

NOTES

General

1. All Dimensions are in meters unless otherwise specified.
2. The given scheme is tentative and not based on design.

Material Specifications

1. Polymer reinforced synthetic erosion control mat which consist of a polypropylene filaments three-dimensional matrix having random shape that is extruded onto a polypropylene extruded geogrid (reinforcement element) during the manufacturing process. Polymer reinforced synthetic erosion control mat shall have maximum cover-management factor (C-factor) of 0.015, 0.032, 0.043 for rainfall intensity of 50 mm/h, 100mm/h and 150mm/h respectively. C factor value of geocomposite shall be based on full scale test run as per ASTM D6459 certified and signed by CPEC. Self-certification from Manufacturer shall not be accepted. Geocomposite shall have a nominal/minimum thickness of 15/13 mm (EN ISO 9863-1), a minimum mass per unit area not lower than to 420 gm/m² (EN ISP 9864), Tensile strength of 5.5 kN/m in both Machine direction and Cross Machine direction as per EN ISO 10319 and, a void index not lower than 90%.
2. Gabion fascia unit with integrated tail as reinforcement of length 3m that is made with double twisted hexagonal shaped steel woven Wire mesh, mechanically edged & selvedged and wire dia. 2.7/3.7mm (ID/OD) with (90% Zn +10% Al) + High abrasion resistant polymer coated with minimum tensile strength of 40kN/m and punch strength 25kN as per IRC: SP-116, IS:16014 & MORTH -Specifications for Road & Bridge Works: Section 2500. Polymer coated wire mesh, when subjected to neutral salt spray test in accordance with ISO 9227, after 10,000 hours of exposure the mesh should not exhibit more than 5% Dark Brown Rust (DBR) and polymer should be resistant to abrasion after 300 cycles and shall not expose metal wire in accordance with the procedure described in ASTM A 975.
3. Strong fascia gabion unit is made with double twisted hexagonal shaped steel woven wire mesh, Mesh Type 10 x12, Wire Dia. 2.7/3.7mm, mechanically edged & selvedged, (front panel wire dia. stronger than other panel) with (90% Zn +10% Al) + High abrasion resistant polymer coated with minimum tensile strength of 40kN/m and punch strength 25kN as per IRC: SP-116, IS:16014 & MORTH -Specifications for Road & Bridge Works: Section 3100. Polymer coated wire mesh, when subjected to neutral salt spray test in accordance with ISO 9227, after 10,000 hours of exposure the mesh should not exhibit more than 5% Dark Brown Rust (DBR) and polymer should be resistant to abrasion after 300 cycles and shall not expose metal wire in accordance with the procedure described in ASTM A 975.
4. Gabion Mattress made with double twisted hexagonal-shaped steel woven wire mesh, mechanically edged & selvedged, with prefabricated vertical ties, pleated diaphragm, (90% Zn +10% Al) + High abrasion resistant polymer coated having minimum Tensile Strength parallel to twist 37 kN/m and Punch Strength of 21 kN as per IS 16014: 2018. Polymer coated wire mesh, when subjected to neutral salt spray test in accordance with ISO 9227, after 10,000 hours of exposure the mesh should not exhibit more than 5% Dark Brown Rust (DBR) and polymer should be resistant to abrasion after 300 cycles and shall not expose metal wire in accordance with the procedure described in ASTM A 975.
5. Green fascia unit is made with double twisted hexagonal shaped steel woven wire mesh, mechanically edged & selvedged, mesh type 10x12, wire dia 2.7/3.7mm (ID/OD) with (90% Zn +10% Al) + High abrasion resistant polymer coated having minimum Tensile Strength parallel to twist 40kN/m and Punch Strength of 25kN, with a biodegradable erosion control blanket and a welded mesh panel with three steel tie rods / triangular brackets of dia 8mm. Polymer coated wire mesh, when subjected to neutral salt spray test in accordance with ISO 9227, after 10,000 hours of exposure the mesh should not exhibit more than 5% Dark Brown Rust (DBR) and polymer should be resistant to abrasion after 300 cycles and shall not expose metal wire in accordance with the procedure described in ASTM A 975.
6. Placing and filling stones of gabion fascia of reinforced soil wall & gabion mattress, of size in the range 150mm-250mm, strong, hard, durable having good crushing strength and preferably having flat face as per details specified in the technical specifications.
7. High Strength Uni-axial geogrid is a Geogrid will act as Soil Reinforcement. The high Strength Flexible geogrid shall have a high-quality coating like LDPE and shall confirm to MoRTH-Specifications for Road & Bridge Works: section 700 and 3100. The manufacture of high strength flexible geogrid shall have creep test data from independent accredited laboratory for period over 5 years at design temperature of 20°C. High strength uni-axial Geogrid will act as primary reinforcement and mesh will act as secondary reinforcement.

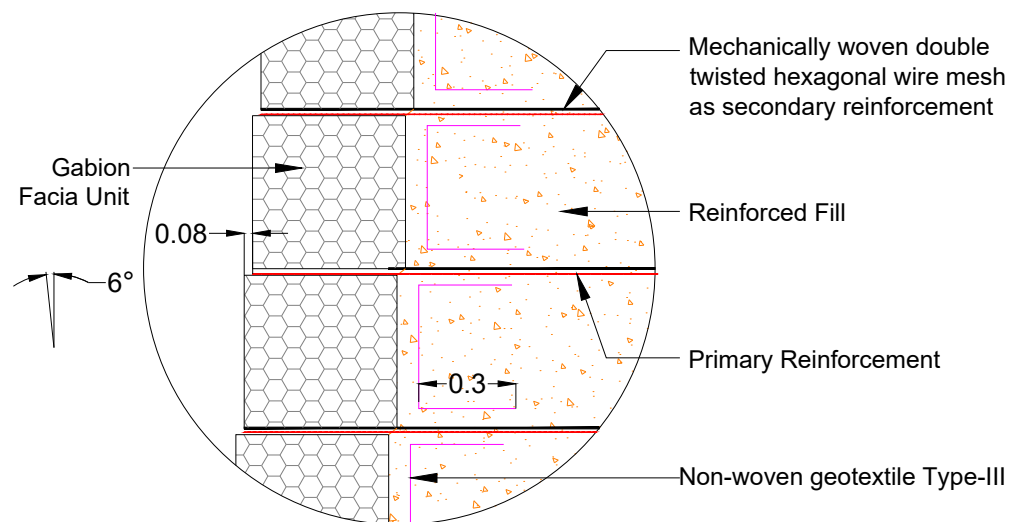
8. Non-woven Geotextile (Type III) should be provided which acts as a separator at the rear end of gabion / gabion fascia units, Non-woven Geotextile (Type I) laid below the gabion mattress. Non-woven Geotextile shall be Needle punched made of Polyester Staple Fibre which are UV stabilized. The material specifications shall be as per MoRTH - section 700.
9. High Performance-Flexible Growth Medium is a flexible Growth Medium which is a hydraulically-applied, 100% bio-degradable, High Performance-Flexible Growth Medium (HP-FGM) composed of 100% recycled thermally refined (within a pressure vessel) wood fibers, crimped interlocking man-made biodegradable fibers, mineral activators, naturally derived cross linked biopolymers and water absorbents. This is phyto-sanitized, free from plastic netting, requires no curing period and upon application forms an intimate bond with the soil surface to create a continuous, porous, absorbent and flexible erosion resistant blanket that allows for rapid germination and accelerated plant growth.
10. Biotic Soil Media is a compost which has been designed as a topsoil alternative that accelerates the development of depleted soils/substrates with low organic matter, low nutrient levels and limited biological activity.
11. Bioengineering measures like hydroseeding and live staking shall be adopted for green fascia units and growing vegetation.
12. Geo Composite drain composite for use behind walls having three dimensional composite with thermobonding a draining core having "w" configuration of minimum thickness 8mm, with two filtering uv stabilized polypropylene non woven geotextile of minimum thickness of 0.75mm characteristic opening size (O90) of 110 micron and tensile strength of 8.0 kN/m that will be working as separation or protecting layer, geocomposite having in plane flow capacity of 1.2 l / (m.s) at hydraulic gradient of 1.0 & 200 kpa pressure and tensile strength of 18 kn/m, with mass per unit area of 890 GSM.
13. The backfill shall be of good quality, free draining granular soil and plasticity index should be less than 6. The percentage of fines passing 75-micron sieve should not be greater than 15%. The maximum particle size in the structural fill shall not be more than 75 mm. The structural fill material should be basically free draining, and it should be devoid of dirt and deleterious material. The angle of friction shall be greater than or equal to 30 degrees. It should confirm to MORT&H - Specifications for Road & Bridge Works, Section 3100.
14. The structural fill shall be carefully placed and compacted in the area behind the fascia units extending up to the end of the design reinforcement length for the layer of structural fill to be placed above the reinforcement the maximum particle should not exceed 40mm for a minimum compacted thickness of 200mm. structural soil shall be compacted to 95% modified proctor density. Perforated PVC Pipes of 160mm internal dia, wrapped in non woven geotextile shall be installed as indicated in drawing in Trench Drain. Backfill & structural fill shall be free draining as per MORTH specification clause 3100.
15. U-Pins shall be of Mild steel 8mm dia, of depth 500mm.
16. Perforated PVC Pipes of 160mm internal dia, wrapped in non woven geotextile shall be installed as indicated in drawing.
17. Sub-surface drainage pipe shall be of 50mm dia, 3m length @ 3m c/c spacing, PVC perforated pipes wrapped with non-woven geotextile.
18. Slope protection measure with erosion control mat and U-pins aims at providing surface protection / erosion control and does not address global stability.

PROJECT TITLE : DETAILED TECHNICAL STUDY OF VARIOUS BREACHED STRETCHES ON MUNGIKAMI-CHAMPAKNAGAR SECTION OF NH-08 LOCATIONS IN THE STATE OF TRIPURA

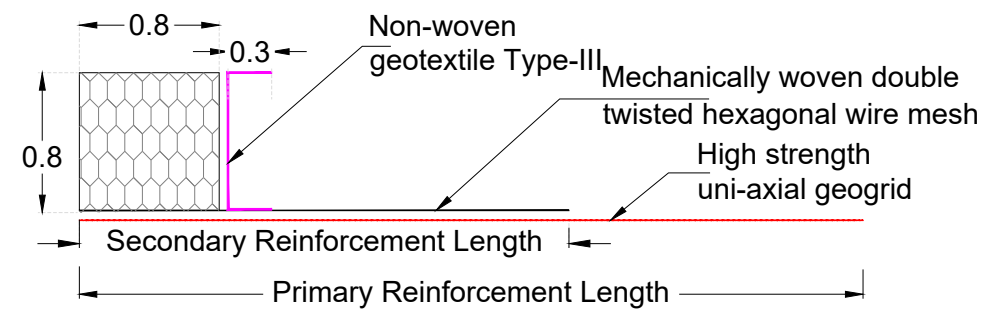
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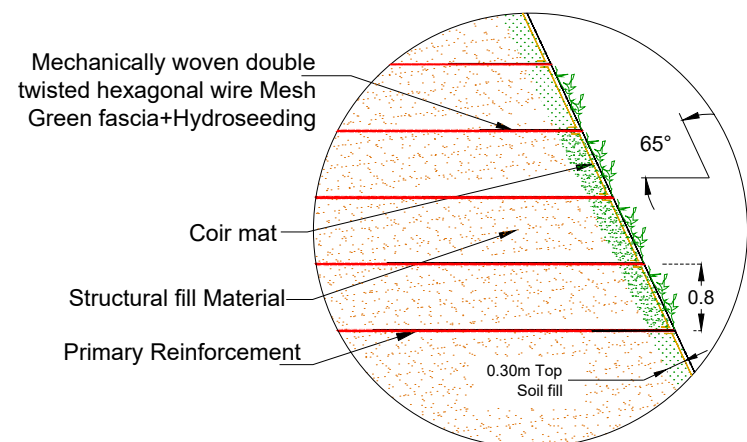
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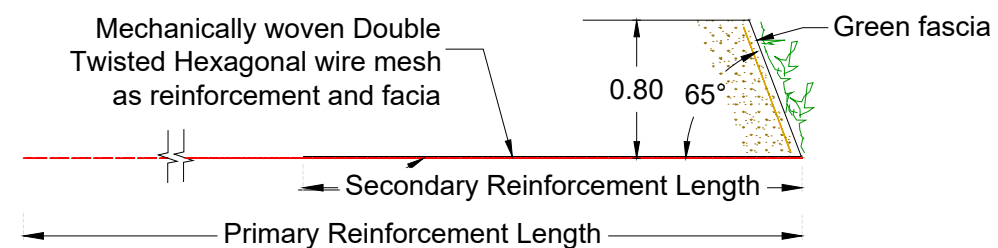
DETAIL (A) TYPICAL DETAILS OF REINFORCED SOIL STRUCTURE



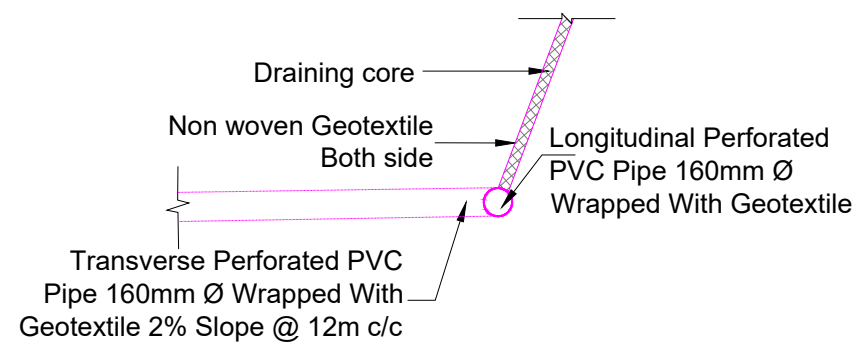
TYPICAL DETAIL OF GABION FACIA UNIT (TMS UNIT)



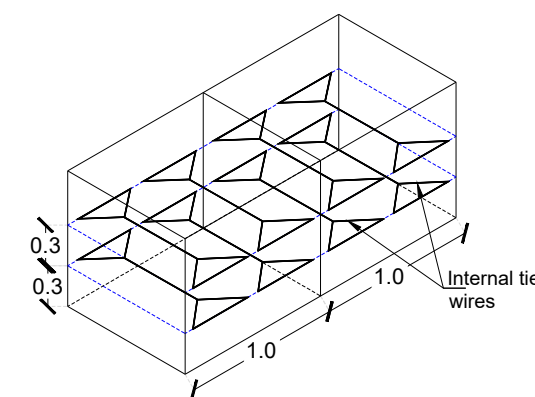
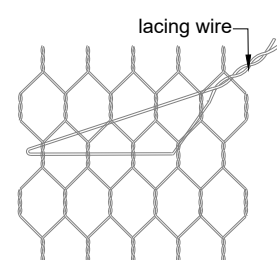
DETAIL (C) TYPICAL DETAILS OF REINFORCED SOIL STRUCTURE WITH GREEN FACIA SYSTEM



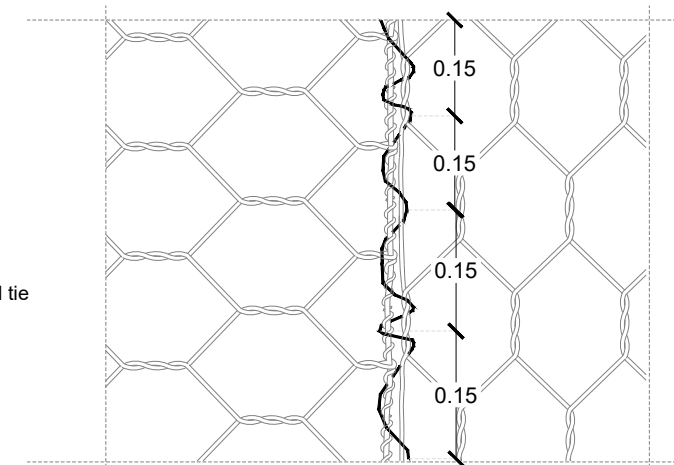
TYPICAL DETAIL OF GREEN FACIA UNIT



DETAIL- B OF GEOCOMPOSITE DRAIN (MACDRAIN)



BRACING DETAILS FOR GABION FACIA



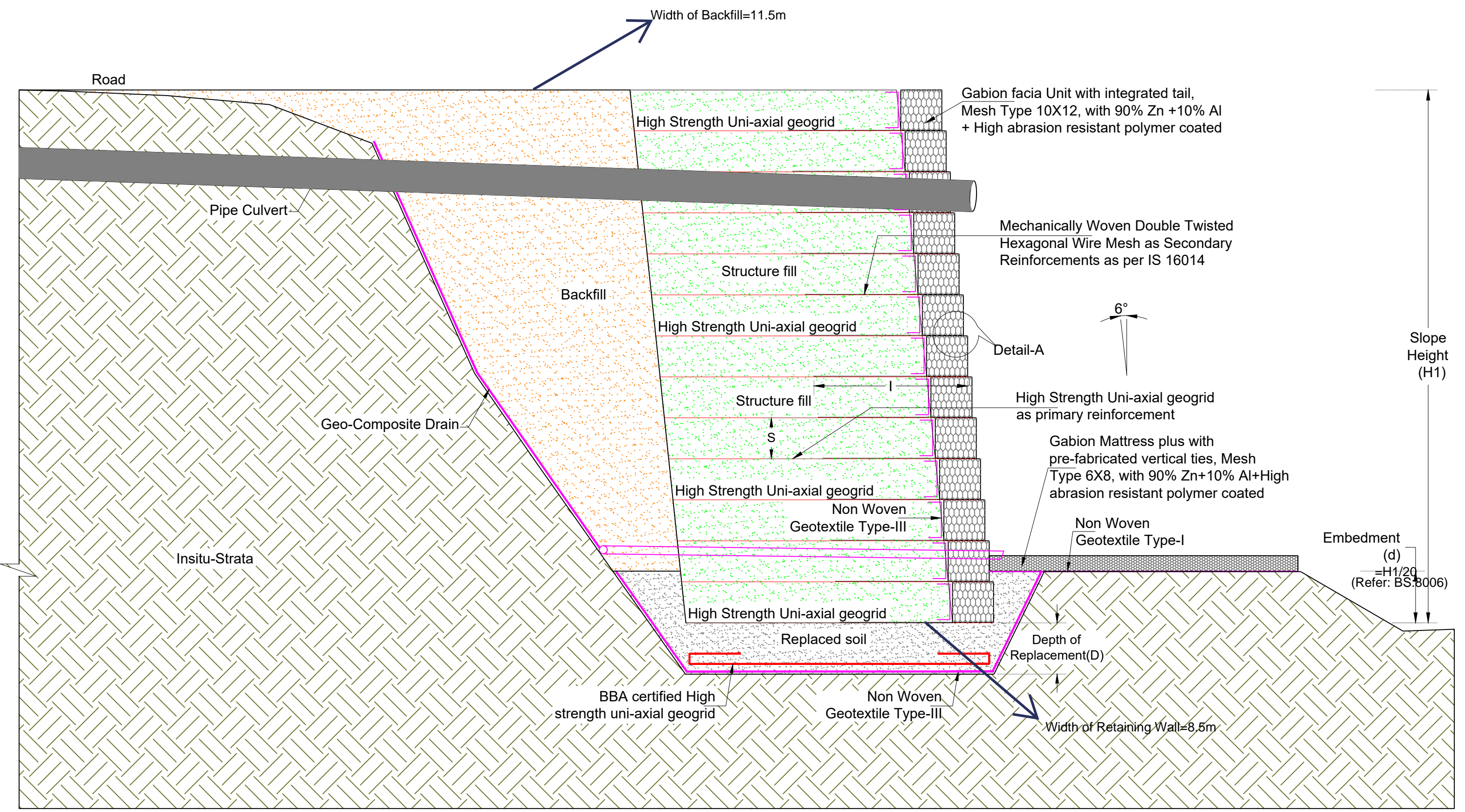
LACING DETAIL

PROJECT TITLE : DETAILED TECHNICAL STUDY OF VARIOUS BREACHED STRETCHES ON MUNGIKAMI-CHAMPAKNAGAR SECTION OF NH-08 LOCATIONS IN THE STATE OF TRIPURA

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TCS-1(A) TYPICAL CROSS SECTION OF SLOPE PROTECTION MEASURES USING PARAMESH SYSTEM

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PROJECT:- DETAILED TECHNICAL STUDY OF VARIOUS BREACHED STRETCHES ON
MUNGIKAMI-CHAMPAKNAGAR SECTION OF NH-08 LOCATIONS IN THE STATE OF TRIPURA

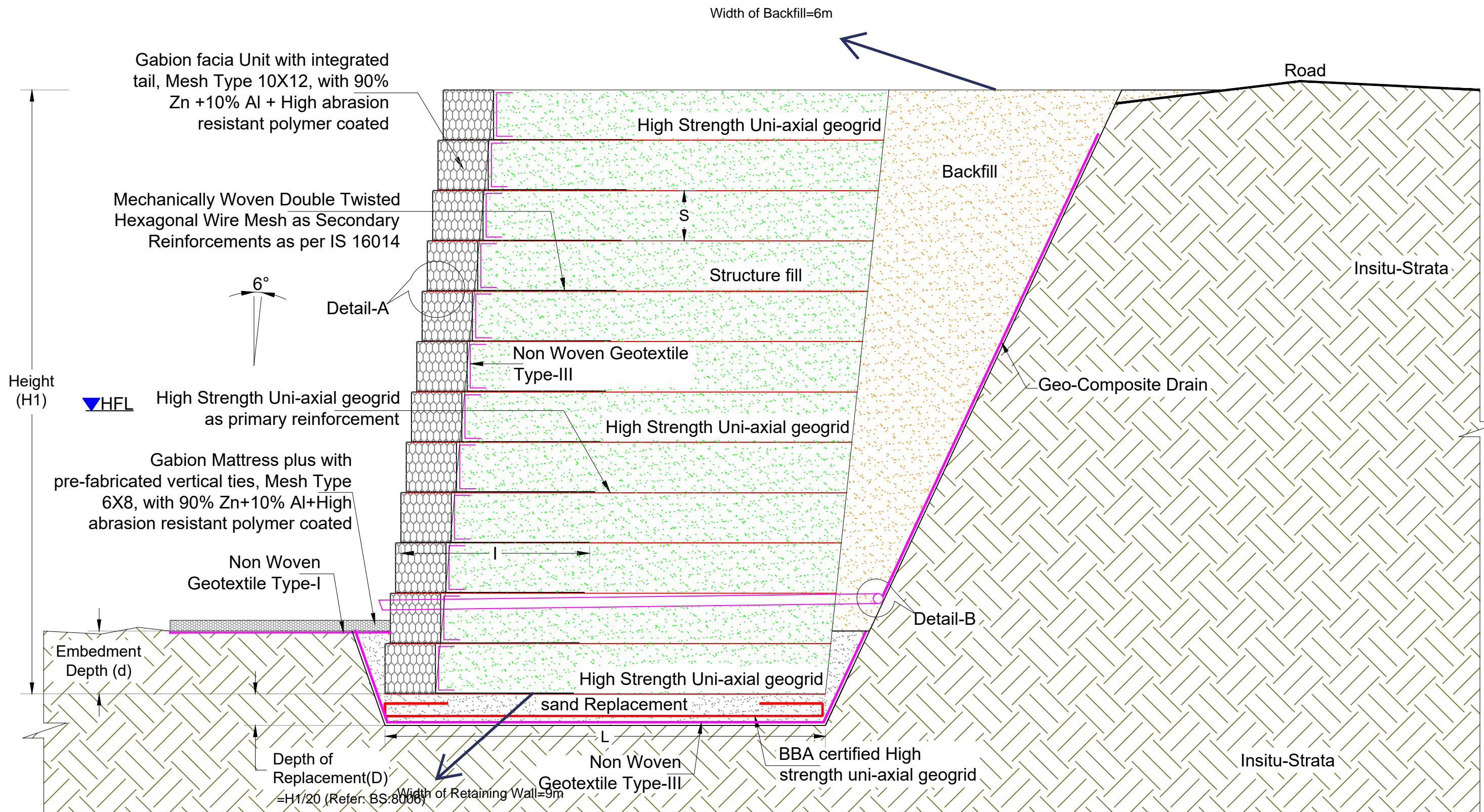
CONSULTANT:- NIT AGARTALA

REV: R0

N.T.S.

SHEET: 11 OF 16

DATE: 18.03.2025



TCS-1(B) TYPICAL CROSS SECTION OF REINFORCED SOIL STRUCTURE USING PARAMESH SYSTEM

CONCEPTUAL SCHEME ONLY,
NOT FOR CONSTRUCTION

PROJECT:- DETAILED TECHNICAL STUDY OF VARIOUS BREACHED STRETCHES ON
MUNGIKAMI-CHAMPAKNAGAR SECTION OF NH-08 LOCATIONS IN THE STATE OF TRIPURA

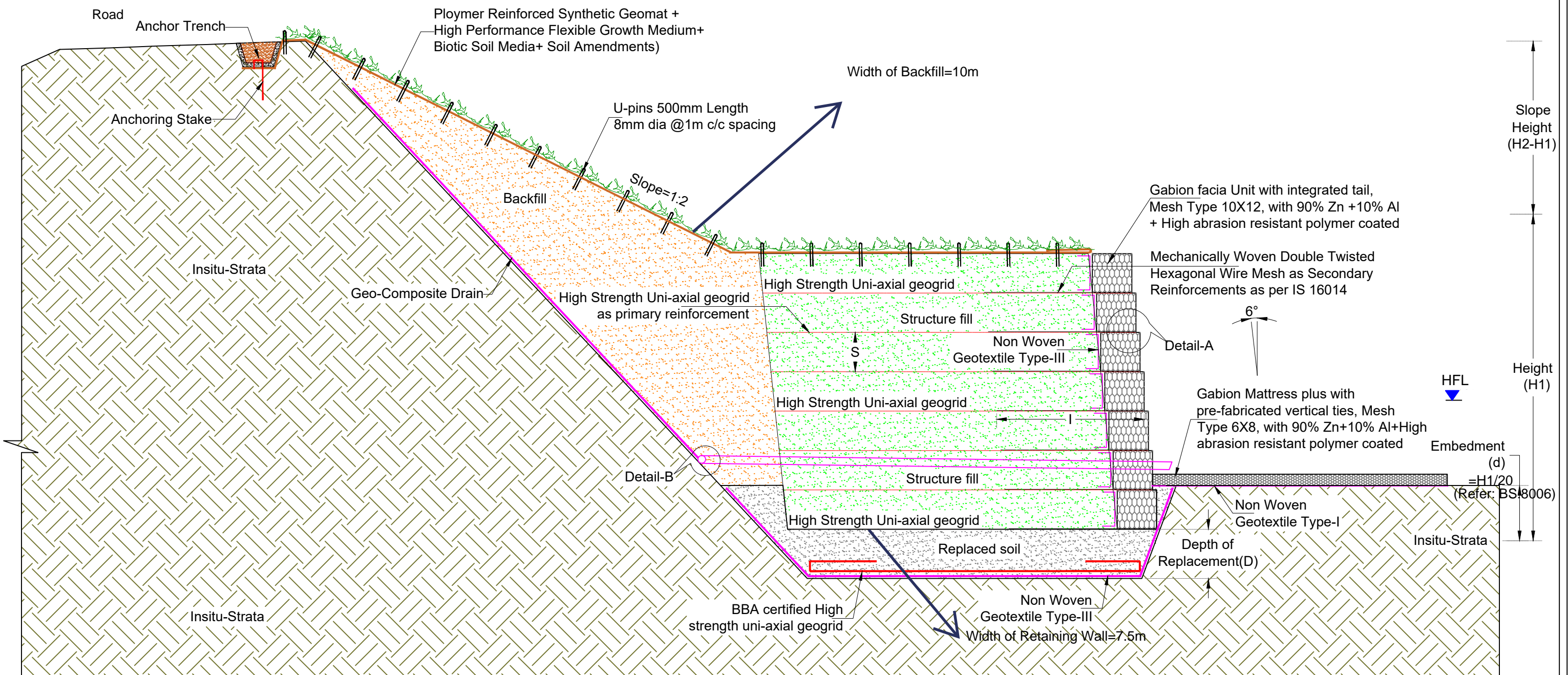
CONSULTANT:- NIT AGARTALA

REV: R0

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SHEET: 12 OF 16

DATE: 18.03.2025



TCS-2A TYPICAL CROSS SECTION OF SLOPE PROTECTION MEASURES USING PARAMESH SYSTEM AND SYNTHETIC GEOMAT

PROJECT:- DETAILED TECHNICAL STUDY OF VARIOUS BREACHED STRETCHES ON MUNGIAKAMI-CHAMPAKNAGAR SECTION OF NH-08 LOCATIONS IN THE STATE OF TRIPURA

CONSULTANT:- NIT AGARTALA

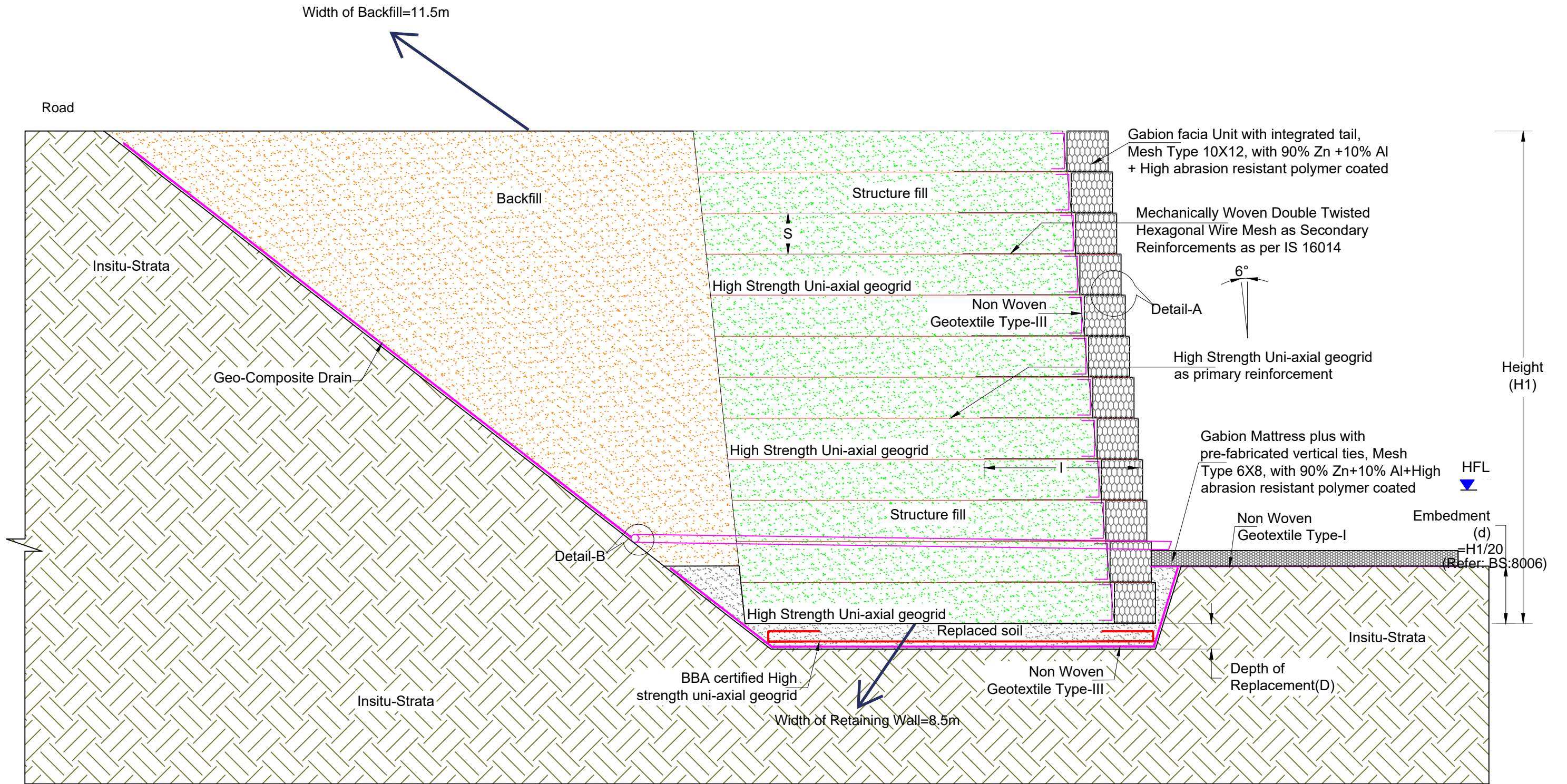
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DATE: 18.03.2025



TCS-2B TYPICAL CROSS SECTION OF REINFORCED SOIL STRUCTURE USING PARAMESH SYSTEM

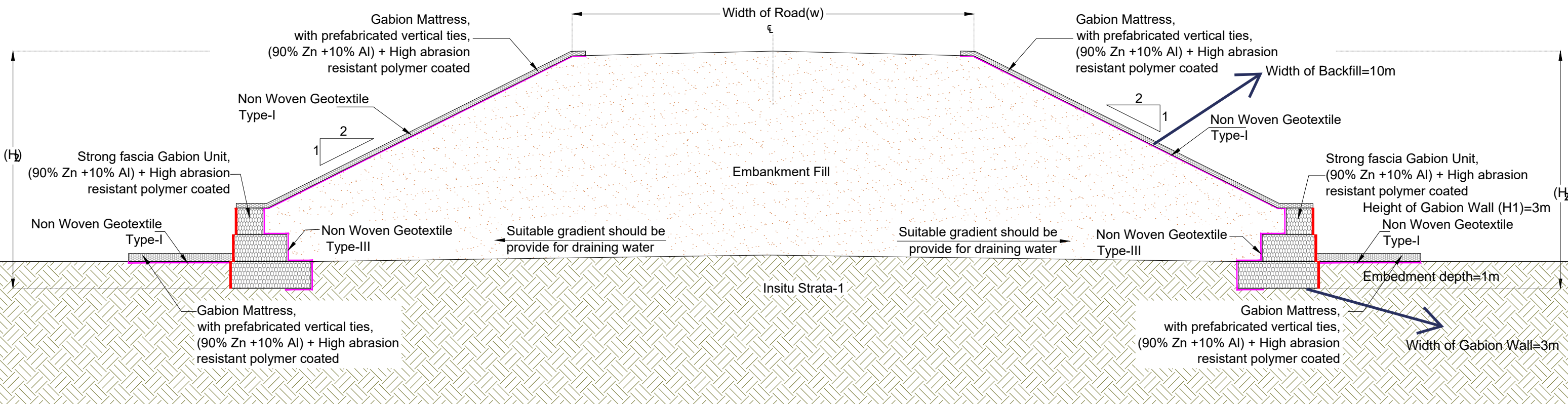
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REV R0. DATE: 18.03.2025



TCS-3 TYPICAL CROSS SECTION OF EMBANKMENT PROTECTION AT POND LOCATION

PROJECT TITLE : DETAILED TECHNICAL STUDY OF VARIOUS BREACHED STRETCHES ON MUNGIAKAMI-CHAMPAKNAGAR SECTION OF NH-08 LOCATIONS IN THE STATE OF TRIPURA

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