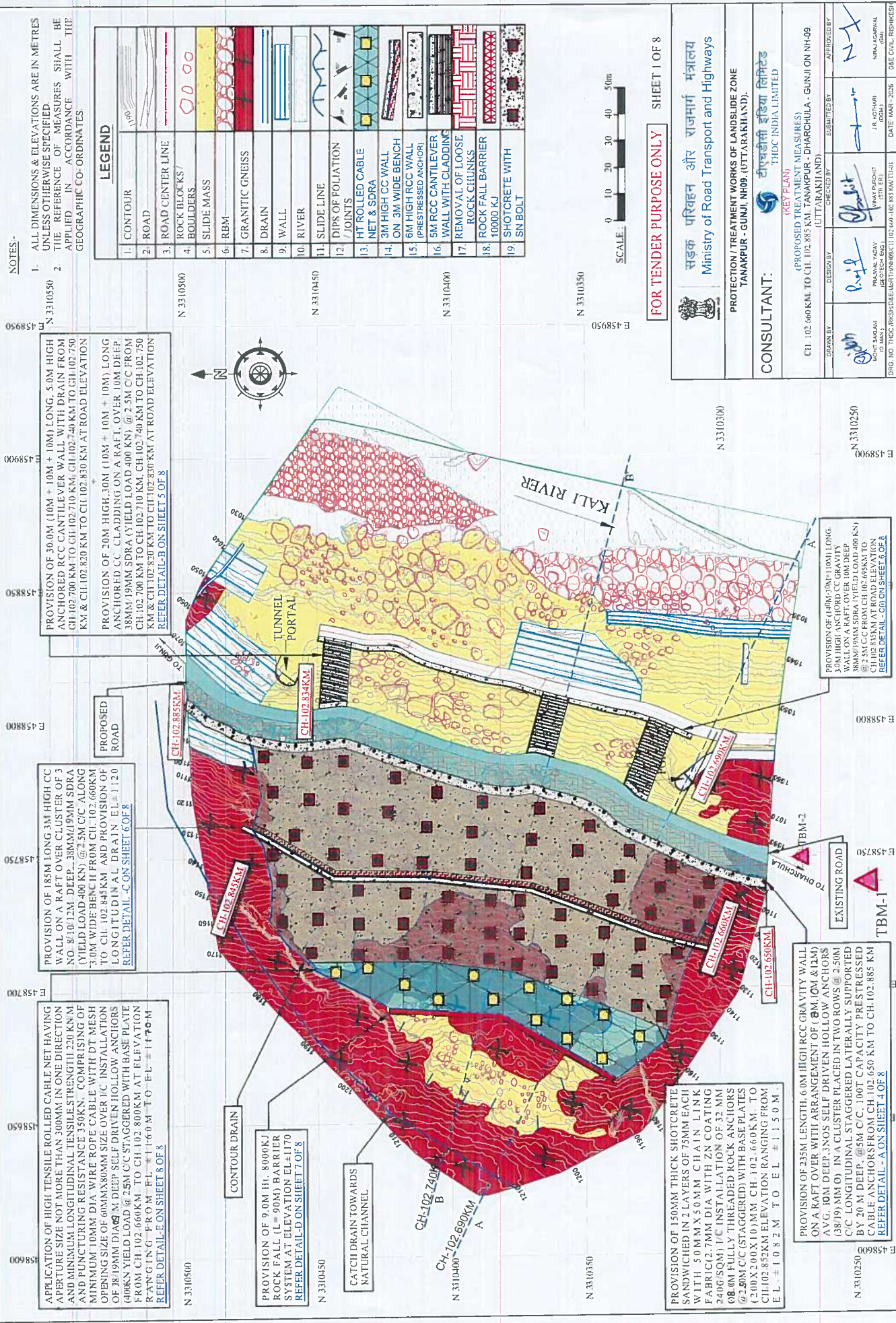




NOTES:-

1. ALL DIMENSIONS & ELEVATIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED

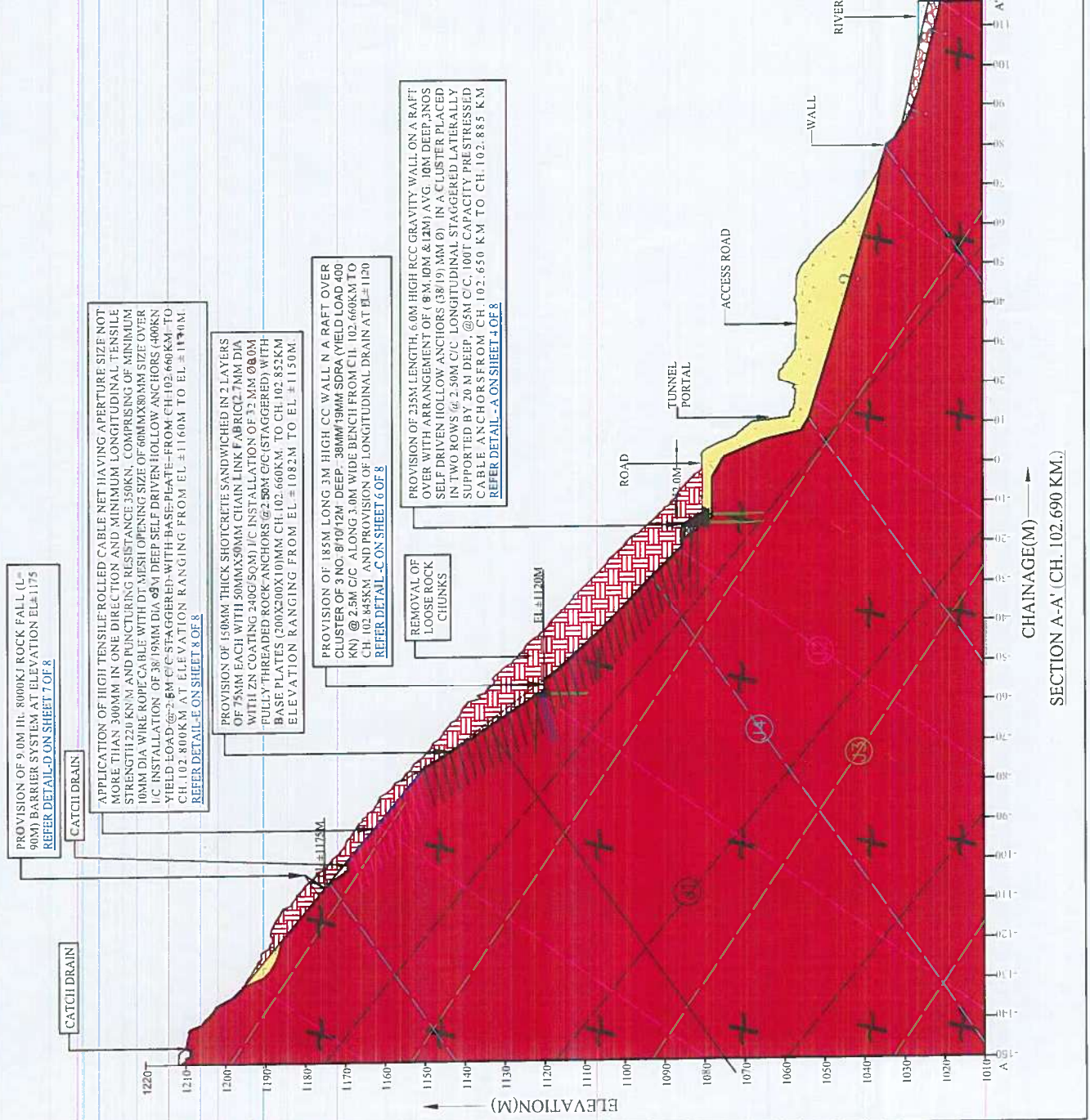
LEGEND

1.	SLIDE MASS	
2.	RBM	
3.	GRANITIC GNEISS	
4.	TRACES OF JOINTS	
5.	SHOTCRETE WITH SN BOLT	
6.	HT ROLLED CABLE NET WITH SDRA	
7.	3M HIGH CC WALL WITH 3M BENCH	
8.	6M HIGH RCC WALL	
9.	REMOVAL OF LOOSE ROCK CHUNKS	
10.	ROCK FALL 800KJ BARRIER	

FOR TENDER PURPOSE ONLY

SHEET 2 OF 8

	सड़क परिवहन और राजमार्ग मंत्रालय Ministry of Road Transport and Highways
PROTECTION / TREATMENT WORKS OF LANDSLIDE ZONE TANAKPUR - GUNJI, NH-09, (UTTARAKHAND).	
CONSULTANT:	टीएचडीसी इंडिया लिमिटेड THDC INDIA LIMITED
(PROPOSED TREATMENT MEASURES) CH 102.600 KM TO CH 102.885 KM TANAKPUR - DHARCHULA - GUNJI ON NH-09 (UTTARAKHAND)	
DRAWN BY	DESIGNED BY
CHECKED BY	APPROVED BY
PROJECT NO. THDC/RHSHO/ENR/THDC/CH 102.600-102.885 KM/TH-02	DATE: MAR-2026
THDC CIVIL ENGINEER	THDC CIVIL ENGINEER

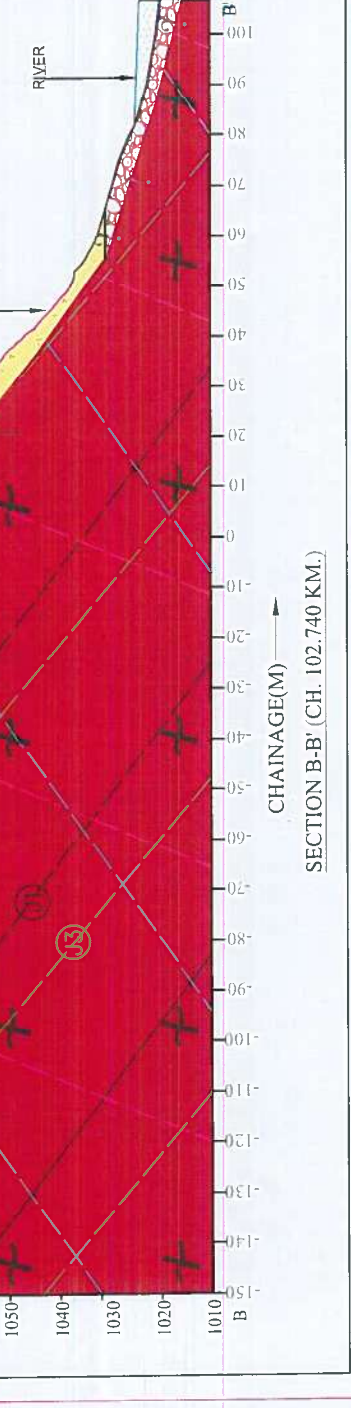


NOTES:-

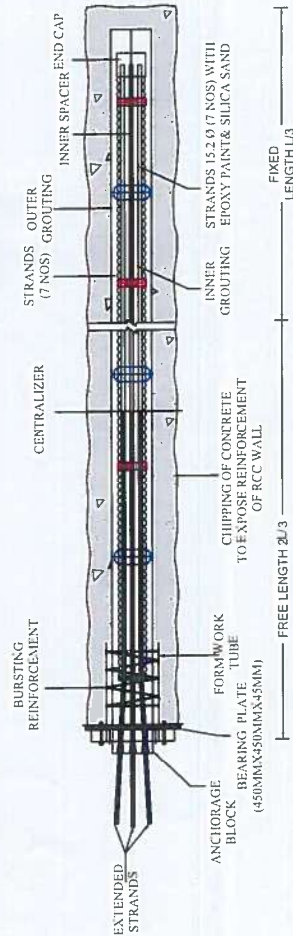
- ALL DIMENSIONS & ELEVATIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.

LEGEND	
1.	SLIDE MASS
2.	RBM
3.	GRANITIC GNEISS
4.	TRACES OF JOINTS
5.	SHOTCRETE WITH SN BOLT
6.	HT ROLLED CABLE NET WITH SDRA
7.	3M HIGH CC WALL WITH 3M BENCH
8.	6M HIGH RCC WALL
9.	5M HIGH CANTILIVER WALL WITH CC CLADDING
10.	REMOVAL OF LOOSE ROCK CHUNKS
10.	ROCK FALL BARRIER 800KJ

FOR TENDER PURPOSE ONLY SHEET 3 OF 8



1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSION SHALL BE SCALED FROM THE DRAWING.
3. HIGH STRENGTH TYPE ORDINARY PORTLAND CEMENT CONFORMING TO IS - 8112 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.
4. THE MINIMUM CEMENT CONTENT AND WATER CEMENT RATIO IN THE CONCRETE DESIGN MIX SHALL BE 300 KG PER CUM AND 0.45 RESPECTIVELY.
5. CONCRETE USED SHALL BE OF GRADES AS SPECIFIED BELOW CONFORMING TO IS 4463.



TYPICAL DETAILS OF 6.0M HIGH RCC WALL OVER
CLUSTER OF SDRA WITH PRESTRESSED CABLE ANCHORS
DETAIL-A

SHEET 4 OF 8



 टीएचडीसी इंडिया लिमिटेड



टीएचडीसी इंडिया लिमिटेड

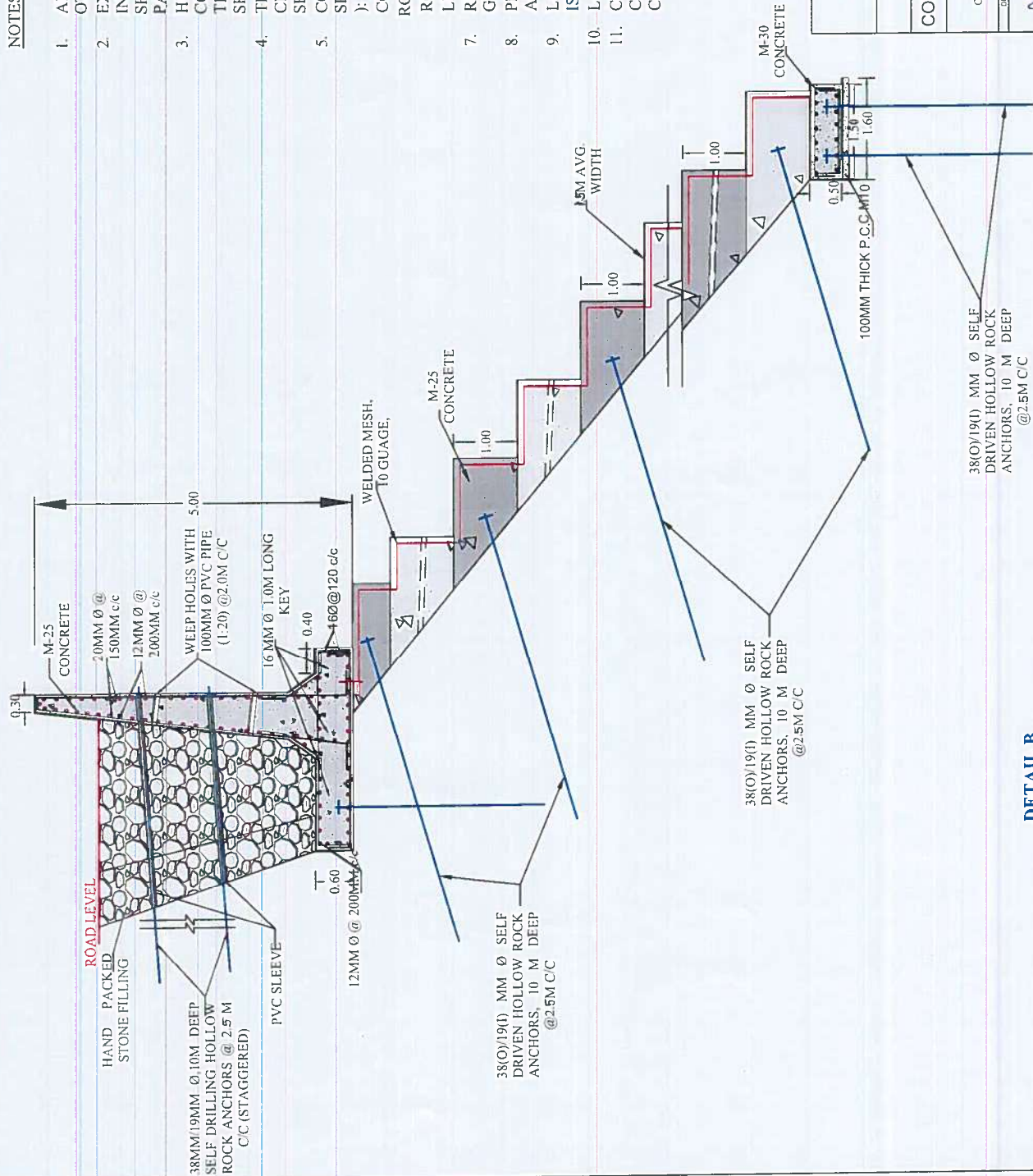
(DETAIL 2.4)
(PROPOSED TREATMENT MEASURES)

CJ. 102.660 KM. TO CH. 102.885 KM. TANAKPUR - DHARCHULA - GUNJION NH-09
(UTTARAKHAND)

[illegible]

NOTES:

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. EXCAVATION FOR FOUNDATION SHALL BE DONE IN 6-8M LONG STRECHES ONLY & TREATMENT SHALL BE COMPLETED BEFORE START OF NEW PATCH.
3. HIGH STRENGTH ORDINARY PORTLAND CEMENT CONFORMING TO IS : 8112 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.
4. THE MINIMUM CEMENT CONTENT AND WATER CEMENT RATIO IN THE CONCRETE DESIGN MIX SHALL BE 310 KG PER CUM AND 0.45 RESPECTIVELY.
5. CONCRETE USED SHALL BE OF GRADES AS SPECIFIED BELOW CONFORMING TO IS 456 (LATEST):
 - CC CLADDING - M25.
 - RCC WALL - M25.
 - RCC RAFT - M30
 - LEVELLING COURSE - M10.
7. REINFORCEMENT SHALL COMPRISE OF FE 500D GRADE DEFORMED BARS, CONFORMING TO IS:1786.
8. PROPERLY BRACED STEEL PLATES SHALL BE USED AS SHUTTERING.
9. LAPS AND ANCHORAGE LENGTH SHALL BE AS PER IS 456(LATEST)
10. LAPS SHALL BE STAGGERED.
11. CONCRETE SURFACE SHOULD BE ROUGHED AND CLEAN BEFORE POURING THE CONCRETE/FRESH CONCRETE.



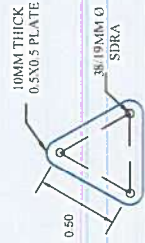
DETAIL B

TYPICAL DETAILS OF 4.0M HIGH RCC WALL OVER HIGH ANCHORED CC CLADDING

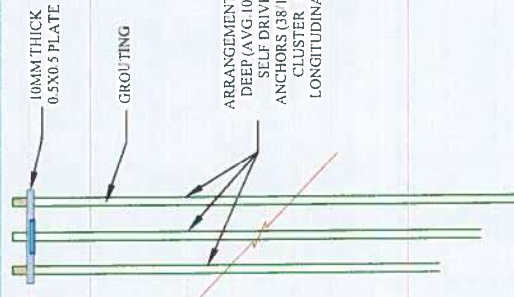
FOR TENDER PURPOSE ONLY

SHEET 5 OF 8

		सड़क परिवहन और राजमार्ग मंत्रालय Ministry of Road Transport and Highways	
PROTECTION / TREATMENT WORKS OF LANDSLIDE ZONE TANAKPUR - GUNJI, NH09, (UTTARAKHAND).		CONSULTANT: टीएसडीसी इंडिया लिमिटेड (DETAIL - B) THDC INDIA LIMITED	
(PROPOSED TREATMENT MEASURES) CH. 102.600 KM. TO CH. 102.885 KM. TANAKPUR - DHARCHULA - GUNJI ON NH-09. (UTTARAKHAND)		DESIGNED BY: CHECKED BY: APPROVED BY:	
DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
DRG. NO. THDC/RW/SHOEN/UP/19/06/01/102.600-102.885 KM/11/45		DATE: MAR - 2024	

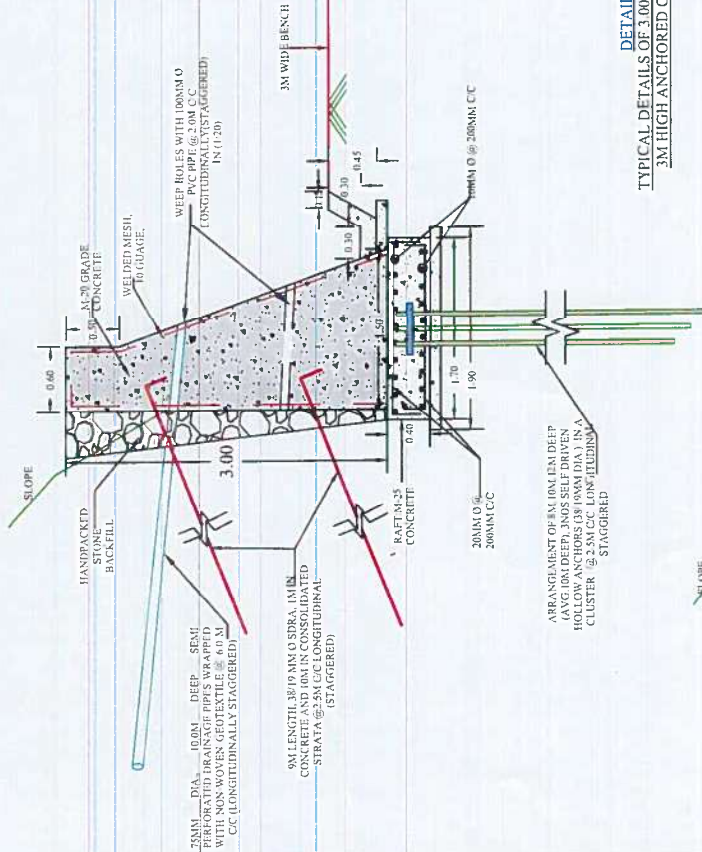
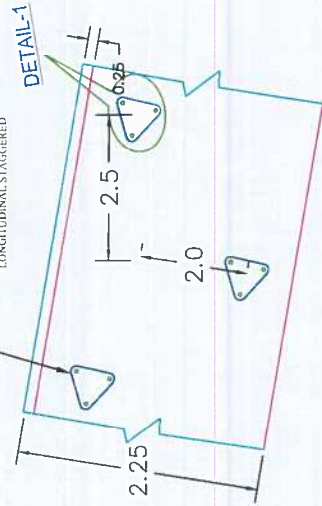


**TYPICAL ARRANGEMENT OF SDRA CLUSTER
DETAIL-1**

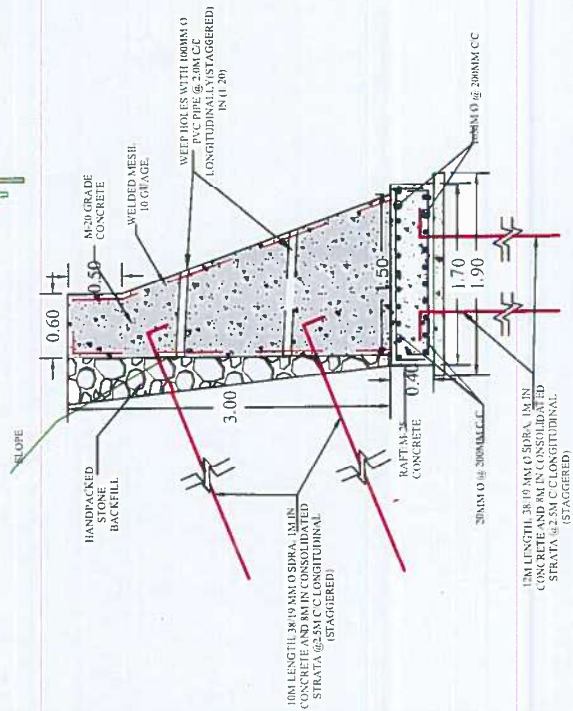


**SECTIONAL ELEVATION OF SDRA CLUSTER
WITH 500X500X10MM PLATE**

ARRANGEMENT OF 38/19MM Ø SDRA (AVG 10M DEEP) IN A CLUSTER @ 2.5M C/C LONGITUDINAL STAGGERED



**TYPICAL DETAILS OF 300M WIDE BENCH WITH
3M HIGH ANCHORED CC GRAVITY WALL
DETAIL-C**



**TYPICAL DETAILS OF 300M HIGH ANCHORED CC GRAVITY WALL
DETAIL-C(i)**

NOTES:-

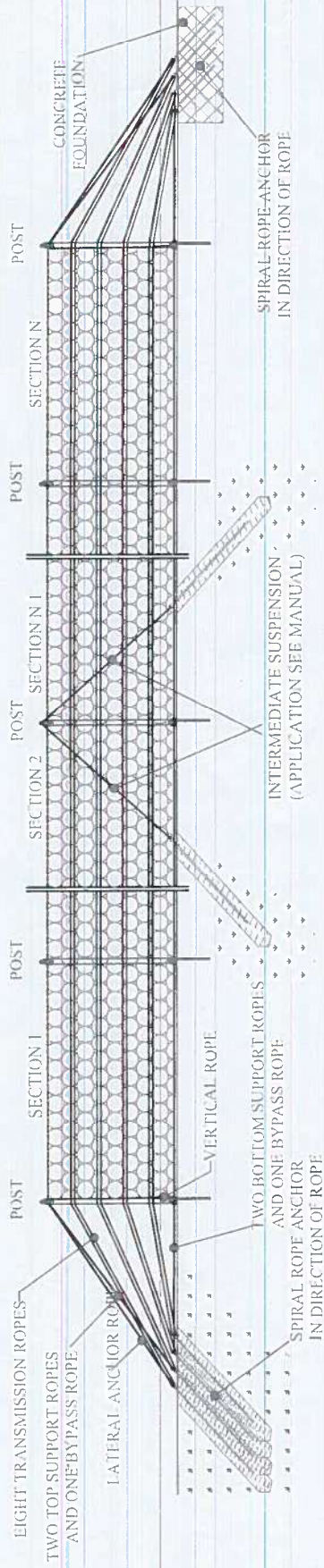
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. EXCAVATION FOR FOUNDATION SHALL BE DONE IN 6-8M LONG STRETCHES ONLY & TREATMENT SHALL BE COMPLETED BEFORE START OF NEW PATCH
3. HIGH STRENGTH ORDINARY PORTLAND CEMENT CONFORMING TO IS: 8112 CAPABLE OF ACHIEVING THE REQUIRED DESIGN CONCRETE STRENGTH SHALL ONLY BE USED.
4. THE MINIMUM CEMENT CONTENT AND WATER CEMENT RATIO IN THE CONCRETE DESIGN MIX SHALL BE 310 KG PER CUM AND 0.45 RESPECTIVELY.
5. CONCRETE USED SHALL BE OF GRADES AS SPECIFIED BELOW CONFORMING TO IS: 456 (LATEST)
6. FOUNDATION/RAFT - M25
7. CC GRAVITY WALL - M20.
8. LEVELING COURSE - M10.
9. PROPERLY BRACED STEEL PLATES SHALL BE USED AS SHUTTERING.
10. LAPS AND ANCHORAGE LENGTH SHALL BE AS PER IS 456 (LATEST).
11. LAPS SHALL BE STAGGERED.
12. CONCRETE SURFACE SHOULD BE ROUGHED AND CLEAN BEFORE POURING THE CONCRETE/FRESH CONCRETE.
13. FOUNDATION SURFACE UPON WHICH CC WALL IS TO BE PLACED SHALL BE APPROVED BY GEOLOGIST/ENGINEER-IN-CHARGE PRIOR TO START OF WORK.

FOR TENDER PURPOSE ONLY

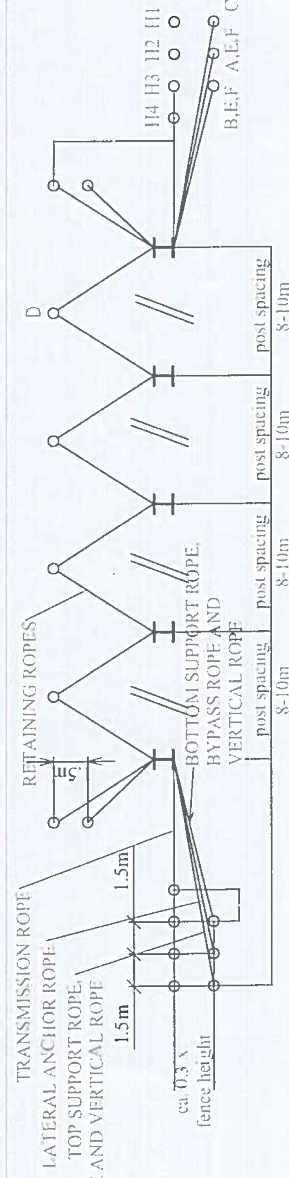
SHEET 6 OF 8

		सड़क परिवहन और राजमार्ग मंत्रालय Ministry of Road Transport and Highways	
PROTECTION / TREATMENT WORKS OF LANDSLIDE ZONE TANAKPUR - GUNJI, NH09, (UTTARAKHAND)		टीएचडीसी इंडिया लिमिटेड THDC INDIA LIMITED	
CONSULTANT:		(PROPOSED TREATMENT MEASURES) (UTTARAKHAND)	
DRAMA BY	DESIGN BY	CHECKED BY	APPROVED BY
			
DRAMA NO. THDC/RISHIKHA/AGRT/HNTH/31/102/660-102/558/1711/166	DESIGN NO. THDC/RISHIKHA/AGRT/HNTH/31/102/660-102/558/1711/166	DATE 2028-03-08	DATE 2028-03-08

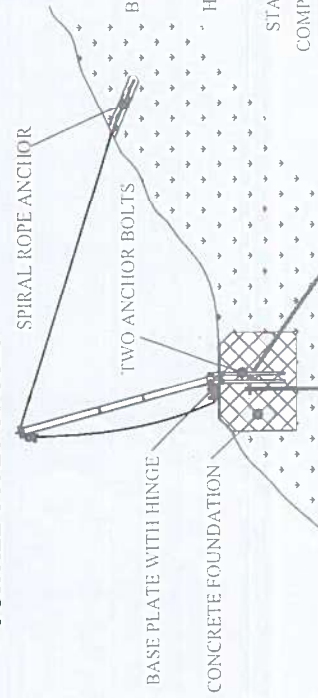
VERTICAL SAG OF NET MAX. 3% OF POST SPACING



LAYOUT OF ANCHOR POINTS (DETAILS IN PRODUCT MANUAL)



ANCHORING CONCRETE FOUNDATION FOR ALL TYPES OF SOIL



ANCHORING IN LOOSE SOIL: WITH TENSION AND COMPRESSION ANCHOR ANCHORING IN BEDROCK: WITH ROCK ANCHORS

ROCKFALL PROTECTION BARRIER 8000KJ SYSTEM (9.00M) DETAIL D

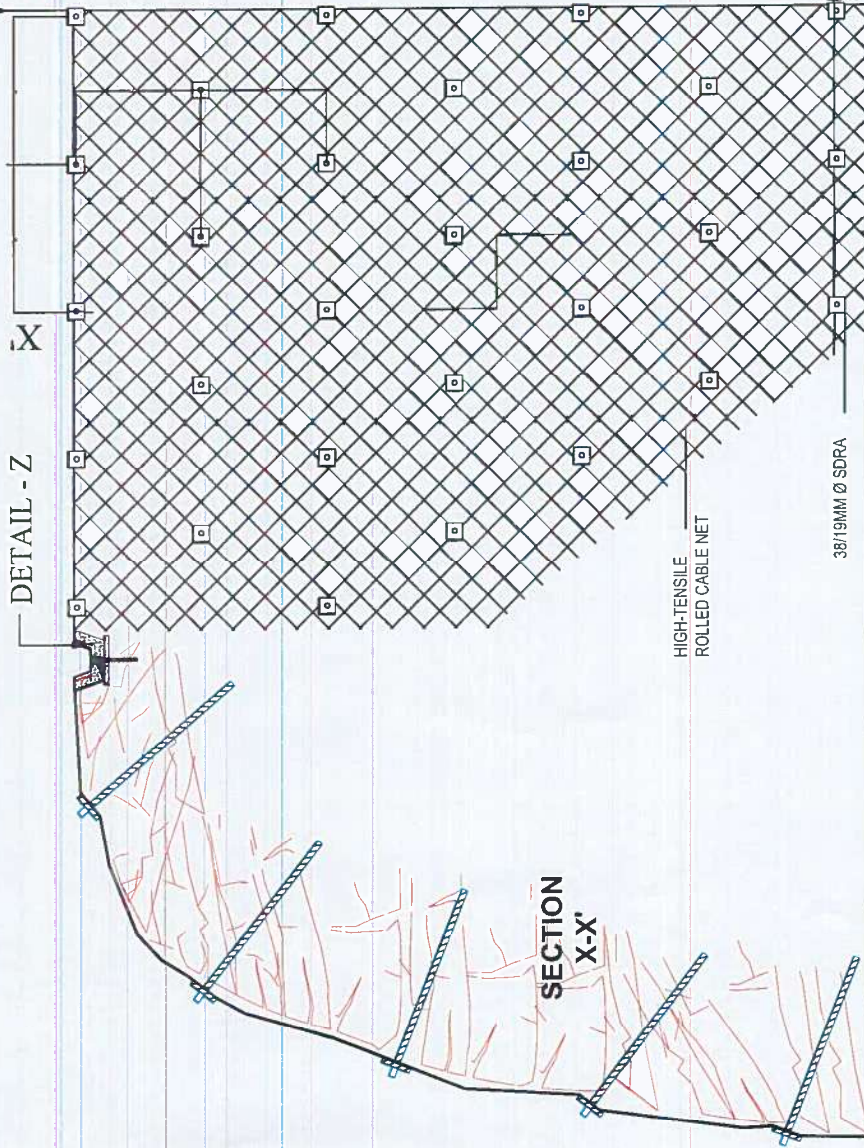
FOR TENDER PURPOSE ONLY SHEET 7 OF 8

		सड़क परिवहन और राजमार्ग मंत्रालय Ministry of Road Transport and Highways	
PROTECTION / TREATMENT WORKS OF LANDSLIDE ZONE TANAKPUR - GUNJI, NH09 (UTTARAKHAND)		 टीएचडीसी इंडिया लिमिटेड THDC INDIA LIMITED	
(PROPOSED TREATMENT MEASURES) CH. 102.609 KM. TO CH. 102.835 KM. TANAKPUR - DHARCHULA - GUNJI ON NH-09.			
DRAWN BY 	DESIGNED BY 	CHECKED BY 	APPROVED BY 
PROJECT NAME ROAD SAFETY (UNDER NH-09)	PREPARED BY 	VERIFIED BY 	J.R. KOTHIARI NRIJ APPROVAL (GATE)
DGS NO. THDC/RWS/DA/ENR/THDC/11/102.609-102.835/KM/TH-07		DATE MAR - 2025	
		DAE CIVIL ASHISH	

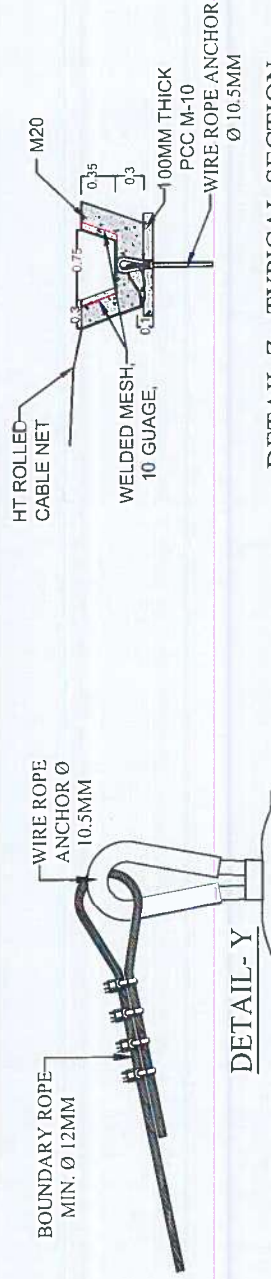
NOTE:
INSPECTION AND MAINTENANCE OF SUCH SYSTEMS ARE AN ABSOLUTE REQUIREMENT TO ENSURE THE DESIRED PROTECTION LEVEL. THE SYSTEM SAFETY CAN ALSO BE IMPAIRED BY EVENTS SUCH AS NATURAL DISASTERS, INADEQUATE DIMENSIONING PARAMETERS OR FAILURE TO USE THE PRESCRIBED STANDARD COMPONENTS, SYSTEMS AND ORIGINAL PARTS; AND/OR CORROSION.

NOTES:-

- THE GENERAL SPECIFICATIONS OF THE SYSTEM SHALL BE AS BELOW. HOWEVER, MENTIONED BELOW ARE THE MINIMUM VALUES
- THE HIGH-TENSILE ROLLED CABLE NETS SHOULD INCLUDE THE SECONDARY MESH.
- FOR THE INSTALLATION OF HIGH-TENSILE ROLLED CABLE NETS STANDARD SUPPORT ROPES, SEAMING ROPES AND SHACKLES SHOULD BE USED. FOR THE HORIZONTAL CONNECTION STANDARD SHACKLES OR LACES SHALL BE USED.
- DESIGN SPECIFICATION OF SYSTEM
 - TENSILE STRENGTH OF HT ROLLED CABLE NET - 220 KN/M
 - PUNCTURING RESISTANCE OF HT ROLLED CABLE NET - 350 KN
 - APERTURE NOT MORE THAN 300MM IN ONE DIRECTION
 - DIA OF CABLE OF HT ROLLED CABLE NET - 10MM
 - BREAKING LOAD OF CABLE OF HT ROLLED CABLE NET - 63 KN
 - TENSILE STRENGTH OF WIRE OF THE CABLE - 1770 N/SQMM
 - COMPOUND FOR CORROSION PROTECTION - 95% ZN AND 5% AL CLASS B OR ZINC COATING CLASS A AS PER IS/ISO-17746-2016.
 - AVERAGE LENGTH OF THE 38/19MM DIA. 40 CR SDRA - 10 M (9.7M GROUTED+0.3M ABOVE SLOPE SURFACE)
 - DRILL BIT SIZE - 76MM
 - GRID PATTERN - STAGGERED
 - SPACING OF ANCHORS, i.e. (a-b) - 2.5M (AVG.) (DEPENDING ON THE SLOPE ANGLE/PROFILE, STRATA AT SITE)
 - SIZE OF BASE PLATE - 200MM X 200MM X 10MM (MINIMUM)
 - GROUTING MATERIAL - CEMENT GROUT
 - SIZE OF DOUBLE TWISTED MESH - 60MMX80MM, COMPRISING OF MESH WIRE DIA. 2.2/3.2MM DIA GI WIRE AND CORROSION PROTECTION Zn COATING+PVC



DETAIL-E
TYPICAL DETAIL OF HT ROLLED CABLE NET & ANCHORS



DETAIL - Y

DETAIL Z - TYPICAL SECTION
OF CONTOUR DRAIN

FOR TENDER PURPOSE ONLY

SHEET 8 OF 8

		सड़क परिवहन और राजमार्ग मंत्रालय Ministry of Road Transport and Highways	
PROTECTION / TREATMENT WORKS OF LANDSLIDE ZONE TANAKPUR - GUNJI, NH09, (UTTARAKHAND)		CONSULTANT: टी.पी.सी. इंडिया लिमिटेड THDC INDIA LIMITED	
(PROPOSED TREATMENT MEASURES) CIL 102.600 KM. TO CIL 102.885 KM. TANAKPUR - DHARACHULA - GUNJI ON NH-09. (UTTARAKHAND)		(DETAIL - E)	
DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
MOHIT SAHANI JUNIOR ENGINEER	PRAVEEN YADAV SENIOR ENGINEER	J.P. KOTHARI SENIOR ENGINEER	H.R. AGARWAL DIRECTOR
DATE: 10.03.2024		DATE: 10.03.2024	