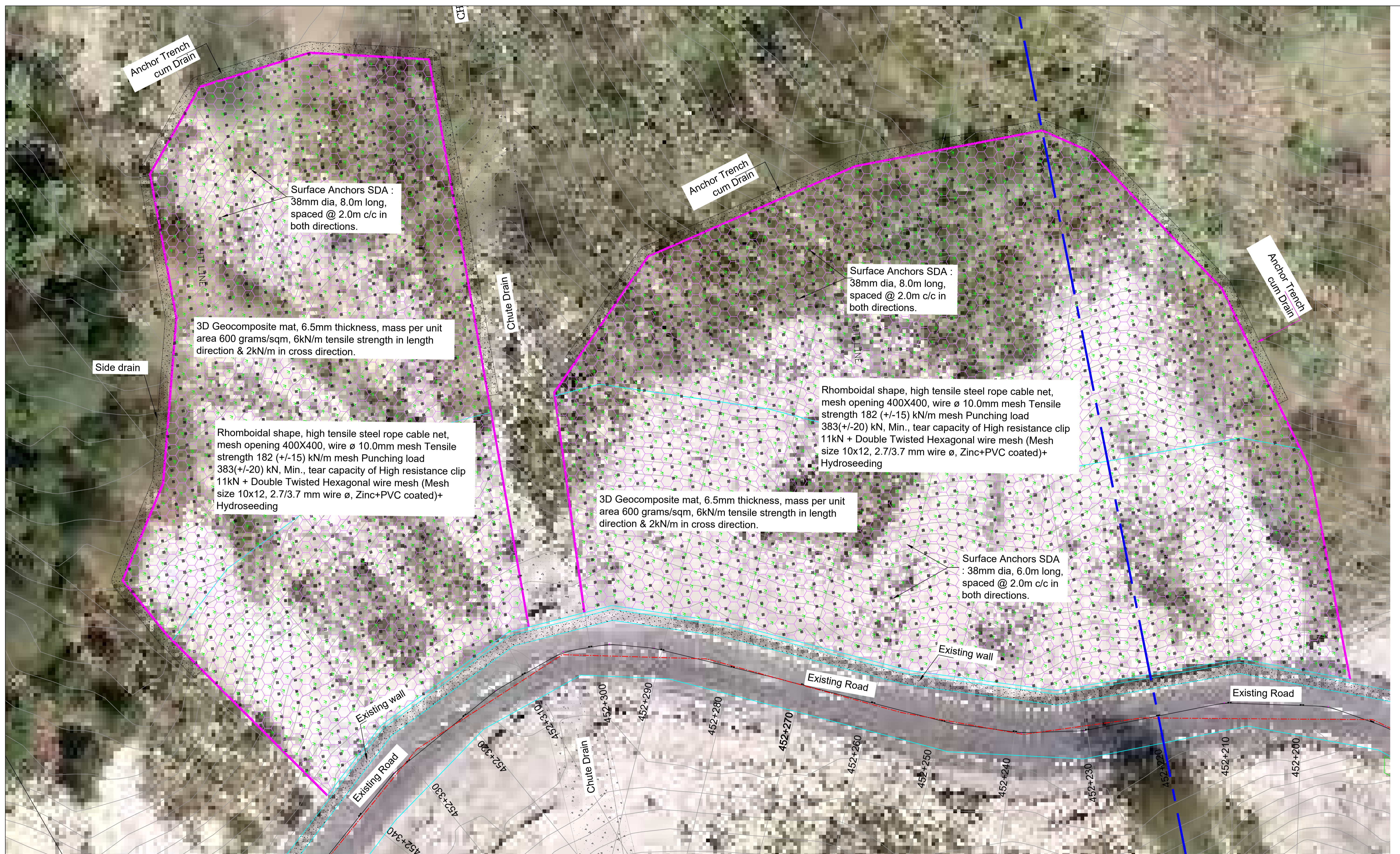


The consultancy services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill& Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), is approximate length 100 km in the State of Uttarakhand

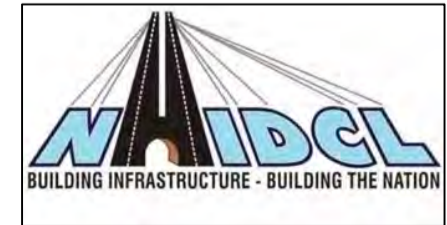
**LANDSLIDE LOCATION-16 KM 452+190 TO  
KM 452+340 (PAKHI VILLAGE)**



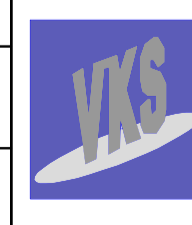
PLAN DRAWING

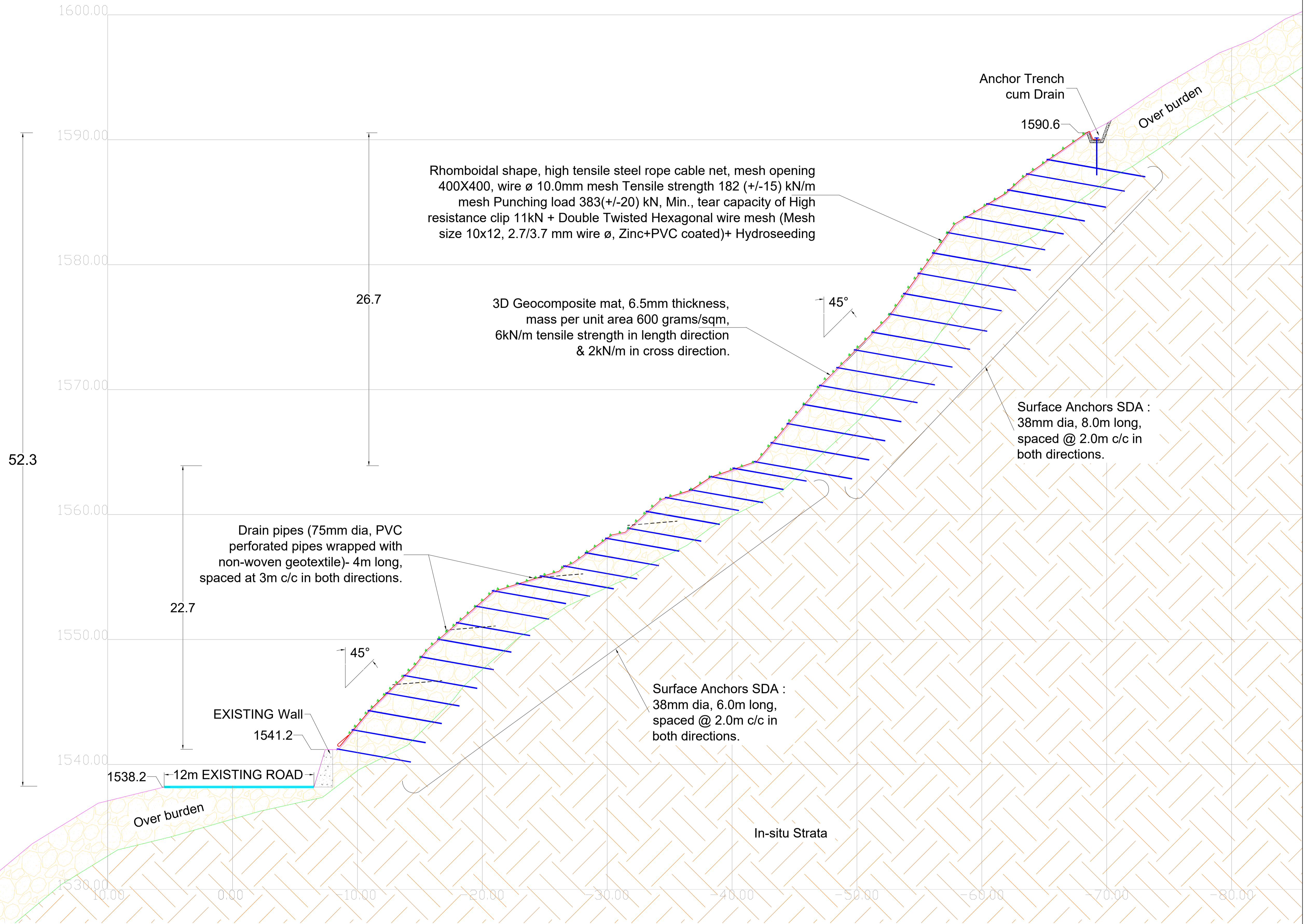
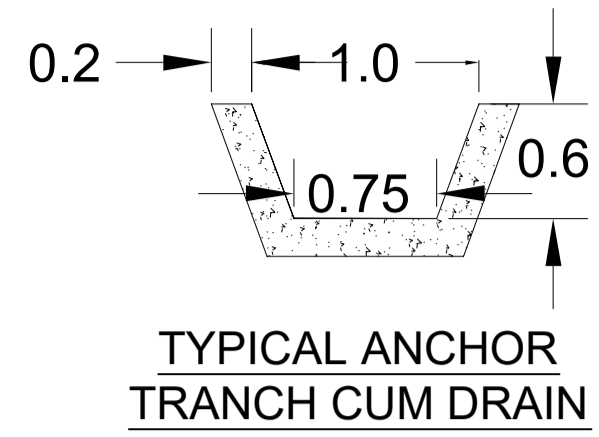
Revision	Changes	By	Chk	Date	Suffix
R1	Changes as per suggestion given by NHIDCL	APK		JAN-2023	
R0	First submission	APK		JULY-2022	

Project Title :  
**Consultancy Services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill & Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), in the State of Uttarakhand**

Client :  
  
**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.**  
 Ministry of Road Transport & Highways, Government of India

Drawing Title :  
 SECTION SHOWING MITIGATION MEASURES  
 AT Km. 452+190 TO 452+340 OF NH-07, PAKHI VILLAGE  
 Drawing Number :  
 VKSIMPL/P-134/NHIDCL/PL/LSZ-16/01  
 Scale :  
 NTS  
 Drawn By : JR  
 Designed By : GKG  
 Checked By : APK  
 Date : JAN-2023

Design Consultant :  
 **VKS INFRA TECH MANAGEMENT PVT. LTD.**  
 Raghunath Bhawan, B-17/882, Block-B, Opp Prachin Shiv Mandir, New Ashok Nagar, Delhi - 110096  
 (Ph: 011-45061563)

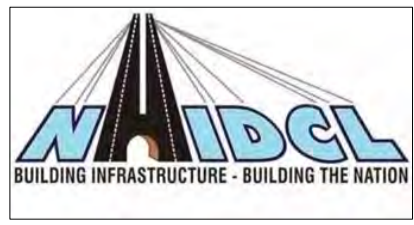


TYPICAL SOLUTION SCHEME AT CH:452+220


APPLICABLE CH:452+200 TO 452+320

Revision	Changes	By	Chk	Date	Suffix
R1	Changes as per suggestion given by NHIDCL	APK		JAN-2023	
R0	First submission	APK		JULY-2022	

Project Title :  
**Consultancy Services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill & Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), in the State of Uttarakhand**

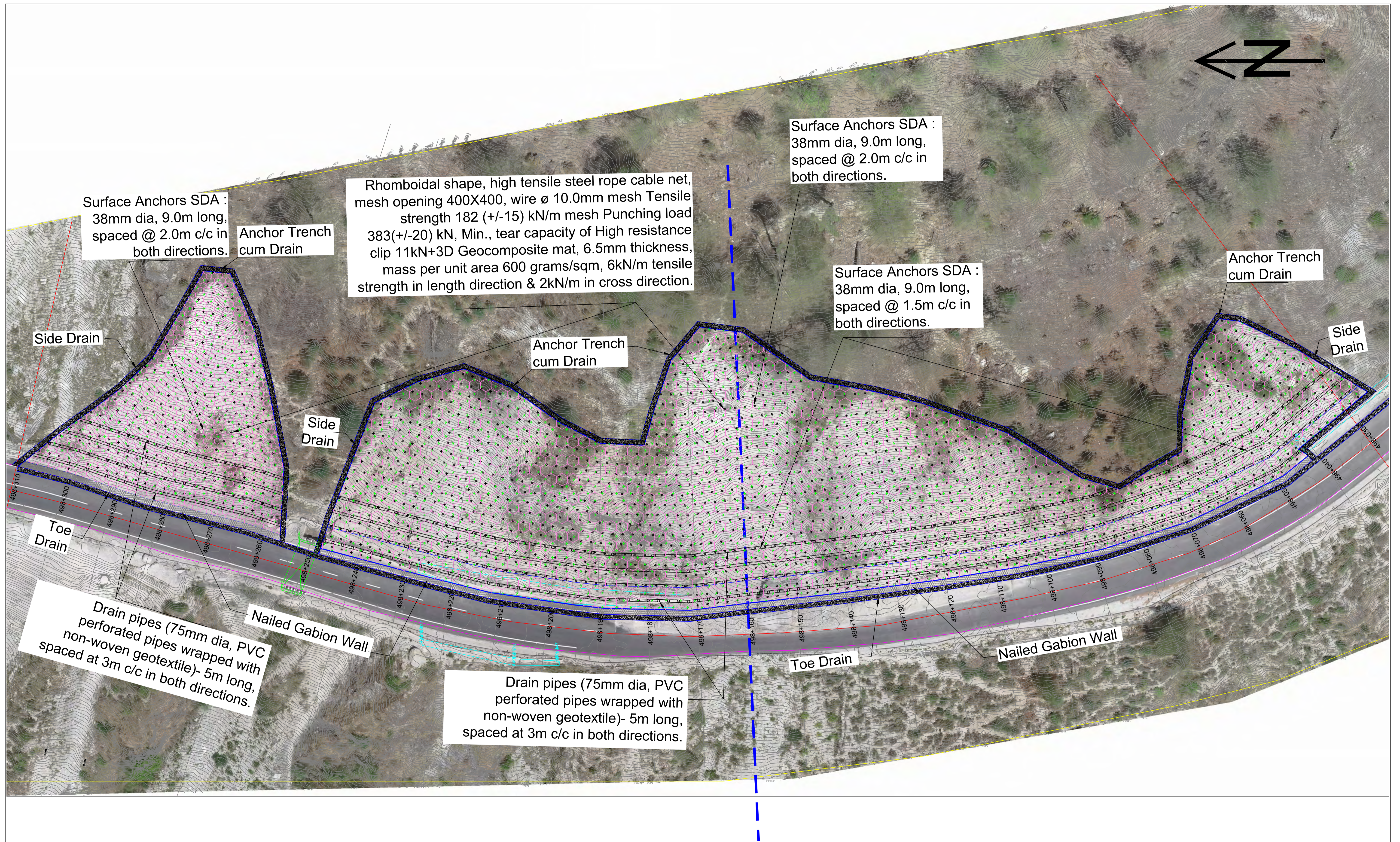
Client :  
  
**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.**  
 Ministry of Road Transport & Highways, Government of India

Drawing Title :  
 SECTION SHOWING MITIGATION MEASURES  
 AT Km. 452+190 TO 452+340 OF NH-07, PAKHI VILLAGE  
 Drawing Number :  
 VKSIMPL/P-134/NHIDCL/PL/LSZ-16/02  
 Scale :  
 NTS  
 Drawn By : JR  
 Designed By : GKG  
 Checked By : APK  
 Date : JAN-2023

Design Consultant :  
 **VKS INFRA TECH MANAGEMENT PVT. LTD.**  
 Raghunath Bhawan, B-17/882, Block-B, Opp Prachin Shiv Mandir, New Ashok Nagar, Delhi - 110096  
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The consultancy services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill& Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), is approximate length 100 km in the State of Uttarakhand

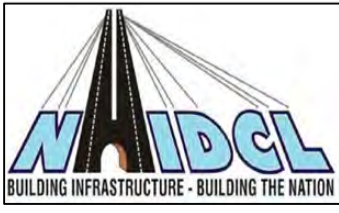
**LANDSLIDE LOCATION-17 KM 453+030 TO  
KM 453+310 (PAKHI VILLAGE)**




**PLAN DRAWING**

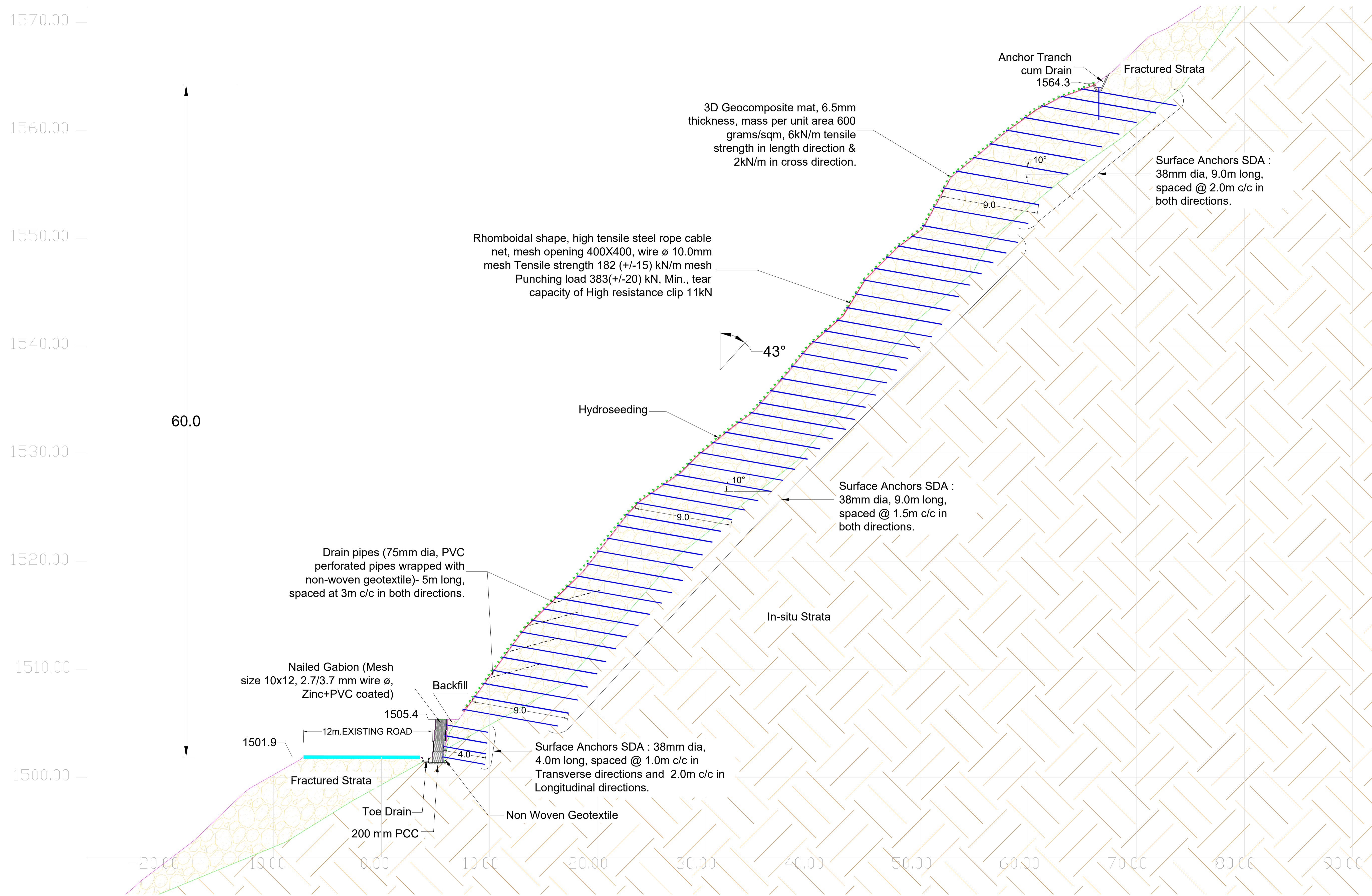
Revision	Details	By	Chk	Date	Suffix
R1	Changes as per suggestion given by NHIDCL	APK		JAN-2023	
R0	First submission	APK		JULY-2022	

Project Title :  
**Consultancy Services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill & Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), in the State of Uttarakhand**

Client :  
  
**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.**  
 Ministry of Road Transport & Highways, Government of India

Drawing Title :  
 PLAN SHOWING MITIGATION MEASURES  
 AT Km. 453+030 TO Km. 453+310 OF NH-07, VILLAGE PAKHI  
 Drawing Number :  
 VKSIMPL/P-134/NHIDCL/PL/LSZ-17/01  
 Scale :  
 NTS  
 Drawn By : JR  
 Designed By : GKG  
 Checked By : APK  
 Date : JAN-2023

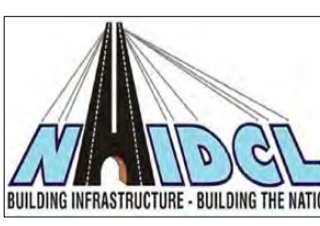
Design Consultant :  
 **VKS INFRA TECH MANAGEMENT PVT. LTD.**  
 Raghunath Bhawan, B-17/882, Block-B, Opp Prachin Shiv Mandir, New Ashok Nagar, Delhi - 110096  
 (Ph: 011-45061563)




TYPICAL SOLUTION SCHEME AT CH:498+160

APPLICABLE CH:498+030 TO 498+310				
Revision	Description	By	Check	Date
R1	Changes as per suggestion given by NHIDCL	APK	JAN-2023	
R0	First submission	APK	JULY-2022	
Revision Details				

Project Title :  
**Consultancy Services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill & Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), in the State of Uttarakhand**

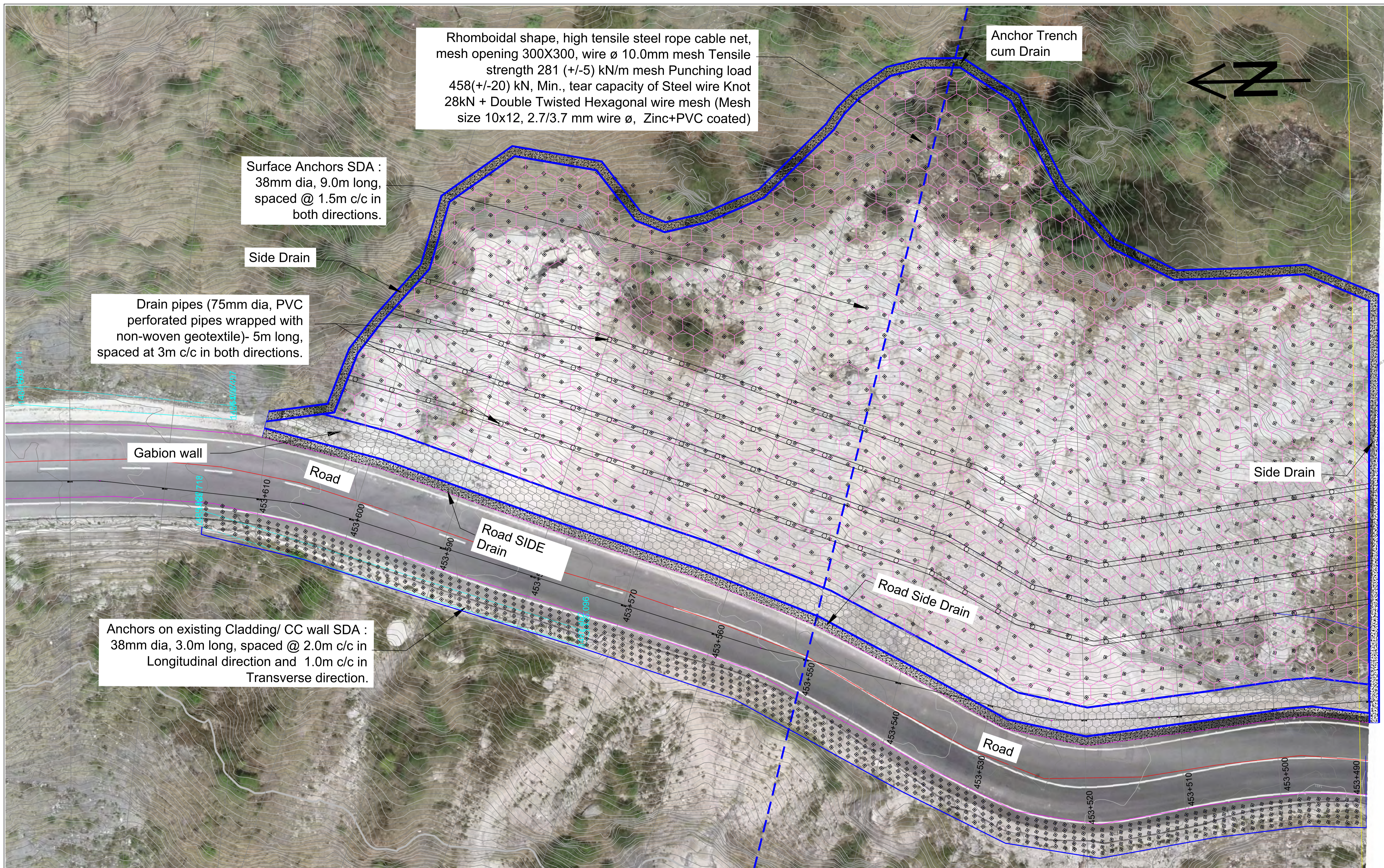
Client :  
  
**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.**  
 Ministry of Road Transport & Highways, Government of India

Drawing Title :  
 SECTION SHOWING MITIGATION MEASURES  
 AT Km. 453+030 TO Km. 453+310 OF NH-07, VILLAGE PAKHI  
 Drawing Number :  
 VKSIMPL/P-134/NHIDCL/PL/LSZ-17/02  
 Scale :  
 NTS  
 Drawn By : JR  
 Designed By : GKG  
 Checked By : APK  
 Date : JAN-2023

Design Consultant :  
 **VKS INFRA TECH MANAGEMENT PVT. LTD.**  
 Raghunath Bhawan, B-17/882, Block-B, Opp Prachin Shiv Mandir, New Ashok Nagar, Delhi - 110096  
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The consultancy services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill& Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), is approximate length 100 km in the State of Uttarakhand

**LANDSLIDE LOCATION-18 KM 453+490 TO  
KM 453+610 (PAKHI VILLAGE)**



Rhomboidal shape, high tensile steel rope cable net, mesh opening 300X300, wire  $\phi$  10.0mm mesh Tensile strength 281 (+/-5) kN/m mesh Punching load 458(+/-20) kN, Min., tear capacity of Steel wire Knot 28kN + Double Twisted Hexagonal wire mesh (Mesh size 10x12, 2.7/3.7 mm wire  $\phi$ , Zinc+PVC coated)

Surface Anchors SDA : 38mm dia, 9.0m long, spaced @ 1.5m c/c in both directions.

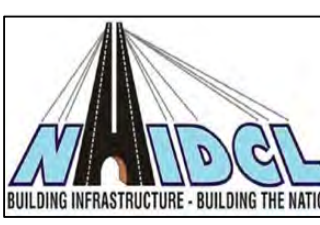
Drain pipes (75mm dia, PVC perforated pipes wrapped with non-woven geotextile)- 5m long, spaced at 3m c/c in both directions.

Anchors on existing Cladding/ CC wall SDA : 38mm dia, 3.0m long, spaced @ 2.0m c/c in Longitudinal direction and 1.0m c/c in Transverse direction.


PLAN DRAWING

Revision	Changes	By	Chk	Date	Suffix
R1	Changes as per suggestion given by NHIDCL	APK		JAN-2023	
R0	First submission	APK		JULY-2022	

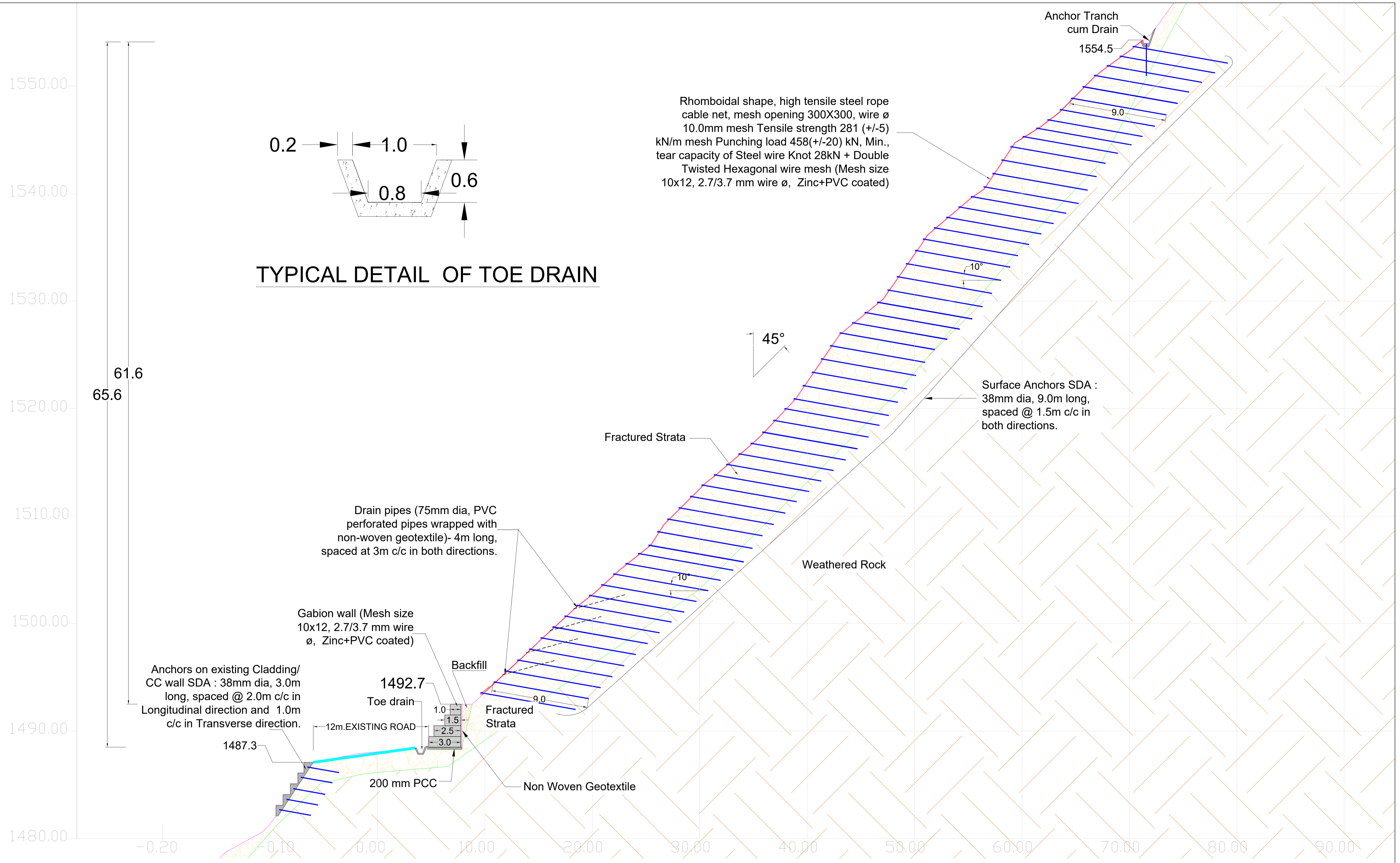
Project Title :  
**Consultancy Services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill & Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), in the State of Uttarakhand**

Client :  
  
**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.**  
 Ministry of Road Transport & Highways, Government of India

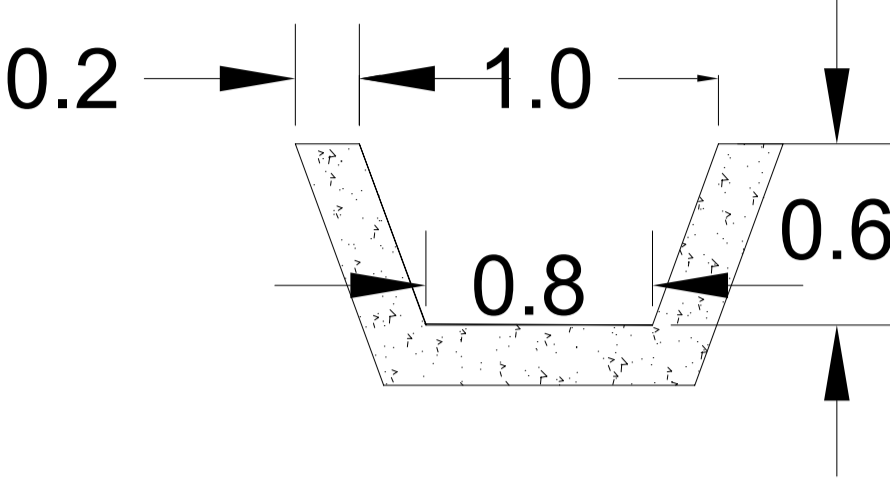
Drawing Title :  
 PLAN SHOWING MITIGATION MEASURES AT Km. 453+490 TO 453+610 OF NH-07, VILLAGE PAKHI  
 Drawing Number :  
 VKSIMPLP-134/NHIDCL/PL/LSZ-18/01  
 Scale :  
 NTS  
 Drawn By : JR  
 Designed By : GKG  
 Checked By : APK  
 Date : JAN-2023

Design Consultant :  
 **VKS INFRA TECH MANAGEMENT PVT. LTD.**  
 Raghunath Bhawan, B-17/882, Block-B, Opp Prachin Shiv Mandir, New Ashok Nagar, Delhi - 110096  
 (Ph: 011-45061563)





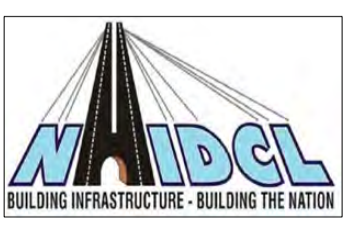
**TYPICAL DETAIL OF TOE DRAIN**




**TYPICAL SOLUTION SCHEME AT CH:453+550**

APPLICABLE CH:453+490 TO 453+610				
Revision	Changes	By	Date	Suffix
R1	Changes as per suggestion given by NHIDCL	APK	JAN-2023	
R0	First submission	APK	JULY-2022	

Project Title :  
**Consultancy Services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill & Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), in the State of Uttarakhand**

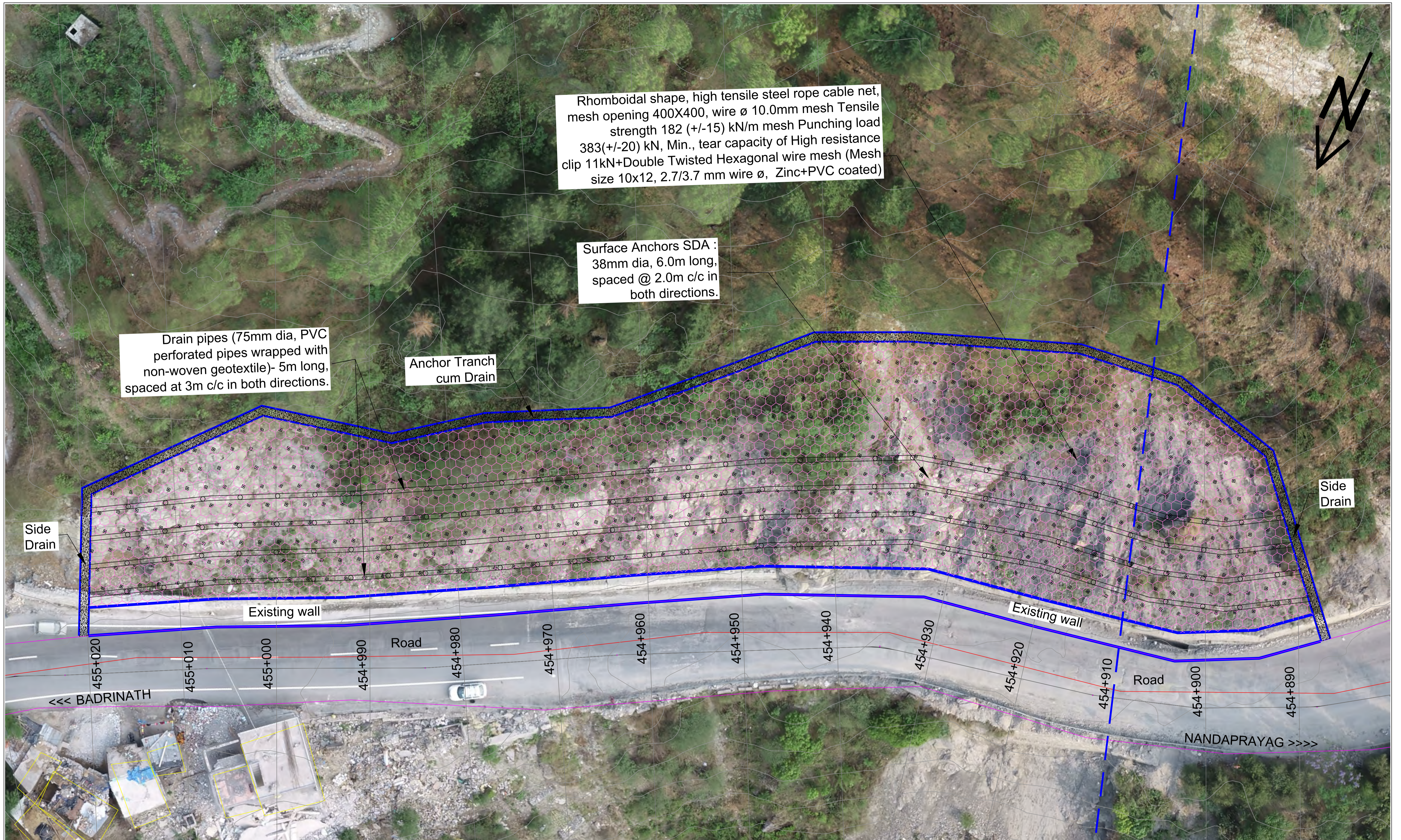
Client :  
  
**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.**  
 Ministry of Road Transport & Highways, Government of India

Drawing Title :  
 SECTION SHOWING MITIGATION MEASURES  
 AT Km. 453+490 TO 453+610 OF NH-07, VILLAGE PAKHI  
 Drawing Number :  
 VKSIMPL/P-134/NHIDCL/PL/LSZ-18/02  
 Scale :  
 NTS  
 Drawn By : JR  
 Designed By : GKG  
 Checked By : APK  
 Date : JAN-2023

Design Consultant :  
 **VKS INFRA TECH MANAGEMENT PVT. LTD.**  
 Raghunath Bhawan, B-17/882, Block-B, Opp Prachin Shiv Mandir, New Ashok Nagar, Delhi - 110096  
 (Ph: 011-45061563)

The consultancy services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill& Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), is approximate length 100 km in the State of Uttarakhand

## **LANDSLIDE LOCATION-19 KM 454+890 TO KM 455+020 (TANGRIMALLA VILLAGE)**



Rhomboidal shape, high tensile steel rope cable net, mesh opening 400X400, wire  $\phi$  10.0mm mesh Tensile strength 182 (+/-15) kN/m mesh Punching load 383(+/-20) kN, Min., tear capacity of High resistance clip 11kN+Double Twisted Hexagonal wire mesh (Mesh size 10x12, 2.7/3.7 mm wire  $\phi$ , Zinc+PVC coated)

Surface Anchors SDA : 38mm dia, 6.0m long, spaced @ 2.0m c/c in both directions.

Drain pipes (75mm dia, PVC perforated pipes wrapped with non-woven geotextile)- 5m long, spaced at 3m c/c in both directions.

Anchor Tranch cum Drain

Side Drain

Side Drain

Existing wall

Existing wall

Road

Road

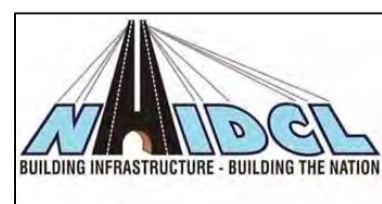
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NANDAPRAYAG >>>>


PLAN DRAWING

Revision	By	Chk	Date	Suffix
R1	APK	JAN-2023		
R0	APK	JULY-2022		
Revision Details				

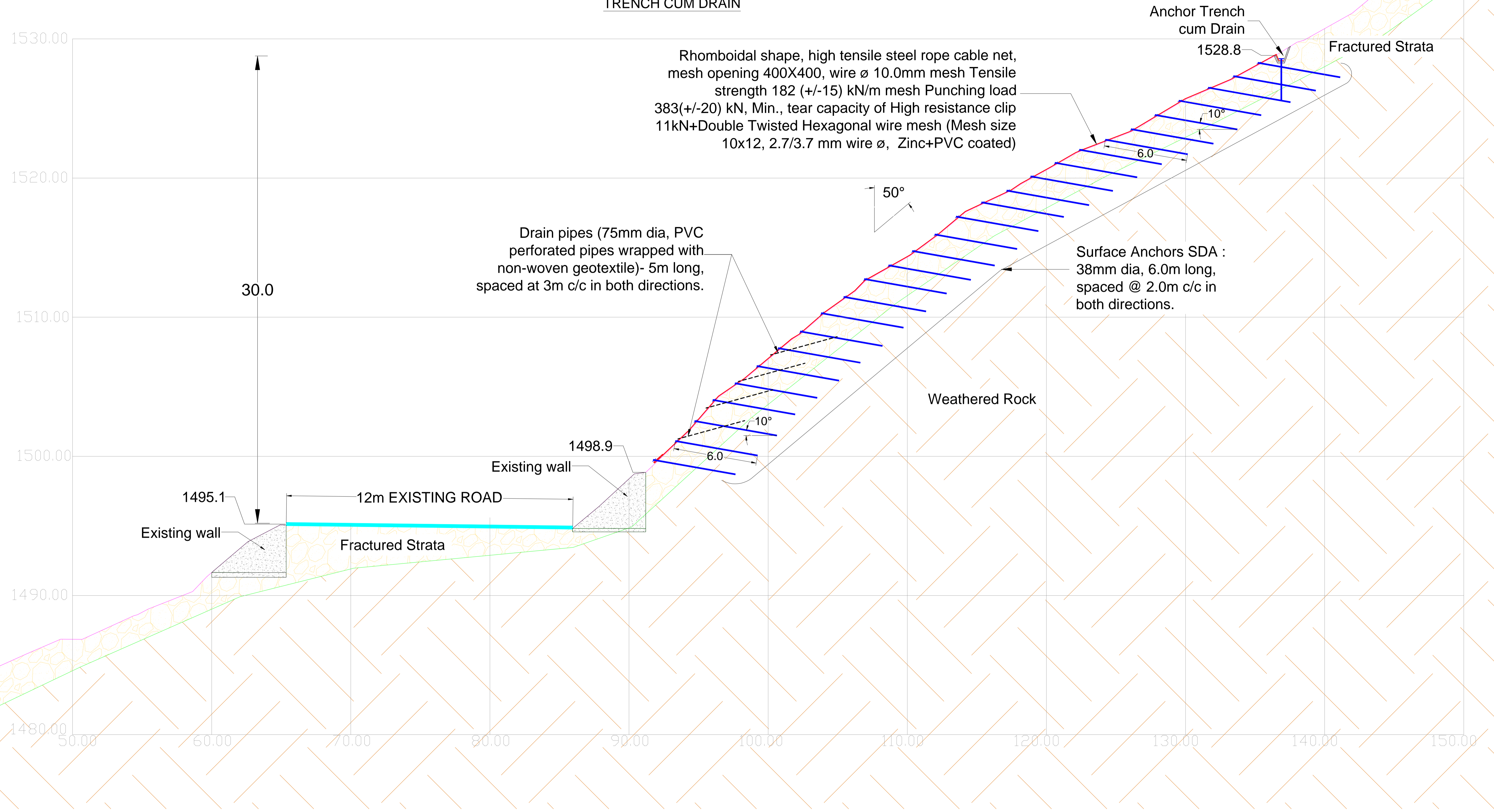
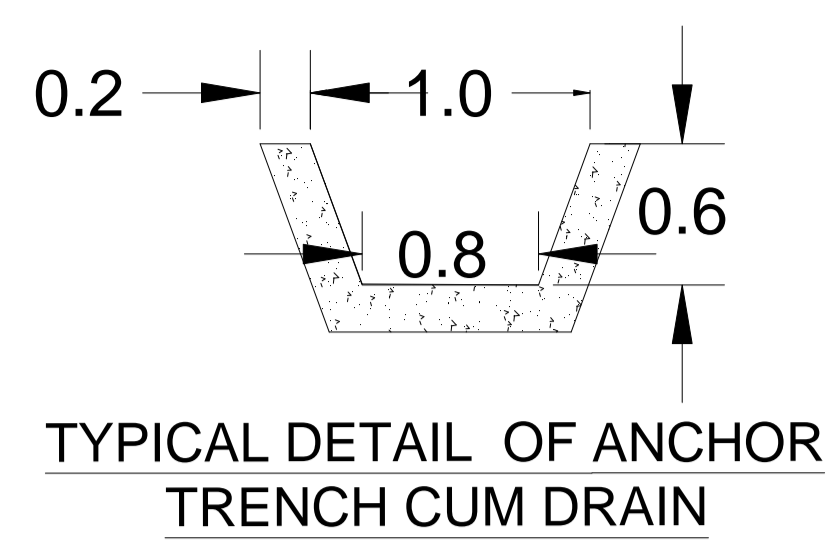
Project Title :  
**Consultancy Services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill & Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), in the State of Uttarakhand**

Client :  
  
**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.**  
 Ministry of Road Transport & Highways, Government of India

Drawing Title :  
 PLAN SHOWING MITIGATION MEASURES  
 AT Km. 454+890 TO 455+020 OF NH-07, VILLAGE TANGRIMALLA  
 Drawing Number :  
 VKSIMPLP-134/NHIDCL/PL/LSZ-19/01  
 Scale :  
 NTS  
 Drawn By : JR  
 Designed By : GKG  
 Checked By : APK  
 Date : JAN-2023

Design Consultant :  
 **VKS INFRA TECH MANAGEMENT PVT. LTD.**  
 Raghunath Bhawan, B-17/882, Block-B, Opp Prachin Shiv Mandir, New Ashok Nagar, Delhi - 110096  
 (Ph: 011-45061563)

Note: Existing toe wall at hill side and valley side shall be completed/reconstruct wherever is missing or damaged




TYPICAL SOLUTION SCHEME AT CH:454+910

APPLICABLE CH:454+890 TO 455+020

Revision	By	Checked	Date	Suffix
R1	APK	APK	JAN-2023	
R0	APK	APK	JULY-2022	
Revision Details				

Project Title :  
**Consultancy Services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill & Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), in the State of Uttarakhand**

Client :



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.  
 Ministry of Road Transport & Highways, Government of India

Drawing Title :  
 SECTION SHOWING MITIGATION MEASURES AT Km. 454+890 TO 455+020 OF NH-07, VILLAGE TANGRIMALLA

Drawing Number :  
 VKSIMPL/P-134/NHIDCL/PL/LSZ-19/02

Scale :  
 NTS

Drawn By : JR  
 Designed By : GKG  
 Checked By : APK  
 Date : JAN-2023

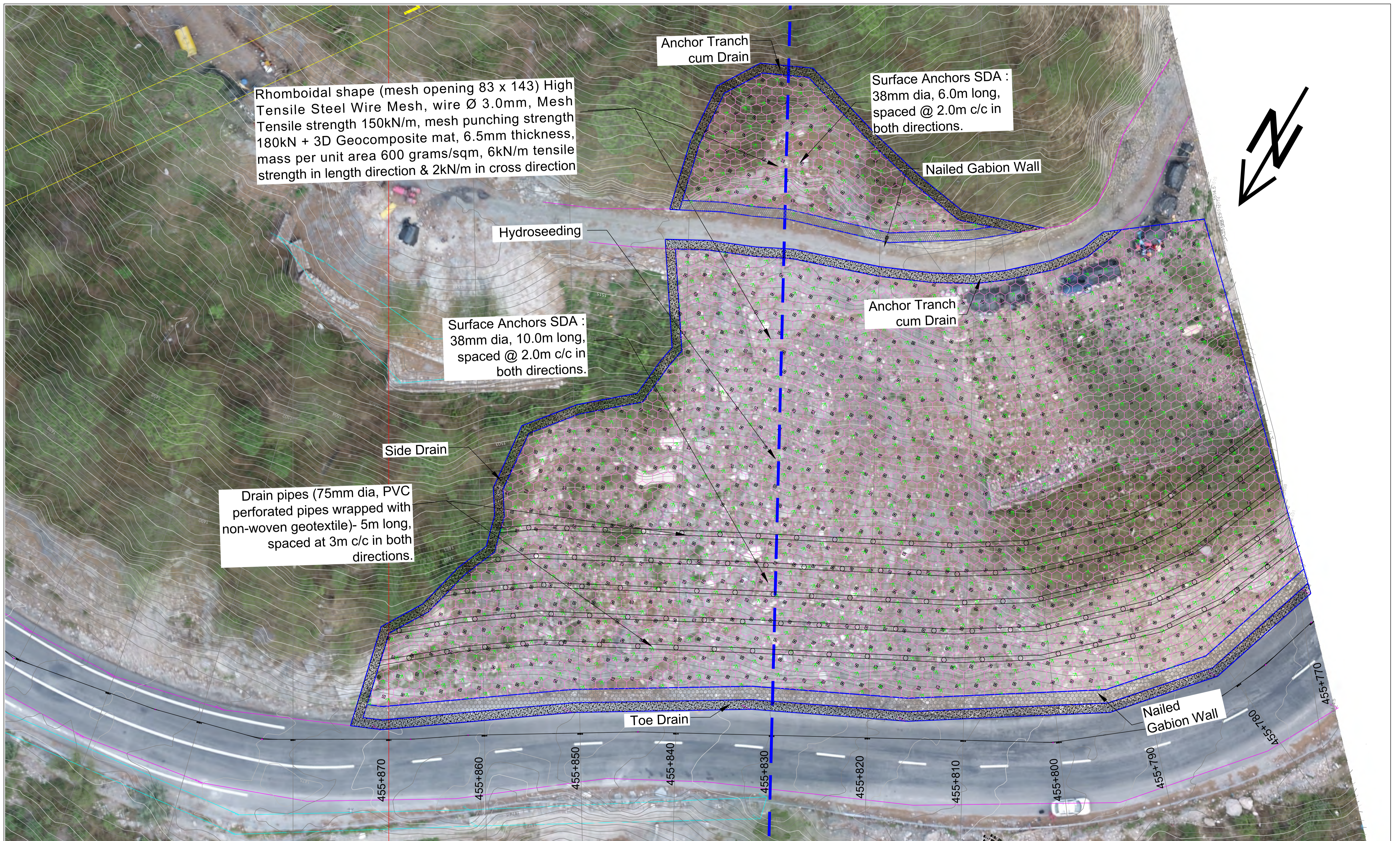
Design Consultant :



**VKS INFRA TECH MANAGEMENT PVT. LTD.**  
*Consulting Engineers, Planners & Managers*  
 Raghunath Bhawan, B-17/882, Block-B, Opp Prachin Shiv Mandir, New Ashok Nagar, Delhi - 110096  
 (Ph: 011-45061563)

The consultancy services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill& Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), is approximate length 100 km in the State of Uttarakhand

## **LANDSLIDE LOCATION-20 KM 455+770 TO KM 455+870 (TANGRIMALLA VILLAGE)**



Rhomboidal shape (mesh opening 83 x 143) High Tensile Steel Wire Mesh, wire Ø 3.0mm, Mesh Tensile strength 150kN/m, mesh punching strength 180kN + 3D Geocomposite mat, 6.5mm thickness, mass per unit area 600 grams/sqm, 6kN/m tensile strength in length direction & 2kN/m in cross direction

Surface Anchors SDA : 38mm dia, 6.0m long, spaced @ 2.0m c/c in both directions.

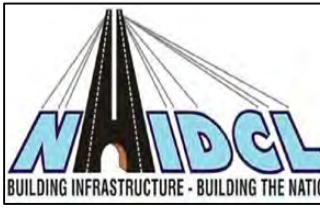
Surface Anchors SDA : 38mm dia, 10.0m long, spaced @ 2.0m c/c in both directions.

Drain pipes (75mm dia, PVC perforated pipes wrapped with non-woven geotextile)- 5m long, spaced at 3m c/c in both directions.


PLAN DRAWING

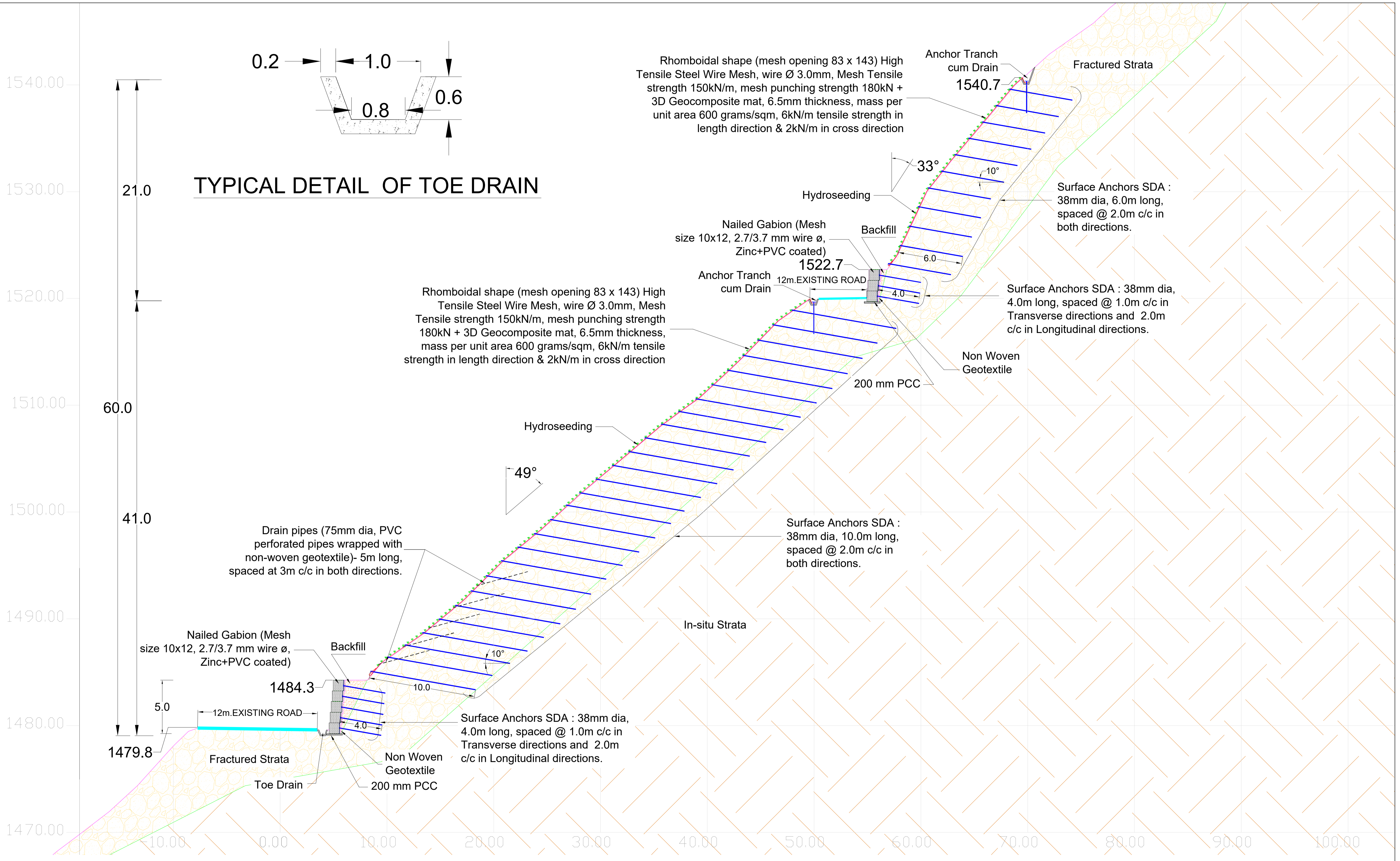
Revision	By	Chk	Date	Suffix
R1	APK	JAN-2023		
R0	APK	JULY-2022		
Revision Details				

Project Title :  
**Consultancy Services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill & Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), in the State of Uttarakhand**

Client :  
  
**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.**  
 Ministry of Road Transport & Highways, Government of India

Drawing Title :  
 PLAN SHOWING MITIGATION MEASURES AT Km. 455+770 TO 455+870 OF NH-07, VILLAGE TANGRIMALLA  
 Drawing Number :  
 VKSIMPLP-134/NHIDCL/PL/LSZ-20/01  
 Scale :  
 NTS  
 Drawn By : JR  
 Designed By : GKG  
 Checked By : APK  
 Date : JAN- 2023

Design Consultant :  
 **VKS INFRA TECH MANAGEMENT PVT. LTD.**  
 Raghunath Bhawan, B-17/882, Block-B, Opp Prachin Shiv Mandir, New Ashok Nagar, Delhi - 110096  
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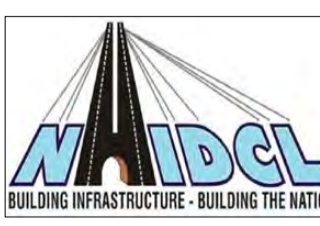


**TYPICAL DETAIL OF TOE DRAIN**


**TYPICAL SOLUTION SCHEME AT CH:455+830**

APPLICABLE CH:455+770 TO 455+870				
Revision	Description	By	Date	Suffix
R1	Changes as per suggestion given by NHIDCL	APK	JAN-2023	
R0	First submission	APK	JULY-2022	

Project Title :  
**Consultancy Services for Identification & Preparation of Detailed Project Report for Slope Protection work on Hill & Valley Side, Sinking Zones and Bridges in between Km 368.000 to Km 468.000 (NH-07), in the State of Uttarakhand**

Client :  
  
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 Ministry of Road Transport & Highways, Government of India

Drawing Title :  
 SECTION SHOWING MITIGATION MEASURES  
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 VKSIMPL/P-134/NHIDCL/PL/LSZ-20/02  
 Scale :  
 NTS  
 Drawn By : JR  
 Designed By : GKG  
 Checked By : APK  
 Date : JAN-2023

Design Consultant :  
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