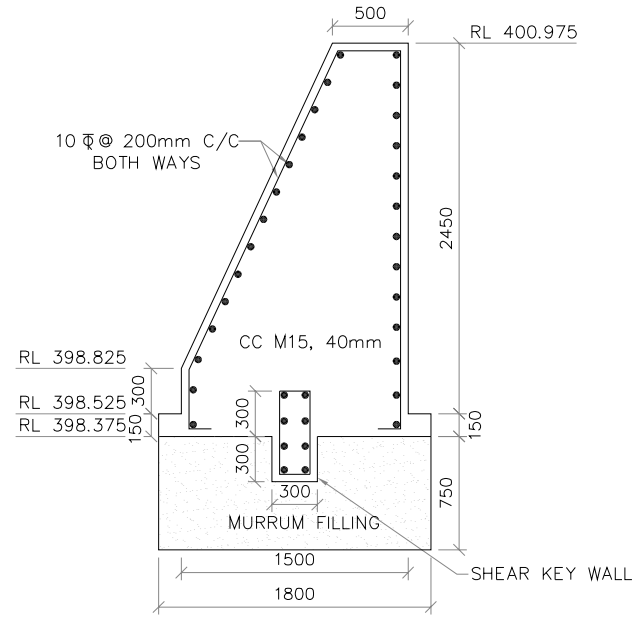
**SECTIONAL ELEVATION FOR TRANSITION WALLS AT START**  
(SCALE 1:50)



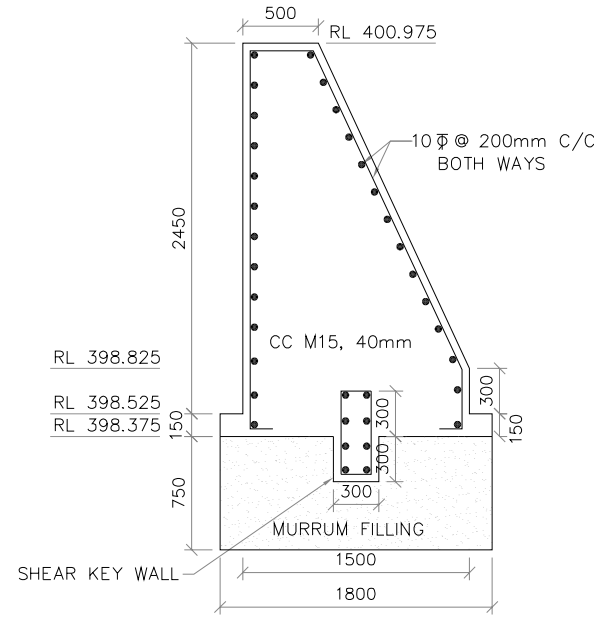
**SECTIONAL ELEVATION FOR TRANSITION WALLS AT END**  
(SCALE 1:50)



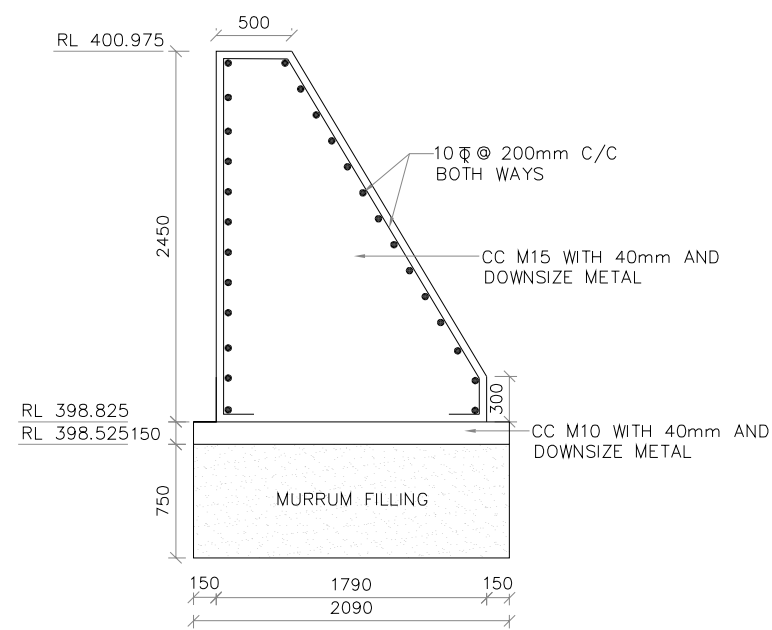
**SECTION OF RETURN WALL**  
(SCALE 1:50)



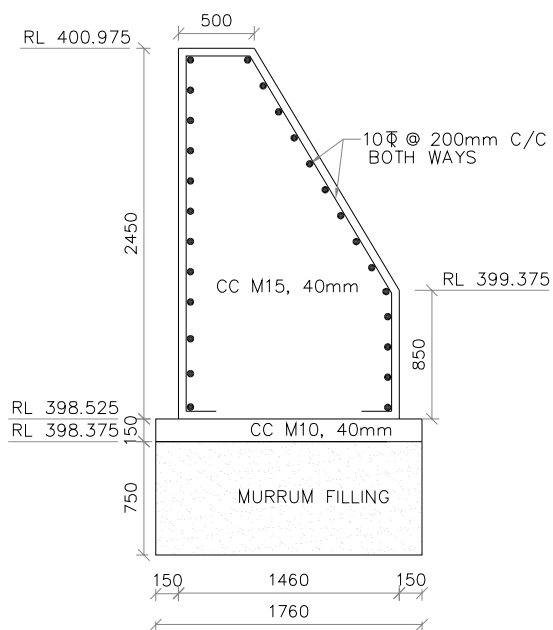
**SECTION OF U/S HEAD WALL**  
(SCALE 1:50)



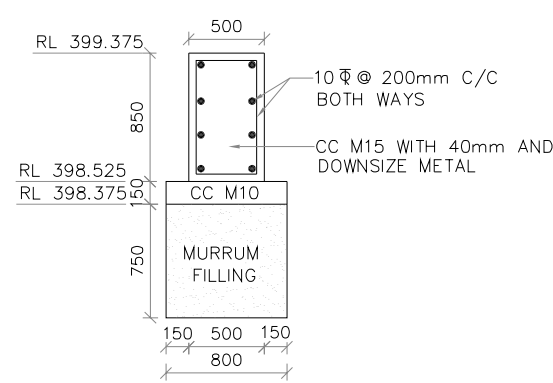
**SECTION OF D/S HEAD WALL**  
(SCALE 1:50)



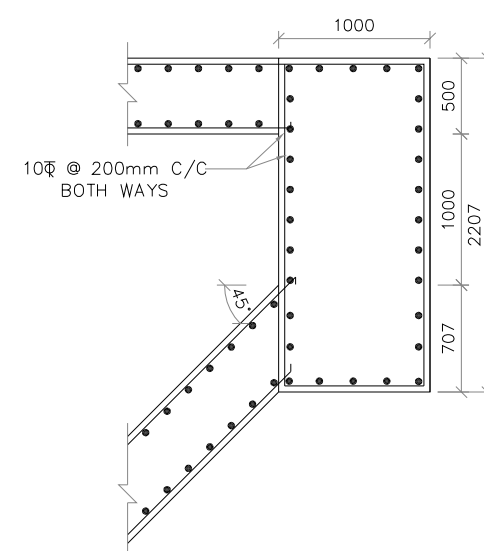
**SECTION OF BASIN SIDE WALL**  
(SCALE 1:50)



**SECTION OF GUIDE WALL AT MAXIMUM HEIGHT**  
(SCALE 1:50)



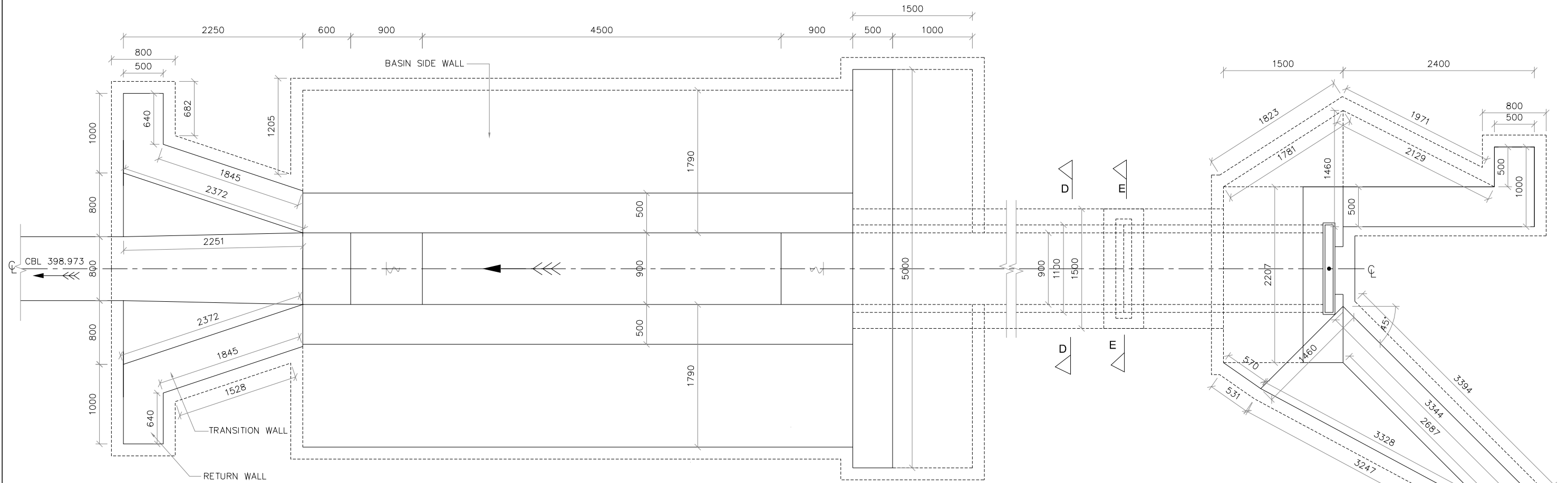
**SECTION OF GUIDE WALL AT MINIMUM HEIGHT**  
(SCALE 1:50)



**SKIN REINFORCEMENT DETAILS OF U/S HEAD WALL AND GUIDE WALLS**  
(SCALE 1:50)

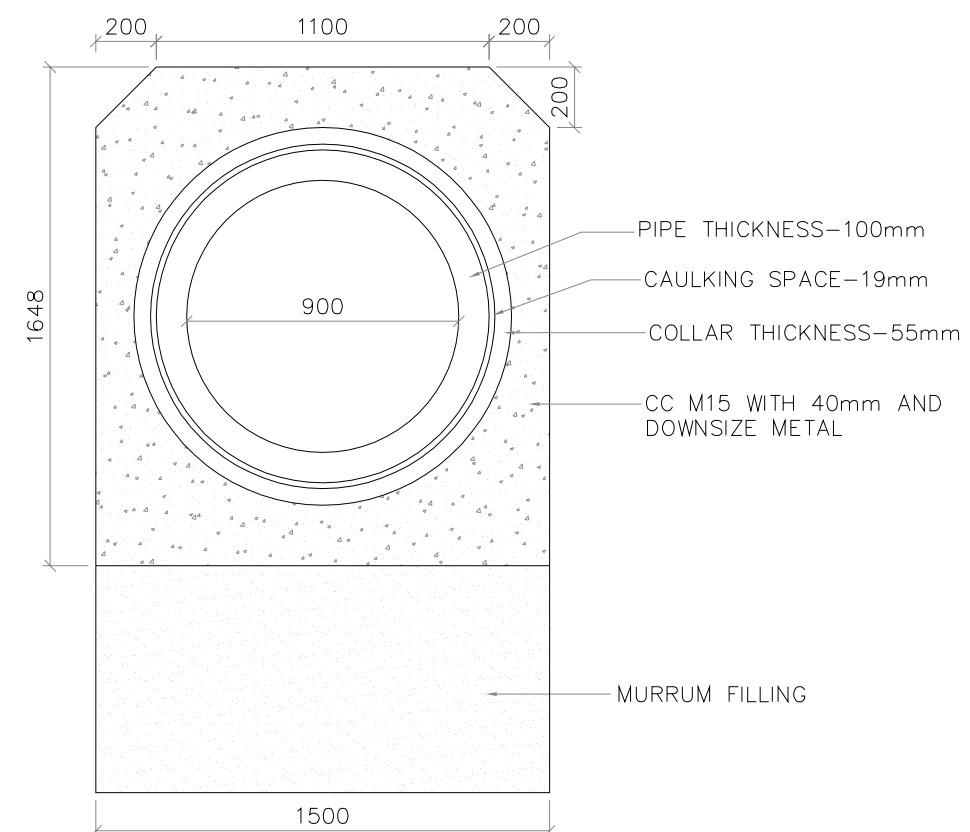
- NOTES**
- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
  - 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.

0	For Approval					
Rev.	Description	Date	Drw.	Pre.	Chk.	App.
CLIENT <b>KARNATAKA NEERAVARI NIGAM LIMITED</b> (A GOVT. OF KARNATAKA UNDERTAKING) BANGALORE - 560 001						
CONSULTANT <b>E I Technologies Pvt. Ltd.,</b> (ISO 9001 : 2008 Certified) # 1149, 26th Main, Jayanagar 4th 'T' Block, Bengaluru-560 041, India. Ph. +91.80.40914714, Fax: +91.80.26650912 info@eitech.in, www.eitech.in						
PROJECT TITLE <b>MODERNIZATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT</b>						
DRAWING TITLE <b>CONSTRUCTION OF HEAD REGULATOR FOR DIST-1 AT CH : 6+738 Km OF RAMSAGARA CHANNEL</b>						
Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.		Rev.		
	KNNL-VNC-RSC-STR-HR-007	02 of 04		0		
 Consultant E I Technologies Pvt. Ltd. Bangalore		 Asst. Executive Engineer VNC Sub-Division Kamalapur		 Executive Engineer TR Division No.1 Munirabad		
 Superintending Engineer Tungabhadra Project Circle Munirabad				 Chief Engineer Irrigation Central Zone Munirabad		

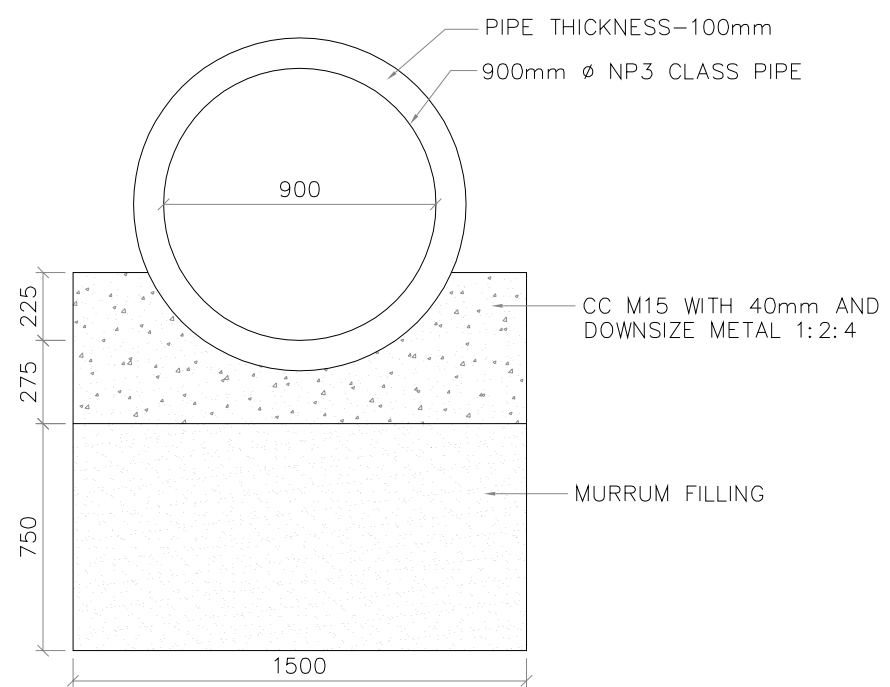


**PLAN OF D/S HEAD WALL, STILLING BASIN, SIDE WALLS AND TRANSITION WALLS**  
(SCALE 1:50)

**PLAN OF U/S HEAD WALL, GUIDE WALL, RETURN WALL AND U/S BASIN**  
(SCALE 1:50)

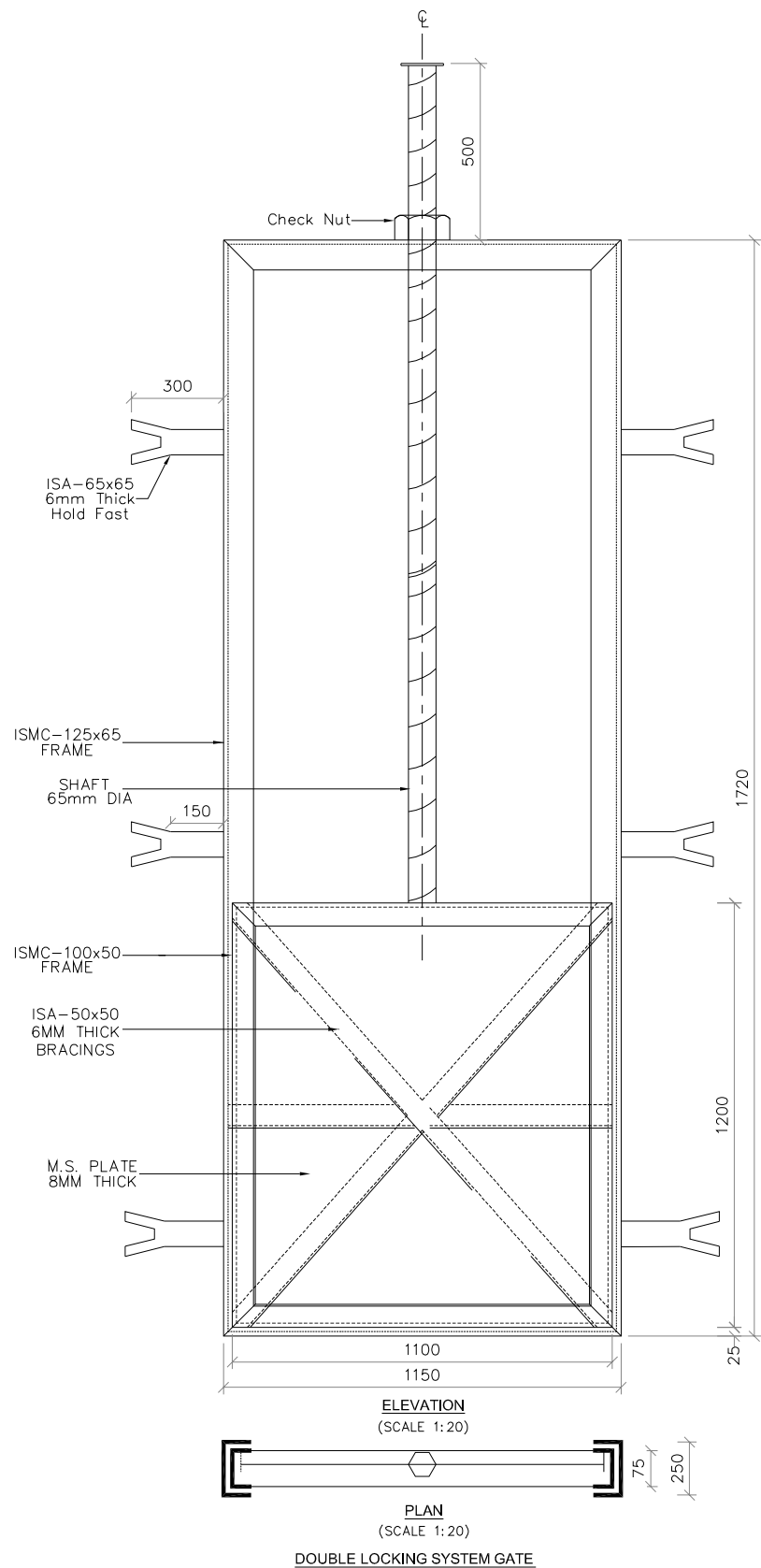


**SECTION D-D**  
(SCALE 1:25)



**SECTION E-E**  
(SCALE 1:25)

0	For Approval						
Rev.	Description	Date	Drw.	Pre.	Chk.	App.	
<b>CLIENT</b> <b>KARNATAKA NEERAVARI NIGAM LIMITED</b> (A GOVT. OF KARNATAKA UNDERTAKING) BANGALORE - 560 001							
<b>CONSULTANT</b> <b>E I Technologies Pvt. Ltd.,</b> (ISO 9001 : 2008 Certified) # 1149, 26th Main, Jayanagar 4th 'T' Block, Bengaluru-560 041, India. Ph. +91.80.40914714, Fax: +91.80.26650912 info@eitech.in, www.eitech.in							
<b>PROJECT TITLE</b> <b>MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT</b>							
<b>DRAWING TITLE</b> <b>CONSTRUCTION OF HEAD REGULATOR FOR DIST-1 AT CH : 6+738 Km OF RAMSAGARA CHANNEL</b>							
Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status	
					AS SHOWN	FOR APPROVAL	
Project No.	Drawing No.		Sheet No.		Rev.		
	KNNL-VNC-RSC-STR-HR-007		03 of 04		0		
 Consultant E I Technologies Pvt. Ltd. Bangalore		 Asst. Executive Engineer VNC Sub-Division Kamalapur		 Executive Engineer TR Division No.1 Muribad			
 Superintending Engineer Tungabhadra Project Circle Muribad				 Chief Engineer Irrigation Central Zone Muribad			



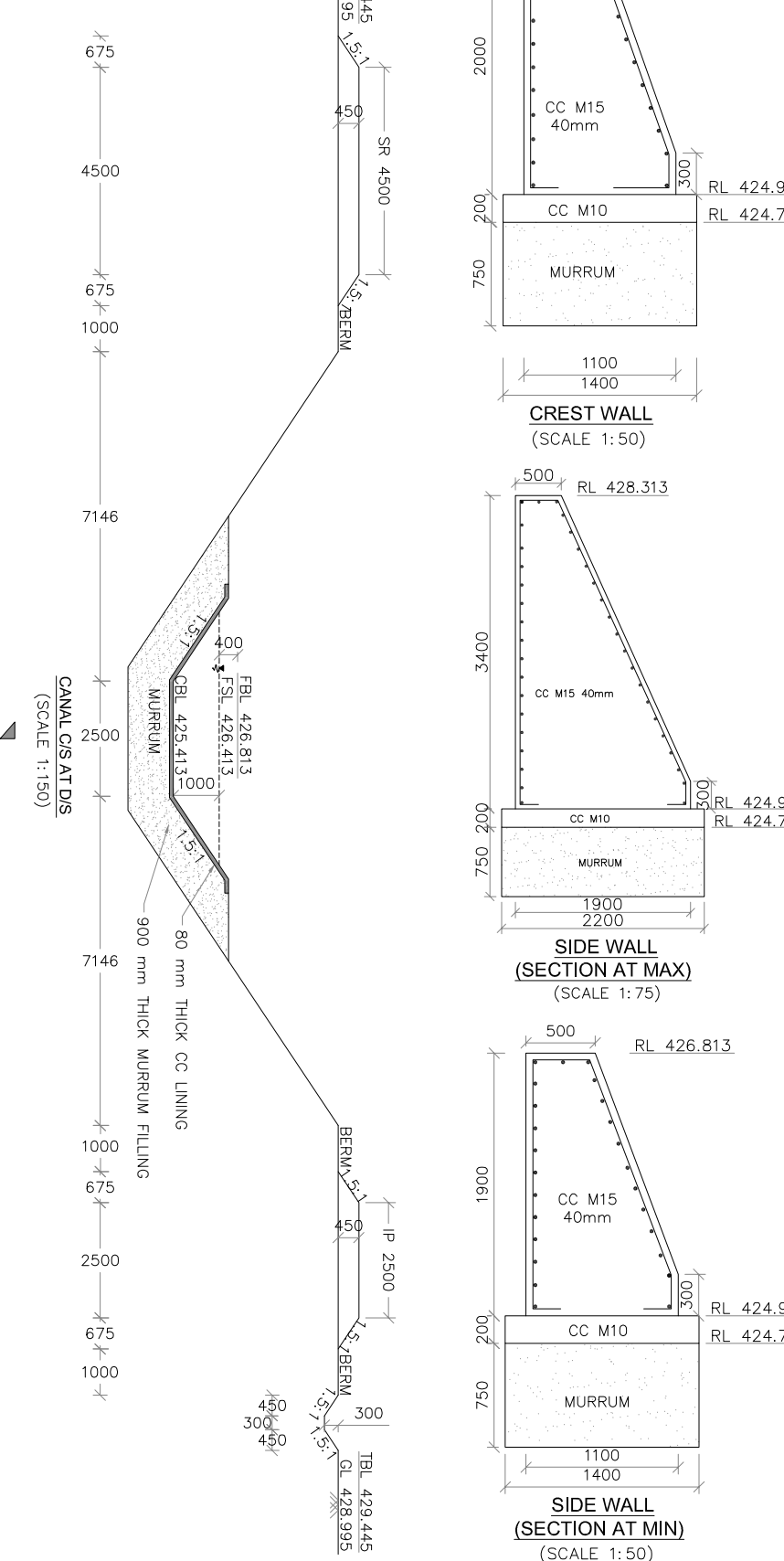
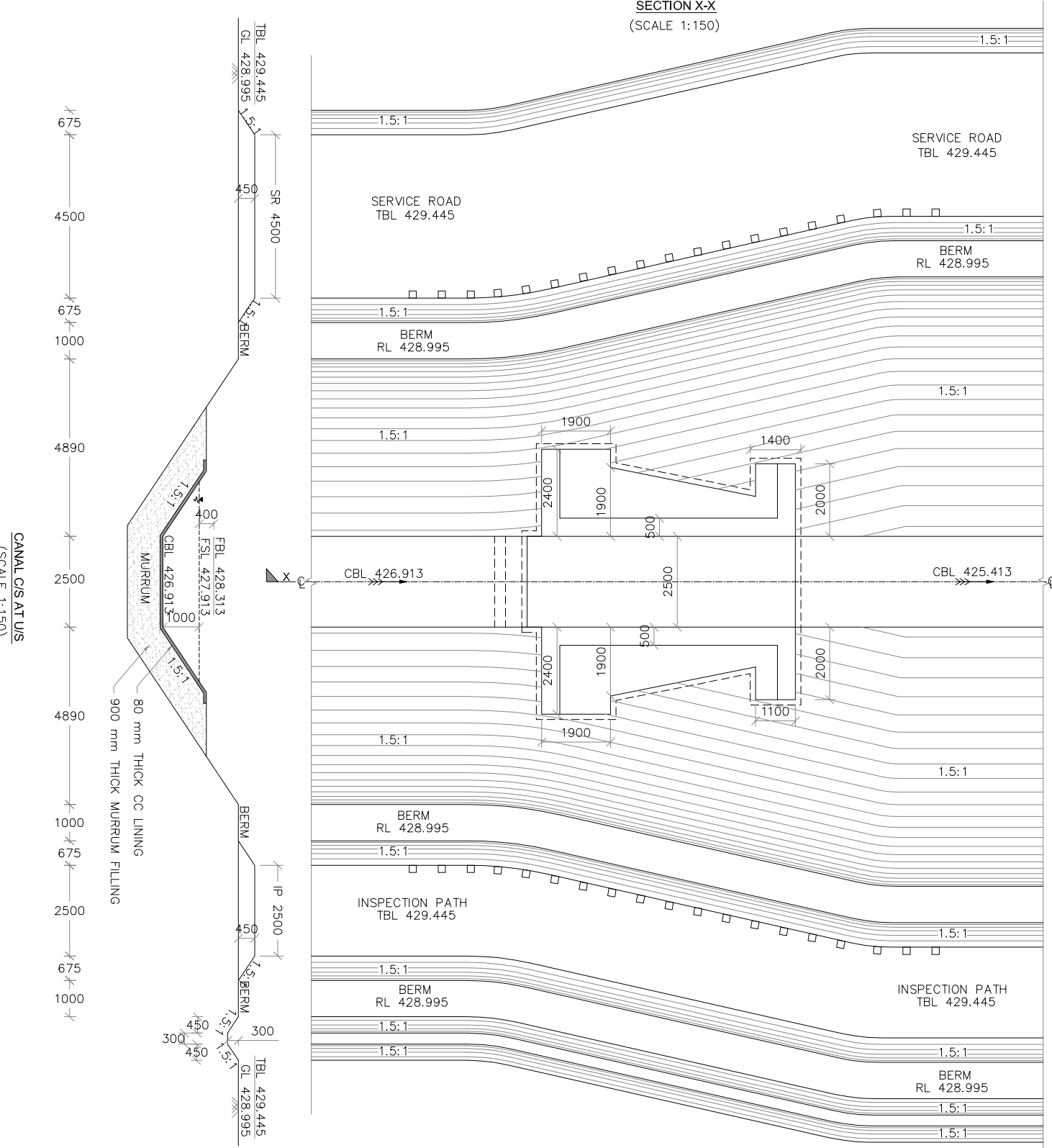
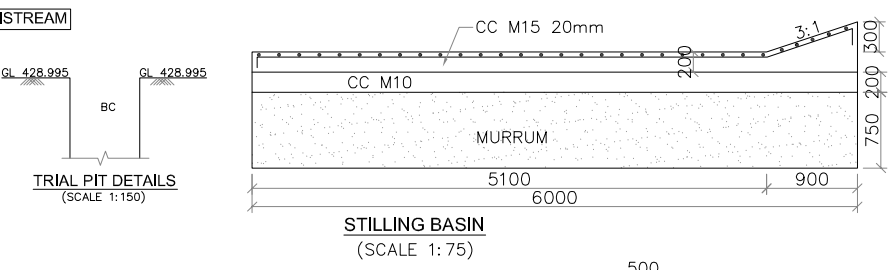
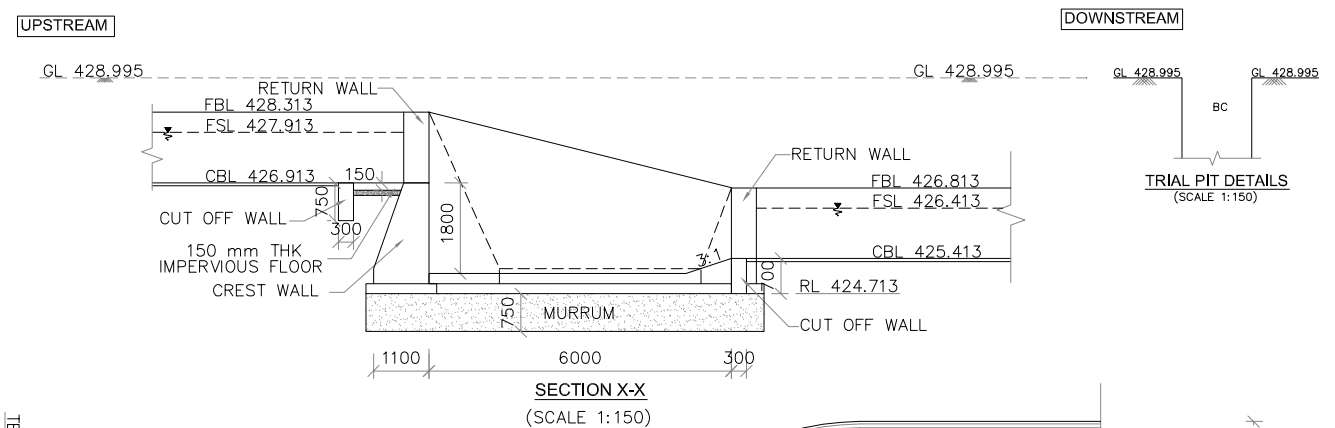
SL. NO.	ITEMS	UNIT	DIMENSION	WT./M (kg/sqm)	TOTAL WT. (kg)
1	ISMC-125 X 65 FRAME	RMT	5.84	12.70	73.02
2	ISMC-100 X 50 FRAME	RMT	4.20	9.20	42.32
3	ISA-5050; 6MM THICK. FOR BRACINGS.	RMT	4.36	4.50	19.62
4	ISA-6565; 6MM THICK. FOR HOLD-FASTS	RMT	1.80	5.80	10.44
5	M.S. PLATE 8MM THICK	SQM	1.32	62.80	82.90
6	SHAFT 65MM Ø M.S.	RMT	1.00	26.05	26.05
7	CHECK NUT M.S.	NO.	1.00	4.00	4.00
8	WHEEL M.S.	NO.	1.00	30.00	30.00

TOTAL Wt. = 288.350 Kgs  
 SAY = 299.000 Kgs  
 = 0.299 MT

**NOTES**

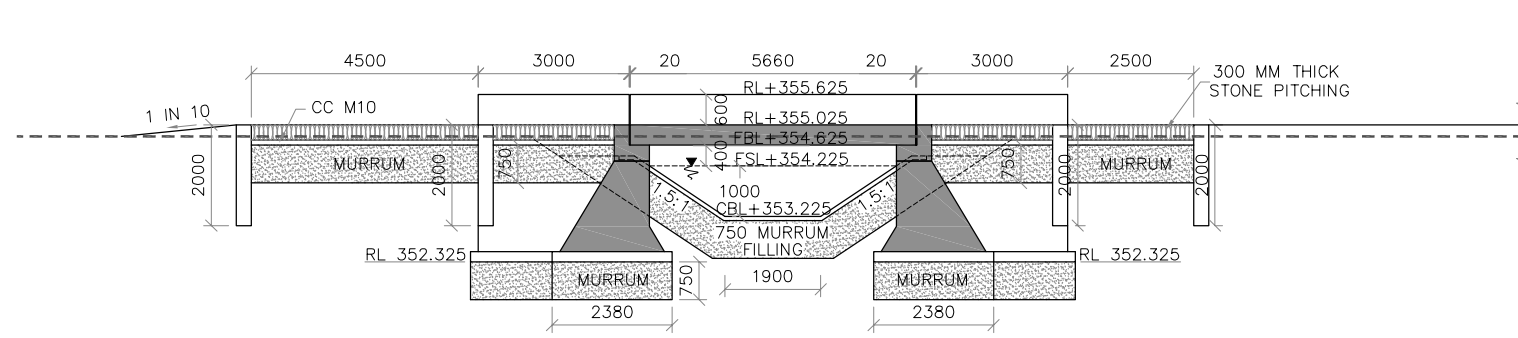
- 1) ALL DIMENSIONS ARE IN MM AND REDUCED LEVELS ARE IN METRES.
- 2) DRAWING SHALL NOT BE SCALED OR MEASURED.

0	For Approval						
Rev.	Description.	Date.	Drw.	Pre.	Chk.	App.	
<p>CLIENT  <b>KARNATAKA NEERAVARI NIGAM LIMITED</b>          (A GOVT. OF KARNATAKA UNDERTAKING)          BANGALORE - 560 001</p>							
<p>CONSULTANT <b>E I Technologies Pvt. Ltd.,</b>          (ISO 9001 : 2008 Certified)          # 1149, 26th Main, Jayanagar 4th 'T' Block,          Bengaluru-560 041, India.          Ph. +91.80.40914714, Fax: +91.80.26650912          info@eitech.in • www.eitech.in</p>							
<p>PROJECT TITLE  <b>MODERNISATION OF VIJAYANAGARA CHANNELS          IN TUNGABHADRA PROJECT</b></p>							
<p>DRAWING TITLE  <b>CONSTRUCTION OF HEAD REGULATOR FOR DIST-1          AT CH : 6+738 Km OF RAMSAGARA CHANNEL</b></p>							
Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.	
					AS SHOWN	FOR APPROVAL	
Project No.	Drawing No.					Sheet No.	Rev.
	KNNL-VNC-RSC-STR-HR-007					04 of 04	0
 Consultant E I Technologies Pvt. Ltd. Bangalore		 Asst. Executive Engineer VNC Sub-Division Kamalapur		 Executive Engineer TR Division No.1 Munirabad			
 Superintending Engineer Tungabhadra Project Circle Munirabad				 Chief Engineer Irrigation Central Zone Munirabad			

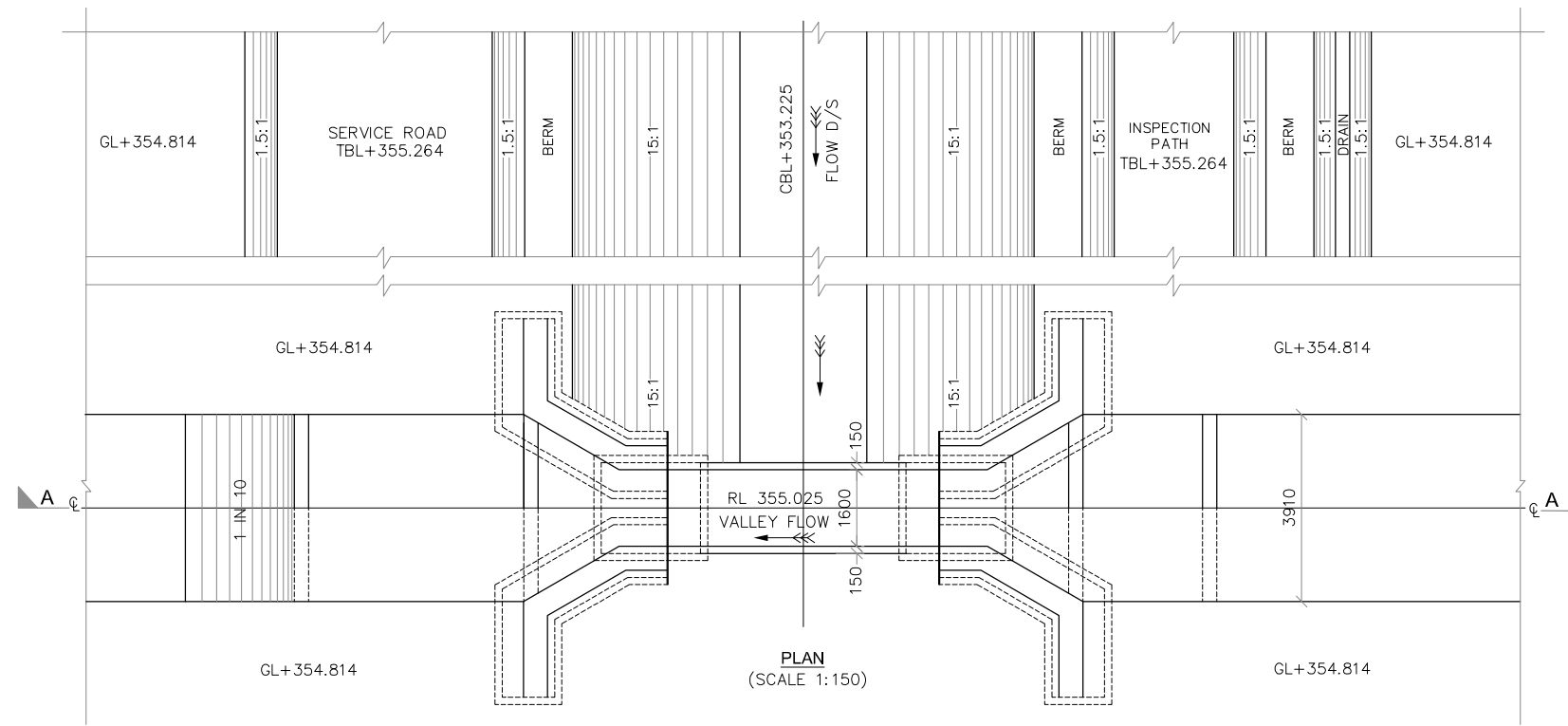


- NOTES**
- 1) ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN M UNLESS OTHERWISE SPECIFIED
  - 2) DRAWING SHALL NOT BE SCALED OR MEASURED.
  - 3) GRADE OF CONCRETE :
    - (I). CC M10 WITH 40mm DOWNSIZE METAL - FOUNDATION BED CONCRETE.
    - (II). CC M15 WITH 40mm DOWN SIZE METAL - SIDE WALLS, CREST WALL, & RETURN WALLS.
    - (III). CC M15 WITH 20mm DOWN SIZE METAL - STILLING BASIN, CUTOFF WALLS & CANAL LINING.
  - 4) ALL REINFORCEMENT STEEL SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS GRADE DESIGNATION Fe 415 CONFORMING TO IS: 1786
  - 5) SKIN REINFORCEMENT OF 10 $\phi$  AT 200mm IS PROVIDED FOR CREST WALL, SIDE WALLS, RETURN WALLS AND CUT OFF WALLS
  - 6) MINIMUM CLEAR COVER TO THE REINFORCEMENT SHALL BE 50mm UNLESS OTHERWISE MENTIONED.
  - 7) DRY STONE PITCHING IS PROVIDED WHEREVER NECESSARY.

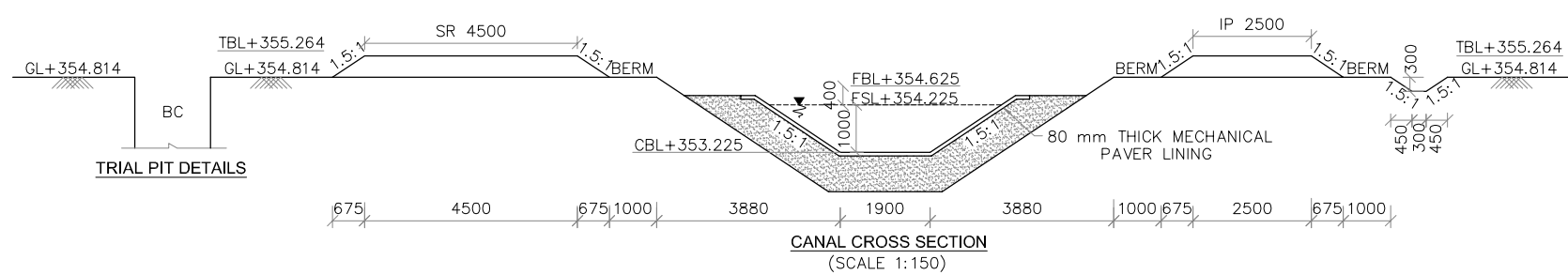
0	For Approval				
Rev.	Description.	Date.	Drw.	Pre.	Chk.
<p>CLIENT <b>KARNATAKA NEERAVARI NIGAM LIMITED</b> (A GOVT. OF KARNATAKA UNDERTAKING) BANGALORE - 560 001</p> <p>CONSULTANT <b>E I Technologies Pvt. Ltd.,</b> (ISO 9001 : 2008 Certified) # 1149, 26th Main, Jayanagar 4th 'T' Block, Bengaluru-560 041, India. Ph.+91.80.40914714, Fax: +91.80.26650912 info@eitech.in . www.eitech.in</p>					
<p>PROJECT TITLE <b>MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT</b></p>					
<p>DRAWING TITLE <b>Construction of canal drop 1.5M at CH:3+960 km of Ramsaara channel</b></p>					
Date	Drw.	Pre.	Chk.	App.	Scale.
					AS SHOWN
Drawing Status.				FOR APPROVAL	
Project No.	Drawing No.	Sheet No.	Rev.		
	KNNL-VNC-TC-STR-CD-008	01 of 01	0		
<p>Consultant <b>E I Technologies Pvt. Ltd.</b> Bangalore</p>		<p>Asst. Executive Engineer <b>VNC Sub-Division</b> Karnalapur</p>		<p>Executive Engineer <b>TR Division No.1</b> Munirabad</p>	
<p>Superintending Engineer <b>Tungabhadra Project Circle</b> Munirabad</p>			<p>Chief Engineer <b>Irrigation Central Zone</b> Munirabad</p>		



LONGITUDINAL SECTION AT A-A  
(SCALE 1:150)



PLAN  
(SCALE 1:150)

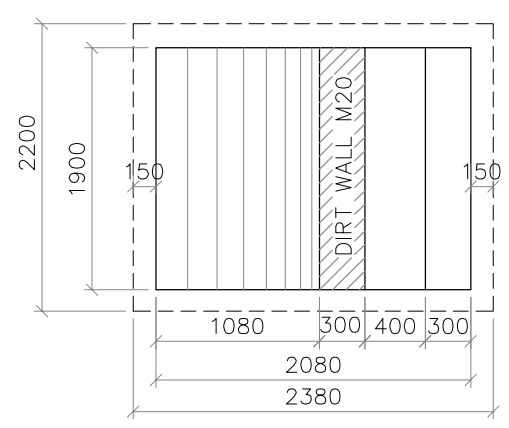


CANAL CROSS SECTION  
(SCALE 1:150)

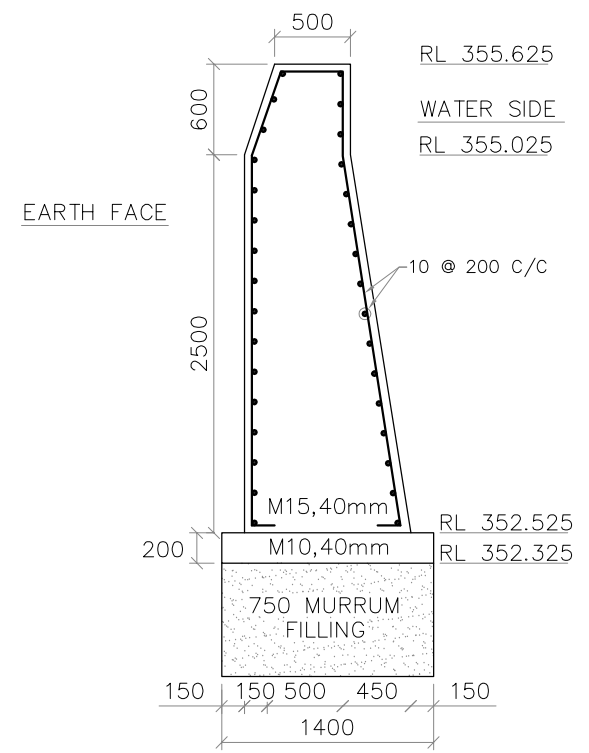
TRIAL PIT DETAILS

- NOTES**
- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
  - 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
  - 3) GRADE OF CONCRETE : CONFORMING TO IS 456-2000
    - (i) LEVELLING COURSE IN FOUNDATION - CC M10 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.
    - (ii) WING WALLS, ABUTMENT AND RETURN WALL - CC M15 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.
    - (iii) ABUTMENT CAP, DIRT WALL, PIER, PIER RAFT, DECK SLAB AND SIDE WALL - CC M20 WITH 20mm AND DOWN SIZE COARSE AGGREGATE.
    - (iv) CUT OF WALLS, CANAL LINING AND HEAD WALLS - CC M15 WITH 20mm AND DOWN SIZE COARSE AGGREGATE.
  - 4) BACK FILLING SHALL BE DONE SIMULTANEOUSLY WITH THE RAISING OF THE STRUCTURE WITH  $\phi$  VALUE OF SOIL NOT LESS THAN 28'.
  - 5) ALL REINFORCEMENT SHALL BE OF HIGH YIELD STRENGTH DEFORMED BARS (GRADE DESIGNATION Fe415).
  - 6) SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
  - 7) FILLING BEHIND ABUTMENTS AND RETURNS SHALL BE AS PER RELEVANT IRC SPECIFICATIONS.
  - 8) ADEQUATE WEEPHOLES SHALL BE PROVIDED IN ABUTMENTS, RETURNS AND OUTER WALLS OF BOX AT NOT MORE THAN 2000mm C/C HORIZONTALLY AND 1000mm C/C VERTICALLY REGULARLY STAGGERED. THE WEEPHOLES SHALL BE PROVIDED UP TO THE BED LEVEL.

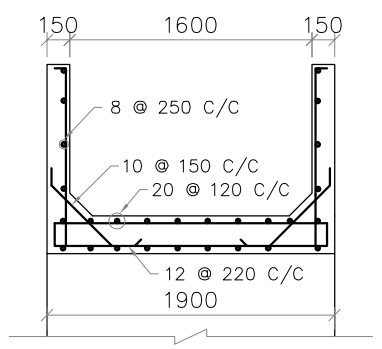
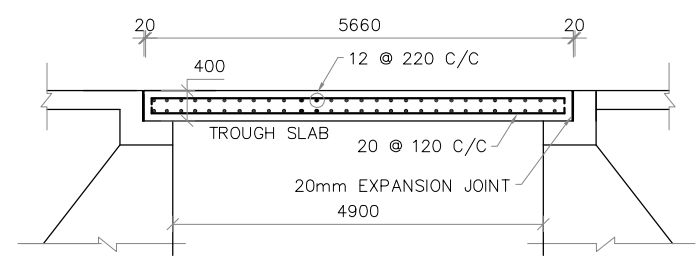
0	For Approval					
Rev.	Description	Date	Drw.	Pre.	Chk.	App.
<p>CLIENT <b>KARNATAKA NEERAVARI NIGAM LIMITED</b> (A GOVT. OF KARNATAKA UNDERTAKING) BANGALORE - 560 001</p> <p>CONSULTANT <b>E I Technologies Pvt. Ltd.,</b> (ISO 9001 : 2008 Certified) # 1149, 26th Main, Jayanagar 4th 'T' Block, Bengaluru-560 041, India. Ph. +91.80.40914714, Fax: +91.80.26650912 info@eitech.in, www.eitech.in</p>						
<p>PROJECT TITLE <b>MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT</b></p>						
<p>DRAWING TITLE <b>CONSTRUCTION OF SUPER PASSAGE AT CH: 2+950 Km OF SIRUGUPPA CHANNEL</b></p>						
Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status
.	.	.	.	.	AS SHOWN	FOR APPROVAL
Project No.	Drawing No.		Sheet No.		Rev.	
.	KNNL-VNC-SGC-STR-SP-005		01 of 02		0	
<p>Consultant E I Technologies Pvt. Ltd. Bangalore</p>		<p>Asst. Executive Engineer VNC Sub-Division Kamalahalli</p>		<p>Executive Engineer TR Division No.1 Munirabad</p>		
<p>Superintending Engineer Tungabhadra Project Circle Munirabad</p>				<p>Chief Engineer Irrigation Central Zone Munirabad</p>		



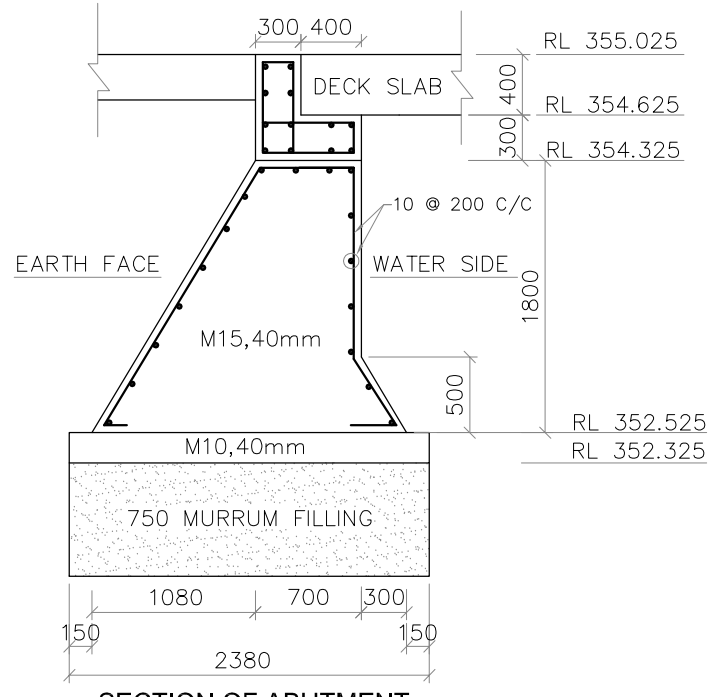
**PLAN OF ABUTMENT**  
(SCALE 1:50)



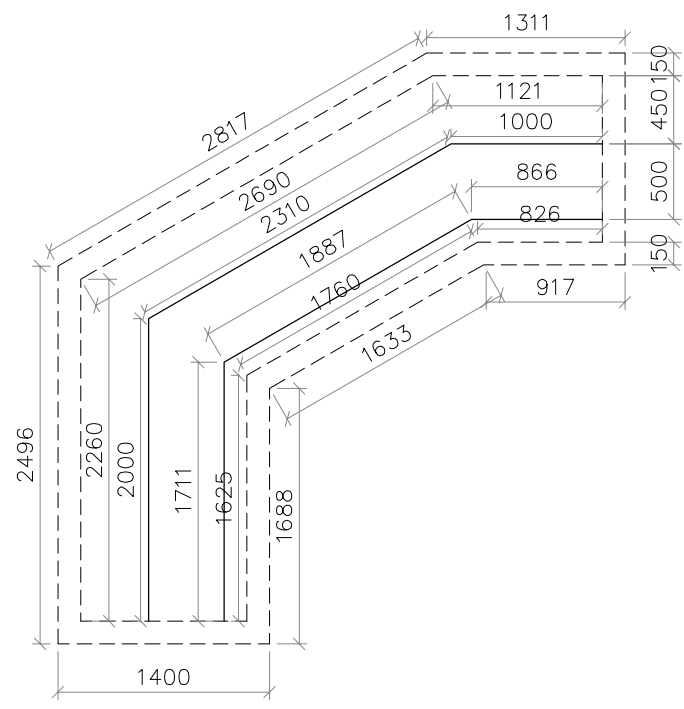
**SECTION OF WING WALL AND RETURN WALL**  
(SCALE 1:50)



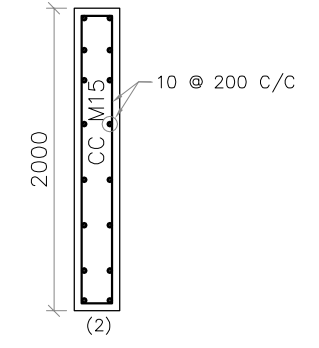
**CROSS SECTION OF TROUGH**  
(SCALE 1:50)



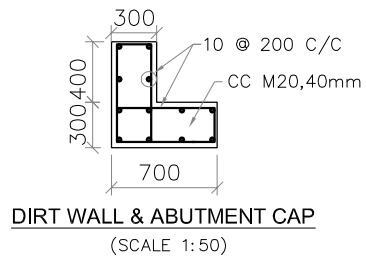
**SECTION OF ABUTMENT**  
(SCALE 1:50)



**DETAILS OF WING WALL U/S**  
(SCALE 1:50)



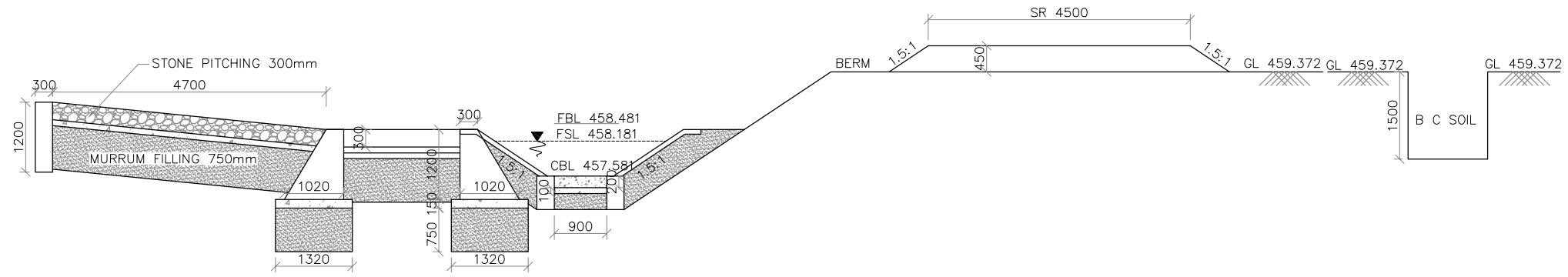
**SECTION OF CUTOFF WALLS**  
(SCALE 1:50)



**DIRT WALL & ABUTMENT CAP**  
(SCALE 1:50)

- NOTES**
- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
  - 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.

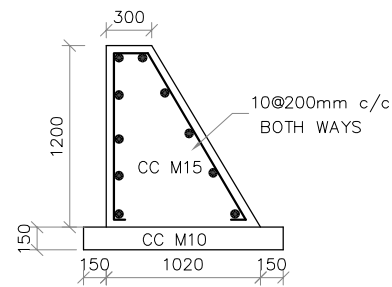
0	For Approval						
Rev.	Description.	Date.	Drw.	Pre.	Chk.	App.	
<p>CLIENT <b>KARNATAKA NEERAVARI NIGAM LIMITED</b> (A GOVT. OF KARNATAKA UNDERTAKING) BANGALORE - 560 001</p> <p>CONSULTANT <b>E I Technologies Pvt. Ltd.,</b> (ISO 9001 : 2008 Certified) # 1149, 26th Main, Jayanagar 4th 'T' Block, Bengaluru-560 041, India. Ph. +91.80.40914714, Fax: +91.80.26650912 info@eitech.in, www.eitech.in</p>							
<p>PROJECT TITLE <b>MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT</b></p>							
<p>DRAWING TITLE <b>CONSTRUCTION OF SUPER PASSAGE AT CH: 2+950 Km OF SIRUGUPPA CHANNEL</b></p>							
Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.	
					AS SHOWN	FOR APPROVAL	
Project No.	Drawing No.	Sheet No.				Rev.	
	KNNL-VNC-SGC-STR-SP-005	02 of 02				0	
<p>Consultant <b>E I Technologies Pvt. Ltd.</b> Bangalore</p>		<p>Asst. Executive Engineer VNC Sub-Division Kamalapur</p>		<p>Executive Engineer TR Division No.1 Munirabad</p>			
<p>Superintending Engineer Tungabhadra Project Circle Munirabad</p>				<p>Chief Engineer Irrigation Central Zone Munirabad</p>			



LONGITUDINAL SECTION  
(SCALE :100)



PLAN  
(SCALE :100)



SECTION HEAD WALL  
(SCALE 1:50)

NOTES

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
- 3) GRADE OF CONCRETE :
  - (I). CC M10 WITH 40mm DOWNSIZE METAL - FOUNDATION BED CONCRETE.
  - (II). CC M15 WITH 40mm DOWN SIZE METAL - HEAD WALLS SILT TRAP
  - (III). CC M15 WITH 20mm DOWN SIZE METAL - BELOW SILT TRAP, CUT OFF WALLS, CANAL PORTION.
  - (IV). CC M20 WITH 20mm DOWN SIZE METAL FOR DECK SLAB AND KERB - TROUGH
- 4) SKIN REINFORCEMENT OF 10@ 200mm C/C BOTH WAYS IS PROVIDED.
- 5) MINIMUM CLEAR COVER TO THE REINFORCEMENT SHALL BE 50mm UNLESS OTHERWISE MENTIONED.
- 6) DRY STONE PITCHING IS PROVIDED WHEREVER NECESSARY.
- 7) CNS LINING IS PROVIDED WHEREVER BC SOIL STRATA MET WITH

0	For Approval					
Rev.	Description.	Date.	Drw.	Pre.	Chk.	App.

CLIENT  
**KARNATAKA NEERAVARI NIGAM LIMITED**  
(A GOVT. OF KARNATAKA UNDERTAKING)  
BANGALORE - 560 001

CONSULTANT **E I Technologies Pvt. Ltd.,**  
(ISO 9001 : 2008 Certified)  
# 1149, 26th Main, Jayanagar 4th 'T' Block,  
Bengaluru-560 041, India.  
Ph. +91.80.40914714, Fax: +91.80.26650912  
info@eitech.in • www.eitech.in

PROJECT TITLE  
**MODERNISATION OF VIJAYANAGARA CHANNELS  
IN TUNGABHADRA PROJECT**

DRAWING TITLE  
**CONSTRUCTION OF INLET AT  
CH : 2+385km OF HULUGI CHANNEL**

Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
.	.	.	.	.	AS SHOWN	FOR APPROVAL

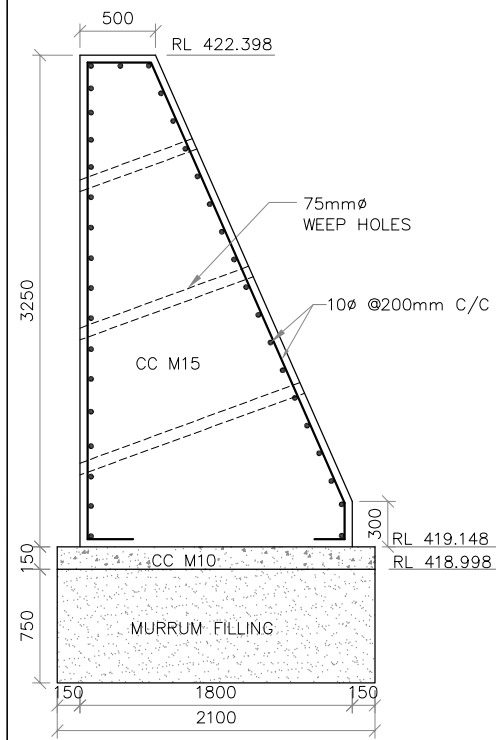
Project No.	Drawing No.	Sheet No.	Rev.
.	KNNL-VNC-HC-STR-INL-008	01 of 01	0

Consultant E I Technologies Pvt. Ltd. Bangalore	Asst. Executive Engineer VNC Sub-Division Kamalapur	Executive Engineer TR Division No.1 Munirabad

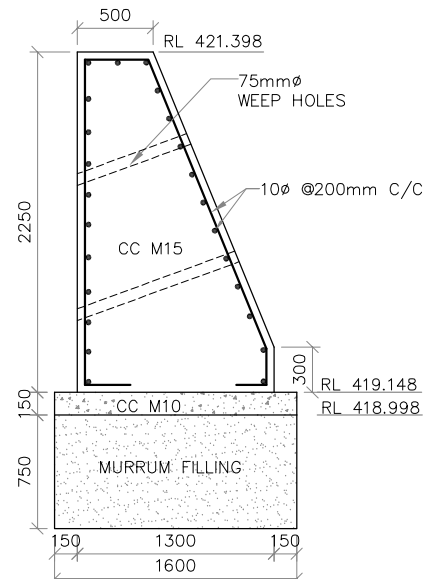
Superintending Engineer Tungabhadra Project Circle Munirabad	Chief Engineer Irrigation Central Zone Munirabad



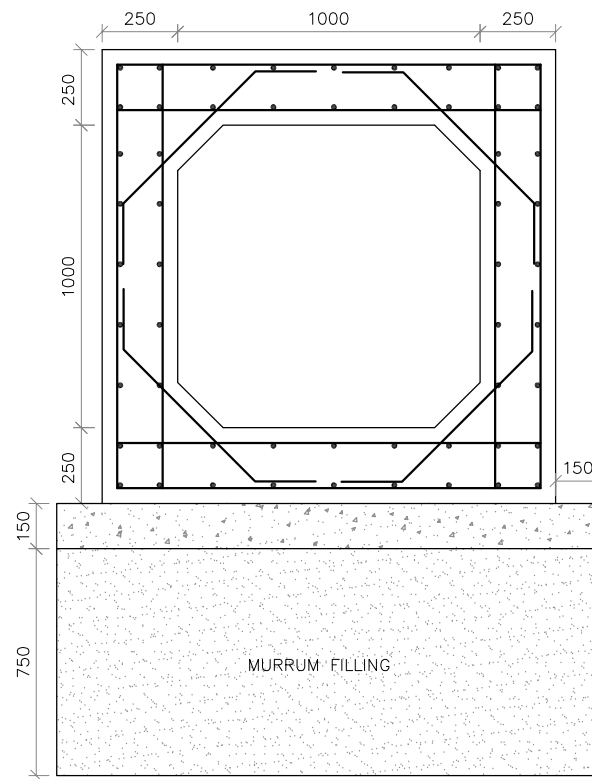




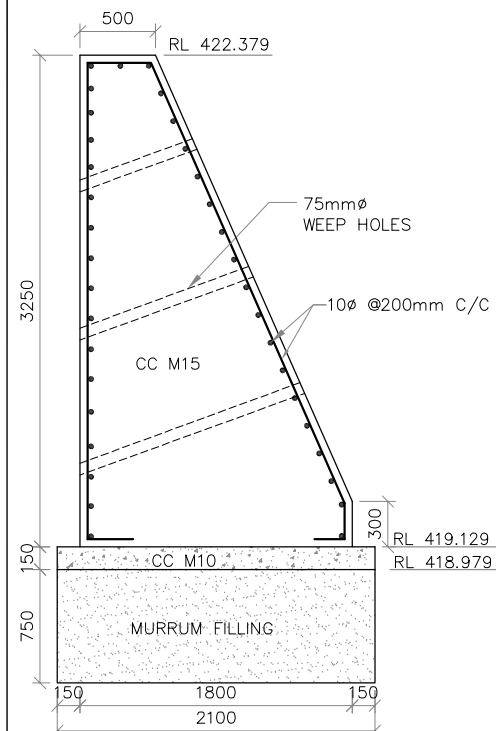
SECTION OF U/S WING WALL  
(AT MAXIMUM HEIGHT)  
(SECTION C-C)  
(SCALE 1:50)



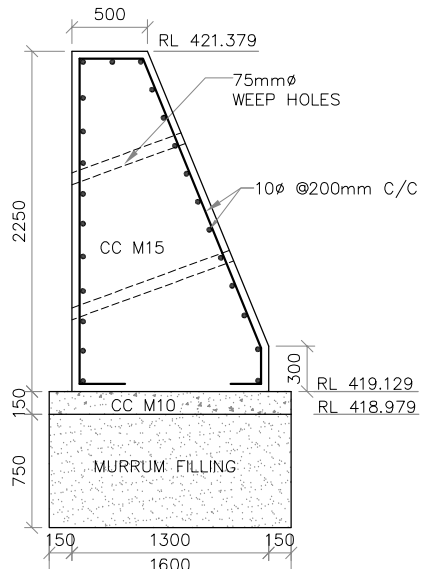
SECTION OF U/S RETURN WALL  
(SECTION D-D)  
(SCALE 1:50)



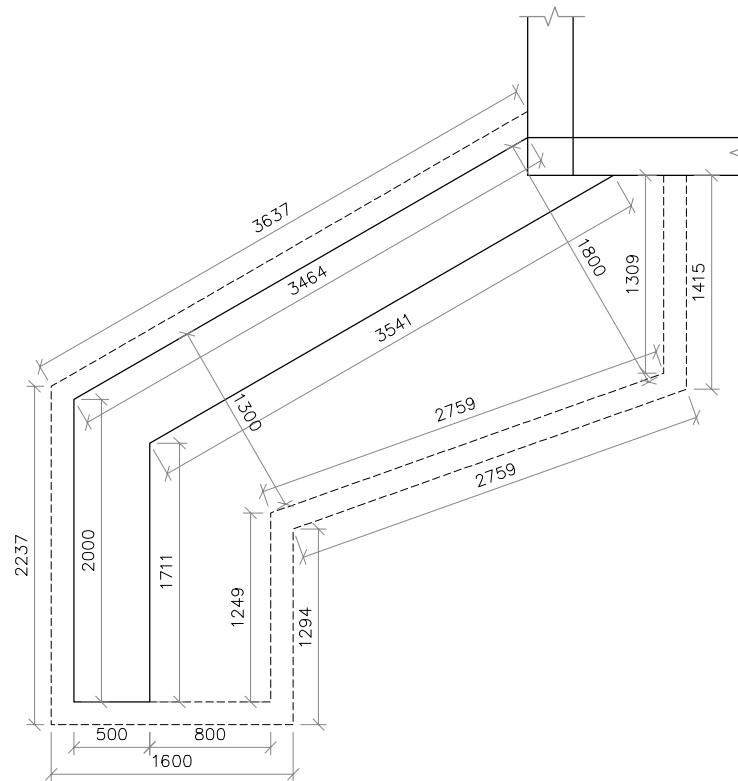
REINFORCEMENT DETAILS OF BOX  
(SCALE 1:25)



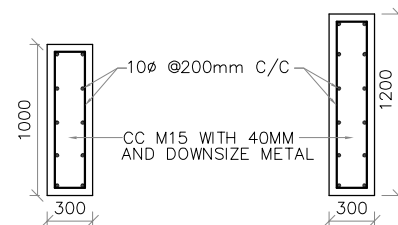
SECTION OF D/S WING WALL  
(AT MAXIMUM HEIGHT)  
(SECTION A-A)  
(SCALE 1:50)



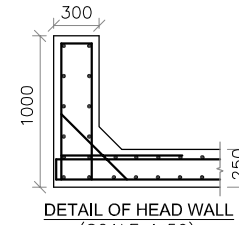
SECTION OF D/S RETURN WALL  
(SECTION B-B)  
(SCALE 1:50)



PLAN OF WING WALL (U/S AND D/S)  
(SCALE 1:50)



DETAILS CUT OFF WALL  
(SCALE 1:50)



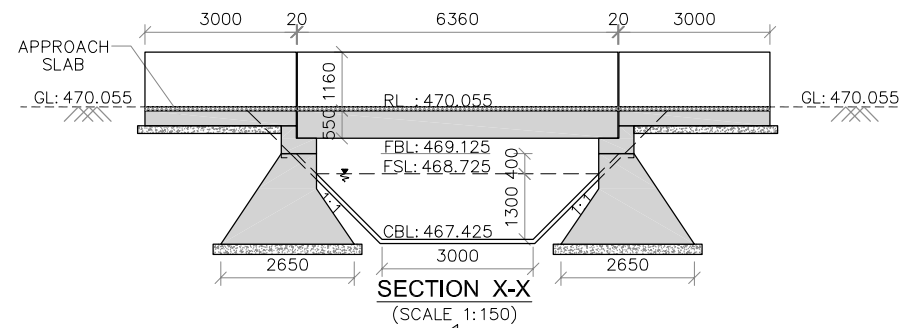
DETAIL OF HEAD WALL  
(SCALE 1:50)

BAR BENDING SCHEDULE OF BOX CULVERT

	BAR	BAR NO	BAR DIA (mm)	SPACING (mm)	No. OF BARS	SHAPE OF BARS (ALL DIMENSIONS ARE IN mm) (NOT TO SCALE)	LENGTH OF EACH BAR (mm)	TOTAL LENGTH (m)	UNIT WT (kg/m)	TOTAL WT (kg)
TOP SLAB	Main	1	10	150	156 X 2	1380 10@150mm(1) 1380	250 250	1880	586.56	0.617 363.67
	Dist	2	10	200	8 X 2	23122	250 250	23122	369.95	0.617 229.37
BOTTOM SLAB	Main	3	10	150	156 X 2	1380 12@150mm(4) 23122	250 250	1880	586.56	0.617 363.67
	Dist	4	10	200	8 X 2	23122	250 250	23122	369.95	0.617 229.37
SIDE WALLS	Main	5	10	150	156 X 4	250 1380	1380	1880	1173.12	0.617 727.33
	Dist	6	10	200	8 X 4	23122	1380	23122	739.90	0.617 458.74
HAUNCH	TOP	7	10	150	156 X 2	150 150 10@150mm(7)	150 150	1078	336.33	0.617 208.52
	BOTTOM	8	10	150	156 X 2	150 150 10@150mm(8)	150 150	1078	236.33	0.617 208.52
CUT OFF WALLS (ENDS)	Long	9	10	200	23 X 3	200 1100	1100	2800	193.20	0.617 119.12
	Trans	10	10	200	14 X 3	10@200mm(9) 100 4364	100	4564	191.69	0.617 118.18
CUT OFF WALL (END OF HEAD WALL)	Long	11	10	200	8 X 2	200 900	900	2400	38.40	0.617 23.68
	Trans	12	10	200	12 X 2	10@200mm(11) 100 1400	100	1600	38.40	0.617 23.68
HEAD WALLS	Long	13	10	200	9 X 2	220 710 220 910	910	3080	55.44	0.617 34.18
	Trans	14	10	200	10 X 2	200 600 1420	600	1620	32.40	0.617 19.98
WING WALL AT WING WALL AT BOX JUNCTION U/S	Long	15	10	200	20 X 2	400 3150 3500	3500	7600	304.00	0.617 187.43
	Trans	16	10	200	38 X 2	100 100 3785	100 250	200	15.20	0.617 9.37
WING WALL AT WING WALL AT BOX JUNCTION D/S	Long	17	10	200	20 X 2	400 3150 3500	3500	7600	304.00	0.617 187.43
	Trans	18	10	200	38 X 2	100 100 3785	100 250	200	15.20	0.617 9.37
RETURN U/S AND D/S	Long	19	10	200	20 X 2	400 2150 2350	2350	5480	219.20	0.617 135.15
	Trans	20	10	200	38 X 2	100 100 1502	100 250	1702	129.35	0.617 79.75

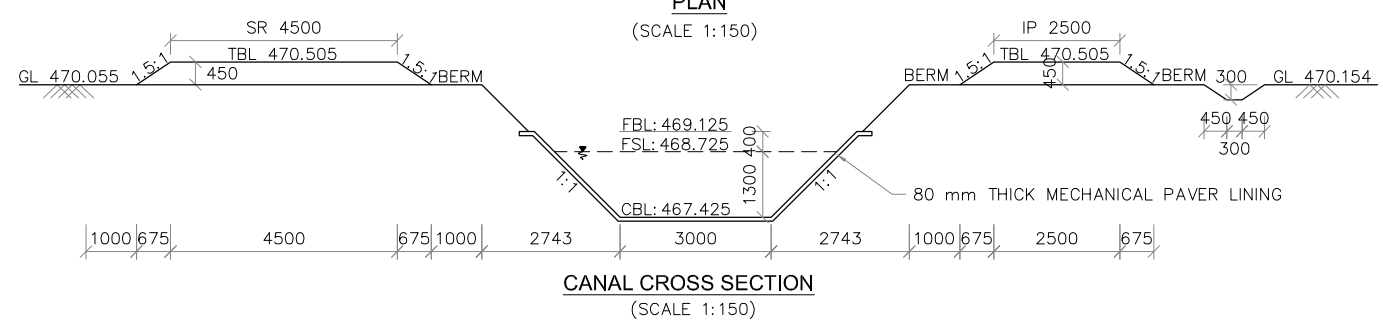
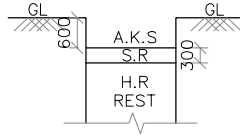
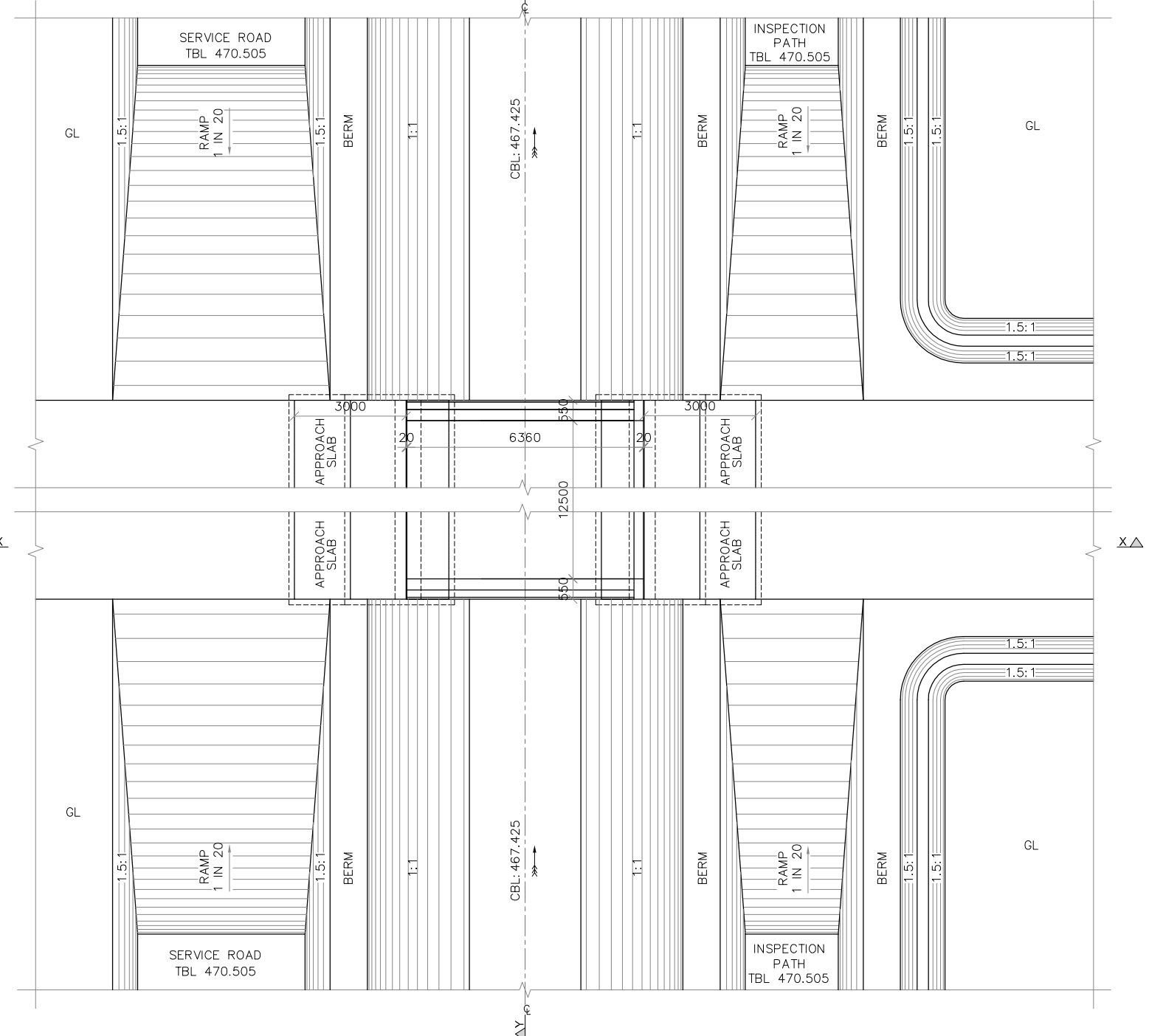
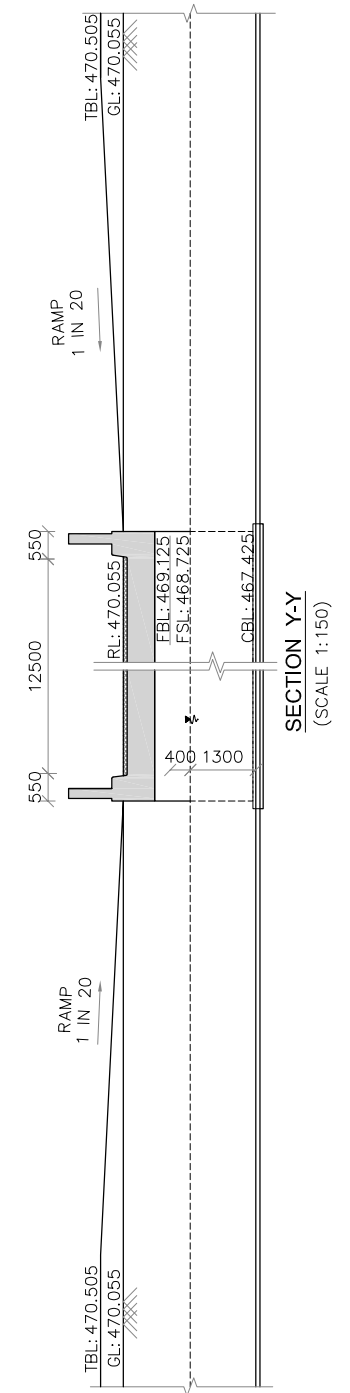
TOTAL = 3736.51Kg  
ADD 5% WASTAGE = 186.82  
TOTAL = 3923.33Kg  
SAY = 3924Kg

0		For Approval				DRAWING TITLE							
Rev.	Description	Date	Drw.	Pre.	Chk.	App.	CONSTRUCTION OF UNDER TUNNEL AT CH: 7+431km FOR ANEGONDI CANAL						
CLIENT							Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
KARNATAKA NEERAVARI NIGAM LIMITED (A GOVT. OF KARNATAKA UNDERTAKING) BANGALORE - 560 001							AS SHOWN		FOR APPROVAL				
CONSULTANT							Project No.	Drawing No.	Sheet No.	Rev.			
E I Technologies Pvt. Ltd., (ISO 9001 : 2008 Certified) # 1149, 26th Main, Jayanagar 4th 'T' Block, Bengaluru-560 041, India. Ph.+91.80.40914714, Fax: +91.80.26650912 info@eitech.in www.eitech.in							KNNL-VNC-AC-STR-UT-007		02 of 02		0		
PROJECT TITLE							Consultant		Asst. Executive Engineer		Executive Engineer		
MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT							E I Technologies Pvt. Ltd. Bangalore		VNC Sub-Division Kamalapur		TR-Division No.1 Muribad		
							Superintending Engineer		Chief Engineer				
							Tungabhadra Project Circle Muribad		Irrigation Central Zone Muribad				



**NOTES AND SPECIFICATIONS**

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
- 3) GRADE OF CONCRETE : CONFORMING TO IS 456-2000
  - (i) LEVELLING COURSE IN FOUNDATION - CC M10 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.
  - (ii) RETAIN WALLS, WING WALLS, ABUTMENT AND APPROACH SLAB - CC M15 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.
  - (iii) ABUTMENT CAP, DIRT WALL, PIER, PIER RAFT, DECK SLAB SIDE WALL, HAND RAILS, KERBS AND WEARING COAT - RCC M20 WITH 20mm AND DOWN SIZE COARSE AGGREGATE.
- 4) BACK FILLING SHALL BE DONE SIMULTANEOUSLY WITH THE RAISING OF THE STRUCTURE WITH  $\phi$  VALUE OF SOIL NOT LESS THAN 28'.
- 5) ALL REINFORCEMENT SHALL BE OF HIGH YIELD STRENGTH DE FORMED BARS (GRADE DESIGNATION Fe415).
- 6) SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- 7) FILLING BEHIND ABUTMENTS AND RETURNS SHALL BE AS PER RELEVANT IRC SPECIFICATIONS.



0	For Approval				
Rev.	Description	Date	Drw.	Pre.	Chk.

**CLIENT**  
**KARNATAKA NEERAVARI NIGAM LIMITED**  
 (A GOVT. OF KARNATAKA UNDERTAKING)  
 BANGALORE - 560 001

**CONSULTANT**  
**E I Technologies Pvt. Ltd.,**  
 (ISO 9001 : 2008 Certified)  
 # 1149, 26th Main, Jayanagar 4th 'T' Block,  
 Bengaluru-560 041, India.  
 Ph. +91.80.40914714, Fax: +91.80.26650912  
 info@eitech.in www.eitech.in

**PROJECT TITLE**  
**MODERNISATION OF VIJAYANAGARA CHANNELS**  
**IN TUNGABHADRA PROJECT**

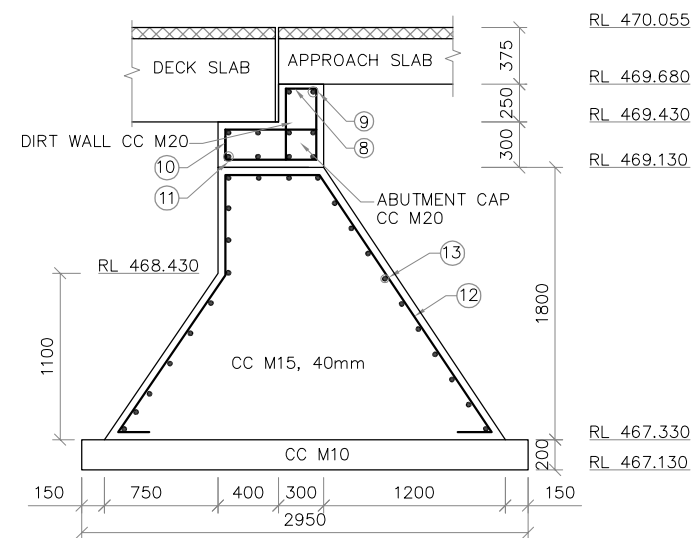
**DRAWING TITLE**  
**DRAWING FOR THE CONSTRUCTION OF MAJOR ROAD**  
**BRIDGE AT CH:8+196km FOR RAYA CHANNEL**

Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.	Rev.			
	KNNL-VNC-RC-STR-MRB-000	01 of 03	0			

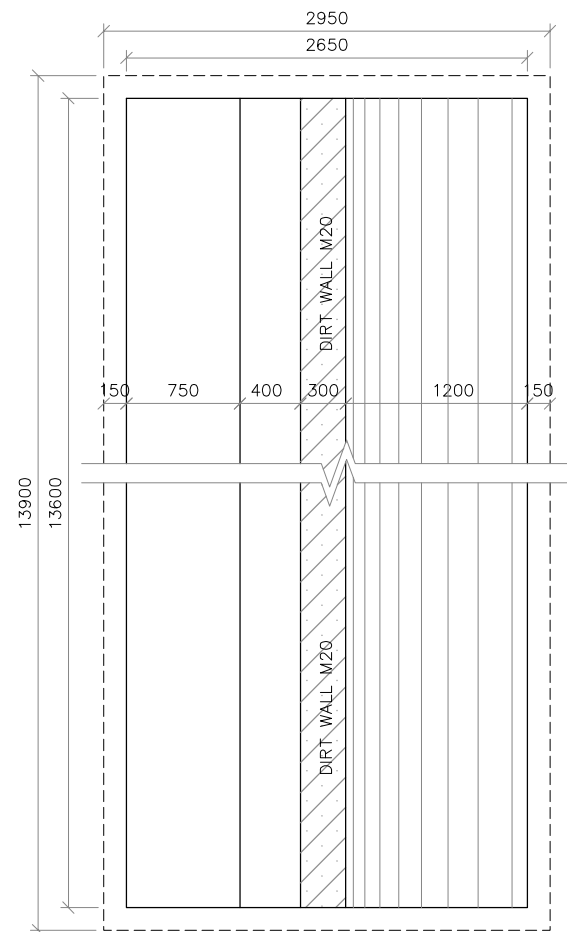
Consultant E I Technologies Pvt. Ltd. Bangalore	Asst. Executive Engineer VNC Sub-Division Kamalahpur	Executive Engineer TR Division No.1 Munirabad
Superintending Engineer Tungabhadra Project Circle Munirabad	Chief Engineer Irrigation Central Zone Munirabad	

**NOTES**

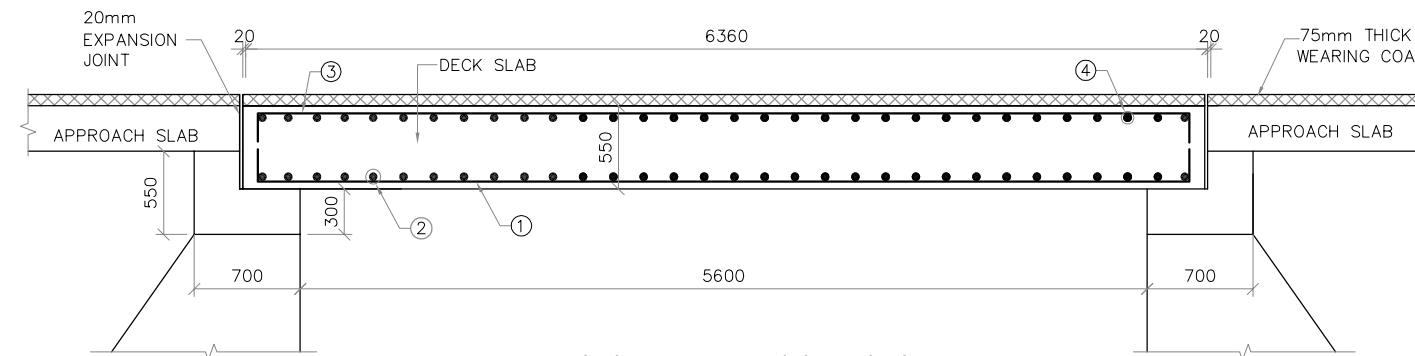
- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.



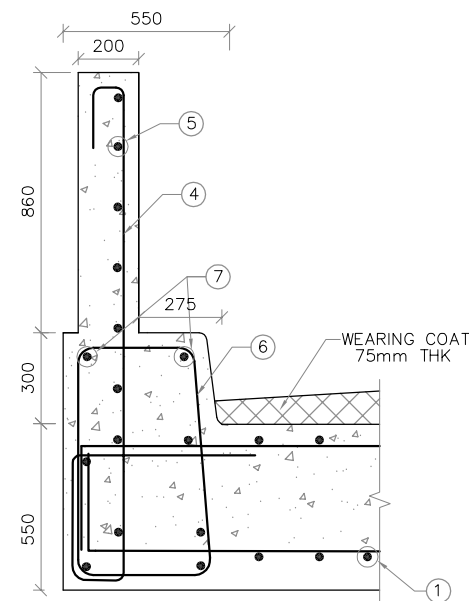
**ABUTMENT DETAILS  
U/S & D/S  
(SCALE 1:50)**



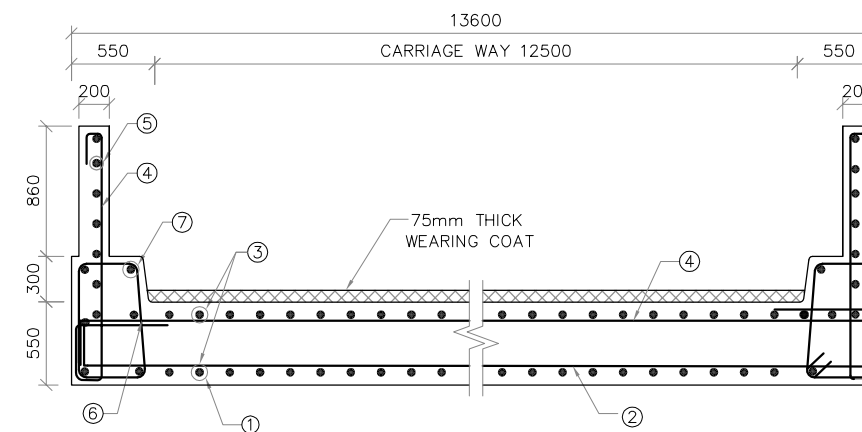
**PLAN OF ABUTMENT  
(SCALE 1:50)**



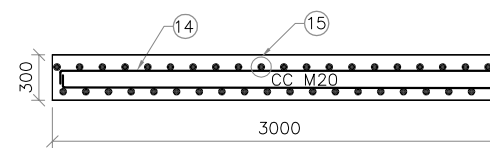
**REINFORCEMENT DETAILS OF DECK SLAB  
(SCALE 1:50)**



**REINFORCEMENT DETAILS OF SIDE WALL  
(SCALE 1:25)**



**REINFORCEMENT DETAILS OF DECK SLAB  
(SCALE 1:50)**



**REINFORCEMENT DETAILS  
OF APPROACH SLAB  
(SCALE 1:50)**

0	For Approval					
Rev.	Description	Date	Drw.	Pre.	Chk.	App.

**CLIENT**  
KARNATAKA NEERAVARI NIGAM LIMITED  
(A GOVT. OF KARNATAKA UNDERTAKING)  
BANGALORE - 560 001

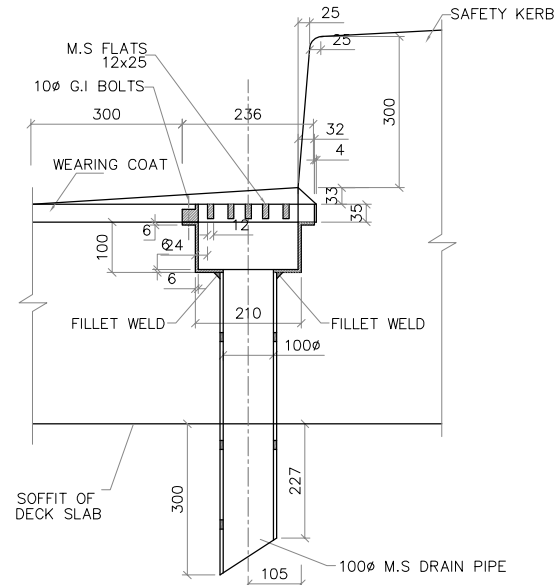
**CONSULTANT**  
**E I Technologies Pvt. Ltd.,**  
(ISO 9001 : 2008 Certified)  
# 1149, 26th Main, Jayanagar 4th 'T' Block,  
Bengaluru-560 041, India.  
Ph. +91.80.40914714, Fax: +91.80.26650912  
info@eitech.in • www.eitech.in

**PROJECT TITLE**  
**MODERNISATION OF VIJAYANAGARA CHANNELS  
IN TUNGABHADRA PROJECT**

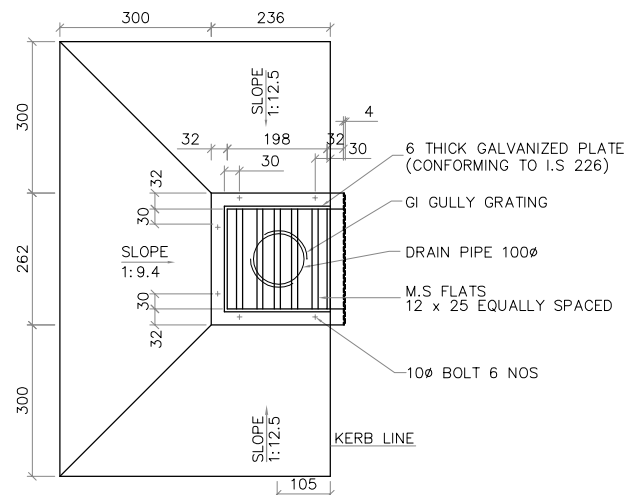
**DRAWING TITLE**  
**DRAWING FOR THE CONSTRUCTION OF MAJOR ROAD  
BRIDGE AT CH:8+196km FOR RAYA CHANNEL**

Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
.	.	.	.	.	AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.		Rev.		
.	KNNL-VNC-RC-STR-MRB-000	02 of 03		0		

 Consultant E I Technologies Pvt. Ltd. Bangalore	 Asst. Executive Engineer VNC Sub-Division Kamalapur	 Executive Engineer TR Division No.1 Munirabad
 Superintending Engineer Tungabhadra Project Circle Munirabad	 Chief Engineer Irrigation Central Zone Munirabad	



**SECTION OF DRAINAGE SPOUT AND COLLECTION PIT**  
(SCALE 1:15)



**PLAN DETAILS OF DRAINAGE SPOUT AND COLLECTION PIT**  
(SCALE 1:15)  
#ONE WATER SPOUT PER 20SQ.M. OF DECK AREA IS CONSIDERED ADEQUATE

**SCHEDULE OF REINFORCEMENT**

MEMBER	BAR MARK	DIA OF BAR (mm)	SPACING OF BAR (mm)	NO.OF BAR	SHAPE OF BARS (DIMENSION ARE IN MM) (NOT TO SCALE)	LENGTH OF EACH BAR (mm)	TOTAL LENGTH IN METRES	UNIT WEIGHT IN Kg/m	TOTAL WEIGHT IN Kg
SLAB	1	20	140	98	200-①-200	6660	652.68	2.47	1609.82
	2	12	150	43	150-②-150	13800	593.40	0.89	526.90
	3	20	140	98	200-③-200	6660	652.68	2.47	1609.82
	4	12	150	43	150-④-150	13800	593.40	0.89	526.90
SIDE WALLS	5	10	200	33x2	100-⑤-1610-400-100	2760	182.16	0.62	112.32
	6	10	200	6x2	150-⑥-6260-150	6560	78.72	0.62	48.54
KERB	7	10	200	33x2	450-⑦-450-200-450	2352	155.21	0.62	95.71
	8	10	200	13x2	150-⑧-6260-150	6560	170.56	0.62	105.17
DIRT WALL	9	10	200	69x2	450-⑨-450-200-450	1500	207.00	0.62	127.64
	10	10	200	2x2	150-⑩-13500-150	13800	55.20	0.62	34.04
ABUTMENT CAP	11	10	200	69x2	600-⑪-600-200-600	1800	248.40	0.62	153.17
	12	10	200	10x2	150-⑫-13500-150	13800	276.00	0.62	170.19
ABUTMENT	13	10	200	69x2	2094-⑬-650-1107-100-100	4651	641.82	0.62	395.75
	14	10	200	25x2	150-⑭-13500-150	13800	690.00	0.62	425.47
APPROACH SLAB	15	12	150	91x4	100-⑮-2900-100	3100	1128.4	0.89	1001.94
	16	10	150	22x4	100-⑯-13500-100	13700	1205.6	0.62	743.39

TOTAL = 7686.75 kg  
5% WASTAGE = 384.34 kg  
TOTAL = 8071.09 kg  
SAY = 8100 kg

**NOTES**

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.

0	For Approval					
Rev.	Description	Date	Drw.	Pre.	Chk.	App.

**CLIENT**  
KARNATAKA NEERAVARI NIGAM LIMITED  
(A GOVT. OF KARNATAKA UNDERTAKING)  
BANGALORE - 560 001

**CONSULTANT**  
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**PROJECT TITLE**  
MODERNISATION OF VIJAYANAGARA CHANNELS  
IN TUNGABHADRA PROJECT

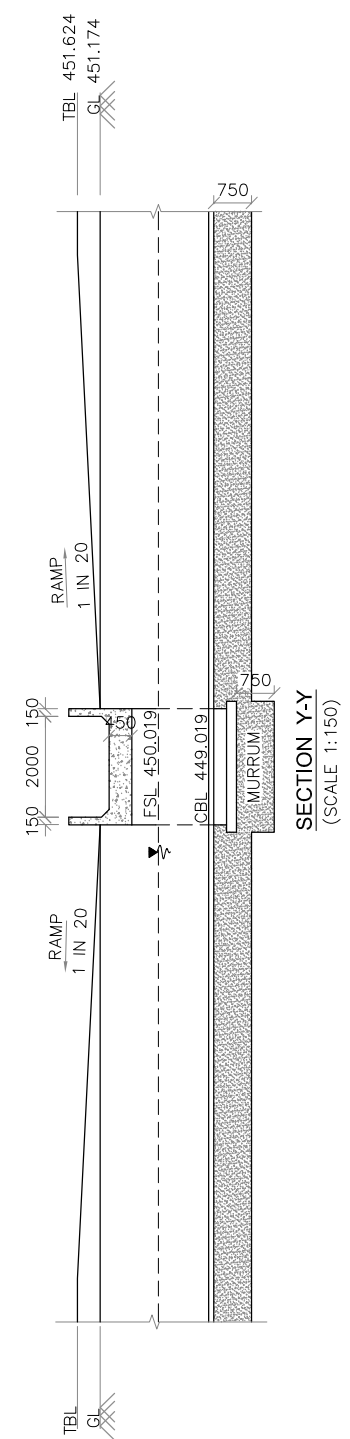
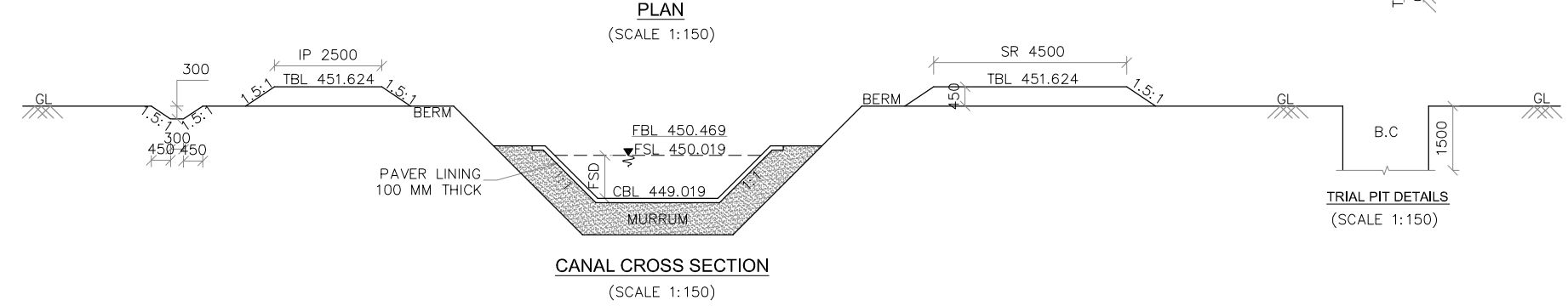
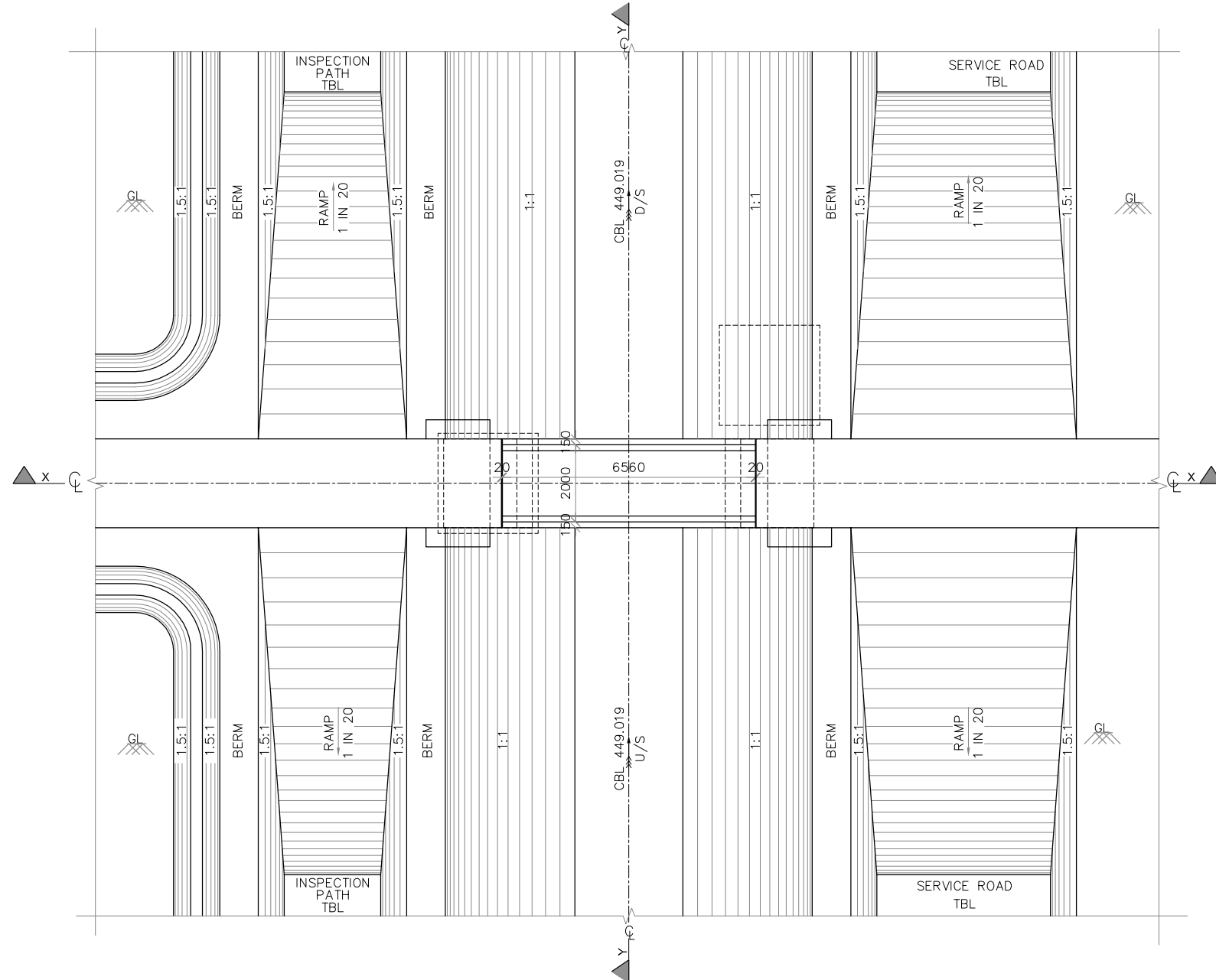
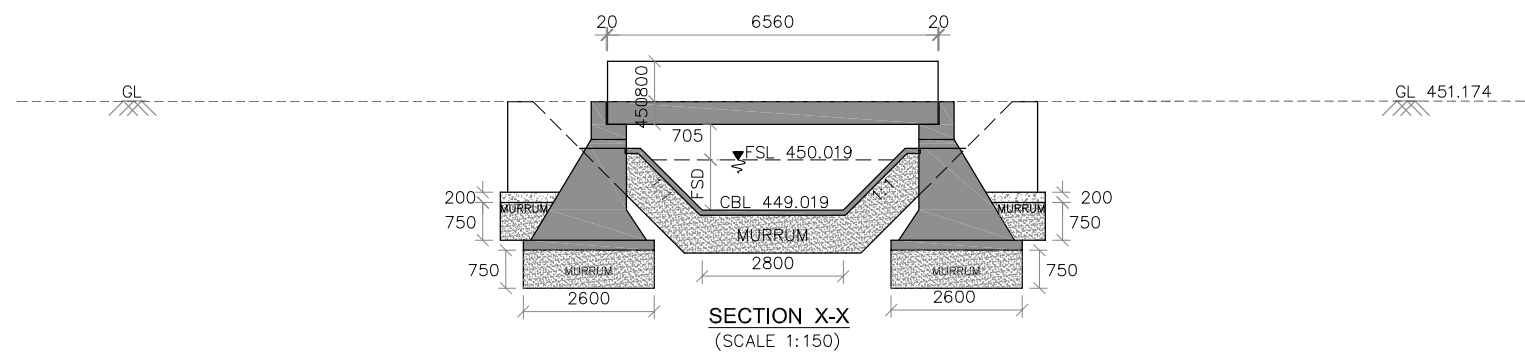
**DRAWING TITLE**  
DRAWING FOR THE CONSTRUCTION OF MAJOR ROAD  
BRIDGE AT CH:8+196km FOR RAYA CHANNEL

Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status
.	.	.	.	.	AS SHOWN	FOR APPROVAL

Project No.	Drawing No.	Sheet No.	Rev.
.	KNNL-VNC-RC-STR-MRB-000	03 of 03	0

Consultant E I Technologies Pvt. Ltd. Bangalore	Asst. Executive Engineer VNC Sub-Division Kamalahalli	Executive Engineer TR Division No.1 Munirabad

Superintending Engineer Tungabhadra Project Circle Munirabad	Chief Engineer Irrigation Central Zone Munirabad



**NOTES AND SPECIFICATIONS**

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
- 3) THE BRIDGE IS DESIGNED ADOPTING THE FOLLOWING IRC AND IS CODES.  
 IRC-5-1998.  
 IRC-6-2000.  
 IRC-21-2000.  
 IRC-78-2000.  
 IRC-83-2000.  
 IS 456-2000.
- 4) GRADE OF CONCRETE : CONFORMING TO IS 456-2000  
 (i) LEVELLING COURSE IN FOUNDATION - CC M10 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.  
 (ii) RETAIN WALLS, WING WALLS, ABUTMENT AND APPROACH SLAB - CC M15 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.  
 (iii) ABUTMENT CAP, DIRT WALL, PIER, PIER RAFT, DECK SLAB SIDE WALL, HAND RAILS, KERBS AND WEARING COAT - RCC M20 WITH 20mm AND DOWN SIZE COARSE AGGREGATE.
- 5) BACK FILLING SHALL BE DONE SIMULTANEOUSLY WITH THE RAISING OF THE STRUCTURE WITH  $\phi$  VALUE OF SOIL NOT LESS THAN 28°.
- 6) ALL REINFORCEMENT SHALL BE OF HIGH YIELD STRENGTH DE FORMED BARS (GRADE DESIGNATION Fe415).
- 7) SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- 8) FILLING BEHIND ABUTMENTS AND RETURNS SHALL BE AS PER RELEVANT IRC SPECIFICATIONS.

0	For Approval				
Rev.	Description	Date	Drw.	Pre.	Chk.

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 BANGALORE - 560 001

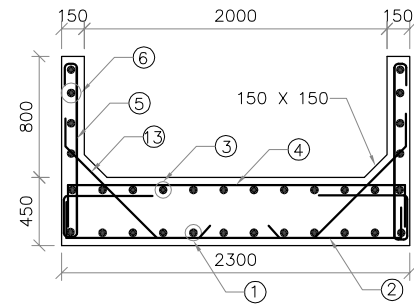
**CONSULTANT**  
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**PROJECT TITLE**  
**MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT**

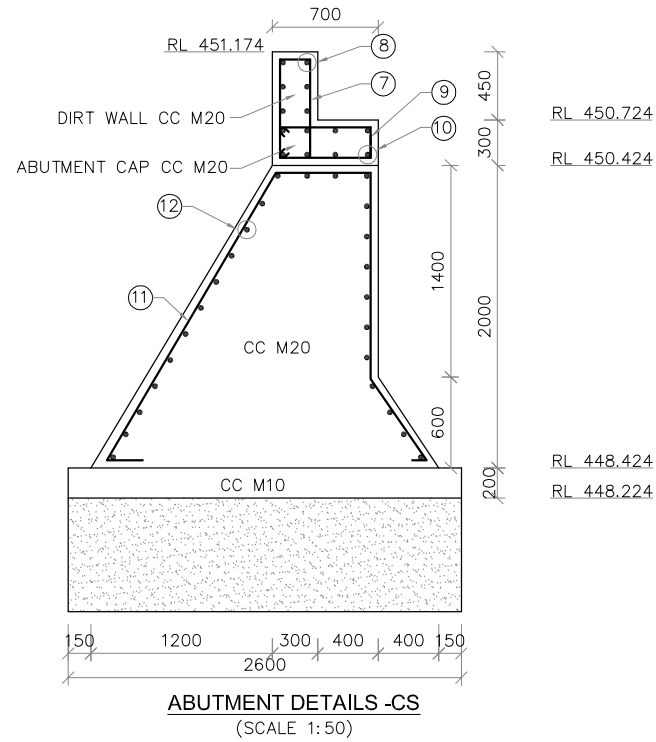
**DRAWING TITLE**  
**CONSTRUCTION OF FOOT BRIDGE AT CH: 0+144 FOR KALAGHATTA CANAL**

Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.		Sheet No.		Rev.	
	KNNL-VNC-KC-STR-FB-007		01 of 02		0	

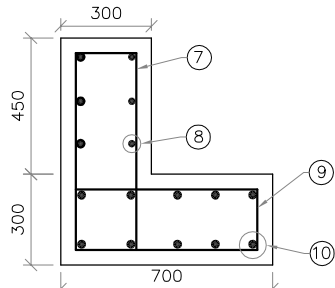
 Consultant E I Technologies Pvt. Ltd. Bangalore	 Asst. Executive Engineer VNC Sub-Division Kamalapur	 Executive Engineer TR Division No.1 Munirabad
 Superintending Engineer Tungabhadra Project Circle Munirabad	 Chief Engineer Irrigation Central Zone Munirabad	



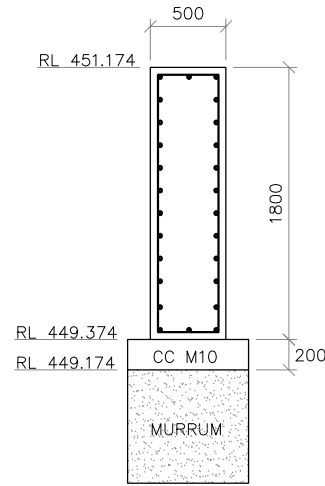
**REINFORCEMENT DETAILS OF DECK SLAB**  
(SCALE 1:50)



**ABUTMENT DETAILS -CS**  
(SCALE 1:50)



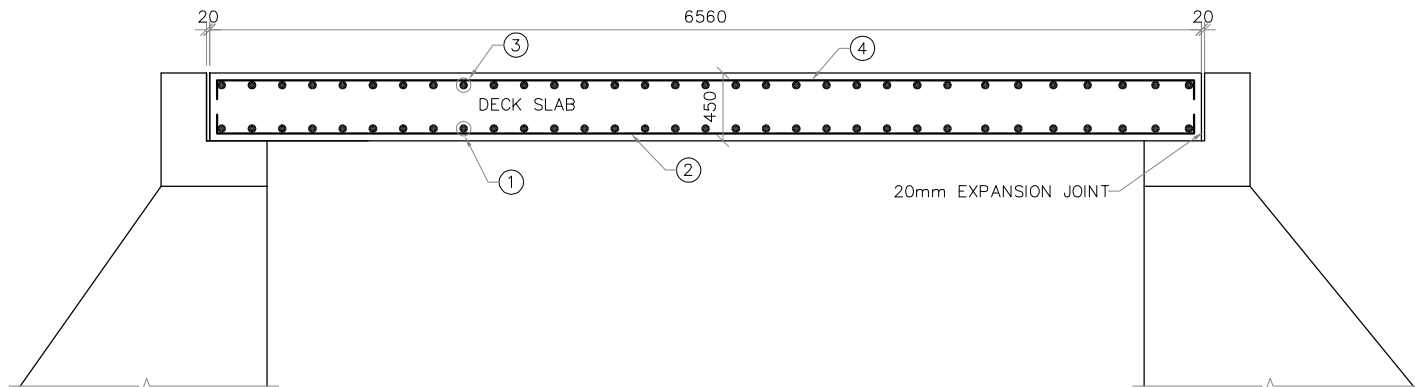
**DIRT WALL & ABUTMENT CAP**  
(SCALE 1:25)



**SECTION OF FIN WALL**  
(SCALE 1:50)

**SCHEDULE OF REINFORCEMENT**

MEMBER	BAR MARK	DIA OF BAR (mm)	SPACING OF BAR (mm)	NO. OF BAR	SHAPE OF BARS (DIMENSION ARE IN MM) (NOT TO SCALE)	LENGTH OF EACH BAR (mm)	TOTAL LENGTH IN METRES	UNIT WEIGHT IN Kg/m	TOTAL WEIGHT IN Kg	
SLAB	1	16	140	17	6460	6460	109.820	1.58	173.515	
	2	10	250	27	2200	2400	64.8	0.62	40.17	
	3	16	140	17	6460	6460	109.820	1.58	173.515	
	4	10	250	28	2200	2400	64.8	0.62	40.17	
SIDE WALLS	5	10	200	34X2	100, 100, 800, 100, 400, 350, 100	2300	156.4	0.62	96.968	
	6	10	200	7X2	6460	6460	90.44	0.62	56.07	
DIRT WALL	7	10	200	10X2	200, 659	1700	34	0.62	21.08	
	8	10	200	9X2	2200	2200	39.6	0.62	24.552	
ABUTMENT CAP	9	10	200	13X2	600, 200, 600	1600	41.6	0.62	25.8	
	10	10	200	9X2	2200	2200	39.6	0.62	24.552	
ABUTMENT	11	10	200	13X2	600, 1400, 671, 100, 100	5104	132.704	0.62	82.27	
	12	10	200	27X2	2200	2200	118.80	0.62	73.65	
HAUNCH	13	10	200	34X2	100, 150, 585	815	55.42	0.62	34.36	
FIN WALL	14	10	200	7	400, 1700, 400	4200	29.4	0.62	18.23	
	15	10	200	22	1060	1060	23.32	0.62	14.45	
							TOTAL=899.35 Kg			
							5% WASTAGE=44.96			
							GRAND TOTAL=945 Kg			



**REINFORCEMENT DETAILS OF DECK SLAB**  
(SCALE 1:50)

**NOTES**

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.

0	For Approval					
Rev.	Description	Date	Drw.	Pre.	Chk.	App.

**CLIENT**  
KARNATAKA NEERAVARI NIGAM LIMITED  
(A GOVT. OF KARNATAKA UNDERTAKING)  
BANGALORE - 560 001

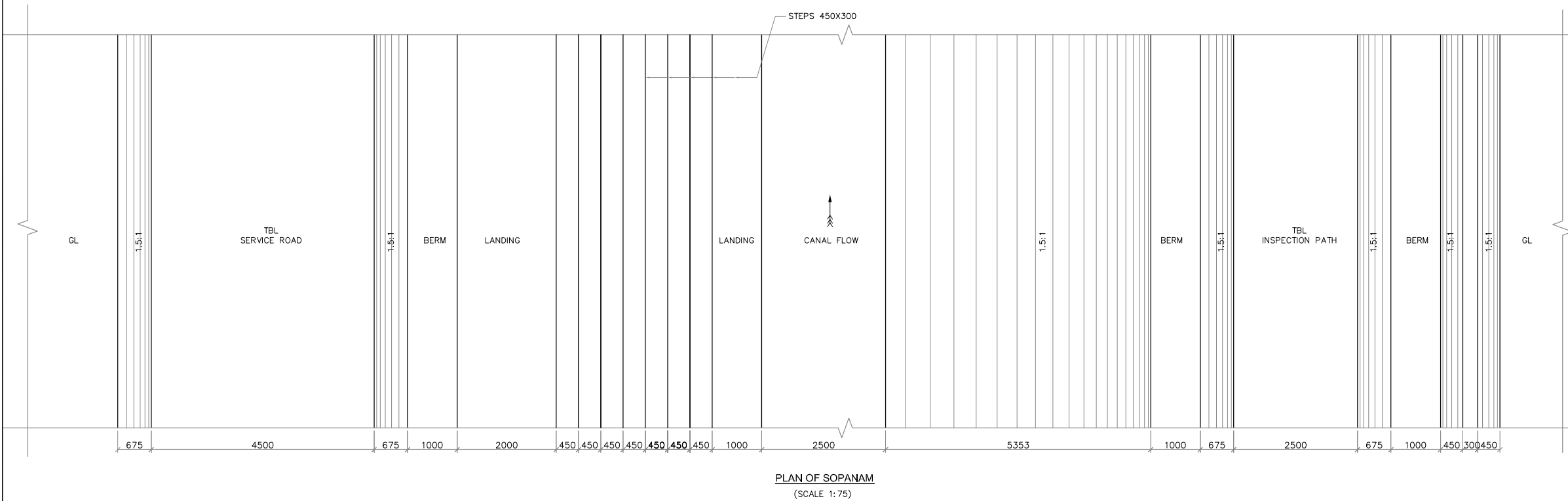
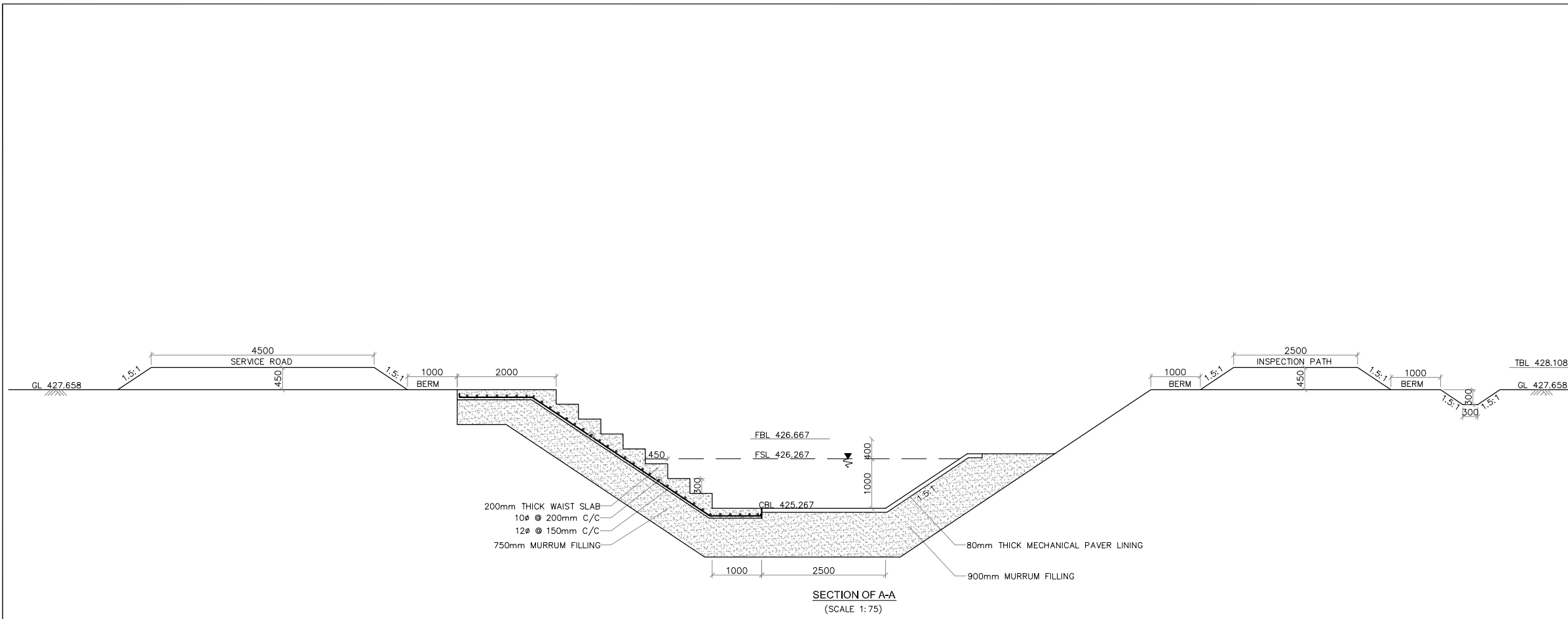
**CONSULTANT**  
E I Technologies Pvt. Ltd.,  
(ISO 9001 : 2008 Certified)  
# 1149, 26th Main, Jayanagar 4th 'T' Block,  
Bengaluru-560 041, India.  
Ph. +91.80.40914714, Fax: +91.80.26650912  
info@eitech.in, www.eitech.in

**PROJECT TITLE**  
**MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT**

**DRAWING TITLE**  
**CONSTRUCTION OF FOOT BRIDGE AT CH: 0+144 FOR KALAGHATTA CANAL**

Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status
.	.	.	.	.	AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.	Rev.			
.	KNNL-VNC-KC-STR-FB-007	02 of 02	0			

 Consultant E I Technologies Pvt. Ltd. Bangalore	 Asst. Executive Engineer VNC Sub-Division Kamalgapur	 Executive Engineer TR Division No.1 Munirabad
 Superintending Engineer Tungabhadra Project Circle Munirabad	 Chief Engineer Irrigation Central Zone Munirabad	



**NOTES**  
 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.  
 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.

0	For Approval					
Rev.	Description	Date	Drw.	Pre.	Chk.	App.

**CLIENT**  
 KARNATAKA NEERAVARI NIGAM LIMITED  
 (A GOVT. OF KARNATAKA UNDERTAKING)  
 BANGALORE - 560 001

**CONSULTANT**  
 E I Technologies Pvt. Ltd.,  
 (ISO 9001 : 2008 Certified)  
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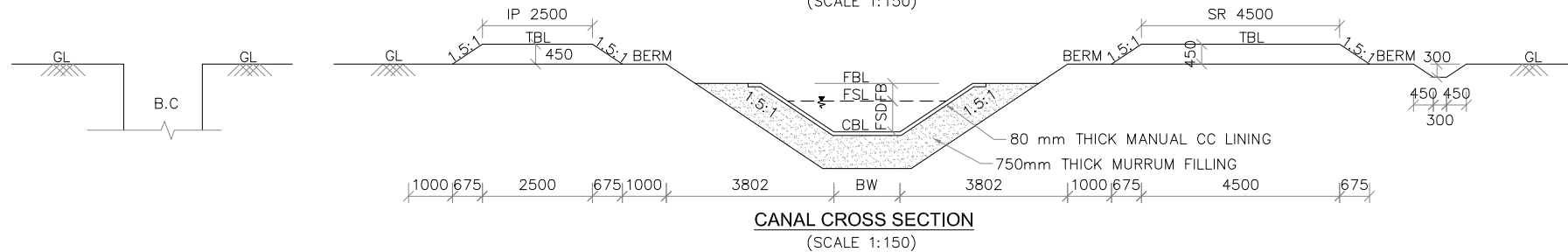
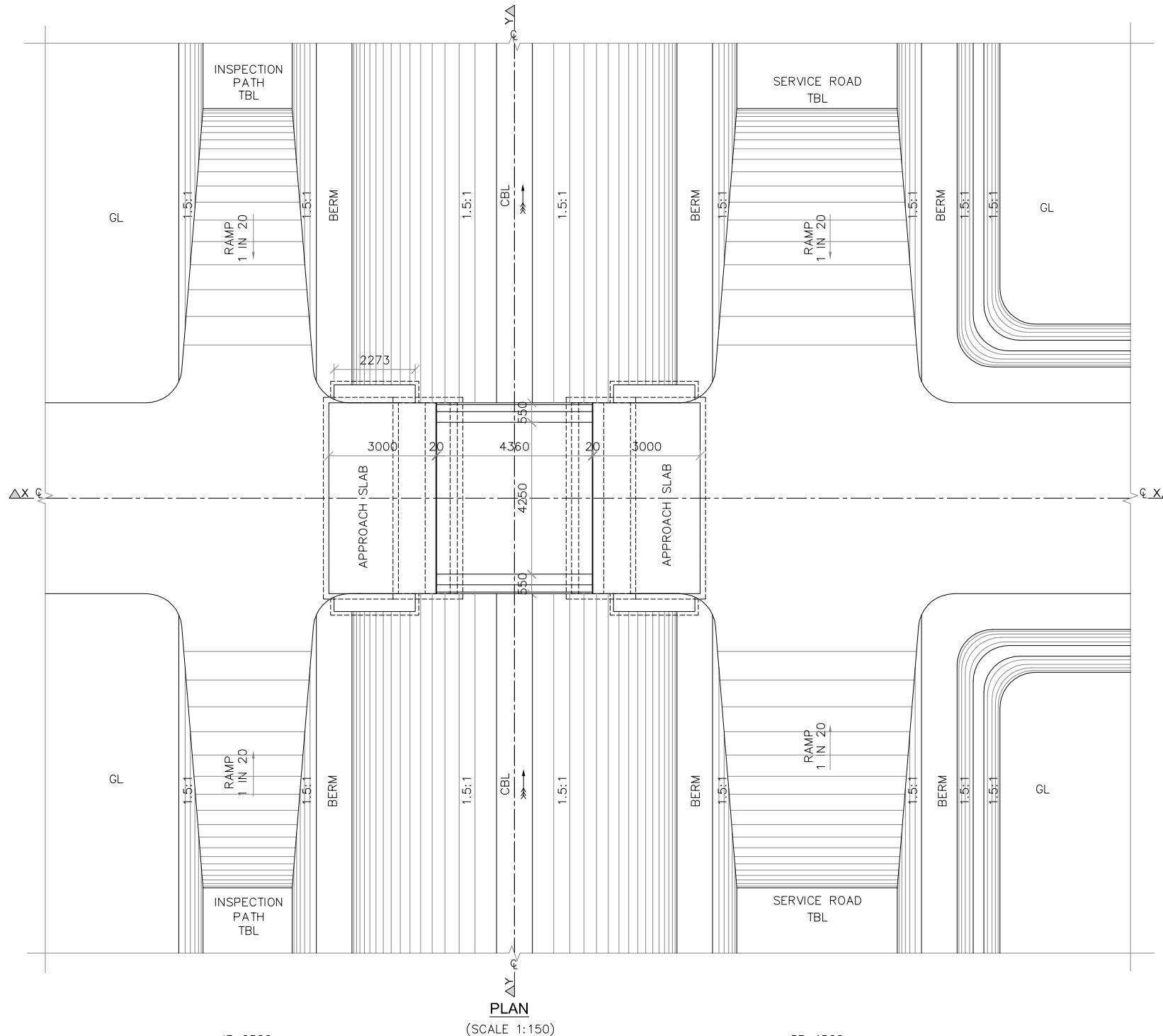
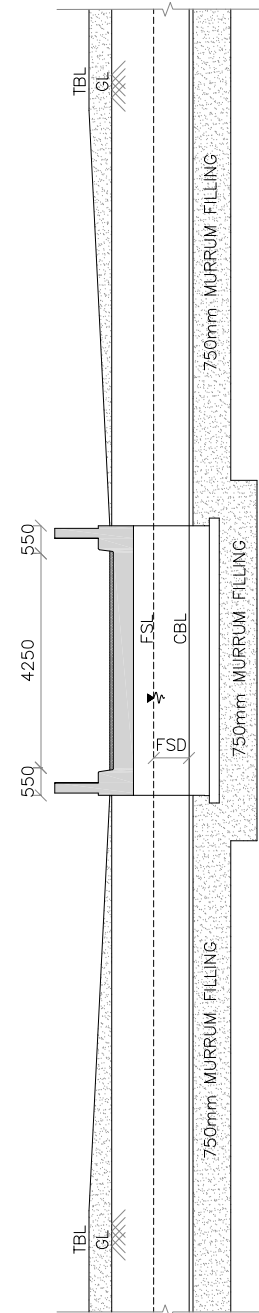
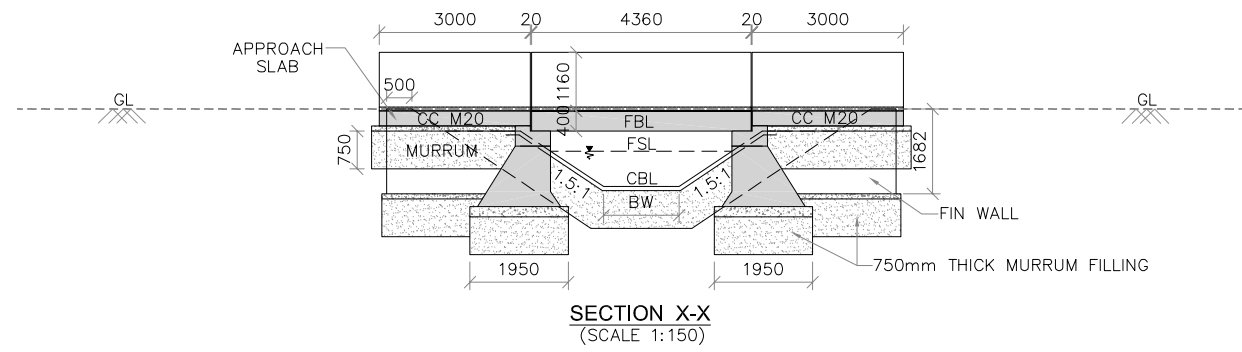
**PROJECT TITLE**  
 MODERNISATION OF VIJAYANAGARA CHANNELS  
 IN TUNGABHADRA PROJECT

**DRAWING TITLE**  
 Construction of Sopanam at CH: 4+810 of Ramsagar Channel

Date	Drw.	Pre.	Chk.	App.	Scale	Drawing Status
.	.	.	.	.	AS SHOWN	FOR APPROVAL
Project No.	Drawing No.		Sheet No.		Rev.	
.	KNNL-VNC-TC-STR-SPM-005		01 of 01		0	

 Consultant E I Technologies Pvt. Ltd. Bangalore	 Asst. Executive Engineer VNC Sub-Division Kamalapur	 Executive Engineer TR Division No.1 Muribad
 Superintending Engineer Tungabhadra Project Circle Muribad	 Chief Engineer Irrigation Central Zone Muribad	





**NOTES AND SPECIFICATIONS**

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
- 3) GRADE OF CONCRETE : CONFORMING TO IS 456-2000
  - (i) LEVELLING COURSE IN FOUNDATION - CC M10 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.
  - (ii) RETAIN WALLS, WING WALLS, ABUTMENT AND APPROACH SLAB - CC M15 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.
  - (iii) ABUTMENT CAP, DIRT WALL, PIER, PIER RAFT, DECK SLAB SIDE WALL, HAND RAILS, KERBS AND WEARING COAT - RCC M20 WITH 20mm AND DOWN SIZE COARSE AGGREGATE.
- 4) BACK FILLING SHALL BE DONE SIMULTANEOUSLY WITH THE RAISING OF THE STRUCTURE WITH  $\phi$  VALUE OF SOIL NOT LESS THAN 28°.
- 5) ALL REINFORCEMENT SHALL BE OF HIGH YIELD STRENGTH DE FORMED BARS (GRADE DESIGNATION Fe415).
- 6) SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- 7) FILLING BEHIND ABUTMENTS AND RETURNS SHALL BE AS PER RELEVANT IRC SPECIFICATIONS.

STRUCTURE DETAILS		
Sl.No.	CHAINAGE	11840.00m
1	Bed Width (BW)	1.50m
2	Full Supply Depth (FSD)	0.70m
3	Side Slope (H:V)	1.5:1
4	Free Board Level (FBL)	0.40m
5	Service Road (SR)	4500mm
6	Inspection Path (IP)	2500mm

0	For Approval					
Rev.	Description	Date	Drw.	Pre.	Chk.	App.

**CLIENT**  
**KARNATAKA NEERAVARI NIGAM LIMITED**  
 (A GOVT. OF KARNATAKA UNDERTAKING)  
 BANGALORE - 560 001

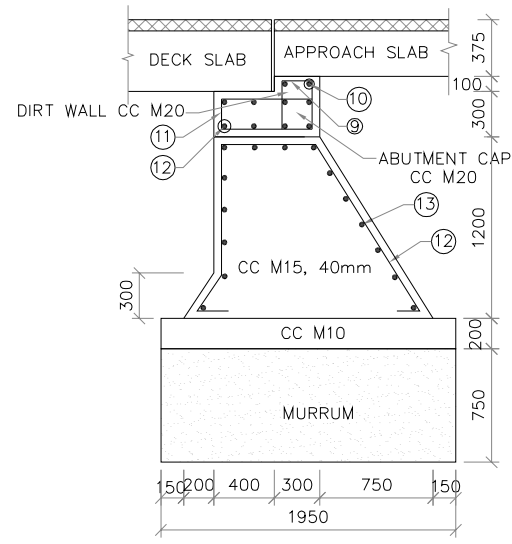
**CONSULTANT**  
**E I Technologies Pvt. Ltd.,**  
 (ISO 9001 : 2008 Certified)  
 # 1149, 26th Main, Jayanagar 4th 'T' Block,  
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**PROJECT TITLE**  
**MODERNISATION OF VIJAYANAGARA CHANNELS**  
**IN TUNGABHADRA PROJECT**

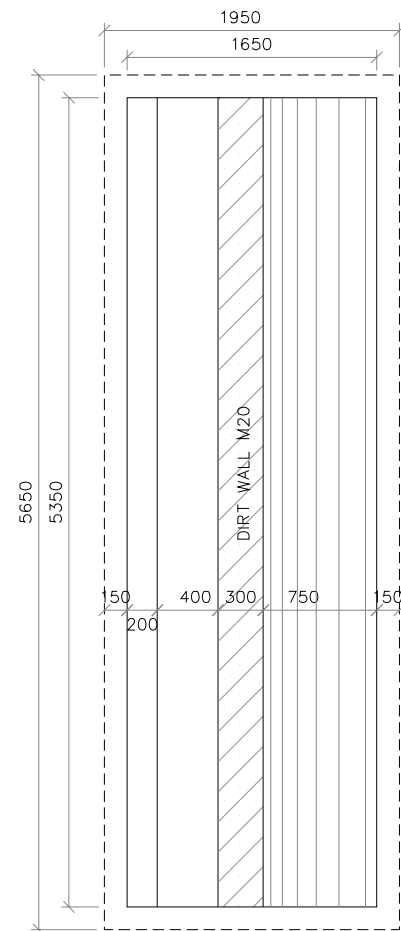
**DRAWING TITLE**  
**TYPICAL DRAWING FOR THE CONSTRUCTION OF**  
**CART TRACK CROSSING FOR ANEGUNDI CHANNEL**

Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.	Rev.			
	KNNL-VNC-AC-TYP-STR-CTC-009	01 of 03	0			

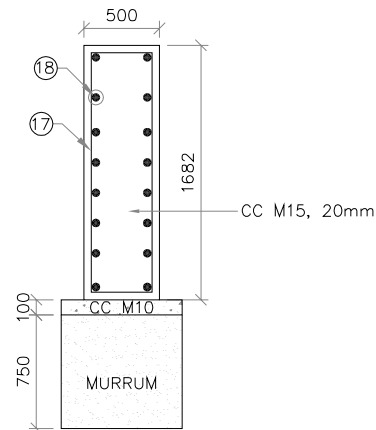
 Consultant E I Technologies Pvt. Ltd. Bangalore	 Asst. Executive Engineer VNC Sub-Division Kamalapur	 Executive Engineer TR Division No.1 Munirabad
 Superintending Engineer Tungabhadra Project Circle Munirabad	 Chief Engineer Irrigation Central Zone Munirabad	



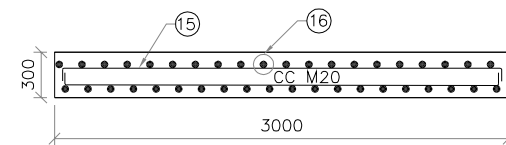
**ABUTMENT DETAILS  
U/S & D/S  
(SCALE 1:50)**



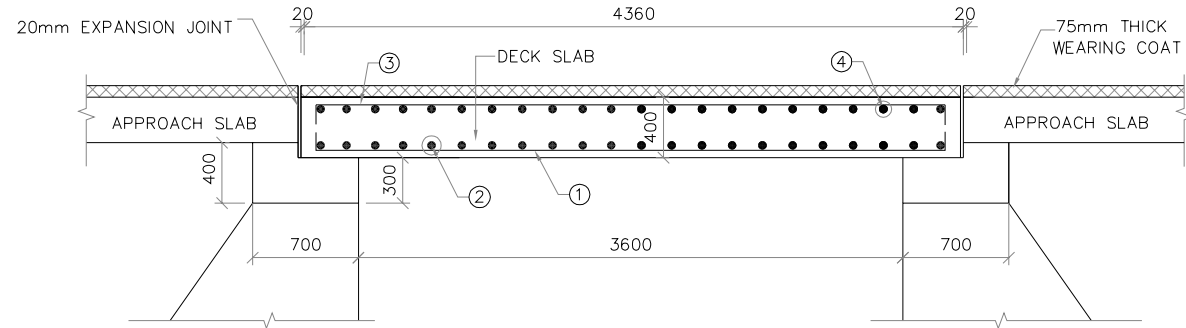
**PLAN OF ABUTMENT  
(SCALE 1:50)**



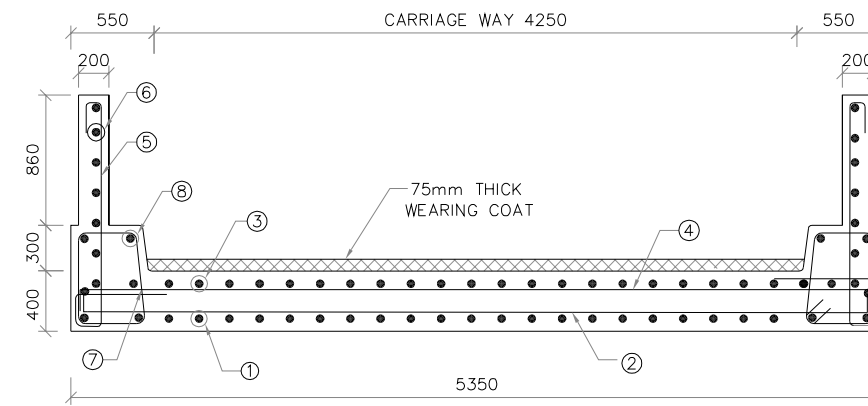
**SECTION OF FIN WALL  
(SCALE 1:50)**



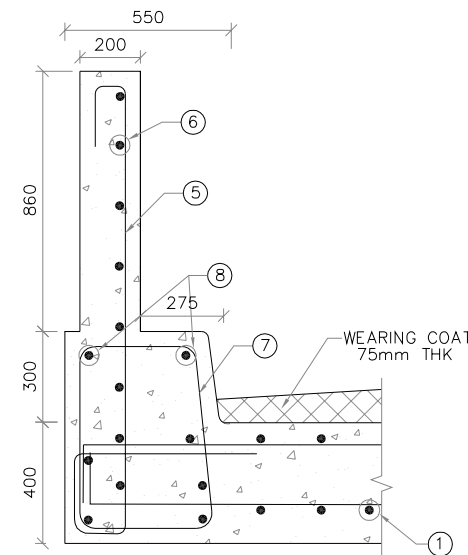
**REINFORCEMENT DETAILS  
OF APPROACH SLAB  
(SCALE 1:50)**



**REINFORCEMENT DETAILS OF DECK SLAB  
(SCALE 1:50)**



**REINFORCEMENT DETAILS OF DECK SLAB  
(SCALE 1:50)**



**REINFORCEMENT DETAILS OF SIDE WALL  
(SCALE 1:25)**

**NOTES**

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.

0	For Approval					
Rev.	Description	Date	Drw.	Pre.	Chk.	App.

**CLIENT**  
KARNATAKA NEERAVARI NIGAM LIMITED  
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BANGALORE - 560 001

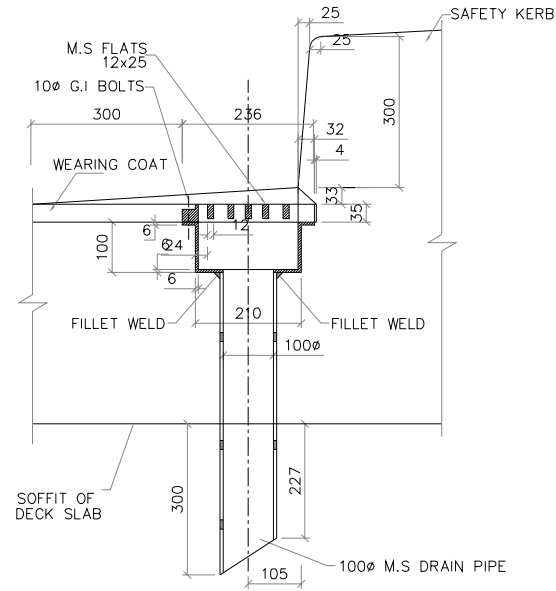
**CONSULTANT**  
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info@eitech.in • www.eitech.in

**PROJECT TITLE**  
**MODERNISATION OF VIJAYANAGARA CHANNELS  
IN TUNGABHADRA PROJECT**

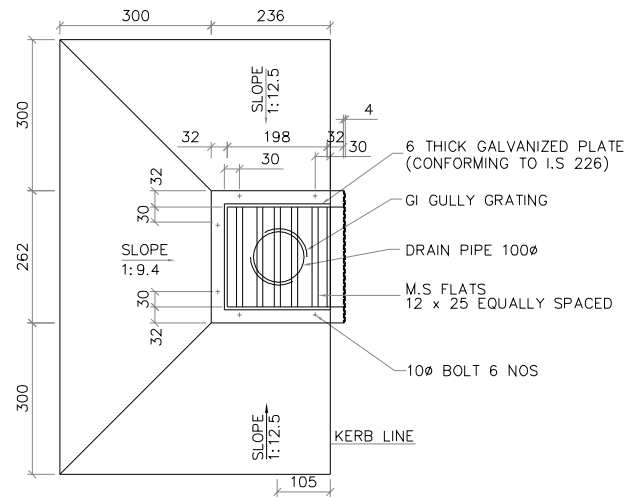
**DRAWING TITLE**  
**TYPICAL DRAWING FOR THE CONSTRUCTION OF  
CART TRACK CROSSING FOR ANEGUNDI CHANNEL**

Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.	Rev.			
	KNNL-VNC-AC-TYP-STR-CTC-009	02 of 03	0			

 Consultant E I Technologies Pvt. Ltd. Bangalore	 Asst. Executive Engineer VNC Sub-Division Kamalahalli	 Executive Engineer TR Division No.1 Munirabad
 Superintending Engineer Tungabhadra Project Circle Munirabad	 Chief Engineer Irrigation Central Zone Munirabad	



**SECTION OF DRAINAGE SPOUT AND COLLECTION PIT**  
(SCALE 1:15)



**PLAN DETAILS OF DRAINAGE SPOUT AND COLLECTION PIT**  
(SCALE 1:15)

#ONE WATER SPOUT PER 20SQ.M.  
OF DECK AREA IS CONSIDERED ADEQUATE

**SCHEDULE OF REINFORCEMENT**

MEMBER	BAR MARK	DIA OF BAR (mm)	SPACING OF BAR (mm)	NO.OF BAR	SHAPE OF BARS (DIMENSION ARE IN MM) (NOT TO SCALE)	LENGTH OF EACH BAR (mm)	TOTAL LENGTH IN METRES	UNIT WEIGHT IN Kg/m	TOTAL WEIGHT IN Kg
SLAB	1	16	150	36	①	4260	167.76	1.58	265.06
	2	10	200	23	②	5250	129.95	0.62	80.569
	3	16	150	36	③	4260	153.36	1.58	242.3
	4	10	200	23	④	5250	120.75	0.62	74.865
SIDE WALLS	5	10	200	23X2	⑤	2460	56.58	0.62	35.079
	6	10	200	7X2	⑥	4150	58.1	0.62	36.02
KERB	7	10	200	23X2	⑦	2500	115	0.62	71.3
	8	10	-	4X2	⑧	4260	34.08	0.62	21.1296
DIRT WALL	9	10	200	28X2	⑨	1400	78.4	0.62	48.608
	10	10	200	2X2	⑩	5250	21.00	0.62	13.02
ABUTMENT CAP	11	10	200	28X2	⑪	2000	112	0.62	69.44
	12	10	200	9X2	⑫	5250	94.5	0.62	58.59
ABUTMENT	13	10	200	28X2	⑬	3577	200.31	0.62	124.2
	14	10	200	19X2	⑭	5250	199.50	0.62	123.69
APPROACH SLAB	15	12	150	36X4	⑮	3100	446.00	0.89	276.77
	16	10	150	21X4	⑯	5450	457.80	0.62	283.84
FIN WALL	17	10	200	13X4	⑰	3256	169.31	0.62	104.97
	18	10	200	18X4	⑱	2273	163.65	0.62	101.466

TOTAL = 2030.916 Kg  
5% WASTAGE = 101.5458 Kg  
TOTAL = 2132.46 Kg  
SAY = 2135 Kg

**NOTES**

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING.WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.

0	For Approval					
Rev.	Description.	Date.	Drw.	Pre.	Chk.	App.

**CLIENT**  
KARNATAKA NEERAVARI NIGAM LIMITED  
(A GOVT. OF KARNATAKA UNDERTAKING)  
BANGALORE - 560 001

**CONSULTANT**  
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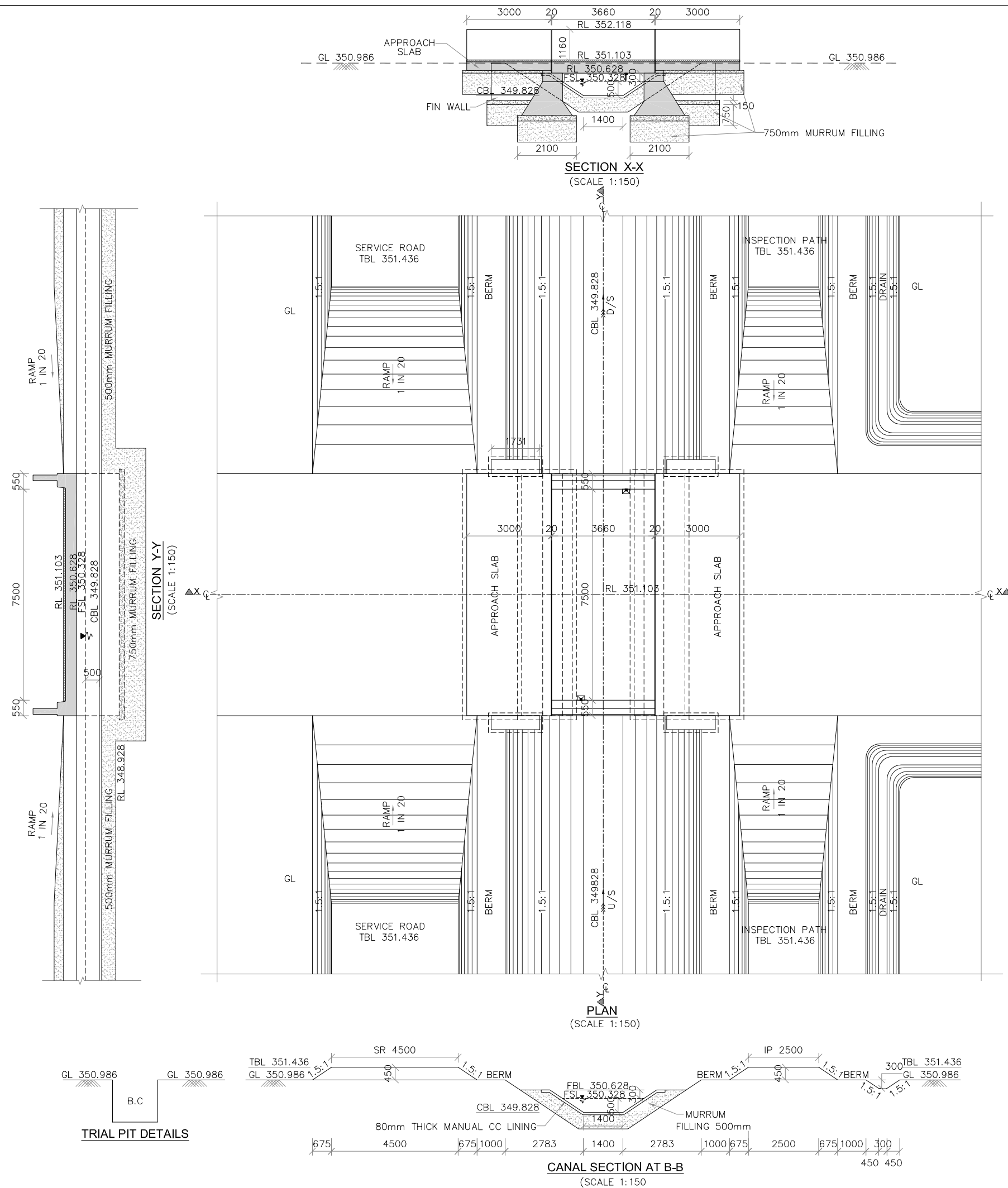
**PROJECT TITLE**  
MODERNISATION OF VIJAYANAGARA CHANNELS  
IN TUNGABHADRA PROJECT

**DRAWING TITLE**  
TYPICAL DRAWING FOR THE CONSTRUCTION OF  
CART TRACK CROSSING FOR ANEGUNDI CHANNEL

Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
					AS SHOWN	FOR APPROVAL

Project No.	Drawing No.	Sheet No.	Rev.
KNNL-VNC-AC-TYP-STR-CTC-009		03 of 03	0

 Consultant E I Technologies Pvt. Ltd. Bangalore	 Asst. Executive Engineer VNC Sub-Division Kamalahpur	 Executive Engineer TR Division No.1 Munirabad
 Superintending Engineer Tungabhadra Project Circle Munirabad	 Chief Engineer Irrigation Central Zone Munirabad	

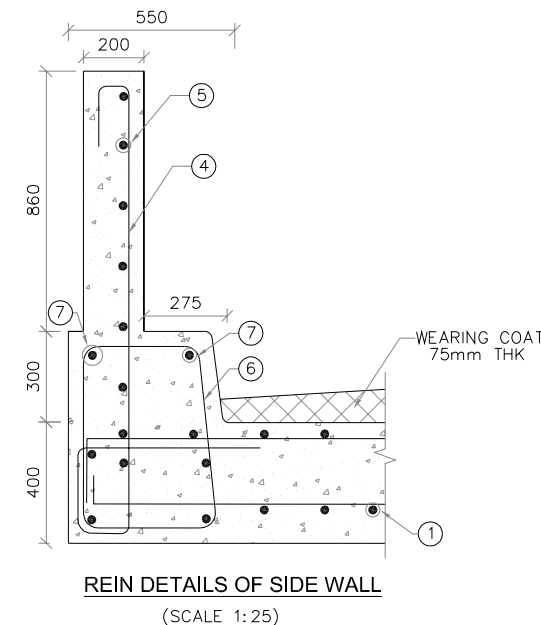
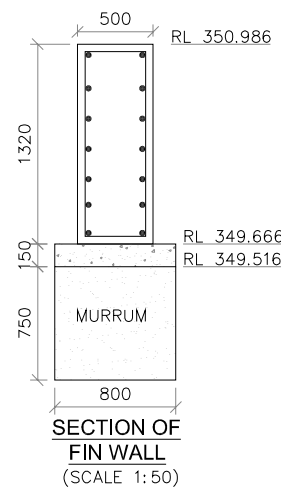
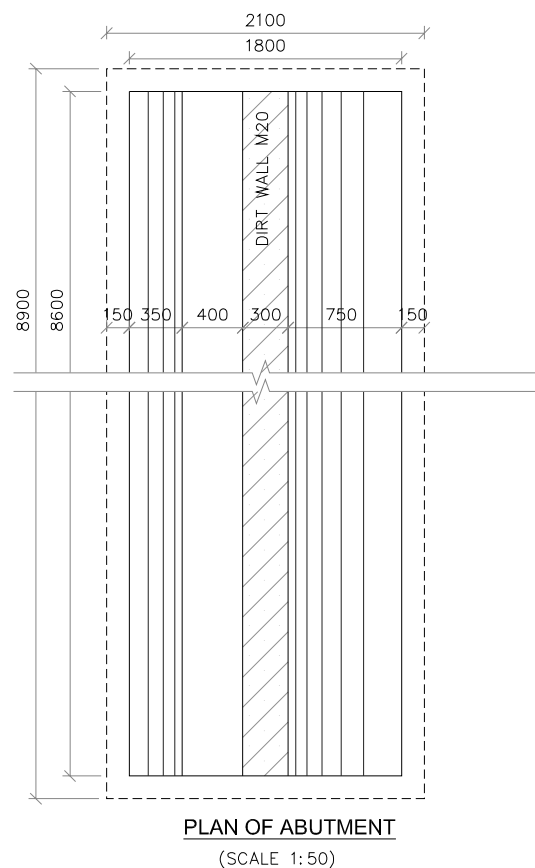
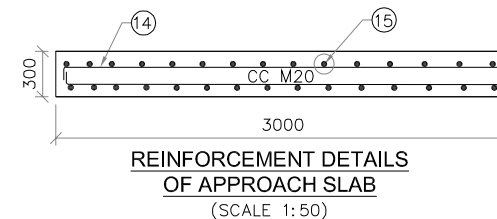
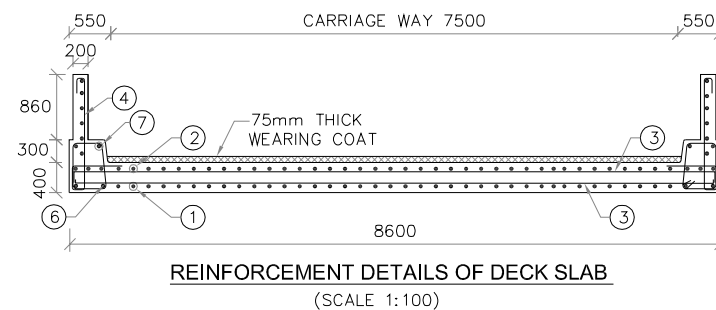
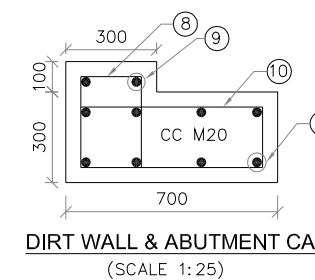
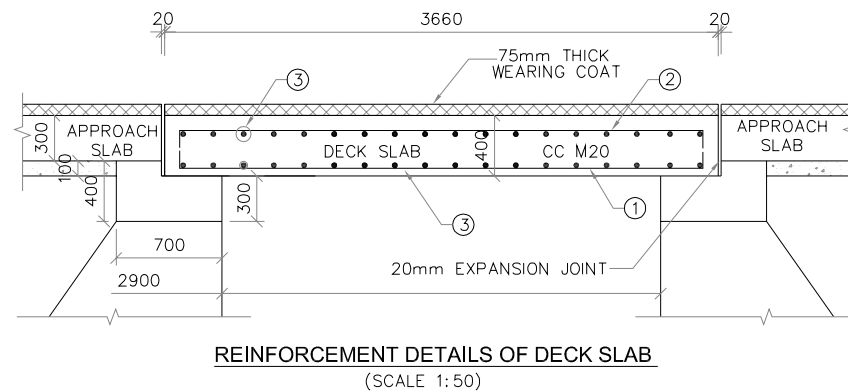
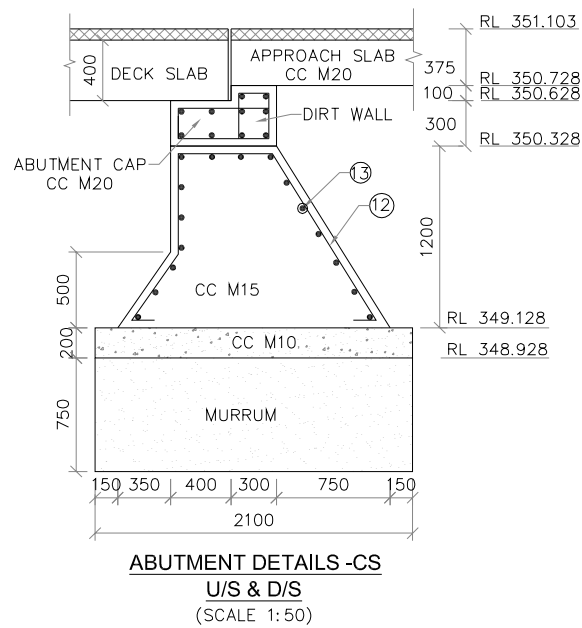


**NOTES**

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
- 3) THE BRIDGE IS DESIGNED ADOPTING THE FOLLOWING IRC AND IS CODES.  
IRC-5-1998.  
IRC-6-2000.  
IRC-21-2000.  
IRC-78-2000  
IS 456-2000.
- 4) GRADE OF CONCRETE : CONFORMING TO IS 456-2000  
(i) LEVELLING COURSE IN FOUNDATION - CC M10 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.  
(ii) ABUTMENT CC M15 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.  
(iii) ABUTMENT CAP, DIRT WALL, DECK SLAB, APPROACH SLAB, DRAIN SLAB, SIDE WALL, KERB AND WEARING COAT - CC M20 WITH 20mm AND DOWN SIZE COARSE AGGREGATE.
- 5) BACK FILLING SHALL BE DONE SIMULTANEOUSLY WITH THE RAISING OF THE STRUCTURE WITH  $\phi$  VALUE OF SOIL NOT LESS THAN 28'.
- 6) ALL REINFORCEMENT SHALL BE OF HIGH YIELD STRENGTH DE FORMED BARS (GRADE DESIGNATION Fe415 ).
- 7) SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- 8) FILLING BEHIND ABUTMENT SHALL BE AS PER RELEVANT IRC SPECIFICATIONS.
- 9) ADDITIONAL REINFORCEMENT FOR SKEW ARE PROVIDED AS PER MOST FOR DECK SLAB.

0	For Approval					
Rev.	Description.	Date.	Drw.	Pre.	Chk.	App.
<p><b>CLIENT</b> KARNATAKA NEERAVARI NIGAM LIMITED (A GOVT. OF KARNATAKA UNDERTAKING) BANGALORE - 560 001</p> <p><b>CONSULTANT</b> E I Technologies Pvt. Ltd., (ISO 9001 : 2008 Certified) # 1149, 26th Main, Jayanagar 4th 'T' Block, Bengaluru-560 041, India. Ph. +91.80.40914714, Fax: +91.80.26650912 info@eitech.in, www.eitech.in</p>						
<p><b>PROJECT TITLE</b> MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT</p>						
<p><b>DRAWING TITLE</b> CONSTRUCTION OF ROAD BRIDGE AT CH: 5+110 Km FOR DESHNUR CANAL</p>						
Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.		Rev.		
	KNNL-VNC-DC-STR-VRB-006	01 of 03		0		
<p><i>[Signature]</i> Consultant E I Technologies Pvt. Ltd. Bangalore</p>		<p><i>[Signature]</i> Asst. Executive Engineer VNC Sub-Division Karnalapur</p>		<p><i>[Signature]</i> Executive Engineer TR Division No.1 Munirabad</p>		
<p><i>[Signature]</i> Superintending Engineer Tungabhadra Project Circle Munirabad</p>				<p><i>[Signature]</i> Chief Engineer Irrigation Central Zone Munirabad</p>		

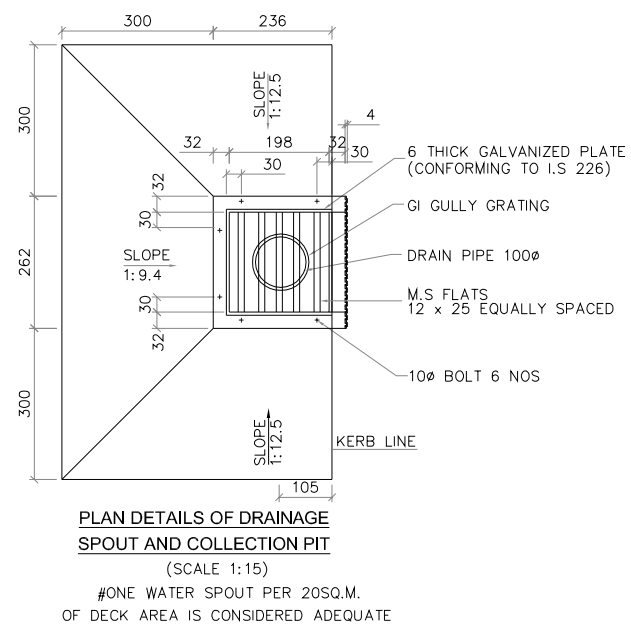
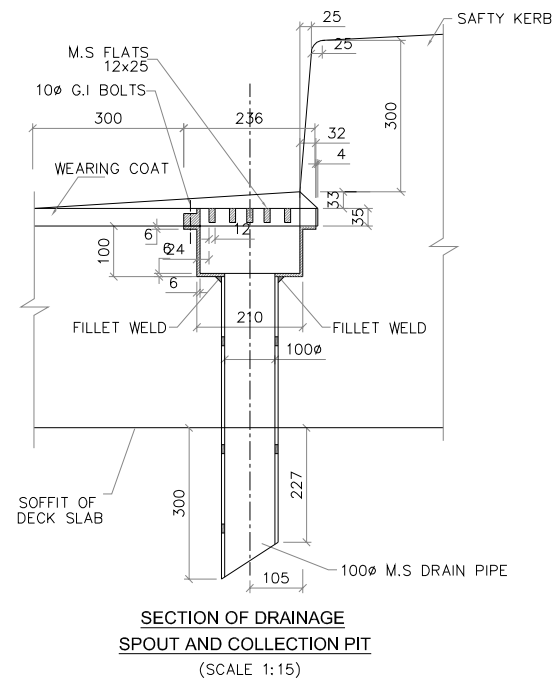
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CLIENT <b>KARNATAKA NEERAVARI NIGAM LIMITED</b> (A GOVT. OF KARNATAKA UNDERTAKING) BANGALORE - 560 001						
CONSULTANT <b>E I Technologies Pvt. Ltd.,</b> (ISO 9001 : 2008 Certified) # 1149, 26th Main, Jayanagar 4th 'T' Block, Bengaluru-560 041, India. Ph. +91.80.40914714, Fax: +91.80.26650912 info@eitech.in, www.eitech.in						
PROJECT TITLE <b>MODERNISATION OF VIJAYANAGARA CHANNELS          IN TUNGABHADRA PROJECT</b>						
DRAWING TITLE <b>CONSTRUCTION OF ROAD BRIDGE          AT CH: 5+110 Km FOR DESHNUR CANAL</b>						
Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.		Rev.		
	KNNL-VNC-DC-STR-VRB-006	02 of 03		0		
Consultant E I Technologies Pvt. Ltd. Bangalore		Asst. Executive Engineer VNC Sub-Division Kamalapur		Executive Engineer TR Division No.1 Muribad		
Superintending Engineer Tungabhadra Project Circle Muribad				Chief Engineer Irrigation Central Zone Muribad		

**NOTES**

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**SCHEDULE OF REINFORCEMENT**

MEMBER	BAR MARK	DIA OF BAR (mm)	SPACING OF BAR (mm)	NO. OF BAR	SHAPE OF BARS (DIMENSION ARE IN MM) (NOT TO SCALE)	LENGTH OF EACH BAR (mm)	TOTAL LENGTH IN METRES	UNIT WEIGHT IN Kg/m	TOTAL WEIGHT IN Kg
SLAB	1	16	150	58	200 — (1) — 200	3560	229.68	3.86	360.59
	2	16	150	58	200 — (2) — 200	3560	229.68	3.86	360.59
	3	12	150	25x2	— (3) —	8500	425.0	0.89	378.25
SIDE WALLS	4	10	200	19x2	100 — (4) — 100	1460	2110	0.62	49.71
	5	10	200	12x2	— (5) —	3560	85.44	0.62	52.97
KERB	6	10	200	19x2	400 — (6) — 400	560	2052	0.62	48.34
	7	10	200	9x2	— (7) —	3560	64.08	0.62	39.72
DIRT WALL	8	10	200	44x2	200 — (8) — 200	300	1000	0.62	54.56
	9	10	200	6x2	— (9) —	8500	102	0.62	63.24
ABUTMENT CAP	10	10	200	44x2	600 — (10) — 600	200	1400	0.62	76.384
	11	10	200	6x2	— (11) —	8500	102.00	0.62	63.24
ABUTMENT	12	10	200	44x2	600 — (12) — 600	800	3805	0.62	207.6
	13	10	200	21x2	— (13) —	8500	357	0.62	221.34
APPROACH SLAB	14	12	150	58x4	100 — (14) — 100	2900	3100	0.89	640.00
	15	10	150	21x4	— (15) —	8500	8500	0.62	442.68
FIN WALL	16	10	200	10x4	400 — (16) — 400	1200	3240	0.62	80.35
	17	10	200	18x4	— (17) —	1660	1660	0.62	74.1

TOTAL = 3213.66 Kg  
 ADD 5% WASTAGE = 160.883 Kg  
 TOTAL = 3374.34 Kg  
 SAY = 3375 Kg

0	For Approval					
Rev.	Description	Date	Drw.	Pre.	Chk.	App.

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**PROJECT TITLE**  
**MODERNISATION OF VIJAYANAGARA CHANNELS**  
**IN TUNGABHADRA PROJECT**

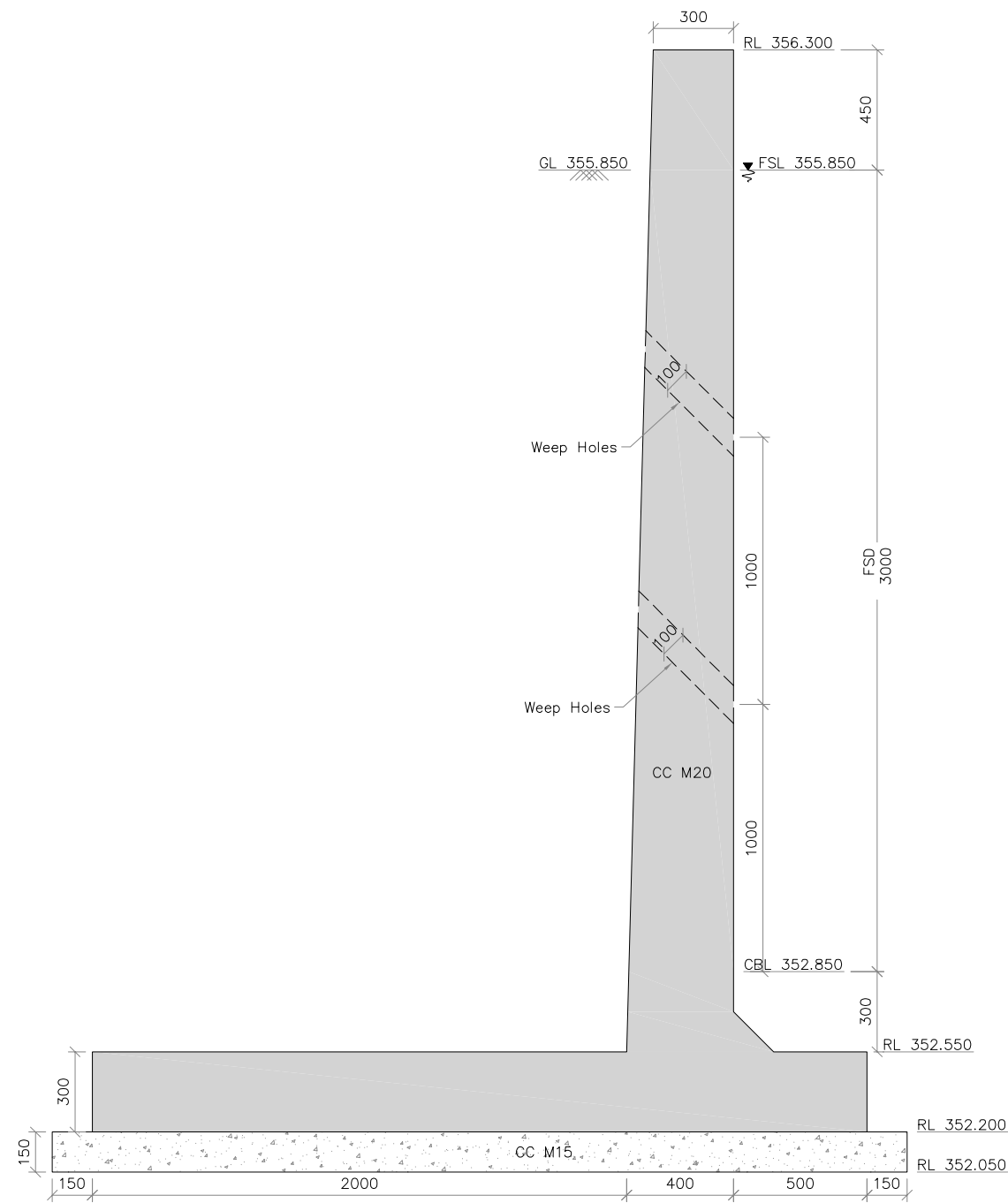
**DRAWING TITLE**  
**CONSTRUCTION OF ROAD BRIDGE**  
**AT CH: 5+110 Km FOR DESHNUR CANAL**

Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
					AS SHOWN	FOR APPROVAL

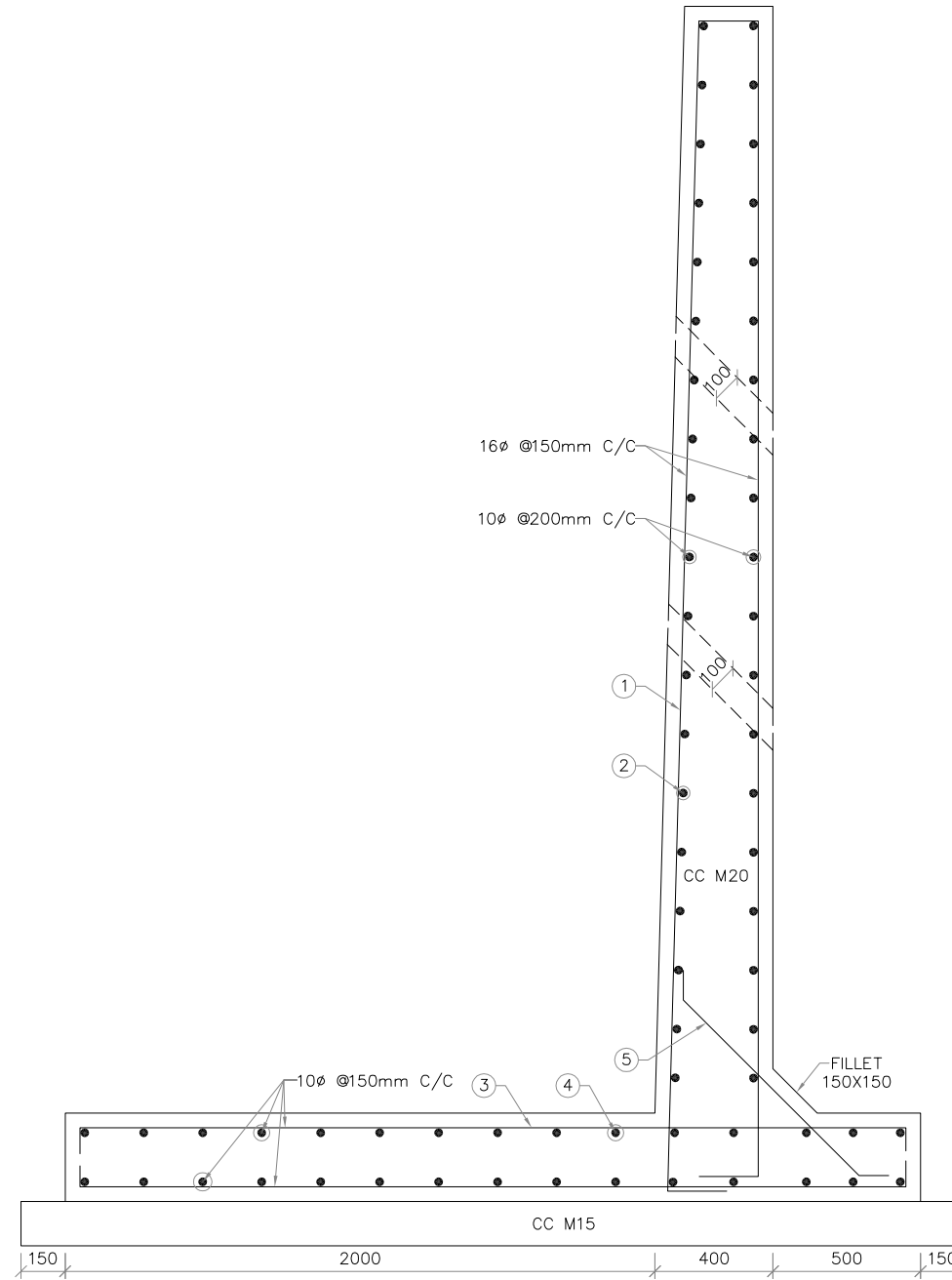
Project No.	Drawing No.	Sheet No.	Rev.
	KNNL-VNC-DC-STR-VRB-006	03 of 03	0

Consultant E I Technologies Pvt. Ltd. Bangalore	Asst. Executive Engineer VNC Sub-Division Kamalapur	Executive Engineer TR Division No.1 Munirabad

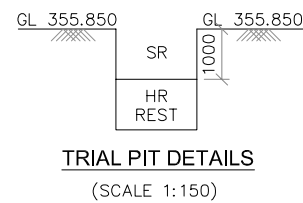
Superintending Engineer Tungabhadra Project Circle Munirabad	Chief Engineer Irrigation Central Zone Munirabad



SECTION OF RETAINING WALL  
(SCALE 1:25)



REINFORCEMENT DETAIL OF RETAINING WALL  
(SCALE 1:25)



TRIAL PIT DETAILS  
(SCALE 1:150)

SCHEDULE OF REINFORCEMENT

MEMBER	BAR MARK	DIA OF BAR (mm)	SPACING OF BAR (mm)	NO. OF BAR	SHAPE OF BARS (DIMENSION ARE IN MM) (NOT TO SCALE)	LENGTH OF EACH BAR (mm)	TOTAL LENGTH IN METRES	UNIT WEIGHT IN Kg/m	TOTAL WEIGHT IN Kg
RETAINING WALL	1	16	150	1001		8596	8604.596	1.58	13595.26
	2	10	200	44		150200	6608.8	0.62	4097.456
	3	10	150	2x1001		3000	6006	0.62	3723.72
	4	10	150	2x21		150200	6308.4	0.62	3911.21
	5	10	200	751		1250	938.75	0.62	582

TOTAL = 25909.646 Kg  
+5% WASTAGE = 1295.482 Kg  
TOTAL = 27205.13 Kg  
SAY = 27210 Kg

NOTES AND SPECIFICATIONS

- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
- 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
- 3) GRADE OF CONCRETE : CONFORMING TO IS 456-2000  
(i) LEVELLING COURSE IN FOUNDATION - CC M15 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.  
(ii) RETAINING WALL - RCC M20 WITH 20mm AND DOWN SIZE COARSE AGGREGATE.
- 4) BACK FILLING SHALL BE DONE SIMULTANEOUSLY WITH THE RAISING OF THE STRUCTURE WITH  $\phi$  VALUE OF SOIL NOT LESS THAN 28°.
- 5) ALL REINFORCEMENT SHALL BE OF HIGH YIELD STRENGTH DE FORMED BARS (GRADE DESIGNATION Fe415 ).
- 6) SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
- 7) FILLING BEHIND RETAINING WALL SHALL BE AS PER RELEVANT IRC SPECIFICATIONS.
- 8) EXPANSION JOINTS OF 20MM THICKNESS ARE TO BE PROVIDED AT INTERVALS OF 15M THROUGHOUT THE LENGTH.
- 9) WEEP HOLES ARE TO BE PROVIDED AT INTERVALS OF 3M HORIZONTALLY AND 1M VERTICALLY.

0	For Approval					
Rev.	Description.	Date.	Drw.	Pre.	Chk.	App.

CLIENT  
**KARNATAKA NEERAVARI NIGAM LIMITED**  
(A GOVT. OF KARNATAKA UNDERTAKING)  
BANGALORE - 560 001

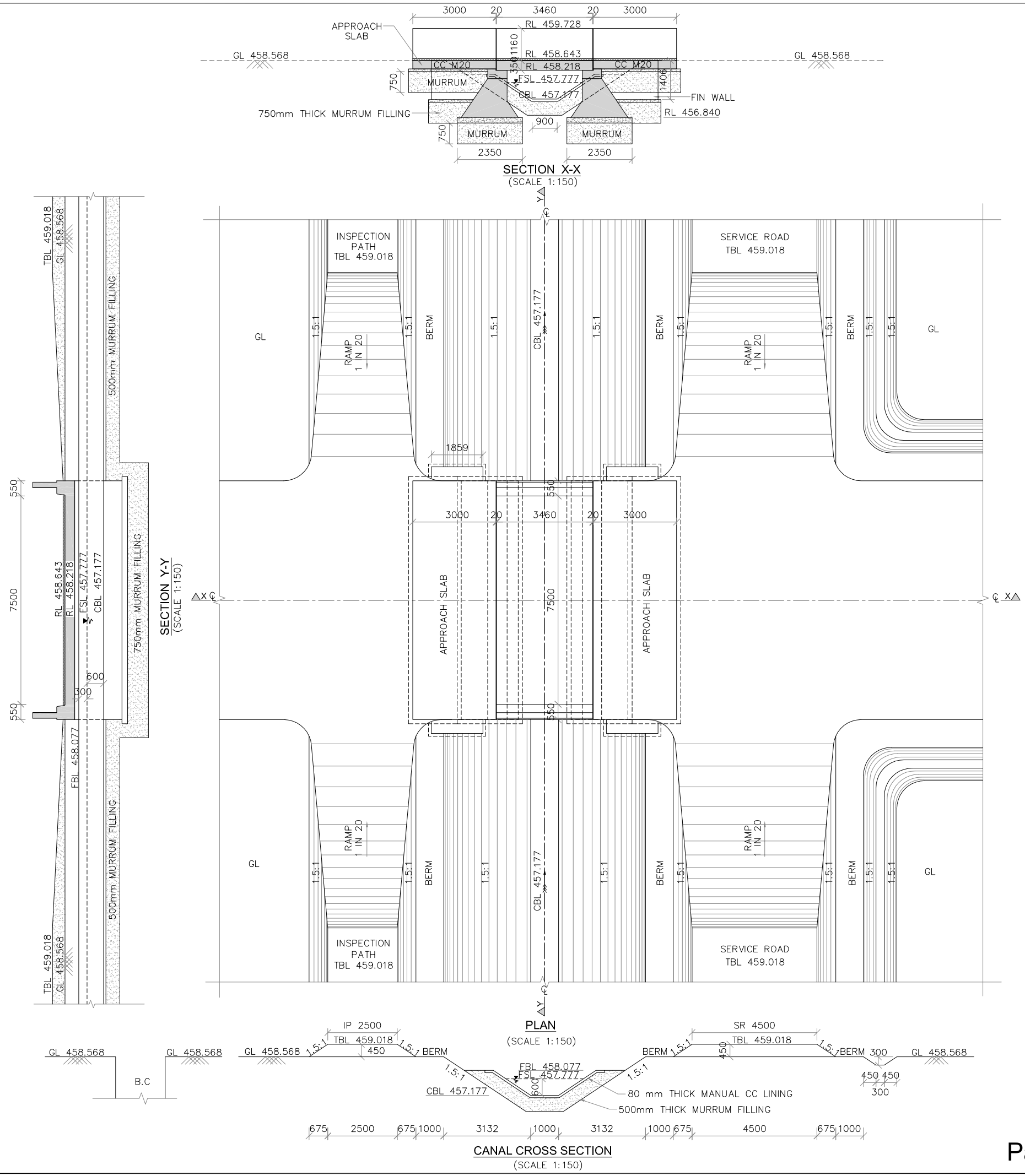
CONSULTANT  
**E I Technologies Pvt. Ltd.,**  
(ISO 9001 : 2008 Certified)  
# 1149, 26th Main, Jayanagar 4th 'T' Block,  
Bengaluru-560 041, India.  
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info@eitech.in, www.eitech.in

PROJECT TITLE  
**MODERNISATION OF VIJAYANAGARA CHANNELS  
IN TUNGABHADRA PROJECT**

DRAWING TITLE  
**CONSTRUCTION OF RETAINING WALL FOR  
FEEDER CHANNEL OF SIRUGUPPA CHANNEL**

Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
					AS SHOWN	FOR APPROVAL
Project No.	Drawing No.	Sheet No.		Rev.		
	KNNL-VNC-SGC-STR-RW-006	01 of 01		0		

 Consultant E I Technologies Pvt. Ltd. Bangalore	 Asst. Executive Engineer VNC Sub-Division Kamalapur	 Executive Engineer TR Division No.1 Muribad
 Superintending Engineer Tungabhadra Project Circle Muribad	 Chief Engineer Irrigation Central Zone Muribad	



- NOTES**
- 1) ALL DIMENSIONS ARE IN MILLIMETRES AND REDUCED LEVELS ARE IN METRES.
  - 2) DO NOT SCALE THE DRAWING. WRITTEN DIMENSIONS ONLY SHALL BE FOLLOWED.
  - 3) THE BRIDGE IS DESIGNED ADOPTING THE FOLLOWING IRC AND IS CODES.  
IRC-5-1998.  
IRC-6-2000.  
IRC-21-2000.  
IRC-78-2000  
IS 456-2000.
  - 4) GRADE OF CONCRETE : CONFORMING TO IS 456-2000  
(i) LEVELLING COURSE IN FOUNDATION - CC M10 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.  
(ii) ABUTMENT CC M15 WITH 40mm AND DOWN SIZE COARSE AGGREGATE.  
(iii) ABUTMENT CAP, DIRT WALL, DECK SLAB, APPROACH SLAB, DRAIN SLAB, SIDE WALL, KERB AND WEARING COAT - CC M20 WITH 20mm AND DOWN SIZE COARSE AGGREGATE.
  - 5) BACK FILLING SHALL BE DONE SIMULTANEOUSLY WITH THE RAISING OF THE STRUCTURE WITH  $\phi$  VALUE OF SOIL NOT LESS THAN 28°.
  - 6) ALL REINFORCEMENT SHALL BE OF HIGH YIELD STRENGTH DE FORMED BARS (GRADE DESIGNATION Fe415 ).
  - 7) SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
  - 8) FILLING BEHIND ABUTMENT SHALL BE AS PER RELEVANT IRC SPECIFICATIONS.
  - 9) ADDITIONAL REINFORCEMENT FOR SKEW ARE PROVIDED AS PER MOST FOR DECK SLAB.

0	For Approval				
Rev.	Description.	Date.	Drw.	Pre.	Chk., App.

**CLIENT**  
**KARNATAKA NEERAVARI NIGAM LIMITED**  
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 BANGALORE - 560 001

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**PROJECT TITLE**  
**MODERNISATION OF VIJAYANAGARA CHANNELS**  
**IN TUNGABHADRA PROJECT**

**DRAWING TITLE**  
**CONSTRUCTION OF VILLAGE ROAD BRIDGE**  
**AT CH: 4+000Km FOR HULGI CHANNEL**

Date	Drw.	Pre.	Chk.	App.	Scale.	Drawing Status.
.	.	.	.	.	AS SHOWN	FOR APPROVAL

Project No.	Drawing No.	Sheet No.	Rev.
KNNL-VNC-HC-TYP-STR-VRB-005		01 of 02	0

 Consultant E I Technologies Pvt. Ltd. Bangalore	 Asst. Executive Engineer VNC Sub-Division Kamalahpur	 Executive Engineer TR Division No.1 Munirabad
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 Superintending Engineer Tungabhadra Project Circle Munirabad	 Chief Engineer Irrigation Central Zone Munirabad
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