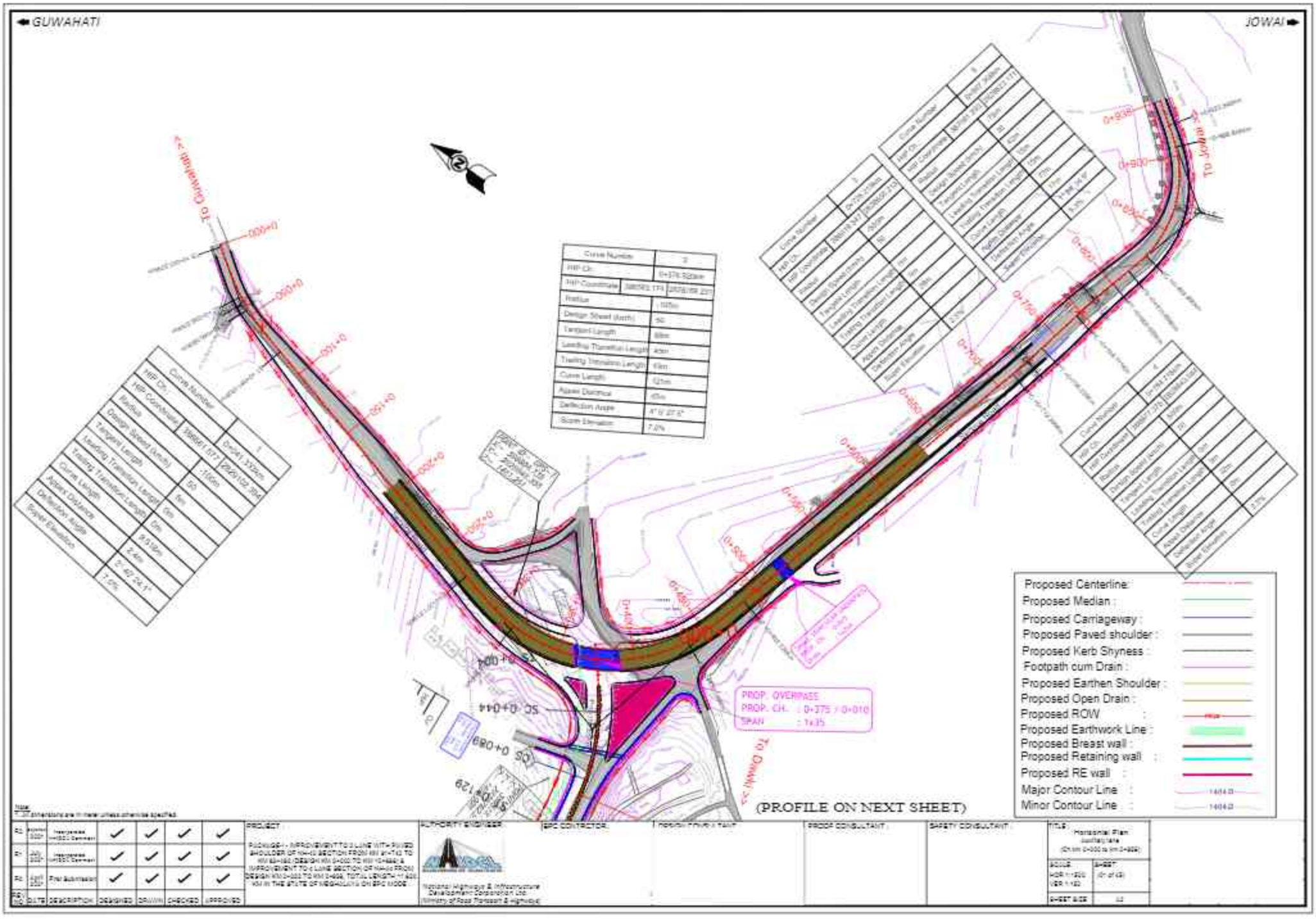
1692707/2022/SRINAGAR-6

PLAN AND PROFILE

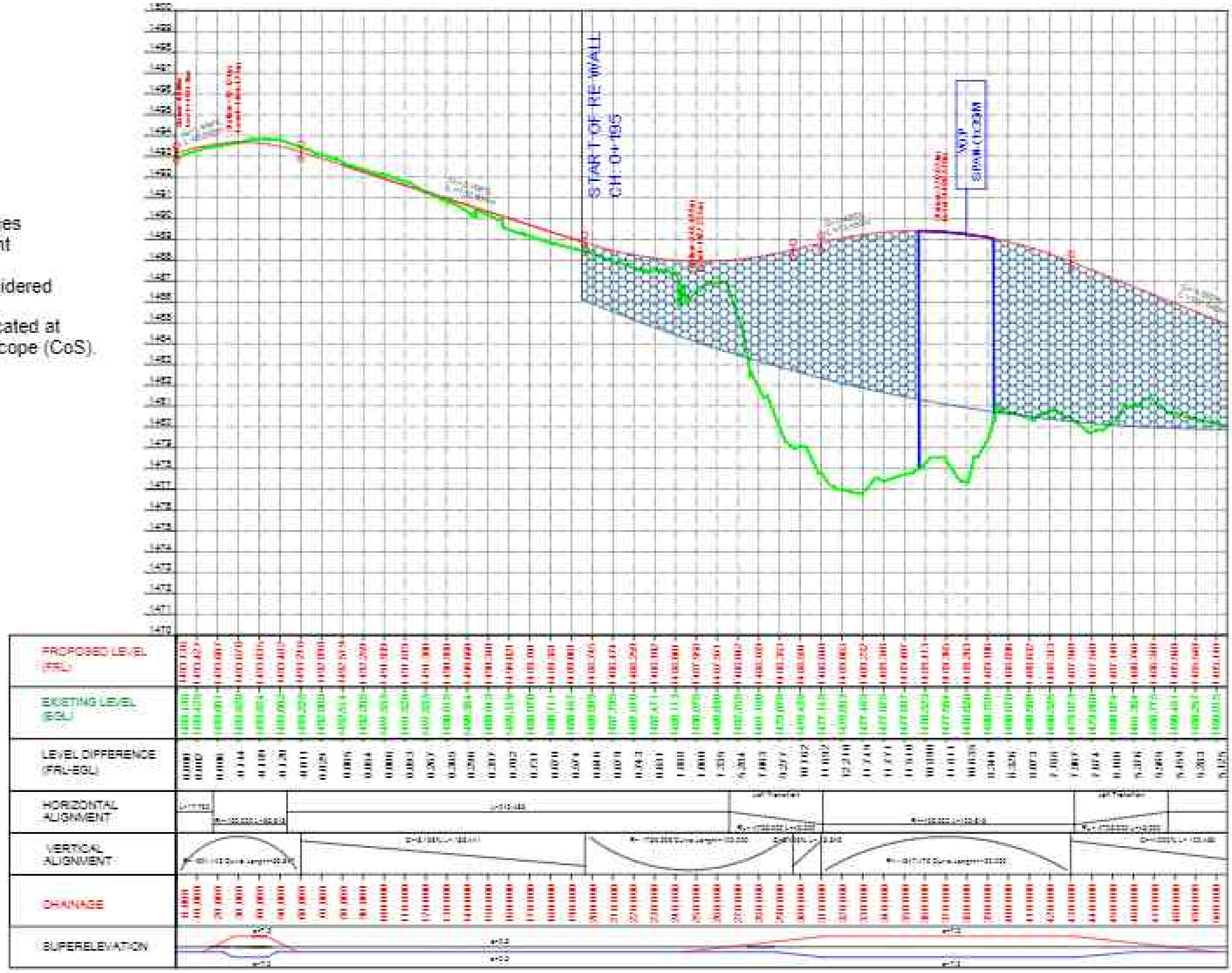
1692707/2022/SRINAGAR-6



1692707/2022/SRINAGAR-6

◄ GUWAHATI — JOWAI ►

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



Proposed Level :
Existing Level :
Left Channel :
RightChannel :

PROJECT :

AUTHORITY ENGINEER :

EPC CONTRACTOR :

DESIGN CONSULTANT :

PROOF CONSULTANT :

SAFETY CONSULTANT :

TITLE : Vertical Profile Auxiliary lane

National Highways & Infrastructure Development Corporation Ltd. (Ministry of Road Transport & Highways)

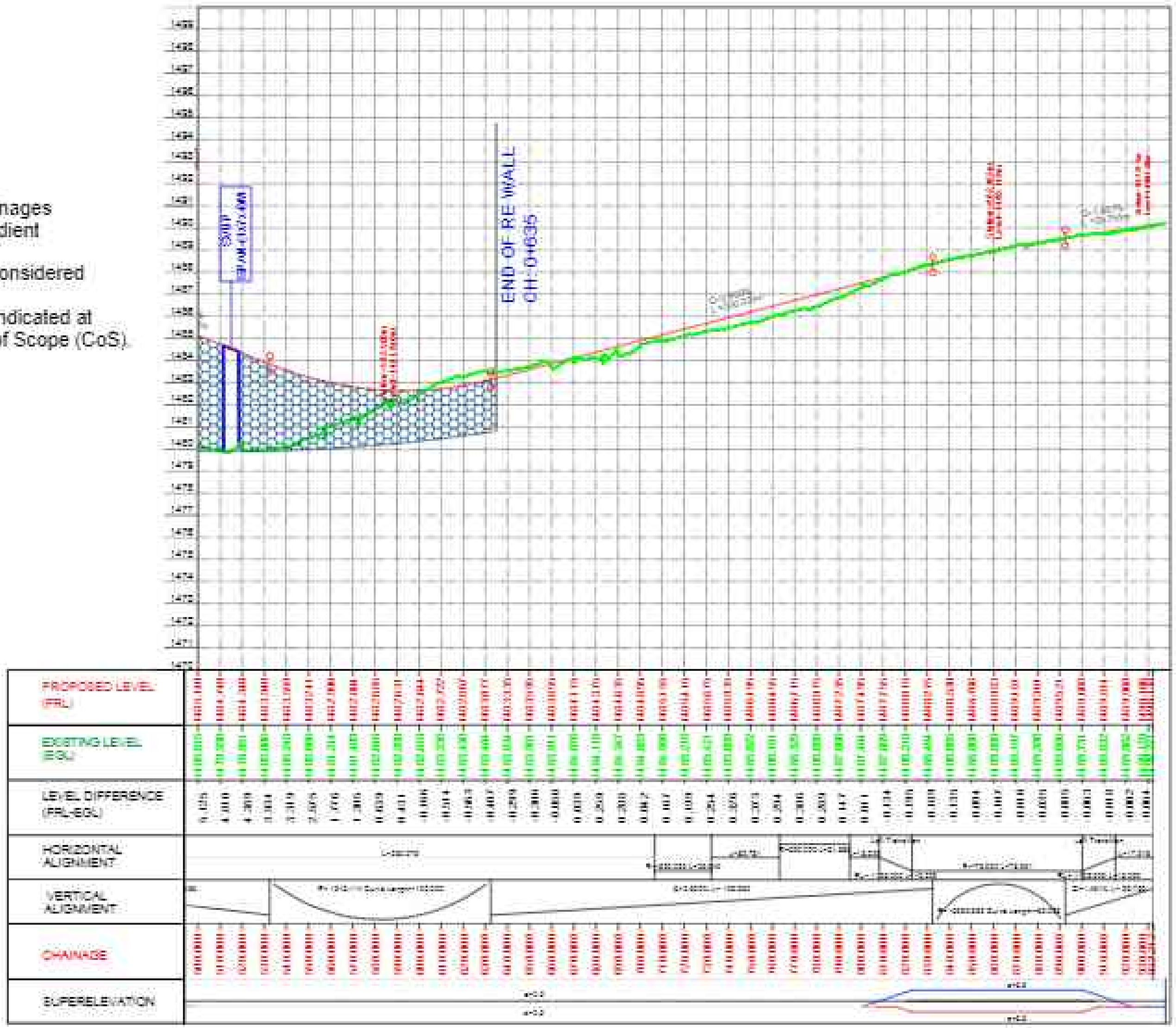
REV. NO.	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED
			✓	✓	✓	✓
			✓	✓	✓	✓
		First Submission	✓	✓	✓	✓

1692707/2022/SRINAGAR-6

◀ GUWAHATI

JOWAI ▶

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



Proposed Level :
Existing Level :
Left Channel :
RightChannel :

(PROFILE ON NEXT SHEET)

REV. NO.	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED
R2		Incorporated CHSDL Comment	✓	✓	✓	✓
R1	July 2021	Incorporated CHSDL Comment	✓	✓	✓	✓
R0	2021	Final Submission	✓	✓	✓	✓

PROJECT :

AUTHORITY ENGINEER :

National Highways & Infrastructure Development Corporation Ltd.

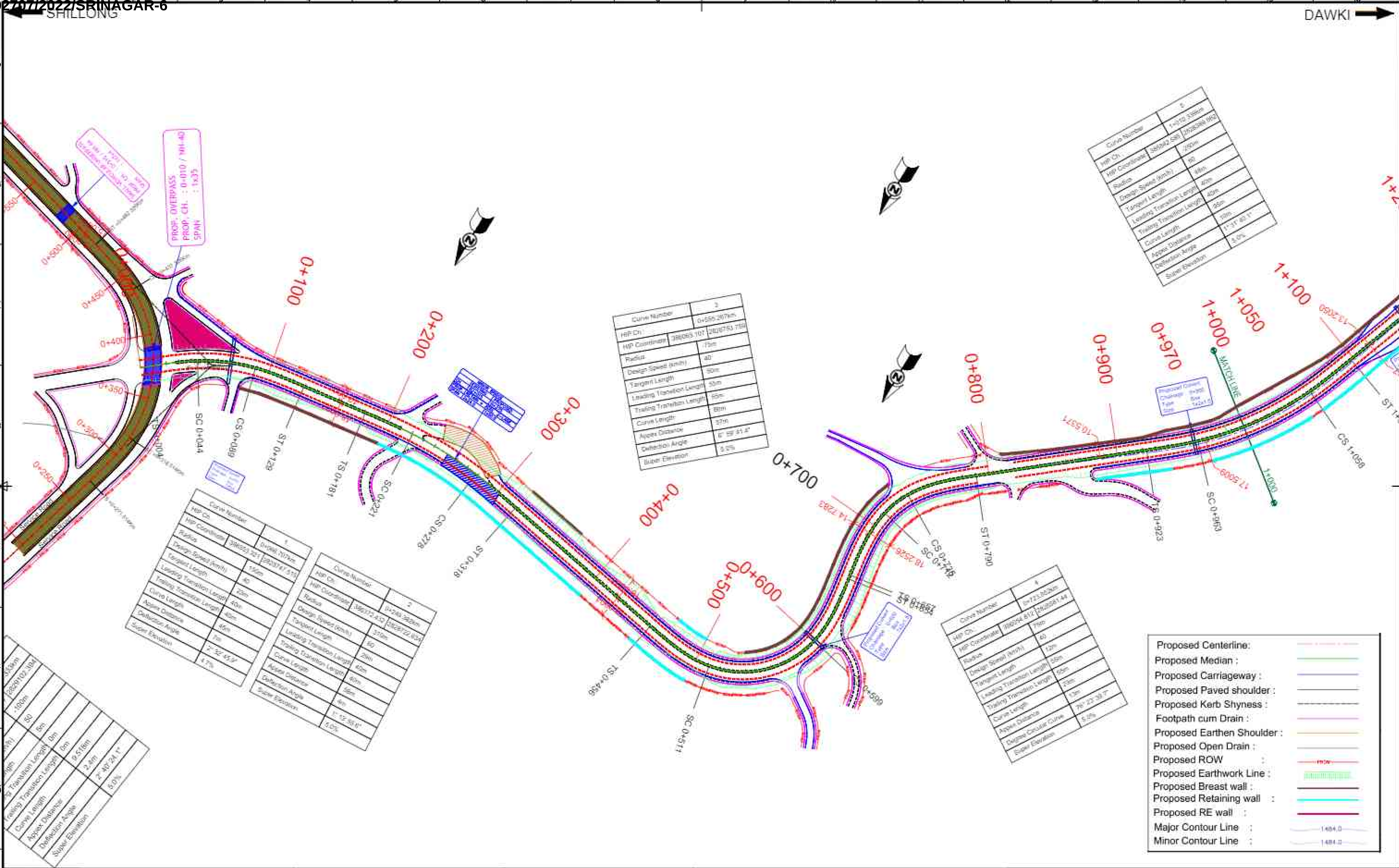
DESIGN CONSULTANT :

PROOF CONSULTANT :

SAFETY CONSULTANT :

TITLE :
Vertical Profile
Auxiliary lane

SCALE :
SHEET SIZE



REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

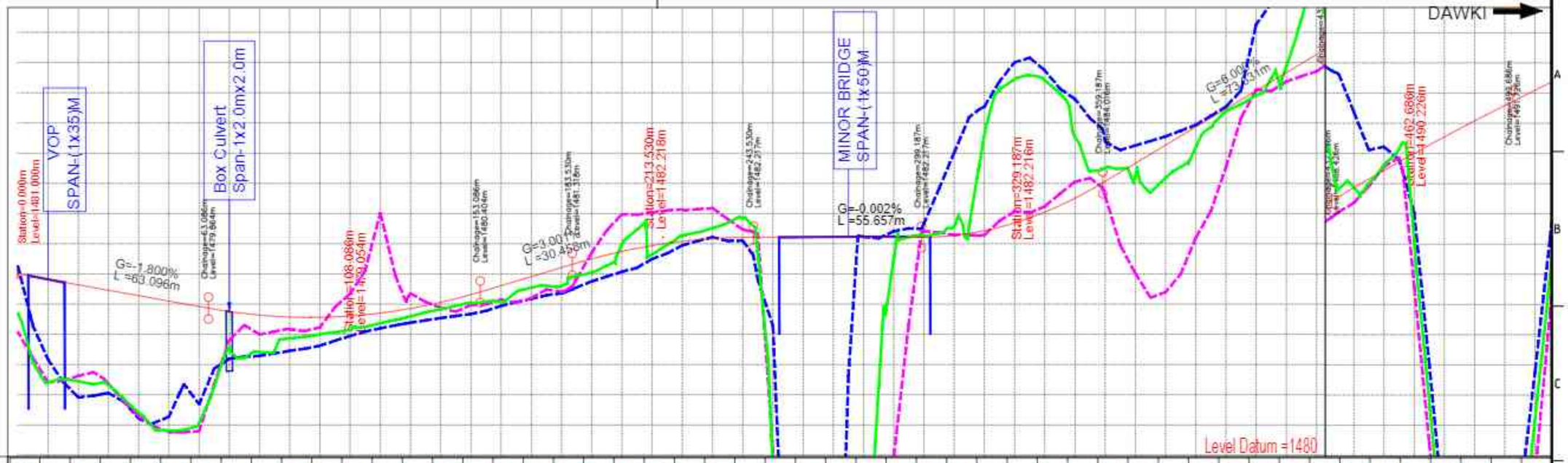
AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 00+000 TO KM 1+000

DATE: MAY 2022
SCALE: NTS
DRAWING NO.
FORMAT:
REV:

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



CHAINAGE	0+000	0+010	0+020	0+030	0+040	0+050	0+060	0+070	0+080	0+090	0+100	0+110	0+120
PROPOSED LEVEL (FRL)	1481.000	1480.820	1480.640	1480.460	1480.280	1480.100	1479.920	1479.752	1479.636	1479.573	1479.563	1479.607	1479.703
EXISTING LEVEL (EGL)	1479.704	1477.399	1477.445	1477.309	1476.418	1475.813	1476.071	1478.564	1478.419	1478.667	1479.000	1479.154	1479.365
LEVEL DIFFERENCE (FRL-EGL)	1.296	3.421	3.195	3.151	3.862	4.287	3.849	1.188	1.217	0.706	0.563	0.453	0.338
GROUND LEVEL AT 7M FROM PROP. C/L Left Channel	1481.260	1478.159	1476.911	1477.057	1476.210	1476.268	1476.686	1478.193	1478.286	1478.455	1478.623	1478.944	1479.199
GROUND LEVEL AT 7M FROM PROP. C/L RightChannel	1479.073	1477.415	1477.621	1477.357	1476.286	1475.765	1475.788	1478.805	1478.994	1479.168	1479.229	1480.344	1483.023

CHAINAGE	0+130	0+140	0+150	0+160	0+170	0+180	0+190	0+200	0+210	0+220	0+230	0+240	0+250
PROPOSED LEVEL (FRL)	1479.854	1480.057	1480.314	1480.612	1480.912	1481.212	1481.501	1481.744	1481.937	1482.079	1482.172	1482.214	1482.217
EXISTING LEVEL (EGL)	1479.594	1479.827	1480.044	1480.075	1480.544	1480.607	1481.040	1481.981	1481.645	1482.272	1482.517	1482.826	1474.411
LEVEL DIFFERENCE (FRL-EGL)	0.260	0.230	0.270	0.537	0.368	0.605	0.461	-0.237	0.292	-0.193	-0.345	-0.612	7.806
GROUND LEVEL AT 7M FROM PROP. C/L Left Channel	1479.386	1479.538	1479.675	1479.942	1480.177	1480.359	1480.753	1481.071	1481.495	1481.948	1482.216	1482.102	1479.284
GROUND LEVEL AT 7M FROM PROP. C/L RightChannel	1480.352	1479.882	1479.972	1480.152	1480.202	1480.416	1481.704	1482.972	1483.033	1483.134	1483.178	1482.474	1475.130

CHAINAGE	0+260	0+270	0+280	0+290	0+300	0+310	0+320	0+330	0+340	0+350	0+360	0+370	0+380
PROPOSED LEVEL (FRL)	1482.217	1482.217	1482.217	1482.217	1482.217	1482.275	1482.433	1482.691	1483.049	1483.507	1484.065	1484.665	1485.265
EXISTING LEVEL (EGL)	1453.140	1452.773	1469.355	1481.468	1482.271	1482.584	1485.585	1487.436	1487.416	1485.543	1484.510	1484.234	1484.176
LEVEL DIFFERENCE (FRL-EGL)	29.077	29.444	12.862	0.749	-0.054	-0.309	-3.152	-4.745	-4.367	-2.036	-0.445	0.431	1.089
GROUND LEVEL AT 7M FROM PROP. C/L Left Channel	1463.650	1462.449	1482.229	1482.415	1482.669	1485.016	1486.538	1488.003	1487.739	1486.790	1485.369	1485.253	1485.552
GROUND LEVEL AT 7M FROM PROP. C/L RightChannel	1449.861	1446.539	1460.395	1474.942	1482.410	1482.292	1482.288	1483.070	1483.236	1484.050	1483.580	1481.022	1480.395

CHAINAGE	0+390	0+400	0+410	0+420	0+430	0+440	0+450	0+460	0+470	0+480	0+490	0+500
PROPOSED LEVEL (FRL)	1485.865	1486.465	1487.065	1487.665	1488.265	1488.860	1489.440	1490.003	1490.549	1491.078	1491.591	1492.092
EXISTING LEVEL (EGL)	1485.188	1486.388	1486.913	1487.879	1490.113	1488.879	1489.614	1487.102	1476.635	1466.496	1471.979	1481.199
LEVEL DIFFERENCE (FRL-EGL)	0.677	0.077	0.152	-0.214	-1.848	-0.019	-0.174	2.901	13.914	24.582	19.612	10.893
GROUND LEVEL AT 7M FROM PROP. C/L Left Channel	1485.935	1486.538	1489.260	1491.306	1492.916	1491.384	1490.219	1488.031	1477.779	1467.589	1474.327	1482.758
GROUND LEVEL AT 7M FROM PROP. C/L RightChannel	1482.194	1484.538	1487.105	1487.368	1487.709	1488.359	1489.562	1485.610	1475.336	1465.012	1469.676	1479.363

HORIZONTAL ALIGNMENT
L=4.195
Right Transition
RL= 6000.000 L=40.000
R=150.000 L=45.023
Right Transition
RL= 6000.000 L=40.000
L=51.402
Right Transition
RL= 12400.000 L=40.000
R=310.000 L=57.524
Right Transition
RL= 12400.000 L=40.000
L=138.135
Left Transition
RL= 4125.000 L=55.000

VERTICAL ALIGNMENT
G=-1.800% L= 63.086
R= 1874.585 Curve Lenght=90.000
K Value =18.746
G=3.001% L= 30.444
K Value =19.984
R= -1998.418 Curve Lenght=60.000
G=-0.002% L= 55.657
R= 999.704 Curve Lenght=60.000
K Value =9.997
G=6.000% L= 73.499
K Value =60.013
R= -6001.345 Curve Lenght=60.000

SUPERELEVATION
e=4.7
e=4.7
e=2.5
e=2.5
e=5.2
e=5.2
e=2.5
e=2.5

REV	DATE	DESCRIPTION

CLIENT:
National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER:
URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE
KM 0+000 TO KM 0+500

DATE: MAY 2022
SCALE: NTS
DRAWING NO.
FORMAT:
REV:

169270/2022/SRINAGAR-6

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Box Culvert Span-1x2.0mx1.5m

Box Culvert Span-1x2.0mx1.5m

G=5.000% L=107.385m

G=7.000% L=441.926m

Station=629.937m Level=1498.587m

Level Datum =1491

Level Datum =1502

Level Datum =1509

PROPOSED LEVEL (FRL)	1492.092	1492.592	1493.092	1493.592	1494.092	1494.592	1495.092	1495.592	1496.092	1496.592	1497.092	1497.601	1498.126	1498.667	1499.226	1499.801	1500.393	1500.993	1501.593	1502.193	1502.793	1503.393	1503.993	1504.593	1505.193	1505.793	1506.393	1506.993	1507.593	1508.193	1508.793	1509.393	1509.993	1510.700	1511.400	1512.100	1512.991	1513.500	1514.200	1514.900	1515.600	1516.300	1517.000	1517.700	1518.400	1519.100	1519.800	1520.500	1521.200	1521.900	1522.600
EXISTING LEVEL (EGL)	1481.199	1490.754	1496.608	1497.297	1496.971	1497.573	1498.091	1499.059	1499.753	1498.987	1499.451	1500.027	1500.781	1501.637	1502.197	1502.354	1502.870	1502.903	1503.301	1503.800	1504.412	1505.046	1505.892	1506.122	1506.597	1507.261	1508.132	1508.892	1509.235	1509.458	1509.424	1509.968	1510.454	1511.598	1512.602	1513.733	1512.801	1513.759	1513.935	1514.425	1514.959	1515.862	1516.499	1516.801	1517.744	1518.199	1518.984	1519.462	1521.587	1523.152	1523.426
LEVEL DIFFERENCE (FRL-EGL)	10.893	1.839	-3.516	-3.705	-2.879	-2.981	-2.999	-3.467	-3.661	-2.395	-2.359	-2.426	-2.655	-2.970	-2.971	-2.553	-2.477	-1.910	-1.708	-1.607	-1.619	-1.653	-1.899	-1.529	-1.404	-1.468	-1.739	-1.889	-1.642	-1.265	-0.631	-0.575	-0.461	-0.898	-1.202	-1.633	0.190	-0.259	0.265	0.475	0.641	0.438	0.501	0.899	0.656	0.901	0.816	1.038	-0.387	-1.252	-0.826
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1482.758	1491.481	1496.573	1496.475	1496.916	1498.064	1498.124	1498.844	1499.108	1499.475	1499.648	1499.367	1500.378	1499.886	1499.910	1501.019	1499.802	1501.701	1500.245	1502.434	1500.922	1503.095	1501.497	1503.547	1501.750	1503.887	1502.407	1504.191	1503.294	1504.502	1503.644	1504.897	1504.269	1505.033	1504.912	1505.314	1505.722	1505.801	1505.745	1506.447	1505.685	1507.093	1506.143	1507.408	1506.696	1507.912	1507.547	1508.704	1509.025	1509.184	1508.761	1509.583	1509.112	1509.960	1509.447	1510.447	1510.957	1510.088	1512.206	1510.569	1512.911	1511.178	1513.590	1511.634	1514.361	1512.349	1514.389	1512.848	1514.290	1512.915	1514.498	1513.354	1514.762	1514.281	1515.350	1514.638	1515.877	1515.122	1516.741	1515.668	1517.013	1516.093	1518.933	1516.851	1518.819	1517.984	1520.451	1518.557	1521.745	1519.611	1522.932	1520.321	1523.706	1520.673	1524.036	1522.468
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1479.363	1489.675	1496.582	1496.273	1498.064	1498.124	1498.844	1499.475	1499.648	1500.378	1501.019	1501.701	1502.434	1503.095	1503.547	1503.887	1504.191	1504.502	1504.897	1505.033	1505.314	1505.801	1506.447	1507.093	1507.408	1507.912	1508.704	1509.184	1509.583	1509.960	1510.447	1510.088	1510.569	1511.178	1511.634	1512.349	1512.848	1512.915	1513.354	1514.281	1514.638	1515.122	1515.668	1516.093	1516.851	1517.984	1518.557	1519.611	1520.321	1520.673	1522.468

HORIZONTAL ALIGNMENT

Left Transition L=8.183 | R=-75.000 L=87.975 | RL= 4125.000 L=55.000 | Right Transition R=475.000 L=22.827 | RL= 4125.000 L=55.000 | Right Transition L=132.614 | RL= 4125.000 L=55.000 | Left Transition RL= 10000.000 L=40.000 | R=-250

VERTICAL ALIGNMENT

G=5.000% L= 107.251 | R= 6001.591 Curve Lenght=60.000 K Value =80.016 | G=6.000% L= 441.133

CHAINAGE	0+500	0+510	0+520	0+530	0+540	0+550	0+560	0+570	0+580	0+590	0+600	0+610	0+620	0+630	0+640	0+650	0+660	0+670	0+680	0+690	0+700	0+710	0+720	0+730	0+740	0+750	0+760	0+770	0+780	0+790	0+800	0+810	0+820	0+830	0+840	0+850	0+860	0+870	0+880	0+890	0+900	0+910	0+920	0+930	0+940	0+950	0+960	0+970	0+980	0+990	1+000

SUPERELEVATION

e=7.0 | e=7.0 | e=7.0 | e=7.0 | e=2.5 | e=2.5

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 0+500 TO KM 1+000

DATE: MAY 2022

SCALE: NTS

DRAWING NO.

FORMAT:

REV:

169270712022/SRINAGAR-6

SHILLONG

DAWKI

Appex Distance	
Deflection Angle	
Super Elevation	5.0%

Curve Number	6
HIP Ch. :	1+258.183km
HIP Coordinate :	385742.874 / 2828164.844
Radius	140m
Design Speed (km/h)	60
Tangent Length	32m
Leading Transition Length	60m
Trailing Transition Length	60m
Curve Length	63m
Appex Distance	16m
Deflection Angle	4° 9' 27.5"
Super Elevation	5.0%

Curve Number	8
HIP Ch. :	1+651.008km
HIP Coordinate :	385160.42 / 2828282.999
Radius	75m
Design Speed (km/h)	40
Tangent Length	159m
Leading Transition Length	55m
Trailing Transition Length	55m
Curve Length	169m
Appex Distance	959m
Deflection Angle	67° 59' 41.4"
Super Elevation	5.0%

Curve Number	7
HIP Ch. :	1+964.685km
HIP Coordinate :	385448.313 / 2828055.613
Radius	150m
Design Speed (km/h)	60
Tangent Length	97m
Leading Transition Length	55m
Trailing Transition Length	125m
Curve Length	332m
Appex Distance	3° 39' 1.5"
Deflection Angle	5.0%
Super Elevation	

Curve Number	9
HIP Ch. :	2+121.936km
HIP Coordinate :	385271.458 / 2827968.074
Radius	150m
Design Speed (km/h)	60
Tangent Length	35m
Leading Transition Length	55m
Trailing Transition Length	101m
Curve Length	24m
Appex Distance	58° 41' 45.1"
Total Deflection	5.0%
Super Elevation	

- Proposed Centerline:
- Proposed Median :
- Proposed Carriageway :
- Proposed Paved shoulder :
- Proposed Kerb Shyness :
- Footpath cum Drain :
- Proposed Earthen Shoulder :
- Proposed Open Drain :
- Proposed ROW :
- Proposed Earthwork Line :
- Proposed Breast wall :
- Proposed Retaining wall :
- Proposed RE wall :
- Major Contour Line : 1484.0
- Minor Contour Line : 1484.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 61+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 01+000 TO KM 2+000

DATE: MAY 2022

SCALE: NTS

DRAWING NO.

FORMAT:

REV:

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Level Datum =1524

Level Datum =1529

Level Datum =1537.2

VUP Span-1x7.0m

Box Culvert Span-1x2.0mx1.5m

G=7.000% L=441.926m

G=1.460% L=100.230m

Chainage=1361.220m Level=1533.462m

Chainage=1911.220m Level=1538.662m

PROPOSED LEVEL (FRL)	1522.600 1523.300 1524.000 1524.682 1525.400 1526.100 1526.800 1527.500 1528.200 1526.193 1526.793 1527.380 1527.933 1528.453 1528.940 1529.394 1529.814 1530.214 1530.614 1531.014 1531.414 1531.814 1532.214 1532.614 1533.014 1533.414 1533.813 1534.219 1534.640 1535.075 1535.526 1535.992 1536.472 1536.968 1537.479 1538.004 1538.545 1539.095 1539.645 1540.195 1540.745 1541.295 1541.845 1542.395 1542.945 1543.495 1544.045 1544.595 1545.145 1545.695 1546.245
EXISTING LEVEL (EGL)	1523.426 1524.119 1525.056 1524.002 1524.896 1524.909 1525.531 1525.849 1526.165 1526.572 1527.038 1528.869 1528.179 1529.066 1529.190 1529.683 1530.215 1530.642 1531.197 1531.736 1532.105 1532.620 1532.668 1533.070 1533.439 1533.820 1533.982 1534.359 1534.479 1534.433 1536.539 1537.162 1538.646 1539.731 1541.176 1542.129 1543.390 1543.992 1543.723 1543.677 1543.810 1541.282 1541.721 1541.536 1540.711 1541.206 1541.787 1542.843 1542.290 1541.263 1542.957
LEVEL DIFFERENCE (FRL-EGL)	-0.826 -0.819 -1.056 0.68 0.504 1.191 1.269 1.651 2.035 -0.379 -0.245 -1.489 -0.246 -0.613 -0.250 -0.289 -0.401 -0.428 -0.583 -0.722 -0.691 -0.806 -0.454 -0.456 -0.425 -0.406 -0.169 -0.140 0.161 0.642 -1.013 -1.170 -2.174 -2.763 -3.697 -4.125 -4.845 -4.897 -4.078 -3.482 -3.065 0.013 0.124 0.859 2.234 2.289 2.258 1.752 2.855 4.432 3.288
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1524.036 1524.580 1524.743 1524.682 1525.256 1525.779 1526.159 1527.148 1527.743 1527.243 1528.053 1529.821 1530.028 1530.441 1530.879 1531.015 1531.375 1531.918 1533.831 1531.831 1532.168 1532.643 1532.993 1532.507 1532.958 1534.061 1534.428 1535.006 1534.934 1536.214 1536.822 1538.047 1540.082 1540.518 1541.150 1541.828 1543.043 1543.609 1543.152 1543.480 1544.105 1544.379 1542.499 1542.357 1542.374 1542.794 1542.691 1542.994 1543.464 1543.226 1543.437
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1522.468 1523.284 1525.570 1523.475 1524.105 1524.541 1524.999 1525.442 1525.834 1526.333 1526.998 1527.926 1527.819 1528.438 1529.192 1529.740 1530.237 1530.711 1531.353 1531.838 1532.099 1532.178 1532.387 1532.605 1532.783 1533.090 1533.414 1533.710 1533.967 1534.316 1534.200 1535.571 1537.597 1538.256 1540.547 1542.337 1544.097 1544.526 1544.218 1542.310 1540.806 1541.381 1540.130 1539.224 1538.888 1539.036 1540.729 1542.767 1543.298 1544.061 1546.291
HORIZONTAL ALIGNMENT	R=-250.000 L=94.919 · Left Transition RL= 10000.000 L=40.000 · L=66.754 · Right Transition RL= 8400.000 L=60.000 · R=140.000 L=83.281 · Right Transition RL= 8400.000 L=60.000 · L=98.873 · Right Transition RL= 8250.000 L=55.000
VERTICAL ALIGNMENT	G=6.000% L= 441.133 · K Value =29.992 R= -2999.162 Curve Lenght=60.000 · G=1.460% L= 100.150 · R= 8863.518 Curve Lenght=100.000 K Value =66.835 · G=5.600% L= 283.662
CHAINAGE	1+000 1+010 1+020 1+030 1+040 1+050 1+060 1+070 1+080 1+090 1+100 1+110 1+120 1+130 1+140 1+150 1+160 1+170 1+180 1+190 1+200 1+210 1+220 1+230 1+240 1+250 1+260 1+270 1+280 1+290 1+300 1+310 1+320 1+330 1+340 1+350 1+360 1+370 1+380 1+390 1+400 1+410 1+420 1+430 1+440 1+450 1+460 1+470 1+480 1+490 1+500
SUPERELEVATION	e=5.4 · e=2.5 · e=7.0 · e=2.5 · e=5.4 · e=2.5 · e=7.0 · e=2.5

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 1+000 TO KM 1+500

DRAWING NO.

DATE: MAY 2022

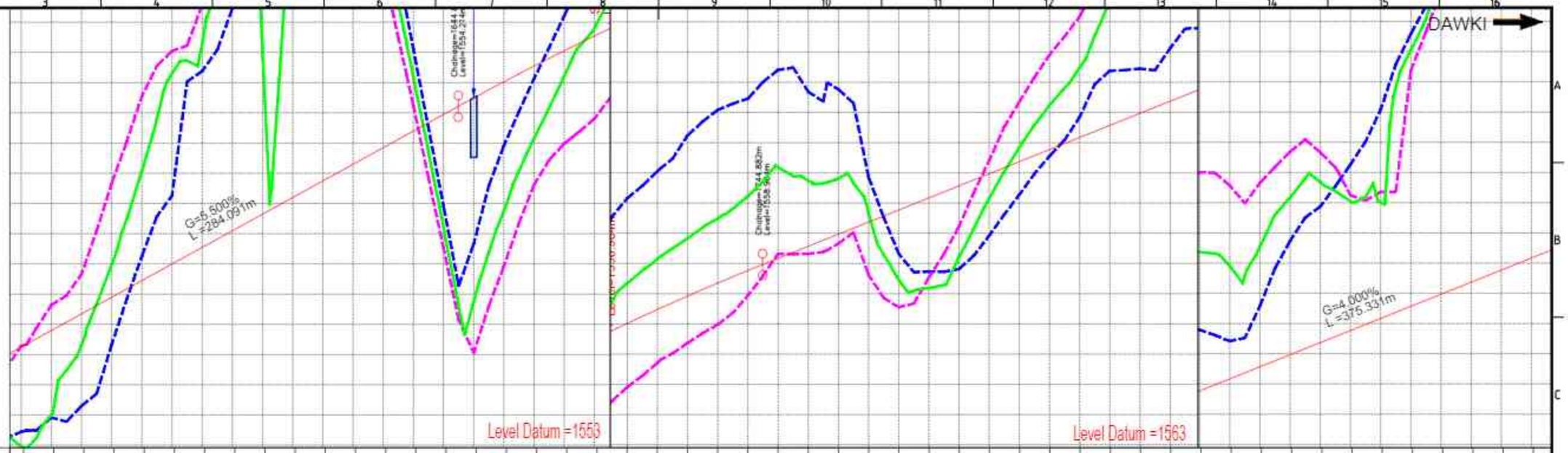
SCALE: NTS

FORMAT:

REV:

SHILLONG ← → DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



CHAINAGE	PROPOSED LEVEL (FRL)	EXISTING LEVEL (EGL)	LEVEL DIFFERENCE (FRL-EGL)	GROUND LEVEL AT 7M FROM PROP. C/L Left Channel	GROUND LEVEL AT 7M FROM PROP. C/L RightChannel
1+500	1546.245	1542.957	3.288	1543.437	1546.291
1+510	1546.795	1543.997	2.798	1543.909	1547.640
1+520	1547.345	1546.317	1.028	1544.300	1548.669
1+530	1547.895	1548.968	-1.073	1546.329	1551.667
1+540	1548.445	1552.072	-3.627	1549.259	1554.550
1+550	1548.995	1555.302	-6.307	1551.258	1556.046
1+560	1549.545	1556.301	-6.756	1555.375	1557.583
1+570	1550.095	1559.052	-8.957	1557.454	1559.655
1+580	1550.645	1556.105	-5.460	1549.481	1561.018
1+590	1551.195	1559.421	-8.225	1554.416	1561.874
1+600	1551.745	1562.181	-10.436	1562.344	1561.746
1+610	1552.295	1560.862	-8.567	1561.649	1560.686
1+620	1552.845	1559.967	-7.122	1560.887	1558.806
1+630	1553.395	1555.189	-1.794	1556.111	1554.241
1+640	1553.945	1550.178	3.767	1550.917	1549.515
1+650	1554.493	1547.746	6.747	1549.655	1546.053
1+660	1555.028	1550.747	4.281	1552.914	1548.916
1+670	1555.548	1553.151	2.397	1555.133	1551.615
1+680	1556.053	1555.212	0.841	1557.205	1552.979
1+690	1556.543	1556.796	-0.253	1559.405	1553.799
1+700	1557.018	1558.350	-1.332	1561.161	1554.910
1+710	1557.477	1559.150	-1.673	1562.057	1555.710
1+720	1557.922	1559.831	-1.909	1563.243	1556.371
1+730	1558.352	1560.488	-2.136	1564.084	1556.980
1+740	1558.767	1561.230	-2.463	1564.456	1557.939
1+750	1559.169	1562.181	-3.012	1565.405	1559.316
1+760	1559.569	1561.731	-2.162	1564.681	1559.321
1+770	1559.969	1561.811	-1.842	1564.764	1559.660
1+780	1560.369	1560.677	-0.309	1561.859	1558.623
1+790	1560.769	1558.458	2.311	1559.322	1557.553
1+800	1561.169	1558.188	2.981	1558.733	1558.532
1+810	1561.569	1559.211	2.358	1558.816	1560.232
1+820	1561.969	1561.159	0.810	1559.924	1562.408
1+830	1562.369	1562.843	-0.474	1561.273	1564.351
1+840	1562.769	1564.234	-1.465	1562.555	1565.904
1+850	1563.169	1565.483	-2.314	1563.846	1567.174
1+860	1563.569	1567.481	-3.912	1565.374	1569.178
1+870	1563.969	1568.189	-4.220	1565.448	1570.909
1+880	1564.369	1568.754	-4.385	1566.121	1571.330
1+890	1564.769	1569.365	-4.596	1566.793	1572.005
1+900	1565.169	1568.903	-3.734	1566.417	1571.566
1+910	1565.569	1569.559	-3.990	1567.587	1571.660
1+920	1565.969	1571.175	-5.206	1569.738	1572.687
1+930	1566.369	1571.681	-5.312	1570.871	1572.664
1+940	1566.769	1571.050	-4.281	1572.266	1571.242
1+950	1567.169	1571.004	-3.835	1574.079	1571.354
1+960	1567.569	1576.041	-8.472	1576.582	1575.357
1+970	1567.969	1578.260	-10.291	1578.473	1578.007
1+980	1568.369	1578.627	-10.258	1578.224	1579.120
1+990	1568.769	1578.118	-9.349	1577.766	1578.682
2+000	1569.169	1577.771	-8.602	1577.494	1578.327

HORIZONTAL ALIGNMENT

R=150.000 L=126.018

Right Transition RL= 6250.000 L=55.000

L=28.612

Left Transition RL= 4125.000 L=55.000

R=-75.000 L=169.487

Left Transition RL= 4125.000 L=55.000

L=25

VERTICAL ALIGNMENT

G=6.500% L= 283.662

K Value =66.667
R= -6666.694 Curve Lenght=100.000

G=4.000% L= 375.031

SUPERELEVATION

e=7.0

e=7.0

e=7.0

e=7.0

REV	DATE	DESCRIPTION

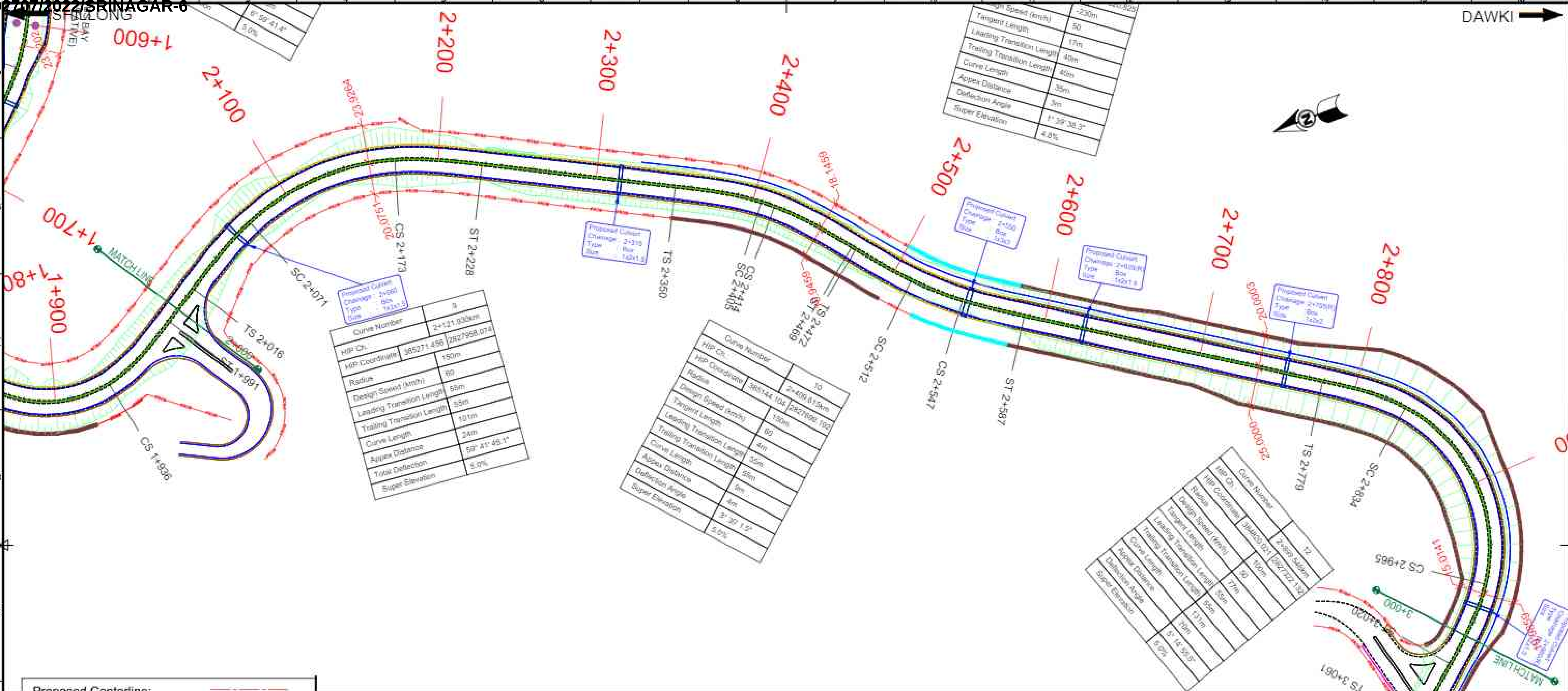
CLIENT:
National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER:
URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE
KM 01+500 TO KM 2+000

DATE: MAY 2022
SCALE: NTS
FORMAT:
REV:
DRAWING NO.



Legend	
Proposed Centerline:	
Proposed Median :	
Proposed Carriageway :	
Proposed Paved shoulder :	
Proposed Kerb Shyness :	
Footpath cum Drain :	
Proposed Earthen Shoulder :	
Proposed Open Drain :	
Proposed ROW :	ROW
Proposed Earthwork Line :	
Proposed Breast wall :	
Proposed Retaining wall :	
Proposed RE wall :	
Major Contour Line :	1484.0
Minor Contour Line :	1484.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 02+000 TO KM 3+000

DATE: MAY 2022

SCALE: NTS

DRAWING NO.

FORMAT:

REV:

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Box Culvert Span-1x2.0mx1.5m

Box Culvert Span-1x2.0m

Station=2169.913m Level=1575.966m

G=4.000% L =375.331m

G=6.800% =2148.162m

Level Datum =1566

Level Datum =1579

Level Datum =1589

PROPOSED LEVEL (FRL)	1569.169 1569.569 1569.969 1570.369 1570.769 1571.169 1571.569 1571.969 1572.369 1572.769 1573.169 1573.569 1573.969 1574.384 1574.826 1575.296 1575.794 1576.321 1576.875 1577.457 1578.067 1578.706 1579.372 1580.052 1580.732 1581.412 1582.092 1582.772 1583.452 1584.132 1584.812 1585.492 1586.172 1586.852 1587.532 1588.212 1588.892 1589.572 1590.252 1590.932 1591.612 1592.292 1592.972 1593.652 1594.332 1595.012 1595.692 1596.372 1597.052 1597.732 1598.412
EXISTING LEVEL (EGL)	1577.771 1577.900 1578.308 1577.640 1574.360 1570.991 1569.557 1571.710 1573.255 1574.517 1575.287 1575.750 1575.364 1574.768 1574.145 1573.556 1572.887 1571.800 1570.761 1571.070 1574.106 1576.403 1579.004 1581.601 1584.198 1585.563 1586.360 1586.218 1585.805 1584.845 1582.761 1582.017 1583.092 1586.175 1591.451 1593.175 1593.156 1593.481 1593.742 1593.904 1594.203 1595.096 1596.154 1597.399 1598.694 1599.062 1599.291 1599.489 1599.212 1598.340 1596.293
LEVEL DIFFERENCE (FRL-EGL)	-8.602 -8.331 -8.339 -7.271 -3.591 0.178 2.012 0.259 -0.886 -1.748 -2.118 -2.181 -1.395 -0.384 0.681 1.740 2.907 4.521 6.114 6.387 3.961 2.303 0.368 -1.549 -3.466 -4.151 -4.268 -3.446 -2.353 -0.713 2.051 3.475 3.080 0.677 -3.919 -4.963 -4.264 -3.909 -3.490 -2.972 -2.591 -2.804 -3.182 -3.747 -4.362 -4.050 -3.599 -3.117 -2.160 -0.608 2.119
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1577.494 1577.615 1578.141 1576.954 1574.167 1571.100 1566.840 1568.661 1570.174 1571.832 1573.806 1574.812 1574.544 1573.947 1573.230 1572.581 1571.829 1570.600 1571.091 1573.034 1574.957 1576.730 1579.307 1581.910 1583.664 1583.774 1584.825 1584.701 1584.375 1583.005 1581.081 1578.820 1581.897 1587.012 1591.167 1591.998 1591.834 1591.934 1591.926 1592.089 1592.668 1593.447 1594.636 1595.874 1597.245 1597.561 1597.641 1597.825 1597.727 1597.140 1595.212
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1578.327 1578.303 1578.211 1576.640 1573.861 1571.202 1571.865 1574.372 1575.729 1576.563 1576.650 1576.633 1576.172 1575.687 1575.041 1574.456 1573.904 1572.904 1571.909 1571.100 1573.583 1576.179 1578.825 1581.292 1583.889 1586.267 1587.681 1587.650 1587.432 1587.769 1588.645 1589.480 1588.800 1590.016 1591.508 1593.447 1594.260 1594.535 1595.030 1595.191 1595.539 1596.490 1597.570 1598.727 1599.694 1600.184 1600.637 1601.014 1597.825 1600.535 1599.336 1597.565
HORIZONTAL ALIGNMENT	L=25.486; Right Transition; R=150.000 L=101.283; RL= 8250.000 L=55.000; Right Transition; RL= 8250.000 L=55.000; L=122.606; Right Transition; R=150.000 L=8.875; RL= 8250.000 L=55.000; Right Transition; L=2.927; Left Transition; RL= 9200.000 L=40
VERTICAL ALIGNMENT	G=4.000% L= 375.031; R= 3671.660 Curve Lenght=100.000 K Value =35.717; G=6.800% L= 2143.213
CHAINAGE	2+000 2+010 2+020 2+030 2+040 2+050 2+060 2+070 2+080 2+090 2+100 2+110 2+120 2+130 2+140 2+150 2+160 2+170 2+180 2+190 2+200 2+210 2+220 2+230 2+240 2+250 2+260 2+270 2+280 2+290 2+300 2+310 2+320 2+330 2+340 2+350 2+360 2+370 2+380 2+390 2+400 2+410 2+420 2+430 2+440 2+450 2+460 2+470 2+480 2+490 2+500
SUPERELEVATION	e=7.0; e=2.5; e=7.0; e=7.0; e=2.5; e=7.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 02+000 TO KM 02+600

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

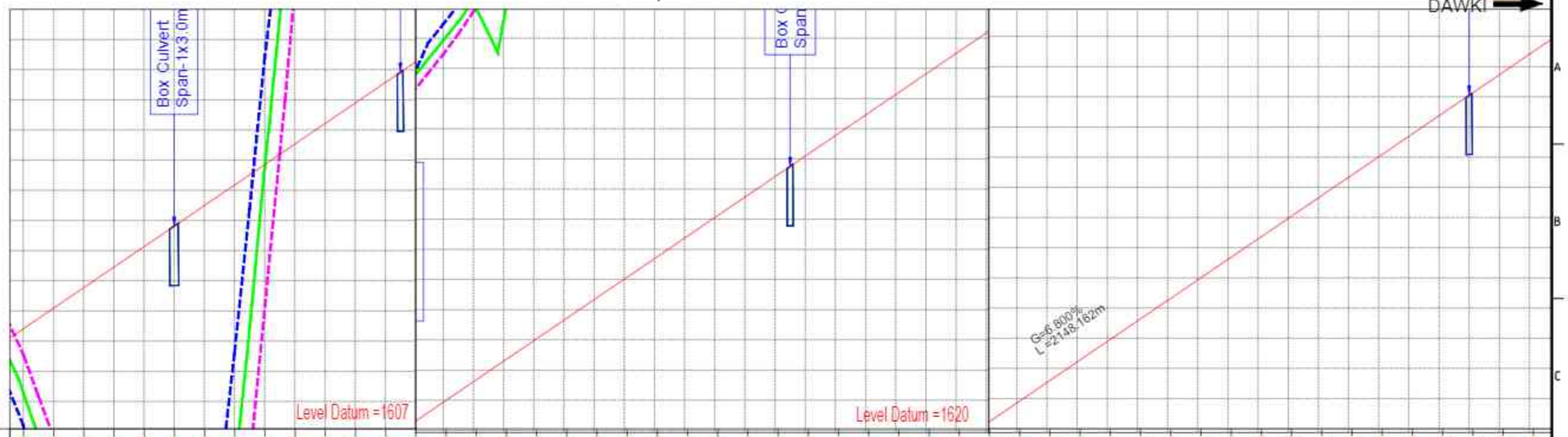
FORMAT:

REV:

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



PROPOSED LEVEL (FRL)		1598.412 1599.092 1599.772 1600.452 1601.132 1601.812 1602.492 1603.172 1603.852 1604.532 1605.212 1605.892 1606.572 1607.252 1607.932 1608.612 1609.292 1609.972 1610.652 1611.332 1612.012 1612.692 1613.372 1614.052 1614.732 1615.412 1616.092 1616.772 1617.452 1618.132 1618.812 1619.492 1620.172 1620.852 1621.532 1622.212 1622.892 1623.572 1624.252 1624.932 1625.612 1626.292 1626.972 1627.652 1628.332 1629.012 1629.692 1631.732 1632.412
EXISTING LEVEL (EGL)		1596.293 1592.348 1586.151 1579.626 1573.848 1576.116 1584.380 1593.594 1603.724 1613.375 1616.009 1616.095 1617.306 1618.699 1619.929 1621.177 1620.572 1624.767 1626.975 1629.172 1631.269 1633.263 1635.208 1637.071 1638.754 1640.365 1642.060 1643.731 1645.417 1647.090 1648.708 1650.279 1651.754 1653.076 1653.749 1654.184 1654.489 1654.693 1654.810 1654.858 1654.777 1654.639 1654.495 1654.220 1653.803 1653.254 1652.550 1651.721 1650.808 1650.129 1649.400
LEVEL DIFFERENCE (FRL-EGL)		2.119 6.744 13.621 20.826 27.284 25.696 18.112 9.578 0.128 -8.843 -10.797 -10.203 -10.734 -11.447 -11.997 -12.565 -11.280 -14.795 -16.329 -17.840 -19.257 -20.571 -21.836 -23.019 -24.022 -24.953 -25.968 -26.959 -27.963 -28.958 -29.896 -30.787 -31.582 -32.224 -32.217 -31.972 -31.597 -31.121 -30.558 -29.926 -29.165 -28.347 -27.523 -26.568 -25.471 -24.242 -22.858 -21.349 -19.756 -18.397 -16.988
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1595.212 1589.229 1582.195 1575.691 1574.250 1579.564 1588.669 1597.598 1607.386 1613.764 1615.854 1616.592 1617.930 1618.742 1620.464 1622.044 1623.250 1625.774 1627.956 1625.270 1632.294 1634.333 1636.293 1638.159 1639.840 1641.439 1643.047 1644.731 1646.413 1648.084 1649.746 1651.342 1652.755 1653.870 1654.603 1655.088 1655.418 1655.604 1655.700 1655.715 1655.632 1655.517 1655.414 1655.169 1654.733 1654.155 1653.381 1652.501 1651.518 1650.713 1650.058
	RightChannel	1597.565 1594.827 1590.227 1585.207 1580.209 1572.276 1579.335 1588.945 1599.066 1609.623 1614.311 1615.656 1616.971 1618.224 1619.468 1620.876 1622.419 1624.035 1626.154 1628.311 1630.369 1632.337 1634.272 1636.102 1637.755 1639.426 1641.112 1642.795 1644.470 1646.152 1647.822 1649.334 1650.740 1652.034 1652.734 1653.173 1653.462 1653.784 1653.931 1653.974 1653.905 1653.761 1653.560 1653.291 1652.910 1652.403 1651.756 1650.986 1650.299 1649.629 1648.858
HORIZONTAL ALIGNMENT		sition L=40.000 / R=-230.000 L=34.732 / Left Transition RL= 9200.000 L=40.000 / L=192.250 / Right Transition RL= 5500.000 L=55.000 / R=100.000 L=131.166 / Right Transition RL= 5500.000 L=55
VERTICAL ALIGNMENT		G=6.800% L= 2143.213
CHAINAGE		2+500 2+510 2+520 2+530 2+540 2+550 2+560 2+570 2+580 2+590 2+600 2+610 2+620 2+630 2+640 2+650 2+660 2+670 2+680 2+690 2+700 2+710 2+720 2+730 2+740 2+750 2+760 2+770 2+780 2+790 2+800 2+810 2+820 2+830 2+840 2+850 2+860 2+870 2+880 2+890 2+900 2+910 2+920 2+930 2+940 2+950 2+960 2+970 2+980 2+990 3+000
SUPERELEVATION		e=4.8 e=2.5 e=7.0 / e=4.8 e=2.5 e=7.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 2+500 TO KM 3+000

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

FORMAT:

REV:

SHILLONG

DAWKI

Curve Number	13
HIP Ch :	3+110.622km
HIP Coordinate	384602.183 / 2827509.093
Radius	96m
Design Speed (km/h)	50
Tangent Length	61m
Leading Transition Length	55m
Trailing Transition Length	55m
Curve Length	109m
Apex Distance	53m
Deflection Angle	5° 31' 28.6"
Super Elevation	5.0%

Curve Number	14
HIP Ch :	3+724.717km
HIP Coordinate	384218.748 / 2827304.188
Radius	250m
Design Speed (km/h)	80
Tangent Length	58m
Leading Transition Length	35m
Trailing Transition Length	35m
Curve Length	114m
Apex Distance	12m
Deflection Angle	1° 20' 12.6"
Super Elevation	5.0%

Curve Number	15
HIP Ch :	3+933.299km
HIP Coordinate	384174.931 / 2826899.371
Radius	150m
Design Speed (km/h)	60
Tangent Length	10m
Leading Transition Length	80m
Trailing Transition Length	80m
Curve Length	20m
Apex Distance	11m
Deflection Angle	5° 5' 23.6"
Super Elevation	5.0%

Proposed Centerline:
Proposed Median :
Proposed Carriageway :
Proposed Paved shoulder :
Proposed Kerb Shyness :
Footpath cum Drain :
Proposed Earthen Shoulder :
Proposed Open Drain :
Proposed ROW :
Proposed Earthwork Line :
Proposed Breast wall :
Proposed Retaining wall :
Proposed RE wall :
Major Contour Line : 1484.0
Minor Contour Line : 1484.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 03+000 TO KM 4+000

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

FORMAT:

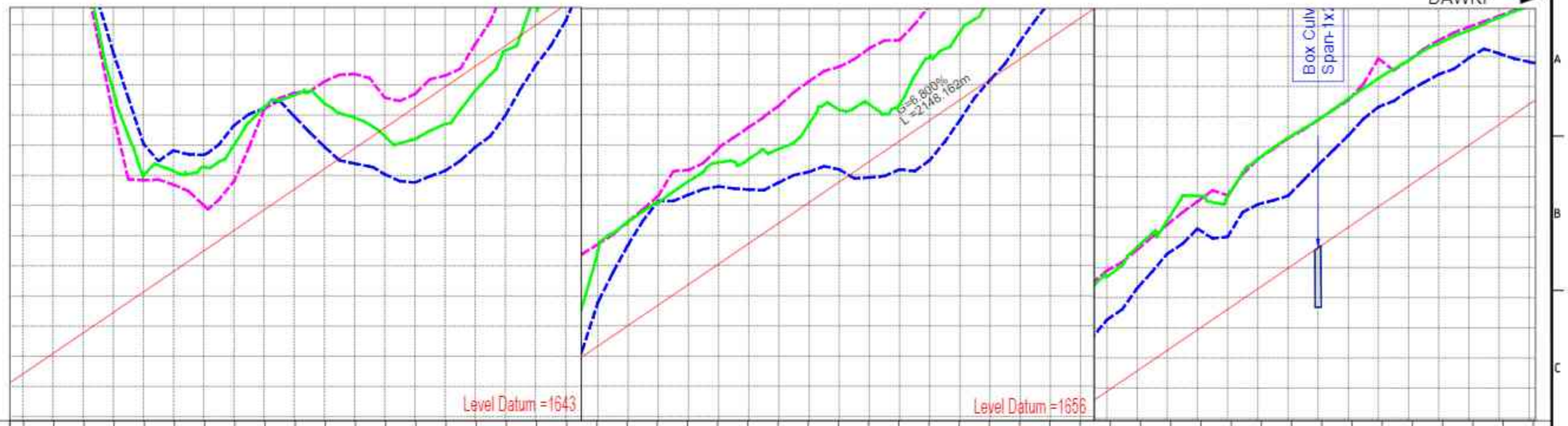
REV:

169270/2022/SRINAGAR-6

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



PROPOSED LEVEL (FRL)	1632.412 1633.092 1633.772 1634.452 1635.132 1635.812 1636.492 1637.172 1637.852 1638.532 1639.212 1639.892 1640.572 1641.252 1641.932 1642.612 1643.292 1643.972 1644.652 1645.332 1646.012 1646.692 1647.372 1648.052 1648.732 1649.412 1650.092 1650.772 1651.452 1652.132 1652.812 1653.492 1654.172 1654.852 1655.532 1656.212 1656.892 1657.572 1658.252 1658.932 1659.612 1660.292 1660.972 1661.652 1662.332 1663.012 1663.692 1664.372 1665.052 1665.732 1666.412
EXISTING LEVEL (EGL)	1649.400 1648.796 1646.312 1641.810 1638.984 1639.137 1639.274 1639.997 1641.261 1641.658 1641.389 1640.914 1640.305 1640.194 1640.697 1641.801 1643.140 1644.806 1646.804 1648.498 1649.428 1650.087 1650.787 1651.419 1651.528 1651.865 1652.702 1653.157 1653.342 1653.340 1654.902 1655.738 1656.839 1657.858 1658.899 1659.817 1660.696 1661.676 1662.558 1663.373 1663.339 1664.590 1665.300 1665.690 1666.588 1667.270 1667.865 1668.431 1668.658 1669.283 1669.666
LEVEL DIFFERENCE (FRL-EGL)	-16.988 -15.704 -12.540 -7.358 -3.852 -3.325 -2.782 -2.825 -3.409 -3.126 -2.177 -1.022 0.267 1.058 1.235 0.811 0.152 -0.835 -2.152 -3.166 -3.416 -3.395 -3.415 -3.367 -2.796 -2.453 -2.610 -2.385 -1.890 -1.208 -2.090 -2.246 -2.667 -3.006 -3.367 -3.605 -3.806 -4.104 -4.306 -4.441 -3.727 -4.298 -4.328 -4.238 -4.256 -4.258 -4.173 -4.059 -3.806 -3.551 -3.254
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1650.058 1649.807 1646.655 1643.077 1640.050 1639.822 1639.675 1640.652 1641.216 1640.957 1639.948 1639.392 1639.032 1638.761 1639.148 1639.932 1640.984 1642.635 1644.127 1646.783 1648.689 1650.141 1650.345 1650.621 1650.518 1650.758 1651.106 1651.188 1650.919 1651.187 1651.491 1652.816 1654.149 1655.437 1656.772 1657.884 1659.267 1660.313 1661.454 1662.285 1662.016 1663.091 1663.372 1664.396 1665.372 1666.322 1666.855 1667.403 1667.946 1668.093 1667.816
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1648.858 1647.358 1645.916 1641.010 1638.837 1638.689 1638.001 1638.798 1641.189 1641.732 1642.111 1642.360 1641.573 1641.691 1642.303 1643.347 1645.270 1647.217 1648.068 1648.704 1649.463 1650.311 1651.167 1651.915 1652.586 1653.298 1654.109 1654.589 1655.207 1655.475 1656.619 1657.260 1657.835 1658.546 1659.330 1660.047 1660.895 1661.586 1662.419 1663.185 1663.389 1664.587 1665.279 1665.886 1666.544 1667.928 1667.860 1668.531 1668.973 1669.338 1669.722
HORIZONTAL ALIGNMENT	nsition L=55.000 · L=41.230 · Left Transition RL= 5225.000 L=55.000 · R=-95.000 L=108.526 · Left Transition RL= 5225.000 L=55.000 · L=352.684
VERTICAL ALIGNMENT	G=6.800% L= 2143.213
CHAINAGE	3+000 3+010 3+020 3+030 3+040 3+050 3+060 3+070 3+080 3+090 3+100 3+110 3+120 3+130 3+140 3+150 3+160 3+170 3+180 3+190 3+200 3+210 3+220 3+230 3+240 3+250 3+260 3+270 3+280 3+290 3+300 3+310 3+320 3+330 3+340 3+350 3+360 3+370 3+380 3+390 3+400 3+410 3+420 3+430 3+440 3+450 3+460 3+470 3+480 3+490 3+500
SUPERELEVATION	e=7.0 · e=2.5 · e=7.0 · e=2.5

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 3+000 TO KM 3+500

DATE: MAY 2022

SCALE: NTS

DRAWING NO.

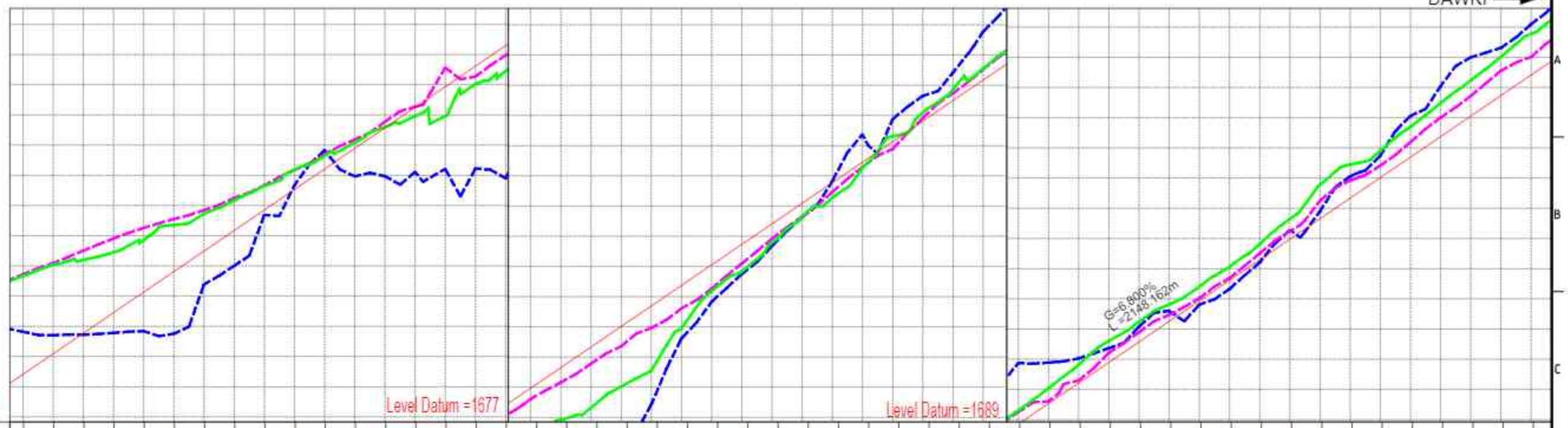
FORMAT:

REV:

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



PROPOSED LEVEL (FRL)	1666.412 1667.092 1667.772 1668.452 1669.132 1669.812 1670.492 1671.172 1671.852 1672.532 1673.212 1673.892 1674.572 1675.252 1675.932 1676.612 1677.292 1677.972 1678.652 1679.332 1680.012 1680.692 1681.372 1682.052 1682.732 1683.412 1684.092 1684.772 1685.452 1686.132 1686.812 1687.492 1688.172 1688.852 1689.532 1690.212 1690.892 1691.572 1692.252 1692.932 1693.612 1694.292 1694.972 1695.652 1696.332 1697.012 1697.692 1698.372 1699.052 1699.732 1700.412
EXISTING LEVEL (EGL)	1669.666 1670.036 1670.197 1670.446 1670.850 1671.356 1671.722 1672.167 1672.640 1673.192 1673.640 1674.084 1674.601 1674.957 1674.960 1676.024 1676.452 1676.477 1676.927 1677.325 1678.029 1678.561 1679.954 1681.176 1681.836 1682.788 1683.668 1684.272 1685.253 1686.308 1687.094 1687.868 1688.553 1689.313 1690.040 1690.824 1691.601 1692.243 1692.815 1693.406 1694.051 1694.812 1695.641 1696.779 1697.448 1697.901 1698.698 1699.481 1700.236 1701.022 1701.775
LEVEL DIFFERENCE (FRL-EGL)	-3.254 -2.944 -2.425 -1.994 -1.718 -1.544 -1.230 -0.995 -0.788 -0.660 -0.428 -0.192 -0.029 0.295 0.972 0.588 0.840 1.495 1.725 2.007 1.983 2.131 1.418 0.876 0.896 0.624 0.424 0.500 0.199 -0.176 -0.282 -0.376 -0.381 -0.461 -0.508 -0.612 -0.709 -0.671 -0.563 -0.474 -0.439 -0.520 -0.669 -1.127 -1.116 -0.889 -1.006 -1.109 -1.186 -1.290 -1.363
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1667.816 1667.704 1667.722 1667.780 1667.839 1667.753 1669.385 1670.005 1671.690 1672.677 1673.835 1672.964 1672.972 1673.116 1673.209 1673.230 1672.901 1674.105 1674.597 1675.264 1676.121 1677.427 1679.617 1680.835 1681.753 1682.679 1683.635 1684.826 1686.374 1686.877 1687.647 1688.418 1689.776 1690.876 1690.890 1691.027 1691.367 1692.081 1692.599 1692.812 1693.327 1694.205 1695.275 1695.904 1697.060 1697.743 1699.060 1700.048 1700.999 1701.314 1702.095
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1669.722 1670.091 1670.506 1670.908 1671.259 1671.556 1671.846 1672.255 1672.663 1673.171 1673.693 1674.188 1674.772 1675.270 1676.566 1676.271 1676.974 1677.612 1678.160 1678.780 1679.355 1679.960 1680.611 1681.264 1682.101 1682.920 1683.652 1684.462 1685.286 1685.888 1686.917 1687.731 1688.521 1689.255 1689.607 1690.297 1691.212 1691.892 1692.470 1693.020 1693.691 1694.501 1695.243 1696.254 1696.926 1697.413 1698.194 1699.001 1699.720 1700.556 1701.012
HORIZONTAL ALIGNMENT	Left Transition; RL= 8750.000 L=35.000; R=-250.000 L=114.296; Left Transition; RL= 8750.000 L=35.000; L=26.596; Right Transition; RL= 12000.000 L=80.000; R=160.000 L=19.889; Right Transition; RL= 12000.000 L=80.000
VERTICAL ALIGNMENT	G=6.800% L= 2143.213
CHAINAGE	3+500 3+510 3+520 3+530 3+540 3+550 3+560 3+570 3+580 3+590 3+600 3+610 3+620 3+630 3+640 3+650 3+660 3+670 3+680 3+690 3+700 3+710 3+720 3+730 3+740 3+750 3+760 3+770 3+780 3+790 3+800 3+810 3+820 3+830 3+840 3+850 3+860 3+870 3+880 3+890 3+900 3+910 3+920 3+930 3+940 3+950 3+960 3+970 3+980 3+990 4+000
SUPERELEVATION	e=6.4; e=6.4; e=7.0; e=7.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 3+500 TO KM 4+000

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

FORMAT:

REV:

SHILLONG

DAWKI

Curve Number	16
HIP Ch.	4+649.319km
HIP Coordinate	383680.721 / 2826393.763
Radius	220m
Design Speed (km/h)	60
Tangent Length	53m
Leading Transition Length	40m
Trailing Transition Length	40m
Curve Length	104m
Appex Distance	13m
Deflection Angle	1° 44' 10.0"
Super Elevation	5.0%

Curve Number	17
HIP Ch.	4+851.059km
HIP Coordinate	383633.826 / 2826183.778
Radius	165m
Design Speed (km/h)	60
Tangent Length	84m
Leading Transition Length	60m
Trailing Transition Length	60m
Curve Length	164m
Appex Distance	21m
Deflection Angle	2° 53' 39.4"
Super Elevation	5.0%

Curve Number	15
HIP Ch.	3+833.256km
HIP Coordinate	383831 / 2828699.371
Radius	150m
Design Speed (km/h)	60
Tangent Length	10m
Leading Transition Length	60m
Trailing Transition Length	60m
Curve Length	20m
Appex Distance	11m
Deflection Angle	5° 3' 23.6"
Super Elevation	5.0%

- Proposed Centerline:
- Proposed Median :
- Proposed Carriageway :
- Proposed Paved shoulder :
- Proposed Kerb Shyness :
- Footpath cum Drain :
- Proposed Earthen Shoulder :
- Proposed Open Drain :
- Proposed ROW :
- Proposed Earthwork Line :
- Proposed Breast wall :
- Proposed Retaining wall :
- Proposed RE wall :
- Major Contour Line : 1484.0
- Minor Contour Line : 1484.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 04+000 TO KM 5+000

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

FORMAT:

REV:

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Level Datum =1700

Level Datum =1711

Level Datum =1723

G=6.800%
L=2148.162m

Station=4413.176m
Level=1728.504m

PROPOSED LEVEL (FRL)		1700.412 1701.092 1701.772 1702.452 1703.132 1703.812 1704.492 1705.172 1705.852 1706.532 1707.211 1707.891 1708.571 1709.251 1709.931 1710.611 1711.291 1711.971 1712.651 1713.331 1714.011 1714.691 1715.371 1716.051 1716.731 1717.411 1718.091 1718.771 1719.451 1720.131 1720.811 1721.491 1722.171 1722.851 1723.531 1724.211 1724.891 1725.570 1726.240 1726.903 1727.557 1728.204 1728.842 1729.472 1730.095 1730.709 1731.316 1731.916 1732.516 1733.116 1733.716
EXISTING LEVEL (EGL)		1701.775 1702.570 1703.390 1704.231 1705.076 1705.948 1706.874 1707.021 1708.113 1708.310 1709.078 1707.227 1706.805 1707.004 1707.255 1707.412 1707.885 1708.292 1708.506 1706.698 1709.400 1710.124 1710.705 1711.155 1712.486 1713.351 1714.371 1715.469 1716.571 1717.864 1718.703 1720.571 1721.509 1722.893 1724.833 1725.383 1726.127 1727.539 1729.158 1730.336 1731.194 1731.839 1732.420 1732.965 1734.028 1734.190 1734.813 1735.513 1735.533 1736.219 1736.653
LEVEL DIFFERENCE (FRL-EGL)		-1.363 -1.478 -1.618 -1.779 -1.944 -2.131 -2.382 -1.849 -2.261 -1.778 -1.867 0.664 1.766 2.247 2.676 3.199 3.406 3.679 4.145 4.633 4.611 4.567 4.666 4.896 4.245 4.060 3.720 3.302 2.880 2.267 2.108 0.920 0.662 -0.042 -1.302 -1.182 -1.236 -1.969 -2.918 -3.433 -3.637 -3.635 -3.578 -3.493 -3.933 -3.481 -3.497 -3.597 -3.017 -3.103 -2.637
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1702.095 1703.024 1703.854 1704.478 1705.400 1706.307 1706.945 1707.520 1708.771 1708.055 1709.065 1708.278 1706.384 1707.473 1708.061 1708.651 1709.451 1709.442 1709.465 1708.987 1709.384 1710.019 1710.599 1711.341 1712.434 1713.441 1714.680 1715.391 1716.816 1718.177 1719.104 1720.389 1722.004 1723.804 1725.490 1726.772 1728.544 1729.754 1730.867 1731.199 1731.490 1731.916 1732.526 1733.838 1733.760 1733.927 1733.880 1733.611 1733.790 1734.381
	RightChannel	1701.012 1701.809 1702.292 1703.478 1704.620 1705.698 1706.713 1707.179 1707.937 1708.250 1709.189 1708.322 1707.631 1707.015 1707.503 1707.867 1708.403 1708.741 1709.054 1709.846 1710.573 1711.324 1711.618 1711.616 1712.816 1713.823 1714.968 1716.520 1717.638 1718.010 1719.404 1721.833 1721.903 1723.097 1725.015 1726.002 1727.035 1727.769 1729.276 1730.081 1730.918 1731.579 1732.297 1733.042 1733.803 1734.409 1735.009 1735.581 1736.118 1736.662 1737.182
HORIZONTAL ALIGNMENT		L=525.388
VERTICAL ALIGNMENT		G=6.800% L= 2143.213; K Value =124.961 R= -12496.071 Curve Lenght=100.000; G=6.0
CHAINAGE		4+000 4+010 4+020 4+030 4+040 4+050 4+060 4+070 4+080 4+090 4+100 4+110 4+120 4+130 4+140 4+150 4+160 4+170 4+180 4+190 4+200 4+210 4+220 4+230 4+240 4+250 4+260 4+270 4+280 4+290 4+300 4+310 4+320 4+330 4+340 4+350 4+360 4+370 4+380 4+390 4+400 4+410 4+420 4+430 4+440 4+450 4+460 4+470 4+480 4+490 4+500
SUPERELEVATION		e=2.5 e=2.5 e=2.5 e=2.5

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 4+000 TO KM 4+500

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

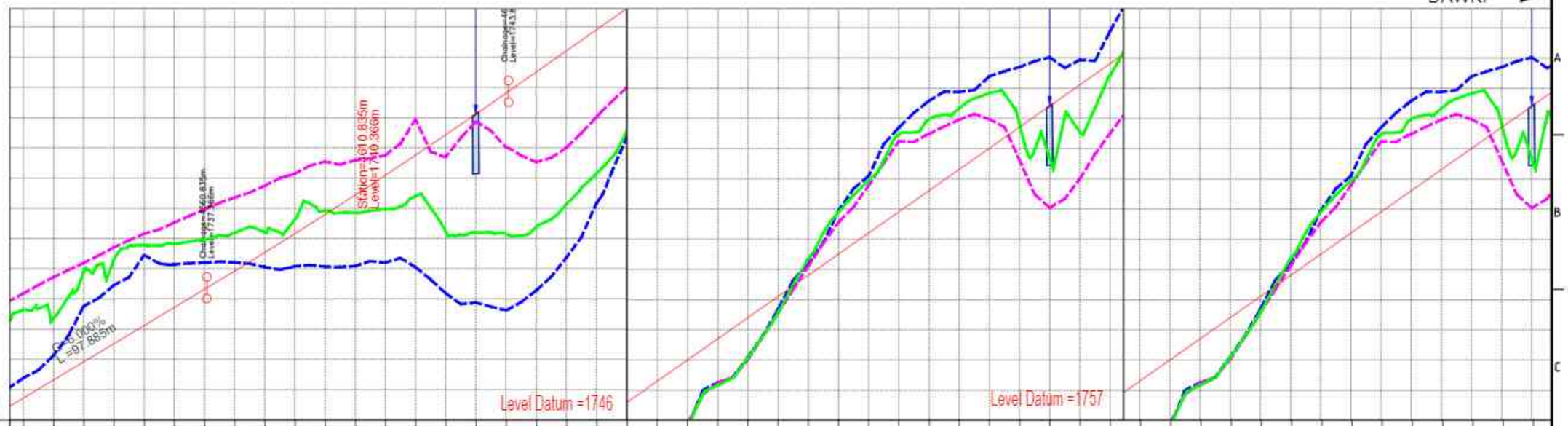
FORMAT:

REV:

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



PROPOSED LEVEL (FRL)	1733.716 1734.316 1734.916 1735.516 1736.116 1736.716 1737.316 1737.920 1738.534 1739.158 1739.793 1740.437 1741.091 1741.755 1742.429 1743.113 1743.808 1744.507 1745.207 1745.907 1746.607 1747.307 1748.007 1748.707 1749.407 1750.107 1750.807 1751.507 1752.207 1752.907 1753.607 1754.307 1755.007 1755.707 1756.407 1757.107 1757.807 1758.507 1759.207 1759.907 1760.607 1761.307 1762.007 1762.707 1763.407 1764.107 1764.807 1765.507 1766.207 1766.907 1767.607
EXISTING LEVEL (EGL)	1736.653 1736.352 1737.895 1738.305 1738.772 1738.826 1738.968 1739.181 1739.201 1739.628 1739.915 1739.848 1739.973 1740.404 1739.233 1739.197 1739.152 1739.379 1740.127 1741.150 1742.532 1744.308 1745.825 1747.161 1748.090 1749.576 1751.357 1752.892 1753.935 1755.470 1755.973 1756.332 1756.831 1755.816 1754.678 1755.539 1757.429 1758.650 1759.173 1759.907 1760.117 1762.327 1763.800 1765.281 1766.112 1766.751 1767.547 1768.444 1769.205 1769.891 1770.483
LEVEL DIFFERENCE (FRL-EGL)	-2.937 -2.036 -2.979 -2.789 -2.656 -2.110 -1.652 -1.261 -0.667 -0.470 -0.122 0.589 1.118 1.351 3.196 3.916 4.656 5.128 5.080 4.757 4.075 2.999 2.182 1.546 1.317 0.531 -0.550 -1.385 -1.728 -2.563 -2.366 -2.025 -1.824 -0.109 1.729 1.568 0.378 -0.143 0.034 0.000 0.490 -1.020 -1.793 -2.574 -2.705 -2.644 -2.740 -2.937 -2.998 -2.984 -2.676
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1734.381 1735.127 1736.757 1737.454 1738.455 1738.143 1738.203 1738.208 1738.055 1738.082 1738.066 1738.090 1738.201 1738.050 1737.188 1736.877 1736.624 1737.274 1738.369 1740.173 1742.330 1744.225 1745.764 1747.258 1748.111 1749.687 1751.189 1752.945 1754.093 1755.699 1756.580 1756.875 1757.390 1757.695 1758.021 1757.937 1758.886 1760.384 1761.533 1762.087 1763.529 1764.259 1764.914 1765.602 1766.345 1767.028 1767.693 1768.376 1769.172 1770.036
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1737.182 1737.717 1738.192 1738.706 1739.157 1739.528 1739.958 1740.353 1740.742 1741.146 1741.542 1741.584 1741.754 1742.951 1741.688 1742.870 1742.007 1741.527 1742.004 1743.021 1743.991 1744.395 1745.903 1747.246 1748.023 1749.565 1751.117 1752.562 1753.781 1755.241 1755.481 1755.956 1755.971 1754.611 1753.041 1754.003 1755.506 1756.681 1757.233 1757.605 1757.711 1759.548 1760.337 1761.760 1762.679 1763.906 1764.244 1767.114 1768.462 1769.797 1770.899
HORIZONTAL ALIGNMENT	Left Transition RL= 8800.000 L=40.000; R=-220.000 L=103.600; Left Transition RL= 8800.000 L=40.000; L=16.706; Right Transition RL= 8250.000 L=50.000; R=185.000 L=104.456; Right Transition RL= 8250.000 L=50.000
VERTICAL ALIGNMENT	G=6.000% L= 97.709; R= 9998.449 Curve Lenght=100.000 K Value =99.984; G=7.000% L= 467.781
CHAINAGE	4+500 4+510 4+520 4+530 4+540 4+550 4+560 4+570 4+580 4+590 4+600 4+610 4+620 4+630 4+640 4+650 4+660 4+670 4+680 4+690 4+700 4+710 4+720 4+730 4+740 4+750 4+760 4+770 4+780 4+790 4+800 4+810 4+820 4+830 4+840 4+850 4+860 4+870 4+880 4+890 4+900 4+910 4+920 4+930 4+940 4+950 4+960 4+970 4+980 4+990 5+000
SUPERELEVATION	e=7.0 e=7.0 e=7.0 e=7.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 4+500 TO KM 5+000

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

FORMAT:

REV:

169270/2022/SRINAGAR-6

SHILLONG

DAWKI

Curve Number	19
HIP Ch.:	5+679.108m
HIP Coordinate:	362871.368 2835687.175
Radius	400m
Design Speed (km/h)	80
Tangent Length	72m
Leading Transition Length	70m
Trailing Transition Length	70m
Curve Length	142m
Apex Distance	15m
Deflection Angle	1° 41' 15.7"
Super Elevation	5.0%

Curve Number	18
HIP Ch.:	5+374.321km
HIP Coordinate:	363173.485 2835834.217
Radius	550m
Design Speed (km/h)	80
Tangent Length	71m
Leading Transition Length	70m
Trailing Transition Length	70m
Curve Length	141m
Apex Distance	11m
Deflection Angle	1° 12' 50.2"
Super Elevation	5.0%

Proposed Centerline:
Proposed Median :
Proposed Carriageway :
Proposed Paved shoulder :
Proposed Kerb Shyness :
Footpath cum Drain :
Proposed Earthen Shoulder :
Proposed Open Drain :
Proposed ROW :
Proposed Earthwork Line :
Proposed Breast wall :
Proposed Retaining wall :
Proposed RE wall :
Major Contour Line :
Minor Contour Line :

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 05+000 TO KM 6+000

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

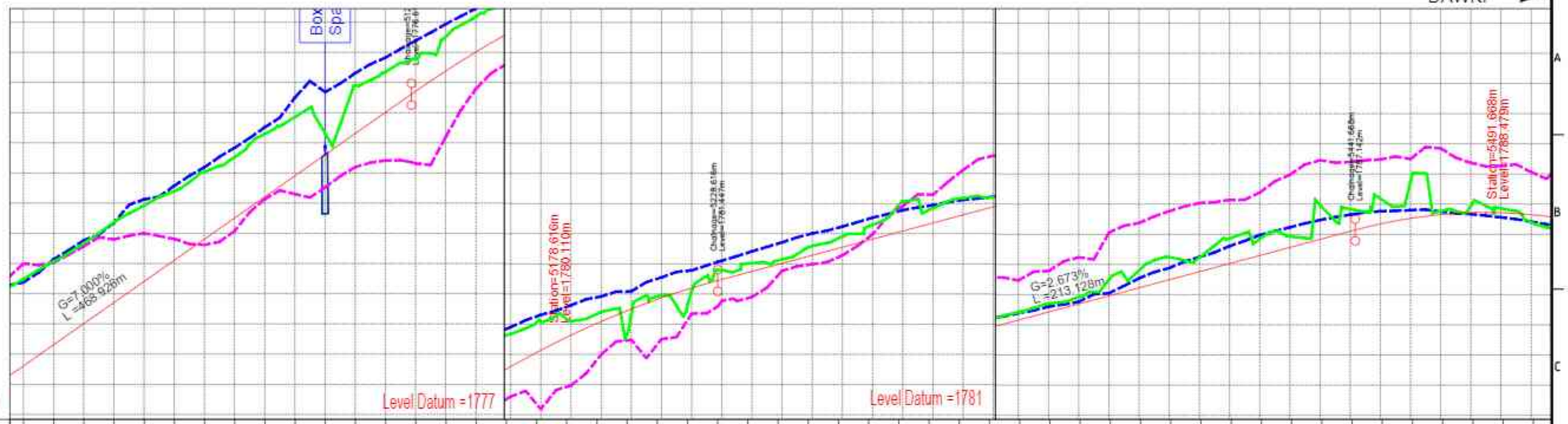
FORMAT:

REV:

169270T/2022/SRINAGAR-6

SHILLONG ← → DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



PROPOSED LEVEL (FRL)	1767.607	1768.307	1769.007	1769.707	1770.407	1771.107	1771.807	1772.507	1773.207	1773.907	1774.607	1775.307	1776.007	1776.707	1777.379	1778.008	1778.594	1779.136	1779.636	1780.092	1780.505	1780.874	1781.200	1781.484	1781.751	1782.018	1782.286	1782.553	1782.820	1783.088	1783.355	1783.622	1783.890	1784.157	1784.424	1784.692	1784.959	1785.226	1785.494	1785.761	1786.028	1786.296	1786.563	1786.830	1787.098	1787.344	1787.529	1787.652	1787.714	1787.713	1787.651
EXISTING LEVEL (EGL)	1770.483	1771.067	1771.672	1772.368	1772.923	1773.399	1774.038	1774.523	1775.295	1775.854	1775.317	1776.910	1777.353	1777.803	1778.517	1779.182	1779.682	1780.082	1780.104	1780.399	1780.312	1780.960	1781.084	1781.788	1782.023	1782.148	1782.594	1782.903	1783.290	1784.066	1783.842	1784.182	1784.211	1784.412	1784.707	1784.911	1785.494	1785.800	1786.239	1786.229	1786.859	1786.839	1786.933	1787.975	1787.832	1788.180	1788.741	1787.766	1787.947	1787.861	1787.396
LEVEL DIFFERENCE (FRL-EGL)	-2.876	-2.760	-2.665	-2.661	-2.516	-2.292	-2.231	-2.016	-2.088	-1.947	-0.710	-1.603	-1.346	-1.096	-1.138	-1.174	-1.088	-0.946	-0.468	-0.307	0.193	-0.086	0.116	-0.304	-0.272	-0.130	-0.308	-0.350	-0.470	-0.978	-0.487	-0.560	-0.321	-0.255	-0.283	-0.219	-0.535	-0.574	-0.745	-0.468	-0.831	-0.543	-0.370	-1.145	-0.734	-0.836	-1.212	-0.114	-0.233	-0.148	0.255
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1770.376	1771.133	1771.767	1772.348	1773.126	1773.576	1774.188	1774.834	1775.509	1776.500	1776.682	1777.309	1777.820	1778.388	1778.936	1779.452	1779.902	1780.310	1780.626	1780.918	1781.089	1781.550	1781.783	1782.105	1782.415	1782.713	1783.008	1783.237	1783.532	1783.779	1783.944	1784.121	1784.226	1784.386	1784.601	1784.760	1785.046	1785.542	1785.880	1786.247	1786.608	1786.974	1787.230	1787.472	1787.650	1787.761	1787.799	1787.751	1787.667	1787.561	1787.418
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1770.999	1771.027	1771.566	1771.799	1772.003	1771.817	1771.620	1772.076	1773.131	1773.306	1773.517	1774.194	1774.414	1774.318	1775.188	1776.787	1777.603	1777.179	1777.973	1778.997	1779.483	1779.508	1780.348	1780.774	1780.901	1781.770	1781.986	1782.284	1782.979	1783.917	1784.293	1785.108	1785.583	1785.469	1785.761	1786.235	1787.050	1787.371	1787.765	1788.034	1788.137	1788.381	1788.972	1789.451	1789.395	1789.481	1789.492	1789.847	1789.367	1789.267	1789.058
HORIZONTAL ALIGNMENT	L=280.554	Right Transition RL= 38500.000 L=70.000	R=550.000 L=140.951	Right Transition RL= 38500.000 L=70.000
VERTICAL ALIGNMENT	G=7.000% L= 467.781	K Value =23.113 R= -2311.324 Curve Lenght=100.000	G=2.673% L= 213.052	K Value =16.199 R= -1619.888 Curve Lenght
CHAINAGE	5+000	5+010	5+020	5+030	5+040	5+050	5+060	5+070	5+080	5+090	5+100	5+110	5+120	5+130	5+140	5+150	5+160	5+170	5+180	5+190	5+200	5+210	5+220	5+230	5+240	5+250	5+260	5+270	5+280	5+290	5+300	5+310	5+320	5+330	5+340	5+350	5+360	5+370	5+380	5+390	5+400	5+410	5+420	5+430	5+440	5+450	5+460	5+470	5+480	5+490	5+500
SUPERELEVATION	e=2.5	e=2.5	e=5.2	a=2.5	e=2.5	e=5.2

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 5+000 TO KM 5+500

DRAWING NO.

DATE: MAY 2022
SCALE: NTS
FORMAT:
REV:

169270T/2022/SRINAGAR-6

SHILLONG → DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Level Datum =1778

Level Datum =1768

Box Culvert

PROPOSED LEVEL (FRL)	1787.651 1787.528 1787.342 1787.095 1786.787 1786.437 1786.087 1785.737 1785.387 1785.037 1784.687 1784.337 1783.987 1783.638 1783.288 1782.938 1782.588 1782.238 1781.888 1781.538 1781.188 1780.838 1780.488 1780.138 1779.788 1779.438 1779.088 1778.738 1778.388 1778.038 1777.688 1777.336 1776.988 1776.638 1776.288 1775.938 1775.588 1775.238 1774.888 1774.538 1774.188 1773.838 1773.488 1773.138 1772.788 1772.438 1772.088 1771.738 1771.388 1771.038 1770.688
EXISTING LEVEL (EGL)	1787.396 1787.330 1787.011 1786.903 1786.808 1786.717 1786.434 1786.262 1786.083 1785.930 1785.452 1785.134 1784.758 1784.446 1784.146 1783.520 1782.921 1782.602 1782.381 1781.750 1781.423 1780.774 1780.202 1779.640 1779.152 1778.855 1778.552 1778.064 1778.096 1777.723 1777.344 1777.261 1777.177 1776.783 1776.470 1775.744 1775.587 1775.216 1775.032 1774.199 1774.601 1774.012 1774.113 1773.457 1773.408 1772.693 1771.967 1771.253 1771.278 1771.136 1771.110
LEVEL DIFFERENCE (FRL-EGL)	0.255 0.198 0.331 0.192 -0.021 -0.280 -0.347 -0.525 -0.696 -0.893 -0.765 -0.797 -0.771 -0.808 -0.858 -0.582 -0.333 -0.364 -0.493 -0.212 -0.235 0.064 0.286 0.498 0.636 0.583 0.536 0.674 0.292 0.315 0.344 0.077 -0.189 -0.145 -0.182 0.194 0.001 0.022 -0.144 0.339 -0.413 -0.174 -0.625 -0.319 -0.620 -0.255 0.121 0.485 0.110 -0.098 -0.122
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1787.418 1787.235 1787.043 1786.780 1786.696 1786.533 1786.340 1786.143 1785.894 1785.656 1785.403 1785.145 1784.829 1784.474 1784.060 1783.612 1783.150 1782.672 1782.159 1781.380 1781.032 1780.475 1779.939 1779.385 1778.990 1778.599 1778.333 1778.021 1777.677 1777.337 1777.058 1776.800 1776.401 1776.072 1775.716 1775.343 1775.082 1774.629 1774.277 1773.965 1773.680 1773.388 1773.134 1772.721 1772.382 1772.136 1771.863 1771.563 1771.326 1771.160 1770.541
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1789.058 1789.309 1788.408 1787.093 1787.032 1787.023 1786.689 1786.286 1786.091 1786.090 1786.070 1785.529 1785.515 1784.972 1784.998 1784.208 1783.685 1783.684 1782.389 1782.149 1781.988 1781.368 1780.658 1780.127 1780.065 1779.626 1779.289 1779.460 1779.121 1778.665 1778.384 1778.332 1777.933 1777.429 1776.856 1776.645 1776.215 1775.829 1775.400 1775.039 1775.194 1775.078 1775.173 1774.887 1774.261 1773.527 1772.577 1771.182 1770.913 1770.432 1768.418
HORIZONTAL ALIGNMENT	L=23.245; Left Transition RL= 28000.000 L=70.000; R=-400.000 L=142.132; Left Transition RL= 28000.000 L=70.000; L=218.694
VERTICAL ALIGNMENT	Lenght=100.000; G=-3.500% L= 456.100
CHAINAGE	5+500 5+510 5+520 5+530 5+540 5+550 5+560 5+570 5+580 5+590 5+600 5+610 5+620 5+630 5+640 5+650 5+660 5+670 5+680 5+690 5+700 5+710 5+720 5+730 5+740 5+750 5+760 5+770 5+780 5+790 5+800 5+810 5+820 5+830 5+840 5+850 5+860 5+870 5+880 5+890 5+900 5+910 5+920 5+930 5+940 5+950 5+960 5+970 5+980 5+990 6+000
SUPERELEVATION	e=7.0; e=2.5; e=7.0; e=2.5

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 5+500 TO KM 6+000

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

FORMAT:

REV:

169270T/2022/SRINAGAR-6

SHILLONG

DAWKI

Curve Number	20
HIP Ch.	6+141.878km
HIP Coordinate	382498.405 / 2825612.749
Radius	300m
Design Speed (km/h)	80
Tangent Length	28m
Leading Transition Length	75m
Trailing Transition Length	75m
Curve Length	84m
Apex Distance	8m
Deflection Angle	7° 22' 13.2"
Super Elevation	5.0%

Curve Number	21
HIP Ch.	6+368.687km
HIP Coordinate	382368.991 / 2825415.611
Radius	250m
Design Speed (km/h)	80
Tangent Length	19m
Leading Transition Length	40m
Trailing Transition Length	40m
Curve Length	53m
Apex Distance	3m
Deflection Angle	1° 31' 40.1"
Super Elevation	5.0%

Curve Number	22
HIP Ch.	6+500.950km
HIP Coordinate	382357.553 / 2825281.563
Radius	250m
Design Speed (km/h)	80
Tangent Length	28m
Leading Transition Length	40m
Trailing Transition Length	40m
Curve Length	51m
Apex Distance	4m
Deflection Angle	1° 31' 40.1"
Super Elevation	5.0%

Curve Number	23
HIP Ch.	6+742.809km
HIP Coordinate	382227 / 2825082.17
Radius	800m
Design Speed (km/h)	80
Tangent Length	31m
Leading Transition Length	30m
Trailing Transition Length	30m
Curve Length	63m
Apex Distance	1m
Deflection Angle	0° 21' 29.2"
Super Elevation	5.0%

Proposed Centerline:
Proposed Median :
Proposed Carriageway :
Proposed Paved shoulder :
Proposed Kerb Shyness :
Footpath cum Drain :
Proposed Earthen Shoulder :
Proposed Open Drain :
Proposed ROW :
Proposed Earthwork Line :
Proposed Breast wall :
Proposed Retaining wall :
Proposed RE wall :
Major Contour Line : 1484.0
Minor Contour Line : 1484.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 06+000 TO KM 7+000

DATE: MAY 2022
SCALE: NTS

DRAWING NO.

FORMAT:

REV:

169270/2022/SRINAGAR-6

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Level Datum =1769

Box Culvert Span-1x2.0

Box Culvert Span-1x2.0mx1.5m

G=-2.274%
L =245.828m

G=0.791%
L=9.561m

Station=6393.532m
Level=1761.152m

Station=6443.532m
Level=1761.548m

Station=6453.093m
Level=1761.631m

Station=6493.093m
Level=1761.940m

PROPOSED LEVEL (FRL)	1770.688 1770.347 1770.018 1769.702 1769.397 1769.105 1768.825 1768.558 1768.302 1768.059 1767.828 1767.601 1767.373 1767.146 1766.918 1766.691 1766.463 1766.236 1766.009 1765.781 1765.554 1765.326 1765.099 1764.871 1764.644 1764.416 1764.189 1763.962 1763.734 1763.507 1763.279 1763.052 1762.824 1762.597 1762.370 1762.148 1761.956 1761.795 1761.664 1761.563 1761.494 1761.455 1761.446 1761.469 1761.522 1761.599 1761.671 1761.717 1761.736 1761.726 1761.688
EXISTING LEVEL (EGL)	1771.110 1771.079 1771.055 1771.530 1770.918 1770.472 1770.638 1770.504 1769.873 1769.395 1768.752 1768.048 1767.458 1767.048 1766.675 1766.116 1765.486 1764.881 1764.513 1764.325 1764.271 1764.043 1764.015 1764.139 1764.256 1764.263 1764.213 1764.057 1763.860 1763.780 1763.423 1763.248 1762.989 1762.719 1762.406 1762.108 1761.871 1761.701 1761.467 1761.273 1761.085 1760.996 1761.008 1761.118 1761.330 1761.464 1761.536 1761.738 1761.639 1761.945 1762.093
LEVEL DIFFERENCE (FRL-EGL)	-0.422 -0.732 -1.037 -1.828 -1.521 -1.367 -1.813 -1.946 -1.571 -1.336 -0.924 -0.447 -0.085 0.098 0.243 0.575 0.977 1.355 1.496 1.456 1.283 1.283 1.084 0.732 0.388 0.153 -0.024 -0.095 -0.126 -0.273 -0.144 -0.196 -0.165 -0.122 -0.036 0.040 0.085 0.094 0.197 0.290 0.409 0.459 0.438 0.351 0.192 0.135 0.135 -0.021 -0.103 -0.219 -0.105
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1770.541 1770.522 1771.866 1772.554 1772.875 1772.394 1771.895 1771.483 1771.069 1770.819 1770.569 1770.809 1768.166 1765.316 1766.157 1765.560 1765.613 1765.103 1764.553 1764.198 1764.136 1764.115 1764.014 1763.850 1764.049 1763.993 1763.867 1763.450 1763.438 1763.306 1763.237 1763.123 1762.854 1762.607 1762.211 1761.948 1761.544 1761.299 1760.989 1760.658 1760.395 1760.457 1759.869 1759.473 1759.703 1759.559 1760.613 1761.221 1761.430 1762.171 1762.421
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1768.418 1769.177 1770.292 1770.724 1770.358 1770.559 1770.215 1769.822 1769.345 1768.949 1768.522 1768.114 1767.566 1766.999 1766.199 1765.572 1764.225 1763.450 1764.476 1764.266 1763.117 1762.772 1764.246 1764.338 1764.427 1764.395 1765.440 1765.698 1765.399 1765.402 1765.045 1764.329 1763.697 1763.006 1762.415 1762.151 1761.961 1761.959 1761.950 1761.464 1761.486 1761.180 1761.392 1761.396 1761.436 1763.079 1763.697 1762.838 1764.242 1765.168 1765.204
HORIZONTAL ALIGNMENT	Left Transition RL= 22500.000 L=75.000 · R=-300.000 L=58.214 · Left Transition RL= 22500.000 L=75.000 · L=87.831 · Left Transition RL= 10000.000 L=40.000 · R=-250.000 L=31.547 · Left Transition RL= 10000.000 L=40.000 · L=16.994 · Right Transition RL= 10000.000 L=40.000 · R=250.00
VERTICAL ALIGNMENT	R= 8169.759 Curve Lenght=100.000 K Value =81.698 · G=-2.274% L= 245.784 · R= 3261.729 Curve Lenght=100.000 K Value =32.617 · G=0.791% L= 9.561 · K Value =35.91 R= -3591.074 Curve
CHAINAGE	6+000 6+010 6+020 6+030 6+040 6+050 6+060 6+070 6+080 6+090 6+100 6+110 6+120 6+130 6+140 6+150 6+160 6+170 6+180 6+190 6+200 6+210 6+220 6+230 6+240 6+250 6+260 6+270 6+280 6+290 6+300 6+310 6+320 6+330 6+340 6+350 6+360 6+370 6+380 6+390 6+400 6+410 6+420 6+430 6+440 6+450 6+460 6+470 6+480 6+490 6+500
SUPERELEVATION	e=7.0 · e=7.0 · e=6.4

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 6+000 TO KM 6+500

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

FORMAT:

REV:

169270/2022/SRINAGAR-6

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Box Culvert Span-1x2.0m

Level Datum =1761

PROPOSED LEVEL (FRL)	1761.688 1761.623 1761.530 1761.409 1761.266 1761.123 1760.979 1760.835 1760.692 1760.548 1760.405 1760.261 1760.117 1759.974 1759.830 1759.686 1759.543 1759.399 1759.256 1759.112 1758.968 1758.825 1758.681 1758.537 1758.394 1758.250 1758.106 1757.963 1757.819 1757.676 1757.532 1757.388 1757.245 1757.101 1756.957 1756.814 1756.670 1756.527 1756.383 1756.239 1756.096 1755.952 1755.808 1755.665 1755.521 1755.378 1755.234 1755.085 1754.921 1754.743 1754.551
EXISTING LEVEL (EGL)	1762.093 1762.100 1762.151 1762.053 1761.892 1761.668 1761.476 1761.273 1761.069 1760.833 1760.566 1760.312 1760.058 1759.975 1759.820 1759.672 1759.536 1759.423 1759.250 1759.130 1759.017 1758.699 1758.500 1758.373 1758.277 1758.132 1758.010 1757.888 1757.757 1757.790 1757.460 1757.326 1756.965 1756.988 1756.814 1756.924 1756.743 1756.729 1756.414 1756.375 1756.310 1756.051 1755.870 1755.843 1755.582 1755.437 1755.311 1755.216 1755.197 1754.792
LEVEL DIFFERENCE (FRL-EGL)	-0.405 -0.477 -0.621 -0.644 -0.626 -0.535 -0.497 -0.438 -0.377 -0.285 -0.161 -0.051 0.059 -0.001 0.010 0.014 0.007 -0.024 0.006 -0.018 -0.049 0.126 0.181 0.164 0.117 0.118 0.096 0.075 0.062 -0.114 0.072 0.062 -0.085 0.136 -0.031 0.000 -0.254 -0.216 -0.346 -0.175 -0.279 -0.358 -0.243 -0.205 -0.322 -0.204 -0.203 -0.226 -0.295 -0.454 -0.241
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1762.421 1762.442 1762.329 1762.117 1761.845 1761.527 1761.281 1761.034 1760.835 1760.584 1760.305 1759.984 1759.938 1759.710 1759.360 1759.202 1759.060 1759.401 1759.292 1759.106 1758.499 1758.672 1758.447 1758.442 1758.343 1758.275 1758.176 1757.940 1757.728 1757.633 1757.700 1757.411 1757.246 1756.977 1756.848 1756.839 1756.750 1756.612 1756.504 1756.359 1756.217 1756.066 1755.916 1755.771 1755.598 1755.432 1755.282 1755.117 1754.961 1754.795 1754.609
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1765.204 1765.081 1764.932 1764.550 1763.923 1763.255 1762.734 1762.557 1762.248 1762.107 1761.968 1760.294 1760.151 1760.536 1760.751 1760.936 1761.400 1761.420 1761.057 1761.068 1760.480 1760.056 1759.713 1759.614 1759.441 1759.539 1759.200 1758.930 1758.766 1758.661 1758.359 1758.225 1758.315 1757.896 1757.839 1757.744 1757.735 1757.679 1757.761 1757.570 1757.412 1757.287 1756.918 1756.706 1756.735 1756.329 1756.212 1756.136 1755.834 1755.593 1755.481
HORIZONTAL ALIGNMENT	250.000 L=51.010 · Right Transition · L=108.883 · RL= 10000.000 L=40.000 · Right Transition · R=800.000 L=92.904 · RL= 24000.000 L=30.000 · Right Transition · L=125.723 · RL= 24000.000 L=30.000 · Right Transition · RL= 27000.000 L=30.000
VERTICAL ALIGNMENT	5.911 Curve Lenght=80.060 · G=-1.436% L= 428.008 · K R= -6991.77
CHAINAGE	6+500 6+510 6+520 6+530 6+540 6+550 6+560 6+570 6+580 6+590 6+600 6+610 6+620 6+630 6+640 6+650 6+660 6+670 6+680 6+690 6+700 6+710 6+720 6+730 6+740 6+750 6+760 6+770 6+780 6+790 6+800 6+810 6+820 6+830 6+840 6+850 6+860 6+870 6+880 6+890 6+900 6+910 6+920 6+930 6+940 6+950 6+960 6+970 6+980 6+990 7+000
SUPERELEVATION	e=6.4 · e=2.5 · e=3.5 · e=2.5

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 6+500 TO KM 7+000

DRAWING NO.

DATE: MAY 2022

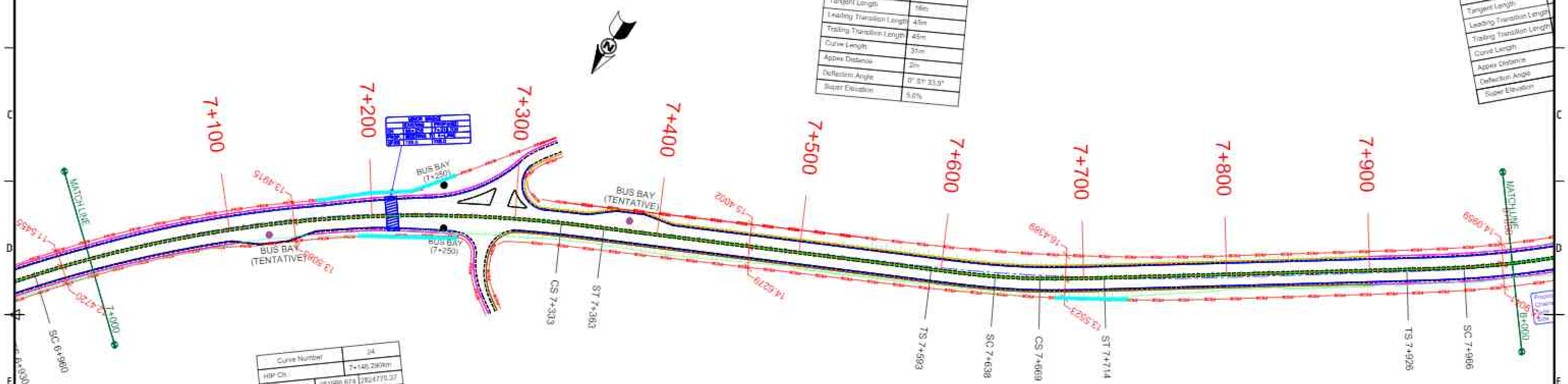
SCALE: NTS

FORMAT:

REV:

SHILLONG

DAWKI



Curve Number		25
HIP Ch :		7+653.819km
HIP Coordinate	381505.76	2824551.567
Radius		500m
Design Speed (km/h)		80
Tangent Length		16m
Leading Transition Length		45m
Trailing Transition Length		45m
Curve Length		31m
Appex Distance		2m
Deflection Angle		0° 01' 33.5"
Super Elevation		5.0%

Curve Number		24
HIP Ch :		7+146.290km
HIP Coordinate	381966.674	2824770.37
Radius		900m
Design Speed (km/h)		80
Tangent Length		199m
Leading Transition Length		30m
Trailing Transition Length		30m
Curve Length		373m
Appex Distance		23m
Deflection Angle		0° 18' 5.9"
Super Elevation		3.3%

Curve Number	
HIP Ch :	
HIP Coordinate	381187.922
Radius	
Design Speed (km/h)	
Tangent Length	
Leading Transition Length	
Trailing Transition Length	
Curve Length	
Appex Distance	
Deflection Angle	
Super Elevation	

Proposed Centerline:
Proposed Median :
Proposed Carriageway :
Proposed Paved shoulder :
Proposed Kerb Shyness :
Footpath cum Drain :
Proposed Earthen Shoulder :
Proposed Open Drain :
Proposed ROW :
Proposed Earthwork Line :
Proposed Breast wall :
Proposed Retaining wall :
Proposed RE wall :
Major Contour Line : 1484.0
Minor Contour Line : 1484.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 07+000 TO KM 8+000

DATE: MAY 2022
SCALE: NTS

DRAWING NO.

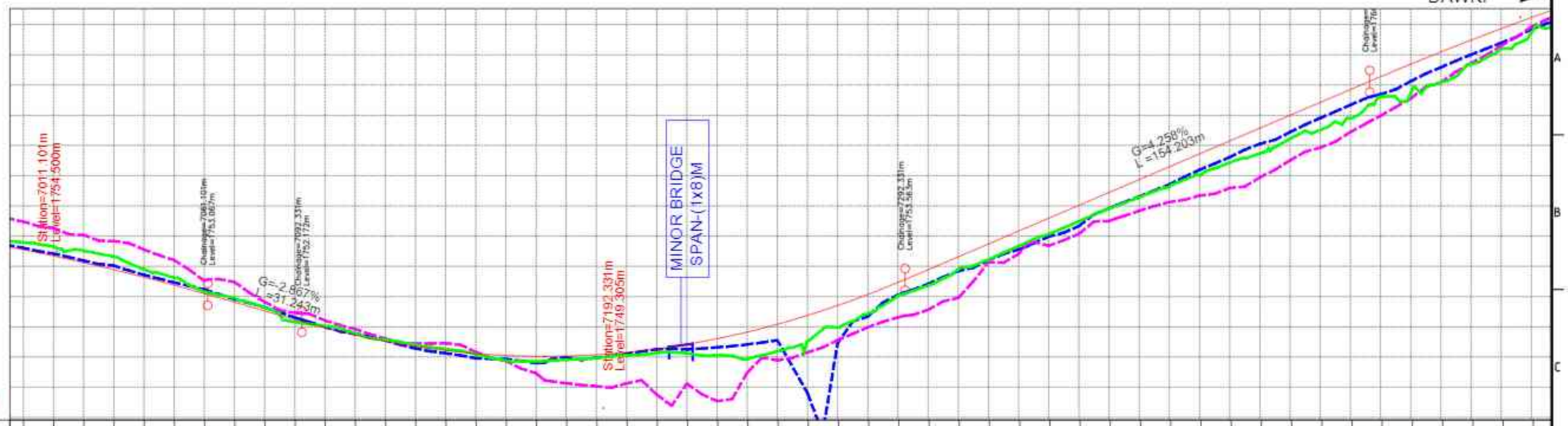
FORMAT:

REV:

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



CHAINAGE	7+000	7+010	7+020	7+030	7+040	7+050	7+060	7+070	7+080	7+090	7+100	7+110	7+120	7+130	7+140	7+150	7+160
PROPOSED LEVEL (FRL)	1754,551	1754,345	1754,124	1753,889	1753,640	1753,376	1753,098	1752,812	1752,525	1752,238	1751,962	1751,721	1751,515	1751,344	1751,210	1751,111	1751,047
EXISTING LEVEL (EGL)	1754,792	1754,642	1754,513	1754,320	1753,902	1753,621	1753,157	1752,961	1752,638	1752,160	1752,030	1751,784	1751,567	1751,401	1751,264	1751,086	1750,878
LEVEL DIFFERENCE (FRL-EGL)	-0,241	-0,297	-0,389	-0,431	-0,262	-0,245	-0,059	-0,149	-0,113	0,078	-0,068	-0,063	-0,052	-0,057	-0,054	0,025	0,169
GROUND LEVEL AT 7M FROM PROP. C/L – Left Channel	1754,609	1754,420	1754,189	1754,020	1753,717	1753,460	1753,230	1752,910	1752,643	1752,309	1751,997	1751,762	1751,547	1751,280	1751,120	1750,954	1750,930
GROUND LEVEL AT 7M FROM PROP. C/L – RightChannel	1755,481	1755,266	1755,035	1754,834	1754,551	1754,207	1753,521	1753,481	1752,819	1752,462	1752,205	1751,922	1751,611	1751,442	1751,453	1751,166	1750,867

CHAINAGE	7+170	7+180	7+190	7+200	7+210	7+220	7+230	7+240	7+250	7+260	7+270	7+280	7+290	7+300	7+310	7+320	7+330
PROPOSED LEVEL (FRL)	1751,020	1751,027	1751,071	1751,150	1751,265	1751,415	1751,601	1751,823	1752,080	1752,373	1752,701	1753,065	1753,465	1753,890	1754,315	1754,741	1755,167
EXISTING LEVEL (EGL)	1750,853	1750,906	1750,967	1751,056	1751,126	1751,119	1751,049	1750,934	1751,185	1751,511	1751,974	1752,439	1753,013	1753,360	1753,902	1754,224	1754,670
LEVEL DIFFERENCE (FRL-EGL)	0,167	0,121	0,104	0,094	0,139	0,296	0,552	0,889	0,895	0,862	0,727	0,626	0,452	0,530	0,413	0,517	0,497
GROUND LEVEL AT 7M FROM PROP. C/L – Left Channel	1750,795	1750,985	1750,977	1751,100	1751,253	1751,250	1751,316	1751,414	1751,550	1749,807	1751,460	1752,338	1753,052	1753,416	1753,845	1754,206	1754,554
GROUND LEVEL AT 7M FROM PROP. C/L – RightChannel	1750,463	1750,130	1750,033	1750,125	1749,751	1750,120	1749,538	1750,480	1750,885	1751,151	1751,556	1751,982	1752,309	1752,562	1752,956	1754,135	1754,407

CHAINAGE	7+340	7+350	7+360	7+370	7+380	7+390	7+400	7+410	7+420	7+430	7+440	7+450	7+460	7+470	7+480	7+490	7+500
PROPOSED LEVEL (FRL)	1755,593	1756,019	1756,444	1756,870	1757,296	1757,722	1758,148	1758,573	1758,999	1759,425	1759,851	1760,276	1760,691	1761,094	1761,486	1761,865	1762,232
EXISTING LEVEL (EGL)	1755,069	1755,491	1755,907	1756,286	1756,643	1757,015	1757,432	1757,738	1758,220	1758,510	1758,898	1759,607	1759,727	1760,082	1760,690	1761,201	1761,728
LEVEL DIFFERENCE (FRL-EGL)	0,524	0,528	0,537	0,584	0,653	0,707	0,716	0,835	0,779	0,915	0,953	0,669	0,964	1,012	0,796	0,664	0,504
GROUND LEVEL AT 7M FROM PROP. C/L – Left Channel	1754,985	1755,334	1755,917	1756,310	1756,710	1757,195	1757,611	1758,054	1758,443	1758,907	1759,341	1759,690	1760,123	1760,586	1761,004	1761,396	1761,839
GROUND LEVEL AT 7M FROM PROP. C/L – RightChannel	1754,680	1755,076	1755,495	1755,837	1756,127	1756,340	1756,595	1756,943	1757,506	1757,927	1758,442	1758,983	1759,551	1760,086	1760,722	1761,299	1761,924

HORIZONTAL ALIGNMENT
R=900.000 L=372.630
Right Transition
RL= 27000.000 L=30.000
L=230.582

VERTICAL ALIGNMENT
K Value =89.918
91.775 Curve Lenght=100.000
G=-2.867% L= 31.230
R= 2807.206 Curve Lenght=200.000
K Value =28.072
G=4.258% L= 154.063
K Value =82
R= -8262.704 Curve Le

SUPERELEVATION
e=3.2
e=2.5

REV	DATE	DESCRIPTION

CLIENT:
National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER:
URS
URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE
KM 7+000 TO KM 7+500

DATE: MAY 2022
SCALE: NTS
FORMAT:
REV:
DRAWING NO.

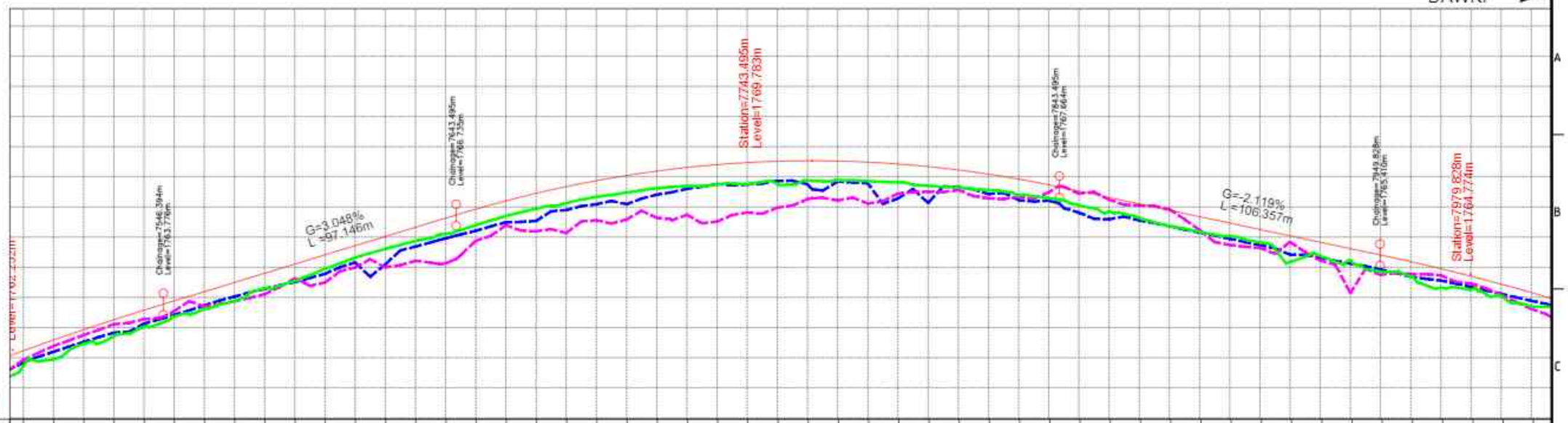
169270T/2022/SRINAGAR-6

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Level Datum =1760



PROPOSED LEVEL (FRL)		1762.232 1762.587 1762.929 1763.260 1763.579 1763.886 1764.191 1764.495 1764.800 1765.105 1765.410 1765.714 1766.019 1766.324 1766.629 1766.928 1767.203 1767.452 1767.676 1767.873 1768.045 1768.191 1768.311 1768.405 1768.473 1768.516 1768.533 1768.523 1768.488 1768.428 1768.341 1768.229 1768.090 1767.926 1767.736 1767.526 1767.314 1767.102 1766.890 1766.678 1766.466 1766.254 1766.042 1765.830 1765.618 1765.406 1765.187 1764.952 1764.704 1764.440 1764.162
EXISTING LEVEL (EGL)		1761.728 1761.943 1762.451 1762.716 1763.020 1763.370 1763.616 1763.885 1764.299 1764.545 1764.943 1765.316 1765.605 1765.871 1766.107 1766.393 1766.698 1766.939 1767.123 1767.333 1767.475 1767.620 1767.694 1767.741 1767.760 1767.756 1767.876 1767.890 1767.855 1767.817 1767.702 1767.641 1767.561 1767.381 1767.288 1767.055 1766.847 1766.636 1766.371 1766.177 1766.032 1765.826 1765.172 1765.379 1765.221 1764.851 1764.682 1764.312 1764.261 1764.035 1763.704
LEVEL DIFFERENCE (FRL-EGL)		0.504 0.644 0.478 0.544 0.559 0.516 0.575 0.610 0.501 0.560 0.467 0.398 0.414 0.453 0.522 0.535 0.505 0.513 0.553 0.540 0.570 0.571 0.617 0.664 0.713 0.760 0.657 0.633 0.633 0.611 0.639 0.588 0.529 0.545 0.448 0.471 0.467 0.466 0.519 0.501 0.434 0.428 0.870 0.451 0.397 0.555 0.505 0.640 0.443 0.405 0.458
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1761.839 1762.197 1762.523 1762.831 1763.130 1763.421 1763.733 1764.026 1764.281 1764.511 1764.782 1765.160 1765.094 1765.682 1765.959 1766.207 1766.488 1766.535 1766.897 1767.089 1767.089 1767.407 1767.601 1767.759 1767.746 1767.863 1767.751 1767.843 1767.786 1767.283 1767.133 1767.655 1767.429 1767.227 1767.211 1766.812 1766.593 1766.552 1766.364 1766.152 1765.947 1765.732 1765.417 1765.321 1765.122 1764.926 1764.688 1764.559 1764.345 1764.120 1763.886
	RightChannel	1761.924 1762.387 1762.750 1763.109 1763.282 1763.542 1763.697 1763.872 1764.104 1764.634 1764.493 1764.988 1764.995 1765.213 1765.132 1765.876 1766.391 1766.192 1766.138 1766.558 1766.582 1766.640 1766.740 1766.511 1766.816 1766.978 1767.255 1767.215 1767.110 1767.441 1767.503 1767.562 1767.285 1767.350 1767.483 1767.439 1767.238 1767.050 1766.924 1766.237 1765.744 1765.643 1765.840 1765.221 1764.141 1764.754 1764.776 1764.734 1764.460 1764.088 1763.618
HORIZONTAL ALIGNMENT		Left Transition RL= 22500.000 L=46.000; R=-500.000 L=31.266; Left Transition RL= 22500.000 L=46.000; L=211.604; Left Transition RL= 26000.000 L=40.000
VERTICAL ALIGNMENT		e =62.627 ve Lenght=100.000; G=3.048% L= 97.101; K Value =38.706 R= -3870.562 Curve Lenght=200.000; G=-2.119% L= 106.333; K Value =68.101 R= -6810.058 Curve Lenght=60.00
CHAINAGE		7+500 7+510 7+520 7+530 7+540 7+550 7+560 7+570 7+580 7+590 7+600 7+610 7+620 7+630 7+640 7+650 7+660 7+670 7+680 7+690 7+700 7+710 7+720 7+730 7+740 7+750 7+760 7+770 7+780 7+790 7+800 7+810 7+820 7+830 7+840 7+850 7+860 7+870 7+880 7+890 7+900 7+910 7+920 7+930 7+940 7+950 7+960 7+970 7+980 7+990 8+000
SUPERELEVATION		e=5.6; e=2.5

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 7+500 TO KM 8+000

DATE: MAY 2022

SCALE: NTS

DRAWING NO.

FORMAT:

REV:

169270/2022/SRINAGAR-6

SHILLONG

DAWKI

Curve Number	20
HIP Ch.	8+036.020km
HIP Coordinate	381187.992 / 2924338.812
Radius	-250m
Design Speed (km/h)	80
Tangent Length	10m
Leading Transition Length	40m
Trailing Transition Length	40m
Curve Length	140m
Apex Distance	6m
Deflection Angle	0° 35' 15.5"
Super Elevation	4.4%

Curve Number	29
HIP Ch.	8+770.109km
HIP Coordinate	380854.998 / 2924029.009
Radius	-150m
Design Speed (km/h)	50
Tangent Length	74m
Leading Transition Length	30m
Trailing Transition Length	30m
Curve Length	138m
Apex Distance	27m
Deflection Angle	1° 54' 34.9"
Super Elevation	7.0%

Curve Number	27
HIP Ch.	8+318.834km
HIP Coordinate	380994.489 / 2924130.68
Radius	300m
Design Speed (km/h)	60
Tangent Length	55m
Leading Transition Length	70m
Trailing Transition Length	70m
Curve Length	105m
Apex Distance	15m
Deflection Angle	2° 17' 40.9"
Super Elevation	7.0%

Curve Number	28
HIP Ch.	8+601.224km
HIP Coordinate	380727.549 / 2924049.819
Radius	400m
Design Speed (km/h)	60
Tangent Length	26m
Leading Transition Length	30m
Trailing Transition Length	30m
Curve Length	90m
Apex Distance	5m
Deflection Angle	2° 42' 58.9"
Super Elevation	4.0%

- Proposed Centerline:
- Proposed Median :
- Proposed Carriageway :
- Proposed Paved shoulder :
- Proposed Kerb Shyness :
- Footpath cum Drain :
- Proposed Earthen Shoulder :
- Proposed Open Drain :
- Proposed ROW :
- Proposed Earthwork Line :
- Proposed Breast wall :
- Proposed Retaining wall :
- Proposed RE wall :
- Major Contour Line : 1484.0
- Minor Contour Line : 1484.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: (IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 08+000 TO KM 9+000

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

FORMAT:

REV:

169270/2022/SRINAGAR-6

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Level Datum =1758

Box Culvert Span-1x2.0mx1.5m

Box Culvert Span-1x2.0mx1.5m

START OF R CH: 8+410

G=-3.001% L= 34.834m

Station=8074.645m Level=1761.929m

G=-1.067% L=194.685m

G=2.400% L=284.046m

PROPOSED LEVEL (FRL)	1764.162 1763.869 1763.569 1763.269 1762.969 1762.673 1762.406 1762.172 1761.970 1761.800 1761.662 1761.552 1761.445 1761.339 1761.232 1761.125 1761.019 1760.912 1760.805 1760.699 1760.592 1760.485 1760.379 1760.272 1760.165 1760.059 1759.952 1759.845 1759.739 1759.632 1759.525 1759.451 1759.435 1759.477 1759.577 1759.734 1759.949 1760.189 1760.429 1760.669 1760.909 1761.149 1761.389 1761.629 1761.869 1762.109 1762.349 1762.589 1762.829 1763.069 1763.309
EXISTING LEVEL (EGL)	1763.704 1763.502 1763.016 1762.901 1762.310 1761.857 1761.730 1761.262 1760.957 1760.935 1761.047 1761.112 1760.901 1760.904 1760.745 1760.497 1760.400 1760.210 1760.135 1760.055 1759.662 1760.388 1760.315 1760.672 1760.790 1760.915 1760.691 1760.366 1759.987 1759.087 1758.503 1757.738 1757.572 1756.926 1757.449 1757.936 1758.904 1759.261 1759.198 1759.883 1762.051 1763.013 1762.817 1762.644 1762.349 1761.946 1761.685 1760.806 1760.140 1759.476 1758.909
LEVEL DIFFERENCE (FRL-EGL)	0.458 0.367 0.553 0.368 0.659 0.816 0.676 0.910 1.013 0.865 0.615 0.440 0.544 0.435 0.487 0.628 0.619 0.702 0.670 0.644 0.930 0.097 0.064 -0.400 -0.625 -0.856 -0.739 -0.521 -0.248 0.545 1.022 1.713 1.863 2.551 2.128 1.798 1.045 0.928 1.231 0.786 -1.142 -1.864 -1.428 -1.015 -0.480 0.163 0.664 1.783 2.689 3.593 4.400
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1763.886 1763.672 1763.472 1763.273 1763.041 1762.898 1762.715 1762.513 1762.228 1762.065 1761.794 1761.631 1761.351 1761.213 1761.038 1760.806 1760.642 1760.461 1760.324 1760.222 1760.018 1760.000 1759.850 1759.836 1759.605 1759.408 1759.284 1759.510 1759.572 1758.968 1758.606 1758.410 1758.110 1758.600 1758.868 1759.722 1760.376 1760.801 1761.235 1761.625 1762.204 1762.619 1762.723 1762.588 1763.442 1762.399 1762.120 1760.591 1760.799 1760.099 1759.060
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1763.618 1763.116 1762.544 1762.068 1761.368 1760.949 1760.519 1760.292 1760.386 1760.097 1760.466 1760.551 1760.814 1760.851 1760.915 1761.040 1760.979 1760.943 1760.768 1760.888 1760.932 1760.738 1761.033 1761.493 1761.885 1762.047 1761.780 1761.309 1760.695 1759.640 1758.666 1757.705 1756.862 1756.235 1756.289 1756.664 1757.201 1757.556 1757.735 1758.738 1761.138 1762.773 1763.228 1762.851 1762.204 1761.476 1760.496 1760.147 1759.611 1759.227 1759.207
HORIZONTAL ALIGNMENT	R=-650.000 L=139.926; Left Transition; L=49.192; RL= 26000.000 L=40.000; Right Transition; RL= 21000.000 L=70.000; R=300.000 L=108.920; Right Transition; RL= 21000.000 L=70.000; L=98.304
VERTICAL ALIGNMENT	=60.000; G=-3.001% L= 34.817; R= 3102.642 Curve Lenght=60.000; K Value =31.029; G=-1.067% L= 194.674; R= 1730.823 Curve Lenght=60.000; K Value =17.307; G=2.400% L= 203.988
CHAINAGE	8+000 8+010 8+020 8+030 8+040 8+050 8+060 8+070 8+080 8+090 8+100 8+110 8+120 8+130 8+140 8+150 8+160 8+170 8+180 8+190 8+200 8+210 8+220 8+230 8+240 8+250 8+260 8+270 8+280 8+290 8+300 8+310 8+320 8+330 8+340 8+350 8+360 8+370 8+380 8+390 8+400 8+410 8+420 8+430 8+440 8+450 8+460 8+470 8+480 8+490 8+500
SUPERELEVATION	e=4.4; e=5.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 8+000 TO KM 8+500

DRAWING NO.

DATE: MAY 2022

SCALE: NTS

FORMAT:

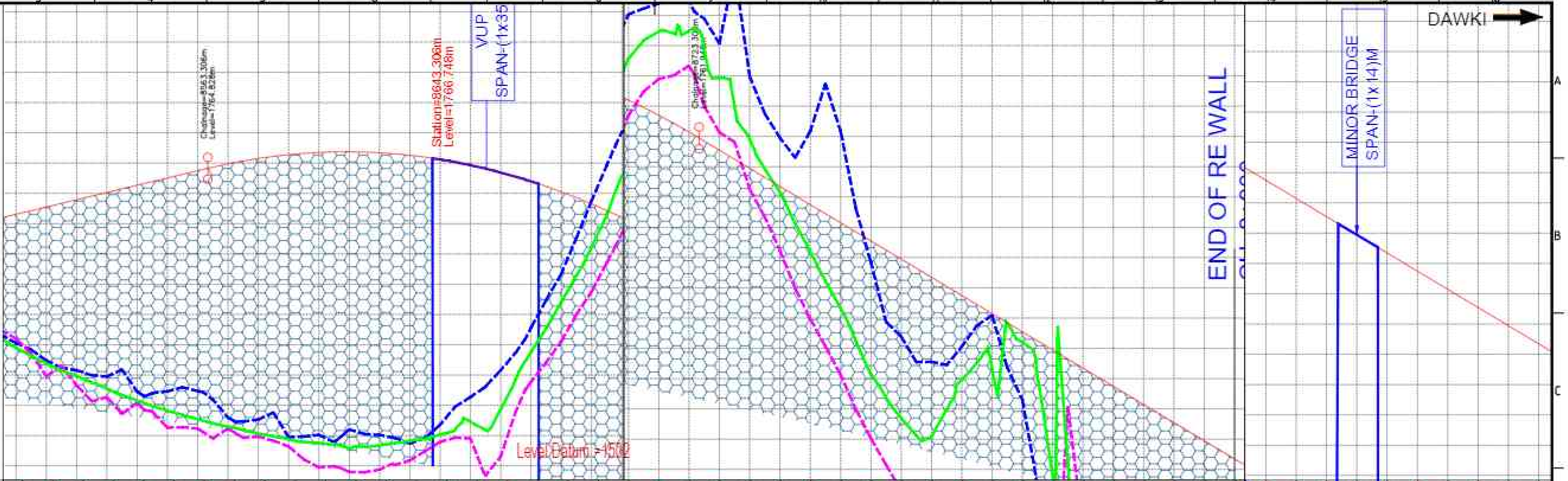
REV:

1692707/2022/SRINAGAR-6

SHILLONG

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Level Datum =1491



CHAINAGE	PROPOSED LEVEL (FRL)	EXISTING LEVEL (EGL)	LEVEL DIFFERENCE (FRL-EGL)	GROUND LEVEL AT 7M FROM PROP. C/L – Left Channel	GROUND LEVEL AT 7M FROM PROP. C/L – RightChannel
8+500	1763.309	1758.909	4.400	1759.060	1759.207
8+510	1763.549	1758.383	5.166	1758.481	1757.960
8+520	1763.789	1757.960	5.829	1758.158	1757.661
8+530	1764.029	1757.549	6.480	1757.945	1757.272
8+540	1764.269	1757.156	7.113	1757.450	1757.083
8+550	1764.509	1756.819	7.690	1757.461	1756.257
8+560	1764.749	1756.542	8.207	1757.471	1756.229
8+570	1764.977	1756.300	8.677	1756.596	1756.240
8+580	1765.155	1756.067	9.088	1756.531	1755.967
8+590	1765.281	1755.875	9.406	1755.946	1755.639
8+600	1765.355	1755.757	9.598	1756.022	1754.951
8+610	1765.376	1755.568	9.808	1756.203	1754.797
8+620	1765.345	1755.678	9.667	1756.021	1754.875
8+630	1765.261	1755.821	9.440	1755.740	1755.177
8+640	1765.124	1756.030	9.094	1756.357	1755.791
8+650	1764.936	1756.457	8.479	1757.272	1755.908
8+660	1764.694	1756.870	7.824	1758.160	1755.312
8+670	1764.400	1758.756	5.644	1759.564	1757.776
8+680	1764.054	1760.414	3.640	1761.347	1759.121
8+690	1763.655	1762.226	1.429	1763.756	1760.759
8+700	1763.204	1764.576	-1.372	1766.034	1762.683
8+710	1762.700	1765.460	-2.760	1766.388	1763.896
8+720	1762.143	1765.483	-3.340	1766.505	1764.336
8+730	1761.546	1763.925	-2.379	1765.065	1762.132
8+740	1760.946	1761.905	-0.959	1763.977	1760.263
8+750	1760.346	1760.150	0.196	1761.948	1758.231
8+760	1759.746	1758.190	1.556	1762.176	1755.975
8+770	1759.146	1756.315	2.831	1762.174	1754.130
8+780	1758.546	1754.154	4.392	1757.838	1752.023
8+790	1757.946	1752.689	5.257	1755.385	1750.293
8+800	1757.346	1752.094	5.252	1754.554	1749.189
8+810	1756.746	1753.953	2.793	1755.059	1749.079
8+820	1756.146	1754.318	1.828	1756.093	1747.960
8+830	1755.546	1755.195	0.350	1753.295	1748.271
8+840	1754.946	1750.772	4.174	1749.368	1744.445
8+850	1754.346	1747.403	6.943	1748.871	1749.018
8+860	1753.746	1748.141	5.605	1746.346	1749.683
8+870	1753.146	1744.142	9.004	1745.327	1744.319
8+880	1752.546	1742.182	10.364	1744.179	1739.625
8+890	1751.946	1740.928	11.018	1742.592	1738.793
8+900	1751.346	1740.423	10.923	1741.250	1738.241
8+910	1750.746	1739.506	11.240	1739.648	1737.391
8+920	1750.146	1738.057	12.089	1737.923	1736.316
8+930	1749.546	1735.965	13.581	1735.578	1735.232
8+940	1748.946	1733.464	15.482	1733.087	1733.934
8+950	1748.346	1731.675	16.671	1731.372	1732.307
8+960	1747.746	1729.810	17.936	1730.155	1730.502
8+970	1747.146	1729.086	18.058	1729.332	1728.964
8+980	1746.546	1728.460	18.086	1728.808	1727.835
8+990	1745.946	1727.134	18.812	1727.681	1726.730
9+000	1745.346	1726.387	18.959	1727.267	[illegible]

Level Datum =1502 (at the start of the FRL row, 8+870–8+900)

HORIZONTAL ALIGNMENT

.304 | Right Transition, RL= 12000.000 L=30.000 | R=400.000 L=51.870 | Right Transition, RL= 12000.000 L=30.000 | L=13.887 | Left Transition, RL= 4500.000 L=30.000 | R=-150.000 L=138.157 | Left Transition, RL= 4500.000 L=30.000

VERTICAL ALIGNMENT

K Value =19.048

R= -1904.791 Curve Lenght=180.000

SUPERELEVATION

e=2.5 | e=4.0 | e=6.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 8+500 TO KM 9+000

DRAWING NO.

DATE: MAY 2022

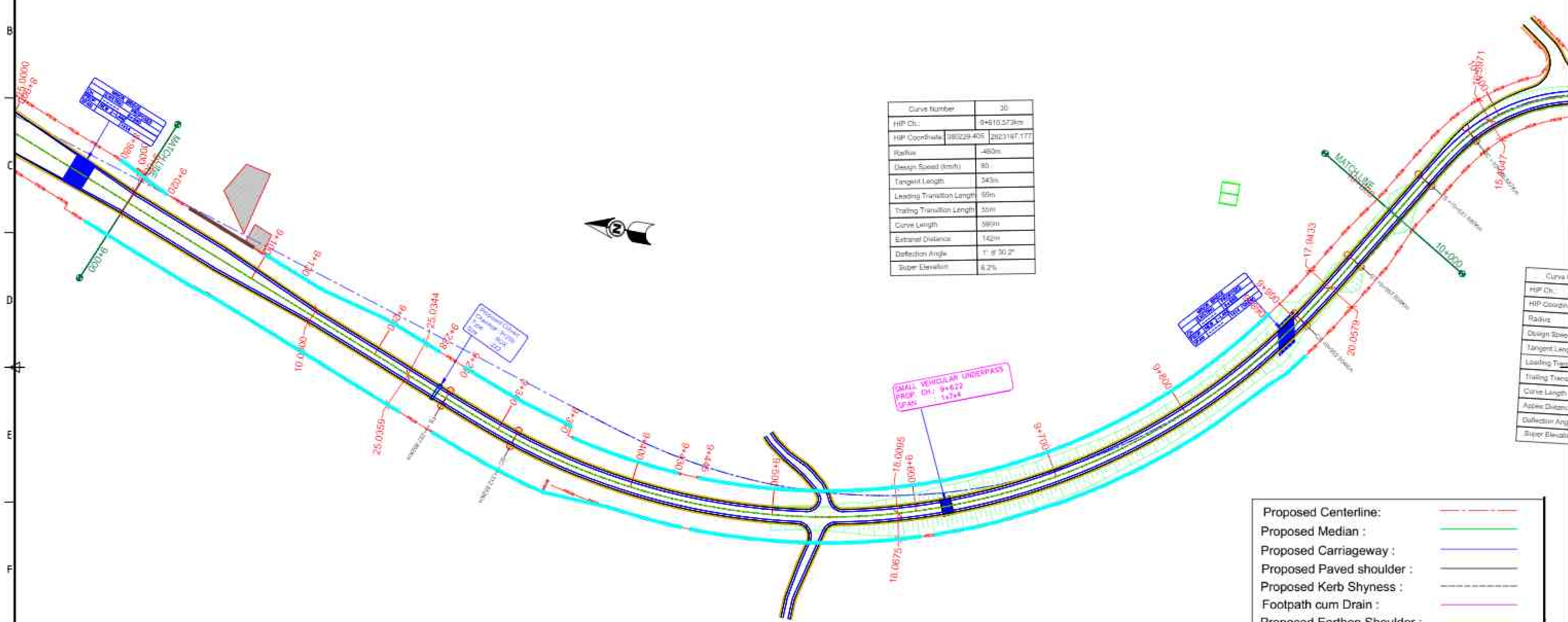
SCALE: NTS

FORMAT:

REV:

SHILLONG

DAWKI



Curve Number	30	
HIP Ch.:	9+610.573km	
HIP Coordinate	380229.405	2823197.177
Radius	-450m	
Design Speed (km/h)	80	
Tangent Length	343m	
Leading Transition Length	55m	
Trailing Transition Length	35m	
Curve Length	389m	
External Distance	142m	
Deflection Angle	1° 8' 30.2"	
Super Elevation	6.2%	

SMALL VEHICULAR UNDERPASS
PROP. CH.: 9+622
SPAN : 1x7x4

Proposed Centerline:
Proposed Median :
Proposed Carriageway :
Proposed Paved shoulder :
Proposed Kerb Shyness :
Footpath cum Drain :
Proposed Earthen Shoulder :
Proposed Open Drain :
Proposed ROW :
Proposed Earthwork Line :
Proposed Breast wall :
Proposed Retaining wall :
Proposed RE wall :
Major Contour Line : 1484.0
Minor Contour Line : 1484.0

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE
KM 09+000 TO KM 10+000

DATE: MAY 2022
SCALE: NTS

DRAWING NO.:

FORMAT:

REV:

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

G=-6.000%
L=645.757m

Box Culvert
Span-1x2.0mx2.0m

Chainage=367.904m
Level=723.272m

Station=9492.904m
Level=715.772m

Level Datum =1730

Level Datum =1719

Level Datum =1710

PROPOSED LEVEL (FRL)	1745.346	1744.746
EXISTING LEVEL (EGL)	1726.387	1725.980
LEVEL DIFFERENCE (FRL-EGL)	18.959	18.766
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1727.267
	RightChannel	1726.917

PROPOSED LEVEL (FRL)	1744.146	1743.546
EXISTING LEVEL (EGL)	1726.150	1726.470
LEVEL DIFFERENCE (FRL-EGL)	17.996	17.076
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1727.908
	RightChannel	1726.128

PROPOSED LEVEL (FRL)	1742.946	1742.346
EXISTING LEVEL (EGL)	1726.181	1727.695
LEVEL DIFFERENCE (FRL-EGL)	16.765	14.651
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1728.285
	RightChannel	1725.615

PROPOSED LEVEL (FRL)	1741.746	1741.146
EXISTING LEVEL (EGL)	1730.207	1732.354
LEVEL DIFFERENCE (FRL-EGL)	11.539	8.792
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1729.047
	RightChannel	1724.620

PROPOSED LEVEL (FRL)	1740.546	1739.946
EXISTING LEVEL (EGL)	1733.596	1730.536
LEVEL DIFFERENCE (FRL-EGL)	6.950	9.410
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1730.468
	RightChannel	1725.262

PROPOSED LEVEL (FRL)	1739.346	1738.746
EXISTING LEVEL (EGL)	1730.827	1729.009
LEVEL DIFFERENCE (FRL-EGL)	8.519	9.737
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1732.811
	RightChannel	1727.742

PROPOSED LEVEL (FRL)	1738.146	1737.546
EXISTING LEVEL (EGL)	1727.444	1725.193
LEVEL DIFFERENCE (FRL-EGL)	10.702	12.353
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1734.520
	RightChannel	1731.281

PROPOSED LEVEL (FRL)	1736.946	1736.346
EXISTING LEVEL (EGL)	1722.070	1720.713
LEVEL DIFFERENCE (FRL-EGL)	14.876	15.633
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1734.446
	RightChannel	1731.218

PROPOSED LEVEL (FRL)	1735.746	1735.146
EXISTING LEVEL (EGL)	1719.694	1718.758
LEVEL DIFFERENCE (FRL-EGL)	16.052	16.388
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1732.849
	RightChannel	1728.757

PROPOSED LEVEL (FRL)	1734.546	1733.946
EXISTING LEVEL (EGL)	1717.938	1717.166
LEVEL DIFFERENCE (FRL-EGL)	16.608	16.780
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1732.784
	RightChannel	1728.507

PROPOSED LEVEL (FRL)	1733.346	1732.746
EXISTING LEVEL (EGL)	1716.695	1716.425
LEVEL DIFFERENCE (FRL-EGL)	16.651	16.321
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1731.288
	RightChannel	1725.257

PROPOSED LEVEL (FRL)	1732.146	1731.546
EXISTING LEVEL (EGL)	1716.080	1715.764
LEVEL DIFFERENCE (FRL-EGL)	16.066	15.782
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1729.282
	RightChannel	1723.544

PROPOSED LEVEL (FRL)	1730.946	1730.346
EXISTING LEVEL (EGL)	1715.512	1715.131
LEVEL DIFFERENCE (FRL-EGL)	15.434	15.215
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1726.767
	RightChannel	1722.328

PROPOSED LEVEL (FRL)	1729.746	1729.146
EXISTING LEVEL (EGL)	1714.828	1714.577
LEVEL DIFFERENCE (FRL-EGL)	14.918	14.569
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1722.949
	RightChannel	1721.148

PROPOSED LEVEL (FRL)	1728.546	1727.946
EXISTING LEVEL (EGL)	1714.126	1713.682
LEVEL DIFFERENCE (FRL-EGL)	14.420	14.264
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1721.367
	RightChannel	1719.729

PROPOSED LEVEL (FRL)	1727.346	1726.746
EXISTING LEVEL (EGL)	1713.452	1713.212
LEVEL DIFFERENCE (FRL-EGL)	13.894	13.534
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1720.264
	RightChannel	1718.974

PROPOSED LEVEL (FRL)	1726.146	1725.546
EXISTING LEVEL (EGL)	1713.049	1712.960
LEVEL DIFFERENCE (FRL-EGL)	13.097	12.586
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1719.257
	RightChannel	1718.269

PROPOSED LEVEL (FRL)	1724.946	1724.346
EXISTING LEVEL (EGL)	1712.931	1713.561
LEVEL DIFFERENCE (FRL-EGL)	12.015	10.785
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1718.254
	RightChannel	1717.819

PROPOSED LEVEL (FRL)	1723.746	1723.147
EXISTING LEVEL (EGL)	1713.514	1713.172
LEVEL DIFFERENCE (FRL-EGL)	10.232	9.975
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1717.731
	RightChannel	1717.056

PROPOSED LEVEL (FRL)	1722.546	1722.558
EXISTING LEVEL (EGL)	1712.916	1712.383
LEVEL DIFFERENCE (FRL-EGL)	9.642	9.602
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1717.266
	RightChannel	1716.215

PROPOSED LEVEL (FRL)	1721.985	1721.429
EXISTING LEVEL (EGL)	1712.284	1712.878
LEVEL DIFFERENCE (FRL-EGL)	9.145	8.010
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1716.641
	RightChannel	1715.695

PROPOSED LEVEL (FRL)	1720.888	1720.363
EXISTING LEVEL (EGL)	1712.801	1712.541
LEVEL DIFFERENCE (FRL-EGL)	7.562	7.314
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1716.321
	RightChannel	1715.709

PROPOSED LEVEL (FRL)	1719.855	1719.362
EXISTING LEVEL (EGL)	1712.425	1712.417
LEVEL DIFFERENCE (FRL-EGL)	6.937	6.468
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1715.970
	RightChannel	1715.614

PROPOSED LEVEL (FRL)	1718.886	1718.425
EXISTING LEVEL (EGL)	1712.592	1713.268
LEVEL DIFFERENCE (FRL-EGL)	5.833	4.712
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1715.582
	RightChannel	1715.379

PROPOSED LEVEL (FRL)	1717.980	1717.551
EXISTING LEVEL (EGL)	1714.345	1715.021
LEVEL DIFFERENCE (FRL-EGL)	3.206	2.118
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1715.198
	RightChannel	1714.968

PROPOSED LEVEL (FRL)	1717.139	1716.742
EXISTING LEVEL (EGL)	1715.637	
LEVEL DIFFERENCE (FRL-EGL)	1.502	
GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1714.703
	RightChannel	1714.796

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1714.510
	RightChannel	1714.384

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1714.240
	RightChannel	1713.943

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.853
	RightChannel	1713.711

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.440
	RightChannel	1713.492

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.229
	RightChannel	1713.239

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.094
	RightChannel	1713.055

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.090
	RightChannel	1712.968

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.817
	RightChannel	1712.880

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.968
	RightChannel	1712.985

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.779
	RightChannel	1712.548

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.488
	RightChannel	1711.979

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.360
	RightChannel	1711.852

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.336
	RightChannel	1711.635

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.321
	RightChannel	1711.510

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.500
	RightChannel	1711.547

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.638
	RightChannel	1711.568

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.572
	RightChannel	1711.772

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.227
	RightChannel	1712.215

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1712.794
	RightChannel	1712.133

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.103
	RightChannel	1712.179

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1713.997
	RightChannel	1712.568

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1715.106
	RightChannel	1713.637

GROUND LEVEL AT 7M FROM PROP. C/L	Left Channel	1715.770
	RightChannel	1714.627

HORIZONTAL ALIGNMENT

L=391.569

Left Transition

RL= 25300.000 L=55.000

VERTICAL ALIGNMENT

G=-8.000% L= 644.597

R= 6249.825 Curve Leng

K Value =62.498

CHAINAGE	9+000	9+010
CHAINAGE	9+020	9+030
CHAINAGE	9+040	9+050
CHAINAGE	9+060	9+070
CHAINAGE	9+080	9+090
CHAINAGE	9+100	9+110
CHAINAGE	9+120	9+130
CHAINAGE	9+140	9+150
CHAINAGE	9+160	9+170
CHAINAGE	9+180	9+190
CHAINAGE	9+200	9+210
CHAINAGE	9+220	9+230
CHAINAGE	9+240	9+250
CHAINAGE	9+260	9+270
CHAINAGE	9+280	9+290
CHAINAGE	9+300	9+310
CHAINAGE	9+320	9+330
CHAINAGE	9+340	9+350
CHAINAGE	9+360	9+370
CHAINAGE	9+380	9+390
CHAINAGE	9+400	9+410
CHAINAGE	9+420	9+430
CHAINAGE	9+440	9+450
CHAINAGE	9+460	9+470
CHAINAGE	9+480	9+490
CHAINAGE	9+500	

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 104+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 9+000 TO KM 9+500

DATE: MAY 2022

SCALE: NTS

DRAWING NO.

FORMAT:

REV:

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Level Datum =1703

SVUP SPAN-(1x7x4)M

MINOR BRIDGE SPAN-(1x14)M

G=-2.000% L=122.443m

G=3.000% L=68.233m

Station=9840.322m Level=1708.824m

PROPOSED LEVEL (FRL)	1716.742 1716.362 1715.997 1715.648 1715.316 1714.999 1714.698 1714.414 1714.145 1713.892 1713.656 1713.435 1713.230 1713.030 1712.830 1712.630 1712.430 1712.230 1712.030 1711.830 1711.630 1711.430 1711.230 1711.030 1710.830 1710.642 1710.479 1710.340 1710.227 1710.139 1710.076 1710.037 1710.024 1710.036 1710.072 1710.134 1710.221 1710.332 1710.469 1710.631 1710.817 1711.029 1711.266 1711.528 1711.814 1712.114 1712.414 1712.714 1713.014 1713.314 1713.614
EXISTING LEVEL (EGL)	1715.337 1715.380 1715.441 1715.062 1714.713 1713.795 1712.413 1711.416 1710.677 1710.128 1709.486 1708.938 1708.603 1707.571 1706.997 1706.757 1706.786 1707.017 1707.278 1707.473 1707.303 1707.212 1707.259 1707.272 1707.272 1707.275 1707.369 1707.453 1707.349 1707.147 1707.306 1707.322 1707.370 1707.395 1707.580 1707.435 1707.354 1707.040 1707.071 1707.064 1709.453 1709.674 1710.047 1710.873 1713.141 1715.126 1712.030 1713.236 1712.457 1713.528 1714.482
LEVEL DIFFERENCE (FRL-EGL)	1.405 0.982 0.556 0.586 0.603 1.204 2.285 2.998 3.468 3.764 4.170 4.497 4.627 5.459 5.833 5.873 5.644 5.213 4.752 4.357 4.327 4.218 3.971 3.758 3.558 3.367 3.110 2.887 2.878 2.992 2.770 2.715 2.654 2.641 2.492 2.699 2.867 3.292 3.398 3.567 1.364 1.355 1.219 0.655 -1.327 -3.012 0.384 -0.522 0.557 -0.214 0.868
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1716.031 1716.251 1716.347 1716.017 1715.329 1713.281 1712.657 1712.084 1711.470 1710.640 1709.908 1709.328 1708.805 1708.326 1707.482 1706.734 1706.880 1707.235 1707.360 1707.439 1707.335 1707.308 1707.277 1707.319 1707.407 1707.426 1707.378 1707.388 1707.284 1707.052 1707.214 1707.377 1707.400 1707.155 1707.527 1707.423 1707.292 1707.291 1707.187 1707.293 1708.345 1709.800 1709.996 1710.310 1713.502 1712.342 1711.156 1712.730 1711.466 1711.836
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1714.688 1714.663 1714.736 1714.274 1713.890 1712.974 1711.962 1711.007 1710.068 1709.549 1708.997 1708.383 1706.741 1706.411 1706.479 1706.651 1706.700 1706.805 1707.140 1707.291 1707.159 1707.111 1707.202 1707.216 1707.262 1707.328 1707.448 1707.465 1707.277 1706.956 1707.145 1707.196 1707.290 1707.466 1707.577 1707.554 1707.375 1706.973 1706.400 1707.956 1709.974 1709.818 1710.428 1710.973 1716.094 1719.327 1712.337 1713.365 1713.069 1714.772 1711.836
HORIZONTAL ALIGNMENT	R=-460.000 L=589.652; Left Transition RL= 25300.000 L=55.000; L=74.183
VERTICAL ALIGNMENT	e Lenght=250.000; G=-2.000% L= 122.418; R= 4000.208 Curve Lenght=200.000 K Value =40.002; G=3.000% L= 68.202
CHAINAGE	9+500 9+510 9+520 9+530 9+540 9+550 9+560 9+570 9+580 9+590 9+600 9+610 9+620 9+630 9+640 9+650 9+660 9+670 9+680 9+690 9+700 9+710 9+720 9+730 9+740 9+750 9+760 9+770 9+780 9+790 9+800 9+810 9+820 9+830 9+840 9+850 9+860 9+870 9+880 9+890 9+900 9+910 9+920 9+930 9+940 9+950 9+960 9+970 9+980 9+990 10+000

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 9+500 TO KM 10+000

DATE: MAY 2022

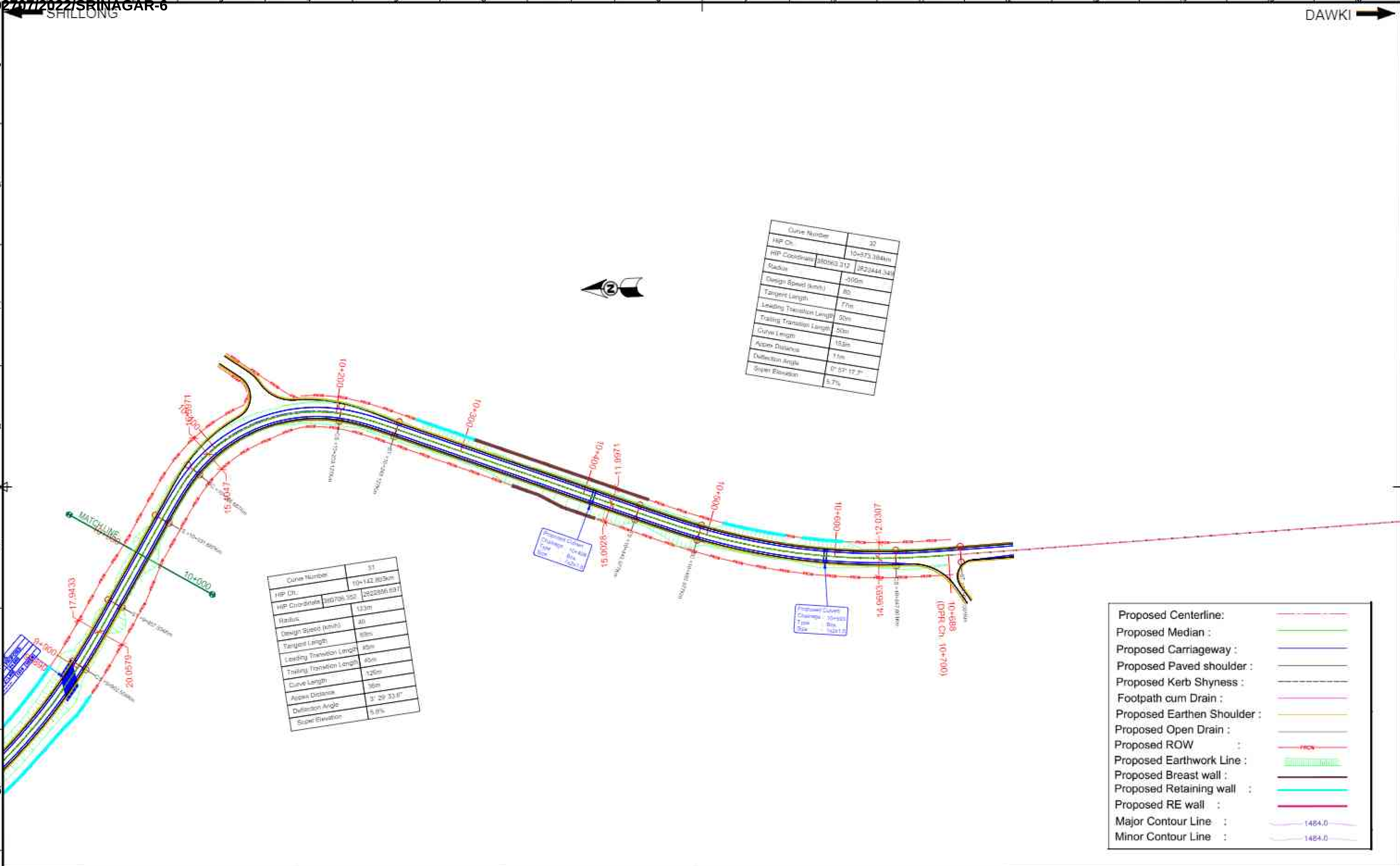
SCALE: NTS

DRAWING NO.

FORMAT:

REV:

1692707/2022/SRINAGAR-6



Curve Number		32
HIP Ch.		10+573.384km
HIP Coordinate	380562.312	2822444.349
Radius		-500m
Design Speed (km/h)		80
Tangent Length		77m
Leading Transition Length		50m
Trailing Transition Length		50m
Curve Length		155m
Apex Distance		11m
Deflection Angle		0° 57' 17.7"
Super Elevation		5.7%

Curve Number		31
HIP Ch.		10+142.803km
HIP Coordinate	380706.352	2822886.837
Radius		123m
Design Speed (km/h)		40
Tangent Length		69m
Leading Transition Length		45m
Trailing Transition Length		45m
Curve Length		126m
Apex Distance		16m
Deflection Angle		3° 29' 33.0"
Super Elevation		5.0%

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 10+000 TO KM 10+688

DATE: MAY 2022

SCALE: NTS

DRAWING NO.

FORMAT:

REV:

169270/2022/SRINAGAR-6

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).

Station=10138.524m
Level=1717.770m

Box Culvert
Span-1x2.0mx1.5m

Level Datum =1703

PROPOSED LEVEL (FRL)	1713.614 1713.914 1714.195 1714.448 1714.671 1714.866 1715.032 1715.169 1715.277 1715.357 1715.407 1715.429 1715.422 1715.386 1715.321 1715.227 1715.105 1714.953 1714.773 1714.564 1714.326 1714.059 1713.764 1713.439 1713.086 1712.704 1712.293 1711.854 1711.404 1710.954 1710.504 1710.054 1709.597 1709.125 1708.638 1708.136 1707.619 1707.087 1706.540 1705.978 1705.401 1704.809 1704.209 1703.609 1703.009 1702.409 1701.809 1701.209 1700.609 1700.009 1699.409
EXISTING LEVEL (EGL)	1714.482 1719.697 1714.417 1714.086 1714.265 1714.061 1714.464 1714.480 1714.537 1714.673 1714.823 1714.684 1714.929 1715.026 1714.841 1714.871 1715.563 1715.762 1715.835 1715.608 1715.434 1715.214 1714.689 1714.234 1713.917 1713.522 1713.175 1712.611 1711.814 1711.086 1710.446 1710.406 1709.813 1709.480 1709.754 1709.323 1707.659 1707.838 1707.571 1708.047 1708.352 1705.835 1704.609 1704.303 1703.328 1703.084 1702.843 1702.456 1702.191 1701.212 1700.724
LEVEL DIFFERENCE (FRL-EGL)	-0.868 -5.783 -0.222 0.362 0.406 0.805 0.568 0.689 0.740 0.684 0.584 0.745 0.493 0.360 0.480 0.356 -0.458 -0.809 -1.062 -1.044 -1.108 -1.155 -0.925 -0.795 -0.831 -0.818 -0.882 -0.757 -0.410 -0.132 0.058 -0.352 -0.216 -0.355 -1.116 -1.187 -0.040 -0.751 -1.031 -2.069 -2.951 -1.026 -0.400 -0.694 -0.319 -0.685 -1.034 -1.247 -1.492 -1.203 -1.215
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1712.062 1719.129 1714.991 1713.614 1713.768 1713.791 1713.932 1714.129 1714.135 1714.120 1714.305 1714.013 1714.320 1714.403 1714.472 1714.576 1715.276 1715.478 1715.483 1715.708 1715.780 1715.073 1715.031 1714.637 1714.226 1713.169 1711.744 1709.233 1707.434 1706.114 1704.700 1707.121 1709.119 1709.211 1708.526 1707.952 1707.565 1707.155 1706.930 1706.983 1706.358 1704.987 1704.340 1703.807 1703.343 1703.003 1702.618 1702.097 1701.900 1700.875
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1721.155 1716.301 1714.630 1714.828 1714.647 1714.626 1714.985 1714.836 1714.752 1714.845 1714.989 1714.910 1715.363 1715.625 1715.299 1715.222 1715.975 1716.259 1716.498 1716.729 1716.340 1716.101 1714.914 1715.028 1714.667 1713.972 1713.444 1712.701 1712.139 1711.652 1710.980 1710.742 1710.459 1710.758 1711.653 1711.946 1712.163 1712.291 1711.042 1710.520 1713.229 1709.390 1707.697 1707.450 1705.329 1703.380 1704.088 1703.825 1707.248 1704.176
HORIZONTAL ALIGNMENT	4.183 — Right Transition RL= 5535.000 L=45.000 — R=123.000 L=126.440 — Right Transition RL= 5535.000 L=45.000 — L=195.849 — Left Transition RL= 25000.000 L=50.000
VERTICAL ALIGNMENT	K Value =34.668 R= -3466.836 Curve Lenght=260.000 — G=-4.500% L= 41.825 — K Value =66.666 R= 6666.613 Curve Lenght=100.000
CHAINAGE	10+000 10+010 10+020 10+030 10+040 10+050 10+060 10+070 10+080 10+090 10+100 10+110 10+120 10+130 10+140 10+150 10+160 10+170 10+180 10+190 10+200 10+210 10+220 10+230 10+240 10+250 10+260 10+270 10+280 10+290 10+300 10+310 10+320 10+330 10+340 10+350 10+360 10+370 10+380 10+390 10+400 10+410 10+420 10+430 10+440 10+450 10+460 10+470 10+480 10+490 10+500

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 1+000 TO KM 10+500

DRAWING NO.

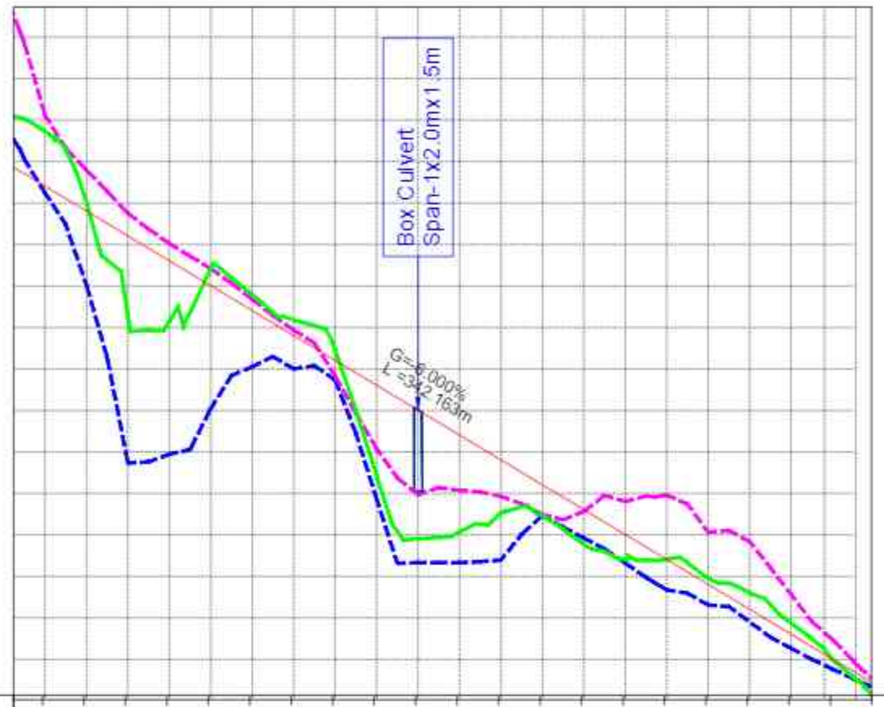
DATE: MAY 2022
SCALE: NTS
FORMAT:
REV:

169270/2022/SRINAGAR-6

SHILLONG

DAWKI

Note:
1. Finished Road Level of the Chainages shall be matched as per actual gradient of Design Levels.
2. OGL of the chainages shall be considered as per actual site conditions.
3. Any minor deviation of OGL as indicated at P&P shall not attract any Change of Scope (CoS).



Level Datum =1687

PROPOSED LEVEL (FRL)	1699.409	1698.809	1698.209	1697.609	1697.009	1696.409	1695.809	1695.209	1694.609	1694.009	1693.409	1692.809	1692.209	1691.609	1691.009	1690.409	1689.809	1689.209	1688.609	1688.009	1687.409	1686.809	1686.209	1685.609	1685.009	1684.409	1683.831	1683.320	1682.877	1682.503	1682.196	1681.957	1681.786	1681.684	1681.649	1681.682	1681.761	1681.842	1681.922	1682.002	1682.082	1682.148	1682.189	1682.207	1682.200	1682.170	1682.116	1682.038	1681.936	1681.810	1681.661
EXISTING LEVEL (EGL)	1700.724	1699.019	1696.256	1696.152	1697.413	1696.789	1696.186	1695.458	1692.437	1690.905	1691.073	1691.521	1691.466	1690.772	1690.405	1690.419	1689.955	1689.598	1688.875	1687.993	1687.104	1685.946	1685.092	1684.211	1683.417	1682.945	1682.671	1682.195	1681.923	1681.396	1680.923	1681.243	1680.640	1680.469	1680.628	1680.671	1680.382	1680.274	1680.165	1680.044	1679.941	1679.933	1680.167	1680.698	1680.953	1682.479	1682.276	1681.427	1682.045	1681.877	1681.704
LEVEL DIFFERENCE (FRL-EGL)	-1.315	-0.210	1.953	1.457	-0.404	-0.380	-0.377	-0.249	2.172	3.104	2.336	1.288	0.743	0.837	0.604	-0.010	-0.146	-0.389	-0.266	0.016	0.305	0.863	1.117	1.398	1.592	1.464	1.160	1.125	0.954	1.107	1.273	0.714	1.146	1.215	1.021	1.011	1.379	1.568	1.757	1.958	2.141	2.215	2.022	1.509	1.247	-0.300	-0.160	0.611	-0.109	-0.067	0.043
GROUND LEVEL AT 7M FROM PROP. C/L — Left Channel	1699.245	1697.025	1692.731	1692.945	1694.046	1695.049	1695.003	1694.732	1691.869	1690.331	1690.331	1690.396	1691.471	1690.925	1690.318	1689.674	1689.309	1688.902	1688.264	1687.766	1687.311	1686.759	1685.941	1684.553	1683.369	1683.194	1682.715	1682.245	1681.790	1681.732	1681.673	1680.692	1680.541	1680.818	1680.798	1680.665	1680.511	1680.386	1680.262	1680.100	1680.285	1680.657	1680.437	1682.731	1682.480	1682.243	1683.631	1682.039	1682.459	1681.897	1681.704
GROUND LEVEL AT 7M FROM PROP. C/L — RightChannel	1701.114	1699.796	1698.751	1698.025	1697.417	1696.681	1695.937	1694.830	1693.078	1691.969	1692.074	1691.928	1691.491	1691.568	1691.805	1691.959	1691.064	1690.843	1689.564	1688.478	1687.499	1686.247	1685.071	1684.251	1683.603	1683.106	1682.528	1682.127	1681.764	1681.579	1681.376	1680.506	1680.830	1680.508	1680.044	1679.979	1680.409	1680.334	1680.086	1679.947	1679.813	1679.721	1679.611	1679.566	1679.934	1680.000	1680.115	1681.026	1680.933	1679.471	1681.897	1681.704

HORIZONTAL ALIGNMENT: R=-500.000 L=153.024 | Left Transition RL= 25000.000 L=50.000 | L=490.614

VERTICAL ALIGNMENT: G=-6.000% L= 341.549 | R= 1470.036 Curve Lenght=100.000 K Value =14.700 | G=0.803% L= 46.908 | K Value =41.823 R= -4182.265 Curve Lenght=100.000

CHAINAGE: 10+500 | 10+510 | 10+520 | 10+530 | 10+540 | 10+550 | 10+560 | 10+570 | 10+580 | 10+590 | 10+600 | 10+610 | 10+620 | 10+630 | 10+640 | 10+650 | 10+660 | 10+670 | 10+680 | 10+690 | 10+700 | 10+710 | 10+720 | 10+730 | 10+740 | 10+750 | 10+760 | 10+770 | 10+780 | 10+790 | 10+800 | 10+810 | 10+820 | 10+830 | 10+840 | 10+850 | 10+860 | 10+870 | 10+880 | 10+890 | 10+900 | 10+910 | 10+920 | 10+930 | 10+940 | 10+950 | 10+960 | 10+970 | 10+980 | 10+990 | 11+000

REV	DATE	DESCRIPTION

CLIENT: National Highways and Infrastructure Development Corporation Ltd.

AUTHORITY ENGINEER: URS in association with Krivam

PROJECT: IMPROVEMENT/WIDENING TO 2-LANE WITH PAVED SHOULDER/4-LANING OF NH-40 BETWEEN SHILLONG TO DAWKI ROAD UPTO BANGLADESH BORDER INCLUDING DAWKI BRIDGE FROM KM 81+740 TO KM 93+490 (DESIGN KM 0+000 TO KM 10+670) & IMPROVEMENT WIDENING TO 4-LANE WITH PAVED SHOULDERS OF NH-44 FROM DESIGN LENGTH KM 0+000 TO KM 9+930, TOTAL LENGTH OF 11.600 KM IN STATE OF MEGHALAYA FOR EXECUTION OF EPC MODE UNDER UNDER JICA FUNDING (PACKAGE - I)

TITLE: PLAN & PROFILE KM 8+500 TO KM 9+000

DATE: MAY 2022
SCALE: NTS

DRAWING NO.

FORMAT:

REV:

1692709/2022/SRINAGAR-6

National Highways & Infrastructure Development Corporation Limited

NHIDCL

BUILDING INFRASTRUCTURE - BUILDING THE NATION

EPC Schedules

FOR

"Package-I - Improvement to 2 lane with paved shoulder/ 4 lane of NH-40 section from Km 81+740 to Km 93+490 (design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to Km 0+930, total length 11.600 Km in the state of Meghalaya on EPC mode under JICA Loan Assistance." (Balance Works)

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD
(MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF INDIA)

June, 2022

NHIDCL, 3RD FLOOR, PRESS TRUST OF INDIA BUILDING, 4, PARLIAMENT STREET, NEW DELHI – 110001

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1. The Site

(i) Site of the Project Highway shall include the land, buildings, structures and road works as described in **Annex-I** of this **Schedule-A**.

(ii) The dates of handing over the Right of Way to the Contractor are specified in **Annex-II** of this **Schedule-A**.

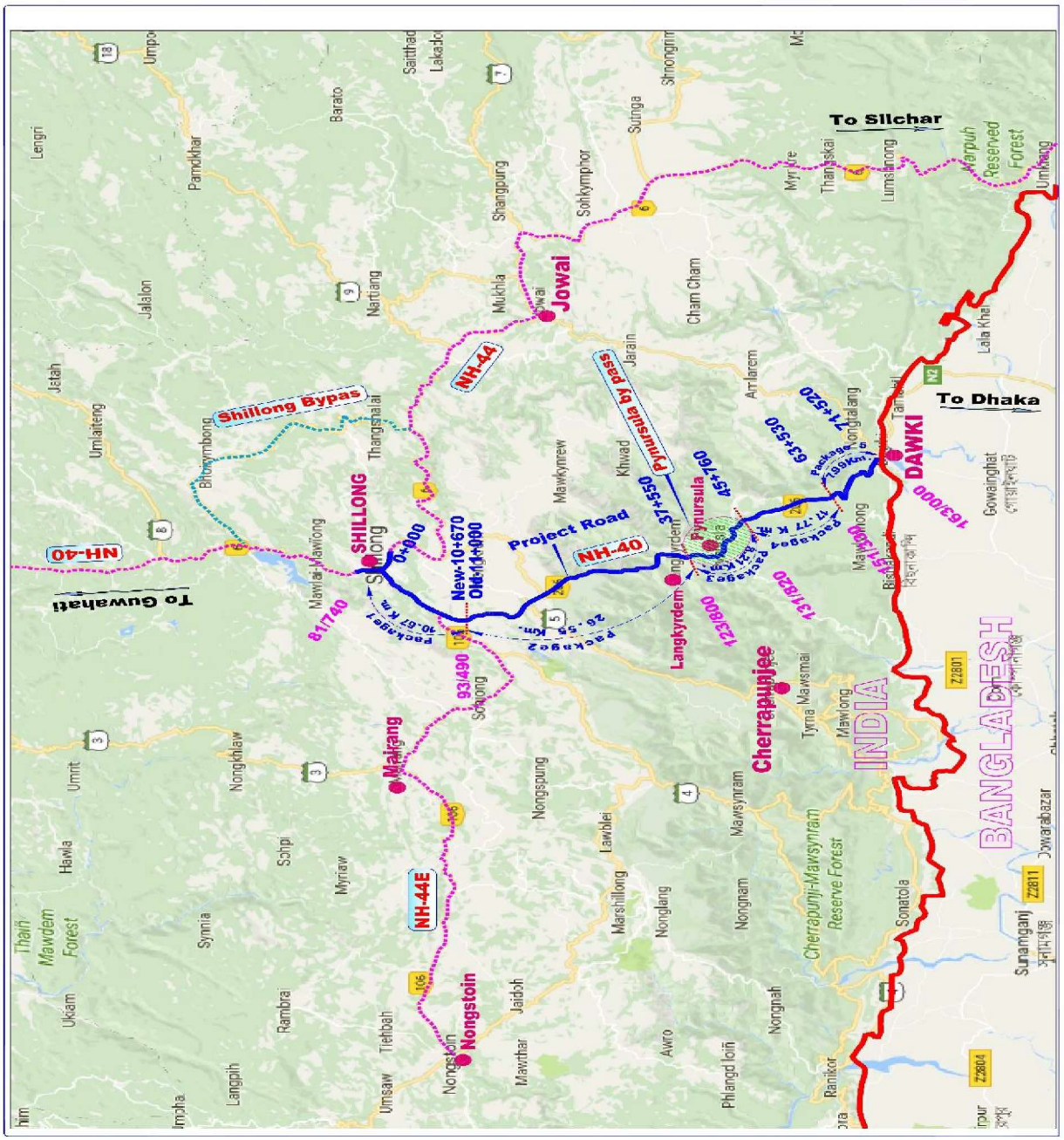
(iii) An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2 (i) of this Agreement.

(iv) The alignment plans of the Project Highway are specified in **Annex-III**. In the case of sections where no modification in the existing alignment of the Project Highway is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be upgraded. The proposed profile of the Project Highway shall be followed by the contractor with minimum FRL as indicated in the alignment plan. The Contractor, however, improve/upgrade the road profile indicated in **Annex-III** based on site/design requirement.

(v) The status of the environment clearances obtained or awaited is given in **Annex IV**.

1692709/2022/SRINAGAR-6

EPC 2022



Annex I

(Schedule A)

1. Site

The project road from Shillong to Dawki is a section of NH-40 and starts from existing Km. 81/740 (Design ch. 0+000), at Rilbong intersection with NH-44 at Shillong and ends at existing km.93/490 (Design ch. 10+670) at junction with Marbaniun village road and the section of NH-44/NH-40 (Design ch. 0+000 to 0+930) Guwahati – Shillong – Jowai road in the State of Meghalaya. The land, carriageway and structures comprising the site are described below.

2. Land

The Site of the Project Highway comprises the land as described below:

Sl. No.	Chainage (km)		ROW
	From	To	
1	81/740	93/490	12 m

3. Carriageway

The present carriageway of the Project Highway is two Lane. The type of existing pavement is flexible. The details are given below.

S. no	Existing Ch. From	Existing Ch. To	C/W width (m)
1	81/740	93/490	6.5 – 7.0

Work executed by previous Contractor partially and considered in existing road are-

A) Widening and Strengthening / Geometric Improvement of existing road:

- A total effective length of 0.385 km of Earthwork upto subgrade top has been partially executed.

B) Reconstruction Realignment / Bypass (Flexible Pavement) :

- A total effective length of 1.820 km of Earthwork upto Subgrade top has been partially executed.
- A total effective length of 0.440 km of GSB has been laid.

4. Major Bridges

The Site includes the following Major Bridges:

S. No.	Existing Chainage (Km)	Type of Structure			Span Arrangement (m)	Width (m)
		Found -ation	Sub structure	Super structure		
		Nil				

5. Road over-bridges (ROB)/ Road under-bridges (RUB)

The Site includes the following ROB (road over railway line)/RUB (road under railway line):

\

S. No.	Existing Chainage (Km)	Type of Structure			Span Arrangement (m)	Width (m)
		Found -ation	Sub structure	Super structure		
	Nil					

6. Grade separators

The Site includes the following grade separators:

S. No.	Existing Chainage (Km)	Type of Structure			Span Arrangement (m)	Width (m)
		Found -ation	Sub structure	Super structure		
	Nil					

7. Minor bridges

The Site includes the following minor bridges:

Sl. No.	Existing Chainage (km)	Type of Structure			Span arrangement	Width (m)
		Found -ation	Sub structure	Super Structure		
1	82/015	Open	RCC Wall/ Circular Pier	Box Girder	2 x 24.0	12.5
2	90/258	Open	RCC Wall	RCC Slab	1x8.0	15.3

8. Railway level crossings

S. No.	**Location (km)**	**Remark**
	NIL	

The Site includes the following railway level crossings:

9. Underpasses (vehicular, non-vehicular)

The Site includes the following underpasses:

S. No	Existing Chainage (Km)	Type of structure	No. of span with Span Arrangement (m)	width (m)
			Nil	

10. Culverts

The Site has the following culverts

(a) Existing Culverts

SL. NO	Ex. Chainage	Type of Culvert	No. x span length	Width (m)
1	81/780	Pipe	1 x 0.60	15.00
2	82/140	Slab	1 x 0.70	10.50
3	82/280	Slab	1 x 0.45	12.50
4	82/560	Pipe	1 x 0.60	10.30
5	83/680	Pipe	1 x 0.90	10.30
6	84/050	Slab	1 x 0.70	12.00
7	84/090	Slab	1 x 0.80	10.00
8	84/420	Slab	1 x 0.80	10.70
9	85/670	Pipe	1 x 0.90	10.80
10	86/390	Pipe	1 x 0.90	9.20
11	86/400	Pipe	1 x 0.90	9.2
12	86/530	Box	1 x 0.50	13.8
13	87/340	Pipe	1 x 0.90	9.8
14	88/230	Pipe	1 x 1.00	11.2
15	88/830	Pipe	1 x 0.90	9.8
16	89/030	Pipe	1 x 0.90	10
17	89/240	Pipe	1 x 0.90	9.8
18	89/460	Pipe	1 x 0.60	8.1
19	89/750	Pipe	1 x 0.90	9.7
20	89/840	Box skew	1 x 3.00	9.7
21	89/940	Pipe	1 x 0.90	9.85
22	90/400	Pipe	1 x 0.90	9.45
23	91/105 (D.Ch.08+055)	Pipe	1 x 0.90	9.45
24	91/380 (D. Ch.08+330)	Pipe	1 x 0.90	9.45
25	91/490	Pipe	1 x 0.90	9.45
26	91/540	Pipe	1 x 0.60	9.1
27	91/760	Pipe	2 x 1.20	9.45
28	91/960	Slab	1 x 1.00	10.4
29	92/600	Pipe	2 x 0.90	9
30	92/630	Pipe	1 x 0.90	8.8
31	93/000	Pipe	1 x 0.90	13
32	93/100 (D.Ch.10+390)	Pipe	1 x 0.90	10
33	93/416 (D.Ch.10+593)	Pipe	1 x 0.90	11.5

(b) Out of above Culverts, following Culverts executed partially:

Sl. No.	Chainage	Clear span (m)/ (nos xLxH)	Type/ (Prop. Improvement)	Width of Culvert (m) (Scope)	Work Executed
1	8+055	1 x 2.0 x 1.5	Box (New)	19.610	6.0 m(RHS) Raft
2	8+330	1 x 2.0 x 1.5	Box (New)	20.022	14.0 m(RHS) PCC
3	10+390	1 x 2.0 x 1.5	Box (New)	12.0	12.0 m(2-lane) Raft
4	10+593	1 x 2.0 x 1.5	Box (New)	12.0	12.0 m(2-lane) PCC

11. Bus bays

The details of bus bays on the Site are as follows:

S. No.	Chainage (km)	Length (m)	Left Hand Side	Right Hand
Nil				

12. Truck Lay byes

The details of truck lay byes are as follows:

S. No.	Chainage (km)	Length (m)	Left Hand Side	Right Hand
Nil				

13. Road side drains

The details of the road side drains are as follows:

S. No.	Location		Type & Side	
	From	To	Masonry/cc (Pucca)	Earthen
1	81/800	82/000	RHS	-
2	82/400	82/700	RHS	-
3	83/000	83/300	LHS	-
4	83/900	84/300	LHS	-
5	84/900	86/100	RHS	-
6	86/900	87/300	RHS	-
7	87/600	87/800	RHS	-
8	88/300	88/900	RHS	-
9	88/900	89/100	LHS	-
10	90/400	90/500	RHS	-
11	90/500	90/700	LHS	-
12	91/000	91/100	RHS	-
13	92/700	92/800	RHS	-

14	92/900	93/000	RHS	-

14. Major junctions

The details of major junctions are as follows:

S.No.	Existing Chainage	Lane Configuration	Type	Sides	Remarks
1	81/740	2-Lane	+ Junction	BHS	Between NH 40 & NH
2	83/850	2-Lane	T Junction	RHS	With Existing NH40
3	91/458	2-Lane	T Junction	RHS	With NH44E

Note: (NH: National Highway, SH: State Highway, MDR: Major District Road)

15. Minor junctions

The details of the minor junctions (all at grade) are as follows:

S.NO.	Location of Intersection	Type of intersection	Other features (Road Leading to)	
			LHS	RHS
1	81/820	T Junction		Upper Shillong
2	82/260	T Junction		
3	82/525	T Junction		Lummawbah
4	82/480	T Junction	Post Office	
5	82/650	T Junction	Signal Center	
6	83/870	T Junction	Finest Forever	
7	83/880	T Junction		Rhino Shopping
8	84/000	T Junction		Upper Shillong
9	86/000	T Junction		3rd Mile, Upper
10	86/755	T Junction		Shillong Sanmer
11	87/820	+ Junction		Shilong Peak
12	88/710	Y Junction		Mattl

13	89/220	T Junction		HQ eastern air command
14	89/960	T Junction		HQ eastern air command
15	89/630	+ Junction		7th Mile
16	91/680	T Junction		Sadew
17	92/220	+ Junction		Sadew
18	92/840	T Junction		Ritmawniew

16. Bypasses

The details of the bypasses are as follows:

S. No.	Name of bypass (town)	Chainage (km)	Design Length (Km)	Carriageway	
				Width (m)	Type
		Nil			

17. Other structures

Sl. No.	Chainage(km)	Type of Structure	No. of Spans with span length(m)	Width(m)
		Nil		

18. Design Chainages corresponding to Existing references

Sl. no.	Existing Chainage	Proposed Chainage
1	81/740	0+000
2	82/000	0+260
3	83/000	0+990
4	84/000	1+640
5	84/280	1+960
6	86/000	3+052
7	86/540	3+550
8	87/000	4+020
9	87/570	4+550
10	88/000	4+990
11	88/580	5+550

12	89/000	5+980
13	89/590	6+551
14	90/000	6+960
15	90/300	7+250
16	92/880	10+170
17	93/000	10+290
18	93/490	10+670

Annex – II

(See Clauses 8.3 (i))

(Schedule-A)

Dates for providing Right of Way of Construction Zone

The dates on which the Authority shall provide Right of Way of construction Zone to the Contractor on different stretches of the Site are stated below

Sl. No	From	To	Length (km)	Width ROW(m)	Date of providing RoW
1	0+000 (NH-40)	10+670 (NH-40)	10.67	24 to 60	Minimum 90% of length on Appointed Date and remaining within 150 days from Appointed Date
2	0+000 (NH-44)	0+930 (NH-44)	0.930	20 to 45	

Note: Total Length : 11.600 km

Annex - III

(Schedule-A)

Alignment Plans

The existing alignment of the Project Highway shall be modified in the following sections as per the alignment plan indicated below:

(i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. The contractor shall, however, improve/upgrade the Road profile as indicated in **Annex-III** based on site/design requirement within the RoW.

(ii) Signage plan of the project highway is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in **Annex-III** based on site/design requirement as per the relevant specifications/IRC codes/Manual.

(iii) Alignment of the project Highway from Ch. 5+600 to Ch. 5+800 (Design chainage), has been shifted by 2 m RHS as per order of Honorable High Court to safeguard the existing trees. Therefore the EPC Contractor has to develop the project highway as per the modified alignment plan for the stretch mentioned above (affected stretch attached in P&P separately).

Annex - IV

(Schedule-A)

Environment Clearances

The project highway does not require environment clearance as per MoEF circular F. No. 21-270/2008-1A.III (dated 22nd August 2013).

Diversion of forest land of 16.107 Ha is required. Forest Proposal (16.107 Ha) has been submitted on 26.06.2019 and got approval from Forest Department.

The muck dumping sites should be identified by the EPC contractor in consultation with the Authority Engineer and forest department for dumping of muck as stated in Schedule F.

Schedule B

SCHEDULE - B

(See Clause 2.1)

DEVELOPMENT OF THE PROJECT HIGHWAY

1. Development of the Project Highway

Development of the Project Highway shall include design and construction of the Project Highway as described in this **Schedule-B** and in **Schedule-C**.

2. Rehabilitation and Augmentation

Widening and upgradation shall include Two-Laning with Paved shoulder/4-Laning of the Project Highway as described in **Annex-I** of this **Schedule-B** and in **Schedule-C**.

3. Specifications and Standards

The Project Highway shall be designed and constructed in conformity with the specifications and standards specified in **Annex-I** of **Schedule-D**.

Annex - I

(Schedule-B)

DESCRIPTION OF PROJECT

Pkg. I - Improvement to 2 lane with paved shoulder/ 4 lane of NH-40 section from Km 81+740 to Km 93+490 (design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to 0+930, total length 11.600 in the state of Meghalaya on EPC mode under JICA Loan Assistance

1. Widening of existing Highway

(i) The Project Highway shall follow the existing alignment unless otherwise specified by the Authority and shown in the alignment plans specified in **Annex-III of Schedule-A**. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for hilly terrain to the extent land is available.

(ii) Width of Carriageway

(a) Two-Laning with paved shoulders/4-Laning shall be undertaken. The paved carriageway shall be in accordance with the typical cross sections given in **Appendix B-I of Schedule –B**. Additional widths for widening at horizontal curve shall be as per the Schedule D.

Provided that in the built-up areas the width of the carriageway shall be as specified in the following table excluding median:

S. No.	Built-up Section Township	Design Chainage		Width of Paved carriageway (m)
		From	To	
1	Upper Shillong	0+000	2+680	2 x 8
2	5th Mile	2+680	7+350	2 x 8
3	Ritmawniew	7+350	8+270	2 x 8
4	Ritmawniew	8+270	8+900	1 x 11

(b) Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall conform to paragraph 1 (i) above.

(c) All the cross-sectional elements are to be accommodated within the proposed ROW. If required, suitable retaining structures along with drainage system shall be provided as per site condition and this will not attract any change of scope

2. Geometric Design and General Features

(i) General: Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the Manual.

(ii) Design speed: The design speed shall be ruling speed of 60 km per hour and minimum speed of 40 km per hour.

(iii) Improvement of the existing road geometrics

In the following sections, where improvement of the existing road geometrics to the prescribed standards is not possible, the existing road geometrics shall be improved to the extent possible within the given right of way and proper road signs and safety measures shall be provided;

(iv) Total Scope of Project Highway works: As follows

A) Scope of Widening and Strengthening / Geometric Improvement of existing road:

Sl. No.	Design Ch. From	Design Ch. To	Existing NH	Side	Effective Length(m)
1	00+000	01+960	NH 40	B/S	1960
2	03+050	07+250	NH 40	B/S	4200
3	10+170	10+670	NH 40	B/S	500
4	00+000	00+930	NH 44	B/S	930
				Total, A:	**7590 m**

B) Reconstruction Realignment / Bypass (Flexible Pavement):

Sl. No.	From	To	Side	Effective Length(m)
1	01+960	03+050	B/S	1090
2	07+250	10+170	B/S	2920
			Total, B:	**4010 m**

Total, A+B:	**11600 m**

Note:

1) ***The above length of 11.6 km includes the partially executed works in Earthwork upto subgrade top and GSB as mentioned in Schedule-A, which shall be rectified as per extant Ministry's Specifications and IRC Codal Provisions in case any deficiencies are found during execution without attracting any Change of Scope (CoS).***

(ii) Right of Way

The site of the project highway comprises the land as described in **Annex-II** of Schedule**-A.**

(iii) Type of shoulders

(a) In built-up sections, footpaths/covered drains shall be provided in the following stretches:

Sl. No.	Left Side			Right Side		
	From	To	Length (m)	From	To	Length (m)
1	0+000	0+070	70	0+000	0+210	210
2	0+300	1+420	1120	0+610	0+920	310
3	3+020	7+390	4370	1+100	1+400	300
4	7+890	8+900	1010	3+020	4+550	1530
5	-	-		4+830	7+390	2560
6	-	-		8+190	8+900	710

Other Locations of Footpath shall be as per TCS/Schedule D

(b) In open country, paved shoulders of 1.5 m width shall be provided and balance 1.0 m shall be covered with granular material in full depth up to GSB layer as shown in typical cross section.

(c) Design and specifications of paved shoulders and granular material shall conform to the requirements specified in the relevant manual.

(iv) Lateral and vertical clearances at underpasses

(a) Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per paragraph 2.10 of the Manual.

(b) Lateral clearance: The width of the opening and vertical clearances at underpasses shall be as follows:

Sl. No	Design Chainage	Clear span/opening (m)	Vertical Clearance (m)	Remarks
1	1+220/NH40	1 X 7.0	4.5	SVUP
2	8+655/NH40	1 x 35.0	5.5	VUP
3	9+622/NH40	1 x 7.0	4	SVUP
4	0+510/NH44	1 x 7.0	4	SVUP

VUP: Vehicular Underpass; LVUP: Light Vehicular Underpass; SVUP: Small Vehicular Underpass;

Note: - IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP.

(v) Lateral and vertical clearances at overpasses

(a) Lateral and vertical clearances at overpasses shall be as per paragraph 2.11 of the Manual.
(b) Lateral clearances at overpasses shall be as follows:

S. No.	Design Chainage	Clear Span (m)	Vertical Clearance (m)	Remarks
1	0+010/NH40	1 x 35.0	5.50	VOP

(vi) Slip Roads/Service Roads: Slip roads along Project highway shall be constructed at the locations and for the lengths indicated below-

Ch. From	Ch. To	Width	Length (m)	Remarks
1+070	1+370	3.5	300	On both sides
8+270	8+900	5.5	630	On both sides
0+190/NH-44	0+730/NH-44	5.5	540	On both sides along Guwahati-Shillong-Jowai Road (NH44)
		Total	**1470**	

***Total length of Slip road/ Service road excluding taper/acceleration/deceleration length is 2x1.470 = 2.940 km (Including Both Sides)**

Note:

1. ***The length of slip road shown in above tables is minimum and increase in length/ width of slip road/ approach road, if required, shall be deemed to be part of project and no Change of Scope shall be admissible on this account.***
2. ***Stone pitching/ Toe wall shall be provided as per site condition for maintaining level difference between main carriageway and service road, and shall not attract any Change of Scope (CoS).***

(vii) **Grade separated structures**

(a) Grade separated structures shall be provided as per paragraph 2.13 of the Manual. The requisite particulars are given below:

i) Overpass

Sl. No.	Design Chainage	Span arrangement(m)	Road to be carried under the structure	Width of Structure (m)
1	0+010	1x35.0	NH-40	12

ii) Vehicular Underpass (VUP) :

	Design Chainage	Span arrangement (m)	Road to be carried under the structure	Min. Vertical clearance (m)	Width of Structure (m)
1	8+655	1 x 35	Shillong – Nongstoin Road (NH-44)	5.50	12

iii) Light Vehicular Underpass

S. No.	Design Chainage	Span arrangement (m)	Road to be carried under the structure	Min. Vertical clearance (m)	Width of Structure (m)
NIL					

iv) Small Vehicular Underpass

	Design Chainage	Span arrangement(m)	Road to be carried under the structure	Min. Vertical clearance (m)	Width of structure (m)
1	1+220	1 X 7	Army opening gate (Both side)	4.5	21
2	9+622/NH40	1 x 7	Village Road	4.0	12
3	0+510/NH44	1 x 7	Village Road	4.0	12

Note: -

(i) Any Change in location/width shall not constitute as Change of Scope or any other

claim whatsoever.

(ii) IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP

(iii) The Design and drawings of the above structure is within the scope of EPC Contractor. The same may be finalized as per actual site conditions and FRL of P&P.

(b) In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows:

S. No.	Location (Design Chainage)	Type of Structure	Cross road at		
			Existing level	Raised Level	Lowered Level
1	0+010	VOP	NH-40	NH-44	----
2	1+220	SVUP	NH-40	-----	Access to Army office
3	8+655	VUP	NH-44E	NH-40	---
4	9+622	SVUP	Village Road	NH-40	---
5	0+510/NH44	SVUP	Access to Army Hospital	NH-44	---

(viii) Cattle and pedestrian under pass / over pass

Cattle and pedestrian underpass/ overpass shall be constructed as follows:

Sl. No.	Location	Type of crossing
NIL		

(ix) Typical cross-sections of the Project Highway

The typical cross-sections shall be developed as applicable, in accordance with clause 2.16 of the Manual (IRC:SP:73-2018). 4 lane divided carriageway (with or without footpath) shall be done from design km. 0+000 to km. 8+270. Indicative TCS are presented in Appendix B-I. Additional TCS as required shall be developed by EPC Contractor.

The indicative TCS for Project Highway are as follows-

S.No.	Design Chainage		Length (m)	TCS Type
	From	To		
NH 40 (Shillong-Dawki Road)				
1	0+000	1+420	1420	Type 1
2	1+420	3+020	1600	Type 2
3	3+020	7+400	4380	Type 1
4	7+400	7+850	450	Type 2
5	7+850	8+270	420	Type 1
6	8+270	8+900	630	Type 4
7	8+900	10+670	1770	Type 3
	Sub-Total:		**10670**	
NH 44 (Guwahati-Jowai Road)				
S.No.	**Design Chainage**		**Length (m)**	**TCS Type**
	From	**To**		
8	0+000	0+190	190	Type 5
9	0+190	0+730	540	Type 4

10	0+730	0+930	200	Type 5
		Sub-Total:	**930**	
		Grand Total:	**11600**	

Note: 1) Any Change in location/length shall not constitute as Change of Scope (CoS) or any other claim whatsoever.

2) The length shown in the above table for TCS are minimum and increase in length for Type TCS will not attract any COS.

3. Intersections and Grade Separators

All intersections and grade separators shall be as per section 3 of the Manual.
Existing intersections which are deficient shall be improved to the prescribed standards.

Properly designed intersections shall be provided at the locations and of the types and features given in the table below:

(i) **At grade Intersections**

All intersections as per the site requirement shall be designed and constructed in accordance with the manual. A list of intersections is given in below table**.** Draft layout of major junctions is given in indicative Plan & Profile drawings for reference.

Sl. No	Proposed Chainage	Classification of Road	Type of Junction (T, Y, +)	Type of cross road	Side	Road leading to
	Major Junctions					
1	0+000	NH 40/NH 44	+ Junction	2-Lane BT	Both	Left- Guwahati Right- Jowai
2	1+990	Existing NH40	T Junction	2-Lane BT	Right	3rd Mile, Upper Shillong
3	8+655	NH 44E	T Junction	2-Lane BT	Right	Nongstoin
	Minor Junctions					
1	0+080	City Road	T Junction	2-Lane BT	Right	Upper Shillong
2	0+210	City Road	Y Junction	Intermediate BT	Left	Upper Shillong
3	0+570	City Road	T Junction	Intermediate BT	Right	Lummawbah
4	0+610	City Road	T Junction	Intermediate BT	Right	Lummawbah
5	0+740	City Road	T Junction	Lane BT	Left	Post Office
6	0+800	City Road	T Junction	1-Lane BT	Left	Signal Center
7	0+840	City Road	Y Junction	2-Lane BT	Right	HQ 101
8	1+310	City Road	T Junction	1-Lane BT	Right	Upper Shillong
9	3+052	City Road	T Junction	2-Lane BT	Right	3rd Mile, Upper Shillong

Sl. No	Proposed Chainage	Classification of Road	Type of Junction (T, Y, +)	Type of cross road	Side	Road leading to
10	3+730	City Road	T Junction	1-Lane BT	Right	Sanmer
11	4+800	Village Road	+ Junction	1-Lane BT	Both	Shillong Peak, Mawklot
12	5+710	Village Road	Y Junction	1-Lane BT	Right	Mattlang
13	6+201	City Road	T Junction	2-Lane BT	Left	A.H. & Veterinary
14	6+400	City Road	T Junction	4-Lane BT	Left	HQ eastern air command
15	6+660	City Road	Y Junction	2-Lane BT	Right	ALG Area, EAC
16	6+920	City Road	T Junction	4-Lane BT	Left	HQ Eastern air command
17	7+290	Existing NH40	+ Junction	2-Lane BT	Both	Elephant falls, 7th Mile
18	8+280	Village Road	Y Junction	1-Lane BT	Left	Baniun
19	9+515	Village Road	+ Junction	1-Lane BT	Both	Baniun
20	10+130	Existing NH40	Y Junction	2-Lane BT	Left	Ritmawniew
21	10+670	Village Road	Y Junction	1-Lane BT	Right	Marbaniun

Note: It is clarified that if any other junction is identified during development of the project highway in addition to those mentioned above shall also be improved with proper drainage facilities as per standards. It shall be covered within the scope of work. The Number, location & type of junction shown in above table are minimum and increase in number will not attract change of Scope on this account.

(ii) **Grade separated intersection without ramps**

S. No.	Design Chainage	Salient Feature (Formation width) (m)	Minimum Length of Viaduct (m)	Road to be carried Under structure	Type of Structure
Nil					

4. Road Embankment and Cut Section

(i) Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/ cuttings shall conform to the Specifications and Standards given in Section 4 of the Manual and the specified cross-sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

(ii) Raising of the existing road/New carriageway the existing road shall be raised as per design requirements in accordance with the manual in conformity to the minimum FRL.

The Contractor may adopt suitable slope (angle) for the embankment as per the availability of fill material/design requirements. The slopes shall be checked for safety against failure. The slopes shall be protected with turfing/geo synthetics /geo green blanket/geo cells/stone pitching or any other method as per schedule D.

Wherever required, toe wall/retaining wall/Breast Wall/other protection works along with drainage system shall be provided to contain the toe of the earthwork, so that all the features shown in the TCS are accommodated in the ROW provided.

(iii) All of surplus cutting soils shall be transported and be disposed to the Spoil Banks in accordance with the Clause 3.1 of Schedule D.

5 Pavement Design

(i) Pavement design shall be carried out in accordance with Section 5 of the Manual.

(ii) Type of pavement

Flexible pavement shall be provided for the entire length of project highway.

(iii) Design requirements - as per paragraph 5.4, 5.9 and 5.10 of the manuals.

(a) Design Period and strategy Flexible pavement shall be designed for a minimum design period of 20 years. Stage construction shall not be permitted.

(b) Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic of not less than 30 MSA.

(iv) Reconstruction of Stretches

The entire stretch of the existing road shall be reconstructed.

6. Road Side Drainage

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per Section 6 of the Manual.

(a) Covered drain / open drain shall be provided in the following stretches

Sl. No.	Left			Right		
	From	To	Length (m)	From	To	Length (m)
i) Covered Drain Locations						
1	0+000	0+070	70	0+000	0+210	210
2	0+300	1+420	1120	0+610	0+920	310
3	3+000	7+390	4390	1+100	1+400	300
4	7+890	8+900	1010	3+000	4+550	1550
5	-	-	-	4+830	7+390	2560
6	-	-	-	8+190	8+900	710
Along NH-44						
7	0+000	0+930	930	0+000	0+930	930
	Total Length (m)		**7520**	**Total Length (m)**		**6570**
ii) Lined Open drain locations (Hill Side)						
1	1+420	2+050	630	1+810	2+500	690
2	2+610	2+980	370	7+390	8+190	800
3	7+390	7+890	500	9+870	10+670	800
	Total Length (m)		**1500**	**Total Length (m)**		**2290**
iii) Lined Open drain locations (Valley Side)						
1	2+210	2+280	70	1+510	1+640	130
2	2+320	2+610	290	1+640	1+810	170
3	-	-	-	2+640	2+930	290
4	-	-	-	9+260	9+870	610
	Total Length (m)		**360**	**Total Length (m)**		**1200**

Note: The above locations are minimum. Additional locations if any required as per site condition shall be provided as per manual. It shall not be treated as change in scope of work.

7. Designs of Structures

(i) General

(a) All bridges, culverts and other structures shall be designed and constructed in accordance with section 7 of the Manual and shall conform the cross-sectional features and other details specified therein.

b) Width of new bridges are shown as follows:

S. No.	Design Chainage	Existing Chainage	Width of structure and cross-sectional features	Remarks
1	0+275	82/015	13.00m	Existing Retain + New 2 lane, NH-40
2	8+940	-	13.00m	New 2 lane, NH-40
3	9+870	-	16.00m	New 2 lane, NH-40

c) The following structures shall be provided with footpaths

Sl. No.	Design Chainage	Existing Chainage	Remarks
1	0+275	82/015	2 lane bridge with One side footpath
2	7+218	90/258	4 lane bridge with both side footpath
3	8+940	-	2 lane bridge with both side footpath
4	9+870	-	2 lane bridge with both side footpath

(d) All bridges shall be high level bridges.

(e) The structures shall be designed to carry utility services like electric cable, water pipe line, OFC etc. as per the requirement of site.

(f) Cross-section of the new culverts and bridges at deck level shall conform to the typical cross-sections given in section 7 of the Manual.

(g) IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP.

(ii) Culverts

(a) Overall width of all culverts shall be equal to the roadway width of the approaches.

(b) Scope for Reconstruction of existing culverts/ New additional culverts / Partially Executed culverts:

Sl. No.	Design Chainage	Clear Span (m)/ (nos. xLxH/dia)	Prop. Type	Proposal for improvement	Remarks
1	0+064	1 x 2.0 x 2.0	Box	New	
2	0+600	1 x 2.0 x 1.5	Box	New	

Sl. No.	Design Chainage	Clear Span (m)/ (nos. xLxH/dia)	Prop. Type	Proposal for improvement	Remarks
3	0+960	1 x 2.0 x 1.5	Box	New	
4	1+150	1 x 2.0 x 1.5	Box	New	
5	1+430	1 x 2.0 x 1.5	Box	New	
6	1+654	1 x 2.0 x 2.0	Box	New	
7	2+060	1 x 2.0 x 1.5	Box	New	
8	2+315	1 x 2.0 x 1.5	Box	New	
9	2+550	1 x 3.0 x 3.0	Box	New	
10	2+625	1 x 2.0 x 1.5	Box	New	
11	2+755	1 x 2.0 x 2.0	Box	New	
12	2+978	1 x 2.0 x 1.5	Box	New	
13	3+432	1 x 2.0 x 1.5	Box	Reconstruction	
14	4+135	1 x 2.0 x 2.0	Box	New	
15	4+650	1 x 2.0 x 2.0	Box	New	
16	4+840	1 x 2.0 x 1.5	Box	New	
17	5+100	1 x 2.0 x 1.5	Box	Reconstruction	
18	5+785	1 x 2.0 x 1.5	Box	Reconstruction	
19	6+005	1 x 2.0 x 1.5	Box	Reconstruction	
20	6+210	1 x 2.0 x 1.5	Box	Reconstruction	
21	6+430	1 x 2.0 x 1.5	Box	Reconstruction	
22	6+810	1 x 2.0 x 1.5	Box	Reconstruction	
23	8+055	1 x 2.0 x 1.5	Box	New	Partially Executed upto (RHS) Raft
24	8+330	1 x 2.0 x 1.5	Box	New	Partially Executed upto(RHS) PCC
25	9+250	1 x 2.0 x 2.0	Box	New	
26	10+390	1 x 2.0 x 1.5	Box	New	Partially Executed upto (RHS) Raft
27	10+593	1 x 2.0 x 1.5	Box	New	Partially Executed upto(RHS) PCC

Note:

1. The proposed locations are minimum. Any change in number/length/span/height shall not be treated as change in scope of work.

2. The culvert location planned as Table above shall be adjusted accordingly to the exact location of cross-water stream or existing culvert located based on the topographic survey performed by the Contractor for the final drawings of the Detailed Design.

3. Cross road culvert to be provided at the location of Major Junction/ Minor Junctions for proper drainage facilities and utility purposes etc. as per manual and shall not be treated as change of scope.

4. For partially executed culverts at Ch. 8+055, Ch. 8+330, Ch. 10+390 & Ch. 10+593, the balance scope shall be remaining items and components as per approved design & drawing.

(c) Widening of existing culverts

All existing culverts which are not to be reconstructed shall be widened to the roadway width of the Project Highway as per the typical cross section given in section 7 of the Manual. Repairs and strengthening of existing structures where required shall be carried out.

Sl. No.	Culvert location	Type, span height and width of existing culvert(m)	Repairs to be carried out
		Nil	

(iii)

Bridges

(a) Existing bridges to be re-constructed/widened

(i) The existing bridges at the following locations shall be re-constructed:

Sl. No.	Bridge location (Ch)	Salient details of existing bridge	Adequacy or otherwise of the existing waterway, vertical clearance, etc.	Remarks
			Nil	

(ii) The following narrow bridges shall be widened:

Sl. No.	Design Chainage	Existing Chainage	Span Arrangement	Existing width (m)	Proposed Total Width (m)	Cross-section at deck level for widening
1	7+218	90/258	1 x 8.0	15.30	25.6	4-Lane

(b) Additional new bridges

Major Bridges

Sl. No	Design Chainage	Name of Nallah	Span arrangement (m)	Total Width of Structure (m)
			nil	

Minor Bridges

S No.	**Design Chainage**	**Existing Chainage**	**Proposed Span (m)**	**Proposed Width (m)**	**Remarks**
1	0+275	82/015	1x50	13.0	Existing Retain + Additional new 2 lane, NH-40
2	8 + 940	Bypass	1x14	12.0	Ritmawniew Bypass New 2 lane, NH-40
3	9+870	Bypass	1x14 (skew)	16.0	Ritmawniew Bypass New 2 lane, NH-40

Note:

1. Proposed span arrangement is minimum and any increase in length/span/height shall not be treated as change in scope of work.

2. IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP.

3. The typical GAD of Minor Bridges attached in this CA may be considered as indicative. Design and drawings may be finalized as per actual site conditions.

(c) The railings of existing bridges shall be replaced by crash barriers at the following locations:

Sl. No.	Location at Chainage	Remarks
	NIL	

(d) Repairs/replacements of railing/parapets of the existing bridges shall be undertaken as follows:

The existing bridges and structures to be repaired/ strengthened, the nature and extent of repairs /strengthening required are given below;

The following bridges shall be retained with repairs:

S. No.	Design Chainage	Existing Chainage	Remarks
1	0+275	82/015	• Wearing coat shall be replaced. • Damaged expansion joint shall be replaced. • Spalling of concrete shall be repaired with epoxy grouting. • Abutment quadrant slopes shall be maintained along with stone pitching on slopes and suitable protection as per site requirement. • Damaged railing/parapet to be replaced. • Missing drainage spouts and gratings with down-take pipe to be provided. • Any other repair required as per site condition in consent with Authority's Engineer/Authority.

(e) Drainage system for bridge decks

An effective drainage system for bridge decks shall be provided as specified in the Manual.

(iv) Rail-road bridges

(a) Design, construction and detailing of ROB shall be as specified in section 7 of the Manual.

(b) Road over-bridges

Road over-bridges (road over rail) shall be provided at the following locations

	Design Chainage	Route	Span arrangement (m)	Total Length (m)	Width (m)
			nil		

(c) Road under-bridges

Road under-bridges (road under railway line) shall be provided at the following level crossings, as per GAD drawings attached:

Sl. No.	Location of Level crossing (Ch)	Number and length of span(m)
	NIL	

Grade separated structures

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2 (vi), 2 (vii) and 2 (ix) of this Annex-I.

(v) Repairs and strengthening of bridges and structures

The existing bridges and structures to be repaired/strengthened, and the nature and extent of repairs /strengthening required are given below:

Bridges

Sl. No.	Location	Nature and extent of repairs to be carried out
	As per table on para 7 (iii) d	

ROB / RUB

Sl. No.	Location of ROB/RUB(Ch)	Nature and extent of repairs /strengthening to be carried out
		NIL

Overpasses/Underpasses and other structures

Sl. No.	Location of Structure(Ch)	Nature and extent of repairs/strengthening to be carried out
		NIL

(vi) List of Major/Minor Bridges, VOP & SVUP

The following is the list of the Major bridges/ Minor Bridges / VOP / SVUP

Sl. No.	Location/ Design Chainage	Type
1	0+510/NH-44	SVUP
2	0+010 NH-40/NH-44	VOP
3	0+275	Additional 2 Lane Minor Bridge
4	1+220	SVUP
5	7+218	Minor Bridge widening
6	8+655	VUP
7	8+940	New 2 Lane Minor Bridge
8	9+622	SVUP
9	9+870	New 2 Lane Minor Bridge

(vii) Slope Protection Structures

Structures for Slope protection and Retaining/ Breast Walls shall be designed and constructed as stipulated in Schedule-D.

Structures to be constructed for slope protection shown in the following Table:

(a) Breast wall

S. no.	LHS				RHS			
	From	To	Length (m)	Height above FRL	From	To	Length (m)	Height above FRL
1	At junction 0+000		90	3.0	0+080	0+210	130	3.0
2	0+320	0+370	50	3.0	1+840	1+920	80	3.0
3	0+540	0+600	60	3.0	2+350	2+500	150	3.0
4	0+600	0+720	120	1.5	2+640	2+720	80	1.5
5	0+810	0+920	110	3.0	2+760	2+930	170	1.5
6	0+920	1+090	170	1.5	3+180	3+670	490	1.5
7	1+090	1+220	130	3.0	5+310	5+520	210	3.0
8	1+310	1+420	110	3.0	6+330	6+390	60	1.5
9	2+630	2+790	160	1.5	6+440	6+570	130	3.0
10	2+790	2+890	100	3.0	6+640	6+760	120	1.5
11	2+890	2+970	80	1.5	-	-	-	-
12	5+980	6+100	120	1.5	-	-	-	-
13	8+500	8+810	310	3.0	-	-	-	-
14	9+040	9+090	50	3.0				
15	10+250	10+450	200	3.0				
	Total Length (m)		**1860**		**Total Length (m)**		**1620**	

Note: The proposed locations are minimum and change in length/height shall not be treated as change in scope of work.

(b) Retaining wall

Sl. No.		LHS		RHS		
	From	To	Length (m)	From	To	Length (m)
1	2+500	2+610	110	0+200	0+350	150
2	2+970	3+000	30	0+350	0+420	70
3	3+050	3+110	60	0+450	0+520	70
4	3+110	3+690	580	0+550	0+610	60
5	4+560	4+730	170	0+870	0+970	100
6	5+300	5+390	90	0+970	1+050	80
7	6+170	6+250	80	1+050	1+330	280
8	6+420	6+500	80	1+700	1+810	110
9	7+160	7+215	55	1+810	1+840	30
10	7+220	7+240	20	2+500	2+640	140
11	8+810	8+855	45	2+930	3+000	70
12	8+980	9+020	40	4+850	5+220	370
13	9+100	9+238	138	5+980	6+100	120
14	9+260	9+350	90	7+190	7+215	25
15	9+350	9+430	80	7+220	7+240	20
16	9+445	9+890	445	7+680	7+730	50

Sl. No.	LHS			RHS		
	From	To	Length (m)	From	To	Length (m)
17	10+240	10+310	70	8+470	8+855	385
18	10+490	10+600	110	8+980	9+130	150
19	--	--	--	9+130	9+238	108
20	--	--	--	9+260	9+350	90
21	--	--	--	9+350	9+440	90
22	--	--	--	9+445	9+600	155
23	--	--	--	9+610	9+890	280
	Total Length (m)		**2293**	**Total Length (m)**		**3003**

(c) Retaining Wall Partially Executed

Sl. No.	Chainage		LHS	
	From	To	Length (m)	Executed Work
1	10+260	10+310	50	PCC Work done
2	10+260	10+285	25	Foundation 1st Lift Completed

(viii) Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates:
Boundary wall complete with iron angle & barbed wire fencing shall be constructed by the Contractor in the Army/ Air Force Area with a minimum height of 3.0 m above the Ground Level.
The location of Boundary wall to be provided after demolition of existing boundary wall is given as follows:

Sr. No.	Chainage (m)		Side	Type of Proposal	Proposal as per Site	Length (m) Including Junction Locations
	From	To				
Auxiliary Alignment (NH 44, Guwahati-Jowai Road)						
1	0+055	0+300	LHS	1	Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates	272.5
2	0+400	0+938	LHS	1		517.5
3	0+055	0+200	RHS	1		143.0
4	0+200	0+360	RHS	1		160.0
5	0+360	0+370	RHS	1		34.00
6	0+440	0+520	RHS	1		79.5
7	0+530	0+938	LHS	1		419.0
Main Alignment (NH 40, Shillong-Dawki Road)						
8	0+080	0+200	RHS	1		120.5
9	0+220	0+260	RHS	1		44.5
10	0+350	0+365	RHS	1		15.0
11	0+365	0+400	RHS	1		35.0
12	0+445	0+455	RHS	1		10.0
13	0+455	0+505	RHS	1		50.0
14	0+505	0+560	RHS	1		85.00

15	0+580	0+600	RHS	1	Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates.	30.0
16	0+620	0+810	RHS	1		177.5
17	0+825	0+845	RHS	1		21.0
18	0+880	0+940	RHS	1		59.0
19	0+940	1+230	RHS	1		291.0
20	1+250	1+320	RHS	1		80.5
21	0+290	0+450	LHS	1		161.0
22	0+530	0+720	LHS	1		173.5
23	0+800	1+220	LHS	1		417.5
24	1+240	1+430	LHS	1		198.5
25	6+340	7+160	RHS	1		820.0
					TOTAL LENGTH (m) :	**4415.00**

Location of Gates adjacent to Boundary wall-

S. No	Chainages	LHS / RHS
1.	Km 0+140 (Jhalupara, NH 44)	LHS
2.	Km 0+500 (MH Shillong, NH 44)	RHS
3.	Km 0+520 (MH Shillong, NH 44)	LHS
4.	Km 0+690 (MH Shillong, NH 44)	RHS
5.	Km 0+150 (Garrison Engineer, NH 40)	RHS
6.	Km 0+ 370 (Infantory T A C O Y, NH 40)	LHS
7.	Km 0+570 (LMO QTRS, NH 40)	LHS
8.	Km 0+840 (Workshop Area, NH 40)	RHS
9.	Km 0+870 (HQ 101, NH 40)	RHS
10.	Km 1+220 (HQ 101, NH – 40)	RHS

Note:

1. The above proposed locations are minimum and minor change in length shall not be treated as change in scope of work.

2. The Design and drawings of the above structure is within the scope of EPC Contractor. The same may be finalized in consultation with Authority's Engineer and Defence Officials as per actual site conditions.

3. The quality of construction shall be strictly maintained as per Good Industry Practice/ Technical Specifications as per requirement of Defence Establishment. Minor upside variation within 5% of the scope shall be constructed by the EPC Contractor without Change of Scope (CoS).

4. The Boundary wall shall be constructed in lieu of the existing wall after demolishing the same. The executed work of boundary wall shall in no case be downgraded w.r.t. the current infrastructure in terms of Dimensions, Technical Specifications and Quality Standards and shall be constructed in accordance with the feasibility of Defence Establishment.

5. The Gates shall be provided at the indicated locations mentioned above along the Boundary wall openings, without attracting any Change of Scope (CoS).

(ix) Slope Protection

As the project involve cutting of existing hill slopes, it is imperative that slopes are stabilized for insuring longevity of the slopes and the roads.

The contractor shall be responsible for accurate assessment of the actual requirement as per schedule D & prepare design for slope protection & stabilization as per schedule D.

Any increase in quantity over the above will not be considered as change of scope. Therefore, contractor should carry out thorough investigation at site and assess the requirement of slope protection and slide prone zone and other safety features at his own before submission of bid.

(x) Disposal of Debris: - As per Manual.

8. Traffic Control Devices and Road Safety Works

(i) Traffic control devices and road safety devices and road furniture shall be provided in accordance with Section 9 of the Manual.

(a) Traffic/ Road Signs:

Traffic signs viz roadside signs, overhead signs, kerb mounted signs etc. along the entire Project highway shall be provided in accordance with section 9 of the manual.

Overhead traffic signs: - Full Width Overhead signs shall be provided in accordance with section 9 of the manual

Minimum number of full overhead gantry sign – 3 nos and cantilever overhead gantry sign – 3 nos shall be provided.

(b) Pavement Marking:

Pavement markings shall cover road marking for the entire Project Highway as per manual.

(c) Safety Barrier:

Semi rigid W-beam crash barriers shall be installed all along the project highway on earthen shoulders on either side of main carriageway at the locations given below:

Sl. No	LHS		Length	RHS		Length (m)
	From	To	(m)	From	To	
1	2+050	2+200	150	2+280	2+340	60
2	2+280	2+340	60	2+500	2+640	140
3	2+500	2+640	140	2+920	3+000	80
4	2+970	3+000	30	8+900	9+950	1050

5	8+900	9+950	1050			
6	10+170	10+670	500			
	Total Length (m)		**1930**	**Total Length (m)**		**1330**

Note: The above proposed length/ locations are minimum. Crash barrier/other suitable safety barriers along the Project highway shall be provided as per schedule D and Any change in length shall not be treated as change in scope of work.

(ii) Specifications of the reflecting sheeting

Retro reflective sheeting should be of high intensity grade with encapsulated lens or with micro prismatic retro reflective element in accordance with ASTM Standard D 956-04 in accordance with Clause 9.2.3 of the Manual.

9. Roadside Furniture

Roadside furniture shall be provided in accordance with the provisions of the Manual.

a) Road studs - Road studs shall be provided for the entire Project highway at median openings, bridges, VUP/Interchange/Flyover structures, approaches of bridges, VUP/Interchange/ Flyover, at curves on shoulder edge line, junctions, slip roads on both side of edge lines etc. in accordance with the manual.

b) LED traffic beacons - Shall be provided on entire project highway near pedestrian crossings, public gathering places, junctions etc. in accordance with the manual.

c) Pedestrian Guard Rail: Provide pedestrian guardrail at each bus stop location and other locations as per manual.

d) Delineators: Delineators for the entire Project Highway at the locations as suggested in relevant IRC Manual recommended in Schedule D.

e) Noise barriers: shall be provided in accordance with manual; Locations shall be decided as per site condition in consent with Authority.

f) Concrete Crash Barrier, Metal Beam Crash Barrier, Separators (MS Railings) – as per manual.

g) Traffic Safety Devices wherever required.

h) Hectometer/ Kilometer Stones.

10. COMPULSORY AFFORESTATION

The number of trees which are required to be planted by the Agency as compensatory afforestation should be as per Forest Conservation Act, thrice the number of trees to be cut.

11. HAZARDOUS LOCATIONS

The safety measures shall be provided at all hazardous/sinking/land slide locations as per the manual in consultation with the Authority's Engineer The safety barriers shall also be provided at the following hazardous structure (Bridges, culverts) locations**:**

Sl. No.	Location stretch from (Ch) to (Ch)	LHS/RHS
	As per schedule D	

12.SPECIAL REQUIREMENTS FOR HILL ROADS

In accordance with Section 13 of the Manual (from IRC: SP: 73-2018), IRC: SP: 1998 & recommended practice for treatment of embankment and road side slopes for erosion control (first revision) IRC: 56-2011 and relevant IRC codes & The cutting slope surface except on Hard Rock classified as per Clause 301.2 of MORTH Specifications for Road and Bridge Works shall be protected by the Seeding and Mulching as per Clause 301.8 of MORTH Specification, and the embankment slope shall be protected by Turfing as per Clause 301.7 of MORTH Specification.

Sl. No.	Design Ch (From)	Design Ch (To)	LHS/RHS
	As per schedule D		

15. UTILITY DUCT

(a) RCC Box/Pipe type Utility Ducts in Defence area shall be provided as follows-

Sl. No.	Location	Type	Size (Nos x Span x Height/ Dia)	Remarks
1	Opp. MH Shillong (Rilbong to Anjali Segment)	Box Type	1 nos. x 2.0 m x 1.5 m	All these Utility Ducts should have provision of Inspection Box/ Chamber
2	Opp. GE Shillong	Pipe	1 nos. x 0.9 m dia	
3	Opp. 101 Area Gate	Box Type	1 nos. x 1.5 m x 1.5 m	
4	Opp. 101 Area CSD	Box Type	1 nos. 1.5 m x 1.5 m	
5	Opp. QM office MH (Rilbong to Garikhana Segment)	Pipe	1 nos. x 0.6 m dia	

Note:

1. The above proposed locations are minimum and change location/dimension shall not be treated as change in scope of work.

2. The Design and drawings of the above structure is within the scope of EPC Contractor. The same may be finalized as per actual site conditions / Defence specifications.

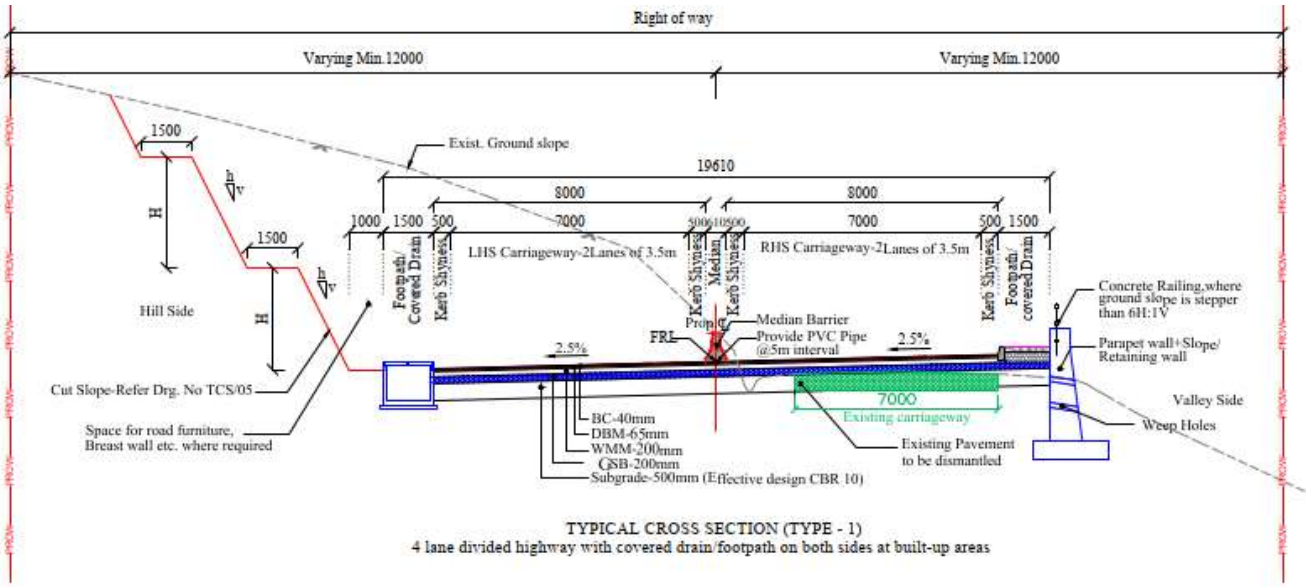
3. The quality of construction shall be strictly maintained as per Good Industry Practice/ Technical Specifications as per requirement of Defence Establishment.

(b) Utility Ducts across the remaining project highway shall be provided as per manual/site conditions.

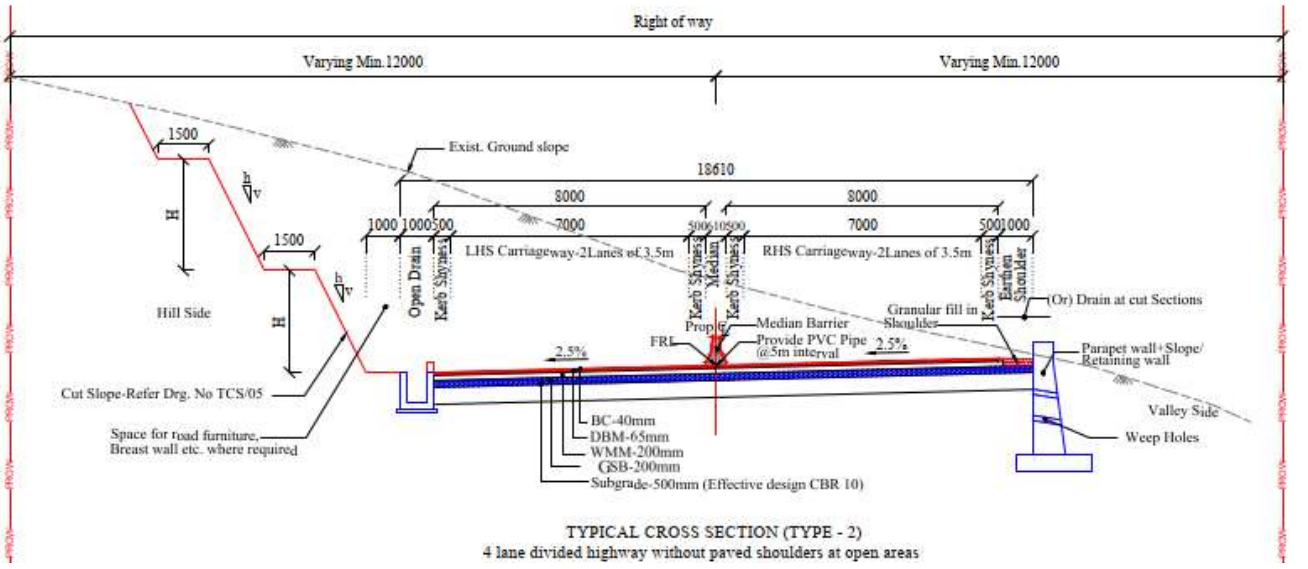
16. CHANGE OF SCOPE

The length of Structures, bridges, culverts, underpasses, flyovers etc. specified hereinabove shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

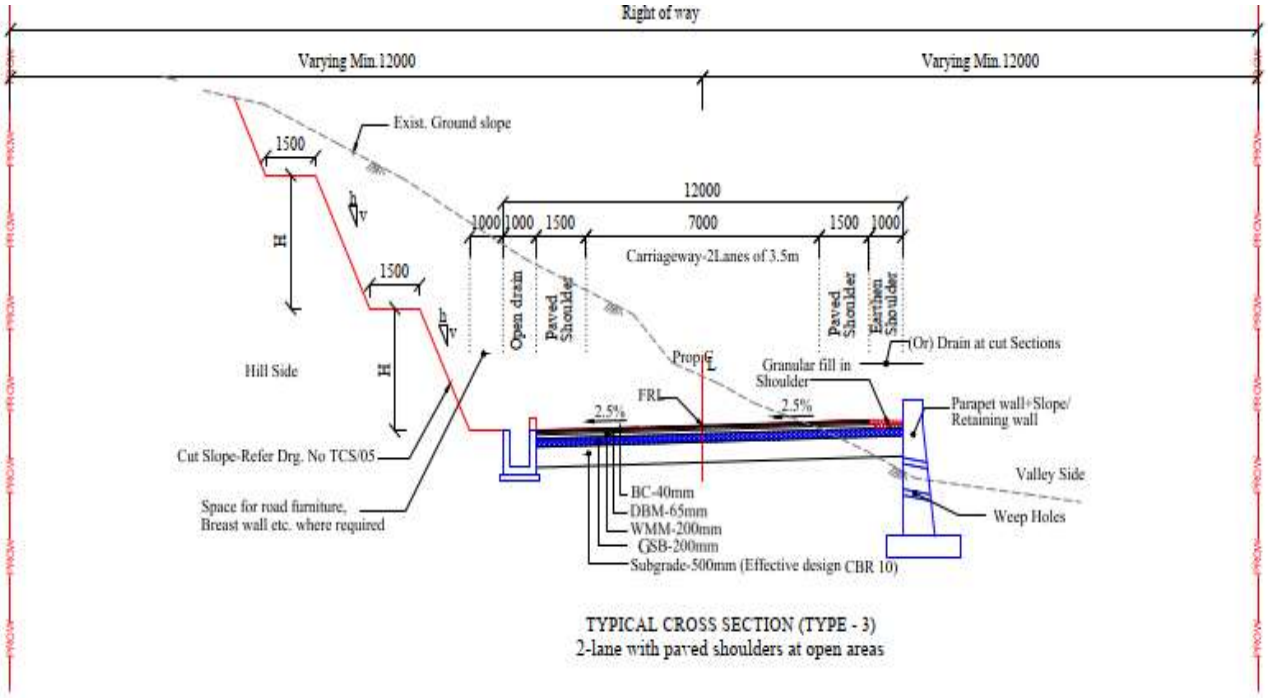
Appendix B-I



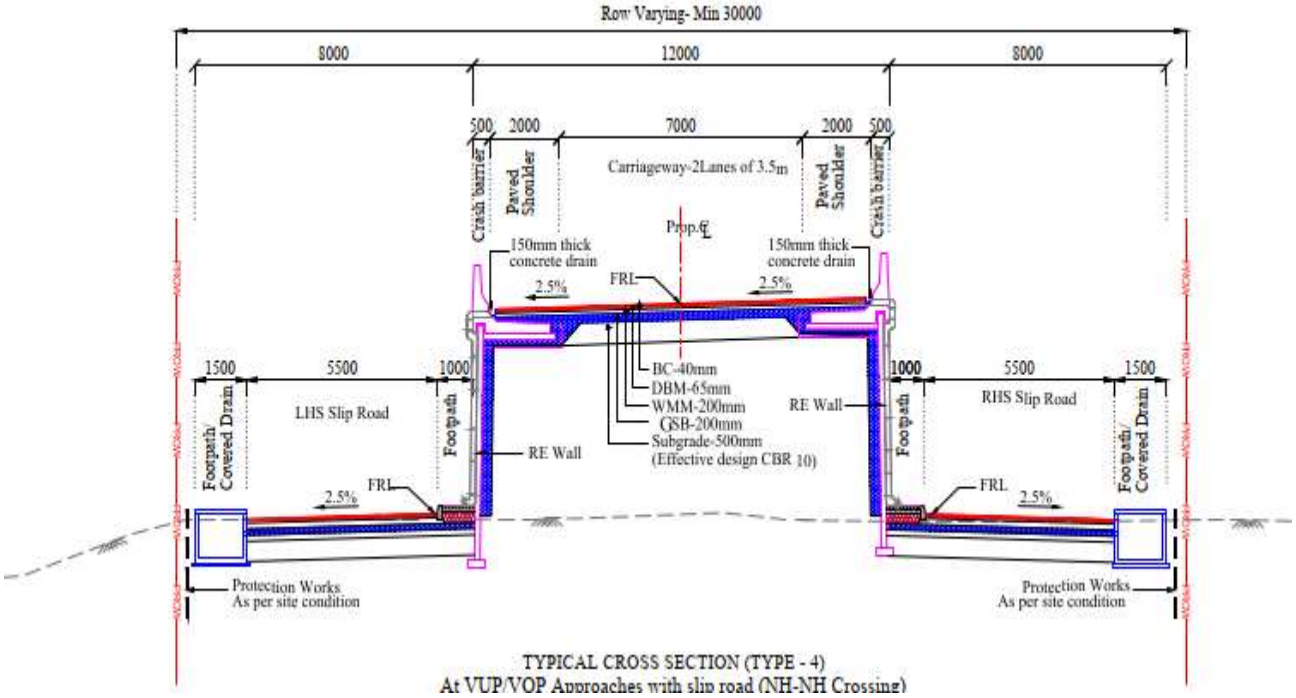
TYPICAL CROSS SECTION (TYPE - 1)
4 lane divided highway with covered drain/footpath on both sides at built-up areas



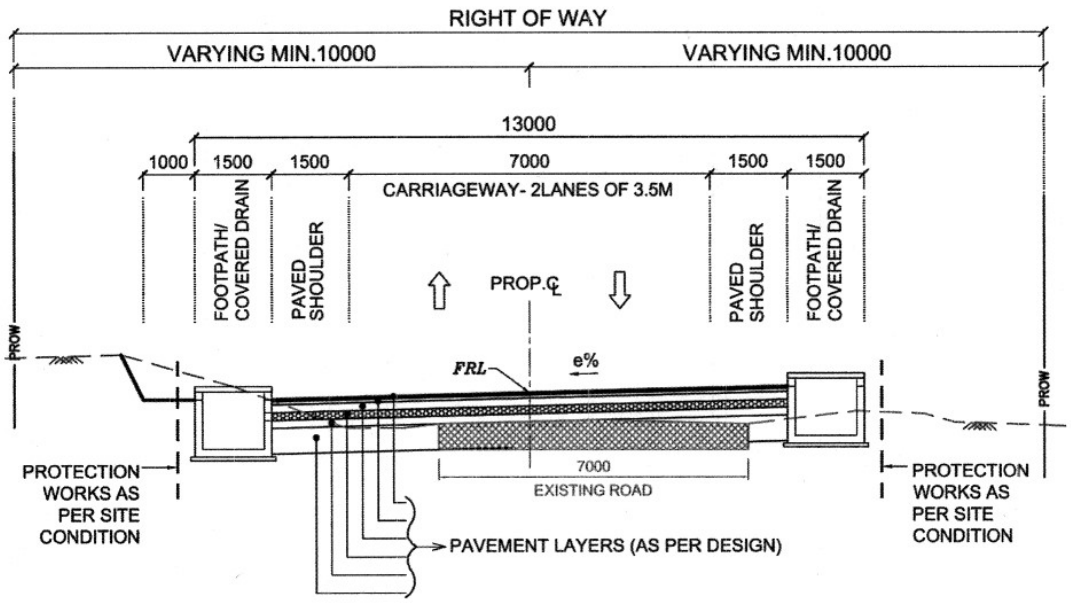
TYPICAL CROSS SECTION (TYPE - 2)
4 lane divided highway without paved shoulders at open areas



TYPICAL CROSS SECTION (TYPE - 3)
2-lane with paved shoulders at open areas



TYPICAL CROSS SECTION (TYPE - 4)
At VUP/VOP Approaches with slip road (NH-NH Crossing)



Typical Cross Section (Type - 5)

2-lane with paved shoulders at built-up areas

Schedule-C

SCHEDULE – C *(See Clause 2.1)* **Project Facilities**

1 Project Facilities

The Contractor shall construct the Project Facilities in accordance with the provisions of this agreement. The Project Facilities shall include:

(a) Toll plazas.
(b) Roadside furniture.
(c) Pedestrian facilities.
(d) Land Scaping and Tree Plantation.
(e) Truck lay-byes.
(f) Wayside amenities.
(g) Bus-bays and Passenger shelters.
(h) Others.
1. Highway Patrol Units
2. Highway lighting
3. Emergency Medical Services
4. Crane Services
5. Communication System
6. Advance Traffic Management System (A. T. M. S.)
7. Operation and Maintenance Center

2 Description of Project Facilities

(a) Toll Plazas

Toll Plaza shall be provided as per as stipulated in section 10 of the Manual. Canopy of Toll plaza should be designed to withstand load of solar panels in addition to other design loads. Location of toll plaza is as per the following details.

Sl. No.	Toll Plaza ID	Design Chainage	Side	Min Number of Lanes
		NIL		

Note: Installation of two number dedicated ETC lane (one lane in each direction) and Hybrid ETC System with provision of medium speed WIM with bending plate technology in each lane, and Static Weigh Bridge (one lane in each direction) at Toll Plaza and Configuration with Advance Traffic Management System.

Above mentioned toll lanes are indicative. However, the actual requirement of toll lanes shall be assessed by Contractor as per actual site condition and Manual. The increase in number of toll lanes shall not be treated as change of scope.

Solar panels shall be erected over the Toll Plaza Canopy to generate the green energy. Same

shall be utilized for toll plaza lighting and other energy requirement within toll plaza area along with conventional lighting.

(b) Roadside furniture as per **clause 9 of Annex-I Schedule B**

(c) Pedestrian facilities.

Pedestrian Guard rails shall be provided at junctions, Truck lay byes, bus bays and near schools and hospitals as per provisions in section 9.8 of the Manual

i. Pedestrian guardrail: Provide pedestrian guardrail at each bus stop location and at other locations as per manual.

ii. Pedestrian Crossings: Provide pedestrian crossing facilities on locations as recommended in Schedule D.

(d) Land Scaping and Tree Plantation.

Land Scaping and tree plantation of the highway shall be provided as per section 11 of the manual. The locations for these provisions shall be finalized in consultation with Authority Engineer**.**

(e) Truck lay-byes

Truck Lay bye shall be provided at the following locations in accordance with section 12.5 of the manual.

Sl. No.	Design Chainage	Side	Nearest Village
Nil			

(f) Way-side Amenities

As stipulated in section 12.10 of the manual, Way-side Amenities shall be provided at the following locations:

S. No.	Design Chainage	Side
Nil		

(g) Bus-bays and Passenger shelters

Minimum 2x4 nos. of Bus Bays with Bus Shelter shall be provided along the project highway. Tentative locations for Bus Bays are indicated below, however, the same shall be finalized as per suitability of location and site requirement in consultation with the Authority's Engineer/ Authority. As stipulated in section 12.6 of the Manual, Bus-bays and shelters shall be provided at below indicative locations.

S. No.	Design Chainage		Location
	Left	Right	
1	1+290	1+370	Mahadev Khola
2	3+470	3+500	4th Mile
3	4+500	4+520	5th Mile
4	7+250	7+250	Elephant Falls

Note: However, the location of bus bays and passenger shelters shall be finalized as per

suitability of location and site requirement in consultation with Authority. Any change in location shall not treated as change of scope.

(h) Others

1. Highway Patrol unit – as per manual
2. Highway LED Lighting: LED Lighting shall be provided at the following locations:

a. LED Lighting shall be provided at approach to bridges, Flyover, built up areas, Toll Plaza, Bus stops, truck Lay-byes and rest areas as per manual recommended in Schedule D.

b. Apart from above locations lighting shall be provided at underpasses and ROB/RUB and as per site condition in consultation with Engineer and shall not be treated as change of scope. On all grade separated structures Lightings will be provided on Top & Underside as per clause 12.4 of IRC SP 73-2018.

c. High Mast Lighting shall be provided at all Major Junctions, Toll plaza locations or any other location as per clause 12.4.3 of IRC SP 73-2018.

3. Emergency Medical Services: Emergency medical Services shall be provided as per provisions of the manual.

4. Cranes services: One Cranes with 30 MT Capacity.

5. Communication System: Communication System shall be provided as per provisions of the manual.

6. Advance Traffic Management System (ATMS) as per technical specification: Provisions of other facilities, if required may be made in similar manner.

7. Operation and Maintenance Centre: Operation and Maintenance Centre shall be provided as per provisions of the manual.

Schedule-D

SCHEDULE - D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1 Construction

The Contractor shall comply with the Specifications and Standards set forth in Annex-I of this Schedule-D for construction of the Project Highway.

2 Design Standards

The Project Highway including Project Facilities shall conform to design requirements set out in the following documents:

a) Manual of Specifications and Standards for Two Laning of Highways with paved shoulder (IRC: SP: 73-2018), referred to herein as the Manual.

Annex - I

(Schedule-D)

Specifications and Standards for Construction

1 Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Two-Laning of Highways with paved shoulder (IRC: SP:73-2018), referred to as the Manual and Indian Road Congress (IRC) Codes and Standards and MORTH Specifications for Road and Bridge Works.

Where the aforesaid Manuals, guidelines, codes, standards and specifications are silent on any aspect, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2 Deviations from the Specifications and Standards

2.1 The terms "Concessionaire", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively.

2.2 Notwithstanding anything to the contrary contained in the aforesaid Manual, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Manual shall be deemed to be amended to the extent set forth below;

1) IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP.

2) Width of bridges

Sl. No.	Item	Description of Deviation	As per manual	Clause Reference
1	Width of bridges	Width bridges on hill road – 16m (0.5+1.5+0.5)+(0.5+1.5+7+1.5 +0.5)+(0.5+1.5+0.5) = 2.5+11+2.5 1) At Minor bridge 7+218 width is 26m due to 4 lane bridge. 2) At Minor bridge 9+916 width is 16.m 3) At Minor bridge 8+940 width is 13 m	Width of bridge on plain/rolling terrain – 18m (0.5+1.5+0.5)+(0.5 +2.5+7+ 2.5+0.5)+(0.5+1.5+ 0.5) = 2.5+13+2.5	Clause 7.3 (ii) Figure 7.6

Schedule – E
(See Clause 2.1 and 14.2)
MAINTENANCE REQUIREMENTS

1. Maintenance Requirements

1.1. The Contractor shall, at all-time maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.

1.2 The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.

1.3. All Materials, works and construction operations shall conform to the "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (FIFTH REVISION, April 2013)", including latest corrections slips, issued by the Ministry of Surface Transport & Highways, Government of India and published by the Indian Roads Congress.

Where the specifications for a work are not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2. Repair/rectification of Defects and deficiencies

The obligations of the Contractor in respect of Maintenance Requirements shall include repair and rectification of the Defects and deficiencies specified in Annex-I of this Schedule-E within the time limit set forth therein.

3. Other Defects and deficiencies

In respect of any Defect or deficiency not specified in Annex-I of this Schedule-E, the Authority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.

4. Extension of time limit

Notwithstanding anything to the contrary specified in this Schedule-E, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof;

5. Emergency repairs/restoration

Notwithstanding anything to the contrary contained in this Schedule-E, if any Defect, deficiency or deterioration in the Project Highway poses a hazard to safety or risk of damage to property, the Contractor shall promptly take all reasonable measures for eliminating or minimizing such danger.

6. Daily inspection by the Contractor

The Contractor shall, through its engineer, undertake a daily visual inspection of the Project Highway and maintain a record thereof in a register to be kept in such form and manner as the Authority's Engineer may specify. Such record shall be kept in safe custody of the Contractor and shall be open to inspection by the Authority and the Authority's Engineer at any time during office hours.

7. Pre-monsoon inspection / post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and drainage system before [1st June] every year in accordance with the guidelines contained in IRC: SP:35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [30th September] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities

All damages occurring to the Project Highway on account of torrential rains, floods, earthquake or other natural disasters shall be undertaken by the Contractor at its own cost and/or out of the proceeds of insurance.

Annex – I
(Schedule-E)

Repair/rectification of Defects and deficiencies

The Contractor shall repair and rectify the defects and deficiencies specified in this Annex-I of Schedule-E within the time limit set forth in the table below.

Nature of Defect or deficiency		Time limit for repair/ rectification
ROADS		
(a)	**Carriageway and paved shoulders**	
(i)	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days
(ii)	Roughness value exceeding 2,200 mm in a stretch of 1 km (as measured by a calibrated bump integrator)	120 (one hundred and twenty) days
(iii)	Pot holes	24 hours
(iv)	Any cracks in road surface	15 (fifteen) days
(v)	Any depressions, rutting exceeding 10 mm	30 (Thirty) days
(vi)	Bleeding/Skidding	7 (seven) days
(vii)	Any other defect/distress on the road	15 (fifteen) days
(viii)	Damage to pavement edges	15 (fifteen) days
(ix)	Removal of debris, dead animals	6 hours
(b)	**Granular earth shoulders, side slopes,**	
(i)	Edge drop at shoulders exceeding 40	7 (Seven) days
(ii)	Variation by more than 1% in the prescribed slope of camber/cross fal (shall not be less than the camber or the main carriageway)	7 (seven) days
(iii)	Variation by more than 15% in the prescribed side (embankment) slopes	30 (thirty) days
(iv)	Rain cuts/gullies in slope	7 (Seven) days
(v)	Damage to or silting of culverts and side	7 (Seven) days
(vi)	Desilting of drains in urban/semi-urban areas	24 hours
(vii)	Railing, parapets, crash barriers	7 (Seven) days (Restore immediately if causing safety hazard)
(c)	**Road side furniture including road sign**	
(i)	Damage to shape or position, poor visibility or loss of retro-reflectivity	48 hours
(ii)	Painting of KM stone, railing, parapets,	As and when required/Once every year
(iii)	Damaged/missing road signs required replacement	7 (Seven) days
(iv)	Damage to road mark ups	7 (Seven) days
(d)	**Road lighting**	

(i)	Any major failure of the system	24 hours
(ii)	Faults and minor failures	8 hours

(e)	**Trees and plantation**	
(i)	Obstruction in a minimum head-room of 5 m above carriageway or	24 hours
(ii)	Removal of fallen trees from	4 hours
(iii)	Deterioration in health of trees and	Timely watering and treatment
(iv)	Trees and bushes requiring	30 (Thirty) days
(v)	Removal of vegetation affecting sight line	15 (fifteen) days
(f)	**Rest area**	
(i)	Cleaning of toilets	Every 4 hours
(ii)	Defects in electrical, water and	24 hours
(g)	**Toll Plaza**	
(h)	**Other Project Facilities, Rest Area and**	
(i)	Damage in pedestrian facilities, truck lay- buys, bus-bays, bus-shelters, cattle, crossings, [Traffic Aid Posts, Medical Aid Posts]	15 (fifteen) days
(ii)	Damaged vehicles or debris on the	4 (Four) hours
(iii)	Malfunctioning of the mobile cranes	4 (four) hours
Bridges		
(a)	**Superstructure**	
(i)	Any damage, cracks, spalling/scaling Temporary measures Permanent	 Within 48 hours Within 15 (fifteen) days or as specified by the Authority's Engineer
(b)	**Foundations**	
(i)	Scouring and/or cavitation	15 (fifteen) days
(c)	**Piers, abutments, return walls and**	
(i)	Cracks and damages including settlement and tilting, Spalling,	30 (thirty) days
(d)	**Bearings (metallic) of bridges**	
(i)	Deformation	15 (fifteen) days Greasing of metallic bearings once in a year
(e)	**Joints**	
(i)	malfunctioning of joints	15 (fifteen) days
(f)	**Other items**	
(i)	Deforming of pads in elastomeric	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days

(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days (immediately within 24 hours if posing danger of safety)
(iv)	Rain-cuts or erosion of banks of the side	7 (seven) days
(v)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach Slabs, pitching, apron, toes, floor	30 (thirty) days
(vii)	Growth of vegetation affecting the structure or obstructing the	15 (fifteen) days
(g)	**Hill Roads**	
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours
(iii)	Snow requiring clearance	24 (twenty four) hours

[**Note:** Where necessary, the Authority may modify the time limit for repair/rectification or add to the nature of Defect or deficiency before issuing the bidding document, with the approval of the competent authority.]

Schedule-F

(See Clause 3.1.5(a))

APPLICABLE PERMITS

1. **Applicable Permits**

The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:

(a) Permission of the State Government for extraction of boulders from quarry.

(b) Permission of Village Panchayat and Pollution Control Board for installation of crushers.

(c) License for use of explosives.

(d) Permission of the State Government for drawing water from river/reservoir.

(e) License from inspector of factories or other competent Authority for setting up batching plant.

(f) Clearance of Pollution Control Board for setting up batching plant.

(g) Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant; (h) Permission of Village Panchayats and State Government for borrow earth; and

(i) Any other permits, clearances or approvals required under Applicable Laws.

1.2 Applicable permits, as required, relating to environmental protection and conservation shall have been produced by the Authority in accordance with the provisions of this Agreement

Schedule-G
(See Clause 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE
Annex-I
(See Clause 7.1.1)
PERFORMANCE SECURITY

The Managing Director,
NHIDCL,
3rd Floor, PTI Building, 4,
Parliament Street, New Delhi-110001

WHEREAS:

(A) _____ [name and address of contractor] (hereinafter called "the Contractor") and [**NHIDCL**], (**"the Authority"**) have entered into an agreement (the **"Agreement"**) for Package-I - Improvement to 2 lane with paved shoulder of NH-40 section from Km 81+740 to Km 93+490 (design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to Km 0+930, total length 11.600 Km in the state of Meghalaya on EPC mode under JICA Loan Assistance, subject to and in accordance with the provisions of the Agreement.

(B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the Construction Period and Defects Liability Period (as defined in the Agreement) in a sum of Rs. …. Crore (Rupees …. Crore) (the "**Guarantee Amount**").

(C) We, ……. through our branch at …….. (the "**Bank**") have agreed to furnish this bank guarantee (hereinafter called the "**Guarantee**") by way of Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during Construction Period and Defects Liability Period under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the guarantee amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank

of General Manager in the NHIDCL that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect on ****$1. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in Para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This guarantee shall also be operable at our…… Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

13. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication no. 758, except that the supporting statement under Article 15 (a) is hereby excluded.

Signed and sealed this …….. day of ……. 20…….. at ……

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)
(Name)
(Designation)
(Code
Number)
(Address)

NOTES:

(i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.

(ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Annex-II
(Schedule-G)
(See Clause 7.5.3)
Form for Guarantee for Withdrawal of Retention Money

The Managing Director,
NHIDCL,
3rd Floor, PTI Building, 4, Parliament Street New Delhi-110001

WHEREAS:

[Name and address of contractor] (hereinafter called "**the Contractor**") has executed an agreement (hereinafter called the "Agreement") with the [NHIDCL], (hereinafter called "the Authority") for the **"Package-I - Improvement to 2 lane with paved shoulder of NH-40 section from Km 81+740 to Km 93+490 (design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to Km 0+930, total length 11.600 Km in the state of Meghalaya on EPC mode under JICA Loan Assistance (Balance Works)."** subject to and in accordance with the provisions of the Agreement.

(A) In accordance with the Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called "**Retention Money**") after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.

(B) We, ……..through our branch at …….. (the "**Bank**") have agreed to furnish this bank guarantee (hereinafter called the "**Guarantee**") for the amount of Rs. ……Cr. (Rs……. in words) (the "**Guarantee Amount"**).

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the NHIDCL that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the

Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Retention Money and any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Retention Money.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of the Completion Certificate specified in Clause 12.4 of the Agreement.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This guarantee shall also be operable at our…… Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/

renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

Signed and sealed this …….. day of ……. 20…….. at ……

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

(i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.

(ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Schedule-H

(See Clauses10.1 (iv) and 19.3)

1 Contract Price Weightages

1.1 The Contract Price for this Agreement is **Rs. _____ Cr**.

1.2 Proportions of the Contract Price for different stages of Construction of the Project Highway shall be as specified below:

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
	1	2	3	4
1	Road works including culverts, widening and repair of culverts.	43.189%	**A - Widening and strengthening of existing road/ Geometric Improvements**	
			(1) Earthwork up to top of the Subgrade	11.699%
			(2) Subbase course (GSB)	6.645%
			(3) Non-bituminous base course (WMM)	4.664%
			(4) Bituminous base	6.323%
			(5) wearing coat	4.000%
			(6) widening and repair of Culverts	------
			B.1 – Reconstruction realignment/ bypass (Flexible pavement)	
			(1) Earthwork up to top of the Subgrade	20.703%
			(2) Subbase course (GSB)	9.014%
			(3) Non-bituminous base course (WMM)	6.986%
			(4) Bituminous base	9.484%
			(5) wearing coat	6.010%
			B.2 – Reconstruction realignment / bypass (Rigid Pavement)	
			(1) Earthwork up to top of the Subgrade	0.00%
			(2) Subbase course (GSB)	0.00%

			(3) Dry lean concrete (DLC)	0.00%
			(4) Pavement quality concrete (PQC) course	0.00%
			C.1 - Reconstruction/ New Service road (flexible Pavement)	
			Slip Roads along Project Highway	
			(1) Earthwork up to top of the Subgrade	0.221%
			(2) Subbase course (GSB)	1.519%
			(3) Non-bituminous base course (WMM)	1.165%
			(4) Bituminous base	1.361%
			(5) wearing coat	0.944%
			D. - Reconstruction/ New culverts on existing road, realignment, bypasses	9.262%
2	Minor Bridges/ Underpasses/ Overpasses	12.529%	**A.1 - Widening and repairs of Minor Bridges**	
			(1)Widening of existing bridges	3.204%
			(2) Rehabilitation of existing bridges	0.571%
			A.2 - New of Minor Bridges	
			(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap	8.418%
			(2) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	21.071%
			(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.906%
			(4) **Guide Bunds and River**	

			Training works: (On completion of Guide Bunds and river training works complete in all respects.)	0.00%
			B.1 - Widening and repairs of Underpasses/Overpasses	
			Underpasses/ Overpasses	0.00%
			B.2 – New Underpasses/Overpasses	
			(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap	16.298%
			(2) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified as specified.	11.151%
			(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	38.381%
3	Major Bridge works and ROB/RUB/elevated	0.00%	**A.1 - Widening and repairs of existing major bridges**	
			(1) Foundation:	0.00%

	sections/flyovers including viaducts, if any		(2) Sub-structure:	0.00%
			(3) Super-structure: (including bearings.)	0.00%
			(4) Wearing Coat including expansion joints	0.00%
			(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
			(6) Wing walls/return walls	0.00%
			(7) Guide bunds, river training works etc.	0.00%
			(8) Approaches (including retaining walls, stone pitching, protection works).	0.00%
			A.2 - New major bridges	
			(1) Foundation:	0.00%
			(2) Sub-structure:	0.00%
			(3) Super-structure: (including bearings.)	0.00%
			(4) Wearing Coat including expansion joints	0.00%
			(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%
			(6) Wing walls/return walls	0.00%
			(7) Guide bunds, river training works etc.	0.00%
			(8) Approaches (including retaining walls, stone pitching, protection works).	0.00%
			B.1 - Widening and repairs of (a) ROB and (b) RUB	
			(1) Foundation	0.00%
			(2) Sub structure	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat: (a) in case of ROB - wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB - rigid pavement under RUB including drainage facility complete in all respect as specified.	0.00%
			(5) Miscellaneous items (like	0.00%

			hand rails, crash barriers, road markings etc.)	
			(6) wing walls/return walls	0.00%
			(7) Approaches (including retaining walls, stone pitching, protection works).	0.00%
			B.2 - New ROB / RUB	
			(1) Foundation	0.00%
			(2) Sub structure	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat: (a) in case of ROB - wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB - rigid pavement under RUB including drainage facility complete in all respect as specified.	0.00%
			(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%
			(6) wing walls/return walls	0.00%
			(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%
			C.1 - Widening and repairs of Elevated section/Flyover/Grade Separators	
			(1) Foundation	0.00%
			(2) Sub structure	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat including expansion joint	0.00%
			(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%
			(6) wing walls/return walls	0.00%
			(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%
			C.2 - New Elevated	

			section/Flyover/Grade Separators	
			(1) Foundation:	0.00%
			(2) Sub-structure:	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat including expansion joint	0.00%
			(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%
			(6) wing walls/return walls	0.00%
			(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%
4	Other works	44.282%	(i) Toll plaza	0.00%
			(ii) Road side drains	20.732%
			(iii) Road signs, markings, km stones safety Devices etc.	15.612%
			(iv) Project facilities	
			(a) Bus Bay with shelter	0.151%
			(b) Truck laybys	0.000%
			(c) Rest areas	0.000%
			(d) others (to be specified)	
			(i) Street Lighting	1.540%
			(ii) Maintenance of existing road	1.779%
			(iii) Utility Ducts	0.196%
			(iv) Utility Ducts in defence area	1.701%
			(v) Junction improvement works including Connecting road & Junction under Grade separator, noise barrier.	4.899%
			(v) Road side plantation	0.00%
			(vi) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROBs/RUBs.	0.00%
			(vii) Protection works retaining wall/Breast walls/toe walls other than approaches to the	34.998%

			bridges, elevated sections, flyovers/ grade separators and ROBs/RUBs.	
			(viii) Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates.	16.263%
			(ix) Safety and traffic management during construction	0.151%
			(x) Side Slope Protection Works- Turfing and stone pitching	1.978%

1.3 Procedure of estimating the value of work done.

1.3.1 Road works

Procedure for estimating the value of road work done shall be as follows:

Table 1.3.1

Stage of Payment	**Percentage -weightage**	**Payment Procedure**
A - Widening and strengthening of existing road/ Geometric Improvement		
(1) Earthwork up to top of the sub-grade	11.699%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 05 (Five) percent of the total length.
(2) Sub-base Course	6.645%	
(3) Non bituminous Base course (WMM)	4.664 %	
(4) Bituminous Base course (DBM)	6.323%	
(5) Wearing Coat	4.000%	
(6) widening and repair of culverts	0.00%	Cost of ten completed culverts shall be determined pro rata with respect to the total number of culverts. Payment shall be made on the completion of at least One culverts.

Stage of Payment	Percentage	Payment Procedure
B.1 - Reconstruction realignment/bypass (Flexible		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 0.500 Km length, whichever is less.
(1) Earthwork up to top of the sub-grade	20.703%	
(2) Sub base course	9.014%	
(3) Non bituminous Base course	6.986%	
(4) Bituminous Base course	9.484%	
(5) Wearing Coat	6.010%	
B.2 - Reconstruction/ realignment/bypass (Rigid		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 1 (One) km. length, whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-base Course	0.00%	
(3) Dry lean concrete (DLC)	0.00%	
(4) Pavement quality concrete (PQC) course	0.00%	
C.1 - Reconstruction/ New Service road (flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 0.500 Km length.
Slip Roads along Project Highway		
(1) Earthwork up to Subgrade top	0.221%	
(2) Subbase course (GSB)	1.519%	
(3) Non-bituminous base course (WMM)	1.165%	
(4) Bituminous base	1.361%	
(5) wearing coat	0.944%	
D. Reconstruction & New Culverts on existing road, realignments, bypasses	9.262%	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least 1 (One) culvert.

@. For example, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows:

Cost per km = P x weightage for road work x weightage for bituminous work x (1/L)

Where P= Contract Price. And L = Total length in km.
Similarly, the rates per km for other stages shall be worked out accordingly.

Note: The length affected due to law and order problems or litigation during execution due to which the Contractor is unable to execute the work, may be deducted from the total project length for payment purposes. The total length calculated here is only for payment purposes and will not affect and referred in other clauses of the Contract Agreement.

1.3.2 Minor Bridges and Underpasses/Overpasses.

Procedure for estimating the value of Minor Bridge and underpasses/Overpasses shall be as stated in table 1.3.2:

Table 1.3.2

Stage of Payment	**Weightage**	**Payment Procedure**
A.1 - Widening and repairs of Minor Bridges		Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge.
(1) Widening of existing bridges	3.204%	
(2) Rehabilitation of existing bridges	0.571%	
A.2 - New of Minor Bridges		
(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap	8.418%	(i) Foundation +Sub Structure: Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation + sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation +substructure of each bridge subject to completion of at least two foundations along with sub-structure up to abutment/pier cap level of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load

(2) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	21.071%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub- clause.

Stage of Payment	Weightage	Payment Procedure
(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.906%	Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.
(4) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	0.00%	Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bunds and River training Works in all respects as specified

B.1 - Widening and repairs of Underpasses/Overpasses	0.00%	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpass/overpasses. Payment shall be made on the completion of widening & repair works of an underpass/overpasses.
B.2 - New Underpasses/Overpasses		
(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap	16.298%	Foundation + Substructure: Cost of each Underpass/ Overpass shall be determined on pro- rata basis with respect to the total linear length (m) of the Underpasses/ Overpasses Payment against foundation + Sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation + Sub Structure of each Underpasses Overpasses subject to completion of at least two foundations along with sub- structure upto abutment/pier cap level each underpass/overpass. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

(2) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified	11.151%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause.

(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	38.381%	Payment shall be made on pro-rata basis on completion of a stage i.e completion of approaches in al respects as specified

Procedure for estimating the value of major Bridge works, ROB/RUB and structure work shall be as stated in table 1.3.3:

Table 1.3.3

Stage of payment	Weightage	Payment procedure
A.1 - Widening and repairs of existing major bridges		
(1) Foundation:	0.00%	Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of at least two foundations of the major bridge. In case where load testing is required for foundation, the trigger of firs payment shall include load testing also where specified.
(2) Sub-structure:	0.00%	Payment against Substructure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of the major bridge subject to completion of at least two sub-structures

Stage of payment	Weightage	Payment procedure
		of abutments/piers up to abutment/pier cap level of the major bridge.
(3) Super-structure: (including bearings.)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified.
(4) Wearing Coat including expansion joints	0.00%	Wearing Coat: Payment shall be made o completion of wearing coat including expansion joints complete in all respects a specified.

(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be mad on completion of all miscellaneous work like hand rails, crash barriers, road markings etc. complete in all respects a specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall b made on completion of all wing walls/retur walls complete in all respects as specified.
(7) Guide bunds, River Training works etc.	0.00%	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	Approaches: Payments shall be made o completion of both approaches includin stone pitching, protection works, etc. complete in all respects as specified.
A.2 - New major bridges		
(1) Foundation	0.00%	Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of a least two foundations of the major bridge. In case where load testing is required fo foundation, the trigger of first payment sha include load testing also where specified.
(2) Sub-structure:	0.00%	Payment against Substructure shall b made on pro-rata basis on completion of stage i.e. not less than 25% of the scop of sub- structure of the major bridge subjec to completion of at least two sub-structures c abutments/piers up to abutment/pier ca level of the major bridge.
(3) Super-structure: (including bearings.)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified.
(4) Wearing Coat including	0.00%	Wearing Coat: Payment shall be made on

Stage of payment	Weightage	Payment procedure
expansion joints		completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Guide bunds, River Training works etc.	0.00%	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B.1 - Widening and repairs of (a) ROB and (b) RUB		
(1) Foundation	0.00%	Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to completion of at least two foundations of the ROB/RUB In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.00%	Sub-structure: Payment against sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB subject to completion of at least two sub-structures of abutments/piers up to abutment/pier cap level of the ROB/RUB.
(3) Super-structure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified.

(4) Wearing Coat including expansion joints in case of ROB. In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%	Wearing Coat: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility
(3) Super-structure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage
Stage of payment		i.e. completion of super- structure including bearings of at least one span in all respects as specified complete in all respects as specified
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including retaining walls, stone pitching, protection works).	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified
B.2 - New ROB / RUB		
(1) Foundation	0.00%	Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to completion of at least two foundations of the ROB/RUB In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.00%	Sub-structure: Payment against sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB bridge subject to completion of at least two sub-structures of abutments/piers up to abutment/pier cap level of the ROB/RUB.

(4) Wearing Coat including expansion joints in case of ROB. In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%	Wearing Coat: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls /Reinforced Earth wall, stone pitching and protection works)	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified
C.1 - Widening and repairs of Elevated section/Flyover/Grade Separators		
(1) Foundation	0.00%	Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. subject to completion of at least two foundations of the Structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.00%	Sub-structure: Payment against sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure or structure subject to completion of at least two sub-structures of abutments/piers up to abutment/pier cap level of the structure.
(3) Super-structure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified.

(4) Wearing Coat including expansion joints	0.00%	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous work like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified

Stage of payment	Weightage	Payment procedure
C.2 - New Elevated section/Flyover/Grade Separators		
(1) Foundation	0.00%	Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. subject to completion of at least two foundations of the Structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.00%	Sub-structure: Payment against sub structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure subject to completion of at least two sub-structures of abutments/piers up to abutment/pier cap level of the structure.
(3) Super-structure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage .e. completion of super- structure including bearings of at least one span in all respects as specified.
(4) Wearing Coat including expansion joints	0.00%	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%	Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified

1.3.4 Other works.

Procedure for estimating the value of other works done shall be as stated in table 1.3.4:

Table 1.3.4

Stage of Payment	Weightage	Payment procedure
(i) Toll plaza	0.00%	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
(ii) Road side drains	20.732%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% of the total length.
(iii) Road signs, markings stones safety Devices, etc.	15.612%	
(iv) Project facilities		Payment shall be made on pro rata basis for completed facilities.
a) Bus bays	0.151%	
b) Truck laybys	0.000%	
c) Rest areas	0.000%	
d) Others (To be specified)		
(i) Street Lighting	1.540%	
(ii) Maintenance of Existing road	1.779%	Payment shall be made on pro rata basis every three months.
(iii) Utility Ducts	0.196%	Payment shall be made on pro rata basis for completed facilities.
(iv) Utility Ducts in Defence area	1.701%	Cost of Utility duct at each location shall be determined on pro rata basis with respect to the total scope of work . Payment shall be made on the completion of facility at at least 1 (One) location.
(v) Junction improvement	4.899%	Payment shall be made on pro rata basis for completed facilities.

	works including connecting roads & junction under Grade separator.		
(vi)	Road Side Plantation	0.000%	Unit of measurement is linear length.
(vii)	Protection works retaining wall/Breast walls/toe walls other than approaches to the bridges, elevated section, flyovers/grade separators and ROBs/RUBs.	34.998%	Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% of the total length.
(viii)	Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates	16.263%	Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% of the total length
(ix)	Safety and traffic management during construction.	0.151%	Payment shall be made on pro rata basis every three months.
(x)	Side slope protection works turfing and stone pitching	1.978%	Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% of the total length.

2. Procedure for payment for Maintenance.

2.1 The cost for maintenance shall be as stated in Clause 14.1.(i)

2.2 Payment for Maintenance shall be made in quarterly instalments in accordance with the provisions of Clause 19.7

Project Name : Package-I, Improvement to 2 Lane with paved shoulder of NH-40 section from Km 81+740 to Km 93+490 (Design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to 0+930 total length 11.60 Km in the state of Meghalaya on EPC Mode under JICA Loan Assistance.

Authority : National Highways and Infrastructure Development Corporation Limited

COMPARATIVE STATEMENT OF SCHEDULE-H(PROVISIONAL)

Contract Price ₹ 1,59,43,74,723 **ANNEXURE-A**

Sl No.	Component	Stage for Payment	Unit	Scope		Unit Rate as per DPR	Project Cost		
				As per Original DPR	As per revised		As per Original DPR	As per revised	Difference
1	Road works including culverts, widening & repair of culverts	**A - Widening and strengthening/Gemetric improvement of existing road**							
		(1)Earth work upto top of sub-grade	Kms	7.443	7.443	1,00,69,195.23	7,49,45,020.12	8,05,56,582.60	56,11,562.48
		(2) Sub Base Course (GSB)	Kms	7.443	7.443	55,88,526.45	4,15,95,402.37	4,57,54,942.60	41,59,540.24
		(3)Non Bituminous Base Course (WMM)	Kms	7.443	7.443	39,22,636.77	2,91,96,185.51	3,21,15,804.03	29,19,618.52
		(4) Bituminous Base Course - DBM	Kms	7.443	7.443	53,17,716.80	3,95,79,766.13	4,35,37,742.76	39,57,976.63
		(5) Wearing Coat - BC	Kms	7.443	7.443	33,64,604.76	2,50,42,753.26	2,75,47,028.55	25,04,275.29
		B - Reconstruction realignment / bypass (Flexible Pavement)							
		(1)Earth work upto top of sub-grade	Kms	3.930	3.930	2,86,12,740.49	11,24,48,070.13	14,25,61,102.17	3,01,13,032.05
		(2)Sub Base Course (GSB)	Kms	3.930	3.930	1,58,68,336.80	6,23,62,563.61	6,20,70,586.23	-2,91,977.38
		(3)Non Bituminous Base Course (WMM)	Kms	3.930	3.930	1,11,28,040.30	4,37,33,198.38	4,81,06,518.22	43,73,319.84
		(4) Bituminous Base Course - DBM	Kms	3.930	3.930	1,51,06,780.96	5,93,69,649.19	6,53,06,614.09	59,36,964.90
		(5) Wearing Coat - BC	Kms	3.930	3.930	95,73,844.73	3,76,25,209.78	4,13,87,730.77	37,62,520.99
		D- Reconstruction/New Servie Road(							
		(1)Earth work upto top of sub-grade	Kms	2.340	2.940	4,69,845.28	10,99,437.95	15,19,479.64	4,20,041.69
		(2)Sub Base Course (GSB)	Kms	2.340	2.940	32,36,711.91	75,73,905.86	1,04,67,526.32	28,93,620.45
		(3)Non Bituminous Base Course (WMM)	Kms	2.340	2.940	24,79,738.96	58,02,589.17	80,19,475.80	22,16,886.63
		(4) Bituminous Base Course - DBM	Kms	2.340	2.940	28,97,379.21	67,79,867.35	93,70,124.37	25,90,257.02
		(5) Wearing Coat - BC	Kms	2.340	2.940	20,09,893.68	47,03,151.22	64,99,996.16	17,96,844.94
		D- Reconstruction/ New Culverts on existing road, realignment, bypass	Nos	27.0	27.0	21,83,040.37	5,89,42,089.99	6,37,79,707.45	48,37,617.46
		Total(1) :					**61,07,98,860.00**	**68,86,00,961.74**	**7,78,02,101.74**
		A1.- Widening and repairs of Minor Bridges							
		Widening of existing bridges	Mtr.	8	8	7,27,383.19	58,19,065.49	64,00,972.04	5,81,906.55
		Rehabilitation of existing bridges	Mtr.	58	58	17,877.72	10,36,907.95	11,40,598.74	1,03,690.79
		A2.- New of Minor Bridges						-	
2	Minor Bridge / Underpasses / Overpasses	1. **Foundation+ Substructure:** On completion of the foundation work including foundations for wing wall and return wall, abutments piers upto the abutmnet/pier cap.	Mtr.	72	86	1,77,761.79	1,27,98,848.83	1,68,16,265.33	40,17,416.51
		2. **Super-structure:** On completion of the super structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect and fit for use	Mtr.	72	86	4,44,941.84	3,20,35,812.66	4,20,91,498.06	1,00,55,685.40
		3. **Approaches:** On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	Mtr.	72	86	19,130.35	13,77,385.18	18,09,731.11	4,32,345.93
		B2-New Underpass/Overpasses						-	-
		1. **Foundation sub structure :** on completion of the foundation work including foundation of wing and return walls,abutments,piers up to the abutment/pier cap	Mtr.	84	91.000	3,07,498.11	2,58,29,841.22	3,25,56,362.40	67,26,521.17
		2. **Super-structure:** On completion of the super structure in all respects including wearing coat,bearings,expansion joints,hand rails,crash barrier,road signs and makings,test on completion etc. complete in all respect. Wearing coat (a) in case of Overpass-wearing including expansion joints complete in all respects as specified and (b) in case of underpass-rigid pavement including drainage facility complete in all respect as specified.	Mtr.	84	91.00	2,10,403.14	1,76,73,863.80	2,22,76,432.45	46,02,568.65

Project Name : Package-I, Improvement to 2 Lane with paved shoulder of NH-40 section from Km 81+740 to Km 93+490 (Design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to 0+930 total length 11.60 Km in the state of Meghalaya on EPC Mode under JICA Loan Assistance.

Authority : National Highways and Infrastructure Development Corporation Limited

COMPARATIVE STATEMENT OF SCHEDULE-H(PROVISIONAL)

Contract Price ₹ 1,59,43,74,723 **ANNEXURE-A**

Sl No.	Component	Stage for Payment	Unit	Scope		Unit Rate as per DPR	Project Cost		
				As per Original DPR	As per revised		As per Original DPR	As per revised	Difference
		3. **Approaches:** on completion of approaches includin retaining wall,stone pitching,protection works complete in all respect and fit for use.	Mtr.	1553	1860	37,474.00	5,81,90,654.88	7,66,71,804.00	1,84,81,149.12
		Total(2) :					**15,47,62,380.00**	**19,97,63,664.13**	**4,50,01,284.13**
3	**Other Works**	**Other works**							
		(i) Toll Plaza					-	0	-
		(ii) Road Side Drains	Kms	18.830	19.440	68,44,785.46	12,88,87,310.16	14,63,68,892.28	1,74,81,582.12
		(iii) Road signs,markings, km stones, safety devices etc...	Kms	11.600	11.600	86,38,156.51	10,02,02,615.57	11,02,22,877.07	1,00,20,261.50
		(iv) Project Facilities						-	-
		a) Bus Bay with Shelter	Nos	1	1	9,69,077.52	9,69,077.52	10,65,985.27	96,907.75
		b) Truck lay-byes				-	-	-	-
		c) Rest Areas				-	-	-	-
		d) Others (to be specified)						-	-
		(i) Street Lighting	Kms	11.6	11.6	8,52,119.89	98,84,590.70	1,08,73,049.80	9,88,459.09
		(ii) Maintenance of existing road	Month	24	24	7,61,129.64	1,82,67,111.25	1,25,58,639.06	-57,08,472.19
		(iii) Utility Ducts	Kms	11.6	11.6	1,08,603.52	12,59,800.78	13,85,780.92	1,25,980.14
		(iv) Utility Ducts in Defence Area	Nos		5		-	1,20,06,722.04	1,20,06,722.04
		(v) Junction improvement works including connecting road & junction under Grad Separtor, noise barrier.	Nos	26	24	13,10,118.26	3,40,63,074.83	3,45,87,122.06	5,24,047.24
		(v) Road Side Plantation				-		-	-
		(vi) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/grade separator abd ROBs/RUBs				-		-	-
		(vii) Protection works retaining wall/toe walls other than approaches to the bridges, elevated sections, flyovers/grade separators and ROBs/RUBs.	Rmt.	6920	8776	25,627.34	17,73,41,186.16	24,70,95,470.47	6,97,54,284.31
		(viii) Boundary Wall	Rmt.	-	4415			11,48,15,165.50	11,48,15,165.50
		(ix)Safety and traffic management during construction	Kms	11.60	11.60	83,541.17	9,69,077.52	10,65,985.33	96,907.81
		(x) Side slope Protection works Turfing and stone pitching	Kms	11.60	11.60	10,94,389.27	1,26,94,915.51	1,39,64,407.09	12,69,491.57
		Total(3) :					**48,45,38,760.00**	**70,60,10,096.88**	**22,14,71,336.88**
						GRAND TOTAL =	**1,25,01,00,000.00**	**1,59,43,74,722.74**	**34,42,74,722.74**

Project Name : Package-I, Improvement to 2 Lane with paved shoulder of NH-40 section from Km 81+740 to Km 93+490 (Design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to 0+930 total length 11.51 Km in the state of Meghalaya on EPC Mode under JICA Loan Assistance.

1692710/2022/SRINAGAR-6

1171120

Authority : National Highways and Infrastructure Development Corporation Limited

SCHEDULE-H (PROVISIONAL)

Contract Price			₹ 1,59,43,74,723								

Sl No.	Component	Weightage in % age to the Contract Price	Total value as per Contract (Rs)	Stage for Payment	Unit	Cost Weightage in Component (%)	Rate per Unit as per Original DPR Cost (Rs.)	Per unit rate including excalation of 10% for two year	Total Qty as per available Scope	executed	Total Qty as per Balance Scope	Total Cost as per available Scope(Rs)
1	Road works including culverts, widening & repair of culverts	43.189%	68,86,00,961.74	**A - Widening and strengthening/Geometric improvement of existing road**								
				(1)Earth work upto top of sub-grade	Kms	11.699%	1,00,69,195.23	1,10,76,114.75	7.443	**0.170**	**7.273**	8,05,56,582.60
				(2)Sub Base Course (GSB)	Kms	6.645%	55,88,526.45	61,47,379.10	7.443	**-**	**7.443**	4,57,54,942.60
				(3)Non Bituminous Base Course (WMM)	Kms	4.664%	39,22,636.77	43,14,900.45	7.443	**-**	**7.443**	3,21,15,804.03
				(4) Bituminous Base Course - DBM	Kms	6.323%	53,17,716.80	58,49,488.48	7.443	**-**	**7.443**	4,35,37,742.76
				(5) Wearing Coat - BC	Kms	4.000%	33,64,604.76	37,01,065.24	7.443	**-**	**7.443**	2,75,47,028.55
				B - Reconstruction realignment / bypass (Flexible Pavement)			-		-	**-**		-
				(1)Earth work upto top of sub-grade	Kms	20.703%	2,86,12,740.49	3,14,74,014.54	3.930	**1.167**	**2.763**	14,25,61,102.17
				(2)Sub Base Course (GSB)	Kms	9.014%	1,58,68,336.80	1,74,55,170.48	3.930	**0.374**	**3.556**	6,20,70,586.23
				(3)Non Bituminous Base Course (WMM)	Kms	6.986%	1,11,28,040.30	1,22,40,844.33	3.930	**-**	**3.930**	4,81,06,518.22
				(4) Bituminous Base Course - DBM	Kms	9.484%	1,51,06,780.96	1,66,17,459.06	3.930	**-**	**3.930**	6,53,06,614.09
				(5) Wearing Coat - BC	Kms	6.010%	95,73,844.73	1,05,31,229.20	3.930	**-**	**3.930**	4,13,87,730.77
				C- Reconstruction/New Service Road(Flexible Pavement)								
				Slip Roads along Project Highway								
				(1)Earth work upto top of sub-grade	Kms	0.221%	4,69,845.28	5,16,829.81	2.940	**-**	**2.940**	15,19,479.64
				(2)Sub Base Course (GSB)	Kms	1.519%	32,36,711.91	35,60,383.10	2.940	**-**	**2.940**	1,04,67,526.32
				(3)Non Bituminous Base Course (WMM)	Kms	1.165%	24,79,738.96	27,27,712.86	2.940	**-**	**2.940**	80,19,475.80
				(4) Bituminous Base Course - DBM	Kms	1.361%	28,97,379.21	31,87,117.13	2.940	**-**	**2.940**	93,70,124.37
				(5) Wearing Coat - BC	Kms	0.944%	20,09,893.68	22,10,883.05	2.940	**-**	**2.940**	64,99,996.16
				D- Reconstruction/ New Culverts on existing road, realignment, bypass	Nos	9.262%	21,83,040.37	24,01,344.41	27.000	**0.440**	**26.560**	6,37,79,707.45
						100.000%			-	**-**	**-**	**68,86,00,961.74**

Project Name : Package-I, Improvement to 2 Lane with paved shoulder of NH-40 section from Km 81+740 to Km 93+490 (Design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to 0+930 total length 11.600 in the state of Meghalaya on EPC Mode under JICA Loan Assistance.

1692710/2022/SRINAGAR-6

Authority : National Highways and Infrastructure Development Corporation Limited

SCHEDULE-H (PROVISIONAL)

Contract Price			₹ 1,59,43,74,723								
Sl No.	Component	Weightage in % age to the Contract Price	Total value as per Contract (Rs)	Stage for Payment	Unit	Cost Weightage in Component (%)	Rate per Unit as per Original DPR Cost (Rs.)	Per unit rate including excalation of 10% for two year	Total Qty as per available Scope	executed	Total Qty as per Balance Scope	Total Cost as per available Scope(Rs)
2	Minor Bridge / Underpasses / Overpasses	12.529%	19,97,63,664.13	**A1.- Widening and repairs of Minor Bridges**						-	-	
				Widening of existing bridges	Mtr.	3.204%	7,27,383.19	8,00,121.50	8.000	-	**8.000**	64,00,972.04
				Rehabilitation of existing bridges	Mtr.	0.571%	17,877.72	19,665.50	58.000	-	**58.000**	11,40,598.74
				A2.- New of Minor Bridges			-		-	-	-	-
				1. **Foundation+ Substructure:** On completion of the foundation work including foundations for wing wall and return wall, abutments piers upto the abutmnet/pier cap.	Mtr.	8.418%	1,77,761.79	1,95,537.97	86.000	-	**86.000**	1,68,16,265.33
				2. **Super-structure:** On completion of the super structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect and fit for use	Mtr.	21.071%	4,44,941.84	4,89,436.02	86.000	-	**86.000**	4,20,91,498.06
				3. **Approaches:** On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	Mtr.	0.906%	19,130.35	21,043.39	86.000	-	**86.000**	18,09,731.11
				B2-New Underpass/Overpasses				-	-		-	-
				1. **Foundation sub structure :** on completion of the foundation work including foundation of wing and return walls,abutments,piers up to the abutment/pier cap	Mtr.	16.298%	3,07,498.11	3,38,247.92	91.000	-	**91.000**	3,25,56,362.40

Project Name : Package-I, Improvement to 2 Lane with paved shoulder of NH-40 section from Km 81+740 to Km 93+490 (Design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to 0+930 total length 9.61 Km in the state of Meghalaya on EPC Mode under JICA Loan Assistance.

1692710/2022/SRINAGAR-6

Authority : National Highways and Infrastructure Development Corporation Limited

SCHEDULE-H (PROVISIONAL)

Contract Price			₹ 1,59,43,74,723								

Sl No.	Component	Weightage in % age to the Contract Price	Total value as per Contract (Rs)	Stage for Payment	Unit	Cost Weightage in Component (%)	Rate per Unit as per Original DPR Cost (Rs.)	Per unit rate including excalation of 10% for two year	Total Qty as per available Scope	executed	Total Qty as per Balance Scope	Total Cost as per available Scope(Rs)
				2. **Super-structure:** On completion of the super structure in all respects including wearing coat,bearings,expansion joints,hand rails,crash barrier,road signs and makings,test on completion etc. complete in all respect. Wearing coat (a) in case of Overpass-wearing including expansion joints complete in all respects as specified and (b) in case of underpass-rigid pavement including drainage facility complete in all respect as specified.	Mtr.	11.151%	2,10,403.14	2,31,443.45	91.000	-	**91.000**	2,22,76,432.45
				3. **Approaches:** on completion of approaches includin retaining wall,stone pitching,protection works complete in all respect and fit for use.	Mtr.	38.381%	37,474.00	41,221.40	1,860	-	**1,860.000**	7,66,71,804.00
						100.000%			-		-	**19,97,63,664.13**
3	**Other Works**	44.281%	70,60,10,096.88	**Other works**					-		-	
				(i) Toll Plaza		0.000%	-	-	-	-	-	-
				(ii) Road Side Drains	Kms	20.732%	68,44,785.46	75,29,264.01	19.440	-	**19.440**	14,63,68,892.28
				(iii) Road signs,markings, km stones, safety devices etc…	Kms	15.612%	86,38,156.51	95,01,972.16	11.60	-	**11.600**	11,02,22,877.07
				(iv) Project Facilities							-	-
				a) Bus Bay with Shelter	Nos	0.151%	9,69,077.52	10,65,985.27	1	-	**1.000**	10,65,985.27
				b) Truck lay-byes		0.000%	-	-	-	-	-	-
				c) Rest Areas		0.000%	-	-	-	-	-	-
				d) Others (to be specified)							-	-
				(i) Street Lighting	Kms	1.540%	8,52,119.89	9,37,331.88	11.60	-	**11.600**	1,08,73,049.80
				(ii) Maintenance of existing road	Month	1.779%	7,61,129.64	8,37,242.60	24	**9.000**	**15.000**	1,25,58,639.06
				(iii) Utility Ducts	Kms	0.196%	1,08,603.52	1,19,463.87	11.60		**11.600**	13,85,780.92
				(iv) Utility Ducts in Defence Area	Nos	1.701%	21,83,040.37	24,01,344.41	5.00		**5.000**	1,20,06,722.04
				(v) Junction improvement works including connecting road & junction under Grad Separtor, noise barrier.	Nos	4.899%	13,10,118.26	14,41,130.09	24		**24.000**	3,45,87,122.06
				(v) Road Side Plantation		0.000%	-	-	-	-	-	-

Project Name : Package-I, Improvement to 2 Lane with paved shoulder of NH-40 section from Km 81+740 to Km 93+490 (Design Km 0+000 to Km 10+670) & Improvement to 4 lane section of NH-44 from design Km 0+000 to 0+930 total length 12.61 Km in the state of Meghalaya on EPC Mode under JICA Loan Assistance.

1692710/2022/SRINAGAR-6

1201120

Authority : National Highways and Infrastructure Development Corporation Limited

SCHEDULE-H (PROVISIONAL)

Contract Price			₹ 1,59,43,74,723								

Sl No.	Component	Weightage in % age to the Contract Price	Total value as per Contract (Rs)	Stage for Payment	Unit	Cost Weightage in Component (%)	Rate per Unit as per Original DPR Cost (Rs.)	Per unit rate including excalation of 10% for two year	Total Qty as per available Scope	executed	Total Qty as per Balance Scope	Total Cost as per available Scope(Rs)
				(vi) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/grade separator abd ROBs/RUBs		0.000%	-	-	-	-	-	-
				(vii) Protection works retaining wall/toe walls other than approaches to the bridges, elevated sections, flyovers/grade separators and ROBs/RUBs.	Rmt.	34.998%	25,627.34	28,190.07	8,776.000	10.664	8,765.336	24,70,95,470.47
				(viii) Boundary wall including Barbed wire Fencing, View Blockers, RCC Columns and Gates	Rmt.	16.263%		26,810.00	4,415.00	-	4,415.000	11,48,15,165.50
				(ix)Safety and traffic management during construction	Kms	0.151%	83,541.17	91,895.29	11.600	-	11.600	10,65,985.33
				(x) Side slope Protection works Turfing and stone pitching	Kms	1.978%	10,94,389.27	12,03,828.20	11.600	-	11.600	1,39,64,407.09
						100.000%						70,60,10,096.88
	Total	100.00%	1,59,43,74,722.74	GRAND TOTAL =								1,59,43,74,722.74
1	Amount for Road works including culverts, widening & repair of culverts											68,86,00,961.74
2	Amount for Minor Bridge / Underpasses / Overpasses											19,97,63,664.13
3	Amount for Other Works											70,60,10,096.88
4	Total Amount of Work											1,59,43,74,722.74