

NATIONAL HIGHWAY AUTHORITY ISLAMABAD



FRIENDLY HIGHWAYS
Ministry of Communications

SINGLE CELL (2.5m x 4.0m) BOX CULVERT AT PRINGABAD BYPASS AT KM 645-646 (N-25)

TENDER DRAWINGS & ENGINEER'S ESTIMATE

CECON

Civil Engineers & Consultants

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Tel: 051-5500441/0333-5104919

DESIGNED BY : DR. CM IQBAL

Structure Expert. (RAMD)

MAR, 2023

TENDER DRAWINGS

- A. GENERAL:-**
1. THE CONTRACTOR MUST STUDY THE DRAWINGS AND THE BOQ CAREFULLY BEFORE THE START OF THE WORK ALSO CORRELATE IT TO ANY ADDITIONAL SITE REQUIREMENTS.
 2. REPORT TO THE DESIGNER IN CASE THERE IS ANY ANOMALY OBSERVED IN THE DRAWINGS OR IN BOQ ITEMS THAT MAY RESULT INTO ANY VO AT THE LATER STAGES. DIFFERENT OPTIONS MUST BE CONSIDERED TO AVOID VOS.
 3. ONLY WRITTEN INSTRUCTION WILL BE FOLLOWED.
 4. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.
 5. IN CASE OF ANY DIFFERENCE, THESE SPECIFICATIONS WILL SUPERSEDE THE NHA GENERAL SPECIFICATIONS.
 6. THE SPECIFICATIONS GIVEN IN THE DRAWINGS SHALL OVER RULE THE GENERAL NOTES.
 7. ALL EXPOSED CONCRETE CORNER, EDGES AND ANGLES SHALL BE CHAMFERED OR FILLETED 20x20mm UNLESS OTHERWISE SPECIFIED.
 8. ALL CONCRETE SURFACE IN CONTACT WITH SOIL SHALL BE COATED WITH TWO COATS OF BITUMEN IN ACCORDANCE WITH SPECIFICATIONS AND ALLOWED TO DRY BEFORE COMPACTION OF SOIL.
 9. SALT RICH SOIL SHALL NOT BE USED AS BACK FILL MATERIAL AROUND OR UNDER THE STRUCTURES.
 10. THE CONTRACTOR SHALL SUBMIT A DETAILED WORK PLAN AND METHODOLOGY DULY IDENTIFYING PERSONNEL, WORKFORCE, MATERIALS EQUIPMENT, PLANT, CASH FLOW AND OTHER DETAILS FOR THE APPROVAL OF ENGINEER PRIOR TO COMMENCEMENT OF WORK ON SITE. THE WORK PROGRAM SHALL BE PREPARED ON COMPUTER USING APPROPRIATE SOFTWARE. THIS WORK SHALL BE REGULARLY UPDATED DURING THE WORK AND SUBMITTED TO THE ENGINEER.
 11. THE TERM APPROVAL SHALL MEAN WRITTEN APPROVAL BY THE ENGINEER. REQUEST FOR APPROVALS SHALL BE SUBMITTED AT LEAST 7 DAYS IN ADVANCE OF THE EXECUTION OF RELEVANT SEGMENT OF WORK.
- B. DESIGN PARAMETERS:-**
1. THE LOADING IS BASED ON THE WEST PAKISTAN CODE OF PRACTICE FOR HIGHWAY BRIDGES (1967) AND AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES (2010).
 2. THE FOLLOWING LIVE LOADS HAVE BEEN CONSIDERED IN DESIGN:-
 - (i) CLASS A LOADS INCLUDING IMPACT AS PER WPOH-1967.
 - (ii) MILITARY LOAD-70 TON KN ON 0.3m x 0.6m AREA (FOR PUNCHING SHEAR OF DECK SLAB ONLY).
- C. MATERIAL AND WORKMANSHIP:-**
1. ALL MATERIAL SHALL CONFORM TO THE AASHTO / ASTM / NHA SPECIFICATIONS AND STANDARDS.
- D. CONCRETE**
1. THE STRENGTH OF CONCRETE SHALL BE MEASURED ON 150x300mm CYLINDERS. THE CYLINDERS SHALL BE PREPARED UNDER THE SUPERVISION OF THE ENGINEER AND SHALL BE TESTED AT A LABORATORY APPROVED BY HCN.
 2. MIXING WATER AND AGGREGATES USED IN THE CONCRETE SHOULD BE CHEMICALLY CHECKED FOR IMPURITIES PERIODICALLY AND SHOULD BE FREE OF CHLORIDES, CARBONATES, SULPHATES, ASR AND ALL AGGREGATES AND WATER TO BE TESTED AS PER NHA GENERAL SPECIFICATIONS FROM A REPUTABLE LABORATORY FREQUENTLY.
 3. THE GRADING OF COARSE AND FINE AGGREGATES SHOULD BE FREQUENTLY CHECKED.
- E. STEEL REINFORCEMENT:-**
1. ALL REINFORCING STEEL SHALL BE ROLLED FROM PRIME GRADE PAKISTAN STEEL BILLETS. REINFORCEMENT ROLLED FROM SCRAPED STEEL, SHIP PLATE OR RE-ROLLED BILLETS SHALL NOT BE USED.
 2. ALL REINFORCING BARS SHALL BE HIGH YIELD DEFORMED BARS WITH MINIMUM YIELD STRENGTH OF 410 N/mm² (APPROX. 60,000 PSI) CONFORMING ASTM 615 HOT ROLLED.
 3. THE CONTRACTOR SHALL PREPARE ALL BAR BENDING SCHEDULE ETC. AND SUBMIT THEM FOR APPROVAL OF THE ENGINEER'S REPRESENTATIVE BEFORE EXECUTION.
 4. ALL REINFORCING STEEL SHALL BE ACCURATELY LOCATED IN FORM WORK, FIRMLY IN PLACE BY MEANS OF 16 GAUGE BLACK ANNEALED WIRE AND ADEQUATELY DESIGN SPACERS BEFORE PLACING OF CONCRETE.
- F. CONCRETE MIX DESIGN:-**
1. CONCRETE MIX DESIGN WILL BE PREPARED FROM THE NEAREST ENGINEERING UNIVERSITY AND THAT WILL BE FOLLOWED STRICTLY DURING THE CONSTRUCTION.

2. THE W/C RATIO SHOULD BE KEPT MINIMUM BUT NOT EXCEEDING 0.55.
3. SLUMP TEST WILL BE CARRIED OUT FREQUENTLY FOR EACH AND SUBSEQUENT CONCRETE WORK OF 50 CUBIC METERS.
4. THE SLUMP MUST NOT EXCEED 150 MM.
5. CONSTRUCTION PARAMETERS:-
1. TWELVE (12) CONCRETE TEST CYLINDERS WILL BE CASTED, SIX OF THESE WILL BE CURED AND TESTED UNDER LABORATORY CONDITIONS AND OTHER SIX WILL BE CURED UNDER CONDITION PREVALENT ON THE STRUCTURE AND THE DIFFERENCE IN RESULTS WILL BE RECORDED IN LAB TEST RESULTS.
2. LOW COST ADMIXTURES CONTAINING CHLORIDES AND SULPHATE SUCH AS CALCIUM CHLORIDE SHALL NOT BE USED.
3. WHILE USING ADMIXTURE MANUFACTURER SPECIFICATIONS MUST BE ALLOWED.
4. CONCRETE COVER & STRENGTH:-

STRUCTURAL ELEMENT	CATEGORY	CLEAR CONCRETE COVER (mm)	28 DAYS COMPRESSIVE STRENGTH (kg/cm ²)	28 DAYS TENSILE STRENGTH (kg/cm ²)	28 DAYS TRIAXIAL MIX LABORATORY STRENGTH (kg/cm ²)
CULVERT SLAB	TOP FACE	50	50	280 (A3)	370
W ALLS	EXTERIOR FACE	25	40		
APPROACH SLAB	EXTERIOR FACE	25	40		
WING WALLS	EXTERIOR FACE	75	50	210 (A1)	300
APRON	EXTERIOR FACE	50	50		

3. LAPS & SPLICES:-
ALL LAPS AND SPLICES IN REINFORCEMENT BARS SHALL BE AS UNDER UNLESS SPECIFIED OTHERWISE:

BAR SIZE (mm)	LAP LENGTH		DEVELOPMENT LENGTH (mm)
	TENSION BAR	OTHER	
10	40d	30d	310
12	40d	30d	310
14	40d	30d	310
16	40d	30d	310
18	40d	30d	310
20	40d	30d	310
22	40d	30d	310
24	40d	30d	310
26	40d	30d	310
28	40d	30d	310
30	40d	30d	310
32	40d	30d	310
34	40d	30d	310
36	40d	30d	310
38	40d	30d	310
40	40d	30d	310
42	40d	30d	310
44	40d	30d	310
46	40d	30d	310
48	40d	30d	310
50	40d	30d	310

- K. CONCRETE COVER & STRENGTH:-**
1. MINIMUM CONCRETE COVER SHALL BE AS FOLLOWS UNLESS OTHERWISE SPECIFIED.
 2. CONCRETE STRENGTH WILL BE CONFORMING TO NHA SPECIFICATIONS. THE DESIGN MIX MUST HAVE AN AVERAGE LABORATORY COMPRESSIVE STRENGTH EQUAL TO OR GREATER THAN THE "DESIGN 28 DAYS COMPRESSIVE STRENGTH PLUS 50 kg/cm² (1300 psi) FOR ALL TYPES OF MIX DESIGNS.
- L. CURING:-**
1. WET CURING WILL BE ENSURED FOR MINIMUM 21 DAYS.
 2. CURING MUST START WITHIN SIX HOURS OF SETTING TIME OF CONCRETE AND IT SHOULD BE CARRIED OUT ON HOURLY BASIS.
 3. ALSO, IF THE CONTRACTOR CANNOT CARRY OUT THE EFFECTIVE CURING THEN IT IS ALLOWED TO PROVIDE TWO LAYERS OF WHITE PIGMENTED CURING COMPOUND. THE COST OF WHICH IS DEEMED TO BE INCLUDED IN THE COST OF THE CONCRETE.
- M. NOTES FOR TRAFFIC MANAGEMENT:-**
1. DAY & NIGHT SIGNAGES WITH 02 POINT MEN WITH REFLECTIVE JACKETS ARE REQUIRED TO REGULATE TRAFFIC.
 2. TRAFFIC SIGNAGE SHOULD BE PROVIDED AT 50 AND 200 METER ON EITHER END OF EXISTING CULVERT FOR EFFICIENT TRAFFIC CONTROL.
 3. TRAFFIC MANAGEMENT DURING THE CONSTRUCTION PERIOD IS THE RESPONSIBILITY OF CONTRACTOR.
- N. IMPORTANT NOTES:-**
1. ALL DIMENSIONS MUST NEEDS TO BE CHECKED AND VERIFIED AT SITE. MISTAKE IF ANY, SHOULD BE IMMEDIATELY NOTIFIED TO THE ENGINEER.

2. LOCATION OF SINGLE CELL BOX CULVERT SHALL BE MARKED.
 3. FILL OF PROPOSED SINGLE CELL BOX CULVERT AND THE EXISTING ROAD FILL WILL BE AT THE SAME LEVEL.
 4. THE CONTRACTOR WILL PREPARE WORKING DRAWINGS AND GET IT APPROVED FROM THE ENGINEER.
 5. CONCRETE USED WILL BE FROM CONCRETE BATCHING PLANT ONLY AND TRANSPORTED IN TRUCK MIXERS.
 6. THE TEMPERATURE OF CONCRETE WILL NEITHER BE LESS THAN 10°C NOR MORE THAN 35°C.
 7. THE LOCAL SAND OF MULLAH RIVER WILL NOT BE USED IN CONCRETE.
 8. CONTRACTOR WILL USE GOOD QUALITY SAND.
 9. METHODOLOGY FOR CONSTRUCTION OF CULVERT:-
 1. PHASE-I OF THE SINGLE CELL BOX CULVERT WILL BE COMPLETED FIRST AND THE TRAFFIC WILL BE DIVERTED ON THIS SECTION.
 2. NEW SINGLE CELL BOX CULVERT WILL BE CONSTRUCTED IN TWO PHASES. IN PHASE-I 600mm WIDTH OF CULVERT ALONG WITH WING WALLS, RCC APRON, CLASS C RAP RAP AND BARRIER WILL BE CONSTRUCTED ON DOWNSTREAM.
 3. IN PHASE-II, ALL THE TRAFFIC WILL BE DIVERTED ON NEWLY CONSTRUCTED 600mm WIDE SINGLE CELL BOX CULVERT AND REMAINING 600mm WIDE CULVERT WILL BE CONSTRUCTED ON UPSTREAM.
- P. TRAFFIC DIVERSION PLAN**
1. IN PHASE-I TRAFFIC WILL MOVE ON REMAINING 600mm WIDE PORTION OF EXISTING ROAD.
 2. IN PHASE-II, TRAFFIC WILL USE NEWLY CONSTRUCTED 600mm WIDE SINGLE CELL BOX CULVERT.
 3. AFTER COMPLETION OF BOTH THE PHASES, NEW SINGLE CELL BOX CULVERT WILL BE OPENED FOR ALL TYPES OF TRAFFIC.
- Q. CONSTRUCTION NOTES:-**
1. THESE DRAWINGS ARE ONLY FOR TENDER PURPOSES AND COST ESTIMATIONS BASED ON A TENTATIVE LAYOUT. THE CONSTRUCTION DRAWINGS WILL BE ISSUED AFTER THE CONTRACTOR HAS SUBMITTED TOPOGRAPHIC SURVEY AND GEOTECHNICAL REPORT.
 2. CONSTRUCTION WORK WILL NOT START TILL FINALIZATION AND ISSUANCE OF CONSTRUCTION DRAWINGS. VERBAL INSTRUCTIONS MUST BE SUBSTANTIATED IN WRITING. ONLY WRITTEN INSTRUCTIONS WILL BE FOLLOWED.
 3. DETAIL SURVEY OF EXISTING CAUSEWAY INCLUDING ALL DIMENSIONS OF EACH ELEMENT OF SKEW, SLOPE AND NORMAL WIDTH OF EXISTING ROAD INCLUDING DEPTHS AND WIDTH OF EXISTING STRUCTURE ALSO LONGITUDINAL AND TRANSVERSE SECTIONS OF EXISTING CAUSEWAY SHALL BE OBTAINED.
 4. ALL THE DIMENSIONS GIVEN IN THE DRAWINGS ARE TENTATIVE. THESE WILL BE FINALIZED AFTER SUBMISSION OF REPORT.
- R. TOPOGRAPHIC SURVEY:-**
1. THE TOPOGRAPHIC SURVEY OF 100x100m OF THE EXISTING CAUSEWAY AREA INCLUDING LONGITUDINAL CROSS SECTIONS AND X-SECTIONS AT 3m INTERVAL, AS SPECIFIED IN SP-1 ON 2x PRINT COPIES OF 24 FEET ON SUITABLE SHEET SIZE AND 2x CDS IS REQUIRED ALONG WITH CONTOURED MAPS ON 30x40" DRAWING SHEET WITH 0.5 METER CONTOUR INTERVALS SHOWING ALL DETAIL IN MENTIONED IN ATTACHED SP.
- S. STANDARD HOOKS:-**



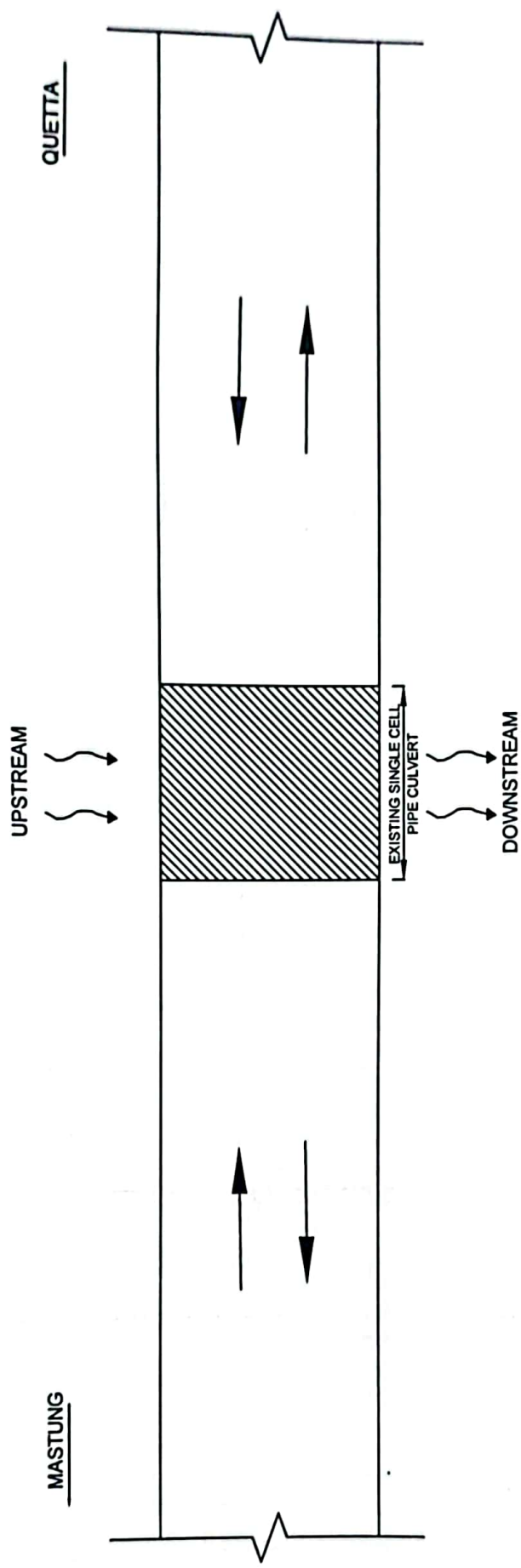
TENDER DRAWING

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NATIONAL HIGHWAY AUTHORITY
ISLAMABAD

1 CELL (2.5m x 4.0m) BOX CULVERT
AT KM 645-646
(N-25)

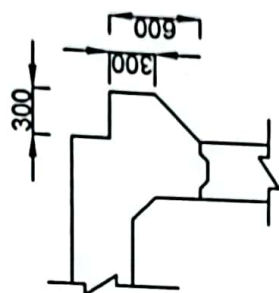
GENERAL NOTES
DATE: 10/01/2023
DRAWN BY: ENGR. NOUMAN
CHECKED BY: ENGR. FAWAD
APPROVED BY: DR. M. IQBAL



**EXISTING SITE
LAYOUT PLAN**

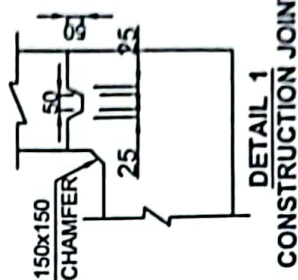
TENDER DRAWING

CECON Civil Engineers & Consultants Plot 4750, Street 117 Chaklala Scheme 3 Rawalpindi E-mail: cecon.enr@gmail.com URL: www.cecon.com Tel: 031-6666441	NATIONAL HIGHWAY AUTHORITY ISLAMABAD	01	DESIGNED BY	Dr. M. IQBAL	1 CELL (2.5m x 4.0m) BOX CULVERT AT KM 645-646 (N-25)	EXISTING LAYOUT PLAN OF THE SITE	N.T.B.
		02	ASSISTED BY	ENGR. FAWAD		DATE	DRAWN NO.
		03	DRAWN BY	ENGR. NOUMAN		MAR. 2023	A-302

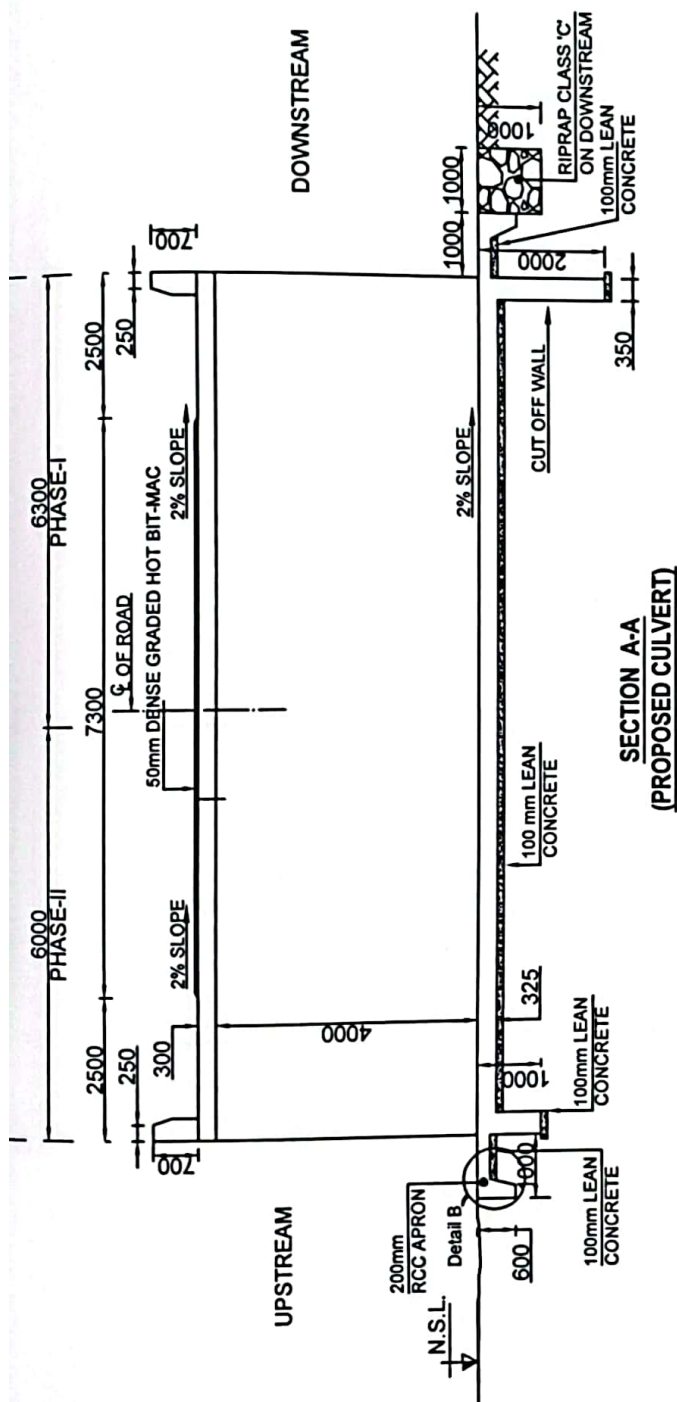


DETAIL 'A'

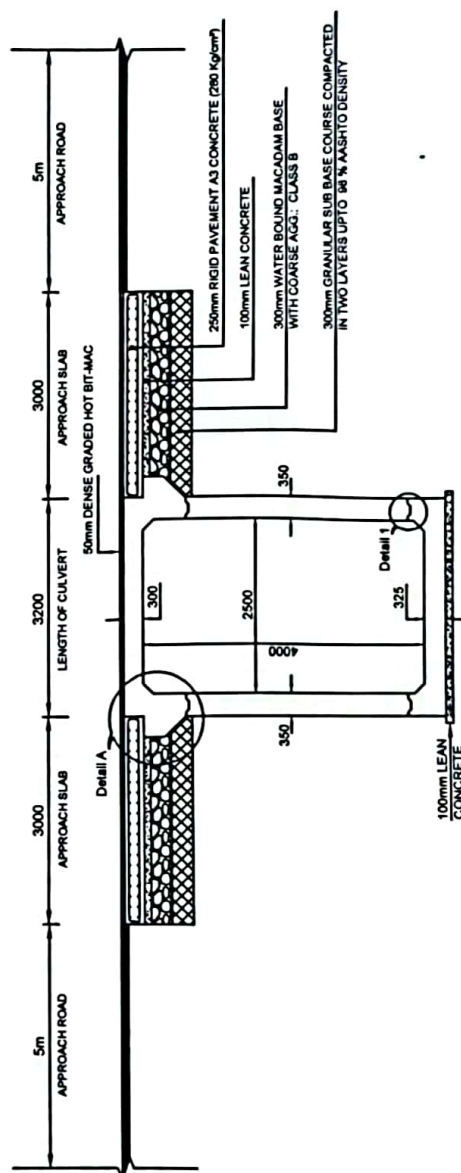
BRACKET/CORBEL ON WALL



DETAIL 1
CONSTRUCTION JOINT



SECTION A-A
(PROPOSED CULVERT)



SECTION B-B
(PROPOSED CULVERT)

FRL OF PROPOSED MULTI CELL BOX CULVERT AND THE EXISTING ROAD FRL WILL BE AT THE SAME LEVEL

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**NATIONAL HIGHWAY AUTHORITY
ISLAMABAD**

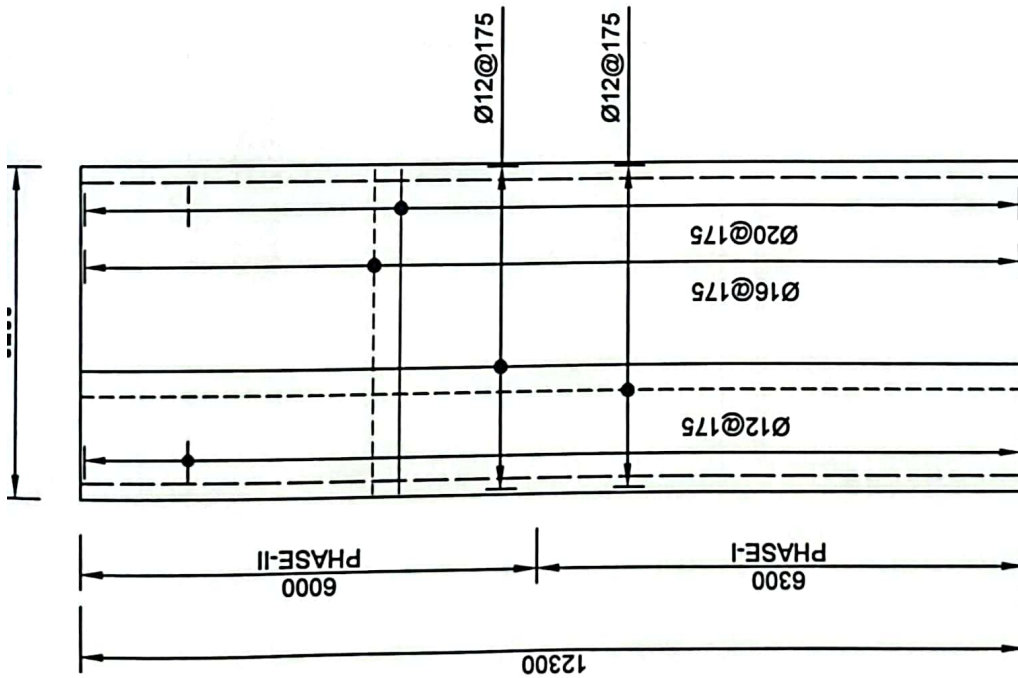
01	DESIGNED BY
02	ASSISTED BY
03	DRAWN BY

Dr. M. IQBAL
ENGR. FAWAD
ENGR. NOUMAN

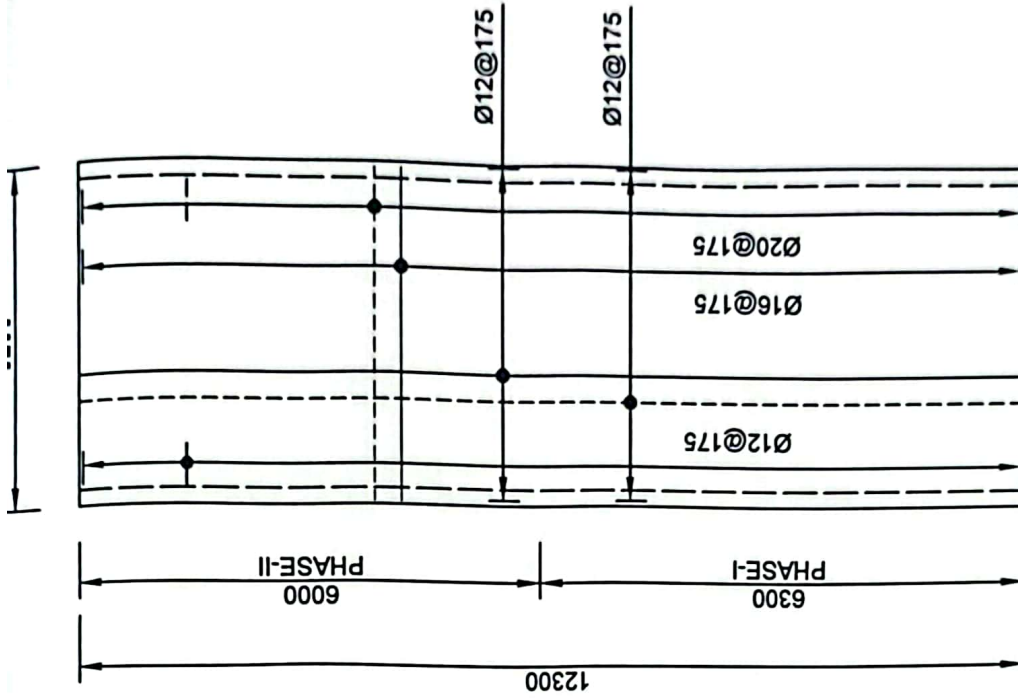
**1 CELL (2.5m x 4.0m) BOX CULVERT
AT KM 645-646
(N-25)**

DATE	MAR. 2023	CHGL. NO.	A-304
DETAIL OF SECTION A-A & SECTION B-B			N T S

TENDER DRAWING



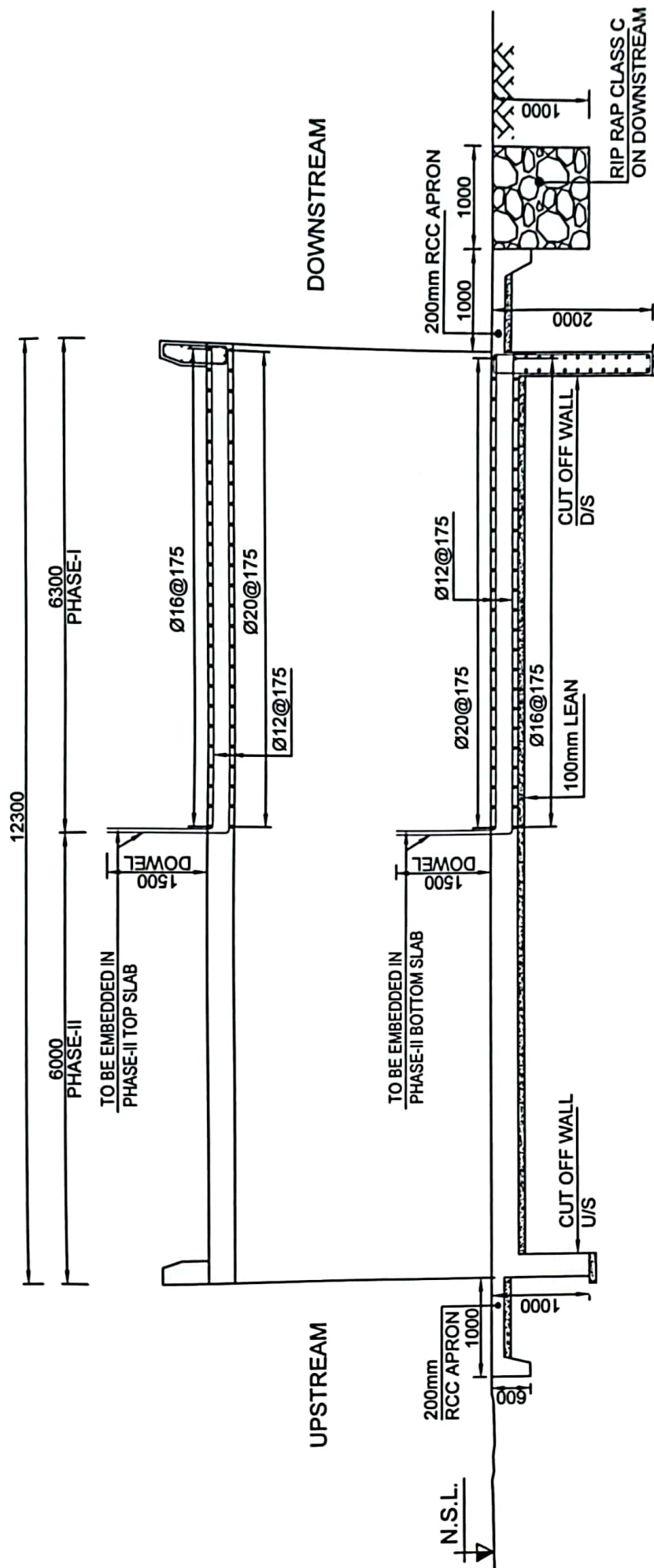
REINF. PLAN OF TOP SLAB



REINF. PLAN OF BOTTOM SLAB

TENDER DRAWING

CECON Civil Engineers & Consultants H# 470, Street 17, Chakula Scheme 3 Rawalpindi E-mail: cecon.nwp@gmail.com URL: www.ceconppl.com Tel: 051-5020441	NATIONAL HIGHWAY AUTHORITY ISLAMABAD	01	DESIGNED BY	Dr. M. IQBAL	1 CELL (2.5m x 4.0m) BOX CULVERT AT KM 64S-646 (N-25)	REINFORCEMENT DETAIL OF TOP & BOTTOM SLAB	N-25	
		02	ASSISTED BY	ENGR. FAWAD				
		03	DRAWN BY	ENGR. NOUMAN				
						DATE	MARK 2023	SCALE 1:200

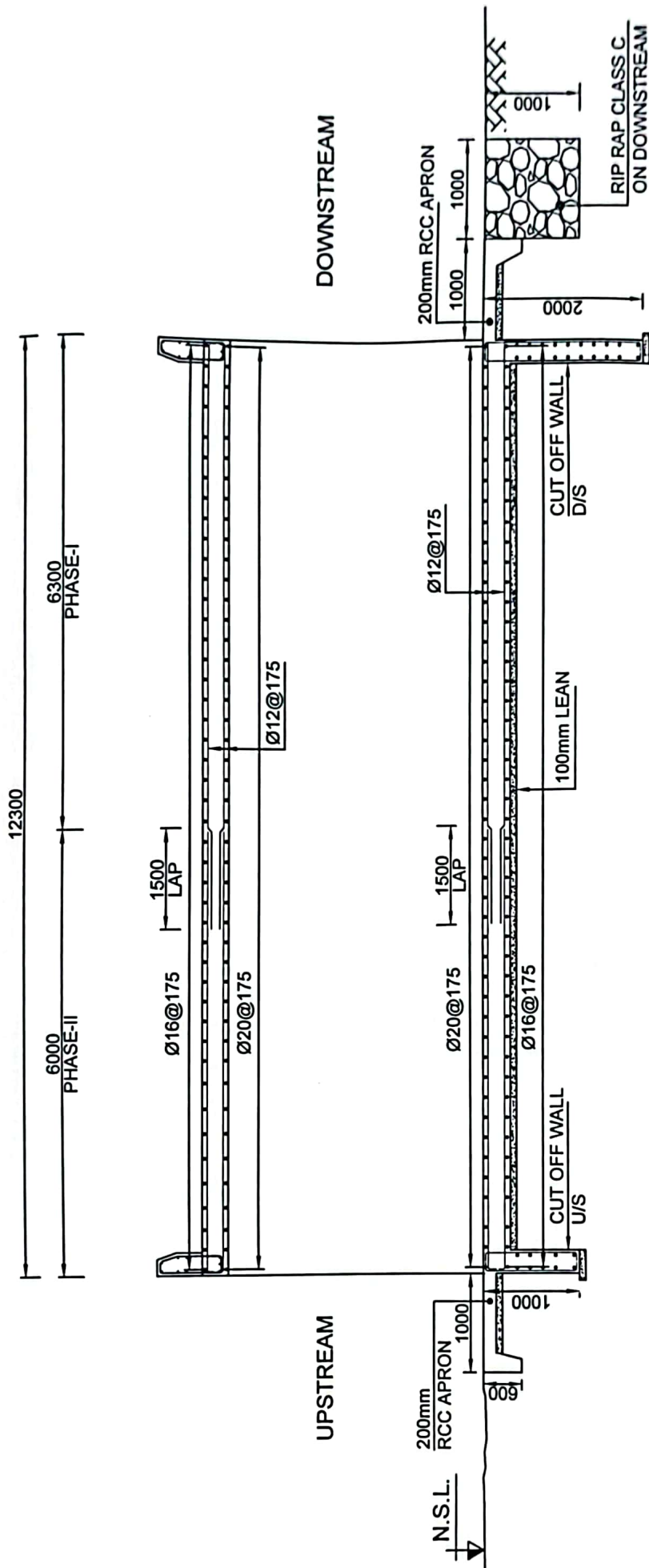


REINF. DETAIL OF PHASE-I

FRL OF PROPOSED MULTI CELL BOX CULVERT AND THE EXISTING ROAD FRL WILL BE AT THE SAME LEVEL.

TENDER DRAWING

CECON Civil Engineers & Consultants H# 470, Street 17, Chaklala Scheme 3 Rawalpindi E-mail: cecon.rwp@gmail.com URL: www.cecon.com Tel: 031-6500441	NATIONAL HIGHWAY AUTHORITY ISLAMABAD			1 CELL (2.5m x 4.0m) BOX CULVERT AT KM 64S-646 (N-25)		REINFORCEMENT DETAIL OF PHASE-I		N.T.S
	01	DESIGNED BY	Dr. M. IQBAL	DATE	MAR 2023	DWG NO A-208		
	02	ASSISTED BY	ENGR. FAWAD					
	03	DRAWN BY	ENGR. NOUMAN					

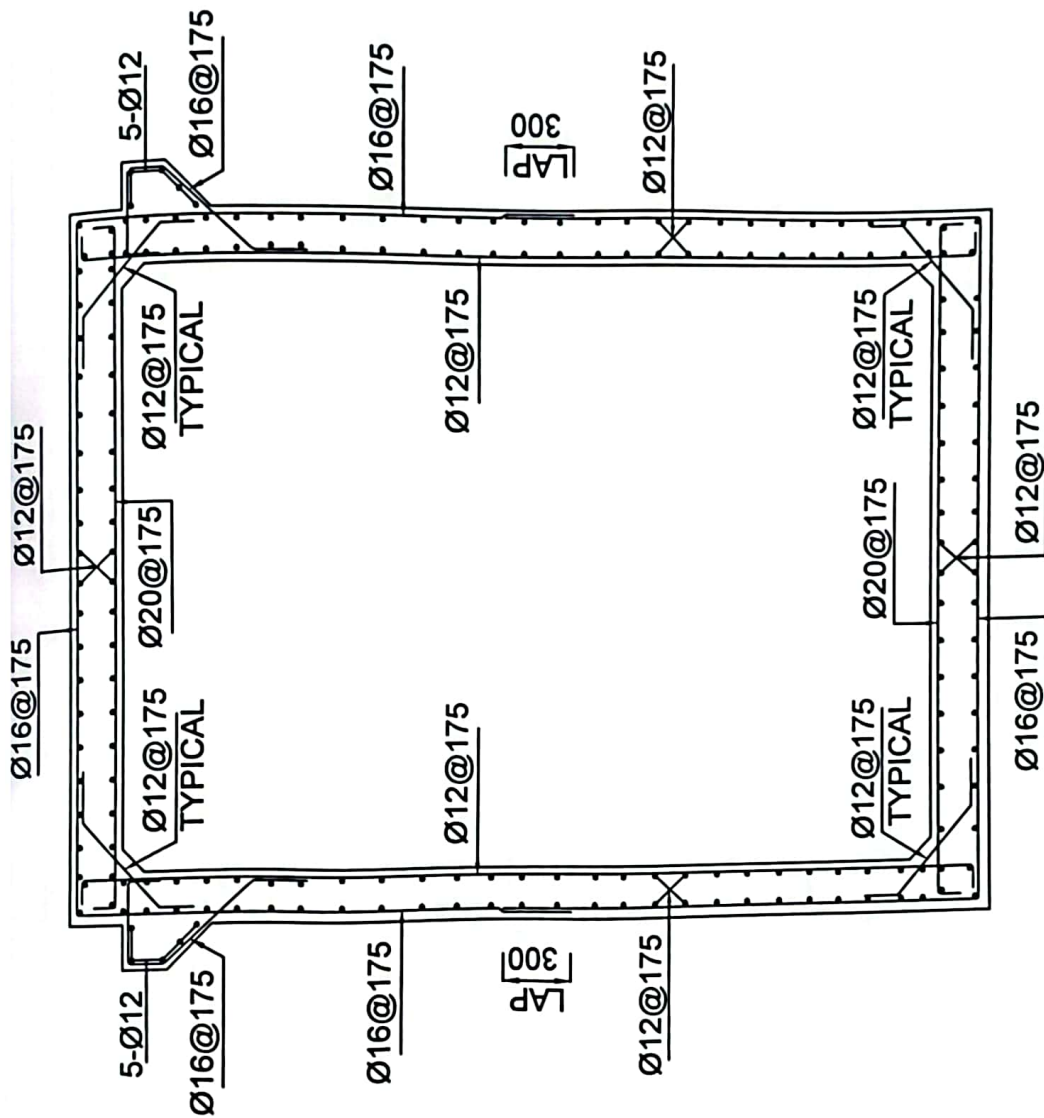


REINF. DETAIL OF PHASE-I & PHASE-II

FRL OF PROPOSED MULTI CELL BOX CULVERT AND THE EXISTING ROAD FRL WILL BE AT THE SAME LEVEL.

TENDER DRAWING

CECON Civil Engineers & Consultants H# 470, Street 17, Chaklala Scheme 3 Rawalpindi E-mail: cecon.rwp@gmail.com URL: www.cecon.com Tel: 051-5500441	NATIONAL HIGHWAY AUTHORITY ISLAMABAD	01 DESIGNED BY 02 ASSISTED BY 03 DRAWN BY	Dr. M. IQBAL ENGR. FAWAD ENGR. NOUMAN	1 CELL (2.5m x 4.0m) BOX CULVERT AT KM 645-646 (N-25)	REINFORCEMENT DETAIL OF PHASE I & PHASE II	DATE MAR 2023	DWG. NO. A-008	N.T.S.
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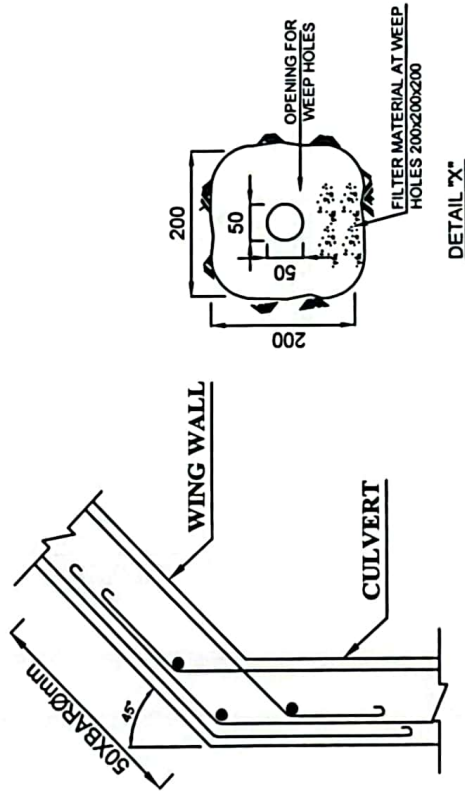


REINFORCEMENT DETAIL OF SINGLE CELL (2.5mx4.0m) BOX CULVERT

TENDER DRAWING

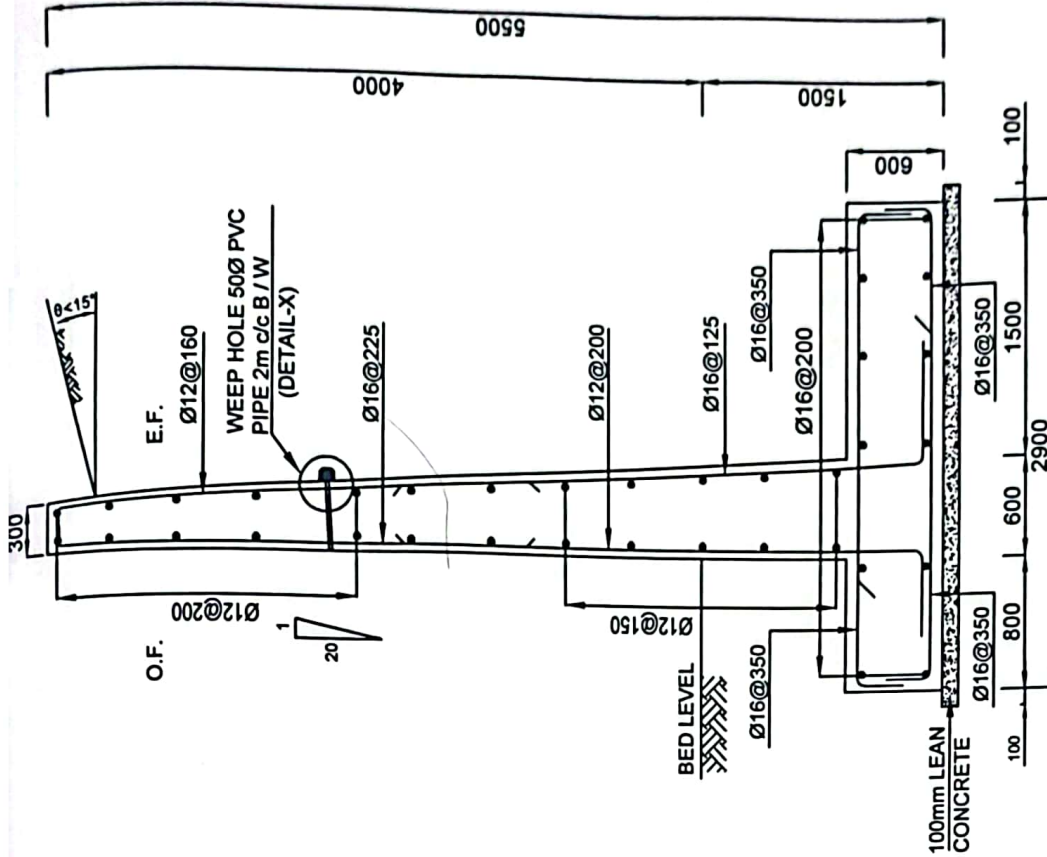
CECON Civil Engineers & Consultants H# 470, Street 17, Chaklala Scheme 3 Rawalpindi E-mail: cecon.rwp@gmail.com URL: www.cecon.com Tel: 051-2800441	NATIONAL HIGHWAY AUTHORITY ISLAMABAD			1 CELL (2.5m x 4.0m) BOX CULVERT AT KM 645-646 (N-25)		REINFORCEMENT DETAIL OF CULVERT	N 13
	01	DESIGNED BY	Dr. M. IQBAL	DATE	MAR 2011	SCALE	A-300
	02	ASSISTED BY	ENGR. FAWAD				
	03	DRAWN BY	ENGR. NOUMAN				

1. CONCRETE USED FOR WING WALLS SHALL BE CLASS A1=210kg/cm² (3000 Psi) WITH MINIMUM CYLINDER STRENGTH AT 28 DAYS.
2. LEAN CONCRETE SHOULD HAVE 100 Kg./Cm² (1400 Psi) MINIMUM CYLINDER STRENGTH AT 28 DAYS.
3. ALL REINFORCING STEEL SHALL BE DEFORMED AND CONFORM TO AASHTO M-31(ASTM A 615) GRADE 60 WITH MINIMUM YIELD STRENGTH OF 60,000 Psi.
4. UNLESS OTHERWISE INDICATED, ALL REINFORCING STEEL SPLICES SHALL BE STAGGERED AND HAVE A MINIMUM LAP OF 45 TIMES THE LARGER BAR DIAMETER SPLICED.
5. COVER TO ALL REINFORCEMENT SHALL BE 50 mm. COVER AT FACES OF CONCRETE PERMANENTLY IN CONTACT WITH SOIL SHALL BE 75 mm.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
7. THE DESIGN OF WING WALLS IS BASED ON THE FOLLOWING PARAMETERS.
(i) BEARING CAPACITY 1 TON / SFT.
(ii) ANGLE OF INTERNAL FRICTION = 30°
8. WING WALLS WILL BE MADE MONOLITHIC WITH BOX CULVERT WALLS. HORIZONTAL REINFORCEMENT FROM CULVERT WALLS MUST BE EXTENDED AND EMBEDDED IN WING WALLS.



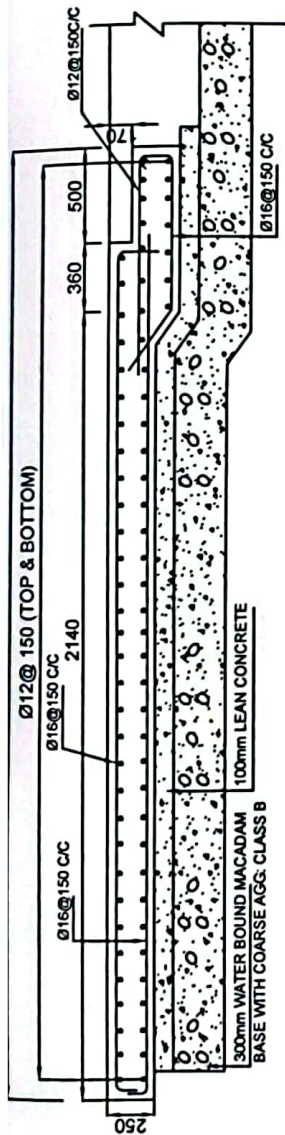
REINFORCEMENT PATTERN CONNECTION JOINT BETWEEN BOX CULVERT & WING WALL

DETAIL OF WING WALL

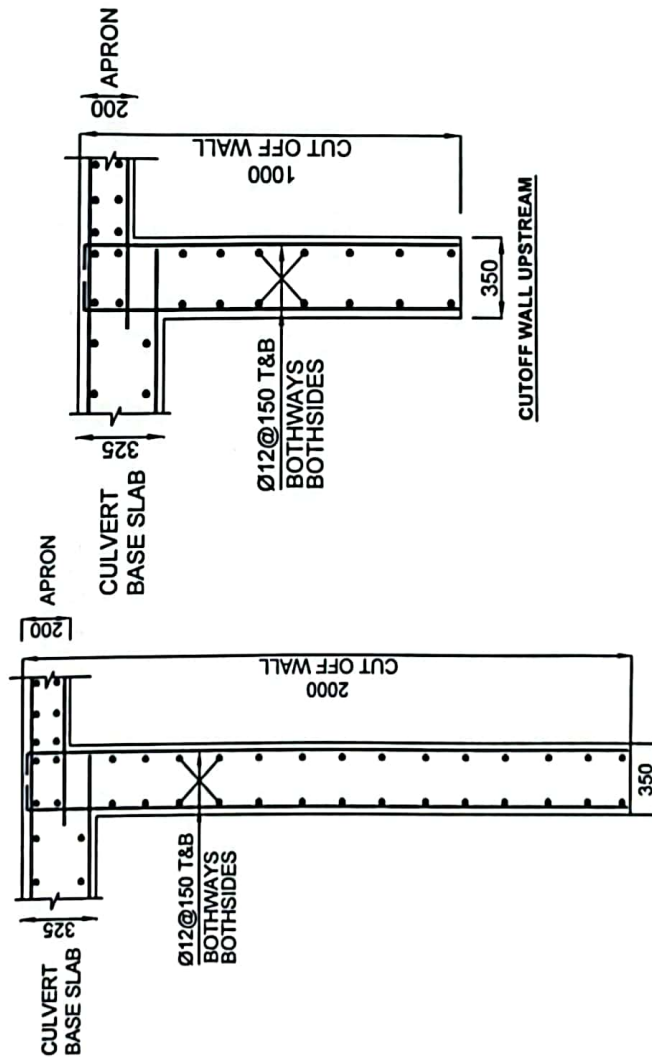


TENDER DRAWING

CECON Civil Engineers & Consultants H# 470, Street 17, Chakiala Scheme 3 Rawalpindi Email: ceconeng@gmail.com URL: www.ceconpld.com Tel: 081-5500441			NATIONAL HIGHWAY AUTHORITY ISLAMABAD		
01	DESIGNED BY	Dr. M. IQBAL	1 CELL (2.5m x 4.0m) BOX CULVERT AT KM 64S-646 (N-25)		
02	ASSISTED BY	ENGR. FAWAD			
03	DRAWN BY	ENGR. NOUMAN			
			DATE	SCALE	NO.
			MAR 2023	1:100	A-108
			DETAIL OF WING WALL		
			N.T.S		



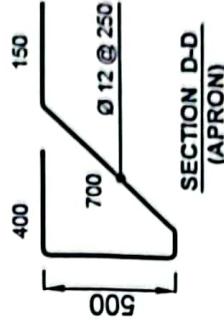
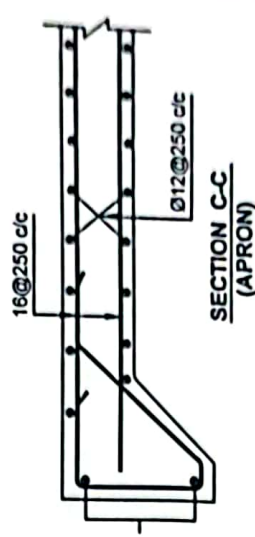
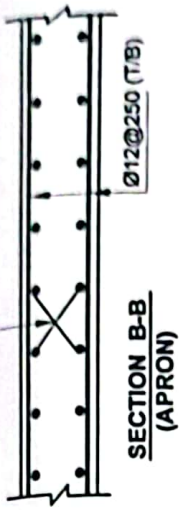
REINFORCEMENT DETAIL OF APPROACH SLAB



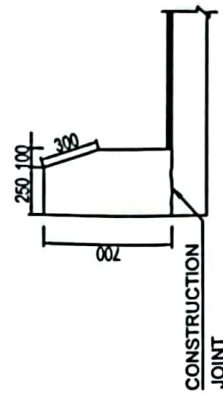
CUTOFF WALL DOWNSTREAM

NOTES:

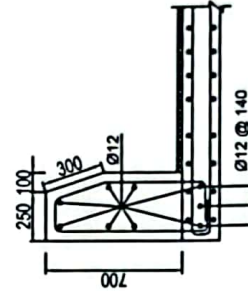
1. ALL STEEL USED SHALL BE GRADE 60 DEFORMED WITH 4100 KG/CM² (60000PSI)
2. CONCRETE USED IN BOX CULVERT WILL BE CLASS A3- 280KG/CM³(4000PSI) AND ALL OTHER CONCRETE WILL BE CLASS A1-210KG/CM³(3000PSI) CYLINDER STRENGTH AT 28 DAYS.



APRON REINFORCEMENT DETAILS



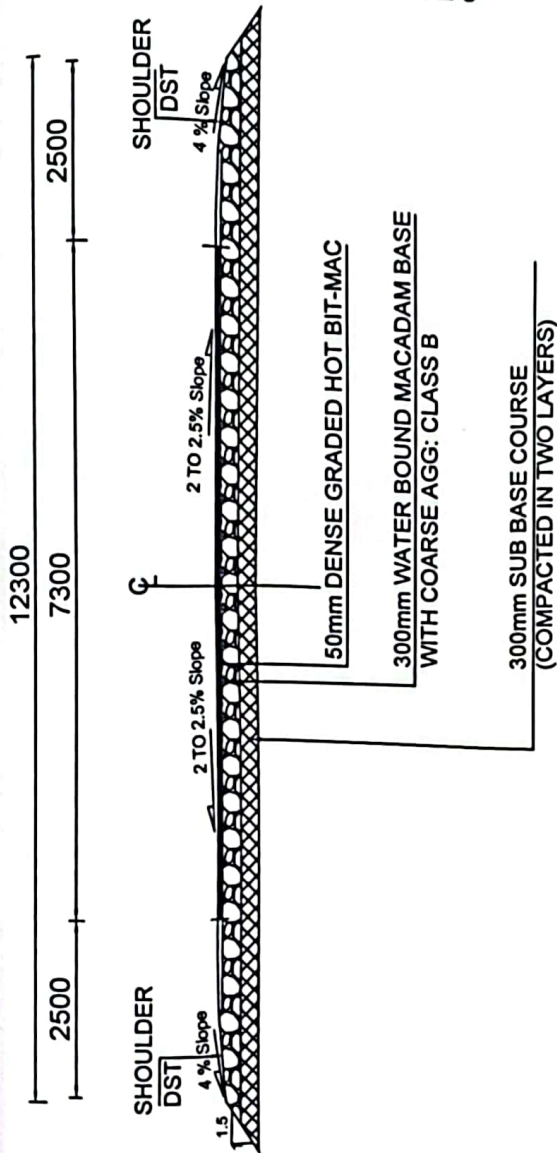
TYPICAL DETAIL OF BARRIER



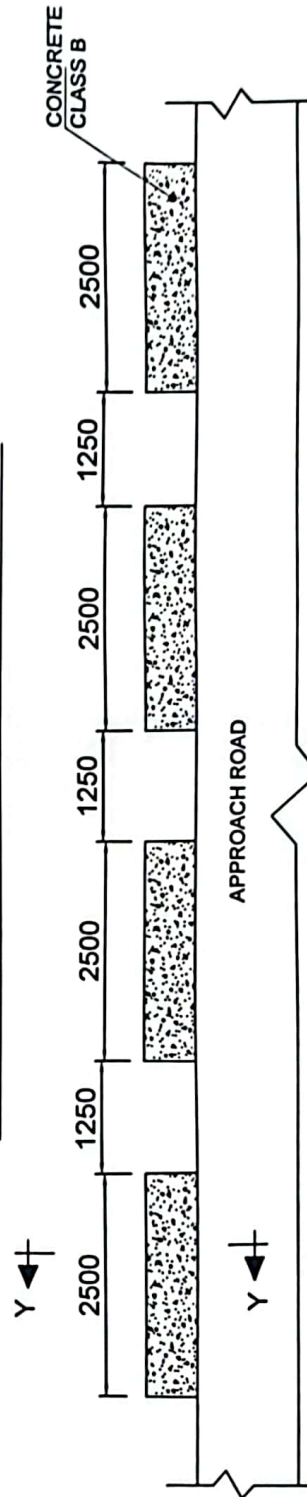
REINFORCEMENT DETAIL OF BARRIER

TENDER DRAWING

CECON Civil Engineers & Consultants H# 470, Street 17/Chakila Scheme 3 Rawalpindi E-mail: cecon.enr@gmail.com URL: www.ceconpl.com Tel: 051-6555441	NATIONAL HIGHWAY AUTHORITY ISLAMABAD			1 CELL (2.5m x 4.0m) BOX CULVERT AT KM: 645-646 (N-25)		
	01	DESIGNED BY	Dr. M. IQBAL	REINFORCEMENT DETAIL AND DETAIL OF BARRIER		
	02	ASSISTED BY	ENGR. FAWAD			
				03	DRAWN BY	ENGR. NOUMAN
				DATE	MAY 2013	SHEET NO. 1/10



TYPICAL CROSS SECTION OF APPROACH ROAD



ELEVATION OF PARAPETS

TENDER DRAWING

CECON Civil Engineers & Consultants No. 47/5, Street 17, Chaklala Scheme 3 Rawalpindi E-mail: cecon@cecon.com URL: www.cecon.com Tel: 951 4850411	NATIONAL HIGHWAY AUTHORITY ISLAMABAD			1 CELL (2.5m x 4.0m) BOX CULVERT AT KM 645-646 (N-25)			DETAIL OF APPROACH ROAD & CONCRETE CLASS B PARAPET		N T 3
	01	DESIGNED BY	Dr. M. IQBAL	ENGR. FAWAD ENGR. NOUMAN			DATE	MAR. 2023	DWG. NO.
	02	ASSISTED BY	ENGR. FAWAD						
	03	DRAWN BY	ENGR. NOUMAN						A-292